# FINAL
# NOVEMBER 2010 (N=28) GROUNDWATER, SURFACE-WATER, AND METHANE MONITORING REPORT

**FOR**

**LONGSTREET ROAD MSW LANDFILL**
**NCDENR LANDFILL PERMIT #26-02**

**FORT BRAGG, NORTH CAROLINA**

**Prepared by:**

**US Army Corps of Engineers**
**Savannah District**
**Hazardous, Toxic & Radioactive Waste Section**
**CESAS-EN-GH**
**110 W. Oglethorpe Avenue**
**Savannah, GA 31401**

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| SIGNATURE OF CERTIFIED PROFESSIONAL GEOLOGIST | |
|---|---|
| Kevin G. Haborak, P. G.<br>Professional License Numbers: Georgia # 1683 | Date |

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**FEBRUARY 2011**

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# LIST OF ACRONYMS

| | |
|---|---|
| C&D | Construction and Demolition |
| COCs | Chemicals of Concern |
| DPW | Directorate of Public Works |
| IDW | Investigation Derived Waste |
| LCID | Land Clearing and Inert Debris |
| µg/L | Micrograms Per Liter |
| MSWLF | Municipal Solid Waste Landfill Facility |
| NC2L | North Carolina Administrative Code, Title 15A, Subchapter 2L |
| NCDENR | North Carolina Department of Environmental and Natural Resources |
| RCRA | Resource Conservation and Recovery Act |
| SAP | Sampling and Analysis Plan |
| USACE | US Army Corps of Engineers |
| VOCs | Volatile Organic Compounds |

# NOVEMBER 2010 (N=28) GROUNDWATER, SURFACE-WATER, AND METHANE MONITORING REPORT FOR LONGSTREET ROAD MSW LANDFILL NCDENR LANDFILL PERMIT #26-02 FORT BRAGG, NORTH CAROLINA

## 1.0 INTRODUCTION

The report for the groundwater, surface-water, and methane monitoring for the Longstreet Landfill (Figure 1) was performed by the United States Army Corps of Engineers (USACE), Savannah District in November 2010. The monitoring is required by the North Carolina Department of Environmental and Natural Resources (NCDENR) Solid Waste Management Division. This is the twenty-eighth (N=28) monitoring event for the site. This report summarizes the methods used for the groundwater, surface-water, and methane monitoring and presents the results of the sampling event.

### 1.1 Project Background

The Longstreet Road landfill is a Municipal Solid Waste Landfill Facility (MSWLF) located north of Longstreet Road at Fort Bragg in Cumberland County, North Carolina. Figure 1 is a map of the site location. The United States Army Corps of Engineers (USACE), Savannah District has been contracted by the Fort Bragg Directorate of Public Works (DPW) to conduct water quality and methane sampling for the Environmental Branch to satisfy the permit and the Sampling and Analysis Plan (SAP) requirements. Groundwater, surface-water, and methane monitoring locations are shown on Figure 2. The current SAP, approved by NCDENR, includes sampling nine monitoring wells and two surface-water stations. The monitoring wells are SLMW-6, SLMW-7, SLMW-8, SLMW-9, SLMW-10, SLMW-11R, SLMW-12AR, SLMW-12BR, and SLMW-13, and the surface-water stations are SW-1 & SW-2. Monitoring well SLMW-11R is a replacement well that was installed in July 2008. The replacement well was installed because well SLMW-11 had been dry for several events. All sampling was conducted according to North Carolina Solid Waste Management Guidelines.

## 1.2 Project Scope

The scope for this project included collecting nine groundwater samples for all Appendix I and triggered Appendix II constituents, collecting two surface-water samples for all Appendix I & II constituents, performing methane monitoring at 14 selected methane monitoring wells and 4 buildings on site, evaluating the analytical results, and reporting the results of the investigation. The groundwater sampling and data analyses included obtaining field parameter measurements (i.e. pH, temperature, etc.), measuring water levels at the monitoring well locations, determining groundwater flow directions, validating laboratory analytical data, performing statistical analyses for each detected constituent as required by NC regulations, and determining the concentration changes of chemicals of concern (COCs) with time.

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## 2.0 PROJECT HISTORY

### 2.1 Site Description

The MSWLF is located north of Longstreet Road at Fort Bragg in Cumberland County, North Carolina. Figures 1 and 2 show the site location and layout. The MSWLF is west of the main post and east of Cooleyconch Mountain. Cooleyconch Mountain is the prominent terrain feature west of the main post. A vehicle washing facility borders the site to the east, the Lamont Road LCID and C&D Landfills are approximately 1.5 miles east of the site (on the west side of Cooleyconch Mountain).

### 2.2 General Site Geology and Hydrology

Lithologic descriptions of soil borings and monitoring well borings from previous investigations at Fort Bragg indicate that in general Fort Bragg is underlain by alternating sands, silty sands, clayey sands, sandy clays, and clays, likely belonging to the Middendorf Formation. The sands and silty sands range in thickness from approximately 2 to 22 ft and are coarse grained. The clay units range in thickness from approximately 2 to 7 ft and are typically plastic.

### 2.3 Previous Investigation and Results

Several sampling events have been conducted at the Landfill. Initially, four monthly sampling events were conducted in July, August, September, and October 1996 by R,S & H Architect, Engineering, & Planning, Inc. Law & Company, Inc. conducted two sampling events in March and September, 1999 in conjunction with the installation of new wells. Then until 2005, sampling events were conducted by BPA Environmental & Engineering, Inc. The USACE has monitored the site since 2005.

The previous sampling event, held in June 2010 for Longstreet Landfill, was conducted by the USACE, Savannah District. Low levels of VOCs, SVOCs, pesticides and Appendix II inorganics were detected, but most detections were at estimated levels

and/or were below NC2L standards. Constituents found above the NC2L standards were: benzene, vinyl chloride, 1,2-Dichloropropane, Tetrachloroethene, and Cyanide.

## 3.0 METHODS

### 3.1 Methane Monitoring

Methane monitoring was performed at 14 wells and 4 buildings. The monitoring included measuring levels of methane, carbon dioxide, and oxygen at each of the locations. The results of the monitoring are summarized in Table 1 and are also presented on Figure 3.

### 3.2 Water-Level Gauging

During this sampling event, USACE personnel measured the water levels in 9 monitoring wells. Measured water levels and calculated groundwater elevations are presented in Table 2. A Potentiometric map was developed based on the groundwater elevations; the map is presented as Figure 4. The map shows that the general direction of the groundwater flow at the Longstreet Landfill is towards the south-southeast.

### 3.3 Groundwater and Surface-Water Sampling

The groundwater sampling was conducted in accordance with the SAP for the Longstreet Road MSWLF (NCDENR Landfill Permit #26-02, which has been updated to reflect the most recent SAP). Groundwater samples were collected from nine monitoring wells and two surface-water stations. Water quality parameters pH, specific conductivity, temperature, turbidity, dissolved oxygen (DO), and oxidation-reduction potential (ORP) were measured during the purge cycle of each well and prior to sampling the surface-water stations. The measurements are summarized in Table 3.

The surface-water sample was collected using a peristaltic pump. The water to be collected for VOC analysis was not allowed to pass through the head of the pump, instead the tubing was filled and the flow was reversed to fill the bottles. Groundwater samples were collected using a low-flow purge method with a bladder pump. Immediately before purging a well, the static water level below the top of the well casing and the total depth of the well were measured to the nearest 0.01 foot and recorded in the field notebook. The volume of water in the well was calculated based on the static water level and the

well construction information. Well volume calculations were placed in the field notebook. The inlet of the sampling pump was placed at the mid-point of the screened interval. This level was adjusted for wells where the static water level is within the well screen. The monitoring wells were purged using a variable-flow bladder pump at a rate of 500 ml/min or less.

The wells were purged until the water quality had stabilized or five purge volumes were removed. The wells were considered stable when the following requirements were met for three consecutive readings: turbidity values within 10% or lower than 10 Nephelometric Turbidity Units (NTUs), temperature values within a range of 0.5 degrees Celcius, pH readings within 0.1 Standard Units (SU), ORP values within a range of 10 milivolts (mV), and conductivity values within 3%, and DO values within 10%.

The rate of pumping was determined and noted in the field notebook. The purge rate was adjusted, as necessary, to avoid purging any well to dryness and to equal the recharge of the aquifer. All sampling equipment was protected from contaminated soil surfaces to prevent contamination of the samples (e.g., equipment may be placed on disposable polyethylene plastic sheeting). Groundwater samples were collected after purging was complete. The tubing was disconnected from the flow through cell and the samples were collected from the pump outlet. The samples were labeled and placed into an ice-filled cooler for preservation.

Groundwater sampling data (including sample number, location, quantity of water purged, field parameters, site conditions, etc.) were documented in the field notebook. Water samples for Resource Conservation and Recovery Act (RCRA) metal analyses were un-filtered. The results of the groundwater sampling are presented in Table 4 and on Figure 5. The groundwater sampling field data logs are presented in Appendix A.

### 3.4 Investigation Derived Wastes Handling

The investigation derived wastes (IDW), including the waste water from well purging and decontamination water, were containerized in 55-gallon drums. Those

drums were appropriately labeled, sealed, and staged within designated areas until analytical results had been received and reviewed. Based on the analytical results of the groundwater samples, the IDW was classified as non-hazardous. With the concurrence of the Fort Bragg Installation Restoration Program Manager, the IDW was disposed of at an appropriate disposal facility.

## 4.0 ANALYTICAL RESULTS AND STATISTICAL ANALYSIS

### 4.1 Analytical Data Summary

Groundwater samples were analyzed for VOCs, SVOCs, Pesticides, PCBs, Organophosphorus Pesticides, and Appendix II Inorganics. The surface-water samples were analyzed for all Appendix I and Appendix II constituents. The summary of detections of the COCs is presented in Table 4. Figure 5 shows the distribution of the detections and their concentrations from this sampling event. The reports of chemical data quality assessment prepared by the Project Chemist are included as Appendix B. The laboratory reports of analytical results are included as Appendix C. For comparison, the analytical results of previous investigations are also presented in the Statistical Analyses Summary Report included in Appendix D.

In accordance with North Carolina guidance, analytical results are compared to North Carolina Groundwater 2L Standards (NC2L standards). The analytical data of the second 2010 sampling event indicated that some VOCs and inorganics were detected at low levels, and most detections were below NC2L standards (Table 4). Six sampling locations had detections exceeding the NC2L standards and several were detected at estimate levels (which will be referred to as estimate): wells SLMW-8, SLMW-9, SLMW-10, SLMW-12AR, SW-1, and SW-2. The analytical results for each of those wells are shown below:

- Well SLMW-8

  Two compounds were detected above the 2L standard as listed below:

| Compound | 2L | | Concentration | |
|---|---|---|---|---|
| Benzene | 1 | µg/L | 1.2 | µg/L |
| Vinyl Chloride | 0.015 | µg/L | 10 | µg/L |

  No other constituents were above their 2L standards.

.

- Well SLMW-9

  Two compounds were detected above the 2L standard as listed below:

| Compound | 2L | | Concentration | |
|---|---|---|---|---|
| Benzene | 1 | µg/L | 1.2 | µg/L |
| Vinyl Chloride | 0.015 | µg/L | 1.9 | µg/L |

No other constituents were above their 2L standards.

- Well SLMW-10

Three compounds were detected above the 2L standard as listed below:

| Compound | 2L | | Concentration | |
|---|---|---|---|---|
| 1,2-Dichloropropane | 0.56 | µg/L | 1.7 | µg/L |
| Benzene | 1 | µg/L | 1.3 | µg/L |
| Vinyl Chloride | 0.015 | µg/L | 1.6 | µg/L |

- Well SLMW-12AR

One compound was estimated above the 2L standard as listed below:

| Compound | 2L | | Concentration | |
|---|---|---|---|---|
| Vinyl Chloride | 0.015 | µg/L | 0.58 J | µg/L |

No other constituents were above their 2L standard.

- Well SW-1-11-10

One compound was estimated above the 2L standard as listed below:

| Compound | 2L | | Concentration | |
|---|---|---|---|---|
| Cyanide | 1.54 | µg/L | 2.5 J | µg/L |

No other constituents were above their 2L standard.

- Well SW-2-11-10

Four compounds were estimated or detected above the 2L standard as listed below:

| Compound | 2L | | Concentration | |
|---|---|---|---|---|
| Cyanide | 1.54 | µg/L | 2.5 J | µg/L |
| Benzene | 1 | µg/L | 2.2 | µg/L |
| Tetrachloroethene | 1.2 | µg/L | 1.2 | µg/L |
| Vinyl Chloride | 0.015 | µg/L | 2.8 | µg/L |

No other constituents were above their 2L standard.

Though wells had constituent detections above method detection limits, all other detections were below the respective NC2L standard and most are estimated values that were detected above the method detection limits but below the reporting limit (Table 4).

### 4.2 Statistical Analysis Results

A statistical test predicts the average behavior (distribution) of a random variable by comparing the means (normal distribution) or medians (lognormal and non-parametric distributions) of the compliance well data to background well data. Different statistical tests were used as appropriate for the different distributional patterns that occur within the data. Prior to testing for statistical significance, the distribution of each parameter was determined to be normal, lognormal, or non-normal.

If the data were non-normally distributed, or the fraction of nondetects exceeded 15% but were less than 90%, then the Kruskal-Wallis Test was applied. However, the Kruskal-Wallis test is prone to false positives. Therefore, additional statistical analyses were used to determine the validity of the positive results. If the fraction of non-detects exceeded 90%, then the Non-Parametric Prediction Limit was applied. Intra-well comparisons of data from a single well to previous data from the same well were performed to confirm if a trend of increasing concentration is occurring. The Mann-Kendall Trend Analysis and the Shewhart-CUSUM Control Chart statistical tests were selected for these additional analyses.

A detailed discussion of the statistical methods is presented in Appendix D. The results of the analysis indicated that the samples collected at the Longstreet Road Municipal Solid Waste Landfill did not exhibit any evidence of SSIs in the analytical results Future analytical results will be evaluated using the same procedures.

According to North Carolina Administrative Code Title 15A Chapter 13 Subchapter B Section 1634 paragraph f [15A NC3AC 13B.1634 (f)], assessment monitoring shall continue if Appendix II parameters are detected at statistically significant levels above

background but below established groundwater protection standards. Assessment monitoring will have to continue at the landfill until the presence of no SSIs is confirmed in the next monitoring event.

### 4.3 Methane Monitoring Results

The methane levels were measured at 18 locations at Longstreet. The results of the monitoring are summarized in Table 1 and are also presented on Figure 3. Four methane monitoring wells contained high levels of methane (> 5% Methane by Volume) with one reading at or above 31.8% methane by volume. Methane vent flares were recommended for this landfill in the 2005 Report.

## 5.0 CONCLUSIONS AND RECOMMENATIONS

The annual monitoring program consists of two sampling events (this was the second) conducted six months apart. This was the N=28 sampling event for the Longstreet Road Landfill. Low levels of VOCs, SVOCs, pesticides and Appendix II inorganics were detected, but most detections were at estimated levels and/or were below NC2L standards. Benzene was detected above its NC2L standard at monitoring wells SLMW-8, SLMW-9, SLMW-10, and SW-2. Vinyl chloride was detected above the NC2L standard at monitoring wells SLMW-8, SLMW-9, SLMW-10, SLMW-12AR, and SW-2.

According to the Statistical Analysis of groundwater Data (Appendix D), The results of the analysis indicated that the samples collected at the Longstreet Road Municipal Solid Waste Landfill did not exhibit any evidence of SSIs in the analytical results.

According to North Carolina Administrative Code Title 15A Chapter 13 Subchapter B Section 1634 paragraph f [15A NC3AC 13B.1634 (f)], assessment monitoring shall continue if Appendix II parameters are detected at statistically significant levels above background but below established groundwater protection standards. No SSIs were identified during this event, assessment monitoring will continue until the lack of SSIs is confirmed in the N=29 sampling event. Long-term monitoring should continue at the Longstreet Road Landfill because it is still an active site and NC Solid Waste Regulations require it.

The methane levels were measured at 18 locations at Longstreet. Four methane monitoring wells showed high levels of methane (> 5%) with one reading at or above 31.8% methane by volume. Methane vent flares were recommended for this landfill in the 2005 Report.

## 6.0 REFERENCES

North Carolina Administrative Code, Title 15A, Department of Environment, Health, and Natural Resources, Division of Solid Waste, Management, Subchapter 13B, Solid Waste Management, Section .1600 (January 4, 1994).

North Carolina Administrative Code, Title 15A, Department of Environment, Health, and Natural Resources, Division of Solid Waste, Management, SubchapterNC2L, Classifications and Water Quality Standards Applicable to the Groundwaters of North Carolina, Sections .0100, .0200, and .0300 (November 8, 1993): from the Environmental Management Commission, Raleigh, North Carolina.

# FIGURES

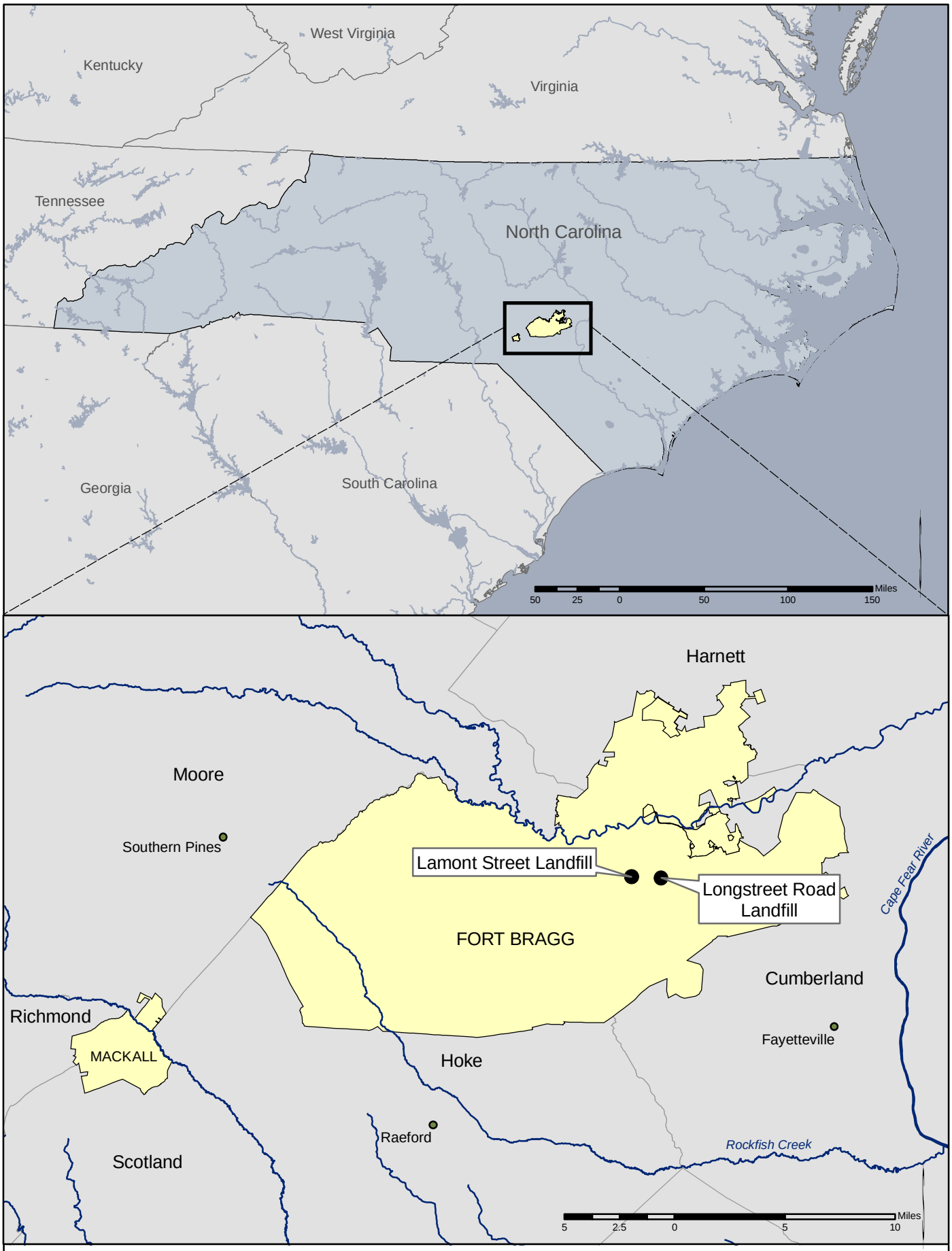


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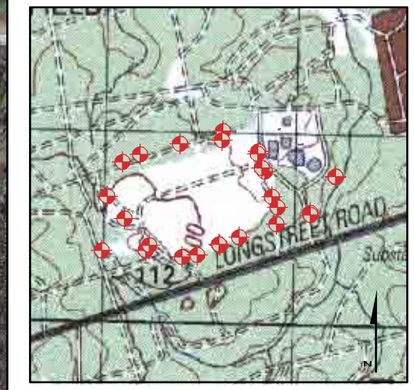
Figure 1

Site Map -- Ft. Bragg, NC




METHANE SAMPLE
SURFACE-WATER SAMPLE
MONITORING WELL
STREAM
PAVED ROAD
DIRT ROAD
BUILDING

1 inch = 320 feet

0 160 320 640'

N

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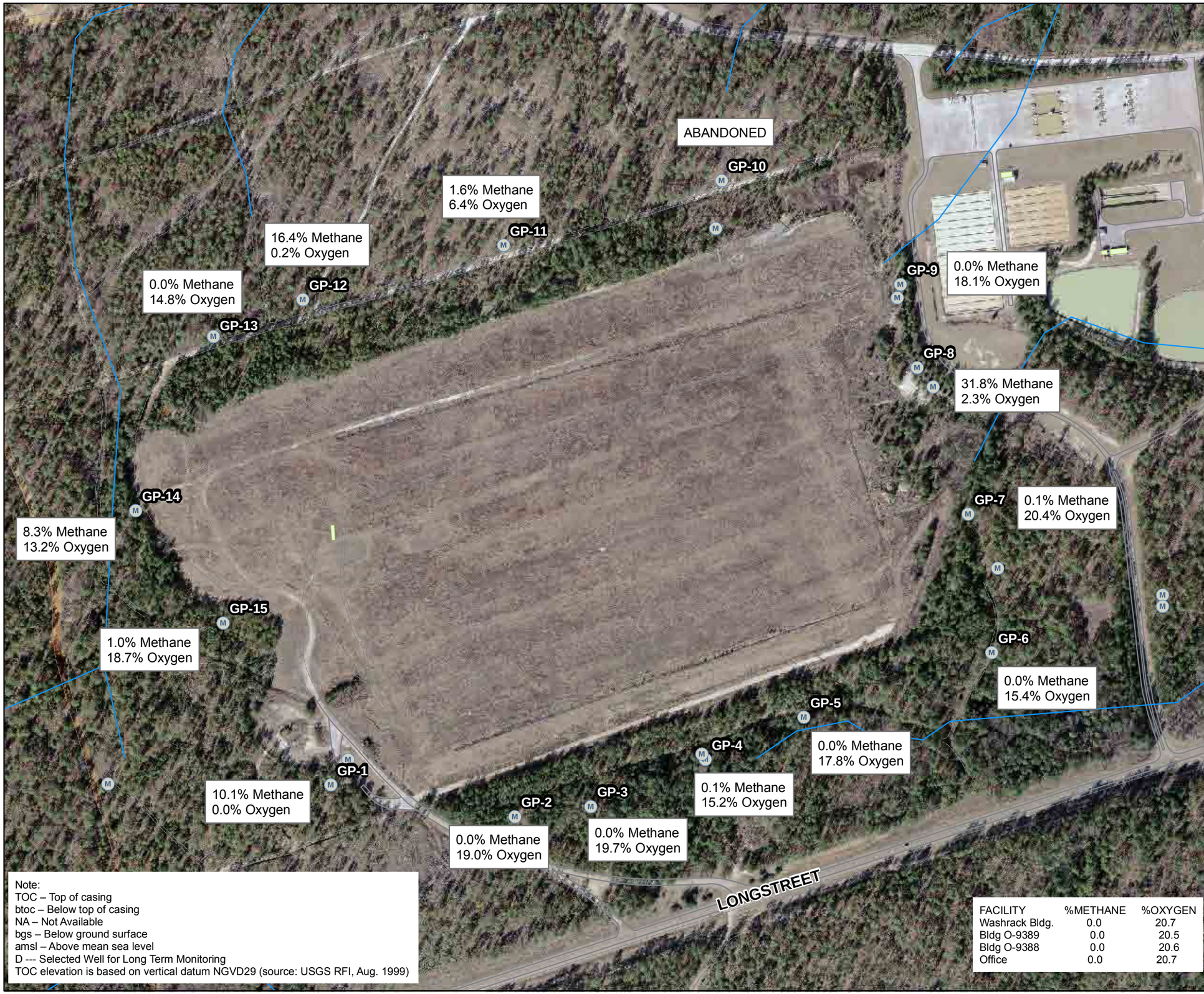
LOCATION MAP- LONGSTREET RD LANDFILL

FT. BRAGG, NC

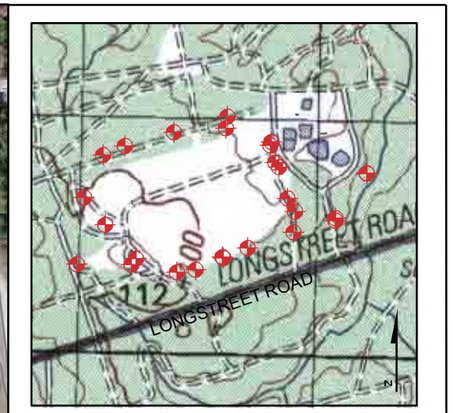
DATE: FEB 2011

FIGURE 2




Note:
TOC – Top of casing
btoc – Below top of casing
NA – Not Available
bgs – Below ground surface
amsl – Above mean sea level
D --- Selected Well for Long Term Monitoring
TOC elevation is based on vertical datum NGVD29 (source: USGS RFI, Aug. 1999)

| FACILITY | %METHANE | %OXYGEN |
|---|---|---|
| Washrack Bldg. | 0.0 | 20.7 |
| Bldg O-9389 | 0.0 | 20.5 |
| Bldg O-9388 | 0.0 | 20.6 |
| Office | 0.0 | 20.7 |




METHANE SAMPLE
STREAM
BUILDING
ROAD
TRAIL

1 inch = 320 feet
0 170 340 680'
N

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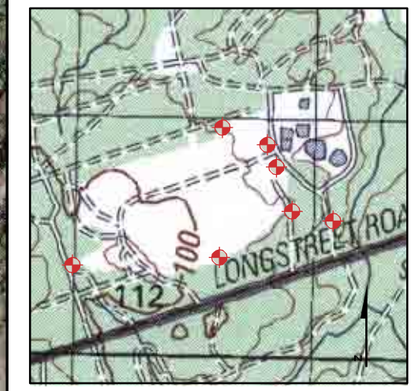
METHANE MONITORING RESULTS

LONGSTREET LANDFILL
FT. BRAGG, NC

DATE: FEB 2011 | FIGURE 3




Longstreet Wells

Stream

Groundwater Contour

Note: Monitoring wells used for potentiometric surface are displayed with elevations in feet above MSL in parenthesis below the label.

1 inch = 289 feet

0 137.5 275 550'

N

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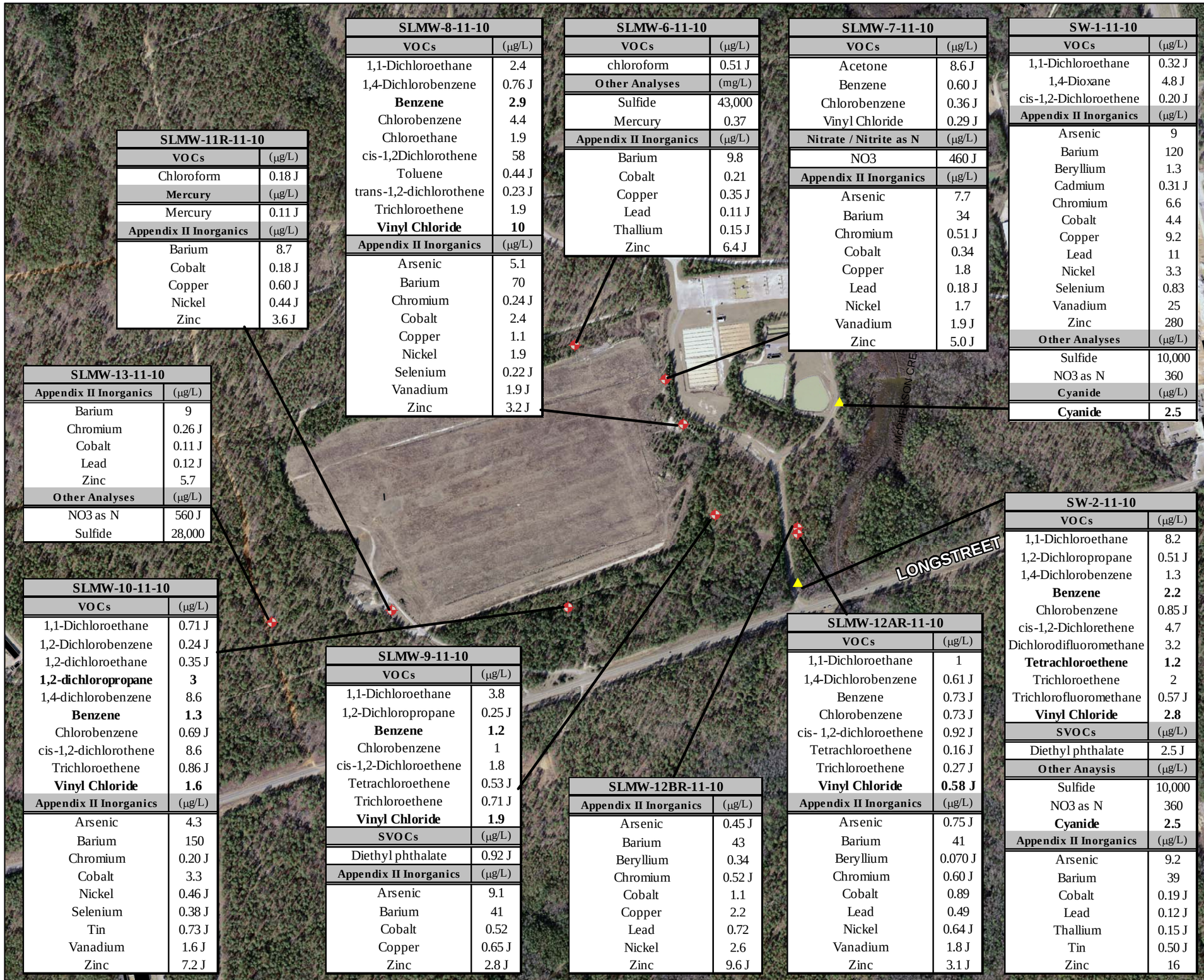
LONGSTREET LANDFILL, FORT BRAGG, NC

POTENTIOMETRIC MAP

DATE: FEB 2011

FIGURE 4




| SLMW-11R-11-10 | |
|---|---|
| **VOCs** | (µg/L) |
| Chloroform | 0.18 J |
| **Mercury** | (µg/L) |
| Mercury | 0.11 J |
| **Appendix II Inorganics** | (µg/L) |
| Barium | 8.7 |
| Cobalt | 0.18 J |
| Copper | 0.60 J |
| Nickel | 0.44 J |
| Zinc | 3.6 J |

| SLMW-8-11-10 | |
|---|---|
| **VOCs** | (µg/L) |
| 1,1-Dichloroethane | 2.4 |
| 1,4-Dichlorobenzene | 0.76 J |
| **Benzene** | **2.9** |
| Chlorobenzene | 4.4 |
| Chloroethane | 1.9 |
| cis-1,2Dichlorothene | 58 |
| Toluene | 0.44 J |
| trans-1,2-dichlorothene | 0.23 J |
| Trichloroethene | 1.9 |
| **Vinyl Chloride** | **10** |
| **Appendix II Inorganics** | (µg/L) |
| Arsenic | 5.1 |
| Barium | 70 |
| Chromium | 0.24 J |
| Cobalt | 2.4 |
| Copper | 1.1 |
| Nickel | 1.9 |
| Selenium | 0.22 J |
| Vanadium | 1.9 J |
| Zinc | 3.2 J |

| SLMW-6-11-10 | |
|---|---|
| **VOCs** | (µg/L) |
| chloroform | 0.51 J |
| **Other Analyses** | (mg/L) |
| Sulfide | 43,000 |
| Mercury | 0.37 |
| **Appendix II Inorganics** | (µg/L) |
| Barium | 9.8 |
| Cobalt | 0.21 |
| Copper | 0.35 J |
| Lead | 0.11 J |
| Thallium | 0.15 J |
| Zinc | 6.4 J |

| SLMW-7-11-10 | |
|---|---|
| **VOCs** | (µg/L) |
| Acetone | 8.6 J |
| Benzene | 0.60 J |
| Chlorobenzene | 0.36 J |
| Vinyl Chloride | 0.29 J |
| **Nitrate / Nitrite as N** | (µg/L) |
| NO3 | 460 J |
| **Appendix II Inorganics** | (µg/L) |
| Arsenic | 7.7 |
| Barium | 34 |
| Chromium | 0.51 J |
| Cobalt | 0.34 |
| Copper | 1.8 |
| Lead | 0.18 J |
| Nickel | 1.7 |
| Vanadium | 1.9 J |
| Zinc | 5.0 J |

| SW-1-11-10 | |
|---|---|
| **VOCs** | (µg/L) |
| 1,1-Dichloroethane | 0.32 J |
| 1,4-Dioxane | 4.8 J |
| cis-1,2-Dichloroethene | 0.20 J |
| **Appendix II Inorganics** | (µg/L) |
| Arsenic | 9 |
| Barium | 120 |
| Beryllium | 1.3 |
| Cadmium | 0.31 J |
| Chromium | 6.6 |
| Cobalt | 4.4 |
| Copper | 9.2 |
| Lead | 11 |
| Nickel | 3.3 |
| Selenium | 0.83 |
| Vanadium | 25 |
| Zinc | 280 |
| **Other Analyses** | (µg/L) |
| Sulfide | 10,000 |
| NO3 as N | 360 |
| **Cyanide** | (µg/L) |
| **Cyanide** | **2.5** |

| SLMW-13-11-10 | |
|---|---|
| **Appendix II Inorganics** | (µg/L) |
| Barium | 9 |
| Chromium | 0.26 J |
| Cobalt | 0.11 J |
| Lead | 0.12 J |
| Zinc | 5.7 |
| **Other Analyses** | (µg/L) |
| NO3 as N | 560 J |
| Sulfide | 28,000 |

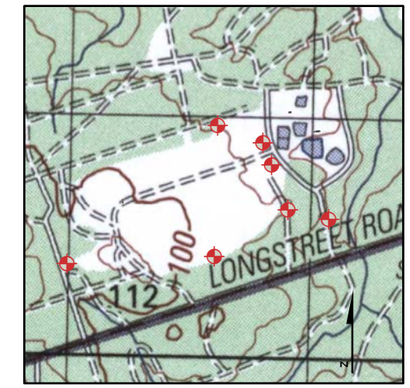
| SLMW-10-11-10 | |
|---|---|
| **VOCs** | (µg/L) |
| 1,1-Dichloroethane | 0.71 J |
| 1,2-Dichlorobenzene | 0.24 J |
| 1,2-dichloroethane | 0.35 J |
| **1,2-dichloropropane** | **3** |
| 1,4-dichlorobenzene | 8.6 |
| **Benzene** | **1.3** |
| Chlorobenzene | 0.69 J |
| cis-1,2-dichlorothene | 8.6 |
| Trichloroethene | 0.86 J |
| **Vinyl Chloride** | **1.6** |
| **Appendix II Inorganics** | (µg/L) |
| Arsenic | 4.3 |
| Barium | 150 |
| Chromium | 0.20 J |
| Cobalt | 3.3 |
| Nickel | 0.46 J |
| Selenium | 0.38 J |
| Tin | 0.73 J |
| Vanadium | 1.6 J |
| Zinc | 7.2 J |

| SLMW-9-11-10 | |
|---|---|
| **VOCs** | (µg/L) |
| 1,1-Dichloroethane | 3.8 |
| 1,2-Dichloropropane | 0.25 J |
| **Benzene** | **1.2** |
| Chlorobenzene | 1 |
| cis-1,2-Dichloroethene | 1.8 |
| Tetrachloroethene | 0.53 J |
| Trichloroethene | 0.71 J |
| **Vinyl Chloride** | **1.9** |
| **SVOCs** | (µg/L) |
| Diethyl phthalate | 0.92 J |
| **Appendix II Inorganics** | (µg/L) |
| Arsenic | 9.1 |
| Barium | 41 |
| Cobalt | 0.52 |
| Copper | 0.65 J |
| Zinc | 2.8 J |

| SLMW-12BR-11-10 | |
|---|---|
| **Appendix II Inorganics** | (µg/L) |
| Arsenic | 0.45 J |
| Barium | 43 |
| Beryllium | 0.34 |
| Chromium | 0.52 J |
| Cobalt | 1.1 |
| Copper | 2.2 |
| Lead | 0.72 |
| Nickel | 2.6 |
| Zinc | 9.6 J |

| SLMW-12AR-11-10 | |
|---|---|
| **VOCs** | (µg/L) |
| 1,1-Dichloroethane | 1 |
| 1,4-Dichlorobenzene | 0.61 J |
| Benzene | 0.73 J |
| Chlorobenzene | 0.73 J |
| cis- 1,2-dichloroethene | 0.92 J |
| Tetrachloroethene | 0.16 J |
| Trichloroethene | 0.27 J |
| **Vinyl Chloride** | **0.58 J** |
| **Appendix II Inorganics** | (µg/L) |
| Arsenic | 0.75 J |
| Barium | 41 |
| Beryllium | 0.070 J |
| Chromium | 0.60 J |
| Cobalt | 0.89 |
| Lead | 0.49 |
| Nickel | 0.64 J |
| Vanadium | 1.8 J |
| Zinc | 3.1 J |

| SW-2-11-10 | |
|---|---|
| **VOCs** | (µg/L) |
| 1,1-Dichloroethane | 8.2 |
| 1,2-Dichloropropane | 0.51 J |
| 1,4-Dichlorobenzene | 1.3 |
| **Benzene** | **2.2** |
| Chlorobenzene | 0.85 J |
| cis-1,2-Dichlorethene | 4.7 |
| Dichlorodifluoromethane | 3.2 |
| **Tetrachloroethene** | **1.2** |
| Trichloroethene | 2 |
| Trichlorofluoromethane | 0.57 J |
| **Vinyl Chloride** | **2.8** |
| **SVOCs** | (µg/L) |
| Diethyl phthalate | 2.5 J |
| **Other Anaysis** | (µg/L) |
| Sulfide | 10,000 |
| NO3 as N | 360 |
| **Cyanide** | **2.5** |
| **Appendix II Inorganics** | (µg/L) |
| Arsenic | 9.2 |
| Barium | 39 |
| Cobalt | 0.19 J |
| Lead | 0.12 J |
| Thallium | 0.15 J |
| Tin | 0.50 J |
| Zinc | 16 |




MONITORING WELL

SURFACE-WATER SAMPLE

Building

NOTE: Only detected analytes shown.
Well labels show total well depth below ground surface in parenthesis.
NA - Not Available
U - Target analytes were not detected above the reporting limits
J - Analyte was present but concentration is an estimated value.
B - Observed in Method Blank
Bold - Concentrations exceed NC 2L standards.
*IMAC - Interim maximum allowable concentration
**PRG based on carcinogenic factor.

1 inch = 650 feet

0 320 640 1,280'

N

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

LONGSTREET RD LANDFILL, FORT BRAGG, NC

GROUNDWATER
ANALYTICAL RESULTS

DATE: FEB 2011 | FIGURE 5

# TABLES

**Table 1. Methane Monitoring Results**
**Longstreet Landfill, Ft. Bragg, NC**

| Well ID | Date Sampled | Time Sampled | % Methane by Volume | % Oxygen | % CO2 |
|---|---|---|---|---|---|
| Gas-MW-1 | 11-20-2010 | 11:13 | 10.1% | 0.0% | 28.0% |
| Gas-MW-2 | 11-20-2010 | 11:09 | 0.0% | 19.0% | 2.3% |
| Gas-MW-3 | 11-20-2010 | 11:06 | 0.0% | 19.7% | 1.5% |
| Gas-MW-4 | 11-20-2010 | 11:03 | 0.1% | 15.2% | 4.5% |
| Gas-MW-5 | 11-20-2010 | 11:40 | 0.0 % | 17.8% | 3.5% |
| Gas-MW-6 | 11-20-2010 | 17:14 | 0.0 % | 15.4% | 3.4% |
| Gas-MW-7 | 11-20-2010 | 11:37 | 0.1% | 20.4% | 0.3% |
| Gas-MW-8 | 11-20-2010 | 11:56 | 31.8% | 2.3% | 25.9% |
| Gas-MW-9 | 11-20-2010 | 12:00 | 0.0% | 18.1% | 2.2% |
| Gas-MW-10** | 11-20-2010 | N/A | N/A | N/A | N/A |
| Gas-MW-11 | 11-20-2010 | 12:42 | 1.6% | 6.4% | 7.5% |
| Gas-MW-12 | 11-20-2010 | 12:45 | 16.4% | 0.2% | 24.4% |
| Gas-MW-13 | 11-20-2010 | 12:49 | 0.0% | 14.8% | 6.5% |
| Gas-MW-14 | 11-20-2010 | 11:22 | 8.3% | 13.2% | 10.5% |
| Gas-MW-15 | 11-20-2010 | 11:18 | 1.0% | 18.7% | 2.1% |
| Washrack Bldg. | 11-20-2010 | 12:08 | 0.0% | 20.7% | 0.0% |
| Bldg O-9389 | 11-20-2010 | 12:15 | 0.0% | 20.5 % | 0.0 % |
| Bldg O-9388 | 11-20-2010 | 12:17 | 0.0% | 20.6% | 0.0 % |
| Office | 11-20-2010 | 12:06 | 0.0% | 20.7% | 0.0 % |

**Note:**
TOC – Top of casing, btoc – Below top of casing, NA – Not Available
bgs – Below ground surface, amsl – Above mean sea level
Δ --- Selected Well for Long Term Monitoring
TOC elevation is based on vertical datum NGVD29 (source: USGS RFI, Aug. 1999)
**MW10 Abandoned

**Table 2. Groundwater Elevation Data**
**Longstreet Landfill, Ft. Bragg, NC**

| Well ID | TOC Elev. (ft. amsl) | Water Level (ft. btoc) 11/06 | Water Elev. (ft. amsl) 11/06 | Water Level (ft. btoc) 11/07 | Water Elev. (ft. amsl) 11/07 | Water Level (ft. btoc) 11/08 | Water Elev. (ft. amsl) 11/08 | Water Level (ft. btoc) 06/09 | Water Elev. (ft.amsl) 06/09 | Water Level (ft. btoc) 11/09 | Water Elev. (ft.amsl) 11/09 | Water Level (ft. btoc) 06/10 | Water Elev. (ft.amsl) 06/10 | Water Elev. (ft. btoc) | Water Level (ft. amsl) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SLMW-6 | 293.55 | 27.27 | 266.28 | 28.61 | 264.94 | 26.27 | 267.28 | 26.11 | 267.44 | 28.22 | 265.33 | 25.08 | 268.47 | 28.02 | 265.53 |
| SLMW-7 | 290.5 | 21.48 | 269.02 | 22.45 | 268.05 | 20.76 | 269.74 | 20.59 | 269.91 | 22.19 | 268.31 | 20.43 | 270.07 | 22.14 | 268.36 |
| SLMW-8 | 290.34 | 23.2 | 267.14 | 24.39 | 265.95 | 22.91 | 267.43 | 23.03 | 267.31 | 24.21 | 266.13 | 22.91 | 267.43 | 24.31 | 266.03 |
| SLMW-9 | 289.54 | 39.57 | 249.97 | 39.29 | 250.25 | 38.31 | 251.23 | 37.3 | 252.24 | 38.72 | 250.82 | 36.66 | 252.88 | 38.34 | 251.2 |
| SLMW-10 | 305.99 | 20.3 | 285.69 | 20.55 | 285.44 | 19.42 | 286.57 | 19.59 | 286.4 | 20.39 | 285.6 | 19.7 | 286.29 | 20.59 | 285.4 |
| SLMW-11 | 357.8 | 78 | 279.8 | 77.48 | 280.32 | 78.96 | 278.84 | 77.62 | 280.18 | 79.2 | 278.6 | 74.31 | 283.49 | 76.42 | 281.38 |
| SLMW-12AR | 243.36 | 8.12 | 235.24 | 53.39 | 286.63 | 8.45 | 234.91 | 9.03 | 234.33 | 9.53 | 233.83 | 8.75 | 234.61 | 9.44 | 233.92 |
| SLMW-12BR | 243.42 | 9.1 | 234.32 | 9.45 | 233.91 | 9.23 | 234.19 | 8.09 | 235.33 | 9.2 | 234.22 | 8.79 | 234.63 | 9.19 | 234.23 |
| SLMW-13 | 340.02 | 53.98 | 286.04 | 9.44 | 224.98 | 53.14 | 286.88 | 51.9 | 288.12 | 53.29 | 286.73 | 50.58 | 289.44 | 53.05 | 286.97 |

**Note:**
TOC – Top of casing
btoc – Below top of casing,
bgs – Below ground surface,
amsl – Above mean sea level
Δ --- Selected Well for Long Term Monitoring
TOC elevation is based on vertical datum NGVD29 (source: USGS RFI, Aug. 1999)

**Table 3. Field Parameter Measurements**
**Longstreet Landfill, Fort Bragg, NC**

| Well ID | Sample Identification | pH | Specific Conductivity (µs/cm) | Temperature (°C) | Turbidity (N.T.U.) | Dissolved Oxygen (mg/L) | ORP |
|---|---|---|---|---|---|---|---|
| SLMW-6 | GW-SLMW-6-11-10 | 4.12 | 0.019 | 17.3 | 0.97 | 36.3 | 258.7 |
| SLMW-7 | GW-SLMW-7-11-10 | 5.50 | 0.210 | 18.0 | 5.23 | 0.56 | -59.6 |
| SLMW-8 | GW-SLMW-8-11-10 | 5.88 | 0.742 | 18.6 | 59.62 | 1.12 | -115.59 |
| SLMW-9 | GW-SLMW-9-11-10 | 6.15 | 0.632 | 18.1 | 2.65 | 0.24 | -128.5 |
| SLMW-10 | GW-SLMW-10-11-10 | 5.20 | 740 | 17.5 | 1.77 | 0.98 | -36.2 |
| SLMW-11R | GW-SLMW-11-11-10 | 4.48 | 0.020 | 18.8 | 5.74 | 2.34 | 214.8 |
| SLMW-12AR | GW-SLMW-12AR-11-10 | 5.52 | 0.248 | 18.3 | 3.25 | 0.42 | -6.2 |
| SLMW-12BR | GW-SLMW-12BR-11-10 | 4.32 | 0.071 | 17.6 | 9.90 | 0.29 | 267.4 |
| SLMW-13 | GW-SLMW-13-11-10 | 2.61 | 15 | 16.4 | 7.45 | 6.94 | 211.3 |
| SW-1 | SW-1-11-10 | 5.87 | 169 | 13.56 | -- | 5.08 | -28.3 |
| SW-2 | SW-2-11-10 | 3.43 | 384 | 16.19 | -- | 2.78 | 43.2 |

**Note:**

N.T.U. --- Nephelometric Turbidity Unit

ORP --- Oxidation Reduction Potential

Table 4. Summary of GroundWater Detections Longstreet Landfill, Fort Bragg, NC

| COMPOUNDS (µg/L) | Groundwater NC 2L Standard (ug/l) | EPA Drinking water MCL (ug/l) | SLMW-6 04/05 | SLMW-6 10/05 | SLMW-6 4/06 | SLMW-6 11/06 | SLMW-6 05/07 | SLMW-6 11/07 | SLMW-6 11/08 | SLMW-6 06/09 | SLMW-6 11/09 | SLMW-6 06/10 | SLMW-6 11/10 | SLMW-7 04/05 | SLMW-7 10/05 | SLMW-7 4/06 | SLMW-7 11/06 | SLMW-7 05/07 | SLMW-7 11/07 | SLMW-7 11/08 | SLMW-7 06/09 | SLMW-7 11/09 | SLMW-7 06/10 | SLMW-7 11/10 | SLMW-8 04/05 | SLMW-8 10/05 | SLMW-8 4/06 | SLMW-8 11/06 | GW-SLMW-8 06/07 | GW-SLMW-8 11/07 | GW-SLMW-8 11/08 | SLMW-8 06/09 | SLMW-8 11/09 | SLMW-8 06/10 | SLMW-8 11/10 | SLMW-9 10/05 | SLMW-9 4/06 | SLMW-9 11/06 | GW-SLMW-9 06/07 | GW-SLMW-9 11/07 | GW-SLMW-9 11/08 | SLMW-9 06/09 | SLMW-9 11/09 | SLMW-9 7/10 | SLMW-9 11/10 | SLMW-10 04/05 | SLM-DUPI 04/05 | SLMW-10 10/05 | SLMW-10 4/06 | SLMW-10 Dup 4/06 | SLMW-10 11/06 | SLMW-10 05/07 | SLMW-10 Dup 05/07 | SLMW-10 11/07 | SLMW-10 11/08 | SLMW-10 DUP 11/08 | SLMW-10 06/09 | SLMW-10 11/09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **VOCs (EPA 8260B)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,1,2,2-tetrachloroethane | 0.17 | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| 1,1-dichloroethane | 700 | 810* | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 1.91 J | 3.43 | 2.11 | 2.86 | <2 | 4.11 | 3.08 | 5.2 | NS | 2.5 | 2.4 | 2.04 | 1.38J | 1.39J | <2 | 3.170 | 3.11 | 7.6 | 4.8 | 4.6 | 3.8 | 1.25 J | 1.41 J | 1.6J | 1.91J | 1.85J | 1.12J | <2 | <2 | 1.35 J | 0.92 J | 0.9 J | 0.97 J | 1.1 |
| 1,2,3-trichloropropane | 0.005 | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| 1,2,4-trimethylbenzene | 350 | 15 * | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.43 J | <2 | <2 |
| 1,2-dibromo-3-chloropropane | 0.025 | 0.2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| 1,2-dibromoethane | 0.0004 | 0.05 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| 1,2-dichlorobenzene | NA | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.51 J |
| 1,2-dichloroethane | 0.38 | 5 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.24 J | **0.44 J** | <2 | <2 | <2 | <2 | <2 | <2 | **0.58J** | **0.61J** | <2 | <2 | <2 | **0.42 J** | **0.48 J** | <2 | <2 | **0.45 J** |
| 1,2-dichloropropane | 0.56 | 5 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.33 J | 0.37 J | 0.25 J | **2.12** | **2.28** | **3.32** | **3.97** | **3.72** | **2.93** | <2 | <2 | **3.78** | **3.27** | **3.09** | **2.2** | **2.8** |
| 1,4-dichlorobenzene | 75 | 75 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.28J | 0.36J | 0.43J | <2 | 0.28 J | 0.31 | 0.62 J | NS | <2 | 0.76 J | 0.54J | 0.43J | 0.4J | <2 | .660J | <2 | <2 | <2 | 0.97 J | <2 | 2.75 | 2.63 | 3.99 | 5.6 | 4.7 | 3.9 | 4.1 | 3.4 | 5.99 | <2 | <2 | 3.4 | 6.9 J |
| 1,4-dioxane | NA | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| 2-butanone | NA | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| 4-isopropyltoluene | NA | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| acetone | 700 | NA | NA | 2.2 | <2 | <2 | <2 | <2 | <2 | 7.6 J | <2 | <2 | <2 | NA | 6.97 | <2 | 1.34J | <2 | <2 | 24 | 52 | 6 J | <2 | 8.6 J | NA | 1.27J | <2 | <2 | <2 | <2 | 9.72 | 9.8 J | NS | 5.3 J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NA | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 26 |
| acrolein | NA | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| benzene | 1 | 5 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.51J | 0.68J | 0.36J | **1.2** | 0.50 J | 1.01 J | 0.73 J | <2 | 0.72 J | 0.60 J | **3.22** | **4.99** | **2.54** | **4.03** | **3.2** | **4.5** | **2.72** | **3.6** | NS | **2.1** | **2.9** | **1.09J** | 0.71J | 0.8J | **2.2** | **1.54 J** | **1.35 J** | **1.9** | **1.4** | **1.8** | **1.2** | **1.8 J** | **1.72 J** | **1.32J** | **1.31J** | **1.24J** | 0.96J | <2 | <2 | **1.38 J** | 1.0 J | 1.0 J | **1** | **1.3** |
| carbon disulfide | 700 | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 1.24J | <2 | <2 | <2 | NS | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.54J | <2 | <2 | <2 | <2 | <2 | <2 |
| chlorobenzene | 50 | 100 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.29 J | <2 | <2 | 0.59 J | 0.36 J | 1.78 J | 2.75 | 1.69J | 3.46 | 2.2 | 3.36 | 2.18 | 4.8 | NS | 1.9 | 4.4 | 0.34J | 0.25J | 0.28J | 1.1 | 0.740 J | 0.65 J | 0.81 J | 0.8 J | 1.4 | 1 | 0.33 J | 0.35 J | 0.43J | 0.59J | 0.50J | 0.4J | <2 | <2 | 0.59 J | 0.62 J | 0.61 J | 0.45 J | 0.63 J |
| chloroethane | 2800 | 4.6* | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 2.74 | 1.47J | 2.27 | 0.72J | <2 | 0.98 J | 1.23 J | <2 | <2 | <2 | <2 | 0.76 J | 0.96J | 0.30J | 0.38J | <2 | <2 | 1.10 J | 9.1 | NS | <2 | 1.9 | <2 | 0.22J | <2 | 0.530 J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| chloroform | 70 | 80 | 0.24 J | <2 | <2 | <2 | <2 | 0.27 J | 0.21 J | 0.31 J | <2 | 0.44 J | 0.51 J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| chloromethane (methyl chloride) | 2.6 | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 2.13 | <2 | <2 | <2 | <2 | NS | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.45 J | <2 |
| cis-1,2-dichloroethene | 70 | 70 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.21 J | <2 | <2 | <2 | <2 | 0.24 J | <2 | <2 | <2 | <2 | 55.9 | **105** | 42.5 | 42.4 | 25 | 60.9 | 35 | 39 | NS | 43 | 58 | 1.26J | 0.88J | 0.71J | 3.0 | 1.570 J | 1.79 J | 2.3 | <2 | 2.3 | 1.8 | 9.33 | 10 | 13.4 | 15.8 | 15.5 | 8.96 | 9.1 | 8.9 | 13.6 | 11.8 | 11.6 | 9 | <2 |
| dibromochloromethane | 0.41 | 80 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| dichlorodifluoromethane | 1400 | 390* | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.61J | 0.58J | <2 | <2 | <2 | 1.9 | NS | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 2.96 | 3.5 | 2.13 | 1.5J | 1.18J | 0.62J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| diisopropyl ether | 70 | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.43 J | <2 | <2 | NS | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.54 J | 0.56 J | 1.04J | 1.15J | 1.22J | 0.88J | <2 | <2 | 1.13 J | <2 | <2 | <2 | <2 |
| isopropylbenzene | 70 | 660* | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| m&p xylene | 530# | 10000# | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.64 J | <2 | <2 |
| methylene chloride (dichloromethane) | 4.6 | 5 | <2 | <2 | <2 | <2 | <2 | 0.21 J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.26 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.75J | <2 | 0.43 J | <2 | <2 | NS | <2 | <2 | <2 | <2 | <2 | <2 | 0.200 J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.28 J | <2 | <2 | <2 | <2 |
| MTBE | 200 | 13* | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.54J | <2 | 0.21J | <2 | 0.39 J | <2 | <2 | NS | <2 | <2 | 0.39J | 0.22J | <2 | <2 | <2 | 0.29 J | <2 | <2 | <2 | <2 | <2 | 0.2 J | 0.2 J | 0.37J | 0.44J | 0.42J | 0.28J | <2 | <2 | 0.39 J | 0.57 J | 0.54 J | <2 | <2 |
| naphthalene | 21 | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.95 J | <2 |
| o-xylene | 530# | 10000# | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.24 J | 0.71J | 0.41J | 0.46J | <2 | 0.27 J | 0.29 | <2 | NS | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.33 J | <2 | <2 |
| sec-butylbenzene | 70 | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 | <2 | <2 | <2 | <2 | <2 | 0.230 J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.28J | 0.22J | 0.21J | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| tetrachloroethene | 0.7 | 5 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | **5.34** | **2.18** | **2.4** | **2.69** | <2 | 0.54 J | 0.65 | **0.80 J** | NS | 0.24 J | <2 | 0.32J | 0.29J | 0.21J | <2 | 0.280 J | 0.41 J | 0.39 J | 0.58 J | 0.68 J | 0.53 J | **0.75 J** | 0.45 J | **0.71J** | **0.96J** | **0.74J** | 0.55J | <2 | <2 | 0.31 J | 0.25 J | 0.26 J | <2 | 0.29 J |
| toluene | 1000 | 1000 | <2 | <2 | 0.43J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.26J | 0.39J | 0.51J | <2 | 0.27 J | 0.29 J | <2 | <2 | <2 | <2 | 0.22 J | 0.55J | 0.58J | 0.49J | 1.2 J | 0.85 J | 1.34 | 1 | NS | 0.39 J | 0.44 J | <2 | 0.46J | <2 | <2 | 0.200 J | 0.33 J | 0.35 J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.35J | 0.55J | <2 | <2 | <2 | <2 | 0.24 J | <2 | <2 |
| trans-1,2-dichloroethene | 70 | 100 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.28 J | 0.52J | 0.28J | 3.65 | <2 | 0.55 J | 0.25 | <2 | NS | 0.24 J | 0.23 J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.24 J | 0.23 J | 0.24J | 0.29J | 0.30J | 0.59J | <2 | <2 | 0.28 J | 0.21 J | 0.22 J | <2 | 0.27 J |
| trichloroethene | 2.8 | 5 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 2.29 | **6.66** | 2.22 | **3.54** | 1.6 | **4.18** | 1.3 | 1.3 | NS | 0.87 J | 1.9 | <2 | 0.45J | 0.43J | 0.6 J | 0.740 J | 0.6 J | 0.67 J | 0.73 J | 0.68 J | 0.71 J | 0.88 J | 1.01 J | 1.15J | 1.27J | 1.29J | 0.89J | <2 | <2 | 1.00 J | 0.91 J | 0.89 J | 0.59 J | 0.94 J |
| trichlorofluoromethane | 2100 | 1300* | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 10.1 | <2 | NS | <2 | <2 | 0.53J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.31 J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| vinyl chloride | 0.015 | 2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | **0.52 J** | **0.36J** | **0.64J** | **0.35J** | <2 | <2 | **0.58 J** | <2 | <2 | <2 | 0.29 J | **59** | **54.2** | **24.6** | **36.6** | **19** | **33.2** | **10.1** | **12** | NS | **10** | **10** | **1.45J** | **0.69J** | **0.73J** | <2 | **1.71 J** | **1.41 J** | **2** | **1.2** | **2.1** | **1.9** | **1.91 J** | **3.58** | **2.48** | **2.8** | **2.62** | **1.7** | <2 | <2 | **2.59 J** | **1.58 J** | **1.72 J** | **1.3** | **1.5** |
| **SVOCs (EPA 8270C)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,4-dichlorobenzene (para) | 1.4 | 75 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | NS | NS | NS | <10 | <10 | <10 | <10 | <10 | 0.54 J | <10 | <10 | <10 | <10 | 1.31 J | 1.57 J | 1.75J | 2.79J | 2.62J | **2.7J** | **1.94 J** | **1.75 J** | <10 | **3.37 J** | **4.25 J** | <10 | <10 |
| 4-methylphenol (p-cresol) | 3.5 | 180* | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 1.87 J | <10 | **14.6** | <10 | **13.5** | <10 | 38.3 | **12** | <10 | **26** | <10 | **7.44 J** | <10 | <10 | <10 | <10 | <10 | <10 | <10 | NS | NS | NS | <10 | <10 | <10 | <10 | <10 | <10 | 2.1 J | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 1.95 J | <10 | <10 |
| benzoic acid | NA | NA | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 8.4 J | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | NS | NS | NS | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| benzyl alcohol | NA | NA | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | NS | NS | NS | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| diethylphthalate | 5000 | 29000* | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 1.06J | <10 | <10 | <10 | <10 | <10 | <10 | NS | NS | NS | <10 | <10 | 2.55 J | 1.44 J | <10 | 0.95 J | <10 | <10 | <10 | 0.92 J | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| di-n-butylphthalate | 700 | 3600* | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | NS | NS | NS | <10 | <10 | <10 | <10 | <10 | <10 | 3 J | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| bis(2-Ethylhexyl)phthalate | 2.5 | 6 | <10 | <10 | 3.62 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | NS | NS | NS | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| phenol | 300 | NA | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 2.89 J | <10 | 4.42 J | 1.7J | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | NS | NS | NS | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | **<10** | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| **Pesticides (EPA 8081)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| delta-BHC | NA | NA | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | 0.043 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | NS | NS | NS | <.0505 | <.0505 | <.0505 | <.0505 | 015 PJ | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | 0.124 | <.0505 | <.0505 | <.0505 |
| alpha-BHC | NA | NA | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | NS | NS | NS | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | 0.05 | <.0505 | <.0505 | <.0505 |
| beta-BHC | NA | NA | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | NS | NS | NS | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | 0.065 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | 0.123 | <.0505 | <.0505 | <.0505 |
| gamma-BHC | 0.2 | 0.2 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | .0207J | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | NS | NS | NS | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | 0.05 | <.0505 | <.0505 | <.0505 |
| alpha-Chlordane* | 0.1 | 2 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | NS | NS | NS | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | **0.1** | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 |
| gamma-Chlordane* | 0.1 | 2 | <.0505 | <.0505 | <.0505 | 0.0202 | 0.0202 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | NS | NS | NS | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0

Longstreet

| COMPOUNDS (µg/L) | Groundwater NC 2L Standard (ug/l) | EPA Drinking water MCL (ug/l) | SLMW-10 7-10 | SLMW-10 11/10 | SLMW-11 04/05 | SLMW-11 10/05 | SLMW-11 4/06 | SLMW-11 11/06 | GW-SLMW-11 06/07 | GW-SLMW-11 11/07 | GW-SLMW-11R 11/08 | SLMW-11R 06-09 | SLMW-11R 11-09 | SLMW-11R 06/10 | SLMW-11R 11/10 | SLMW-12A 04/05 | SLMW-12B 04/05 | SLMW-12AR 04/05 | SLMW-12AR 10/05 | SLMW-12AR Dup 10/05 | SLMW-12AR 4/06 | SLMW-12AR 11/06 | SLMW-12AR 05/07 | SLMW-12AR 11/07 | SLMW-12AR-DUP11/07 | SLMW-12AR11/08 | SLMW-12AR 06/09 | SLMW-12AR 11/09 | SLMW-12AR 06/10 | SLMW-12AR 11/10 | SLMW-12BR 04/05 | SLMW-12BR Dup 04/05 | SLMW-12BR 10/05 | SLMW-12BR 4/06 | SLMW-12BR 11/06 | SLMW-12BR 05/07 | SLMW-12BR 11/07 | SLMW-12BR 11/08 | SLMW-12BR 06/09 | SLMW-12BR 11/09 | SLMW-12BR 06/10 | SLMW-12BR 11/10 | SLMW-13 04/05 | SLMW-13 10/05 | SLMW-13 4/06 | SLMW-13 11/06 | GW-SLMW-13 06/07 | GW-SLMW-13 11/07 | GW-SLMW-13 11/08 | SLMW-13 06/09 | SLMW-13 11/09 | SLMW-13 06/10 | SLMW-13 11/10 | SW-1 04/05 | SW-1 10/05 | SW-1 4/06 | SW-1 11/06 | SW-1 06/07 | SW-1 11/07 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **VOCs (EPA 8260B)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,1,2,2-tetrachloroethane | 0.17 | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| 1,1-dichloroethane | 700 | 810* | 0.49 J | 0.71 J | 3.86 | 2.18 | 1.68J | 2.07 | <2 | 4.05 | 0.56 J | 2.9 | 0.42 J | 2.9 | <2 | <2 | 4.25 | <2 | 1.21J | 1.22J | 1.39J | 0.83J | <2 | 1.15 J | 1.0 J | 0.62 J | <2 | 0.35 J | <2 | 1 | 1.41J | 1.39J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 7.64 | 7.8 | 3.93 | 7.7 | 7.36 |
| 1,2,3-trichloropropane | 0.005 | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| 1,2,4-trimethylbenzene | 350 | 15 * | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| 1,2-dibromo-3-chloropropane | 0.025 | 0.2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| 1,2-dibromoethane | 0.0004 | 0.05 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| 1,2-dichlorobenzene | NA | NA | <2 | 0.24 J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| 1,2-dichloroethane | 0.38 | 5 | 0.20 J | 0.35 J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.41J | <2 | <2 | <2 |
| 1,2-dichloropropane | 0.56 | 5 | **1.7** | **3** | **1.3 J** | <2 | 0.5J | **0.6J** | <2 | **.950 J** | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.23 J | <2 | <2 | <2 | <2 | <2 | 0.42J | 0.45J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.44 J |
| 1,4-dichlorobenzene | 75 | 75 | 5.2 | 8.6 | <2 | <2 | <2 | <2 | <2 | 0.300 J | <2 | 0.48 J | <2 | 0.37 J | <2 | <2 | 1.11 J | <2 | 1.05J | 0.94J | 1.14J | 0.84J | <2 | 0.78 J | 0.67 J | 0.49 J | <2 | <2 | <2 | 0.61 J | 1.07J | 1.15J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.76J | 0.96J | 0.51J | <2 | 0.71 J |
| 1,4-dioxane | NA | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 9.8 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| 2-butanone | NA | NA | <2 | <2 | <2 | <2 | <2 | 2.29J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| 4-isopropyltoluene | NA | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| acetone | 700 | NA | <2 | <2 | NA | <2 | <2 | 13.9 | 100 | 100 | <2 | <2 | <2 | <2 | <2 | NA | NA | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NA | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NA | <2 | <2 | <2 | <2 |
| acrolein | NA | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| benzene | 1 | 5 | 0.94 J | **1.3** | **4.58** | **1.54J** | 0.83J | 0.93J | **2.1** | **1.30 J** | <2 | 0.59 J | <2 | 0.81 J | <2 | <2 | <2 | <2 | **1.03J** | 0.95J | **1.04J** | 0.76J | <2 | 0.84 J | 0.72 J | 0.53 J | <2 | 0.26 J | <2 | 0.73 J | **1.11J** | **1.15J** | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | **1.59J** | **1.72J** | 0.87J | **1.6** | **1.45 J** |
| carbon disulfide | 700 | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| chlorobenzene | 50 | 100 | <2 | 0.69 J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 1.01 J | <2 | 0.57J | 0.53J | 0.62J | 0.53J | <2 | 0.56 J | 0.51 J | 0.4 J | <2 | <2 | <2 | 0.73 J | 0.58J | 0.6J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.35J | 0.37J | <2 | <2 | 0.22 J |
| chloroethane | 2800 | 4.6* | <2 | <2 | <2 | 0.42J | 0.56J | 0.82J | <2 | .200 J | <2 | <2 | <2 | <2 | <2 | <2 | 0.4 J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.51J | 0.52J | 0.23J | <2 | 0.38 J |
| chloroform | 70 | 80 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.22 J | <2 | 0.23 J | <2 | 0.18 J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.43 J |
| chloromethane (methyl chloride) | 2.6 | NA | <2 | <2 | <2 | <2 | <2 | 2.44 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 2.05 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.51J | 0.52J | <2 | <2 | <2 |
| cis-1,2-dichloroethene | 70 | 70 | 5.8 | 8.6 | 9.47 | 4.56 | 2.88 | 1.71J | 5.7 | 3.24 | <2 | 1.3 | <2 | 1.6 | <2 | <2 | 10.7 | <2 | 2.9 | 2.58 | 3.19 | 1.09J | <2 | 1.22 J | 1.08 J | 0.83 J | <2 | <2 | <2 | 0.92 J | 3.79 | 4.02 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 5.02 | 5.01 | 1.79J | 6.1 | 4.73 |
| dibromochloromethane | 0.41 | 80 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| dichlorodifluoromethane | 1400 | 390* | <2 | <2 | 4.85 | 0.8J | <2 | 0.68J | <2 | 0.410 J | 1.64 J | 1.3 | 1.1 | <2 | <2 | <2 | 3.73 | <2 | 5.11 | 5.15 | 4.41 | 3.61 | <2 | 1.81 J | 1.78 J | <2 | <2 | <2 | <2 | <2 | 10.2 | 11.6 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 10.4 | 7.07 | 5.78 | 8.4 | 5.77 |
| diisopropyl ether | 70 | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0280 . | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| isopropylbenzene | 70 | 660* | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.5 J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.2J | <2 | <2 | <2 | <2 |
| m&p xylene | 530# | 10000# | <2 | <2 | <2 | 0.23J | <2 | <2 | <2 | 0.510 . | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| methylene chloride (dichloromethane) | 4.6 | 5 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.230 . | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.21 J | 0.27 J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.25 J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.30 J |
| MTBE | 200 | 13* | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.32J | 0.35J | 0.31J | <2 | <2 | 0.22 J | 0.21 J | <2 | <2 | <2 | <2 | <2 | 0.36J | 0.38J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 1.2J | 0.86J | <2 | <2 | 0.56 J |
| naphthalene | 21 | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| o-xylene | 530# | 10000# | <2 | <2 | 0.34 J | 0.26J | <2 | <2 | <2 | 0.470 . | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| sec-butylbenzene | 70 | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.20 J |
| tetrachloroethene | 0.7 | 5 | <2 | <2 | **2.64** | 0.46J | <2 | 0.49J | <2 | 0.380J | 0.4 J | **2.3** | 0.3 J | **1.2** | <2 | <2 | 0.42 J | <2 | 0.32J | 0.3J | 0.35J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.16 J | 0.4J | 0.38J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | **1.41J** | **1.36J** | **0.77J** | <2 | **0.88 J** |
| toluene | 1000 | 1000 | <2 | <2 | <2 | <2 | 3.16 | <2 | <2 | 0.550 . | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.37J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.24J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 1.15J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.42J | <2 | <2 | <2 |
| trans-1,2-dichloroethene | 70 | 100 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.22 J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.27J | <2 | <2 | <2 |
| trichloroethene | 2.8 | 5 | 0.52 J | 0.86 J | **3.01** | 1.28J | 0.59J | 0.96J | 2.0 | 1.01 J | 0.29 J | 1.5 | 0.22 J | 1.4 | <2 | <2 | 2.14 | <2 | 0.64J | 0.52J | 0.55J | 0.35J | <2 | 0.45 J | 0.37 J | 0.23 J | <2 | 0.13 J | <2 | 0.27 J | 0.71J | 0.68J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 2.36 | 2.21 | 1.12J | <2 | 2.14 |
| trichlorofluoromethane | 2100 | 1300* | <2 | <2 | <2 | 0.28J | <2 | <2 | <2 | <2 | 0.2 J | <2 | <2 | 0.54 J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.59J | 0.54J | <2 | <2 | 0.30 J |
| vinyl chloride | 0.015 | 2 | <2 | **1.6** | **3.57** | **0.9J** | **0.78J** | **0.8J** | <2 | **0.48 J** | <2 | <2 | <2 | <2 | <2 | <2 | **5.41** | <2 | **2.08** | **1.82J** | **2.44** | **1.17** | <2 | **0.97 J** | **0.77 J** | **0.52 J** | <2 | <2 | <2 | **0.58 J** | **3.25** | **3.5** | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | **2.78** | **3.52** | **1.89J** | <2 | **3.24** |
| **SVOCs (EPA 8270C)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,4-dichlorobenzene (para) | 1.4 | 75 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 1.98J | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| 4-methylphenol (p-cresol) | 3.5 | 180* | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | **13.1** | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| benzoic acid | NA | NA | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| benzyl alcohol | NA | NA | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| diethylphthalate | 5000 | 29000* | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 3.49 J | <10 | 1.51J | 1.23J | <10 | 1.15J | 1.28 J | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 1.46J | 2.2J | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 2.81J | 3.19J | 2.02J | 2.51 J | 1.79 J |
| di-n-butylphthalate | 700 | 3600* | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 1.06J | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| bis(2-Ethylhexyl)phthalate | 2.5 | 6 | <10 | <10 | <10 | <10 | 4.41 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 1.5 J | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| phenol | 300 | NA | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| **Pesticides (EPA 8081)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| delta-BHC | NA | NA | <.0505 | <.0505 | <.0505 

| COMPOUNDS (µg/L) | Groundwater NC 2L Standard (ug/l) | EPA Drinking water MCL (ug/l) | SW-1 11/08 | SW-1 06/09 | SW-1 11/09 | SW-1 06/10 | SW-1 11/10 | SW-2 04/05 | SW-2 10/05 | SW-2 4/06 | SW-2 11/06 | SW-2 06/07 | SW-2 11/07 | SW-2 11/08 | SW-2 06/09 | SW-2 11/09 | SW-2 06/10 | SW-2 11/10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **VOCs (EPA 8260B)** | | | | | | | | | | | | | | | | | | |
| 1,1,2,2-tetrachloroethane | 0.17 | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 |
| 1,1-dichloroethane | 700 | 810* | 7.73 | 10 | 0.46 J | <2 | 0.32 J | <2 | <2 | <2 | <2 | <2 | 0.20 J | 0.31 J | <2 | <2 | NS | 8.2 |
| 1,2,3-trichloropropane | 0.005 | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 |
| 1,2,4-trimethylbenzene | 350 | 15 * | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 |
| 1,2-dibromo-3-chloropropane | 0.025 | 0.2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 |
| 1,2-dibromoethane | 0.0004 | 0.05 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 |
| 1,2-dichlorobenzene | NA | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 |
| 1,2-dichloroethane | 0.38 | 5 | <2 | 0.34 J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 |
| 1,2-dichloropropane | 0.56 | 5 | 0.058 J | 0.44 J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | 0.51 J |
| 1,4-dichlorobenzene | 75 | 75 | <2 | 0.62 J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | 1.3 |
| 1,4-dioxane | NA | NA | <2 | <2 | <2 | <2 | 4.8 J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 7.7 J | NS | <2 |
| 2-butanone | NA | NA | <2 | <2 | <2 | <2 | <2 | <2 | 1.78J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 |
| 4-isopropyltoluene | NA | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.21 J | <2 | <2 | NS | <2 |
| acetone | 700 | NA | <2 | <2 | <2 | <2 | <2 | NA | 3.5 | <2 | <2 | <2 | 4.29 J | <2 | <2 | <2 | NS | <2 |
| acrolein | NA | NA | <2 | <2 | <2 | <2 | <2 | <2 | 2.59J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 |
| benzene | 1 | 5 | **1.88 J** | **1.7** | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | **2.2** |
| carbon disulfide | 700 | NA | <2 | <2 | <2 | <2 | <2 | <2 | 0.28J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 |
| chlorobenzene | 50 | 100 | 0.42 J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | 0.85 J |
| chloroethane | 2800 | 4.6* | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 |
| chloroform | 70 | 80 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 |
| chloromethane (methyl chloride) | 2.6 | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 |
| cis-1,2-dichloroethene | 70 | 70 | 5.24 | 4.8 | <2 | <2 | 0.20 J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | 4.7 |
| dibromochloromethane | 0.41 | 80 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 |
| dichlorodifluoromethane | 1400 | 390* | 5.1 | 4.2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.23 J | <2 | <2 | NS | 3.2 |
| diisopropyl ether | 70 | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 |
| isopropylbenzene | 70 | 660* | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 |
| m&p xylene | 530# | 10000# | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 |
| methylene chloride (dichloromethane) | 4.6 | 5 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 0.22 J | <2 | <2 | <2 | NS | <2 |
| MTBE | 200 | 13* | 0.66 J | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 |
| naphthalene | 21 | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 |
| o-xylene | 530# | 10000# | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 |
| sec-butylbenzene | 70 | NA | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 |
| tetrachloroethene | 0.7 | 5 | **1.32 J** | **1.1** | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | **1.2** |
| toluene | 1000 | 1000 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 1.62J | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 |
| trans-1,2-dichloroethene | 70 | 100 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 |
| trichloroethene | 2.8 | 5 | 2.3 | 1.9 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | 2 |
| trichlorofluoromethane | 2100 | 1300* | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | 0.57 J |
| vinyl chloride | 0.015 | 2 | **2.98** | **2.8** | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | **2.8** |
| **SVOCs (EPA 8270C)** | | | | | | | | | | | | | | | | | | |
| 1,4-dichlorobenzene (para) | 1.4 | 75 | 0.91 J | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | **1.87 J** | <10 | <10 | <10 | <10 | NS | <10 |
| 4-methylphenol (p-cresol) | 3.5 | 180* | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | NS | <10 |
| benzoic acid | NA | NA | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | NS | <10 |
| benzyl alcohol | NA | NA | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | NS | <10 |
| diethylphthalate | 5000 | 29000* | 1.98 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | NS | 2.5 J |
| di-n-butylphthalate | 700 | 3600* | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | NS | <10 |
| bis(2-Ethylhexyl)phthalate | 2.5 | 6 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 1.35J | <10 | <10 | <10 | <10 | <10 | NS | <10 |
| phenol | 300 | NA | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | NS | <10 |
| **Pesticides (EPA 8081)** | | | | | | | | | | | | | | | | | | |
| delta-BHC | NA | NA | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | 0.038 J | NS | <.0505 |
| alpha-BHC | NA | NA | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | 0.04 J | NS | <.0505 |
| beta-BHC | NA | NA | 0.042 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | 0.03 | <.0505 | 0.051 J | NS | <.0505 |
| gamma-BHC | 0.2 | 0.2 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | NS | <.0505 |
| alpha-Chlordane* | 0.1 | 2 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | NS | <.0505 |
| gamma-Chlordane* | 0.1 | 2 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | NS | <.0505 |
| Aldrin | NA | NA | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | NS | <.0505 |
| Dieldrin | 0.0022 | NA | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | **.0306** | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | NS | <.0505 |
| Endosulfan I | NA | NA | <0.025 | <0.025 | <.0505 | <.0505 | <.0505 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <.0505 | NS | <.0505 |
| Heptachlor | 0.0078 | 0.4 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | <.0505 | NS | <.0505 |
| **PCBs (EPA 8082)** | | | | | | | | | | | | | | | | | | |
| **No Detections** | | | | | | | | | | | | | | | | | | |
| **Organophosphorus Pesticides (EPA 8141A)** | | | | | | | | | | | | | | | | | | |
| **No Detections** | | | | | | | | | | | | | | | | | | |
| **Appendix II Inorganics (EPA 6010B/6020A)** | | | | | | | | | | | | | | | | | | |
| Antimony | NA | 6 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | NS | <1 |
| Arsenic | 10 | 10 | **14.4** | 6.6 | 1.2 | 0.57 J | 9 | <2 | 1.09J | 1.08J | <2 | 1.18 J | 1.85 J | 5.79 | 0.53 J | 0.76 J | NS | 9.2 |
| Barium | 2000 | 2000 | 28 | 26 | 8.2 | 22 | 120 | 10.3 | 15.6 | 10 | 11.6 | 9.3 | 20 | 22 | 23 | 15 | NS | 39 |
| Beryllium | NA | 4 | 19 | <4 | <4 | <4 | 1.3 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | 0.36 J | 0.094 J | NS | <4 |
| Cadmium | 5 | 5 | <1 | <1 | <1 | <1 | 0.31 J | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | NS | <1 |
| Chromium | 50 | 100 | <5 | 0.16 J | 0.74 J | 0.38 J | 6.6 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | 1.4 B | NS | <5 |
| Cobalt | NA | NA | <1 | 0.19 J | 0.18 J | 0.23 | 4.4 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | 0.26 | 0.3 | NS | 0.19 J |
| Copper | 1000 | 1000 | <1 | 0.39 J | 4.4 | 1.5 | 9.2 | <1 | <1 | <1 | <1 | <1 | 5.4 | <1 | 0.51 J | 1.8 | NS | <1 |
| Iron | 300 | NA | <1 | <1 | <1 | **5400** | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | NS | <1 |
| Lead | 15 | 15 | <1 | 0.12 J | 0.51 | 0.15 J | 11 | <1 | <1 | 2.36 | 0.56J | <1 | <1 | <1 | 0.19 J | 0.72 | NS | 0.12 J |
| Manganese | 50 | NA | <1 | <1 | <1 | 24 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | NS | <1 |
| Nickel | 100 | 730* | <50 | 0.54 J | 1.7 | 0.55 J | 3.3 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | 0.6 | 1.2 | NS | <50 |
| Selenium | 50 | 50 | <2 | <2 | <2 | <2 | 0.83 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | <2 |
| Silver | 18 | 100* | <30 | <30 | <30 | <30 | <30 | <30 | <30 | <30 | <30 | <30 | <30 | <30 | <30 | <30 | NS | <30 |
| Thallium | NA | 2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | NS | 0.15 J |
| Tin | NA | NA | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | NS | 0.50 J |
| Vanadium | NA | 260* | 11 | <30 | <30 | <30 | 25 | <30 | <30 | <30 | <30 | <30 | <30 | <30 | <30 | <30 | NS | <30 |
| Zinc | 2100 | 5000 | <60 | 20 | 15 | 370 | 280 | 37.1 J | <60 | 0.02J | 34.5 | 24.5 J | <60 | <60 | 12 | 24 | NS | 16 |
| **Other Analyses** | | | | | | | | | | | | | | | | | | |
| Sulfide (EPA 376.1) | 250,000 | 250,000 | <200 | <200 | <200 | 10,000 | 10,000 | NA | <200 | <200 | <200 | <200 | <200 | <200 | <200 | <200 | NS | 10,000 |
| Cyanide (EPA 335.2) | 154 | 200 | <20 | <20 | 4.2 J | 2.5 | 2.5 | NA | <20 | <20 | <20 | 18 J | <20 | <20 | <20 | 2.7 J | NS | 2.5 |
| Mercury | 1.05 | 2 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | NS | <0.20 |
| Nitrate/Nitrite (SM 4500 - NO3-E) | 10,000 | 10,000 | 541 | NA | <40 | 1,700 | 360 | NA | <40 | 0.331J | 0.492 | 68 | <40 | <40 | 880 | <40 | NS | 360 |

# APPENDICES

# APPENDIX A

# GROUNDWATER SAMPLING LOGS

| | U.S. ARMY CORPS OF ENGINEERS<br>SAVANNAH DISTRICT<br>GEOLOGY and HYDROGEOLOGY | GROUNDWATER<br>FIELD DATA LOG |
|---|---|---|

1. CLIENT: Ft. Bragg, NC
**DATE:11/19/10** TIME: 1355
SAMPLED BY: Jackson, Louis
WEATHER CONDITIONS: Sunny, cool

| Location: Longstreet Landfill | **Sample ID:LSMW-12AR-11-10** |
|---|---|

PRESERVATIVE: $HNO_3$, NaOH, NaOH/ZnOAc, Ice
ANALYSES REQUESTED: 8260, 8270, 8081, 8082, 8141, App II Metals, Cyanide, Nitrate, Sulfide
# OF CONTAINERS:13
SAMPLING METHOD: x Peristaltic Pump
Bladder Pump LOW FLOW: ☒ YES ☐ NO
SAMPLES FILTERED: ☐ YES ☒ NO DUPLICATE SAMPLE: xYES NO

2. **WATER LEVEL DATA**
MEASURING POINT: ☒ Top of casing ☐ Other:
METHOD OF MEASUREMENT: Water Level Indicator

3. **WELL EVACUATION DATA**
Well Depth (wd): 20.00 (ft) Diameter (d): 2.00 (in)
Depth to Water (dw): 9.44 (ft) Diameter (d): 0.167 (ft)
Well Volume = ($5.904 \times d^2$ (wd-dw)) = 1.7 (gallons)
Flow Rate : 250 (ml/min) Purge vol: NA (gallons)
Length of Time Purged: 45 (minutes) Purge time: 910
Amount Purged= 3.0 (gallons)

4. **FIELD PARAMETERS**

| INSTRUMENT | CALIBRATED |
|---|---|
| pH Meter –YSI 556XL | ☒ |
| Conductivity Meter – YSI 556XL | ☒ |
| Temperature – YSI 556XL | ☒ |
| Turbidity Meter – Hach 2100 Q | ☒ |
| DO Meter – YSI 556XL | ☒ |
| ORP Meter – YSI 556XL | ☒ |
| $CO_2$– Hach Digital Titrator | ☐ |

| **Time** | 0925 | 0935 | 0945 | 0950 | | |
|---|---|---|---|---|---|---|
| **pH** | 5.28 | 5.45 | 5.49 | 5.52 | | |
| **Sp. Cond** | 0.228 | 0.246 | 0.249 | 0.248 | | |
| **Temp. °C** | 18.3 | 18.3 | 18.3 | 18.3 | | |
| **Turbidity** | 55.1 | 16.9 | 4.20 | 3.25 | | |
| **DO** | 0.23 | 0.49 | 0.45 | 0.42 | | |
| **ORP** | 26.3 | 2.9 | -4.0 | -6.2 | | |
| | | | | | | |

**5. COMMENTS: LSMW-DUP2-11-10 @ 1200. Well obstructed by debris.**

| | U.S. ARMY CORPS OF ENGINEERS<br>SAVANNAH DISTRICT<br>GEOLOGY and HYDROGEOLOGY | GROUNDWATER<br>FIELD DATA LOG |
|---|---|---|

1. CLIENT: Ft. Bragg, NC
**DATE:11/19/10** TIME: 1215
SAMPLED BY: Jackson, Louis
WEATHER CONDITIONS: Sunny, cool

| Location: Longstreet Landfill | **Sample ID:LSMW-12BR-11-10** |
|---|---|

PRESERVATIVE: $HNO_3$, NaOH, NaOH/ZnOAc, Ice
ANALYSES REQUESTED: 8260, 8270, 8081, 8082, 8141, App II Metals, Cyanide, Nitrate, Sulfide
# OF CONTAINERS:13
SAMPLING METHOD: x Peristaltic Pump
Bladder Pump LOW FLOW: ☒ YES ☐ NO
SAMPLES FILTERED: ☐ YES ☒ NO DUPLICATE SAMPLE: YES xNO

2. **WATER LEVEL DATA**
MEASURING POINT: ☒ Top of casing ☐ Other:
METHOD OF MEASUREMENT: Water Level Indicator

3. **WELL EVACUATION DATA**
Well Depth (wd): 64.50 (ft) Diameter (d): 2.00 (in)
Depth to Water (dw): 9.19 (ft) Diameter (d): 0.167 (ft)
Well Volume = ($5.904 \times d^2$ (wd-dw)) = 9.1 (gallons)
Flow Rate : 250 (ml/min) Purge vol: NA (gallons)
Length of Time Purged: 120 (minutes) Purge time: 1015
Amount Purged= 7.9 (gallons)

4. **FIELD PARAMETERS**

| INSTRUMENT | CALIBRATED |
|---|---|
| pH Meter –YSI 556XL | ☒ |
| Conductivity Meter – YSI 556XL | ☒ |
| Temperature – YSI 556XL | ☒ |
| Turbidity Meter – Hach 2100 Q | ☒ |
| DO Meter – YSI 556XL | ☒ |
| ORP Meter – YSI 556XL | ☒ |
| $CO_2$– Hach Digital Titrator | ☐ |

| **Time** | 1030 | 1040 | 1145 | 1200 | 1210 | |
|---|---|---|---|---|---|---|
| **pH** | 4.31 | 4.27 | 4.41 | 4.39 | 4.32 | |
| **Sp. Cond** | 0.070 | 0.070 | 0.070 | 0.071 | 0.071 | |
| **Temp. °C** | 16.7 | 15.8 | 17.6 | 17.6 | 17.6 | |
| **Turbidity** | 3.93 | 2.55 | 24.3 | 17.4 | 9.90 | |
| **DO** | 3.69 | 3.26 | 0.32 | 0.30 | 0.29 | |
| **ORP** | 293.4 | 339.1 | 246.2 | 252.9 | 267.4 | |
| | | | | | | |

**5. COMMENTS: LSMW-MS/MSD-11-10 taken. Well obstructed by debris. Changed to bladder pump @ 1130.**

| | U.S. ARMY CORPS OF ENGINEERS<br>SAVANNAH DISTRICT<br>GEOLOGY and HYDROGEOLOGY | GROUNDWATER<br>FIELD DATA LOG |
|---|---|---|

1. CLIENT: Ft. Bragg, NC
**DATE:11/18/10** TIME: 1430
SAMPLED BY: Jackson, Louis
WEATHER CONDITIONS: Sunny, cool

| Location: Longstreet Landfill | **Sample ID:LSMW-8-11-10** |
|---|---|

PRESERVATIVE: $HNO_3$, NaOH, NaOH/ZnOAc, Ice
ANALYSES REQUESTED: 8260, 8270, 8081, 8082, 8141, App II Metals, Cyanide, Nitrate, Sulfide
# OF CONTAINERS:13
SAMPLING METHOD: x Peristaltic Pump
Bladder Pump LOW FLOW: ☒ YES ☐ NO
SAMPLES FILTERED: ☐ YES ☒ NO DUPLICATE SAMPLE: xYES NO

2. **WATER LEVEL DATA**
MEASURING POINT: ☒ Top of casing ☐ Other:
METHOD OF MEASUREMENT: Water Level Indicator

3. **WELL EVACUATION DATA**
Well Depth (wd): 27.20 (ft) Diameter (d): 2.00 (in)
Depth to Water (dw): 24.31 (ft) Diameter (d): 0.167 (ft)
Well Volume = ($5.904 \times d^2$ (wd-dw)) = 0.5 (gallons)
Flow Rate : 100 (ml/min) Purge vol: NA (gallons)
Length of Time Purged: 180 (minutes) Purge time: 1130
Amount Purged= 4.8 (gallons)

4. **FIELD PARAMETERS**

| INSTRUMENT | CALIBRATED |
|---|---|
| pH Meter –YSI 556XL | ☒ |
| Conductivity Meter – YSI 556XL | ☒ |
| Temperature – YSI 556XL | ☒ |
| Turbidity Meter – Hach 2100 Q | ☒ |
| DO Meter – YSI 556XL | ☒ |
| ORP Meter – YSI 556XL | ☒ |
| $CO_2$– Hach Digital Titrator | ☐ |

| **Time** | 1150 | 1210 | 1232 | 1245 | 1305 | 1320 |
|---|---|---|---|---|---|---|
| **pH** | 6.05 | 6.03 | 5.98 | 5.94 | 5.90 | 5.89 |
| **Sp. Cond** | 0.715 | 0.715 | 0.711 | 0.708 | 0.727 | 0.725 |
| **Temp. °C** | 18.2 | 18.5 | 18.8 | 18.9 | 18.7 | 18.3 |
| **Turbidity** | 156 | 211 | 45.2 | 29.6 | 24.0 | 28.7 |
| **DO** | 2.53 | 1.55 | 1.45 | 1.35 | 1.27 | 1.17 |
| **ORP** | -105.0 | -112.7 | -114.3 | -113.4 | -115.7 | -115.9 |
| | | | | | | |

**5. COMMENTS: Inorganics and VOC's sampled only per PM.**

| | U.S. ARMY CORPS OF ENGINEERS<br>SAVANNAH DISTRICT<br>GEOLOGY and HYDROGEOLOGY | GROUNDWATER<br>FIELD DATA LOG |
|---|---|---|

1. CLIENT: Ft. Bragg, NC
**DATE:11/18/10** TIME: 1025
SAMPLED BY: Jackson, Louis
WEATHER CONDITIONS: Sunny, cool

| Location: Longstreet Landfill | **Sample ID:LSMW-7-11-10** |
|---|---|

PRESERVATIVE: $HNO_3$, NaOH, NaOH/ZnOAc, Ice
ANALYSES REQUESTED: 8260, 8270, 8081, 8082, 8141, App II Metals, Cyanide, Nitrate, Sulfide
# OF CONTAINERS:13
SAMPLING METHOD: x Peristaltic Pump
Bladder Pump LOW FLOW: ☒ YES ☐ NO
SAMPLES FILTERED: ☐ YES ☒ NO DUPLICATE SAMPLE: xYES NO

2. **WATER LEVEL DATA**
MEASURING POINT: ☒ Top of casing ☐ Other:
METHOD OF MEASUREMENT: Water Level Indicator

3. **WELL EVACUATION DATA**
Well Depth (wd): 26.64 (ft) Diameter (d): 2.00 (in)
Depth to Water (dw): 22.14 (ft) Diameter (d): 0.167 (ft)
Well Volume = ($5.904 \times d^2$ (wd-dw)) = 0.7 (gallons)
Flow Rate : 125 (ml/min) Purge vol: NA (gallons)
Length of Time Purged: 50 (minutes) Purge time: 935
Amount Purged= 1.7 (gallons)

4. **FIELD PARAMETERS**

| INSTRUMENT | CALIBRATED |
|---|---|
| pH Meter –YSI 556XL | ☒ |
| Conductivity Meter – YSI 556XL | ☒ |
| Temperature – YSI 556XL | ☒ |
| Turbidity Meter – Hach 2100 Q | ☒ |
| DO Meter – YSI 556XL | ☒ |
| ORP Meter – YSI 556XL | ☒ |
| $CO_2$– Hach Digital Titrator | ☐ |

| **Time** | 0955 | 1005 | 1020 | | | |
|---|---|---|---|---|---|---|
| **pH** | 5.49 | 5.47 | 5.50 | | | |
| **Sp. Cond** | 0.227 | 0.216 | 0.210 | | | |
| **Temp. °C** | 18.0 | 18.0 | 18.0 | | | |
| **Turbidity** | 4.96 | 4.46 | 5.23 | | | |
| **DO** | 0.56 | 0.51 | 0.56 | | | |
| **ORP** | -63.5 | -63.5 | -59.6 | | | |
| | | | | | | |

**5. COMMENTS:**

| | U.S. ARMY CORPS OF ENGINEERS<br>SAVANNAH DISTRICT<br>GEOLOGY and HYDROGEOLOGY | GROUNDWATER<br>FIELD DATA LOG |
|---|---|---|

1. CLIENT: Ft. Bragg, NC
**DATE:11/18/10** TIME: 1430
SAMPLED BY: Jackson, Louis
WEATHER CONDITIONS: Sunny, cool

| Location: Longstreet Landfill | **Sample ID:LSMW-8-11-10** |
|---|---|

PRESERVATIVE: $HNO_3$, NaOH, NaOH/ZnOAc, Ice
ANALYSES REQUESTED: 8260, 8270, 8081, 8082, 8141, App II Metals, Cyanide, Nitrate, Sulfide
# OF CONTAINERS:13
SAMPLING METHOD: x Peristaltic Pump
Bladder Pump LOW FLOW: ☒ YES ☐ NO
SAMPLES FILTERED: ☐ YES ☒ NO DUPLICATE SAMPLE: xYES NO

2. **WATER LEVEL DATA**
MEASURING POINT: ☒ Top of casing ☐ Other:
METHOD OF MEASUREMENT: Water Level Indicator

3. **WELL EVACUATION DATA**
Well Depth (wd): 27.20 (ft) Diameter (d): 2.00 (in)
Depth to Water (dw): 24.31 (ft) Diameter (d): 0.167 (ft)
Well Volume = ($5.904 \times d^2$ (wd-dw)) = 0.5 (gallons)
Flow Rate : 100 (ml/min) Purge vol: NA (gallons)
Length of Time Purged: 180 (minutes) Purge time: 1130
Amount Purged= 4.8 (gallons)

4. **FIELD PARAMETERS**

| INSTRUMENT | CALIBRATED |
|---|---|
| pH Meter –YSI 556XL | ☒ |
| Conductivity Meter – YSI 556XL | ☒ |
| Temperature – YSI 556XL | ☒ |
| Turbidity Meter – Hach 2100 Q | ☒ |
| DO Meter – YSI 556XL | ☒ |
| ORP Meter – YSI 556XL | ☒ |
| $CO_2$– Hach Digital Titrator | ☐ |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Time** | 1330 | | | | | |
| **pH** | 5.88 | | | | | |
| **Sp. Cond** | 0.742 | | | | | |
| **Temp. °C** | 18.6 | | | | | |
| **Turbidity** | 9.62 | | | | | |
| **DO** | 1.12 | | | | | |
| **ORP** | -115.5 | | | | | |
| | | | | | | |

**5. COMMENTS: Inorganics and VOC's sampled only per PM.**

| | U.S. ARMY CORPS OF ENGINEERS<br>SAVANNAH DISTRICT<br>GEOLOGY and HYDROGEOLOGY | GROUNDWATER<br>FIELD DATA LOG |
|---|---|---|

1. CLIENT: Ft. Bragg, NC
**DATE:11/19/10** TIME: 1620
SAMPLED BY: Jackson, Louis
WEATHER CONDITIONS: Sunny, cool

| Location: Longstreet Landfill | **Sample ID:LSMW-9-11-10** |
|---|---|

PRESERVATIVE: $HNO_3$, NaOH, NaOH/ZnOAc, Ice
ANALYSES REQUESTED: 8260, 8270, 8081, 8082, 8141, App II Metals, Cyanide, Nitrate, Sulfide
# OF CONTAINERS:13
SAMPLING METHOD: Peristaltic Pump
xBladder Pump LOW FLOW: ☒ YES ☐ NO
SAMPLES FILTERED: ☐ YES ☒ NO DUPLICATE SAMPLE: YES xNO

2. **WATER LEVEL DATA**
MEASURING POINT: ☒ Top of casing ☐ Other:
METHOD OF MEASUREMENT: Water Level Indicator

3. **WELL EVACUATION DATA**
Well Depth (wd): 40.15 (ft) Diameter (d): 2.00 (in)
Depth to Water (dw): 38.34 (ft) Diameter (d): 0.167 (ft)
Well Volume = ($5.904 \times d^2$ (wd-dw)) = 0.3 (gallons)
Flow Rate : 250 (ml/min) Purge vol: NA (gallons)
Length of Time Purged: 50 (minutes) Purge time: 1530
Amount Purged= 3.3 (gallons)

4. **FIELD PARAMETERS**

| INSTRUMENT | CALIBRATED |
|---|---|
| pH Meter –YSI 556XL | ☒ |
| Conductivity Meter – YSI 556XL | ☒ |
| Temperature – YSI 556XL | ☒ |
| Turbidity Meter – Hach 2100 Q | ☒ |
| DO Meter – YSI 556XL | ☒ |
| ORP Meter – YSI 556XL | ☒ |
| $CO_2$– Hach Digital Titrator | ☐ |

| **Time** | 1545 | 1555 | 1605 | 1615 | | |
|---|---|---|---|---|---|---|
| **pH** | 6.09 | 6.12 | 6.14 | 6.15 | | |
| **Sp. Cond** | 0.578 | 0.602 | 0.617 | 0.632 | | |
| **Temp. °C** | 18.3 | 18.2 | 18.1 | 18.1 | | |
| **Turbidity** | 30.8 | 11.4 | 5.00 | 2.65 | | |
| **DO** | 0.52 | 0.24 | 0.23 | 0.24 | | |
| **ORP** | -125.0 | -131.4 | 131.9 | -128.5 | | |
| | | | | | | |

**5. COMMENTS: LSMW-BLK-11-10 @ 1800**

| | U.S. ARMY CORPS OF ENGINEERS<br>SAVANNAH DISTRICT<br>GEOLOGY and HYDROGEOLOGY | GROUNDWATER<br>FIELD DATA LOG |
|---|---|---|

1. CLIENT: Ft. Bragg, NC
**DATE:11/19/10** TIME: 1420
SAMPLED BY: Jackson, Louis
WEATHER CONDITIONS: Sunny, cool

| Location: Longstreet Landfill | **Sample ID:LSMW-11R-11-10** |
|---|---|

PRESERVATIVE: $HNO_3$, NaOH, NaOH/ZnOAc, Ice
ANALYSES REQUESTED: 8260, 8270, 8081, 8082, 8141, App II Metals, Cyanide, Nitrate, Sulfide
# OF CONTAINERS:13
SAMPLING METHOD: Peristaltic Pump
xBladder Pump LOW FLOW: ☒ YES ☐ NO
SAMPLES FILTERED: ☐ YES ☒ NO DUPLICATE SAMPLE: YES xNO

2. **WATER LEVEL DATA**
MEASURING POINT: ☒ Top of casing ☐ Other:
METHOD OF MEASUREMENT: Water Level Indicator

3. **WELL EVACUATION DATA**
Well Depth (wd): 86.60 (ft) Diameter (d): 2.00 (in)
Depth to Water (dw): 78.81 (ft) Diameter (d): 0.167 (ft)
Well Volume = ($5.904 \times d^2$ (wd-dw)) = 1.3 (gallons)
Flow Rate : 250 (ml/min) Purge vol: NA (gallons)
Length of Time Purged: 40 (minutes) Purge time: 1340
Amount Purged= 2.6 (gallons)

4. **FIELD PARAMETERS**

| INSTRUMENT | CALIBRATED |
|---|---|
| pH Meter –YSI 556XL | ☒ |
| Conductivity Meter – YSI 556XL | ☒ |
| Temperature – YSI 556XL | ☒ |
| Turbidity Meter – Hach 2100 Q | ☒ |
| DO Meter – YSI 556XL | ☒ |
| ORP Meter – YSI 556XL | ☒ |
| $CO_2$– Hach Digital Titrator | ☐ |

| **Time** | 1350 | 1405 | 1415 | | | |
|---|---|---|---|---|---|---|
| **pH** | 4.52 | 4.56 | 4.48 | | | |
| **Sp. Cond** | 0.020 | 0.020 | 0.020 | | | |
| **Temp. °C** | 18.0 | 18.8 | 18.8 | | | |
| **Turbidity** | 11.9 | 5.32 | 5.74 | | | |
| **DO** | 2.51 | 2.41 | 2.34 | | | |
| **ORP** | 214.0 | 202.6 | 214.8 | | | |
| | | | | | | |

**5. COMMENTS:**

# APPENDIX B

# DATA VALIDATION REPORTS

# QA LEVEL II - DATA EVALUATION CHECKLIST

Company Name: USACE
Project Name: Longstreet Landfill
Reviewer: F. Burwell

Project Manager: Z. Kidwai
Project Number: 680-63343-1
Validation Date: 4-JAN-2011

Laboratory: Test America
SDG #:

Analytical Method (type and no.): SW846 8270D, 8081B, 8082A, 8141B, 8151A, 6020A, 7470A, 9034 + MCAWW 300 + 335.4

Matrix: ☐ Air ☐ Soil/Sed. ☒ Water ☐ Waste ☐

Sample Names
LS-SW2-11-10, LS-SW1-11-10, LS-DUP1-11-10,
LS-MW7-11-10, LS-MW8-11-10

**NOTE: Please provide calculation in Comment areas or on the back (if on the back please indicate in comment areas).**

| Field Information | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Sampling dates noted? | ☒ | ☐ | ☐ | pH, Conductivity, Temperature, Dissolved Oxygen, ORP, Turbidity |
| b) Sampling team indicated? | ☐ | ☒ | ☐ | |
| c) Sample location noted? | ☒ | ☐ | ☐ | |
| d) Sample depth indicated (Soils)? | ☐ | ☐ | ☒ | |
| e) Sample type indicated (grab/composite)? | ☐ | ☐ | ☒ | |
| f) Field QC noted? | ☒ | ☐ | ☐ | |
| g) Field parameters collected (note types)? | ☒ | ☐ | ☐ | |
| h) Field Calibration within control limits? | ☒ | ☐ | ☐ | |
| i) Notations of unacceptable field conditions/performances from field logs or field notes? | ☐ | ☒ | ☐ | |
| j) Does the laboratory narrative indicate deficiencies: | ☐ | ☒ | ☐ | |

Note Deficiencies: No field deficiencies noted in the laboratory Narrative

| Chain-of-Custody (COC) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| k) Was the COC properly completed? | ☒ | ☐ | ☐ | |
| l) Was the COC signed by both field and laboratory personnel? | ☒ | ☐ | ☐ | |
| m) Were samples received in good condition? | ☒ | ☐ | ☐ | |

| General (Reference QAPP or Method) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were hold times met for sample pretreatment? | ☒ | ☐ | ☐ | * 5x dilution for Nitrate as NO3 |
| b) Were hold times met for sample analysis? | ☒ | ☐ | ☐ | |
| c) Were the correct preservatives used? | ☒ | ☐ | ☐ | * Due to sample Matrix effect on internal standard dilution required for |
| d) Was the correct method used? | ☒ | ☐ | ☐ | |
| e) Were appropriate reporting limits achieved? | ☒ | ☐ | ☐ | |
| f) Were any sample dilutions noted? | ☒ | ☐ | ☐ | · LS-MW8-11-10 |
| g) Were any matrix problems noted? | ☒ | ☐ | ☐ | · LS-SW1-11-10 |

| Blanks | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were analytes detected in the method blank(s)? | ☐ | ☒ | ☐ | |
| b) Were analytes detected in the field blank(s)? | ☐ | ☐ | ☒ | |
| c) Were analytes detected in the equipment blank(s)? | ☐ | ☐ | ☒ | |
| d) Were analytes detected in the trip blank(s)? | ☐ | ☐ | ☒ | |

| Laboratory Control Sample (LCS) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a LCS analyzed once per SDG? | ☒ | ☐ | ☐ | |
| b) Were the proper compounds included in the LCS? | ☒ | ☐ | ☐ | |
| c) Was the LCS accuracy criteria met? | ☒ | ☐ | ☐ | |

| Duplicates | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were field duplicates collected (note original and duplicate sample names)? | ☒ | ☐ | ☐ | LS-SW2 = LS-DUPI-1 |
| b) Were field dup. precision criteria met (note RPD)? | ☒ | ☐ | ☐ | |
| c) Were lab duplicates analyzed (note original and duplicate samples)? | ☐ | ☒ | ☐ | |
| d) Were lab dup. precision criteria met (note RPD)? | ☐ | ☐ | ☒ | |

| Blind Standards | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a blind standard used (indicate name, compounds included and concentrations)? | ☐ | ☒ | ☐ | |
| b) Was the %D within control limits? | ☐ | ☐ | ☒ | |

| Matrix Spike/Matrix Spike Duplicate (MS/MSD) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was MS accuracy criteria met? | ☒ | ☐ | ☐ | |
| b) Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☒ | |
| c) Was MSD accuracy criteria met? | ☒ | ☐ | ☐ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☒ | |
| d) Were MS/MSD precision criteria met? | ☒ | ☐ | ☐ | |

| Reagent Water Spike and Duplicate (RWS & RWSD) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was RWS accuracy criteria met? | ☐ | ☐ | ☒ | |
| b) Was RWSD accuracy criteria met? | ☐ | ☐ | ☒ | |
| c) Was RWS/RWSD precision criteria met (RPD)? | ☐ | ☐ | ☒ | |

| Surrogate Spikes | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were surrogate recoveries within control limits? | ☒ | ☐ | ☐ | |
| b) Were surrogate recoveries not calculated due to dilutions? | ☐ | ☒ | ☐ | |

**Comments/Notes:**

**Data Qualification:**

| Sample Name | Constituent(s) | Result | Qualifier | Reason |
|---|---|---|---|---|
| | | | | |
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Signature: _____ Date: _____

# QA LEVEL II - DATA EVALUATION CHECKLIST

Company Name: USACE
Project Manager: Z. Kidwai
Project Name: Longstreet LANDFILL
Project Number: 680-63374-1
Reviewer: F. Burwell
Validation Date: 3-JANUARY-2011

Laboratory: TEST AMERICA
SDG #:
Analytical Method (type and no.): SW846; 8260B, 8270D, 8081B, 8082A, 8141B, 8151A, 6020A, 7470A, 9034,
Matrix: ☐ Air ☐ Soil/Sed. ☒ Water ☐ Waste ☐ MCAWW 300 + 335.4
Sample Names Trip Blank, LS-SW2-11-10, LS-SW1-11-10, LS-DUP1-11-10, LS-MW7-11-10, LS-MW8-11-10, SLMW-06-11-10, SLMW-10-11-10, SLMW-13-11-10, LSMW-12AR-11-10, LSMW-12-BR-11 LSMW-DUP2-11-10, LSMW-11R-11-10, LSMW-9-11-10, LSMW-BLK-11-10

**NOTE: Please provide calculation in Comment areas or on the back (if on the back please indicate in comment areas).**

| Field Information | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Sampling dates noted? | ☒ | ☐ | ☐ | *pH, Conductivity, Temperature, |
| b) Sampling team indicated? | ☐ | ☒ | ☐ | Dissolved Oxygen, ORP, Turbidity |
| c) Sample location noted? | ☒ | ☐ | ☐ | |
| d) Sample depth indicated (Soils)? | ☐ | ☐ | ☒ | |
| e) Sample type indicated (grab/composite)? | ☐ | ☐ | ☒ | |
| f) Field QC noted? | ☒ | ☐ | ☐ | |
| g) Field parameters collected (note types)? | ☒ | ☐ | ☐ | |
| h) Field Calibration within control limits? | ☒ | ☐ | ☐ | |
| i) Notations of unacceptable field conditions/performances from field logs or field notes? | ☐ | ☐ | ☒ | |
| j) Does the laboratory narrative indicate deficiencies: | ☐ | ☒ | ☐ | |

Note Deficiencies: No Field deficiencies

| Chain-of-Custody (COC) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| k) Was the COC properly completed? | ☐ | ☒ | ☐ | • ONE SAMPLE site omitted from list, |
| l) Was the COC signed by both field and laboratory personnel? | ☒ | ☐ | ☐ | • several vials were Broken |
| m) Were samples received in good condition? | ☐ | ☒ | ☐ | • ONE EXTRA VIALS RECEIVED |

| General (Reference QAPP or Method) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were hold times met for sample pretreatment? | ☒ | ☐ | ☐ | |
| b) Were hold times met for sample analysis? | ☒ | ☐ | ☐ | 5x dilution for |
| c) Were the correct preservatives used? | ☒ | ☐ | ☐ | Nitrate as NO3 |
| d) Was the correct method used? | ☒ | ☐ | ☐ | |
| e) Were appropriate reporting limits achieved? | ☒ | ☐ | ☐ | |
| f) Were any sample dilutions noted? | ☒ | ☐ | ☐ | |
| g) Were any matrix problems noted? | ☐ | ☒ | ☐ | |

| Blanks | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were analytes detected in the method blank(s)? | ☐ | ☒ | ☐ | |
| b) Were analytes detected in the field blank(s)? | ☐ | ☐ | ☒ | |
| c) Were analytes detected in the equipment blank(s)? | ☐ | ☐ | ☒ | |
| d) Were analytes detected in the trip blank(s)? | ☐ | ☒ | ☐ | |

| Laboratory Control Sample (LCS) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a LCS analyzed once per SDG? | ☒ | ☐ | ☐ | |
| b) Were the proper compounds included in the LCS? | ☒ | ☐ | ☐ | |
| c) Was the LCS accuracy criteria met? | ☒ | ☐ | ☐ | |

| Duplicates | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were field duplicates collected (note original and duplicate sample names)? | ☒ | ☐ | ☐ | LS-DUP1 / LS-SW2 |
| b) Were field dup. precision criteria met (note RPD)? | ☒ | ☐ | ☐ | |
| c) Were lab duplicates analyzed (note original and duplicate samples)? | ☐ | ☒ | ☐ | |
| d) Were lab dup. precision criteria met (note RPD)? | ☐ | ☐ | ☒ | |

| Blind Standards | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a blind standard used (indicate name, compounds included and concentrations)? | ☐ | ☒ | ☐ | |
| b) Was the %D within control limits? | ☐ | ☐ | ☒ | |

| Matrix Spike/Matrix Spike Duplicate (MS/MSD) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was MS accuracy criteria met? | ☒ | ☐ | ☐ | |
| b) Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☒ | |
| c) Was MSD accuracy criteria met? | ☒ | ☐ | ☐ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☒ | |
| d) Were MS/MSD precision criteria met? | ☒ | ☐ | ☐ | |

| Reagent Water Spike and Duplicate (RWS & RWSD) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was RWS accuracy criteria met? | ☐ | ☐ | ☒ | |
| b) Was RWSD accuracy criteria met? | ☐ | ☐ | ☒ | |
| c) Was RWS/RWSD precision criteria met (RPD)? | ☐ | ☐ | ☒ | |

| Surrogate Spikes | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were surrogate recoveries within control limits? | ☒ | ☐ | ☐ | |
| b) Were surrogate recoveries not calculated due to dilutions? | ☐ | ☒ | ☐ | |

**Comments/Notes:**

**Data Qualification:**

| Sample Name | Constituent(s) | Result | Qualifier | Reason |
|---|---|---|---|---|
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Signature: _____ Date: _____

# APPENDIX C

## CHAIN OF CUSTODY AND LABORATORY ANALYTICAL REPORTS

**(Electronic Only)**

# ANALYTICAL REPORT

Job Number: 680-63374-1

Job Description: Ft. Bragg Longstreet

For:
U.S. Army Corps of Engineers
PO BOX 889
Savannah, GA 31402-0889

Attention: Mr. Kevin Haborak

Approved for release.
Kathryn Smith
Project Manager I
12/15/2010 5:00 PM

Kathryn Smith
Project Manager I
kathye.smith@testamericainc.com
12/15/2010

The test results in this report meet NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted. Results pertain only to samples listed in this report. This report may not be reproduced, except in full, without the written approval of the laboratory. Questions should be directed to the person who signed this report.

Savannah Certifications and ID #s: A2LA: 0399.01; AL: 41450; ARDEQ: 88-0692; ARDOH; CA: 03217CA; CO; CT: PH0161; DE; FL: E87052; GA: 803; Guam; HI; IL: 200022; IN; IA: 353; KS: E-10322; KY EPPC: 90084; KY UST; LA DEQ: 30690; LA DHH: LA080008; ME: 2008022; MD: 250; MA: M-GA006; MI: 9925; MS; NFESC: 249; NV: GA00006; NJ: GA769; NM; NY: 10842; NC DWQ: 269; NC DHHS: 13701; PA: 68-00474; PR: GA00006; RI: LAO00244; SC: 98001001; TN: TN0296; TX: T104704185; USEPA: GA00006; VT: VT-87052; VA: 00302; WA; WV DEP: 094; WV DHHR: 9950 C; WI DNR: 999819810; WY/EPAR8: 8TMS-Q

**Comments**
No additional comments.

**Receipt**
All samples were received in good condition within temperature requirements.

**GC/MS VOA**
Method(s) 8260B: The %RPD of the laboratory control standard duplicate (LCSD) for preparation batch 187226 exceeded control limits for the following analytes: vinyl acetate.

No other analytical or quality issues were noted.

**GC/MS Semi VOA**
Method(s) 8270D: The initial calibration curves associated with analytical batch 187762 were outside method criteria for the following analyte(s): Benzidine, 2,4-Dinitrophenol, Benzaldehyde, 1,3,5-Trinitrobenzene, As indicated in the reference method, sample analysis may proceed; however, any detection or non-detection for the affected analyte(s) is considered an estimated concentration.

Method(s) 8270D: The continuing calibration verification (CCV) analyzed in batch 187662 exceeded the method criteria for the following analyte(s): Benzaldehyde and Benzoic Acid, ethyl methanesulfonate, 1,3,5-Trinitrobenzene, 4-nitroquinoline-1-oxide, 4-chlorophenol, o,o,o-triethylphosphorthioate, methyl parathion and parathion. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

Method(s) 8270D: Surrogate recovery for the following sample(s) was outside control limits: LSMW-12BR-11-10 (680-63374-11). Re-extraction and/or re-analysis was performed outside of holding time with acceptable results.

Method(s) 8270D: The continuing calibration verification (CCV) analyzed in batch 187142 and 188177 exceeded the method criteria for the following analyte(s): 1,4 dioxane, n-nitrosimethylamine, bis-(2-chloroethyl)ether, bis (2-chloroisopropyl) ehter, methyl parathion, hexacholorpene, pentachlorobenzene, pronamide, pentachloronitrobenzene, methayriliene, and 3'3' dimethylbenzidine. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

Method(s) 8270D: The initial calibration verification (ICV) analyzed in batch 188177 and 187142 was outside method criteria for the following analyte(s): 2,4 dinitophenol and 1,3,5 trinitrobenzene. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

No other analytical or quality issues were noted.

**GC Semi VOA**
Method(s) 8081B/8082A: Surrogate recovery for the following sample(s) was outside control limits: LSMW-9-11-10 (680-63374-14), LSMW-DUP2-11-10 (680-63374-12), SLMW-10-11-10 (680-63374-8). Re-extraction and/or re-analysis was performed with concurring results. The original analysis has been reported.

Method(s) 8081B/8082A: Two surrogates are used for this analysis. The laboratory's SOP allows one of these surrogates to be outside acceptance criteria without performing re-extraction/re-analysis. The following samples contained an allowable number of surrogate compounds outside limits: LSMW-9-11-10 (680-63374-14), LSMW-DUP2-11-10 (680-63374-12), SLMW-10-11-10 (680-63374-8). These results have been reported and qualified.

Method(s) 8151A: This method incorporates the use of second column confirmation. Corrective action for unacceptable percent recovery is not taken for surrogate or spike compounds unless the results from both columns are outside criteria. Any results which fall outside criteria are qualified and reported.

No other analytical or quality issues were noted.

**Metals**
No analytical or quality issues were noted.

**General Chemistry**
No analytical or quality issues were noted.

**Organic Prep**
No analytical or quality issues were noted.

**VOA Prep**
No analytical or quality issues were noted.

# METHOD SUMMARY

Client: U.S. Army Corps of Engineers | Job Number: 680-63374-1

| Description | Lab Location | Method | Preparation Method |
|---|---|---|---|
| **Matrix Water** | | | |
| Volatile Organic Compounds (GC/MS) | TAL SAV | SW846 8260B | |
| Purge and Trap | TAL SAV | | SW846 5030B |
| Semivolatile Organic Compounds (GC/MS) | TAL SAV | SW846 8270D | |
| Liquid-Liquid Extraction (Continuous) | TAL SAV | | SW846 3520C |
| Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography | TAL SAV | SW846 8081B/8082A | |
| Liquid-Liquid Extraction (Continuous) | TAL SAV | | SW846 3520C |
| Organophosphorous Compounds by Gas Chromatography, Capillary Column Technique | TAL SAV | SW846 8141B | |
| Liquid-Liquid Extraction (Continuous) | TAL SAV | | SW846 3520C |
| Herbicides (GC) | TAL SAV | SW846 8151A | |
| Extraction (Herbicides) | TAL SAV | | SW846 8151A |
| Metals (ICP/MS) | TAL SAV | SW846 6020A | |
| Preparation, Extractable Metals | TAL SAV | | SM 3030C |
| Mercury (CVAA) | TAL SAV | SW846 7470A | |
| Preparation, Mercury | TAL SAV | | SW846 7470A |
| Anions, Ion Chromatography | TAL SAV | MCAWW 300.0 | |
| Cyanide, Total | TAL SAV | MCAWW 335.4 | |
| Distillation, Cyanide | TAL SAV | | Distill/CN |
| Sulfide, Acid Soluble and Insoluble (Titrimetric) | TAL SAV | SW846 9034 | |
| Sulfide, Distillation (Acid Soluble and Insoluble) | TAL SAV | | SW846 9030B |

**Lab References:**

TAL SAV = TestAmerica Savannah

**Method References:**

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

# METHOD / ANALYST SUMMARY

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

| Method | Analyst | Analyst ID |
|---|---|---|
| SW846 8260B | Bearden, Robert | RB |
| SW846 8260B | Cowart, Judson | WJC |
| SW846 8270D | Haynes, Carion | CRH |
| SW846 8081B/8082A | Smith, Crystal | CAS |
| SW846 8141B | Kellar, Joshua | JK |
| SW846 8151A | Smith, Crystal | CAS |
| SW846 6020A | Robertson, Bryn | BR |
| SW846 7470A | Vasquez, Juana | JV |
| MCAWW 300.0 | Brazell, Connie | CB |
| MCAWW 335.4 | McDonald, Debbie | DAM |
| SW846 9034 | Lanier, Jerry | JAL |

# SAMPLE SUMMARY

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

| Lab Sample ID | Client Sample ID | Client Matrix | Date/Time Sampled | Date/Time Received |
|---|---|---|---|---|
| 680-63374-1TB | Trip Blank | Water | 11/18/2010 0000 | 11/20/2010 1047 |
| 680-63374-2 | LS-SW2-11-10 | Water | 11/18/2010 1415 | 11/20/2010 1047 |
| 680-63374-3 | LS-SW1-11-10 | Water | 11/18/2010 1440 | 11/20/2010 1047 |
| 680-63374-4 | LS-DUP1-11-10 | Water | 11/18/2010 1200 | 11/20/2010 1047 |
| 680-63374-5 | LS-MW7-11-10 | Water | 11/18/2010 1025 | 11/20/2010 1047 |
| 680-63374-6 | LS-MW8-11-10 | Water | 11/18/2010 1430 | 11/20/2010 1047 |
| 680-63374-7 | SLMW-06-11-10 | Water | 11/19/2010 1040 | 11/20/2010 1047 |
| 680-63374-8 | SLMW-10-11-10 | Water | 11/19/2010 1248 | 11/20/2010 1047 |
| 680-63374-9 | SLMW-13-11-10 | Water | 11/19/2010 1455 | 11/20/2010 1047 |
| 680-63374-10 | LSMW-12AR-11-10 | Water | 11/19/2010 0955 | 11/20/2010 1047 |
| 680-63374-11 | LSMW-12BR-11-10 | Water | 11/19/2010 1215 | 11/20/2010 1047 |
| 680-63374-11MS | LSMW-12BR-11-10 | Water | 11/19/2010 1215 | 11/20/2010 1047 |
| 680-63374-11MSD | LSMW-12BR-11-10 | Water | 11/19/2010 1215 | 11/20/2010 1047 |
| 680-63374-12 | LSMW-DUP2-11-10 | Water | 11/19/2010 1200 | 11/20/2010 1047 |
| 680-63374-13 | LSMW-11R-11-10 | Water | 11/19/2010 1420 | 11/20/2010 1047 |
| 680-63374-14 | LSMW-9-11-10 | Water | 11/19/2010 1620 | 11/20/2010 1047 |
| 680-63374-15FB | LSMW-BLK-11-10 | Water | 11/19/2010 1800 | 11/20/2010 1047 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **Trip Blank**

Lab Sample ID: 680-63374-1TB

Client Matrix: Water

Date Sampled: 11/18/2010 0000

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | |
|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-187038 | Instrument ID: | MSO2 |
| Preparation: | 5030B | | Lab File ID: | o0036.d |
| Dilution: | 1.0 | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/23/2010 1247 | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/23/2010 1247 | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acetonitrile | 10 | U | 10 | 40 |
| Acetone | 5.0 | U | 5.0 | 25 |
| Benzene | 0.25 | U | 0.25 | 1.0 |
| Dichlorobromomethane | 0.25 | U | 0.25 | 1.0 |
| Bromomethane | 0.80 | U | 0.80 | 1.0 |
| Carbon disulfide | 0.60 | U | 0.60 | 2.0 |
| Chlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Chlorodibromomethane | 0.10 | U | 0.10 | 1.0 |
| Chloroethane | 1.0 | U | 1.0 | 1.0 |
| Chloromethane | 0.33 | U | 0.33 | 1.0 |
| Chloroform | 0.14 | U | 0.14 | 1.0 |
| 3-Chloro-1-propene | 0.20 | U | 0.20 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 0.44 | U | 0.44 | 1.0 |
| Ethylene Dibromide | 0.25 | U | 0.25 | 1.0 |
| trans-1,4-Dichloro-2-butene | 0.50 | U | 0.50 | 2.0 |
| Dichlorodifluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,1-Dichloroethane | 0.25 | U | 0.25 | 1.0 |
| 1,2-Dichloroethane | 0.10 | U | 0.10 | 1.0 |
| trans-1,2-Dichloroethene | 0.20 | U | 0.20 | 1.0 |
| 1,1-Dichloroethene | 0.11 | U | 0.11 | 1.0 |
| Methylene Chloride | 1.0 | U | 1.0 | 5.0 |
| 1,2-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| cis-1,3-Dichloropropene | 0.11 | U | 0.11 | 1.0 |
| trans-1,3-Dichloropropene | 0.21 | U | 0.21 | 1.0 |
| Ethylbenzene | 0.11 | U | 0.11 | 1.0 |
| 2-Butanone (MEK) | 1.0 | U | 1.0 | 10 |
| Iodomethane | 1.0 | U | 1.0 | 5.0 |
| Methacrylonitrile | 3.3 | U | 3.3 | 20 |
| 4-Methyl-2-pentanone (MIBK) | 1.0 | U | 1.0 | 10 |
| Styrene | 0.11 | U | 0.11 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 0.33 | U | 0.33 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 0.18 | U | 0.18 | 1.0 |
| Tetrachloroethene | 0.15 | U | 0.15 | 1.0 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 1.0 |
| Toluene | 0.33 | U | 0.33 | 1.0 |
| Bromoform | 0.50 | U | 0.50 | 1.0 |
| 1,1,2-Trichloroethane | 0.13 | U | 0.13 | 1.0 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.50 | 1.0 |
| Trichloroethene | 0.13 | U | 0.13 | 1.0 |
| Trichlorofluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,2,3-Trichloropropane | 0.41 | U | 0.41 | 1.0 |
| Vinyl acetate | 0.28 | U | 0.28 | 2.0 |
| Vinyl chloride | 0.18 | U | 0.18 | 1.0 |
| Xylenes, Total | 0.20 | U | 0.20 | 2.0 |
| 2-Hexanone | 1.0 | U | 1.0 | 10 |
| Propionitrile | 4.6 | U | 4.6 | 20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **Trip Blank**

Lab Sample ID: 680-63374-1TB

Client Matrix: Water

Date Sampled: 11/18/2010 0000

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | |
|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-187038 | Instrument ID: | MSO2 |
| Preparation: | 5030B | | Lab File ID: | o0036.d |
| Dilution: | 1.0 | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/23/2010 1247 | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/23/2010 1247 | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methyl methacrylate | 0.48 | U | 0.48 | 1.0 |
| Acrolein | 7.4 | U | 7.4 | 20 |
| Acrylonitrile | 7.2 | U | 7.2 | 20 |
| Ethyl methacrylate | 0.25 | U | 0.25 | 1.0 |
| Isobutyl alcohol | 11 | U | 11 | 40 |
| Chlorobromomethane | 0.14 | U | 0.14 | 1.0 |
| cis-1,2-Dichloroethene | 0.15 | U | 0.15 | 1.0 |
| 1,3-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| 2,2-Dichloropropane | 0.12 | U | 0.12 | 1.0 |
| 1,1-Dichloropropene | 0.25 | U | 0.25 | 1.0 |
| 2-Chloro-1,3-butadiene | 0.30 | U | 0.30 | 1.0 |
| 1,2-Dichlorobenzene | 0.21 | U | 0.21 | 1.0 |
| 1,3-Dichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| 1,4-Dichlorobenzene | 0.28 | U | 0.28 | 1.0 |
| 1,2,4-Trichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Dibromomethane | 0.20 | U | 0.20 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 89 | | 70 - 130 |
| 4-Bromofluorobenzene | 92 | | 70 - 130 |
| Dibromofluoromethane | 93 | | 70 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LS-SW2-11-10**

Lab Sample ID: 680-63374-2

Client Matrix: Water

Date Sampled: 11/18/2010 1415

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

Method: 8260B

Preparation: 5030B

Dilution: 1.0

Date Analyzed: 11/23/2010 1710

Date Prepared: 11/23/2010 1710

Analysis Batch: 680-187038

Instrument ID: MSO2

Lab File ID: o0052.d

Initial Weight/Volume: 5 mL

Final Weight/Volume: 5 mL

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acetonitrile | 10 | U | 10 | 40 |
| Acetone | 5.0 | U | 5.0 | 25 |
| Benzene | 2.2 | | 0.25 | 1.0 |
| Dichlorobromomethane | 0.25 | U | 0.25 | 1.0 |
| Bromomethane | 0.80 | U | 0.80 | 1.0 |
| Carbon disulfide | 0.60 | U | 0.60 | 2.0 |
| Chlorobenzene | 0.85 | J | 0.25 | 1.0 |
| Chlorodibromomethane | 0.10 | U | 0.10 | 1.0 |
| Chloroethane | 1.0 | U | 1.0 | 1.0 |
| Chloromethane | 0.33 | U | 0.33 | 1.0 |
| Chloroform | 0.14 | U | 0.14 | 1.0 |
| 3-Chloro-1-propene | 0.20 | U | 0.20 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 0.44 | U | 0.44 | 1.0 |
| Ethylene Dibromide | 0.25 | U | 0.25 | 1.0 |
| trans-1,4-Dichloro-2-butene | 0.50 | U | 0.50 | 2.0 |
| Dichlorodifluoromethane | 3.2 | | 0.25 | 1.0 |
| 1,1-Dichloroethane | 8.2 | | 0.25 | 1.0 |
| 1,2-Dichloroethane | 0.10 | U | 0.10 | 1.0 |
| trans-1,2-Dichloroethene | 0.20 | U | 0.20 | 1.0 |
| 1,1-Dichloroethene | 0.13 | J | 0.11 | 1.0 |
| Methylene Chloride | 1.0 | U | 1.0 | 5.0 |
| 1,2-Dichloropropane | 0.51 | J | 0.13 | 1.0 |
| cis-1,3-Dichloropropene | 0.11 | U | 0.11 | 1.0 |
| trans-1,3-Dichloropropene | 0.21 | U | 0.21 | 1.0 |
| Ethylbenzene | 0.11 | U | 0.11 | 1.0 |
| 2-Butanone (MEK) | 1.0 | U | 1.0 | 10 |
| Iodomethane | 1.0 | U | 1.0 | 5.0 |
| Methacrylonitrile | 3.3 | U | 3.3 | 20 |
| 4-Methyl-2-pentanone (MIBK) | 1.0 | U | 1.0 | 10 |
| Styrene | 0.11 | U | 0.11 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 0.33 | U | 0.33 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 0.18 | U | 0.18 | 1.0 |
| Tetrachloroethene | 1.2 | | 0.15 | 1.0 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 1.0 |
| Toluene | 0.33 | U | 0.33 | 1.0 |
| Bromoform | 0.50 | U | 0.50 | 1.0 |
| 1,1,2-Trichloroethane | 0.13 | U | 0.13 | 1.0 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.50 | 1.0 |
| Trichloroethene | 2.0 | | 0.13 | 1.0 |
| Trichlorofluoromethane | 0.57 | J | 0.25 | 1.0 |
| 1,2,3-Trichloropropane | 0.41 | U | 0.41 | 1.0 |
| Vinyl acetate | 0.28 | U | 0.28 | 2.0 |
| Vinyl chloride | 2.8 | | 0.18 | 1.0 |
| Xylenes, Total | 0.20 | U | 0.20 | 2.0 |
| 2-Hexanone | 1.0 | U | 1.0 | 10 |
| Propionitrile | 4.6 | U | 4.6 | 20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LS-SW2-11-10**

Lab Sample ID: 680-63374-2

Client Matrix: Water

Date Sampled: 11/18/2010 1415

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | |
|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-187038 | Instrument ID: | MSO2 |
| Preparation: | 5030B | | Lab File ID: | o0052.d |
| Dilution: | 1.0 | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/23/2010 1710 | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/23/2010 1710 | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methyl methacrylate | 0.48 | U | 0.48 | 1.0 |
| Acrolein | 7.4 | U | 7.4 | 20 |
| Acrylonitrile | 7.2 | U | 7.2 | 20 |
| Ethyl methacrylate | 0.25 | U | 0.25 | 1.0 |
| Isobutyl alcohol | 11 | U | 11 | 40 |
| Chlorobromomethane | 0.14 | U | 0.14 | 1.0 |
| cis-1,2-Dichloroethene | 4.7 | | 0.15 | 1.0 |
| 1,3-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| 2,2-Dichloropropane | 0.12 | U | 0.12 | 1.0 |
| 1,1-Dichloropropene | 0.25 | U | 0.25 | 1.0 |
| 2-Chloro-1,3-butadiene | 0.30 | U | 0.30 | 1.0 |
| 1,2-Dichlorobenzene | 0.21 | U | 0.21 | 1.0 |
| 1,3-Dichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| 1,4-Dichlorobenzene | 1.3 | | 0.28 | 1.0 |
| 1,2,4-Trichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Dibromomethane | 0.20 | U | 0.20 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 100 | | 70 - 130 |
| 4-Bromofluorobenzene | 98 | | 70 - 130 |
| Dibromofluoromethane | 99 | | 70 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LS-SW1-11-10**

Lab Sample ID: 680-63374-3

Client Matrix: Water

Date Sampled: 11/18/2010 1440

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | |
|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-187038 | Instrument ID: | MSO2 |
| Preparation: | 5030B | | Lab File ID: | o0054.d |
| Dilution: | 1.0 | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/23/2010 1739 | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/23/2010 1739 | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acetonitrile | 10 | U | 10 | 40 |
| Acetone | 5.0 | U | 5.0 | 25 |
| Benzene | 0.25 | U | 0.25 | 1.0 |
| Dichlorobromomethane | 0.25 | U | 0.25 | 1.0 |
| Bromomethane | 0.80 | U | 0.80 | 1.0 |
| Carbon disulfide | 0.60 | U | 0.60 | 2.0 |
| Chlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Chlorodibromomethane | 0.10 | U | 0.10 | 1.0 |
| Chloroethane | 1.0 | U | 1.0 | 1.0 |
| Chloromethane | 0.33 | U | 0.33 | 1.0 |
| Chloroform | 0.14 | U | 0.14 | 1.0 |
| 3-Chloro-1-propene | 0.20 | U | 0.20 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 0.44 | U | 0.44 | 1.0 |
| Ethylene Dibromide | 0.25 | U | 0.25 | 1.0 |
| trans-1,4-Dichloro-2-butene | 0.50 | U | 0.50 | 2.0 |
| Dichlorodifluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,1-Dichloroethane | 0.32 | J | 0.25 | 1.0 |
| 1,2-Dichloroethane | 0.10 | U | 0.10 | 1.0 |
| trans-1,2-Dichloroethene | 0.20 | U | 0.20 | 1.0 |
| 1,1-Dichloroethene | 0.11 | U | 0.11 | 1.0 |
| Methylene Chloride | 1.0 | U | 1.0 | 5.0 |
| 1,2-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| cis-1,3-Dichloropropene | 0.11 | U | 0.11 | 1.0 |
| trans-1,3-Dichloropropene | 0.21 | U | 0.21 | 1.0 |
| Ethylbenzene | 0.11 | U | 0.11 | 1.0 |
| 2-Butanone (MEK) | 1.0 | U | 1.0 | 10 |
| Iodomethane | 1.0 | U | 1.0 | 5.0 |
| Methacrylonitrile | 3.3 | U | 3.3 | 20 |
| 4-Methyl-2-pentanone (MIBK) | 1.0 | U | 1.0 | 10 |
| Styrene | 0.11 | U | 0.11 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 0.33 | U | 0.33 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 0.18 | U | 0.18 | 1.0 |
| Tetrachloroethene | 0.15 | U | 0.15 | 1.0 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 1.0 |
| Toluene | 0.33 | U | 0.33 | 1.0 |
| Bromoform | 0.50 | U | 0.50 | 1.0 |
| 1,1,2-Trichloroethane | 0.13 | U | 0.13 | 1.0 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.50 | 1.0 |
| Trichloroethene | 0.13 | U | 0.13 | 1.0 |
| Trichlorofluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,2,3-Trichloropropane | 0.41 | U | 0.41 | 1.0 |
| Vinyl acetate | 0.28 | U | 0.28 | 2.0 |
| Vinyl chloride | 0.18 | U | 0.18 | 1.0 |
| Xylenes, Total | 0.20 | U | 0.20 | 2.0 |
| 2-Hexanone | 1.0 | U | 1.0 | 10 |
| Propionitrile | 4.6 | U | 4.6 | 20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LS-SW1-11-10**

Lab Sample ID: 680-63374-3

Client Matrix: Water

Date Sampled: 11/18/2010 1440

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | |
|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-187038 | Instrument ID: | MSO2 |
| Preparation: | 5030B | | Lab File ID: | o0054.d |
| Dilution: | 1.0 | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/23/2010 1739 | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/23/2010 1739 | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methyl methacrylate | 0.48 | U | 0.48 | 1.0 |
| Acrolein | 7.4 | U | 7.4 | 20 |
| Acrylonitrile | 7.2 | U | 7.2 | 20 |
| Ethyl methacrylate | 0.25 | U | 0.25 | 1.0 |
| Isobutyl alcohol | 11 | U | 11 | 40 |
| Chlorobromomethane | 0.14 | U | 0.14 | 1.0 |
| cis-1,2-Dichloroethene | 0.20 | J | 0.15 | 1.0 |
| 1,3-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| 2,2-Dichloropropane | 0.12 | U | 0.12 | 1.0 |
| 1,1-Dichloropropene | 0.25 | U | 0.25 | 1.0 |
| 2-Chloro-1,3-butadiene | 0.30 | U | 0.30 | 1.0 |
| 1,2-Dichlorobenzene | 0.21 | U | 0.21 | 1.0 |
| 1,3-Dichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| 1,4-Dichlorobenzene | 0.28 | U | 0.28 | 1.0 |
| 1,2,4-Trichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Dibromomethane | 0.20 | U | 0.20 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 102 | | 70 - 130 |
| 4-Bromofluorobenzene | 100 | | 70 - 130 |
| Dibromofluoromethane | 96 | | 70 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LS-DUP1-11-10**

Lab Sample ID: 680-63374-4

Client Matrix: Water

Date Sampled: 11/18/2010 1200

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

Method: 8260B

Preparation: 5030B

Dilution: 1.0

Date Analyzed: 11/23/2010 1510

Date Prepared: 11/23/2010 1510

Analysis Batch: 680-187038

Instrument ID: MSO2

Lab File ID: o0046.d

Initial Weight/Volume: 5 mL

Final Weight/Volume: 5 mL

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acetonitrile | 10 | U | 10 | 40 |
| Acetone | 5.0 | U | 5.0 | 25 |
| Benzene | 2.0 | | 0.25 | 1.0 |
| Dichlorobromomethane | 0.25 | U | 0.25 | 1.0 |
| Bromomethane | 0.80 | U | 0.80 | 1.0 |
| Carbon disulfide | 0.60 | U | 0.60 | 2.0 |
| Chlorobenzene | 0.81 | J | 0.25 | 1.0 |
| Chlorodibromomethane | 0.10 | U | 0.10 | 1.0 |
| Chloroethane | 1.0 | U | 1.0 | 1.0 |
| Chloromethane | 0.33 | U | 0.33 | 1.0 |
| Chloroform | 0.14 | U | 0.14 | 1.0 |
| 3-Chloro-1-propene | 0.20 | U | 0.20 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 0.44 | U | 0.44 | 1.0 |
| Ethylene Dibromide | 0.25 | U | 0.25 | 1.0 |
| trans-1,4-Dichloro-2-butene | 0.50 | U | 0.50 | 2.0 |
| Dichlorodifluoromethane | 3.0 | | 0.25 | 1.0 |
| 1,1-Dichloroethane | 7.3 | | 0.25 | 1.0 |
| 1,2-Dichloroethane | 0.37 | J | 0.10 | 1.0 |
| trans-1,2-Dichloroethene | 0.20 | U | 0.20 | 1.0 |
| 1,1-Dichloroethene | 0.11 | U | 0.11 | 1.0 |
| Methylene Chloride | 1.0 | U | 1.0 | 5.0 |
| 1,2-Dichloropropane | 0.53 | J | 0.13 | 1.0 |
| cis-1,3-Dichloropropene | 0.11 | U | 0.11 | 1.0 |
| trans-1,3-Dichloropropene | 0.21 | U | 0.21 | 1.0 |
| Ethylbenzene | 0.11 | U | 0.11 | 1.0 |
| 2-Butanone (MEK) | 1.0 | U | 1.0 | 10 |
| Iodomethane | 1.0 | U | 1.0 | 5.0 |
| Methacrylonitrile | 3.3 | U | 3.3 | 20 |
| 4-Methyl-2-pentanone (MIBK) | 1.0 | U | 1.0 | 10 |
| Styrene | 0.11 | U | 0.11 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 0.33 | U | 0.33 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 0.18 | U | 0.18 | 1.0 |
| Tetrachloroethene | 1.2 | | 0.15 | 1.0 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 1.0 |
| Toluene | 0.33 | U | 0.33 | 1.0 |
| Bromoform | 0.50 | U | 0.50 | 1.0 |
| 1,1,2-Trichloroethane | 0.13 | U | 0.13 | 1.0 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.50 | 1.0 |
| Trichloroethene | 2.0 | | 0.13 | 1.0 |
| Trichlorofluoromethane | 0.51 | J | 0.25 | 1.0 |
| 1,2,3-Trichloropropane | 0.41 | U | 0.41 | 1.0 |
| Vinyl acetate | 0.28 | U | 0.28 | 2.0 |
| Vinyl chloride | 2.5 | | 0.18 | 1.0 |
| Xylenes, Total | 0.20 | U | 0.20 | 2.0 |
| 2-Hexanone | 1.0 | U | 1.0 | 10 |
| Propionitrile | 4.6 | U | 4.6 | 20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LS-DUP1-11-10**

Lab Sample ID: 680-63374-4

Client Matrix: Water

Date Sampled: 11/18/2010 1200

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | |
|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-187038 | Instrument ID: | MSO2 |
| Preparation: | 5030B | | Lab File ID: | o0046.d |
| Dilution: | 1.0 | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/23/2010 1510 | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/23/2010 1510 | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methyl methacrylate | 0.48 | U | 0.48 | 1.0 |
| Acrolein | 7.4 | U | 7.4 | 20 |
| Acrylonitrile | 7.2 | U | 7.2 | 20 |
| Ethyl methacrylate | 0.25 | U | 0.25 | 1.0 |
| Isobutyl alcohol | 11 | U | 11 | 40 |
| Chlorobromomethane | 0.14 | U | 0.14 | 1.0 |
| cis-1,2-Dichloroethene | 3.9 | | 0.15 | 1.0 |
| 1,3-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| 2,2-Dichloropropane | 0.12 | U | 0.12 | 1.0 |
| 1,1-Dichloropropene | 0.25 | U | 0.25 | 1.0 |
| 2-Chloro-1,3-butadiene | 0.30 | U | 0.30 | 1.0 |
| 1,2-Dichlorobenzene | 0.21 | U | 0.21 | 1.0 |
| 1,3-Dichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| 1,4-Dichlorobenzene | 1.1 | | 0.28 | 1.0 |
| 1,2,4-Trichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Dibromomethane | 0.20 | U | 0.20 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 101 | | 70 - 130 |
| 4-Bromofluorobenzene | 99 | | 70 - 130 |
| Dibromofluoromethane | 98 | | 70 - 130 |

Client: U.S. Army Corps of Engineers | Job Number: 680-63374-1

**Client Sample ID:** **LS-MW7-11-10**

Lab Sample ID: 680-63374-5 | Date Sampled: 11/18/2010 1025
Client Matrix: Water | Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | |
|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-187038 | Instrument ID: | MSO2 |
| Preparation: | 5030B | | Lab File ID: | o0048.d |
| Dilution: | 1.0 | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/23/2010 1613 | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/23/2010 1613 | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acetonitrile | 10 | U | 10 | 40 |
| Acetone | 8.6 | J | 5.0 | 25 |
| Benzene | 0.60 | J | 0.25 | 1.0 |
| Dichlorobromomethane | 0.25 | U | 0.25 | 1.0 |
| Bromomethane | 0.80 | U | 0.80 | 1.0 |
| Carbon disulfide | 0.60 | U | 0.60 | 2.0 |
| Chlorobenzene | 0.36 | J | 0.25 | 1.0 |
| Chlorodibromomethane | 0.10 | U | 0.10 | 1.0 |
| Chloroethane | 1.0 | U | 1.0 | 1.0 |
| Chloromethane | 0.33 | U | 0.33 | 1.0 |
| Chloroform | 0.14 | U | 0.14 | 1.0 |
| 3-Chloro-1-propene | 0.20 | U | 0.20 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 0.44 | U | 0.44 | 1.0 |
| Ethylene Dibromide | 0.25 | U | 0.25 | 1.0 |
| trans-1,4-Dichloro-2-butene | 0.50 | U | 0.50 | 2.0 |
| Dichlorodifluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,1-Dichloroethane | 0.25 | U | 0.25 | 1.0 |
| 1,2-Dichloroethane | 0.10 | U | 0.10 | 1.0 |
| trans-1,2-Dichloroethene | 0.20 | U | 0.20 | 1.0 |
| 1,1-Dichloroethene | 0.11 | U | 0.11 | 1.0 |
| Methylene Chloride | 1.0 | U | 1.0 | 5.0 |
| 1,2-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| cis-1,3-Dichloropropene | 0.11 | U | 0.11 | 1.0 |
| trans-1,3-Dichloropropene | 0.21 | U | 0.21 | 1.0 |
| Ethylbenzene | 0.11 | U | 0.11 | 1.0 |
| 2-Butanone (MEK) | 1.0 | U | 1.0 | 10 |
| Iodomethane | 1.0 | U | 1.0 | 5.0 |
| Methacrylonitrile | 3.3 | U | 3.3 | 20 |
| 4-Methyl-2-pentanone (MIBK) | 1.0 | U | 1.0 | 10 |
| Styrene | 0.11 | U | 0.11 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 0.33 | U | 0.33 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 0.18 | U | 0.18 | 1.0 |
| Tetrachloroethene | 0.15 | U | 0.15 | 1.0 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 1.0 |
| Toluene | 0.33 | U | 0.33 | 1.0 |
| Bromoform | 0.50 | U | 0.50 | 1.0 |
| 1,1,2-Trichloroethane | 0.13 | U | 0.13 | 1.0 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.50 | 1.0 |
| Trichloroethene | 0.13 | U | 0.13 | 1.0 |
| Trichlorofluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,2,3-Trichloropropane | 0.41 | U | 0.41 | 1.0 |
| Vinyl acetate | 0.28 | U | 0.28 | 2.0 |
| Vinyl chloride | 0.29 | J | 0.18 | 1.0 |
| Xylenes, Total | 0.20 | U | 0.20 | 2.0 |
| 2-Hexanone | 1.0 | U | 1.0 | 10 |
| Propionitrile | 4.6 | U | 4.6 | 20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LS-MW7-11-10**

Lab Sample ID: 680-63374-5

Client Matrix: Water

Date Sampled: 11/18/2010 1025

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | |
|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-187038 | Instrument ID: | MSO2 |
| Preparation: | 5030B | | Lab File ID: | o0048.d |
| Dilution: | 1.0 | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/23/2010 1613 | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/23/2010 1613 | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methyl methacrylate | 0.48 | U | 0.48 | 1.0 |
| Acrolein | 7.4 | U | 7.4 | 20 |
| Acrylonitrile | 7.2 | U | 7.2 | 20 |
| Ethyl methacrylate | 0.25 | U | 0.25 | 1.0 |
| Isobutyl alcohol | 11 | U | 11 | 40 |
| Chlorobromomethane | 0.14 | U | 0.14 | 1.0 |
| cis-1,2-Dichloroethene | 0.15 | U | 0.15 | 1.0 |
| 1,3-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| 2,2-Dichloropropane | 0.12 | U | 0.12 | 1.0 |
| 1,1-Dichloropropene | 0.25 | U | 0.25 | 1.0 |
| 2-Chloro-1,3-butadiene | 0.30 | U | 0.30 | 1.0 |
| 1,2-Dichlorobenzene | 0.21 | U | 0.21 | 1.0 |
| 1,3-Dichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| 1,4-Dichlorobenzene | 0.28 | U | 0.28 | 1.0 |
| 1,2,4-Trichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Dibromomethane | 0.20 | U | 0.20 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 104 | | 70 - 130 |
| 4-Bromofluorobenzene | 99 | | 70 - 130 |
| Dibromofluoromethane | 97 | | 70 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LS-MW8-11-10**

Lab Sample ID: 680-63374-6

Client Matrix: Water

Date Sampled: 11/18/2010 1430

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

Method: 8260B

Preparation: 5030B

Dilution: 1.0

Date Analyzed: 11/23/2010 1641

Date Prepared: 11/23/2010 1641

Analysis Batch: 680-187038

Instrument ID: MSO2

Lab File ID: o0050.d

Initial Weight/Volume: 5 mL

Final Weight/Volume: 5 mL

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acetonitrile | 10 | U | 10 | 40 |
| Acetone | 5.0 | U | 5.0 | 25 |
| Benzene | 2.9 | | 0.25 | 1.0 |
| Dichlorobromomethane | 0.25 | U | 0.25 | 1.0 |
| Bromomethane | 0.80 | U | 0.80 | 1.0 |
| Carbon disulfide | 0.60 | U | 0.60 | 2.0 |
| Chlorobenzene | 4.4 | | 0.25 | 1.0 |
| Chlorodibromomethane | 0.10 | U | 0.10 | 1.0 |
| Chloroethane | 1.9 | | 1.0 | 1.0 |
| Chloromethane | 0.33 | U | 0.33 | 1.0 |
| Chloroform | 0.14 | U | 0.14 | 1.0 |
| 3-Chloro-1-propene | 0.20 | U | 0.20 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 0.44 | U | 0.44 | 1.0 |
| Ethylene Dibromide | 0.25 | U | 0.25 | 1.0 |
| trans-1,4-Dichloro-2-butene | 0.50 | U | 0.50 | 2.0 |
| Dichlorodifluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,1-Dichloroethane | 2.4 | | 0.25 | 1.0 |
| 1,2-Dichloroethane | 0.10 | U | 0.10 | 1.0 |
| trans-1,2-Dichloroethene | 0.23 | J | 0.20 | 1.0 |
| 1,1-Dichloroethene | 0.11 | U | 0.11 | 1.0 |
| Methylene Chloride | 1.0 | U | 1.0 | 5.0 |
| 1,2-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| cis-1,3-Dichloropropene | 0.11 | U | 0.11 | 1.0 |
| trans-1,3-Dichloropropene | 0.21 | U | 0.21 | 1.0 |
| Ethylbenzene | 0.11 | U | 0.11 | 1.0 |
| 2-Butanone (MEK) | 1.0 | U | 1.0 | 10 |
| Iodomethane | 1.0 | U | 1.0 | 5.0 |
| Methacrylonitrile | 3.3 | U | 3.3 | 20 |
| 4-Methyl-2-pentanone (MIBK) | 1.0 | U | 1.0 | 10 |
| Styrene | 0.11 | U | 0.11 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 0.33 | U | 0.33 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 0.18 | U | 0.18 | 1.0 |
| Tetrachloroethene | 0.15 | U | 0.15 | 1.0 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 1.0 |
| Toluene | 0.44 | J | 0.33 | 1.0 |
| Bromoform | 0.50 | U | 0.50 | 1.0 |
| 1,1,2-Trichloroethane | 0.13 | U | 0.13 | 1.0 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.50 | 1.0 |
| Trichloroethene | 1.9 | | 0.13 | 1.0 |
| Trichlorofluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,2,3-Trichloropropane | 0.41 | U | 0.41 | 1.0 |
| Vinyl acetate | 0.28 | U | 0.28 | 2.0 |
| Vinyl chloride | 10 | | 0.18 | 1.0 |
| Xylenes, Total | 0.20 | U | 0.20 | 2.0 |
| 2-Hexanone | 1.0 | U | 1.0 | 10 |
| Propionitrile | 4.6 | U | 4.6 | 20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LS-MW8-11-10**

Lab Sample ID: 680-63374-6

Client Matrix: Water

Date Sampled: 11/18/2010 1430

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | |
|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-187038 | Instrument ID: | MSO2 |
| Preparation: | 5030B | | Lab File ID: | o0050.d |
| Dilution: | 1.0 | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/23/2010 1641 | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/23/2010 1641 | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methyl methacrylate | 0.48 | U | 0.48 | 1.0 |
| Acrolein | 7.4 | U | 7.4 | 20 |
| Acrylonitrile | 7.2 | U | 7.2 | 20 |
| Ethyl methacrylate | 0.25 | U | 0.25 | 1.0 |
| Isobutyl alcohol | 11 | U | 11 | 40 |
| Chlorobromomethane | 0.14 | U | 0.14 | 1.0 |
| cis-1,2-Dichloroethene | 58 | | 0.15 | 1.0 |
| 1,3-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| 2,2-Dichloropropane | 0.12 | U | 0.12 | 1.0 |
| 1,1-Dichloropropene | 0.25 | U | 0.25 | 1.0 |
| 2-Chloro-1,3-butadiene | 0.30 | U | 0.30 | 1.0 |
| 1,2-Dichlorobenzene | 0.21 | U | 0.21 | 1.0 |
| 1,3-Dichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| 1,4-Dichlorobenzene | 0.76 | J | 0.28 | 1.0 |
| 1,2,4-Trichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Dibromomethane | 0.20 | U | 0.20 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 100 | | 70 - 130 |
| 4-Bromofluorobenzene | 96 | | 70 - 130 |
| Dibromofluoromethane | 98 | | 70 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-06-11-10**

Lab Sample ID: 680-63374-7

Client Matrix: Water

Date Sampled: 11/19/2010 1040

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

Method: 8260B

Preparation: 5030B

Dilution: 1.0

Date Analyzed: 11/24/2010 0330

Date Prepared: 11/24/2010 0330

Analysis Batch: 680-187226

Instrument ID: MSO

Lab File ID: o0080.d

Initial Weight/Volume: 5 mL

Final Weight/Volume: 5 mL

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acetonitrile | 10 | U | 10 | 40 |
| Acetone | 5.0 | U | 5.0 | 25 |
| Benzene | 0.25 | U | 0.25 | 1.0 |
| Dichlorobromomethane | 0.25 | U | 0.25 | 1.0 |
| Bromomethane | 0.80 | U | 0.80 | 1.0 |
| Carbon disulfide | 0.60 | U | 0.60 | 2.0 |
| Chlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Chlorodibromomethane | 0.10 | U | 0.10 | 1.0 |
| Chloroethane | 1.0 | U | 1.0 | 1.0 |
| Chloromethane | 0.33 | U | 0.33 | 1.0 |
| Chloroform | 0.51 | J | 0.14 | 1.0 |
| 3-Chloro-1-propene | 0.20 | U | 0.20 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 0.44 | U | 0.44 | 1.0 |
| Ethylene Dibromide | 0.25 | U | 0.25 | 1.0 |
| trans-1,4-Dichloro-2-butene | 0.50 | U | 0.50 | 2.0 |
| Dichlorodifluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,1-Dichloroethane | 0.25 | U | 0.25 | 1.0 |
| 1,2-Dichloroethane | 0.10 | U | 0.10 | 1.0 |
| trans-1,2-Dichloroethene | 0.20 | U | 0.20 | 1.0 |
| 1,1-Dichloroethene | 0.11 | U | 0.11 | 1.0 |
| Methylene Chloride | 1.0 | U | 1.0 | 5.0 |
| 1,2-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| cis-1,3-Dichloropropene | 0.11 | U | 0.11 | 1.0 |
| trans-1,3-Dichloropropene | 0.21 | U | 0.21 | 1.0 |
| Ethylbenzene | 0.11 | U | 0.11 | 1.0 |
| 2-Butanone (MEK) | 1.0 | U | 1.0 | 10 |
| Iodomethane | 1.0 | U | 1.0 | 5.0 |
| Methacrylonitrile | 3.3 | U | 3.3 | 20 |
| 4-Methyl-2-pentanone (MIBK) | 1.0 | U | 1.0 | 10 |
| Styrene | 0.11 | U | 0.11 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 0.33 | U | 0.33 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 0.18 | U | 0.18 | 1.0 |
| Tetrachloroethene | 0.15 | U | 0.15 | 1.0 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 1.0 |
| Toluene | 0.33 | U | 0.33 | 1.0 |
| Bromoform | 0.50 | U | 0.50 | 1.0 |
| 1,1,2-Trichloroethane | 0.13 | U | 0.13 | 1.0 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.50 | 1.0 |
| Trichloroethene | 0.13 | U | 0.13 | 1.0 |
| Trichlorofluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,2,3-Trichloropropane | 0.41 | U | 0.41 | 1.0 |
| Vinyl acetate | 0.28 | U Q | 0.28 | 2.0 |
| Vinyl chloride | 0.18 | U | 0.18 | 1.0 |
| Xylenes, Total | 0.20 | U | 0.20 | 2.0 |
| 2-Hexanone | 1.0 | U | 1.0 | 10 |
| Propionitrile | 4.6 | U | 4.6 | 20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-06-11-10**

Lab Sample ID: 680-63374-7

Client Matrix: Water

Date Sampled: 11/19/2010 1040

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | |
|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-187226 | Instrument ID: | MSO |
| Preparation: | 5030B | | Lab File ID: | o0080.d |
| Dilution: | 1.0 | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/24/2010 0330 | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/24/2010 0330 | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methyl methacrylate | 0.48 | U | 0.48 | 1.0 |
| Acrolein | 7.4 | U | 7.4 | 20 |
| Acrylonitrile | 7.2 | U | 7.2 | 20 |
| Ethyl methacrylate | 0.25 | U | 0.25 | 1.0 |
| Isobutyl alcohol | 11 | U | 11 | 40 |
| Chlorobromomethane | 0.14 | U | 0.14 | 1.0 |
| cis-1,2-Dichloroethene | 0.15 | U | 0.15 | 1.0 |
| 1,3-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| 2,2-Dichloropropane | 0.12 | U | 0.12 | 1.0 |
| 1,1-Dichloropropene | 0.25 | U | 0.25 | 1.0 |
| 2-Chloro-1,3-butadiene | 0.30 | U | 0.30 | 1.0 |
| 1,2-Dichlorobenzene | 0.21 | U | 0.21 | 1.0 |
| 1,3-Dichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| 1,4-Dichlorobenzene | 0.28 | U | 0.28 | 1.0 |
| 1,2,4-Trichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Dibromomethane | 0.20 | U | 0.20 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 103 | | 70 - 130 |
| 4-Bromofluorobenzene | 99 | | 70 - 130 |
| Dibromofluoromethane | 94 | | 70 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-10-11-10**

Lab Sample ID: 680-63374-8

Client Matrix: Water

Date Sampled: 11/19/2010 1248

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | |
|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-187226 | Instrument ID: | MSO |
| Preparation: | 5030B | | Lab File ID: | o0081.d |
| Dilution: | 1.0 | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/24/2010 0351 | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/24/2010 0351 | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acetonitrile | 10 | U | 10 | 40 |
| Acetone | 5.0 | U | 5.0 | 25 |
| Benzene | 1.3 | | 0.25 | 1.0 |
| Dichlorobromomethane | 0.25 | U | 0.25 | 1.0 |
| Bromomethane | 0.80 | U | 0.80 | 1.0 |
| Carbon disulfide | 0.60 | U | 0.60 | 2.0 |
| Chlorobenzene | 0.69 | J | 0.25 | 1.0 |
| Chlorodibromomethane | 0.10 | U | 0.10 | 1.0 |
| Chloroethane | 1.0 | U | 1.0 | 1.0 |
| Chloromethane | 0.33 | U | 0.33 | 1.0 |
| Chloroform | 0.14 | U | 0.14 | 1.0 |
| 3-Chloro-1-propene | 0.20 | U | 0.20 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 0.44 | U | 0.44 | 1.0 |
| Ethylene Dibromide | 0.25 | U | 0.25 | 1.0 |
| trans-1,4-Dichloro-2-butene | 0.50 | U | 0.50 | 2.0 |
| Dichlorodifluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,1-Dichloroethane | 0.71 | J | 0.25 | 1.0 |
| 1,2-Dichloroethane | 0.35 | J | 0.10 | 1.0 |
| trans-1,2-Dichloroethene | 0.20 | U | 0.20 | 1.0 |
| 1,1-Dichloroethene | 0.11 | U | 0.11 | 1.0 |
| Methylene Chloride | 1.0 | U | 1.0 | 5.0 |
| 1,2-Dichloropropane | 3.0 | | 0.13 | 1.0 |
| cis-1,3-Dichloropropene | 0.11 | U | 0.11 | 1.0 |
| trans-1,3-Dichloropropene | 0.21 | U | 0.21 | 1.0 |
| Ethylbenzene | 0.11 | U | 0.11 | 1.0 |
| 2-Butanone (MEK) | 1.0 | U | 1.0 | 10 |
| Iodomethane | 1.0 | U | 1.0 | 5.0 |
| Methacrylonitrile | 3.3 | U | 3.3 | 20 |
| 4-Methyl-2-pentanone (MIBK) | 1.0 | U | 1.0 | 10 |
| Styrene | 0.11 | U | 0.11 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 0.33 | U | 0.33 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 0.18 | U | 0.18 | 1.0 |
| Tetrachloroethene | 0.15 | U | 0.15 | 1.0 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 1.0 |
| Toluene | 0.33 | U | 0.33 | 1.0 |
| Bromoform | 0.50 | U | 0.50 | 1.0 |
| 1,1,2-Trichloroethane | 0.13 | U | 0.13 | 1.0 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.50 | 1.0 |
| Trichloroethene | 0.86 | J | 0.13 | 1.0 |
| Trichlorofluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,2,3-Trichloropropane | 0.41 | U | 0.41 | 1.0 |
| Vinyl acetate | 0.28 | U Q | 0.28 | 2.0 |
| Vinyl chloride | 1.6 | | 0.18 | 1.0 |
| Xylenes, Total | 0.20 | U | 0.20 | 2.0 |
| 2-Hexanone | 1.0 | U | 1.0 | 10 |
| Propionitrile | 4.6 | U | 4.6 | 20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-10-11-10**

Lab Sample ID: 680-63374-8

Client Matrix: Water

Date Sampled: 11/19/2010 1248

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | |
|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-187226 | Instrument ID: | MSO |
| Preparation: | 5030B | | Lab File ID: | o0081.d |
| Dilution: | 1.0 | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/24/2010 0351 | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/24/2010 0351 | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methyl methacrylate | 0.48 | U | 0.48 | 1.0 |
| Acrolein | 7.4 | U | 7.4 | 20 |
| Acrylonitrile | 7.2 | U | 7.2 | 20 |
| Ethyl methacrylate | 0.25 | U | 0.25 | 1.0 |
| Isobutyl alcohol | 11 | U | 11 | 40 |
| Chlorobromomethane | 0.14 | U | 0.14 | 1.0 |
| cis-1,2-Dichloroethene | 8.6 | | 0.15 | 1.0 |
| 1,3-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| 2,2-Dichloropropane | 0.12 | U | 0.12 | 1.0 |
| 1,1-Dichloropropene | 0.25 | U | 0.25 | 1.0 |
| 2-Chloro-1,3-butadiene | 0.30 | U | 0.30 | 1.0 |
| 1,2-Dichlorobenzene | 0.24 | J | 0.21 | 1.0 |
| 1,3-Dichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| 1,4-Dichlorobenzene | 8.6 | | 0.28 | 1.0 |
| 1,2,4-Trichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Dibromomethane | 0.20 | U | 0.20 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 105 | | 70 - 130 |
| 4-Bromofluorobenzene | 101 | | 70 - 130 |
| Dibromofluoromethane | 94 | | 70 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-13-11-10**

Lab Sample ID: 680-63374-9

Client Matrix: Water

Date Sampled: 11/19/2010 1455

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | |
|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-187226 | Instrument ID: | MSO |
| Preparation: | 5030B | | Lab File ID: | o0082.d |
| Dilution: | 1.0 | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/24/2010 0412 | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/24/2010 0412 | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acetonitrile | 10 | U | 10 | 40 |
| Acetone | 5.0 | U | 5.0 | 25 |
| Benzene | 0.25 | U | 0.25 | 1.0 |
| Dichlorobromomethane | 0.25 | U | 0.25 | 1.0 |
| Bromomethane | 0.80 | U | 0.80 | 1.0 |
| Carbon disulfide | 0.60 | U | 0.60 | 2.0 |
| Chlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Chlorodibromomethane | 0.10 | U | 0.10 | 1.0 |
| Chloroethane | 1.0 | U | 1.0 | 1.0 |
| Chloromethane | 0.33 | U | 0.33 | 1.0 |
| Chloroform | 0.14 | U | 0.14 | 1.0 |
| 3-Chloro-1-propene | 0.20 | U | 0.20 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 0.44 | U | 0.44 | 1.0 |
| Ethylene Dibromide | 0.25 | U | 0.25 | 1.0 |
| trans-1,4-Dichloro-2-butene | 0.50 | U | 0.50 | 2.0 |
| Dichlorodifluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,1-Dichloroethane | 0.25 | U | 0.25 | 1.0 |
| 1,2-Dichloroethane | 0.10 | U | 0.10 | 1.0 |
| trans-1,2-Dichloroethene | 0.20 | U | 0.20 | 1.0 |
| 1,1-Dichloroethene | 0.11 | U | 0.11 | 1.0 |
| Methylene Chloride | 1.0 | U | 1.0 | 5.0 |
| 1,2-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| cis-1,3-Dichloropropene | 0.11 | U | 0.11 | 1.0 |
| trans-1,3-Dichloropropene | 0.21 | U | 0.21 | 1.0 |
| Ethylbenzene | 0.11 | U | 0.11 | 1.0 |
| 2-Butanone (MEK) | 1.0 | U | 1.0 | 10 |
| Iodomethane | 1.0 | U | 1.0 | 5.0 |
| Methacrylonitrile | 3.3 | U | 3.3 | 20 |
| 4-Methyl-2-pentanone (MIBK) | 1.0 | U | 1.0 | 10 |
| Styrene | 0.11 | U | 0.11 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 0.33 | U | 0.33 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 0.18 | U | 0.18 | 1.0 |
| Tetrachloroethene | 0.15 | U | 0.15 | 1.0 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 1.0 |
| Toluene | 0.33 | U | 0.33 | 1.0 |
| Bromoform | 0.50 | U | 0.50 | 1.0 |
| 1,1,2-Trichloroethane | 0.13 | U | 0.13 | 1.0 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.50 | 1.0 |
| Trichloroethene | 0.13 | U | 0.13 | 1.0 |
| Trichlorofluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,2,3-Trichloropropane | 0.41 | U | 0.41 | 1.0 |
| Vinyl acetate | 0.28 | U Q | 0.28 | 2.0 |
| Vinyl chloride | 0.18 | U | 0.18 | 1.0 |
| Xylenes, Total | 0.20 | U | 0.20 | 2.0 |
| 2-Hexanone | 1.0 | U | 1.0 | 10 |
| Propionitrile | 4.6 | U | 4.6 | 20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-13-11-10**

Lab Sample ID: 680-63374-9

Client Matrix: Water

Date Sampled: 11/19/2010 1455

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | |
|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-187226 | Instrument ID: | MSO |
| Preparation: | 5030B | | Lab File ID: | o0082.d |
| Dilution: | 1.0 | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/24/2010 0412 | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/24/2010 0412 | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methyl methacrylate | 0.48 | U | 0.48 | 1.0 |
| Acrolein | 7.4 | U | 7.4 | 20 |
| Acrylonitrile | 7.2 | U | 7.2 | 20 |
| Ethyl methacrylate | 0.25 | U | 0.25 | 1.0 |
| Isobutyl alcohol | 11 | U | 11 | 40 |
| Chlorobromomethane | 0.14 | U | 0.14 | 1.0 |
| cis-1,2-Dichloroethene | 0.15 | U | 0.15 | 1.0 |
| 1,3-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| 2,2-Dichloropropane | 0.12 | U | 0.12 | 1.0 |
| 1,1-Dichloropropene | 0.25 | U | 0.25 | 1.0 |
| 2-Chloro-1,3-butadiene | 0.30 | U | 0.30 | 1.0 |
| 1,2-Dichlorobenzene | 0.21 | U | 0.21 | 1.0 |
| 1,3-Dichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| 1,4-Dichlorobenzene | 0.28 | U | 0.28 | 1.0 |
| 1,2,4-Trichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Dibromomethane | 0.20 | U | 0.20 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 102 | | 70 - 130 |
| 4-Bromofluorobenzene | 100 | | 70 - 130 |
| Dibromofluoromethane | 95 | | 70 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-12AR-11-10**

Lab Sample ID: 680-63374-10

Client Matrix: Water

Date Sampled: 11/19/2010 0955

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | |
|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-187226 | Instrument ID: | MSO |
| Preparation: | 5030B | | Lab File ID: | o0083.d |
| Dilution: | 1.0 | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/24/2010 0433 | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/24/2010 0433 | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acetonitrile | 10 | U | 10 | 40 |
| Acetone | 5.0 | U | 5.0 | 25 |
| Benzene | 0.73 | J | 0.25 | 1.0 |
| Dichlorobromomethane | 0.25 | U | 0.25 | 1.0 |
| Bromomethane | 0.80 | U | 0.80 | 1.0 |
| Carbon disulfide | 0.60 | U | 0.60 | 2.0 |
| Chlorobenzene | 0.73 | J | 0.25 | 1.0 |
| Chlorodibromomethane | 0.10 | U | 0.10 | 1.0 |
| Chloroethane | 1.0 | U | 1.0 | 1.0 |
| Chloromethane | 0.33 | U | 0.33 | 1.0 |
| Chloroform | 0.14 | U | 0.14 | 1.0 |
| 3-Chloro-1-propene | 0.20 | U | 0.20 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 0.44 | U | 0.44 | 1.0 |
| Ethylene Dibromide | 0.25 | U | 0.25 | 1.0 |
| trans-1,4-Dichloro-2-butene | 0.50 | U | 0.50 | 2.0 |
| Dichlorodifluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,1-Dichloroethane | 1.0 | | 0.25 | 1.0 |
| 1,2-Dichloroethane | 0.10 | U | 0.10 | 1.0 |
| trans-1,2-Dichloroethene | 0.20 | U | 0.20 | 1.0 |
| 1,1-Dichloroethene | 0.11 | U | 0.11 | 1.0 |
| Methylene Chloride | 1.0 | U | 1.0 | 5.0 |
| 1,2-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| cis-1,3-Dichloropropene | 0.11 | U | 0.11 | 1.0 |
| trans-1,3-Dichloropropene | 0.21 | U | 0.21 | 1.0 |
| Ethylbenzene | 0.11 | U | 0.11 | 1.0 |
| 2-Butanone (MEK) | 1.0 | U | 1.0 | 10 |
| Iodomethane | 1.0 | U | 1.0 | 5.0 |
| Methacrylonitrile | 3.3 | U | 3.3 | 20 |
| 4-Methyl-2-pentanone (MIBK) | 1.0 | U | 1.0 | 10 |
| Styrene | 0.11 | U | 0.11 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 0.33 | U | 0.33 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 0.18 | U | 0.18 | 1.0 |
| Tetrachloroethene | 0.16 | J | 0.15 | 1.0 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 1.0 |
| Toluene | 0.33 | U | 0.33 | 1.0 |
| Bromoform | 0.50 | U | 0.50 | 1.0 |
| 1,1,2-Trichloroethane | 0.13 | U | 0.13 | 1.0 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.50 | 1.0 |
| Trichloroethene | 0.27 | J | 0.13 | 1.0 |
| Trichlorofluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,2,3-Trichloropropane | 0.41 | U | 0.41 | 1.0 |
| Vinyl acetate | 0.28 | U Q | 0.28 | 2.0 |
| Vinyl chloride | 0.58 | J | 0.18 | 1.0 |
| Xylenes, Total | 0.20 | U | 0.20 | 2.0 |
| 2-Hexanone | 1.0 | U | 1.0 | 10 |
| Propionitrile | 4.6 | U | 4.6 | 20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-12AR-11-10**

Lab Sample ID: 680-63374-10

Client Matrix: Water

Date Sampled: 11/19/2010 0955

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | |
|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-187226 | Instrument ID: | MSO |
| Preparation: | 5030B | | Lab File ID: | o0083.d |
| Dilution: | 1.0 | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/24/2010 0433 | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/24/2010 0433 | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methyl methacrylate | 0.48 | U | 0.48 | 1.0 |
| Acrolein | 7.4 | U | 7.4 | 20 |
| Acrylonitrile | 7.2 | U | 7.2 | 20 |
| Ethyl methacrylate | 0.25 | U | 0.25 | 1.0 |
| Isobutyl alcohol | 11 | U | 11 | 40 |
| Chlorobromomethane | 0.14 | U | 0.14 | 1.0 |
| cis-1,2-Dichloroethene | 0.92 | J | 0.15 | 1.0 |
| 1,3-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| 2,2-Dichloropropane | 0.12 | U | 0.12 | 1.0 |
| 1,1-Dichloropropene | 0.25 | U | 0.25 | 1.0 |
| 2-Chloro-1,3-butadiene | 0.30 | U | 0.30 | 1.0 |
| 1,2-Dichlorobenzene | 0.21 | U | 0.21 | 1.0 |
| 1,3-Dichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| 1,4-Dichlorobenzene | 0.61 | J | 0.28 | 1.0 |
| 1,2,4-Trichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Dibromomethane | 0.20 | U | 0.20 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 102 | | 70 - 130 |
| 4-Bromofluorobenzene | 102 | | 70 - 130 |
| Dibromofluoromethane | 95 | | 70 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-12BR-11-10**

Lab Sample ID: 680-63374-11

Client Matrix: Water

Date Sampled: 11/19/2010 1215

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | |
|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-187226 | Instrument ID: | MSO |
| Preparation: | 5030B | | Lab File ID: | o0084.d |
| Dilution: | 1.0 | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/24/2010 0454 | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/24/2010 0454 | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acetonitrile | 10 | U | 10 | 40 |
| Acetone | 5.0 | U | 5.0 | 25 |
| Benzene | 0.25 | U | 0.25 | 1.0 |
| Dichlorobromomethane | 0.25 | U | 0.25 | 1.0 |
| Bromomethane | 0.80 | U | 0.80 | 1.0 |
| Carbon disulfide | 0.60 | U | 0.60 | 2.0 |
| Chlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Chlorodibromomethane | 0.10 | U | 0.10 | 1.0 |
| Chloroethane | 1.0 | U | 1.0 | 1.0 |
| Chloromethane | 0.33 | U | 0.33 | 1.0 |
| Chloroform | 0.14 | U | 0.14 | 1.0 |
| 3-Chloro-1-propene | 0.20 | U | 0.20 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 0.44 | U | 0.44 | 1.0 |
| Ethylene Dibromide | 0.25 | U | 0.25 | 1.0 |
| trans-1,4-Dichloro-2-butene | 0.50 | U | 0.50 | 2.0 |
| Dichlorodifluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,1-Dichloroethane | 0.25 | U | 0.25 | 1.0 |
| 1,2-Dichloroethane | 0.10 | U | 0.10 | 1.0 |
| trans-1,2-Dichloroethene | 0.20 | U | 0.20 | 1.0 |
| 1,1-Dichloroethene | 0.11 | U | 0.11 | 1.0 |
| Methylene Chloride | 1.0 | U | 1.0 | 5.0 |
| 1,2-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| cis-1,3-Dichloropropene | 0.11 | U | 0.11 | 1.0 |
| trans-1,3-Dichloropropene | 0.21 | U | 0.21 | 1.0 |
| Ethylbenzene | 0.11 | U | 0.11 | 1.0 |
| 2-Butanone (MEK) | 1.0 | U | 1.0 | 10 |
| Iodomethane | 1.0 | U | 1.0 | 5.0 |
| Methacrylonitrile | 3.3 | U | 3.3 | 20 |
| 4-Methyl-2-pentanone (MIBK) | 1.0 | U | 1.0 | 10 |
| Styrene | 0.11 | U | 0.11 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 0.33 | U | 0.33 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 0.18 | U | 0.18 | 1.0 |
| Tetrachloroethene | 0.15 | U | 0.15 | 1.0 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 1.0 |
| Toluene | 0.33 | U | 0.33 | 1.0 |
| Bromoform | 0.50 | U | 0.50 | 1.0 |
| 1,1,2-Trichloroethane | 0.13 | U | 0.13 | 1.0 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.50 | 1.0 |
| Trichloroethene | 0.13 | U | 0.13 | 1.0 |
| Trichlorofluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,2,3-Trichloropropane | 0.41 | U | 0.41 | 1.0 |
| Vinyl acetate | 0.28 | U Q | 0.28 | 2.0 |
| Vinyl chloride | 0.18 | U | 0.18 | 1.0 |
| Xylenes, Total | 0.20 | U | 0.20 | 2.0 |
| 2-Hexanone | 1.0 | U | 1.0 | 10 |
| Propionitrile | 4.6 | U | 4.6 | 20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-12BR-11-10**

Lab Sample ID: 680-63374-11

Client Matrix: Water

Date Sampled: 11/19/2010 1215

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | |
|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-187226 | Instrument ID: | MSO |
| Preparation: | 5030B | | Lab File ID: | o0084.d |
| Dilution: | 1.0 | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/24/2010 0454 | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/24/2010 0454 | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methyl methacrylate | 0.48 | U | 0.48 | 1.0 |
| Acrolein | 7.4 | U | 7.4 | 20 |
| Acrylonitrile | 7.2 | U | 7.2 | 20 |
| Ethyl methacrylate | 0.25 | U | 0.25 | 1.0 |
| Isobutyl alcohol | 11 | U | 11 | 40 |
| Chlorobromomethane | 0.14 | U | 0.14 | 1.0 |
| cis-1,2-Dichloroethene | 0.15 | U | 0.15 | 1.0 |
| 1,3-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| 2,2-Dichloropropane | 0.12 | U | 0.12 | 1.0 |
| 1,1-Dichloropropene | 0.25 | U | 0.25 | 1.0 |
| 2-Chloro-1,3-butadiene | 0.30 | U | 0.30 | 1.0 |
| 1,2-Dichlorobenzene | 0.21 | U | 0.21 | 1.0 |
| 1,3-Dichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| 1,4-Dichlorobenzene | 0.28 | U | 0.28 | 1.0 |
| 1,2,4-Trichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Dibromomethane | 0.20 | U | 0.20 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 103 | | 70 - 130 |
| 4-Bromofluorobenzene | 101 | | 70 - 130 |
| Dibromofluoromethane | 95 | | 70 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-DUP2-11-10**

Lab Sample ID: 680-63374-12

Client Matrix: Water

Date Sampled: 11/19/2010 1200

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

Method: 8260B

Preparation: 5030B

Dilution: 1.0

Date Analyzed: 11/24/2010 0514

Date Prepared: 11/24/2010 0514

Analysis Batch: 680-187226

Instrument ID: MSO

Lab File ID: o0085.d

Initial Weight/Volume: 5 mL

Final Weight/Volume: 5 mL

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acetonitrile | 10 | U | 10 | 40 |
| Acetone | 5.0 | U | 5.0 | 25 |
| Benzene | 0.72 | J | 0.25 | 1.0 |
| Dichlorobromomethane | 0.25 | U | 0.25 | 1.0 |
| Bromomethane | 0.80 | U | 0.80 | 1.0 |
| Carbon disulfide | 0.60 | U | 0.60 | 2.0 |
| Chlorobenzene | 0.76 | J | 0.25 | 1.0 |
| Chlorodibromomethane | 0.10 | U | 0.10 | 1.0 |
| Chloroethane | 1.0 | U | 1.0 | 1.0 |
| Chloromethane | 0.33 | U | 0.33 | 1.0 |
| Chloroform | 0.14 | U | 0.14 | 1.0 |
| 3-Chloro-1-propene | 0.20 | U | 0.20 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 0.44 | U | 0.44 | 1.0 |
| Ethylene Dibromide | 0.25 | U | 0.25 | 1.0 |
| trans-1,4-Dichloro-2-butene | 0.50 | U | 0.50 | 2.0 |
| Dichlorodifluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,1-Dichloroethane | 1.0 | | 0.25 | 1.0 |
| 1,2-Dichloroethane | 0.10 | U | 0.10 | 1.0 |
| trans-1,2-Dichloroethene | 0.20 | U | 0.20 | 1.0 |
| 1,1-Dichloroethene | 0.11 | U | 0.11 | 1.0 |
| Methylene Chloride | 1.0 | U | 1.0 | 5.0 |
| 1,2-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| cis-1,3-Dichloropropene | 0.11 | U | 0.11 | 1.0 |
| trans-1,3-Dichloropropene | 0.21 | U | 0.21 | 1.0 |
| Ethylbenzene | 0.11 | U | 0.11 | 1.0 |
| 2-Butanone (MEK) | 1.0 | U | 1.0 | 10 |
| Iodomethane | 1.0 | U | 1.0 | 5.0 |
| Methacrylonitrile | 3.3 | U | 3.3 | 20 |
| 4-Methyl-2-pentanone (MIBK) | 1.0 | U | 1.0 | 10 |
| Styrene | 0.11 | U | 0.11 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 0.33 | U | 0.33 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 0.18 | U | 0.18 | 1.0 |
| Tetrachloroethene | 0.21 | J | 0.15 | 1.0 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 1.0 |
| Toluene | 0.33 | U | 0.33 | 1.0 |
| Bromoform | 0.50 | U | 0.50 | 1.0 |
| 1,1,2-Trichloroethane | 0.13 | U | 0.13 | 1.0 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.50 | 1.0 |
| Trichloroethene | 0.29 | J | 0.13 | 1.0 |
| Trichlorofluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,2,3-Trichloropropane | 0.41 | U | 0.41 | 1.0 |
| Vinyl acetate | 0.28 | U Q | 0.28 | 2.0 |
| Vinyl chloride | 0.62 | J | 0.18 | 1.0 |
| Xylenes, Total | 0.20 | U | 0.20 | 2.0 |
| 2-Hexanone | 1.0 | U | 1.0 | 10 |
| Propionitrile | 4.6 | U | 4.6 | 20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-DUP2-11-10**

Lab Sample ID: 680-63374-12

Client Matrix: Water

Date Sampled: 11/19/2010 1200

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | |
|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-187226 | Instrument ID: | MSO |
| Preparation: | 5030B | | Lab File ID: | o0085.d |
| Dilution: | 1.0 | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/24/2010 0514 | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/24/2010 0514 | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methyl methacrylate | 0.48 | U | 0.48 | 1.0 |
| Acrolein | 7.4 | U | 7.4 | 20 |
| Acrylonitrile | 7.2 | U | 7.2 | 20 |
| Ethyl methacrylate | 0.25 | U | 0.25 | 1.0 |
| Isobutyl alcohol | 11 | U | 11 | 40 |
| Chlorobromomethane | 0.14 | U | 0.14 | 1.0 |
| cis-1,2-Dichloroethene | 0.92 | J | 0.15 | 1.0 |
| 1,3-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| 2,2-Dichloropropane | 0.12 | U | 0.12 | 1.0 |
| 1,1-Dichloropropene | 0.25 | U | 0.25 | 1.0 |
| 2-Chloro-1,3-butadiene | 0.30 | U | 0.30 | 1.0 |
| 1,2-Dichlorobenzene | 0.21 | U | 0.21 | 1.0 |
| 1,3-Dichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| 1,4-Dichlorobenzene | 0.62 | J | 0.28 | 1.0 |
| 1,2,4-Trichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Dibromomethane | 0.20 | U | 0.20 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 104 | | 70 - 130 |
| 4-Bromofluorobenzene | 100 | | 70 - 130 |
| Dibromofluoromethane | 93 | | 70 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-11R-11-10**

Lab Sample ID: 680-63374-13

Client Matrix: Water

Date Sampled: 11/19/2010 1420

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

Method: 8260B

Preparation: 5030B

Dilution: 1.0

Date Analyzed: 11/24/2010 0535

Date Prepared: 11/24/2010 0535

Analysis Batch: 680-187226

Instrument ID: MSO

Lab File ID: o0086.d

Initial Weight/Volume: 5 mL

Final Weight/Volume: 5 mL

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acetonitrile | 10 | U | 10 | 40 |
| Acetone | 5.0 | U | 5.0 | 25 |
| Benzene | 0.25 | U | 0.25 | 1.0 |
| Dichlorobromomethane | 0.25 | U | 0.25 | 1.0 |
| Bromomethane | 0.80 | U | 0.80 | 1.0 |
| Carbon disulfide | 0.60 | U | 0.60 | 2.0 |
| Chlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Chlorodibromomethane | 0.10 | U | 0.10 | 1.0 |
| Chloroethane | 1.0 | U | 1.0 | 1.0 |
| Chloromethane | 0.33 | U | 0.33 | 1.0 |
| Chloroform | 0.18 | J | 0.14 | 1.0 |
| 3-Chloro-1-propene | 0.20 | U | 0.20 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 0.44 | U | 0.44 | 1.0 |
| Ethylene Dibromide | 0.25 | U | 0.25 | 1.0 |
| trans-1,4-Dichloro-2-butene | 0.50 | U | 0.50 | 2.0 |
| Dichlorodifluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,1-Dichloroethane | 0.25 | U | 0.25 | 1.0 |
| 1,2-Dichloroethane | 0.10 | U | 0.10 | 1.0 |
| trans-1,2-Dichloroethene | 0.20 | U | 0.20 | 1.0 |
| 1,1-Dichloroethene | 0.11 | U | 0.11 | 1.0 |
| Methylene Chloride | 1.0 | U | 1.0 | 5.0 |
| 1,2-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| cis-1,3-Dichloropropene | 0.11 | U | 0.11 | 1.0 |
| trans-1,3-Dichloropropene | 0.21 | U | 0.21 | 1.0 |
| Ethylbenzene | 0.11 | U | 0.11 | 1.0 |
| 2-Butanone (MEK) | 1.0 | U | 1.0 | 10 |
| Iodomethane | 1.0 | U | 1.0 | 5.0 |
| Methacrylonitrile | 3.3 | U | 3.3 | 20 |
| 4-Methyl-2-pentanone (MIBK) | 1.0 | U | 1.0 | 10 |
| Styrene | 0.11 | U | 0.11 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 0.33 | U | 0.33 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 0.18 | U | 0.18 | 1.0 |
| Tetrachloroethene | 0.15 | U | 0.15 | 1.0 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 1.0 |
| Toluene | 0.33 | U | 0.33 | 1.0 |
| Bromoform | 0.50 | U | 0.50 | 1.0 |
| 1,1,2-Trichloroethane | 0.13 | U | 0.13 | 1.0 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.50 | 1.0 |
| Trichloroethene | 0.13 | U | 0.13 | 1.0 |
| Trichlorofluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,2,3-Trichloropropane | 0.41 | U | 0.41 | 1.0 |
| Vinyl acetate | 0.28 | U Q | 0.28 | 2.0 |
| Vinyl chloride | 0.18 | U | 0.18 | 1.0 |
| Xylenes, Total | 0.20 | U | 0.20 | 2.0 |
| 2-Hexanone | 1.0 | U | 1.0 | 10 |
| Propionitrile | 4.6 | U | 4.6 | 20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-11R-11-10**

Lab Sample ID: 680-63374-13

Client Matrix: Water

Date Sampled: 11/19/2010 1420

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | |
|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-187226 | Instrument ID: | MSO |
| Preparation: | 5030B | | Lab File ID: | o0086.d |
| Dilution: | 1.0 | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/24/2010 0535 | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/24/2010 0535 | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methyl methacrylate | 0.48 | U | 0.48 | 1.0 |
| Acrolein | 7.4 | U | 7.4 | 20 |
| Acrylonitrile | 7.2 | U | 7.2 | 20 |
| Ethyl methacrylate | 0.25 | U | 0.25 | 1.0 |
| Isobutyl alcohol | 11 | U | 11 | 40 |
| Chlorobromomethane | 0.14 | U | 0.14 | 1.0 |
| cis-1,2-Dichloroethene | 0.15 | U | 0.15 | 1.0 |
| 1,3-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| 2,2-Dichloropropane | 0.12 | U | 0.12 | 1.0 |
| 1,1-Dichloropropene | 0.25 | U | 0.25 | 1.0 |
| 2-Chloro-1,3-butadiene | 0.30 | U | 0.30 | 1.0 |
| 1,2-Dichlorobenzene | 0.21 | U | 0.21 | 1.0 |
| 1,3-Dichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| 1,4-Dichlorobenzene | 0.28 | U | 0.28 | 1.0 |
| 1,2,4-Trichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Dibromomethane | 0.20 | U | 0.20 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 103 | | 70 - 130 |
| 4-Bromofluorobenzene | 100 | | 70 - 130 |
| Dibromofluoromethane | 95 | | 70 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-9-11-10**

Lab Sample ID: 680-63374-14

Client Matrix: Water

Date Sampled: 11/19/2010 1620

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | |
|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-187226 | Instrument ID: | MSO |
| Preparation: | 5030B | | Lab File ID: | o0087.d |
| Dilution: | 1.0 | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/24/2010 0556 | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/24/2010 0556 | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acetonitrile | 10 | U | 10 | 40 |
| Acetone | 5.0 | U | 5.0 | 25 |
| Benzene | 1.2 | | 0.25 | 1.0 |
| Dichlorobromomethane | 0.25 | U | 0.25 | 1.0 |
| Bromomethane | 0.80 | U | 0.80 | 1.0 |
| Carbon disulfide | 0.60 | U | 0.60 | 2.0 |
| Chlorobenzene | 1.0 | | 0.25 | 1.0 |
| Chlorodibromomethane | 0.10 | U | 0.10 | 1.0 |
| Chloroethane | 1.0 | U | 1.0 | 1.0 |
| Chloromethane | 0.33 | U | 0.33 | 1.0 |
| Chloroform | 0.14 | U | 0.14 | 1.0 |
| 3-Chloro-1-propene | 0.20 | U | 0.20 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 0.44 | U | 0.44 | 1.0 |
| Ethylene Dibromide | 0.25 | U | 0.25 | 1.0 |
| trans-1,4-Dichloro-2-butene | 0.50 | U | 0.50 | 2.0 |
| Dichlorodifluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,1-Dichloroethane | 3.8 | | 0.25 | 1.0 |
| 1,2-Dichloroethane | 0.10 | U | 0.10 | 1.0 |
| trans-1,2-Dichloroethene | 0.20 | U | 0.20 | 1.0 |
| 1,1-Dichloroethene | 0.11 | U | 0.11 | 1.0 |
| Methylene Chloride | 1.0 | U | 1.0 | 5.0 |
| 1,2-Dichloropropane | 0.25 | J | 0.13 | 1.0 |
| cis-1,3-Dichloropropene | 0.11 | U | 0.11 | 1.0 |
| trans-1,3-Dichloropropene | 0.21 | U | 0.21 | 1.0 |
| Ethylbenzene | 0.11 | U | 0.11 | 1.0 |
| 2-Butanone (MEK) | 1.0 | U | 1.0 | 10 |
| Iodomethane | 1.0 | U | 1.0 | 5.0 |
| Methacrylonitrile | 3.3 | U | 3.3 | 20 |
| 4-Methyl-2-pentanone (MIBK) | 1.0 | U | 1.0 | 10 |
| Styrene | 0.11 | U | 0.11 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 0.33 | U | 0.33 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 0.18 | U | 0.18 | 1.0 |
| Tetrachloroethene | 0.53 | J | 0.15 | 1.0 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 1.0 |
| Toluene | 0.33 | U | 0.33 | 1.0 |
| Bromoform | 0.50 | U | 0.50 | 1.0 |
| 1,1,2-Trichloroethane | 0.13 | U | 0.13 | 1.0 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.50 | 1.0 |
| Trichloroethene | 0.71 | J | 0.13 | 1.0 |
| Trichlorofluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,2,3-Trichloropropane | 0.41 | U | 0.41 | 1.0 |
| Vinyl acetate | 0.28 | U Q | 0.28 | 2.0 |
| Vinyl chloride | 1.9 | | 0.18 | 1.0 |
| Xylenes, Total | 0.20 | U | 0.20 | 2.0 |
| 2-Hexanone | 1.0 | U | 1.0 | 10 |
| Propionitrile | 4.6 | U | 4.6 | 20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-9-11-10**

Lab Sample ID: 680-63374-14

Client Matrix: Water

Date Sampled: 11/19/2010 1620

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | |
|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-187226 | Instrument ID: | MSO |
| Preparation: | 5030B | | Lab File ID: | o0087.d |
| Dilution: | 1.0 | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/24/2010 0556 | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/24/2010 0556 | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methyl methacrylate | 0.48 | U | 0.48 | 1.0 |
| Acrolein | 7.4 | U | 7.4 | 20 |
| Acrylonitrile | 7.2 | U | 7.2 | 20 |
| Ethyl methacrylate | 0.25 | U | 0.25 | 1.0 |
| Isobutyl alcohol | 11 | U | 11 | 40 |
| Chlorobromomethane | 0.14 | U | 0.14 | 1.0 |
| cis-1,2-Dichloroethene | 1.8 | | 0.15 | 1.0 |
| 1,3-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| 2,2-Dichloropropane | 0.12 | U | 0.12 | 1.0 |
| 1,1-Dichloropropene | 0.25 | U | 0.25 | 1.0 |
| 2-Chloro-1,3-butadiene | 0.30 | U | 0.30 | 1.0 |
| 1,2-Dichlorobenzene | 0.21 | U | 0.21 | 1.0 |
| 1,3-Dichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| 1,4-Dichlorobenzene | 0.28 | U | 0.28 | 1.0 |
| 1,2,4-Trichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Dibromomethane | 0.20 | U | 0.20 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 101 | | 70 - 130 |
| 4-Bromofluorobenzene | 102 | | 70 - 130 |
| Dibromofluoromethane | 94 | | 70 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-BLK-11-10**

Lab Sample ID: 680-63374-15FB

Client Matrix: Water

Date Sampled: 11/19/2010 1800

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

Method: 8260B

Preparation: 5030B

Dilution: 1.0

Date Analyzed: 11/24/2010 0617

Date Prepared: 11/24/2010 0617

Analysis Batch: 680-187226

Instrument ID: MSO

Lab File ID: o0088.d

Initial Weight/Volume: 5 mL

Final Weight/Volume: 5 mL

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acetonitrile | 10 | U | 10 | 40 |
| Acetone | 5.0 | U | 5.0 | 25 |
| Benzene | 0.25 | U | 0.25 | 1.0 |
| Dichlorobromomethane | 0.25 | U | 0.25 | 1.0 |
| Bromomethane | 0.80 | U | 0.80 | 1.0 |
| Carbon disulfide | 0.60 | U | 0.60 | 2.0 |
| Chlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Chlorodibromomethane | 0.10 | U | 0.10 | 1.0 |
| Chloroethane | 1.0 | U | 1.0 | 1.0 |
| Chloromethane | 0.33 | U | 0.33 | 1.0 |
| Chloroform | 0.14 | U | 0.14 | 1.0 |
| 3-Chloro-1-propene | 0.20 | U | 0.20 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 0.44 | U | 0.44 | 1.0 |
| Ethylene Dibromide | 0.25 | U | 0.25 | 1.0 |
| trans-1,4-Dichloro-2-butene | 0.50 | U | 0.50 | 2.0 |
| Dichlorodifluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,1-Dichloroethane | 0.25 | U | 0.25 | 1.0 |
| 1,2-Dichloroethane | 0.10 | U | 0.10 | 1.0 |
| trans-1,2-Dichloroethene | 0.20 | U | 0.20 | 1.0 |
| 1,1-Dichloroethene | 0.11 | U | 0.11 | 1.0 |
| Methylene Chloride | 1.0 | U | 1.0 | 5.0 |
| 1,2-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| cis-1,3-Dichloropropene | 0.11 | U | 0.11 | 1.0 |
| trans-1,3-Dichloropropene | 0.21 | U | 0.21 | 1.0 |
| Ethylbenzene | 0.11 | U | 0.11 | 1.0 |
| 2-Butanone (MEK) | 1.0 | U | 1.0 | 10 |
| Iodomethane | 1.0 | U | 1.0 | 5.0 |
| Methacrylonitrile | 3.3 | U | 3.3 | 20 |
| 4-Methyl-2-pentanone (MIBK) | 1.0 | U | 1.0 | 10 |
| Styrene | 0.11 | U | 0.11 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 0.33 | U | 0.33 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 0.18 | U | 0.18 | 1.0 |
| Tetrachloroethene | 0.15 | U | 0.15 | 1.0 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 1.0 |
| Toluene | 0.33 | U | 0.33 | 1.0 |
| Bromoform | 0.50 | U | 0.50 | 1.0 |
| 1,1,2-Trichloroethane | 0.13 | U | 0.13 | 1.0 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.50 | 1.0 |
| Trichloroethene | 0.13 | U | 0.13 | 1.0 |
| Trichlorofluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,2,3-Trichloropropane | 0.41 | U | 0.41 | 1.0 |
| Vinyl acetate | 0.28 | U Q | 0.28 | 2.0 |
| Vinyl chloride | 0.18 | U | 0.18 | 1.0 |
| Xylenes, Total | 0.20 | U | 0.20 | 2.0 |
| 2-Hexanone | 1.0 | U | 1.0 | 10 |
| Propionitrile | 4.6 | U | 4.6 | 20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-BLK-11-10**

Lab Sample ID: 680-63374-15FB

Client Matrix: Water

Date Sampled: 11/19/2010 1800

Date Received: 11/20/2010 1047

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | |
|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-187226 | Instrument ID: | MSO |
| Preparation: | 5030B | | Lab File ID: | o0088.d |
| Dilution: | 1.0 | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/24/2010 0617 | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/24/2010 0617 | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methyl methacrylate | 0.48 | U | 0.48 | 1.0 |
| Acrolein | 7.4 | U | 7.4 | 20 |
| Acrylonitrile | 7.2 | U | 7.2 | 20 |
| Ethyl methacrylate | 0.25 | U | 0.25 | 1.0 |
| Isobutyl alcohol | 11 | U | 11 | 40 |
| Chlorobromomethane | 0.14 | U | 0.14 | 1.0 |
| cis-1,2-Dichloroethene | 0.15 | U | 0.15 | 1.0 |
| 1,3-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| 2,2-Dichloropropane | 0.12 | U | 0.12 | 1.0 |
| 1,1-Dichloropropene | 0.25 | U | 0.25 | 1.0 |
| 2-Chloro-1,3-butadiene | 0.30 | U | 0.30 | 1.0 |
| 1,2-Dichlorobenzene | 0.21 | U | 0.21 | 1.0 |
| 1,3-Dichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| 1,4-Dichlorobenzene | 0.28 | U | 0.28 | 1.0 |
| 1,2,4-Trichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Dibromomethane | 0.20 | U | 0.20 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 104 | | 70 - 130 |
| 4-Bromofluorobenzene | 100 | | 70 - 130 |
| Dibromofluoromethane | 92 | | 70 - 130 |

Client: U.S. Army Corps of Engineers | Job Number: 680-63374-1

**Client Sample ID:** **SLMW-06-11-10**

Lab Sample ID: 680-63374-7 | Date Sampled: 11/19/2010 1040
Client Matrix: Water | Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4491.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1060 mL |
| Date Analyzed: | 12/02/2010 1544 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acenaphthene | 0.72 | U | 0.72 | 9.4 |
| Acenaphthylene | 0.80 | U | 0.80 | 9.4 |
| Acetophenone | 0.54 | U | 0.54 | 9.4 |
| 2-Acetylaminofluorene | 1.5 | U | 1.5 | 9.4 |
| 4-Aminobiphenyl | 1.1 | U | 1.1 | 9.4 |
| Anthracene | 0.65 | U | 0.65 | 9.4 |
| Benzo[a]anthracene | 0.52 | U | 0.52 | 9.4 |
| Benzo[a]pyrene | 0.67 | U | 0.67 | 9.4 |
| Benzo[b]fluoranthene | 2.5 | U | 2.5 | 9.4 |
| Benzo[g,h,i]perylene | 0.82 | U | 0.82 | 9.4 |
| Benzo[k]fluoranthene | 1.1 | U | 1.1 | 9.4 |
| Benzyl alcohol | 1.0 | U | 1.0 | 9.4 |
| 1,1'-Biphenyl | 0.55 | U | 0.55 | 9.4 |
| Bis(2-chloroethoxy)methane | 0.89 | U | 0.89 | 9.4 |
| Bis(2-chloroethyl)ether | 1.0 | U | 1.0 | 9.4 |
| bis(chloroisopropyl) ether | 0.74 | U | 0.74 | 9.4 |
| Bis(2-ethylhexyl) phthalate | 1.5 | U | 1.5 | 9.4 |
| 4-Bromophenyl phenyl ether | 0.73 | U | 0.73 | 9.4 |
| Butyl benzyl phthalate | 1.1 | U | 1.1 | 9.4 |
| 4-Chloroaniline | 2.1 | U | 2.1 | 19 |
| 4-Chloro-3-methylphenol | 0.94 | U | 0.94 | 9.4 |
| 2-Chloronaphthalene | 0.75 | U | 0.75 | 9.4 |
| 2-Chlorophenol | 0.82 | U | 0.82 | 9.4 |
| 4-Chlorophenyl phenyl ether | 0.79 | U | 0.79 | 9.4 |
| Chrysene | 0.48 | U | 0.48 | 9.4 |
| Diallate | 0.74 | U | 0.74 | 9.4 |
| Dibenz(a,h)anthracene | 0.94 | U | 0.94 | 9.4 |
| Dibenzofuran | 0.75 | U | 0.75 | 9.4 |
| 3,3'-Dichlorobenzidine | 28 | U | 28 | 57 |
| 2,4-Dichlorophenol | 1.0 | U | 1.0 | 9.4 |
| 2,6-Dichlorophenol | 0.69 | U | 0.69 | 9.4 |
| Diethyl phthalate | 0.83 | U | 0.83 | 9.4 |
| Dimethoate | 0.71 | U | 0.71 | 9.4 |
| 7,12-Dimethylbenz(a)anthracene | 1.1 | U | 1.1 | 9.4 |
| 3,3'-Dimethylbenzidine | 9.4 | U | 9.4 | 19 |
| 2,4-Dimethylphenol | 3.8 | U | 3.8 | 9.4 |
| Dimethyl phthalate | 0.93 | U | 0.93 | 9.4 |
| Di-n-butyl phthalate | 0.78 | U | 0.78 | 9.4 |
| 1,3-Dinitrobenzene | 0.57 | U | 0.57 | 9.4 |
| 4,6-Dinitro-2-methylphenol | 9.4 | U | 9.4 | 47 |
| 2,4-Dinitrophenol | 9.4 | U | 9.4 | 47 |
| 2,4-Dinitrotoluene | 1.1 | U | 1.1 | 9.4 |
| 2,6-Dinitrotoluene | 1.0 | U | 1.0 | 9.4 |
| Di-n-octyl phthalate | 1.3 | U | 1.3 | 9.4 |
| Dinoseb | 4.7 | U | 4.7 | 9.4 |
| 1,4-Dioxane | 3.2 | U | 3.2 | 9.4 |

Client: U.S. Army Corps of Engineers | Job Number: 680-63374-1

**Client Sample ID:** **SLMW-06-11-10**

Lab Sample ID: 680-63374-7 | Date Sampled: 11/19/2010 1040
Client Matrix: Water | Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4491.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1060 mL |
| Date Analyzed: | 12/02/2010 1544 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Disulfoton | 0.75 | U | 0.75 | 9.4 |
| Ethyl methanesulfonate | 0.91 | U | 0.91 | 9.4 |
| Ethyl Parathion | 1.2 | U | 1.2 | 9.4 |
| Famphur | 1.0 | U | 1.0 | 9.4 |
| Fluoranthene | 0.70 | U | 0.70 | 9.4 |
| Fluorene | 0.91 | U | 0.91 | 9.4 |
| Hexachlorobenzene | 0.75 | U | 0.75 | 9.4 |
| Hexachlorobutadiene | 0.58 | U | 0.58 | 9.4 |
| Hexachlorocyclopentadiene | 2.4 | U | 2.4 | 9.4 |
| Hexachloroethane | 0.72 | U | 0.72 | 9.4 |
| Hexachloropropene | 1.3 | U | 1.3 | 9.4 |
| Indeno[1,2,3-cd]pyrene | 0.94 | U | 0.94 | 9.4 |
| Isophorone | 0.85 | U | 0.85 | 9.4 |
| Isosafrole | 0.47 | U | 0.47 | 9.4 |
| Methapyrilene | 2.5 | U | 2.5 | 1900 |
| 3-Methylcholanthrene | 1.3 | U | 1.3 | 9.4 |
| Methyl methanesulfonate | 0.57 | U Q | 0.57 | 9.4 |
| 2-Methylnaphthalene | 0.74 | U | 0.74 | 9.4 |
| Methyl parathion | 0.83 | U | 0.83 | 9.4 |
| 2-Methylphenol | 0.84 | U | 0.84 | 9.4 |
| 3 & 4 Methylphenol | 1.2 | U | 1.2 | 9.4 |
| Naphthalene | 0.66 | U | 0.66 | 9.4 |
| 1,4-Naphthoquinone | 0.58 | U | 0.58 | 9.4 |
| 1-Naphthylamine | 1.0 | U | 1.0 | 9.4 |
| 2-Naphthylamine | 1.4 | U | 1.4 | 9.4 |
| 2-Nitroaniline | 1.2 | U | 1.2 | 47 |
| 3-Nitroaniline | 4.7 | U | 4.7 | 47 |
| 4-Nitroaniline | 4.7 | U | 4.7 | 47 |
| Nitrobenzene | 0.69 | U | 0.69 | 9.4 |
| 2-Nitrophenol | 0.72 | U | 0.72 | 9.4 |
| 4-Nitrophenol | 1.8 | U | 1.8 | 47 |
| N-Nitro-o-toluidine | 1.4 | U | 1.4 | 9.4 |
| N-Nitrosodiethylamine | 0.88 | U | 0.88 | 9.4 |
| N-Nitrosodimethylamine | 2.6 | U | 2.6 | 9.4 |
| N-Nitrosodi-n-butylamine | 0.91 | U | 0.91 | 9.4 |
| N-Nitrosodi-n-propylamine | 0.68 | U | 0.68 | 9.4 |
| N-Nitrosodiphenylamine | 0.87 | U | 0.87 | 9.4 |
| N-Nitrosomethylethylamine | 3.1 | U | 3.1 | 9.4 |
| N-Nitrosopiperidine | 0.83 | U | 0.83 | 9.4 |
| N-Nitrosopyrrolidine | 0.94 | U | 0.94 | 9.4 |
| o,o',o''-Triethylphosphorothioate | 0.94 | U | 0.94 | 9.4 |
| p-Dimethylamino azobenzene | 0.75 | U | 0.75 | 9.4 |
| Pentachlorobenzene | 0.49 | U | 0.49 | 9.4 |
| Pentachloronitrobenzene | 0.74 | U | 0.74 | 9.4 |
| Pentachlorophenol | 1.9 | U | 1.9 | 47 |
| Phenacetin | 1.3 | U | 1.3 | 9.4 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-06-11-10**

Lab Sample ID: 680-63374-7

Client Matrix: Water

Date Sampled: 11/19/2010 1040

Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4491.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1060 mL |
| Date Analyzed: | 12/02/2010 1544 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Phenanthrene | 0.73 | U | 0.73 | 9.4 |
| Phenol | 0.78 | U | 0.78 | 9.4 |
| Phorate | 0.82 | U | 0.82 | 9.4 |
| p-Phenylene diamine | 9.4 | U | 9.4 | 1900 |
| Pronamide | 0.84 | U | 0.84 | 9.4 |
| Pyrene | 0.59 | U | 0.59 | 9.4 |
| Safrole, Total | 0.75 | U | 0.75 | 9.4 |
| Sulfotepp | 0.50 | U | 0.50 | 9.4 |
| 1,2,4,5-Tetrachlorobenzene | 0.72 | U | 0.72 | 9.4 |
| 2,3,4,6-Tetrachlorophenol | 0.68 | U | 0.68 | 9.4 |
| Thionazin | 0.86 | U | 0.86 | 9.4 |
| 2-Toluidine | 1.3 | U | 1.3 | 9.4 |
| 2,4,5-Trichlorophenol | 1.1 | U | 1.1 | 9.4 |
| 2,4,6-Trichlorophenol | 0.80 | U | 0.80 | 9.4 |
| 1,3,5-Trinitrobenzene | 1.9 | U | 1.9 | 9.4 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 60 | J | 62 - 130 |
| 2-Fluorophenol | 63 | | 50 - 130 |
| Nitrobenzene-d5 | 72 | | 62 - 130 |
| Phenol-d5 | 65 | | 51 - 130 |
| Terphenyl-d14 | 81 | | 20 - 130 |
| 2,4,6-Tribromophenol | 65 | | 57 - 131 |

Client: U.S. Army Corps of Engineers | Job Number: 680-63374-1

**Client Sample ID:** **SLMW-10-11-10**

Lab Sample ID: 680-63374-8 | Date Sampled: 11/19/2010 1248
Client Matrix: Water | Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4492.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1050 mL |
| Date Analyzed: | 12/02/2010 1612 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acenaphthene | 0.72 | U | 0.72 | 9.5 |
| Acenaphthylene | 0.81 | U | 0.81 | 9.5 |
| Acetophenone | 0.54 | U | 0.54 | 9.5 |
| 2-Acetylaminofluorene | 1.5 | U | 1.5 | 9.5 |
| 4-Aminobiphenyl | 1.1 | U | 1.1 | 9.5 |
| Anthracene | 0.66 | U | 0.66 | 9.5 |
| Benzo[a]anthracene | 0.52 | U | 0.52 | 9.5 |
| Benzo[a]pyrene | 0.68 | U | 0.68 | 9.5 |
| Benzo[b]fluoranthene | 2.5 | U | 2.5 | 9.5 |
| Benzo[g,h,i]perylene | 0.83 | U | 0.83 | 9.5 |
| Benzo[k]fluoranthene | 1.1 | U | 1.1 | 9.5 |
| Benzyl alcohol | 1.0 | U | 1.0 | 9.5 |
| 1,1'-Biphenyl | 0.55 | U | 0.55 | 9.5 |
| Bis(2-chloroethoxy)methane | 0.90 | U | 0.90 | 9.5 |
| Bis(2-chloroethyl)ether | 1.0 | U | 1.0 | 9.5 |
| bis(chloroisopropyl) ether | 0.74 | U | 0.74 | 9.5 |
| Bis(2-ethylhexyl) phthalate | 1.5 | U | 1.5 | 9.5 |
| 4-Bromophenyl phenyl ether | 0.73 | U | 0.73 | 9.5 |
| Butyl benzyl phthalate | 1.1 | U | 1.1 | 9.5 |
| 4-Chloroaniline | 2.1 | U | 2.1 | 19 |
| 4-Chloro-3-methylphenol | 0.95 | U | 0.95 | 9.5 |
| 2-Chloronaphthalene | 0.76 | U | 0.76 | 9.5 |
| 2-Chlorophenol | 0.83 | U | 0.83 | 9.5 |
| 4-Chlorophenyl phenyl ether | 0.80 | U | 0.80 | 9.5 |
| Chrysene | 0.49 | U | 0.49 | 9.5 |
| Diallate | 0.74 | U | 0.74 | 9.5 |
| Dibenz(a,h)anthracene | 0.95 | U | 0.95 | 9.5 |
| Dibenzofuran | 0.75 | U | 0.75 | 9.5 |
| 3,3'-Dichlorobenzidine | 29 | U | 29 | 57 |
| 2,4-Dichlorophenol | 1.0 | U | 1.0 | 9.5 |
| 2,6-Dichlorophenol | 0.70 | U | 0.70 | 9.5 |
| Diethyl phthalate | 0.84 | U | 0.84 | 9.5 |
| Dimethoate | 0.71 | U | 0.71 | 9.5 |
| 7,12-Dimethylbenz(a)anthracene | 1.1 | U | 1.1 | 9.5 |
| 3,3'-Dimethylbenzidine | 9.5 | U | 9.5 | 19 |
| 2,4-Dimethylphenol | 3.8 | U | 3.8 | 9.5 |
| Dimethyl phthalate | 0.94 | U | 0.94 | 9.5 |
| Di-n-butyl phthalate | 0.79 | U | 0.79 | 9.5 |
| 1,3-Dinitrobenzene | 0.57 | U | 0.57 | 9.5 |
| 4,6-Dinitro-2-methylphenol | 9.5 | U | 9.5 | 48 |
| 2,4-Dinitrophenol | 9.5 | U | 9.5 | 48 |
| 2,4-Dinitrotoluene | 1.1 | U | 1.1 | 9.5 |
| 2,6-Dinitrotoluene | 1.0 | U | 1.0 | 9.5 |
| Di-n-octyl phthalate | 1.3 | U | 1.3 | 9.5 |
| Dinoseb | 4.8 | U | 4.8 | 9.5 |
| 1,4-Dioxane | 3.2 | U | 3.2 | 9.5 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-10-11-10**

Lab Sample ID: 680-63374-8

Client Matrix: Water

Date Sampled: 11/19/2010 1248

Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4492.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1050 mL |
| Date Analyzed: | 12/02/2010 1612 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Disulfoton | 0.75 | U | 0.75 | 9.5 |
| Ethyl methanesulfonate | 0.91 | U | 0.91 | 9.5 |
| Ethyl Parathion | 1.2 | U | 1.2 | 9.5 |
| Famphur | 1.0 | U | 1.0 | 9.5 |
| Fluoranthene | 0.70 | U | 0.70 | 9.5 |
| Fluorene | 0.91 | U | 0.91 | 9.5 |
| Hexachlorobenzene | 0.75 | U | 0.75 | 9.5 |
| Hexachlorobutadiene | 0.59 | U | 0.59 | 9.5 |
| Hexachlorocyclopentadiene | 2.4 | U | 2.4 | 9.5 |
| Hexachloroethane | 0.72 | U | 0.72 | 9.5 |
| Hexachloropropene | 1.3 | U | 1.3 | 9.5 |
| Indeno[1,2,3-cd]pyrene | 0.95 | U | 0.95 | 9.5 |
| Isophorone | 0.86 | U | 0.86 | 9.5 |
| Isosafrole | 0.48 | U | 0.48 | 9.5 |
| Methapyrilene | 2.6 | U | 2.6 | 1900 |
| 3-Methylcholanthrene | 1.3 | U | 1.3 | 9.5 |
| Methyl methanesulfonate | 0.57 | U Q | 0.57 | 9.5 |
| 2-Methylnaphthalene | 0.74 | U | 0.74 | 9.5 |
| Methyl parathion | 0.84 | U | 0.84 | 9.5 |
| 2-Methylphenol | 0.85 | U | 0.85 | 9.5 |
| 3 & 4 Methylphenol | 1.2 | U | 1.2 | 9.5 |
| Naphthalene | 0.67 | U | 0.67 | 9.5 |
| 1,4-Naphthoquinone | 0.59 | U | 0.59 | 9.5 |
| 1-Naphthylamine | 1.0 | U | 1.0 | 9.5 |
| 2-Naphthylamine | 1.4 | U | 1.4 | 9.5 |
| 2-Nitroaniline | 1.2 | U | 1.2 | 48 |
| 3-Nitroaniline | 4.8 | U | 4.8 | 48 |
| 4-Nitroaniline | 4.8 | U | 4.8 | 48 |
| Nitrobenzene | 0.70 | U | 0.70 | 9.5 |
| 2-Nitrophenol | 0.72 | U | 0.72 | 9.5 |
| 4-Nitrophenol | 1.8 | U | 1.8 | 48 |
| N-Nitro-o-toluidine | 1.4 | U | 1.4 | 9.5 |
| N-Nitrosodiethylamine | 0.89 | U | 0.89 | 9.5 |
| N-Nitrosodimethylamine | 2.7 | U | 2.7 | 9.5 |
| N-Nitrosodi-n-butylamine | 0.91 | U | 0.91 | 9.5 |
| N-Nitrosodi-n-propylamine | 0.69 | U | 0.69 | 9.5 |
| N-Nitrosodiphenylamine | 0.88 | U | 0.88 | 9.5 |
| N-Nitrosomethylethylamine | 3.1 | U | 3.1 | 9.5 |
| N-Nitrosopiperidine | 0.84 | U | 0.84 | 9.5 |
| N-Nitrosopyrrolidine | 0.95 | U | 0.95 | 9.5 |
| o,o',o''-Triethylphosphorothioate | 0.95 | U | 0.95 | 9.5 |
| p-Dimethylamino azobenzene | 0.75 | U | 0.75 | 9.5 |
| Pentachlorobenzene | 0.50 | U | 0.50 | 9.5 |
| Pentachloronitrobenzene | 0.74 | U | 0.74 | 9.5 |
| Pentachlorophenol | 1.9 | U | 1.9 | 48 |
| Phenacetin | 1.3 | U | 1.3 | 9.5 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-10-11-10**

Lab Sample ID: 680-63374-8

Client Matrix: Water

Date Sampled: 11/19/2010 1248

Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4492.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1050 mL |
| Date Analyzed: | 12/02/2010 1612 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Phenanthrene | 0.73 | U | 0.73 | 9.5 |
| Phenol | 0.79 | U | 0.79 | 9.5 |
| Phorate | 0.83 | U | 0.83 | 9.5 |
| p-Phenylene diamine | 9.5 | U | 9.5 | 1900 |
| Pronamide | 0.85 | U | 0.85 | 9.5 |
| Pyrene | 0.60 | U | 0.60 | 9.5 |
| Safrole, Total | 0.76 | U | 0.76 | 9.5 |
| Sulfotepp | 0.50 | U | 0.50 | 9.5 |
| 1,2,4,5-Tetrachlorobenzene | 0.72 | U | 0.72 | 9.5 |
| 2,3,4,6-Tetrachlorophenol | 0.69 | U | 0.69 | 9.5 |
| Thionazin | 0.87 | U | 0.87 | 9.5 |
| 2-Toluidine | 1.3 | U | 1.3 | 9.5 |
| 2,4,5-Trichlorophenol | 1.1 | U | 1.1 | 9.5 |
| 2,4,6-Trichlorophenol | 0.81 | U | 0.81 | 9.5 |
| 1,3,5-Trinitrobenzene | 1.9 | U | 1.9 | 9.5 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 63 | | 62 - 130 |
| 2-Fluorophenol | 64 | | 50 - 130 |
| Nitrobenzene-d5 | 59 | J | 62 - 130 |
| Phenol-d5 | 64 | | 51 - 130 |
| Terphenyl-d14 | 66 | | 20 - 130 |
| 2,4,6-Tribromophenol | 73 | | 57 - 131 |

Client: U.S. Army Corps of Engineers | Job Number: 680-63374-1

**Client Sample ID:** **SLMW-13-11-10**

Lab Sample ID: 680-63374-9 | Date Sampled: 11/19/2010 1455
Client Matrix: Water | Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4493.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1060 mL |
| Date Analyzed: | 12/02/2010 1641 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acenaphthene | 0.72 | U | 0.72 | 9.4 |
| Acenaphthylene | 0.80 | U | 0.80 | 9.4 |
| Acetophenone | 0.54 | U | 0.54 | 9.4 |
| 2-Acetylaminofluorene | 1.5 | U | 1.5 | 9.4 |
| 4-Aminobiphenyl | 1.1 | U | 1.1 | 9.4 |
| Anthracene | 0.65 | U | 0.65 | 9.4 |
| Benzo[a]anthracene | 0.52 | U | 0.52 | 9.4 |
| Benzo[a]pyrene | 0.67 | U | 0.67 | 9.4 |
| Benzo[b]fluoranthene | 2.5 | U | 2.5 | 9.4 |
| Benzo[g,h,i]perylene | 0.82 | U | 0.82 | 9.4 |
| Benzo[k]fluoranthene | 1.1 | U | 1.1 | 9.4 |
| Benzyl alcohol | 1.0 | U | 1.0 | 9.4 |
| 1,1'-Biphenyl | 0.55 | U | 0.55 | 9.4 |
| Bis(2-chloroethoxy)methane | 0.89 | U | 0.89 | 9.4 |
| Bis(2-chloroethyl)ether | 1.0 | U | 1.0 | 9.4 |
| bis(chloroisopropyl) ether | 0.74 | U | 0.74 | 9.4 |
| Bis(2-ethylhexyl) phthalate | 1.5 | U | 1.5 | 9.4 |
| 4-Bromophenyl phenyl ether | 0.73 | U | 0.73 | 9.4 |
| Butyl benzyl phthalate | 1.1 | U | 1.1 | 9.4 |
| 4-Chloroaniline | 2.1 | U | 2.1 | 19 |
| 4-Chloro-3-methylphenol | 0.94 | U | 0.94 | 9.4 |
| 2-Chloronaphthalene | 0.75 | U | 0.75 | 9.4 |
| 2-Chlorophenol | 0.82 | U | 0.82 | 9.4 |
| 4-Chlorophenyl phenyl ether | 0.79 | U | 0.79 | 9.4 |
| Chrysene | 0.48 | U | 0.48 | 9.4 |
| Diallate | 0.74 | U | 0.74 | 9.4 |
| Dibenz(a,h)anthracene | 0.94 | U | 0.94 | 9.4 |
| Dibenzofuran | 0.75 | U | 0.75 | 9.4 |
| 3,3'-Dichlorobenzidine | 28 | U | 28 | 57 |
| 2,4-Dichlorophenol | 1.0 | U | 1.0 | 9.4 |
| 2,6-Dichlorophenol | 0.69 | U | 0.69 | 9.4 |
| Diethyl phthalate | 0.83 | U | 0.83 | 9.4 |
| Dimethoate | 0.71 | U | 0.71 | 9.4 |
| 7,12-Dimethylbenz(a)anthracene | 1.1 | U | 1.1 | 9.4 |
| 3,3'-Dimethylbenzidine | 9.4 | U | 9.4 | 19 |
| 2,4-Dimethylphenol | 3.8 | U | 3.8 | 9.4 |
| Dimethyl phthalate | 0.93 | U | 0.93 | 9.4 |
| Di-n-butyl phthalate | 0.78 | U | 0.78 | 9.4 |
| 1,3-Dinitrobenzene | 0.57 | U | 0.57 | 9.4 |
| 4,6-Dinitro-2-methylphenol | 9.4 | U | 9.4 | 47 |
| 2,4-Dinitrophenol | 9.4 | U | 9.4 | 47 |
| 2,4-Dinitrotoluene | 1.1 | U | 1.1 | 9.4 |
| 2,6-Dinitrotoluene | 1.0 | U | 1.0 | 9.4 |
| Di-n-octyl phthalate | 1.3 | U | 1.3 | 9.4 |
| Dinoseb | 4.7 | U | 4.7 | 9.4 |
| 1,4-Dioxane | 3.2 | U | 3.2 | 9.4 |

Client: U.S. Army Corps of Engineers | Job Number: 680-63374-1

**Client Sample ID:** **SLMW-13-11-10**

Lab Sample ID: 680-63374-9 | Date Sampled: 11/19/2010 1455
Client Matrix: Water | Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4493.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1060 mL |
| Date Analyzed: | 12/02/2010 1641 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Disulfoton | 0.75 | U | 0.75 | 9.4 |
| Ethyl methanesulfonate | 0.91 | U | 0.91 | 9.4 |
| Ethyl Parathion | 1.2 | U | 1.2 | 9.4 |
| Famphur | 1.0 | U | 1.0 | 9.4 |
| Fluoranthene | 0.70 | U | 0.70 | 9.4 |
| Fluorene | 0.91 | U | 0.91 | 9.4 |
| Hexachlorobenzene | 0.75 | U | 0.75 | 9.4 |
| Hexachlorobutadiene | 0.58 | U | 0.58 | 9.4 |
| Hexachlorocyclopentadiene | 2.4 | U | 2.4 | 9.4 |
| Hexachloroethane | 0.72 | U | 0.72 | 9.4 |
| Hexachloropropene | 1.3 | U | 1.3 | 9.4 |
| Indeno[1,2,3-cd]pyrene | 0.94 | U | 0.94 | 9.4 |
| Isophorone | 0.85 | U | 0.85 | 9.4 |
| Isosafrole | 0.47 | U | 0.47 | 9.4 |
| Methapyrilene | 2.5 | U | 2.5 | 1900 |
| 3-Methylcholanthrene | 1.3 | U | 1.3 | 9.4 |
| Methyl methanesulfonate | 0.57 | U Q | 0.57 | 9.4 |
| 2-Methylnaphthalene | 0.74 | U | 0.74 | 9.4 |
| Methyl parathion | 0.83 | U | 0.83 | 9.4 |
| 2-Methylphenol | 0.84 | U | 0.84 | 9.4 |
| 3 & 4 Methylphenol | 1.2 | U | 1.2 | 9.4 |
| Naphthalene | 0.66 | U | 0.66 | 9.4 |
| 1,4-Naphthoquinone | 0.58 | U | 0.58 | 9.4 |
| 1-Naphthylamine | 1.0 | U | 1.0 | 9.4 |
| 2-Naphthylamine | 1.4 | U | 1.4 | 9.4 |
| 2-Nitroaniline | 1.2 | U | 1.2 | 47 |
| 3-Nitroaniline | 4.7 | U | 4.7 | 47 |
| 4-Nitroaniline | 4.7 | U | 4.7 | 47 |
| Nitrobenzene | 0.69 | U | 0.69 | 9.4 |
| 2-Nitrophenol | 0.72 | U | 0.72 | 9.4 |
| 4-Nitrophenol | 1.8 | U | 1.8 | 47 |
| N-Nitro-o-toluidine | 1.4 | U | 1.4 | 9.4 |
| N-Nitrosodiethylamine | 0.88 | U | 0.88 | 9.4 |
| N-Nitrosodimethylamine | 2.6 | U | 2.6 | 9.4 |
| N-Nitrosodi-n-butylamine | 0.91 | U | 0.91 | 9.4 |
| N-Nitrosodi-n-propylamine | 0.68 | U | 0.68 | 9.4 |
| N-Nitrosodiphenylamine | 0.87 | U | 0.87 | 9.4 |
| N-Nitrosomethylethylamine | 3.1 | U | 3.1 | 9.4 |
| N-Nitrosopiperidine | 0.83 | U | 0.83 | 9.4 |
| N-Nitrosopyrrolidine | 0.94 | U | 0.94 | 9.4 |
| o,o',o''-Triethylphosphorothioate | 0.94 | U | 0.94 | 9.4 |
| p-Dimethylamino azobenzene | 0.75 | U | 0.75 | 9.4 |
| Pentachlorobenzene | 0.49 | U | 0.49 | 9.4 |
| Pentachloronitrobenzene | 0.74 | U | 0.74 | 9.4 |
| Pentachlorophenol | 1.9 | U | 1.9 | 47 |
| Phenacetin | 1.3 | U | 1.3 | 9.4 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-13-11-10**

Lab Sample ID: 680-63374-9

Client Matrix: Water

Date Sampled: 11/19/2010 1455

Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4493.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1060 mL |
| Date Analyzed: | 12/02/2010 1641 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Phenanthrene | 0.73 | U | 0.73 | 9.4 |
| Phenol | 0.78 | U | 0.78 | 9.4 |
| Phorate | 0.82 | U | 0.82 | 9.4 |
| p-Phenylene diamine | 9.4 | U | 9.4 | 1900 |
| Pronamide | 0.84 | U | 0.84 | 9.4 |
| Pyrene | 0.59 | U | 0.59 | 9.4 |
| Safrole, Total | 0.75 | U | 0.75 | 9.4 |
| Sulfotepp | 0.50 | U | 0.50 | 9.4 |
| 1,2,4,5-Tetrachlorobenzene | 0.72 | U | 0.72 | 9.4 |
| 2,3,4,6-Tetrachlorophenol | 0.68 | U | 0.68 | 9.4 |
| Thionazin | 0.86 | U | 0.86 | 9.4 |
| 2-Toluidine | 1.3 | U | 1.3 | 9.4 |
| 2,4,5-Trichlorophenol | 1.1 | U | 1.1 | 9.4 |
| 2,4,6-Trichlorophenol | 0.80 | U | 0.80 | 9.4 |
| 1,3,5-Trinitrobenzene | 1.9 | U | 1.9 | 9.4 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 71 | | 62 - 130 |
| 2-Fluorophenol | 79 | | 50 - 130 |
| Nitrobenzene-d5 | 78 | | 62 - 130 |
| Phenol-d5 | 77 | | 51 - 130 |
| Terphenyl-d14 | 84 | | 20 - 130 |
| 2,4,6-Tribromophenol | 77 | | 57 - 131 |

Client: U.S. Army Corps of Engineers | Job Number: 680-63374-1

**Client Sample ID:** **LSMW-12AR-11-10**

Lab Sample ID: 680-63374-10 | Date Sampled: 11/19/2010 0955
Client Matrix: Water | Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4494.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1060 mL |
| Date Analyzed: | 12/02/2010 1710 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acenaphthene | 0.72 | U | 0.72 | 9.4 |
| Acenaphthylene | 0.80 | U | 0.80 | 9.4 |
| Acetophenone | 0.54 | U | 0.54 | 9.4 |
| 2-Acetylaminofluorene | 1.5 | U | 1.5 | 9.4 |
| 4-Aminobiphenyl | 1.1 | U | 1.1 | 9.4 |
| Anthracene | 0.65 | U | 0.65 | 9.4 |
| Benzo[a]anthracene | 0.52 | U | 0.52 | 9.4 |
| Benzo[a]pyrene | 0.67 | U | 0.67 | 9.4 |
| Benzo[b]fluoranthene | 2.5 | U | 2.5 | 9.4 |
| Benzo[g,h,i]perylene | 0.82 | U | 0.82 | 9.4 |
| Benzo[k]fluoranthene | 1.1 | U | 1.1 | 9.4 |
| Benzyl alcohol | 1.0 | U | 1.0 | 9.4 |
| 1,1'-Biphenyl | 0.55 | U | 0.55 | 9.4 |
| Bis(2-chloroethoxy)methane | 0.89 | U | 0.89 | 9.4 |
| Bis(2-chloroethyl)ether | 1.0 | U | 1.0 | 9.4 |
| bis(chloroisopropyl) ether | 0.74 | U | 0.74 | 9.4 |
| Bis(2-ethylhexyl) phthalate | 1.5 | U | 1.5 | 9.4 |
| 4-Bromophenyl phenyl ether | 0.73 | U | 0.73 | 9.4 |
| Butyl benzyl phthalate | 1.1 | U | 1.1 | 9.4 |
| 4-Chloroaniline | 2.1 | U | 2.1 | 19 |
| 4-Chloro-3-methylphenol | 0.94 | U | 0.94 | 9.4 |
| 2-Chloronaphthalene | 0.75 | U | 0.75 | 9.4 |
| 2-Chlorophenol | 0.82 | U | 0.82 | 9.4 |
| 4-Chlorophenyl phenyl ether | 0.79 | U | 0.79 | 9.4 |
| Chrysene | 0.48 | U | 0.48 | 9.4 |
| Diallate | 0.74 | U | 0.74 | 9.4 |
| Dibenz(a,h)anthracene | 0.94 | U | 0.94 | 9.4 |
| Dibenzofuran | 0.75 | U | 0.75 | 9.4 |
| 3,3'-Dichlorobenzidine | 28 | U | 28 | 57 |
| 2,4-Dichlorophenol | 1.0 | U | 1.0 | 9.4 |
| 2,6-Dichlorophenol | 0.69 | U | 0.69 | 9.4 |
| Diethyl phthalate | 0.83 | U | 0.83 | 9.4 |
| Dimethoate | 0.71 | U | 0.71 | 9.4 |
| 7,12-Dimethylbenz(a)anthracene | 1.1 | U | 1.1 | 9.4 |
| 3,3'-Dimethylbenzidine | 9.4 | U | 9.4 | 19 |
| 2,4-Dimethylphenol | 3.8 | U | 3.8 | 9.4 |
| Dimethyl phthalate | 0.93 | U | 0.93 | 9.4 |
| Di-n-butyl phthalate | 0.78 | U | 0.78 | 9.4 |
| 1,3-Dinitrobenzene | 0.57 | U | 0.57 | 9.4 |
| 4,6-Dinitro-2-methylphenol | 9.4 | U | 9.4 | 47 |
| 2,4-Dinitrophenol | 9.4 | U | 9.4 | 47 |
| 2,4-Dinitrotoluene | 1.1 | U | 1.1 | 9.4 |
| 2,6-Dinitrotoluene | 1.0 | U | 1.0 | 9.4 |
| Di-n-octyl phthalate | 1.3 | U | 1.3 | 9.4 |
| Dinoseb | 4.7 | U | 4.7 | 9.4 |
| 1,4-Dioxane | 12 | | 3.2 | 9.4 |

Client: U.S. Army Corps of Engineers | Job Number: 680-63374-1

**Client Sample ID:** **LSMW-12AR-11-10**

Lab Sample ID: 680-63374-10 | Date Sampled: 11/19/2010 0955
Client Matrix: Water | Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4494.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1060 mL |
| Date Analyzed: | 12/02/2010 1710 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Disulfoton | 0.75 | U | 0.75 | 9.4 |
| Ethyl methanesulfonate | 0.91 | U | 0.91 | 9.4 |
| Ethyl Parathion | 1.2 | U | 1.2 | 9.4 |
| Famphur | 1.0 | U | 1.0 | 9.4 |
| Fluoranthene | 0.70 | U | 0.70 | 9.4 |
| Fluorene | 0.91 | U | 0.91 | 9.4 |
| Hexachlorobenzene | 0.75 | U | 0.75 | 9.4 |
| Hexachlorobutadiene | 0.58 | U | 0.58 | 9.4 |
| Hexachlorocyclopentadiene | 2.4 | U | 2.4 | 9.4 |
| Hexachloroethane | 0.72 | U | 0.72 | 9.4 |
| Hexachloropropene | 1.3 | U | 1.3 | 9.4 |
| Indeno[1,2,3-cd]pyrene | 0.94 | U | 0.94 | 9.4 |
| Isophorone | 0.85 | U | 0.85 | 9.4 |
| Isosafrole | 0.47 | U | 0.47 | 9.4 |
| Methapyrilene | 2.5 | U | 2.5 | 1900 |
| 3-Methylcholanthrene | 1.3 | U | 1.3 | 9.4 |
| Methyl methanesulfonate | 0.57 | U Q | 0.57 | 9.4 |
| 2-Methylnaphthalene | 0.74 | U | 0.74 | 9.4 |
| Methyl parathion | 0.83 | U | 0.83 | 9.4 |
| 2-Methylphenol | 0.84 | U | 0.84 | 9.4 |
| 3 & 4 Methylphenol | 1.2 | U | 1.2 | 9.4 |
| Naphthalene | 0.66 | U | 0.66 | 9.4 |
| 1,4-Naphthoquinone | 0.58 | U | 0.58 | 9.4 |
| 1-Naphthylamine | 1.0 | U | 1.0 | 9.4 |
| 2-Naphthylamine | 1.4 | U | 1.4 | 9.4 |
| 2-Nitroaniline | 1.2 | U | 1.2 | 47 |
| 3-Nitroaniline | 4.7 | U | 4.7 | 47 |
| 4-Nitroaniline | 4.7 | U | 4.7 | 47 |
| Nitrobenzene | 0.69 | U | 0.69 | 9.4 |
| 2-Nitrophenol | 0.72 | U | 0.72 | 9.4 |
| 4-Nitrophenol | 1.8 | U | 1.8 | 47 |
| N-Nitro-o-toluidine | 1.4 | U | 1.4 | 9.4 |
| N-Nitrosodiethylamine | 0.88 | U | 0.88 | 9.4 |
| N-Nitrosodimethylamine | 2.6 | U | 2.6 | 9.4 |
| N-Nitrosodi-n-butylamine | 0.91 | U | 0.91 | 9.4 |
| N-Nitrosodi-n-propylamine | 0.68 | U | 0.68 | 9.4 |
| N-Nitrosodiphenylamine | 0.87 | U | 0.87 | 9.4 |
| N-Nitrosomethylethylamine | 3.1 | U | 3.1 | 9.4 |
| N-Nitrosopiperidine | 0.83 | U | 0.83 | 9.4 |
| N-Nitrosopyrrolidine | 0.94 | U | 0.94 | 9.4 |
| o,o',o''-Triethylphosphorothioate | 0.94 | U | 0.94 | 9.4 |
| p-Dimethylamino azobenzene | 0.75 | U | 0.75 | 9.4 |
| Pentachlorobenzene | 0.49 | U | 0.49 | 9.4 |
| Pentachloronitrobenzene | 0.74 | U | 0.74 | 9.4 |
| Pentachlorophenol | 1.9 | U | 1.9 | 47 |
| Phenacetin | 1.3 | U | 1.3 | 9.4 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-12AR-11-10**

Lab Sample ID: 680-63374-10

Client Matrix: Water

Date Sampled: 11/19/2010 0955

Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4494.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1060 mL |
| Date Analyzed: | 12/02/2010 1710 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Phenanthrene | 0.73 | U | 0.73 | 9.4 |
| Phenol | 0.78 | U | 0.78 | 9.4 |
| Phorate | 0.82 | U | 0.82 | 9.4 |
| p-Phenylene diamine | 9.4 | U | 9.4 | 1900 |
| Pronamide | 0.84 | U | 0.84 | 9.4 |
| Pyrene | 0.59 | U | 0.59 | 9.4 |
| Safrole, Total | 0.75 | U | 0.75 | 9.4 |
| Sulfotepp | 0.50 | U | 0.50 | 9.4 |
| 1,2,4,5-Tetrachlorobenzene | 0.72 | U | 0.72 | 9.4 |
| 2,3,4,6-Tetrachlorophenol | 0.68 | U | 0.68 | 9.4 |
| Thionazin | 0.86 | U | 0.86 | 9.4 |
| 2-Toluidine | 1.3 | U | 1.3 | 9.4 |
| 2,4,5-Trichlorophenol | 1.1 | U | 1.1 | 9.4 |
| 2,4,6-Trichlorophenol | 0.80 | U | 0.80 | 9.4 |
| 1,3,5-Trinitrobenzene | 1.9 | U | 1.9 | 9.4 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 72 | | 62 - 130 |
| 2-Fluorophenol | 71 | | 50 - 130 |
| Nitrobenzene-d5 | 78 | | 62 - 130 |
| Phenol-d5 | 79 | | 51 - 130 |
| Terphenyl-d14 | 78 | | 20 - 130 |
| 2,4,6-Tribromophenol | 88 | | 57 - 131 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-12BR-11-10**

Lab Sample ID: 680-63374-11

Client Matrix: Water

Date Sampled: 11/19/2010 1215

Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4495.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 500 mL |
| Date Analyzed: | 12/02/2010 1738 | | | Final Weight/Volume: | 0.5 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acenaphthene | 0.76 | U | 0.76 | 10 |
| Acenaphthylene | 0.85 | U | 0.85 | 10 |
| Acetophenone | 0.57 | U | 0.57 | 10 |
| 2-Acetylaminofluorene | 1.6 | U | 1.6 | 10 |
| 4-Aminobiphenyl | 1.2 | U | 1.2 | 10 |
| Anthracene | 0.69 | U | 0.69 | 10 |
| Benzo[a]anthracene | 0.55 | U | 0.55 | 10 |
| Benzo[a]pyrene | 0.71 | U | 0.71 | 10 |
| Benzo[b]fluoranthene | 2.6 | U | 2.6 | 10 |
| Benzo[g,h,i]perylene | 0.87 | U | 0.87 | 10 |
| Benzo[k]fluoranthene | 1.2 | U | 1.2 | 10 |
| Benzyl alcohol | 1.1 | U | 1.1 | 10 |
| 1,1'-Biphenyl | 0.58 | U | 0.58 | 10 |
| Bis(2-chloroethoxy)methane | 0.94 | U | 0.94 | 10 |
| Bis(2-chloroethyl)ether | 1.1 | U | 1.1 | 10 |
| bis(chloroisopropyl) ether | 0.78 | U | 0.78 | 10 |
| Bis(2-ethylhexyl) phthalate | 1.6 | U | 1.6 | 10 |
| 4-Bromophenyl phenyl ether | 0.77 | U | 0.77 | 10 |
| Butyl benzyl phthalate | 1.2 | U | 1.2 | 10 |
| 4-Chloroaniline | 2.2 | U | 2.2 | 20 |
| 4-Chloro-3-methylphenol | 1.0 | U | 1.0 | 10 |
| 2-Chloronaphthalene | 0.80 | U | 0.80 | 10 |
| 2-Chlorophenol | 0.87 | U | 0.87 | 10 |
| 4-Chlorophenyl phenyl ether | 0.84 | U | 0.84 | 10 |
| Chrysene | 0.51 | U | 0.51 | 10 |
| Diallate | 0.78 | U | 0.78 | 10 |
| Dibenz(a,h)anthracene | 1.0 | U | 1.0 | 10 |
| Dibenzofuran | 0.79 | U | 0.79 | 10 |
| 3,3'-Dichlorobenzidine | 30 | U | 30 | 60 |
| 2,4-Dichlorophenol | 1.1 | U | 1.1 | 10 |
| 2,6-Dichlorophenol | 0.73 | U | 0.73 | 10 |
| Diethyl phthalate | 0.88 | U | 0.88 | 10 |
| Dimethoate | 0.75 | U | 0.75 | 10 |
| 7,12-Dimethylbenz(a)anthracene | 1.2 | U J | 1.2 | 10 |
| 3,3'-Dimethylbenzidine | 10 | U J | 10 | 20 |
| 2,4-Dimethylphenol | 4.0 | U | 4.0 | 10 |
| Dimethyl phthalate | 0.99 | U | 0.99 | 10 |
| Di-n-butyl phthalate | 0.83 | U | 0.83 | 10 |
| 1,3-Dinitrobenzene | 0.60 | U | 0.60 | 10 |
| 4,6-Dinitro-2-methylphenol | 10 | U | 10 | 50 |
| 2,4-Dinitrophenol | 10 | U | 10 | 50 |
| 2,4-Dinitrotoluene | 1.2 | U | 1.2 | 10 |
| 2,6-Dinitrotoluene | 1.1 | U | 1.1 | 10 |
| Di-n-octyl phthalate | 1.4 | U | 1.4 | 10 |
| Dinoseb | 5.0 | U | 5.0 | 10 |
| 1,4-Dioxane | 3.4 | U | 3.4 | 10 |

Client: U.S. Army Corps of Engineers | Job Number: 680-63374-1

**Client Sample ID:** **LSMW-12BR-11-10**

Lab Sample ID: 680-63374-11 | Date Sampled: 11/19/2010 1215
Client Matrix: Water | Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4495.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 500 mL |
| Date Analyzed: | 12/02/2010 1738 | | | Final Weight/Volume: | 0.5 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Disulfoton | 0.79 | U J | 0.79 | 10 |
| Ethyl methanesulfonate | 0.96 | U | 0.96 | 10 |
| Ethyl Parathion | 1.3 | U | 1.3 | 10 |
| Famphur | 1.1 | U | 1.1 | 10 |
| Fluoranthene | 0.74 | U | 0.74 | 10 |
| Fluorene | 0.96 | U | 0.96 | 10 |
| Hexachlorobenzene | 0.79 | U | 0.79 | 10 |
| Hexachlorobutadiene | 0.62 | U | 0.62 | 10 |
| Hexachlorocyclopentadiene | 2.5 | U | 2.5 | 10 |
| Hexachloroethane | 0.76 | U | 0.76 | 10 |
| Hexachloropropene | 1.4 | U | 1.4 | 10 |
| Indeno[1,2,3-cd]pyrene | 1.0 | U | 1.0 | 10 |
| Isophorone | 0.90 | U | 0.90 | 10 |
| Isosafrole | 0.50 | U | 0.50 | 10 |
| Methapyrilene | 2.7 | U | 2.7 | 2000 |
| 3-Methylcholanthrene | 1.4 | U | 1.4 | 10 |
| Methyl methanesulfonate | 0.60 | U Q J | 0.60 | 10 |
| 2-Methylnaphthalene | 0.78 | U | 0.78 | 10 |
| Methyl parathion | 0.88 | U | 0.88 | 10 |
| 2-Methylphenol | 0.89 | U | 0.89 | 10 |
| 3 & 4 Methylphenol | 1.3 | U | 1.3 | 10 |
| Naphthalene | 0.70 | U | 0.70 | 10 |
| 1,4-Naphthoquinone | 0.62 | U | 0.62 | 10 |
| 1-Naphthylamine | 1.1 | U J | 1.1 | 10 |
| 2-Naphthylamine | 1.5 | U | 1.5 | 10 |
| 2-Nitroaniline | 1.3 | U | 1.3 | 50 |
| 3-Nitroaniline | 5.0 | U | 5.0 | 50 |
| 4-Nitroaniline | 5.0 | U | 5.0 | 50 |
| Nitrobenzene | 0.73 | U | 0.73 | 10 |
| 2-Nitrophenol | 0.76 | U | 0.76 | 10 |
| 4-Nitrophenol | 1.9 | U | 1.9 | 50 |
| N-Nitro-o-toluidine | 1.5 | U | 1.5 | 10 |
| N-Nitrosodiethylamine | 0.93 | U | 0.93 | 10 |
| N-Nitrosodimethylamine | 2.8 | U | 2.8 | 10 |
| N-Nitrosodi-n-butylamine | 0.96 | U | 0.96 | 10 |
| N-Nitrosodi-n-propylamine | 0.72 | U | 0.72 | 10 |
| N-Nitrosodiphenylamine | 0.92 | U | 0.92 | 10 |
| N-Nitrosomethylethylamine | 3.3 | U | 3.3 | 10 |
| N-Nitrosopiperidine | 0.88 | U | 0.88 | 10 |
| N-Nitrosopyrrolidine | 1.0 | U | 1.0 | 10 |
| o,o',o''-Triethylphosphorothioate | 1.0 | U | 1.0 | 10 |
| p-Dimethylamino azobenzene | 0.79 | U | 0.79 | 10 |
| Pentachlorobenzene | 0.52 | U | 0.52 | 10 |
| Pentachloronitrobenzene | 0.78 | U | 0.78 | 10 |
| Pentachlorophenol | 2.0 | U | 2.0 | 50 |
| Phenacetin | 1.4 | U | 1.4 | 10 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-12BR-11-10**

Lab Sample ID: 680-63374-11

Client Matrix: Water

Date Sampled: 11/19/2010 1215

Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4495.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 500 mL |
| Date Analyzed: | 12/02/2010 1738 | | | Final Weight/Volume: | 0.5 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Phenanthrene | 0.77 | U | 0.77 | 10 |
| Phenol | 0.83 | U | 0.83 | 10 |
| Phorate | 0.87 | U | 0.87 | 10 |
| p-Phenylene diamine | 10 | U J | 10 | 2000 |
| Pronamide | 0.89 | U | 0.89 | 10 |
| Pyrene | 0.63 | U | 0.63 | 10 |
| Safrole, Total | 0.80 | U | 0.80 | 10 |
| Sulfotepp | 0.53 | U | 0.53 | 10 |
| 1,2,4,5-Tetrachlorobenzene | 0.76 | U | 0.76 | 10 |
| 2,3,4,6-Tetrachlorophenol | 0.72 | U | 0.72 | 10 |
| Thionazin | 0.91 | U | 0.91 | 10 |
| 2-Toluidine | 1.4 | U | 1.4 | 10 |
| 2,4,5-Trichlorophenol | 1.2 | U | 1.2 | 10 |
| 2,4,6-Trichlorophenol | 0.85 | U | 0.85 | 10 |
| 1,3,5-Trinitrobenzene | 2.0 | U | 2.0 | 10 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 49 | J | 62 - 130 |
| 2-Fluorophenol | 52 | | 50 - 130 |
| Nitrobenzene-d5 | 57 | J | 62 - 130 |
| Phenol-d5 | 60 | | 51 - 130 |
| Terphenyl-d14 | 79 | | 20 - 130 |
| 2,4,6-Tribromophenol | 68 | | 57 - 131 |

Client: U.S. Army Corps of Engineers | Job Number: 680-63374-1

**Client Sample ID:** **LSMW-12BR-11-10**

Lab Sample ID: 680-63374-11 | Date Sampled: 11/19/2010 1215
Client Matrix: Water | Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-188615 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-188177 | | Lab File ID: | g4637.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 500 mL |
| Date Analyzed: | 12/10/2010 1238 | Run Type: | RE | Final Weight/Volume: | 0.5 mL |
| Date Prepared: | 12/07/2010 1433 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acenaphthene | 0.76 | U H | 0.76 | 10 |
| Acenaphthylene | 0.85 | U H | 0.85 | 10 |
| Acetophenone | 0.57 | U H Q | 0.57 | 10 |
| 2-Acetylaminofluorene | 1.6 | U H | 1.6 | 10 |
| 4-Aminobiphenyl | 1.2 | U H | 1.2 | 10 |
| Anthracene | 0.69 | U H | 0.69 | 10 |
| Benzo[a]anthracene | 0.55 | U H | 0.55 | 10 |
| Benzo[a]pyrene | 0.71 | U H | 0.71 | 10 |
| Benzo[b]fluoranthene | 2.6 | U H | 2.6 | 10 |
| Benzo[g,h,i]perylene | 0.87 | U H | 0.87 | 10 |
| Benzo[k]fluoranthene | 1.2 | U H | 1.2 | 10 |
| Benzyl alcohol | 1.1 | U H Q | 1.1 | 10 |
| 1,1'-Biphenyl | 0.58 | U H | 0.58 | 10 |
| Bis(2-chloroethoxy)methane | 0.94 | U H | 0.94 | 10 |
| Bis(2-chloroethyl)ether | 1.1 | U H | 1.1 | 10 |
| bis(chloroisopropyl) ether | 0.78 | U H | 0.78 | 10 |
| Bis(2-ethylhexyl) phthalate | 1.6 | U H | 1.6 | 10 |
| 4-Bromophenyl phenyl ether | 0.77 | U H | 0.77 | 10 |
| Butyl benzyl phthalate | 1.2 | U H | 1.2 | 10 |
| 4-Chloroaniline | 2.2 | U H | 2.2 | 20 |
| 4-Chloro-3-methylphenol | 1.0 | U H | 1.0 | 10 |
| 2-Chloronaphthalene | 0.80 | U H | 0.80 | 10 |
| 2-Chlorophenol | 0.87 | U H | 0.87 | 10 |
| 4-Chlorophenyl phenyl ether | 0.84 | U H | 0.84 | 10 |
| Chrysene | 0.51 | U H | 0.51 | 10 |
| Diallate | 0.78 | U H | 0.78 | 10 |
| Dibenz(a,h)anthracene | 1.0 | U H | 1.0 | 10 |
| Dibenzofuran | 0.79 | U H | 0.79 | 10 |
| 3,3'-Dichlorobenzidine | 30 | U H | 30 | 60 |
| 2,4-Dichlorophenol | 1.1 | U H | 1.1 | 10 |
| 2,6-Dichlorophenol | 0.73 | U H | 0.73 | 10 |
| Diethyl phthalate | 0.88 | U H | 0.88 | 10 |
| Dimethoate | 0.75 | U H | 0.75 | 10 |
| 7,12-Dimethylbenz(a)anthracene | 1.2 | U H | 1.2 | 10 |
| 3,3'-Dimethylbenzidine | 10 | U H | 10 | 20 |
| 2,4-Dimethylphenol | 4.0 | U H | 4.0 | 10 |
| Dimethyl phthalate | 0.99 | U H | 0.99 | 10 |
| Di-n-butyl phthalate | 0.83 | U H | 0.83 | 10 |
| 1,3-Dinitrobenzene | 0.60 | U H | 0.60 | 10 |
| 4,6-Dinitro-2-methylphenol | 10 | U H | 10 | 50 |
| 2,4-Dinitrophenol | 10 | U H | 10 | 50 |
| 2,4-Dinitrotoluene | 1.2 | U H | 1.2 | 10 |
| 2,6-Dinitrotoluene | 1.1 | U H | 1.1 | 10 |
| Di-n-octyl phthalate | 1.4 | U H | 1.4 | 10 |
| Dinoseb | 5.0 | U H | 5.0 | 10 |
| 1,4-Dioxane | 3.4 | U H | 3.4 | 10 |

Client: U.S. Army Corps of Engineers | Job Number: 680-63374-1

**Client Sample ID:** **LSMW-12BR-11-10**

Lab Sample ID: 680-63374-11 | Date Sampled: 11/19/2010 1215
Client Matrix: Water | Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-188615 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-188177 | | Lab File ID: | g4637.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 500 mL |
| Date Analyzed: | 12/10/2010 1238 | Run Type: | RE | Final Weight/Volume: | 0.5 mL |
| Date Prepared: | 12/07/2010 1433 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Disulfoton | 0.79 | U H | 0.79 | 10 |
| Ethyl methanesulfonate | 0.96 | U H | 0.96 | 10 |
| Ethyl Parathion | 1.3 | U H | 1.3 | 10 |
| Famphur | 1.1 | U H | 1.1 | 10 |
| Fluoranthene | 0.74 | U H | 0.74 | 10 |
| Fluorene | 0.96 | U H | 0.96 | 10 |
| Hexachlorobenzene | 0.79 | U H | 0.79 | 10 |
| Hexachlorobutadiene | 0.62 | U H | 0.62 | 10 |
| Hexachlorocyclopentadiene | 2.5 | U H | 2.5 | 10 |
| Hexachloroethane | 0.76 | U H | 0.76 | 10 |
| Hexachloropropene | 1.4 | U H | 1.4 | 10 |
| Indeno[1,2,3-cd]pyrene | 1.0 | U H | 1.0 | 10 |
| Isophorone | 0.90 | U H | 0.90 | 10 |
| Isosafrole | 0.50 | U H | 0.50 | 10 |
| Methapyrilene | 2.7 | U H | 2.7 | 2000 |
| 3-Methylcholanthrene | 1.4 | U H | 1.4 | 10 |
| Methyl methanesulfonate | 0.60 | U H | 0.60 | 10 |
| 2-Methylnaphthalene | 0.78 | U H | 0.78 | 10 |
| Methyl parathion | 0.88 | U H | 0.88 | 10 |
| 2-Methylphenol | 0.89 | U H | 0.89 | 10 |
| 3 & 4 Methylphenol | 1.3 | U H | 1.3 | 10 |
| Naphthalene | 0.70 | U H | 0.70 | 10 |
| 1,4-Naphthoquinone | 0.62 | U H | 0.62 | 10 |
| 1-Naphthylamine | 1.1 | U H | 1.1 | 10 |
| 2-Naphthylamine | 1.5 | U H | 1.5 | 10 |
| 2-Nitroaniline | 1.3 | U H | 1.3 | 50 |
| 3-Nitroaniline | 5.0 | U H | 5.0 | 50 |
| 4-Nitroaniline | 5.0 | U H | 5.0 | 50 |
| Nitrobenzene | 0.73 | U H | 0.73 | 10 |
| 2-Nitrophenol | 0.76 | U H | 0.76 | 10 |
| 4-Nitrophenol | 1.9 | U H | 1.9 | 50 |
| N-Nitro-o-toluidine | 1.5 | U H | 1.5 | 10 |
| N-Nitrosodiethylamine | 0.93 | U H | 0.93 | 10 |
| N-Nitrosodimethylamine | 2.8 | U H | 2.8 | 10 |
| N-Nitrosodi-n-butylamine | 0.96 | U H | 0.96 | 10 |
| N-Nitrosodi-n-propylamine | 0.72 | U H | 0.72 | 10 |
| N-Nitrosodiphenylamine | 0.92 | U H Q | 0.92 | 10 |
| N-Nitrosomethylethylamine | 3.3 | U H | 3.3 | 10 |
| N-Nitrosopiperidine | 0.88 | U H | 0.88 | 10 |
| N-Nitrosopyrrolidine | 1.0 | U H | 1.0 | 10 |
| o,o',o''-Triethylphosphorothioate | 1.0 | U H Q | 1.0 | 10 |
| p-Dimethylamino azobenzene | 0.79 | U H | 0.79 | 10 |
| Pentachlorobenzene | 0.52 | U H | 0.52 | 10 |
| Pentachloronitrobenzene | 0.78 | U H | 0.78 | 10 |
| Pentachlorophenol | 2.0 | U H | 2.0 | 50 |
| Phenacetin | 1.4 | U H | 1.4 | 10 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-12BR-11-10**

Lab Sample ID: 680-63374-11

Client Matrix: Water

Date Sampled: 11/19/2010 1215

Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-188615 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-188177 | | Lab File ID: | g4637.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 500 mL |
| Date Analyzed: | 12/10/2010 1238 | Run Type: | RE | Final Weight/Volume: | 0.5 mL |
| Date Prepared: | 12/07/2010 1433 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Phenanthrene | 0.77 | U H | 0.77 | 10 |
| Phenol | 0.83 | U H | 0.83 | 10 |
| Phorate | 0.87 | U H | 0.87 | 10 |
| p-Phenylene diamine | 10 | U H | 10 | 2000 |
| Pronamide | 0.89 | U H | 0.89 | 10 |
| Pyrene | 0.63 | U H | 0.63 | 10 |
| Safrole, Total | 0.80 | U H | 0.80 | 10 |
| Sulfotepp | 0.53 | U H | 0.53 | 10 |
| 1,2,4,5-Tetrachlorobenzene | 0.76 | U H | 0.76 | 10 |
| 2,3,4,6-Tetrachlorophenol | 0.72 | U H | 0.72 | 10 |
| Thionazin | 0.91 | U H | 0.91 | 10 |
| 2-Toluidine | 1.4 | U H | 1.4 | 10 |
| 2,4,5-Trichlorophenol | 1.2 | U H | 1.2 | 10 |
| 2,4,6-Trichlorophenol | 0.85 | U H | 0.85 | 10 |
| 1,3,5-Trinitrobenzene | 2.0 | U H | 2.0 | 10 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 71 | | 62 - 130 |
| 2-Fluorophenol | 62 | | 50 - 130 |
| Nitrobenzene-d5 | 62 | | 62 - 130 |
| Phenol-d5 | 52 | | 51 - 130 |
| Terphenyl-d14 | 95 | | 20 - 130 |
| 2,4,6-Tribromophenol | 80 | | 57 - 131 |

Client: U.S. Army Corps of Engineers | Job Number: 680-63374-1

**Client Sample ID:** **LSMW-DUP2-11-10**

Lab Sample ID: 680-63374-12 | Date Sampled: 11/19/2010 1200
Client Matrix: Water | Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4496.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1050 mL |
| Date Analyzed: | 12/02/2010 1806 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acenaphthene | 0.72 | U | 0.72 | 9.5 |
| Acenaphthylene | 0.81 | U | 0.81 | 9.5 |
| Acetophenone | 0.54 | U | 0.54 | 9.5 |
| 2-Acetylaminofluorene | 1.5 | U | 1.5 | 9.5 |
| 4-Aminobiphenyl | 1.1 | U | 1.1 | 9.5 |
| Anthracene | 0.66 | U | 0.66 | 9.5 |
| Benzo[a]anthracene | 0.52 | U | 0.52 | 9.5 |
| Benzo[a]pyrene | 0.68 | U | 0.68 | 9.5 |
| Benzo[b]fluoranthene | 2.5 | U | 2.5 | 9.5 |
| Benzo[g,h,i]perylene | 0.83 | U | 0.83 | 9.5 |
| Benzo[k]fluoranthene | 1.1 | U | 1.1 | 9.5 |
| Benzyl alcohol | 1.0 | U | 1.0 | 9.5 |
| 1,1'-Biphenyl | 0.55 | U | 0.55 | 9.5 |
| Bis(2-chloroethoxy)methane | 0.90 | U | 0.90 | 9.5 |
| Bis(2-chloroethyl)ether | 1.0 | U | 1.0 | 9.5 |
| bis(chloroisopropyl) ether | 0.74 | U | 0.74 | 9.5 |
| Bis(2-ethylhexyl) phthalate | 1.5 | U | 1.5 | 9.5 |
| 4-Bromophenyl phenyl ether | 0.73 | U | 0.73 | 9.5 |
| Butyl benzyl phthalate | 1.1 | U | 1.1 | 9.5 |
| 4-Chloroaniline | 2.1 | U | 2.1 | 19 |
| 4-Chloro-3-methylphenol | 0.95 | U | 0.95 | 9.5 |
| 2-Chloronaphthalene | 0.76 | U | 0.76 | 9.5 |
| 2-Chlorophenol | 0.83 | U | 0.83 | 9.5 |
| 4-Chlorophenyl phenyl ether | 0.80 | U | 0.80 | 9.5 |
| Chrysene | 0.49 | U | 0.49 | 9.5 |
| Diallate | 0.74 | U | 0.74 | 9.5 |
| Dibenz(a,h)anthracene | 0.95 | U | 0.95 | 9.5 |
| Dibenzofuran | 0.75 | U | 0.75 | 9.5 |
| 3,3'-Dichlorobenzidine | 29 | U | 29 | 57 |
| 2,4-Dichlorophenol | 1.0 | U | 1.0 | 9.5 |
| 2,6-Dichlorophenol | 0.70 | U | 0.70 | 9.5 |
| Diethyl phthalate | 0.84 | U | 0.84 | 9.5 |
| Dimethoate | 0.71 | U | 0.71 | 9.5 |
| 7,12-Dimethylbenz(a)anthracene | 1.1 | U | 1.1 | 9.5 |
| 3,3'-Dimethylbenzidine | 9.5 | U | 9.5 | 19 |
| 2,4-Dimethylphenol | 3.8 | U | 3.8 | 9.5 |
| Dimethyl phthalate | 0.94 | U | 0.94 | 9.5 |
| Di-n-butyl phthalate | 0.79 | U | 0.79 | 9.5 |
| 1,3-Dinitrobenzene | 0.57 | U | 0.57 | 9.5 |
| 4,6-Dinitro-2-methylphenol | 9.5 | U | 9.5 | 48 |
| 2,4-Dinitrophenol | 9.5 | U | 9.5 | 48 |
| 2,4-Dinitrotoluene | 1.1 | U | 1.1 | 9.5 |
| 2,6-Dinitrotoluene | 1.0 | U | 1.0 | 9.5 |
| Di-n-octyl phthalate | 1.3 | U | 1.3 | 9.5 |
| Dinoseb | 4.8 | U | 4.8 | 9.5 |
| 1,4-Dioxane | 14 | | 3.2 | 9.5 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-DUP2-11-10**

Lab Sample ID: 680-63374-12

Client Matrix: Water

Date Sampled: 11/19/2010 1200

Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4496.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1050 mL |
| Date Analyzed: | 12/02/2010 1806 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Disulfoton | 0.75 | U | 0.75 | 9.5 |
| Ethyl methanesulfonate | 0.91 | U | 0.91 | 9.5 |
| Ethyl Parathion | 1.2 | U | 1.2 | 9.5 |
| Famphur | 1.0 | U | 1.0 | 9.5 |
| Fluoranthene | 0.70 | U | 0.70 | 9.5 |
| Fluorene | 0.91 | U | 0.91 | 9.5 |
| Hexachlorobenzene | 0.75 | U | 0.75 | 9.5 |
| Hexachlorobutadiene | 0.59 | U | 0.59 | 9.5 |
| Hexachlorocyclopentadiene | 2.4 | U | 2.4 | 9.5 |
| Hexachloroethane | 0.72 | U | 0.72 | 9.5 |
| Hexachloropropene | 1.3 | U | 1.3 | 9.5 |
| Indeno[1,2,3-cd]pyrene | 0.95 | U | 0.95 | 9.5 |
| Isophorone | 0.86 | U | 0.86 | 9.5 |
| Isosafrole | 0.48 | U | 0.48 | 9.5 |
| Methapyrilene | 2.6 | U | 2.6 | 1900 |
| 3-Methylcholanthrene | 1.3 | U | 1.3 | 9.5 |
| Methyl methanesulfonate | 0.57 | U Q | 0.57 | 9.5 |
| 2-Methylnaphthalene | 0.74 | U | 0.74 | 9.5 |
| Methyl parathion | 0.84 | U | 0.84 | 9.5 |
| 2-Methylphenol | 0.85 | U | 0.85 | 9.5 |
| 3 & 4 Methylphenol | 1.2 | U | 1.2 | 9.5 |
| Naphthalene | 0.67 | U | 0.67 | 9.5 |
| 1,4-Naphthoquinone | 0.59 | U | 0.59 | 9.5 |
| 1-Naphthylamine | 1.0 | U | 1.0 | 9.5 |
| 2-Naphthylamine | 1.4 | U | 1.4 | 9.5 |
| 2-Nitroaniline | 1.2 | U | 1.2 | 48 |
| 3-Nitroaniline | 4.8 | U | 4.8 | 48 |
| 4-Nitroaniline | 4.8 | U | 4.8 | 48 |
| Nitrobenzene | 0.70 | U | 0.70 | 9.5 |
| 2-Nitrophenol | 0.72 | U | 0.72 | 9.5 |
| 4-Nitrophenol | 1.8 | U | 1.8 | 48 |
| N-Nitro-o-toluidine | 1.4 | U | 1.4 | 9.5 |
| N-Nitrosodiethylamine | 0.89 | U | 0.89 | 9.5 |
| N-Nitrosodimethylamine | 2.7 | U | 2.7 | 9.5 |
| N-Nitrosodi-n-butylamine | 0.91 | U | 0.91 | 9.5 |
| N-Nitrosodi-n-propylamine | 0.69 | U | 0.69 | 9.5 |
| N-Nitrosodiphenylamine | 0.88 | U | 0.88 | 9.5 |
| N-Nitrosomethylethylamine | 3.1 | U | 3.1 | 9.5 |
| N-Nitrosopiperidine | 0.84 | U | 0.84 | 9.5 |
| N-Nitrosopyrrolidine | 0.95 | U | 0.95 | 9.5 |
| o,o',o''-Triethylphosphorothioate | 0.95 | U | 0.95 | 9.5 |
| p-Dimethylamino azobenzene | 0.75 | U | 0.75 | 9.5 |
| Pentachlorobenzene | 0.50 | U | 0.50 | 9.5 |
| Pentachloronitrobenzene | 0.74 | U | 0.74 | 9.5 |
| Pentachlorophenol | 1.9 | U | 1.9 | 48 |
| Phenacetin | 1.3 | U | 1.3 | 9.5 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-DUP2-11-10**

Lab Sample ID: 680-63374-12

Client Matrix: Water

Date Sampled: 11/19/2010 1200

Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4496.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1050 mL |
| Date Analyzed: | 12/02/2010 1806 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Phenanthrene | 0.73 | U | 0.73 | 9.5 |
| Phenol | 0.79 | U | 0.79 | 9.5 |
| Phorate | 0.83 | U | 0.83 | 9.5 |
| p-Phenylene diamine | 9.5 | U | 9.5 | 1900 |
| Pronamide | 0.85 | U | 0.85 | 9.5 |
| Pyrene | 0.60 | U | 0.60 | 9.5 |
| Safrole, Total | 0.76 | U | 0.76 | 9.5 |
| Sulfotepp | 0.50 | U | 0.50 | 9.5 |
| 1,2,4,5-Tetrachlorobenzene | 0.72 | U | 0.72 | 9.5 |
| 2,3,4,6-Tetrachlorophenol | 0.69 | U | 0.69 | 9.5 |
| Thionazin | 0.87 | U | 0.87 | 9.5 |
| 2-Toluidine | 1.3 | U | 1.3 | 9.5 |
| 2,4,5-Trichlorophenol | 1.1 | U | 1.1 | 9.5 |
| 2,4,6-Trichlorophenol | 0.81 | U | 0.81 | 9.5 |
| 1,3,5-Trinitrobenzene | 1.9 | U | 1.9 | 9.5 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 68 | | 62 - 130 |
| 2-Fluorophenol | 72 | | 50 - 130 |
| Nitrobenzene-d5 | 75 | | 62 - 130 |
| Phenol-d5 | 74 | | 51 - 130 |
| Terphenyl-d14 | 82 | | 20 - 130 |
| 2,4,6-Tribromophenol | 84 | | 57 - 131 |

Client: U.S. Army Corps of Engineers | Job Number: 680-63374-1

**Client Sample ID:** **LSMW-11R-11-10**

Lab Sample ID: 680-63374-13 | Date Sampled: 11/19/2010 1420
Client Matrix: Water | Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4497.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1050 mL |
| Date Analyzed: | 12/02/2010 1835 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acenaphthene | 0.72 | U | 0.72 | 9.5 |
| Acenaphthylene | 0.81 | U | 0.81 | 9.5 |
| Acetophenone | 0.54 | U | 0.54 | 9.5 |
| 2-Acetylaminofluorene | 1.5 | U | 1.5 | 9.5 |
| 4-Aminobiphenyl | 1.1 | U | 1.1 | 9.5 |
| Anthracene | 0.66 | U | 0.66 | 9.5 |
| Benzo[a]anthracene | 0.52 | U | 0.52 | 9.5 |
| Benzo[a]pyrene | 0.68 | U | 0.68 | 9.5 |
| Benzo[b]fluoranthene | 2.5 | U | 2.5 | 9.5 |
| Benzo[g,h,i]perylene | 0.83 | U | 0.83 | 9.5 |
| Benzo[k]fluoranthene | 1.1 | U | 1.1 | 9.5 |
| Benzyl alcohol | 1.0 | U | 1.0 | 9.5 |
| 1,1'-Biphenyl | 0.55 | U | 0.55 | 9.5 |
| Bis(2-chloroethoxy)methane | 0.90 | U | 0.90 | 9.5 |
| Bis(2-chloroethyl)ether | 1.0 | U | 1.0 | 9.5 |
| bis(chloroisopropyl) ether | 0.74 | U | 0.74 | 9.5 |
| Bis(2-ethylhexyl) phthalate | 1.5 | U | 1.5 | 9.5 |
| 4-Bromophenyl phenyl ether | 0.73 | U | 0.73 | 9.5 |
| Butyl benzyl phthalate | 1.1 | U | 1.1 | 9.5 |
| 4-Chloroaniline | 2.1 | U | 2.1 | 19 |
| 4-Chloro-3-methylphenol | 0.95 | U | 0.95 | 9.5 |
| 2-Chloronaphthalene | 0.76 | U | 0.76 | 9.5 |
| 2-Chlorophenol | 0.83 | U | 0.83 | 9.5 |
| 4-Chlorophenyl phenyl ether | 0.80 | U | 0.80 | 9.5 |
| Chrysene | 0.49 | U | 0.49 | 9.5 |
| Diallate | 0.74 | U | 0.74 | 9.5 |
| Dibenz(a,h)anthracene | 0.95 | U | 0.95 | 9.5 |
| Dibenzofuran | 0.75 | U | 0.75 | 9.5 |
| 3,3'-Dichlorobenzidine | 29 | U | 29 | 57 |
| 2,4-Dichlorophenol | 1.0 | U | 1.0 | 9.5 |
| 2,6-Dichlorophenol | 0.70 | U | 0.70 | 9.5 |
| Diethyl phthalate | 0.84 | U | 0.84 | 9.5 |
| Dimethoate | 0.71 | U | 0.71 | 9.5 |
| 7,12-Dimethylbenz(a)anthracene | 1.1 | U | 1.1 | 9.5 |
| 3,3'-Dimethylbenzidine | 9.5 | U | 9.5 | 19 |
| 2,4-Dimethylphenol | 3.8 | U | 3.8 | 9.5 |
| Dimethyl phthalate | 0.94 | U | 0.94 | 9.5 |
| Di-n-butyl phthalate | 0.79 | U | 0.79 | 9.5 |
| 1,3-Dinitrobenzene | 0.57 | U | 0.57 | 9.5 |
| 4,6-Dinitro-2-methylphenol | 9.5 | U | 9.5 | 48 |
| 2,4-Dinitrophenol | 9.5 | U | 9.5 | 48 |
| 2,4-Dinitrotoluene | 1.1 | U | 1.1 | 9.5 |
| 2,6-Dinitrotoluene | 1.0 | U | 1.0 | 9.5 |
| Di-n-octyl phthalate | 1.3 | U | 1.3 | 9.5 |
| Dinoseb | 4.8 | U | 4.8 | 9.5 |
| 1,4-Dioxane | 3.2 | U | 3.2 | 9.5 |

Client: U.S. Army Corps of Engineers | Job Number: 680-63374-1

**Client Sample ID:** **LSMW-11R-11-10**

Lab Sample ID: 680-63374-13 | Date Sampled: 11/19/2010 1420
Client Matrix: Water | Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4497.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1050 mL |
| Date Analyzed: | 12/02/2010 1835 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Disulfoton | 0.75 | U | 0.75 | 9.5 |
| Ethyl methanesulfonate | 0.91 | U | 0.91 | 9.5 |
| Ethyl Parathion | 1.2 | U | 1.2 | 9.5 |
| Famphur | 1.0 | U | 1.0 | 9.5 |
| Fluoranthene | 0.70 | U | 0.70 | 9.5 |
| Fluorene | 0.91 | U | 0.91 | 9.5 |
| Hexachlorobenzene | 0.75 | U | 0.75 | 9.5 |
| Hexachlorobutadiene | 0.59 | U | 0.59 | 9.5 |
| Hexachlorocyclopentadiene | 2.4 | U | 2.4 | 9.5 |
| Hexachloroethane | 0.72 | U | 0.72 | 9.5 |
| Hexachloropropene | 1.3 | U | 1.3 | 9.5 |
| Indeno[1,2,3-cd]pyrene | 0.95 | U | 0.95 | 9.5 |
| Isophorone | 0.86 | U | 0.86 | 9.5 |
| Isosafrole | 0.48 | U | 0.48 | 9.5 |
| Methapyrilene | 2.6 | U | 2.6 | 1900 |
| 3-Methylcholanthrene | 1.3 | U | 1.3 | 9.5 |
| Methyl methanesulfonate | 0.57 | U Q | 0.57 | 9.5 |
| 2-Methylnaphthalene | 0.74 | U | 0.74 | 9.5 |
| Methyl parathion | 0.84 | U | 0.84 | 9.5 |
| 2-Methylphenol | 0.85 | U | 0.85 | 9.5 |
| 3 & 4 Methylphenol | 1.2 | U | 1.2 | 9.5 |
| Naphthalene | 0.67 | U | 0.67 | 9.5 |
| 1,4-Naphthoquinone | 0.59 | U | 0.59 | 9.5 |
| 1-Naphthylamine | 1.0 | U | 1.0 | 9.5 |
| 2-Naphthylamine | 1.4 | U | 1.4 | 9.5 |
| 2-Nitroaniline | 1.2 | U | 1.2 | 48 |
| 3-Nitroaniline | 4.8 | U | 4.8 | 48 |
| 4-Nitroaniline | 4.8 | U | 4.8 | 48 |
| Nitrobenzene | 0.70 | U | 0.70 | 9.5 |
| 2-Nitrophenol | 0.72 | U | 0.72 | 9.5 |
| 4-Nitrophenol | 1.8 | U | 1.8 | 48 |
| N-Nitro-o-toluidine | 1.4 | U | 1.4 | 9.5 |
| N-Nitrosodiethylamine | 0.89 | U | 0.89 | 9.5 |
| N-Nitrosodimethylamine | 2.7 | U | 2.7 | 9.5 |
| N-Nitrosodi-n-butylamine | 0.91 | U | 0.91 | 9.5 |
| N-Nitrosodi-n-propylamine | 0.69 | U | 0.69 | 9.5 |
| N-Nitrosodiphenylamine | 0.88 | U | 0.88 | 9.5 |
| N-Nitrosomethylethylamine | 3.1 | U | 3.1 | 9.5 |
| N-Nitrosopiperidine | 0.84 | U | 0.84 | 9.5 |
| N-Nitrosopyrrolidine | 0.95 | U | 0.95 | 9.5 |
| o,o',o''-Triethylphosphorothioate | 0.95 | U | 0.95 | 9.5 |
| p-Dimethylamino azobenzene | 0.75 | U | 0.75 | 9.5 |
| Pentachlorobenzene | 0.50 | U | 0.50 | 9.5 |
| Pentachloronitrobenzene | 0.74 | U | 0.74 | 9.5 |
| Pentachlorophenol | 1.9 | U | 1.9 | 48 |
| Phenacetin | 1.3 | U | 1.3 | 9.5 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-11R-11-10**

Lab Sample ID: 680-63374-13

Client Matrix: Water

Date Sampled: 11/19/2010 1420

Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4497.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1050 mL |
| Date Analyzed: | 12/02/2010 1835 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Phenanthrene | 0.73 | U | 0.73 | 9.5 |
| Phenol | 0.79 | U | 0.79 | 9.5 |
| Phorate | 0.83 | U | 0.83 | 9.5 |
| p-Phenylene diamine | 9.5 | U | 9.5 | 1900 |
| Pronamide | 0.85 | U | 0.85 | 9.5 |
| Pyrene | 0.60 | U | 0.60 | 9.5 |
| Safrole, Total | 0.76 | U | 0.76 | 9.5 |
| Sulfotepp | 0.50 | U | 0.50 | 9.5 |
| 1,2,4,5-Tetrachlorobenzene | 0.72 | U | 0.72 | 9.5 |
| 2,3,4,6-Tetrachlorophenol | 0.69 | U | 0.69 | 9.5 |
| Thionazin | 0.87 | U | 0.87 | 9.5 |
| 2-Toluidine | 1.3 | U | 1.3 | 9.5 |
| 2,4,5-Trichlorophenol | 1.1 | U | 1.1 | 9.5 |
| 2,4,6-Trichlorophenol | 0.81 | U | 0.81 | 9.5 |
| 1,3,5-Trinitrobenzene | 1.9 | U | 1.9 | 9.5 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 71 | | 62 - 130 |
| 2-Fluorophenol | 81 | | 50 - 130 |
| Nitrobenzene-d5 | 77 | | 62 - 130 |
| Phenol-d5 | 77 | | 51 - 130 |
| Terphenyl-d14 | 87 | | 20 - 130 |
| 2,4,6-Tribromophenol | 82 | | 57 - 131 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-9-11-10**

Lab Sample ID: 680-63374-14

Client Matrix: Water

Date Sampled: 11/19/2010 1620

Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4498.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1060 mL |
| Date Analyzed: | 12/02/2010 1903 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acenaphthene | 0.72 | U | 0.72 | 9.4 |
| Acenaphthylene | 0.80 | U | 0.80 | 9.4 |
| Acetophenone | 0.54 | U | 0.54 | 9.4 |
| 2-Acetylaminofluorene | 1.5 | U | 1.5 | 9.4 |
| 4-Aminobiphenyl | 1.1 | U | 1.1 | 9.4 |
| Anthracene | 0.65 | U | 0.65 | 9.4 |
| Benzo[a]anthracene | 0.52 | U | 0.52 | 9.4 |
| Benzo[a]pyrene | 0.67 | U | 0.67 | 9.4 |
| Benzo[b]fluoranthene | 2.5 | U | 2.5 | 9.4 |
| Benzo[g,h,i]perylene | 0.82 | U | 0.82 | 9.4 |
| Benzo[k]fluoranthene | 1.1 | U | 1.1 | 9.4 |
| Benzyl alcohol | 1.0 | U | 1.0 | 9.4 |
| 1,1'-Biphenyl | 0.55 | U | 0.55 | 9.4 |
| Bis(2-chloroethoxy)methane | 0.89 | U | 0.89 | 9.4 |
| Bis(2-chloroethyl)ether | 1.0 | U | 1.0 | 9.4 |
| bis(chloroisopropyl) ether | 0.74 | U | 0.74 | 9.4 |
| Bis(2-ethylhexyl) phthalate | 1.5 | U | 1.5 | 9.4 |
| 4-Bromophenyl phenyl ether | 0.73 | U | 0.73 | 9.4 |
| Butyl benzyl phthalate | 1.1 | U | 1.1 | 9.4 |
| 4-Chloroaniline | 2.1 | U | 2.1 | 19 |
| 4-Chloro-3-methylphenol | 0.94 | U | 0.94 | 9.4 |
| 2-Chloronaphthalene | 0.75 | U | 0.75 | 9.4 |
| 2-Chlorophenol | 0.82 | U | 0.82 | 9.4 |
| 4-Chlorophenyl phenyl ether | 0.79 | U | 0.79 | 9.4 |
| Chrysene | 0.48 | U | 0.48 | 9.4 |
| Diallate | 0.74 | U | 0.74 | 9.4 |
| Dibenz(a,h)anthracene | 0.94 | U | 0.94 | 9.4 |
| Dibenzofuran | 0.75 | U | 0.75 | 9.4 |
| 3,3'-Dichlorobenzidine | 28 | U | 28 | 57 |
| 2,4-Dichlorophenol | 1.0 | U | 1.0 | 9.4 |
| 2,6-Dichlorophenol | 0.69 | U | 0.69 | 9.4 |
| Diethyl phthalate | 0.92 | J | 0.83 | 9.4 |
| Dimethoate | 0.71 | U | 0.71 | 9.4 |
| 7,12-Dimethylbenz(a)anthracene | 1.1 | U | 1.1 | 9.4 |
| 3,3'-Dimethylbenzidine | 9.4 | U | 9.4 | 19 |
| 2,4-Dimethylphenol | 3.8 | U | 3.8 | 9.4 |
| Dimethyl phthalate | 0.93 | U | 0.93 | 9.4 |
| Di-n-butyl phthalate | 0.78 | U | 0.78 | 9.4 |
| 1,3-Dinitrobenzene | 0.57 | U | 0.57 | 9.4 |
| 4,6-Dinitro-2-methylphenol | 9.4 | U | 9.4 | 47 |
| 2,4-Dinitrophenol | 9.4 | U | 9.4 | 47 |
| 2,4-Dinitrotoluene | 1.1 | U | 1.1 | 9.4 |
| 2,6-Dinitrotoluene | 1.0 | U | 1.0 | 9.4 |
| Di-n-octyl phthalate | 1.3 | U | 1.3 | 9.4 |
| Dinoseb | 4.7 | U | 4.7 | 9.4 |
| 1,4-Dioxane | 20 | | 3.2 | 9.4 |

Client: U.S. Army Corps of Engineers | Job Number: 680-63374-1

**Client Sample ID:** **LSMW-9-11-10**

Lab Sample ID: 680-63374-14 | Date Sampled: 11/19/2010 1620
Client Matrix: Water | Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4498.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1060 mL |
| Date Analyzed: | 12/02/2010 1903 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Disulfoton | 0.75 | U | 0.75 | 9.4 |
| Ethyl methanesulfonate | 0.91 | U | 0.91 | 9.4 |
| Ethyl Parathion | 1.2 | U | 1.2 | 9.4 |
| Famphur | 1.0 | U | 1.0 | 9.4 |
| Fluoranthene | 0.70 | U | 0.70 | 9.4 |
| Fluorene | 0.91 | U | 0.91 | 9.4 |
| Hexachlorobenzene | 0.75 | U | 0.75 | 9.4 |
| Hexachlorobutadiene | 0.58 | U | 0.58 | 9.4 |
| Hexachlorocyclopentadiene | 2.4 | U | 2.4 | 9.4 |
| Hexachloroethane | 0.72 | U | 0.72 | 9.4 |
| Hexachloropropene | 1.3 | U | 1.3 | 9.4 |
| Indeno[1,2,3-cd]pyrene | 0.94 | U | 0.94 | 9.4 |
| Isophorone | 0.85 | U | 0.85 | 9.4 |
| Isosafrole | 0.47 | U | 0.47 | 9.4 |
| Methapyrilene | 2.5 | U | 2.5 | 1900 |
| 3-Methylcholanthrene | 1.3 | U | 1.3 | 9.4 |
| Methyl methanesulfonate | 0.57 | U Q | 0.57 | 9.4 |
| 2-Methylnaphthalene | 0.74 | U | 0.74 | 9.4 |
| Methyl parathion | 0.83 | U | 0.83 | 9.4 |
| 2-Methylphenol | 0.84 | U | 0.84 | 9.4 |
| 3 & 4 Methylphenol | 1.2 | U | 1.2 | 9.4 |
| Naphthalene | 0.66 | U | 0.66 | 9.4 |
| 1,4-Naphthoquinone | 0.58 | U | 0.58 | 9.4 |
| 1-Naphthylamine | 1.0 | U | 1.0 | 9.4 |
| 2-Naphthylamine | 1.4 | U | 1.4 | 9.4 |
| 2-Nitroaniline | 1.2 | U | 1.2 | 47 |
| 3-Nitroaniline | 4.7 | U | 4.7 | 47 |
| 4-Nitroaniline | 4.7 | U | 4.7 | 47 |
| Nitrobenzene | 0.69 | U | 0.69 | 9.4 |
| 2-Nitrophenol | 0.72 | U | 0.72 | 9.4 |
| 4-Nitrophenol | 1.8 | U | 1.8 | 47 |
| N-Nitro-o-toluidine | 1.4 | U | 1.4 | 9.4 |
| N-Nitrosodiethylamine | 0.88 | U | 0.88 | 9.4 |
| N-Nitrosodimethylamine | 2.6 | U | 2.6 | 9.4 |
| N-Nitrosodi-n-butylamine | 0.91 | U | 0.91 | 9.4 |
| N-Nitrosodi-n-propylamine | 0.68 | U | 0.68 | 9.4 |
| N-Nitrosodiphenylamine | 0.87 | U | 0.87 | 9.4 |
| N-Nitrosomethylethylamine | 3.1 | U | 3.1 | 9.4 |
| N-Nitrosopiperidine | 0.83 | U | 0.83 | 9.4 |
| N-Nitrosopyrrolidine | 0.94 | U | 0.94 | 9.4 |
| o,o',o''-Triethylphosphorothioate | 0.94 | U | 0.94 | 9.4 |
| p-Dimethylamino azobenzene | 0.75 | U | 0.75 | 9.4 |
| Pentachlorobenzene | 0.49 | U | 0.49 | 9.4 |
| Pentachloronitrobenzene | 0.74 | U | 0.74 | 9.4 |
| Pentachlorophenol | 1.9 | U | 1.9 | 47 |
| Phenacetin | 1.3 | U | 1.3 | 9.4 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-9-11-10**

Lab Sample ID: 680-63374-14

Client Matrix: Water

Date Sampled: 11/19/2010 1620

Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4498.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1060 mL |
| Date Analyzed: | 12/02/2010 1903 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Phenanthrene | 0.73 | U | 0.73 | 9.4 |
| Phenol | 0.78 | U | 0.78 | 9.4 |
| Phorate | 0.82 | U | 0.82 | 9.4 |
| p-Phenylene diamine | 9.4 | U | 9.4 | 1900 |
| Pronamide | 0.84 | U | 0.84 | 9.4 |
| Pyrene | 0.59 | U | 0.59 | 9.4 |
| Safrole, Total | 0.75 | U | 0.75 | 9.4 |
| Sulfotepp | 0.50 | U | 0.50 | 9.4 |
| 1,2,4,5-Tetrachlorobenzene | 0.72 | U | 0.72 | 9.4 |
| 2,3,4,6-Tetrachlorophenol | 0.68 | U | 0.68 | 9.4 |
| Thionazin | 0.86 | U | 0.86 | 9.4 |
| 2-Toluidine | 1.3 | U | 1.3 | 9.4 |
| 2,4,5-Trichlorophenol | 1.1 | U | 1.1 | 9.4 |
| 2,4,6-Trichlorophenol | 0.80 | U | 0.80 | 9.4 |
| 1,3,5-Trinitrobenzene | 1.9 | U | 1.9 | 9.4 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 72 | | 62 - 130 |
| 2-Fluorophenol | 70 | | 50 - 130 |
| Nitrobenzene-d5 | 81 | | 62 - 130 |
| Phenol-d5 | 80 | | 51 - 130 |
| Terphenyl-d14 | 83 | | 20 - 130 |
| 2,4,6-Tribromophenol | 94 | | 57 - 131 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-BLK-11-10**

Lab Sample ID: 680-63374-15FB

Client Matrix: Water

Date Sampled: 11/19/2010 1800

Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4499.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1060 mL |
| Date Analyzed: | 12/02/2010 1932 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acenaphthene | 0.72 | U | 0.72 | 9.4 |
| Acenaphthylene | 0.80 | U | 0.80 | 9.4 |
| Acetophenone | 0.54 | U | 0.54 | 9.4 |
| 2-Acetylaminofluorene | 1.5 | U | 1.5 | 9.4 |
| 4-Aminobiphenyl | 1.1 | U | 1.1 | 9.4 |
| Anthracene | 0.65 | U | 0.65 | 9.4 |
| Benzo[a]anthracene | 0.52 | U | 0.52 | 9.4 |
| Benzo[a]pyrene | 0.67 | U | 0.67 | 9.4 |
| Benzo[b]fluoranthene | 2.5 | U | 2.5 | 9.4 |
| Benzo[g,h,i]perylene | 0.82 | U | 0.82 | 9.4 |
| Benzo[k]fluoranthene | 1.1 | U | 1.1 | 9.4 |
| Benzyl alcohol | 1.0 | U | 1.0 | 9.4 |
| 1,1'-Biphenyl | 0.55 | U | 0.55 | 9.4 |
| Bis(2-chloroethoxy)methane | 0.89 | U | 0.89 | 9.4 |
| Bis(2-chloroethyl)ether | 1.0 | U | 1.0 | 9.4 |
| bis(chloroisopropyl) ether | 0.74 | U | 0.74 | 9.4 |
| Bis(2-ethylhexyl) phthalate | 1.5 | U | 1.5 | 9.4 |
| 4-Bromophenyl phenyl ether | 0.73 | U | 0.73 | 9.4 |
| Butyl benzyl phthalate | 1.1 | U | 1.1 | 9.4 |
| 4-Chloroaniline | 2.1 | U | 2.1 | 19 |
| 4-Chloro-3-methylphenol | 0.94 | U | 0.94 | 9.4 |
| 2-Chloronaphthalene | 0.75 | U | 0.75 | 9.4 |
| 2-Chlorophenol | 0.82 | U | 0.82 | 9.4 |
| 4-Chlorophenyl phenyl ether | 0.79 | U | 0.79 | 9.4 |
| Chrysene | 0.48 | U | 0.48 | 9.4 |
| Diallate | 0.74 | U | 0.74 | 9.4 |
| Dibenz(a,h)anthracene | 0.94 | U | 0.94 | 9.4 |
| Dibenzofuran | 0.75 | U | 0.75 | 9.4 |
| 3,3'-Dichlorobenzidine | 28 | U | 28 | 57 |
| 2,4-Dichlorophenol | 1.0 | U | 1.0 | 9.4 |
| 2,6-Dichlorophenol | 0.69 | U | 0.69 | 9.4 |
| Diethyl phthalate | 0.83 | U | 0.83 | 9.4 |
| Dimethoate | 0.71 | U | 0.71 | 9.4 |
| 7,12-Dimethylbenz(a)anthracene | 1.1 | U | 1.1 | 9.4 |
| 3,3'-Dimethylbenzidine | 9.4 | U | 9.4 | 19 |
| 2,4-Dimethylphenol | 3.8 | U | 3.8 | 9.4 |
| Dimethyl phthalate | 0.93 | U | 0.93 | 9.4 |
| Di-n-butyl phthalate | 0.78 | U | 0.78 | 9.4 |
| 1,3-Dinitrobenzene | 0.57 | U | 0.57 | 9.4 |
| 4,6-Dinitro-2-methylphenol | 9.4 | U | 9.4 | 47 |
| 2,4-Dinitrophenol | 9.4 | U | 9.4 | 47 |
| 2,4-Dinitrotoluene | 1.1 | U | 1.1 | 9.4 |
| 2,6-Dinitrotoluene | 1.0 | U | 1.0 | 9.4 |
| Di-n-octyl phthalate | 1.3 | U | 1.3 | 9.4 |
| Dinoseb | 4.7 | U | 4.7 | 9.4 |
| 1,4-Dioxane | 3.2 | U | 3.2 | 9.4 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-BLK-11-10**

Lab Sample ID: 680-63374-15FB

Client Matrix: Water

Date Sampled: 11/19/2010 1800

Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4499.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1060 mL |
| Date Analyzed: | 12/02/2010 1932 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Disulfoton | 0.75 | U | 0.75 | 9.4 |
| Ethyl methanesulfonate | 0.91 | U | 0.91 | 9.4 |
| Ethyl Parathion | 1.2 | U | 1.2 | 9.4 |
| Famphur | 1.0 | U | 1.0 | 9.4 |
| Fluoranthene | 0.70 | U | 0.70 | 9.4 |
| Fluorene | 0.91 | U | 0.91 | 9.4 |
| Hexachlorobenzene | 0.75 | U | 0.75 | 9.4 |
| Hexachlorobutadiene | 0.58 | U | 0.58 | 9.4 |
| Hexachlorocyclopentadiene | 2.4 | U | 2.4 | 9.4 |
| Hexachloroethane | 0.72 | U | 0.72 | 9.4 |
| Hexachloropropene | 1.3 | U | 1.3 | 9.4 |
| Indeno[1,2,3-cd]pyrene | 0.94 | U | 0.94 | 9.4 |
| Isophorone | 0.85 | U | 0.85 | 9.4 |
| Isosafrole | 0.47 | U | 0.47 | 9.4 |
| Methapyrilene | 2.5 | U | 2.5 | 1900 |
| 3-Methylcholanthrene | 1.3 | U | 1.3 | 9.4 |
| Methyl methanesulfonate | 0.57 | U Q | 0.57 | 9.4 |
| 2-Methylnaphthalene | 0.74 | U | 0.74 | 9.4 |
| Methyl parathion | 0.83 | U | 0.83 | 9.4 |
| 2-Methylphenol | 0.84 | U | 0.84 | 9.4 |
| 3 & 4 Methylphenol | 1.2 | U | 1.2 | 9.4 |
| Naphthalene | 0.66 | U | 0.66 | 9.4 |
| 1,4-Naphthoquinone | 0.58 | U | 0.58 | 9.4 |
| 1-Naphthylamine | 1.0 | U | 1.0 | 9.4 |
| 2-Naphthylamine | 1.4 | U | 1.4 | 9.4 |
| 2-Nitroaniline | 1.2 | U | 1.2 | 47 |
| 3-Nitroaniline | 4.7 | U | 4.7 | 47 |
| 4-Nitroaniline | 4.7 | U | 4.7 | 47 |
| Nitrobenzene | 0.69 | U | 0.69 | 9.4 |
| 2-Nitrophenol | 0.72 | U | 0.72 | 9.4 |
| 4-Nitrophenol | 1.8 | U | 1.8 | 47 |
| N-Nitro-o-toluidine | 1.4 | U | 1.4 | 9.4 |
| N-Nitrosodiethylamine | 0.88 | U | 0.88 | 9.4 |
| N-Nitrosodimethylamine | 2.6 | U | 2.6 | 9.4 |
| N-Nitrosodi-n-butylamine | 0.91 | U | 0.91 | 9.4 |
| N-Nitrosodi-n-propylamine | 0.68 | U | 0.68 | 9.4 |
| N-Nitrosodiphenylamine | 0.87 | U | 0.87 | 9.4 |
| N-Nitrosomethylethylamine | 3.1 | U | 3.1 | 9.4 |
| N-Nitrosopiperidine | 0.83 | U | 0.83 | 9.4 |
| N-Nitrosopyrrolidine | 0.94 | U | 0.94 | 9.4 |
| o,o',o''-Triethylphosphorothioate | 0.94 | U | 0.94 | 9.4 |
| p-Dimethylamino azobenzene | 0.75 | U | 0.75 | 9.4 |
| Pentachlorobenzene | 0.49 | U | 0.49 | 9.4 |
| Pentachloronitrobenzene | 0.74 | U | 0.74 | 9.4 |
| Pentachlorophenol | 1.9 | U | 1.9 | 47 |
| Phenacetin | 1.3 | U | 1.3 | 9.4 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-BLK-11-10**

Lab Sample ID: 680-63374-15FB

Client Matrix: Water

Date Sampled: 11/19/2010 1800

Date Received: 11/20/2010 1047

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4499.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1060 mL |
| Date Analyzed: | 12/02/2010 1932 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Phenanthrene | 0.73 | U | 0.73 | 9.4 |
| Phenol | 0.78 | U | 0.78 | 9.4 |
| Phorate | 0.82 | U | 0.82 | 9.4 |
| p-Phenylene diamine | 9.4 | U | 9.4 | 1900 |
| Pronamide | 0.84 | U | 0.84 | 9.4 |
| Pyrene | 0.59 | U | 0.59 | 9.4 |
| Safrole, Total | 0.75 | U | 0.75 | 9.4 |
| Sulfotepp | 0.50 | U | 0.50 | 9.4 |
| 1,2,4,5-Tetrachlorobenzene | 0.72 | U | 0.72 | 9.4 |
| 2,3,4,6-Tetrachlorophenol | 0.68 | U | 0.68 | 9.4 |
| Thionazin | 0.86 | U | 0.86 | 9.4 |
| 2-Toluidine | 1.3 | U | 1.3 | 9.4 |
| 2,4,5-Trichlorophenol | 1.1 | U | 1.1 | 9.4 |
| 2,4,6-Trichlorophenol | 0.80 | U | 0.80 | 9.4 |
| 1,3,5-Trinitrobenzene | 1.9 | U | 1.9 | 9.4 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 81 | | 62 - 130 |
| 2-Fluorophenol | 82 | | 50 - 130 |
| Nitrobenzene-d5 | 90 | | 62 - 130 |
| Phenol-d5 | 79 | | 51 - 130 |
| Terphenyl-d14 | 90 | | 20 - 130 |
| 2,4,6-Tribromophenol | 88 | | 57 - 131 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-06-11-10**

Lab Sample ID: 680-63374-7

Client Matrix: Water

Date Sampled: 11/19/2010 1040

Date Received: 11/20/2010 1047

**8081B/8082A Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8081B/8082A | Analysis Batch: 680-187781 | | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 1050 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/30/2010 1415 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 4,4'-DDD | 0.0062 | U | 0.0062 | 0.095 |
| 4,4'-DDE | 0.0073 | U | 0.0073 | 0.095 |
| 4,4'-DDT | 0.0092 | U | 0.0092 | 0.095 |
| Aldrin | 0.0067 | U | 0.0067 | 0.048 |
| alpha-BHC | 0.0054 | U | 0.0054 | 0.048 |
| beta-BHC | 0.0064 | U | 0.0064 | 0.048 |
| Chlordane (technical) | 0.095 | U | 0.095 | 0.48 |
| Chlorobenzilate | 0.48 | U | 0.48 | 0.48 |
| delta-BHC | 0.0046 | U | 0.0046 | 0.048 |
| Dieldrin | 0.0087 | U | 0.0087 | 0.095 |
| Endosulfan I | 0.0040 | U | 0.0040 | 0.048 |
| Endosulfan II | 0.0093 | U | 0.0093 | 0.095 |
| Endosulfan sulfate | 0.0065 | U | 0.0065 | 0.095 |
| Endrin | 0.0092 | U | 0.0092 | 0.095 |
| Endrin aldehyde | 0.015 | U | 0.015 | 0.095 |
| gamma-BHC (Lindane) | 0.0056 | U | 0.0056 | 0.048 |
| Heptachlor | 0.0067 | U | 0.0067 | 0.048 |
| Heptachlor epoxide | 0.0057 | U | 0.0057 | 0.048 |
| Isodrin | 0.048 | U | 0.048 | 0.048 |
| Methoxychlor | 0.012 | U | 0.012 | 0.095 |
| PCB-1016 | 0.068 | U | 0.068 | 0.95 |
| PCB-1221 | 0.27 | U | 0.27 | 1.9 |
| PCB-1232 | 0.10 | U | 0.10 | 0.95 |
| PCB-1242 | 0.17 | U | 0.17 | 0.95 |
| PCB-1248 | 0.34 | U | 0.34 | 0.95 |
| PCB-1254 | 0.25 | U | 0.25 | 0.95 |
| PCB-1260 | 0.19 | U | 0.19 | 0.95 |
| PCB-1262 | 0.23 | U | 0.23 | 0.95 |
| Toxaphene | 0.48 | U | 0.48 | 4.8 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 65 | | 40 - 130 |
| Tetrachloro-m-xylene | 63 | | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-06-11-10**

Lab Sample ID: 680-63374-7

Client Matrix: Water

Date Sampled: 11/19/2010 1040

Date Received: 11/20/2010 1047

**8081B/8082A Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography**

| | | | | |
|---|---|---|---|---|
| Method: | 8081B/8082A | Analysis Batch: 680-187781 | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-187137 | Initial Weight/Volume: | 1050 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/30/2010 1415 | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 51 | | 40 - 130 |
| Tetrachloro-m-xylene | 58 | | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-10-11-10**

Lab Sample ID: 680-63374-8

Client Matrix: Water

Date Sampled: 11/19/2010 1248

Date Received: 11/20/2010 1047

**8081B/8082A Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8081B/8082A | Analysis Batch: 680-187781 | | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 1060 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/30/2010 1434 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 4,4'-DDD | 0.0061 | U | 0.0061 | 0.094 |
| 4,4'-DDE | 0.0073 | U | 0.0073 | 0.094 |
| 4,4'-DDT | 0.0092 | U | 0.0092 | 0.094 |
| Aldrin | 0.0066 | U | 0.0066 | 0.047 |
| alpha-BHC | 0.0054 | U | 0.0054 | 0.047 |
| beta-BHC | 0.0063 | U | 0.0063 | 0.047 |
| Chlordane (technical) | 0.094 | U | 0.094 | 0.47 |
| Chlorobenzilate | 0.47 | U | 0.47 | 0.47 |
| delta-BHC | 0.0045 | U | 0.0045 | 0.047 |
| Dieldrin | 0.0086 | U | 0.0086 | 0.094 |
| Endosulfan I | 0.0040 | U | 0.0040 | 0.047 |
| Endosulfan II | 0.0092 | U | 0.0092 | 0.094 |
| Endosulfan sulfate | 0.0064 | U | 0.0064 | 0.094 |
| Endrin | 0.0092 | U | 0.0092 | 0.094 |
| Endrin aldehyde | 0.015 | U | 0.015 | 0.094 |
| gamma-BHC (Lindane) | 0.0056 | U | 0.0056 | 0.047 |
| Heptachlor | 0.0066 | U | 0.0066 | 0.047 |
| Heptachlor epoxide | 0.0057 | U | 0.0057 | 0.047 |
| Isodrin | 0.047 | U | 0.047 | 0.047 |
| Methoxychlor | 0.012 | U | 0.012 | 0.094 |
| PCB-1016 | 0.067 | U | 0.067 | 0.94 |
| PCB-1221 | 0.26 | U | 0.26 | 1.9 |
| PCB-1232 | 0.10 | U | 0.10 | 0.94 |
| PCB-1242 | 0.17 | U | 0.17 | 0.94 |
| PCB-1248 | 0.34 | U | 0.34 | 0.94 |
| PCB-1254 | 0.25 | U | 0.25 | 0.94 |
| PCB-1260 | 0.19 | U | 0.19 | 0.94 |
| PCB-1262 | 0.23 | U | 0.23 | 0.94 |
| Toxaphene | 0.47 | U | 0.47 | 4.7 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 24 | J | 40 - 130 |
| Tetrachloro-m-xylene | 64 | | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-10-11-10**

Lab Sample ID: 680-63374-8

Client Matrix: Water

Date Sampled: 11/19/2010 1248

Date Received: 11/20/2010 1047

**8081B/8082A Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8081B/8082A | Analysis Batch: 680-187781 | | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 1060 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/30/2010 1434 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 21 | J | 40 - 130 |
| Tetrachloro-m-xylene | 57 | | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-13-11-10**

Lab Sample ID: 680-63374-9

Client Matrix: Water

Date Sampled: 11/19/2010 1455

Date Received: 11/20/2010 1047

**8081B/8082A Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8081B/8082A | Analysis Batch: 680-187781 | | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 1060 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/30/2010 1454 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 4,4'-DDD | 0.0061 | U | 0.0061 | 0.094 |
| 4,4'-DDE | 0.0073 | U | 0.0073 | 0.094 |
| 4,4'-DDT | 0.0092 | U | 0.0092 | 0.094 |
| Aldrin | 0.0066 | U | 0.0066 | 0.047 |
| alpha-BHC | 0.0054 | U | 0.0054 | 0.047 |
| beta-BHC | 0.0063 | U | 0.0063 | 0.047 |
| Chlordane (technical) | 0.094 | U | 0.094 | 0.47 |
| Chlorobenzilate | 0.47 | U | 0.47 | 0.47 |
| delta-BHC | 0.0045 | U | 0.0045 | 0.047 |
| Dieldrin | 0.0086 | U | 0.0086 | 0.094 |
| Endosulfan I | 0.0040 | U | 0.0040 | 0.047 |
| Endosulfan II | 0.0092 | U | 0.0092 | 0.094 |
| Endosulfan sulfate | 0.0064 | U | 0.0064 | 0.094 |
| Endrin | 0.0092 | U | 0.0092 | 0.094 |
| Endrin aldehyde | 0.015 | U | 0.015 | 0.094 |
| gamma-BHC (Lindane) | 0.0056 | U | 0.0056 | 0.047 |
| Heptachlor | 0.0066 | U | 0.0066 | 0.047 |
| Heptachlor epoxide | 0.0057 | U | 0.0057 | 0.047 |
| Isodrin | 0.047 | U | 0.047 | 0.047 |
| Methoxychlor | 0.012 | U | 0.012 | 0.094 |
| PCB-1016 | 0.067 | U | 0.067 | 0.94 |
| PCB-1221 | 0.26 | U | 0.26 | 1.9 |
| PCB-1232 | 0.10 | U | 0.10 | 0.94 |
| PCB-1242 | 0.17 | U | 0.17 | 0.94 |
| PCB-1248 | 0.34 | U | 0.34 | 0.94 |
| PCB-1254 | 0.25 | U | 0.25 | 0.94 |
| PCB-1260 | 0.19 | U | 0.19 | 0.94 |
| PCB-1262 | 0.23 | U | 0.23 | 0.94 |
| Toxaphene | 0.47 | U | 0.47 | 4.7 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 55 | | 40 - 130 |
| Tetrachloro-m-xylene | 65 | | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-13-11-10**

Lab Sample ID: 680-63374-9

Client Matrix: Water

Date Sampled: 11/19/2010 1455

Date Received: 11/20/2010 1047

**8081B/8082A Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography**

| | | | | |
|---|---|---|---|---|
| Method: | 8081B/8082A | Analysis Batch: 680-187781 | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-187137 | Initial Weight/Volume: | 1060 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/30/2010 1454 | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 46 | | 40 - 130 |
| Tetrachloro-m-xylene | 62 | | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-12AR-11-10**

Lab Sample ID: 680-63374-10

Client Matrix: Water

Date Sampled: 11/19/2010 0955

Date Received: 11/20/2010 1047

**8081B/8082A Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8081B/8082A | Analysis Batch: 680-187781 | | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 500 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 5 mL |
| Date Analyzed: | 11/30/2010 1513 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 4,4'-DDD | 0.0065 | U | 0.0065 | 0.10 |
| 4,4'-DDE | 0.0077 | U | 0.0077 | 0.10 |
| 4,4'-DDT | 0.0097 | U | 0.0097 | 0.10 |
| Aldrin | 0.0070 | U | 0.0070 | 0.050 |
| alpha-BHC | 0.0057 | U | 0.0057 | 0.050 |
| beta-BHC | 0.0067 | U | 0.0067 | 0.050 |
| Chlordane (technical) | 0.10 | U | 0.10 | 0.50 |
| Chlorobenzilate | 0.50 | U | 0.50 | 0.50 |
| delta-BHC | 0.0048 | U | 0.0048 | 0.050 |
| Dieldrin | 0.0091 | U | 0.0091 | 0.10 |
| Endosulfan I | 0.0042 | U | 0.0042 | 0.050 |
| Endosulfan II | 0.0098 | U | 0.0098 | 0.10 |
| Endosulfan sulfate | 0.0068 | U | 0.0068 | 0.10 |
| Endrin | 0.0097 | U | 0.0097 | 0.10 |
| Endrin aldehyde | 0.016 | U | 0.016 | 0.10 |
| gamma-BHC (Lindane) | 0.0059 | U | 0.0059 | 0.050 |
| Heptachlor | 0.0070 | U | 0.0070 | 0.050 |
| Heptachlor epoxide | 0.0060 | U | 0.0060 | 0.050 |
| Isodrin | 0.050 | U | 0.050 | 0.050 |
| Methoxychlor | 0.013 | U | 0.013 | 0.10 |
| PCB-1016 | 0.071 | U | 0.071 | 1.0 |
| PCB-1221 | 0.28 | U | 0.28 | 2.0 |
| PCB-1232 | 0.11 | U | 0.11 | 1.0 |
| PCB-1242 | 0.18 | U | 0.18 | 1.0 |
| PCB-1248 | 0.36 | U | 0.36 | 1.0 |
| PCB-1254 | 0.26 | U | 0.26 | 1.0 |
| PCB-1260 | 0.20 | U | 0.20 | 1.0 |
| PCB-1262 | 0.24 | U | 0.24 | 1.0 |
| Toxaphene | 0.50 | U | 0.50 | 5.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 62 | | 40 - 130 |
| Tetrachloro-m-xylene | 71 | | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-12AR-11-10**

Lab Sample ID: 680-63374-10

Client Matrix: Water

Date Sampled: 11/19/2010 0955

Date Received: 11/20/2010 1047

**8081B/8082A Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography**

| | | | | |
|---|---|---|---|---|
| Method: | 8081B/8082A | Analysis Batch: 680-187781 | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-187137 | Initial Weight/Volume: | 500 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 5 mL |
| Date Analyzed: | 11/30/2010 1513 | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 46 | | 40 - 130 |
| Tetrachloro-m-xylene | 61 | | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-12BR-11-10**

Lab Sample ID: 680-63374-11

Client Matrix: Water

Date Sampled: 11/19/2010 1215

Date Received: 11/20/2010 1047

**8081B/8082A Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8081B/8082A | Analysis Batch: 680-187781 | | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 500 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 5 mL |
| Date Analyzed: | 11/30/2010 1533 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 4,4'-DDD | 0.0065 | U | 0.0065 | 0.10 |
| 4,4'-DDE | 0.0077 | U | 0.0077 | 0.10 |
| 4,4'-DDT | 0.0097 | U | 0.0097 | 0.10 |
| Aldrin | 0.0070 | U | 0.0070 | 0.050 |
| alpha-BHC | 0.0057 | U | 0.0057 | 0.050 |
| beta-BHC | 0.0067 | U J | 0.0067 | 0.050 |
| Chlordane (technical) | 0.10 | U | 0.10 | 0.50 |
| Chlorobenzilate | 0.50 | U | 0.50 | 0.50 |
| delta-BHC | 0.0048 | U | 0.0048 | 0.050 |
| Dieldrin | 0.0091 | U | 0.0091 | 0.10 |
| Endosulfan I | 0.0042 | U | 0.0042 | 0.050 |
| Endosulfan II | 0.0098 | U | 0.0098 | 0.10 |
| Endosulfan sulfate | 0.0068 | U | 0.0068 | 0.10 |
| Endrin | 0.0097 | U | 0.0097 | 0.10 |
| Endrin aldehyde | 0.016 | U | 0.016 | 0.10 |
| gamma-BHC (Lindane) | 0.0059 | U | 0.0059 | 0.050 |
| Heptachlor | 0.0070 | U | 0.0070 | 0.050 |
| Heptachlor epoxide | 0.0060 | U | 0.0060 | 0.050 |
| Isodrin | 0.050 | U | 0.050 | 0.050 |
| Methoxychlor | 0.013 | U | 0.013 | 0.10 |
| PCB-1016 | 0.071 | U | 0.071 | 1.0 |
| PCB-1221 | 0.28 | U | 0.28 | 2.0 |
| PCB-1232 | 0.11 | U | 0.11 | 1.0 |
| PCB-1242 | 0.18 | U | 0.18 | 1.0 |
| PCB-1248 | 0.36 | U | 0.36 | 1.0 |
| PCB-1254 | 0.26 | U | 0.26 | 1.0 |
| PCB-1260 | 0.20 | U | 0.20 | 1.0 |
| PCB-1262 | 0.24 | U | 0.24 | 1.0 |
| Toxaphene | 0.50 | U | 0.50 | 5.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 69 | | 40 - 130 |
| Tetrachloro-m-xylene | 80 | | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-12BR-11-10**

Lab Sample ID: 680-63374-11

Client Matrix: Water

Date Sampled: 11/19/2010 1215

Date Received: 11/20/2010 1047

**8081B/8082A Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography**

| | | | | |
|---|---|---|---|---|
| Method: | 8081B/8082A | Analysis Batch: 680-187781 | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-187137 | Initial Weight/Volume: | 500 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 5 mL |
| Date Analyzed: | 11/30/2010 1533 | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 56 | | 40 - 130 |
| Tetrachloro-m-xylene | 77 | | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-DUP2-11-10**

Lab Sample ID: 680-63374-12

Client Matrix: Water

Date Sampled: 11/19/2010 1200

Date Received: 11/20/2010 1047

**8081B/8082A Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography**

| | | | | |
|---|---|---|---|---|
| Method: | 8081B/8082A | Analysis Batch: 680-187781 | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-187137 | Initial Weight/Volume: | 1050 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/30/2010 1552 | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 4,4'-DDD | 0.0062 | U | 0.0062 | 0.095 |
| 4,4'-DDE | 0.0073 | U | 0.0073 | 0.095 |
| 4,4'-DDT | 0.0092 | U | 0.0092 | 0.095 |
| Aldrin | 0.0067 | U | 0.0067 | 0.048 |
| alpha-BHC | 0.0054 | U | 0.0054 | 0.048 |
| beta-BHC | 0.0064 | U | 0.0064 | 0.048 |
| Chlordane (technical) | 0.095 | U | 0.095 | 0.48 |
| Chlorobenzilate | 0.48 | U | 0.48 | 0.48 |
| delta-BHC | 0.0046 | U | 0.0046 | 0.048 |
| Dieldrin | 0.0087 | U | 0.0087 | 0.095 |
| Endosulfan I | 0.0040 | U | 0.0040 | 0.048 |
| Endosulfan II | 0.0093 | U | 0.0093 | 0.095 |
| Endosulfan sulfate | 0.0065 | U | 0.0065 | 0.095 |
| Endrin | 0.0092 | U | 0.0092 | 0.095 |
| Endrin aldehyde | 0.015 | U | 0.015 | 0.095 |
| gamma-BHC (Lindane) | 0.0056 | U | 0.0056 | 0.048 |
| Heptachlor | 0.0067 | U | 0.0067 | 0.048 |
| Heptachlor epoxide | 0.0057 | U | 0.0057 | 0.048 |
| Isodrin | 0.048 | U | 0.048 | 0.048 |
| Methoxychlor | 0.012 | U | 0.012 | 0.095 |
| PCB-1016 | 0.068 | U | 0.068 | 0.95 |
| PCB-1221 | 0.27 | U | 0.27 | 1.9 |
| PCB-1232 | 0.10 | U | 0.10 | 0.95 |
| PCB-1242 | 0.17 | U | 0.17 | 0.95 |
| PCB-1248 | 0.34 | U | 0.34 | 0.95 |
| PCB-1254 | 0.25 | U | 0.25 | 0.95 |
| PCB-1260 | 0.19 | U | 0.19 | 0.95 |
| PCB-1262 | 0.23 | U | 0.23 | 0.95 |
| Toxaphene | 0.48 | U | 0.48 | 4.8 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 26 | J | 40 - 130 |
| Tetrachloro-m-xylene | 65 | | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-DUP2-11-10**

Lab Sample ID: 680-63374-12

Client Matrix: Water

Date Sampled: 11/19/2010 1200

Date Received: 11/20/2010 1047

**8081B/8082A Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography**

| | | | | |
|---|---|---|---|---|
| Method: | 8081B/8082A | Analysis Batch: 680-187781 | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-187137 | Initial Weight/Volume: | 1050 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/30/2010 1552 | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 18 | J | 40 - 130 |
| Tetrachloro-m-xylene | 56 | | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-11R-11-10**

Lab Sample ID: 680-63374-13

Client Matrix: Water

Date Sampled: 11/19/2010 1420

Date Received: 11/20/2010 1047

**8081B/8082A Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8081B/8082A | Analysis Batch: 680-187781 | | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 1050 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/30/2010 1612 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 4,4'-DDD | 0.0062 | U | 0.0062 | 0.095 |
| 4,4'-DDE | 0.0073 | U | 0.0073 | 0.095 |
| 4,4'-DDT | 0.0092 | U | 0.0092 | 0.095 |
| Aldrin | 0.0067 | U | 0.0067 | 0.048 |
| alpha-BHC | 0.0054 | U | 0.0054 | 0.048 |
| beta-BHC | 0.0064 | U | 0.0064 | 0.048 |
| Chlordane (technical) | 0.095 | U | 0.095 | 0.48 |
| Chlorobenzilate | 0.48 | U | 0.48 | 0.48 |
| delta-BHC | 0.0046 | U | 0.0046 | 0.048 |
| Dieldrin | 0.0087 | U | 0.0087 | 0.095 |
| Endosulfan I | 0.0040 | U | 0.0040 | 0.048 |
| Endosulfan II | 0.0093 | U | 0.0093 | 0.095 |
| Endosulfan sulfate | 0.0065 | U | 0.0065 | 0.095 |
| Endrin | 0.0092 | U | 0.0092 | 0.095 |
| Endrin aldehyde | 0.015 | U | 0.015 | 0.095 |
| gamma-BHC (Lindane) | 0.0056 | U | 0.0056 | 0.048 |
| Heptachlor | 0.0067 | U | 0.0067 | 0.048 |
| Heptachlor epoxide | 0.0057 | U | 0.0057 | 0.048 |
| Isodrin | 0.048 | U | 0.048 | 0.048 |
| Methoxychlor | 0.012 | U | 0.012 | 0.095 |
| PCB-1016 | 0.068 | U | 0.068 | 0.95 |
| PCB-1221 | 0.27 | U | 0.27 | 1.9 |
| PCB-1232 | 0.10 | U | 0.10 | 0.95 |
| PCB-1242 | 0.17 | U | 0.17 | 0.95 |
| PCB-1248 | 0.34 | U | 0.34 | 0.95 |
| PCB-1254 | 0.25 | U | 0.25 | 0.95 |
| PCB-1260 | 0.19 | U | 0.19 | 0.95 |
| PCB-1262 | 0.23 | U | 0.23 | 0.95 |
| Toxaphene | 0.48 | U | 0.48 | 4.8 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 73 | | 40 - 130 |
| Tetrachloro-m-xylene | 71 | | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-11R-11-10**

Lab Sample ID: 680-63374-13

Client Matrix: Water

Date Sampled: 11/19/2010 1420

Date Received: 11/20/2010 1047

**8081B/8082A Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography**

| | | | | |
|---|---|---|---|---|
| Method: | 8081B/8082A | Analysis Batch: 680-187781 | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-187137 | Initial Weight/Volume: | 1050 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/30/2010 1612 | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 60 | | 40 - 130 |
| Tetrachloro-m-xylene | 64 | | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-9-11-10**

Lab Sample ID: 680-63374-14

Client Matrix: Water

Date Sampled: 11/19/2010 1620

Date Received: 11/20/2010 1047

**8081B/8082A Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8081B/8082A | Analysis Batch: 680-187781 | | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 1060 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/30/2010 1631 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 4,4'-DDD | 0.0061 | U | 0.0061 | 0.094 |
| 4,4'-DDE | 0.0073 | U | 0.0073 | 0.094 |
| 4,4'-DDT | 0.0092 | U | 0.0092 | 0.094 |
| Aldrin | 0.0066 | U | 0.0066 | 0.047 |
| alpha-BHC | 0.0054 | U | 0.0054 | 0.047 |
| beta-BHC | 0.0063 | U | 0.0063 | 0.047 |
| Chlordane (technical) | 0.094 | U | 0.094 | 0.47 |
| Chlorobenzilate | 0.47 | U | 0.47 | 0.47 |
| delta-BHC | 0.0045 | U | 0.0045 | 0.047 |
| Dieldrin | 0.0086 | U | 0.0086 | 0.094 |
| Endosulfan I | 0.0040 | U | 0.0040 | 0.047 |
| Endosulfan II | 0.0092 | U | 0.0092 | 0.094 |
| Endosulfan sulfate | 0.0064 | U | 0.0064 | 0.094 |
| Endrin | 0.0092 | U | 0.0092 | 0.094 |
| Endrin aldehyde | 0.015 | U | 0.015 | 0.094 |
| gamma-BHC (Lindane) | 0.0056 | U | 0.0056 | 0.047 |
| Heptachlor | 0.0066 | U | 0.0066 | 0.047 |
| Heptachlor epoxide | 0.0057 | U | 0.0057 | 0.047 |
| Isodrin | 0.047 | U | 0.047 | 0.047 |
| Methoxychlor | 0.012 | U | 0.012 | 0.094 |
| PCB-1016 | 0.067 | U | 0.067 | 0.94 |
| PCB-1221 | 0.26 | U | 0.26 | 1.9 |
| PCB-1232 | 0.10 | U | 0.10 | 0.94 |
| PCB-1242 | 0.17 | U | 0.17 | 0.94 |
| PCB-1248 | 0.34 | U | 0.34 | 0.94 |
| PCB-1254 | 0.25 | U | 0.25 | 0.94 |
| PCB-1260 | 0.19 | U | 0.19 | 0.94 |
| PCB-1262 | 0.23 | U | 0.23 | 0.94 |
| Toxaphene | 0.47 | U | 0.47 | 4.7 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 31 | J | 40 - 130 |
| Tetrachloro-m-xylene | 76 | | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-9-11-10**

Lab Sample ID: 680-63374-14

Client Matrix: Water

Date Sampled: 11/19/2010 1620

Date Received: 11/20/2010 1047

**8081B/8082A Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography**

| | | | | |
|---|---|---|---|---|
| Method: | 8081B/8082A | Analysis Batch: 680-187781 | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-187137 | Initial Weight/Volume: | 1060 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/30/2010 1631 | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 26 | J | 40 - 130 |
| Tetrachloro-m-xylene | 69 | | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-BLK-11-10**

Lab Sample ID: 680-63374-15FB

Client Matrix: Water

Date Sampled: 11/19/2010 1800

Date Received: 11/20/2010 1047

**8081B/8082A Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography**

| | | | | |
|---|---|---|---|---|
| Method: | 8081B/8082A | Analysis Batch: 680-187781 | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-187137 | Initial Weight/Volume: | 1060 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/30/2010 1651 | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 4,4'-DDD | 0.0061 | U | 0.0061 | 0.094 |
| 4,4'-DDE | 0.0073 | U | 0.0073 | 0.094 |
| 4,4'-DDT | 0.0092 | U | 0.0092 | 0.094 |
| Aldrin | 0.0066 | U | 0.0066 | 0.047 |
| alpha-BHC | 0.0054 | U | 0.0054 | 0.047 |
| beta-BHC | 0.0063 | U | 0.0063 | 0.047 |
| Chlordane (technical) | 0.094 | U | 0.094 | 0.47 |
| Chlorobenzilate | 0.47 | U | 0.47 | 0.47 |
| delta-BHC | 0.0045 | U | 0.0045 | 0.047 |
| Dieldrin | 0.0086 | U | 0.0086 | 0.094 |
| Endosulfan I | 0.0040 | U | 0.0040 | 0.047 |
| Endosulfan II | 0.0092 | U | 0.0092 | 0.094 |
| Endosulfan sulfate | 0.0064 | U | 0.0064 | 0.094 |
| Endrin | 0.0092 | U | 0.0092 | 0.094 |
| Endrin aldehyde | 0.015 | U | 0.015 | 0.094 |
| gamma-BHC (Lindane) | 0.0056 | U | 0.0056 | 0.047 |
| Heptachlor | 0.0066 | U | 0.0066 | 0.047 |
| Heptachlor epoxide | 0.0057 | U | 0.0057 | 0.047 |
| Isodrin | 0.047 | U | 0.047 | 0.047 |
| Methoxychlor | 0.012 | U | 0.012 | 0.094 |
| PCB-1016 | 0.067 | U | 0.067 | 0.94 |
| PCB-1221 | 0.26 | U | 0.26 | 1.9 |
| PCB-1232 | 0.10 | U | 0.10 | 0.94 |
| PCB-1242 | 0.17 | U | 0.17 | 0.94 |
| PCB-1248 | 0.34 | U | 0.34 | 0.94 |
| PCB-1254 | 0.25 | U | 0.25 | 0.94 |
| PCB-1260 | 0.19 | U | 0.19 | 0.94 |
| PCB-1262 | 0.23 | U | 0.23 | 0.94 |
| Toxaphene | 0.47 | U | 0.47 | 4.7 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 86 | | 40 - 130 |
| Tetrachloro-m-xylene | 92 | | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-BLK-11-10**

Lab Sample ID: 680-63374-15FB

Client Matrix: Water

Date Sampled: 11/19/2010 1800

Date Received: 11/20/2010 1047

**8081B/8082A Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography**

| | | | | |
|---|---|---|---|---|
| Method: | 8081B/8082A | Analysis Batch: 680-187781 | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-187137 | Initial Weight/Volume: | 1060 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/30/2010 1651 | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 80 | | 40 - 130 |
| Tetrachloro-m-xylene | 68 | | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-06-11-10**

Lab Sample ID: 680-63374-7

Client Matrix: Water

Date Sampled: 11/19/2010 1040

Date Received: 11/20/2010 1047

**8141B Organophosphorous Compounds by Gas Chromatography, Capillary Column Technique**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8141B | Analysis Batch: 680-187733 | | Instrument ID: | SGO |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 1050 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 12/02/2010 0301 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dimethoate | 0.95 | U | 0.95 | 1.9 |
| Disulfoton | 0.95 | U | 0.95 | 1.9 |
| Ethyl Parathion | 0.48 | U | 0.48 | 0.95 |
| Famphur | 0.95 | U | 0.95 | 1.9 |
| Methyl parathion | 0.48 | U | 0.48 | 0.48 |
| Phorate | 0.48 | U | 0.48 | 0.95 |
| Sulfotepp | 0.48 | U | 0.48 | 0.48 |
| Thionazin | 0.48 | U | 0.48 | 0.95 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Triphenylphosphate | 82 | | 67 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-10-11-10**

Lab Sample ID: 680-63374-8

Client Matrix: Water

Date Sampled: 11/19/2010 1248

Date Received: 11/20/2010 1047

**8141B Organophosphorous Compounds by Gas Chromatography, Capillary Column Technique**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8141B | Analysis Batch: 680-187733 | | Instrument ID: | SGO |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 1060 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 12/02/2010 0326 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dimethoate | 0.94 | U | 0.94 | 1.9 |
| Disulfoton | 0.94 | U | 0.94 | 1.9 |
| Ethyl Parathion | 0.47 | U | 0.47 | 0.94 |
| Famphur | 0.94 | U | 0.94 | 1.9 |
| Methyl parathion | 0.47 | U | 0.47 | 0.47 |
| Phorate | 0.47 | U | 0.47 | 0.94 |
| Sulfotepp | 0.47 | U | 0.47 | 0.47 |
| Thionazin | 0.47 | U | 0.47 | 0.94 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Triphenylphosphate | 94 | | 67 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-13-11-10**

Lab Sample ID: 680-63374-9

Client Matrix: Water

Date Sampled: 11/19/2010 1455

Date Received: 11/20/2010 1047

**8141B Organophosphorous Compounds by Gas Chromatography, Capillary Column Technique**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8141B | Analysis Batch: 680-187733 | | Instrument ID: | SGO |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 1060 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 12/02/2010 0350 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dimethoate | 0.94 | U | 0.94 | 1.9 |
| Disulfoton | 0.94 | U | 0.94 | 1.9 |
| Ethyl Parathion | 0.47 | U | 0.47 | 0.94 |
| Famphur | 0.94 | U | 0.94 | 1.9 |
| Methyl parathion | 0.47 | U | 0.47 | 0.47 |
| Phorate | 0.47 | U | 0.47 | 0.94 |
| Sulfotepp | 0.47 | U | 0.47 | 0.47 |
| Thionazin | 0.47 | U | 0.47 | 0.94 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Triphenylphosphate | 92 | | 67 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-12AR-11-10**

Lab Sample ID: 680-63374-10

Client Matrix: Water

Date Sampled: 11/19/2010 0955

Date Received: 11/20/2010 1047

**8141B Organophosphorous Compounds by Gas Chromatography, Capillary Column Technique**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8141B | Analysis Batch: 680-187733 | | Instrument ID: | SGO |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 500 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 5 mL |
| Date Analyzed: | 12/02/2010 0415 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dimethoate | 1.0 | U | 1.0 | 2.0 |
| Disulfoton | 1.0 | U | 1.0 | 2.0 |
| Ethyl Parathion | 0.50 | U | 0.50 | 1.0 |
| Famphur | 1.0 | U | 1.0 | 2.0 |
| Methyl parathion | 0.50 | U | 0.50 | 0.50 |
| Phorate | 0.50 | U | 0.50 | 1.0 |
| Sulfotepp | 0.50 | U | 0.50 | 0.50 |
| Thionazin | 0.50 | U | 0.50 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Triphenylphosphate | 105 | | 67 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-12BR-11-10**

Lab Sample ID: 680-63374-11

Client Matrix: Water

Date Sampled: 11/19/2010 1215

Date Received: 11/20/2010 1047

**8141B Organophosphorous Compounds by Gas Chromatography, Capillary Column Technique**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8141B | Analysis Batch: 680-187733 | | Instrument ID: | SGO |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 500 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 5 mL |
| Date Analyzed: | 12/02/2010 0440 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dimethoate | 1.0 | U | 1.0 | 2.0 |
| Disulfoton | 1.0 | U | 1.0 | 2.0 |
| Ethyl Parathion | 0.50 | U | 0.50 | 1.0 |
| Famphur | 1.0 | U | 1.0 | 2.0 |
| Methyl parathion | 0.50 | U | 0.50 | 0.50 |
| Phorate | 0.50 | U | 0.50 | 1.0 |
| Sulfotepp | 0.50 | U | 0.50 | 0.50 |
| Thionazin | 0.50 | U | 0.50 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Triphenylphosphate | 115 | | 67 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-DUP2-11-10**

Lab Sample ID: 680-63374-12

Client Matrix: Water

Date Sampled: 11/19/2010 1200

Date Received: 11/20/2010 1047

**8141B Organophosphorous Compounds by Gas Chromatography, Capillary Column Technique**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8141B | Analysis Batch: 680-187733 | | Instrument ID: | SGO |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 1050 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 12/02/2010 0505 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dimethoate | 0.95 | U | 0.95 | 1.9 |
| Disulfoton | 0.95 | U | 0.95 | 1.9 |
| Ethyl Parathion | 0.48 | U | 0.48 | 0.95 |
| Famphur | 0.95 | U | 0.95 | 1.9 |
| Methyl parathion | 0.48 | U | 0.48 | 0.48 |
| Phorate | 0.48 | U | 0.48 | 0.95 |
| Sulfotepp | 0.48 | U | 0.48 | 0.48 |
| Thionazin | 0.48 | U | 0.48 | 0.95 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Triphenylphosphate | 88 | | 67 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-11R-11-10**

Lab Sample ID: 680-63374-13

Client Matrix: Water

Date Sampled: 11/19/2010 1420

Date Received: 11/20/2010 1047

**8141B Organophosphorous Compounds by Gas Chromatography, Capillary Column Technique**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8141B | Analysis Batch: 680-187733 | | Instrument ID: | SGO |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 1050 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 12/02/2010 0530 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dimethoate | 0.95 | U | 0.95 | 1.9 |
| Disulfoton | 0.95 | U | 0.95 | 1.9 |
| Ethyl Parathion | 0.48 | U | 0.48 | 0.95 |
| Famphur | 0.95 | U | 0.95 | 1.9 |
| Methyl parathion | 0.48 | U | 0.48 | 0.48 |
| Phorate | 0.48 | U | 0.48 | 0.95 |
| Sulfotepp | 0.48 | U | 0.48 | 0.48 |
| Thionazin | 0.48 | U | 0.48 | 0.95 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Triphenylphosphate | 85 | | 67 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-9-11-10**

Lab Sample ID: 680-63374-14

Client Matrix: Water

Date Sampled: 11/19/2010 1620

Date Received: 11/20/2010 1047

**8141B Organophosphorous Compounds by Gas Chromatography, Capillary Column Technique**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8141B | Analysis Batch: 680-187733 | | Instrument ID: | SGO |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 1060 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 12/02/2010 0555 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dimethoate | 0.94 | U | 0.94 | 1.9 |
| Disulfoton | 0.94 | U | 0.94 | 1.9 |
| Ethyl Parathion | 0.47 | U | 0.47 | 0.94 |
| Famphur | 0.94 | U | 0.94 | 1.9 |
| Methyl parathion | 0.47 | U | 0.47 | 0.47 |
| Phorate | 0.47 | U | 0.47 | 0.94 |
| Sulfotepp | 0.47 | U | 0.47 | 0.47 |
| Thionazin | 0.47 | U | 0.47 | 0.94 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Triphenylphosphate | 104 | | 67 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-BLK-11-10**

Lab Sample ID: 680-63374-15FB

Client Matrix: Water

Date Sampled: 11/19/2010 1800

Date Received: 11/20/2010 1047

**8141B Organophosphorous Compounds by Gas Chromatography, Capillary Column Technique**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8141B | Analysis Batch: 680-187733 | | Instrument ID: | SGO |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 1060 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 12/02/2010 0620 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dimethoate | 0.94 | U | 0.94 | 1.9 |
| Disulfoton | 0.94 | U | 0.94 | 1.9 |
| Ethyl Parathion | 0.47 | U | 0.47 | 0.94 |
| Famphur | 0.94 | U | 0.94 | 1.9 |
| Methyl parathion | 0.47 | U | 0.47 | 0.47 |
| Phorate | 0.47 | U | 0.47 | 0.94 |
| Sulfotepp | 0.47 | U | 0.47 | 0.47 |
| Thionazin | 0.47 | U | 0.47 | 0.94 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Triphenylphosphate | 92 | | 67 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-06-11-10**

Lab Sample ID: 680-63374-7

Client Matrix: Water

Date Sampled: 11/19/2010 1040

Date Received: 11/20/2010 1047

**8151A Herbicides (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8151A | Analysis Batch: 680-187487 | | Instrument ID: | SGS |
| Preparation: | 8151A | Prep Batch: 680-186942 | | Initial Weight/Volume: | 1040 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/29/2010 1715 | | | Injection Volume: | 1 uL |
| Date Prepared: | 11/23/2010 0835 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 2,4-D | 0.036 | U | 0.036 | 0.48 |
| 2,4-DB | 0.14 | U | 0.14 | 0.48 |
| 2,4,5-T | 0.060 | U | 0.060 | 0.48 |
| Silvex (2,4,5-TP) | 0.060 | U | 0.060 | 0.48 |
| Dalapon | 0.096 | U | 0.096 | 9.6 |
| Dicamba | 0.082 | U | 0.082 | 0.48 |
| Dichlorprop | 0.14 | U | 0.14 | 0.48 |
| Dinoseb | 0.15 | U | 0.15 | 5.8 |
| MCPA | 16 | U | 16 | 120 |
| Mecoprop | 18 | U | 18 | 120 |
| Pentachlorophenol | 0.036 | U | 0.036 | 0.24 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 103 | | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-06-11-10**

Lab Sample ID: 680-63374-7

Client Matrix: Water

Date Sampled: 11/19/2010 1040

Date Received: 11/20/2010 1047

**8151A Herbicides (GC)**

| | | | | |
|---|---|---|---|---|
| Method: | 8151A | Analysis Batch: 680-187487 | Instrument ID: | SGS |
| Preparation: | 8151A | Prep Batch: 680-186942 | Initial Weight/Volume: | 1040 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/29/2010 1715 | | Injection Volume: | 1 uL |
| Date Prepared: | 11/23/2010 0835 | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 81 | | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-10-11-10**

Lab Sample ID: 680-63374-8

Client Matrix: Water

Date Sampled: 11/19/2010 1248

Date Received: 11/20/2010 1047

**8151A Herbicides (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8151A | Analysis Batch: 680-187487 | | Instrument ID: | SGS |
| Preparation: | 8151A | Prep Batch: 680-186942 | | Initial Weight/Volume: | 1040 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/29/2010 1731 | | | Injection Volume: | 1 uL |
| Date Prepared: | 11/23/2010 0835 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 2,4-D | 0.036 | U | 0.036 | 0.48 |
| 2,4-DB | 0.14 | U | 0.14 | 0.48 |
| 2,4,5-T | 0.060 | U | 0.060 | 0.48 |
| Silvex (2,4,5-TP) | 0.060 | U | 0.060 | 0.48 |
| Dalapon | 0.096 | U | 0.096 | 9.6 |
| Dicamba | 0.082 | U | 0.082 | 0.48 |
| Dichlorprop | 0.14 | U | 0.14 | 0.48 |
| Dinoseb | 0.15 | U | 0.15 | 5.8 |
| MCPA | 16 | U | 16 | 120 |
| Mecoprop | 18 | U | 18 | 120 |
| Pentachlorophenol | 0.036 | U | 0.036 | 0.24 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 97 | | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-10-11-10**

Lab Sample ID: 680-63374-8

Client Matrix: Water

Date Sampled: 11/19/2010 1248

Date Received: 11/20/2010 1047

**8151A Herbicides (GC)**

| | | | | |
|---|---|---|---|---|
| Method: | 8151A | Analysis Batch: 680-187487 | Instrument ID: | SGS |
| Preparation: | 8151A | Prep Batch: 680-186942 | Initial Weight/Volume: | 1040 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/29/2010 1731 | | Injection Volume: | 1 uL |
| Date Prepared: | 11/23/2010 0835 | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 79 | | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-13-11-10**

Lab Sample ID: 680-63374-9

Client Matrix: Water

Date Sampled: 11/19/2010 1455

Date Received: 11/20/2010 1047

**8151A Herbicides (GC)**

| | | | | |
|---|---|---|---|---|
| Method: | 8151A | Analysis Batch: 680-187487 | Instrument ID: | SGS |
| Preparation: | 8151A | Prep Batch: 680-186942 | Initial Weight/Volume: | 1040 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/29/2010 1746 | | Injection Volume: | 1 uL |
| Date Prepared: | 11/23/2010 0835 | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 2,4-D | 0.036 | U | 0.036 | 0.48 |
| 2,4-DB | 0.14 | U | 0.14 | 0.48 |
| 2,4,5-T | 0.060 | U | 0.060 | 0.48 |
| Silvex (2,4,5-TP) | 0.060 | U | 0.060 | 0.48 |
| Dalapon | 0.096 | U | 0.096 | 9.6 |
| Dicamba | 0.082 | U | 0.082 | 0.48 |
| Dichlorprop | 0.14 | U | 0.14 | 0.48 |
| Dinoseb | 0.15 | U | 0.15 | 5.8 |
| MCPA | 16 | U | 16 | 120 |
| Mecoprop | 18 | U | 18 | 120 |
| Pentachlorophenol | 0.036 | U | 0.036 | 0.24 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 110 | | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-13-11-10**

Lab Sample ID: 680-63374-9

Client Matrix: Water

Date Sampled: 11/19/2010 1455

Date Received: 11/20/2010 1047

**8151A Herbicides (GC)**

| | | | | |
|---|---|---|---|---|
| Method: | 8151A | Analysis Batch: 680-187487 | Instrument ID: | SGS |
| Preparation: | 8151A | Prep Batch: 680-186942 | Initial Weight/Volume: | 1040 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/29/2010 1746 | | Injection Volume: | 1 uL |
| Date Prepared: | 11/23/2010 0835 | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 81 | | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-12AR-11-10**

Lab Sample ID: 680-63374-10

Client Matrix: Water

Date Sampled: 11/19/2010 0955

Date Received: 11/20/2010 1047

**8151A Herbicides (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8151A | Analysis Batch: 680-187487 | | Instrument ID: | SGS |
| Preparation: | 8151A | Prep Batch: 680-186942 | | Initial Weight/Volume: | 1040 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/29/2010 1802 | | | Injection Volume: | 1 uL |
| Date Prepared: | 11/23/2010 0835 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 2,4-D | 0.036 | U | 0.036 | 0.48 |
| 2,4-DB | 0.14 | U | 0.14 | 0.48 |
| 2,4,5-T | 0.060 | U | 0.060 | 0.48 |
| Silvex (2,4,5-TP) | 0.060 | U | 0.060 | 0.48 |
| Dalapon | 0.096 | U | 0.096 | 9.6 |
| Dicamba | 0.082 | U | 0.082 | 0.48 |
| Dichlorprop | 0.14 | U | 0.14 | 0.48 |
| Dinoseb | 0.15 | U | 0.15 | 5.8 |
| MCPA | 16 | U | 16 | 120 |
| Mecoprop | 18 | U | 18 | 120 |
| Pentachlorophenol | 0.036 | U | 0.036 | 0.24 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 79 | | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-12AR-11-10**

Lab Sample ID: 680-63374-10

Client Matrix: Water

Date Sampled: 11/19/2010 0955

Date Received: 11/20/2010 1047

**8151A Herbicides (GC)**

| | | | | |
|---|---|---|---|---|
| Method: | 8151A | Analysis Batch: 680-187487 | Instrument ID: | SGS |
| Preparation: | 8151A | Prep Batch: 680-186942 | Initial Weight/Volume: | 1040 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/29/2010 1802 | | Injection Volume: | 1 uL |
| Date Prepared: | 11/23/2010 0835 | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 66 | | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-12BR-11-10**

Lab Sample ID: 680-63374-11

Client Matrix: Water

Date Sampled: 11/19/2010 1215

Date Received: 11/20/2010 1047

**8151A Herbicides (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8151A | Analysis Batch: 680-187487 | | Instrument ID: | SGS |
| Preparation: | 8151A | Prep Batch: 680-186942 | | Initial Weight/Volume: | 1040 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/29/2010 1817 | | | Injection Volume: | 1 uL |
| Date Prepared: | 11/23/2010 0835 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 2,4-D | 0.036 | U | 0.036 | 0.48 |
| 2,4-DB | 0.14 | U | 0.14 | 0.48 |
| 2,4,5-T | 0.060 | U J | 0.060 | 0.48 |
| Silvex (2,4,5-TP) | 0.060 | U J | 0.060 | 0.48 |
| Dalapon | 0.096 | U | 0.096 | 9.6 |
| Dicamba | 0.082 | U J | 0.082 | 0.48 |
| Dichlorprop | 0.14 | U | 0.14 | 0.48 |
| Dinoseb | 0.15 | U J | 0.15 | 5.8 |
| MCPA | 16 | U | 16 | 120 |
| Mecoprop | 18 | U J | 18 | 120 |
| Pentachlorophenol | 0.036 | U | 0.036 | 0.24 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 76 | J | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-12BR-11-10**

Lab Sample ID: 680-63374-11

Client Matrix: Water

Date Sampled: 11/19/2010 1215

Date Received: 11/20/2010 1047

**8151A Herbicides (GC)**

| | | | | |
|---|---|---|---|---|
| Method: | 8151A | Analysis Batch: 680-187487 | Instrument ID: | SGS |
| Preparation: | 8151A | Prep Batch: 680-186942 | Initial Weight/Volume: | 1040 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/29/2010 1817 | | Injection Volume: | 1 uL |
| Date Prepared: | 11/23/2010 0835 | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 115 | J | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-DUP2-11-10**

Lab Sample ID: 680-63374-12

Client Matrix: Water

Date Sampled: 11/19/2010 1200

Date Received: 11/20/2010 1047

**8151A Herbicides (GC)**

| | | | | |
|---|---|---|---|---|
| Method: | 8151A | Analysis Batch: 680-187487 | Instrument ID: | SGS |
| Preparation: | 8151A | Prep Batch: 680-186942 | Initial Weight/Volume: | 1040 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/29/2010 1833 | | Injection Volume: | 1 uL |
| Date Prepared: | 11/23/2010 0835 | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 2,4-D | 0.036 | U | 0.036 | 0.48 |
| 2,4-DB | 0.14 | U | 0.14 | 0.48 |
| 2,4,5-T | 0.060 | U | 0.060 | 0.48 |
| Silvex (2,4,5-TP) | 0.060 | U | 0.060 | 0.48 |
| Dalapon | 0.096 | U | 0.096 | 9.6 |
| Dicamba | 0.082 | U | 0.082 | 0.48 |
| Dichlorprop | 0.14 | U | 0.14 | 0.48 |
| Dinoseb | 0.15 | U | 0.15 | 5.8 |
| MCPA | 16 | U | 16 | 120 |
| Mecoprop | 18 | U | 18 | 120 |
| Pentachlorophenol | 0.036 | U | 0.036 | 0.24 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 92 | | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-DUP2-11-10**

Lab Sample ID: 680-63374-12

Client Matrix: Water

Date Sampled: 11/19/2010 1200

Date Received: 11/20/2010 1047

**8151A Herbicides (GC)**

| | | | | |
|---|---|---|---|---|
| Method: | 8151A | Analysis Batch: 680-187487 | Instrument ID: | SGS |
| Preparation: | 8151A | Prep Batch: 680-186942 | Initial Weight/Volume: | 1040 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/29/2010 1833 | | Injection Volume: | 1 uL |
| Date Prepared: | 11/23/2010 0835 | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 78 | | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-11R-11-10**

Lab Sample ID: 680-63374-13

Client Matrix: Water

Date Sampled: 11/19/2010 1420

Date Received: 11/20/2010 1047

**8151A Herbicides (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8151A | Analysis Batch: 680-187487 | | Instrument ID: | SGS |
| Preparation: | 8151A | Prep Batch: 680-186942 | | Initial Weight/Volume: | 1040 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/29/2010 1849 | | | Injection Volume: | 1 uL |
| Date Prepared: | 11/23/2010 0835 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 2,4-D | 0.036 | U | 0.036 | 0.48 |
| 2,4-DB | 0.14 | U | 0.14 | 0.48 |
| 2,4,5-T | 0.060 | U | 0.060 | 0.48 |
| Silvex (2,4,5-TP) | 0.060 | U | 0.060 | 0.48 |
| Dalapon | 0.096 | U | 0.096 | 9.6 |
| Dicamba | 0.082 | U | 0.082 | 0.48 |
| Dichlorprop | 0.14 | U | 0.14 | 0.48 |
| Dinoseb | 0.15 | U | 0.15 | 5.8 |
| MCPA | 16 | U | 16 | 120 |
| Mecoprop | 18 | U | 18 | 120 |
| Pentachlorophenol | 0.036 | U | 0.036 | 0.24 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 95 | | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-11R-11-10**

Lab Sample ID: 680-63374-13

Client Matrix: Water

Date Sampled: 11/19/2010 1420

Date Received: 11/20/2010 1047

**8151A Herbicides (GC)**

| | | | | |
|---|---|---|---|---|
| Method: | 8151A | Analysis Batch: 680-187487 | Instrument ID: | SGS |
| Preparation: | 8151A | Prep Batch: 680-186942 | Initial Weight/Volume: | 1040 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/29/2010 1849 | | Injection Volume: | 1 uL |
| Date Prepared: | 11/23/2010 0835 | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 69 | | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-9-11-10**

Lab Sample ID: 680-63374-14

Client Matrix: Water

Date Sampled: 11/19/2010 1620

Date Received: 11/20/2010 1047

**8151A Herbicides (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8151A | Analysis Batch: 680-187487 | | Instrument ID: | SGS |
| Preparation: | 8151A | Prep Batch: 680-186942 | | Initial Weight/Volume: | 1040 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/29/2010 1904 | | | Injection Volume: | 1 uL |
| Date Prepared: | 11/23/2010 0835 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 2,4-D | 0.036 | U | 0.036 | 0.48 |
| 2,4-DB | 0.14 | U | 0.14 | 0.48 |
| 2,4,5-T | 0.060 | U | 0.060 | 0.48 |
| Silvex (2,4,5-TP) | 0.060 | U | 0.060 | 0.48 |
| Dalapon | 0.096 | U | 0.096 | 9.6 |
| Dicamba | 0.082 | U | 0.082 | 0.48 |
| Dichlorprop | 0.14 | U | 0.14 | 0.48 |
| Dinoseb | 0.15 | U | 0.15 | 5.8 |
| MCPA | 16 | U | 16 | 120 |
| Mecoprop | 18 | U | 18 | 120 |
| Pentachlorophenol | 0.036 | U | 0.036 | 0.24 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 107 | | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-9-11-10**

Lab Sample ID: 680-63374-14

Client Matrix: Water

Date Sampled: 11/19/2010 1620

Date Received: 11/20/2010 1047

**8151A Herbicides (GC)**

| | | | | |
|---|---|---|---|---|
| Method: | 8151A | Analysis Batch: 680-187487 | Instrument ID: | SGS |
| Preparation: | 8151A | Prep Batch: 680-186942 | Initial Weight/Volume: | 1040 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/29/2010 1904 | | Injection Volume: | 1 uL |
| Date Prepared: | 11/23/2010 0835 | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 81 | | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-BLK-11-10**

Lab Sample ID: 680-63374-15FB

Client Matrix: Water

Date Sampled: 11/19/2010 1800

Date Received: 11/20/2010 1047

**8151A Herbicides (GC)**

| | | | | |
|---|---|---|---|---|
| Method: | 8151A | Analysis Batch: 680-187487 | Instrument ID: | SGS |
| Preparation: | 8151A | Prep Batch: 680-186942 | Initial Weight/Volume: | 1040 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/29/2010 1920 | | Injection Volume: | 1 uL |
| Date Prepared: | 11/23/2010 0835 | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 2,4-D | 0.036 | U | 0.036 | 0.48 |
| 2,4-DB | 0.14 | U | 0.14 | 0.48 |
| 2,4,5-T | 0.060 | U | 0.060 | 0.48 |
| Silvex (2,4,5-TP) | 0.060 | U | 0.060 | 0.48 |
| Dalapon | 0.096 | U | 0.096 | 9.6 |
| Dicamba | 0.082 | U | 0.082 | 0.48 |
| Dichlorprop | 0.14 | U | 0.14 | 0.48 |
| Dinoseb | 0.15 | U | 0.15 | 5.8 |
| MCPA | 16 | U | 16 | 120 |
| Mecoprop | 18 | U | 18 | 120 |
| Pentachlorophenol | 0.036 | U | 0.036 | 0.24 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 102 | | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-BLK-11-10**

Lab Sample ID: 680-63374-15FB

Client Matrix: Water

Date Sampled: 11/19/2010 1800

Date Received: 11/20/2010 1047

**8151A Herbicides (GC)**

| | | | | |
|---|---|---|---|---|
| Method: | 8151A | Analysis Batch: 680-187487 | Instrument ID: | SGS |
| Preparation: | 8151A | Prep Batch: 680-186942 | Initial Weight/Volume: | 1040 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/29/2010 1920 | | Injection Volume: | 1 uL |
| Date Prepared: | 11/23/2010 0835 | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 74 | | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-06-11-10**

Lab Sample ID: 680-63374-7

Client Matrix: Water

Date Sampled: 11/19/2010 1040

Date Received: 11/20/2010 1047

**6020A Metals (ICP/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6020A | Analysis Batch: 680-187361 | | Instrument ID: | ICPMSB |
| Preparation: | 3030C | Prep Batch: 680-186813 | | Lab File ID: | 186813.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 11/24/2010 0850 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/22/2010 0932 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Antimony | 0.99 | U | 0.99 | 2.0 |
| Arsenic | 0.40 | U | 0.40 | 1.0 |
| Barium | 9.8 | | 0.15 | 1.0 |
| Beryllium | 0.070 | U | 0.070 | 0.20 |
| Cadmium | 0.20 | U | 0.20 | 0.50 |
| Chromium | 0.16 | U | 0.16 | 1.0 |
| Cobalt | 0.21 | | 0.078 | 0.20 |
| Copper | 0.35 | J | 0.21 | 1.0 |
| Lead | 0.11 | J | 0.080 | 0.30 |
| Nickel | 0.40 | U | 0.40 | 1.0 |
| Selenium | 0.21 | U | 0.21 | 0.50 |
| Silver | 0.10 | U | 0.10 | 0.20 |
| Thallium | 0.15 | J | 0.10 | 0.20 |
| Tin | 0.40 | U | 0.40 | 1.0 |
| Vanadium | 1.4 | U | 1.4 | 5.0 |
| Zinc | 6.4 | J | 2.6 | 10 |

**7470A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7470A | Analysis Batch: 680-187718 | | Instrument ID: | LEEMAN1 |
| Preparation: | 7470A | Prep Batch: 680-187406 | | Lab File ID: | b120110.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 12/01/2010 2016 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/29/2010 1615 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Mercury | 0.37 | | 0.091 | 0.20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-10-11-10**

Lab Sample ID: 680-63374-8

Client Matrix: Water

Date Sampled: 11/19/2010 1248

Date Received: 11/20/2010 1047

**6020A Metals (ICP/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6020A | Analysis Batch: 680-187361 | | Instrument ID: | ICPMSB |
| Preparation: | 3030C | Prep Batch: 680-186813 | | Lab File ID: | 186813.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 11/24/2010 1440 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/22/2010 0932 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Antimony | 0.99 | U | 0.99 | 2.0 |
| Arsenic | 4.3 | | 0.40 | 1.0 |
| Barium | 150 | | 0.15 | 1.0 |
| Cadmium | 0.20 | U | 0.20 | 0.50 |
| Chromium | 0.20 | J | 0.16 | 1.0 |
| Cobalt | 3.3 | | 0.078 | 0.20 |
| Copper | 0.21 | U | 0.21 | 1.0 |
| Lead | 0.080 | U | 0.080 | 0.30 |
| Nickel | 0.46 | J | 0.40 | 1.0 |
| Selenium | 0.38 | J | 0.21 | 0.50 |
| Silver | 0.10 | U | 0.10 | 0.20 |
| Thallium | 0.10 | U | 0.10 | 0.20 |
| Tin | 0.73 | J | 0.40 | 1.0 |
| Vanadium | 1.6 | J | 1.4 | 5.0 |
| Zinc | 7.2 | J | 2.6 | 10 |

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6020A | Analysis Batch: 680-187361 | | Instrument ID: | ICPMSB |
| Preparation: | 3030C | Prep Batch: 680-186813 | | Lab File ID: | 186813.chr |
| Dilution: | 5.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 11/24/2010 0857 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/22/2010 0932 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Beryllium | 0.35 | U | 0.35 | 1.0 |

**7470A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7470A | Analysis Batch: 680-187718 | | Instrument ID: | LEEMAN1 |
| Preparation: | 7470A | Prep Batch: 680-187406 | | Lab File ID: | b120110.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 12/01/2010 2020 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/29/2010 1615 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Mercury | 0.091 | U | 0.091 | 0.20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **SLMW-13-11-10**

Lab Sample ID: 680-63374-9

Client Matrix: Water

Date Sampled: 11/19/2010 1455

Date Received: 11/20/2010 1047

**6020A Metals (ICP/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6020A | Analysis Batch: 680-187361 | | Instrument ID: | ICPMSB |
| Preparation: | 3030C | Prep Batch: 680-186813 | | Lab File ID: | 186813.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 11/24/2010 0904 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/22/2010 0932 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Antimony | 0.99 | U | 0.99 | 2.0 |
| Arsenic | 0.40 | U | 0.40 | 1.0 |
| Barium | 9.0 | | 0.15 | 1.0 |
| Beryllium | 0.070 | U | 0.070 | 0.20 |
| Cadmium | 0.20 | U | 0.20 | 0.50 |
| Chromium | 0.26 | J | 0.16 | 1.0 |
| Cobalt | 0.11 | J | 0.078 | 0.20 |
| Copper | 0.21 | U | 0.21 | 1.0 |
| Lead | 0.12 | J | 0.080 | 0.30 |
| Nickel | 0.40 | U | 0.40 | 1.0 |
| Selenium | 0.21 | U | 0.21 | 0.50 |
| Silver | 0.10 | U | 0.10 | 0.20 |
| Thallium | 0.10 | U | 0.10 | 0.20 |
| Tin | 0.40 | U | 0.40 | 1.0 |
| Vanadium | 1.4 | U | 1.4 | 5.0 |
| Zinc | 5.7 | J | 2.6 | 10 |

**7470A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7470A | Analysis Batch: 680-187718 | | Instrument ID: | LEEMAN1 |
| Preparation: | 7470A | Prep Batch: 680-187406 | | Lab File ID: | b120110.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 12/01/2010 2023 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/29/2010 1615 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Mercury | 0.091 | U | 0.091 | 0.20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-12AR-11-10**

Lab Sample ID: 680-63374-10

Client Matrix: Water

Date Sampled: 11/19/2010 0955

Date Received: 11/20/2010 1047

**6020A Metals (ICP/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6020A | Analysis Batch: 680-187361 | | Instrument ID: | ICPMSB |
| Preparation: | 3030C | Prep Batch: 680-186813 | | Lab File ID: | 186813.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 11/24/2010 0911 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/22/2010 0932 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Antimony | 0.99 | U | 0.99 | 2.0 |
| Arsenic | 0.75 | J | 0.40 | 1.0 |
| Barium | 41 | | 0.15 | 1.0 |
| Beryllium | 0.070 | J | 0.070 | 0.20 |
| Cadmium | 0.20 | U | 0.20 | 0.50 |
| Chromium | 0.60 | J | 0.16 | 1.0 |
| Cobalt | 0.89 | | 0.078 | 0.20 |
| Copper | 0.21 | U | 0.21 | 1.0 |
| Lead | 0.49 | | 0.080 | 0.30 |
| Nickel | 0.64 | J | 0.40 | 1.0 |
| Selenium | 0.21 | U | 0.21 | 0.50 |
| Silver | 0.10 | U | 0.10 | 0.20 |
| Thallium | 0.10 | U | 0.10 | 0.20 |
| Tin | 0.40 | U | 0.40 | 1.0 |
| Vanadium | 1.8 | J | 1.4 | 5.0 |
| Zinc | 3.1 | J | 2.6 | 10 |

**7470A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7470A | Analysis Batch: 680-187718 | | Instrument ID: | LEEMAN1 |
| Preparation: | 7470A | Prep Batch: 680-187406 | | Lab File ID: | b120110.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 12/01/2010 2026 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/29/2010 1615 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Mercury | 0.091 | U | 0.091 | 0.20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-12BR-11-10**

Lab Sample ID: 680-63374-11

Client Matrix: Water

Date Sampled: 11/19/2010 1215

Date Received: 11/20/2010 1047

**6020A Metals (ICP/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6020A | Analysis Batch: 680-187361 | | Instrument ID: | ICPMSB |
| Preparation: | 3030C | Prep Batch: 680-186813 | | Lab File ID: | 186813.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 11/24/2010 0919 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/22/2010 0932 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Antimony | 0.99 | U | 0.99 | 2.0 |
| Arsenic | 0.45 | J | 0.40 | 1.0 |
| Barium | 43 | | 0.15 | 1.0 |
| Beryllium | 0.34 | | 0.070 | 0.20 |
| Cadmium | 0.20 | U | 0.20 | 0.50 |
| Chromium | 0.52 | J | 0.16 | 1.0 |
| Cobalt | 1.1 | | 0.078 | 0.20 |
| Copper | 2.2 | | 0.21 | 1.0 |
| Lead | 0.72 | | 0.080 | 0.30 |
| Nickel | 2.6 | | 0.40 | 1.0 |
| Selenium | 0.21 | U | 0.21 | 0.50 |
| Silver | 0.10 | U | 0.10 | 0.20 |
| Thallium | 0.10 | U | 0.10 | 0.20 |
| Tin | 0.40 | U | 0.40 | 1.0 |
| Vanadium | 1.4 | U | 1.4 | 5.0 |
| Zinc | 9.6 | J | 2.6 | 10 |

**7470A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7470A | Analysis Batch: 680-187718 | | Instrument ID: | LEEMAN1 |
| Preparation: | 7470A | Prep Batch: 680-187406 | | Lab File ID: | b120110.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 12/01/2010 2029 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/29/2010 1615 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Mercury | 0.091 | U J | 0.091 | 0.20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-DUP2-11-10**

Lab Sample ID: 680-63374-12

Client Matrix: Water

Date Sampled: 11/19/2010 1200

Date Received: 11/20/2010 1047

**6020A Metals (ICP/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6020A | Analysis Batch: 680-187361 | | Instrument ID: | ICPMSB |
| Preparation: | 3030C | Prep Batch: 680-186813 | | Lab File ID: | 186813.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 11/24/2010 1008 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/22/2010 0932 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Antimony | 0.99 | U | 0.99 | 2.0 |
| Arsenic | 0.61 | J | 0.40 | 1.0 |
| Barium | 44 | | 0.15 | 1.0 |
| Beryllium | 0.076 | J | 0.070 | 0.20 |
| Cadmium | 0.20 | U | 0.20 | 0.50 |
| Chromium | 0.56 | J | 0.16 | 1.0 |
| Cobalt | 0.91 | | 0.078 | 0.20 |
| Copper | 0.30 | J | 0.21 | 1.0 |
| Lead | 0.27 | J | 0.080 | 0.30 |
| Nickel | 0.82 | J | 0.40 | 1.0 |
| Selenium | 0.21 | U | 0.21 | 0.50 |
| Silver | 0.10 | U | 0.10 | 0.20 |
| Thallium | 0.16 | J | 0.10 | 0.20 |
| Tin | 0.40 | U | 0.40 | 1.0 |
| Vanadium | 1.4 | U | 1.4 | 5.0 |
| Zinc | 5.6 | J | 2.6 | 10 |

**7470A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7470A | Analysis Batch: 680-187718 | | Instrument ID: | LEEMAN1 |
| Preparation: | 7470A | Prep Batch: 680-187406 | | Lab File ID: | b120110.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 12/01/2010 2043 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/29/2010 1615 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Mercury | 0.091 | U | 0.091 | 0.20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-11R-11-10**

Lab Sample ID: 680-63374-13

Client Matrix: Water

Date Sampled: 11/19/2010 1420

Date Received: 11/20/2010 1047

**6020A Metals (ICP/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6020A | Analysis Batch: 680-187361 | | Instrument ID: | ICPMSB |
| Preparation: | 3030C | Prep Batch: 680-186813 | | Lab File ID: | 186813.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 11/24/2010 1015 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/22/2010 0932 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Antimony | 0.99 | U | 0.99 | 2.0 |
| Arsenic | 0.40 | U | 0.40 | 1.0 |
| Barium | 8.7 | | 0.15 | 1.0 |
| Beryllium | 0.070 | U | 0.070 | 0.20 |
| Cadmium | 0.20 | U | 0.20 | 0.50 |
| Chromium | 0.16 | U | 0.16 | 1.0 |
| Cobalt | 0.18 | J | 0.078 | 0.20 |
| Copper | 0.60 | J | 0.21 | 1.0 |
| Lead | 0.080 | U | 0.080 | 0.30 |
| Nickel | 0.44 | J | 0.40 | 1.0 |
| Selenium | 0.21 | U | 0.21 | 0.50 |
| Silver | 0.10 | U | 0.10 | 0.20 |
| Thallium | 0.10 | U | 0.10 | 0.20 |
| Tin | 0.40 | U | 0.40 | 1.0 |
| Vanadium | 1.4 | U | 1.4 | 5.0 |
| Zinc | 3.6 | J | 2.6 | 10 |

**7470A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7470A | Analysis Batch: 680-187718 | | Instrument ID: | LEEMAN1 |
| Preparation: | 7470A | Prep Batch: 680-187406 | | Lab File ID: | b120110.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 12/01/2010 2046 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/29/2010 1615 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Mercury | 0.11 | J | 0.091 | 0.20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-9-11-10**

Lab Sample ID: 680-63374-14

Client Matrix: Water

Date Sampled: 11/19/2010 1620

Date Received: 11/20/2010 1047

**6020A Metals (ICP/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6020A | Analysis Batch: 680-187361 | | Instrument ID: | ICPMSB |
| Preparation: | 3030C | Prep Batch: 680-186813 | | Lab File ID: | 186813.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 11/24/2010 1023 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/22/2010 0932 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Antimony | 0.99 | U | 0.99 | 2.0 |
| Arsenic | 9.1 | | 0.40 | 1.0 |
| Barium | 41 | | 0.15 | 1.0 |
| Beryllium | 0.070 | U | 0.070 | 0.20 |
| Cadmium | 0.20 | U | 0.20 | 0.50 |
| Chromium | 0.16 | U | 0.16 | 1.0 |
| Cobalt | 0.52 | | 0.078 | 0.20 |
| Copper | 0.65 | J | 0.21 | 1.0 |
| Lead | 0.080 | U | 0.080 | 0.30 |
| Nickel | 0.40 | U | 0.40 | 1.0 |
| Selenium | 0.21 | U | 0.21 | 0.50 |
| Silver | 0.10 | U | 0.10 | 0.20 |
| Thallium | 0.10 | U | 0.10 | 0.20 |
| Tin | 0.58 | J | 0.40 | 1.0 |
| Vanadium | 1.4 | U | 1.4 | 5.0 |
| Zinc | 2.8 | J | 2.6 | 10 |

**7470A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7470A | Analysis Batch: 680-187718 | | Instrument ID: | LEEMAN1 |
| Preparation: | 7470A | Prep Batch: 680-187406 | | Lab File ID: | b120110.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 12/01/2010 2050 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/29/2010 1615 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Mercury | 0.091 | U | 0.091 | 0.20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Client Sample ID:** **LSMW-BLK-11-10**

Lab Sample ID: 680-63374-15FB

Client Matrix: Water

Date Sampled: 11/19/2010 1800

Date Received: 11/20/2010 1047

**6020A Metals (ICP/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6020A | Analysis Batch: 680-187361 | | Instrument ID: | ICPMSB |
| Preparation: | 3030C | Prep Batch: 680-186813 | | Lab File ID: | 186813.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 11/24/2010 1030 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/22/2010 0932 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Antimony | 0.99 | U | 0.99 | 2.0 |
| Arsenic | 0.82 | J | 0.40 | 1.0 |
| Barium | 12 | | 0.15 | 1.0 |
| Beryllium | 0.070 | U | 0.070 | 0.20 |
| Cadmium | 53 | | 0.20 | 0.50 |
| Chromium | 0.39 | J | 0.16 | 1.0 |
| Cobalt | 0.078 | U | 0.078 | 0.20 |
| Copper | 4.7 | | 0.21 | 1.0 |
| Lead | 0.087 | J | 0.080 | 0.30 |
| Nickel | 0.40 | U | 0.40 | 1.0 |
| Selenium | 0.21 | U | 0.21 | 0.50 |
| Silver | 0.10 | U | 0.10 | 0.20 |
| Thallium | 0.10 | U | 0.10 | 0.20 |
| Tin | 0.40 | U | 0.40 | 1.0 |
| Vanadium | 1.4 | U | 1.4 | 5.0 |
| Zinc | 6.2 | J | 2.6 | 10 |

**7470A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7470A | Analysis Batch: 680-187718 | | Instrument ID: | LEEMAN1 |
| Preparation: | 7470A | Prep Batch: 680-187406 | | Lab File ID: | b120110.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 12/01/2010 2053 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/29/2010 1615 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Mercury | 0.091 | U | 0.091 | 0.20 |

**General Chemistry**

**Client Sample ID:** **SLMW-06-11-10**

Lab Sample ID: 680-63374-7

Client Matrix: Water

Date Sampled: 11/19/2010 1040

Date Received: 11/20/2010 1047

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Nitrate as NO3 | 0.36 | U | mg/L | 0.36 | 1.1 | 5.0 | 300.0 |
| Analysis Batch: 680-187194 | Date Analyzed: 11/20/2010 1719 | | | | | | |
| Cyanide, Total | 0.0025 | U | mg/L | 0.0025 | 0.010 | 1.0 | 335.4 |
| Analysis Batch: 680-187499 | Date Analyzed: 11/30/2010 1223 | | | | | | |
| Prep Batch: 680-187431 | Date Prepared: 11/30/2010 0458 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Sulfide | 43 | | mg/L | 10 | 10 | 1.0 | 9034 |
| Analysis Batch: 680-187236 | Date Analyzed: 11/24/2010 1633 | | | | | | |
| Prep Batch: 680-187122 | Date Prepared: 11/24/2010 0837 | | | | | | |

**General Chemistry**

**Client Sample ID:** **SLMW-10-11-10**

Lab Sample ID: 680-63374-8

Client Matrix: Water

Date Sampled: 11/19/2010 1248

Date Received: 11/20/2010 1047

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Nitrate as NO3 | 0.36 | U | mg/L | 0.36 | 1.1 | 5.0 | 300.0 |
| Analysis Batch: 680-187194 | Date Analyzed: 11/20/2010 1853 | | | | | | |
| Cyanide, Total | 0.0025 | U | mg/L | 0.0025 | 0.010 | 1.0 | 335.4 |
| Analysis Batch: 680-187499 | Date Analyzed: 11/30/2010 1223 | | | | | | |
| Prep Batch: 680-187431 | Date Prepared: 11/30/2010 0458 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Sulfide | 10 | U | mg/L | 10 | 10 | 1.0 | 9034 |
| Analysis Batch: 680-187236 | Date Analyzed: 11/24/2010 1633 | | | | | | |
| Prep Batch: 680-187122 | Date Prepared: 11/24/2010 0837 | | | | | | |

**General Chemistry**

**Client Sample ID:** **SLMW-13-11-10**

Lab Sample ID: 680-63374-9

Client Matrix: Water

Date Sampled: 11/19/2010 1455

Date Received: 11/20/2010 1047

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Nitrate as NO3 | 0.56 | J | mg/L | 0.36 | 1.1 | 5.0 | 300.0 |
| Analysis Batch: 680-187194 | Date Analyzed: 11/20/2010 1920 | | | | | | |
| Cyanide, Total | 0.0025 | U | mg/L | 0.0025 | 0.010 | 1.0 | 335.4 |
| Analysis Batch: 680-187499 | Date Analyzed: 11/30/2010 1223 | | | | | | |
| Prep Batch: 680-187431 | Date Prepared: 11/30/2010 0458 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Sulfide | 28 | | mg/L | 10 | 10 | 1.0 | 9034 |
| Analysis Batch: 680-187236 | Date Analyzed: 11/24/2010 1633 | | | | | | |
| Prep Batch: 680-187122 | Date Prepared: 11/24/2010 0837 | | | | | | |

**General Chemistry**

**Client Sample ID:** **LSMW-12AR-11-10**

Lab Sample ID: 680-63374-10

Client Matrix: Water

Date Sampled: 11/19/2010 0955

Date Received: 11/20/2010 1047

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Nitrate as NO3 | 0.36 | U | mg/L | 0.36 | 1.1 | 5.0 | 300.0 |
| Analysis Batch: 680-187194 | Date Analyzed: 11/20/2010 1706 | | | | | | |
| Cyanide, Total | 0.0025 | U | mg/L | 0.0025 | 0.010 | 1.0 | 335.4 |
| Analysis Batch: 680-187499 | Date Analyzed: 11/30/2010 1223 | | | | | | |
| Prep Batch: 680-187431 | Date Prepared: 11/30/2010 0458 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Sulfide | 10 | U | mg/L | 10 | 10 | 1.0 | 9034 |
| Analysis Batch: 680-187236 | Date Analyzed: 11/24/2010 1633 | | | | | | |
| Prep Batch: 680-187122 | Date Prepared: 11/24/2010 0837 | | | | | | |

**General Chemistry**

**Client Sample ID:** **LSMW-12BR-11-10**

Lab Sample ID: 680-63374-11

Client Matrix: Water

Date Sampled: 11/19/2010 1215

Date Received: 11/20/2010 1047

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Nitrate as NO3 | 0.36 | U | mg/L | 0.36 | 1.1 | 5.0 | 300.0 |
| Analysis Batch: 680-187194 | Date Analyzed: 11/20/2010 1813 | | | | | | |
| Cyanide, Total | 0.0025 | U | mg/L | 0.0025 | 0.010 | 1.0 | 335.4 |
| Analysis Batch: 680-187499 | Date Analyzed: 11/30/2010 1223 | | | | | | |
| Prep Batch: 680-187431 | Date Prepared: 11/30/2010 0458 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Sulfide | 10 | U | mg/L | 10 | 10 | 1.0 | 9034 |
| Analysis Batch: 680-187236 | Date Analyzed: 11/24/2010 1633 | | | | | | |
| Prep Batch: 680-187122 | Date Prepared: 11/24/2010 0837 | | | | | | |

**General Chemistry**

**Client Sample ID:** **LSMW-DUP2-11-10**

Lab Sample ID: 680-63374-12

Client Matrix: Water

Date Sampled: 11/19/2010 1200

Date Received: 11/20/2010 1047

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Nitrate as NO3 | 0.36 | U | mg/L | 0.36 | 1.1 | 5.0 | 300.0 |
| Analysis Batch: 680-187194 | Date Analyzed: 11/20/2010 1759 | | | | | | |
| Cyanide, Total | 0.0025 | U | mg/L | 0.0025 | 0.010 | 1.0 | 335.4 |
| Analysis Batch: 680-187499 | Date Analyzed: 11/30/2010 1223 | | | | | | |
| Prep Batch: 680-187431 | Date Prepared: 11/30/2010 0458 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Sulfide | 10 | U | mg/L | 10 | 10 | 1.0 | 9034 |
| Analysis Batch: 680-187236 | Date Analyzed: 11/24/2010 1633 | | | | | | |
| Prep Batch: 680-187122 | Date Prepared: 11/24/2010 0837 | | | | | | |

**General Chemistry**

**Client Sample ID:** **LSMW-11R-11-10**

Lab Sample ID: 680-63374-13

Client Matrix: Water

Date Sampled: 11/19/2010 1420

Date Received: 11/20/2010 1047

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Nitrate as NO3 | 0.36 | U | mg/L | 0.36 | 1.1 | 5.0 | 300.0 |
| Analysis Batch: 680-187194 | Date Analyzed: 11/20/2010 1906 | | | | | | |
| Cyanide, Total | 0.0025 | U | mg/L | 0.0025 | 0.010 | 1.0 | 335.4 |
| Analysis Batch: 680-187499 | Date Analyzed: 11/30/2010 1223 | | | | | | |
| Prep Batch: 680-187431 | Date Prepared: 11/30/2010 0458 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Sulfide | 10 | U | mg/L | 10 | 10 | 1.0 | 9034 |
| Analysis Batch: 680-187236 | Date Analyzed: 11/24/2010 1633 | | | | | | |
| Prep Batch: 680-187122 | Date Prepared: 11/24/2010 0837 | | | | | | |

**General Chemistry**

**Client Sample ID:** **LSMW-9-11-10**

Lab Sample ID: 680-63374-14

Client Matrix: Water

Date Sampled: 11/19/2010 1620

Date Received: 11/20/2010 1047

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Nitrate as NO3 | 0.36 | U | mg/L | 0.36 | 1.1 | 5.0 | 300.0 |
| Analysis Batch: 680-187194 | Date Analyzed: 11/20/2010 1933 | | | | | | |
| Cyanide, Total | 0.0025 | U | mg/L | 0.0025 | 0.010 | 1.0 | 335.4 |
| Analysis Batch: 680-187499 | Date Analyzed: 11/30/2010 1223 | | | | | | |
| Prep Batch: 680-187431 | Date Prepared: 11/30/2010 0458 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Sulfide | 10 | U | mg/L | 10 | 10 | 1.0 | 9034 |
| Analysis Batch: 680-187236 | Date Analyzed: 11/24/2010 1633 | | | | | | |
| Prep Batch: 680-187122 | Date Prepared: 11/24/2010 0837 | | | | | | |

**General Chemistry**

**Client Sample ID:** **LSMW-BLK-11-10**

Lab Sample ID: 680-63374-15FB

Client Matrix: Water

Date Sampled: 11/19/2010 1800

Date Received: 11/20/2010 1047

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Nitrate as NO3 | 0.36 | U | mg/L | 0.36 | 1.1 | 5.0 | 300.0 |
| Analysis Batch: 680-187194 | Date Analyzed: 11/20/2010 1947 | | | | | | |
| Cyanide, Total | 0.0025 | U | mg/L | 0.0025 | 0.010 | 1.0 | 335.4 |
| Analysis Batch: 680-187499 | Date Analyzed: 11/30/2010 1223 | | | | | | |
| Prep Batch: 680-187431 | Date Prepared: 11/30/2010 0458 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Sulfide | 10 | U | mg/L | 10 | 10 | 1.0 | 9034 |
| Analysis Batch: 680-187236 | Date Analyzed: 11/24/2010 1633 | | | | | | |
| Prep Batch: 680-187122 | Date Prepared: 11/24/2010 0837 | | | | | | |

# DATA REPORTING QUALIFIERS

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

| Lab Section | Qualifier | Description |
|---|---|---|
| GC/MS VOA | | |
| | J | Estimated: The analyte was positively identified; the quantitation is an estimation |
| | Q | One or more quality control criteria failed. |
| | U | Undetected at the Limit of Detection. |
| GC/MS Semi VOA | | |
| | J | Estimated: The analyte was positively identified; the quantitation is an estimation |
| | J | Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria. |
| | M | Manual integrated compound. |
| | Q | One or more quality control criteria failed. |
| | H | Sample was prepped or analyzed beyond the specified holding time |
| | U | Undetected at the Limit of Detection. |
| GC Semi VOA | | |
| | J | Estimated: The analyte was positively identified; the quantitation is an estimation |
| | J | Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria. |
| | M | Manual integrated compound. |
| | U | Undetected at the Limit of Detection. |

# DATA REPORTING QUALIFIERS

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

| Lab Section | Qualifier | Description |
|---|---|---|
| Metals | | |
| | J | Estimated: The analyte was positively identified; the quantitation is an estimation |
| | J | Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria. |
| | U | Undetected at the Limit of Detection. |
| General Chemistry | | |
| | J | Estimated: The analyte was positively identified; the quantitation is an estimation |
| | U | Undetected at the Limit of Detection. |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Method Blank - Batch: 680-187038**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 680-187038/10 | Analysis Batch: | 680-187038 | Instrument ID: | MSO2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | oq068.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/23/2010 1204 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/23/2010 1204 | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Acetonitrile | 10 | U | 10 | 40 |
| Acetone | 5.0 | U | 5.0 | 25 |
| Benzene | 0.25 | U | 0.25 | 1.0 |
| Dichlorobromomethane | 0.25 | U | 0.25 | 1.0 |
| Bromomethane | 0.80 | U | 0.80 | 1.0 |
| Carbon disulfide | 0.60 | U | 0.60 | 2.0 |
| Chlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Chlorodibromomethane | 0.10 | U | 0.10 | 1.0 |
| Chloroethane | 1.0 | U | 1.0 | 1.0 |
| Chloromethane | 0.33 | U | 0.33 | 1.0 |
| Chloroform | 0.14 | U | 0.14 | 1.0 |
| 3-Chloro-1-propene | 0.20 | U | 0.20 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 0.44 | U | 0.44 | 1.0 |
| Ethylene Dibromide | 0.25 | U | 0.25 | 1.0 |
| trans-1,4-Dichloro-2-butene | 0.50 | U | 0.50 | 2.0 |
| Dichlorodifluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,1-Dichloroethane | 0.25 | U | 0.25 | 1.0 |
| 1,2-Dichloroethane | 0.10 | U | 0.10 | 1.0 |
| trans-1,2-Dichloroethene | 0.20 | U | 0.20 | 1.0 |
| 1,1-Dichloroethene | 0.11 | U | 0.11 | 1.0 |
| Methylene Chloride | 1.0 | U | 1.0 | 5.0 |
| 1,2-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| cis-1,3-Dichloropropene | 0.11 | U | 0.11 | 1.0 |
| trans-1,3-Dichloropropene | 0.21 | U | 0.21 | 1.0 |
| Ethylbenzene | 0.11 | U | 0.11 | 1.0 |
| 2-Butanone (MEK) | 1.0 | U | 1.0 | 10 |
| Iodomethane | 1.0 | U | 1.0 | 5.0 |
| Methacrylonitrile | 3.3 | U | 3.3 | 20 |
| 4-Methyl-2-pentanone (MIBK) | 1.0 | U | 1.0 | 10 |
| Styrene | 0.11 | U | 0.11 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 0.33 | U | 0.33 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 0.18 | U | 0.18 | 1.0 |
| Tetrachloroethene | 0.15 | U | 0.15 | 1.0 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 1.0 |
| Toluene | 0.33 | U | 0.33 | 1.0 |
| Bromoform | 0.50 | U | 0.50 | 1.0 |
| 1,1,2-Trichloroethane | 0.13 | U | 0.13 | 1.0 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.50 | 1.0 |
| Trichloroethene | 0.13 | U | 0.13 | 1.0 |
| Trichlorofluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,2,3-Trichloropropane | 0.41 | U | 0.41 | 1.0 |
| Vinyl acetate | 0.28 | U | 0.28 | 2.0 |
| Vinyl chloride | 0.18 | U | 0.18 | 1.0 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Method Blank - Batch: 680-187038**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 680-187038/10 | Analysis Batch: | 680-187038 | Instrument ID: | MSO2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | oq068.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/23/2010 1204 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/23/2010 1204 | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Xylenes, Total | 0.20 | U | 0.20 | 2.0 |
| 2-Hexanone | 1.0 | U | 1.0 | 10 |
| Propionitrile | 4.6 | U | 4.6 | 20 |
| Methyl methacrylate | 0.48 | U | 0.48 | 1.0 |
| Acrolein | 7.4 | U | 7.4 | 20 |
| Acrylonitrile | 7.2 | U | 7.2 | 20 |
| Ethyl methacrylate | 0.25 | U | 0.25 | 1.0 |
| Isobutyl alcohol | 11 | U | 11 | 40 |
| Chlorobromomethane | 0.14 | U | 0.14 | 1.0 |
| cis-1,2-Dichloroethene | 0.15 | U | 0.15 | 1.0 |
| 1,3-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| 2,2-Dichloropropane | 0.12 | U | 0.12 | 1.0 |
| 1,1-Dichloropropene | 0.25 | U | 0.25 | 1.0 |
| 2-Chloro-1,3-butadiene | 0.30 | U | 0.30 | 1.0 |
| 1,2-Dichlorobenzene | 0.21 | U | 0.21 | 1.0 |
| 1,3-Dichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| 1,4-Dichlorobenzene | 0.28 | U | 0.28 | 1.0 |
| 1,2,4-Trichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Dibromomethane | 0.20 | U | 0.20 | 1.0 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Toluene-d8 (Surr) | 102 | 70 - 130 |
| 4-Bromofluorobenzene | 100 | 70 - 130 |
| Dibromofluoromethane | 100 | 70 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 680-187038**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 680-187038/7 | Analysis Batch: | 680-187038 | Instrument ID: | MSO2 |
| Client Matrix: | Water | Prep Batch: N/A | | Lab File ID: | oq060.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/23/2010 1005 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/23/2010 1005 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 680-187038/8 | Analysis Batch: | 680-187038 | Instrument ID: | MSO2 |
| Client Matrix: | Water | Prep Batch: N/A | | Lab File ID: | oq062.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/23/2010 1034 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/23/2010 1034 | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| Acetone | 99 | 98 | 26 - 180 | 1 | 50 | | |
| Benzene | 96 | 99 | 70 - 130 | 3 | 30 | | |
| Dichlorobromomethane | 101 | 105 | 70 - 130 | 4 | 30 | | |
| Bromomethane | 110 | 110 | 23 - 165 | 0 | 50 | | |
| Carbon disulfide | 104 | 102 | 54 - 132 | 2 | 30 | | |
| Chlorobenzene | 98 | 100 | 70 - 130 | 1 | 30 | | |
| Chlorodibromomethane | 98 | 100 | 70 - 130 | 2 | 50 | | |
| Chloroethane | 96 | 93 | 56 - 152 | 3 | 40 | | |
| Chloromethane | 103 | 99 | 70 - 130 | 5 | 30 | | |
| Chloroform | 98 | 99 | 70 - 130 | 2 | 30 | | |
| 1,2-Dibromo-3-Chloropropane | 114 | 118 | 70 - 130 | 4 | 50 | | |
| Ethylene Dibromide | 103 | 107 | 70 - 130 | 4 | 30 | | |
| Dichlorodifluoromethane | 96 | 90 | 44 - 146 | 6 | 50 | | |
| 1,1-Dichloroethane | 99 | 99 | 70 - 130 | 1 | 30 | | |
| 1,2-Dichloroethane | 98 | 105 | 70 - 130 | 7 | 30 | | |
| trans-1,2-Dichloroethene | 91 | 90 | 70 - 130 | 1 | 30 | | |
| 1,1-Dichloroethene | 94 | 92 | 66 - 131 | 3 | 30 | | |
| Methylene Chloride | 103 | 105 | 67 - 130 | 2 | 30 | | |
| 1,2-Dichloropropane | 96 | 100 | 70 - 130 | 4 | 30 | | |
| cis-1,3-Dichloropropene | 100 | 102 | 70 - 130 | 2 | 30 | | |
| trans-1,3-Dichloropropene | 100 | 104 | 70 - 130 | 4 | 50 | | |
| Ethylbenzene | 99 | 98 | 70 - 130 | 1 | 30 | | |
| 2-Butanone (MEK) | 99 | 100 | 49 - 172 | 1 | 30 | | |
| 4-Methyl-2-pentanone (MIBK) | 98 | 102 | 70 - 130 | 5 | 30 | | |
| Styrene | 95 | 98 | 70 - 130 | 2 | 30 | | |
| 1,1,1,2-Tetrachloroethane | 95 | 98 | 70 - 130 | 2 | 30 | | |
| 1,1,2,2-Tetrachloroethane | 103 | 105 | 70 - 130 | 2 | 30 | | |
| Tetrachloroethene | 93 | 92 | 70 - 130 | 1 | 30 | | |
| Carbon tetrachloride | 95 | 95 | 70 - 130 | 0 | 30 | | |
| Toluene | 99 | 101 | 70 - 130 | 1 | 30 | | |
| Bromoform | 108 | 112 | 70 - 130 | 3 | 30 | | |
| 1,1,2-Trichloroethane | 96 | 101 | 70 - 130 | 6 | 30 | | |
| 1,1,1-Trichloroethane | 96 | 97 | 70 - 130 | 1 | 30 | | |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 680-187038**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 680-187038/7 | Analysis Batch: | 680-187038 | Instrument ID: | MSO2 |
| Client Matrix: | Water | Prep Batch: N/A | | Lab File ID: | oq060.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/23/2010 1005 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/23/2010 1005 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 680-187038/8 | Analysis Batch: | 680-187038 | Instrument ID: | MSO2 |
| Client Matrix: | Water | Prep Batch: N/A | | Lab File ID: | oq062.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/23/2010 1034 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/23/2010 1034 | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| Trichloroethene | 93 | 96 | 70 - 130 | 2 | 30 | | |
| Trichlorofluoromethane | 91 | 88 | 55 - 156 | 4 | 30 | | |
| 1,2,3-Trichloropropane | 100 | 107 | 70 - 130 | 7 | 30 | | |
| Vinyl acetate | 156 | 157 | 60 - 176 | 1 | 30 | | |
| Vinyl chloride | 102 | 98 | 67 - 134 | 4 | 30 | | |
| Xylenes, Total | 95 | 96 | 70 - 130 | 1 | 30 | | |
| 2-Hexanone | 100 | 104 | 42 - 185 | 4 | 30 | | |
| Chlorobromomethane | 103 | 105 | 70 - 130 | 2 | 30 | | |
| cis-1,2-Dichloroethene | 95 | 97 | 70 - 130 | 2 | 30 | | |
| 1,3-Dichloropropane | 97 | 104 | 70 - 130 | 6 | 30 | | |
| 2,2-Dichloropropane | 108 | 103 | 70 - 135 | 4 | 30 | | |
| 1,1-Dichloropropene | 96 | 96 | 70 - 130 | 0 | 30 | | |
| 1,2-Dichlorobenzene | 112 | 114 | 70 - 130 | 2 | 30 | | |
| 1,3-Dichlorobenzene | 111 | 114 | 70 - 130 | 3 | 30 | | |
| 1,4-Dichlorobenzene | 113 | 113 | 70 - 130 | 1 | 30 | | |
| 1,2,4-Trichlorobenzene | 110 | 112 | 65 - 130 | 2 | 30 | | |
| Dibromomethane | 95 | 99 | 70 - 130 | 5 | 30 | | |

| Surrogate | LCS % Rec | LCSD % Rec | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 98 | 102 | 70 - 130 |
| 4-Bromofluorobenzene | 103 | 105 | 70 - 130 |
| Dibromofluoromethane | 99 | 99 | 70 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Method Blank - Batch: 680-187218**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 680-187218/12 | Analysis Batch: | 680-187218 | Instrument ID: | MSO |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | oq089.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/24/2010 1133 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/24/2010 1133 | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Acetonitrile | 10 | U | 10 | 40 |
| Acetone | 5.0 | U | 5.0 | 25 |
| Benzene | 0.25 | U | 0.25 | 1.0 |
| Dichlorobromomethane | 0.25 | U | 0.25 | 1.0 |
| Bromomethane | 0.80 | U | 0.80 | 1.0 |
| Carbon disulfide | 0.60 | U | 0.60 | 2.0 |
| Chlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Chlorodibromomethane | 0.10 | U | 0.10 | 1.0 |
| Chloroethane | 1.0 | U | 1.0 | 1.0 |
| Chloromethane | 0.33 | U | 0.33 | 1.0 |
| Chloroform | 0.14 | U | 0.14 | 1.0 |
| 3-Chloro-1-propene | 0.20 | U | 0.20 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 0.44 | U | 0.44 | 1.0 |
| Ethylene Dibromide | 0.25 | U | 0.25 | 1.0 |
| trans-1,4-Dichloro-2-butene | 0.50 | U | 0.50 | 2.0 |
| Dichlorodifluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,1-Dichloroethane | 0.25 | U | 0.25 | 1.0 |
| 1,2-Dichloroethane | 0.10 | U | 0.10 | 1.0 |
| trans-1,2-Dichloroethene | 0.20 | U | 0.20 | 1.0 |
| 1,1-Dichloroethene | 0.11 | U | 0.11 | 1.0 |
| Methylene Chloride | 1.0 | U | 1.0 | 5.0 |
| 1,2-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| cis-1,3-Dichloropropene | 0.11 | U | 0.11 | 1.0 |
| trans-1,3-Dichloropropene | 0.21 | U | 0.21 | 1.0 |
| Ethylbenzene | 0.11 | U | 0.11 | 1.0 |
| 2-Butanone (MEK) | 1.0 | U | 1.0 | 10 |
| Iodomethane | 1.0 | U | 1.0 | 5.0 |
| Methacrylonitrile | 3.3 | U | 3.3 | 20 |
| 4-Methyl-2-pentanone (MIBK) | 1.0 | U | 1.0 | 10 |
| Styrene | 0.11 | U | 0.11 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 0.33 | U | 0.33 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 0.18 | U | 0.18 | 1.0 |
| Tetrachloroethene | 0.15 | U | 0.15 | 1.0 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 1.0 |
| Toluene | 0.33 | U | 0.33 | 1.0 |
| Bromoform | 0.50 | U | 0.50 | 1.0 |
| 1,1,2-Trichloroethane | 0.13 | U | 0.13 | 1.0 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.50 | 1.0 |
| Trichloroethene | 0.13 | U | 0.13 | 1.0 |
| Trichlorofluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,2,3-Trichloropropane | 0.41 | U | 0.41 | 1.0 |
| Vinyl acetate | 0.28 | U | 0.28 | 2.0 |
| Vinyl chloride | 0.18 | U | 0.18 | 1.0 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Method Blank - Batch: 680-187218**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 680-187218/12 | Analysis Batch: | 680-187218 | Instrument ID: | MSO |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | oq089.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/24/2010 1133 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/24/2010 1133 | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Xylenes, Total | 0.20 | U | 0.20 | 2.0 |
| 2-Hexanone | 1.0 | U | 1.0 | 10 |
| Propionitrile | 4.6 | U | 4.6 | 20 |
| Methyl methacrylate | 0.48 | U | 0.48 | 1.0 |
| Acrolein | 7.4 | U | 7.4 | 20 |
| Acrylonitrile | 7.2 | U | 7.2 | 20 |
| Ethyl methacrylate | 0.25 | U | 0.25 | 1.0 |
| Isobutyl alcohol | 11 | U | 11 | 40 |
| Chlorobromomethane | 0.14 | U | 0.14 | 1.0 |
| cis-1,2-Dichloroethene | 0.15 | U | 0.15 | 1.0 |
| 1,3-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| 2,2-Dichloropropane | 0.12 | U | 0.12 | 1.0 |
| 1,1-Dichloropropene | 0.25 | U | 0.25 | 1.0 |
| 2-Chloro-1,3-butadiene | 0.30 | U | 0.30 | 1.0 |
| 1,2-Dichlorobenzene | 0.21 | U | 0.21 | 1.0 |
| 1,3-Dichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| 1,4-Dichlorobenzene | 0.28 | U | 0.28 | 1.0 |
| 1,2,4-Trichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Dibromomethane | 0.20 | U | 0.20 | 1.0 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Toluene-d8 (Surr) | 103 | 70 - 130 |
| 4-Bromofluorobenzene | 101 | 70 - 130 |
| Dibromofluoromethane | 96 | 70 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 680-187218**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 680-187218/9 | Analysis Batch: | 680-187218 | Instrument ID: | MSO |
| Client Matrix: | Water | Prep Batch: N/A | | Lab File ID: | oq081.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/24/2010 0935 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/24/2010 0935 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 680-187218/10 | Analysis Batch: | 680-187218 | Instrument ID: | MSO |
| Client Matrix: | Water | Prep Batch: N/A | | Lab File ID: | oq083.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/24/2010 1003 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/24/2010 1003 | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| Acetone | 99 | 103 | 26 - 180 | 4 | 50 | | |
| Benzene | 101 | 101 | 70 - 130 | 0 | 30 | | |
| Dichlorobromomethane | 111 | 109 | 70 - 130 | 2 | 30 | | |
| Bromomethane | 92 | 86 | 23 - 165 | 6 | 50 | | |
| Carbon disulfide | 95 | 97 | 54 - 132 | 3 | 30 | | |
| Chlorobenzene | 101 | 102 | 70 - 130 | 2 | 30 | | |
| Chlorodibromomethane | 110 | 111 | 70 - 130 | 1 | 50 | | |
| Chloroethane | 81 | 78 | 56 - 152 | 4 | 40 | | |
| Chloromethane | 87 | 84 | 70 - 130 | 4 | 30 | | |
| Chloroform | 105 | 104 | 70 - 130 | 1 | 30 | | |
| 1,2-Dibromo-3-Chloropropane | 107 | 106 | 70 - 130 | 1 | 50 | | |
| Ethylene Dibromide | 108 | 106 | 70 - 130 | 2 | 30 | | |
| Dichlorodifluoromethane | 98 | 100 | 44 - 146 | 2 | 50 | | |
| 1,1-Dichloroethane | 101 | 100 | 70 - 130 | 1 | 30 | | |
| 1,2-Dichloroethane | 102 | 101 | 70 - 130 | 1 | 30 | | |
| trans-1,2-Dichloroethene | 95 | 97 | 70 - 130 | 1 | 30 | | |
| 1,1-Dichloroethene | 93 | 95 | 66 - 131 | 2 | 30 | | |
| Methylene Chloride | 98 | 99 | 67 - 130 | 1 | 30 | | |
| 1,2-Dichloropropane | 101 | 101 | 70 - 130 | 0 | 30 | | |
| cis-1,3-Dichloropropene | 105 | 105 | 70 - 130 | 0 | 30 | | |
| trans-1,3-Dichloropropene | 108 | 106 | 70 - 130 | 2 | 50 | | |
| Ethylbenzene | 100 | 100 | 70 - 130 | 0 | 30 | | |
| 2-Butanone (MEK) | 102 | 103 | 49 - 172 | 1 | 30 | | |
| 4-Methyl-2-pentanone (MIBK) | 102 | 101 | 70 - 130 | 1 | 30 | | |
| Styrene | 99 | 99 | 70 - 130 | 1 | 30 | | |
| 1,1,1,2-Tetrachloroethane | 101 | 103 | 70 - 130 | 2 | 30 | | |
| 1,1,2,2-Tetrachloroethane | 109 | 108 | 70 - 130 | 1 | 30 | | |
| Tetrachloroethene | 102 | 101 | 70 - 130 | 1 | 30 | | |
| Carbon tetrachloride | 102 | 101 | 70 - 130 | 1 | 30 | | |
| Toluene | 104 | 105 | 70 - 130 | 1 | 30 | | |
| Bromoform | 116 | 117 | 70 - 130 | 1 | 30 | | |
| 1,1,2-Trichloroethane | 104 | 105 | 70 - 130 | 1 | 30 | | |
| 1,1,1-Trichloroethane | 101 | 101 | 70 - 130 | 0 | 30 | | |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 680-187218**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 680-187218/9 | Analysis Batch: | 680-187218 | Instrument ID: | MSO |
| Client Matrix: | Water | Prep Batch: N/A | | Lab File ID: | oq081.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/24/2010 0935 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/24/2010 0935 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 680-187218/10 | Analysis Batch: | 680-187218 | Instrument ID: | MSO |
| Client Matrix: | Water | Prep Batch: N/A | | Lab File ID: | oq083.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/24/2010 1003 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/24/2010 1003 | | | | |

| Analyte | % Rec. LCS | % Rec. LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
|---|---|---|---|---|---|---|---|
| Trichloroethene | 100 | 99 | 70 - 130 | 1 | 30 | | |
| Trichlorofluoromethane | 92 | 88 | 55 - 156 | 5 | 30 | | |
| 1,2,3-Trichloropropane | 112 | 112 | 70 - 130 | 0 | 30 | | |
| Vinyl acetate | 154 | 153 | 60 - 176 | 1 | 30 | | |
| Vinyl chloride | 87 | 85 | 67 - 134 | 2 | 30 | | |
| Xylenes, Total | 96 | 97 | 70 - 130 | 1 | 30 | | |
| 2-Hexanone | 107 | 105 | 42 - 185 | 2 | 30 | | |
| Chlorobromomethane | 101 | 95 | 70 - 130 | 5 | 30 | | |
| cis-1,2-Dichloroethene | 102 | 101 | 70 - 130 | 1 | 30 | | |
| 1,3-Dichloropropane | 103 | 102 | 70 - 130 | 1 | 30 | | |
| 2,2-Dichloropropane | 112 | 111 | 70 - 135 | 1 | 30 | | |
| 1,1-Dichloropropene | 99 | 98 | 70 - 130 | 1 | 30 | | |
| 1,2-Dichlorobenzene | 108 | 105 | 70 - 130 | 2 | 30 | | |
| 1,3-Dichlorobenzene | 103 | 103 | 70 - 130 | 0 | 30 | | |
| 1,4-Dichlorobenzene | 106 | 105 | 70 - 130 | 1 | 30 | | |
| 1,2,4-Trichlorobenzene | 109 | 109 | 65 - 130 | 1 | 30 | | |
| Dibromomethane | 99 | 96 | 70 - 130 | 3 | 30 | | |

| Surrogate | LCS % Rec | LCSD % Rec | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 102 | 103 | 70 - 130 |
| 4-Bromofluorobenzene | 110 | 110 | 70 - 130 |
| Dibromofluoromethane | 102 | 101 | 70 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 680-187218**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 680-63374-11 | Analysis Batch: | 680-187218 | Instrument ID: | MSO |
| Client Matrix: | Water | Prep Batch: N/A | | Lab File ID: | o0107.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/24/2010 1923 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/24/2010 1923 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 680-63374-11 | Analysis Batch: | 680-187218 | Instrument ID: | MSO |
| Client Matrix: | Water | Prep Batch: N/A | | Lab File ID: | o0109.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/24/2010 1952 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/24/2010 1952 | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Acetone | 97 | 94 | 26 - 180 | 3 | 50 | | |
| Benzene | 104 | 102 | 70 - 130 | 3 | 30 | | |
| Dichlorobromomethane | 110 | 105 | 70 - 130 | 4 | 30 | | |
| Bromomethane | 37 | 52 | 23 - 165 | 35 | 50 | | |
| Carbon disulfide | 108 | 106 | 54 - 132 | 2 | 30 | | |
| Chlorobenzene | 102 | 102 | 70 - 130 | 0 | 30 | | |
| Chlorodibromomethane | 104 | 104 | 70 - 130 | 0 | 50 | | |
| Chloroethane | 100 | 96 | 56 - 152 | 4 | 40 | | |
| Chloromethane | 97 | 94 | 70 - 130 | 4 | 30 | | |
| Chloroform | 107 | 103 | 70 - 130 | 4 | 30 | | |
| 1,2-Dibromo-3-Chloropropane | 101 | 101 | 70 - 130 | 0 | 50 | | |
| Ethylene Dibromide | 103 | 102 | 70 - 130 | 1 | 30 | | |
| Dichlorodifluoromethane | 126 | 122 | 44 - 146 | 3 | 50 | | |
| 1,1-Dichloroethane | 105 | 102 | 70 - 130 | 3 | 30 | | |
| 1,2-Dichloroethane | 105 | 102 | 70 - 130 | 3 | 30 | | |
| trans-1,2-Dichloroethene | 102 | 102 | 70 - 130 | 0 | 30 | | |
| 1,1-Dichloroethene | 108 | 106 | 66 - 131 | 2 | 30 | | |
| Methylene Chloride | 103 | 102 | 67 - 130 | 1 | 30 | | |
| 1,2-Dichloropropane | 100 | 97 | 70 - 130 | 3 | 30 | | |
| cis-1,3-Dichloropropene | 103 | 99 | 70 - 130 | 4 | 30 | | |
| trans-1,3-Dichloropropene | 106 | 101 | 70 - 130 | 5 | 50 | | |
| Ethylbenzene | 102 | 101 | 70 - 130 | 1 | 30 | | |
| 2-Butanone (MEK) | 95 | 92 | 49 - 172 | 4 | 30 | | |
| 4-Methyl-2-pentanone (MIBK) | 95 | 92 | 70 - 130 | 3 | 30 | | |
| Styrene | 99 | 96 | 70 - 130 | 3 | 30 | | |
| 1,1,1,2-Tetrachloroethane | 106 | 103 | 70 - 130 | 3 | 30 | | |
| 1,1,2,2-Tetrachloroethane | 111 | 107 | 70 - 130 | 4 | 30 | | |
| Tetrachloroethene | 104 | 104 | 70 - 130 | 0 | 30 | | |
| Carbon tetrachloride | 107 | 104 | 70 - 130 | 3 | 30 | | |
| Toluene | 108 | 103 | 70 - 130 | 4 | 30 | | |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 680-187218**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 680-63374-11 | Analysis Batch: | 680-187218 | Instrument ID: | MSO |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | o0107.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/24/2010 1923 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/24/2010 1923 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 680-63374-11 | Analysis Batch: | 680-187218 | Instrument ID: | MSO |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | o0109.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/24/2010 1952 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/24/2010 1952 | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Bromoform | 109 | 109 | 70 - 130 | 0 | 30 | | |
| 1,1,2-Trichloroethane | 105 | 103 | 70 - 130 | 2 | 30 | | |
| 1,1,1-Trichloroethane | 108 | 105 | 70 - 130 | 3 | 30 | | |
| Trichloroethene | 103 | 99 | 70 - 130 | 3 | 30 | | |
| Trichlorofluoromethane | 110 | 106 | 55 - 156 | 4 | 30 | | |
| 1,2,3-Trichloropropane | 106 | 105 | 70 - 130 | 1 | 30 | | |
| Vinyl acetate | 93 | 91 | 60 - 176 | 2 | 30 | | |
| Vinyl chloride | 96 | 94 | 67 - 134 | 2 | 30 | | |
| Xylenes, Total | 100 | 96 | 70 - 130 | 4 | 30 | | |
| 2-Hexanone | 97 | 94 | 42 - 185 | 3 | 30 | | |
| Chlorobromomethane | 100 | 95 | 70 - 130 | 5 | 30 | | |
| cis-1,2-Dichloroethene | 107 | 103 | 70 - 130 | 3 | 30 | | |
| 1,3-Dichloropropane | 104 | 100 | 70 - 130 | 4 | 30 | | |
| 2,2-Dichloropropane | 114 | 110 | 70 - 135 | 3 | 30 | | |
| 1,1-Dichloropropene | 109 | 107 | 70 - 130 | 2 | 30 | | |
| 1,2-Dichlorobenzene | 103 | 102 | 70 - 130 | 2 | 30 | | |
| 1,3-Dichlorobenzene | 102 | 98 | 70 - 130 | 4 | 30 | | |
| 1,4-Dichlorobenzene | 104 | 101 | 70 - 130 | 3 | 30 | | |
| 1,2,4-Trichlorobenzene | 106 | 103 | 65 - 130 | 3 | 30 | | |
| Dibromomethane | 96 | 93 | 70 - 130 | 4 | 30 | | |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 106 | 103 | 70 - 130 |
| 4-Bromofluorobenzene | 106 | 105 | 70 - 130 |
| Dibromofluoromethane | 101 | 100 | 70 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Method Blank - Batch: 680-187226**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 680-187226/26 | Analysis Batch: | 680-187226 | Instrument ID: | MSO |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | oq075.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/23/2010 2321 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/23/2010 2321 | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Acetonitrile | 10 | U | 10 | 40 |
| Acetone | 5.0 | U | 5.0 | 25 |
| Benzene | 0.25 | U | 0.25 | 1.0 |
| Dichlorobromomethane | 0.25 | U | 0.25 | 1.0 |
| Bromomethane | 0.80 | U | 0.80 | 1.0 |
| Carbon disulfide | 0.60 | U | 0.60 | 2.0 |
| Chlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Chlorodibromomethane | 0.10 | U | 0.10 | 1.0 |
| Chloroethane | 1.0 | U | 1.0 | 1.0 |
| Chloromethane | 0.33 | U | 0.33 | 1.0 |
| Chloroform | 0.14 | U | 0.14 | 1.0 |
| 3-Chloro-1-propene | 0.20 | U | 0.20 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 0.44 | U | 0.44 | 1.0 |
| Ethylene Dibromide | 0.25 | U | 0.25 | 1.0 |
| trans-1,4-Dichloro-2-butene | 0.50 | U | 0.50 | 2.0 |
| Dichlorodifluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,1-Dichloroethane | 0.25 | U | 0.25 | 1.0 |
| 1,2-Dichloroethane | 0.10 | U | 0.10 | 1.0 |
| trans-1,2-Dichloroethene | 0.20 | U | 0.20 | 1.0 |
| 1,1-Dichloroethene | 0.11 | U | 0.11 | 1.0 |
| Methylene Chloride | 1.0 | U | 1.0 | 5.0 |
| 1,2-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| cis-1,3-Dichloropropene | 0.11 | U | 0.11 | 1.0 |
| trans-1,3-Dichloropropene | 0.21 | U | 0.21 | 1.0 |
| Ethylbenzene | 0.11 | U | 0.11 | 1.0 |
| 2-Butanone (MEK) | 1.0 | U | 1.0 | 10 |
| Iodomethane | 1.0 | U | 1.0 | 5.0 |
| Methacrylonitrile | 3.3 | U | 3.3 | 20 |
| 4-Methyl-2-pentanone (MIBK) | 1.0 | U | 1.0 | 10 |
| Styrene | 0.11 | U | 0.11 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 0.33 | U | 0.33 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 0.18 | U | 0.18 | 1.0 |
| Tetrachloroethene | 0.15 | U | 0.15 | 1.0 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 1.0 |
| Toluene | 0.33 | U | 0.33 | 1.0 |
| Bromoform | 0.50 | U | 0.50 | 1.0 |
| 1,1,2-Trichloroethane | 0.13 | U | 0.13 | 1.0 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.50 | 1.0 |
| Trichloroethene | 0.13 | U | 0.13 | 1.0 |
| Trichlorofluoromethane | 0.25 | U | 0.25 | 1.0 |
| 1,2,3-Trichloropropane | 0.41 | U | 0.41 | 1.0 |
| Vinyl acetate | 0.28 | U | 0.28 | 2.0 |
| Vinyl chloride | 0.18 | U | 0.18 | 1.0 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Method Blank - Batch: 680-187226**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 680-187226/26 | Analysis Batch: | 680-187226 | Instrument ID: | MSO |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | oq075.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/23/2010 2321 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/23/2010 2321 | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Xylenes, Total | 0.20 | U | 0.20 | 2.0 |
| 2-Hexanone | 1.0 | U | 1.0 | 10 |
| Propionitrile | 4.6 | U | 4.6 | 20 |
| Methyl methacrylate | 0.48 | U | 0.48 | 1.0 |
| Acrolein | 7.4 | U | 7.4 | 20 |
| Acrylonitrile | 7.2 | U | 7.2 | 20 |
| Ethyl methacrylate | 0.25 | U | 0.25 | 1.0 |
| Isobutyl alcohol | 11 | U | 11 | 40 |
| Chlorobromomethane | 0.14 | U | 0.14 | 1.0 |
| cis-1,2-Dichloroethene | 0.15 | U | 0.15 | 1.0 |
| 1,3-Dichloropropane | 0.13 | U | 0.13 | 1.0 |
| 2,2-Dichloropropane | 0.12 | U | 0.12 | 1.0 |
| 1,1-Dichloropropene | 0.25 | U | 0.25 | 1.0 |
| 2-Chloro-1,3-butadiene | 0.30 | U | 0.30 | 1.0 |
| 1,2-Dichlorobenzene | 0.21 | U | 0.21 | 1.0 |
| 1,3-Dichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| 1,4-Dichlorobenzene | 0.28 | U | 0.28 | 1.0 |
| 1,2,4-Trichlorobenzene | 0.25 | U | 0.25 | 1.0 |
| Dibromomethane | 0.20 | U | 0.20 | 1.0 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Toluene-d8 (Surr) | 103 | 70 - 130 |
| 4-Bromofluorobenzene | 100 | 70 - 130 |
| Dibromofluoromethane | 93 | 70 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 680-187226**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 680-187226/24 | Analysis Batch: | 680-187226 | Instrument ID: | MSO |
| Client Matrix: | Water | Prep Batch: N/A | | Lab File ID: | oq071.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/23/2010 2158 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/23/2010 2158 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 680-187226/27 | Analysis Batch: | 680-187226 | Instrument ID: | MSO |
| Client Matrix: | Water | Prep Batch: N/A | | Lab File ID: | oq076.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/24/2010 0637 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/24/2010 0637 | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| Acetone | 106 | 100 | 26 - 180 | 6 | 50 | | |
| Benzene | 101 | 103 | 70 - 130 | 3 | 30 | | |
| Dichlorobromomethane | 107 | 108 | 70 - 130 | 1 | 30 | | |
| Bromomethane | 87 | 104 | 23 - 165 | 18 | 50 | | |
| Carbon disulfide | 99 | 97 | 54 - 132 | 2 | 30 | | |
| Chlorobenzene | 100 | 99 | 70 - 130 | 0 | 30 | | |
| Chlorodibromomethane | 101 | 100 | 70 - 130 | 1 | 50 | | |
| Chloroethane | 84 | 98 | 56 - 152 | 15 | 40 | | |
| Chloromethane | 94 | 98 | 70 - 130 | 4 | 30 | | |
| Chloroform | 102 | 100 | 70 - 130 | 2 | 30 | | |
| 1,2-Dibromo-3-Chloropropane | 100 | 97 | 70 - 130 | 3 | 50 | | |
| Ethylene Dibromide | 103 | 104 | 70 - 130 | 2 | 30 | | |
| Dichlorodifluoromethane | 97 | 92 | 44 - 146 | 5 | 50 | | |
| 1,1-Dichloroethane | 101 | 100 | 70 - 130 | 1 | 30 | | |
| 1,2-Dichloroethane | 101 | 103 | 70 - 130 | 2 | 30 | | |
| trans-1,2-Dichloroethene | 98 | 98 | 70 - 130 | 1 | 30 | | |
| 1,1-Dichloroethene | 97 | 94 | 66 - 131 | 3 | 30 | | |
| Methylene Chloride | 99 | 97 | 67 - 130 | 2 | 30 | | |
| 1,2-Dichloropropane | 101 | 99 | 70 - 130 | 2 | 30 | | |
| cis-1,3-Dichloropropene | 102 | 100 | 70 - 130 | 2 | 30 | | |
| trans-1,3-Dichloropropene | 104 | 104 | 70 - 130 | 1 | 50 | | |
| Ethylbenzene | 97 | 98 | 70 - 130 | 1 | 30 | | |
| 2-Butanone (MEK) | 100 | 97 | 49 - 172 | 4 | 30 | | |
| 4-Methyl-2-pentanone (MIBK) | 102 | 102 | 70 - 130 | 0 | 30 | | |
| Styrene | 96 | 97 | 70 - 130 | 1 | 30 | | |
| 1,1,1,2-Tetrachloroethane | 97 | 99 | 70 - 130 | 2 | 30 | | |
| 1,1,2,2-Tetrachloroethane | 103 | 105 | 70 - 130 | 1 | 30 | | |
| Tetrachloroethene | 98 | 97 | 70 - 130 | 0 | 30 | | |
| Carbon tetrachloride | 100 | 101 | 70 - 130 | 0 | 30 | | |
| Toluene | 104 | 106 | 70 - 130 | 3 | 30 | | |
| Bromoform | 110 | 108 | 70 - 130 | 2 | 30 | | |
| 1,1,2-Trichloroethane | 100 | 104 | 70 - 130 | 3 | 30 | | |
| 1,1,1-Trichloroethane | 100 | 102 | 70 - 130 | 2 | 30 | | |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 680-187226**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 680-187226/24 | Analysis Batch: | 680-187226 | Instrument ID: | MSO |
| Client Matrix: | Water | Prep Batch: N/A | | Lab File ID: | oq071.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/23/2010 2158 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/23/2010 2158 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 680-187226/27 | Analysis Batch: | 680-187226 | Instrument ID: | MSO |
| Client Matrix: | Water | Prep Batch: N/A | | Lab File ID: | oq076.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 11/24/2010 0637 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 11/24/2010 0637 | | | | |

| Analyte | % Rec. LCS | % Rec. LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
|---|---|---|---|---|---|---|---|
| Trichloroethene | 98 | 97 | 70 - 130 | 0 | 30 | | |
| Trichlorofluoromethane | 95 | 102 | 55 - 156 | 8 | 30 | | |
| 1,2,3-Trichloropropane | 107 | 103 | 70 - 130 | 4 | 30 | | |
| Vinyl acetate | 154 | 87 | 60 - 176 | 56 | 30 | | Q |
| Vinyl chloride | 94 | 100 | 67 - 134 | 7 | 30 | | |
| Xylenes, Total | 94 | 96 | 70 - 130 | 1 | 30 | | |
| 2-Hexanone | 104 | 99 | 42 - 185 | 5 | 30 | | |
| Chlorobromomethane | 97 | 95 | 70 - 130 | 2 | 30 | | |
| cis-1,2-Dichloroethene | 101 | 99 | 70 - 130 | 2 | 30 | | |
| 1,3-Dichloropropane | 98 | 103 | 70 - 130 | 5 | 30 | | |
| 2,2-Dichloropropane | 114 | 89 | 70 - 135 | 24 | 30 | | |
| 1,1-Dichloropropene | 101 | 101 | 70 - 130 | 1 | 30 | | |
| 1,2-Dichlorobenzene | 102 | 102 | 70 - 130 | 1 | 30 | | |
| 1,3-Dichlorobenzene | 100 | 99 | 70 - 130 | 1 | 30 | | |
| 1,4-Dichlorobenzene | 103 | 103 | 70 - 130 | 0 | 30 | | |
| 1,2,4-Trichlorobenzene | 103 | 98 | 65 - 130 | 6 | 30 | | |
| Dibromomethane | 95 | 96 | 70 - 130 | 1 | 30 | | |

| Surrogate | LCS % Rec | LCSD % Rec | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 103 | 106 | 70 - 130 |
| 4-Bromofluorobenzene | 104 | 104 | 70 - 130 |
| Dibromofluoromethane | 98 | 96 | 70 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Method Blank - Batch: 680-187142**

**Method: 8270D**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 680-187142/19-A | Analysis Batch: | 680-187762 | Instrument ID: | MSG |
| Client Matrix: | Water | Prep Batch: | 680-187142 | Lab File ID: | g4484.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 1000 mL |
| Date Analyzed: | 12/02/2010 1224 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Acenaphthene | 0.76 | U | 0.76 | 10 |
| Acenaphthylene | 0.85 | U | 0.85 | 10 |
| Acetophenone | 0.57 | U | 0.57 | 10 |
| 2-Acetylaminofluorene | 1.6 | U | 1.6 | 10 |
| 4-Aminobiphenyl | 1.2 | U | 1.2 | 10 |
| Anthracene | 0.69 | U | 0.69 | 10 |
| Benzo[a]anthracene | 0.55 | U | 0.55 | 10 |
| Benzo[a]pyrene | 0.71 | U | 0.71 | 10 |
| Benzo[b]fluoranthene | 2.6 | U | 2.6 | 10 |
| Benzo[g,h,i]perylene | 0.87 | U | 0.87 | 10 |
| Benzo[k]fluoranthene | 1.2 | U | 1.2 | 10 |
| Benzyl alcohol | 1.1 | U | 1.1 | 10 |
| 1,1'-Biphenyl | 0.58 | U | 0.58 | 10 |
| Bis(2-chloroethoxy)methane | 0.94 | U | 0.94 | 10 |
| Bis(2-chloroethyl)ether | 1.1 | U | 1.1 | 10 |
| bis(chloroisopropyl) ether | 0.78 | U | 0.78 | 10 |
| Bis(2-ethylhexyl) phthalate | 1.6 | U | 1.6 | 10 |
| 4-Bromophenyl phenyl ether | 0.77 | U | 0.77 | 10 |
| Butyl benzyl phthalate | 1.2 | U | 1.2 | 10 |
| 4-Chloroaniline | 2.2 | U | 2.2 | 20 |
| 4-Chloro-3-methylphenol | 1.0 | U | 1.0 | 10 |
| 2-Chloronaphthalene | 0.80 | U | 0.80 | 10 |
| 2-Chlorophenol | 0.87 | U | 0.87 | 10 |
| 4-Chlorophenyl phenyl ether | 0.84 | U | 0.84 | 10 |
| Chrysene | 0.51 | U | 0.51 | 10 |
| Diallate | 0.78 | U | 0.78 | 10 |
| Dibenz(a,h)anthracene | 1.0 | U | 1.0 | 10 |
| Dibenzofuran | 0.79 | U | 0.79 | 10 |
| 3,3'-Dichlorobenzidine | 30 | U | 30 | 60 |
| 2,4-Dichlorophenol | 1.1 | U | 1.1 | 10 |
| 2,6-Dichlorophenol | 0.73 | U | 0.73 | 10 |
| Diethyl phthalate | 0.88 | U | 0.88 | 10 |
| Dimethoate | 0.75 | U | 0.75 | 10 |
| 7,12-Dimethylbenz(a)anthracene | 1.2 | U | 1.2 | 10 |
| 3,3'-Dimethylbenzidine | 10 | U | 10 | 20 |
| 2,4-Dimethylphenol | 4.0 | U | 4.0 | 10 |
| Dimethyl phthalate | 0.99 | U | 0.99 | 10 |
| Di-n-butyl phthalate | 0.83 | U | 0.83 | 10 |
| 1,3-Dinitrobenzene | 0.60 | U | 0.60 | 10 |
| 4,6-Dinitro-2-methylphenol | 10 | U | 10 | 50 |
| 2,4-Dinitrophenol | 10 | U | 10 | 50 |
| 2,4-Dinitrotoluene | 1.2 | U | 1.2 | 10 |
| 2,6-Dinitrotoluene | 1.1 | U | 1.1 | 10 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Method Blank - Batch: 680-187142**

**Method: 8270D**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 680-187142/19-A | Analysis Batch: | 680-187762 | Instrument ID: | MSG |
| Client Matrix: | Water | Prep Batch: | 680-187142 | Lab File ID: | g4484.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 1000 mL |
| Date Analyzed: | 12/02/2010 1224 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Di-n-octyl phthalate | 1.4 | U | 1.4 | 10 |
| Dinoseb | 5.0 | U | 5.0 | 10 |
| 1,4-Dioxane | 3.4 | U | 3.4 | 10 |
| Disulfoton | 0.79 | U | 0.79 | 10 |
| Ethyl methanesulfonate | 0.96 | U | 0.96 | 10 |
| Ethyl Parathion | 1.3 | U | 1.3 | 10 |
| Famphur | 1.1 | U | 1.1 | 10 |
| Fluoranthene | 0.74 | U | 0.74 | 10 |
| Fluorene | 0.96 | U | 0.96 | 10 |
| Hexachlorobenzene | 0.79 | U | 0.79 | 10 |
| Hexachlorobutadiene | 0.62 | U | 0.62 | 10 |
| Hexachlorocyclopentadiene | 2.5 | U | 2.5 | 10 |
| Hexachloroethane | 0.76 | U | 0.76 | 10 |
| Hexachloropropene | 1.4 | U | 1.4 | 10 |
| Indeno[1,2,3-cd]pyrene | 1.0 | U | 1.0 | 10 |
| Isophorone | 0.90 | U | 0.90 | 10 |
| Isosafrole | 0.50 | U | 0.50 | 10 |
| Methapyrilene | 2.7 | U | 2.7 | 2000 |
| 3-Methylcholanthrene | 1.4 | U | 1.4 | 10 |
| Methyl methanesulfonate | 0.60 | U | 0.60 | 10 |
| 2-Methylnaphthalene | 0.78 | U | 0.78 | 10 |
| Methyl parathion | 0.88 | U | 0.88 | 10 |
| 2-Methylphenol | 0.89 | U | 0.89 | 10 |
| 3 & 4 Methylphenol | 1.3 | U | 1.3 | 10 |
| Naphthalene | 0.70 | U | 0.70 | 10 |
| 1,4-Naphthoquinone | 0.62 | U | 0.62 | 10 |
| 1-Naphthylamine | 1.1 | U | 1.1 | 10 |
| 2-Naphthylamine | 1.5 | U | 1.5 | 10 |
| 2-Nitroaniline | 1.3 | U | 1.3 | 50 |
| 3-Nitroaniline | 5.0 | U | 5.0 | 50 |
| 4-Nitroaniline | 5.0 | U | 5.0 | 50 |
| Nitrobenzene | 0.73 | U | 0.73 | 10 |
| 2-Nitrophenol | 0.76 | U | 0.76 | 10 |
| 4-Nitrophenol | 1.9 | U | 1.9 | 50 |
| N-Nitro-o-toluidine | 1.5 | U | 1.5 | 10 |
| N-Nitrosodiethylamine | 0.93 | U | 0.93 | 10 |
| N-Nitrosodimethylamine | 2.8 | U | 2.8 | 10 |
| N-Nitrosodi-n-butylamine | 0.96 | U | 0.96 | 10 |
| N-Nitrosodi-n-propylamine | 0.72 | U | 0.72 | 10 |
| N-Nitrosodiphenylamine | 0.92 | U | 0.92 | 10 |
| N-Nitrosomethylethylamine | 3.3 | U | 3.3 | 10 |
| N-Nitrosopiperidine | 0.88 | U | 0.88 | 10 |
| N-Nitrosopyrrolidine | 1.0 | U | 1.0 | 10 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Method Blank - Batch: 680-187142**

**Method: 8270D**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 680-187142/19-A | Analysis Batch: | 680-187762 | Instrument ID: | MSG |
| Client Matrix: | Water | Prep Batch: | 680-187142 | Lab File ID: | g4484.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 1000 mL |
| Date Analyzed: | 12/02/2010 1224 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| o,o',o"-Triethylphosphorothioate | 1.0 | U | 1.0 | 10 |
| p-Dimethylamino azobenzene | 0.79 | U | 0.79 | 10 |
| Pentachlorobenzene | 0.52 | U | 0.52 | 10 |
| Pentachloronitrobenzene | 0.78 | U | 0.78 | 10 |
| Pentachlorophenol | 2.0 | U | 2.0 | 50 |
| Phenacetin | 1.4 | U | 1.4 | 10 |
| Phenanthrene | 0.77 | U | 0.77 | 10 |
| Phenol | 0.83 | U | 0.83 | 10 |
| Phorate | 0.87 | U | 0.87 | 10 |
| p-Phenylene diamine | 10 | U | 10 | 2000 |
| Pronamide | 0.89 | U | 0.89 | 10 |
| Pyrene | 0.63 | U | 0.63 | 10 |
| Safrole, Total | 0.80 | U | 0.80 | 10 |
| Sulfotepp | 0.53 | U | 0.53 | 10 |
| 1,2,4,5-Tetrachlorobenzene | 0.76 | U | 0.76 | 10 |
| 2,3,4,6-Tetrachlorophenol | 0.72 | U | 0.72 | 10 |
| Thionazin | 0.91 | U | 0.91 | 10 |
| 2-Toluidine | 1.4 | U | 1.4 | 10 |
| 2,4,5-Trichlorophenol | 1.2 | U | 1.2 | 10 |
| 2,4,6-Trichlorophenol | 0.85 | U | 0.85 | 10 |
| 1,3,5-Trinitrobenzene | 2.0 | U | 2.0 | 10 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 2-Fluorobiphenyl | 79 | 62 - 130 |
| 2-Fluorophenol | 80 | 50 - 130 |
| Nitrobenzene-d5 | 84 | 62 - 130 |
| Phenol-d5 | 79 | 51 - 130 |
| Terphenyl-d14 | 89 | 20 - 130 |
| 2,4,6-Tribromophenol | 83 | 57 - 131 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Lab Control Sample - Batch: 680-187142**

**Method: 8270D**
**Preparation: 3520C**

Lab Sample ID: LCS 680-187142/20-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 12/02/2010 1252
Date Prepared: 11/24/2010 1459

Analysis Batch: 680-187762
Prep Batch: 680-187142
Units: ug/L

Instrument ID: MSG
Lab File ID: g4485.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 1 mL
Injection Volume: 1 uL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Acenaphthene | 100 | 90.6 | 91 | 55 - 130 | |
| Acenaphthylene | 100 | 93.2 | 93 | 60 - 130 | |
| Anthracene | 100 | 93.4 | 93 | 61 - 130 | |
| Benzo[a]anthracene | 100 | 96.3 | 96 | 58 - 130 | |
| Benzo[a]pyrene | 100 | 109 | 109 | 61 - 130 | |
| Benzo[b]fluoranthene | 100 | 100 | 100 | 51 - 130 | |
| Benzo[g,h,i]perylene | 100 | 90.9 | 91 | 54 - 130 | |
| Benzo[k]fluoranthene | 100 | 88.9 | 89 | 53 - 130 | |
| Benzyl alcohol | 100 | 92.3 | 92 | 53 - 130 | |
| 1,1'-Biphenyl | 100 | 85.4 | 85 | 54 - 130 | |
| Bis(2-chloroethoxy)methane | 100 | 98.9 | 99 | 64 - 130 | |
| Bis(2-chloroethyl)ether | 100 | 94.7 | 95 | 56 - 130 | |
| bis(chloroisopropyl) ether | 100 | 93.2 | 93 | 55 - 130 | |
| Bis(2-ethylhexyl) phthalate | 100 | 99.6 | 100 | 62 - 130 | |
| 4-Bromophenyl phenyl ether | 100 | 98.8 | 99 | 61 - 130 | |
| Butyl benzyl phthalate | 100 | 104 | 104 | 66 - 130 | |
| 4-Chloroaniline | 100 | 81.5 | 81 | 42 - 130 | |
| 4-Chloro-3-methylphenol | 100 | 90.9 | 91 | 60 - 130 | |
| 2-Chloronaphthalene | 100 | 83.1 | 83 | 53 - 130 | |
| 2-Chlorophenol | 100 | 85.9 | 86 | 57 - 130 | |
| 4-Chlorophenyl phenyl ether | 100 | 92.1 | 92 | 57 - 130 | |
| Chrysene | 100 | 97.2 | 97 | 59 - 130 | |
| Dibenz(a,h)anthracene | 100 | 86.2 | 86 | 55 - 130 | |
| Dibenzofuran | 100 | 88.2 | 88 | 58 - 130 | |
| 3,3'-Dichlorobenzidine | 100 | 84.9 | 85 | 27 - 130 | |
| 2,4-Dichlorophenol | 100 | 86.0 | 86 | 54 - 130 | |
| Diethyl phthalate | 100 | 99.3 | 99 | 70 - 130 | |
| 2,4-Dimethylphenol | 100 | 73.6 | 74 | 40 - 130 | |
| Dimethyl phthalate | 100 | 96.6 | 97 | 69 - 130 | |
| Di-n-butyl phthalate | 100 | 97.5 | 97 | 66 - 130 | |
| 4,6-Dinitro-2-methylphenol | 100 | 105 | 105 | 45 - 134 | |
| 2,4-Dinitrophenol | 100 | 137 | 137 | 20 - 165 | |
| 2,4-Dinitrotoluene | 100 | 98.1 | 98 | 63 - 130 | |
| 2,6-Dinitrotoluene | 100 | 94.2 | 94 | 65 - 130 | |
| Di-n-octyl phthalate | 100 | 105 | 105 | 64 - 130 | |
| 1,4-Dioxane | 100 | 55.9 | 56 | 35 - 130 | |
| Fluoranthene | 100 | 95.2 | 95 | 56 - 130 | |
| Fluorene | 100 | 91.5 | 92 | 61 - 130 | |
| Hexachlorobenzene | 100 | 89.4 | 89 | 52 - 130 | |
| Hexachlorobutadiene | 100 | 67.1 | 67 | 36 - 130 | |
| Hexachlorocyclopentadiene | 100 | 71.4 | 71 | 10 - 130 | |
| Hexachloroethane | 100 | 63.7 | 64 | 39 - 130 | |
| Indeno[1,2,3-cd]pyrene | 100 | 96.0 | 96 | 47 - 130 | |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Lab Control Sample - Batch: 680-187142**

**Method: 8270D**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 680-187142/20-A | Analysis Batch: | 680-187762 | Instrument ID: | MSG |
| Client Matrix: | Water | Prep Batch: | 680-187142 | Lab File ID: | g4485.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 1000 mL |
| Date Analyzed: | 12/02/2010 1252 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Isophorone | 100 | 82.5 | 83 | 59 - 130 | |
| 2-Methylnaphthalene | 100 | 81.1 | 81 | 52 - 130 | |
| 2-Methylphenol | 100 | 85.7 | 86 | 55 - 130 | |
| 3 & 4 Methylphenol | 100 | 101 | 101 | 35 - 130 | |
| Naphthalene | 100 | 78.5 | 78 | 50 - 130 | |
| 2-Nitroaniline | 100 | 106 | 106 | 60 - 130 | |
| 3-Nitroaniline | 100 | 100 | 100 | 54 - 130 | |
| 4-Nitroaniline | 100 | 111 | 111 | 54 - 130 | |
| Nitrobenzene | 100 | 87.5 | 88 | 56 - 130 | |
| 2-Nitrophenol | 100 | 85.4 | 85 | 54 - 130 | |
| 4-Nitrophenol | 100 | 106 | 106 | 38 - 130 | |
| N-Nitrosodimethylamine | 100 | 96.0 | 96 | 54 - 130 | |
| N-Nitrosodi-n-propylamine | 100 | 97.2 | 97 | 64 - 130 | |
| N-Nitrosodiphenylamine | 100 | 103 | 103 | 68 - 130 | |
| Pentachlorophenol | 100 | 84.6 | 85 | 42 - 138 | |
| Phenanthrene | 100 | 94.5 | 94 | 62 - 130 | |
| Phenol | 100 | 84.8 | 85 | 29 - 130 | |
| Pyrene | 100 | 90.8 | 91 | 60 - 130 | |
| 2,4,5-Trichlorophenol | 100 | 96.6 | 97 | 61 - 130 | |
| 2,4,6-Trichlorophenol | 100 | 91.4 | 91 | 57 - 130 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 2-Fluorobiphenyl | 79 | 62 - 130 |
| 2-Fluorophenol | 81 | 50 - 130 |
| Nitrobenzene-d5 | 87 | 62 - 130 |
| Phenol-d5 | 86 | 51 - 130 |
| Terphenyl-d14 | 82 | 20 - 130 |
| 2,4,6-Tribromophenol | 90 | 57 - 131 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 2-Fluorobiphenyl | 68 | 62 - 130 |
| 2-Fluorophenol | 62 | 50 - 130 |
| Nitrobenzene-d5 | 72 | 62 - 130 |
| Phenol-d5 | 62 | 51 - 130 |
| Terphenyl-d14 | 85 | 20 - 130 |
| 2,4,6-Tribromophenol | 82 | 57 - 131 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 680-187142**

**Method: 8270D**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 680-63374-11 | Analysis Batch: | 680-188615 | Instrument ID: | MSG |
| Client Matrix: | Water | Prep Batch: | 680-187142 | Lab File ID: | g4638.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 500 mL |
| Date Analyzed: | 12/10/2010 1303 | | | Final Weight/Volume: | 0.5 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 680-63374-11 | Analysis Batch: | 680-188615 | Instrument ID: | MSG |
| Client Matrix: | Water | Prep Batch: | 680-187142 | Lab File ID: | g4639.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 500 mL |
| Date Analyzed: | 12/10/2010 1353 | | | Final Weight/Volume: | 0.5 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Acenaphthene | 75 | 86 | 55 - 130 | 13 | 50 | | |
| Acenaphthylene | 75 | 86 | 60 - 130 | 14 | 50 | | |
| Anthracene | 76 | 88 | 61 - 130 | 14 | 50 | | |
| Benzo[a]anthracene | 87 | 94 | 58 - 130 | 8 | 50 | | |
| Benzo[a]pyrene | 96 | 105 | 61 - 130 | 9 | 50 | | |
| Benzo[b]fluoranthene | 85 | 98 | 51 - 130 | 13 | 50 | | |
| Benzo[g,h,i]perylene | 82 | 89 | 54 - 130 | 8 | 50 | | |
| Benzo[k]fluoranthene | 82 | 86 | 53 - 130 | 4 | 50 | | |
| Benzyl alcohol | 65 | 82 | 53 - 130 | 22 | 50 | | |
| 1,1'-Biphenyl | 69 | 78 | 54 - 130 | 12 | 50 | | |
| Bis(2-chloroethoxy)methane | 77 | 90 | 64 - 130 | 16 | 50 | | |
| Bis(2-chloroethyl)ether | 99 | 119 | 56 - 130 | 18 | 50 | | |
| bis(chloroisopropyl) ether | 58 | 67 | 55 - 130 | 15 | 50 | | |
| Bis(2-ethylhexyl) phthalate | 96 | 105 | 62 - 130 | 9 | 50 | | |
| 4-Bromophenyl phenyl ether | 85 | 95 | 61 - 130 | 12 | 50 | | |
| Butyl benzyl phthalate | 97 | 107 | 66 - 130 | 9 | 50 | | |
| 4-Chloroaniline | 50 | 44 | 42 - 130 | 13 | 50 | | |
| 4-Chloro-3-methylphenol | 80 | 96 | 60 - 130 | 18 | 50 | | |
| 2-Chloronaphthalene | 65 | 74 | 53 - 130 | 13 | 50 | | |
| 2-Chlorophenol | 69 | 81 | 57 - 130 | 16 | 50 | | |
| 4-Chlorophenyl phenyl ether | 75 | 86 | 57 - 130 | 14 | 50 | | |
| Chrysene | 87 | 95 | 59 - 130 | 8 | 50 | | |
| Dibenz(a,h)anthracene | 80 | 85 | 55 - 130 | 5 | 50 | | |
| Dibenzofuran | 72 | 84 | 58 - 130 | 15 | 50 | | |
| 3,3'-Dichlorobenzidine | 0 | 0 | 27 - 130 | NC | 50 | U J | U J |
| 2,4-Dichlorophenol | 75 | 87 | 54 - 130 | 14 | 50 | | |
| Diethyl phthalate | 89 | 99 | 70 - 130 | 11 | 50 | | |
| 2,4-Dimethylphenol | 67 | 84 | 40 - 130 | 22 | 50 | | |
| Dimethyl phthalate | 83 | 95 | 69 - 130 | 13 | 50 | | |
| Di-n-butyl phthalate | 91 | 100 | 66 - 130 | 10 | 50 | | |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 680-187142**

**Method: 8270D**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 680-63374-11 | Analysis Batch: | 680-188615 | Instrument ID: | MSG |
| Client Matrix: | Water | Prep Batch: | 680-187142 | Lab File ID: | g4638.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 500 mL |
| Date Analyzed: | 12/10/2010 1303 | | | Final Weight/Volume: | 0.5 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 680-63374-11 | Analysis Batch: | 680-188615 | Instrument ID: | MSG |
| Client Matrix: | Water | Prep Batch: | 680-187142 | Lab File ID: | g4639.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 500 mL |
| Date Analyzed: | 12/10/2010 1353 | | | Final Weight/Volume: | 0.5 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| 4,6-Dinitro-2-methylphenol | 97 | 110 | 45 - 134 | 13 | 50 | | |
| 2,4-Dinitrophenol | 124 | 152 | 20 - 165 | 20 | 50 | | |
| 2,4-Dinitrotoluene | 87 | 96 | 63 - 130 | 9 | 50 | | |
| 2,6-Dinitrotoluene | 82 | 91 | 65 - 130 | 11 | 50 | | |
| Di-n-octyl phthalate | 100 | 112 | 64 - 130 | 11 | 50 | | |
| 1,4-Dioxane | 41 | 48 | 35 - 130 | 14 | 50 | | |
| Fluoranthene | 82 | 91 | 56 - 130 | 11 | 50 | | |
| Fluorene | 81 | 92 | 61 - 130 | 12 | 50 | | |
| Hexachlorobenzene | 83 | 93 | 52 - 130 | 12 | 50 | | |
| Hexachlorobutadiene | 59 | 64 | 36 - 130 | 9 | 50 | | |
| Hexachlorocyclopentadiene | 58 | 64 | 10 - 130 | 10 | 50 | | |
| Hexachloroethane | 54 | 59 | 39 - 130 | 9 | 50 | | |
| Indeno[1,2,3-cd]pyrene | 88 | 94 | 47 - 130 | 7 | 50 | | |
| Isophorone | 66 | 78 | 59 - 130 | 16 | 50 | | |
| 2-Methylnaphthalene | 65 | 77 | 52 - 130 | 16 | 50 | | |
| 2-Methylphenol | 66 | 81 | 55 - 130 | 20 | 50 | | |
| 3 & 4 Methylphenol | 76 | 93 | 35 - 130 | 21 | 50 | | |
| Naphthalene | 65 | 72 | 50 - 130 | 11 | 50 | | |
| 2-Nitroaniline | 81 | 89 | 60 - 130 | 9 | 50 | | |
| 3-Nitroaniline | 66 | 89 | 54 - 130 | 30 | 50 | | |
| 4-Nitroaniline | 83 | 100 | 54 - 130 | 19 | 50 | | |
| Nitrobenzene | 63 | 73 | 56 - 130 | 14 | 50 | | |
| 2-Nitrophenol | 70 | 81 | 54 - 130 | 15 | 50 | | |
| 4-Nitrophenol | 79 | 89 | 38 - 130 | 12 | 50 | | |
| N-Nitrosodimethylamine | 60 | 73 | 54 - 130 | 18 | 50 | | |
| N-Nitrosodi-n-propylamine | 73 | 91 | 64 - 130 | 21 | 50 | | |
| N-Nitrosodiphenylamine | 80 | 87 | 68 - 130 | 8 | 50 | | |
| Pentachlorophenol | 87 | 95 | 42 - 138 | 8 | 50 | | |
| Phenanthrene | 81 | 93 | 62 - 130 | 13 | 50 | | |
| Phenol | 55 | 70 | 29 - 130 | 24 | 50 | | |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 680-187142**

**Method: 8270D**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 680-63374-11 | Analysis Batch: | 680-188615 | Instrument ID: | MSG |
| Client Matrix: | Water | Prep Batch: | 680-187142 | Lab File ID: | g4638.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 500 mL |
| Date Analyzed: | 12/10/2010 1303 | | | Final Weight/Volume: | 0.5 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 680-63374-11 | Analysis Batch: | 680-188615 | Instrument ID: | MSG |
| Client Matrix: | Water | Prep Batch: | 680-187142 | Lab File ID: | g4639.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 500 mL |
| Date Analyzed: | 12/10/2010 1353 | | | Final Weight/Volume: | 0.5 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Pyrene | 79 | 87 | 60 - 130 | 10 | 50 | | |
| 2,4,5-Trichlorophenol | 74 | 97 | 61 - 130 | 26 | 50 | | |
| 2,4,6-Trichlorophenol | 75 | 87 | 57 - 130 | 15 | 50 | | |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 68 | 77 | 62 - 130 |
| 2-Fluorophenol | 61 | 75 | 50 - 130 |
| Nitrobenzene-d5 | 63 | 73 | 62 - 130 |
| Phenol-d5 | 60 | 76 | 51 - 130 |
| Terphenyl-d14 | 76 | 84 | 20 - 130 |
| 2,4,6-Tribromophenol | 92 | 96 | 57 - 131 |

| Surrogate | MS % Rec | MSD % Rec | | Acceptance Limits |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 66 | 58 | J | 62 - 130 |
| 2-Fluorophenol | 66 | 54 | | 50 - 130 |
| Nitrobenzene-d5 | 68 | 58 | J | 62 - 130 |
| Phenol-d5 | 62 | 52 | | 51 - 130 |
| Terphenyl-d14 | 80 | 80 | | 20 - 130 |
| 2,4,6-Tribromophenol | 88 | 80 | | 57 - 131 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Method Blank - Batch: 680-188177**

**Method: 8270D**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 680-188177/17-A | Analysis Batch: | 680-188615 | Instrument ID: | MSG |
| Client Matrix: | Water | Prep Batch: | 680-188177 | Lab File ID: | g4634.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 1000 mL |
| Date Analyzed: | 12/10/2010 1123 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 12/07/2010 1433 | | | Injection Volume: | 1 uL |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Acenaphthene | 0.76 | U | 0.76 | 10 |
| Acenaphthylene | 0.85 | U | 0.85 | 10 |
| Acetophenone | 0.57 | U | 0.57 | 10 |
| 2-Acetylaminofluorene | 1.6 | U | 1.6 | 10 |
| 4-Aminobiphenyl | 1.2 | U | 1.2 | 10 |
| Anthracene | 0.69 | U | 0.69 | 10 |
| Benzo[a]anthracene | 0.55 | U | 0.55 | 10 |
| Benzo[a]pyrene | 0.71 | U | 0.71 | 10 |
| Benzo[b]fluoranthene | 2.6 | U | 2.6 | 10 |
| Benzo[g,h,i]perylene | 0.87 | U | 0.87 | 10 |
| Benzo[k]fluoranthene | 1.2 | U | 1.2 | 10 |
| Benzyl alcohol | 1.1 | U | 1.1 | 10 |
| 1,1'-Biphenyl | 0.58 | U | 0.58 | 10 |
| Bis(2-chloroethoxy)methane | 0.94 | U | 0.94 | 10 |
| Bis(2-chloroethyl)ether | 1.1 | U | 1.1 | 10 |
| bis(chloroisopropyl) ether | 0.78 | U | 0.78 | 10 |
| Bis(2-ethylhexyl) phthalate | 1.6 | U | 1.6 | 10 |
| 4-Bromophenyl phenyl ether | 0.77 | U | 0.77 | 10 |
| Butyl benzyl phthalate | 1.2 | U | 1.2 | 10 |
| 4-Chloroaniline | 2.2 | U | 2.2 | 20 |
| 4-Chloro-3-methylphenol | 1.0 | U | 1.0 | 10 |
| 2-Chloronaphthalene | 0.80 | U | 0.80 | 10 |
| 2-Chlorophenol | 0.87 | U | 0.87 | 10 |
| 4-Chlorophenyl phenyl ether | 0.84 | U | 0.84 | 10 |
| Chrysene | 0.51 | U | 0.51 | 10 |
| Diallate | 0.78 | U | 0.78 | 10 |
| Dibenz(a,h)anthracene | 1.0 | U | 1.0 | 10 |
| Dibenzofuran | 0.79 | U | 0.79 | 10 |
| 3,3'-Dichlorobenzidine | 30 | U | 30 | 60 |
| 2,4-Dichlorophenol | 1.1 | U | 1.1 | 10 |
| 2,6-Dichlorophenol | 0.73 | U | 0.73 | 10 |
| Diethyl phthalate | 0.88 | U | 0.88 | 10 |
| Dimethoate | 0.75 | U | 0.75 | 10 |
| 7,12-Dimethylbenz(a)anthracene | 1.2 | U | 1.2 | 10 |
| 3,3'-Dimethylbenzidine | 10 | U | 10 | 20 |
| 2,4-Dimethylphenol | 4.0 | U | 4.0 | 10 |
| Dimethyl phthalate | 0.99 | U | 0.99 | 10 |
| Di-n-butyl phthalate | 0.83 | U | 0.83 | 10 |
| 1,3-Dinitrobenzene | 0.60 | U | 0.60 | 10 |
| 4,6-Dinitro-2-methylphenol | 10 | U | 10 | 50 |
| 2,4-Dinitrophenol | 10 | U | 10 | 50 |
| 2,4-Dinitrotoluene | 1.2 | U | 1.2 | 10 |
| 2,6-Dinitrotoluene | 1.1 | U | 1.1 | 10 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Method Blank - Batch: 680-188177**

**Method: 8270D**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 680-188177/17-A | Analysis Batch: | 680-188615 | Instrument ID: | MSG |
| Client Matrix: | Water | Prep Batch: | 680-188177 | Lab File ID: | g4634.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 1000 mL |
| Date Analyzed: | 12/10/2010 1123 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 12/07/2010 1433 | | | Injection Volume: | 1 uL |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Di-n-octyl phthalate | 1.4 | U | 1.4 | 10 |
| Dinoseb | 5.0 | U | 5.0 | 10 |
| 1,4-Dioxane | 3.4 | U | 3.4 | 10 |
| Disulfoton | 0.79 | U | 0.79 | 10 |
| Ethyl methanesulfonate | 0.96 | U | 0.96 | 10 |
| Ethyl Parathion | 1.3 | U | 1.3 | 10 |
| Famphur | 1.1 | U | 1.1 | 10 |
| Fluoranthene | 0.74 | U | 0.74 | 10 |
| Fluorene | 0.96 | U | 0.96 | 10 |
| Hexachlorobenzene | 0.79 | U | 0.79 | 10 |
| Hexachlorobutadiene | 0.62 | U | 0.62 | 10 |
| Hexachlorocyclopentadiene | 2.5 | U | 2.5 | 10 |
| Hexachloroethane | 0.76 | U | 0.76 | 10 |
| Hexachloropropene | 1.4 | U | 1.4 | 10 |
| Indeno[1,2,3-cd]pyrene | 1.0 | U | 1.0 | 10 |
| Isophorone | 0.90 | U | 0.90 | 10 |
| Isosafrole | 0.50 | U | 0.50 | 10 |
| Methapyrilene | 2.7 | U | 2.7 | 2000 |
| 3-Methylcholanthrene | 1.4 | U | 1.4 | 10 |
| Methyl methanesulfonate | 0.60 | U | 0.60 | 10 |
| 2-Methylnaphthalene | 0.78 | U | 0.78 | 10 |
| Methyl parathion | 0.88 | U | 0.88 | 10 |
| 2-Methylphenol | 0.89 | U | 0.89 | 10 |
| 3 & 4 Methylphenol | 1.3 | U | 1.3 | 10 |
| Naphthalene | 0.70 | U | 0.70 | 10 |
| 1,4-Naphthoquinone | 0.62 | U | 0.62 | 10 |
| 1-Naphthylamine | 1.1 | U | 1.1 | 10 |
| 2-Naphthylamine | 1.5 | U | 1.5 | 10 |
| 2-Nitroaniline | 1.3 | U | 1.3 | 50 |
| 3-Nitroaniline | 5.0 | U | 5.0 | 50 |
| 4-Nitroaniline | 5.0 | U | 5.0 | 50 |
| Nitrobenzene | 0.73 | U | 0.73 | 10 |
| 2-Nitrophenol | 0.76 | U | 0.76 | 10 |
| 4-Nitrophenol | 1.9 | U | 1.9 | 50 |
| N-Nitro-o-toluidine | 1.5 | U | 1.5 | 10 |
| N-Nitrosodiethylamine | 0.93 | U | 0.93 | 10 |
| N-Nitrosodimethylamine | 2.8 | U | 2.8 | 10 |
| N-Nitrosodi-n-butylamine | 0.96 | U | 0.96 | 10 |
| N-Nitrosodi-n-propylamine | 0.72 | U | 0.72 | 10 |
| N-Nitrosodiphenylamine | 0.92 | U | 0.92 | 10 |
| N-Nitrosomethylethylamine | 3.3 | U | 3.3 | 10 |
| N-Nitrosopiperidine | 0.88 | U | 0.88 | 10 |
| N-Nitrosopyrrolidine | 1.0 | U | 1.0 | 10 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Method Blank - Batch: 680-188177**

**Method: 8270D**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 680-188177/17-A | Analysis Batch: | 680-188615 | Instrument ID: | MSG |
| Client Matrix: | Water | Prep Batch: | 680-188177 | Lab File ID: | g4634.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 1000 mL |
| Date Analyzed: | 12/10/2010 1123 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 12/07/2010 1433 | | | Injection Volume: | 1 uL |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| o,o',o"-Triethylphosphorothioate | 1.0 | U | 1.0 | 10 |
| p-Dimethylamino azobenzene | 0.79 | U | 0.79 | 10 |
| Pentachlorobenzene | 0.52 | U | 0.52 | 10 |
| Pentachloronitrobenzene | 0.78 | U | 0.78 | 10 |
| Pentachlorophenol | 2.0 | U | 2.0 | 50 |
| Phenacetin | 1.4 | U | 1.4 | 10 |
| Phenanthrene | 0.77 | U | 0.77 | 10 |
| Phenol | 0.83 | U | 0.83 | 10 |
| Phorate | 0.87 | U | 0.87 | 10 |
| p-Phenylene diamine | 10 | U | 10 | 2000 |
| Pronamide | 0.89 | U | 0.89 | 10 |
| Pyrene | 0.63 | U | 0.63 | 10 |
| Safrole, Total | 0.80 | U | 0.80 | 10 |
| Sulfotepp | 0.53 | U | 0.53 | 10 |
| 1,2,4,5-Tetrachlorobenzene | 0.76 | U | 0.76 | 10 |
| 2,3,4,6-Tetrachlorophenol | 0.72 | U | 0.72 | 10 |
| Thionazin | 0.91 | U | 0.91 | 10 |
| 2-Toluidine | 1.4 | U | 1.4 | 10 |
| 2,4,5-Trichlorophenol | 1.2 | U | 1.2 | 10 |
| 2,4,6-Trichlorophenol | 0.85 | U | 0.85 | 10 |
| 1,3,5-Trinitrobenzene | 2.0 | U | 2.0 | 10 |

| Surrogate | % Rec | | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 64 | | 62 - 130 |
| 2-Fluorophenol | 42 | J | 50 - 130 |
| Nitrobenzene-d5 | 62 | | 62 - 130 |
| Phenol-d5 | 54 | | 51 - 130 |
| Terphenyl-d14 | 87 | | 20 - 130 |
| 2,4,6-Tribromophenol | 74 | | 57 - 131 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Lab Control Sample - Batch: 680-188177**

**Method: 8270D**
**Preparation: 3520C**

Lab Sample ID: LCS 680-188177/18-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 12/10/2010 1148
Date Prepared: 12/07/2010 1433

Analysis Batch: 680-188615
Prep Batch: 680-188177
Units: ug/L

Instrument ID: MSG
Lab File ID: g4635.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 1 mL
Injection Volume: 1 uL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Acenaphthene | 100 | 82.6 | 83 | 55 - 130 | |
| Acenaphthylene | 100 | 83.8 | 84 | 60 - 130 | |
| Anthracene | 100 | 84.0 | 84 | 61 - 130 | |
| Benzo[a]anthracene | 100 | 94.7 | 95 | 58 - 130 | |
| Benzo[a]pyrene | 100 | 102 | 102 | 61 - 130 | |
| Benzo[b]fluoranthene | 100 | 94.3 | 94 | 51 - 130 | |
| Benzo[g,h,i]perylene | 100 | 88.8 | 89 | 54 - 130 | |
| Benzo[k]fluoranthene | 100 | 85.7 | 86 | 53 - 130 | |
| Benzyl alcohol | 100 | 77.5 | 77 | 53 - 130 | |
| 1,1'-Biphenyl | 100 | 80.1 | 80 | 54 - 130 | |
| Bis(2-chloroethoxy)methane | 100 | 92.5 | 93 | 64 - 130 | |
| Bis(2-chloroethyl)ether | 100 | 124 | 124 | 56 - 130 | |
| bis(chloroisopropyl) ether | 100 | 72.1 | 72 | 55 - 130 | |
| Bis(2-ethylhexyl) phthalate | 100 | 104 | 104 | 62 - 130 | |
| 4-Bromophenyl phenyl ether | 100 | 92.0 | 92 | 61 - 130 | |
| Butyl benzyl phthalate | 100 | 106 | 106 | 66 - 130 | |
| 4-Chloroaniline | 100 | 66.8 | 67 | 42 - 130 | |
| 4-Chloro-3-methylphenol | 100 | 85.2 | 85 | 60 - 130 | |
| 2-Chloronaphthalene | 100 | 77.0 | 77 | 53 - 130 | |
| 2-Chlorophenol | 100 | 83.5 | 84 | 57 - 130 | |
| 4-Chlorophenyl phenyl ether | 100 | 82.6 | 83 | 57 - 130 | |
| Chrysene | 100 | 95.9 | 96 | 59 - 130 | |
| Dibenz(a,h)anthracene | 100 | 86.8 | 87 | 55 - 130 | |
| Dibenzofuran | 100 | 79.7 | 80 | 58 - 130 | |
| 3,3'-Dichlorobenzidine | 100 | 66.8 | 67 | 27 - 130 | |
| 2,4-Dichlorophenol | 100 | 86.0 | 86 | 54 - 130 | |
| Diethyl phthalate | 100 | 91.9 | 92 | 70 - 130 | |
| 2,4-Dimethylphenol | 100 | 72.0 | 72 | 40 - 130 | |
| Dimethyl phthalate | 100 | 89.0 | 89 | 69 - 130 | |
| Di-n-butyl phthalate | 100 | 96.6 | 97 | 66 - 130 | |
| 4,6-Dinitro-2-methylphenol | 100 | 99.4 | 99 | 45 - 134 | |
| 2,4-Dinitrophenol | 100 | 114 | 114 | 20 - 165 | |
| 2,4-Dinitrotoluene | 100 | 89.1 | 89 | 63 - 130 | |
| 2,6-Dinitrotoluene | 100 | 87.3 | 87 | 65 - 130 | |
| Di-n-octyl phthalate | 100 | 109 | 109 | 64 - 130 | |
| 1,4-Dioxane | 100 | 47.7 | 48 | 35 - 130 | |
| Fluoranthene | 100 | 88.5 | 89 | 56 - 130 | |
| Fluorene | 100 | 86.1 | 86 | 61 - 130 | |
| Hexachlorobenzene | 100 | 89.8 | 90 | 52 - 130 | |
| Hexachlorobutadiene | 100 | 81.7 | 82 | 36 - 130 | |
| Hexachlorocyclopentadiene | 100 | 51.4 | 51 | 10 - 130 | |
| Hexachloroethane | 100 | 76.2 | 76 | 39 - 130 | |
| Indeno[1,2,3-cd]pyrene | 100 | 98.8 | 99 | 47 - 130 | |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Lab Control Sample - Batch: 680-188177**

**Method: 8270D**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 680-188177/18-A | Analysis Batch: | 680-188615 | Instrument ID: | MSG |
| Client Matrix: | Water | Prep Batch: | 680-188177 | Lab File ID: | g4635.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 1000 mL |
| Date Analyzed: | 12/10/2010 1148 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 12/07/2010 1433 | | | Injection Volume: | 1 uL |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Isophorone | 100 | 75.6 | 76 | 59 - 130 | |
| 2-Methylnaphthalene | 100 | 82.0 | 82 | 52 - 130 | |
| 2-Methylphenol | 100 | 73.5 | 74 | 55 - 130 | |
| 3 & 4 Methylphenol | 100 | 81.0 | 81 | 35 - 130 | |
| Naphthalene | 100 | 82.8 | 83 | 50 - 130 | |
| 2-Nitroaniline | 100 | 81.0 | 81 | 60 - 130 | |
| 3-Nitroaniline | 100 | 74.6 | 75 | 54 - 130 | |
| 4-Nitroaniline | 100 | 95.0 | 95 | 54 - 130 | |
| Nitrobenzene | 100 | 78.4 | 78 | 56 - 130 | |
| 2-Nitrophenol | 100 | 85.5 | 85 | 54 - 130 | |
| 4-Nitrophenol | 100 | 75.6 | 76 | 38 - 130 | |
| N-Nitrosodimethylamine | 100 | 76.0 | 76 | 54 - 130 | |
| N-Nitrosodi-n-propylamine | 100 | 84.9 | 85 | 64 - 130 | |
| N-Nitrosodiphenylamine | 100 | 92.8 | 93 | 68 - 130 | |
| Pentachlorophenol | 100 | 86.6 | 87 | 42 - 138 | |
| Phenanthrene | 100 | 87.0 | 87 | 62 - 130 | |
| Phenol | 100 | 71.1 | 71 | 29 - 130 | |
| Pyrene | 100 | 86.2 | 86 | 60 - 130 | |
| 2,4,5-Trichlorophenol | 100 | 87.1 | 87 | 61 - 130 | |
| 2,4,6-Trichlorophenol | 100 | 81.3 | 81 | 57 - 130 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 2-Fluorobiphenyl | 75 | 62 - 130 |
| 2-Fluorophenol | 68 | 50 - 130 |
| Nitrobenzene-d5 | 72 | 62 - 130 |
| Phenol-d5 | 67 | 51 - 130 |
| Terphenyl-d14 | 78 | 20 - 130 |
| 2,4,6-Tribromophenol | 88 | 57 - 131 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 2-Fluorobiphenyl | 77 | 62 - 130 |
| 2-Fluorophenol | 74 | 50 - 130 |
| Nitrobenzene-d5 | 76 | 62 - 130 |
| Phenol-d5 | 70 | 51 - 130 |
| Terphenyl-d14 | 89 | 20 - 130 |
| 2,4,6-Tribromophenol | 92 | 57 - 131 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Method Blank - Batch: 680-187137**

**Method: 8081B/8082A**
**Preparation: 3520C**

Lab Sample ID: MB 680-187137/18-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/30/2010 1257
Date Prepared: 11/24/2010 1459

Analysis Batch: 680-187781
Prep Batch: 680-187137
Units: ug/L

Instrument ID: SGM
Lab File ID: mk30010.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 10 mL
Injection Volume: 2 uL
Column ID: PRIMARY

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| 4,4'-DDD | 0.0065 | U | 0.0065 | 0.10 |
| 4,4'-DDE | 0.0077 | U | 0.0077 | 0.10 |
| 4,4'-DDT | 0.0097 | U | 0.0097 | 0.10 |
| Aldrin | 0.0070 | U | 0.0070 | 0.050 |
| alpha-BHC | 0.0057 | U | 0.0057 | 0.050 |
| beta-BHC | 0.0067 | U | 0.0067 | 0.050 |
| Chlordane (technical) | 0.10 | U | 0.10 | 0.50 |
| Chlorobenzilate | 0.50 | U | 0.50 | 0.50 |
| delta-BHC | 0.0048 | U | 0.0048 | 0.050 |
| Dieldrin | 0.0091 | U | 0.0091 | 0.10 |
| Endosulfan I | 0.0042 | U | 0.0042 | 0.050 |
| Endosulfan II | 0.0098 | U | 0.0098 | 0.10 |
| Endosulfan sulfate | 0.0068 | U | 0.0068 | 0.10 |
| Endrin | 0.0097 | U | 0.0097 | 0.10 |
| Endrin aldehyde | 0.016 | U | 0.016 | 0.10 |
| gamma-BHC (Lindane) | 0.0059 | U | 0.0059 | 0.050 |
| Heptachlor | 0.0070 | U | 0.0070 | 0.050 |
| Heptachlor epoxide | 0.0060 | U | 0.0060 | 0.050 |
| Isodrin | 0.050 | U | 0.050 | 0.050 |
| Methoxychlor | 0.013 | U | 0.013 | 0.10 |
| PCB-1016 | 0.071 | U | 0.071 | 1.0 |
| PCB-1221 | 0.28 | U | 0.28 | 2.0 |
| PCB-1232 | 0.11 | U | 0.11 | 1.0 |
| PCB-1242 | 0.18 | U | 0.18 | 1.0 |
| PCB-1248 | 0.36 | U | 0.36 | 1.0 |
| PCB-1254 | 0.26 | U | 0.26 | 1.0 |
| PCB-1260 | 0.20 | U | 0.20 | 1.0 |
| PCB-1262 | 0.24 | U | 0.24 | 1.0 |
| Toxaphene | 0.50 | U | 0.50 | 5.0 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| DCB Decachlorobiphenyl | 74 | 40 - 130 |
| Tetrachloro-m-xylene | 91 | 36 - 130 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| DCB Decachlorobiphenyl | 58 | 40 - 130 |
| Tetrachloro-m-xylene | 76 | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Lab Control Sample - Batch: 680-187137**

**Method: 8081B/8082A**
**Preparation: 3520C**

Lab Sample ID: LCS 680-187137/19-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/30/2010 1316
Date Prepared: 11/24/2010 1459

Analysis Batch: 680-187781
Prep Batch: 680-187137
Units: ug/L

Instrument ID: SGM
Lab File ID: mk30011.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 10 mL
Injection Volume: 2 uL
Column ID: PRIMARY

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| 4,4'-DDD | 0.200 | 0.176 | 88 | 49 - 144 | |
| 4,4'-DDE | 0.200 | 0.165 | 83 | 46 - 144 | |
| 4,4'-DDT | 0.200 | 0.214 | 107 | 48 - 166 | |
| Aldrin | 0.100 | 0.0832 | 83 | 14 - 168 | |
| alpha-BHC | 0.100 | 0.0857 | 86 | 43 - 138 | |
| beta-BHC | 0.100 | 0.124 | 124 | 38 - 158 | |
| delta-BHC | 0.100 | 0.0901 | 90 | 23 - 191 | |
| Dieldrin | 0.200 | 0.191 | 96 | 61 - 136 | |
| Endosulfan I | 0.100 | 0.0983 | 98 | 52 - 141 | |
| Endosulfan II | 0.200 | 0.202 | 101 | 60 - 140 | |
| Endosulfan sulfate | 0.200 | 0.198 | 99 | 60 - 151 | |
| Endrin | 0.200 | 0.196 | 98 | 66 - 150 | |
| Endrin aldehyde | 0.200 | 0.197 | 99 | 16 - 200 | |
| gamma-BHC (Lindane) | 0.100 | 0.0972 | 97 | 54 - 134 | |
| Heptachlor | 0.100 | 0.0862 | 86 | 10 - 200 | |
| Heptachlor epoxide | 0.100 | 0.0866 | 87 | 49 - 142 | |
| Methoxychlor | 0.200 | 0.125 | 63 | 13 - 186 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| DCB Decachlorobiphenyl | 47 | 40 - 130 |
| DCB Decachlorobiphenyl | 60 | 40 - 130 |
| Tetrachloro-m-xylene | 82 | 36 - 130 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Tetrachloro-m-xylene | 73 | 36 - 130 |

**Lab Control Sample - Batch: 680-187137**

**Method: 8081B/8082A**
**Preparation: 3520C**

Lab Sample ID: LCS 680-187137/22-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/30/2010 1336
Date Prepared: 11/24/2010 1459

Analysis Batch: 680-187781
Prep Batch: 680-187137
Units: ug/L

Instrument ID: SGM
Lab File ID: mk30012.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 10 mL
Injection Volume: 2 uL
Column ID: PRIMARY

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| PCB-1016 | 10.0 | 10.7 | 107 | 38 - 172 | |
| PCB-1260 | 10.0 | 10.2 | 102 | 46 - 138 | |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| DCB Decachlorobiphenyl | 61 | 40 - 130 |
| Tetrachloro-m-xylene | 85 | 36 - 130 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| DCB Decachlorobiphenyl | 48 | 40 - 130 |
| Tetrachloro-m-xylene | 78 | 36 - 130 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| DCB Decachlorobiphenyl | 66 | 40 - 130 |
| Tetrachloro-m-xylene | 77 | 36 - 130 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| DCB Decachlorobiphenyl | 54 | 40 - 130 |
| Tetrachloro-m-xylene | 68 | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 680-187137**

**Method: 8081B/8082A**
**Preparation: 3520C**

| | | | |
|---|---|---|---|
| MS Lab Sample ID: | 680-63374-11 | Analysis Batch: 680-187781 | Instrument ID: SGM |
| Client Matrix: | Water | Prep Batch: 680-187137 | Lab File ID: mk30024.d |
| Dilution: | 1.0 | | Initial Weight/Volume: 500 mL |
| Date Analyzed: | 11/30/2010 1733 | | Final Weight/Volume: 5 mL |
| Date Prepared: | 11/24/2010 1459 | | Injection Volume: 2 uL |
| | | | Column ID: PRIMARY |

| | | | |
|---|---|---|---|
| MSD Lab Sample ID: | 680-63374-11 | Analysis Batch: 680-187781 | Instrument ID: SGM |
| Client Matrix: | Water | Prep Batch: 680-187137 | Lab File ID: mk30025.d |
| Dilution: | 1.0 | | Initial Weight/Volume: 500 mL |
| Date Analyzed: | 11/30/2010 1759 | | Final Weight/Volume: 5 mL |
| Date Prepared: | 11/24/2010 1459 | | Injection Volume: 2 uL |
| | | | Column ID: PRIMARY |

| Analyte | % Rec. MS | % Rec. MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
|---|---|---|---|---|---|---|---|
| 4,4'-DDD | 70 | 73 | 49 - 144 | 5 | 50 | | |
| 4,4'-DDE | 74 | 82 | 46 - 144 | 11 | 50 | | |
| 4,4'-DDT | 90 | 96 | 48 - 166 | 6 | 50 | | |
| Aldrin | 97 | 94 | 14 - 168 | 3 | 50 | | |
| alpha-BHC | 96 | 94 | 43 - 138 | 2 | 50 | | |
| beta-BHC | 61 | 93 | 38 - 158 | 41 | 50 | J | |
| delta-BHC | 77 | 81 | 23 - 191 | 5 | 50 | | |
| Dieldrin | 87 | 91 | 61 - 136 | 5 | 50 | | |
| Endosulfan I | 81 | 88 | 52 - 141 | 8 | 50 | | |
| Endosulfan II | 85 | 87 | 60 - 140 | 2 | 50 | | |
| Endosulfan sulfate | 90 | 90 | 60 - 151 | 0 | 50 | | |
| Endrin | 88 | 92 | 66 - 150 | 4 | 50 | | |
| Endrin aldehyde | 94 | 95 | 16 - 200 | 1 | 50 | | |
| gamma-BHC (Lindane) | 82 | 82 | 54 - 134 | 1 | 50 | | |
| Heptachlor | 77 | 85 | 10 - 200 | 10 | 50 | | |
| Heptachlor epoxide | 80 | 86 | 49 - 142 | 8 | 50 | | |
| Methoxychlor | 61 | 61 | 13 - 186 | 1 | 50 | J | J |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 54 | 61 | 40 - 130 |
| Tetrachloro-m-xylene | 61 | 64 | 36 - 130 |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 44 | 49 | 40 - 130 |
| Tetrachloro-m-xylene | 57 | 64 | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 680-187137**

**Method: 8081B/8082A**
**Preparation: 3520C**

| | | | |
|---|---|---|---|
| MS Lab Sample ID: | 680-63374-11 | Analysis Batch: 680-187781 | Instrument ID: SGM |
| Client Matrix: | Water | Prep Batch: 680-187137 | Lab File ID: mk30026.d |
| Dilution: | 1.0 | | Initial Weight/Volume: 500 mL |
| Date Analyzed: | 11/30/2010 1818 | | Final Weight/Volume: 5 mL |
| Date Prepared: | 11/24/2010 1459 | | Injection Volume: 2 uL |
| | | | Column ID: PRIMARY |

| | | | |
|---|---|---|---|
| MSD Lab Sample ID: | 680-63374-11 | Analysis Batch: 680-187781 | Instrument ID: SGM |
| Client Matrix: | Water | Prep Batch: 680-187137 | Lab File ID: mk30027.d |
| Dilution: | 1.0 | | Initial Weight/Volume: 500 mL |
| Date Analyzed: | 11/30/2010 1838 | | Final Weight/Volume: 5 mL |
| Date Prepared: | 11/24/2010 1459 | | Injection Volume: 2 uL |
| | | | Column ID: PRIMARY |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| PCB-1016 | 105 | 104 | 38 - 172 | 1 | 50 | | |
| PCB-1260 | 78 | 79 | 46 - 138 | 1 | 50 | | |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 47 | 56 | 40 - 130 |
| Tetrachloro-m-xylene | 74 | 74 | 36 - 130 |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 40 | 45 | 40 - 130 |
| Tetrachloro-m-xylene | 67 | 62 | 36 - 130 |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 45 | 51 | 40 - 130 |
| Tetrachloro-m-xylene | 81 | 77 | 36 - 130 |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 40 | 45 | 40 - 130 |
| Tetrachloro-m-xylene | 62 | 67 | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Method Blank - Batch: 680-187137**

**Method: 8141B**
**Preparation: 3520C**

Lab Sample ID: MB 680-187137/18-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 12/02/2010 0146
Date Prepared: 11/24/2010 1459

Analysis Batch: 680-187733
Prep Batch: 680-187137
Units: ug/L

Instrument ID: SGO
Lab File ID: ol01031.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 10 mL
Injection Volume: 2 uL
Column ID: PRIMARY

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Dimethoate | 1.0 | U | 1.0 | 2.0 |
| Disulfoton | 1.0 | U | 1.0 | 2.0 |
| Ethyl Parathion | 0.50 | U | 0.50 | 1.0 |
| Famphur | 1.0 | U | 1.0 | 2.0 |
| Methyl parathion | 0.50 | U | 0.50 | 0.50 |
| Phorate | 0.50 | U | 0.50 | 1.0 |
| Sulfotepp | 0.50 | U | 0.50 | 0.50 |
| Thionazin | 0.50 | U | 0.50 | 1.0 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Triphenylphosphate | 84 | 67 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Lab Control Sample - Batch: 680-187137**

**Method: 8141B**
**Preparation: 3520C**

Lab Sample ID: LCS 680-187137/25-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 12/02/2010 0211
Date Prepared: 11/24/2010 1459

Analysis Batch: 680-187733
Prep Batch: 680-187137
Units: ug/L

Instrument ID: SGO
Lab File ID: ol01032.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 10 mL
Injection Volume: 2 uL
Column ID: PRIMARY

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Methyl parathion | 8.00 | 7.40 | 93 | 58 - 131 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Triphenylphosphate | 95 | 67 - 130 |

**Lab Control Sample - Batch: 680-187137**

**Method: 8141B**
**Preparation: 3520C**

Lab Sample ID: LCS 680-187137/28-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 12/02/2010 0236
Date Prepared: 11/24/2010 1459

Analysis Batch: 680-187733
Prep Batch: 680-187137
Units: ug/L

Instrument ID: SGO
Lab File ID: ol01033.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 10 mL
Injection Volume: 2 uL
Column ID: PRIMARY

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Ethyl Parathion | 8.00 | 6.53 | 82 | 70 - 130 | |
| Thionazin | 8.00 | 6.25 | 78 | 69 - 130 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Triphenylphosphate | 83 | 67 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 680-187137**

**Method: 8141B**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 680-63374-11 | Analysis Batch: 680-187733 | Instrument ID: | SGO | |
| Client Matrix: | Water | Prep Batch: 680-187137 | Lab File ID: | ol01043.d | |
| Dilution: | 1.0 | | Initial Weight/Volume: | 500 | mL |
| Date Analyzed: | 12/02/2010 0645 | | Final Weight/Volume: | 5 | mL |
| Date Prepared: | 11/24/2010 1459 | | Injection Volume: | 2 | uL |
| | | | Column ID: | PRIMARY | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 680-63374-11 | Analysis Batch: 680-187733 | Instrument ID: | SGO | |
| Client Matrix: | Water | Prep Batch: 680-187137 | Lab File ID: | ol01044.d | |
| Dilution: | 1.0 | | Initial Weight/Volume: | 500 | mL |
| Date Analyzed: | 12/02/2010 0709 | | Final Weight/Volume: | 5 | mL |
| Date Prepared: | 11/24/2010 1459 | | Injection Volume: | 2 | uL |
| | | | Column ID: | PRIMARY | |

| Analyte | % Rec. MS | % Rec. MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
|---|---|---|---|---|---|---|---|
| Methyl parathion | 92 | 89 | 58 - 131 | 3 | 50 | | |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| Triphenylphosphate | 95 | 100 | 67 - 130 |

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 680-187137**

**Method: 8141B**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 680-63374-11 | Analysis Batch: 680-187733 | Instrument ID: | SGO | |
| Client Matrix: | Water | Prep Batch: 680-187137 | Lab File ID: | ol01045.d | |
| Dilution: | 1.0 | | Initial Weight/Volume: | 500 | mL |
| Date Analyzed: | 12/02/2010 0734 | | Final Weight/Volume: | 5 | mL |
| Date Prepared: | 11/24/2010 1459 | | Injection Volume: | 2 | uL |
| | | | Column ID: | PRIMARY | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 680-63374-11 | Analysis Batch: 680-187733 | Instrument ID: | SGO | |
| Client Matrix: | Water | Prep Batch: 680-187137 | Lab File ID: | ol01046.d | |
| Dilution: | 1.0 | | Initial Weight/Volume: | 500 | mL |
| Date Analyzed: | 12/02/2010 0759 | | Final Weight/Volume: | 5 | mL |
| Date Prepared: | 11/24/2010 1459 | | Injection Volume: | 2 | uL |
| | | | Column ID: | PRIMARY | |

| Analyte | % Rec. MS | % Rec. MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
|---|---|---|---|---|---|---|---|
| Ethyl Parathion | 99 | 89 | 70 - 130 | 11 | 50 | | |
| Thionazin | 89 | 81 | 69 - 130 | 9 | 50 | | |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| Triphenylphosphate | 100 | 94 | 67 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Method Blank - Batch: 680-186942**

**Method: 8151A**
**Preparation: 8151A**

Lab Sample ID: MB 680-186942/19-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/29/2010 1628
Date Prepared: 11/23/2010 0835

Analysis Batch: 680-187487
Prep Batch: 680-186942
Units: ug/L

Instrument ID: SGS
Lab File ID: sk29016.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 10 mL
Injection Volume: 1 uL
Column ID: PRIMARY

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| 2,4-D | 0.037 | U | 0.037 | 0.50 |
| 2,4-DB | 0.15 | U | 0.15 | 0.50 |
| 2,4,5-T | 0.062 | U | 0.062 | 0.50 |
| Silvex (2,4,5-TP) | 0.062 | U | 0.062 | 0.50 |
| Dalapon | 0.10 | U | 0.10 | 10 |
| Dicamba | 0.085 | U | 0.085 | 0.50 |
| Dichlorprop | 0.15 | U | 0.15 | 0.50 |
| Dinoseb | 0.16 | U | 0.16 | 6.0 |
| MCPA | 17 | U | 17 | 120 |
| Mecoprop | 19 | U | 19 | 120 |
| Pentachlorophenol | 0.037 | U | 0.037 | 0.25 |

| Surrogate | % Rec | | Acceptance Limits |
|---|---|---|---|
| DCAA | 98 | J | 52 - 151 |

| Surrogate | % Rec | | Acceptance Limits |
|---|---|---|---|
| DCAA | 151 | J | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Lab Control Sample - Batch: 680-186942**

**Method: 8151A**
**Preparation: 8151A**

Lab Sample ID: LCS 680-186942/20-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/29/2010 1644
Date Prepared: 11/23/2010 0835

Analysis Batch: 680-187487
Prep Batch: 680-186942
Units: ug/L

Instrument ID: SGS
Lab File ID: sk29017.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 10 mL
Injection Volume: 1 uL
Column ID: PRIMARY

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| 2,4-D | 2.00 | 1.58 | 79 | 63 - 130 | |
| 2,4-DB | 2.00 | 1.43 | 72 | 34 - 157 | M J |
| 2,4,5-T | 2.00 | 1.82 | 91 | 59 - 130 | M |
| Silvex (2,4,5-TP) | 2.00 | 1.58 | 79 | 64 - 130 | |
| Dalapon | 10.0 | 8.30 | 83 | 24 - 130 | J |
| Dicamba | 2.00 | 1.73 | 87 | 66 - 130 | |
| Dichlorprop | 2.00 | 2.04 | 102 | 65 - 152 | |
| Dinoseb | 2.00 | 0.245 | 12 | 10 - 130 | M J |
| MCPA | 200 | 178 | 89 | 40 - 130 | |
| Mecoprop | 200 | 161 | 80 | 53 - 130 | |
| Pentachlorophenol | 1.34 | 1.21 | 90 | 70 - 130 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| DCAA | 98 | 52 - 151 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| DCAA | 82 | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 680-186942**

**Method: 8151A**
**Preparation: 8151A**

| | | | |
|---|---|---|---|
| MS Lab Sample ID: | 680-63374-11 | Analysis Batch: 680-187487 | Instrument ID: SGS |
| Client Matrix: | Water | Prep Batch: 680-186942 | Lab File ID: sk29028.d |
| Dilution: | 1.0 | | Initial Weight/Volume: 1040 mL |
| Date Analyzed: | 11/29/2010 1935 | | Final Weight/Volume: 10 mL |
| Date Prepared: | 11/23/2010 0835 | | Injection Volume: 1 uL |
| | | | Column ID: PRIMARY |

| | | | |
|---|---|---|---|
| MSD Lab Sample ID: | 680-63374-11 | Analysis Batch: 680-187487 | Instrument ID: SGS |
| Client Matrix: | Water | Prep Batch: 680-186942 | Lab File ID: sk29029.d |
| Dilution: | 1.0 | | Initial Weight/Volume: 1040 mL |
| Date Analyzed: | 11/29/2010 1951 | | Final Weight/Volume: 10 mL |
| Date Prepared: | 11/23/2010 0835 | | Injection Volume: 1 uL |
| | | | Column ID: PRIMARY |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| 2,4-D | 84 | 82 | 63 - 130 | 2 | 50 | | |
| 2,4-DB | 74 | 105 | 34 - 157 | 34 | 50 | J | |
| 2,4,5-T | 34 | 83 | 59 - 130 | 85 | 50 | J | J |
| Silvex (2,4,5-TP) | 76 | 78 | 64 - 130 | 3 | 50 | | |
| Dalapon | 78 | 76 | 24 - 130 | 3 | 50 | J | J |
| Dicamba | 57 | 84 | 66 - 130 | 38 | 50 | J | |
| Dichlorprop | 109 | 99 | 65 - 152 | 10 | 50 | | |
| Dinoseb | 56 | 18 | 10 - 130 | 102 | 50 | J | J |
| MCPA | 122 | 98 | 40 - 130 | 22 | 50 | | |
| Mecoprop | 159 | 102 | 53 - 130 | 44 | 50 | J | |
| Pentachlorophenol | 85 | 87 | 70 - 130 | 2 | 50 | | |

| Surrogate | MS % Rec | | MSD % Rec | Acceptance Limits |
|---|---|---|---|---|
| DCAA | 94 | J | 97 | 52 - 151 |

| Surrogate | MS % Rec | | MSD % Rec | Acceptance Limits |
|---|---|---|---|---|
| DCAA | 157 | J | 82 | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Method Blank - Batch: 680-186813**

**Method: 6020A**
**Preparation: 3030C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 680-186813/10-A | Analysis Batch: | 680-187361 | Instrument ID: | ICPMSB |
| Client Matrix: | Water | Prep Batch: | 680-186813 | Lab File ID: | 186813.chr |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 11/24/2010 0836 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/22/2010 0932 | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Antimony | 0.99 | U | 0.99 | 2.0 |
| Arsenic | 0.40 | U | 0.40 | 1.0 |
| Barium | 0.15 | U | 0.15 | 1.0 |
| Beryllium | 0.070 | U | 0.070 | 0.20 |
| Cadmium | 0.20 | U | 0.20 | 0.50 |
| Chromium | 0.16 | U | 0.16 | 1.0 |
| Cobalt | 0.078 | U | 0.078 | 0.20 |
| Copper | 0.21 | U | 0.21 | 1.0 |
| Lead | 0.080 | U | 0.080 | 0.30 |
| Nickel | 0.40 | U | 0.40 | 1.0 |
| Selenium | 0.21 | U | 0.21 | 0.50 |
| Silver | 0.10 | U | 0.10 | 0.20 |
| Thallium | 0.10 | U | 0.10 | 0.20 |
| Tin | 0.40 | U | 0.40 | 1.0 |
| Vanadium | 1.4 | U | 1.4 | 5.0 |
| Zinc | 2.6 | U | 2.6 | 10 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Lab Control Sample - Batch: 680-186813**

**Method: 6020A**
**Preparation: 3030C**

Lab Sample ID: LCS 680-186813/11-A
Client Matrix: Water
Dilution: 5.0
Date Analyzed: 11/24/2010 1357
Date Prepared: 11/22/2010 0932

Analysis Batch: 680-187361
Prep Batch: 680-186813
Units: ug/L

Instrument ID: ICPMSB
Lab File ID: 186813.chr
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Antimony | 50.0 | 55.3 | 111 | 75 - 125 | |
| Arsenic | 100 | 99.6 | 100 | 75 - 125 | |
| Barium | 100 | 103 | 103 | 75 - 125 | |
| Beryllium | 50.0 | 48.1 | 96 | 75 - 125 | |
| Cadmium | 50.0 | 51.0 | 102 | 75 - 125 | |
| Chromium | 100 | 93.0 | 93 | 75 - 125 | |
| Cobalt | 50.0 | 46.1 | 92 | 75 - 125 | |
| Copper | 100 | 95.0 | 95 | 75 - 125 | |
| Lead | 50.0 | 52.5 | 105 | 75 - 125 | |
| Nickel | 100 | 94.5 | 94 | 75 - 125 | |
| Selenium | 100 | 102 | 102 | 75 - 125 | |
| Silver | 50.0 | 51.2 | 102 | 75 - 125 | |
| Thallium | 40.0 | 41.7 | 104 | 75 - 125 | |
| Tin | 100 | 96.2 | 96 | 75 - 125 | |
| Vanadium | 100 | 91.6 | 92 | 75 - 125 | |
| Zinc | 100 | 102 | 102 | 75 - 125 | |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 680-186813**

**Method: 6020A**
**Preparation: 3030C**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 680-63374-11 | Analysis Batch: | 680-187361 | Instrument ID: | ICPMSB |
| Client Matrix: | Water | Prep Batch: | 680-186813 | Lab File ID: | 186813.chr |
| Dilution: | 5.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 11/24/2010 1404 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/22/2010 0932 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 680-63374-11 | Analysis Batch: | 680-187361 | Instrument ID: | ICPMSB |
| Client Matrix: | Water | Prep Batch: | 680-186813 | Lab File ID: | 186813.chr |
| Dilution: | 5.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 11/24/2010 1412 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/22/2010 0932 | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Antimony | 111 | 111 | 75 - 125 | 0 | 20 | | |
| Arsenic | 99 | 98 | 75 - 125 | 1 | 20 | | |
| Barium | 102 | 101 | 75 - 125 | 1 | 20 | | |
| Beryllium | 98 | 96 | 75 - 125 | 2 | 20 | | |
| Cadmium | 104 | 102 | 75 - 125 | 1 | 20 | | |
| Chromium | 94 | 93 | 75 - 125 | 1 | 20 | | |
| Cobalt | 93 | 91 | 75 - 125 | 2 | 20 | | |
| Copper | 97 | 97 | 75 - 125 | 1 | 20 | | |
| Lead | 104 | 104 | 75 - 125 | 0 | 20 | | |
| Nickel | 96 | 96 | 75 - 125 | 0 | 20 | | |
| Selenium | 101 | 87 | 75 - 125 | 14 | 20 | | |
| Silver | 102 | 101 | 75 - 125 | 1 | 20 | | |
| Thallium | 104 | 104 | 75 - 125 | 0 | 20 | | |
| Tin | 97 | 97 | 75 - 125 | 0 | 20 | | |
| Vanadium | 92 | 92 | 75 - 125 | 1 | 20 | | |
| Zinc | 103 | 99 | 75 - 125 | 3 | 20 | | |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Method Blank - Batch: 680-187406**

**Method: 7470A**
**Preparation: 7470A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 680-187406/1-A | Analysis Batch: | 680-187718 | Instrument ID: | LEEMAN1 |
| Client Matrix: | Water | Prep Batch: | 680-187406 | Lab File ID: | b120110.chr |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 12/01/2010 1929 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/29/2010 1615 | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Mercury | 0.091 | U | 0.091 | 0.20 |

**Lab Control Sample - Batch: 680-187406**

**Method: 7470A**
**Preparation: 7470A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 680-187406/2-A | Analysis Batch: | 680-187718 | Instrument ID: | LEEMAN1 |
| Client Matrix: | Water | Prep Batch: | 680-187406 | Lab File ID: | b120110.chr |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 12/01/2010 1933 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/29/2010 1615 | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Mercury | 2.50 | 2.85 | 114 | 80 - 120 | |

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 680-187406**

**Method: 7470A**
**Preparation: 7470A**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 680-63374-11 | Analysis Batch: | 680-187718 | Instrument ID: | LEEMAN1 |
| Client Matrix: | Water | Prep Batch: | 680-187406 | Lab File ID: | b120110.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 12/01/2010 2037 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/29/2010 1615 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 680-63374-11 | Analysis Batch: | 680-187718 | Instrument ID: | LEEMAN1 |
| Client Matrix: | Water | Prep Batch: | 680-187406 | Lab File ID: | b120110.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 12/01/2010 2040 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/29/2010 1615 | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Mercury | 124 | 118 | 80 - 120 | 4 | 20 | J | |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Method Blank - Batch: 680-187194**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 680-187194/2 | Analysis Batch: | 680-187194 | Instrument ID: | ICG |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 0034.d |
| Dilution: | 5.0 | Units: | mg/L | Initial Weight/Volume: | 1 mL |
| Date Analyzed: | 11/20/2010 1505 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Nitrate as NO3 | 0.36 | U | 0.36 | 1.1 |

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 680-187194**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 680-187194/3 | Analysis Batch: | 680-187194 | Instrument ID: | ICG |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 0035.d |
| Dilution: | 5.0 | Units: | mg/L | Initial Weight/Volume: | 1 mL |
| Date Analyzed: | 11/20/2010 1519 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | N/A | | | | 1 uL |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 680-187194/4 | Analysis Batch: | 680-187194 | Instrument ID: | ICG |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 0036.d |
| Dilution: | 5.0 | Units: | mg/L | Initial Weight/Volume: | 1 mL |
| Date Analyzed: | 11/20/2010 1532 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | N/A | | | | 1 uL |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| Nitrate as NO3 | 96 | 97 | 90 - 110 | 0 | 30 | | |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 680-187194**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 680-63374-11 | Analysis Batch: | 680-187194 | Instrument ID: | ICG |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 0049.d |
| Dilution: | 5.0 | | | Initial Weight/Volume: | 1 mL |
| Date Analyzed: | 11/20/2010 1826 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | N/A | | | | 1 uL |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 680-63374-11 | Analysis Batch: | 680-187194 | Instrument ID: | ICG |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 0050.d |
| Dilution: | 5.0 | | | Initial Weight/Volume: | 1 mL |
| Date Analyzed: | 11/20/2010 1840 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | N/A | | | | 1 uL |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Nitrate as NO3 | 101 | 103 | 90 - 110 | 1 | 30 | | |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Method Blank - Batch: 680-187431**

**Method: 335.4**
**Preparation: Distill/CN**

Lab Sample ID: MB 680-187431/1-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/30/2010 1223
Date Prepared: 11/30/2010 0458

Analysis Batch: 680-187499
Prep Batch: 680-187431
Units: mg/L

Instrument ID: LACHAT1
Lab File ID: N/A
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Cyanide, Total | 0.0025 | U | 0.0025 | 0.010 |

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 680-187431**

**Method: 335.4**
**Preparation: Distill/CN**

LCS Lab Sample ID: LCS 680-187431/2-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/30/2010 1223
Date Prepared: 11/30/2010 0458

Analysis Batch: 680-187499
Prep Batch: 680-187431
Units: mg/L

Instrument ID: LACHAT1
Lab File ID: N/A
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

LCSD Lab Sample ID: LCSD 680-187431/3-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/30/2010 1223
Date Prepared: 11/30/2010 0458

Analysis Batch: 680-187499
Prep Batch: 680-187431
Units: mg/L

Instrument ID: LACHAT1
Lab File ID: N/A
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

| Analyte | % Rec. LCS | % Rec. LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 104 | 104 | 90 - 110 | 0 | 20 | | |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 680-187431**

**Method: 335.4**
**Preparation: Distill/CN**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 680-63374-11 | Analysis Batch: | 680-187499 | Instrument ID: | LACHAT1 |
| Client Matrix: | Water | Prep Batch: | 680-187431 | Lab File ID: | N/A |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 11/30/2010 1223 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/30/2010 0458 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 680-63374-11 | Analysis Batch: | 680-187499 | Instrument ID: | LACHAT1 |
| Client Matrix: | Water | Prep Batch: | 680-187431 | Lab File ID: | N/A |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 11/30/2010 1223 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/30/2010 0458 | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Cyanide, Total | 103 | 106 | 90 - 110 | 3 | 20 | | |

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Method Blank - Batch: 680-187122**

**Method: 9034**
**Preparation: 9030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 680-187122/1-A | Analysis Batch: | 680-187236 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | 680-187122 | Lab File ID: | N/A |
| Dilution: | 1.0 | Units: | mg/L | Initial Weight/Volume: | 6.0 mL |
| Date Analyzed: | 11/24/2010 1633 | | | Final Weight/Volume: | 6.0 mL |
| Date Prepared: | 11/24/2010 0837 | | | | |

| Analyte | Result | Qual | RL | RL |
|---|---|---|---|---|
| Sulfide | 10 | U | 10 | 10 |

**Lab Control Sample - Batch: 680-187122**

**Method: 9034**
**Preparation: 9030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 680-187122/2-A | Analysis Batch: | 680-187236 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | 680-187122 | Lab File ID: | N/A |
| Dilution: | 1.0 | Units: | mg/L | Initial Weight/Volume: | 6.0 mL |
| Date Analyzed: | 11/24/2010 1633 | | | Final Weight/Volume: | 6.0 mL |
| Date Prepared: | 11/24/2010 0837 | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Sulfide | 416 | 239 | 57 | 50 - 150 | |

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 680-187122**

**Method: 9034**
**Preparation: 9030B**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 680-63374-11 | Analysis Batch: | 680-187236 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | 680-187122 | Lab File ID: | N/A |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 6.0 mL |
| Date Analyzed: | 11/24/2010 1633 | | | Final Weight/Volume: | 6.0 mL |
| Date Prepared: | 11/24/2010 0837 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 680-63374-11 | Analysis Batch: | 680-187236 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | 680-187122 | Lab File ID: | N/A |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 6.0 mL |
| Date Analyzed: | 11/24/2010 1633 | | | Final Weight/Volume: | 6.0 mL |
| Date Prepared: | 11/24/2010 0837 | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Sulfide | 58 | 61 | 50 - 150 | 5 | 50 | | |

Serial Number 033551

# ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404

Website: www.testamericainc.com
Phone: (912) 354-7858
Fax: (912) 352-0165

Alternate Laboratory Name/Location
Phone:
Fax:

| | | |
|---|---|---|
| PROJECT REFERENCE: Long Street Ft Bragg Landfill | PROJECT NO. | PROJECT LOCATION (STATE): NC |
| TAL (LAB) PROJECT MANAGER: Kathy Smith | P.O. NUMBER | CONTRACT NO. |
| CLIENT (SITE) PM: Kevin Haborak | CLIENT PHONE: 912 652 6083 | CLIENT FAX |
| CLIENT NAME: USACE | CLIENT E-MAIL | |
| CLIENT ADDRESS: 100 W. Oglethorpe Avenue Savannah GA 31401 | | |
| COMPANY CONTRACTING THIS WORK (if applicable) | | |

PAGE 1 OF 2

STANDARD REPORT DELIVERY ◯

DATE DUE _____

EXPEDITED REPORT DELIVERY (SURCHARGE) ◯

DATE DUE _____

NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

PRESERVATIVE: HCL; HNO3; NaOH; NaOH; ZnOAc/NaOH; HCL

| SAMPLE DATE | SAMPLE TIME | SAMPLE IDENTIFICATION | COMPOSITE (C) OR GRAB (G) INDICATE | AQUEOUS (WATER) | SOLID OR SEMISOLID | AIR | NONAQUEOUS LIQUID (OIL, SOLVENT, ...) | 8141, 8151, 8081A, 8260C | 6020/3030C Metals | 300.0 | 9010 Cyanide | 9030B | 8260B/10C | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Trip Blank | | W | | | | | | | | | 2 | |
| 11-18-10 | 1415 | LS-SW2-11-10 | G | W | | | | | | | | | 3 | |
| 11-18-10 | 1440 | LS-SW1-11-10 | G | W | | | | | | | | | 3 | |
| 11-18-10 | 1200 | LS-DUP1-11-10 | G | W | | | | | | | | | 3 | |
| 11-18-10 | 1025 | LS-MW7-11-10 | G | W | | | | | | | | | 3 | |
| 11-18-10 | 1430 | LS-MW8-11-10 | G | W | | | | | | | | | 3 | |
| 11-19-10 | 1040 | SLMW-06-11-10 | G | W | | | | 6 | 1 | 1 | 1 | 2 | 3 | |
| 11-19-10 | 1248 | SLMW-10-11-10 | G | W | | | | 6 | 1 | 1 | 1 | 2 | 3 | |
| 11-19-10 | 1455 | SLMW-13-11-10 | G | W | | | | 6 | 1 | 1 | 1 | 2 | 3 | |

| RELINQUISHED BY: (SIGNATURE) | DATE | TIME | RELINQUISHED BY: (SIGNATURE) | DATE | TIME | RELINQUISHED BY: (SIGNATURE) | DATE | TIME |
|---|---|---|---|---|---|---|---|---|
| [signature] | 11/20/10 | 1802 | Shipped via Fedex | | | | | |
| RECEIVED BY: (SIGNATURE) | DATE | TIME | RECEIVED BY: (SIGNATURE) | DATE | TIME | RECEIVED BY: (SIGNATURE) | DATE | TIME |
| | | | | | | | | |

LABORATORY USE ONLY

| RECEIVED FOR LABORATORY BY: (SIGNATURE) | DATE | TIME | CUSTODY INTACT | CUSTODY SEAL NO. | SAVANNAH LOG NO. | LABORATORY REMARKS |
|---|---|---|---|---|---|---|
| George K Conner | 11/20/10 | 1047 | YES ◯ NO ◯ | | 680-63374 | 0.8/1.4/0.9/1.3/0.9/1.1/0.9/0.8 |

TAL8240-680 (1207)

Serial Number 033552

# ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404

Website: www.testamericainc.com
Phone: (912) 354-7858
Fax: (912) 352-0165

Alternate Laboratory Name/Location
Phone:
Fax:

| | | | |
|---|---|---|---|
| PROJECT REFERENCE: Ft Bragg Landfill | PROJECT NO. | PROJECT LOCATION (STATE): NC | PAGE 2 OF 2 |
| TAL (LAB) PROJECT MANAGER: Kathy Smith | P.O. NUMBER | CONTRACT NO. | STANDARD REPORT DELIVERY ○ DATE DUE ____ |
| CLIENT (SITE) PM: Kevin Haborak | CLIENT PHONE: 912 652 6053 | CLIENT FAX | EXPEDITED REPORT DELIVERY (SURCHARGE) ○ DATE DUE ____ |
| CLIENT NAME: USACE | CLIENT E-MAIL | | |
| CLIENT ADDRESS: 100 W. Oglethorpe Avenue | | | |
| COMPANY CONTRACTING THIS WORK (if applicable) | | | NUMBER OF COOLERS SUBMITTED PER SHIPMENT: |

MATRIX TYPE — COMPOSITE (C) OR GRAB (G) INDICATE

REQUIRED ANALYSIS: 8141/8151 8082 8260 (VOC); 6020/3020 Metals; 300.0; 9210 9215 (Nitrate); 9030 9034 (Sulfide); 6200 (VOC)

PRESERVATIVE: HCL; HNO3; H2SO4; NaOH; ZnAc; NaOH; NaOH; HCL

| SAMPLE DATE | SAMPLE TIME | SAMPLE IDENTIFICATION | COMPOSITE (C) OR GRAB (G) | AQUEOUS (WATER) | SOLID OR SEMISOLID | AIR | NONAQUEOUS LIQUID (OIL, SOLVENT, ...) | 8141/8151 8082 8260 | 6020/3020 Metals | 300.0 | 9210 9215 | 9030 9034 | 6200 | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 19 Nov 2010 | 0955 | LSMW-12AR-11-10 | 6 | W | | | | 6 | 1 | 1 | 1 | 2 | 3 | | | | | |
| 19 Nov 2010 | 1215 | LSMW-12BR-11-10 | 6 | W | | | | 12 | 2 | 2 | 2 | 4 | 6 | | | | | MS/MSD TAKEN |
| 19 Nov 2010 | 1200 | LSMW-DUP2-11-10 | 6 | W | | | | 6 | 1 | 1 | 1 | 2 | 3 | | | | | |
| 19 Nov 2010 | 1420 | LSMW-11R-11-10 | 6 | W | | | | 6 | 1 | 1 | 1 | 2 | 3 | | | | | |
| 19 Nov 2010 | 1620 | LSMW-9-11-10 | 6 | W | | | | 6 | 1 | 1 | 1 | 2 | 3 | | | | | |

End of Sampling

| RELINQUISHED BY: (SIGNATURE) | DATE | TIME | RELINQUISHED BY: (SIGNATURE) | DATE | TIME | RELINQUISHED BY: (SIGNATURE) | DATE | TIME |
|---|---|---|---|---|---|---|---|---|
| [signature] | 19 Nov 2010 | 1800 | Shipped via fedex | | | | | |
| RECEIVED BY: (SIGNATURE) | DATE | TIME | RECEIVED BY: (SIGNATURE) | DATE | TIME | RECEIVED BY: (SIGNATURE) | DATE | TIME |
| | | | | | | | | |

LABORATORY USE ONLY

| RECEIVED FOR LABORATORY BY: (SIGNATURE) | DATE | TIME | CUSTODY INTACT | CUSTODY SEAL NO. | SAVANNAH LOG NO. | LABORATORY REMARKS |
|---|---|---|---|---|---|---|
| [signature] | 11/20/10 | 1047 | YES ○ NO ○ | | 680-63574 | |

TAL8240-680 (1207)

# Login Sample Receipt Check List

Client: U.S. Army Corps of Engineers

Job Number: 680-63374-1

**Login Number: 63374**

**List Source: TestAmerica Savannah**

**Creator: Conner, Keaton**

**List Number: 1**

| Question | T / F/ NA | Comment |
|---|---|---|
| Radioactivity either was not measured or, if measured, is at or below background | N/A | |
| The cooler's custody seal, if present, is intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | False | -15 NOT LISTED ON COC (Field Blank) |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the sample IDs on the containers and the COC. | False | RECEIVED EXTRA 125 OBLONG -5 |
| Samples are received within Holding Time. | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | False | 1 VIAL -2 AND -5 REC. BROKEN |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter. | True | |
| If necessary, staff have been informed of any short hold time or quick TAT needs | True | |
| Multiphasic samples are not present. | N/A | |
| Samples do not require splitting or compositing. | N/A | |

# ANALYTICAL REPORT

Job Number: 680-63343-1

Job Description: Ft. Bragg Longstreet

For:
U.S. Army Corps of Engineers
PO BOX 889
Savannah, GA 31402-0889

Attention: Mr. Kevin Haborak

Approved for release.
Kathryn Smith
Project Manager I
12/15/2010 4:56 PM

Kathryn Smith
Project Manager I
kathye.smith@testamericainc.com
12/15/2010

The test results in this report meet NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted. Results pertain only to samples listed in this report. This report may not be reproduced, except in full, without the written approval of the laboratory. Questions should be directed to the person who signed this report.

Savannah Certifications and ID #s: A2LA: 0399.01; AL: 41450; ARDEQ: 88-0692; ARDOH; CA: 03217CA; CO; CT: PH0161; DE; FL: E87052; GA: 803; Guam; HI; IL: 200022; IN; IA: 353; KS: E-10322; KY EPPC: 90084; KY UST; LA DEQ: 30690; LA DHH: LA080008; ME: 2008022; MD: 250; MA: M-GA006; MI: 9925; MS; NFESC: 249; NV: GA00006; NJ: GA769; NM; NY: 10842; NC DWQ: 269; NC DHHS: 13701; PA: 68-00474; PR: GA00006; RI: LAO00244; SC: 98001001; TN: TN0296; TX: T104704185; USEPA: GA00006; VT: VT-87052; VA: 00302; WA; WV DEP: 094; WV DHHR: 9950 C; WI DNR: 999819810; WY/EPAR8: 8TMS-Q

**Comments**
No additional comments.

**Receipt**
All samples were received in good condition within temperature requirements.

**GC/MS Semi VOA**
Method(s) 8270D: The initial calibration curves associated with analytical batch 187762 were outside method criteria for the following analyte(s): Benzidine, 2,4-Dinitrophenol, Benzaldehyde, 1,3,5-Trinitrobenzene, As indicated in the reference method, sample analysis may proceed; however, any detection or non-detection for the affected analyte(s) is considered an estimated concentration.

Method(s) 8270D: The continuing calibration verification (CCV) analyzed in batch 187662 exceeded the method criteria for the following analyte(s): Benzaldehyde and Benzoic Acid, ethyl methanesulfonate, 1,3,5-Trinitrobenzene, 4-nitroquinoline-1-oxide, 4-chlorophenol, o,o,o-triethylphosphorthioate, methyl parathion and parathion. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

No other analytical or quality issues were noted.

**GC Semi VOA**
Method(s) 8081B/8082A: Two surrogates are used for this analysis. The laboratory's SOP allows one of these surrogates to be outside acceptance criteria without performing re-extraction/re-analysis. The following sample(s) contained an allowable number of surrogate compounds outside limits: LS-Dup1-11-10 (680-63343-3), LS-MW7-11-10 (680-63343-4), LS-SW1-11-10 (680-63343-2), LS-SW2-11-10 (680-63343-1). These results have been reported and qualified.

No other analytical or quality issues were noted.

**Metals**
Method(s) 6020A: Due to sample matrix effect on the internal standard (ISTD), a dilution was required for the following sample(s): LS-MW8-11-10 (680-63343-5).

Method(s) 6020A: Due to sample matrix effect on the internal standard (ISTD), a dilution was required for the following sample(s): LS-SW1-11-10 (680-63343-2).

No other analytical or quality issues were noted.

**General Chemistry**
No analytical or quality issues were noted.

**Organic Prep**
No analytical or quality issues were noted.

# METHOD SUMMARY

Client: U.S. Army Corps of Engineers | Job Number: 680-63343-1

| Description | Lab Location | Method | Preparation Method |
|---|---|---|---|
| **Matrix Water** | | | |
| Semivolatile Organic Compounds (GC/MS) | TAL SAV | SW846 8270D | |
| Liquid-Liquid Extraction (Continuous) | TAL SAV | | SW846 3520C |
| Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography | TAL SAV | SW846 8081B/8082A | |
| Liquid-Liquid Extraction (Continuous) | TAL SAV | | SW846 3520C |
| Organophosphorous Compounds by Gas Chromatography, Capillary Column Technique | TAL SAV | SW846 8141B | |
| Liquid-Liquid Extraction (Continuous) | TAL SAV | | SW846 3520C |
| Herbicides (GC) | TAL SAV | SW846 8151A | |
| Extraction (Herbicides) | TAL SAV | | SW846 8151A |
| Metals (ICP/MS) | TAL SAV | SW846 6020A | |
| Preparation, Extractable Metals | TAL SAV | | SM 3030C |
| Mercury (CVAA) | TAL SAV | SW846 7470A | |
| Preparation, Mercury | TAL SAV | | SW846 7470A |
| Anions, Ion Chromatography | TAL SAV | MCAWW 300.0 | |
| Cyanide, Total | TAL SAV | MCAWW 335.4 | |
| Distillation, Cyanide | TAL SAV | | Distill/CN |
| Sulfide, Acid Soluble and Insoluble (Titrimetric) | TAL SAV | SW846 9034 | |
| Sulfide, Distillation (Acid Soluble and Insoluble) | TAL SAV | | SW846 9030B |

**Lab References:**

TAL SAV = TestAmerica Savannah

**Method References:**

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

# METHOD / ANALYST SUMMARY

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

| Method | Analyst | Analyst ID |
|---|---|---|
| SW846 8270D | Haynes, Carion | CRH |
| SW846 8081B/8082A | Kellar, Joshua | JK |
| SW846 8141B | Kellar, Joshua | JK |
| SW846 8151A | Smith, Crystal | CAS |
| SW846 6020A | Robertson, Bryn | BR |
| SW846 7470A | Vasquez, Juana | JV |
| MCAWW 300.0 | Brazell, Connie | CB |
| MCAWW 335.4 | McDonald, Debbie | DAM |
| SW846 9034 | Lanier, Jerry | JAL |

# SAMPLE SUMMARY

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

| Lab Sample ID | Client Sample ID | Client Matrix | Date/Time Sampled | Date/Time Received |
|---|---|---|---|---|
| 680-63343-1 | LS-SW2-11-10 | Water | 11/18/2010 1415 | 11/19/2010 0953 |
| 680-63343-2 | LS-SW1-11-10 | Water | 11/18/2010 1440 | 11/19/2010 0953 |
| 680-63343-3 | LS-Dup1-11-10 | Water | 11/18/2010 1200 | 11/19/2010 0953 |
| 680-63343-4 | LS-MW7-11-10 | Water | 11/18/2010 1025 | 11/19/2010 0953 |
| 680-63343-5 | LS-MW8-11-10 | Water | 11/18/2010 1430 | 11/19/2010 0953 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-SW2-11-10**

Lab Sample ID: 680-63343-1

Client Matrix: Water

Date Sampled: 11/18/2010 1415

Date Received: 11/19/2010 0953

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4487.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1060 mL |
| Date Analyzed: | 12/02/2010 1350 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acenaphthene | 0.72 | U | 0.72 | 9.4 |
| Acenaphthylene | 0.80 | U | 0.80 | 9.4 |
| Acetophenone | 0.54 | U | 0.54 | 9.4 |
| 2-Acetylaminofluorene | 1.5 | U | 1.5 | 9.4 |
| 4-Aminobiphenyl | 1.1 | U | 1.1 | 9.4 |
| Anthracene | 0.65 | U | 0.65 | 9.4 |
| Benzo[a]anthracene | 0.52 | U | 0.52 | 9.4 |
| Benzo[a]pyrene | 0.67 | U | 0.67 | 9.4 |
| Benzo[b]fluoranthene | 2.5 | U | 2.5 | 9.4 |
| Benzo[g,h,i]perylene | 0.82 | U | 0.82 | 9.4 |
| Benzo[k]fluoranthene | 1.1 | U | 1.1 | 9.4 |
| Benzyl alcohol | 1.0 | U | 1.0 | 9.4 |
| 1,1'-Biphenyl | 0.55 | U | 0.55 | 9.4 |
| Bis(2-chloroethoxy)methane | 0.89 | U | 0.89 | 9.4 |
| Bis(2-chloroethyl)ether | 1.0 | U | 1.0 | 9.4 |
| bis(chloroisopropyl) ether | 0.74 | U | 0.74 | 9.4 |
| Bis(2-ethylhexyl) phthalate | 1.5 | U | 1.5 | 9.4 |
| 4-Bromophenyl phenyl ether | 0.73 | U | 0.73 | 9.4 |
| Butyl benzyl phthalate | 1.1 | U | 1.1 | 9.4 |
| 4-Chloroaniline | 2.1 | U | 2.1 | 19 |
| 4-Chloro-3-methylphenol | 0.94 | U | 0.94 | 9.4 |
| 2-Chloronaphthalene | 0.75 | U | 0.75 | 9.4 |
| 2-Chlorophenol | 0.82 | U | 0.82 | 9.4 |
| 4-Chlorophenyl phenyl ether | 0.79 | U | 0.79 | 9.4 |
| Chrysene | 0.48 | U | 0.48 | 9.4 |
| Diallate | 0.74 | U | 0.74 | 9.4 |
| Dibenz(a,h)anthracene | 0.94 | U | 0.94 | 9.4 |
| Dibenzofuran | 0.75 | U | 0.75 | 9.4 |
| 3,3'-Dichlorobenzidine | 28 | U | 28 | 57 |
| 2,4-Dichlorophenol | 1.0 | U | 1.0 | 9.4 |
| 2,6-Dichlorophenol | 0.69 | U | 0.69 | 9.4 |
| Diethyl phthalate | 2.5 | J | 0.83 | 9.4 |
| Dimethoate | 0.71 | U | 0.71 | 9.4 |
| 7,12-Dimethylbenz(a)anthracene | 1.1 | U | 1.1 | 9.4 |
| 3,3'-Dimethylbenzidine | 9.4 | U | 9.4 | 19 |
| 2,4-Dimethylphenol | 3.8 | U | 3.8 | 9.4 |
| Dimethyl phthalate | 0.93 | U | 0.93 | 9.4 |
| Di-n-butyl phthalate | 0.78 | U | 0.78 | 9.4 |
| 1,3-Dinitrobenzene | 0.57 | U | 0.57 | 9.4 |
| 4,6-Dinitro-2-methylphenol | 9.4 | U | 9.4 | 47 |
| 2,4-Dinitrophenol | 9.4 | U | 9.4 | 47 |
| 2,4-Dinitrotoluene | 1.1 | U | 1.1 | 9.4 |
| 2,6-Dinitrotoluene | 1.0 | U | 1.0 | 9.4 |
| Di-n-octyl phthalate | 1.3 | U | 1.3 | 9.4 |
| Dinoseb | 4.7 | U | 4.7 | 9.4 |
| 1,4-Dioxane | 16 | | 3.2 | 9.4 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-SW2-11-10**

Lab Sample ID: 680-63343-1

Client Matrix: Water

Date Sampled: 11/18/2010 1415

Date Received: 11/19/2010 0953

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4487.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1060 mL |
| Date Analyzed: | 12/02/2010 1350 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Disulfoton | 0.75 | U | 0.75 | 9.4 |
| Ethyl methanesulfonate | 0.91 | U | 0.91 | 9.4 |
| Ethyl Parathion | 1.2 | U | 1.2 | 9.4 |
| Famphur | 1.0 | U | 1.0 | 9.4 |
| Fluoranthene | 0.70 | U | 0.70 | 9.4 |
| Fluorene | 0.91 | U | 0.91 | 9.4 |
| Hexachlorobenzene | 0.75 | U | 0.75 | 9.4 |
| Hexachlorobutadiene | 0.58 | U | 0.58 | 9.4 |
| Hexachlorocyclopentadiene | 2.4 | U | 2.4 | 9.4 |
| Hexachloroethane | 0.72 | U | 0.72 | 9.4 |
| Hexachloropropene | 1.3 | U | 1.3 | 9.4 |
| Indeno[1,2,3-cd]pyrene | 0.94 | U | 0.94 | 9.4 |
| Isophorone | 0.85 | U | 0.85 | 9.4 |
| Isosafrole | 0.47 | U | 0.47 | 9.4 |
| Methapyrilene | 2.5 | U | 2.5 | 1900 |
| 3-Methylcholanthrene | 1.3 | U | 1.3 | 9.4 |
| Methyl methanesulfonate | 0.57 | U Q | 0.57 | 9.4 |
| 2-Methylnaphthalene | 0.74 | U | 0.74 | 9.4 |
| Methyl parathion | 0.83 | U | 0.83 | 9.4 |
| 2-Methylphenol | 0.84 | U | 0.84 | 9.4 |
| 3 & 4 Methylphenol | 1.2 | U | 1.2 | 9.4 |
| Naphthalene | 0.66 | U | 0.66 | 9.4 |
| 1,4-Naphthoquinone | 0.58 | U | 0.58 | 9.4 |
| 1-Naphthylamine | 1.0 | U | 1.0 | 9.4 |
| 2-Naphthylamine | 1.4 | U | 1.4 | 9.4 |
| 2-Nitroaniline | 1.2 | U | 1.2 | 47 |
| 3-Nitroaniline | 4.7 | U | 4.7 | 47 |
| 4-Nitroaniline | 4.7 | U | 4.7 | 47 |
| Nitrobenzene | 0.69 | U | 0.69 | 9.4 |
| 2-Nitrophenol | 0.72 | U | 0.72 | 9.4 |
| 4-Nitrophenol | 1.8 | U | 1.8 | 47 |
| N-Nitro-o-toluidine | 1.4 | U | 1.4 | 9.4 |
| N-Nitrosodiethylamine | 0.88 | U | 0.88 | 9.4 |
| N-Nitrosodimethylamine | 2.6 | U | 2.6 | 9.4 |
| N-Nitrosodi-n-butylamine | 0.91 | U | 0.91 | 9.4 |
| N-Nitrosodi-n-propylamine | 0.68 | U | 0.68 | 9.4 |
| N-Nitrosodiphenylamine | 0.87 | U | 0.87 | 9.4 |
| N-Nitrosomethylethylamine | 3.1 | U | 3.1 | 9.4 |
| N-Nitrosopiperidine | 0.83 | U | 0.83 | 9.4 |
| N-Nitrosopyrrolidine | 0.94 | U | 0.94 | 9.4 |
| o,o',o''-Triethylphosphorothioate | 0.94 | U | 0.94 | 9.4 |
| p-Dimethylamino azobenzene | 0.75 | U | 0.75 | 9.4 |
| Pentachlorobenzene | 0.49 | U | 0.49 | 9.4 |
| Pentachloronitrobenzene | 0.74 | U | 0.74 | 9.4 |
| Pentachlorophenol | 1.9 | U | 1.9 | 47 |
| Phenacetin | 1.3 | U | 1.3 | 9.4 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-SW2-11-10**

Lab Sample ID: 680-63343-1

Client Matrix: Water

Date Sampled: 11/18/2010 1415

Date Received: 11/19/2010 0953

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4487.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1060 mL |
| Date Analyzed: | 12/02/2010 1350 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Phenanthrene | 0.73 | U | 0.73 | 9.4 |
| Phenol | 0.78 | U | 0.78 | 9.4 |
| Phorate | 0.82 | U | 0.82 | 9.4 |
| p-Phenylene diamine | 9.4 | U | 9.4 | 1900 |
| Pronamide | 0.84 | U | 0.84 | 9.4 |
| Pyrene | 0.59 | U | 0.59 | 9.4 |
| Safrole, Total | 0.75 | U | 0.75 | 9.4 |
| Sulfotepp | 0.50 | U | 0.50 | 9.4 |
| 1,2,4,5-Tetrachlorobenzene | 0.72 | U | 0.72 | 9.4 |
| 2,3,4,6-Tetrachlorophenol | 0.68 | U | 0.68 | 9.4 |
| Thionazin | 0.86 | U | 0.86 | 9.4 |
| 2-Toluidine | 1.3 | U | 1.3 | 9.4 |
| 2,4,5-Trichlorophenol | 1.1 | U | 1.1 | 9.4 |
| 2,4,6-Trichlorophenol | 0.80 | U | 0.80 | 9.4 |
| 1,3,5-Trinitrobenzene | 1.9 | U | 1.9 | 9.4 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 57 | J | 62 - 130 |
| 2-Fluorophenol | 62 | | 50 - 130 |
| Nitrobenzene-d5 | 63 | | 62 - 130 |
| Phenol-d5 | 62 | | 51 - 130 |
| Terphenyl-d14 | 55 | | 20 - 130 |
| 2,4,6-Tribromophenol | 78 | | 57 - 131 |

Client: U.S. Army Corps of Engineers | Job Number: 680-63343-1

**Client Sample ID:** **LS-SW1-11-10**

Lab Sample ID: 680-63343-2 | Date Sampled: 11/18/2010 1440
Client Matrix: Water | Date Received: 11/19/2010 0953

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4488.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1050 mL |
| Date Analyzed: | 12/02/2010 1418 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acenaphthene | 0.72 | U | 0.72 | 9.5 |
| Acenaphthylene | 0.81 | U | 0.81 | 9.5 |
| Acetophenone | 0.54 | U | 0.54 | 9.5 |
| 2-Acetylaminofluorene | 1.5 | U | 1.5 | 9.5 |
| 4-Aminobiphenyl | 1.1 | U | 1.1 | 9.5 |
| Anthracene | 0.66 | U | 0.66 | 9.5 |
| Benzo[a]anthracene | 0.52 | U | 0.52 | 9.5 |
| Benzo[a]pyrene | 0.68 | U | 0.68 | 9.5 |
| Benzo[b]fluoranthene | 2.5 | U | 2.5 | 9.5 |
| Benzo[g,h,i]perylene | 0.83 | U | 0.83 | 9.5 |
| Benzo[k]fluoranthene | 1.1 | U | 1.1 | 9.5 |
| Benzyl alcohol | 1.0 | U | 1.0 | 9.5 |
| 1,1'-Biphenyl | 0.55 | U | 0.55 | 9.5 |
| Bis(2-chloroethoxy)methane | 0.90 | U | 0.90 | 9.5 |
| Bis(2-chloroethyl)ether | 1.0 | U | 1.0 | 9.5 |
| bis(chloroisopropyl) ether | 0.74 | U | 0.74 | 9.5 |
| Bis(2-ethylhexyl) phthalate | 1.5 | U | 1.5 | 9.5 |
| 4-Bromophenyl phenyl ether | 0.73 | U | 0.73 | 9.5 |
| Butyl benzyl phthalate | 1.1 | U | 1.1 | 9.5 |
| 4-Chloroaniline | 2.1 | U | 2.1 | 19 |
| 4-Chloro-3-methylphenol | 0.95 | U | 0.95 | 9.5 |
| 2-Chloronaphthalene | 0.76 | U | 0.76 | 9.5 |
| 2-Chlorophenol | 0.83 | U | 0.83 | 9.5 |
| 4-Chlorophenyl phenyl ether | 0.80 | U | 0.80 | 9.5 |
| Chrysene | 0.49 | U | 0.49 | 9.5 |
| Diallate | 0.74 | U | 0.74 | 9.5 |
| Dibenz(a,h)anthracene | 0.95 | U | 0.95 | 9.5 |
| Dibenzofuran | 0.75 | U | 0.75 | 9.5 |
| 3,3'-Dichlorobenzidine | 29 | U | 29 | 57 |
| 2,4-Dichlorophenol | 1.0 | U | 1.0 | 9.5 |
| 2,6-Dichlorophenol | 0.70 | U | 0.70 | 9.5 |
| Diethyl phthalate | 0.84 | U | 0.84 | 9.5 |
| Dimethoate | 0.71 | U | 0.71 | 9.5 |
| 7,12-Dimethylbenz(a)anthracene | 1.1 | U | 1.1 | 9.5 |
| 3,3'-Dimethylbenzidine | 9.5 | U | 9.5 | 19 |
| 2,4-Dimethylphenol | 3.8 | U | 3.8 | 9.5 |
| Dimethyl phthalate | 0.94 | U | 0.94 | 9.5 |
| Di-n-butyl phthalate | 0.79 | U | 0.79 | 9.5 |
| 1,3-Dinitrobenzene | 0.57 | U | 0.57 | 9.5 |
| 4,6-Dinitro-2-methylphenol | 9.5 | U | 9.5 | 48 |
| 2,4-Dinitrophenol | 9.5 | U | 9.5 | 48 |
| 2,4-Dinitrotoluene | 1.1 | U | 1.1 | 9.5 |
| 2,6-Dinitrotoluene | 1.0 | U | 1.0 | 9.5 |
| Di-n-octyl phthalate | 1.3 | U | 1.3 | 9.5 |
| Dinoseb | 4.8 | U | 4.8 | 9.5 |
| 1,4-Dioxane | 4.8 | J | 3.2 | 9.5 |

Client: U.S. Army Corps of Engineers | Job Number: 680-63343-1

**Client Sample ID:** **LS-SW1-11-10**

Lab Sample ID: 680-63343-2 | Date Sampled: 11/18/2010 1440
Client Matrix: Water | Date Received: 11/19/2010 0953

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4488.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1050 mL |
| Date Analyzed: | 12/02/2010 1418 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Disulfoton | 0.75 | U | 0.75 | 9.5 |
| Ethyl methanesulfonate | 0.91 | U | 0.91 | 9.5 |
| Ethyl Parathion | 1.2 | U | 1.2 | 9.5 |
| Famphur | 1.0 | U | 1.0 | 9.5 |
| Fluoranthene | 0.70 | U | 0.70 | 9.5 |
| Fluorene | 0.91 | U | 0.91 | 9.5 |
| Hexachlorobenzene | 0.75 | U | 0.75 | 9.5 |
| Hexachlorobutadiene | 0.59 | U | 0.59 | 9.5 |
| Hexachlorocyclopentadiene | 2.4 | U | 2.4 | 9.5 |
| Hexachloroethane | 0.72 | U | 0.72 | 9.5 |
| Hexachloropropene | 1.3 | U | 1.3 | 9.5 |
| Indeno[1,2,3-cd]pyrene | 0.95 | U | 0.95 | 9.5 |
| Isophorone | 0.86 | U | 0.86 | 9.5 |
| Isosafrole | 0.48 | U | 0.48 | 9.5 |
| Methapyrilene | 2.6 | U | 2.6 | 1900 |
| 3-Methylcholanthrene | 1.3 | U | 1.3 | 9.5 |
| Methyl methanesulfonate | 0.57 | U Q | 0.57 | 9.5 |
| 2-Methylnaphthalene | 0.74 | U | 0.74 | 9.5 |
| Methyl parathion | 0.84 | U | 0.84 | 9.5 |
| 2-Methylphenol | 0.85 | U | 0.85 | 9.5 |
| 3 & 4 Methylphenol | 1.2 | U | 1.2 | 9.5 |
| Naphthalene | 0.67 | U | 0.67 | 9.5 |
| 1,4-Naphthoquinone | 0.59 | U | 0.59 | 9.5 |
| 1-Naphthylamine | 1.0 | U | 1.0 | 9.5 |
| 2-Naphthylamine | 1.4 | U | 1.4 | 9.5 |
| 2-Nitroaniline | 1.2 | U | 1.2 | 48 |
| 3-Nitroaniline | 4.8 | U | 4.8 | 48 |
| 4-Nitroaniline | 4.8 | U | 4.8 | 48 |
| Nitrobenzene | 0.70 | U | 0.70 | 9.5 |
| 2-Nitrophenol | 0.72 | U | 0.72 | 9.5 |
| 4-Nitrophenol | 1.8 | U | 1.8 | 48 |
| N-Nitro-o-toluidine | 1.4 | U | 1.4 | 9.5 |
| N-Nitrosodiethylamine | 0.89 | U | 0.89 | 9.5 |
| N-Nitrosodimethylamine | 2.7 | U | 2.7 | 9.5 |
| N-Nitrosodi-n-butylamine | 0.91 | U | 0.91 | 9.5 |
| N-Nitrosodi-n-propylamine | 0.69 | U | 0.69 | 9.5 |
| N-Nitrosodiphenylamine | 0.88 | U | 0.88 | 9.5 |
| N-Nitrosomethylethylamine | 3.1 | U | 3.1 | 9.5 |
| N-Nitrosopiperidine | 0.84 | U | 0.84 | 9.5 |
| N-Nitrosopyrrolidine | 0.95 | U | 0.95 | 9.5 |
| o,o',o''-Triethylphosphorothioate | 0.95 | U | 0.95 | 9.5 |
| p-Dimethylamino azobenzene | 0.75 | U | 0.75 | 9.5 |
| Pentachlorobenzene | 0.50 | U | 0.50 | 9.5 |
| Pentachloronitrobenzene | 0.74 | U | 0.74 | 9.5 |
| Pentachlorophenol | 1.9 | U | 1.9 | 48 |
| Phenacetin | 1.3 | U | 1.3 | 9.5 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-SW1-11-10**

Lab Sample ID: 680-63343-2

Client Matrix: Water

Date Sampled: 11/18/2010 1440

Date Received: 11/19/2010 0953

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4488.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1050 mL |
| Date Analyzed: | 12/02/2010 1418 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Phenanthrene | 0.73 | U | 0.73 | 9.5 |
| Phenol | 0.79 | U | 0.79 | 9.5 |
| Phorate | 0.83 | U | 0.83 | 9.5 |
| p-Phenylene diamine | 9.5 | U | 9.5 | 1900 |
| Pronamide | 0.85 | U | 0.85 | 9.5 |
| Pyrene | 0.60 | U | 0.60 | 9.5 |
| Safrole, Total | 0.76 | U | 0.76 | 9.5 |
| Sulfotepp | 0.50 | U | 0.50 | 9.5 |
| 1,2,4,5-Tetrachlorobenzene | 0.72 | U | 0.72 | 9.5 |
| 2,3,4,6-Tetrachlorophenol | 0.69 | U | 0.69 | 9.5 |
| Thionazin | 0.87 | U | 0.87 | 9.5 |
| 2-Toluidine | 1.3 | U | 1.3 | 9.5 |
| 2,4,5-Trichlorophenol | 1.1 | U | 1.1 | 9.5 |
| 2,4,6-Trichlorophenol | 0.81 | U | 0.81 | 9.5 |
| 1,3,5-Trinitrobenzene | 1.9 | U | 1.9 | 9.5 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 62 | | 62 - 130 |
| 2-Fluorophenol | 63 | | 50 - 130 |
| Nitrobenzene-d5 | 71 | | 62 - 130 |
| Phenol-d5 | 63 | | 51 - 130 |
| Terphenyl-d14 | 27 | | 20 - 130 |
| 2,4,6-Tribromophenol | 77 | | 57 - 131 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-Dup1-11-10**

Lab Sample ID: 680-63343-3

Client Matrix: Water

Date Sampled: 11/18/2010 1200

Date Received: 11/19/2010 0953

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4489.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1060 mL |
| Date Analyzed: | 12/02/2010 1447 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acenaphthene | 0.72 | U | 0.72 | 9.4 |
| Acenaphthylene | 0.80 | U | 0.80 | 9.4 |
| Acetophenone | 0.54 | U | 0.54 | 9.4 |
| 2-Acetylaminofluorene | 1.5 | U | 1.5 | 9.4 |
| 4-Aminobiphenyl | 1.1 | U | 1.1 | 9.4 |
| Anthracene | 0.65 | U | 0.65 | 9.4 |
| Benzo[a]anthracene | 0.52 | U | 0.52 | 9.4 |
| Benzo[a]pyrene | 0.67 | U | 0.67 | 9.4 |
| Benzo[b]fluoranthene | 2.5 | U | 2.5 | 9.4 |
| Benzo[g,h,i]perylene | 0.82 | U | 0.82 | 9.4 |
| Benzo[k]fluoranthene | 1.1 | U | 1.1 | 9.4 |
| Benzyl alcohol | 1.0 | U | 1.0 | 9.4 |
| 1,1'-Biphenyl | 0.55 | U | 0.55 | 9.4 |
| Bis(2-chloroethoxy)methane | 0.89 | U | 0.89 | 9.4 |
| Bis(2-chloroethyl)ether | 1.0 | U | 1.0 | 9.4 |
| bis(chloroisopropyl) ether | 0.74 | U | 0.74 | 9.4 |
| Bis(2-ethylhexyl) phthalate | 1.5 | U | 1.5 | 9.4 |
| 4-Bromophenyl phenyl ether | 0.73 | U | 0.73 | 9.4 |
| Butyl benzyl phthalate | 1.1 | U | 1.1 | 9.4 |
| 4-Chloroaniline | 2.1 | U | 2.1 | 19 |
| 4-Chloro-3-methylphenol | 0.94 | U | 0.94 | 9.4 |
| 2-Chloronaphthalene | 0.75 | U | 0.75 | 9.4 |
| 2-Chlorophenol | 0.82 | U | 0.82 | 9.4 |
| 4-Chlorophenyl phenyl ether | 0.79 | U | 0.79 | 9.4 |
| Chrysene | 0.48 | U | 0.48 | 9.4 |
| Diallate | 0.74 | U | 0.74 | 9.4 |
| Dibenz(a,h)anthracene | 0.94 | U | 0.94 | 9.4 |
| Dibenzofuran | 0.75 | U | 0.75 | 9.4 |
| 3,3'-Dichlorobenzidine | 28 | U | 28 | 57 |
| 2,4-Dichlorophenol | 1.0 | U | 1.0 | 9.4 |
| 2,6-Dichlorophenol | 0.69 | U | 0.69 | 9.4 |
| Diethyl phthalate | 2.9 | J | 0.83 | 9.4 |
| Dimethoate | 0.71 | U | 0.71 | 9.4 |
| 7,12-Dimethylbenz(a)anthracene | 1.1 | U | 1.1 | 9.4 |
| 3,3'-Dimethylbenzidine | 9.4 | U | 9.4 | 19 |
| 2,4-Dimethylphenol | 3.8 | U | 3.8 | 9.4 |
| Dimethyl phthalate | 0.93 | U | 0.93 | 9.4 |
| Di-n-butyl phthalate | 0.78 | U | 0.78 | 9.4 |
| 1,3-Dinitrobenzene | 0.57 | U | 0.57 | 9.4 |
| 4,6-Dinitro-2-methylphenol | 9.4 | U | 9.4 | 47 |
| 2,4-Dinitrophenol | 9.4 | U | 9.4 | 47 |
| 2,4-Dinitrotoluene | 1.1 | U | 1.1 | 9.4 |
| 2,6-Dinitrotoluene | 1.0 | U | 1.0 | 9.4 |
| Di-n-octyl phthalate | 1.3 | U | 1.3 | 9.4 |
| Dinoseb | 4.7 | U | 4.7 | 9.4 |
| 1,4-Dioxane | 15 | | 3.2 | 9.4 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-Dup1-11-10**

Lab Sample ID: 680-63343-3

Client Matrix: Water

Date Sampled: 11/18/2010 1200

Date Received: 11/19/2010 0953

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4489.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1060 mL |
| Date Analyzed: | 12/02/2010 1447 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Disulfoton | 0.75 | U | 0.75 | 9.4 |
| Ethyl methanesulfonate | 0.91 | U | 0.91 | 9.4 |
| Ethyl Parathion | 1.2 | U | 1.2 | 9.4 |
| Famphur | 1.0 | U | 1.0 | 9.4 |
| Fluoranthene | 0.70 | U | 0.70 | 9.4 |
| Fluorene | 0.91 | U | 0.91 | 9.4 |
| Hexachlorobenzene | 0.75 | U | 0.75 | 9.4 |
| Hexachlorobutadiene | 0.58 | U | 0.58 | 9.4 |
| Hexachlorocyclopentadiene | 2.4 | U | 2.4 | 9.4 |
| Hexachloroethane | 0.72 | U | 0.72 | 9.4 |
| Hexachloropropene | 1.3 | U | 1.3 | 9.4 |
| Indeno[1,2,3-cd]pyrene | 0.94 | U | 0.94 | 9.4 |
| Isophorone | 0.85 | U | 0.85 | 9.4 |
| Isosafrole | 0.47 | U | 0.47 | 9.4 |
| Methapyrilene | 2.5 | U | 2.5 | 1900 |
| 3-Methylcholanthrene | 1.3 | U | 1.3 | 9.4 |
| Methyl methanesulfonate | 0.57 | U Q | 0.57 | 9.4 |
| 2-Methylnaphthalene | 0.74 | U | 0.74 | 9.4 |
| Methyl parathion | 0.83 | U | 0.83 | 9.4 |
| 2-Methylphenol | 0.84 | U | 0.84 | 9.4 |
| 3 & 4 Methylphenol | 1.2 | U | 1.2 | 9.4 |
| Naphthalene | 0.66 | U | 0.66 | 9.4 |
| 1,4-Naphthoquinone | 0.58 | U | 0.58 | 9.4 |
| 1-Naphthylamine | 1.0 | U | 1.0 | 9.4 |
| 2-Naphthylamine | 1.4 | U | 1.4 | 9.4 |
| 2-Nitroaniline | 1.2 | U | 1.2 | 47 |
| 3-Nitroaniline | 4.7 | U | 4.7 | 47 |
| 4-Nitroaniline | 4.7 | U | 4.7 | 47 |
| Nitrobenzene | 0.69 | U | 0.69 | 9.4 |
| 2-Nitrophenol | 0.72 | U | 0.72 | 9.4 |
| 4-Nitrophenol | 1.8 | U | 1.8 | 47 |
| N-Nitro-o-toluidine | 1.4 | U | 1.4 | 9.4 |
| N-Nitrosodiethylamine | 0.88 | U | 0.88 | 9.4 |
| N-Nitrosodimethylamine | 2.6 | U | 2.6 | 9.4 |
| N-Nitrosodi-n-butylamine | 0.91 | U | 0.91 | 9.4 |
| N-Nitrosodi-n-propylamine | 0.68 | U | 0.68 | 9.4 |
| N-Nitrosodiphenylamine | 0.87 | U | 0.87 | 9.4 |
| N-Nitrosomethylethylamine | 3.1 | U | 3.1 | 9.4 |
| N-Nitrosopiperidine | 0.83 | U | 0.83 | 9.4 |
| N-Nitrosopyrrolidine | 0.94 | U | 0.94 | 9.4 |
| o,o',o''-Triethylphosphorothioate | 0.94 | U | 0.94 | 9.4 |
| p-Dimethylamino azobenzene | 0.75 | U | 0.75 | 9.4 |
| Pentachlorobenzene | 0.49 | U | 0.49 | 9.4 |
| Pentachloronitrobenzene | 0.74 | U | 0.74 | 9.4 |
| Pentachlorophenol | 1.9 | U | 1.9 | 47 |
| Phenacetin | 1.3 | U | 1.3 | 9.4 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-Dup1-11-10**

Lab Sample ID: 680-63343-3

Client Matrix: Water

Date Sampled: 11/18/2010 1200

Date Received: 11/19/2010 0953

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4489.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1060 mL |
| Date Analyzed: | 12/02/2010 1447 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Phenanthrene | 0.73 | U | 0.73 | 9.4 |
| Phenol | 0.78 | U | 0.78 | 9.4 |
| Phorate | 0.82 | U | 0.82 | 9.4 |
| p-Phenylene diamine | 9.4 | U | 9.4 | 1900 |
| Pronamide | 0.84 | U | 0.84 | 9.4 |
| Pyrene | 0.59 | U | 0.59 | 9.4 |
| Safrole, Total | 0.75 | U | 0.75 | 9.4 |
| Sulfotepp | 0.50 | U | 0.50 | 9.4 |
| 1,2,4,5-Tetrachlorobenzene | 0.72 | U | 0.72 | 9.4 |
| 2,3,4,6-Tetrachlorophenol | 0.68 | U | 0.68 | 9.4 |
| Thionazin | 0.86 | U | 0.86 | 9.4 |
| 2-Toluidine | 1.3 | U | 1.3 | 9.4 |
| 2,4,5-Trichlorophenol | 1.1 | U | 1.1 | 9.4 |
| 2,4,6-Trichlorophenol | 0.80 | U | 0.80 | 9.4 |
| 1,3,5-Trinitrobenzene | 1.9 | U | 1.9 | 9.4 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 70 | | 62 - 130 |
| 2-Fluorophenol | 78 | | 50 - 130 |
| Nitrobenzene-d5 | 77 | | 62 - 130 |
| Phenol-d5 | 76 | | 51 - 130 |
| Terphenyl-d14 | 56 | | 20 - 130 |
| 2,4,6-Tribromophenol | 87 | | 57 - 131 |

Client: U.S. Army Corps of Engineers | Job Number: 680-63343-1

**Client Sample ID:** **LS-MW7-11-10**

Lab Sample ID: 680-63343-4 | Date Sampled: 11/18/2010 1025
Client Matrix: Water | Date Received: 11/19/2010 0953

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4490.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1060 mL |
| Date Analyzed: | 12/02/2010 1515 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acenaphthene | 0.72 | U | 0.72 | 9.4 |
| Acenaphthylene | 0.80 | U | 0.80 | 9.4 |
| Acetophenone | 0.54 | U | 0.54 | 9.4 |
| 2-Acetylaminofluorene | 1.5 | U | 1.5 | 9.4 |
| 4-Aminobiphenyl | 1.1 | U | 1.1 | 9.4 |
| Anthracene | 0.65 | U | 0.65 | 9.4 |
| Benzo[a]anthracene | 0.52 | U | 0.52 | 9.4 |
| Benzo[a]pyrene | 0.67 | U | 0.67 | 9.4 |
| Benzo[b]fluoranthene | 2.5 | U | 2.5 | 9.4 |
| Benzo[g,h,i]perylene | 0.82 | U | 0.82 | 9.4 |
| Benzo[k]fluoranthene | 1.1 | U | 1.1 | 9.4 |
| Benzyl alcohol | 1.0 | U | 1.0 | 9.4 |
| 1,1'-Biphenyl | 0.55 | U | 0.55 | 9.4 |
| Bis(2-chloroethoxy)methane | 0.89 | U | 0.89 | 9.4 |
| Bis(2-chloroethyl)ether | 1.0 | U | 1.0 | 9.4 |
| bis(chloroisopropyl) ether | 0.74 | U | 0.74 | 9.4 |
| Bis(2-ethylhexyl) phthalate | 1.5 | U | 1.5 | 9.4 |
| 4-Bromophenyl phenyl ether | 0.73 | U | 0.73 | 9.4 |
| Butyl benzyl phthalate | 1.1 | U | 1.1 | 9.4 |
| 4-Chloroaniline | 2.1 | U | 2.1 | 19 |
| 4-Chloro-3-methylphenol | 0.94 | U | 0.94 | 9.4 |
| 2-Chloronaphthalene | 0.75 | U | 0.75 | 9.4 |
| 2-Chlorophenol | 0.82 | U | 0.82 | 9.4 |
| 4-Chlorophenyl phenyl ether | 0.79 | U | 0.79 | 9.4 |
| Chrysene | 0.48 | U | 0.48 | 9.4 |
| Diallate | 0.74 | U | 0.74 | 9.4 |
| Dibenz(a,h)anthracene | 0.94 | U | 0.94 | 9.4 |
| Dibenzofuran | 0.75 | U | 0.75 | 9.4 |
| 3,3'-Dichlorobenzidine | 28 | U | 28 | 57 |
| 2,4-Dichlorophenol | 1.0 | U | 1.0 | 9.4 |
| 2,6-Dichlorophenol | 0.69 | U | 0.69 | 9.4 |
| Diethyl phthalate | 0.83 | U | 0.83 | 9.4 |
| Dimethoate | 0.71 | U | 0.71 | 9.4 |
| 7,12-Dimethylbenz(a)anthracene | 1.1 | U | 1.1 | 9.4 |
| 3,3'-Dimethylbenzidine | 9.4 | U | 9.4 | 19 |
| 2,4-Dimethylphenol | 3.8 | U | 3.8 | 9.4 |
| Dimethyl phthalate | 0.93 | U | 0.93 | 9.4 |
| Di-n-butyl phthalate | 0.78 | U | 0.78 | 9.4 |
| 1,3-Dinitrobenzene | 0.57 | U | 0.57 | 9.4 |
| 4,6-Dinitro-2-methylphenol | 9.4 | U | 9.4 | 47 |
| 2,4-Dinitrophenol | 9.4 | U | 9.4 | 47 |
| 2,4-Dinitrotoluene | 1.1 | U | 1.1 | 9.4 |
| 2,6-Dinitrotoluene | 1.0 | U | 1.0 | 9.4 |
| Di-n-octyl phthalate | 1.3 | U | 1.3 | 9.4 |
| Dinoseb | 4.7 | U | 4.7 | 9.4 |
| 1,4-Dioxane | 3.2 | U | 3.2 | 9.4 |

Client: U.S. Army Corps of Engineers | Job Number: 680-63343-1

**Client Sample ID:** **LS-MW7-11-10**

Lab Sample ID: 680-63343-4 | Date Sampled: 11/18/2010 1025
Client Matrix: Water | Date Received: 11/19/2010 0953

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4490.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1060 mL |
| Date Analyzed: | 12/02/2010 1515 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Disulfoton | 0.75 | U | 0.75 | 9.4 |
| Ethyl methanesulfonate | 0.91 | U | 0.91 | 9.4 |
| Ethyl Parathion | 1.2 | U | 1.2 | 9.4 |
| Famphur | 1.0 | U | 1.0 | 9.4 |
| Fluoranthene | 0.70 | U | 0.70 | 9.4 |
| Fluorene | 0.91 | U | 0.91 | 9.4 |
| Hexachlorobenzene | 0.75 | U | 0.75 | 9.4 |
| Hexachlorobutadiene | 0.58 | U | 0.58 | 9.4 |
| Hexachlorocyclopentadiene | 2.4 | U | 2.4 | 9.4 |
| Hexachloroethane | 0.72 | U | 0.72 | 9.4 |
| Hexachloropropene | 1.3 | U | 1.3 | 9.4 |
| Indeno[1,2,3-cd]pyrene | 0.94 | U | 0.94 | 9.4 |
| Isophorone | 0.85 | U | 0.85 | 9.4 |
| Isosafrole | 0.47 | U | 0.47 | 9.4 |
| Methapyrilene | 2.5 | U | 2.5 | 1900 |
| 3-Methylcholanthrene | 1.3 | U | 1.3 | 9.4 |
| Methyl methanesulfonate | 0.57 | U Q | 0.57 | 9.4 |
| 2-Methylnaphthalene | 0.74 | U | 0.74 | 9.4 |
| Methyl parathion | 0.83 | U | 0.83 | 9.4 |
| 2-Methylphenol | 0.84 | U | 0.84 | 9.4 |
| 3 & 4 Methylphenol | 1.2 | U | 1.2 | 9.4 |
| Naphthalene | 0.66 | U | 0.66 | 9.4 |
| 1,4-Naphthoquinone | 0.58 | U | 0.58 | 9.4 |
| 1-Naphthylamine | 1.0 | U | 1.0 | 9.4 |
| 2-Naphthylamine | 1.4 | U | 1.4 | 9.4 |
| 2-Nitroaniline | 1.2 | U | 1.2 | 47 |
| 3-Nitroaniline | 4.7 | U | 4.7 | 47 |
| 4-Nitroaniline | 4.7 | U | 4.7 | 47 |
| Nitrobenzene | 0.69 | U | 0.69 | 9.4 |
| 2-Nitrophenol | 0.72 | U | 0.72 | 9.4 |
| 4-Nitrophenol | 1.8 | U | 1.8 | 47 |
| N-Nitro-o-toluidine | 1.4 | U | 1.4 | 9.4 |
| N-Nitrosodiethylamine | 0.88 | U | 0.88 | 9.4 |
| N-Nitrosodimethylamine | 2.6 | U | 2.6 | 9.4 |
| N-Nitrosodi-n-butylamine | 0.91 | U | 0.91 | 9.4 |
| N-Nitrosodi-n-propylamine | 0.68 | U | 0.68 | 9.4 |
| N-Nitrosodiphenylamine | 0.87 | U | 0.87 | 9.4 |
| N-Nitrosomethylethylamine | 3.1 | U | 3.1 | 9.4 |
| N-Nitrosopiperidine | 0.83 | U | 0.83 | 9.4 |
| N-Nitrosopyrrolidine | 0.94 | U | 0.94 | 9.4 |
| o,o',o''-Triethylphosphorothioate | 0.94 | U | 0.94 | 9.4 |
| p-Dimethylamino azobenzene | 0.75 | U | 0.75 | 9.4 |
| Pentachlorobenzene | 0.49 | U | 0.49 | 9.4 |
| Pentachloronitrobenzene | 0.74 | U | 0.74 | 9.4 |
| Pentachlorophenol | 1.9 | U | 1.9 | 47 |
| Phenacetin | 1.3 | U | 1.3 | 9.4 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-MW7-11-10**

Lab Sample ID: 680-63343-4

Client Matrix: Water

Date Sampled: 11/18/2010 1025

Date Received: 11/19/2010 0953

**8270D Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270D | Analysis Batch: 680-187762 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-187142 | | Lab File ID: | g4490.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1060 mL |
| Date Analyzed: | 12/02/2010 1515 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Phenanthrene | 0.73 | U | 0.73 | 9.4 |
| Phenol | 0.78 | U | 0.78 | 9.4 |
| Phorate | 0.82 | U | 0.82 | 9.4 |
| p-Phenylene diamine | 9.4 | U | 9.4 | 1900 |
| Pronamide | 0.84 | U | 0.84 | 9.4 |
| Pyrene | 0.59 | U | 0.59 | 9.4 |
| Safrole, Total | 0.75 | U | 0.75 | 9.4 |
| Sulfotepp | 0.50 | U | 0.50 | 9.4 |
| 1,2,4,5-Tetrachlorobenzene | 0.72 | U | 0.72 | 9.4 |
| 2,3,4,6-Tetrachlorophenol | 0.68 | U | 0.68 | 9.4 |
| Thionazin | 0.86 | U | 0.86 | 9.4 |
| 2-Toluidine | 1.3 | U | 1.3 | 9.4 |
| 2,4,5-Trichlorophenol | 1.1 | U | 1.1 | 9.4 |
| 2,4,6-Trichlorophenol | 0.80 | U | 0.80 | 9.4 |
| 1,3,5-Trinitrobenzene | 1.9 | U | 1.9 | 9.4 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 60 | J | 62 - 130 |
| 2-Fluorophenol | 61 | | 50 - 130 |
| Nitrobenzene-d5 | 64 | | 62 - 130 |
| Phenol-d5 | 61 | | 51 - 130 |
| Terphenyl-d14 | 41 | | 20 - 130 |
| 2,4,6-Tribromophenol | 67 | | 57 - 131 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-SW2-11-10**

Lab Sample ID: 680-63343-1

Client Matrix: Water

Date Sampled: 11/18/2010 1415

Date Received: 11/19/2010 0953

**8081B/8082A Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8081B/8082A | Analysis Batch: 680-187621 | | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 1060 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 12/01/2010 0049 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 4,4'-DDD | 0.0061 | U | 0.0061 | 0.094 |
| 4,4'-DDE | 0.0073 | U | 0.0073 | 0.094 |
| 4,4'-DDT | 0.0092 | U | 0.0092 | 0.094 |
| Aldrin | 0.0066 | U | 0.0066 | 0.047 |
| alpha-BHC | 0.0054 | U | 0.0054 | 0.047 |
| beta-BHC | 0.0063 | U | 0.0063 | 0.047 |
| Chlordane (technical) | 0.094 | U | 0.094 | 0.47 |
| Chlorobenzilate | 0.47 | U | 0.47 | 0.47 |
| delta-BHC | 0.0045 | U | 0.0045 | 0.047 |
| Dieldrin | 0.0086 | U | 0.0086 | 0.094 |
| Endosulfan I | 0.0040 | U | 0.0040 | 0.047 |
| Endosulfan II | 0.0092 | U | 0.0092 | 0.094 |
| Endosulfan sulfate | 0.0064 | U | 0.0064 | 0.094 |
| Endrin | 0.0092 | U | 0.0092 | 0.094 |
| Endrin aldehyde | 0.015 | U | 0.015 | 0.094 |
| gamma-BHC (Lindane) | 0.0056 | U | 0.0056 | 0.047 |
| Heptachlor | 0.0066 | U | 0.0066 | 0.047 |
| Heptachlor epoxide | 0.0057 | U | 0.0057 | 0.047 |
| Isodrin | 0.047 | U | 0.047 | 0.047 |
| Methoxychlor | 0.012 | U | 0.012 | 0.094 |
| PCB-1016 | 0.067 | U | 0.067 | 0.94 |
| PCB-1221 | 0.26 | U | 0.26 | 1.9 |
| PCB-1232 | 0.10 | U | 0.10 | 0.94 |
| PCB-1242 | 0.17 | U | 0.17 | 0.94 |
| PCB-1248 | 0.34 | U | 0.34 | 0.94 |
| PCB-1254 | 0.25 | U | 0.25 | 0.94 |
| PCB-1260 | 0.19 | U | 0.19 | 0.94 |
| PCB-1262 | 0.23 | U | 0.23 | 0.94 |
| Toxaphene | 0.47 | U | 0.47 | 4.7 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 33 | J | 40 - 130 |
| Tetrachloro-m-xylene | 73 | | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-SW2-11-10**

Lab Sample ID: 680-63343-1

Client Matrix: Water

Date Sampled: 11/18/2010 1415

Date Received: 11/19/2010 0953

**8081B/8082A Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography**

| | | | | |
|---|---|---|---|---|
| Method: | 8081B/8082A | Analysis Batch: 680-187621 | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-187137 | Initial Weight/Volume: | 1060 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 12/01/2010 0049 | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 27 | J | 40 - 130 |
| Tetrachloro-m-xylene | 58 | | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-SW1-11-10**

Lab Sample ID: 680-63343-2

Client Matrix: Water

Date Sampled: 11/18/2010 1440

Date Received: 11/19/2010 0953

**8081B/8082A Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8081B/8082A | Analysis Batch: 680-187621 | | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 1030 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 12/01/2010 0109 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 4,4'-DDD | 0.0063 | U | 0.0063 | 0.097 |
| 4,4'-DDE | 0.0075 | U | 0.0075 | 0.097 |
| 4,4'-DDT | 0.0094 | U | 0.0094 | 0.097 |
| Aldrin | 0.0068 | U | 0.0068 | 0.049 |
| alpha-BHC | 0.0055 | U | 0.0055 | 0.049 |
| beta-BHC | 0.0065 | U | 0.0065 | 0.049 |
| Chlordane (technical) | 0.097 | U | 0.097 | 0.49 |
| Chlorobenzilate | 0.49 | U | 0.49 | 0.49 |
| delta-BHC | 0.0047 | U | 0.0047 | 0.049 |
| Dieldrin | 0.0088 | U | 0.0088 | 0.097 |
| Endosulfan I | 0.0041 | U | 0.0041 | 0.049 |
| Endosulfan II | 0.0095 | U | 0.0095 | 0.097 |
| Endosulfan sulfate | 0.0066 | U | 0.0066 | 0.097 |
| Endrin | 0.0094 | U | 0.0094 | 0.097 |
| Endrin aldehyde | 0.016 | U | 0.016 | 0.097 |
| gamma-BHC (Lindane) | 0.0057 | U | 0.0057 | 0.049 |
| Heptachlor | 0.0068 | U | 0.0068 | 0.049 |
| Heptachlor epoxide | 0.0058 | U | 0.0058 | 0.049 |
| Isodrin | 0.049 | U | 0.049 | 0.049 |
| Methoxychlor | 0.013 | U | 0.013 | 0.097 |
| PCB-1016 | 0.069 | U | 0.069 | 0.97 |
| PCB-1221 | 0.27 | U | 0.27 | 1.9 |
| PCB-1232 | 0.11 | U | 0.11 | 0.97 |
| PCB-1242 | 0.17 | U | 0.17 | 0.97 |
| PCB-1248 | 0.35 | U | 0.35 | 0.97 |
| PCB-1254 | 0.25 | U | 0.25 | 0.97 |
| PCB-1260 | 0.19 | U | 0.19 | 0.97 |
| PCB-1262 | 0.23 | U | 0.23 | 0.97 |
| Toxaphene | 0.49 | U | 0.49 | 4.9 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 29 | J | 40 - 130 |
| Tetrachloro-m-xylene | 52 | | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-SW1-11-10**

Lab Sample ID: 680-63343-2

Client Matrix: Water

Date Sampled: 11/18/2010 1440

Date Received: 11/19/2010 0953

**8081B/8082A Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8081B/8082A | Analysis Batch: 680-187621 | | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 1030 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 12/01/2010 0109 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 22 | J | 40 - 130 |
| Tetrachloro-m-xylene | 50 | | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-Dup1-11-10**

Lab Sample ID: 680-63343-3

Client Matrix: Water

Date Sampled: 11/18/2010 1200

Date Received: 11/19/2010 0953

**8081B/8082A Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8081B/8082A | Analysis Batch: 680-187621 | | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 1060 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 12/01/2010 0128 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 4,4'-DDD | 0.0061 | U | 0.0061 | 0.094 |
| 4,4'-DDE | 0.0073 | U | 0.0073 | 0.094 |
| 4,4'-DDT | 0.0092 | U | 0.0092 | 0.094 |
| Aldrin | 0.0066 | U | 0.0066 | 0.047 |
| alpha-BHC | 0.0054 | U | 0.0054 | 0.047 |
| beta-BHC | 0.0063 | U | 0.0063 | 0.047 |
| Chlordane (technical) | 0.094 | U | 0.094 | 0.47 |
| Chlorobenzilate | 0.47 | U | 0.47 | 0.47 |
| delta-BHC | 0.0045 | U | 0.0045 | 0.047 |
| Dieldrin | 0.0086 | U | 0.0086 | 0.094 |
| Endosulfan I | 0.0040 | U | 0.0040 | 0.047 |
| Endosulfan II | 0.0092 | U | 0.0092 | 0.094 |
| Endosulfan sulfate | 0.0064 | U | 0.0064 | 0.094 |
| Endrin | 0.0092 | U | 0.0092 | 0.094 |
| Endrin aldehyde | 0.015 | U | 0.015 | 0.094 |
| gamma-BHC (Lindane) | 0.0056 | U | 0.0056 | 0.047 |
| Heptachlor | 0.0066 | U | 0.0066 | 0.047 |
| Heptachlor epoxide | 0.0057 | U | 0.0057 | 0.047 |
| Isodrin | 0.047 | U | 0.047 | 0.047 |
| Methoxychlor | 0.012 | U | 0.012 | 0.094 |
| PCB-1016 | 0.067 | U | 0.067 | 0.94 |
| PCB-1221 | 0.26 | U | 0.26 | 1.9 |
| PCB-1232 | 0.10 | U | 0.10 | 0.94 |
| PCB-1242 | 0.17 | U | 0.17 | 0.94 |
| PCB-1248 | 0.34 | U | 0.34 | 0.94 |
| PCB-1254 | 0.25 | U | 0.25 | 0.94 |
| PCB-1260 | 0.19 | U | 0.19 | 0.94 |
| PCB-1262 | 0.23 | U | 0.23 | 0.94 |
| Toxaphene | 0.47 | U | 0.47 | 4.7 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 23 | J | 40 - 130 |
| Tetrachloro-m-xylene | 71 | | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-Dup1-11-10**

Lab Sample ID: 680-63343-3

Client Matrix: Water

Date Sampled: 11/18/2010 1200

Date Received: 11/19/2010 0953

**8081B/8082A Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography**

| | | | | |
|---|---|---|---|---|
| Method: | 8081B/8082A | Analysis Batch: 680-187621 | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-187137 | Initial Weight/Volume: | 1060 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 12/01/2010 0128 | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 20 | J | 40 - 130 |
| Tetrachloro-m-xylene | 62 | | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-MW7-11-10**

Lab Sample ID: 680-63343-4

Client Matrix: Water

Date Sampled: 11/18/2010 1025

Date Received: 11/19/2010 0953

**8081B/8082A Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8081B/8082A | Analysis Batch: 680-187621 | | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 1060 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 12/01/2010 0148 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 4,4'-DDD | 0.0061 | U | 0.0061 | 0.094 |
| 4,4'-DDE | 0.0073 | U | 0.0073 | 0.094 |
| 4,4'-DDT | 0.0092 | U | 0.0092 | 0.094 |
| Aldrin | 0.0066 | U | 0.0066 | 0.047 |
| alpha-BHC | 0.0054 | U | 0.0054 | 0.047 |
| beta-BHC | 0.0063 | U | 0.0063 | 0.047 |
| Chlordane (technical) | 0.094 | U | 0.094 | 0.47 |
| Chlorobenzilate | 0.47 | U | 0.47 | 0.47 |
| delta-BHC | 0.0045 | U | 0.0045 | 0.047 |
| Dieldrin | 0.0086 | U | 0.0086 | 0.094 |
| Endosulfan I | 0.0040 | U | 0.0040 | 0.047 |
| Endosulfan II | 0.0092 | U | 0.0092 | 0.094 |
| Endosulfan sulfate | 0.0064 | U | 0.0064 | 0.094 |
| Endrin | 0.0092 | U | 0.0092 | 0.094 |
| Endrin aldehyde | 0.015 | U | 0.015 | 0.094 |
| gamma-BHC (Lindane) | 0.0056 | U | 0.0056 | 0.047 |
| Heptachlor | 0.0066 | U | 0.0066 | 0.047 |
| Heptachlor epoxide | 0.0057 | U | 0.0057 | 0.047 |
| Isodrin | 0.047 | U | 0.047 | 0.047 |
| Methoxychlor | 0.012 | U | 0.012 | 0.094 |
| PCB-1016 | 0.067 | U | 0.067 | 0.94 |
| PCB-1221 | 0.26 | U | 0.26 | 1.9 |
| PCB-1232 | 0.10 | U | 0.10 | 0.94 |
| PCB-1242 | 0.17 | U | 0.17 | 0.94 |
| PCB-1248 | 0.34 | U | 0.34 | 0.94 |
| PCB-1254 | 0.25 | U | 0.25 | 0.94 |
| PCB-1260 | 0.19 | U | 0.19 | 0.94 |
| PCB-1262 | 0.23 | U | 0.23 | 0.94 |
| Toxaphene | 0.47 | U | 0.47 | 4.7 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 41 | | 40 - 130 |
| Tetrachloro-m-xylene | 53 | | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-MW7-11-10**

Lab Sample ID: 680-63343-4

Client Matrix: Water

Date Sampled: 11/18/2010 1025

Date Received: 11/19/2010 0953

**8081B/8082A Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8081B/8082A | Analysis Batch: 680-187621 | | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 1060 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 12/01/2010 0148 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl | 37 | J | 40 - 130 |
| Tetrachloro-m-xylene | 44 | | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-SW2-11-10**

Lab Sample ID: 680-63343-1

Client Matrix: Water

Date Sampled: 11/18/2010 1415

Date Received: 11/19/2010 0953

**8141B Organophosphorous Compounds by Gas Chromatography, Capillary Column Technique**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8141B | Analysis Batch: 680-187460 | | Instrument ID: | SGO |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 1060 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/29/2010 1616 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dimethoate | 0.94 | U | 0.94 | 1.9 |
| Disulfoton | 0.94 | U | 0.94 | 1.9 |
| Ethyl Parathion | 0.47 | U | 0.47 | 0.94 |
| Famphur | 0.94 | U | 0.94 | 1.9 |
| Methyl parathion | 0.47 | U | 0.47 | 0.47 |
| Phorate | 0.47 | U | 0.47 | 0.94 |
| Sulfotepp | 0.47 | U | 0.47 | 0.47 |
| Thionazin | 0.47 | U | 0.47 | 0.94 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Triphenylphosphate | 80 | | 67 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-SW1-11-10**

Lab Sample ID: 680-63343-2

Client Matrix: Water

Date Sampled: 11/18/2010 1440

Date Received: 11/19/2010 0953

**8141B Organophosphorous Compounds by Gas Chromatography, Capillary Column Technique**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8141B | Analysis Batch: 680-187460 | | Instrument ID: | SGO |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 1030 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/29/2010 1641 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dimethoate | 0.97 | U | 0.97 | 1.9 |
| Disulfoton | 0.97 | U | 0.97 | 1.9 |
| Ethyl Parathion | 0.49 | U | 0.49 | 0.97 |
| Famphur | 0.97 | U | 0.97 | 1.9 |
| Methyl parathion | 0.49 | U | 0.49 | 0.49 |
| Phorate | 0.49 | U | 0.49 | 0.97 |
| Sulfotepp | 0.49 | U | 0.49 | 0.49 |
| Thionazin | 0.49 | U | 0.49 | 0.97 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Triphenylphosphate | 71 | | 67 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-Dup1-11-10**

Lab Sample ID: 680-63343-3

Client Matrix: Water

Date Sampled: 11/18/2010 1200

Date Received: 11/19/2010 0953

**8141B Organophosphorous Compounds by Gas Chromatography, Capillary Column Technique**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8141B | Analysis Batch: 680-187460 | | Instrument ID: | SGO |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 1060 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/29/2010 1706 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dimethoate | 0.94 | U | 0.94 | 1.9 |
| Disulfoton | 0.94 | U | 0.94 | 1.9 |
| Ethyl Parathion | 0.47 | U | 0.47 | 0.94 |
| Famphur | 0.94 | U | 0.94 | 1.9 |
| Methyl parathion | 0.47 | U | 0.47 | 0.47 |
| Phorate | 0.47 | U | 0.47 | 0.94 |
| Sulfotepp | 0.47 | U | 0.47 | 0.47 |
| Thionazin | 0.47 | U | 0.47 | 0.94 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Triphenylphosphate | 84 | | 67 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-MW7-11-10**

Lab Sample ID: 680-63343-4

Client Matrix: Water

Date Sampled: 11/18/2010 1025

Date Received: 11/19/2010 0953

**8141B Organophosphorous Compounds by Gas Chromatography, Capillary Column Technique**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8141B | Analysis Batch: 680-187460 | | Instrument ID: | SGO |
| Preparation: | 3520C | Prep Batch: 680-187137 | | Initial Weight/Volume: | 1060 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/29/2010 1731 | | | Injection Volume: | 2 uL |
| Date Prepared: | 11/24/2010 1459 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dimethoate | 0.94 | U | 0.94 | 1.9 |
| Disulfoton | 0.94 | U | 0.94 | 1.9 |
| Ethyl Parathion | 0.47 | U | 0.47 | 0.94 |
| Famphur | 0.94 | U | 0.94 | 1.9 |
| Methyl parathion | 0.47 | U | 0.47 | 0.47 |
| Phorate | 0.47 | U | 0.47 | 0.94 |
| Sulfotepp | 0.47 | U | 0.47 | 0.47 |
| Thionazin | 0.47 | U | 0.47 | 0.94 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Triphenylphosphate | 69 | | 67 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-SW2-11-10**

Lab Sample ID: 680-63343-1

Client Matrix: Water

Date Sampled: 11/18/2010 1415

Date Received: 11/19/2010 0953

**8151A Herbicides (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8151A | Analysis Batch: 680-187317 | | Instrument ID: | SGS |
| Preparation: | 8151A | Prep Batch: 680-186942 | | Initial Weight/Volume: | 1040 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/24/2010 2117 | | | Injection Volume: | 1 uL |
| Date Prepared: | 11/23/2010 0835 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 2,4-D | 0.036 | U | 0.036 | 0.48 |
| 2,4-DB | 0.14 | U | 0.14 | 0.48 |
| 2,4,5-T | 0.060 | U | 0.060 | 0.48 |
| Silvex (2,4,5-TP) | 0.060 | U | 0.060 | 0.48 |
| Dalapon | 0.096 | U | 0.096 | 9.6 |
| Dicamba | 0.082 | U | 0.082 | 0.48 |
| Dichlorprop | 0.14 | U | 0.14 | 0.48 |
| Dinoseb | 0.15 | U | 0.15 | 5.8 |
| MCPA | 16 | U | 16 | 120 |
| Mecoprop | 18 | U | 18 | 120 |
| Pentachlorophenol | 0.036 | U | 0.036 | 0.24 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 117 | | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-SW2-11-10**

Lab Sample ID: 680-63343-1

Client Matrix: Water

Date Sampled: 11/18/2010 1415

Date Received: 11/19/2010 0953

**8151A Herbicides (GC)**

| | | | | |
|---|---|---|---|---|
| Method: | 8151A | Analysis Batch: 680-187317 | Instrument ID: | SGS |
| Preparation: | 8151A | Prep Batch: 680-186942 | Initial Weight/Volume: | 1040 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/24/2010 2117 | | Injection Volume: | 1 uL |
| Date Prepared: | 11/23/2010 0835 | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 89 | | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-SW1-11-10**

Lab Sample ID: 680-63343-2

Client Matrix: Water

Date Sampled: 11/18/2010 1440

Date Received: 11/19/2010 0953

**8151A Herbicides (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8151A | Analysis Batch: 680-187317 | | Instrument ID: | SGS |
| Preparation: | 8151A | Prep Batch: 680-186942 | | Initial Weight/Volume: | 1040 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/24/2010 2133 | | | Injection Volume: | 1 uL |
| Date Prepared: | 11/23/2010 0835 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 2,4-D | 0.32 | J | 0.036 | 0.48 |
| 2,4-DB | 0.14 | U | 0.14 | 0.48 |
| 2,4,5-T | 0.060 | U | 0.060 | 0.48 |
| Silvex (2,4,5-TP) | 0.060 | U | 0.060 | 0.48 |
| Dalapon | 0.096 | U | 0.096 | 9.6 |
| Dicamba | 0.082 | U | 0.082 | 0.48 |
| Dichlorprop | 0.14 | U | 0.14 | 0.48 |
| Dinoseb | 0.15 | U | 0.15 | 5.8 |
| MCPA | 16 | U | 16 | 120 |
| Mecoprop | 18 | U | 18 | 120 |
| Pentachlorophenol | 0.036 | U | 0.036 | 0.24 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 90 | | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-SW1-11-10**

Lab Sample ID: 680-63343-2

Client Matrix: Water

Date Sampled: 11/18/2010 1440

Date Received: 11/19/2010 0953

**8151A Herbicides (GC)**

| | | | | |
|---|---|---|---|---|
| Method: | 8151A | Analysis Batch: 680-187317 | Instrument ID: | SGS |
| Preparation: | 8151A | Prep Batch: 680-186942 | Initial Weight/Volume: | 1040 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/24/2010 2133 | | Injection Volume: | 1 uL |
| Date Prepared: | 11/23/2010 0835 | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 87 | | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-Dup1-11-10**

Lab Sample ID: 680-63343-3

Client Matrix: Water

Date Sampled: 11/18/2010 1200

Date Received: 11/19/2010 0953

**8151A Herbicides (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8151A | Analysis Batch: 680-187317 | | Instrument ID: | SGS |
| Preparation: | 8151A | Prep Batch: 680-186942 | | Initial Weight/Volume: | 1040 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/24/2010 2148 | | | Injection Volume: | 1 uL |
| Date Prepared: | 11/23/2010 0835 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 2,4-D | 0.036 | U | 0.036 | 0.48 |
| 2,4-DB | 0.14 | U | 0.14 | 0.48 |
| 2,4,5-T | 0.060 | U | 0.060 | 0.48 |
| Silvex (2,4,5-TP) | 0.060 | U | 0.060 | 0.48 |
| Dalapon | 0.096 | U | 0.096 | 9.6 |
| Dicamba | 0.082 | U | 0.082 | 0.48 |
| Dichlorprop | 0.14 | U | 0.14 | 0.48 |
| Dinoseb | 0.15 | U | 0.15 | 5.8 |
| MCPA | 16 | U | 16 | 120 |
| Mecoprop | 18 | U | 18 | 120 |
| Pentachlorophenol | 0.036 | U | 0.036 | 0.24 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 97 | | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-Dup1-11-10**

Lab Sample ID: 680-63343-3

Client Matrix: Water

Date Sampled: 11/18/2010 1200

Date Received: 11/19/2010 0953

**8151A Herbicides (GC)**

| | | | | |
|---|---|---|---|---|
| Method: | 8151A | Analysis Batch: 680-187317 | Instrument ID: | SGS |
| Preparation: | 8151A | Prep Batch: 680-186942 | Initial Weight/Volume: | 1040 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/24/2010 2148 | | Injection Volume: | 1 uL |
| Date Prepared: | 11/23/2010 0835 | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 88 | | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-MW7-11-10**

Lab Sample ID: 680-63343-4

Client Matrix: Water

Date Sampled: 11/18/2010 1025

Date Received: 11/19/2010 0953

**8151A Herbicides (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8151A | Analysis Batch: 680-187317 | | Instrument ID: | SGS |
| Preparation: | 8151A | Prep Batch: 680-186942 | | Initial Weight/Volume: | 1040 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/24/2010 2204 | | | Injection Volume: | 1 uL |
| Date Prepared: | 11/23/2010 0835 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 2,4-D | 0.036 | U | 0.036 | 0.48 |
| 2,4-DB | 0.14 | U | 0.14 | 0.48 |
| 2,4,5-T | 0.060 | U | 0.060 | 0.48 |
| Silvex (2,4,5-TP) | 0.060 | U | 0.060 | 0.48 |
| Dalapon | 0.096 | U | 0.096 | 9.6 |
| Dicamba | 0.082 | U | 0.082 | 0.48 |
| Dichlorprop | 0.14 | U | 0.14 | 0.48 |
| Dinoseb | 0.15 | U | 0.15 | 5.8 |
| MCPA | 16 | U | 16 | 120 |
| Mecoprop | 18 | U | 18 | 120 |
| Pentachlorophenol | 0.036 | U | 0.036 | 0.24 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 115 | | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-MW7-11-10**

Lab Sample ID: 680-63343-4

Client Matrix: Water

Date Sampled: 11/18/2010 1025

Date Received: 11/19/2010 0953

**8151A Herbicides (GC)**

| | | | | |
|---|---|---|---|---|
| Method: | 8151A | Analysis Batch: 680-187317 | Instrument ID: | SGS |
| Preparation: | 8151A | Prep Batch: 680-186942 | Initial Weight/Volume: | 1040 mL |
| Dilution: | 1.0 | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 11/24/2010 2204 | | Injection Volume: | 1 uL |
| Date Prepared: | 11/23/2010 0835 | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 90 | | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-SW2-11-10**

Lab Sample ID: 680-63343-1

Client Matrix: Water

Date Sampled: 11/18/2010 1415

Date Received: 11/19/2010 0953

**6020A Metals (ICP/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6020A | Analysis Batch: 680-187366 | | Instrument ID: | ICPMSB |
| Preparation: | 3030C | Prep Batch: 680-186745 | | Lab File ID: | 186745.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 11/24/2010 1149 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/20/2010 1409 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Antimony | 0.99 | U | 0.99 | 2.0 |
| Arsenic | 9.2 | | 0.40 | 1.0 |
| Barium | 39 | | 0.15 | 1.0 |
| Beryllium | 0.070 | U | 0.070 | 0.20 |
| Cadmium | 0.20 | U | 0.20 | 0.50 |
| Chromium | 0.16 | U | 0.16 | 1.0 |
| Cobalt | 0.19 | J | 0.078 | 0.20 |
| Copper | 0.21 | U | 0.21 | 1.0 |
| Lead | 0.12 | J | 0.080 | 0.30 |
| Nickel | 0.40 | U | 0.40 | 1.0 |
| Selenium | 0.21 | U | 0.21 | 0.50 |
| Silver | 0.10 | U | 0.10 | 0.20 |
| Thallium | 0.15 | J | 0.10 | 0.20 |
| Tin | 0.50 | J | 0.40 | 1.0 |
| Vanadium | 1.4 | U | 1.4 | 5.0 |
| Zinc | 16 | | 2.6 | 10 |

**7470A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7470A | Analysis Batch: 680-187718 | | Instrument ID: | LEEMAN1 |
| Preparation: | 7470A | Prep Batch: 680-187406 | | Lab File ID: | b120110.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 12/01/2010 2001 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/29/2010 1615 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Mercury | 0.091 | U | 0.091 | 0.20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-SW1-11-10**

Lab Sample ID: 680-63343-2

Client Matrix: Water

Date Sampled: 11/18/2010 1440

Date Received: 11/19/2010 0953

**6020A Metals (ICP/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6020A | Analysis Batch: 680-187366 | | Instrument ID: | ICPMSB |
| Preparation: | 3030C | Prep Batch: 680-186745 | | Lab File ID: | 186745.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 11/24/2010 1433 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/20/2010 1409 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Antimony | 0.99 | U | 0.99 | 2.0 |
| Arsenic | 9.0 | | 0.40 | 1.0 |
| Barium | 120 | | 0.15 | 1.0 |
| Cadmium | 0.31 | J | 0.20 | 0.50 |
| Chromium | 6.6 | | 0.16 | 1.0 |
| Cobalt | 4.4 | | 0.078 | 0.20 |
| Copper | 9.2 | | 0.21 | 1.0 |
| Lead | 11 | | 0.080 | 0.30 |
| Nickel | 3.3 | | 0.40 | 1.0 |
| Selenium | 0.83 | | 0.21 | 0.50 |
| Silver | 0.10 | U | 0.10 | 0.20 |
| Thallium | 0.10 | U | 0.10 | 0.20 |
| Tin | 0.40 | U | 0.40 | 1.0 |
| Vanadium | 25 | | 1.4 | 5.0 |
| Zinc | 280 | | 2.6 | 10 |

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6020A | Analysis Batch: 680-187366 | | Instrument ID: | ICPMSB |
| Preparation: | 3030C | Prep Batch: 680-186745 | | Lab File ID: | 186745.chr |
| Dilution: | 5.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 11/24/2010 1156 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/20/2010 1409 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Beryllium | 1.3 | | 0.35 | 1.0 |

**7470A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7470A | Analysis Batch: 680-187718 | | Instrument ID: | LEEMAN1 |
| Preparation: | 7470A | Prep Batch: 680-187406 | | Lab File ID: | b120110.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 12/01/2010 2005 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/29/2010 1615 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Mercury | 0.091 | U | 0.091 | 0.20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-Dup1-11-10**

Lab Sample ID: 680-63343-3

Client Matrix: Water

Date Sampled: 11/18/2010 1200

Date Received: 11/19/2010 0953

**6020A Metals (ICP/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6020A | Analysis Batch: 680-187366 | | Instrument ID: | ICPMSB |
| Preparation: | 3030C | Prep Batch: 680-186745 | | Lab File ID: | 186745.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 11/24/2010 1203 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/20/2010 1409 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Antimony | 0.99 | U | 0.99 | 2.0 |
| Arsenic | 8.3 | | 0.40 | 1.0 |
| Barium | 39 | | 0.15 | 1.0 |
| Beryllium | 0.070 | U | 0.070 | 0.20 |
| Cadmium | 0.20 | U | 0.20 | 0.50 |
| Chromium | 0.16 | U | 0.16 | 1.0 |
| Cobalt | 0.15 | J | 0.078 | 0.20 |
| Copper | 0.21 | U | 0.21 | 1.0 |
| Lead | 0.080 | U | 0.080 | 0.30 |
| Nickel | 0.40 | U | 0.40 | 1.0 |
| Selenium | 0.21 | U | 0.21 | 0.50 |
| Silver | 0.10 | U | 0.10 | 0.20 |
| Thallium | 0.10 | U | 0.10 | 0.20 |
| Tin | 0.40 | U | 0.40 | 1.0 |
| Vanadium | 1.4 | U | 1.4 | 5.0 |
| Zinc | 30 | | 2.6 | 10 |

**7470A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7470A | Analysis Batch: 680-187718 | | Instrument ID: | LEEMAN1 |
| Preparation: | 7470A | Prep Batch: 680-187406 | | Lab File ID: | b120110.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 12/01/2010 2008 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/29/2010 1615 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Mercury | 0.091 | U | 0.091 | 0.20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-MW7-11-10**

Lab Sample ID: 680-63343-4

Client Matrix: Water

Date Sampled: 11/18/2010 1025

Date Received: 11/19/2010 0953

**6020A Metals (ICP/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6020A | Analysis Batch: 680-187366 | | Instrument ID: | ICPMSB |
| Preparation: | 3030C | Prep Batch: 680-186745 | | Lab File ID: | 186745.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 11/24/2010 1210 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/20/2010 1409 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Antimony | 0.99 | U | 0.99 | 2.0 |
| Arsenic | 7.7 | | 0.40 | 1.0 |
| Barium | 34 | | 0.15 | 1.0 |
| Beryllium | 0.070 | U | 0.070 | 0.20 |
| Cadmium | 0.20 | U | 0.20 | 0.50 |
| Chromium | 0.51 | J | 0.16 | 1.0 |
| Cobalt | 0.34 | | 0.078 | 0.20 |
| Copper | 1.8 | | 0.21 | 1.0 |
| Lead | 0.18 | J | 0.080 | 0.30 |
| Nickel | 1.7 | | 0.40 | 1.0 |
| Selenium | 0.21 | U | 0.21 | 0.50 |
| Silver | 0.10 | U | 0.10 | 0.20 |
| Thallium | 0.10 | U | 0.10 | 0.20 |
| Tin | 0.40 | U | 0.40 | 1.0 |
| Vanadium | 1.9 | J | 1.4 | 5.0 |
| Zinc | 5.0 | J | 2.6 | 10 |

**7470A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7470A | Analysis Batch: 680-187718 | | Instrument ID: | LEEMAN1 |
| Preparation: | 7470A | Prep Batch: 680-187406 | | Lab File ID: | b120110.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 12/01/2010 2011 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/29/2010 1615 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Mercury | 0.091 | U | 0.091 | 0.20 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Client Sample ID:** **LS-MW8-11-10**

Lab Sample ID: 680-63343-5

Client Matrix: Water

Date Sampled: 11/18/2010 1430

Date Received: 11/19/2010 0953

**6020A Metals (ICP/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6020A | Analysis Batch: 680-187366 | | Instrument ID: | ICPMSB |
| Preparation: | 3030C | Prep Batch: 680-186745 | | Lab File ID: | 186745.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 11/24/2010 1217 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/20/2010 1409 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Antimony | 0.99 | U | 0.99 | 2.0 |
| Arsenic | 5.1 | | 0.40 | 1.0 |
| Barium | 70 | | 0.15 | 1.0 |
| Cadmium | 0.20 | U | 0.20 | 0.50 |
| Chromium | 0.24 | J | 0.16 | 1.0 |
| Cobalt | 2.4 | | 0.078 | 0.20 |
| Copper | 1.1 | | 0.21 | 1.0 |
| Lead | 0.080 | U | 0.080 | 0.30 |
| Nickel | 1.9 | | 0.40 | 1.0 |
| Selenium | 0.22 | J | 0.21 | 0.50 |
| Silver | 0.10 | U | 0.10 | 0.20 |
| Thallium | 0.10 | U | 0.10 | 0.20 |
| Tin | 0.40 | U | 0.40 | 1.0 |
| Vanadium | 1.9 | J | 1.4 | 5.0 |
| Zinc | 3.2 | J | 2.6 | 10 |

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6020A | Analysis Batch: 680-187366 | | Instrument ID: | ICPMSB |
| Preparation: | 3030C | Prep Batch: 680-186745 | | Lab File ID: | 186745.chr |
| Dilution: | 5.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 11/24/2010 1224 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/20/2010 1409 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Beryllium | 0.35 | U | 0.35 | 1.0 |

**7470A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7470A | Analysis Batch: 680-187718 | | Instrument ID: | LEEMAN1 |
| Preparation: | 7470A | Prep Batch: 680-187406 | | Lab File ID: | b120110.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 12/01/2010 2013 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/29/2010 1615 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Mercury | 0.091 | U | 0.091 | 0.20 |

**General Chemistry**

**Client Sample ID:** **LS-SW2-11-10**

Lab Sample ID: 680-63343-1

Client Matrix: Water

Date Sampled: 11/18/2010 1415

Date Received: 11/19/2010 0953

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Nitrate as NO3 | 0.36 | U | mg/L | 0.36 | 1.1 | 5.0 | 300.0 |
| Analysis Batch: 680-186872 | Date Analyzed: 11/19/2010 2156 | | | | | | |
| Cyanide, Total | 0.0025 | U | mg/L | 0.0025 | 0.010 | 1.0 | 335.4 |
| Analysis Batch: 680-187499 | Date Analyzed: 11/30/2010 1223 | | | | | | |
| Prep Batch: 680-187431 | Date Prepared: 11/30/2010 0458 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Sulfide | 10 | U | mg/L | 10 | 10 | 1.0 | 9034 |
| Analysis Batch: 680-187236 | Date Analyzed: 11/24/2010 1633 | | | | | | |
| Prep Batch: 680-187122 | Date Prepared: 11/24/2010 0837 | | | | | | |

**General Chemistry**

**Client Sample ID:** **LS-SW1-11-10**

Lab Sample ID: 680-63343-2

Client Matrix: Water

Date Sampled: 11/18/2010 1440

Date Received: 11/19/2010 0953

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Nitrate as NO3 | 0.36 | U | mg/L | 0.36 | 1.1 | 5.0 | 300.0 |
| Analysis Batch: 680-186872 | Date Analyzed: 11/19/2010 2210 | | | | | | |
| Cyanide, Total | 0.0025 | U | mg/L | 0.0025 | 0.010 | 1.0 | 335.4 |
| Analysis Batch: 680-187499 | Date Analyzed: 11/30/2010 1223 | | | | | | |
| Prep Batch: 680-187431 | Date Prepared: 11/30/2010 0458 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Sulfide | 10 | U | mg/L | 10 | 10 | 1.0 | 9034 |
| Analysis Batch: 680-187236 | Date Analyzed: 11/24/2010 1633 | | | | | | |
| Prep Batch: 680-187122 | Date Prepared: 11/24/2010 0837 | | | | | | |

**General Chemistry**

**Client Sample ID:** **LS-Dup1-11-10**

Lab Sample ID: 680-63343-3

Client Matrix: Water

Date Sampled: 11/18/2010 1200

Date Received: 11/19/2010 0953

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Nitrate as NO3 | 0.36 | U | mg/L | 0.36 | 1.1 | 5.0 | 300.0 |
| Analysis Batch: 680-186872 | Date Analyzed: 11/19/2010 2223 | | | | | | |
| Cyanide, Total | 0.0025 | U | mg/L | 0.0025 | 0.010 | 1.0 | 335.4 |
| Analysis Batch: 680-187499 | Date Analyzed: 11/30/2010 1223 | | | | | | |
| Prep Batch: 680-187431 | Date Prepared: 11/30/2010 0458 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Sulfide | 15 | | mg/L | 10 | 10 | 1.0 | 9034 |
| Analysis Batch: 680-187236 | Date Analyzed: 11/24/2010 1633 | | | | | | |
| Prep Batch: 680-187122 | Date Prepared: 11/24/2010 0837 | | | | | | |

**General Chemistry**

**Client Sample ID:** **LS-MW7-11-10**

Lab Sample ID: 680-63343-4

Client Matrix: Water

Date Sampled: 11/18/2010 1025

Date Received: 11/19/2010 0953

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Nitrate as NO3 | 0.46 | J | mg/L | 0.36 | 1.1 | 5.0 | 300.0 |
| Analysis Batch: 680-186872 | Date Analyzed: 11/19/2010 2236 | | | | | | |
| Cyanide, Total | 0.0025 | U | mg/L | 0.0025 | 0.010 | 1.0 | 335.4 |
| Analysis Batch: 680-187499 | Date Analyzed: 11/30/2010 1223 | | | | | | |
| Prep Batch: 680-187431 | Date Prepared: 11/30/2010 0458 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Sulfide | 10 | U | mg/L | 10 | 10 | 1.0 | 9034 |
| Analysis Batch: 680-187236 | Date Analyzed: 11/24/2010 1633 | | | | | | |
| Prep Batch: 680-187122 | Date Prepared: 11/24/2010 0837 | | | | | | |

**General Chemistry**

**Client Sample ID:** **LS-MW8-11-10**

Lab Sample ID: 680-63343-5

Client Matrix: Water

Date Sampled: 11/18/2010 1430

Date Received: 11/19/2010 0953

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Nitrate as NO3 | 0.36 | U | mg/L | 0.36 | 1.1 | 5.0 | 300.0 |
| Analysis Batch: 680-186872 | Date Analyzed: 11/19/2010 2303 | | | | | | |
| Cyanide, Total | 0.0025 | U | mg/L | 0.0025 | 0.010 | 1.0 | 335.4 |
| Analysis Batch: 680-187499 | Date Analyzed: 11/30/2010 1223 | | | | | | |
| Prep Batch: 680-187431 | Date Prepared: 11/30/2010 0458 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Sulfide | 18 | | mg/L | 10 | 10 | 1.0 | 9034 |
| Analysis Batch: 680-187236 | Date Analyzed: 11/24/2010 1633 | | | | | | |
| Prep Batch: 680-187122 | Date Prepared: 11/24/2010 0837 | | | | | | |

# DATA REPORTING QUALIFIERS

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

| Lab Section | Qualifier | Description |
|---|---|---|
| GC/MS Semi VOA | | |
| | J | Estimated: The analyte was positively identified; the quantitation is an estimation |
| | J | Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria. |
| | M | Manual integrated compound. |
| | Q | One or more quality control criteria failed. |
| | U | Undetected at the Limit of Detection. |
| GC Semi VOA | | |
| | J | Estimated: The analyte was positively identified; the quantitation is an estimation |
| | J | Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria. |
| | U | Undetected at the Limit of Detection. |
| Metals | | |
| | J | Estimated: The analyte was positively identified; the quantitation is an estimation |
| | U | Undetected at the Limit of Detection. |
| General Chemistry | | |
| | J | Estimated: The analyte was positively identified; the quantitation is an estimation |
| | U | Undetected at the Limit of Detection. |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Method Blank - Batch: 680-187142**

**Method: 8270D**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 680-187142/19-A | Analysis Batch: | 680-187762 | Instrument ID: | MSG |
| Client Matrix: | Water | Prep Batch: | 680-187142 | Lab File ID: | g4484.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 1000 mL |
| Date Analyzed: | 12/02/2010 1224 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Acenaphthene | 0.76 | U | 0.76 | 10 |
| Acenaphthylene | 0.85 | U | 0.85 | 10 |
| Acetophenone | 0.57 | U | 0.57 | 10 |
| 2-Acetylaminofluorene | 1.6 | U | 1.6 | 10 |
| 4-Aminobiphenyl | 1.2 | U | 1.2 | 10 |
| Anthracene | 0.69 | U | 0.69 | 10 |
| Benzo[a]anthracene | 0.55 | U | 0.55 | 10 |
| Benzo[a]pyrene | 0.71 | U | 0.71 | 10 |
| Benzo[b]fluoranthene | 2.6 | U | 2.6 | 10 |
| Benzo[g,h,i]perylene | 0.87 | U | 0.87 | 10 |
| Benzo[k]fluoranthene | 1.2 | U | 1.2 | 10 |
| Benzyl alcohol | 1.1 | U | 1.1 | 10 |
| 1,1'-Biphenyl | 0.58 | U | 0.58 | 10 |
| Bis(2-chloroethoxy)methane | 0.94 | U | 0.94 | 10 |
| Bis(2-chloroethyl)ether | 1.1 | U | 1.1 | 10 |
| bis(chloroisopropyl) ether | 0.78 | U | 0.78 | 10 |
| Bis(2-ethylhexyl) phthalate | 1.6 | U | 1.6 | 10 |
| 4-Bromophenyl phenyl ether | 0.77 | U | 0.77 | 10 |
| Butyl benzyl phthalate | 1.2 | U | 1.2 | 10 |
| 4-Chloroaniline | 2.2 | U | 2.2 | 20 |
| 4-Chloro-3-methylphenol | 1.0 | U | 1.0 | 10 |
| 2-Chloronaphthalene | 0.80 | U | 0.80 | 10 |
| 2-Chlorophenol | 0.87 | U | 0.87 | 10 |
| 4-Chlorophenyl phenyl ether | 0.84 | U | 0.84 | 10 |
| Chrysene | 0.51 | U | 0.51 | 10 |
| Diallate | 0.78 | U | 0.78 | 10 |
| Dibenz(a,h)anthracene | 1.0 | U | 1.0 | 10 |
| Dibenzofuran | 0.79 | U | 0.79 | 10 |
| 3,3'-Dichlorobenzidine | 30 | U | 30 | 60 |
| 2,4-Dichlorophenol | 1.1 | U | 1.1 | 10 |
| 2,6-Dichlorophenol | 0.73 | U | 0.73 | 10 |
| Diethyl phthalate | 0.88 | U | 0.88 | 10 |
| Dimethoate | 0.75 | U | 0.75 | 10 |
| 7,12-Dimethylbenz(a)anthracene | 1.2 | U | 1.2 | 10 |
| 3,3'-Dimethylbenzidine | 10 | U | 10 | 20 |
| 2,4-Dimethylphenol | 4.0 | U | 4.0 | 10 |
| Dimethyl phthalate | 0.99 | U | 0.99 | 10 |
| Di-n-butyl phthalate | 0.83 | U | 0.83 | 10 |
| 1,3-Dinitrobenzene | 0.60 | U | 0.60 | 10 |
| 4,6-Dinitro-2-methylphenol | 10 | U | 10 | 50 |
| 2,4-Dinitrophenol | 10 | U | 10 | 50 |
| 2,4-Dinitrotoluene | 1.2 | U | 1.2 | 10 |
| 2,6-Dinitrotoluene | 1.1 | U | 1.1 | 10 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Method Blank - Batch: 680-187142**

**Method: 8270D**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 680-187142/19-A | Analysis Batch: | 680-187762 | Instrument ID: | MSG |
| Client Matrix: | Water | Prep Batch: | 680-187142 | Lab File ID: | g4484.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 1000 mL |
| Date Analyzed: | 12/02/2010 1224 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Di-n-octyl phthalate | 1.4 | U | 1.4 | 10 |
| Dinoseb | 5.0 | U | 5.0 | 10 |
| 1,4-Dioxane | 3.4 | U | 3.4 | 10 |
| Disulfoton | 0.79 | U | 0.79 | 10 |
| Ethyl methanesulfonate | 0.96 | U | 0.96 | 10 |
| Ethyl Parathion | 1.3 | U | 1.3 | 10 |
| Famphur | 1.1 | U | 1.1 | 10 |
| Fluoranthene | 0.74 | U | 0.74 | 10 |
| Fluorene | 0.96 | U | 0.96 | 10 |
| Hexachlorobenzene | 0.79 | U | 0.79 | 10 |
| Hexachlorobutadiene | 0.62 | U | 0.62 | 10 |
| Hexachlorocyclopentadiene | 2.5 | U | 2.5 | 10 |
| Hexachloroethane | 0.76 | U | 0.76 | 10 |
| Hexachloropropene | 1.4 | U | 1.4 | 10 |
| Indeno[1,2,3-cd]pyrene | 1.0 | U | 1.0 | 10 |
| Isophorone | 0.90 | U | 0.90 | 10 |
| Isosafrole | 0.50 | U | 0.50 | 10 |
| Methapyrilene | 2.7 | U | 2.7 | 2000 |
| 3-Methylcholanthrene | 1.4 | U | 1.4 | 10 |
| Methyl methanesulfonate | 0.60 | U | 0.60 | 10 |
| 2-Methylnaphthalene | 0.78 | U | 0.78 | 10 |
| Methyl parathion | 0.88 | U | 0.88 | 10 |
| 2-Methylphenol | 0.89 | U | 0.89 | 10 |
| 3 & 4 Methylphenol | 1.3 | U | 1.3 | 10 |
| Naphthalene | 0.70 | U | 0.70 | 10 |
| 1,4-Naphthoquinone | 0.62 | U | 0.62 | 10 |
| 1-Naphthylamine | 1.1 | U | 1.1 | 10 |
| 2-Naphthylamine | 1.5 | U | 1.5 | 10 |
| 2-Nitroaniline | 1.3 | U | 1.3 | 50 |
| 3-Nitroaniline | 5.0 | U | 5.0 | 50 |
| 4-Nitroaniline | 5.0 | U | 5.0 | 50 |
| Nitrobenzene | 0.73 | U | 0.73 | 10 |
| 2-Nitrophenol | 0.76 | U | 0.76 | 10 |
| 4-Nitrophenol | 1.9 | U | 1.9 | 50 |
| N-Nitro-o-toluidine | 1.5 | U | 1.5 | 10 |
| N-Nitrosodiethylamine | 0.93 | U | 0.93 | 10 |
| N-Nitrosodimethylamine | 2.8 | U | 2.8 | 10 |
| N-Nitrosodi-n-butylamine | 0.96 | U | 0.96 | 10 |
| N-Nitrosodi-n-propylamine | 0.72 | U | 0.72 | 10 |
| N-Nitrosodiphenylamine | 0.92 | U | 0.92 | 10 |
| N-Nitrosomethylethylamine | 3.3 | U | 3.3 | 10 |
| N-Nitrosopiperidine | 0.88 | U | 0.88 | 10 |
| N-Nitrosopyrrolidine | 1.0 | U | 1.0 | 10 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Method Blank - Batch: 680-187142**

**Method: 8270D**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 680-187142/19-A | Analysis Batch: | 680-187762 | Instrument ID: | MSG |
| Client Matrix: | Water | Prep Batch: | 680-187142 | Lab File ID: | g4484.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 1000 mL |
| Date Analyzed: | 12/02/2010 1224 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| o,o',o''-Triethylphosphorothioate | 1.0 | U | 1.0 | 10 |
| p-Dimethylamino azobenzene | 0.79 | U | 0.79 | 10 |
| Pentachlorobenzene | 0.52 | U | 0.52 | 10 |
| Pentachloronitrobenzene | 0.78 | U | 0.78 | 10 |
| Pentachlorophenol | 2.0 | U | 2.0 | 50 |
| Phenacetin | 1.4 | U | 1.4 | 10 |
| Phenanthrene | 0.77 | U | 0.77 | 10 |
| Phenol | 0.83 | U | 0.83 | 10 |
| Phorate | 0.87 | U | 0.87 | 10 |
| p-Phenylene diamine | 10 | U | 10 | 2000 |
| Pronamide | 0.89 | U | 0.89 | 10 |
| Pyrene | 0.63 | U | 0.63 | 10 |
| Safrole, Total | 0.80 | U | 0.80 | 10 |
| Sulfotepp | 0.53 | U | 0.53 | 10 |
| 1,2,4,5-Tetrachlorobenzene | 0.76 | U | 0.76 | 10 |
| 2,3,4,6-Tetrachlorophenol | 0.72 | U | 0.72 | 10 |
| Thionazin | 0.91 | U | 0.91 | 10 |
| 2-Toluidine | 1.4 | U | 1.4 | 10 |
| 2,4,5-Trichlorophenol | 1.2 | U | 1.2 | 10 |
| 2,4,6-Trichlorophenol | 0.85 | U | 0.85 | 10 |
| 1,3,5-Trinitrobenzene | 2.0 | U | 2.0 | 10 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 2-Fluorobiphenyl | 79 | 62 - 130 |
| 2-Fluorophenol | 80 | 50 - 130 |
| Nitrobenzene-d5 | 84 | 62 - 130 |
| Phenol-d5 | 79 | 51 - 130 |
| Terphenyl-d14 | 89 | 20 - 130 |
| 2,4,6-Tribromophenol | 83 | 57 - 131 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Lab Control Sample - Batch: 680-187142**

**Method: 8270D**
**Preparation: 3520C**

Lab Sample ID: LCS 680-187142/20-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 12/02/2010 1252
Date Prepared: 11/24/2010 1459

Analysis Batch: 680-187762
Prep Batch: 680-187142
Units: ug/L

Instrument ID: MSG
Lab File ID: g4485.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 1 mL
Injection Volume: 1 uL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Acenaphthene | 100 | 90.6 | 91 | 55 - 130 | |
| Acenaphthylene | 100 | 93.2 | 93 | 60 - 130 | |
| Anthracene | 100 | 93.4 | 93 | 61 - 130 | |
| Benzo[a]anthracene | 100 | 96.3 | 96 | 58 - 130 | |
| Benzo[a]pyrene | 100 | 109 | 109 | 61 - 130 | |
| Benzo[b]fluoranthene | 100 | 100 | 100 | 51 - 130 | |
| Benzo[g,h,i]perylene | 100 | 90.9 | 91 | 54 - 130 | |
| Benzo[k]fluoranthene | 100 | 88.9 | 89 | 53 - 130 | |
| Benzyl alcohol | 100 | 92.3 | 92 | 53 - 130 | |
| 1,1'-Biphenyl | 100 | 85.4 | 85 | 54 - 130 | |
| Bis(2-chloroethoxy)methane | 100 | 98.9 | 99 | 64 - 130 | |
| Bis(2-chloroethyl)ether | 100 | 94.7 | 95 | 56 - 130 | |
| bis(chloroisopropyl) ether | 100 | 93.2 | 93 | 55 - 130 | |
| Bis(2-ethylhexyl) phthalate | 100 | 99.6 | 100 | 62 - 130 | |
| 4-Bromophenyl phenyl ether | 100 | 98.8 | 99 | 61 - 130 | |
| Butyl benzyl phthalate | 100 | 104 | 104 | 66 - 130 | |
| 4-Chloroaniline | 100 | 81.5 | 81 | 42 - 130 | |
| 4-Chloro-3-methylphenol | 100 | 90.9 | 91 | 60 - 130 | |
| 2-Chloronaphthalene | 100 | 83.1 | 83 | 53 - 130 | |
| 2-Chlorophenol | 100 | 85.9 | 86 | 57 - 130 | |
| 4-Chlorophenyl phenyl ether | 100 | 92.1 | 92 | 57 - 130 | |
| Chrysene | 100 | 97.2 | 97 | 59 - 130 | |
| Dibenz(a,h)anthracene | 100 | 86.2 | 86 | 55 - 130 | |
| Dibenzofuran | 100 | 88.2 | 88 | 58 - 130 | |
| 3,3'-Dichlorobenzidine | 100 | 84.9 | 85 | 27 - 130 | |
| 2,4-Dichlorophenol | 100 | 86.0 | 86 | 54 - 130 | |
| Diethyl phthalate | 100 | 99.3 | 99 | 70 - 130 | |
| 2,4-Dimethylphenol | 100 | 73.6 | 74 | 40 - 130 | |
| Dimethyl phthalate | 100 | 96.6 | 97 | 69 - 130 | |
| Di-n-butyl phthalate | 100 | 97.5 | 97 | 66 - 130 | |
| 4,6-Dinitro-2-methylphenol | 100 | 105 | 105 | 45 - 134 | |
| 2,4-Dinitrophenol | 100 | 137 | 137 | 20 - 165 | |
| 2,4-Dinitrotoluene | 100 | 98.1 | 98 | 63 - 130 | |
| 2,6-Dinitrotoluene | 100 | 94.2 | 94 | 65 - 130 | |
| Di-n-octyl phthalate | 100 | 105 | 105 | 64 - 130 | |
| 1,4-Dioxane | 100 | 55.9 | 56 | 35 - 130 | |
| Fluoranthene | 100 | 95.2 | 95 | 56 - 130 | |
| Fluorene | 100 | 91.5 | 92 | 61 - 130 | |
| Hexachlorobenzene | 100 | 89.4 | 89 | 52 - 130 | |
| Hexachlorobutadiene | 100 | 67.1 | 67 | 36 - 130 | |
| Hexachlorocyclopentadiene | 100 | 71.4 | 71 | 10 - 130 | |
| Hexachloroethane | 100 | 63.7 | 64 | 39 - 130 | |
| Indeno[1,2,3-cd]pyrene | 100 | 96.0 | 96 | 47 - 130 | |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Lab Control Sample - Batch: 680-187142**

**Method: 8270D**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 680-187142/20-A | Analysis Batch: | 680-187762 | Instrument ID: | MSG |
| Client Matrix: | Water | Prep Batch: | 680-187142 | Lab File ID: | g4485.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 1000 mL |
| Date Analyzed: | 12/02/2010 1252 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 11/24/2010 1459 | | | Injection Volume: | 1 uL |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Isophorone | 100 | 82.5 | 83 | 59 - 130 | |
| 2-Methylnaphthalene | 100 | 81.1 | 81 | 52 - 130 | |
| 2-Methylphenol | 100 | 85.7 | 86 | 55 - 130 | |
| 3 & 4 Methylphenol | 100 | 101 | 101 | 35 - 130 | |
| Naphthalene | 100 | 78.5 | 78 | 50 - 130 | |
| 2-Nitroaniline | 100 | 106 | 106 | 60 - 130 | |
| 3-Nitroaniline | 100 | 100 | 100 | 54 - 130 | |
| 4-Nitroaniline | 100 | 111 | 111 | 54 - 130 | |
| Nitrobenzene | 100 | 87.5 | 88 | 56 - 130 | |
| 2-Nitrophenol | 100 | 85.4 | 85 | 54 - 130 | |
| 4-Nitrophenol | 100 | 106 | 106 | 38 - 130 | |
| N-Nitrosodimethylamine | 100 | 96.0 | 96 | 54 - 130 | |
| N-Nitrosodi-n-propylamine | 100 | 97.2 | 97 | 64 - 130 | |
| N-Nitrosodiphenylamine | 100 | 103 | 103 | 68 - 130 | |
| Pentachlorophenol | 100 | 84.6 | 85 | 42 - 138 | |
| Phenanthrene | 100 | 94.5 | 94 | 62 - 130 | |
| Phenol | 100 | 84.8 | 85 | 29 - 130 | |
| Pyrene | 100 | 90.8 | 91 | 60 - 130 | |
| 2,4,5-Trichlorophenol | 100 | 96.6 | 97 | 61 - 130 | |
| 2,4,6-Trichlorophenol | 100 | 91.4 | 91 | 57 - 130 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 2-Fluorobiphenyl | 79 | 62 - 130 |
| 2-Fluorophenol | 81 | 50 - 130 |
| Nitrobenzene-d5 | 87 | 62 - 130 |
| Phenol-d5 | 86 | 51 - 130 |
| Terphenyl-d14 | 82 | 20 - 130 |
| 2,4,6-Tribromophenol | 90 | 57 - 131 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 2-Fluorobiphenyl | 68 | 62 - 130 |
| 2-Fluorophenol | 62 | 50 - 130 |
| Nitrobenzene-d5 | 72 | 62 - 130 |
| Phenol-d5 | 62 | 51 - 130 |
| Terphenyl-d14 | 85 | 20 - 130 |
| 2,4,6-Tribromophenol | 82 | 57 - 131 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Method Blank - Batch: 680-187137**

**Method: 8081B/8082A**
**Preparation: 3520C**

Lab Sample ID: MB 680-187137/18-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/30/2010 1257
Date Prepared: 11/24/2010 1459

Analysis Batch: 680-187781
Prep Batch: 680-187137
Units: ug/L

Instrument ID: SGM
Lab File ID: mk30010.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 10 mL
Injection Volume: 2 uL
Column ID: PRIMARY

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| 4,4'-DDD | 0.0065 | U | 0.0065 | 0.10 |
| 4,4'-DDE | 0.0077 | U | 0.0077 | 0.10 |
| 4,4'-DDT | 0.0097 | U | 0.0097 | 0.10 |
| Aldrin | 0.0070 | U | 0.0070 | 0.050 |
| alpha-BHC | 0.0057 | U | 0.0057 | 0.050 |
| beta-BHC | 0.0067 | U | 0.0067 | 0.050 |
| Chlordane (technical) | 0.10 | U | 0.10 | 0.50 |
| Chlorobenzilate | 0.50 | U | 0.50 | 0.50 |
| delta-BHC | 0.0048 | U | 0.0048 | 0.050 |
| Dieldrin | 0.0091 | U | 0.0091 | 0.10 |
| Endosulfan I | 0.0042 | U | 0.0042 | 0.050 |
| Endosulfan II | 0.0098 | U | 0.0098 | 0.10 |
| Endosulfan sulfate | 0.0068 | U | 0.0068 | 0.10 |
| Endrin | 0.0097 | U | 0.0097 | 0.10 |
| Endrin aldehyde | 0.016 | U | 0.016 | 0.10 |
| gamma-BHC (Lindane) | 0.0059 | U | 0.0059 | 0.050 |
| Heptachlor | 0.0070 | U | 0.0070 | 0.050 |
| Heptachlor epoxide | 0.0060 | U | 0.0060 | 0.050 |
| Isodrin | 0.050 | U | 0.050 | 0.050 |
| Methoxychlor | 0.013 | U | 0.013 | 0.10 |
| PCB-1016 | 0.071 | U | 0.071 | 1.0 |
| PCB-1221 | 0.28 | U | 0.28 | 2.0 |
| PCB-1232 | 0.11 | U | 0.11 | 1.0 |
| PCB-1242 | 0.18 | U | 0.18 | 1.0 |
| PCB-1248 | 0.36 | U | 0.36 | 1.0 |
| PCB-1254 | 0.26 | U | 0.26 | 1.0 |
| PCB-1260 | 0.20 | U | 0.20 | 1.0 |
| PCB-1262 | 0.24 | U | 0.24 | 1.0 |
| Toxaphene | 0.50 | U | 0.50 | 5.0 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| DCB Decachlorobiphenyl | 74 | 40 - 130 |
| Tetrachloro-m-xylene | 91 | 36 - 130 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| DCB Decachlorobiphenyl | 58 | 40 - 130 |
| Tetrachloro-m-xylene | 76 | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Lab Control Sample - Batch: 680-187137**

**Method: 8081B/8082A**
**Preparation: 3520C**

Lab Sample ID: LCS 680-187137/19-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/30/2010 1316
Date Prepared: 11/24/2010 1459

Analysis Batch: 680-187781
Prep Batch: 680-187137
Units: ug/L

Instrument ID: SGM
Lab File ID: mk30011.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 10 mL
Injection Volume: 2 uL
Column ID: PRIMARY

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| 4,4'-DDD | 0.200 | 0.176 | 88 | 49 - 144 | |
| 4,4'-DDE | 0.200 | 0.165 | 83 | 46 - 144 | |
| 4,4'-DDT | 0.200 | 0.214 | 107 | 48 - 166 | |
| Aldrin | 0.100 | 0.0832 | 83 | 14 - 168 | |
| alpha-BHC | 0.100 | 0.0857 | 86 | 43 - 138 | |
| beta-BHC | 0.100 | 0.124 | 124 | 38 - 158 | |
| delta-BHC | 0.100 | 0.0901 | 90 | 23 - 191 | |
| Dieldrin | 0.200 | 0.191 | 96 | 61 - 136 | |
| Endosulfan I | 0.100 | 0.0983 | 98 | 52 - 141 | |
| Endosulfan II | 0.200 | 0.202 | 101 | 60 - 140 | |
| Endosulfan sulfate | 0.200 | 0.198 | 99 | 60 - 151 | |
| Endrin | 0.200 | 0.196 | 98 | 66 - 150 | |
| Endrin aldehyde | 0.200 | 0.197 | 99 | 16 - 200 | |
| gamma-BHC (Lindane) | 0.100 | 0.0972 | 97 | 54 - 134 | |
| Heptachlor | 0.100 | 0.0862 | 86 | 10 - 200 | |
| Heptachlor epoxide | 0.100 | 0.0866 | 87 | 49 - 142 | |
| Methoxychlor | 0.200 | 0.125 | 63 | 13 - 186 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| DCB Decachlorobiphenyl | 47 | 40 - 130 |
| DCB Decachlorobiphenyl | 60 | 40 - 130 |
| Tetrachloro-m-xylene | 82 | 36 - 130 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Tetrachloro-m-xylene | 73 | 36 - 130 |

**Lab Control Sample - Batch: 680-187137**

**Method: 8081B/8082A**
**Preparation: 3520C**

Lab Sample ID: LCS 680-187137/22-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/30/2010 1336
Date Prepared: 11/24/2010 1459

Analysis Batch: 680-187781
Prep Batch: 680-187137
Units: ug/L

Instrument ID: SGM
Lab File ID: mk30012.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 10 mL
Injection Volume: 2 uL
Column ID: PRIMARY

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| PCB-1016 | 10.0 | 10.7 | 107 | 38 - 172 | |
| PCB-1260 | 10.0 | 10.2 | 102 | 46 - 138 | |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| DCB Decachlorobiphenyl | 48 | 40 - 130 |
| DCB Decachlorobiphenyl | 61 | 40 - 130 |
| Tetrachloro-m-xylene | 85 | 36 - 130 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Tetrachloro-m-xylene | 78 | 36 - 130 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| DCB Decachlorobiphenyl | 66 | 40 - 130 |
| Tetrachloro-m-xylene | 77 | 36 - 130 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| DCB Decachlorobiphenyl | 54 | 40 - 130 |
| Tetrachloro-m-xylene | 68 | 36 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Method Blank - Batch: 680-187137**

**Method: 8141B**
**Preparation: 3520C**

Lab Sample ID: MB 680-187137/18-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/29/2010 1502
Date Prepared: 11/24/2010 1459

Analysis Batch: 680-187460
Prep Batch: 680-187137
Units: ug/L

Instrument ID: SGO
Lab File ID: ok22009.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 10 mL
Injection Volume: 2 uL
Column ID: PRIMARY

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Dimethoate | 1.0 | U | 1.0 | 2.0 |
| Disulfoton | 1.0 | U | 1.0 | 2.0 |
| Ethyl Parathion | 0.50 | U | 0.50 | 1.0 |
| Famphur | 1.0 | U | 1.0 | 2.0 |
| Methyl parathion | 0.50 | U | 0.50 | 0.50 |
| Phorate | 0.50 | U | 0.50 | 1.0 |
| Sulfotepp | 0.50 | U | 0.50 | 0.50 |
| Thionazin | 0.50 | U | 0.50 | 1.0 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Triphenylphosphate | 74 | 67 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Lab Control Sample - Batch: 680-187137**

**Method: 8141B**
**Preparation: 3520C**

Lab Sample ID: LCS 680-187137/25-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/29/2010 1527
Date Prepared: 11/24/2010 1459

Analysis Batch: 680-187460
Prep Batch: 680-187137
Units: ug/L

Instrument ID: SGO
Lab File ID: ok22010.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 10 mL
Injection Volume: 2 uL
Column ID: PRIMARY

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Methyl parathion | 8.00 | 7.02 | 88 | 58 - 131 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Triphenylphosphate | 84 | 67 - 130 |

**Lab Control Sample - Batch: 680-187137**

**Method: 8141B**
**Preparation: 3520C**

Lab Sample ID: LCS 680-187137/28-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/29/2010 1552
Date Prepared: 11/24/2010 1459

Analysis Batch: 680-187460
Prep Batch: 680-187137
Units: ug/L

Instrument ID: SGO
Lab File ID: ok22011.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 10 mL
Injection Volume: 2 uL
Column ID: PRIMARY

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Ethyl Parathion | 8.00 | 6.77 | 85 | 70 - 130 | |
| Thionazin | 8.00 | 6.16 | 77 | 69 - 130 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Triphenylphosphate | 77 | 67 - 130 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Method Blank - Batch: 680-186942**

**Method: 8151A**
**Preparation: 8151A**

Lab Sample ID: MB 680-186942/19-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/24/2010 1927
Date Prepared: 11/23/2010 0835

Analysis Batch: 680-187317
Prep Batch: 680-186942
Units: ug/L

Instrument ID: SGS
Lab File ID: sk24031.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 10 mL
Injection Volume: 1 uL
Column ID: PRIMARY

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| 2,4-D | 0.037 | U | 0.037 | 0.50 |
| 2,4-DB | 0.15 | U | 0.15 | 0.50 |
| 2,4,5-T | 0.062 | U | 0.062 | 0.50 |
| Silvex (2,4,5-TP) | 0.062 | U | 0.062 | 0.50 |
| Dalapon | 0.10 | U | 0.10 | 10 |
| Dicamba | 0.085 | U | 0.085 | 0.50 |
| Dichlorprop | 0.15 | U | 0.15 | 0.50 |
| Dinoseb | 0.16 | U | 0.16 | 6.0 |
| MCPA | 17 | U | 17 | 120 |
| Mecoprop | 19 | U | 19 | 120 |
| Pentachlorophenol | 0.037 | U | 0.037 | 0.25 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| DCAA | 113 | 52 - 151 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| DCAA | 78 | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Lab Control Sample - Batch: 680-186942**

**Method: 8151A**
**Preparation: 8151A**

Lab Sample ID: LCS 680-186942/20-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/24/2010 1943
Date Prepared: 11/23/2010 0835

Analysis Batch: 680-187317
Prep Batch: 680-186942
Units: ug/L

Instrument ID: SGS
Lab File ID: sk24032.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 10 mL
Injection Volume: 1 uL
Column ID: PRIMARY

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| 2,4-D | 2.00 | 1.58 | 79 | 63 - 130 | |
| 2,4-DB | 2.00 | 2.49 | 124 | 34 - 157 | |
| 2,4,5-T | 2.00 | 1.84 | 92 | 59 - 130 | |
| Silvex (2,4,5-TP) | 2.00 | 1.49 | 75 | 64 - 130 | |
| Dalapon | 10.0 | 6.53 | 65 | 24 - 130 | J |
| Dicamba | 2.00 | 1.59 | 80 | 66 - 130 | |
| Dichlorprop | 2.00 | 1.92 | 96 | 65 - 152 | |
| Dinoseb | 2.00 | 0.663 | 33 | 10 - 130 | J |
| MCPA | 200 | 156 | 78 | 40 - 130 | |
| Mecoprop | 200 | 153 | 76 | 53 - 130 | |
| Pentachlorophenol | 1.34 | 1.14 | 85 | 70 - 130 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| DCAA | 103 | 52 - 151 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| DCAA | 78 | 52 - 151 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Method Blank - Batch: 680-186745**

**Method: 6020A**
**Preparation: 3030C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 680-186745/1-A | Analysis Batch: | 680-187366 | Instrument ID: | ICPMSB |
| Client Matrix: | Water | Prep Batch: | 680-186745 | Lab File ID: | 186745.chr |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 11/24/2010 1127 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/20/2010 1409 | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Antimony | 0.99 | U | 0.99 | 2.0 |
| Arsenic | 0.40 | U | 0.40 | 1.0 |
| Barium | 0.15 | U | 0.15 | 1.0 |
| Beryllium | 0.070 | U | 0.070 | 0.20 |
| Cadmium | 0.20 | U | 0.20 | 0.50 |
| Chromium | 0.16 | U | 0.16 | 1.0 |
| Cobalt | 0.078 | U | 0.078 | 0.20 |
| Copper | 0.21 | U | 0.21 | 1.0 |
| Lead | 0.080 | U | 0.080 | 0.30 |
| Nickel | 0.40 | U | 0.40 | 1.0 |
| Selenium | 0.21 | U | 0.21 | 0.50 |
| Silver | 0.10 | U | 0.10 | 0.20 |
| Thallium | 0.10 | U | 0.10 | 0.20 |
| Tin | 0.40 | U | 0.40 | 1.0 |
| Vanadium | 1.4 | U | 1.4 | 5.0 |
| Zinc | 2.6 | U | 2.6 | 10 |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Lab Control Sample - Batch: 680-186745**

**Method: 6020A**
**Preparation: 3030C**

Lab Sample ID: LCS 680-186745/2-A
Client Matrix: Water
Dilution: 5.0
Date Analyzed: 11/24/2010 1134
Date Prepared: 11/20/2010 1409

Analysis Batch: 680-187366
Prep Batch: 680-186745
Units: ug/L

Instrument ID: ICPMSB
Lab File ID: 186745.chr
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Antimony | 50.0 | 56.6 | 113 | 75 - 125 | |
| Arsenic | 100 | 110 | 110 | 75 - 125 | |
| Barium | 100 | 105 | 105 | 75 - 125 | |
| Beryllium | 50.0 | 48.8 | 98 | 75 - 125 | |
| Cadmium | 50.0 | 51.3 | 103 | 75 - 125 | |
| Chromium | 100 | 102 | 102 | 75 - 125 | |
| Cobalt | 50.0 | 47.1 | 94 | 75 - 125 | |
| Copper | 100 | 104 | 104 | 75 - 125 | |
| Lead | 50.0 | 52.3 | 105 | 75 - 125 | |
| Nickel | 100 | 105 | 105 | 75 - 125 | |
| Selenium | 100 | 104 | 104 | 75 - 125 | |
| Silver | 50.0 | 52.0 | 104 | 75 - 125 | |
| Thallium | 40.0 | 41.5 | 104 | 75 - 125 | |
| Tin | 100 | 96.7 | 97 | 75 - 125 | |
| Vanadium | 100 | 101 | 101 | 75 - 125 | |
| Zinc | 100 | 103 | 103 | 75 - 125 | |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 680-186745**

**Method: 6020A**
**Preparation: 3030C**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 680-63343-5 | Analysis Batch: | 680-187366 | Instrument ID: | ICPMSB |
| Client Matrix: | Water | Prep Batch: | 680-186745 | Lab File ID: | 186745.chr |
| Dilution: | 5.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 11/24/2010 1253 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/20/2010 1409 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 680-63343-5 | Analysis Batch: | 680-187366 | Instrument ID: | ICPMSB |
| Client Matrix: | Water | Prep Batch: | 680-186745 | Lab File ID: | 186745.chr |
| Dilution: | 5.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 11/24/2010 1300 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/20/2010 1409 | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Antimony | 111 | 114 | 75 - 125 | 2 | 20 | | |
| Arsenic | 101 | 100 | 75 - 125 | 1 | 20 | | |
| Barium | 102 | 107 | 75 - 125 | 3 | 20 | | |
| Beryllium | 100 | 99 | 75 - 125 | 1 | 20 | | |
| Cadmium | 102 | 106 | 75 - 125 | 4 | 20 | | |
| Chromium | 95 | 95 | 75 - 125 | 0 | 20 | | |
| Cobalt | 92 | 94 | 75 - 125 | 1 | 20 | | |
| Copper | 100 | 99 | 75 - 125 | 1 | 20 | | |
| Lead | 106 | 109 | 75 - 125 | 4 | 20 | | |
| Nickel | 97 | 96 | 75 - 125 | 1 | 20 | | |
| Selenium | 99 | 98 | 75 - 125 | 1 | 20 | | |
| Silver | 91 | 87 | 75 - 125 | 4 | 20 | | |
| Thallium | 106 | 110 | 75 - 125 | 3 | 20 | | |
| Tin | 95 | 97 | 75 - 125 | 2 | 20 | | |
| Vanadium | 96 | 95 | 75 - 125 | 1 | 20 | | |
| Zinc | 108 | 106 | 75 - 125 | 2 | 20 | | |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Method Blank - Batch: 680-187406**

**Method: 7470A**
**Preparation: 7470A**

Lab Sample ID: MB 680-187406/1-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 12/01/2010 1929
Date Prepared: 11/29/2010 1615

Analysis Batch: 680-187718
Prep Batch: 680-187406
Units: ug/L

Instrument ID: LEEMAN1
Lab File ID: b120110.chr
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Mercury | 0.091 | U | 0.091 | 0.20 |

**Lab Control Sample - Batch: 680-187406**

**Method: 7470A**
**Preparation: 7470A**

Lab Sample ID: LCS 680-187406/2-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 12/01/2010 1933
Date Prepared: 11/29/2010 1615

Analysis Batch: 680-187718
Prep Batch: 680-187406
Units: ug/L

Instrument ID: LEEMAN1
Lab File ID: b120110.chr
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Mercury | 2.50 | 2.85 | 114 | 80 - 120 | |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Method Blank - Batch: 680-186872**

**Method: 300.0**
**Preparation: N/A**

Lab Sample ID: MB 680-186872/2
Client Matrix: Water
Dilution: 5.0
Date Analyzed: 11/19/2010 1822
Date Prepared: N/A

Analysis Batch: 680-186872
Prep Batch: N/A
Units: mg/L

Instrument ID: ICG
Lab File ID: 0046.d
Initial Weight/Volume: 1 mL
Final Weight/Volume: 5 mL

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Nitrate as NO3 | 0.36 | U | 0.36 | 1.1 |

**Lab Control Sample - Batch: 680-186872**

**Method: 300.0**
**Preparation: N/A**

Lab Sample ID: LCS 680-186872/3
Client Matrix: Water
Dilution: 5.0
Date Analyzed: 11/19/2010 1835
Date Prepared: N/A

Analysis Batch: 680-186872
Prep Batch: N/A
Units: mg/L

Instrument ID: ICG
Lab File ID: 0047.d
Initial Weight/Volume: 1 mL
Final Weight/Volume: 5 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Nitrate as NO3 | 11.0 | 10.6 | 96 | 90 - 110 | |

**Matrix Spike - Batch: 680-186872**

**Method: 300.0**
**Preparation: N/A**

Lab Sample ID: 680-63343-4
Client Matrix: Water
Dilution: 5.0
Date Analyzed: 11/19/2010 2250
Date Prepared: N/A

Analysis Batch: 680-186872
Prep Batch: N/A
Units: mg/L

Instrument ID: ICG
Lab File ID: 0066.d
Initial Weight/Volume: 1 mL
Final Weight/Volume: 5 mL
1 uL

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Nitrate as NO3 | 0.46 | J | 22.1 | 23.2 | 103 | 90 - 110 | |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Method Blank - Batch: 680-187431**

**Method: 335.4**
**Preparation: Distill/CN**

Lab Sample ID: MB 680-187431/1-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/30/2010 1223
Date Prepared: 11/30/2010 0458

Analysis Batch: 680-187499
Prep Batch: 680-187431
Units: mg/L

Instrument ID: LACHAT1
Lab File ID: N/A
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Cyanide, Total | 0.0025 | U | 0.0025 | 0.010 |

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 680-187431**

**Method: 335.4**
**Preparation: Distill/CN**

LCS Lab Sample ID: LCS 680-187431/2-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/30/2010 1223
Date Prepared: 11/30/2010 0458

Analysis Batch: 680-187499
Prep Batch: 680-187431
Units: mg/L

Instrument ID: LACHAT1
Lab File ID: N/A
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

LCSD Lab Sample ID: LCSD 680-187431/3-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/30/2010 1223
Date Prepared: 11/30/2010 0458

Analysis Batch: 680-187499
Prep Batch: 680-187431
Units: mg/L

Instrument ID: LACHAT1
Lab File ID: N/A
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

| Analyte | % Rec. LCS | % Rec. LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 104 | 104 | 90 - 110 | 0 | 20 | | |

**Duplicate - Batch: 680-187431**

**Method: 335.4**
**Preparation: Distill/CN**

Lab Sample ID: 680-63343-3
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/30/2010 1223
Date Prepared: 11/30/2010 0458

Analysis Batch: 680-187499
Prep Batch: 680-187431
Units: mg/L

Instrument ID: LACHAT1
Lab File ID: N/A
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Cyanide, Total | 0.0025 | U | 0.0025 | NC | 20 | U |

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Method Blank - Batch: 680-187122**

**Method: 9034**
**Preparation: 9030B**

Lab Sample ID: MB 680-187122/1-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/24/2010 1633
Date Prepared: 11/24/2010 0837

Analysis Batch: 680-187236
Prep Batch: 680-187122
Units: mg/L

Instrument ID: No Equipment Assigned
Lab File ID: N/A
Initial Weight/Volume: 6.0 mL
Final Weight/Volume: 6.0 mL

| Analyte | Result | Qual | RL | RL |
|---|---|---|---|---|
| Sulfide | 10 | U | 10 | 10 |

**Lab Control Sample - Batch: 680-187122**

**Method: 9034**
**Preparation: 9030B**

Lab Sample ID: LCS 680-187122/2-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/24/2010 1633
Date Prepared: 11/24/2010 0837

Analysis Batch: 680-187236
Prep Batch: 680-187122
Units: mg/L

Instrument ID: No Equipment Assigned
Lab File ID: N/A
Initial Weight/Volume: 6.0 mL
Final Weight/Volume: 6.0 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Sulfide | 416 | 239 | 57 | 50 - 150 | |

**Duplicate - Batch: 680-187122**

**Method: 9034**
**Preparation: 9030B**

Lab Sample ID: 680-63343-4
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/24/2010 1633
Date Prepared: 11/24/2010 0837

Analysis Batch: 680-187236
Prep Batch: 680-187122
Units: mg/L

Instrument ID: No Equipment Assigned
Lab File ID: N/A
Initial Weight/Volume: 6.0 mL
Final Weight/Volume: 6.0 mL

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Sulfide | 10 | U | 10 | NC | 50 | U |

Serial Number 035891

# ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404

Website: www.testamericainc.com
Phone: (912) 354-7858
Fax: (912) 352-0165

Alternate Laboratory Name/Location
Phone:
Fax:

| | | |
|---|---|---|
| PROJECT REFERENCE: Ft Brags LF Longstreet | PROJECT NO. | PROJECT LOCATION (STATE): NC |
| TAL (LAB) PROJECT MANAGER: Kathy Smith | P.O. NUMBER | CONTRACT NO. |
| CLIENT (SITE) PM: Kevin Hamrick | CLIENT PHONE: (912) 652-6083 | CLIENT FAX: (912) 652-5311 |
| CLIENT NAME: USACE | CLIENT E-MAIL | |
| CLIENT ADDRESS: 100 W Oglethorpe Ave Savannah GA 31402 | | |
| COMPANY CONTRACTING THIS WORK (if applicable) | | |

PAGE 1 OF 1

STANDARD REPORT DELIVERY ◯
DATE DUE _____
EXPEDITED REPORT DELIVERY (SURCHARGE) ◯
DATE DUE _____
NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

REQUIRED ANALYSIS / NUMBER OF CONTAINERS SUBMITTED

| SAMPLE DATE | SAMPLE TIME | SAMPLE IDENTIFICATION | COMPOSITE (C) OR GRAB (G) INDICATE | AQUEOUS (WATER) | SOLID OR SEMISOLID | AIR | NONAQUEOUS LIQUID (OIL, SOLVENT, ...) | 8141, 8151, 8081A, 8082, 8270C | 6020/3030C | 300.0 | 9010 | 9030B | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PRESERVATIVE | | | | | | ICE | HNO3 | H2SO4 | NaOH | | | | | | | |
| 11-18-10 | 1415 | LS-SW2-11-10 | G | X | | | | 6 | 1 | 1 | ~~2~~ SHG 1 | 2 | | | | | | |
| 11-18-10 | 1440 | LS-SW1-11-10 | G | X | | | | 6 | 1 | 1 | 1 | 2 | | | | | | |
| 11-18-10 | 1200 | LS-DUP1-11-10 | G | X | | | | 6 | 1 | 1 | 1 | 2 | | | | | | |
| 11-18-10 | 1025 | LS-MW7-11-10 | G | X | | | | 6 | 1 | 1 | 1 | 2 | | | | | | |
| 11-18-10 | 1430 | LS-MW8-11-10 | G | X | | | SHG ~~X~~ | ~~X~~ | 1 | 1 | 1 | 2 | | | | | | |
| | | End of Sampling | | | | | | | | | | | | | | | | |

| RELINQUISHED BY: (SIGNATURE) | DATE | TIME | RELINQUISHED BY: (SIGNATURE) | DATE | TIME | RELINQUISHED BY: (SIGNATURE) | DATE | TIME |
|---|---|---|---|---|---|---|---|---|
| [signature] | 18 Nov 2010 | 1800 | Shipped via FedEx | | | | | |
| RECEIVED BY: (SIGNATURE) | DATE | TIME | RECEIVED BY: (SIGNATURE) | DATE | TIME | RECEIVED BY: (SIGNATURE) | DATE | TIME |
| | | | | | | | | |

LABORATORY USE ONLY

| RECEIVED FOR LABORATORY BY: (SIGNATURE) | DATE | TIME | CUSTODY INTACT | CUSTODY SEAL NO. | SAVANNAH LOG NO. | LABORATORY REMARKS |
|---|---|---|---|---|---|---|
| [signature] | 11/19/10 | 09:53 | YES ◯ NO ◯ | 680- | 63343 | 1.0, 2.2, 3.6 |



TAL 8240-680 (1008)

# Login Sample Receipt Check List

Client: U.S. Army Corps of Engineers

Job Number: 680-63343-1

**Login Number: 63343**

**List Source: TestAmerica Savannah**

**Creator: Kicklighter, Marilyn**

**List Number: 1**

| Question | T / F/ NA | Comment |
|---|---|---|
| Radioactivity either was not measured or, if measured, is at or below background | N/A | |
| The cooler's custody seal, if present, is intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | N/A | |
| There are no discrepancies between the sample IDs on the containers and the COC. | True | |
| Samples are received within Holding Time. | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter. | N/A | |
| If necessary, staff have been informed of any short hold time or quick TAT needs | True | |
| Multiphasic samples are not present. | N/A | |
| Samples do not require splitting or compositing. | N/A | |

# APPENDIX D

# STATISTICAL REPORTS
**(Electronic Only)**

**Statistical Analysis of Ground-Water Data**
**Longstreet Road MSW Landfill**
**Fort Bragg, North Carolina**
**Rounds N1 through N27**

## EXECUTIVE SUMMARY

Fort Bragg authorized the U.S. Army Corps of Engineers, Savannah District to perform required sampling of the Longstreet Road Municipal Solid Waste (MSW) Landfill. Sampling activities for the twenty-eighth round of sampling (N=28) were conducted November 2010. All background and compliance wells were sampled. Ground-water data were statistically analyzed to determine if the mean concentration for each analyte deviated significantly from the mean concentration of the analytes detected in the background well. Appendix II analysis was performed on all ground-water samples collected. Any analyte with a detection since the beginning of the study was analyzed with the Kruskal Wallis Tests. Any analyte detection during this event was tested to determine if the detection was a statistically significant increase (SSI) over background levels.

Analysis of the 1,1-dichloroethane data using the Kruskal-Wallis test indicated a possible SSI in monitoring wells MW-8, MW-9, MW-10, MW-11R, and MW-12AR. The possible SSIs were not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the 1,1-dichloroethane data are not SSIs.

Analysis of the 1,2-dichloropropane data using the Kruskal-Wallis test indicated a possible SSI in monitoring well MW-10. The possible SSIs were not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the 1,2-dichloropropane data in monitoring well MW-10 are not SSIs.

Analysis of the 1,4-dichlorobenzene data using the Kruskal-Wallis test indicated a possible SSI in monitoring well MW-10. The possible SSIs were not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the 1,4-dichlorobenzene data in monitoring well MW-10 are not SSIs.

Analysis of the acetone data using the Kruskal-Wallis test indicated a possible SSI in monitoring well MW-7. The SSI was not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the acetone data in monitoring well MW-7 are not SSIs.

Analysis of the arsenic data using the Kruskal-Wallis test indicated a possible SSI in monitoring wells MW-7 and MW-9. The SSIs were not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the arsenic data in monitoring wells MW-7 and MW-9 are not SSIs.

Analysis of the barium data using the Kruskal-Wallis test indicated a possible SSI at the group level, no single well was indicated to have an SSI. Therefore, the Non-Parametric Prediction Limit was used to test if the data contained SSIs. The Non-Parametric Prediction Limit indicated possible SSIs for wells MW-8 and MW-10. The possible SSIs were not

confirmed by the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart The fluctuations in the barium data are not considered to be SSIs.

Analysis of the benzene data using the Kruskal-Wallis test indicated a possible SSI in monitoring wells MW-8, MW-9, MW-10, and MW-11R. The possible SSIs were not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The benzene data for MW-8, MW-9, MW-10, and MW-11R are not considered to contain SSIs.

Analysis of the chlorobenzene data using the Kruskal-Wallis test indicated a possible SSI in monitoring well MW-9. The SSI was not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the chlorobenzene data in monitoring well MW-9 are not SSIs.

Analysis of the cis-1,2,-dichloroethene data using the Kruskal-Wallis test indicated a possible SSI in wells MW-8, MW-10, MW-11R, and MW-12AR. The possible SSIs were not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The cis-1,2,-dichloroethene data fluctuations are not considered to be SSIs.

Analysis of the ethyl chloride data using the Kruskal-Wallis test indicated a possible SSI in monitoring well MW-7. The possible SSI was not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the ethyl chloride data are not SSIs.

Analysis of the sulfide data using the Non-Parametric Prediction Limit test indicated a possible SSI in monitoring well MW-6. The possible SSI was not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the sulfide data are not SSIs.

Analysis of the tetrachloroethene data using the Kruskal-Wallis test indicated a possible SSI in monitoring wells MW-8, MW-9, and MW-11R. The possible SSIs were not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the tetrachloroethene data in the monitoring wells are not SSIs.

Analysis of the toluene data using the Kruskal-Wallis test indicated a possible SSI at the group level, no single well was indicated to have an SSI. Therefore, the Non-Parametric Prediction Limit was used to test if the data contained SSIs. The Non-Parametric Prediction Limit did not indicate that the data contained possible SSIs for any of the wells.

Analysis of the trans-1,2,-dichloroethene data using the Kruskal-Wallis test indicated a possible SSI in well MW-8. The possible SSI was not confirmed by either the Mann-Kendall Trend Analysisor the Shewhart-CUSUM Control Chart. The trans-1,2,-dichloroethene data for MW-8 are not considered to contain SSIs.

Analysis of the trichloroethene data using the Kruskal-Wallis test indicated a possible SSI in monitoring wells MW-8, MW-9, MW-10, and MW-11R. The possible SSIs were not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the trichloroethene data in the monitoring wells are not SSIs.

Analysis of the vanadium data using the Kruskal-Wallis test indicated a possible SSI in monitoring well MW-7. The possible SSI was not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the toluene data in the monitoring well do not contain SSIs.

Analysis of the vinyl chloride data using the Kruskal-Wallis test indicated possible SSIs in monitoring wells MW-8, MW-9, and MW-10. The possible SSIs were not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the vinyl chloride data in the monitoring wells are not SSIs.

The results of the statistical analysis indicate that the compliance well concentrations do not vary significantly from background concentrations for any of the other parameters analyzed. Future analytical results will be evaluated using the same procedures.

**REGISTERED PROFESSIONAL GEOLOGIST CERTIFICATION**

I certify that I am a qualified ground-water scientist who has received a baccalaureate or post graduate degree in the natural sciences or engineering and have sufficient training and experience in ground-water hydrology and related fields as demonstrated by state registration and completion of accredited university courses that enable me to make sound professional judgments regarding ground-water monitoring and contaminant fate and transport. I further certify that this report was prepared by me or by a subordinate working under my direction.

_____

Kevin G. Haborak, P.G.

DATE: February, 2010

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LIST OF ATTACHMENTS

Attachment A: ..... Statistical Calculations

## 1.0 BACKGROUND

Fort Bragg authorized the U.S. Army Corps of Engineers, Savannah District to perform the required sampling of the Longstreet Road MSW Landfill. Sampling activities for the twenty-eighth round of sampling (N=28) were conducted November 2010. The landfill is a Municipal Solid Waste Landfill Facility (MSWLF) located north of Longstreet Road at Fort Bragg in Cumberland County, North Carolina.

A comparison of statistical procedures was performed using this data to determine an adequate statistical analysis for future monitoring at the facility as required. Guidance for determining proper statistical methods was obtained from the EPA guidance document titled: Statistical Analysis of Ground Water Monitoring Data at RCRA Facilities - Interim Final Guidance, April 1989 (herein referenced as the Guidance) and it's addendum Statistical Analysis of Ground Water Monitoring Data at RCRA Facilities - Addendum to Interim Final Guidance, July 1992 (herein referenced as the Addendum). The statistical computer software ChemStat (version 5.0) used for this analysis is based on the guidance documents referenced above.

Factors that were considered in selecting a statistical method include departures from normality, unequal variances, temporal and spatial variability, and the percentage of non-detects. Tests for normality that were considered include Probability Plots, Chi-Squared, Shapiro-Wilk Test, and Shapiro-Francia Test. Statistical analysis procedures considered were parametric Two Sample t-Test and non-parametric Wilcoxin Rank-Sum Test, parametric ANOVA Tests and non-parametric Kruskal-Wallis Test, Tolerance and Prediction Intervals' and Control Charts.

## 2.0 DETERMINATION OF APPROPRIATE DISTRIBUTION MODEL

A statistical test predicts the average behavior (distribution) of a random variable by comparing the means (normal distribution) or medians (lognormal and non-parametric distributions) of the compliance well data to background well data. Before conducting a statistical analysis, a distributional assumption must be tested to determine whether the data conforms to the assumed distribution.

Prior to testing for significance, the distribution of each parameter is determined to be normal, lognormal, or neither. First, the dataset is used to test the assumption that the distribution is normal. If this assumption is rejected, the same data are log transformed and the hypothesis that the distribution is lognormal is tested. If these assumptions are rejected, it is concluded that the data are neither normally nor lognormally distributed. The data is determined to be non-normal if the distribution of each parameter is determined to be neither normal nor lognormal.

The Shapiro-Francia Test was selected as the main test to determine whether the data conform to the assumed distribution. This test has a good likelihood of distinguishing between the target distribution (normal) and other common distributions (for example, uniform or skewed), and is recommended for data sets with 50 or more samples.

## 3.0 SELECTION OF STATISTICAL METHOD

The ground-water samples were analyzed for Appendix II organics and inorganics. Monitoring well MW-13 serves as the background well. The eight compliance wells (MW-6, MW-7, MW-8, MW-9, MW-10, MW-11, MW-12A and MW-12B) were compared to the background concentrations by means of the applicable statistical procedure. These monitoring wells are listed on Table 1.

**Table 1. Ground-Water Monitoring Network**

| WELL NAME | STATUS |
|---|---|
| | |
| MW-6 | **Active - Compliance Monitoring Well** |
| MW-7 | **Active - Compliance Monitoring Well** |
| MW-8 | **Active - Compliance Monitoring Well** |
| MW-9 | **Active - Compliance Monitoring Well** |
| MW-10 | **Active - Compliance Monitoring Well** |
| MW-11R | **Active - Compliance Monitoring Well** |
| MW-12AR | **Active - Compliance Monitoring Well** |
| MW-12BR | **Active - Compliance Monitoring Well** |
| MW-13 | **Active - Compliance Monitoring Well (Background)** |

For this report, contamination is described as the difference in average concentrations between the background and compliance sample data. Random variation of the sample results will occur, but this variation does not necessarily represent contamination. The statistical test used for this report will predict the average behavior (distribution) of a random variable by comparing the means (normal) or medians (lognormal and non-parametric) of compliance well data to background data. It tests the hypothesis that all background and compliance wells have the same median concentration of a constituent. If the hypothesis of equal medians is rejected, then additional calculations are required to determine which compliance wells show evidence of contamination.

Different statistical tests are used as appropriate for the different distribution patterns that occur within the data. Prior to testing for statistical significance, the distribution of each parameter was determined to be normal, lognormal, or non-normal. The Shapiro-Francia Test was selected as the primary test to determine whether the data conform to the assumed distribution. This test has a good likelihood of distinguishing between the target distribution (normal) and other common distributions (for example, uniform or skewed) and is valid for samples with 50 or more observations. The process of choosing the appropriate statistical analyses is illustrated on Figure 1.

The ANOVA Test assumes that there are at least three groups of data (including background), with a minimum of four samples per group. It also assumes that the results are normally or lognormally distributed. This test calculates the F-statistic and its corresponding significance probability. If the computed F-statistic is not significant (less than the tabulated F-statistic), it is concluded that there is no significant difference between the average background

concentration and the average concentrations of compliance wells. If the F-statistic is significant, it is concluded that at least one pair of well groups is probably different. In this case, ANOVA proceeds to make individual comparisons between background and compliance well data to isolate which well(s) show evidence of contamination.

If the data were non-normally distributed, or the fraction of non-detects exceeded 15% but were less than 90%, then the Kruskal-Wallis Test was applied. If the fraction of non-detects exceeded 90%, then the Non-Parametric Prediction Limit was applied. For these tests to be sufficiently sensitive, the sample size for any group must be at least four. A Kruskal-Wallis Test can be used in any situation that the parametric analysis of variance can be used. This test computes the H-statistic, adjusts it for ties, and compares it to the appropriate chi-square critical value. If the H-statistic is less than the critical value, the null-hypothesis is accepted, and it is concluded that there are no differences between median background and compliance well concentrations. If the H-statistic is greater than the critical value, it is concluded that at least one pair of well groups is statistically different.

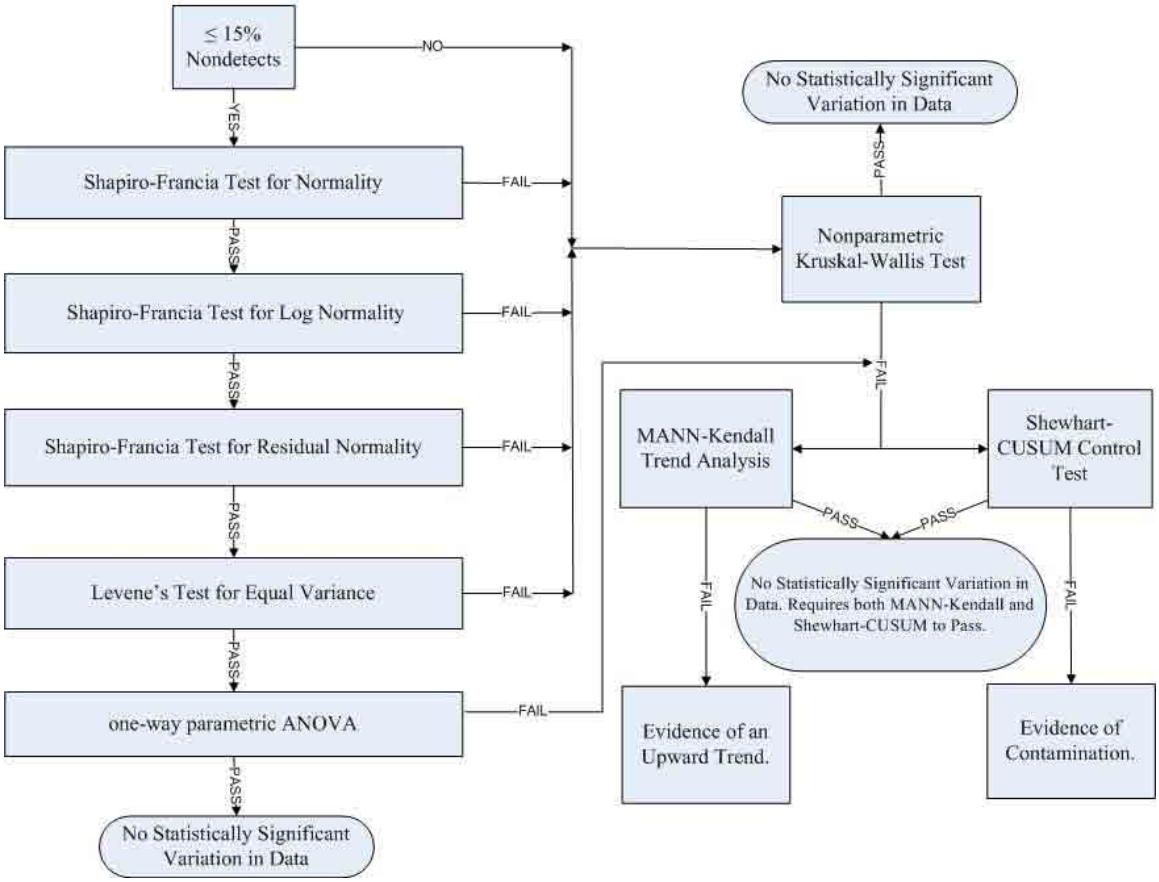
In this case, the Kruskal-Wallis Test performs post-hoc comparisons between background and compliance well data to determine which wells, if any, show evidence of contamination. If the difference between the average ranks and the mean background rank of any individual well exceeds the critical difference calculated for that well, then evidence of contamination exists. A drawback to the Kruskal-Wallis Test is the dependence on background samples. Fewer background samples will result in an increase of incidence of false positives. An additional drawback to the Kruskal-Wallis Test is that past detections can be the cause for the determination of a statistically significant increase since the test does not discriminate between present and past values.

Additional statistical analyzes can help to determine the validity of the positive results. Intra-well comparisons comparing data from a single well to previous data from the same well are performed to determine if a trend of increasing concentration is occurring. The Mann-Kendall Trend Analysis and the Shewhart-CUSUM Control Charts were selected for these additional analyses.

The purpose for the Mann-Kendall Trend Analysis is to determine trends in sets of data. The assumption of the Mann-Kendall Trend Analysis procedure is the idea that, if an increasing trend really exists, the sample taken first from any randomly selected pair of measurements should, on average, have a lower concentration than the measurement collected at a later point. The result for a data set being examined by the Mann-Kendall Trend Analysis is either an upward trend, a downward trend or no trend.

The Shewhart-CUSUM Control Chart is a graphical method to assess contamination levels for individual wells. This analysis visually tracks concentrations at a given well over time to determine whether they exceed critical thresholds, thus implying a significant increase over the baseline value. Shewhart-CUSUM Control Charts are very susceptible to false positives. However, the graph is useful in providing a visual indication of changing trends in parameter concentrations.

**Figure 1: Flowchart of the Statistical Tests Performed for Each Analyte Detected in Compliance Wells**




## 4.0 FIELD ACTIVITIES

This section describes the procedures that were followed for equipment decontamination, ground-water sampling, quality assurance sampling, preservation, handling, and shipment of samples. Ground-water samples were collected using a low-flow purge method with a bladder pump. Immediately before purging a well, the static water level below the top of the well casing and the total depth of the well were measured to the nearest 0.01 foot and recorded in the field notebook.

The volume of water in the well, including the saturated pore volume (assumed to be 30%) of the sand-packed annulus, was calculated based on the static water level and the well construction information. Well volume calculations were placed in the field notebook. The inlet of the sampling pump was placed at the mid-point of the screened interval. This level was adjusted for wells where the static water level is within the well screen. The monitoring wells were purged using a variable-flow bladder pump at a rate of 500 ml/min or less.

Temperature and specific conductance were monitored to ensure the water quality had stabilized to within 10% of the previous reading. Turbidity readings should either stabilize at or be lower than 10 Nephelometric Turbidity Units (NTUs). Stabilization occurs with pH measurements when readings remain constant within 0.1 Standard Units (SU). The rate of

pumping was determined and noted in the field notebook. The purge rate was adjusted, as necessary, to avoid purging any well to dryness and to equal the recharge of the aquifer.

All sampling equipment was protected from contaminated soil surfaces to prevent contamination of the samples (e.g., equipment may be placed on disposable polyethylene plastic sheeting). Ground-water sampling data (including sample number, location, quantity of water purged, field parameters, site conditions, etc.) were documented in the field notebook.

## 5.0 RESULTS

Fort Bragg authorized the U.S. Army Corps of Engineers, Savannah District to perform the required sampling of the Lamont Land Clearing and Inert Debris Landfill. The evaluation of ground-water data was in accordance with 15A NC3AC 13B.1634 for detection monitoring systems.

Sampling activities occurred in November, 2010. The background and compliance wells sampled are listed on Table 1. Ground-water data were statistically analyzed to determine if the mean concentration for each analyte deviated significantly from the mean concentration from the background well data. Any analyte detected during this event was tested to determine if the detection was a statistically significant increase over background levels.

Analysis of the 1,1-dichloroethane data using the Kruskal-Wallis test indicated a possible SSI in monitoring wells MW-8, MW-9, MW-10, MW-11R, and MW-12AR. The possible SSIs were not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the 1,1-dichloroethane data are not SSIs.

Analysis of the 1,2-dichloropropane data using the Kruskal-Wallis test indicated a possible SSI in monitoring well MW-10. The possible SSIs were not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the 1,2-dichloropropane data in monitoring well MW-10 are not SSIs.

Analysis of the 1,4-dichlorobenzene data using the Kruskal-Wallis test indicated a possible SSI in monitoring well MW-10. The possible SSIs were not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the 1,4-dichlorobenzene data in monitoring well MW-10 are not SSIs.

Analysis of the acetone data using the Kruskal-Wallis test indicated a possible SSI in monitoring well MW-7. The SSI was not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the acetone data in monitoring well MW-7 are not SSIs.

Analysis of the arsenic data using the Kruskal-Wallis test indicated a possible SSI in monitoring wells MW-7 and MW-9. The SSIs were not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the arsenic data in monitoring wells MW-7 and MW-9 are not SSIs.

Analysis of the barium data using the Kruskal-Wallis test indicated a possible SSI at the group level, no single well was indicated to have an SSI. Therefore, the Non-Parametric

Prediction Limit was used to test if the data contained SSIs. The Non-Parametric Prediction Limit indicated possible SSIs for wells MW-8 and MW-10. The possible SSIs were not confirmed by the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart The fluctuations in the barium data are not considered to be SSIs.

Analysis of the benzene data using the Kruskal-Wallis test indicated a possible SSI in monitoring wells MW-8, MW-9, MW-10, and MW-11R. The possible SSIs were not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The benzene data for MW-8, MW-9, MW-10, and MW-11R are not considered to contain SSIs.

Analysis of the chlorobenzene data using the Kruskal-Wallis test indicated a possible SSI in monitoring well MW-9. The SSI was not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the chlorobenzene data in monitoring well MW-9 are not SSIs.

Analysis of the cis-1,2,-dichloroethene data using the Kruskal-Wallis test indicated a possible SSI in wells MW-8, MW-10, MW-11R, and MW-12AR. The possible SSIs were not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The cis-1,2,-dichloroethene data fluctuations are not considered to be SSIs.

Analysis of the ethyl chloride data using the Kruskal-Wallis test indicated a possible SSI in monitoring well MW-7. The possible SSI was not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the ethyl chloride data are not SSIs.

Analysis of the sulfide data using the Non-Parametric Prediction Limit test indicated a possible SSI in monitoring well MW-6. The possible SSI was not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the sulfide data are not SSIs.

Analysis of the tetrachloroethene data using the Kruskal-Wallis test indicated a possible SSI in monitoring wells MW-8, MW-9, and MW-11R. The possible SSIs were not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the tetrachloroethene data in the monitoring wells are not SSIs.

Analysis of the toluene data using the Kruskal-Wallis test indicated a possible SSI at the group level, no single well was indicated to have an SSI. Therefore, the Non-Parametric Prediction Limit was used to test if the data contained SSIs. The Non-Parametric Prediction Limit did not indicate that the data contained possible SSIs for any of the wells.

Analysis of the trans-1,2,-dichloroethene data using the Kruskal-Wallis test indicated a possible SSI in well MW-8. The possible SSI was not confirmed by either the Mann-Kendall Trend Analysisor the Shewhart-CUSUM Control Chart. The trans-1,2,-dichloroethene data for MW-8 are not considered to contain SSIs.

Analysis of the trichloroethene data using the Kruskal-Wallis test indicated a possible SSI in monitoring wells MW-8, MW-9, MW-10, and MW-11R. The possible SSIs were not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the trichloroethene data in the monitoring wells are not SSIs.

Analysis of the vanadium data using the Kruskal-Wallis test indicated a possible SSI in monitoring well MW-7. The possible SSI was not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the toluene data in the monitoring well do not contain SSIs.

Analysis of the vinyl chloride data using the Kruskal-Wallis test indicated possible SSIs in monitoring wells MW-8, MW-9, and MW-10. The possible SSIs were not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the vinyl chloride data in the monitoring wells are not SSIs.

The results of the statistical analysis indicate that the compliance well concentrations do not vary significantly from background concentrations for any of the other parameters analyzed. Future analytical results will be evaluated using the same procedures.

## 6.0 CONCLUSIONS

Compliance well concentrations do not vary significantly from background concentrations for any of the parameters analyzed. Future analytical results will be evaluated using the same statistical procedures.

## 7.0 REFERENCES

EPA, Statistical Analysis of Ground Water Monitoring Data at RCRA Facilities - Interim Final Guidance, April 1989.

EPA, Statistical Analysis of Ground Water Monitoring Data at RCRA Facilities - Addendum to Interim Final Guidance, July 1992.

EPA, Region IV, *Standard Operating Procedures and Quality Assurance Manual*, Revision 1, November, 2001.

North Carolina Administrative Code, Title 15A, Department of Environment, Health, and Natural Resources, Division of Solid Waste, Management, Subchapter 13B, Solid Waste Management, Section .1600, January 4, 1994.

Attachment A

Statistical Calculation

# Concentrations (ppb)

## Parameter: 1,1-Dichloroethane

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 120
Percent Non-Detects: 54.2986%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 18 (100%) | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.25 | ND<0.25 |
| | | | 11/16/2009 | ND<0.25 | ND<0.25 |
| | | | 6/30/2010 | ND<0.25 | ND<0.25 |
| | | | 11/12/2010 | ND<0.25 U | ND<0.25 U |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-12BR | 18 | 15 (83.3333%) | 3/16/1999 | 7.3 | 7.3 |
| | | | 9/23/1999 | 5.7 | 5.7 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | 4.25 | 4.25 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.25 | ND<0.25 |
| | | | 11/16/2009 | ND<0.25 | ND<0.25 |
| | | | 6/30/2010 | ND<0.25 | ND<0.25 |
| | | | 11/12/2010 | ND<0.25 U | ND<0.25 U |
| MW-9 | 28 | 11 (39.2857%) | 7/20/1995 | 0.84 J | 0.84 J |
| | | | 8/24/1995 | 0.84 J | 0.84 J |
| | | | 9/28/1995 | 2 | 2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 10/26/1995 | 3 | 3 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | 5.3 | 5.3 | |
| | | | 3/16/1999 | 3.6 | 3.6 | |
| | | | 9/23/1999 | 3.5 | 3.5 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 2.99 | 2.99 | |
| | | | 10/25/2005 | 2.04 | 2.04 | |
| | | | 4/29/2006 | 1.38 J | 1.38 J | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | 3.17 | 3.17 | |
| | | | 6/5/2008 | 3.24 | 3.24 | |
| | | | 11/20/2008 | 3.11 | 3.11 | |
| | | | 6/11/2009 | 7.6 | 7.6 | |
| | | | 11/16/2009 | 4.8 | 4.8 | |
| | | | 6/30/2010 | 4.6 | 4.6 | |
| | | | 11/12/2010 | 3.8 | 3.8 | |
| MW-6 | 28 | 28 (100%) | 7/20/1995 | ND<2 | ND<2 | |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.25 | ND<0.25 | |
| | | | 11/16/2009 | ND<0.25 | ND<0.25 | |
| | | | 6/30/2010 | ND<0.25 | ND<0.25 | |
| | | | 11/12/2010 | ND<0.25 U | ND<0.25 U | |
| MW-7 | 28 | 20 (71.4286%) | 7/20/1995 | 1.6 J | 1.6 J | |
| | | | 8/24/1995 | 1.1 J | 1.1 J | |
| | | | 9/28/1995 | 1 J | 1 J | |
| | | | 10/26/1995 | 2 | 2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | 9 | 9 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |

| | | | | | |
|---|---|---|---|---|---|
| | | | 9/24/1997 | ND<2 | ND<2 |
| | | | 4/7/1998 | 12 | 12 |
| | | | 9/23/1998 | 12 | 12 |
| | | | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | 5.9 | 5.9 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.25 | ND<0.25 |
| | | | 11/16/2009 | ND<0.25 | ND<0.25 |
| | | | 6/30/2010 | ND<0.25 | ND<0.25 |
| | | | 11/12/2010 | ND<0.25 U | ND<0.25 U |
| MW-11R | 28 | 8 (28.5714%) | 7/20/1995 | 8.5 | 8.5 |
| | | | 8/24/1995 | 21 | 21 |
| | | | 9/28/1995 | 19 | 19 |
| | | | 10/26/1995 | 22 | 22 |
| | | | 11/19/1996 | ND<2 | ND<2 |
| | | | 12/19/1996 | 19 | 19 |
| | | | 3/24/1997 | ND<2 | ND<2 |
| | | | 9/24/1997 | 5.1 | 5.1 |
| | | | 4/7/1998 | 8.4 | 8.4 |
| | | | 9/23/1998 | 13 | 13 |
| | | | 3/16/1999 | 10.8 | 10.8 |
| | | | 9/23/1999 | 5.5 | 5.5 |
| | | | 3/15/2000 | 9.9 | 9.9 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | 3.86 | 3.86 |
| | | | 10/25/2005 | 2.18 | 2.18 |
| | | | 4/29/2006 | 1.68 J | 1.68 J |
| | | | 11/18/2006 | 2.07 | 2.07 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | 4.05 | 4.05 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | 0.56 J | 0.56 J |
| | | | 6/11/2009 | 2.9 | 2.9 |
| | | | 11/16/2009 | 0.42 J | 0.42 J |
| | | | 6/30/2010 | 2.9 | 2.9 |
| | | | 11/12/2010 | ND<0.25 U | ND<0.25 U |
| MW-10 | 28 | 8 (28.5714%) | 7/20/1995 | 0.8 J | 0.8 J |
| | | | 8/24/1995 | 3.5 | 3.5 |
| | | | 9/28/1995 | 7 | 7 |
| | | | 10/26/1995 | 6 | 6 |
| | | | 11/19/1996 | ND<2 | ND<2 |
| | | | 12/19/1996 | 5 | 5 |
| | | | 3/24/1997 | 14 | 14 |
| | | | 9/24/1997 | 5.8 | 5.8 |
| | | | 4/7/1998 | ND<2 | ND<2 |
| | | | 9/23/1998 | ND<2 | ND<2 |
| | | | 3/16/1999 | 4.7 | 4.7 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 9/23/1999 | 2.6 | 2.6 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 1.25 J | 1.25 J | |
| | | | 10/25/2005 | 1.6 J | 1.6 J | |
| | | | 4/29/2006 | 1.91 J | 1.91 J | |
| | | | 11/18/2006 | 1.12 J | 1.12 J | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | 1.35 | 1.35 | |
| | | | 6/5/2008 | 1.26 J | 1.26 J | |
| | | | 11/20/2008 | 0.92 J | 0.92 J | |
| | | | 6/11/2009 | 0.97 J | 0.97 J | |
| | | | 11/16/2009 | 1.1 | 1.1 | |
| | | | 6/30/2010 | 0.49 J | 0.49 J | |
| | | | 11/12/2010 | 0.71 J | 0.71 J | |
| MW-8 | 27 | 6 (22.2222%) | 7/20/1995 | 0.47 J | 0.47 J | |
| | | | 8/24/1995 | 12 | 12 | |
| | | | 9/28/1995 | 11 | 11 | |
| | | | 10/26/1995 | 1 J | 1 J | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | 19 | 19 | |
| | | | 3/24/1997 | 18 | 18 | |
| | | | 9/24/1997 | 22 | 22 | |
| | | | 4/7/1998 | 16 | 16 | |
| | | | 9/23/1998 | 28 | 28 | |
| | | | 3/16/1999 | 16.3 | 16.3 | |
| | | | 9/23/1999 | 16.2 | 16.2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 1.91 J | 1.91 J | |
| | | | 10/25/2005 | 3.43 | 3.43 | |
| | | | 4/29/2006 | 2.11 | 2.11 | |
| | | | 11/18/2006 | 2.86 | 2.86 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | 4.11 | 4.11 | |
| | | | 6/5/2008 | 4.43 | 4.43 | |
| | | | 11/20/2008 | 3.08 | 3.08 | |
| | | | 6/11/2009 | 5.2 | 5.2 | |
| | | | 6/30/2010 | 2.5 | 2.5 | |
| | | | 11/12/2010 | 2.4 | 2.4 | |
| MW-12AR | 18 | 6 (33.3333%) | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | 7.2 | 7.2 | |
| | | | 9/24/2003 | 6.9 | 6.9 | |
| | | | 3/11/2004 | 6.1 | 6.1 | |
| | | | 10/12/2004 | 6.3 | 6.3 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | 1.21 J | 1.21 J | |
| | | | 4/29/2006 | 1.39 J | 1.39 J | |
| | | | 11/18/2006 | 0.83 J | 0.83 J | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | 1.15 J | 1.15 J | |
| | | | 6/5/2008 | 1.25 J | 1.25 J | |
| | | | 11/20/2008 | 0.62 J | 0.62 J | |
| | | | 6/11/2009 | ND<0.25 | ND<0.25 | |
| | | | 11/16/2009 | 0.35 J | 0.35 J | |

| | | |
|---|---|---|
| 6/30/2010 | ND<0.25 | ND<0.25 |
| 11/12/2010 | 1 | 1 |

There are 0 unused locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: 1,1-Dichloroethane

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.125 | -2.65209 | 7.03356 | -0.331511 |
| 2 | 0.125 | -2.36561 | 12.6297 | -0.627213 |
| 3 | 0.125 | -2.22621 | 17.5857 | -0.905488 |
| 4 | 0.125 | -2.09693 | 21.9828 | -1.1676 |
| 5 | 0.125 | -2.01409 | 26.0394 | -1.41937 |
| 6 | 0.125 | -1.92684 | 29.7521 | -1.66022 |
| 7 | 0.125 | -1.86629 | 33.2351 | -1.89351 |
| 8 | 0.125 | -1.79912 | 36.472 | -2.1184 |
| 9 | 0.125 | -1.75069 | 39.5369 | -2.33723 |
| 10 | 0.125 | -1.6954 | 42.4112 | -2.54916 |
| 11 | 0.125 | -1.65463 | 45.149 | -2.75599 |
| 12 | 0.125 | -1.60725 | 47.7323 | -2.95689 |
| 13 | 0.125 | -1.57179 | 50.2028 | -3.15337 |
| 14 | 0.125 | -1.53007 | 52.5439 | -3.34462 |
| 15 | 0.125 | -1.49852 | 54.7894 | -3.53194 |
| 16 | 0.125 | -1.46106 | 56.9241 | -3.71457 |
| 17 | 0.125 | -1.4325 | 58.9762 | -3.89363 |
| 18 | 0.125 | -1.39838 | 60.9316 | -4.06843 |
| 19 | 0.125 | -1.3722 | 62.8146 | -4.23996 |
| 20 | 0.35 | -1.34075 | 64.6122 | -4.70922 |
| 21 | 0.42 | -1.31652 | 66.3454 | -5.26216 |
| 22 | 0.47 | -1.28727 | 68.0025 | -5.86718 |
| 23 | 0.49 | -1.26464 | 69.6018 | -6.48685 |
| 24 | 0.56 | -1.23724 | 71.1326 | -7.1797 |
| 25 | 0.62 | -1.21596 | 72.6111 | -7.9336 |
| 26 | 0.71 | -1.19012 | 74.0275 | -8.77858 |
| 27 | 0.8 | -1.17 | 75.3964 | -9.71458 |
| 28 | 0.83 | -1.1455 | 76.7086 | -10.6654 |
| 29 | 0.84 | -1.12639 | 77.9774 | -11.6115 |
| 30 | 0.84 | -1.10306 | 79.1941 | -12.5381 |
| 31 | 0.92 | -1.08482 | 80.371 | -13.5361 |
| 32 | 0.97 | -1.06252 | 81.4999 | -14.5668 |
| 33 | 1 | -1.04505 | 82.592 | -15.6118 |
| 34 | 1 | -1.02365 | 83.6399 | -16.6355 |
| 35 | 1 | -1.00687 | 84.6537 | -17.6423 |
| 36 | 1 | -0.986272 | 85.6264 | -18.6286 |
| 37 | 1 | -0.970094 | 86.5675 | -19.5987 |
| 38 | 1 | -0.950222 | 87.4704 | -20.5489 |
| 39 | 1 | -0.934598 | 88.3439 | -21.4835 |
| 40 | 1 | -0.915365 | 89.1818 | -22.3989 |
| 41 | 1 | -0.900227 | 89.9922 | -23.2991 |
| 42 | 1 | -0.881587 | 90.7694 | -24.1807 |
| 43 | 1 | -0.866894 | 91.5209 | -25.0476 |
| 44 | 1 | -0.848786 | 92.2413 | -25.8964 |
| 45 | 1 | -0.834498 | 92.9377 | -26.7309 |
| 46 | 1 | -0.816874 | 93.605 | -27.5478 |
| 47 | 1 | -0.802956 | 94.2497 | -28.3507 |
| 48 | 1 | -0.785774 | 94.8672 | -29.1365 |
| 49 | 1 | -0.772193 | 95.4634 | -29.9087 |

| | | | | |
|---|---|---|---|---|
| 50 | 1 | -0.755415 | 96.0341 | -30.6641 |
| 51 | 1 | -0.742143 | 96.5849 | -31.4062 |
| 52 | 1 | -0.725736 | 97.1116 | -32.132 |
| 53 | 1 | -0.712751 | 97.6196 | -32.8447 |
| 54 | 1 | -0.696684 | 98.1049 | -33.5414 |
| 55 | 1 | -0.683969 | 8.5727 | -34.2254 |
| 56 | 1 | -0.668209 | 99.0192 | -34.8936 |
| 57 | 1 | -0.655726 | 99.4492 | -35.5493 |
| 58 | 1 | -0.640266 | 99.8592 | -36.1896 |
| 59 | 1 | -0.628006 | 100.254 | -36.8176 |
| 60 | 1 | -0.612813 | 100.629 | -37.4304 |
| 61 | 1 | -0.60076 | 100.99 | -38.0311 |
| 62 | 1 | -0.585815 | 101.333 | -38.617 |
| 63 | 1 | -0.573953 | 101.663 | -39.1909 |
| 64 | 1 | -0.559237 | 101.975 | -39.7501 |
| 65 | 1 | -0.547551 | 102.275 | -40.2977 |
| 66 | 1 | -0.533048 | 102.559 | -40.8307 |
| 67 | 1 | -0.521527 | 102.831 | -41.3523 |
| 68 | 1 | -0.507221 | 103.089 | -41.8595 |
| 69 | 1 | -0.49585 | 103.334 | -42.3553 |
| 70 | 1 | -0.481728 | 103.566 | -42.8371 |
| 71 | 1 | -0.470498 | 103.788 | -43.3076 |
| 72 | 1 | -0.456542 | 103.996 | -43.7641 |
| 73 | 1 | -0.445443 | 104.195 | -44.2096 |
| 74 | 1 | -0.431644 | 104.381 | -44.6412 |
| 75 | 1 | -0.420664 | 104.558 | -45.0619 |
| 76 | 1 | -0.40701 | 104.724 | -45.4689 |
| 77 | 1 | -0.396142 | 104.881 | -45.865 |
| 78 | 1 | -0.382622 | 105.027 | -46.2476 |
| 79 | 1 | -0.371856 | 105.165 | -46.6195 |
| 80 | 1 | -0.358459 | 105.294 | -46.978 |
| 81 | 1 | -0.347787 | 105.415 | -47.3257 |
| 82 | 1 | -0.334503 | 105.527 | -47.6602 |
| 83 | 1 | -0.323919 | 105.632 | -47.9842 |
| 84 | 1 | -0.310738 | 105.728 | -48.2949 |
| 85 | 1 | -0.300232 | 105.818 | -48.5951 |
| 86 | 1 | -0.287147 | 105.901 | -48.8823 |
| 87 | 1 | -0.276714 | 105.977 | -49.159 |
| 88 | 1 | -0.263715 | 106.047 | -49.4227 |
| 89 | 1 | -0.253347 | 106.111 | -49.6761 |
| 90 | 1 | -0.240426 | 106.169 | -49.9165 |
| 91 | 1 | -0.230118 | 106.222 | -50.1466 |
| 92 | 1 | -0.217267 | 106.269 | -50.3639 |
| 93 | 1 | -0.207012 | 106.312 | -50.5709 |
| 94 | 1 | -0.194225 | 106.35 | -50.7651 |
| 95 | 1 | -0.184017 | 106.383 | -50.9491 |
| 96 | 1 | -0.171285 | 106.413 | -51.1204 |
| 97 | 1 | -0.161119 | 106.439 | -51.2815 |
| 98 | 1 | -0.148434 | 106.461 | -51.43 |
| 99 | 1 | -0.138305 | 106.48 | -51.5683 |
| 100 | 1 | -0.125661 | 106.496 | -51.6939 |
| 101 | 1 | -0.115562 | 106.509 | -51.8095 |
| 102 | 1 | -0.102953 | 106.52 | -51.9124 |
| 103 | 1 | -0.0928787 | 106.528 | -52.0053 |
| 104 | 1 | -0.0802981 | 106.535 | -52.0856 |
| 105 | 1 | -0.0702426 | 106.54 | -52.1559 |
| 106 | 1 | -0.0576847 | 106.543 | -52.2135 |
| 107 | 1 | -0.0476439 | 106.545 | -52.2612 |
| 108 | 1 | -0.0350997 | 106.546 | -52.2963 |
| 109 | 1 | -0.0250691 | 106.547 | -52.3214 |
| 110 | 1 | -0.0125328 | 106.547 | -52.3339 |
| 111 | 1 | 0 | 106.547 | -52.3339 |

| | | | | |
|---|---|---|---|---|
| 112 | 1 | 0.0125328 | 106.547 | -52.3214 |
| 113 | 1 | 0.0250691 | 106.548 | -52.2963 |
| 114 | 1 | 0.0350997 | 106.549 | -52.2612 |
| 115 | 1 | 0.0476439 | 106.551 | -52.2135 |
| 116 | 1 | 0.0576847 | 106.555 | -52.1559 |
| 117 | 1 | 0.0702426 | 106.56 | -52.0856 |
| 118 | 1 | 0.0802981 | 106.566 | -52.0053 |
| 119 | 1 | 0.0928787 | 106.575 | -51.9124 |
| 120 | 1 | 0.102953 | 106.585 | -51.8095 |
| 121 | 1 | 0.115562 | 106.599 | -51.6939 |
| 122 | 1 | 0.125661 | 106.615 | -51.5683 |
| 123 | 1 | 0.138305 | 106.634 | -51.43 |
| 124 | 1 | 0.148434 | 106.656 | -51.2815 |
| 125 | 1 | 0.161119 | 106.682 | -51.1204 |
| 126 | 1 | 0.171285 | 106.711 | -50.9491 |
| 127 | 1 | 0.184017 | 106.745 | -50.7651 |
| 128 | 1 | 0.194225 | 106.783 | -50.5709 |
| 129 | 1 | 0.207012 | 106.825 | -50.3639 |
| 130 | 1 | 0.217267 | 106.873 | -50.1466 |
| 131 | 1 | 0.230118 | 106.926 | -49.9165 |
| 132 | 1 | 0.240426 | 106.983 | -49.6761 |
| 133 | 1 | 0.253347 | 107.048 | -49.4227 |
| 134 | 1 | 0.263715 | 107.117 | -49.159 |
| 135 | 1 | 0.276714 | 107.194 | -48.8823 |
| 136 | 1 | 0.287147 | 107.276 | -48.5951 |
| 137 | 1.1 | 0.300232 | 107.366 | -48.2649 |
| 138 | 1.1 | 0.310738 | 107.463 | -47.9231 |
| 139 | 1.12 | 0.323919 | 107.568 | -47.5603 |
| 140 | 1.15 | 0.334503 | 107.68 | -47.1756 |
| 141 | 1.21 | 0.347787 | 107.801 | -46.7548 |
| 142 | 1.25 | 0.358459 | 107.929 | -46.3067 |
| 143 | 1.25 | 0.371856 | 108.067 | -45.8419 |
| 144 | 1.26 | 0.382622 | 108.214 | -45.3598 |
| 145 | 1.35 | 0.396142 | 108.371 | -44.825 |
| 146 | 1.38 | 0.40701 | 108.536 | -44.2633 |
| 147 | 1.39 | 0.420664 | 108.713 | -43.6786 |
| 148 | 1.6 | 0.431644 | 108.9 | -42.988 |
| 149 | 1.6 | 0.445443 | 109.098 | -42.2752 |
| 150 | 1.68 | 0.456542 | 109.307 | -41.5083 |
| 151 | 1.91 | 0.470498 | 109.528 | -40.6096 |
| 152 | 1.91 | 0.481728 | 109.76 | -39.6895 |
| 153 | 2 | 0.49585 | 110.006 | -38.6978 |
| 154 | 2 | 0.507221 | 110.263 | -37.6834 |
| 155 | 2.04 | 0.521527 | 110.535 | -36.6195 |
| 156 | 2.07 | 0.533048 | 110.819 | -35.516 |
| 157 | 2.11 | 0.547551 | 111.119 | -34.3607 |
| 158 | 2.18 | 0.559237 | 111.432 | -33.1416 |
| 159 | 2.4 | 0.573953 | 111.761 | -31.7641 |
| 160 | 2.5 | 0.585815 | 112.104 | -30.2995 |
| 161 | 2.6 | 0.60076 | 112.465 | -28.7376 |
| 162 | 2.86 | 0.612813 | 112.841 | -26.9849 |
| 163 | 2.9 | 0.628006 | 113.235 | -25.1637 |
| 164 | 2.9 | 0.640266 | 113.645 | -23.3069 |
| 165 | 2.99 | 0.655726 | 114.075 | -21.3463 |
| 166 | 3 | 0.668209 | 114.522 | -19.3417 |
| 167 | 3.08 | 0.68396 | 114.989 | -17.2351 |
| 168 | 3.11 | 0.696684 | 115.475 | -15.0684 |
| 169 | 3.17 | 0.712751 | 115.983 | -12.809 |
| 170 | 3.24 | 0.725736 | 116.51 | -10.4576 |
| 171 | 3.43 | 0.742143 | 117.06 | -7.91205 |
| 172 | 3.5 | 0.755415 | 117.631 | -5.2681 |
| 173 | 3.5 | 0.772193 | 118.227 | -2.56542 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 3.6 | 0.785774 | | 118.845 | 0.263363 |
| 175 | 3.8 | 0.802956 | | 119.489 | 3.3146 |
| 176 | 3.86 | 0.816874 | | 120.157 | 6.46773 |
| 177 | 4.05 | 0.834498 | | 120.853 | 9.84745 |
| 178 | 4.11 | 0.848786 | | 121.574 | 13.336 |
| 179 | 4.25 | 0.866894 | | 122.325 | 17.0203 |
| 180 | 4.43 | 0.881587 | | 123.102 | 20.9257 |
| 181 | 4.6 | 0.900227 | | 123.913 | 25.0667 |
| 182 | 4.7 | 0.915365 | | 124.751 | 29.3689 |
| 183 | 4.8 | 0.93459 | 125.624 | 33.855 | |
| 184 | 5 | 0.950222 | | 126.527 | 38.6061 |
| 185 | 5.1 | 0.970094 | | 127.468 | 43.5536 |
| 186 | 5.2 | 0.986272 | | 128.441 | 48.6822 |
| 187 | 5.3 | 1.00687 | 129.455 | 54.0186 | |
| 188 | 5.5 | 1.02365 | 130.502 | 59.6487 | |
| 189 | 5.7 | 1.04505 | 131.594 | 65.6054 | |
| 190 | 5.8 | 1.06252 | 132.723 | 71.7681 | |
| 191 | 5.9 | 1.08482 | 133.9 | 78.1685 | |
| 192 | 6 | 1.10306 | 135.117 | 84.7869 | |
| 193 | 6.1 | 1.12639 | 136.386 | 91.6579 | |
| 194 | 6.3 | 1.1455 | 137.698 | 98.8745 | |
| 195 | 6.9 | 1.17 | 139.067 | 106.948 | |
| 196 | 7 | 1.19012 | 140.483 | 115.278 | |
| 197 | 7.2 | 1.21596 | 141.962 | 124.033 | |
| 198 | 7.3 | 1.23724 | 143.493 | 133.065 | |
| 199 | 7.6 | 1.26464 | 145.092 | 142.676 | |
| 200 | 8.4 | 1.28727 | 146.749 | 153.489 | |
| 201 | 8.5 | 1.31652 | 148.482 | 164.68 | |
| 202 | 9 | 1.34075 | 150.28 | 176.747 | |
| 203 | 9.9 | 1.3722 | 152.163 | 190.332 | |
| 204 | 10.8 | 1.39838 | 154.118 | 205.434 | |
| 205 | 11 | 1.4325 | 156.17 | 221.192 | |
| 206 | 12 | 1.46106 | 158.305 | 238.724 | |
| 207 | 12 | 1.49852 | 160.551 | 256.706 | |
| 208 | 12 | 1.53007 | 162.892 | 275.067 | |
| 209 | 13 | 1.57179 | 165.362 | 295.5 | |
| 210 | 14 | 1.60725 | 167.945 | 318.002 | |
| 211 | 16 | 1.65463 | 170.683 | 344.476 | |
| 212 | 16.2 | 1.6954 | 173.558 | 371.941 | |
| 213 | 16.3 | 1.75069 | 176.622 | 400.478 | |
| 214 | 18 | 1.79912 | 179.859 | 432.862 | |
| 215 | 19 | 1.86629 | 183.342 | 468.321 | |
| 216 | 19 | 1.92684 | 187.055 | 504.931 | |
| 217 | 19 | 2.01409 | 191.112 | 543.199 | |
| 218 | 21 | 2.09693 | 195.509 | 587.234 | |
| 219 | 22 | 2.22621 | 200.465 | 636.211 | |
| 220 | 22 | 2.36561 | 206.061 | 688.255 | |
| 221 | 28 | 2.65209 | 213.094 | 762.513 | |

Data Set Standard Deviation = 4.66675
Numerator = 581426
Denominator = 1.021e+006
W Statistic = 0.56947 = 581426 / 1.021e+006

5% Critical value of 0.976 exceeds 0.56947
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.56947
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: 1,1-Dichloroethane

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | -2.07944 | -2.65209 | 7.03356 | 5.51486 |
| 2 | -2.07944 | -2.36561 | 12.6297 | 10.434 |
| 3 | -2.07944 | -2.22621 | 17.5857 | 15.0633 |
| 4 | -2.07944 | -2.09693 | 21.9828 | 19.4237 |
| 5 | -2.07944 | -2.01409 | 26.0394 | 23.6119 |
| 6 | -2.07944 | -1.92684 | 29.7521 | 27.6187 |
| 7 | -2.07944 | -1.86629 | 33.2351 | 31.4995 |
| 8 | -2.07944 | -1.79912 | 36.472 | 35.2407 |
| 9 | -2.07944 | -1.75069 | 39.5369 | 38.8811 |
| 10 | -2.07944 | -1.6954 | 42.4112 | 42.4066 |
| 11 | -2.07944 | -1.65463 | 45.149 | 45.8473 |
| 12 | -2.07944 | -1.60725 | 47.7323 | 49.1895 |
| 13 | -2.07944 | -1.57179 | 50.2028 | 52.4579 |
| 14 | -2.07944 | -1.53007 | 52.5439 | 55.6396 |
| 15 | -2.07944 | -1.49852 | 54.7894 | 58.7557 |
| 16 | -2.07944 | -1.46106 | 56.9241 | 61.7939 |
| 17 | -2.07944 | -1.4325 | 58.9762 | 64.7727 |
| 18 | -2.07944 | -1.39838 | 60.9316 | 67.6805 |
| 19 | -2.07944 | -1.3722 | 62.8146 | 70.5339 |
| 20 | -1.04982 | -1.34075 | 64.6122 | 71.9415 |
| 21 | -0.867501 | -1.31652 | 66.3454 | 73.0836 |
| 22 | -0.755023 | -1.28727 | 68.0025 | 74.0555 |
| 23 | -0.71335 | -1.26464 | 69.6018 | 74.9576 |
| 24 | -0.579818 | -1.23724 | 71.1326 | 75.675 |
| 25 | -0.478036 | -1.21596 | 72.6111 | 76.2563 |
| 26 | -0.34249 | -1.19012 | 74.0275 | 76.6639 |
| 27 | -0.223144 | -1.17 | 75.3964 | 76.9249 |
| 28 | -0.18633 | -1.1455 | 76.7086 | 77.1384 |
| 29 | -0.174353 | -1.12639 | 77.9774 | 77.3348 |
| 30 | -0.174353 | -1.10306 | 79.1941 | 77.5271 |
| 31 | -0.0833816 | -1.08482 | 80.371 | 77.6176 |
| 32 | -0.0304592 | -1.06252 | 81.4999 | 77.6499 |
| 33 | 0 | -1.04505 | 82.592 | 77.6499 |
| 34 | 0 | -1.02365 | 83.6399 | 77.6499 |
| 35 | 0 | -1.00687 | 84.6537 | 77.6499 |
| 36 | 0 | -0.986272 | 85.6264 | 77.6499 |
| 37 | 0 | -0.970094 | 86.5675 | 77.6499 |
| 38 | 0 | -0.950222 | 87.4704 | 77.6499 |
| 39 | 0 | -0.934598 | 88.3439 | 77.6499 |
| 40 | 0 | -0.915365 | 89.1818 | 77.6499 |
| 41 | 0 | -0.900227 | 89.9922 | 77.6499 |
| 42 | 0 | -0.881587 | 90.7694 | 77.6499 |
| 43 | 0 | -0.866894 | 91.5209 | 77.6499 |
| 44 | 0 | -0.848786 | 92.2413 | 77.6499 |
| 45 | 0 | -0.834498 | 92.9377 | 77.6499 |
| 46 | 0 | -0.816874 | 93.605 | 77.6499 |
| 47 | 0 | -0.802956 | 94.2497 | 77.6499 |
| 48 | 0 | -0.785774 | 94.8672 | 77.6499 |
| 49 | 0 | -0.772193 | 95.4634 | 77.6499 |

| | | | | |
|---|---|---|---|---|
| 50 | 0 | -0.755415 | 96.0341 | 77.6499 |
| 51 | 0 | -0.742143 | 96.5849 | 77.6499 |
| 52 | 0 | -0.725736 | 97.1116 | 77.6499 |
| 53 | 0 | -0.712751 | 97.6196 | 77.6499 |
| 54 | 0 | -0.696684 | 98.1049 | 77.6499 |
| 55 | 0 | -0.683969 | 8.5727 | 77.6499 |
| 56 | 0 | -0.668209 | 99.0192 | 77.6499 |
| 57 | 0 | -0.655726 | 99.4492 | 77.6499 |
| 58 | 0 | -0.640266 | 99.8592 | 77.6499 |
| 59 | 0 | -0.628006 | 100.254 | 77.6499 |
| 60 | 0 | -0.612813 | 100.629 | 77.6499 |
| 61 | 0 | -0.60076 | 100.99 | 77.6499 |
| 62 | 0 | -0.585815 | 101.333 | 77.6499 |
| 63 | 0 | -0.573953 | 101.663 | 77.6499 |
| 64 | 0 | -0.559237 | 101.975 | 77.6499 |
| 65 | 0 | -0.547551 | 102.275 | 77.6499 |
| 66 | 0 | -0.533048 | 102.559 | 77.6499 |
| 67 | 0 | -0.521527 | 102.831 | 77.6499 |
| 68 | 0 | -0.507221 | 103.089 | 77.6499 |
| 69 | 0 | -0.49585 | 103.334 | 77.6499 |
| 70 | 0 | -0.481728 | 103.566 | 77.6499 |
| 71 | 0 | -0.470498 | 103.788 | 77.6499 |
| 72 | 0 | -0.456542 | 103.996 | 77.6499 |
| 73 | 0 | -0.445443 | 104.195 | 77.6499 |
| 74 | 0 | -0.431644 | 104.381 | 77.6499 |
| 75 | 0 | -0.420664 | 104.558 | 77.6499 |
| 76 | 0 | -0.40701 | 104.724 | 77.6499 |
| 77 | 0 | -0.396142 | 104.881 | 77.6499 |
| 78 | 0 | -0.382622 | 105.027 | 77.6499 |
| 79 | 0 | -0.371856 | 105.165 | 77.6499 |
| 80 | 0 | -0.358459 | 105.294 | 77.6499 |
| 81 | 0 | -0.347787 | 105.415 | 77.6499 |
| 82 | 0 | -0.334503 | 105.527 | 77.6499 |
| 83 | 0 | -0.323919 | 105.632 | 77.6499 |
| 84 | 0 | -0.310738 | 105.728 | 77.6499 |
| 85 | 0 | -0.300232 | 105.818 | 77.6499 |
| 86 | 0 | -0.287147 | 105.901 | 77.6499 |
| 87 | 0 | -0.276714 | 105.977 | 77.6499 |
| 88 | 0 | -0.263715 | 106.047 | 77.6499 |
| 89 | 0 | -0.253347 | 106.111 | 77.6499 |
| 90 | 0 | -0.240426 | 106.169 | 77.6499 |
| 91 | 0 | -0.230118 | 106.222 | 77.6499 |
| 92 | 0 | -0.217267 | 106.269 | 77.6499 |
| 93 | 0 | -0.207012 | 106.312 | 77.6499 |
| 94 | 0 | -0.194225 | 106.35 | 77.6499 |
| 95 | 0 | -0.184017 | 106.383 | 77.6499 |
| 96 | 0 | -0.171285 | 106.413 | 77.6499 |
| 97 | 0 | -0.161119 | 106.439 | 77.6499 |
| 98 | 0 | -0.148434 | 106.461 | 77.6499 |
| 99 | 0 | -0.138305 | 106.48 | 77.6499 |
| 100 | 0 | -0.125661 | 106.496 | 77.6499 |
| 101 | 0 | -0.115562 | 106.509 | 77.6499 |
| 102 | 0 | -0.102953 | 106.52 | 77.6499 |
| 103 | 0 | -0.0928787 | 106.528 | 77.6499 |
| 104 | 0 | -0.0802981 | 106.535 | 77.6499 |
| 105 | 0 | -0.0702426 | 106.54 | 77.6499 |
| 106 | 0 | -0.0576847 | 106.543 | 77.6499 |
| 107 | 0 | -0.0476439 | 106.545 | 77.6499 |
| 108 | 0 | -0.0350997 | 106.546 | 77.6499 |
| 109 | 0 | -0.0250691 | 106.547 | 77.6499 |
| 110 | 0 | -0.0125328 | 106.547 | 77.6499 |
| 111 | 0 | 0 | 106.547 | 77.6499 |

| | | | | |
|---|---|---|---|---|
| 112 | 0 | 0.0125328 | 106.547 | 77.6499 |
| 113 | 0 | 0.0250691 | 106.548 | 77.6499 |
| 114 | 0 | 0.0350997 | 106.549 | 77.6499 |
| 115 | 0 | 0.0476439 | 106.551 | 77.6499 |
| 116 | 0 | 0.0576847 | 106.555 | 77.6499 |
| 117 | 0 | 0.0702426 | 106.56 | 77.6499 |
| 118 | 0 | 0.0802981 | 106.566 | 77.6499 |
| 119 | 0 | 0.0928787 | 106.575 | 77.6499 |
| 120 | 0 | 0.102953 | 106.585 | 77.6499 |
| 121 | 0 | 0.115562 | 106.599 | 77.6499 |
| 122 | 0 | 0.125661 | 106.615 | 77.6499 |
| 123 | 0 | 0.138305 | 106.634 | 77.6499 |
| 124 | 0 | 0.148434 | 106.656 | 77.6499 |
| 125 | 0 | 0.161119 | 106.682 | 77.6499 |
| 126 | 0 | 0.171285 | 106.711 | 77.6499 |
| 127 | 0 | 0.184017 | 106.745 | 77.6499 |
| 128 | 0 | 0.194225 | 106.783 | 77.6499 |
| 129 | 0 | 0.207012 | 106.825 | 77.6499 |
| 130 | 0 | 0.217267 | 106.873 | 77.6499 |
| 131 | 0 | 0.230118 | 106.926 | 77.6499 |
| 132 | 0 | 0.240426 | 106.983 | 77.6499 |
| 133 | 0 | 0.253347 | 107.048 | 77.6499 |
| 134 | 0 | 0.263715 | 107.117 | 77.6499 |
| 135 | 0 | 0.276714 | 107.194 | 77.6499 |
| 136 | 0 | 0.287147 | 107.276 | 77.6499 |
| 137 | 0.0953102 | 0.300232 | 107.366 | 77.6785 |
| 138 | 0.0953102 | 0.310738 | 107.463 | 77.7081 |
| 139 | 0.113329 | 0.323919 | 107.568 | 77.7449 |
| 140 | 0.139762 | 0.334503 | 107.68 | 77.7916 |
| 141 | 0.19062 | 0.347787 | 107.801 | 77.8579 |
| 142 | 0.223144 | 0.358459 | 107.929 | 77.9379 |
| 143 | 0.223144 | 0.371856 | 108.067 | 78.0209 |
| 144 | 0.231112 | 0.382622 | 108.214 | 78.1093 |
| 145 | 0.300105 | 0.396142 | 108.371 | 78.2282 |
| 146 | 0.322083 | 0.40701 | 108.536 | 78.3593 |
| 147 | 0.329304 | 0.420664 | 108.713 | 78.4978 |
| 148 | 0.470004 | 0.431644 | 108.9 | 78.7007 |
| 149 | 0.470004 | 0.445443 | 109.098 | 78.91 |
| 150 | 0.518794 | 0.456542 | 109.307 | 79.1469 |
| 151 | 0.647103 | 0.470498 | 109.528 | 79.4513 |
| 152 | 0.647103 | 0.481728 | 109.76 | 79.7631 |
| 153 | 0.693147 | 0.49585 | 110.006 | 80.1068 |
| 154 | 0.693147 | 0.507221 | 110.263 | 80.4583 |
| 155 | 0.71295 | 0.521527 | 110.535 | 80.8302 |
| 156 | 0.727549 | 0.533048 | 110.819 | 81.218 |
| 157 | 0.746688 | 0.547551 | 111.119 | 81.6268 |
| 158 | 0.779325 | 0.559237 | 111.432 | 82.0627 |
| 159 | 0.875469 | 0.573953 | 111.761 | 82.5651 |
| 160 | 0.916291 | 0.585815 | 112.104 | 83.1019 |
| 161 | 0.955511 | 0.60076 | 112.465 | 83.676 |
| 162 | 1.05082 | 0.612813 | 112.841 | 84.3199 |
| 163 | 1.06471 | 0.628006 | 113.235 | 84.9886 |
| 164 | 1.06471 | 0.640266 | 113.645 | 85.6703 |
| 165 | 1.09527 | 0.655726 | 114.075 | 86.3885 |
| 166 | 1.09861 | 0.668209 | 114.522 | 87.1226 |
| 167 | 1.12493 | 0.68396 | 114.989 | 87.892 |
| 168 | 1.13462 | 0.696684 | 115.475 | 88.6824 |
| 169 | 1.15373 | 0.712751 | 115.983 | 89.5048 |
| 170 | 1.17557 | 0.725736 | 116.51 | 90.3579 |
| 171 | 1.23256 | 0.742143 | 117.06 | 91.2727 |
| 172 | 1.25276 | 0.755415 | 117.631 | 92.219 |
| 173 | 1.25276 | 0.772193 | 118.227 | 93.1864 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 1.28093 | 0.785774 | | 118.845 | 94.1929 |
| 175 | 1.335 | 0.802956 | | 119.489 | 95.2649 |
| 176 | 1.35067 | 0.816874 | | 120.157 | 96.3682 |
| 177 | 1.39872 | 0.834498 | | 120.853 | 97.5354 |
| 178 | 1.41342 | 0.848786 | | 121.574 | 98.7351 |
| 179 | 1.44692 | 0.866894 | | 122.325 | 99.9894 |
| 180 | 1.4884 | 0.881587 | | 123.102 | 101.302 |
| 181 | 1.52606 | 0.900227 | | 123.913 | 102.675 |
| 182 | 1.54756 | 0.915365 | | 124.751 | 104.092 |
| 183 | 1.56862 | 0.93459 | 125.624 | 105.558 | |
| 184 | 1.60944 | 0.950222 | | 126.527 | 107.087 |
| 185 | 1.62924 | 0.970094 | | 127.468 | 108.668 |
| 186 | 1.64866 | 0.986272 | | 128.441 | 110.294 |
| 187 | 1.66771 | 1.00687 | 129.455 | 111.973 | |
| 188 | 1.70475 | 1.02365 | 130.502 | 113.718 | |
| 189 | 1.74047 | 1.04505 | 131.594 | 115.537 | |
| 190 | 1.75786 | 1.06252 | 132.723 | 117.405 | |
| 191 | 1.77495 | 1.08482 | 133.9 | 119.33 | |
| 192 | 1.79176 | 1.10306 | 135.117 | 121.307 | |
| 193 | 1.80829 | 1.12639 | 136.386 | 123.343 | |
| 194 | 1.84055 | 1.1455 | 137.698 | 125.452 | |
| 195 | 1.93152 | 1.17 | 139.067 | 127.712 | |
| 196 | 1.94591 | 1.19012 | 140.483 | 130.028 | |
| 197 | 1.97408 | 1.21596 | 141.962 | 132.428 | |
| 198 | 1.98787 | 1.23724 | 143.493 | 134.887 | |
| 199 | 2.02815 | 1.26464 | 145.092 | 137.452 | |
| 200 | 2.12823 | 1.28727 | 146.749 | 140.192 | |
| 201 | 2.14007 | 1.31652 | 148.482 | 143.009 | |
| 202 | 2.19722 | 1.34075 | 150.28 | 145.955 | |
| 203 | 2.29253 | 1.3722 | 152.163 | 149.101 | |
| 204 | 2.37955 | 1.39838 | 154.118 | 152.429 | |
| 205 | 2.3979 | 1.4325 | 156.17 | 155.864 | |
| 206 | 2.48491 | 1.46106 | 158.305 | 159.494 | |
| 207 | 2.48491 | 1.49852 | 160.551 | 163.218 | |
| 208 | 2.48491 | 1.53007 | 162.892 | 167.02 | |
| 209 | 2.56495 | 1.57179 | 165.362 | 171.052 | |
| 210 | 2.63906 | 1.60725 | 167.945 | 175.293 | |
| 211 | 2.77259 | 1.65463 | 170.683 | 179.881 | |
| 212 | 2.78501 | 1.6954 | 173.558 | 184.602 | |
| 213 | 2.79117 | 1.75069 | 176.622 | 189.489 | |
| 214 | 2.89037 | 1.79912 | 179.859 | 194.689 | |
| 215 | 2.94444 | 1.86629 | 183.342 | 200.184 | |
| 216 | 2.94444 | 1.92684 | 187.055 | 205.858 | |
| 217 | 2.94444 | 2.01409 | 191.112 | 211.788 | |
| 218 | 3.04452 | 2.09693 | 195.509 | 218.172 | |
| 219 | 3.09104 | 2.22621 | 200.465 | 225.053 | |
| 220 | 3.09104 | 2.36561 | 206.061 | 232.366 | |
| 221 | 3.3322 | 2.65209 | 213.094 | 241.203 | |

Data Set Standard Deviation = 1.18932
Numerator = 58178.9
Denominator = 66312.6
W Statistic = 0.877344 = 58178.9 / 66312.6

5% Critical value of 0.976 exceeds 0.877344
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.877344
Evidence of non-normality at 99% level of significance

# Kruskal-Wallis Non-Parametric Test

## Parameter: 1,1-Dichloroethane

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

# Kruskal Wallis Ranks

## Background Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-13 | 3/16/1999 | ND<0 | 60.5 |
| | 9/23/1999 | ND<0 | 60.5 |
| | 3/15/2000 | ND<0 | 60.5 |
| | 9/24/2003 | ND<0 | 60.5 |
| | 3/11/2004 | ND<0 | 60.5 |
| | 10/12/2004 | ND<0 | 60.5 |
| | 4/1/2005 | ND<0 | 60.5 |
| | 10/25/2005 | ND<0 | 60.5 |
| | 4/29/2006 | ND<0 | 60.5 |
| | 11/18/2006 | ND<0 | 60.5 |
| | 5/23/2007 | ND<0 | 60.5 |
| | 11/28/2007 | ND<0 | 60.5 |
| | 6/5/2008 | ND<0 | 60.5 |
| | 11/20/2008 | ND<0 | 60.5 |
| | 6/11/2009 | ND<-2.07944 | 60.5 |
| | 11/16/2009 | ND<-2.07944 | 60.5 |
| | 6/30/2010 | ND<-2.07944 | 60.5 |
| | 11/12/2010 | ND<-2.07944 U | 60.5 |

Rank Sum = 1089
Rank Mean = 60.5

Background Rank Sum = 1089
Background Rank Mean = 60.5

## Compliance Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-12BR | 3/16/1999 | 1.98787 | 198 |
| | 9/23/1999 | 1.74047 | 189 |
| | 3/15/2000 | ND<0 | 60.5 |
| | 9/24/2003 | ND<0 | 60.5 |
| | 3/11/2004 | ND<0 | 60.5 |
| | 10/12/2004 | ND<0 | 60.5 |
| | 4/1/2005 | 1.44692 | 179 |
| | 10/25/2005 | ND<0 | 60.5 |
| | 4/29/2006 | ND<0 | 60.5 |
| | 11/18/2006 | ND<0 | 60.5 |
| | 5/23/2007 | ND<0 | 60.5 |
| | 11/28/2007 | ND<0 | 60.5 |
| | 6/5/2008 | ND<0 | 60.5 |
| | 11/20/2008 | ND<0 | 60.5 |
| | 6/11/2009 | ND<-2.07944 | 60.5 |
| | 11/16/2009 | ND<-2.07944 | 60.5 |
| | 6/30/2010 | ND<-2.07944 | 60.5 |
| | 11/12/2010 | ND<-2.07944 U | 60.5 |

Rank Sum = 1473.5
Rank Mean = 81.8611

| | | | | |
|---|---|---|---|---|
| MW-9 | 7/20/1995 | -0.174353 | J | 130 |
| | 8/24/1995 | -0.174353 | J | 131 |
| | 9/28/1995 | 0.693147 | | 153 |
| | 10/26/1995 | 1.09861 | | 166 |
| | 11/19/1996 | ND<0 | 60.5 | |
| | 12/19/1996 | ND<0 | 60.5 | |
| | 3/24/1997 | ND<0 | 60.5 | |
| | 9/24/1997 | ND<0 | 60.5 | |
| | 4/7/1998 | ND<0 | 60.5 | |
| | 9/23/1998 | 1.66771 | | 187 |
| | 3/16/1999 | 1.28093 | | 174 |
| | 9/23/1999 | 1.25276 | | 172 |
| | 3/15/2000 | ND<0 | 60.5 | |
| | 9/24/2003 | ND<0 | 60.5 | |
| | 3/11/2004 | ND<0 | 60.5 | |
| | 10/12/2004 | ND<0 | 60.5 | |
| | 4/1/2005 | 1.09527 | 165 | |
| | 10/25/2005 | 0.71295 | | 155 |
| | 4/29/2006 | 0.322083 | J | 146 |
| | 11/18/2006 | ND<0 | 60.5 | |
| | 5/23/2007 | ND<0 | 60.5 | |
| | 11/28/2007 | 1.15373 | | 169 |
| | 6/5/2008 | 1.17557 | 170 | |
| | 11/20/2008 | 1.13462 | | 168 |
| | 6/11/2009 | 2.02815 | | 199 |
| | 11/16/2009 | 1.56862 | | 183 |
| | 6/30/2010 | 1.52606 | | 181 |
| | 11/12/2010 | 1.335 | 175 | |

Rank Sum = 3489.5
Rank Mean = 124.625

| | | | | |
|---|---|---|---|---|
| MW-6 | 7/20/1995 | ND<0 | 60.5 | |
| | 8/24/1995 | ND<0 | 60.5 | |
| | 9/28/1995 | ND<0 | 60.5 | |
| | 10/26/1995 | ND<0 | 60.5 | |
| | 11/19/1996 | ND<0 | 60.5 | |
| | 12/19/1996 | ND<0 | 60.5 | |
| | 3/24/1997 | ND<0 | 60.5 | |
| | 9/24/1997 | ND<0 | 60.5 | |
| | 4/7/1998 | ND<0 | 60.5 | |
| | 9/23/1998 | ND<0 | 60.5 | |
| | 3/16/1999 | ND<0 | 60.5 | |
| | 9/23/1999 | ND<0 | 60.5 | |
| | 3/15/2000 | ND<0 | 60.5 | |
| | 9/24/2003 | ND<0 | 60.5 | |
| | 3/11/2004 | ND<0 | 60.5 | |
| | 10/12/2004 | ND<0 | 60.5 | |
| | 4/1/2005 | ND<0 | 60.5 | |
| | 10/25/2005 | ND<0 | 60.5 | |
| | 4/29/2006 | ND<0 | 60.5 | |
| | 11/18/2006 | ND<0 | 60.5 | |
| | 5/23/2007 | ND<0 | 60.5 | |
| | 11/28/2007 | ND<0 | 60.5 | |
| | 6/5/2008 | ND<0 | 60.5 | |
| | 11/20/2008 | ND<0 | 60.5 | |
| | 6/11/2009 | ND<-2.07944 | | 60.5 |
| | 11/16/2009 | ND<-2.07944 | | 60.5 |
| | 6/30/2010 | ND<-2.07944 | | 60.5 |
| | 11/12/2010 | ND<-2.07944 | U | 60.5 |

Rank Sum = 1694
Rank Mean = 60.5

| | | | | |
|---|---|---|---|---|
| MW-7 | 7/20/1995 | 0.470004 | J | 148 |
| | 8/24/1995 | 0.0953102 | J | 137 |
| | 9/28/1995 | 0 | J | 134 |
| | 10/26/1995 | 0.693147 | | 154 |
| | 11/19/1996 | ND<0 | | 60.5 |
| | 12/19/1996 | 2.19722 | | 202 |
| | 3/24/1997 | ND<0 | | 60.5 |
| | 9/24/1997 | ND<0 | | 60.5 |
| | 4/7/1998 | 2.48491 | | 206 |
| | 9/23/1998 | 2.48491 | | 207 |
| | 3/16/1999 | ND<0 | | 60.5 |
| | 9/23/1999 | 1.77495 | | 191 |
| | 3/15/2000 | ND<0 | | 60.5 |
| | 9/24/2003 | ND<0 | | 60.5 |
| | 3/11/2004 | ND<0 | | 60.5 |
| | 10/12/2004 | ND<0 | | 60.5 |
| | 4/1/2005 | ND<0 | | 60.5 |
| | 10/25/2005 | ND<0 | | 60.5 |
| | 4/29/2006 | ND<0 | | 60.5 |
| | 11/18/2006 | ND<0 | | 60.5 |
| | 5/23/2007 | ND<0 | | 60.5 |
| | 11/28/2007 | ND<0 | | 60.5 |
| | 6/5/2008 | ND<0 | | 60.5 |
| | 11/20/2008 | ND<0 | | 60.5 |
| | 6/11/2009 | ND<-2.07944 | | 60.5 |
| | 11/16/2009 | ND<-2.07944 | | 60.5 |
| | 6/30/2010 | ND<-2.07944 | | 60.5 |
| | 11/12/2010 | ND<-2.07944 | U | 60.5 |

Rank Sum = 2589
Rank Mean = 92.4643

| | | | | |
|---|---|---|---|---|
| MW-11R | 7/20/1995 | 2.14007 | | 201 |
| | 8/24/1995 | 3.04452 | | 218 |
| | 9/28/1995 | 2.94444 | | 215 |
| | 10/26/1995 | 3.09104 | | 219 |
| | 11/19/1996 | ND<0 | | 60.5 |
| | 12/19/1996 | 2.94444 | | 216 |
| | 3/24/1997 | ND<0 | | 60.5 |
| | 9/24/1997 | 1.62924 | | 185 |
| | 4/7/1998 | 2.12823 | | 200 |
| | 9/23/1998 | 2.56495 | | 209 |
| | 3/16/1999 | 2.37955 | | 204 |
| | 9/23/1999 | 1.70475 | | 188 |
| | 3/15/2000 | 2.29253 | | 203 |
| | 9/24/2003 | ND<0 | | 60.5 |
| | 3/11/2004 | ND<0 | | 60.5 |
| | 10/12/2004 | ND<0 | | 60.5 |
| | 4/1/2005 | 1.35067 | | 176 |
| | 10/25/2005 | 0.779325 | | 158 |
| | 4/29/2006 | 0.518794 | J | 150 |
| | 11/18/2006 | 0.727549 | | 156 |
| | 5/23/2007 | ND<0 | | 60.5 |
| | 11/28/2007 | 1.39872 | | 177 |
| | 6/5/2008 | ND<0 | | 60.5 |
| | 11/20/2008 | -0.579818 | J | 125 |
| | 6/11/2009 | 1.06471 | | 163 |
| | 11/16/2009 | -0.867501 | J | 122 |
| | 6/30/2010 | 1.06471 | | 164 |
| | 11/12/2010 | ND<-2.07944 | U | 60.5 |

Rank Sum = 4133
Rank Mean = 147.607

| | | | | |
|---|---|---|---|---|
| MW-10 | 7/20/1995 | -0.223144 | J | 128 |
| | 8/24/1995 | 1.25276 | | 173 |
| | 9/28/1995 | 1.94591 | | 196 |
| | 10/26/1995 | 1.79176 | | 192 |
| | 11/19/1996 | ND<0 | 60.5 | |
| | 12/19/1996 | 1.60944 | | 184 |
| | 3/24/1997 | 2.63906 | | 210 |
| | 9/24/1997 | 1.75786 | | 190 |
| | 4/7/1998 | ND<0 | 60.5 | |
| | 9/23/1998 | ND<0 | 60.5 | |
| | 3/16/1999 | 1.54756 | | 182 |
| | 9/23/1999 | 0.955511 | | 161 |
| | 3/15/2000 | ND<0 | 60.5 | |
| | 9/24/2003 | ND<0 | 60.5 | |
| | 3/11/2004 | ND<0 | 60.5 | |
| | 10/12/2004 | ND<0 | 60.5 | |
| | 4/1/2005 | 0.223144 | J | 142 |
| | 10/25/2005 | 0.470004 | J | 149 |
| | 4/29/2006 | 0.647103 | J | 151 |
| | 11/18/2006 | 0.113329 | J | 139 |
| | 5/23/2007 | ND<0 | 60.5 | |
| | 11/28/2007 | 0.300105 | | 145 |
| | 6/5/2008 | 0.231112 | J | 144 |
| | 11/20/2008 | -0.0833816 | J | 132 |
| | 6/11/2009 | -0.0304592 | J | 133 |
| | 11/16/2009 | 0.0953102 | | 138 |
| | 6/30/2010 | -0.71335 | J | 124 |
| | 11/12/2010 | -0.34249 | J | 127 |

Rank Sum = 3624
Rank Mean = 129.429

| | | | | |
|---|---|---|---|---|
| MW-8 | 7/20/1995 | -0.755023 | J | 123 |
| | 8/24/1995 | 2.48491 | | 208 |
| | 9/28/1995 | 2.3979 | 205 | |
| | 10/26/1995 | 0 | J | 135 |
| | 11/19/1996 | ND<0 | 60.5 | |
| | 12/19/1996 | 2.94444 | | 217 |
| | 3/24/1997 | 2.89037 | | 214 |
| | 9/24/1997 | 3.09104 | | 220 |
| | 4/7/1998 | 2.77259 | 211 | |
| | 9/23/1998 | 3.3322 | 221 | |
| | 3/16/1999 | 2.79117 | | 213 |
| | 9/23/1999 | 2.78501 | | 212 |
| | 3/15/2000 | ND<0 | 60.5 | |
| | 9/24/2003 | ND<0 | 60.5 | |
| | 3/11/2004 | ND<0 | 60.5 | |
| | 10/12/2004 | ND<0 | 60.5 | |
| | 4/1/2005 | 0.647103 | J | 152 |
| | 10/25/2005 | 1.23256 | | 171 |
| | 4/29/2006 | 0.746688 | | 157 |
| | 11/18/2006 | 1.05082 | | 162 |
| | 5/23/2007 | ND<0 | 60.5 | |
| | 11/28/2007 | 1.41342 | | 178 |
| | 6/5/2008 | 1.4884 | 180 | |
| | 11/20/2008 | 1.12493 | | 167 |
| | 6/11/2009 | 1.64866 | | 186 |
| | 6/30/2010 | 0.916291 | | 160 |
| | 11/12/2010 | 0.875469 | | 159 |

Rank Sum = 4214
Rank Mean = 156.074

| | | | | |
|---|---|---|---|---|
| MW-12AR | 3/16/1999 | ND<0 | 60.5 | |
| | 9/23/1999 | ND<0 | 60.5 | |
| | 3/15/2000 | 1.97408 | | 197 |
| | 9/24/2003 | 1.93152 | | 195 |
| | 3/11/2004 | 1.80829 | | 193 |
| | 10/12/2004 | 1.84055 | | 194 |
| | 4/1/2005 | ND<0 | 60.5 | |
| | 10/25/2005 | 0.19062 J | | 141 |
| | 4/29/2006 | 0.329304 J | | 147 |
| | 11/18/2006 | -0.18633 J | | 129 |
| | 5/23/2007 | ND<0 | 60.5 | |
| | 11/28/2007 | 0.139762 J | | 140 |
| | 6/5/2008 | 0.223144 J | 143 | |
| | 11/20/2008 | -0.478036 J | | 126 |
| | 6/11/2009 | ND<-2.07944 | | 60.5 |
| | 11/16/2009 | -1.04982 J | | 121 |
| | 6/30/2010 | ND<-2.07944 | | 60.5 |
| | 11/12/2010 | 0 | 136 | |

Rank Sum = 2225
Rank Mean = 123.611

## Calculation Results:

Kruskal-Wallis H Statistic = 61.676
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 73.431
95% Confidence comparison value is 15.5073 at 8 degrees of freedom
61.676 > 15.5073 indicating a significant group difference at 5% significance level
73.431 > 15.5073 indicating a significant group difference at 5% significance level when adjusted for ties

## Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 60.5

| Well | Mean Rank | Dif from Bkg | Critical Value |
|---|---|---|---|
| MW-12BR | 81.8611 | 21.3611 | 49.5832 |
| MW-9 | 124.625 | 64.125 | 44.9386 |
| MW-6 | 60.5 | 0 | 44.9386 |
| MW-7 | 92.4643 | 31.9643 | 44.9386 |
| MW-11R | 147.607 | 87.1071 | 44.9386 |
| MW-10 | 129.429 | 68.9286 | 44.9386 |
| MW-8 | 156.074 | 95.5741 | 45.263 |
| MW-12AR | 123.611 | 63.1111 | 49.5832 |

## Individual Well Comparisons at Groupwise 5% Significance Level (0.625% Significance Level per comparison)

0.625% Z score is 2.51213
Mean background rank is 60.5

| Well | Mean Rank | Dif from Bkg | Critical Value |
|---|---|---|---|
| MW-12BR | 81.8611 | 21.3611 | 53.5431 |
| MW-9 | 124.625 | 64.125 | 48.5275 |
| MW-6 | 60.5 | 0 | 48.5275 |
| MW-7 | 92.4643 | 31.9643 | 48.5275 |
| MW-11R | 147.607 | 87.1071 | 48.5275 |
| MW-10 | 129.429 | 68.9286 | 48.5275 |
| MW-8 | 156.074 | 95.5741 | 48.8779 |
| MW-12AR | 123.611 | 63.1111 | 53.5431 |

# Mann-Kendall Trend Analysis

## Parameter: 1,1-Dichloroethane

## Location: MW-9

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | Positives | | Negatives | |
|---|---|---|---|---|---|---|
| -0.174353 J | | -0.174353 J | 0 | 0 | 0 | |
| 0.693147 | | -0.174353 J | 0.867501 | | 1 | 0 |
| 1.09861 | | -0.174353 J | 1.27297 | 2 | 0 | |
| ND<0 | -0.174353 J | 0.174353 | | 3 | 0 | |
| ND<0 | -0.174353 J | 0.174353 | | 4 | 0 | |
| ND<0 | -0.174353 J | 0.174353 | | 5 | 0 | |
| ND<0 | -0.174353 J | 0.174353 | | 6 | 0 | |
| ND<0 | -0.174353 J | 0.174353 | | 7 | 0 | |
| 1.66771 | | -0.174353 J | 1.84206 | 8 | 0 | |
| 1.28093 | | -0.174353 J | 1.45529 | 9 | 0 | |
| 1.25276 | | -0.174353 J | 1.42712 | 10 | 0 | |
| ND<0 | -0.174353 J | 0.174353 | | 11 | 0 | |
| ND<0 | -0.174353 J | 0.174353 | | 12 | 0 | |
| ND<0 | -0.174353 J | 0.174353 | | 13 | 0 | |
| ND<0 | -0.174353 J | 0.174353 | | 14 | 0 | |
| 1.09527 | | -0.174353 J | 1.26963 | 15 | 0 | |
| 0.71295 | | -0.174353 J | 0.887303 | | 16 | 0 |
| 0.322083 J | | -0.174353 J | 0.496437 | | 17 | 0 |
| ND<0 | -0.174353 J | 0.174353 | | 18 | 0 | |
| ND<0 | -0.174353 J | 0.174353 | | 19 | 0 | |
| 1.15373 | | -0.174353 J | 1.32808 | 20 | 0 | |
| 1.17557 | | -0.174353 J | 1.34993 | 21 | 0 | |
| 1.13462 | | -0.174353 J | 1.30898 | 22 | 0 | |
| 2.02815 | | -0.174353 J | 2.2025 | 23 | 0 | |
| 1.56862 | | -0.174353 J | 1.74297 | 24 | 0 | |
| 1.52606 | | -0.174353 J | 1.70041 | 25 | 0 | |
| 1.335 | -0.174353 J | 1.50935 | 26 | 0 | | |
| | | | | | | |
| 0.693147 | | -0.174353 J | 0.867501 | | 27 | 0 |
| 1.09861 | | -0.174353 J | 1.27297 | 28 | 0 | |
| ND<0 | -0.174353 J | 0.174353 | | 29 | 0 | |
| ND<0 | -0.174353 J | 0.174353 | | 30 | 0 | |
| ND<0 | -0.174353 J | 0.174353 | | 31 | 0 | |
| ND<0 | -0.174353 J | 0.174353 | | 32 | 0 | |
| ND<0 | -0.174353 J | 0.174353 | | 33 | 0 | |
| 1.66771 | | -0.174353 J | 1.84206 | 34 | 0 | |
| 1.28093 | | -0.174353 J | 1.45529 | 35 | 0 | |
| 1.25276 | | -0.174353 J | 1.42712 | 36 | 0 | |
| ND<0 | -0.174353 J | 0.174353 | | 37 | 0 | |
| ND<0 | -0.174353 J | 0.174353 | | 38 | 0 | |
| ND<0 | -0.174353 J | 0.174353 | | 39 | 0 | |
| ND<0 | -0.174353 J | 0.174353 | | 40 | 0 | |
| 1.09527 | | -0.174353 J | 1.26963 | 41 | 0 | |
| 0.71295 | | -0.174353 J | 0.887303 | | 42 | 0 |
| 0.322083 J | | -0.174353 J | 0.496437 | | 43 | 0 |
| ND<0 | -0.174353 J | 0.174353 | | 44 | 0 | |
| ND<0 | -0.174353 J | 0.174353 | | 45 | 0 | |
| 1.15373 | | -0.174353 J | 1.32808 | 46 | 0 | |

| | | | | |
|---|---|---|---|---|
| 1.17557 | -0.174353 J | 1.34993 | 47 | 0 |
| 1.13462 | -0.174353 J | 1.30898 | 48 | 0 |
| 2.02815 | -0.174353 J | 2.2025 | 49 | 0 |
| 1.56862 | -0.174353 J | 1.74297 | 50 | 0 |
| 1.52606 | -0.174353 J | 1.70041 | 51 | 0 |
| 1.335 | -0.174353 J | 1.50935 | 52 | 0 |

| | | | | |
|---|---|---|---|---|
| 1.09861 | 0.693147 | 0.405465 | 53 | 0 |
| ND<0 | 0.693147 | -0.693147 | 53 | 1 |
| ND<0 | 0.693147 | -0.693147 | 53 | 2 |
| ND<0 | 0.693147 | -0.693147 | 53 | 3 |
| ND<0 | 0.693147 | -0.693147 | 53 | 4 |
| ND<0 | 0.693147 | -0.693147 | 53 | 5 |
| 1.66771 | 0.693147 | 0.97456 | 54 | 5 |
| 1.28093 | 0.693147 | 0.587787 | 55 | 5 |
| 1.25276 | 0.693147 | 0.559616 | 56 | 5 |
| ND<0 | 0.693147 | -0.693147 | 56 | 6 |
| ND<0 | 0.693147 | -0.693147 | 56 | 7 |
| ND<0 | 0.693147 | -0.693147 | 56 | 8 |
| ND<0 | 0.693147 | -0.693147 | 56 | 9 |
| 1.09527 | 0.693147 | 0.402126 | 57 | 9 |
| 0.71295 | 0.693147 | 0.0198026 | 58 | 9 |
| 0.322083 J | 0.693147 | -0.371064 | 58 | 10 |
| ND<0 | 0.693147 | -0.693147 | 58 | 11 |
| ND<0 | 0.693147 | -0.693147 | 58 | 12 |
| 1.15373 | 0.693147 | 0.460584 | 59 | 12 |
| 1.17557 | 0.693147 | 0.482426 | 60 | 12 |
| 1.13462 | 0.693147 | 0.441476 | 61 | 12 |
| 2.02815 | 0.693147 | 1.335 | 62 | 12 |
| 1.56862 | 0.693147 | 0.875469 | 63 | 12 |
| 1.52606 | 0.693147 | 0.832909 | 64 | 12 |
| 1.335 | 0.693147 | 0.641854 | 65 | 12 |

| | | | |
|---|---|---|---|
| ND<0 | 1.09861 | -1.0986165 | 13 |
| ND<0 | 1.09861 | -1.0986165 | 14 |
| ND<0 | 1.09861 | -1.0986165 | 15 |
| ND<0 | 1.09861 | -1.0986165 | 16 |
| ND<0 | 1.09861 | -1.0986165 | 17 |
| 1.66771 | 1.09861 | 0.569095 | 66 | 17 |
| 1.28093 | 1.09861 | 0.182322 | 67 | 17 |
| 1.25276 | 1.09861 | 0.154151 | 68 | 17 |
| ND<0 | 1.09861 | -1.0986168 | 18 |
| ND<0 | 1.09861 | -1.0986168 | 19 |
| ND<0 | 1.09861 | -1.0986168 | 20 |
| ND<0 | 1.09861 | -1.0986168 | 21 |
| 1.09527 | 1.09861 | -0.0033389 | 68 | 22 |
| 0.71295 | 1.09861 | -0.385662 | 68 | 23 |
| 0.322083 J | 1.09861 | -0.776529 | 68 | 24 |
| ND<0 | 1.09861 | -1.0986168 | 25 |
| ND<0 | 1.09861 | -1.0986168 | 26 |
| 1.15373 | 1.09861 | 0.0551193 | 69 | 26 |
| 1.17557 | 1.09861 | 0.076961 | 70 | 26 |
| 1.13462 | 1.09861 | 0.0360104 | 71 | 26 |
| 2.02815 | 1.09861 | 0.929536 | 72 | 26 |
| 1.56862 | 1.09861 | 0.470004 | 73 | 26 |
| 1.52606 | 1.09861 | 0.427444 | 74 | 26 |
| 1.335 | 1.09861 | 0.236389 | 75 | 26 |

| | | | | |
|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 75 | 26 |
| ND<0 | ND<0 | 0 | 75 | 26 |
| ND<0 | ND<0 | 0 | 75 | 26 |
| ND<0 | ND<0 | 0 | 75 | 26 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1.66771 | | ND<0 | 1.66771 | 76 | 26 | |
| 1.28093 | | ND<0 | 1.28093 | 77 | 26 | |
| 1.25276 | | ND<0 | 1.25276 | 78 | 26 | |
| ND<0 | ND<0 | 0 | 78 | 26 | | |
| ND<0 | ND<0 | 0 | 78 | 26 | | |
| ND<0 | ND<0 | 0 | 78 | 26 | | |
| ND<0 | ND<0 | 0 | 78 | 26 | | |
| 1.09527 | | ND<0 | 1.09527 | 79 | 26 | |
| 0.71295 | | ND<0 | 0.71295 | 80 | 26 | |
| 0.322083 | J | ND<0 | 0.322083 | | 81 | 26 |
| ND<0 | ND<0 | 0 | 81 | 26 | | |
| ND<0 | ND<0 | 0 | 81 | 26 | | |
| 1.15373 | | ND<0 | 1.15373 | 82 | 26 | |
| 1.17557 | | ND<0 | 1.17557 | 83 | 26 | |
| 1.13462 | | ND<0 | 1.13462 | 84 | 26 | |
| 2.02815 | | ND<0 | 2.02815 | 85 | 26 | |
| 1.56862 | | ND<0 | 1.56862 | 86 | 26 | |
| 1.52606 | | ND<0 | 1.52606 | 87 | 26 | |
| 1.335 | ND<0 | 1.335 | 88 | 26 | | |
| ND<0 | ND<0 | 0 | 88 | 26 | | |
| ND<0 | ND<0 | 0 | 88 | 26 | | |
| ND<0 | ND<0 | 0 | 88 | 26 | | |
| 1.66771 | | ND<0 | 1.66771 | 89 | 26 | |
| 1.28093 | | ND<0 | 1.28093 | 90 | 26 | |
| 1.25276 | | ND<0 | 1.25276 | 91 | 26 | |
| ND<0 | ND<0 | 0 | 91 | 26 | | |
| ND<0 | ND<0 | 0 | 91 | 26 | | |
| ND<0 | ND<0 | 0 | 91 | 26 | | |
| ND<0 | ND<0 | 0 | 91 | 26 | | |
| 1.09527 | | ND<0 | 1.09527 | 92 | 26 | |
| 0.71295 | | ND<0 | 0.71295 | 93 | 26 | |
| 0.322083 | J | ND<0 | 0.322083 | | 94 | 26 |
| ND<0 | ND<0 | 0 | 94 | 26 | | |
| ND<0 | ND<0 | 0 | 94 | 26 | | |
| 1.15373 | | ND<0 | 1.15373 | 95 | 26 | |
| 1.17557 | | ND<0 | 1.17557 | 96 | 26 | |
| 1.13462 | | ND<0 | 1.13462 | 97 | 26 | |
| 2.02815 | | ND<0 | 2.02815 | 98 | 26 | |
| 1.56862 | | ND<0 | 1.56862 | 99 | 26 | |
| 1.52606 | | ND<0 | 1.52606 | 100 | 26 | |
| 1.335 | ND<0 | 1.335 | 101 | 26 | | |
| ND<0 | ND<0 | 0 | 101 | 26 | | |
| ND<0 | ND<0 | 0 | 101 | 26 | | |
| 1.66771 | | ND<0 | 1.66771 | 102 | 26 | |
| 1.28093 | | ND<0 | 1.28093 | 103 | 26 | |
| 1.25276 | | ND<0 | 1.25276 | 104 | 26 | |
| ND<0 | ND<0 | 0 | 104 | 26 | | |
| ND<0 | ND<0 | 0 | 104 | 26 | | |
| ND<0 | ND<0 | 0 | 104 | 26 | | |
| ND<0 | ND<0 | 0 | 104 | 26 | | |
| 1.09527 | | ND<0 | 1.09527 | 105 | 26 | |
| 0.71295 | | ND<0 | 0.71295 | 106 | 26 | |
| 0.322083 | J | ND<0 | 0.322083 | | 107 | 26 |
| ND<0 | ND<0 | 0 | 107 | 26 | | |
| ND<0 | ND<0 | 0 | 107 | 26 | | |
| 1.15373 | | ND<0 | 1.15373 | 108 | 26 | |
| 1.17557 | | ND<0 | 1.17557 | 109 | 26 | |
| 1.13462 | | ND<0 | 1.13462 | 110 | 26 | |
| 2.02815 | | ND<0 | 2.02815 | 111 | 26 | |
| 1.56862 | | ND<0 | 1.56862 | 112 | 26 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1.52606 | | ND<0 | 1.52606 | 113 | 26 | | |
| 1.335 | ND<0 | 1.335 | 114 | 26 | | | |
| | | | | | | | |
| ND<0 | ND<0 | 0 | 114 | 26 | | | |
| 1.66771 | | ND<0 | 1.66771 | 115 | 26 | | |
| 1.28093 | | ND<0 | 1.28093 | 116 | 26 | | |
| 1.25276 | | ND<0 | 1.25276 | 117 | 26 | | |
| ND<0 | ND<0 | 0 | 117 | 26 | | | |
| ND<0 | ND<0 | 0 | 117 | 26 | | | |
| ND<0 | ND<0 | 0 | 117 | 26 | | | |
| ND<0 | ND<0 | 0 | 117 | 26 | | | |
| 1.09527 | | ND<0 | 1.09527 | 118 | 26 | | |
| 0.71295 | | ND<0 | 0.71295 | 119 | 26 | | |
| 0.322083 | J | ND<0 | 0.322083 | | 120 | 26 | |
| ND<0 | ND<0 | 0 | 120 | 26 | | | |
| ND<0 | ND<0 | 0 | 120 | 26 | | | |
| 1.15373 | | ND<0 | 1.15373 | 121 | 26 | | |
| 1.17557 | | ND<0 | 1.17557 | 122 | 26 | | |
| 1.13462 | | ND<0 | 1.13462 | 123 | 26 | | |
| 2.02815 | | ND<0 | 2.02815 | 124 | 26 | | |
| 1.56862 | | ND<0 | 1.56862 | 125 | 26 | | |
| 1.52606 | | ND<0 | 1.52606 | 126 | 26 | | |
| 1.335 | ND<0 | 1.335 | 127 | 26 | | | |
| | | | | | | | |
| 1.66771 | | ND<0 | 1.66771 | 128 | 26 | | |
| 1.28093 | | ND<0 | 1.28093 | 129 | 26 | | |
| 1.25276 | | ND<0 | 1.25276 | 130 | 26 | | |
| ND<0 | ND<0 | 0 | 130 | 26 | | | |
| ND<0 | ND<0 | 0 | 130 | 26 | | | |
| ND<0 | ND<0 | 0 | 130 | 26 | | | |
| ND<0 | ND<0 | 0 | 130 | 26 | | | |
| 1.09527 | | ND<0 | 1.09527 | 131 | 26 | | |
| 0.71295 | | ND<0 | 0.71295 | 132 | 26 | | |
| 0.322083 | J | ND<0 | 0.322083 | | 133 | 26 | |
| ND<0 | ND<0 | 0 | 133 | 26 | | | |
| ND<0 | ND<0 | 0 | 133 | 26 | | | |
| 1.15373 | | ND<0 | 1.15373 | 134 | 26 | | |
| 1.17557 | | ND<0 | 1.17557 | 135 | 26 | | |
| 1.13462 | | ND<0 | 1.13462 | 136 | 26 | | |
| 2.02815 | | ND<0 | 2.02815 | 137 | 26 | | |
| 1.56862 | | ND<0 | 1.56862 | 138 | 26 | | |
| 1.52606 | | ND<0 | 1.52606 | 139 | 26 | | |
| 1.335 | ND<0 | 1.335 | 140 | 26 | | | |
| | | | | | | | |
| 1.28093 | | 1.66771 | | -0.386773 | | 140 | 27 |
| 1.25276 | | 1.66771 | | -0.414944 | | 140 | 28 |
| ND<0 | 1.66771 | | -1.66771 | 140 | 29 | | |
| ND<0 | 1.66771 | | -1.66771 | 140 | 30 | | |
| ND<0 | 1.66771 | | -1.66771 | 140 | 31 | | |
| ND<0 | 1.66771 | | -1.66771 | 140 | 32 | | |
| 1.09527 | | 1.66771 | | -0.572433 | | 140 | 33 |
| 0.71295 | | 1.66771 | | -0.954757 | | 140 | 34 |
| 0.322083 | J | 1.66771 | | -1.34562 | 140 | 35 | |
| ND<0 | 1.66771 | | -1.66771 | 140 | 36 | | |
| ND<0 | 1.66771 | | -1.66771 | 140 | 37 | | |
| 1.15373 | | 1.66771 | | -0.513975 | | 140 | 38 |
| 1.17557 | | 1.66771 | | -0.492133 | | 140 | 39 |
| 1.13462 | | 1.66771 | | -0.533084 | | 140 | 40 |
| 2.02815 | | 1.66771 | | 0.360441 | | 141 | 40 |
| 1.56862 | | 1.66771 | | -0.0990909 | | 141 | 41 |
| 1.52606 | | 1.66771 | | -0.141651 | | 141 | 42 |
| 1.335 | 1.66771 | | -0.332706 | | 141 | 43 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1.25276 | | 1.28093 | | -0.0281709 | 141 | 44 |
| ND<0 | 1.28093 | | -1.28093141 | 45 | | |
| ND<0 | 1.28093 | | -1.28093141 | 46 | | |
| ND<0 | 1.28093 | | -1.28093141 | 47 | | |
| ND<0 | 1.28093 | | -1.28093141 | 48 | | |
| 1.09527 | | 1.28093 | | -0.18566141 | 49 | |
| 0.71295 | | 1.28093 | | -0.567984 | 141 | 50 |
| 0.322083 J | | 1.28093 | | -0.95885141 | 51 | |
| ND<0 | 1.28093 | | -1.28093141 | 52 | | |
| ND<0 | 1.28093 | | -1.28093141 | 53 | | |
| 1.15373 | | 1.28093 | | -0.127202 | 141 | 54 |
| 1.17557 | | 1.28093 | | -0.105361 | 141 | 55 |
| 1.13462 | | 1.28093 | | -0.146311 | 141 | 56 |
| 2.02815 | | 1.28093 | | 0.747214 | 142 | 56 |
| 1.56862 | | 1.28093 | | 0.287682 | 143 | 56 |
| 1.52606 | | 1.28093 | | 0.245122 | 144 | 56 |
| 1.335 | 1.28093 | | 0.0540672 | 145 | 56 | |
| | | | | | | |
| ND<0 | 1.25276 | | -1.25276145 | 57 | | |
| ND<0 | 1.25276 | | -1.25276145 | 58 | | |
| ND<0 | 1.25276 | | -1.25276145 | 59 | | |
| ND<0 | 1.25276 | | -1.25276145 | 60 | | |
| 1.09527 | | 1.25276 | | -0.15749145 | 61 | |
| 0.71295 | | 1.25276 | | -0.539813 | 145 | 62 |
| 0.322083 J | | 1.25276 | | -0.930679 | 145 | 63 |
| ND<0 | 1.25276 | | -1.25276145 | 64 | | |
| ND<0 | 1.25276 | | -1.25276145 | 65 | | |
| 1.15373 | | 1.25276 | | -0.0990314 | 145 | 66 |
| 1.17557 | | 1.25276 | | -0.0771896 | 145 | 67 |
| 1.13462 | | 1.25276 | | -0.11814145 | 68 | |
| 2.02815 | | 1.25276 | | 0.775385 | 146 | 68 |
| 1.56862 | | 1.25276 | | 0.315853 | 147 | 68 |
| 1.52606 | | 1.25276 | | 0.273293 | 148 | 68 |
| 1.335 | 1.25276 | | 0.0822381 | 149 | 68 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 149 | 68 | | |
| ND<0 | ND<0 | 0 | 149 | 68 | | |
| ND<0 | ND<0 | 0 | 149 | 68 | | |
| 1.09527 | | ND<0 | 1.09527 | 150 | 68 | |
| 0.71295 | | ND<0 | 0.71295 | 151 | 68 | |
| 0.322083 J | | ND<0 | 0.322083 | | 152 | 68 |
| ND<0 | ND<0 | 0 | 152 | 68 | | |
| ND<0 | ND<0 | 0 | 152 | 68 | | |
| 1.15373 | | ND<0 | 1.15373 | 153 | 68 | |
| 1.17557 | | ND<0 | 1.17557 | 154 | 68 | |
| 1.13462 | | ND<0 | 1.13462 | 155 | 68 | |
| 2.02815 | | ND<0 | 2.02815 | 156 | 68 | |
| 1.56862 | | ND<0 | 1.56862 | 157 | 68 | |
| 1.52606 | | ND<0 | 1.52606 | 158 | 68 | |
| 1.335 | ND<0 | 1.335 | 159 | 68 | | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 159 | 68 | | |
| ND<0 | ND<0 | 0 | 159 | 68 | | |
| 1.09527 | | ND<0 | 1.09527 | 160 | 68 | |
| 0.71295 | | ND<0 | 0.71295 | 161 | 68 | |
| 0.322083 J | | ND<0 | 0.322083 | | 162 | 68 |
| ND<0 | ND<0 | 0 | 162 | 68 | | |
| ND<0 | ND<0 | 0 | 162 | 68 | | |
| 1.15373 | | ND<0 | 1.15373 | 163 | 68 | |
| 1.17557 | | ND<0 | 1.17557 | 164 | 68 | |
| 1.13462 | | ND<0 | 1.13462 | 165 | 68 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2.02815 | | ND<0 | 2.02815 | 166 | 68 | |
| 1.56862 | | ND<0 | 1.56862 | 167 | 68 | |
| 1.52606 | | ND<0 | 1.52606 | 168 | 68 | |
| 1.335 | ND<0 | 1.335 | 169 | 68 | | |
| ND<0 | ND<0 | 0 | 169 | 68 | | |
| 1.09527 | | ND<0 | 1.09527 | 170 | 68 | |
| 0.71295 | | ND<0 | 0.71295 | 171 | 68 | |
| 0.322083 J | | ND<0 | 0.322083 | 172 | 68 | |
| ND<0 | ND<0 | 0 | 172 | 68 | | |
| ND<0 | ND<0 | 0 | 172 | 68 | | |
| 1.15373 | | ND<0 | 1.15373 | 173 | 68 | |
| 1.17557 | | ND<0 | 1.17557 | 174 | 68 | |
| 1.13462 | | ND<0 | 1.13462 | 175 | 68 | |
| 2.02815 | | ND<0 | 2.02815 | 176 | 68 | |
| 1.56862 | | ND<0 | 1.56862 | 177 | 68 | |
| 1.52606 | | ND<0 | 1.52606 | 178 | 68 | |
| 1.335 | ND<0 | 1.335 | 179 | 68 | | |
| 1.09527 | | ND<0 | 1.09527 | 180 | 68 | |
| 0.71295 | | ND<0 | 0.71295 | 181 | 68 | |
| 0.322083 J | | ND<0 | 0.322083 | 182 | 68 | |
| ND<0 | ND<0 | 0 | 182 | 68 | | |
| ND<0 | ND<0 | 0 | 182 | 68 | | |
| 1.15373 | | ND<0 | 1.15373 | 183 | 68 | |
| 1.17557 | | ND<0 | 1.17557 | 184 | 68 | |
| 1.13462 | | ND<0 | 1.13462 | 185 | 68 | |
| 2.02815 | | ND<0 | 2.02815 | 186 | 68 | |
| 1.56862 | | ND<0 | 1.56862 | 187 | 68 | |
| 1.52606 | | ND<0 | 1.52606 | 188 | 68 | |
| 1.335 | ND<0 | 1.335 | 189 | 68 | | |
| 0.71295 | | 1.09527 | -0.382324 | 189 | 69 | |
| 0.322083 J | | 1.09527 | -0.77319 | 189 | 70 | |
| ND<0 | 1.09527 | -1.09527 | 189 | 71 | | |
| ND<0 | 1.09527 | -1.09527 | 189 | 72 | | |
| 1.15373 | | 1.09527 | 0.0584582 | 190 | 72 | |
| 1.17557 | | 1.09527 | 0.0802999 | 191 | 72 | |
| 1.13462 | | 1.09527 | 0.0393493 | 192 | 72 | |
| 2.02815 | | 1.09527 | 0.932875 | 193 | 72 | |
| 1.56862 | | 1.09527 | 0.473343 | 194 | 72 | |
| 1.52606 | | 1.09527 | 0.430783 | 195 | 72 | |
| 1.335 | 1.09527 | 0.239728 | 196 | 72 | | |
| 0.322083 J | | 0.71295 | -0.390866 | 196 | 73 | |
| ND<0 | 0.71295 | -0.71295 | 196 | 74 | | |
| ND<0 | 0.71295 | -0.71295 | 196 | 75 | | |
| 1.15373 | | 0.71295 | 0.440782 | 197 | 75 | |
| 1.17557 | | 0.71295 | 0.462624 | 198 | 75 | |
| 1.13462 | | 0.71295 | 0.421673 | 199 | 75 | |
| 2.02815 | | 0.71295 | 1.3152 | 200 | 75 | |
| 1.56862 | | 0.71295 | 0.855666 | 201 | 75 | |
| 1.52606 | | 0.71295 | 0.813106 | 202 | 75 | |
| 1.335 | 0.71295 | 0.622051 | 203 | 75 | | |
| ND<0 | 0.322083 J | -0.322083 | 203 | 76 | | |
| ND<0 | 0.322083 J | -0.322083 | 203 | 77 | | |
| 1.15373 | | 0.322083 J | 0.831648 | 204 | 77 | |
| 1.17557 | | 0.322083 J | 0.85349 | 205 | 77 | |
| 1.13462 | | 0.322083 J | 0.812539 | 206 | 77 | |
| 2.02815 | | 0.322083 J | 1.70606 | 207 | 77 | |
| 1.56862 | | 0.322083 J | 1.24653 | 208 | 77 | |

| | | | | | |
|---|---|---|---|---|---|
| 1.52606 | 0.322083 J | 1.20397 | 209 | 77 | |
| 1.335 | 0.322083 J | 1.01292 | 210 | 77 | |
| | | | | | |
| ND<0 | ND<0 | 0 | 210 | 77 | |
| 1.15373 | ND<0 | 1.15373 | 211 | 77 | |
| 1.17557 | ND<0 | 1.17557 | 212 | 77 | |
| 1.13462 | ND<0 | 1.13462 | 213 | 77 | |
| 2.02815 | ND<0 | 2.02815 | 214 | 77 | |
| 1.56862 | ND<0 | 1.56862 | 215 | 77 | |
| 1.52606 | ND<0 | 1.52606 | 216 | 77 | |
| 1.335 | ND<0 | 1.335 | 217 | 77 | |
| | | | | | |
| 1.15373 | ND<0 | 1.15373 | 218 | 77 | |
| 1.17557 | ND<0 | 1.17557 | 219 | 77 | |
| 1.13462 | ND<0 | 1.13462 | 220 | 77 | |
| 2.02815 | ND<0 | 2.02815 | 221 | 77 | |
| 1.56862 | ND<0 | 1.56862 | 222 | 77 | |
| 1.52606 | ND<0 | 1.52606 | 223 | 77 | |
| 1.335 | ND<0 | 1.335 | 224 | 77 | |
| | | | | | |
| 1.17557 | 1.15373 | 0.0218417 | 225 | 77 | |
| 1.13462 | 1.15373 | -0.0191089 | 225 | 78 | |
| 2.02815 | 1.15373 | 0.874417 | 226 | 78 | |
| 1.56862 | 1.15373 | 0.414884 | 227 | 78 | |
| 1.52606 | 1.15373 | 0.372325 | 228 | 78 | |
| 1.335 | 1.15373 | 0.181269 | 229 | 78 | |
| | | | | | |
| 1.13462 | 1.17557 | -0.0409506 | 229 | 79 | |
| 2.02815 | 1.17557 | 0.852575 | 230 | 79 | |
| 1.56862 | 1.17557 | 0.393043 | 231 | 79 | |
| 1.52606 | 1.17557 | 0.350483 | 232 | 79 | |
| 1.335 | 1.17557 | 0.159428 | 233 | 79 | |
| | | | | | |
| 2.02815 | 1.13462 | 0.893526 | 234 | 79 | |
| 1.56862 | 1.13462 | 0.433993 | 235 | 79 | |
| 1.52606 | 1.13462 | 0.391434 | 236 | 79 | |
| 1.335 | 1.13462 | 0.200378 | 237 | 79 | |
| | | | | | |
| 1.56862 | 2.02815 | -0.459532 | 237 | 80 | |
| 1.52606 | 2.02815 | -0.502092 | 237 | 81 | |
| 1.335 | 2.02815 | -0.693147 | 237 | 82 | |
| | | | | | |
| 1.52606 | 1.56862 | -0.0425596 | 237 | 83 | |
| 1.335 | 1.56862 | -0.233615 | 237 | 84 | |
| | | | | | |
| 1.335 | 1.52606 | -0.191055 | 237 | 85 | |

S Statistic = 237 - 85 = 152

| Tied Group | Value | Members |
|---|---|---|
| 1 | -0.174353 | 2 |
| 2 | 0 | 11 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |
| 11/19/1996 | 1 |

| | | |
|---|---|---|
| 12/19/1996 | | 1 |
| 3/24/1997 | | 1 |
| 9/24/1997 | | 1 |
| 4/7/1998 | 1 | |
| 9/23/1998 | | 1 |
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 11/16/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 1 |

There are 0 time periods with multiple data

A = 2988
B = 0
C = 990
D = 0
E = 112
F = 0
a = 46116
b = 176904
c = 1512
Group Variance = 2396
Z-Score = 3.08485
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|3.08485| > 1.97737 indicating a trend

# Mann-Kendall Trend Analysis

## Parameter: 1,1-Dichloroethane

## Location: MW-11R

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | Positives | Negatives |
|---|---|---|---|---|
| 3.04452 | 2.14007 | 0.904456 | 1 | 0 |
| 2.94444 | 2.14007 | 0.804373 | 2 | 0 |
| 3.09104 | 2.14007 | 0.950976 | 3 | 0 |
| ND<0 | 2.14007 | -2.140073 | 1 | |
| 2.94444 | 2.14007 | 0.804373 | 4 | 1 |
| ND<0 | 2.14007 | -2.140074 | 2 | |
| 1.62924 | 2.14007 | -0.510826 | 4 | 3 |
| 2.12823 | 2.14007 | -0.0118345 | 4 | 4 |
| 2.56495 | 2.14007 | 0.424883 | 5 | 4 |
| 2.37955 | 2.14007 | 0.23948 | 6 | 4 |
| 1.70475 | 2.14007 | -0.435318 | 6 | 5 |
| 2.29253 | 2.14007 | 0.152469 | 7 | 5 |
| ND<0 | 2.14007 | -2.140077 | 6 | |
| ND<0 | 2.14007 | -2.140077 | 7 | |
| ND<0 | 2.14007 | -2.140077 | 8 | |
| 1.35067 | 2.14007 | -0.789399 | 7 | 9 |
| 0.779325 | 2.14007 | -1.360747 | 10 | |
| 0.518794 J | 2.14007 | -1.621277 | 11 | |
| 0.727549 | 2.14007 | -1.412527 | 12 | |
| ND<0 | 2.14007 | -2.140077 | 13 | |
| 1.39872 | 2.14007 | -0.741349 | 7 | 14 |
| ND<0 | 2.14007 | -2.140077 | 15 | |
| -0.579818 J | 2.14007 | -2.719887 | 16 | |
| 1.06471 | 2.14007 | -1.075367 | 17 | |
| -0.867501 J | 2.14007 | -3.007577 | 18 | |
| 1.06471 | 2.14007 | -1.075367 | 19 | |
| ND<-2.07944 U | 2.14007 | -4.219517 | 20 | |
| | | | | |
| 2.94444 | 3.04452 | -0.100083 | 7 | 21 |
| 3.09104 | 3.04452 | 0.04652 | 8 | 21 |
| ND<0 | 3.04452 | -3.044528 | 22 | |
| 2.94444 | 3.04452 | -0.100083 | 8 | 23 |
| ND<0 | 3.04452 | -3.044528 | 24 | |
| 1.62924 | 3.04452 | -1.415288 | 25 | |
| 2.12823 | 3.04452 | -0.916291 | 8 | 26 |
| 2.56495 | 3.04452 | -0.479573 | 8 | 27 |
| 2.37955 | 3.04452 | -0.664976 | 8 | 28 |
| 1.70475 | 3.04452 | -1.339778 | 29 | |
| 2.29253 | 3.04452 | -0.751988 | 8 | 30 |
| ND<0 | 3.04452 | -3.044528 | 31 | |
| ND<0 | 3.04452 | -3.044528 | 32 | |
| ND<0 | 3.04452 | -3.044528 | 33 | |
| 1.35067 | 3.04452 | -1.693868 | 34 | |
| 0.779325 | 3.04452 | -2.2652 | 8 | 35 |
| 0.518794 J | 3.04452 | -2.525738 | 36 | |
| 0.727549 | 3.04452 | -2.316978 | 37 | |
| ND<0 | 3.04452 | -3.044528 | 38 | |
| 1.39872 | 3.04452 | -1.645818 | 39 | |

| | | | | | |
|---|---|---|---|---|---|
| ND<0 | 3.04452 | -3.044528 | 40 | | |
| -0.579818 J | 3.04452 | -3.624348 | 41 | | |
| 1.06471 | 3.04452 | -1.979818 | 42 | | |
| -0.867501 J | 3.04452 | -3.912028 | 43 | | |
| 1.06471 | 3.04452 | -1.979818 | 44 | | |
| ND<-2.07944 U | 3.04452 | -5.123968 | 45 | | |
| | | | | | |
| 3.09104 | 2.94444 | 0.146603 | 9 | 45 | |
| ND<0 | 2.94444 | -2.944449 | 46 | | |
| 2.94444 | 2.94444 | 0 | 9 | 46 | |
| ND<0 | 2.94444 | -2.944449 | 47 | | |
| 1.62924 | 2.94444 | -1.3152 | 9 | 48 | |
| 2.12823 | 2.94444 | -0.816207 | 9 | 49 | |
| 2.56495 | 2.94444 | -0.379499 | 50 | | |
| 2.37955 | 2.94444 | -0.564893 | 9 | 51 | |
| 1.70475 | 2.94444 | -1.239699 | 52 | | |
| 2.29253 | 2.94444 | -0.651904 | 9 | 53 | |
| ND<0 | 2.94444 | -2.944449 | 54 | | |
| ND<0 | 2.94444 | -2.944449 | 55 | | |
| ND<0 | 2.94444 | -2.944449 | 56 | | |
| 1.35067 | 2.94444 | -1.593779 | 57 | | |
| 0.779325 | 2.94444 | -2.165119 | 58 | | |
| 0.518794 J | 2.94444 | -2.425659 | 59 | | |
| 0.727549 | 2.94444 | -2.216899 | 60 | | |
| ND<0 | 2.94444 | -2.944449 | 61 | | |
| 1.39872 | 2.94444 | -1.545729 | 62 | | |
| ND<0 | 2.94444 | -2.944449 | 63 | | |
| -0.579818 J | 2.94444 | -3.524269 | 64 | | |
| 1.06471 | 2.94444 | -1.879739 | 65 | | |
| -0.867501 J | 2.94444 | -3.811949 | 66 | | |
| 1.06471 | 2.94444 | -1.879739 | 67 | | |
| ND<-2.07944 U | 2.94444 | -5.023889 | 68 | | |
| | | | | | |
| ND<0 | 3.09104 | -3.091049 | 69 | | |
| 2.94444 | 3.09104 | -0.146603 | 9 | 70 | |
| ND<0 | 3.09104 | -3.091049 | 71 | | |
| 1.62924 | 3.09104 | -1.4618 | 9 | 72 | |
| 2.12823 | 3.09104 | -0.962811 | 9 | 73 | |
| 2.56495 | 3.09104 | -0.526093 | 9 | 74 | |
| 2.37955 | 3.09104 | -0.711496 | 9 | 75 | |
| 1.70475 | 3.09104 | -1.386299 | 76 | | |
| 2.29253 | 3.09104 | -0.798508 | 9 | 77 | |
| ND<0 | 3.09104 | -3.091049 | 78 | | |
| ND<0 | 3.09104 | -3.091049 | 79 | | |
| ND<0 | 3.09104 | -3.091049 | 80 | | |
| 1.35067 | 3.09104 | -1.740389 | 81 | | |
| 0.779325 | 3.09104 | -2.311729 | 82 | | |
| 0.518794 J | 3.09104 | -2.572259 | 83 | | |
| 0.727549 | 3.09104 | -2.363499 | 84 | | |
| ND<0 | 3.09104 | -3.091049 | 85 | | |
| 1.39872 | 3.09104 | -1.692339 | 86 | | |
| ND<0 | 3.09104 | -3.091049 | 87 | | |
| -0.579818 J | 3.09104 | -3.670869 | 88 | | |
| 1.06471 | 3.09104 | -2.026339 | 89 | | |
| -0.867501 J | 3.09104 | -3.958549 | 90 | | |
| 1.06471 | 3.09104 | -2.026339 | 91 | | |
| ND<-2.07944 U | 3.09104 | -5.170489 | 92 | | |
| | | | | | |
| 2.94444 | ND<0 | 2.94444 | 10 | 92 | |
| ND<0 | ND<0 | 0 | 10 | 92 | |
| 1.62924 | ND<0 | 1.62924 | 11 | 92 | |
| 2.12823 | ND<0 | 2.12823 | 12 | 92 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2.56495 | | ND<0 | 2.56495 | 13 | 92 | | |
| 2.37955 | | ND<0 | 2.37955 | 14 | 92 | | |
| 1.70475 | | ND<0 | 1.70475 | 15 | 92 | | |
| 2.29253 | | ND<0 | 2.29253 | 16 | 92 | | |
| ND<0 | ND<0 | 0 | 16 | 92 | | | |
| ND<0 | ND<0 | 0 | 16 | 92 | | | |
| ND<0 | ND<0 | 0 | 16 | 92 | | | |
| 1.35067 | | ND<0 | 1.35067 | 17 | 92 | | |
| 0.779325 | | ND<0 | 0.779325 | | 18 | 92 | |
| 0.518794 J | | ND<0 | 0.518794 | | 19 | 92 | |
| 0.727549 | | ND<0 | 0.727549 | | 20 | 92 | |
| ND<0 | ND<0 | 0 | 20 | 92 | | | |
| 1.39872 | | ND<0 | 1.39872 | 21 | 92 | | |
| ND<0 | ND<0 | 0 | 21 | 92 | | | |
| -0.579818 J | | ND<0 | -0.579818 | | 21 | 93 | |
| 1.06471 | | ND<0 | 1.06471 | 22 | 93 | | |
| -0.867501 J | | ND<0 | -0.867501 | | 22 | 94 | |
| 1.06471 | | ND<0 | 1.06471 | 23 | 94 | | |
| ND<-2.07944 U | | ND<0 | -2.07944 | 23 | 95 | | |
| | | | | | | | |
| ND<0 | 2.94444 | | -2.94444 | 23 | 96 | | |
| 1.62924 | | 2.94444 | | -1.3152 | 23 | 97 | |
| 2.12823 | | 2.94444 | | -0.816207 | | 23 | 98 |
| 2.56495 | | 2.94444 | | -0.37949 | 23 | 99 | |
| 2.37955 | | 2.94444 | | -0.564893 | | 23 | 100 |
| 1.70475 | | 2.94444 | | -1.23969 | 23 | 101 | |
| 2.29253 | | 2.94444 | | -0.651904 | | 23 | 102 |
| ND<0 | 2.94444 | | -2.94444 | 23 | 103 | | |
| ND<0 | 2.94444 | | -2.94444 | 23 | 104 | | |
| ND<0 | 2.94444 | | -2.94444 | 23 | 105 | | |
| 1.35067 | | 2.94444 | | -1.59377 | 23 | 106 | |
| 0.779325 | | 2.94444 | | -2.16511 | 23 | 107 | |
| 0.518794 J | | 2.94444 | | -2.42565 | 23 | 108 | |
| 0.727549 | | 2.94444 | | -2.21689 | 23 | 109 | |
| ND<0 | 2.94444 | | -2.94444 | 23 | 110 | | |
| 1.39872 | | 2.94444 | | -1.54572 | 23 | 111 | |
| ND<0 | 2.94444 | | -2.94444 | 23 | 112 | | |
| -0.579818 J | | 2.94444 | | -3.52426 | 23 | 113 | |
| 1.06471 | | 2.94444 | | -1.87973 | 23 | 114 | |
| -0.867501 J | | 2.94444 | | -3.81194 | 23 | 115 | |
| 1.06471 | | 2.94444 | | -1.87973 | 23 | 116 | |
| ND<-2.07944 U | | 2.94444 | | -5.02388 | 23 | 117 | |
| | | | | | | | |
| 1.62924 | | ND<0 | 1.62924 | 24 | 117 | | |
| 2.12823 | | ND<0 | 2.12823 | 25 | 117 | | |
| 2.56495 | | ND<0 | 2.56495 | 26 | 117 | | |
| 2.37955 | | ND<0 | 2.37955 | 27 | 117 | | |
| 1.70475 | | ND<0 | 1.70475 | 28 | 117 | | |
| 2.29253 | | ND<0 | 2.29253 | 29 | 117 | | |
| ND<0 | ND<0 | 0 | 29 | 117 | | | |
| ND<0 | ND<0 | 0 | 29 | 117 | | | |
| ND<0 | ND<0 | 0 | 29 | 117 | | | |
| 1.35067 | | ND<0 | 1.35067 | 30 | 117 | | |
| 0.779325 | | ND<0 | 0.779325 | | 31 | 117 | |
| 0.518794 J | | ND<0 | 0.518794 | | 32 | 117 | |
| 0.727549 | | ND<0 | 0.727549 | | 33 | 117 | |
| ND<0 | ND<0 | 0 | 33 | 117 | | | |
| 1.39872 | | ND<0 | 1.39872 | 34 | 117 | | |
| ND<0 | ND<0 | 0 | 34 | 117 | | | |
| -0.579818 J | | ND<0 | -0.579818 | | 34 | 118 | |
| 1.06471 | | ND<0 | 1.06471 | 35 | 118 | | |
| -0.867501 J | | ND<0 | -0.867501 | | 35 | 119 | |

| | | | | |
|---|---|---|---|---|
| 1.06471 | ND<0 | 1.06471 | 36 | 119 |
| ND<-2.07944 U | ND<0 | -2.0794 | 436 | 120 |

| | | | | |
|---|---|---|---|---|
| 2.12823 | 1.62924 | 0.498991 | 37 | 120 |
| 2.56495 | 1.62924 | 0.935709 | 38 | 120 |
| 2.37955 | 1.62924 | 0.750306 | 39 | 120 |
| 1.70475 | 1.62924 | 0.0755076 | 40 | 120 |
| 2.29253 | 1.62924 | 0.663294 | 41 | 120 |
| ND<0 | 1.62924 | -1.6292 | 441 | 121 |
| ND<0 | 1.62924 | -1.6292 | 441 | 122 |
| ND<0 | 1.62924 | -1.6292 | 441 | 123 |
| 1.35067 | 1.62924 | -0.278573 | 41 | 124 |
| 0.779325 | 1.62924 | -0.849916 | 41 | 125 |
| 0.518794 J | 1.62924 | -1.1104 | 541 | 126 |
| 0.727549 | 1.62924 | -0.901692 | 41 | 127 |
| ND<0 | 1.62924 | -1.6292 | 441 | 128 |
| 1.39872 | 1.62924 | -0.230524 | 41 | 129 |
| ND<0 | 1.62924 | -1.6292 | 441 | 130 |
| -0.579818 J | 1.62924 | -2.2090 | 641 | 131 |
| 1.06471 | 1.62924 | -0.5645 | 341 | 132 |
| -0.867501 J | 1.62924 | -2.4967 | 441 | 133 |
| 1.06471 | 1.62924 | -0.5645 | 341 | 134 |
| ND<-2.07944 U | 1.62924 | -3.7086 | 841 | 135 |

| | | | | |
|---|---|---|---|---|
| 2.56495 | 2.12823 | 0.436718 | 42 | 135 |
| 2.37955 | 2.12823 | 0.251314 | 43 | 135 |
| 1.70475 | 2.12823 | -0.423484 | 43 | 136 |
| 2.29253 | 2.12823 | 0.164303 | 44 | 136 |
| ND<0 | 2.12823 | -2.1282 | 344 | 137 |
| ND<0 | 2.12823 | -2.1282 | 344 | 138 |
| ND<0 | 2.12823 | -2.1282 | 344 | 139 |
| 1.35067 | 2.12823 | -0.777565 | 44 | 140 |
| 0.779325 | 2.12823 | -1.3489 | 144 | 141 |
| 0.518794 J | 2.12823 | -1.6094 | 444 | 142 |
| 0.727549 | 2.12823 | -1.4006 | 844 | 143 |
| ND<0 | 2.12823 | -2.1282 | 344 | 144 |
| 1.39872 | 2.12823 | -0.729515 | 44 | 145 |
| ND<0 | 2.12823 | -2.1282 | 344 | 146 |
| -0.579818 J | 2.12823 | -2.7080 | 544 | 147 |
| 1.06471 | 2.12823 | -1.0635 | 244 | 148 |
| -0.867501 J | 2.12823 | -2.9957 | 344 | 149 |
| 1.06471 | 2.12823 | -1.0635 | 244 | 150 |
| ND<-2.07944 U | 2.12823 | -4.2076 | 744 | 151 |

| | | | | |
|---|---|---|---|---|
| 2.37955 | 2.56495 | -0.185403 | 44 | 152 |
| 1.70475 | 2.56495 | -0.860201 | 44 | 153 |
| 2.29253 | 2.56495 | -0.272415 | 44 | 154 |
| ND<0 | 2.56495 | -2.5649 | 544 | 155 |
| ND<0 | 2.56495 | -2.5649 | 544 | 156 |
| ND<0 | 2.56495 | -2.5649 | 544 | 157 |
| 1.35067 | 2.56495 | -1.2142 | 844 | 158 |
| 0.779325 | 2.56495 | -1.7856 | 244 | 159 |
| 0.518794 J | 2.56495 | -2.0461 | 644 | 160 |
| 0.727549 | 2.56495 | -1.8374 | 44 | 161 |
| ND<0 | 2.56495 | -2.5649 | 544 | 162 |
| 1.39872 | 2.56495 | -1.1662 | 344 | 163 |
| ND<0 | 2.56495 | -2.5649 | 544 | 164 |
| -0.579818 J | 2.56495 | -3.1447 | 744 | 165 |
| 1.06471 | 2.56495 | -1.5002 | 444 | 166 |
| -0.867501 J | 2.56495 | -3.4324 | 544 | 167 |
| 1.06471 | 2.56495 | -1.5002 | 444 | 168 |
| ND<-2.07944 U | 2.56495 | -4.6443 | 944 | 169 |

| | | | | |
|---|---|---|---|---|
| 1.70475 | 2.37955 | -0.674798 | 44 | 170 |
| 2.29253 | 2.37955 | -0.0870114 | 44 | 171 |
| ND<0 | 2.37955 | -2.3795544 | 172 | |
| ND<0 | 2.37955 | -2.3795544 | 173 | |
| ND<0 | 2.37955 | -2.3795544 | 174 | |
| 1.35067 | 2.37955 | -1.0288844 | 175 | |
| 0.779325 | 2.37955 | -1.6002244 | 176 | |
| 0.518794 J | 2.37955 | -1.8607544 | 177 | |
| 0.727549 | 2.37955 | -1.652 44 | 178 | |
| ND<0 | 2.37955 | -2.3795544 | 179 | |
| 1.39872 | 2.37955 | -0.980829 | 44 | 180 |
| ND<0 | 2.37955 | -2.3795544 | 181 | |
| -0.579818 J | 2.37955 | -2.9593644 | 182 | |
| 1.06471 | 2.37955 | -1.3148444 | 183 | |
| -0.867501 J | 2.37955 | -3.2470544 | 184 | |
| 1.06471 | 2.37955 | -1.3148444 | 185 | |
| ND<-2.07944 U | 2.37955 | -4.4589944 | 186 | |
| | | | | |
| 2.29253 | 1.70475 | 0.587787 | 45 | 186 |
| ND<0 | 1.70475 | -1.7047545 | 187 | |
| ND<0 | 1.70475 | -1.7047545 | 188 | |
| ND<0 | 1.70475 | -1.7047545 | 189 | |
| 1.35067 | 1.70475 | -0.354081 | 45 | 190 |
| 0.779325 | 1.70475 | -0.925423 | 45 | 191 |
| 0.518794 J | 1.70475 | -1.1859545 | 192 | |
| 0.727549 | 1.70475 | -0.977199 | 45 | 193 |
| ND<0 | 1.70475 | -1.7047545 | 194 | |
| 1.39872 | 1.70475 | -0.306031 | 45 | 195 |
| ND<0 | 1.70475 | -1.7047545 | 196 | |
| -0.579818 J | 1.70475 | -2.2845745 | 197 | |
| 1.06471 | 1.70475 | -0.640037 | 45 | 198 |
| -0.867501 J | 1.70475 | -2.5722545 | 199 | |
| 1.06471 | 1.70475 | -0.640037 | 45 | 200 |
| ND<-2.07944 U | 1.70475 | -3.7841945 | 201 | |
| | | | | |
| ND<0 | 2.29253 | -2.2925345 | 202 | |
| ND<0 | 2.29253 | -2.2925345 | 203 | |
| ND<0 | 2.29253 | -2.2925345 | 204 | |
| 1.35067 | 2.29253 | -0.941868 | 45 | 205 |
| 0.779325 | 2.29253 | -1.5132145 | 206 | |
| 0.518794 J | 2.29253 | -1.7737445 | 207 | |
| 0.727549 | 2.29253 | -1.5649945 | 208 | |
| ND<0 | 2.29253 | -2.2925345 | 209 | |
| 1.39872 | 2.29253 | -0.893818 | 45 | 210 |
| ND<0 | 2.29253 | -2.2925345 | 211 | |
| -0.579818 J | 2.29253 | -2.8723545 | 212 | |
| 1.06471 | 2.29253 | -1.2278245 | 213 | |
| -0.867501 J | 2.29253 | -3.1600445 | 214 | |
| 1.06471 | 2.29253 | -1.2278245 | 215 | |
| ND<-2.07944 U | 2.29253 | -4.3719845 | 216 | |
| | | | | |
| ND<0 | ND<0 | 0 | 45 | 216 |
| ND<0 | ND<0 | 0 | 45 | 216 |
| 1.35067 | ND<0 | 1.35067 | 46 | 216 |
| 0.779325 | ND<0 | 0.779325 | 47 | 216 |
| 0.518794 J | ND<0 | 0.518794 | 48 | 216 |
| 0.727549 | ND<0 | 0.727549 | 49 | 216 |
| ND<0 | ND<0 | 0 | 49 | 216 |
| 1.39872 | ND<0 | 1.39872 | 50 | 216 |
| ND<0 | ND<0 | 0 | 50 | 216 |
| -0.579818 J | ND<0 | -0.579818 | 50 | 217 |

| | | | | | |
|---|---|---|---|---|---|
| 1.06471 | ND<0 | 1.06471 | 51 | 217 | |
| -0.867501 J | ND<0 | -0.867501 | 51 | 218 | |
| 1.06471 | ND<0 | 1.06471 | 52 | 218 | |
| ND<-2.07944 U | ND<0 | -2.0794452 | 219 | | |
| | | | | | |
| ND<0 | ND<0 | 0 | 52 | 219 | |
| 1.35067 | ND<0 | 1.35067 | 53 | 219 | |
| 0.779325 | ND<0 | 0.779325 | 54 | 219 | |
| 0.518794 J | ND<0 | 0.518794 | 55 | 219 | |
| 0.727549 | ND<0 | 0.727549 | 56 | 219 | |
| ND<0 | ND<0 | 0 | 56 | 219 | |
| 1.39872 | ND<0 | 1.39872 | 57 | 219 | |
| ND<0 | ND<0 | 0 | 57 | 219 | |
| -0.579818 J | ND<0 | -0.579818 | 57 | 220 | |
| 1.06471 | ND<0 | 1.06471 | 58 | 220 | |
| -0.867501 J | ND<0 | -0.867501 | 58 | 221 | |
| 1.06471 | ND<0 | 1.06471 | 59 | 221 | |
| ND<-2.07944 U | ND<0 | -2.0794459 | 222 | | |
| | | | | | |
| 1.35067 | ND<0 | 1.35067 | 60 | 222 | |
| 0.779325 | ND<0 | 0.779325 | 61 | 222 | |
| 0.518794 J | ND<0 | 0.518794 | 62 | 222 | |
| 0.727549 | ND<0 | 0.727549 | 63 | 222 | |
| ND<0 | ND<0 | 0 | 63 | 222 | |
| 1.39872 | ND<0 | 1.39872 | 64 | 222 | |
| ND<0 | ND<0 | 0 | 64 | 222 | |
| -0.579818 J | ND<0 | -0.579818 | 64 | 223 | |
| 1.06471 | ND<0 | 1.06471 | 65 | 223 | |
| -0.867501 J | ND<0 | -0.867501 | 65 | 224 | |
| 1.06471 | ND<0 | 1.06471 | 66 | 224 | |
| ND<-2.07944 U | ND<0 | -2.0794466 | 225 | | |
| | | | | | |
| 0.779325 | 1.35067 | -0.571342 | 66 | 226 | |
| 0.518794 J | 1.35067 | -0.831873 | 66 | 227 | |
| 0.727549 | 1.35067 | -0.623119 | 66 | 228 | |
| ND<0 | 1.35067 | -1.3506766 | 229 | | |
| 1.39872 | 1.35067 | 0.0480497 | 67 | 229 | |
| ND<0 | 1.35067 | -1.3506767 | 230 | | |
| -0.579818 J | 1.35067 | -1.9304967 | 231 | | |
| 1.06471 | 1.35067 | -0.285956 | 67 | 232 | |
| -0.867501 J | 1.35067 | -2.2181767 | 233 | | |
| 1.06471 | 1.35067 | -0.285956 | 67 | 234 | |
| ND<-2.07944 U | 1.35067 | -3.4301167 | 235 | | |
| | | | | | |
| 0.518794 J | 0.779325 | -0.260531 | 67 | 236 | |
| 0.727549 | 0.779325 | -0.0517763 | 67 | 237 | |
| ND<0 | 0.779325 | -0.779325 | 67 | 238 | |
| 1.39872 | 0.779325 | 0.619392 | 68 | 238 | |
| ND<0 | 0.779325 | -0.779325 | 68 | 239 | |
| -0.579818 J | 0.779325 | -1.3591468 | 240 | | |
| 1.06471 | 0.779325 | 0.285386 | 69 | 240 | |
| -0.867501 J | 0.779325 | -1.6468369 | 241 | | |
| 1.06471 | 0.779325 | 0.285386 | 70 | 241 | |
| ND<-2.07944 U | 0.779325 | -2.8587770 | 242 | | |
| | | | | | |
| 0.727549 | 0.518794 J | 0.208755 | 71 | 242 | |
| ND<0 | 0.518794 J | -0.518794 | 71 | 243 | |
| 1.39872 | 0.518794 J | 0.879923 | 72 | 243 | |
| ND<0 | 0.518794 J | -0.518794 | 72 | 244 | |
| -0.579818 J | 0.518794 J | -1.0986172 | 245 | | |
| 1.06471 | 0.518794 J | 0.545917 | 73 | 245 | |
| -0.867501 J | 0.518794 J | -1.3862973 | 246 | | |

| | | | | | |
|---|---|---|---|---|---|
| 1.06471 | 0.518794 J | 0.545917 | 74 | 246 | |
| ND<-2.07944 U | 0.518794 J | -2.5982474 | 247 | | |
| | | | | | |
| ND<0 | 0.727549 | -0.727549 | 74 | 248 | |
| 1.39872 | 0.727549 | 0.671168 | 75 | 248 | |
| ND<0 | 0.727549 | -0.727549 | 75 | 249 | |
| -0.579818 J | 0.727549 | -1.3073775 | 250 | | |
| 1.06471 | 0.727549 | 0.337162 | 76 | 250 | |
| -0.867501 J | 0.727549 | -1.5950576 | 251 | | |
| 1.06471 | 0.727549 | 0.337162 | 77 | 251 | |
| ND<-2.07944 U | 0.727549 | -2.8069977 | 252 | | |
| | | | | | |
| 1.39872 | ND<0 | 1.39872 78 | 252 | | |
| ND<0 | ND<0 | 0 | 78 | 252 | |
| -0.579818 J | ND<0 | -0.579818 | 78 | 253 | |
| 1.06471 | ND<0 | 1.06471 79 | 253 | | |
| -0.867501 J | ND<0 | -0.867501 | 79 | 254 | |
| 1.06471 | ND<0 | 1.06471 80 | 254 | | |
| ND<-2.07944 U | ND<0 | -2.0794480 | 255 | | |
| | | | | | |
| ND<0 | 1.39872 | -1.3987280 | 256 | | |
| -0.579818 J | 1.39872 | -1.9785480 | 257 | | |
| 1.06471 | 1.39872 | -0.334006 | 80 | 258 | |
| -0.867501 J | 1.39872 | -2.2662280 | 259 | | |
| 1.06471 | 1.39872 | -0.334006 | 80 | 260 | |
| ND<-2.07944 U | 1.39872 | -3.4781680 | 261 | | |
| | | | | | |
| -0.579818 J | ND<0 | -0.579818 | 80 | 262 | |
| 1.06471 | ND<0 | 1.06471 81 | 262 | | |
| -0.867501 J | ND<0 | -0.867501 | 81 | 263 | |
| 1.06471 | ND<0 | 1.06471 82 | 263 | | |
| ND<-2.07944 U | ND<0 | -2.0794482 | 264 | | |
| | | | | | |
| 1.06471 | -0.579818 J | 1.64453 83 | 264 | | |
| -0.867501 J | -0.579818 J | -0.287682 | 83 | 265 | |
| 1.06471 | -0.579818 J | 1.64453 84 | 265 | | |
| ND<-2.07944 U | -0.579818 J | -1.4996284 | 266 | | |
| | | | | | |
| -0.867501 J | 1.06471 | -1.9322184 | 267 | | |
| 1.06471 | 1.06471 | 0 | 84 | 267 | |
| ND<-2.07944 U | 1.06471 | -3.1441584 | 268 | | |
| | | | | | |
| 1.06471 | -0.867501 J | 1.93221 85 | 268 | | |
| ND<-2.07944 U | -0.867501 J | -1.2119485 | 269 | | |
| | | | | | |
| ND<-2.07944 U | 1.06471 | -3.1441585 | 270 | | |

S Statistic = 85 - 270 = -185

| Tied Group | Value | Members |
|---|---|---|
| 1 | 2.94444 | 2 |
| 2 | 0 | 7 |
| 3 | 1.06471 | 2 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |

| | | |
|---|---|---|
| 11/19/1996 | | 1 |
| 12/19/1996 | | 1 |
| 3/24/1997 | | 1 |
| 9/24/1997 | | 1 |
| 4/7/1998 | 1 | |
| 9/23/1998 | | 1 |
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 11/16/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 1 |

There are 0 time periods with multiple data

A = 834
B = 0
C = 210
D = 0
E = 46
F = 0
a = 46116
b = 176904
c = 1512
Group Variance = 2515.67
Z-Score = -3.66852
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-3.66852| > 1.97737 indicating a trend

# Mann-Kendall Trend Analysis

## Parameter: 1,1-Dichloroethane

## Location: MW-10

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | Positives | Negatives |
|---|---|---|---|---|
| 1.25276 | -0.223144 J | 1.47591 | 1 | 0 |
| 1.94591 | -0.223144 J | 2.16905 | 2 | 0 |
| 1.79176 | -0.223144 J | 2.0149 | 3 | 0 |
| ND<0 | -0.223144 J | 0.223144 | 4 | 0 |
| 1.60944 | -0.223144 J | 1.83258 | 5 | 0 |
| 2.63906 | -0.223144 J | 2.8622 | 6 | 0 |
| 1.75786 | -0.223144 J | 1.981 | 7 | 0 |
| ND<0 | -0.223144 J | 0.223144 | 8 | 0 |
| ND<0 | -0.223144 J | 0.223144 | 9 | 0 |
| 1.54756 | -0.223144 J | 1.77071 | 10 | 0 |
| 0.955511 | -0.223144 J | 1.17865 | 11 | 0 |
| ND<0 | -0.223144 J | 0.223144 | 12 | 0 |
| ND<0 | -0.223144 J | 0.223144 | 13 | 0 |
| ND<0 | -0.223144 J | 0.223144 | 14 | 0 |
| ND<0 | -0.223144 J | 0.223144 | 15 | 0 |
| 0.223144 J | -0.223144 J | 0.446287 | 16 | 0 |
| 0.470004 J | -0.223144 J | 0.693147 | 17 | 0 |
| 0.647103 J | -0.223144 J | 0.870247 | 18 | 0 |
| 0.113329 J | -0.223144 J | 0.336472 | 19 | 0 |
| ND<0 | -0.223144 J | 0.223144 | 20 | 0 |
| 0.300105 | -0.223144 J | 0.523248 | 21 | 0 |
| 0.231112 J | -0.223144 J | 0.454255 | 22 | 0 |
| -0.0833816 J | -0.223144 J | 0.139762 | 23 | 0 |
| -0.0304592 J | -0.223144 J | 0.192684 | 24 | 0 |
| 0.0953102 | -0.223144 J | 0.318454 | 25 | 0 |
| -0.71335 J | -0.223144 J | -0.490206 | 25 | 1 |
| -0.34249 J | -0.223144 J | -0.119347 | 25 | 2 |
| | | | | |
| 1.94591 | 1.25276 | 0.693147 | 26 | 2 |
| 1.79176 | 1.25276 | 0.538997 | 27 | 2 |
| ND<0 | 1.25276 | -1.2527627 | 3 | |
| 1.60944 | 1.25276 | 0.356675 | 28 | 3 |
| 2.63906 | 1.25276 | 1.38629 | 29 | 3 |
| 1.75786 | 1.25276 | 0.505095 | 30 | 3 |
| ND<0 | 1.25276 | -1.2527630 | 4 | |
| ND<0 | 1.25276 | -1.2527630 | 5 | |
| 1.54756 | 1.25276 | 0.2948 | 31 | 5 |
| 0.955511 | 1.25276 | -0.297252 | 31 | 6 |
| ND<0 | 1.25276 | -1.2527631 | 7 | |
| ND<0 | 1.25276 | -1.2527631 | 8 | |
| ND<0 | 1.25276 | -1.2527631 | 9 | |
| ND<0 | 1.25276 | -1.2527631 | 10 | |
| 0.223144 J | 1.25276 | -1.0296231 | 11 | |
| 0.470004 J | 1.25276 | -0.782759 | 31 | 12 |
| 0.647103 J | 1.25276 | -0.6056631 | 13 | |
| 0.113329 J | 1.25276 | -1.1394331 | 14 | |
| ND<0 | 1.25276 | -1.2527631 | 15 | |
| 0.300105 | 1.25276 | -0.952658 | 31 | 16 |

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| 0.231112 J | 1.25276 | -1.0216531 | 17 | |
| -0.0833816 J | 1.25276 | -1.3361431 | 18 | |
| -0.0304592 J | 1.25276 | -1.2832231 | 19 | |
| 0.0953102 | 1.25276 | -1.1574531 | 20 | |
| -0.71335 J | 1.25276 | -1.9661131 | 21 | |
| -0.34249 J | 1.25276 | -1.5952531 | 22 | |
| | | | | |
| 1.79176 | 1.94591 | -0.154151 | 31 | 23 |
| ND<0 | 1.94591 | -1.9459131 | 24 | |
| 1.60944 | 1.94591 | -0.336472 | 31 | 25 |
| 2.63906 | 1.94591 | 0.693147 | 32 | 25 |
| 1.75786 | 1.94591 | -0.188052 | 32 | 26 |
| ND<0 | 1.94591 | -1.9459132 | 27 | |
| ND<0 | 1.94591 | -1.9459132 | 28 | |
| 1.54756 | 1.94591 | -0.398348 | 32 | 29 |
| 0.955511 | 1.94591 | -0.990399 | 32 | 30 |
| ND<0 | 1.94591 | -1.9459132 | 31 | |
| ND<0 | 1.94591 | -1.9459132 | 32 | |
| ND<0 | 1.94591 | -1.9459132 | 33 | |
| ND<0 | 1.94591 | -1.9459132 | 34 | |
| 0.223144 J | 1.94591 | -1.7227732 | 35 | |
| 0.470004 J | 1.94591 | -1.4759132 | 36 | |
| 0.647103 J | 1.94591 | -1.2988132 | 37 | |
| 0.113329 J | 1.94591 | -1.8325832 | 38 | |
| ND<0 | 1.94591 | -1.9459132 | 39 | |
| 0.300105 | 1.94591 | -1.6458132 | 40 | |
| 0.231112 J | 1.94591 | -1.7148 32 | 41 | |
| -0.0833816 J | 1.94591 | -2.0292932 | 42 | |
| -0.0304592 J | 1.94591 | -1.9763732 | 43 | |
| 0.0953102 | 1.94591 | -1.8506 32 | 44 | |
| -0.71335 J | 1.94591 | -2.6592632 | 45 | |
| -0.34249 J | 1.94591 | -2.2884 32 | 46 | |
| | | | | |
| ND<0 | 1.79176 | -1.7917632 | 47 | |
| 1.60944 | 1.79176 | -0.182322 | 32 | 48 |
| 2.63906 | 1.79176 | 0.847298 | 33 | 48 |
| 1.75786 | 1.79176 | -0.0339016 | 33 | 49 |
| ND<0 | 1.79176 | -1.7917633 | 50 | |
| ND<0 | 1.79176 | -1.7917633 | 51 | |
| 1.54756 | 1.79176 | -0.244197 | 33 | 52 |
| 0.955511 | 1.79176 | -0.836248 | 33 | 53 |
| ND<0 | 1.79176 | -1.7917633 | 54 | |
| ND<0 | 1.79176 | -1.7917633 | 55 | |
| ND<0 | 1.79176 | -1.7917633 | 56 | |
| ND<0 | 1.79176 | -1.7917633 | 57 | |
| 0.223144 J | 1.79176 | -1.5686233 | 58 | |
| 0.470004 J | 1.79176 | -1.3217633 | 59 | |
| 0.647103 J | 1.79176 | -1.1446633 | 60 | |
| 0.113329 J | 1.79176 | -1.6784333 | 61 | |
| ND<0 | 1.79176 | -1.7917633 | 62 | |
| 0.300105 | 1.79176 | -1.4916533 | 63 | |
| 0.231112 J | 1.79176 | -1.5606533 | 64 | |
| -0.0833816 J | 1.79176 | -1.8751433 | 65 | |
| -0.0304592 J | 1.79176 | -1.8222233 | 66 | |
| 0.0953102 | 1.79176 | -1.6964533 | 67 | |
| -0.71335 J | 1.79176 | -2.5051133 | 68 | |
| -0.34249 J | 1.79176 | -2.1342533 | 69 | |
| | | | | |
| 1.60944 | ND<0 | 1.60944 34 | 69 | |
| 2.63906 | ND<0 | 2.63906 35 | 69 | |
| 1.75786 | ND<0 | 1.75786 36 | 69 | |
| ND<0 | ND<0 | 0 36 | 69 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 36 | 69 | | | |
| 1.54756 | | ND<0 | 1.54756 | 37 | 69 | | |
| 0.955511 | | ND<0 | 0.955511 | | 38 | 69 | |
| ND<0 | ND<0 | 0 | 38 | 69 | | | |
| ND<0 | ND<0 | 0 | 38 | 69 | | | |
| ND<0 | ND<0 | 0 | 38 | 69 | | | |
| ND<0 | ND<0 | 0 | 38 | 69 | | | |
| 0.223144 J | | ND<0 | 0.223144 | | 39 | 69 | |
| 0.470004 J | | ND<0 | 0.470004 | | 40 | 69 | |
| 0.647103 J | | ND<0 | 0.647103 | | 41 | 69 | |
| 0.113329 J | | ND<0 | 0.113329 | | 42 | 69 | |
| ND<0 | ND<0 | 0 | 42 | 69 | | | |
| 0.300105 | | ND<0 | 0.300105 | | 43 | 69 | |
| 0.231112 J | | ND<0 | 0.231112 | | 44 | 69 | |
| -0.0833816 J | | ND<0 | -0.0833816 | | 44 | 70 | |
| -0.0304592 J | | ND<0 | -0.0304592 | | 44 | 71 | |
| 0.0953102 | | ND<0 | 0.0953102 | | 45 | 71 | |
| -0.71335 J | | ND<0 | -0.7133545 | | 72 | | |
| -0.34249 J | | ND<0 | -0.3424945 | | 73 | | |
| | | | | | | | |
| 2.63906 | | 1.60944 | | 1.02962 | 46 | 73 | |
| 1.75786 | | 1.60944 | | 0.14842 | 47 | 73 | |
| ND<0 | 1.60944 | | -1.6094447 | | 74 | | |
| ND<0 | 1.60944 | | -1.6094447 | | 75 | | |
| 1.54756 | | 1.60944 | | -0.0618754 | | 47 | 76 |
| 0.955511 | | 1.60944 | | -0.653926 | | 47 | 77 |
| ND<0 | 1.60944 | | -1.6094447 | | 78 | | |
| ND<0 | 1.60944 | | -1.6094447 | | 79 | | |
| ND<0 | 1.60944 | | -1.6094447 | | 80 | | |
| ND<0 | 1.60944 | | -1.6094447 | | 81 | | |
| 0.223144 J | | 1.60944 | | -1.3862947 | | 82 | |
| 0.470004 J | | 1.60944 | | -1.1394347 | | 83 | |
| 0.647103 J | | 1.60944 | | -0.962335 | | 47 | 84 |
| 0.113329 J | | 1.60944 | | -1.4961147 | | 85 | |
| ND<0 | 1.60944 | | -1.6094447 | | 86 | | |
| 0.300105 | | 1.60944 | | -1.3093347 | | 87 | |
| 0.231112 J | | 1.60944 | | -1.3783347 | | 88 | |
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| -0.0304592 J | | 1.60944 | | -1.6399 47 | | 90 | |
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| -0.71335 J | | 1.60944 | | -2.3227947 | | 92 | |
| -0.34249 J | | 1.60944 | | -1.9519347 | | 93 | |
| | | | | | | | |
| 1.75786 | | 2.63906 | | -0.881199 | | 47 | 94 |
| ND<0 | 2.63906 | | -2.6390647 | | 95 | | |
| ND<0 | 2.63906 | | -2.6390647 | | 96 | | |
| 1.54756 | | 2.63906 | | -1.0914947 | | 97 | |
| 0.955511 | | 2.63906 | | -1.6835547 | | 98 | |
| ND<0 | 2.63906 | | -2.6390647 | | 99 | | |
| ND<0 | 2.63906 | | -2.6390647 | | 100 | | |
| ND<0 | 2.63906 | | -2.6390647 | | 101 | | |
| ND<0 | 2.63906 | | -2.6390647 | | 102 | | |
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| 0.470004 J | | 2.63906 | | -2.1690547 | | 104 | |
| 0.647103 J | | 2.63906 | | -1.9919547 | | 105 | |
| 0.113329 J | | 2.63906 | | -2.5257347 | | 106 | |
| ND<0 | 2.63906 | | -2.6390647 | | 107 | | |
| 0.300105 | | 2.63906 | | -2.3389547 | | 108 | |
| 0.231112 J | | 2.63906 | | -2.4079547 | | 109 | |
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| 0.0953102 | | 2.63906 | | -2.5437547 | | 112 | |

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|---|---|---|---|---|---|
| -0.71335 J | 2.63906 | -3.3524147 | 113 | | |
| -0.34249 J | 2.63906 | -2.9815547 | 114 | | |
| | | | | | |
| ND<0 | 1.75786 | -1.7578647 | 115 | | |
| ND<0 | 1.75786 | -1.7578647 | 116 | | |
| 1.54756 | 1.75786 | -0.210295 | 47 | 117 | |
| 0.955511 | 1.75786 | -0.802346 | 47 | 118 | |
| ND<0 | 1.75786 | -1.7578647 | 119 | | |
| ND<0 | 1.75786 | -1.7578647 | 120 | | |
| ND<0 | 1.75786 | -1.7578647 | 121 | | |
| ND<0 | 1.75786 | -1.7578647 | 122 | | |
| 0.223144 J | 1.75786 | -1.5347147 | 123 | | |
| 0.470004 J | 1.75786 | -1.2878547 | 124 | | |
| 0.647103 J | 1.75786 | -1.1107547 | 125 | | |
| 0.113329 J | 1.75786 | -1.6445347 | 126 | | |
| ND<0 | 1.75786 | -1.7578647 | 127 | | |
| 0.300105 | 1.75786 | -1.4577547 | 128 | | |
| 0.231112 J | 1.75786 | -1.5267547 | 129 | | |
| -0.0833816 J | 1.75786 | -1.8412447 | 130 | | |
| -0.0304592 J | 1.75786 | -1.7883247 | 131 | | |
| 0.0953102 | 1.75786 | -1.6625547 | 132 | | |
| -0.71335 J | 1.75786 | -2.4712147 | 133 | | |
| -0.34249 J | 1.75786 | -2.1003547 | 134 | | |
| | | | | | |
| ND<0 | ND<0 | 0 | 47 | 134 | |
| 1.54756 | ND<0 | 1.54756 | 48 | 134 | |
| 0.955511 | ND<0 | 0.955511 | 49 | 134 | |
| ND<0 | ND<0 | 0 | 49 | 134 | |
| ND<0 | ND<0 | 0 | 49 | 134 | |
| ND<0 | ND<0 | 0 | 49 | 134 | |
| ND<0 | ND<0 | 0 | 49 | 134 | |
| 0.223144 J | ND<0 | 0.223144 | 50 | 134 | |
| 0.470004 J | ND<0 | 0.470004 | 51 | 134 | |
| 0.647103 J | ND<0 | 0.647103 | 52 | 134 | |
| 0.113329 J | ND<0 | 0.113329 | 53 | 134 | |
| ND<0 | ND<0 | 0 | 53 | 134 | |
| 0.300105 | ND<0 | 0.300105 | 54 | 134 | |
| 0.231112 J | ND<0 | 0.231112 | 55 | 134 | |
| -0.0833816 J | ND<0 | -0.0833816 | 55 | 135 | |
| -0.0304592 J | ND<0 | -0.0304592 | 55 | 136 | |
| 0.0953102 | ND<0 | 0.0953102 | 56 | 136 | |
| -0.71335 J | ND<0 | -0.7133556 | 137 | | |
| -0.34249 J | ND<0 | -0.3424956 | 138 | | |
| | | | | | |
| 1.54756 | ND<0 | 1.54756 | 57 | 138 | |
| 0.955511 | ND<0 | 0.955511 | 58 | 138 | |
| ND<0 | ND<0 | 0 | 58 | 138 | |
| ND<0 | ND<0 | 0 | 58 | 138 | |
| ND<0 | ND<0 | 0 | 58 | 138 | |
| ND<0 | ND<0 | 0 | 58 | 138 | |
| 0.223144 J | ND<0 | 0.223144 | 59 | 138 | |
| 0.470004 J | ND<0 | 0.470004 | 60 | 138 | |
| 0.647103 J | ND<0 | 0.647103 | 61 | 138 | |
| 0.113329 J | ND<0 | 0.113329 | 62 | 138 | |
| ND<0 | ND<0 | 0 | 62 | 138 | |
| 0.300105 | ND<0 | 0.300105 | 63 | 138 | |
| 0.231112 J | ND<0 | 0.231112 | 64 | 138 | |
| -0.0833816 J | ND<0 | -0.0833816 | 64 | 139 | |
| -0.0304592 J | ND<0 | -0.0304592 | 64 | 140 | |
| 0.0953102 | ND<0 | 0.0953102 | 65 | 140 | |
| -0.71335 J | ND<0 | -0.7133565 | 141 | | |
| -0.34249 J | ND<0 | -0.3424965 | 142 | | |

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|---|---|---|---|---|
| 0.955511 | 1.54756 | -0.592051 | 65 | 143 |
| ND<0 | 1.54756 | -1.5475665 | 144 | |
| ND<0 | 1.54756 | -1.5475665 | 145 | |
| ND<0 | 1.54756 | -1.5475665 | 146 | |
| ND<0 | 1.54756 | -1.5475665 | 147 | |
| 0.223144 J | 1.54756 | -1.3244265 | 148 | |
| 0.470004 J | 1.54756 | -1.0775665 | 149 | |
| 0.647103 J | 1.54756 | -0.900459 | 65 | 150 |
| 0.113329 J | 1.54756 | -1.4342365 | 151 | |
| ND<0 | 1.54756 | -1.5475665 | 152 | |
| 0.300105 | 1.54756 | -1.2474665 | 153 | |
| 0.231112 J | 1.54756 | -1.3164565 | 154 | |
| -0.0833816 J | 1.54756 | -1.6309465 | 155 | |
| -0.0304592 J | 1.54756 | -1.5780265 | 156 | |
| 0.0953102 | 1.54756 | -1.4522565 | 157 | |
| -0.71335 J | 1.54756 | -2.2609165 | 158 | |
| -0.34249 J | 1.54756 | -1.8900565 | 159 | |

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|---|---|---|---|---|
| ND<0 | 0.955511 | -0.955511 | 65 | 160 |
| ND<0 | 0.955511 | -0.955511 | 65 | 161 |
| ND<0 | 0.955511 | -0.955511 | 65 | 162 |
| ND<0 | 0.955511 | -0.955511 | 65 | 163 |
| 0.223144 J | 0.955511 | -0.732368 | 65 | 164 |
| 0.470004 J | 0.955511 | -0.485508 | 65 | 165 |
| 0.647103 J | 0.955511 | -0.308408 | 65 | 166 |
| 0.113329 J | 0.955511 | -0.842183 | 65 | 167 |
| ND<0 | 0.955511 | -0.955511 | 65 | 168 |
| 0.300105 | 0.955511 | -0.655407 | 65 | 169 |
| 0.231112 J | 0.955511 | -0.7244 65 | 170 | |
| -0.0833816 J | 0.955511 | -1.0388965 | 171 | |
| -0.0304592 J | 0.955511 | -0.985971 | 65 | 172 |
| 0.0953102 | 0.955511 | -0.860201 | 65 | 173 |
| -0.71335 J | 0.955511 | -1.6688665 | 174 | |
| -0.34249 J | 0.955511 | -1.298 65 | 175 | |

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|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 65 | 175 |
| ND<0 | ND<0 | 0 | 65 | 175 |
| ND<0 | ND<0 | 0 | 65 | 175 |
| 0.223144 J | ND<0 | 0.223144 | 66 | 175 |
| 0.470004 J | ND<0 | 0.470004 | 67 | 175 |
| 0.647103 J | ND<0 | 0.647103 | 68 | 175 |
| 0.113329 J | ND<0 | 0.113329 | 69 | 175 |
| ND<0 | ND<0 | 0 | 69 | 175 |
| 0.300105 | ND<0 | 0.300105 | 70 | 175 |
| 0.231112 J | ND<0 | 0.231112 | 71 | 175 |
| -0.0833816 J | ND<0 | -0.0833816 | 71 | 176 |
| -0.0304592 J | ND<0 | -0.0304592 | 71 | 177 |
| 0.0953102 | ND<0 | 0.0953102 | 72 | 177 |
| -0.71335 J | ND<0 | -0.7133572 | 178 | |
| -0.34249 J | ND<0 | -0.3424972 | 179 | |

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|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 72 | 179 |
| ND<0 | ND<0 | 0 | 72 | 179 |
| 0.223144 J | ND<0 | 0.223144 | 73 | 179 |
| 0.470004 J | ND<0 | 0.470004 | 74 | 179 |
| 0.647103 J | ND<0 | 0.647103 | 75 | 179 |
| 0.113329 J | ND<0 | 0.113329 | 76 | 179 |
| ND<0 | ND<0 | 0 | 76 | 179 |
| 0.300105 | ND<0 | 0.300105 | 77 | 179 |
| 0.231112 J | ND<0 | 0.231112 | 78 | 179 |
| -0.0833816 J | ND<0 | -0.0833816 | 78 | 180 |

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|---|---|---|---|---|---|
| -0.0304592 J | ND<0 | -0.0304592 | 78 | 181 | |
| 0.0953102 | ND<0 | 0.0953102 | 79 | 181 | |
| -0.71335 J | ND<0 | -0.7133579 | 182 | | |
| -0.34249 J | ND<0 | -0.3424979 | 183 | | |
| | | | | | |
| ND<0 | ND<0 | 0 | 79 | 183 | |
| 0.223144 J | ND<0 | 0.223144 | 80 | 183 | |
| 0.470004 J | ND<0 | 0.470004 | 81 | 183 | |
| 0.647103 J | ND<0 | 0.647103 | 82 | 183 | |
| 0.113329 J | ND<0 | 0.113329 | 83 | 183 | |
| ND<0 | ND<0 | 0 | 83 | 183 | |
| 0.300105 | ND<0 | 0.300105 | 84 | 183 | |
| 0.231112 J | ND<0 | 0.231112 | 85 | 183 | |
| -0.0833816 J | ND<0 | -0.0833816 | 85 | 184 | |
| -0.0304592 J | ND<0 | -0.0304592 | 85 | 185 | |
| 0.0953102 | ND<0 | 0.0953102 | 86 | 185 | |
| -0.71335 J | ND<0 | -0.7133586 | 186 | | |
| -0.34249 J | ND<0 | -0.3424986 | 187 | | |
| | | | | | |
| 0.223144 J | ND<0 | 0.223144 | 87 | 187 | |
| 0.470004 J | ND<0 | 0.470004 | 88 | 187 | |
| 0.647103 J | ND<0 | 0.647103 | 89 | 187 | |
| 0.113329 J | ND<0 | 0.113329 | 90 | 187 | |
| ND<0 | ND<0 | 0 | 90 | 187 | |
| 0.300105 | ND<0 | 0.300105 | 91 | 187 | |
| 0.231112 J | ND<0 | 0.231112 | 92 | 187 | |
| -0.0833816 J | ND<0 | -0.0833816 | 92 | 188 | |
| -0.0304592 J | ND<0 | -0.0304592 | 92 | 189 | |
| 0.0953102 | ND<0 | 0.0953102 | 93 | 189 | |
| -0.71335 J | ND<0 | -0.7133593 | 190 | | |
| -0.34249 J | ND<0 | -0.3424993 | 191 | | |
| | | | | | |
| 0.470004 J | 0.223144 J | 0.24686 | 94 | 191 | |
| 0.647103 J | 0.223144 J | 0.42396 | 95 | 191 | |
| 0.113329 J | 0.223144 J | -0.109815 | 95 | 193 | 192 |
| ND<0 | 0.223144 J | -0.223144 | 95 | 193 | |
| 0.300105 | 0.223144 J | 0.076961 | 96 | 193 | |
| 0.231112 J | 0.223144 J | 0.00796817 | 97 | 193 | |
| -0.0833816 J | 0.223144 J | -0.306525 | 97 | 194 | |
| -0.0304592 J | 0.223144 J | -0.253603 | 97 | 195 | |
| 0.0953102 | 0.223144 J | -0.127833 | 97 | 196 | |
| -0.71335 J | 0.223144 J | -0.936493 | 97 | 197 | |
| -0.34249 J | 0.223144 J | -0.565634 | 97 | 198 | |
| | | | | | |
| 0.647103 J | 0.470004 J | 0.1771 | 98 | 198 | |
| 0.113329 J | 0.470004 J | -0.356675 | 98 | 199 | |
| ND<0 | 0.470004 J | -0.470004 | 98 | 200 | |
| 0.300105 | 0.470004 J | -0.169899 | 98 | 201 | |
| 0.231112 J | 0.470004 J | -0.238892 | 98 | 202 | |
| -0.0833816 J | 0.470004 J | -0.553385 | 98 | 203 | |
| -0.0304592 J | 0.470004 J | -0.500463 | 98 | 204 | |
| 0.0953102 | 0.470004 J | -0.374693 | 98 | 205 | |
| -0.71335 J | 0.470004 J | -1.1833598 | 206 | | |
| -0.34249 J | 0.470004 J | -0.812494 | 98 | 207 | |
| | | | | | |
| 0.113329 J | 0.647103 J | -0.533775 | 98 | 208 | |
| ND<0 | 0.647103 J | -0.647103 | 98 | 209 | |
| 0.300105 | 0.647103 J | -0.346999 | 98 | 210 | |
| 0.231112 J | 0.647103 J | -0.415992 | 98 | 211 | |
| -0.0833816 J | 0.647103 J | -0.730485 | 98 | 212 | |
| -0.0304592 J | 0.647103 J | -0.677562 | 98 | 213 | |
| 0.0953102 | 0.647103 J | -0.551793 | 98 | 214 | |

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|---|---|---|---|---|
| -0.71335 J | 0.647103 J | -1.3604598 | 215 | |
| -0.34249 J | 0.647103 J | -0.989594 | 98 | 216 |
| | | | | |
| ND<0 | 0.113329 J | -0.113329 | 98 | 217 |
| 0.300105 | 0.113329 J | 0.186776 | 99 | 217 |
| 0.231112 J | 0.113329 J | 0.117783 | 100 | 217 |
| -0.0833816 J | 0.113329 J | -0.19671100 | 218 | |
| -0.0304592 J | 0.113329 J | -0.143788 | 100 | 219 |
| 0.0953102 | 0.113329 J | -0.0180185 | 100 | 220 |
| -0.71335 J | 0.113329 J | -0.826679 | 100 | 221 |
| -0.34249 J | 0.113329 J | -0.455819 | 100 | 222 |
| | | | | |
| 0.300105 | ND<0 | 0.300105 | 101 | 222 |
| 0.231112 J | ND<0 | 0.231112 | 102 | 222 |
| -0.0833816 J | ND<0 | -0.0833816 | 102 | 223 |
| -0.0304592 J | ND<0 | -0.0304592 | 102 | 224 |
| 0.0953102 | ND<0 | 0.0953102 | 103 | 224 |
| -0.71335 J | ND<0 | -0.71335103 | 225 | |
| -0.34249 J | ND<0 | -0.34249103 | 226 | |
| | | | | |
| 0.231112 J | 0.300105 | -0.0689929 | 103 | 227 |
| -0.0833816 J | 0.300105 | -0.383486 | 103 | 228 |
| -0.0304592 J | 0.300105 | -0.330564 | 103 | 229 |
| 0.0953102 | 0.300105 | -0.204794 | 103 | 230 |
| -0.71335 J | 0.300105 | -1.01345103 | 231 | |
| -0.34249 J | 0.300105 | -0.642595 | 103 | 232 |
| | | | | |
| -0.0833816 J | 0.231112 J | -0.314493 | 103 | 233 |
| -0.0304592 J | 0.231112 J | -0.261571 | 103 | 234 |
| 0.0953102 | 0.231112 J | -0.135802 | 103 | 235 |
| -0.71335 J | 0.231112 J | -0.944462 | 103 | 236 |
| -0.34249 J | 0.231112 J | -0.573602 | 103 | 237 |
| | | | | |
| -0.0304592 J | -0.0833816 J | 0.0529224 | 104 | 237 |
| 0.0953102 | -0.0833816 J | 0.178692 | 105 | 237 |
| -0.71335 J | -0.0833816 J | -0.629968 | 105 | 238 |
| -0.34249 J | -0.0833816 J | -0.259109 | 105 | 239 |
| | | | | |
| 0.0953102 | -0.0304592 J | 0.125769 | 106 | 239 |
| -0.71335 J | -0.0304592 J | -0.682891 | 106 | 240 |
| -0.34249 J | -0.0304592 J | -0.312031 | 106 | 241 |
| | | | | |
| -0.71335 J | 0.0953102 | -0.80866106 | 242 | |
| -0.34249 J | 0.0953102 | -0.4378 106 | 243 | |
| | | | | |
| -0.34249 J | -0.71335 J | 0.37086 107 | 243 | |

S Statistic = 107 - 243 = -136

| Tied Group | Value | Members |
|---|---|---|
| 1 | 0 | 8 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |
| 11/19/1996 | 1 |
| 12/19/1996 | 1 |

| | | |
|---|---|---|
| 3/24/1997 | | 1 |
| 9/24/1997 | | 1 |
| 4/7/1998 | 1 | |
| 9/23/1998 | | 1 |
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 11/16/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 1 |

There are 0 time periods with multiple data

A = 1176
B = 0
C = 336
D = 0
E = 56
F = 0
a = 46116
b = 176904
c = 1512
Group Variance = 2496.67
Z-Score = -2.7018
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-2.7018| > 1.97737 indicating a trend

# Mann-Kendall Trend Analysis

## Parameter: 1,1-Dichloroethane

## Location: MW-8

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | Positives | Negatives |
|---|---|---|---|---|
| 2.48491 | -0.755023 J | 3.23993 | 1 | 0 |
| 2.3979 | -0.755023 J | 3.15292 | 2 | 0 |
| 0 J | -0.755023 J | 0.755023 | 3 | 0 |
| ND<0 | -0.755023 J | 0.755023 | 4 | 0 |
| 2.94444 | -0.755023 J | 3.69946 | 5 | 0 |
| 2.89037 | -0.755023 J | 3.64539 | 6 | 0 |
| 3.09104 | -0.755023 J | 3.84607 | 7 | 0 |
| 2.77259 | -0.755023 J | 3.52761 | 8 | 0 |
| 3.3322 | -0.755023 J | 4.08723 | 9 | 0 |
| 2.79117 | -0.755023 J | 3.54619 | 10 | 0 |
| 2.78501 | -0.755023 J | 3.54003 | 11 | 0 |
| ND<0 | -0.755023 J | 0.755023 | 12 | 0 |
| ND<0 | -0.755023 J | 0.755023 | 13 | 0 |
| ND<0 | -0.755023 J | 0.755023 | 14 | 0 |
| ND<0 | -0.755023 J | 0.755023 | 15 | 0 |
| 0.647103 J | -0.755023 J | 1.40213 | 16 | 0 |
| 1.23256 | -0.755023 J | 1.98758 | 17 | 0 |
| 0.746688 | -0.755023 J | 1.50171 | 18 | 0 |
| 1.05082 | -0.755023 J | 1.80584 | 19 | 0 |
| ND<0 | -0.755023 J | 0.755023 | 20 | 0 |
| 1.41342 | -0.755023 J | 2.16845 | 21 | 0 |
| 1.4884 | -0.755023 J | 2.24342 | 22 | 0 |
| 1.12493 | -0.755023 J | 1.87995 | 23 | 0 |
| 1.64866 | -0.755023 J | 2.40368 | 24 | 0 |
| 0.916291 | -0.755023 J | 1.67131 | 25 | 0 |
| 0.875469 | -0.755023 J | 1.63049 | 26 | 0 |

| | | | | |
|---|---|---|---|---|
| 2.3979 | 2.48491 | -0.0870114 | 26 | 1 |
| 0 J | 2.48491 | -2.4849126 | 2 | |
| ND<0 | 2.48491 | -2.4849126 | 3 | |
| 2.94444 | 2.48491 | 0.459532 | 27 | 3 |
| 2.89037 | 2.48491 | 0.405465 | 28 | 3 |
| 3.09104 | 2.48491 | 0.606136 | 29 | 3 |
| 2.77259 | 2.48491 | 0.287682 | 30 | 3 |
| 3.3322 | 2.48491 | 0.847298 | 31 | 3 |
| 2.79117 | 2.48491 | 0.306258 | 32 | 3 |
| 2.78501 | 2.48491 | 0.300105 | 33 | 3 |
| ND<0 | 2.48491 | -2.4849133 | 4 | |
| ND<0 | 2.48491 | -2.4849133 | 5 | |
| ND<0 | 2.48491 | -2.4849133 | 6 | |
| ND<0 | 2.48491 | -2.4849133 | 7 | |
| 0.647103 J | 2.48491 | -1.8378 | 33 | 8 |
| 1.23256 | 2.48491 | -1.2523533 | 9 | |
| 0.746688 | 2.48491 | -1.7382233 | 10 | |
| 1.05082 | 2.48491 | -1.4340933 | 11 | |
| ND<0 | 2.48491 | -2.4849133 | 12 | |
| 1.41342 | 2.48491 | -1.0714833 | 13 | |
| 1.4884 | 2.48491 | -0.996507 | 33 | 14 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1.12493 | | 2.48491 | | -1.3599833 | 15 | |
| 1.64866 | | 2.48491 | | -0.836248 | 33 | 16 |
| 0.916291 | | 2.48491 | | -1.5686233 | 17 | |
| 0.875469 | | 2.48491 | | -1.6094433 | 18 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 0 J | 2.3979 | -2.3979 | 33 | 19 | | |
| ND<0 | 2.3979 | -2.3979 | 33 | 20 | | |
| 2.94444 | | 2.3979 | 0.546544 | | 34 | 20 |
| 2.89037 | | 2.3979 | 0.492476 | | 35 | 20 |
| 3.09104 | | 2.3979 | 0.693147 | | 36 | 20 |
| 2.77259 | | 2.3979 | 0.374693 | | 37 | 20 |
| 3.3322 | 2.3979 | 0.934309 | | 38 | 20 | |
| 2.79117 | | 2.3979 | 0.39327 | 39 | 20 | |
| 2.78501 | | 2.3979 | 0.387116 | | 40 | 20 |
| ND<0 | 2.3979 | -2.3979 | 40 | 21 | | |
| ND<0 | 2.3979 | -2.3979 | 40 | 22 | | |
| ND<0 | 2.3979 | -2.3979 | 40 | 23 | | |
| ND<0 | 2.3979 | -2.3979 | 40 | 24 | | |
| 0.647103 | J | 2.3979 | -1.7507 | 40 | 25 | |
| 1.23256 | | 2.3979 | -1.1653 | 40 | 26 | |
| 0.746688 | | 2.3979 | -1.6512 | 40 | 27 | |
| 1.05082 | | 2.3979 | -1.3470 | 40 | 28 | |
| ND<0 | 2.3979 | -2.3979 | 40 | 29 | | |
| 1.41342 | | 2.3979 | -0.984472 | | 40 | 30 |
| 1.4884 | 2.3979 | -0.909496 | | 40 | 31 | |
| 1.12493 | | 2.3979 | -1.2729 | 40 | 32 | |
| 1.64866 | | 2.3979 | -0.749237 | | 40 | 33 |
| 0.916291 | | 2.3979 | -1.4816 | 40 | 34 | |
| 0.875469 | | 2.3979 | -1.5224 | 40 | 35 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | 0 J | 0 | 40 | 35 | | |
| 2.94444 | | 0 J | 2.94444 | 41 | 35 | |
| 2.89037 | | 0 J | 2.89037 | 42 | 35 | |
| 3.09104 | | 0 J | 3.09104 | 43 | 35 | |
| 2.77259 | | 0 J | 2.77259 | 44 | 35 | |
| 3.3322 | 0 J | 3.3322 | 45 | 35 | | |
| 2.79117 | | 0 J | 2.79117 | 46 | 35 | |
| 2.78501 | | 0 J | 2.78501 | 47 | 35 | |
| ND<0 | 0 J | 0 | 47 | 35 | | |
| ND<0 | 0 J | 0 | 47 | 35 | | |
| ND<0 | 0 J | 0 | 47 | 35 | | |
| ND<0 | 0 J | 0 | 47 | 35 | | |
| 0.647103 | J | 0 J | 0.647103 | | 48 | 35 |
| 1.23256 | | 0 J | 1.23256 | 49 | 35 | |
| 0.746688 | | 0 J | 0.746688 | | 50 | 35 |
| 1.05082 | | 0 J | 1.05082 | 51 | 35 | |
| ND<0 | 0 J | 0 | 51 | 35 | | |
| 1.41342 | | 0 J | 1.41342 | 52 | 35 | |
| 1.4884 | 0 J | 1.4884 | 53 | 35 | | |
| 1.12493 | | 0 J | 1.12493 | 54 | 35 | |
| 1.64866 | | 0 J | 1.64866 | 55 | 35 | |
| 0.916291 | | 0 J | 0.916291 | | 56 | 35 |
| 0.875469 | | 0 J | 0.875469 | | 57 | 35 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2.94444 | | ND<0 | 2.94444 | 58 | 35 | |
| 2.89037 | | ND<0 | 2.89037 | 59 | 35 | |
| 3.09104 | | ND<0 | 3.09104 | 60 | 35 | |
| 2.77259 | | ND<0 | 2.77259 | 61 | 35 | |
| 3.3322 | ND<0 | 3.3322 | 62 | 35 | | |
| 2.79117 | | ND<0 | 2.79117 | 63 | 35 | |
| 2.78501 | | ND<0 | 2.78501 | 64 | 35 | |
| ND<0 | ND<0 | 0 | 64 | 35 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 64 | 35 | | |
| ND<0 | ND<0 | 0 | 64 | 35 | | |
| ND<0 | ND<0 | 0 | 64 | 35 | | |
| 0.647103 J | | ND<0 | 0.647103 | 65 | 35 | |
| 1.23256 | | ND<0 | 1.23256 | 66 | 35 | |
| 0.746688 | | ND<0 | 0.746688 | 67 | 35 | |
| 1.05082 | | ND<0 | 1.05082 | 68 | 35 | |
| ND<0 | ND<0 | 0 | 68 | 35 | | |
| 1.41342 | | ND<0 | 1.41342 | 69 | 35 | |
| 1.4884 | ND<0 | 1.4884 | 70 | 35 | | |
| 1.12493 | | ND<0 | 1.12493 | 71 | 35 | |
| 1.64866 | | ND<0 | 1.64866 | 72 | 35 | |
| 0.916291 | | ND<0 | 0.916291 | 73 | 35 | |
| 0.875469 | | ND<0 | 0.875469 | 74 | 35 | |
| | | | | | | |
| 2.89037 | | 2.94444 | -0.0540672 | 74 | 36 | |
| 3.09104 | | 2.94444 | 0.146603 | 75 | 36 | |
| 2.77259 | | 2.94444 | -0.171857 | 5 | 37 | |
| 3.3322 | 2.94444 | 0.387766 | 76 | 37 | | |
| 2.79117 | | 2.94444 | -0.153274 | 76 | 38 | |
| 2.78501 | | 2.94444 | -0.159428 | 76 | 39 | |
| ND<0 | 2.94444 | -2.9444476 | 40 | | | |
| ND<0 | 2.94444 | -2.9444476 | 41 | | | |
| ND<0 | 2.94444 | -2.9444476 | 42 | | | |
| ND<0 | 2.94444 | -2.9444476 | 43 | | | |
| 0.647103 J | | 2.94444 | -2.2973476 | 44 | | |
| 1.23256 | | 2.94444 | -1.7118876 | 45 | | |
| 0.746688 | | 2.94444 | -2.1977576 | 46 | | |
| 1.05082 | | 2.94444 | -1.8936276 | 47 | | |
| ND<0 | 2.94444 | -2.9444476 | 48 | | | |
| 1.41342 | | 2.94444 | -1.5310276 | 49 | | |
| 1.4884 | 2.94444 | -1.4560476 | 50 | | | |
| 1.12493 | | 2.94444 | -1.8195176 | 51 | | |
| 1.64866 | | 2.94444 | -1.2957876 | 52 | | |
| 0.916291 | | 2.94444 | -2.0281576 | 53 | | |
| 0.875469 | | 2.94444 | -2.0689776 | 54 | | |
| | | | | | | |
| 3.09104 | | 2.89037 | 0.200671 | 77 | 54 | |
| 2.77259 | | 2.89037 | -0.117783 | 77 | 55 | |
| 3.3322 | 2.89037 | 0.441833 | 78 | 55 | | |
| 2.79117 | | 2.89037 | -0.0992067 | 78 | 56 | |
| 2.78501 | | 2.89037 | -0.105361 | 78 | 57 | |
| ND<0 | 2.89037 | -2.8903778 | 58 | | | |
| ND<0 | 2.89037 | -2.8903778 | 59 | | | |
| ND<0 | 2.89037 | -2.8903778 | 60 | | | |
| ND<0 | 2.89037 | -2.8903778 | 61 | | | |
| 0.647103 J | | 2.89037 | -2.2432778 | 62 | | |
| 1.23256 | | 2.89037 | -1.6578178 | 63 | | |
| 0.746688 | | 2.89037 | -2.1436878 | 64 | | |
| 1.05082 | | 2.89037 | -1.8395578 | 65 | | |
| ND<0 | 2.89037 | -2.8903778 | 66 | | | |
| 1.41342 | | 2.89037 | -1.4769578 | 67 | | |
| 1.4884 | 2.89037 | -1.4019778 | 68 | | | |
| 1.12493 | | 2.89037 | -1.7654478 | 69 | | |
| 1.64866 | | 2.89037 | -1.2417178 | 70 | | |
| 0.916291 | | 2.89037 | -1.9740878 | 71 | | |
| 0.875469 | | 2.89037 | -2.0149 78 | 72 | | |
| | | | | | | |
| 2.77259 | | 3.09104 | -0.318454 | 78 | 73 | |
| 3.3322 | 3.09104 | 0.241162 | 79 | 73 | | |
| 2.79117 | | 3.09104 | -0.299877 | 79 | 74 | |
| 2.78501 | | 3.09104 | -0.306031 | 79 | 75 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | 3.09104 | -3.0910479 | 76 | | | |
| ND<0 | 3.09104 | -3.0910479 | 77 | | | |
| ND<0 | 3.09104 | -3.0910479 | 78 | | | |
| ND<0 | 3.09104 | -3.0910479 | 79 | | | |
| 0.647103 J | 3.09104 | -2.4439479 | 80 | | | |
| 1.23256 | 3.09104 | -1.8584879 | 81 | | | |
| 0.746688 | 3.09104 | -2.3443579 | 82 | | | |
| 1.05082 | 3.09104 | -2.0402279 | 83 | | | |
| ND<0 | 3.09104 | -3.0910479 | 84 | | | |
| 1.41342 | 3.09104 | -1.6776279 | 85 | | | |
| 1.4884 | 3.09104 | -1.6026479 | 86 | | | |
| 1.12493 | 3.09104 | -1.9661179 | 87 | | | |
| 1.64866 | 3.09104 | -1.4423879 | 88 | | | |
| 0.916291 | 3.09104 | -2.1747579 | 89 | | | |
| 0.875469 | 3.09104 | -2.2155779 | 90 | | | |
| | | | | | | |
| 3.3322 | 2.77259 | 0.559616 | 80 | 90 | | |
| 2.79117 | 2.77259 | 0.0185764 | 81 | 90 | | |
| 2.78501 | 2.77259 | 0.0124225 | 82 | 90 | | |
| ND<0 | 2.77259 | -2.7725982 | 91 | | | |
| ND<0 | 2.77259 | -2.7725982 | 92 | | | |
| ND<0 | 2.77259 | -2.7725982 | 93 | | | |
| ND<0 | 2.77259 | -2.7725982 | 94 | | | |
| 0.647103 J | 2.77259 | -2.1254982 | 95 | | | |
| 1.23256 | 2.77259 | -1.5400382 | 96 | | | |
| 0.746688 | 2.77259 | -2.0259 82 | 97 | | | |
| 1.05082 | 2.77259 | -1.7217782 | 98 | | | |
| ND<0 | 2.77259 | -2.7725982 | 99 | | | |
| 1.41342 | 2.77259 | -1.3591782 | 100 | | | |
| 1.4884 | 2.77259 | -1.2841982 | 101 | | | |
| 1.12493 | 2.77259 | -1.6476682 | 102 | | | |
| 1.64866 | 2.77259 | -1.1239382 | 103 | | | |
| 0.916291 | 2.77259 | -1.8563 82 | 104 | | | |
| 0.875469 | 2.77259 | -1.8971282 | 105 | | | |
| | | | | | | |
| 2.79117 | 3.3322 | -0.541039 | 82 | 106 | | |
| 2.78501 | 3.3322 | -0.547193 | 82 | 107 | | |
| ND<0 | 3.3322 | -3.3322 82 | 108 | | | |
| ND<0 | 3.3322 | -3.3322 82 | 109 | | | |
| ND<0 | 3.3322 | -3.3322 82 | 110 | | | |
| ND<0 | 3.3322 | -3.3322 82 | 111 | | | |
| 0.647103 J | 3.3322 | -2.6851 82 | 112 | | | |
| 1.23256 | 3.3322 | -2.0996482 | 113 | | | |
| 0.746688 | 3.3322 | -2.5855282 | 114 | | | |
| 1.05082 | 3.3322 | -2.2813882 | 115 | | | |
| ND<0 | 3.3322 | -3.3322 82 | 116 | | | |
| 1.41342 | 3.3322 | -1.9187882 | 117 | | | |
| 1.4884 | 3.3322 | -1.8438 82 | 118 | | | |
| 1.12493 | 3.3322 | -2.2072782 | 119 | | | |
| 1.64866 | 3.3322 | -1.6835582 | 120 | | | |
| 0.916291 | 3.3322 | -2.4159182 | 121 | | | |
| 0.875469 | 3.3322 | -2.4567482 | 122 | | | |
| | | | | | | |
| 2.78501 | 2.79117 | -0.00615387 | 82 | 123 | | |
| ND<0 | 2.79117 | -2.7911782 | 124 | | | |
| ND<0 | 2.79117 | -2.7911782 | 125 | | | |
| ND<0 | 2.79117 | -2.7911782 | 126 | | | |
| ND<0 | 2.79117 | -2.7911782 | 127 | | | |
| 0.647103 J | 2.79117 | -2.1440682 | 128 | | | |
| 1.23256 | 2.79117 | -1.5586 82 | 129 | | | |
| 0.746688 | 2.79117 | -2.0444882 | 130 | | | |
| 1.05082 | 2.79117 | -1.7403482 | 131 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | 2.79117 | | -2.7911782 | | 132 | |
| 1.41342 | | 2.79117 | | -1.3777482 | | 133 |
| 1.4884 | 2.79117 | | -1.3027782 | | 134 | |
| 1.12493 | | 2.79117 | | -1.6662482 | | 135 |
| 1.64866 | | 2.79117 | | -1.1425182 | | 136 |
| 0.916291 | | 2.79117 | | -1.8748782 | | 137 |
| 0.875469 | | 2.79117 | | -1.9157 82 | | 138 |
| | | | | | | |
| ND<0 | 2.78501 | | -2.7850182 | | 139 | |
| ND<0 | 2.78501 | | -2.7850182 | | 140 | |
| ND<0 | 2.78501 | | -2.7850182 | | 141 | |
| ND<0 | 2.78501 | | -2.7850182 | | 142 | |
| 0.647103 J | | 2.78501 | | -2.1379182 | | 143 |
| 1.23256 | | 2.78501 | | -1.5524582 | | 144 |
| 0.746688 | | 2.78501 | | -2.0383282 | | 145 |
| 1.05082 | | 2.78501 | | -1.7341982 | | 146 |
| ND<0 | 2.78501 | | -2.7850182 | | 147 | |
| 1.41342 | | 2.78501 | | -1.3715982 | | 148 |
| 1.4884 | 2.78501 | | -1.2966182 | | 149 | |
| 1.12493 | | 2.78501 | | -1.6600882 | | 150 |
| 1.64866 | | 2.78501 | | -1.1363582 | | 151 |
| 0.916291 | | 2.78501 | | -1.8687282 | | 152 |
| 0.875469 | | 2.78501 | | -1.9095482 | | 153 |
| | | | | | | |
| ND<0 | ND<0 | 0 | 82 | 153 | | |
| ND<0 | ND<0 | 0 | 82 | 153 | | |
| ND<0 | ND<0 | 0 | 82 | 153 | | |
| 0.647103 J | | ND<0 | 0.647103 | | 83 | 153 |
| 1.23256 | | ND<0 | 1.23256 | 84 | 153 | |
| 0.746688 | | ND<0 | 0.746688 | | 85 | 153 |
| 1.05082 | | ND<0 | 1.05082 | 86 | 153 | |
| ND<0 | ND<0 | 0 | 86 | 153 | | |
| 1.41342 | | ND<0 | 1.41342 | 87 | 153 | |
| 1.4884 | ND<0 | 1.4884 | 88 | 153 | | |
| 1.12493 | | ND<0 | 1.12493 | 89 | 153 | |
| 1.64866 | | ND<0 | 1.64866 | 90 | 153 | |
| 0.916291 | | ND<0 | 0.916291 | | 91 | 153 |
| 0.875469 | | ND<0 | 0.875469 | | 92 | 153 |
| | | | | | | |
| ND<0 | ND<0 | 0 | 92 | 153 | | |
| ND<0 | ND<0 | 0 | 92 | 153 | | |
| 0.647103 J | | ND<0 | 0.647103 | | 93 | 153 |
| 1.23256 | | ND<0 | 1.23256 | 94 | 153 | |
| 0.746688 | | ND<0 | 0.746688 | | 95 | 153 |
| 1.05082 | | ND<0 | 1.05082 | 96 | 153 | |
| ND<0 | ND<0 | 0 | 96 | 153 | | |
| 1.41342 | | ND<0 | 1.41342 | 97 | 153 | |
| 1.4884 | ND<0 | 1.4884 | 98 | 153 | | |
| 1.12493 | | ND<0 | 1.12493 | 99 | 153 | |
| 1.64866 | | ND<0 | 1.64866 | 100 | 153 | |
| 0.916291 | | ND<0 | 0.916291 | | 101 | 153 |
| 0.875469 | | ND<0 | 0.875469 | | 102 | 153 |
| | | | | | | |
| ND<0 | ND<0 | 0 | 102 | 153 | | |
| 0.647103 J | | ND<0 | 0.647103 | | 103 | 153 |
| 1.23256 | | ND<0 | 1.23256 | 104 | 153 | |
| 0.746688 | | ND<0 | 0.746688 | | 105 | 153 |
| 1.05082 | | ND<0 | 1.05082 | 106 | 153 | |
| ND<0 | ND<0 | 0 | 106 | 153 | | |
| 1.41342 | | ND<0 | 1.41342 | 107 | 153 | |
| 1.4884 | ND<0 | 1.4884 | 108 | 153 | | |
| 1.12493 | | ND<0 | 1.12493 | 109 | 153 | |

| | | | | | |
|---|---|---|---|---|---|
| 1.64866 | ND<0 | 1.64866 | 110 | 153 | |
| 0.916291 | ND<0 | 0.916291 | 111 | 153 | |
| 0.875469 | ND<0 | 0.875469 | 112 | 153 | |
| | | | | | |
| 0.647103 J | ND<0 | 0.647103 | 113 | 153 | |
| 1.23256 | ND<0 | 1.23256 | 114 | 153 | |
| 0.746688 | ND<0 | 0.746688 | 115 | 153 | |
| 1.05082 | ND<0 | 1.05082 | 116 | 153 | |
| ND<0 | ND<0 | 0 | 116 | 153 | |
| 1.41342 | ND<0 | 1.41342 | 117 | 153 | |
| 1.4884 | ND<0 | 1.4884 | 118 | 153 | |
| 1.12493 | ND<0 | 1.12493 | 119 | 153 | |
| 1.64866 | ND<0 | 1.64866 | 120 | 153 | |
| 0.916291 | ND<0 | 0.916291 | 121 | 153 | |
| 0.875469 | ND<0 | 0.875469 | 122 | 153 | |
| | | | | | |
| 1.23256 | 0.647103 J | 0.585457 | 123 | 153 | |
| 0.746688 | 0.647103 J | 0.0995847 | 124 | 153 | |
| 1.05082 | 0.647103 J | 0.403718 | 125 | 153 | |
| ND<0 | 0.647103 J | -0.647103 | 125 | 154 | |
| 1.41342 | 0.647103 J | 0.76632 | 126 | 154 | |
| 1.4884 | 0.647103 J | 0.841296 | 127 | 154 | |
| 1.12493 | 0.647103 J | 0.477826 | 128 | 154 | |
| 1.64866 | 0.647103 J | 1.00156 | 129 | 154 | |
| 0.916291 | 0.647103 J | 0.269187 | 130 | 154 | |
| 0.875469 | 0.647103 J | 0.228365 | 131 | 154 | |
| | | | | | |
| 0.746688 | 1.23256 | -0.485872 | 131 | 155 | |
| 1.05082 | 1.23256 | -0.181739 | 131 | 156 | |
| ND<0 | 1.23256 | -1.23256 | 131 | 157 | |
| 1.41342 | 1.23256 | 0.180863 | 132 | 157 | |
| 1.4884 | 1.23256 | 0.255839 | 133 | 157 | |
| 1.12493 | 1.23256 | -0.107631 | 133 | 158 | |
| 1.64866 | 1.23256 | 0.416098 | 134 | 158 | |
| 0.916291 | 1.23256 | -0.31627 | 134 | 159 | |
| 0.875469 | 1.23256 | -0.357092 | 134 | 160 | |
| | | | | | |
| 1.05082 | 0.746688 | 0.304134 | 135 | 160 | |
| ND<0 | 0.746688 | -0.746688 | 135 | 161 | |
| 1.41342 | 0.746688 | 0.666735 | 136 | 161 | |
| 1.4884 | 0.746688 | 0.741712 | 137 | 161 | |
| 1.12493 | 0.746688 | 0.378242 | 138 | 161 | |
| 1.64866 | 0.746688 | 0.901971 | 139 | 161 | |
| 0.916291 | 0.746688 | 0.169603 | 140 | 161 | |
| 0.875469 | 0.746688 | 0.128781 | 141 | 161 | |
| | | | | | |
| ND<0 | 1.05082 | -1.05082 | 141 | 162 | |
| 1.41342 | 1.05082 | 0.362601 | 142 | 162 | |
| 1.4884 | 1.05082 | 0.437578 | 143 | 162 | |
| 1.12493 | 1.05082 | 0.074108 | 144 | 162 | |
| 1.64866 | 1.05082 | 0.597837 | 145 | 162 | |
| 0.916291 | 1.05082 | -0.134531 | 145 | 163 | |
| 0.875469 | 1.05082 | -0.175353 | 145 | 164 | |
| | | | | | |
| 1.41342 | ND<0 | 1.41342 | 146 | 164 | |
| 1.4884 | ND<0 | 1.4884 | 147 | 164 | |
| 1.12493 | ND<0 | 1.12493 | 148 | 164 | |
| 1.64866 | ND<0 | 1.64866 | 149 | 164 | |
| 0.916291 | ND<0 | 0.916291 | 150 | 164 | |
| 0.875469 | ND<0 | 0.875469 | 151 | 164 | |

| | | | | |
|---|---|---|---|---|
| 1.4884 | 1.41342 | 0.0749766 | 152 | 164 |
| 1.12493 | 1.41342 | -0.288493 | 152 | 165 |
| 1.64866 | 1.41342 | 0.235236 | 153 | 165 |
| 0.916291 | 1.41342 | -0.497132 | 153 | 166 |
| 0.875469 | 1.41342 | -0.537954 | 153 | 167 |
| 1.12493 | 1.4884 | -0.36347153 | 168 | |
| 1.64866 | 1.4884 | 0.160259 | 154 | 168 |
| 0.916291 | 1.4884 | -0.572109 | 154 | 169 |
| 0.875469 | 1.4884 | -0.612931 | 154 | 170 |
| 1.64866 | 1.12493 | 0.523729 | 155 | 170 |
| 0.916291 | 1.12493 | -0.208639 | 155 | 171 |
| 0.875469 | 1.12493 | -0.249461 | 155 | 172 |
| 0.916291 | 1.64866 | -0.732368 | 155 | 173 |
| 0.875469 | 1.64866 | -0.77319155 | 174 | |
| 0.875469 | 0.916291 | -0.040822 | 155 | 175 |

S Statistic = 155 - 175 = -20

| Tied Group | Value | Members |
|---|---|---|
| 1 | 0 | 7 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |
| 11/19/1996 | 1 |
| 12/19/1996 | 1 |
| 3/24/1997 | 1 |
| 9/24/1997 | 1 |
| 4/7/1998 | 1 |
| 9/23/1998 | 1 |
| 3/16/1999 | 1 |
| 9/23/1999 | 1 |
| 3/15/2000 | 1 |
| 9/24/2003 | 1 |
| 3/11/2004 | 1 |
| 10/12/2004 | 1 |
| 4/1/2005 | 1 |
| 10/25/2005 | 1 |
| 4/29/2006 | 1 |
| 11/18/2006 | 1 |
| 5/23/2007 | 1 |
| 11/28/2007 | 1 |
| 6/5/2008 | 1 |
| 11/20/2008 | 1 |
| 6/11/2009 | 1 |
| 6/30/2010 | 1 |
| 11/12/2010 | 1 |

There are 0 time periods with multiple data

A = 798
B = 0
C = 210
D = 0

E = 42
F = 0
a = 41418
b = 157950
c = 1404
Group Variance = 2256.67
Z-Score = -0.399963
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-0.399963| <= 1.97737 indicating no evidence of a trend

# Mann-Kendall Trend Analysis

## Parameter: 1,1-Dichloroethane

## Location: MW-12AR

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | | Positives | Negatives | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 0 | 0 | | |
| 1.97408 | | ND<0 | 1.97408 | 1 | 0 | |
| 1.93152 | | ND<0 | 1.93152 | 2 | 0 | |
| 1.80829 | | ND<0 | 1.80829 | 3 | 0 | |
| 1.84055 | | ND<0 | 1.84055 | 4 | 0 | |
| ND<0 | ND<0 | 0 | 4 | 0 | | |
| 0.19062 J | | ND<0 | 0.19062 | 5 | 0 | |
| 0.329304 J | | ND<0 | 0.329304 | 6 | 0 | |
| -0.18633 J | | ND<0 | -0.186336 | 1 | | |
| ND<0 | ND<0 | 0 | 6 | 1 | | |
| 0.139762 J | | ND<0 | 0.139762 | 7 | 1 | |
| 0.223144 J | | ND<0 | 0.223144 | 8 | 1 | |
| -0.478036 J | | ND<0 | -0.478036 | 8 | 2 | |
| ND<-2.07944 | | ND<0 | -2.079448 | 3 | | |
| -1.04982 J | | ND<0 | -1.049828 | 4 | | |
| ND<-2.07944 | | ND<0 | -2.079448 | 5 | | |
| 0 | ND<0 | 0 | 8 | 5 | | |
| | | | | | | |
| 1.97408 | | ND<0 | 1.97408 | 9 | 5 | |
| 1.93152 | | ND<0 | 1.93152 | 10 | 5 | |
| 1.80829 | | ND<0 | 1.80829 | 11 | 5 | |
| 1.84055 | | ND<0 | 1.84055 | 12 | 5 | |
| ND<0 | ND<0 | 0 | 12 | 5 | | |
| 0.19062 J | | ND<0 | 0.19062 | 13 | 5 | |
| 0.329304 J | | ND<0 | 0.329304 | 14 | 5 | |
| -0.18633 J | | ND<0 | -0.1863314 | 6 | | |
| ND<0 | ND<0 | 0 | 14 | 6 | | |
| 0.139762 J | | ND<0 | 0.139762 | 15 | 6 | |
| 0.223144 J | | ND<0 | 0.223144 | 16 | 6 | |
| -0.478036 J | | ND<0 | -0.478036 | 16 | 7 | |
| ND<-2.07944 | | ND<0 | -2.0794416 | 8 | | |
| -1.04982 J | | ND<0 | -1.0498216 | 9 | | |
| ND<-2.07944 | | ND<0 | -2.0794416 | 10 | | |
| 0 | ND<0 | 0 | 16 | 10 | | |
| | | | | | | |
| 1.93152 | | 1.97408 | -0.0425596 | 16 | 11 | |
| 1.80829 | | 1.97408 | -0.165792 | 16 | 12 | |
| 1.84055 | | 1.97408 | -0.133531 | 16 | 13 | |
| ND<0 | 1.97408 | -1.9740816 | 14 | | | |
| 0.19062 J | | 1.97408 | -1.7834616 | 15 | | |
| 0.329304 J | | 1.97408 | -1.6447816 | 16 | | |
| -0.18633 J | | 1.97408 | -2.1604116 | 17 | | |
| ND<0 | 1.97408 | -1.9740816 | 18 | | | |
| 0.139762 J | | 1.97408 | -1.8343216 | 19 | | |
| 0.223144 J | | 1.97408 | -1.7509416 | 20 | | |
| -0.478036 J | | 1.97408 | -2.4521216 | 21 | | |
| ND<-2.07944 | | 1.97408 | -4.0535216 | 22 | | |
| -1.04982 J | | 1.97408 | -3.0239 16 | 23 | | |

ND<-2.07944 1.97408 -4.0535216 24
0 1.97408 -1.9740816 25

1.80829 1.93152 -0.123233 16 26
1.84055 1.93152 -0.0909718 16 27
ND<0 1.93152 -1.9315216 28
0.19062 J 1.93152 -1.7409 16 29
0.329304 J 1.93152 -1.6022216 30
-0.18633 J 1.93152 -2.1178516 31
ND<0 1.93152 -1.9315216 32
0.139762 J 1.93152 -1.7917616 33
0.223144 J 1.93152 -1.7083816 34
-0.478036 J 1.93152 -2.4095616 35
ND<-2.07944 1.93152 -4.0109616 36
-1.04982 J 1.93152 -2.9813416 37
ND<-2.07944 1.93152 -4.0109616 38
0 1.93152 -1.9315216 39

1.84055 1.80829 0.0322609 17 39
ND<0 1.80829 -1.8082917 40
0.19062 J 1.80829 -1.6176717 41
0.329304 J 1.80829 -1.4789917 42
-0.18633 J 1.80829 -1.9946217 43
ND<0 1.80829 -1.8082917 44
0.139762 J 1.80829 -1.6685317 45
0.223144 J 1.80829 -1.5851517 46
-0.478036 J 1.80829 -2.2863217 47
ND<-2.07944 1.80829 -3.8877317 48
-1.04982 J 1.80829 -2.8581117 49
ND<-2.07944 1.80829 -3.8877317 50
0 1.80829 -1.8082917 51

ND<0 1.84055 -1.8405517 52
0.19062 J 1.84055 -1.6499317 53
0.329304 J 1.84055 -1.5112517 54
-0.18633 J 1.84055 -2.0268817 55
ND<0 1.84055 -1.8405517 56
0.139762 J 1.84055 -1.7007917 57
0.223144 J 1.84055 -1.6174117 58
-0.478036 J 1.84055 -2.3185917 59
ND<-2.07944 1.84055 -3.9199917 60
-1.04982 J 1.84055 -2.8903717 61
ND<-2.07944 1.84055 -3.9199917 62
0 1.84055 -1.8405517 63

0.19062 J ND<0 0.19062 18 63
0.329304 J ND<0 0.329304 19 63
-0.18633 J ND<0 -0.1863319 64
ND<0 ND<0 0 19 64
0.139762 J ND<0 0.139762 20 64
0.223144 J ND<0 0.223144 21 64
-0.478036 J ND<0 -0.478036 21 65
ND<-2.07944 ND<0 -2.0794421 66
-1.04982 J ND<0 -1.0498221 67
ND<-2.07944 ND<0 -2.0794421 68
0 ND<0 0 21 68

0.329304 J 0.19062 J 0.138683 22 68
-0.18633 J 0.19062 J -0.3769522 69
ND<0 0.19062 J -0.1906222 70
0.139762 J 0.19062 J -0.0508584 22 71
0.223144 J 0.19062 J 0.0325232 23 71

| | | | | |
|---|---|---|---|---|
| -0.478036 J | 0.19062 J | -0.668656 | 23 | 72 |
| ND<-2.07944 | 0.19062 J | -2.2700623 | 73 | |
| -1.04982 J | 0.19062 J | -1.2404423 | 74 | |
| ND<-2.07944 | 0.19062 J | -2.2700623 | 75 | |
| 0 | 0.19062 J | -0.1906223 | 76 | |
| | | | | |
| -0.18633 J | 0.329304 J | -0.515633 | 23 | 77 |
| ND<0 | 0.329304 J | -0.329304 | 23 | 78 |
| 0.139762 J | 0.329304 J | -0.189542 | 23 | 79 |
| 0.223144 J | 0.329304 J | -0.1061623 | 80 | |
| -0.478036 J | 0.329304 J | -0.8073423 | 81 | |
| ND<-2.07944 | 0.329304 J | -2.4087523 | 82 | |
| -1.04982 J | 0.329304 J | -1.3791323 | 83 | |
| ND<-2.07944 | 0.329304 J | -2.4087523 | 84 | |
| 0 | 0.329304 J | -0.329304 | 23 | 85 |
| | | | | |
| ND<0 | -0.18633 J | 0.18633 | 24 | 85 |
| 0.139762 J | -0.18633 J | 0.326092 | 25 | 85 |
| 0.223144 J | -0.18633 J | 0.409473 | 26 | 85 |
| -0.478036 J | -0.18633 J | -0.291706 | 26 | 86 |
| ND<-2.07944 | -0.18633 J | -1.8931126 | 87 | |
| -1.04982 J | -0.18633 J | -0.863493 | 26 | 88 |
| ND<-2.07944 | -0.18633 J | -1.8931126 | 89 | |
| 0 | -0.18633 J | 0.18633 | 27 | 89 |
| | | | | |
| 0.139762 J | ND<0 | 0.139762 | 28 | 89 |
| 0.223144 J | ND<0 | 0.223144 | 29 | 89 |
| -0.478036 J | ND<0 | -0.478036 | 29 | 90 |
| ND<-2.07944 | ND<0 | -2.0794429 | 91 | |
| -1.04982 J | ND<0 | -1.0498229 | 92 | |
| ND<-2.07944 | ND<0 | -2.0794429 | 93 | |
| 0 | ND<0 | 0 | 29 | 93 |
| | | | | |
| 0.223144 J | 0.139762 J | 0.0833816 | 30 | 93 |
| -0.478036 J | 0.139762 J | -0.617798 | 30 | 94 |
| ND<-2.07944 | 0.139762 J | -2.2192 | 30 | 95 |
| -1.04982 J | 0.139762 J | -1.1895830 | 96 | |
| ND<-2.07944 | 0.139762 J | -2.2192 | 30 | 97 |
| 0 | 0.139762 J | -0.139762 | 30 | 98 |
| | | | | |
| -0.478036 J | 0.223144 J | -0.701179 | 30 | 99 |
| ND<-2.07944 | 0.223144 J | -2.3025930 | 100 | |
| -1.04982 J | 0.223144 J | -1.2729730 | 101 | |
| ND<-2.07944 | 0.223144 J | -2.3025930 | 102 | |
| 0 | 0.223144 J | -0.223144 | 30 | 103 |
| | | | | |
| ND<-2.07944 | -0.478036 J | -1.6014130 | 104 | |
| -1.04982 J | -0.478036 J | -0.571786 | 30 | 105 |
| ND<-2.07944 | -0.478036 J | -1.6014130 | 106 | |
| 0 | -0.478036 J | 0.478036 | 31 | 106 |
| | | | | |
| -1.04982 J | ND<-2.07944 | 1.02962 | 32 | 106 |
| ND<-2.07944 | ND<-2.07944 | 0 | 32 | 106 |
| 0 | ND<-2.07944 | 2.07944 | 33 | 106 |
| | | | | |
| ND<-2.07944 | -1.04982 J | -1.0296233 | 107 | |
| 0 | -1.04982 J | 1.04982 | 34 | 107 |
| | | | | |
| 0 | ND<-2.07944 | 2.07944 | 35 | 107 |

S Statistic = 35 - 107 = -72

| Tied Group | Value | Members |
|---|---|---|
| 1 | 0 | 5 |
| 2 | -2.07944 | 2 |

| Time Period | | Observations |
|---|---|---|
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 11/16/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 1 |

There are 0 time periods with multiple data

A = 318
B = 0
C = 60
D = 0
E = 22
F = 0
a = 12546
b = 44064
c = 612
Group Variance = 679.333
Z-Score = -2.72406
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-2.72406| > 1.97737 indicating a trend

# Concentrations (ppb)

## Parameter: 1,2-Dichlorobenzene

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 218
Percent Non-Detects: 98.6425%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 18 (100%) | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.21 | ND<0.21 |
| | | | 11/16/2009 | ND<0.5 | ND<0.5 |
| | | | 6/30/2010 | ND<0.21 | ND<0.21 |
| | | | 11/12/2010 | ND<0.21 U | ND<0.21 U |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-12AR | 18 | 18 (100%) | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.21 | ND<0.21 |
| | | | 11/16/2009 | ND<0.47 | ND<0.47 |
| | | | 6/30/2010 | ND<0.21 | ND<0.21 |
| | | | 11/12/2010 | ND<0.21 U | ND<0.21 U |
| MW-11R | 28 | 28 (100%) | 7/20/1995 | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 |
| | | | 9/28/1995 | ND<2 | ND<2 |
| | | | 10/26/1995 | ND<2 | ND<2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.21 | | ND<0.21 |
| | | | 11/16/2009 | ND<0.47 | | ND<0.47 |
| | | | 6/30/2010 | ND<0.21 | | ND<0.21 |
| | | | 11/12/2010 | ND<0.21 U | | ND<0.21 U |
| MW-6 | 28 | 28 (100%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.21 | | ND<0.21 |
| | | | 11/16/2009 | ND<0.5 | ND<0.5 | |
| | | | 6/30/2010 | ND<0.21 | | ND<0.21 |
| | | | 11/12/2010 | ND<0.21 U | | ND<0.21 U |
| MW-12BR | 18 | 18 (100%) | 3/16/1999 | | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |

| | | | | | |
|---|---|---|---|---|---|
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.21 | ND<0.21 |
| | | | 11/16/2009 | ND<0.47 | ND<0.47 |
| | | | 6/30/2010 | ND<0.21 | ND<0.21 |
| | | | 11/12/2010 | ND<0.21 U | ND<0.21 U |
| MW-7 | 28 | 28 (100%) | 7/20/1995 | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 |
| | | | 9/28/1995 | ND<2 | ND<2 |
| | | | 10/26/1995 | ND<2 | ND<2 |
| | | | 11/19/1996 | ND<2 | ND<2 |
| | | | 12/19/1996 | ND<2 | ND<2 |
| | | | 3/24/1997 | ND<2 | ND<2 |
| | | | 9/24/1997 | ND<2 | ND<2 |
| | | | 4/7/1998 | ND<2 | ND<2 |
| | | | 9/23/1998 | ND<2 | ND<2 |
| | | | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.21 | ND<0.21 |
| | | | 11/16/2009 | ND<0.47 | ND<0.47 |
| | | | 6/30/2010 | ND<0.21 | ND<0.21 |
| | | | 11/12/2010 | ND<0.21 U | ND<0.21 U |
| MW-9 | 28 | 28 (100%) | 7/20/1995 | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 |
| | | | 9/28/1995 | ND<2 | ND<2 |
| | | | 10/26/1995 | ND<2 | ND<2 |
| | | | 11/19/1996 | ND<2 | ND<2 |
| | | | 12/19/1996 | ND<2 | ND<2 |
| | | | 3/24/1997 | ND<2 | ND<2 |
| | | | 9/24/1997 | ND<2 | ND<2 |
| | | | 4/7/1998 | ND<2 | ND<2 |
| | | | 9/23/1998 | ND<2 | ND<2 |
| | | | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.21 | | ND<0.21 |
| | | | 11/16/2009 | ND<0.5 | ND<0.5 | |
| | | | 6/30/2010 | ND<0.21 | | ND<0.21 |
| | | | 11/12/2010 | ND<0.21 U | | ND<0.21 U |
| MW-10 | 28 | 25 (89.2857%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | 0.5 J | 0.5 J | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.21 | | ND<0.21 |
| | | | 11/16/2009 | 0.51 J | 0.51 J | |
| | | | 6/30/2010 | ND<0.21 | | ND<0.21 |
| | | | 11/12/2010 | 0.24 J | 0.24 J | |
| MW-8 | 27 | 27 (100%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.21 | | ND<0.21 |
| | | | 6/30/2010 | ND<0.21 | | ND<0.21 |

| | | | |
|---|---|---|---|
| | 11/12/2010 | ND<0.21 U | ND<0.21 U |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. | Original |
|---|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: 1,2-Dichlorobenzene

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.105 | -2.65209 | 7.03356 | -0.278469 |
| 2 | 0.105 | -2.36561 | 12.6297 | -0.526859 |
| 3 | 0.105 | -2.22621 | 17.5857 | -0.76061 |
| 4 | 0.105 | -2.09693 | 21.9828 | -0.980788 |
| 5 | 0.105 | -2.01409 | 26.0394 | -1.19227 |
| 6 | 0.105 | -1.92684 | 29.7521 | -1.39459 |
| 7 | 0.105 | -1.86629 | 33.2351 | -1.59055 |
| 8 | 0.105 | -1.79912 | 36.472 | -1.77945 |
| 9 | 0.105 | -1.75069 | 39.5369 | -1.96328 |
| 10 | 0.105 | -1.6954 | 42.4112 | -2.14129 |
| 11 | 0.105 | -1.65463 | 45.149 | -2.31503 |
| 12 | 0.105 | -1.60725 | 47.7323 | -2.48379 |
| 13 | 0.105 | -1.57179 | 50.2028 | -2.64883 |
| 14 | 0.105 | -1.53007 | 52.5439 | -2.80948 |
| 15 | 0.105 | -1.49852 | 54.7894 | -2.96683 |
| 16 | 0.105 | -1.46106 | 56.9241 | -3.12024 |
| 17 | 0.105 | -1.4325 | 58.9762 | -3.27065 |
| 18 | 0.105 | -1.39838 | 60.9316 | -3.41748 |
| 19 | 0.105 | -1.3722 | 62.8146 | -3.56156 |
| 20 | 0.105 | -1.34075 | 64.6122 | -3.70234 |
| 21 | 0.105 | -1.31652 | 66.3454 | -3.84058 |
| 22 | 0.105 | -1.28727 | 68.0025 | -3.97574 |
| 23 | 0.105 | -1.26464 | 69.6018 | -4.10853 |
| 24 | 0.105 | -1.23724 | 71.1326 | -4.23844 |
| 25 | 0.105 | -1.21596 | 72.6111 | -4.36611 |
| 26 | 0.105 | -1.19012 | 74.0275 | -4.49108 |
| 27 | 0.235 | -1.17 | 75.3964 | -4.76603 |
| 28 | 0.235 | -1.1455 | 76.7086 | -5.03522 |
| 29 | 0.235 | -1.12639 | 77.9774 | -5.29992 |
| 30 | 0.235 | -1.10306 | 79.1941 | -5.55914 |
| 31 | 0.24 | -1.08482 | 80.371 | -5.8195 |
| 32 | 0.25 | -1.06252 | 81.4999 | -6.08513 |
| 33 | 0.25 | -1.04505 | 82.592 | -6.34639 |
| 34 | 0.25 | -1.02365 | 83.6399 | -6.6023 |
| 35 | 0.5 | -1.00687 | 84.6537 | -7.10574 |
| 36 | 0.51 | -0.986272 | 85.6264 | -7.60874 |
| 37 | 1 | -0.970094 | 86.5675 | -8.57883 |
| 38 | 1 | -0.950222 | 87.4704 | -9.52905 |
| 39 | 1 | -0.934598 | 88.3439 | -10.4636 |
| 40 | 1 | -0.915365 | 89.1818 | -11.379 |
| 41 | 1 | -0.900227 | 89.9922 | -12.2792 |
| 42 | 1 | -0.881587 | 90.7694 | -13.1608 |
| 43 | 1 | -0.866894 | 91.5209 | -14.0277 |
| 44 | 1 | -0.848786 | 92.2413 | -14.8765 |
| 45 | 1 | -0.834498 | 92.9377 | -15.711 |
| 46 | 1 | -0.816874 | 93.605 | -16.5279 |
| 47 | 1 | -0.802956 | 94.2497 | -17.3308 |
| 48 | 1 | -0.785774 | 94.8672 | -18.1166 |
| 49 | 1 | -0.772193 | 95.4634 | -18.8888 |

| | | | | |
|---|---|---|---|---|
| 50 | 1 | -0.755415 | 96.0341 | -19.6442 |
| 51 | 1 | -0.742143 | 96.5849 | -20.3864 |
| 52 | 1 | -0.725736 | 97.1116 | -21.1121 |
| 53 | 1 | -0.712751 | 97.6196 | -21.8248 |
| 54 | 1 | -0.696684 | 98.1049 | -22.5215 |
| 55 | 1 | -0.683969 | 8.5727 | -23.2055 |
| 56 | 1 | -0.668209 | 99.0192 | -23.8737 |
| 57 | 1 | -0.655726 | 99.4492 | -24.5294 |
| 58 | 1 | -0.640266 | 99.8592 | -25.1697 |
| 59 | 1 | -0.628006 | 100.254 | -25.7977 |
| 60 | 1 | -0.612813 | 100.629 | -26.4105 |
| 61 | 1 | -0.60076 | 100.99 | -27.0113 |
| 62 | 1 | -0.585815 | 101.333 | -27.5971 |
| 63 | 1 | -0.573953 | 101.663 | -28.171 |
| 64 | 1 | -0.559237 | 101.975 | -28.7303 |
| 65 | 1 | -0.547551 | 102.275 | -29.2778 |
| 66 | 1 | -0.533048 | 102.559 | -29.8109 |
| 67 | 1 | -0.521527 | 102.831 | -30.3324 |
| 68 | 1 | -0.507221 | 103.089 | -30.8396 |
| 69 | 1 | -0.49585 | 103.334 | -31.3355 |
| 70 | 1 | -0.481728 | 103.566 | -31.8172 |
| 71 | 1 | -0.470498 | 103.788 | -32.2877 |
| 72 | 1 | -0.456542 | 103.996 | -32.7442 |
| 73 | 1 | -0.445443 | 104.195 | -33.1897 |
| 74 | 1 | -0.431644 | 104.381 | -33.6213 |
| 75 | 1 | -0.420664 | 104.558 | -34.042 |
| 76 | 1 | -0.40701 | 104.724 | -34.449 |
| 77 | 1 | -0.396142 | 104.881 | -34.8451 |
| 78 | 1 | -0.382622 | 105.027 | -35.2278 |
| 79 | 1 | -0.371856 | 105.165 | -35.5996 |
| 80 | 1 | -0.358459 | 105.294 | -35.9581 |
| 81 | 1 | -0.347787 | 105.415 | -36.3059 |
| 82 | 1 | -0.334503 | 105.527 | -36.6404 |
| 83 | 1 | -0.323919 | 105.632 | -36.9643 |
| 84 | 1 | -0.310738 | 105.728 | -37.275 |
| 85 | 1 | -0.300232 | 105.818 | -37.5753 |
| 86 | 1 | -0.287147 | 105.901 | -37.8624 |
| 87 | 1 | -0.276714 | 105.977 | -38.1391 |
| 88 | 1 | -0.263715 | 106.047 | -38.4028 |
| 89 | 1 | -0.253347 | 106.111 | -38.6562 |
| 90 | 1 | -0.240426 | 106.169 | -38.8966 |
| 91 | 1 | -0.230118 | 106.222 | -39.1267 |
| 92 | 1 | -0.217267 | 106.269 | -39.344 |
| 93 | 1 | -0.207012 | 106.312 | -39.551 |
| 94 | 1 | -0.194225 | 106.35 | -39.7452 |
| 95 | 1 | -0.184017 | 106.383 | -39.9292 |
| 96 | 1 | -0.171285 | 106.413 | -40.1005 |
| 97 | 1 | -0.161119 | 106.439 | -40.2616 |
| 98 | 1 | -0.148434 | 106.461 | -40.4101 |
| 99 | 1 | -0.138305 | 106.48 | -40.5484 |
| 100 | 1 | -0.125661 | 106.496 | -40.674 |
| 101 | 1 | -0.115562 | 106.509 | -40.7896 |
| 102 | 1 | -0.102953 | 106.52 | -40.8926 |
| 103 | 1 | -0.0928787 | 106.528 | -40.9854 |
| 104 | 1 | -0.0802981 | 106.535 | -41.0657 |
| 105 | 1 | -0.0702426 | 106.54 | -41.136 |
| 106 | 1 | -0.0576847 | 106.543 | -41.1937 |
| 107 | 1 | -0.0476439 | 106.545 | -41.2413 |
| 108 | 1 | -0.0350997 | 106.546 | -41.2764 |
| 109 | 1 | -0.0250691 | 106.547 | -41.3015 |
| 110 | 1 | -0.0125328 | 106.547 | -41.314 |
| 111 | 1 | 0 | 106.547 | -41.314 |

| | | | | |
|---|---|---|---|---|
| 112 | 1 | 0.0125328 | 106.547 | -41.3015 |
| 113 | 1 | 0.0250691 | 106.548 | -41.2764 |
| 114 | 1 | 0.0350997 | 106.549 | -41.2413 |
| 115 | 1 | 0.0476439 | 106.551 | -41.1937 |
| 116 | 1 | 0.0576847 | 106.555 | -41.136 |
| 117 | 1 | 0.0702426 | 106.56 | -41.0657 |
| 118 | 1 | 0.0802981 | 106.566 | -40.9854 |
| 119 | 1 | 0.0928787 | 106.575 | -40.8926 |
| 120 | 1 | 0.102953 | 106.585 | -40.7896 |
| 121 | 1 | 0.115562 | 106.599 | -40.674 |
| 122 | 1 | 0.125661 | 106.615 | -40.5484 |
| 123 | 1 | 0.138305 | 106.634 | -40.4101 |
| 124 | 1 | 0.148434 | 106.656 | -40.2616 |
| 125 | 1 | 0.161119 | 106.682 | -40.1005 |
| 126 | 1 | 0.171285 | 106.711 | -39.9292 |
| 127 | 1 | 0.184017 | 106.745 | -39.7452 |
| 128 | 1 | 0.194225 | 106.783 | -39.551 |
| 129 | 1 | 0.207012 | 106.825 | -39.344 |
| 130 | 1 | 0.217267 | 106.873 | -39.1267 |
| 131 | 1 | 0.230118 | 106.926 | -38.8966 |
| 132 | 1 | 0.240426 | 106.983 | -38.6562 |
| 133 | 1 | 0.253347 | 107.048 | -38.4028 |
| 134 | 1 | 0.263715 | 107.117 | -38.1391 |
| 135 | 1 | 0.276714 | 107.194 | -37.8624 |
| 136 | 1 | 0.287147 | 107.276 | -37.5753 |
| 137 | 1 | 0.300232 | 107.366 | -37.275 |
| 138 | 1 | 0.310738 | 107.463 | -36.9643 |
| 139 | 1 | 0.323919 | 107.568 | -36.6404 |
| 140 | 1 | 0.334503 | 107.68 | -36.3059 |
| 141 | 1 | 0.347787 | 107.801 | -35.9581 |
| 142 | 1 | 0.358459 | 107.929 | -35.5996 |
| 143 | 1 | 0.371856 | 108.067 | -35.2278 |
| 144 | 1 | 0.382622 | 108.214 | -34.8451 |
| 145 | 1 | 0.396142 | 108.371 | -34.449 |
| 146 | 1 | 0.40701 | 108.536 | -34.042 |
| 147 | 1 | 0.420664 | 108.713 | -33.6213 |
| 148 | 1 | 0.431644 | 108.9 | -33.1897 |
| 149 | 1 | 0.445443 | 109.098 | -32.7442 |
| 150 | 1 | 0.456542 | 109.307 | -32.2877 |
| 151 | 1 | 0.470498 | 109.528 | -31.8172 |
| 152 | 1 | 0.481728 | 109.76 | -31.3355 |
| 153 | 1 | 0.49585 | 110.006 | -30.8396 |
| 154 | 1 | 0.507221 | 110.263 | -30.3324 |
| 155 | 1 | 0.521527 | 110.535 | -29.8109 |
| 156 | 1 | 0.533048 | 110.819 | -29.2778 |
| 157 | 1 | 0.547551 | 111.119 | -28.7303 |
| 158 | 1 | 0.559237 | 111.432 | -28.171 |
| 159 | 1 | 0.573953 | 111.761 | -27.5971 |
| 160 | 1 | 0.585815 | 112.104 | -27.0113 |
| 161 | 1 | 0.60076 | 112.465 | -26.4105 |
| 162 | 1 | 0.612813 | 112.841 | -25.7977 |
| 163 | 1 | 0.628006 | 113.235 | -25.1697 |
| 164 | 1 | 0.640266 | 113.645 | -24.5294 |
| 165 | 1 | 0.655726 | 114.075 | -23.8737 |
| 166 | 1 | 0.668209 | 114.522 | -23.2055 |
| 167 | 1 | 0.68396 | 114.989 | -22.5215 |
| 168 | 1 | 0.696684 | 115.475 | -21.8248 |
| 169 | 1 | 0.712751 | 115.983 | -21.1121 |
| 170 | 1 | 0.725736 | 116.51 | -20.3864 |
| 171 | 1 | 0.742143 | 117.06 | -19.6442 |
| 172 | 1 | 0.755415 | 117.631 | -18.8888 |
| 173 | 1 | 0.772193 | 118.227 | -18.1166 |

| | | | | |
|---|---|---|---|---|
| 174 | 1 | 0.785774 | 118.845 | -17.3308 |
| 175 | 1 | 0.802956 | 119.489 | -16.5279 |
| 176 | 1 | 0.816874 | 120.157 | -15.711 |
| 177 | 1 | 0.834498 | 120.853 | -14.8765 |
| 178 | 1 | 0.848786 | 121.574 | -14.0277 |
| 179 | 1 | 0.866894 | 122.325 | -13.1608 |
| 180 | 1 | 0.881587 | 123.102 | -12.2792 |
| 181 | 1 | 0.900227 | 123.913 | -11.379 |
| 182 | 1 | 0.915365 | 124.751 | -10.4636 |
| 183 | 1 | 0.93459 | 125.624 | -9.52905 |
| 184 | 1 | 0.950222 | 126.527 | -8.57883 |
| 185 | 1 | 0.970094 | 127.468 | -7.60874 |
| 186 | 1 | 0.986272 | 128.441 | -6.62246 |
| 187 | 1 | 1.00687 | 129.455 | -5.6156 |
| 188 | 1 | 1.02365 | 130.502 | -4.59195 |
| 189 | 1 | 1.04505 | 131.594 | -3.5469 |
| 190 | 1 | 1.06252 | 132.723 | -2.48438 |
| 191 | 1 | 1.08482 | 133.9 | -1.39955 |
| 192 | 1 | 1.10306 | 135.117 | -0.296491 |
| 193 | 1 | 1.12639 | 136.386 | 0.8299 |
| 194 | 1 | 1.1455 | 137.698 | 1.9754 |
| 195 | 1 | 1.17 | 139.067 | 3.1454 |
| 196 | 1 | 1.19012 | 140.483 | 4.33552 |
| 197 | 1 | 1.21596 | 141.962 | 5.55148 |
| 198 | 1 | 1.23724 | 143.493 | 6.78872 |
| 199 | 1 | 1.26464 | 145.092 | 8.05336 |
| 200 | 1 | 1.28727 | 146.749 | 9.34063 |
| 201 | 1 | 1.31652 | 148.482 | 10.6572 |
| 202 | 1 | 1.34075 | 150.28 | 11.9979 |
| 203 | 1 | 1.3722 | 152.163 | 13.3701 |
| 204 | 1 | 1.39838 | 154.118 | 14.7685 |
| 205 | 1 | 1.4325 | 156.17 | 16.201 |
| 206 | 1 | 1.46106 | 158.305 | 17.662 |
| 207 | 1 | 1.49852 | 160.551 | 19.1606 |
| 208 | 1 | 1.53007 | 162.892 | 20.6906 |
| 209 | 1 | 1.57179 | 165.362 | 22.2624 |
| 210 | 1 | 1.60725 | 167.945 | 23.8697 |
| 211 | 1 | 1.65463 | 170.683 | 25.5243 |
| 212 | 1 | 1.6954 | 173.558 | 27.2197 |
| 213 | 1 | 1.75069 | 176.622 | 28.9704 |
| 214 | 1 | 1.79912 | 179.859 | 30.7695 |
| 215 | 1 | 1.86629 | 183.342 | 32.6358 |
| 216 | 1 | 1.92684 | 187.055 | 34.5626 |
| 217 | 1 | 2.01409 | 191.112 | 36.5767 |
| 218 | 1 | 2.09693 | 195.509 | 38.6737 |
| 219 | 1 | 2.22621 | 200.465 | 40.8999 |
| 220 | 1 | 2.36561 | 206.061 | 43.2655 |
| 221 | 1 | 2.65209 | 213.094 | 45.9176 |

Data Set Standard Deviation = 0.3145
Numerator = 2108.42
Denominator = 4636.99
W Statistic = 0.454696 = 2108.42 / 4636.99

5% Critical value of 0.976 exceeds 0.454696
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.454696
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: 1,2-Dichlorobenzene

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | -2.25379 | -2.65209 | 7.03356 | 5.97726 |
| 2 | -2.25379 | -2.36561 | 12.6297 | 11.3089 |
| 3 | -2.25379 | -2.22621 | 17.5857 | 16.3263 |
| 4 | -2.25379 | -2.09693 | 21.9828 | 21.0523 |
| 5 | -2.25379 | -2.01409 | 26.0394 | 25.5917 |
| 6 | -2.25379 | -1.92684 | 29.7521 | 29.9344 |
| 7 | -2.25379 | -1.86629 | 33.2351 | 34.1406 |
| 8 | -2.25379 | -1.79912 | 36.472 | 38.1955 |
| 9 | -2.25379 | -1.75069 | 39.5369 | 42.1412 |
| 10 | -2.25379 | -1.6954 | 42.4112 | 45.9622 |
| 11 | -2.25379 | -1.65463 | 45.149 | 49.6914 |
| 12 | -2.25379 | -1.60725 | 47.7323 | 53.3138 |
| 13 | -2.25379 | -1.57179 | 50.2028 | 56.8563 |
| 14 | -2.25379 | -1.53007 | 52.5439 | 60.3048 |
| 15 | -2.25379 | -1.49852 | 54.7894 | 63.6821 |
| 16 | -2.25379 | -1.46106 | 56.9241 | 66.975 |
| 17 | -2.25379 | -1.4325 | 58.9762 | 70.2036 |
| 18 | -2.25379 | -1.39838 | 60.9316 | 73.3553 |
| 19 | -2.25379 | -1.3722 | 62.8146 | 76.4479 |
| 20 | -2.25379 | -1.34075 | 64.6122 | 79.4697 |
| 21 | -2.25379 | -1.31652 | 66.3454 | 82.4369 |
| 22 | -2.25379 | -1.28727 | 68.0025 | 85.3381 |
| 23 | -2.25379 | -1.26464 | 69.6018 | 88.1884 |
| 24 | -2.25379 | -1.23724 | 71.1326 | 90.9769 |
| 25 | -2.25379 | -1.21596 | 72.6111 | 93.7174 |
| 26 | -2.25379 | -1.19012 | 74.0275 | 96.3997 |
| 27 | -1.44817 | -1.17 | 75.3964 | 98.094 |
| 28 | -1.44817 | -1.1455 | 76.7086 | 99.7529 |
| 29 | -1.44817 | -1.12639 | 77.9774 | 101.384 |
| 30 | -1.44817 | -1.10306 | 79.1941 | 102.982 |
| 31 | -1.42712 | -1.08482 | 80.371 | 104.53 |
| 32 | -1.38629 | -1.06252 | 81.4999 | 106.003 |
| 33 | -1.38629 | -1.04505 | 82.592 | 107.451 |
| 34 | -1.38629 | -1.02365 | 83.6399 | 108.87 |
| 35 | -0.693147 | -1.00687 | 84.6537 | 109.568 |
| 36 | -0.673345 | -0.986272 | 85.6264 | 110.233 |
| 37 | 0 | -0.970094 | 86.5675 | 110.233 |
| 38 | 0 | -0.950222 | 87.4704 | 110.233 |
| 39 | 0 | -0.934598 | 88.3439 | 110.233 |
| 40 | 0 | -0.915365 | 89.1818 | 110.233 |
| 41 | 0 | -0.900227 | 89.9922 | 110.233 |
| 42 | 0 | -0.881587 | 90.7694 | 110.233 |
| 43 | 0 | -0.866894 | 91.5209 | 110.233 |
| 44 | 0 | -0.848786 | 92.2413 | 110.233 |
| 45 | 0 | -0.834498 | 92.9377 | 110.233 |
| 46 | 0 | -0.816874 | 93.605 | 110.233 |
| 47 | 0 | -0.802956 | 94.2497 | 110.233 |
| 48 | 0 | -0.785774 | 94.8672 | 110.233 |
| 49 | 0 | -0.772193 | 95.4634 | 110.233 |

| | | | | |
|---|---|---|---|---|
| 50 | 0 | -0.755415 | 96.0341 | 110.233 |
| 51 | 0 | -0.742143 | 96.5849 | 110.233 |
| 52 | 0 | -0.725736 | 97.1116 | 110.233 |
| 53 | 0 | -0.712751 | 97.6196 | 110.233 |
| 54 | 0 | -0.696684 | 98.1049 | 110.233 |
| 55 | 0 | -0.683969 | 8.5727 | 110.233 |
| 56 | 0 | -0.668209 | 99.0192 | 110.233 |
| 57 | 0 | -0.655726 | 99.4492 | 110.233 |
| 58 | 0 | -0.640266 | 99.8592 | 110.233 |
| 59 | 0 | -0.628006 | 100.254 | 110.233 |
| 60 | 0 | -0.612813 | 100.629 | 110.233 |
| 61 | 0 | -0.60076 | 100.99 | 110.233 |
| 62 | 0 | -0.585815 | 101.333 | 110.233 |
| 63 | 0 | -0.573953 | 101.663 | 110.233 |
| 64 | 0 | -0.559237 | 101.975 | 110.233 |
| 65 | 0 | -0.547551 | 102.275 | 110.233 |
| 66 | 0 | -0.533048 | 102.559 | 110.233 |
| 67 | 0 | -0.521527 | 102.831 | 110.233 |
| 68 | 0 | -0.507221 | 103.089 | 110.233 |
| 69 | 0 | -0.49585 | 103.334 | 110.233 |
| 70 | 0 | -0.481728 | 103.566 | 110.233 |
| 71 | 0 | -0.470498 | 103.788 | 110.233 |
| 72 | 0 | -0.456542 | 103.996 | 110.233 |
| 73 | 0 | -0.445443 | 104.195 | 110.233 |
| 74 | 0 | -0.431644 | 104.381 | 110.233 |
| 75 | 0 | -0.420664 | 104.558 | 110.233 |
| 76 | 0 | -0.40701 | 104.724 | 110.233 |
| 77 | 0 | -0.396142 | 104.881 | 110.233 |
| 78 | 0 | -0.382622 | 105.027 | 110.233 |
| 79 | 0 | -0.371856 | 105.165 | 110.233 |
| 80 | 0 | -0.358459 | 105.294 | 110.233 |
| 81 | 0 | -0.347787 | 105.415 | 110.233 |
| 82 | 0 | -0.334503 | 105.527 | 110.233 |
| 83 | 0 | -0.323919 | 105.632 | 110.233 |
| 84 | 0 | -0.310738 | 105.728 | 110.233 |
| 85 | 0 | -0.300232 | 105.818 | 110.233 |
| 86 | 0 | -0.287147 | 105.901 | 110.233 |
| 87 | 0 | -0.276714 | 105.977 | 110.233 |
| 88 | 0 | -0.263715 | 106.047 | 110.233 |
| 89 | 0 | -0.253347 | 106.111 | 110.233 |
| 90 | 0 | -0.240426 | 106.169 | 110.233 |
| 91 | 0 | -0.230118 | 106.222 | 110.233 |
| 92 | 0 | -0.217267 | 106.269 | 110.233 |
| 93 | 0 | -0.207012 | 106.312 | 110.233 |
| 94 | 0 | -0.194225 | 106.35 | 110.233 |
| 95 | 0 | -0.184017 | 106.383 | 110.233 |
| 96 | 0 | -0.171285 | 106.413 | 110.233 |
| 97 | 0 | -0.161119 | 106.439 | 110.233 |
| 98 | 0 | -0.148434 | 106.461 | 110.233 |
| 99 | 0 | -0.138305 | 106.48 | 110.233 |
| 100 | 0 | -0.125661 | 106.496 | 110.233 |
| 101 | 0 | -0.115562 | 106.509 | 110.233 |
| 102 | 0 | -0.102953 | 106.52 | 110.233 |
| 103 | 0 | -0.0928787 | 106.528 | 110.233 |
| 104 | 0 | -0.0802981 | 106.535 | 110.233 |
| 105 | 0 | -0.0702426 | 106.54 | 110.233 |
| 106 | 0 | -0.0576847 | 106.543 | 110.233 |
| 107 | 0 | -0.0476439 | 106.545 | 110.233 |
| 108 | 0 | -0.0350997 | 106.546 | 110.233 |
| 109 | 0 | -0.0250691 | 106.547 | 110.233 |
| 110 | 0 | -0.0125328 | 106.547 | 110.233 |
| 111 | 0 | 0 | 106.547 | 110.233 |

| | | | | |
|---|---|---|---|---|
| 112 | 0 | 0.0125328 | 106.547 | 110.233 |
| 113 | 0 | 0.0250691 | 106.548 | 110.233 |
| 114 | 0 | 0.0350997 | 106.549 | 110.233 |
| 115 | 0 | 0.0476439 | 106.551 | 110.233 |
| 116 | 0 | 0.0576847 | 106.555 | 110.233 |
| 117 | 0 | 0.0702426 | 106.56 | 110.233 |
| 118 | 0 | 0.0802981 | 106.566 | 110.233 |
| 119 | 0 | 0.0928787 | 106.575 | 110.233 |
| 120 | 0 | 0.102953 | 106.585 | 110.233 |
| 121 | 0 | 0.115562 | 106.599 | 110.233 |
| 122 | 0 | 0.125661 | 106.615 | 110.233 |
| 123 | 0 | 0.138305 | 106.634 | 110.233 |
| 124 | 0 | 0.148434 | 106.656 | 110.233 |
| 125 | 0 | 0.161119 | 106.682 | 110.233 |
| 126 | 0 | 0.171285 | 106.711 | 110.233 |
| 127 | 0 | 0.184017 | 106.745 | 110.233 |
| 128 | 0 | 0.194225 | 106.783 | 110.233 |
| 129 | 0 | 0.207012 | 106.825 | 110.233 |
| 130 | 0 | 0.217267 | 106.873 | 110.233 |
| 131 | 0 | 0.230118 | 106.926 | 110.233 |
| 132 | 0 | 0.240426 | 106.983 | 110.233 |
| 133 | 0 | 0.253347 | 107.048 | 110.233 |
| 134 | 0 | 0.263715 | 107.117 | 110.233 |
| 135 | 0 | 0.276714 | 107.194 | 110.233 |
| 136 | 0 | 0.287147 | 107.276 | 110.233 |
| 137 | 0 | 0.300232 | 107.366 | 110.233 |
| 138 | 0 | 0.310738 | 107.463 | 110.233 |
| 139 | 0 | 0.323919 | 107.568 | 110.233 |
| 140 | 0 | 0.334503 | 107.68 | 110.233 |
| 141 | 0 | 0.347787 | 107.801 | 110.233 |
| 142 | 0 | 0.358459 | 107.929 | 110.233 |
| 143 | 0 | 0.371856 | 108.067 | 110.233 |
| 144 | 0 | 0.382622 | 108.214 | 110.233 |
| 145 | 0 | 0.396142 | 108.371 | 110.233 |
| 146 | 0 | 0.40701 | 108.536 | 110.233 |
| 147 | 0 | 0.420664 | 108.713 | 110.233 |
| 148 | 0 | 0.431644 | 108.9 | 110.233 |
| 149 | 0 | 0.445443 | 109.098 | 110.233 |
| 150 | 0 | 0.456542 | 109.307 | 110.233 |
| 151 | 0 | 0.470498 | 109.528 | 110.233 |
| 152 | 0 | 0.481728 | 109.76 | 110.233 |
| 153 | 0 | 0.49585 | 110.006 | 110.233 |
| 154 | 0 | 0.507221 | 110.263 | 110.233 |
| 155 | 0 | 0.521527 | 110.535 | 110.233 |
| 156 | 0 | 0.533048 | 110.819 | 110.233 |
| 157 | 0 | 0.547551 | 111.119 | 110.233 |
| 158 | 0 | 0.559237 | 111.432 | 110.233 |
| 159 | 0 | 0.573953 | 111.761 | 110.233 |
| 160 | 0 | 0.585815 | 112.104 | 110.233 |
| 161 | 0 | 0.60076 | 112.465 | 110.233 |
| 162 | 0 | 0.612813 | 112.841 | 110.233 |
| 163 | 0 | 0.628006 | 113.235 | 110.233 |
| 164 | 0 | 0.640266 | 113.645 | 110.233 |
| 165 | 0 | 0.655726 | 114.075 | 110.233 |
| 166 | 0 | 0.668209 | 114.522 | 110.233 |
| 167 | 0 | 0.68396 | 114.989 | 110.233 |
| 168 | 0 | 0.696684 | 115.475 | 110.233 |
| 169 | 0 | 0.712751 | 115.983 | 110.233 |
| 170 | 0 | 0.725736 | 116.51 | 110.233 |
| 171 | 0 | 0.742143 | 117.06 | 110.233 |
| 172 | 0 | 0.755415 | 117.631 | 110.233 |
| 173 | 0 | 0.772193 | 118.227 | 110.233 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 0 | 0.785774 | | 118.845 | 110.233 |
| 175 | 0 | 0.802956 | | 119.489 | 110.233 |
| 176 | 0 | 0.816874 | | 120.157 | 110.233 |
| 177 | 0 | 0.834498 | | 120.853 | 110.233 |
| 178 | 0 | 0.848786 | | 121.574 | 110.233 |
| 179 | 0 | 0.866894 | | 122.325 | 110.233 |
| 180 | 0 | 0.881587 | | 123.102 | 110.233 |
| 181 | 0 | 0.900227 | | 123.913 | 110.233 |
| 182 | 0 | 0.915365 | | 124.751 | 110.233 |
| 183 | 0 | 0.93459 | 125.624 | 110.233 | |
| 184 | 0 | 0.950222 | | 126.527 | 110.233 |
| 185 | 0 | 0.970094 | | 127.468 | 110.233 |
| 186 | 0 | 0.986272 | | 128.441 | 110.233 |
| 187 | 0 | 1.00687 | 129.455 | 110.233 | |
| 188 | 0 | 1.02365 | 130.502 | 110.233 | |
| 189 | 0 | 1.04505 | 131.594 | 110.233 | |
| 190 | 0 | 1.06252 | 132.723 | 110.233 | |
| 191 | 0 | 1.08482 | 133.9 | 110.233 | |
| 192 | 0 | 1.10306 | 135.117 | 110.233 | |
| 193 | 0 | 1.12639 | 136.386 | 110.233 | |
| 194 | 0 | 1.1455 | 137.698 | 110.233 | |
| 195 | 0 | 1.17 | 139.067 | 110.233 | |
| 196 | 0 | 1.19012 | 140.483 | 110.233 | |
| 197 | 0 | 1.21596 | 141.962 | 110.233 | |
| 198 | 0 | 1.23724 | 143.493 | 110.233 | |
| 199 | 0 | 1.26464 | 145.092 | 110.233 | |
| 200 | 0 | 1.28727 | 146.749 | 110.233 | |
| 201 | 0 | 1.31652 | 148.482 | 110.233 | |
| 202 | 0 | 1.34075 | 150.28 | 110.233 | |
| 203 | 0 | 1.3722 | 152.163 | 110.233 | |
| 204 | 0 | 1.39838 | 154.118 | 110.233 | |
| 205 | 0 | 1.4325 | 156.17 | 110.233 | |
| 206 | 0 | 1.46106 | 158.305 | 110.233 | |
| 207 | 0 | 1.49852 | 160.551 | 110.233 | |
| 208 | 0 | 1.53007 | 162.892 | 110.233 | |
| 209 | 0 | 1.57179 | 165.362 | 110.233 | |
| 210 | 0 | 1.60725 | 167.945 | 110.233 | |
| 211 | 0 | 1.65463 | 170.683 | 110.233 | |
| 212 | 0 | 1.6954 | 173.558 | 110.233 | |
| 213 | 0 | 1.75069 | 176.622 | 110.233 | |
| 214 | 0 | 1.79912 | 179.859 | 110.233 | |
| 215 | 0 | 1.86629 | 183.342 | 110.233 | |
| 216 | 0 | 1.92684 | 187.055 | 110.233 | |
| 217 | 0 | 2.01409 | 191.112 | 110.233 | |
| 218 | 0 | 2.09693 | 195.509 | 110.233 | |
| 219 | 0 | 2.22621 | 200.465 | 110.233 | |
| 220 | 0 | 2.36561 | 206.061 | 110.233 | |
| 221 | 0 | 2.65209 | 213.094 | 110.233 | |

Data Set Standard Deviation = 0.757276
Numerator = 12151.2
Denominator = 26884.6
W Statistic = 0.451977 = 12151.2 / 26884.6

5% Critical value of 0.976 exceeds 0.451977
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.451977
Evidence of non-normality at 99% level of significance

# Non-Parametric Prediction Interval

## Inter-Well Comparison

## Parameter: 1,2-Dichlorobenzene

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 98.6425%
Number of comparisons = 8
Future Samples (k) = 8
Recent Dates = 1
Background Samples (n) = 18
Maximum Background Concentration = 0
Confidence Level = 69.2%
False Positive Rate = 30.8%

| Location | Date | Samples | Mean | Significant |
|---|---|---|---|---|
| MW-12AR | 11/12/2010 | 1 | -2.25379 | FALSE |
| MW-11R | 11/12/2010 | 1 | -2.25379 | FALSE |
| MW-6 | 11/12/2010 | 1 | -2.25379 | FALSE |
| MW-12BR | 11/12/2010 | 1 | -2.25379 | FALSE |
| MW-7 | 11/12/2010 | 1 | -2.25379 | FALSE |
| MW-9 | 11/12/2010 | 1 | -2.25379 | FALSE |
| MW-10 | 11/12/2010 | 1 | -1.42712 | FALSE |
| MW-8 | 11/12/2010 | 1 | -2.25379 | FALSE |

# Concentrations (ppb)

## Parameter: 1,2-Dichloroethane

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 214
Percent Non-Detects: 96.8326%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 18 (100%) | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.1 | ND<0.1 |
| | | | 11/16/2009 | ND<0.1 | ND<0.1 |
| | | | 6/30/2010 | ND<0.1 | ND<0.1 |
| | | | 11/12/2010 | ND<0.1 U | ND<0.1 U |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-11R | 28 | 28 (100%) | 7/20/1995 | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 |
| | | | 9/28/1995 | ND<2 | ND<2 |
| | | | 10/26/1995 | ND<2 | ND<2 |
| | | | 11/19/1996 | ND<2 | ND<2 |
| | | | 12/19/1996 | ND<2 | ND<2 |
| | | | 3/24/1997 | ND<2 | ND<2 |
| | | | 9/24/1997 | ND<2 | ND<2 |
| | | | 4/7/1998 | ND<2 | ND<2 |
| | | | 9/23/1998 | ND<2 | ND<2 |
| | | | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |

| | | | | | |
|---|---|---|---|---|---|
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.1 | ND<0.1 |
| | | | 11/16/2009 | ND<0.1 | ND<0.1 |
| | | | 6/30/2010 | ND<0.1 | ND<0.1 |
| | | | 11/12/2010 | ND<0.1 U | ND<0.1 U |
| MW-12AR | 18 | 18 (100%) | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.1 | ND<0.1 |
| | | | 11/16/2009 | ND<0.1 | ND<0.1 |
| | | | 6/30/2010 | ND<0.1 | ND<0.1 |
| | | | 11/12/2010 | ND<0.1 U | ND<0.1 U |
| MW-12BR | 18 | 18 (100%) | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.1 | ND<0.1 |
| | | | 11/16/2009 | ND<0.1 | ND<0.1 |
| | | | 6/30/2010 | ND<0.1 | ND<0.1 |
| | | | 11/12/2010 | ND<0.1 U | ND<0.1 U |
| MW-6 | 28 | 28 (100%) | 7/20/1995 | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 |
| | | | 9/28/1995 | ND<2 | ND<2 |
| | | | 10/26/1995 | ND<2 | ND<2 |
| | | | 11/19/1996 | ND<2 | ND<2 |
| | | | 12/19/1996 | ND<2 | ND<2 |
| | | | 3/24/1997 | ND<2 | ND<2 |
| | | | 9/24/1997 | ND<2 | ND<2 |
| | | | 4/7/1998 | ND<2 | ND<2 |
| | | | 9/23/1998 | ND<2 | ND<2 |
| | | | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |

| | | | | | |
|---|---|---|---|---|---|
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.1 | ND<0.1 |
| | | | 11/16/2009 | ND<0.1 | ND<0.1 |
| | | | 6/30/2010 | ND<0.1 | ND<0.1 |
| | | | 11/12/2010 | ND<0.1 U | ND<0.1 U |
| MW-7 | 28 | 28 (100%) | 7/20/1995 | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 |
| | | | 9/28/1995 | ND<2 | ND<2 |
| | | | 10/26/1995 | ND<2 | ND<2 |
| | | | 11/19/1996 | ND<2 | ND<2 |
| | | | 12/19/1996 | ND<2 | ND<2 |
| | | | 3/24/1997 | ND<2 | ND<2 |
| | | | 9/24/1997 | ND<2 | ND<2 |
| | | | 4/7/1998 | ND<2 | ND<2 |
| | | | 9/23/1998 | ND<2 | ND<2 |
| | | | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.1 | ND<0.1 |
| | | | 11/16/2009 | ND<0.1 | ND<0.1 |
| | | | 6/30/2010 | ND<0.1 | ND<0.1 |
| | | | 11/12/2010 | ND<0.1 U | ND<0.1 U |
| MW-8 | 27 | 27 (100%) | 7/20/1995 | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 |
| | | | 9/28/1995 | ND<2 | ND<2 |
| | | | 10/26/1995 | ND<2 | ND<2 |
| | | | 11/19/1996 | ND<2 | ND<2 |
| | | | 12/19/1996 | ND<2 | ND<2 |
| | | | 3/24/1997 | ND<2 | ND<2 |
| | | | 9/24/1997 | ND<2 | ND<2 |
| | | | 4/7/1998 | ND<2 | ND<2 |
| | | | 9/23/1998 | ND<2 | ND<2 |
| | | | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.1 | ND<0.1 | |
| | | | 6/30/2010 | ND<0.1 | ND<0.1 | |
| | | | 11/12/2010 | ND<0.1 U | | ND<0.1 U |
| MW-10 | 28 | 22 (78.5714%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | 0.58 J | 0.58 J | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | 0.42 J | 0.42 J | |
| | | | 6/5/2008 | 0.67 J | 0.67 J | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.1 | ND<0.1 | |
| | | | 11/16/2009 | 0.45 J | 0.45 J | |
| | | | 6/30/2010 | 0.2 J | 0.2 J | |
| | | | 11/12/2010 | 0.35 J | 0.35 J | |
| MW-9 | 28 | 27 (96.4286%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | 1.39 J | 1.39 J | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.1 | ND<0.1 | |
| | | | 11/16/2009 | ND<0.1 | ND<0.1 | |
| | | | 6/30/2010 | ND<0.1 | ND<0.1 | |

| | | | |
|---|---|---|---|
| | 11/12/2010 | ND<0.1 U | ND<0.1 U |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. | Original |
|---|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: 1,2-Dichloroethane

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.05 | -2.65209 | 7.03356 | -0.132604 |
| 2 | 0.05 | -2.36561 | 12.6297 | -0.250885 |
| 3 | 0.05 | -2.22621 | 17.5857 | -0.362195 |
| 4 | 0.05 | -2.09693 | 21.9828 | -0.467042 |
| 5 | 0.05 | -2.01409 | 26.0394 | -0.567747 |
| 6 | 0.05 | -1.92684 | 29.7521 | -0.664088 |
| 7 | 0.05 | -1.86629 | 33.2351 | -0.757403 |
| 8 | 0.05 | -1.79912 | 36.472 | -0.847359 |
| 9 | 0.05 | -1.75069 | 39.5369 | -0.934893 |
| 10 | 0.05 | -1.6954 | 42.4112 | -1.01966 |
| 11 | 0.05 | -1.65463 | 45.149 | -1.10239 |
| 12 | 0.05 | -1.60725 | 47.7323 | -1.18276 |
| 13 | 0.05 | -1.57179 | 50.2028 | -1.26135 |
| 14 | 0.05 | -1.53007 | 52.5439 | -1.33785 |
| 15 | 0.05 | -1.49852 | 54.7894 | -1.41278 |
| 16 | 0.05 | -1.46106 | 56.9241 | -1.48583 |
| 17 | 0.05 | -1.4325 | 58.9762 | -1.55745 |
| 18 | 0.05 | -1.39838 | 60.9316 | -1.62737 |
| 19 | 0.05 | -1.3722 | 62.8146 | -1.69598 |
| 20 | 0.05 | -1.34075 | 64.6122 | -1.76302 |
| 21 | 0.05 | -1.31652 | 66.3454 | -1.82885 |
| 22 | 0.05 | -1.28727 | 68.0025 | -1.89321 |
| 23 | 0.05 | -1.26464 | 69.6018 | -1.95644 |
| 24 | 0.05 | -1.23724 | 71.1326 | -2.0183 |
| 25 | 0.05 | -1.21596 | 72.6111 | -2.0791 |
| 26 | 0.05 | -1.19012 | 74.0275 | -2.13861 |
| 27 | 0.05 | -1.17 | 75.3964 | -2.19711 |
| 28 | 0.05 | -1.1455 | 76.7086 | -2.25438 |
| 29 | 0.05 | -1.12639 | 77.9774 | -2.3107 |
| 30 | 0.05 | -1.10306 | 79.1941 | -2.36586 |
| 31 | 0.05 | -1.08482 | 80.371 | -2.4201 |
| 32 | 0.05 | -1.06252 | 81.4999 | -2.47322 |
| 33 | 0.2 | -1.04505 | 82.592 | -2.68223 |
| 34 | 0.35 | -1.02365 | 83.6399 | -3.04051 |
| 35 | 0.42 | -1.00687 | 84.6537 | -3.46339 |
| 36 | 0.45 | -0.986272 | 85.6264 | -3.90722 |
| 37 | 0.58 | -0.970094 | 86.5675 | -4.46987 |
| 38 | 0.67 | -0.950222 | 87.4704 | -5.10652 |
| 39 | 1 | -0.93459 | 88.3439 | -6.04111 |
| 40 | 1 | -0.915365 | 89.1818 | -6.95648 |
| 41 | 1 | -0.900227 | 89.9922 | -7.8567 |
| 42 | 1 | -0.881587 | 90.7694 | -8.73829 |
| 43 | 1 | -0.866894 | 91.5209 | -9.60518 |
| 44 | 1 | -0.848786 | 92.2413 | -10.454 |
| 45 | 1 | -0.834498 | 92.9377 | -11.2885 |
| 46 | 1 | -0.816874 | 93.605 | -12.1053 |
| 47 | 1 | -0.802956 | 94.2497 | -12.9083 |
| 48 | 1 | -0.785774 | 94.8672 | -13.6941 |
| 49 | 1 | -0.772193 | 95.4634 | -14.4663 |

| | | | | |
|---|---|---|---|---|
| 50 | 1 | -0.755415 | 96.0341 | -15.2217 |
| 51 | 1 | -0.742143 | 96.5849 | -15.9638 |
| 52 | 1 | -0.725736 | 97.1116 | -16.6896 |
| 53 | 1 | -0.712751 | 97.6196 | -17.4023 |
| 54 | 1 | -0.696684 | 98.1049 | -18.099 |
| 55 | 1 | -0.683969 | 8.5727 | -18.783 |
| 56 | 1 | -0.668209 | 99.0192 | -19.4512 |
| 57 | 1 | -0.655726 | 99.4492 | -20.1069 |
| 58 | 1 | -0.640266 | 99.8592 | -20.7472 |
| 59 | 1 | -0.628006 | 100.254 | -21.3752 |
| 60 | 1 | -0.612813 | 100.629 | -21.988 |
| 61 | 1 | -0.60076 | 100.99 | -22.5887 |
| 62 | 1 | -0.585815 | 101.333 | -23.1745 |
| 63 | 1 | -0.573953 | 101.663 | -23.7485 |
| 64 | 1 | -0.559237 | 101.975 | -24.3077 |
| 65 | 1 | -0.547551 | 102.275 | -24.8553 |
| 66 | 1 | -0.533048 | 102.559 | -25.3883 |
| 67 | 1 | -0.521527 | 102.831 | -25.9099 |
| 68 | 1 | -0.507221 | 103.089 | -26.4171 |
| 69 | 1 | -0.49585 | 103.334 | -26.9129 |
| 70 | 1 | -0.481728 | 103.566 | -27.3947 |
| 71 | 1 | -0.470498 | 103.788 | -27.8652 |
| 72 | 1 | -0.456542 | 103.996 | -28.3217 |
| 73 | 1 | -0.445443 | 104.195 | -28.7671 |
| 74 | 1 | -0.431644 | 104.381 | -29.1988 |
| 75 | 1 | -0.420664 | 104.558 | -29.6195 |
| 76 | 1 | -0.40701 | 104.724 | -30.0265 |
| 77 | 1 | -0.396142 | 104.881 | -30.4226 |
| 78 | 1 | -0.382622 | 105.027 | -30.8052 |
| 79 | 1 | -0.371856 | 105.165 | -31.1771 |
| 80 | 1 | -0.358459 | 105.294 | -31.5355 |
| 81 | 1 | -0.347787 | 105.415 | -31.8833 |
| 82 | 1 | -0.334503 | 105.527 | -32.2178 |
| 83 | 1 | -0.323919 | 105.632 | -32.5418 |
| 84 | 1 | -0.310738 | 105.728 | -32.8525 |
| 85 | 1 | -0.300232 | 105.818 | -33.1527 |
| 86 | 1 | -0.287147 | 105.901 | -33.4399 |
| 87 | 1 | -0.276714 | 105.977 | -33.7166 |
| 88 | 1 | -0.263715 | 106.047 | -33.9803 |
| 89 | 1 | -0.253347 | 106.111 | -34.2336 |
| 90 | 1 | -0.240426 | 106.169 | -34.4741 |
| 91 | 1 | -0.230118 | 106.222 | -34.7042 |
| 92 | 1 | -0.217267 | 106.269 | -34.9215 |
| 93 | 1 | -0.207012 | 106.312 | -35.1285 |
| 94 | 1 | -0.194225 | 106.35 | -35.3227 |
| 95 | 1 | -0.184017 | 106.383 | -35.5067 |
| 96 | 1 | -0.171285 | 106.413 | -35.678 |
| 97 | 1 | -0.161119 | 106.439 | -35.8391 |
| 98 | 1 | -0.148434 | 106.461 | -35.9875 |
| 99 | 1 | -0.138305 | 106.48 | -36.1259 |
| 100 | 1 | -0.125661 | 106.496 | -36.2515 |
| 101 | 1 | -0.115562 | 106.509 | -36.3671 |
| 102 | 1 | -0.102953 | 106.52 | -36.47 |
| 103 | 1 | -0.0928787 | 106.528 | -36.5629 |
| 104 | 1 | -0.0802981 | 106.535 | -36.6432 |
| 105 | 1 | -0.0702426 | 106.54 | -36.7134 |
| 106 | 1 | -0.0576847 | 106.543 | -36.7711 |
| 107 | 1 | -0.0476439 | 106.545 | -36.8188 |
| 108 | 1 | -0.0350997 | 106.546 | -36.8539 |
| 109 | 1 | -0.0250691 | 106.547 | -36.8789 |
| 110 | 1 | -0.0125328 | 106.547 | -36.8915 |
| 111 | 1 | 0 | 106.547 | -36.8915 |

| | | | | |
|---|---|---|---|---|
| 112 | 1 | 0.0125328 | 106.547 | -36.8789 |
| 113 | 1 | 0.0250691 | 106.548 | -36.8539 |
| 114 | 1 | 0.0350997 | 106.549 | -36.8188 |
| 115 | 1 | 0.0476439 | 106.551 | -36.7711 |
| 116 | 1 | 0.0576847 | 106.555 | -36.7134 |
| 117 | 1 | 0.0702426 | 106.56 | -36.6432 |
| 118 | 1 | 0.0802981 | 106.566 | -36.5629 |
| 119 | 1 | 0.0928787 | 106.575 | -36.47 |
| 120 | 1 | 0.102953 | 106.585 | -36.3671 |
| 121 | 1 | 0.115562 | 106.599 | -36.2515 |
| 122 | 1 | 0.125661 | 106.615 | -36.1259 |
| 123 | 1 | 0.138305 | 106.634 | -35.9875 |
| 124 | 1 | 0.148434 | 106.656 | -35.8391 |
| 125 | 1 | 0.161119 | 106.682 | -35.678 |
| 126 | 1 | 0.171285 | 106.711 | -35.5067 |
| 127 | 1 | 0.184017 | 106.745 | -35.3227 |
| 128 | 1 | 0.194225 | 106.783 | -35.1285 |
| 129 | 1 | 0.207012 | 106.825 | -34.9215 |
| 130 | 1 | 0.217267 | 106.873 | -34.7042 |
| 131 | 1 | 0.230118 | 106.926 | -34.4741 |
| 132 | 1 | 0.240426 | 106.983 | -34.2336 |
| 133 | 1 | 0.253347 | 107.048 | -33.9803 |
| 134 | 1 | 0.263715 | 107.117 | -33.7166 |
| 135 | 1 | 0.276714 | 107.194 | -33.4399 |
| 136 | 1 | 0.287147 | 107.276 | -33.1527 |
| 137 | 1 | 0.300232 | 107.366 | -32.8525 |
| 138 | 1 | 0.310738 | 107.463 | -32.5418 |
| 139 | 1 | 0.323919 | 107.568 | -32.2178 |
| 140 | 1 | 0.334503 | 107.68 | -31.8833 |
| 141 | 1 | 0.347787 | 107.801 | -31.5355 |
| 142 | 1 | 0.358459 | 107.929 | -31.1771 |
| 143 | 1 | 0.371856 | 108.067 | -30.8052 |
| 144 | 1 | 0.382622 | 108.214 | -30.4226 |
| 145 | 1 | 0.396142 | 108.371 | -30.0265 |
| 146 | 1 | 0.40701 | 108.536 | -29.6195 |
| 147 | 1 | 0.420664 | 108.713 | -29.1988 |
| 148 | 1 | 0.431644 | 108.9 | -28.7671 |
| 149 | 1 | 0.445443 | 109.098 | -28.3217 |
| 150 | 1 | 0.456542 | 109.307 | -27.8652 |
| 151 | 1 | 0.470498 | 109.528 | -27.3947 |
| 152 | 1 | 0.481728 | 109.76 | -26.9129 |
| 153 | 1 | 0.49585 | 110.006 | -26.4171 |
| 154 | 1 | 0.507221 | 110.263 | -25.9099 |
| 155 | 1 | 0.521527 | 110.535 | -25.3883 |
| 156 | 1 | 0.533048 | 110.819 | -24.8553 |
| 157 | 1 | 0.547551 | 111.119 | -24.3077 |
| 158 | 1 | 0.559237 | 111.432 | -23.7485 |
| 159 | 1 | 0.573953 | 111.761 | -23.1745 |
| 160 | 1 | 0.585815 | 112.104 | -22.5887 |
| 161 | 1 | 0.60076 | 112.465 | -21.988 |
| 162 | 1 | 0.612813 | 112.841 | -21.3752 |
| 163 | 1 | 0.628006 | 113.235 | -20.7472 |
| 164 | 1 | 0.640266 | 113.645 | -20.1069 |
| 165 | 1 | 0.655726 | 114.075 | -19.4512 |
| 166 | 1 | 0.668209 | 114.522 | -18.783 |
| 167 | 1 | 0.68396 | 114.989 | -18.099 |
| 168 | 1 | 0.696684 | 115.475 | -17.4023 |
| 169 | 1 | 0.712751 | 115.983 | -16.6896 |
| 170 | 1 | 0.725736 | 116.51 | -15.9638 |
| 171 | 1 | 0.742143 | 117.06 | -15.2217 |
| 172 | 1 | 0.755415 | 117.631 | -14.4663 |
| 173 | 1 | 0.772193 | 118.227 | -13.6941 |

| | | | | |
|---|---|---|---|---|
| 174 | 1 | 0.785774 | 118.845 | -12.9083 |
| 175 | 1 | 0.802956 | 119.489 | -12.1053 |
| 176 | 1 | 0.816874 | 120.157 | -11.2885 |
| 177 | 1 | 0.834498 | 120.853 | -10.454 |
| 178 | 1 | 0.848786 | 121.574 | -9.60518 |
| 179 | 1 | 0.866894 | 122.325 | -8.73829 |
| 180 | 1 | 0.881587 | 123.102 | -7.8567 |
| 181 | 1 | 0.900227 | 123.913 | -6.95648 |
| 182 | 1 | 0.915365 | 124.751 | -6.04111 |
| 183 | 1 | 0.93459 | 125.624 | -5.10652 |
| 184 | 1 | 0.950222 | 126.527 | -4.1563 |
| 185 | 1 | 0.970094 | 127.468 | -3.1862 |
| 186 | 1 | 0.986272 | 128.441 | -2.19993 |
| 187 | 1 | 1.00687 | 129.455 | -1.19307 |
| 188 | 1 | 1.02365 | 130.502 | -0.169415 |
| 189 | 1 | 1.04505 | 131.594 | 0.875636 |
| 190 | 1 | 1.06252 | 132.723 | 1.93816 |
| 191 | 1 | 1.08482 | 133.9 | 3.02298 |
| 192 | 1 | 1.10306 | 135.117 | 4.12604 |
| 193 | 1 | 1.12639 | 136.386 | 5.25243 |
| 194 | 1 | 1.1455 | 137.698 | 6.39794 |
| 195 | 1 | 1.17 | 139.067 | 7.56794 |
| 196 | 1 | 1.19012 | 140.483 | 8.75806 |
| 197 | 1 | 1.21596 | 141.962 | 9.97402 |
| 198 | 1 | 1.23724 | 143.493 | 11.2113 |
| 199 | 1 | 1.26464 | 145.092 | 12.4759 |
| 200 | 1 | 1.28727 | 146.749 | 13.7632 |
| 201 | 1 | 1.31652 | 148.482 | 15.0797 |
| 202 | 1 | 1.34075 | 150.28 | 16.4204 |
| 203 | 1 | 1.3722 | 152.163 | 17.7926 |
| 204 | 1 | 1.39838 | 154.118 | 19.191 |
| 205 | 1 | 1.4325 | 156.17 | 20.6235 |
| 206 | 1 | 1.46106 | 158.305 | 22.0846 |
| 207 | 1 | 1.49852 | 160.551 | 23.5831 |
| 208 | 1 | 1.53007 | 162.892 | 25.1132 |
| 209 | 1 | 1.57179 | 165.362 | 26.685 |
| 210 | 1 | 1.60725 | 167.945 | 28.2922 |
| 211 | 1 | 1.65463 | 170.683 | 29.9468 |
| 212 | 1 | 1.6954 | 173.558 | 31.6422 |
| 213 | 1 | 1.75069 | 176.622 | 33.3929 |
| 214 | 1 | 1.79912 | 179.859 | 35.192 |
| 215 | 1 | 1.86629 | 183.342 | 37.0583 |
| 216 | 1 | 1.92684 | 187.055 | 38.9852 |
| 217 | 1 | 2.01409 | 191.112 | 40.9993 |
| 218 | 1 | 2.09693 | 195.509 | 43.0962 |
| 219 | 1 | 2.22621 | 200.465 | 45.3224 |
| 220 | 1 | 2.36561 | 206.061 | 47.688 |
| 221 | 1.39 | 2.65209 | 213.094 | 51.3744 |

Data Set Standard Deviation = 0.343704
Numerator = 2639.33
Denominator = 5538.14
W Statistic = 0.476573 = 2639.33 / 5538.14

5% Critical value of 0.976 exceeds 0.476573
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.476573
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: 1,2-Dichloroethane

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | -2.99573 | -2.65209 | 7.03356 | 7.94494 |
| 2 | -2.99573 | -2.36561 | 12.6297 | 15.0317 |
| 3 | -2.99573 | -2.22621 | 17.5857 | 21.7008 |
| 4 | -2.99573 | -2.09693 | 21.9828 | 27.9826 |
| 5 | -2.99573 | -2.01409 | 26.0394 | 34.0163 |
| 6 | -2.99573 | -1.92684 | 29.7521 | 39.7886 |
| 7 | -2.99573 | -1.86629 | 33.2351 | 45.3795 |
| 8 | -2.99573 | -1.79912 | 36.472 | 50.7692 |
| 9 | -2.99573 | -1.75069 | 39.5369 | 56.0138 |
| 10 | -2.99573 | -1.6954 | 42.4112 | 61.0928 |
| 11 | -2.99573 | -1.65463 | 45.149 | 66.0496 |
| 12 | -2.99573 | -1.60725 | 47.7323 | 70.8645 |
| 13 | -2.99573 | -1.57179 | 50.2028 | 75.5731 |
| 14 | -2.99573 | -1.53007 | 52.5439 | 80.1568 |
| 15 | -2.99573 | -1.49852 | 54.7894 | 84.6459 |
| 16 | -2.99573 | -1.46106 | 56.9241 | 89.0229 |
| 17 | -2.99573 | -1.4325 | 58.9762 | 93.3143 |
| 18 | -2.99573 | -1.39838 | 60.9316 | 97.5034 |
| 19 | -2.99573 | -1.3722 | 62.8146 | 101.614 |
| 20 | -2.99573 | -1.34075 | 64.6122 | 105.631 |
| 21 | -2.99573 | -1.31652 | 66.3454 | 109.575 |
| 22 | -2.99573 | -1.28727 | 68.0025 | 113.431 |
| 23 | -2.99573 | -1.26464 | 69.6018 | 117.22 |
| 24 | -2.99573 | -1.23724 | 71.1326 | 120.926 |
| 25 | -2.99573 | -1.21596 | 72.6111 | 124.569 |
| 26 | -2.99573 | -1.19012 | 74.0275 | 128.134 |
| 27 | -2.99573 | -1.17 | 75.3964 | 131.639 |
| 28 | -2.99573 | -1.1455 | 76.7086 | 135.071 |
| 29 | -2.99573 | -1.12639 | 77.9774 | 138.445 |
| 30 | -2.99573 | -1.10306 | 79.1941 | 141.749 |
| 31 | -2.99573 | -1.08482 | 80.371 | 144.999 |
| 32 | -2.99573 | -1.06252 | 81.4999 | 148.182 |
| 33 | -1.60944 | -1.04505 | 82.592 | 149.864 |
| 34 | -1.04982 | -1.02365 | 83.6399 | 150.939 |
| 35 | -0.867501 | -1.00687 | 84.6537 | 151.812 |
| 36 | -0.798508 | -0.986272 | 85.6264 | 152.6 |
| 37 | -0.544727 | -0.970094 | 86.5675 | 153.128 |
| 38 | -0.400478 | -0.950222 | 87.4704 | 153.509 |
| 39 | 0 | -0.934598 | 88.3439 | 153.509 |
| 40 | 0 | -0.915365 | 89.1818 | 153.509 |
| 41 | 0 | -0.900227 | 89.9922 | 153.509 |
| 42 | 0 | -0.881587 | 90.7694 | 153.509 |
| 43 | 0 | -0.866894 | 91.5209 | 153.509 |
| 44 | 0 | -0.848786 | 92.2413 | 153.509 |
| 45 | 0 | -0.834498 | 92.9377 | 153.509 |
| 46 | 0 | -0.816874 | 93.605 | 153.509 |
| 47 | 0 | -0.802956 | 94.2497 | 153.509 |
| 48 | 0 | -0.785774 | 94.8672 | 153.509 |
| 49 | 0 | -0.772193 | 95.4634 | 153.509 |

| | | | | |
|---|---|---|---|---|
| 50 | 0 | -0.755415 | 96.0341 | 153.509 |
| 51 | 0 | -0.742143 | 96.5849 | 153.509 |
| 52 | 0 | -0.725736 | 97.1116 | 153.509 |
| 53 | 0 | -0.712751 | 97.6196 | 153.509 |
| 54 | 0 | -0.696684 | 98.1049 | 153.509 |
| 55 | 0 | -0.683969 | 8.5727 | 153.509 |
| 56 | 0 | -0.668209 | 99.0192 | 153.509 |
| 57 | 0 | -0.655726 | 99.4492 | 153.509 |
| 58 | 0 | -0.640266 | 99.8592 | 153.509 |
| 59 | 0 | -0.628006 | 100.254 | 153.509 |
| 60 | 0 | -0.612813 | 100.629 | 153.509 |
| 61 | 0 | -0.60076 | 100.99 | 153.509 |
| 62 | 0 | -0.585815 | 101.333 | 153.509 |
| 63 | 0 | -0.573953 | 101.663 | 153.509 |
| 64 | 0 | -0.559237 | 101.975 | 153.509 |
| 65 | 0 | -0.547551 | 102.275 | 153.509 |
| 66 | 0 | -0.533048 | 102.559 | 153.509 |
| 67 | 0 | -0.521527 | 102.831 | 153.509 |
| 68 | 0 | -0.507221 | 103.089 | 153.509 |
| 69 | 0 | -0.49585 | 103.334 | 153.509 |
| 70 | 0 | -0.481728 | 103.566 | 153.509 |
| 71 | 0 | -0.470498 | 103.788 | 153.509 |
| 72 | 0 | -0.456542 | 103.996 | 153.509 |
| 73 | 0 | -0.445443 | 104.195 | 153.509 |
| 74 | 0 | -0.431644 | 104.381 | 153.509 |
| 75 | 0 | -0.420664 | 104.558 | 153.509 |
| 76 | 0 | -0.40701 | 104.724 | 153.509 |
| 77 | 0 | -0.396142 | 104.881 | 153.509 |
| 78 | 0 | -0.382622 | 105.027 | 153.509 |
| 79 | 0 | -0.371856 | 105.165 | 153.509 |
| 80 | 0 | -0.358459 | 105.294 | 153.509 |
| 81 | 0 | -0.347787 | 105.415 | 153.509 |
| 82 | 0 | -0.334503 | 105.527 | 153.509 |
| 83 | 0 | -0.323919 | 105.632 | 153.509 |
| 84 | 0 | -0.310738 | 105.728 | 153.509 |
| 85 | 0 | -0.300232 | 105.818 | 153.509 |
| 86 | 0 | -0.287147 | 105.901 | 153.509 |
| 87 | 0 | -0.276714 | 105.977 | 153.509 |
| 88 | 0 | -0.263715 | 106.047 | 153.509 |
| 89 | 0 | -0.253347 | 106.111 | 153.509 |
| 90 | 0 | -0.240426 | 106.169 | 153.509 |
| 91 | 0 | -0.230118 | 106.222 | 153.509 |
| 92 | 0 | -0.217267 | 106.269 | 153.509 |
| 93 | 0 | -0.207012 | 106.312 | 153.509 |
| 94 | 0 | -0.194225 | 106.35 | 153.509 |
| 95 | 0 | -0.184017 | 106.383 | 153.509 |
| 96 | 0 | -0.171285 | 106.413 | 153.509 |
| 97 | 0 | -0.161119 | 106.439 | 153.509 |
| 98 | 0 | -0.148434 | 106.461 | 153.509 |
| 99 | 0 | -0.138305 | 106.48 | 153.509 |
| 100 | 0 | -0.125661 | 106.496 | 153.509 |
| 101 | 0 | -0.115562 | 106.509 | 153.509 |
| 102 | 0 | -0.102953 | 106.52 | 153.509 |
| 103 | 0 | -0.0928787 | 106.528 | 153.509 |
| 104 | 0 | -0.0802981 | 106.535 | 153.509 |
| 105 | 0 | -0.0702426 | 106.54 | 153.509 |
| 106 | 0 | -0.0576847 | 106.543 | 153.509 |
| 107 | 0 | -0.0476439 | 106.545 | 153.509 |
| 108 | 0 | -0.0350997 | 106.546 | 153.509 |
| 109 | 0 | -0.0250691 | 106.547 | 153.509 |
| 110 | 0 | -0.0125328 | 106.547 | 153.509 |
| 111 | 0 | 0 | 106.547 | 153.509 |

| | | | | |
|---|---|---|---|---|
| 112 | 0 | 0.0125328 | 106.547 | 153.509 |
| 113 | 0 | 0.0250691 | 106.548 | 153.509 |
| 114 | 0 | 0.0350997 | 106.549 | 153.509 |
| 115 | 0 | 0.0476439 | 106.551 | 153.509 |
| 116 | 0 | 0.0576847 | 106.555 | 153.509 |
| 117 | 0 | 0.0702426 | 106.56 | 153.509 |
| 118 | 0 | 0.0802981 | 106.566 | 153.509 |
| 119 | 0 | 0.0928787 | 106.575 | 153.509 |
| 120 | 0 | 0.102953 | 106.585 | 153.509 |
| 121 | 0 | 0.115562 | 106.599 | 153.509 |
| 122 | 0 | 0.125661 | 106.615 | 153.509 |
| 123 | 0 | 0.138305 | 106.634 | 153.509 |
| 124 | 0 | 0.148434 | 106.656 | 153.509 |
| 125 | 0 | 0.161119 | 106.682 | 153.509 |
| 126 | 0 | 0.171285 | 106.711 | 153.509 |
| 127 | 0 | 0.184017 | 106.745 | 153.509 |
| 128 | 0 | 0.194225 | 106.783 | 153.509 |
| 129 | 0 | 0.207012 | 106.825 | 153.509 |
| 130 | 0 | 0.217267 | 106.873 | 153.509 |
| 131 | 0 | 0.230118 | 106.926 | 153.509 |
| 132 | 0 | 0.240426 | 106.983 | 153.509 |
| 133 | 0 | 0.253347 | 107.048 | 153.509 |
| 134 | 0 | 0.263715 | 107.117 | 153.509 |
| 135 | 0 | 0.276714 | 107.194 | 153.509 |
| 136 | 0 | 0.287147 | 107.276 | 153.509 |
| 137 | 0 | 0.300232 | 107.366 | 153.509 |
| 138 | 0 | 0.310738 | 107.463 | 153.509 |
| 139 | 0 | 0.323919 | 107.568 | 153.509 |
| 140 | 0 | 0.334503 | 107.68 | 153.509 |
| 141 | 0 | 0.347787 | 107.801 | 153.509 |
| 142 | 0 | 0.358459 | 107.929 | 153.509 |
| 143 | 0 | 0.371856 | 108.067 | 153.509 |
| 144 | 0 | 0.382622 | 108.214 | 153.509 |
| 145 | 0 | 0.396142 | 108.371 | 153.509 |
| 146 | 0 | 0.40701 | 108.536 | 153.509 |
| 147 | 0 | 0.420664 | 108.713 | 153.509 |
| 148 | 0 | 0.431644 | 108.9 | 153.509 |
| 149 | 0 | 0.445443 | 109.098 | 153.509 |
| 150 | 0 | 0.456542 | 109.307 | 153.509 |
| 151 | 0 | 0.470498 | 109.528 | 153.509 |
| 152 | 0 | 0.481728 | 109.76 | 153.509 |
| 153 | 0 | 0.49585 | 110.006 | 153.509 |
| 154 | 0 | 0.507221 | 110.263 | 153.509 |
| 155 | 0 | 0.521527 | 110.535 | 153.509 |
| 156 | 0 | 0.533048 | 110.819 | 153.509 |
| 157 | 0 | 0.547551 | 111.119 | 153.509 |
| 158 | 0 | 0.559237 | 111.432 | 153.509 |
| 159 | 0 | 0.573953 | 111.761 | 153.509 |
| 160 | 0 | 0.585815 | 112.104 | 153.509 |
| 161 | 0 | 0.60076 | 112.465 | 153.509 |
| 162 | 0 | 0.612813 | 112.841 | 153.509 |
| 163 | 0 | 0.628006 | 113.235 | 153.509 |
| 164 | 0 | 0.640266 | 113.645 | 153.509 |
| 165 | 0 | 0.655726 | 114.075 | 153.509 |
| 166 | 0 | 0.668209 | 114.522 | 153.509 |
| 167 | 0 | 0.68396 | 114.989 | 153.509 |
| 168 | 0 | 0.696684 | 115.475 | 153.509 |
| 169 | 0 | 0.712751 | 115.983 | 153.509 |
| 170 | 0 | 0.725736 | 116.51 | 153.509 |
| 171 | 0 | 0.742143 | 117.06 | 153.509 |
| 172 | 0 | 0.755415 | 117.631 | 153.509 |
| 173 | 0 | 0.772193 | 118.227 | 153.509 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 0 | 0.785774 | | 118.845 | 153.509 |
| 175 | 0 | 0.802956 | | 119.489 | 153.509 |
| 176 | 0 | 0.816874 | | 120.157 | 153.509 |
| 177 | 0 | 0.834498 | | 120.853 | 153.509 |
| 178 | 0 | 0.848786 | | 121.574 | 153.509 |
| 179 | 0 | 0.866894 | | 122.325 | 153.509 |
| 180 | 0 | 0.881587 | | 123.102 | 153.509 |
| 181 | 0 | 0.900227 | | 123.913 | 153.509 |
| 182 | 0 | 0.915365 | | 124.751 | 153.509 |
| 183 | 0 | 0.93459 | 125.624 | 153.509 | |
| 184 | 0 | 0.950222 | | 126.527 | 153.509 |
| 185 | 0 | 0.970094 | | 127.468 | 153.509 |
| 186 | 0 | 0.986272 | | 128.441 | 153.509 |
| 187 | 0 | 1.00687 | 129.455 | 153.509 | |
| 188 | 0 | 1.02365 | 130.502 | 153.509 | |
| 189 | 0 | 1.04505 | 131.594 | 153.509 | |
| 190 | 0 | 1.06252 | 132.723 | 153.509 | |
| 191 | 0 | 1.08482 | 133.9 | 153.509 | |
| 192 | 0 | 1.10306 | 135.117 | 153.509 | |
| 193 | 0 | 1.12639 | 136.386 | 153.509 | |
| 194 | 0 | 1.1455 | 137.698 | 153.509 | |
| 195 | 0 | 1.17 | 139.067 | 153.509 | |
| 196 | 0 | 1.19012 | 140.483 | 153.509 | |
| 197 | 0 | 1.21596 | 141.962 | 153.509 | |
| 198 | 0 | 1.23724 | 143.493 | 153.509 | |
| 199 | 0 | 1.26464 | 145.092 | 153.509 | |
| 200 | 0 | 1.28727 | 146.749 | 153.509 | |
| 201 | 0 | 1.31652 | 148.482 | 153.509 | |
| 202 | 0 | 1.34075 | 150.28 | 153.509 | |
| 203 | 0 | 1.3722 | 152.163 | 153.509 | |
| 204 | 0 | 1.39838 | 154.118 | 153.509 | |
| 205 | 0 | 1.4325 | 156.17 | 153.509 | |
| 206 | 0 | 1.46106 | 158.305 | 153.509 | |
| 207 | 0 | 1.49852 | 160.551 | 153.509 | |
| 208 | 0 | 1.53007 | 162.892 | 153.509 | |
| 209 | 0 | 1.57179 | 165.362 | 153.509 | |
| 210 | 0 | 1.60725 | 167.945 | 153.509 | |
| 211 | 0 | 1.65463 | 170.683 | 153.509 | |
| 212 | 0 | 1.6954 | 173.558 | 153.509 | |
| 213 | 0 | 1.75069 | 176.622 | 153.509 | |
| 214 | 0 | 1.79912 | 179.859 | 153.509 | |
| 215 | 0 | 1.86629 | 183.342 | 153.509 | |
| 216 | 0 | 1.92684 | 187.055 | 153.509 | |
| 217 | 0 | 2.01409 | 191.112 | 153.509 | |
| 218 | 0 | 2.09693 | 195.509 | 153.509 | |
| 219 | 0 | 2.22621 | 200.465 | 153.509 | |
| 220 | 0 | 2.36561 | 206.061 | 153.509 | |
| 221 | 0.329304 | | 2.65209 | 213.094 | 154.382 |

Data Set Standard Deviation = 1.05927
Numerator = 23833.9
Denominator = 52602.2
W Statistic = 0.453096 = 23833.9 / 52602.2

5% Critical value of 0.976 exceeds 0.453096
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.453096
Evidence of non-normality at 99% level of significance

# Non-Parametric Prediction Interval

## Inter-Well Comparison

## Parameter: 1,2-Dichloroethane

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 96.8326%
Number of comparisons = 8
Future Samples (k) = 8
Recent Dates = 1
Background Samples (n) = 18
Maximum Background Concentration = 0
Confidence Level = 69.2%
False Positive Rate = 30.8%

| Location | Date | Samples | Mean | Significant |
|---|---|---|---|---|
| MW-11R | 11/12/2010 | 1 | -2.99573 | FALSE |
| MW-12AR | 11/12/2010 | 1 | -2.99573 | FALSE |
| MW-12BR | 11/12/2010 | 1 | -2.99573 | FALSE |
| MW-6 | 11/12/2010 | 1 | -2.99573 | FALSE |
| MW-7 | 11/12/2010 | 1 | -2.99573 | FALSE |
| MW-8 | 11/12/2010 | 1 | -2.99573 | FALSE |
| MW-10 | 11/12/2010 | 1 | -1.04982 | FALSE |
| MW-9 | 11/12/2010 | 1 | -2.99573 | FALSE |

# Concentrations (ppb)

## Parameter: 1,2-Dichloropropane

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 230
Total Non-Detect: 198
Percent Non-Detects: 86.087%
Total Background Measurements: 19
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 19 | 19 (100%) | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.13 | ND<0.13 |
| | | | 11/16/2009 | ND<0.13 | ND<0.13 |
| | | | 6/30/2010 | ND<0.13 | ND<0.13 |
| | | | 11/12/2010 | ND<0.13 U | ND<0.13 U |
| | | | 11/12/2010 | ND<0.13 U | ND<0.13 U |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-9 | 29 | 24 (82.7586%) | 7/20/1995 | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 |
| | | | 9/28/1995 | ND<2 | ND<2 |
| | | | 10/26/1995 | ND<2 | ND<2 |
| | | | 11/19/1996 | ND<2 | ND<2 |
| | | | 12/19/1996 | ND<2 | ND<2 |
| | | | 3/24/1997 | ND<2 | ND<2 |
| | | | 9/24/1997 | ND<2 | ND<2 |
| | | | 4/7/1998 | ND<2 | ND<2 |
| | | | 9/23/1998 | ND<2 | ND<2 |
| | | | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | 0.23 J | 0.23 J |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | 0.24 J | 0.24 J | |
| | | | 6/11/2009 | ND<0.13 | | ND<0.13 |
| | | | 11/16/2009 | 0.33 J | 0.33 J | |
| | | | 6/30/2010 | 0.37 J | 0.37 J | |
| | | | 11/12/2010 | 0.25 J | 0.25 J | |
| | | | 11/12/2010 | ND<0.13 U | | ND<0.13 U |
| MW-8 | 28 | 28 (100%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.13 | | ND<0.13 |
| | | | 6/30/2010 | ND<0.13 | | ND<0.13 |
| | | | 11/12/2010 | ND<0.13 U | | ND<0.13 U |
| | | | 11/12/2010 | ND<0.13 U | | ND<0.13 U |
| MW-10 | 29 | 10 (34.4828%) | 7/20/1995 | | 0.42 J | 0.42 J |
| | | | 8/24/1995 | 3.1 | 3.1 | |
| | | | 9/28/1995 | 5 | 5 | |
| | | | 10/26/1995 | 3 | 3 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | 6 | 6 | |
| | | | 9/24/1997 | 7.7 | 7.7 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | 5.6 | 5.6 | |
| | | | 3/16/1999 | 9.1 | 9.1 | |
| | | | 9/23/1999 | 5.6 | 5.6 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 2.12 | 2.12 | |
| | | | 10/25/2005 | 3.32 | 3.32 | |
| | | | 4/29/2006 | 3.97 | 3.97 | |
| | | | 11/18/2006 | 2.93 | 2.93 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | 3.78 | 3.78 | |
| | | | 6/5/2008 | 3.51 | 3.51 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | 2.2 | 2.2 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | 11/16/2009 | 2.8 | 2.8 | | |
| | | 6/30/2010 | 1.7 | 1.7 | | |
| | | 11/12/2010 | ND<0.13 U | | ND<0.13 U | |
| | | 11/12/2010 | 3 | 3 | | |
| MW-11R | 29 | 21 (72.4138%) | 7/20/1995 | 1.2 J | 1.2 J | |
| | | 8/24/1995 | 4.3 | 4.3 | | |
| | | 9/28/1995 | 3 | 3 | | |
| | | 10/26/1995 | 4 | 4 | | |
| | | 11/19/1996 | ND<2 | ND<2 | | |
| | | 12/19/1996 | ND<2 | ND<2 | | |
| | | 3/24/1997 | ND<2 | ND<2 | | |
| | | 9/24/1997 | ND<2 | ND<2 | | |
| | | 4/7/1998 | ND<2 | ND<2 | | |
| | | 9/23/1998 | ND<2 | ND<2 | | |
| | | 3/16/1999 | ND<2 | ND<2 | | |
| | | 9/23/1999 | ND<2 | ND<2 | | |
| | | 3/15/2000 | ND<2 | ND<2 | | |
| | | 9/24/2003 | ND<2 | ND<2 | | |
| | | 3/11/2004 | ND<2 | ND<2 | | |
| | | 10/12/2004 | ND<2 | ND<2 | | |
| | | 4/1/2005 | 1.3 J | 1.3 J | | |
| | | 10/25/2005 | ND<2 | ND<2 | | |
| | | 4/29/2006 | 0.5 J | 0.5 J | | |
| | | 11/18/2006 | 0.6 J | 0.6 J | | |
| | | 5/23/2007 | ND<2 | ND<2 | | |
| | | 11/28/2007 | 0.95 J | 0.95 J | | |
| | | 6/5/2008 | ND<2 | ND<2 | | |
| | | 11/20/2008 | ND<2 | ND<2 | | |
| | | 6/11/2009 | ND<0.13 | | ND<0.13 | |
| | | 11/16/2009 | ND<0.13 | | ND<0.13 | |
| | | 6/30/2010 | ND<0.13 | | ND<0.13 | |
| | | 11/12/2010 | ND<0.13 U | | ND<0.13 U | |
| | | 11/12/2010 | ND<0.13 U | | ND<0.13 U | |
| MW-12A | 19 | 19 (100%) | 3/16/1999 | ND<2 | ND<2 | |
| | | 9/23/1999 | ND<2 | ND<2 | | |
| | | 3/15/2000 | ND<2 | ND<2 | | |
| | | 9/24/2003 | ND<2 | ND<2 | | |
| | | 3/11/2004 | ND<2 | ND<2 | | |
| | | 10/12/2004 | ND<2 | ND<2 | | |
| | | 4/1/2005 | ND<2 | ND<2 | | |
| | | 10/25/2005 | ND<2 | ND<2 | | |
| | | 4/29/2006 | ND<2 | ND<2 | | |
| | | 11/18/2006 | ND<2 | ND<2 | | |
| | | 5/23/2007 | ND<2 | ND<2 | | |
| | | 11/28/2007 | ND<2 | ND<2 | | |
| | | 6/5/2008 | ND<2 | ND<2 | | |
| | | 11/20/2008 | ND<2 | ND<2 | | |
| | | 6/11/2009 | ND<0.13 | | ND<0.13 | |
| | | 11/16/2009 | ND<0.13 | | ND<0.13 | |
| | | 6/30/2010 | ND<0.13 | | ND<0.13 | |
| | | 11/12/2010 | ND<0.13 U | | ND<0.13 U | |
| | | 11/12/2010 | ND<0.13 U | | ND<0.13 U | |
| MW-12B | 19 | 19 (100%) | 3/16/1999 | ND<2 | ND<2 | |
| | | 9/23/1999 | ND<2 | ND<2 | | |
| | | 3/15/2000 | ND<2 | ND<2 | | |
| | | 9/24/2003 | ND<2 | ND<2 | | |
| | | 3/11/2004 | ND<2 | ND<2 | | |
| | | 10/12/2004 | ND<2 | ND<2 | | |
| | | 4/1/2005 | ND<2 | ND<2 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.13 | | ND<0.13 |
| | | | 11/16/2009 | ND<0.13 | | ND<0.13 |
| | | | 6/30/2010 | ND<0.13 | | ND<0.13 |
| | | | 11/12/2010 | ND<0.13 U | | ND<0.13 U |
| | | | 11/12/2010 | ND<0.13 U | | ND<0.13 U |
| MW-6 | 29 | 29 (100%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.13 | | ND<0.13 |
| | | | 11/16/2009 | ND<0.13 | | ND<0.13 |
| | | | 6/30/2010 | ND<0.13 | | ND<0.13 |
| | | | 11/12/2010 | ND<0.13 U | | ND<0.13 U |
| | | | 11/12/2010 | ND<0.13 U | | ND<0.13 U |
| MW-7 | 29 | 29 (100%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |

| | | | |
|---|---|---|---|
| 11/18/2006 | ND<2 | ND<2 | |
| 5/23/2007 | ND<2 | ND<2 | |
| 11/28/2007 | ND<2 | ND<2 | |
| 6/5/2008 | ND<2 | ND<2 | |
| 11/20/2008 | ND<2 | ND<2 | |
| 6/11/2009 | ND<0.13 | | ND<0.13 |
| 11/16/2009 | ND<0.13 | | ND<0.13 |
| 6/30/2010 | ND<0.13 | | ND<0.13 |
| 11/12/2010 | ND<0.13 U | | ND<0.13 U |
| 11/12/2010 | ND<0.13 U | | ND<0.13 U |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. | Original |
|---|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: 1,2-Dichloropropane

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 230

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.065 | -2.65209 | 7.03356 | -0.172386 |
| 2 | 0.065 | -2.40892 | 12.8365 | -0.328966 |
| 3 | 0.065 | -2.25713 | 17.9311 | -0.475679 |
| 4 | 0.065 | -2.12007 | 22.4258 | -0.613484 |
| 5 | 0.065 | -2.03352 | 26.561 | -0.745662 |
| 6 | 0.065 | -1.95996 | 30.4025 | -0.87306 |
| 7 | 0.065 | -1.88079 | 33.9398 | -0.995311 |
| 8 | 0.065 | -1.82501 | 37.2705 | -1.11394 |
| 9 | 0.065 | -1.77438 | 40.4189 | -1.22927 |
| 10 | 0.065 | -1.71688 | 43.3666 | -1.34087 |
| 11 | 0.065 | -1.67466 | 46.1711 | -1.44972 |
| 12 | 0.065 | -1.63524 | 48.8451 | -1.55601 |
| 13 | 0.065 | -1.58927 | 51.3708 | -1.65931 |
| 14 | 0.065 | -1.55477 | 53.7882 | -1.76037 |
| 15 | 0.065 | -1.52203 | 56.1048 | -1.85931 |
| 16 | 0.065 | -1.48328 | 58.3049 | -1.95572 |
| 17 | 0.065 | -1.4538 | 60.4184 | -2.05022 |
| 18 | 0.065 | -1.42554 | 62.4506 | -2.14288 |
| 19 | 0.065 | -1.39175 | 64.3876 | -2.23334 |
| 20 | 0.065 | -1.36581 | 66.253 | -2.32212 |
| 21 | 0.065 | -1.34075 | 68.0506 | -2.40927 |
| 22 | 0.065 | -1.31058 | 69.7682 | -2.49446 |
| 23 | 0.065 | -1.28727 | 71.4253 | -2.57813 |
| 24 | 0.065 | -1.26464 | 73.0246 | -2.66033 |
| 25 | 0.065 | -1.23724 | 74.5554 | -2.74075 |
| 26 | 0.065 | -1.21596 | 76.0339 | -2.81979 |
| 27 | 0.065 | -1.19522 | 77.4625 | -2.89748 |
| 28 | 0.065 | -1.17 | 78.8314 | -2.97353 |
| 29 | 0.065 | -1.15035 | 80.1547 | -3.0483 |
| 30 | 0.065 | -1.13113 | 81.4341 | -3.12182 |
| 31 | 0.065 | -1.10768 | 82.6611 | -3.19382 |
| 32 | 0.065 | -1.08935 | 83.8478 | -3.26463 |
| 33 | 0.065 | -1.07138 | 84.9956 | -3.33427 |
| 34 | 0.065 | -1.04939 | 86.0968 | -3.40248 |
| 35 | 0.065 | -1.03215 | 87.1622 | -3.46957 |
| 36 | 0.065 | -1.01522 | 88.1929 | -3.53556 |
| 37 | 0.065 | -0.994457 | 89.1818 | -3.6002 |
| 38 | 0.23 | -0.97815 | 90.1386 | -3.82517 |
| 39 | 0.24 | -0.9621 | 91.0642 | -4.05608 |
| 40 | 0.25 | -0.942375 | 91.9523 | -4.29167 |
| 41 | 0.33 | -0.926859 | 92.8114 | -4.59753 |
| 42 | 0.37 | -0.911562 | 93.6423 | -4.93481 |
| 43 | 0.42 | -0.892733 | 94.4393 | -5.30976 |
| 44 | 0.5 | -0.877897 | 95.21 | -5.74871 |
| 45 | 0.6 | -0.863249 | 95.9552 | -6.26666 |
| 46 | 0.95 | -0.845198 | 96.6695 | -7.0696 |
| 47 | 1 | -0.830953 | 97.36 | -7.90055 |
| 48 | 1 | -0.816874 | 98.0273 | -8.71742 |
| 49 | 1 | -0.7995 | 98.6665 | -9.51692 |

| | | | | |
|---|---|---|---|---|
| 50 | 1 | -0.785774 | 99.2839 | -10.3027 |
| 51 | 1 | -0.772193 | 99.8802 | -11.0749 |
| 52 | 1 | -0.755415 | 100.451 | -11.8303 |
| 53 | 1 | -0.742143 | 101.002 | -12.5724 |
| 54 | 1 | -0.729003 | 101.533 | -13.3015 |
| 55 | 1 | -0.712751 | 102.041 | -14.0142 |
| 56 | 1 | -0.699883 | 102.531 | -14.7141 |
| 57 | 1 | -0.687131 | 103.003 | -15.4012 |
| 58 | 1 | -0.671346 | 103.454 | -16.0726 |
| 59 | 1 | -0.658838 | 103.888 | -16.7314 |
| 60 | 1 | -0.646431 | 104.306 | -17.3778 |
| 61 | 1 | -0.631062 | 104.704 | -18.0089 |
| 62 | 1 | -0.618872 | 105.087 | -18.6278 |
| 63 | 1 | -0.606775 | 105.455 | -19.2345 |
| 64 | 1 | -0.591776 | 105.805 | -19.8263 |
| 65 | 1 | -0.579873 | 106.142 | -20.4062 |
| 66 | 1 | -0.568052 | 106.464 | -20.9742 |
| 67 | 1 | -0.553384 | 106.771 | -21.5276 |
| 68 | 1 | -0.541736 | 107.064 | -22.0694 |
| 69 | 1 | -0.530162 | 107.345 | -22.5995 |
| 70 | 1 | -0.515791 | 107.611 | -23.1153 |
| 71 | 1 | -0.504372 | 107.866 | -23.6197 |
| 72 | 1 | -0.493018 | 108.109 | -24.1127 |
| 73 | 1 | -0.478914 | 108.338 | -24.5916 |
| 74 | 1 | -0.467699 | 108.557 | -25.0593 |
| 75 | 1 | -0.456542 | 108.765 | -25.5159 |
| 76 | 1 | -0.442676 | 108.961 | -25.9585 |
| 77 | 1 | -0.431644 | 109.147 | -26.3902 |
| 78 | 1 | -0.420664 | 109.324 | -26.8108 |
| 79 | 1 | -0.409735 | 109.492 | -27.2206 |
| 80 | 1 | -0.396142 | 109.649 | -27.6167 |
| 81 | 1 | -0.385321 | 109.798 | -28.002 |
| 82 | 1 | -0.374544 | 109.938 | -28.3766 |
| 83 | 1 | -0.361133 | 110.068 | -28.7377 |
| 84 | 1 | -0.350451 | 110.191 | -29.0882 |
| 85 | 1 | -0.33981 | 110.307 | -29.428 |
| 86 | 1 | -0.326561 | 110.413 | -29.7545 |
| 87 | 1 | -0.316004 | 110.513 | -30.0705 |
| 88 | 1 | -0.305481 | 110.606 | -30.376 |
| 89 | 1 | -0.292375 | 110.692 | -30.6684 |
| 90 | 1 | -0.281926 | 110.771 | -30.9503 |
| 91 | 1 | -0.271509 | 110.845 | -31.2218 |
| 92 | 1 | -0.258527 | 110.912 | -31.4804 |
| 93 | 1 | -0.248174 | 110.974 | -31.7285 |
| 94 | 1 | -0.237847 | 111.03 | -31.9664 |
| 95 | 1 | -0.224974 | 111.081 | -32.1914 |
| 96 | 1 | -0.214702 | 111.127 | -32.4061 |
| 97 | 1 | -0.204452 | 111.169 | -32.6105 |
| 98 | 1 | -0.191671 | 111.205 | -32.8022 |
| 99 | 1 | -0.181468 | 111.238 | -32.9837 |
| 100 | 1 | -0.171285 | 111.268 | -33.1549 |
| 101 | 1 | -0.158579 | 111.293 | -33.3135 |
| 102 | 1 | -0.148434 | 111.315 | -33.462 |
| 103 | 1 | -0.138305 | 111.334 | -33.6003 |
| 104 | 1 | -0.125661 | 111.35 | -33.7259 |
| 105 | 1 | -0.115562 | 111.363 | -33.8415 |
| 106 | 1 | -0.105474 | 111.374 | -33.947 |
| 107 | 1 | -0.0928787 | 111.383 | -34.0398 |
| 108 | 1 | -0.0828129 | 111.39 | -34.1226 |
| 109 | 1 | -0.0727562 | 111.395 | -34.1954 |
| 110 | 1 | -0.0601949 | 111.399 | -34.2556 |
| 111 | 1 | -0.0501541 | 111.401 | -34.3057 |

| | | | | |
|---|---|---|---|---|
| 112 | 1 | -0.0401167 | 111.403 | -34.3459 |
| 113 | 1 | -0.0275759 | 111.403 | -34.3734 |
| 114 | 1 | -0.0175476 | 111.404 | -34.391 |
| 115 | 1 | -0.00751925 | 111.404 | -34.3985 |
| 116 | 1 | 0.00751925 | 111.404 | -34.391 |
| 117 | 1 | 0.0175476 | 111.404 | -34.3734 |
| 118 | 1 | 0.0275759 | 111.405 | -34.3459 |
| 119 | 1 | 0.0401167 | 111.407 | -34.3057 |
| 120 | 1 | 0.0501541 | 111.409 | -34.2556 |
| 121 | 1 | 0.0601949 | 111.413 | -34.1954 |
| 122 | 1 | 0.0727562 | 111.418 | -34.1226 |
| 123 | 1 | 0.0828129 | 111.425 | -34.0398 |
| 124 | 1 | 0.0928787 | 111.434 | -33.947 |
| 125 | 1 | 0.105474 | 111.445 | -33.8415 |
| 126 | 1 | 0.115562 | 111.458 | -33.7259 |
| 127 | 1 | 0.125661 | 111.474 | -33.6003 |
| 128 | 1 | 0.138305 | 111.493 | -33.462 |
| 129 | 1 | 0.148434 | 111.515 | -33.3135 |
| 130 | 1 | 0.158579 | 111.54 | -33.1549 |
| 131 | 1 | 0.171285 | 111.569 | -32.9837 |
| 132 | 1 | 0.181468 | 111.602 | -32.8022 |
| 133 | 1 | 0.191671 | 111.639 | -32.6105 |
| 134 | 1 | 0.204452 | 111.681 | -32.4061 |
| 135 | 1 | 0.214702 | 111.727 | -32.1914 |
| 136 | 1 | 0.224974 | 111.778 | -31.9664 |
| 137 | 1 | 0.237847 | 111.834 | -31.7285 |
| 138 | 1 | 0.248174 | 111.896 | -31.4804 |
| 139 | 1 | 0.258527 | 111.963 | -31.2218 |
| 140 | 1 | 0.271509 | 112.036 | -30.9503 |
| 141 | 1 | 0.281926 | 112.116 | -30.6684 |
| 142 | 1 | 0.292375 | 112.201 | -30.376 |
| 143 | 1 | 0.305481 | 112.295 | -30.0705 |
| 144 | 1 | 0.316004 | 112.394 | -29.7545 |
| 145 | 1 | 0.326561 | 112.501 | -29.428 |
| 146 | 1 | 0.33981 | 112.617 | -29.0882 |
| 147 | 1 | 0.350451 | 112.739 | -28.7377 |
| 148 | 1 | 0.361133 | 112.87 | -28.3766 |
| 149 | 1 | 0.374544 | 113.01 | -28.002 |
| 150 | 1 | 0.385321 | 113.159 | -27.6167 |
| 151 | 1 | 0.396142 | 113.315 | -27.2206 |
| 152 | 1 | 0.409735 | 113.483 | -26.8108 |
| 153 | 1 | 0.420664 | 113.66 | -26.3902 |
| 154 | 1 | 0.431644 | 113.847 | -25.9585 |
| 155 | 1 | 0.442676 | 114.043 | -25.5159 |
| 156 | 1 | 0.456542 | 114.251 | -25.0593 |
| 157 | 1 | 0.467699 | 114.47 | -24.5916 |
| 158 | 1 | 0.478914 | 114.699 | -24.1127 |
| 159 | 1 | 0.493018 | 114.942 | -23.6197 |
| 160 | 1 | 0.504372 | 115.197 | -23.1153 |
| 161 | 1 | 0.515791 | 115.463 | -22.5995 |
| 162 | 1 | 0.530162 | 115.744 | -22.0694 |
| 163 | 1 | 0.541736 | 116.037 | -21.5276 |
| 164 | 1 | 0.553384 | 116.343 | -20.9742 |
| 165 | 1 | 0.568052 | 116.666 | -20.4062 |
| 166 | 1 | 0.579873 | 117.002 | -19.8263 |
| 167 | 1 | 0.591776 | 117.353 | -19.2345 |
| 168 | 1 | 0.606775 | 117.721 | -18.6278 |
| 169 | 1 | 0.618872 | 118.104 | -18.0089 |
| 170 | 1 | 0.631062 | 118.502 | -17.3778 |
| 171 | 1 | 0.646431 | 118.92 | -16.7314 |
| 172 | 1 | 0.658838 | 119.354 | -16.0726 |
| 173 | 1 | 0.671346 | 119.805 | -15.4012 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 1 | 0.687131 | | 120.277 | -14.7141 |
| 175 | 1 | 0.699883 | | 120.767 | -14.0142 |
| 176 | 1 | 0.712751 | | 121.275 | -13.3015 |
| 177 | 1 | 0.729003 | | 121.806 | -12.5724 |
| 178 | 1 | 0.742143 | | 122.357 | -11.8303 |
| 179 | 1 | 0.755415 | | 122.928 | -11.0749 |
| 180 | 1 | 0.772193 | | 123.524 | -10.3027 |
| 181 | 1 | 0.785774 | | 124.141 | -9.51692 |
| 182 | 1 | 0.7995 | 124.78 | -8.71742 | |
| 183 | 1 | 0.816874 | | 125.448 | -7.90055 |
| 184 | 1 | 0.830953 | | 126.138 | -7.0696 |
| 185 | 1 | 0.845198 | | 126.853 | -6.2244 |
| 186 | 1 | 0.863249 | | 127.598 | -5.36115 |
| 187 | 1 | 0.877897 | | 128.368 | -4.48325 |
| 188 | 1 | 0.892733 | | 129.165 | -3.59052 |
| 189 | 1 | 0.911562 | | 129.996 | -2.67896 |
| 190 | 1 | 0.926859 | | 130.855 | -1.7521 |
| 191 | 1 | 0.942375 | | 131.744 | -0.809724 |
| 192 | 1 | 0.9621 | 132.669 | 0.152376 | |
| 193 | 1 | 0.97815 | 133.626 | 1.13053 | |
| 194 | 1 | 0.994457 | | 134.615 | 2.12498 |
| 195 | 1 | 1.01522 | 135.646 | 3.1402 | |
| 196 | 1 | 1.03215 | 136.711 | 4.17236 | |
| 197 | 1 | 1.04939 | 137.812 | 5.22174 | |
| 198 | 1 | 1.07138 | 138.96 | 6.29312 | |
| 199 | 1 | 1.08935 | 140.147 | 7.38247 | |
| 200 | 1 | 1.10768 | 141.374 | 8.49015 | |
| 201 | 1 | 1.13113 | 142.653 | 9.62128 | |
| 202 | 1 | 1.15035 | 143.976 | 10.7716 | |
| 203 | 1 | 1.17 | 145.345 | 11.9416 | |
| 204 | 1 | 1.19522 | 146.774 | 13.1369 | |
| 205 | 1 | 1.21596 | 148.252 | 14.3528 | |
| 206 | 1 | 1.23724 | 149.783 | 15.5901 | |
| 207 | 1 | 1.26464 | 151.382 | 16.8547 | |
| 208 | 1.2 | 1.28727 | 153.04 | 18.3994 | |
| 209 | 1.3 | 1.31058 | 154.757 | 20.1032 | |
| 210 | 1.7 | 1.34075 | 156.555 | 22.3825 | |
| 211 | 2.12 | 1.36581 | 158.42 | 25.278 | |
| 212 | 2.2 | 1.39175 | 160.357 | 28.3398 | |
| 213 | 2.8 | 1.42554 | 162.389 | 32.3313 | |
| 214 | 2.93 | 1.4538 | 164.503 | 36.591 | |
| 215 | 3 | 1.48328 | 166.703 | 41.0408 | |
| 216 | 3 | 1.52203 | 169.02 | 45.6069 | |
| 217 | 3 | 1.55477 | 171.437 | 50.2712 | |
| 218 | 3.1 | 1.58927 | 173.963 | 55.198 | |
| 219 | 3.32 | 1.63524 | 176.637 | 60.627 | |
| 220 | 3.51 | 1.67466 | 179.441 | 66.505 | |
| 221 | 3.78 | 1.71688 | 182.389 | 72.9948 | |
| 222 | 3.97 | 1.77438 | 185.537 | 80.0391 | |
| 223 | 4 | 1.82501 | 188.868 | 87.3391 | |
| 224 | 4.3 | 1.88079 | 192.405 | 95.4265 | |
| 225 | 5 | 1.95996 | 196.247 | 105.226 | |
| 226 | 5.6 | 2.03352 | 200.382 | 116.614 | |
| 227 | 5.6 | 2.12007 | 204.877 | 128.486 | |
| 228 | 6 | 2.25713 | 209.971 | 142.029 | |
| 229 | 7.7 | 2.40892 | 215.774 | 160.578 | |
| 230 | 9.1 | 2.65209 | 222.808 | 184.712 | |

Data Set Standard Deviation = 1.14738
Numerator = 34118.5
Denominator = 67170.4

W Statistic = 0.50794 = 34118.5 / 67170.4

5% Critical value of 0.976 exceeds 0.50794
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.50794
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: 1,2-Dichloropropane

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 230

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | -2.73337 | -2.65209 | 7.03356 | 7.24913 |
| 2 | -2.73337 | -2.40892 | 12.8365 | 13.8336 |
| 3 | -2.73337 | -2.25713 | 17.9311 | 20.0032 |
| 4 | -2.73337 | -2.12007 | 22.4258 | 25.7981 |
| 5 | -2.73337 | -2.03352 | 26.561 | 31.3565 |
| 6 | -2.73337 | -1.95996 | 30.4025 | 36.7138 |
| 7 | -2.73337 | -1.88079 | 33.9398 | 41.8546 |
| 8 | -2.73337 | -1.82501 | 37.2705 | 46.8431 |
| 9 | -2.73337 | -1.77438 | 40.4189 | 51.6931 |
| 10 | -2.73337 | -1.71688 | 43.3666 | 56.386 |
| 11 | -2.73337 | -1.67466 | 46.1711 | 60.9634 |
| 12 | -2.73337 | -1.63524 | 48.8451 | 65.4331 |
| 13 | -2.73337 | -1.58927 | 51.3708 | 69.7772 |
| 14 | -2.73337 | -1.55477 | 53.7882 | 74.027 |
| 15 | -2.73337 | -1.52203 | 56.1048 | 78.1872 |
| 16 | -2.73337 | -1.48328 | 58.3049 | 82.2416 |
| 17 | -2.73337 | -1.4538 | 60.4184 | 86.2154 |
| 18 | -2.73337 | -1.42554 | 62.4506 | 90.1119 |
| 19 | -2.73337 | -1.39175 | 64.3876 | 93.9161 |
| 20 | -2.73337 | -1.36581 | 66.253 | 97.6493 |
| 21 | -2.73337 | -1.34075 | 68.0506 | 101.314 |
| 22 | -2.73337 | -1.31058 | 69.7682 | 104.896 |
| 23 | -2.73337 | -1.28727 | 71.4253 | 108.415 |
| 24 | -2.73337 | -1.26464 | 73.0246 | 111.872 |
| 25 | -2.73337 | -1.23724 | 74.5554 | 115.254 |
| 26 | -2.73337 | -1.21596 | 76.0339 | 118.577 |
| 27 | -2.73337 | -1.19522 | 77.4625 | 121.844 |
| 28 | -2.73337 | -1.17 | 78.8314 | 125.042 |
| 29 | -2.73337 | -1.15035 | 80.1547 | 128.187 |
| 30 | -2.73337 | -1.13113 | 81.4341 | 131.278 |
| 31 | -2.73337 | -1.10768 | 82.6611 | 134.306 |
| 32 | -2.73337 | -1.08935 | 83.8478 | 137.284 |
| 33 | -2.73337 | -1.07138 | 84.9956 | 140.212 |
| 34 | -2.73337 | -1.04939 | 86.0968 | 143.08 |
| 35 | -2.73337 | -1.03215 | 87.1622 | 145.902 |
| 36 | -2.73337 | -1.01522 | 88.1929 | 148.677 |
| 37 | -2.73337 | -0.994457 | 89.1818 | 151.395 |
| 38 | -1.46968 | -0.97815 | 90.1386 | 152.832 |
| 39 | -1.42712 | -0.9621 | 91.0642 | 154.205 |
| 40 | -1.38629 | -0.942375 | 91.9523 | 155.512 |
| 41 | -1.10866 | -0.926859 | 92.8114 | 156.539 |
| 42 | -0.994252 | -0.911562 | 93.6423 | 157.446 |
| 43 | -0.867501 | -0.892733 | 94.4393 | 158.22 |
| 44 | -0.693147 | -0.877897 | 95.21 | 158.829 |
| 45 | -0.510826 | -0.863249 | 95.9552 | 159.27 |
| 46 | -0.0512933 | -0.845198 | 96.6695 | 159.313 |
| 47 | 0 | -0.830953 | 97.36 | 159.313 |
| 48 | 0 | -0.816874 | 98.0273 | 159.313 |
| 49 | 0 | -0.7995 | 98.6665 | 159.313 |

| | | | | |
|---|---|---|---|---|
| 50 | 0 | -0.785774 | 99.2839 | 159.313 |
| 51 | 0 | -0.772193 | 99.8802 | 159.313 |
| 52 | 0 | -0.755415 | 100.451 | 159.313 |
| 53 | 0 | -0.742143 | 101.002 | 159.313 |
| 54 | 0 | -0.729003 | 101.533 | 159.313 |
| 55 | 0 | -0.712751 | 102.041 | 159.313 |
| 56 | 0 | -0.699883 | 102.531 | 159.313 |
| 57 | 0 | -0.687131 | 103.003 | 159.313 |
| 58 | 0 | -0.671346 | 103.454 | 159.313 |
| 59 | 0 | -0.658838 | 103.888 | 159.313 |
| 60 | 0 | -0.646431 | 104.306 | 159.313 |
| 61 | 0 | -0.631062 | 104.704 | 159.313 |
| 62 | 0 | -0.618872 | 105.087 | 159.313 |
| 63 | 0 | -0.606775 | 105.455 | 159.313 |
| 64 | 0 | -0.591776 | 105.805 | 159.313 |
| 65 | 0 | -0.579873 | 106.142 | 159.313 |
| 66 | 0 | -0.568052 | 106.464 | 159.313 |
| 67 | 0 | -0.553384 | 106.771 | 159.313 |
| 68 | 0 | -0.541736 | 107.064 | 159.313 |
| 69 | 0 | -0.530162 | 107.345 | 159.313 |
| 70 | 0 | -0.515791 | 107.611 | 159.313 |
| 71 | 0 | -0.504372 | 107.866 | 159.313 |
| 72 | 0 | -0.493018 | 108.109 | 159.313 |
| 73 | 0 | -0.478914 | 108.338 | 159.313 |
| 74 | 0 | -0.467699 | 108.557 | 159.313 |
| 75 | 0 | -0.456542 | 108.765 | 159.313 |
| 76 | 0 | -0.442676 | 108.961 | 159.313 |
| 77 | 0 | -0.431644 | 109.147 | 159.313 |
| 78 | 0 | -0.420664 | 109.324 | 159.313 |
| 79 | 0 | -0.409735 | 109.492 | 159.313 |
| 80 | 0 | -0.396142 | 109.649 | 159.313 |
| 81 | 0 | -0.385321 | 109.798 | 159.313 |
| 82 | 0 | -0.374544 | 109.938 | 159.313 |
| 83 | 0 | -0.361133 | 110.068 | 159.313 |
| 84 | 0 | -0.350451 | 110.191 | 159.313 |
| 85 | 0 | -0.33981 | 110.307 | 159.313 |
| 86 | 0 | -0.326561 | 110.413 | 159.313 |
| 87 | 0 | -0.316004 | 110.513 | 159.313 |
| 88 | 0 | -0.305481 | 110.606 | 159.313 |
| 89 | 0 | -0.292375 | 110.692 | 159.313 |
| 90 | 0 | -0.281926 | 110.771 | 159.313 |
| 91 | 0 | -0.271509 | 110.845 | 159.313 |
| 92 | 0 | -0.258527 | 110.912 | 159.313 |
| 93 | 0 | -0.248174 | 110.974 | 159.313 |
| 94 | 0 | -0.237847 | 111.03 | 159.313 |
| 95 | 0 | -0.224974 | 111.081 | 159.313 |
| 96 | 0 | -0.214702 | 111.127 | 159.313 |
| 97 | 0 | -0.204452 | 111.169 | 159.313 |
| 98 | 0 | -0.191671 | 111.205 | 159.313 |
| 99 | 0 | -0.181468 | 111.238 | 159.313 |
| 100 | 0 | -0.171285 | 111.268 | 159.313 |
| 101 | 0 | -0.158579 | 111.293 | 159.313 |
| 102 | 0 | -0.148434 | 111.315 | 159.313 |
| 103 | 0 | -0.138305 | 111.334 | 159.313 |
| 104 | 0 | -0.125661 | 111.35 | 159.313 |
| 105 | 0 | -0.115562 | 111.363 | 159.313 |
| 106 | 0 | -0.105474 | 111.374 | 159.313 |
| 107 | 0 | -0.0928787 | 111.383 | 159.313 |
| 108 | 0 | -0.0828129 | 111.39 | 159.313 |
| 109 | 0 | -0.0727562 | 111.395 | 159.313 |
| 110 | 0 | -0.0601949 | 111.399 | 159.313 |
| 111 | 0 | -0.0501541 | 111.401 | 159.313 |

| | | | | |
|---|---|---|---|---|
| 112 | 0 | -0.0401167 | 111.403 | 159.313 |
| 113 | 0 | -0.0275759 | 111.403 | 159.313 |
| 114 | 0 | -0.0175476 | 111.404 | 159.313 |
| 115 | 0 | -0.00751925 | 111.404 | 159.313 |
| 116 | 0 | 0.00751925 | 111.404 | 159.313 |
| 117 | 0 | 0.0175476 | 111.404 | 159.313 |
| 118 | 0 | 0.0275759 | 111.405 | 159.313 |
| 119 | 0 | 0.0401167 | 111.407 | 159.313 |
| 120 | 0 | 0.0501541 | 111.409 | 159.313 |
| 121 | 0 | 0.0601949 | 111.413 | 159.313 |
| 122 | 0 | 0.0727562 | 111.418 | 159.313 |
| 123 | 0 | 0.0828129 | 111.425 | 159.313 |
| 124 | 0 | 0.0928787 | 111.434 | 159.313 |
| 125 | 0 | 0.105474 | 111.445 | 159.313 |
| 126 | 0 | 0.115562 | 111.458 | 159.313 |
| 127 | 0 | 0.125661 | 111.474 | 159.313 |
| 128 | 0 | 0.138305 | 111.493 | 159.313 |
| 129 | 0 | 0.148434 | 111.515 | 159.313 |
| 130 | 0 | 0.158579 | 111.54 | 159.313 |
| 131 | 0 | 0.171285 | 111.569 | 159.313 |
| 132 | 0 | 0.181468 | 111.602 | 159.313 |
| 133 | 0 | 0.191671 | 111.639 | 159.313 |
| 134 | 0 | 0.204452 | 111.681 | 159.313 |
| 135 | 0 | 0.214702 | 111.727 | 159.313 |
| 136 | 0 | 0.224974 | 111.778 | 159.313 |
| 137 | 0 | 0.237847 | 111.834 | 159.313 |
| 138 | 0 | 0.248174 | 111.896 | 159.313 |
| 139 | 0 | 0.258527 | 111.963 | 159.313 |
| 140 | 0 | 0.271509 | 112.036 | 159.313 |
| 141 | 0 | 0.281926 | 112.116 | 159.313 |
| 142 | 0 | 0.292375 | 112.201 | 159.313 |
| 143 | 0 | 0.305481 | 112.295 | 159.313 |
| 144 | 0 | 0.316004 | 112.394 | 159.313 |
| 145 | 0 | 0.326561 | 112.501 | 159.313 |
| 146 | 0 | 0.33981 | 112.617 | 159.313 |
| 147 | 0 | 0.350451 | 112.739 | 159.313 |
| 148 | 0 | 0.361133 | 112.87 | 159.313 |
| 149 | 0 | 0.374544 | 113.01 | 159.313 |
| 150 | 0 | 0.385321 | 113.159 | 159.313 |
| 151 | 0 | 0.396142 | 113.315 | 159.313 |
| 152 | 0 | 0.409735 | 113.483 | 159.313 |
| 153 | 0 | 0.420664 | 113.66 | 159.313 |
| 154 | 0 | 0.431644 | 113.847 | 159.313 |
| 155 | 0 | 0.442676 | 114.043 | 159.313 |
| 156 | 0 | 0.456542 | 114.251 | 159.313 |
| 157 | 0 | 0.467699 | 114.47 | 159.313 |
| 158 | 0 | 0.478914 | 114.699 | 159.313 |
| 159 | 0 | 0.493018 | 114.942 | 159.313 |
| 160 | 0 | 0.504372 | 115.197 | 159.313 |
| 161 | 0 | 0.515791 | 115.463 | 159.313 |
| 162 | 0 | 0.530162 | 115.744 | 159.313 |
| 163 | 0 | 0.541736 | 116.037 | 159.313 |
| 164 | 0 | 0.553384 | 116.343 | 159.313 |
| 165 | 0 | 0.568052 | 116.666 | 159.313 |
| 166 | 0 | 0.579873 | 117.002 | 159.313 |
| 167 | 0 | 0.591776 | 117.353 | 159.313 |
| 168 | 0 | 0.606775 | 117.721 | 159.313 |
| 169 | 0 | 0.618872 | 118.104 | 159.313 |
| 170 | 0 | 0.631062 | 118.502 | 159.313 |
| 171 | 0 | 0.646431 | 118.92 | 159.313 |
| 172 | 0 | 0.658838 | 119.354 | 159.313 |
| 173 | 0 | 0.671346 | 119.805 | 159.313 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 0 | 0.687131 | | 120.277 | 159.313 |
| 175 | 0 | 0.699883 | | 120.767 | 159.313 |
| 176 | 0 | 0.712751 | | 121.275 | 159.313 |
| 177 | 0 | 0.729003 | | 121.806 | 159.313 |
| 178 | 0 | 0.742143 | | 122.357 | 159.313 |
| 179 | 0 | 0.755415 | | 122.928 | 159.313 |
| 180 | 0 | 0.772193 | | 123.524 | 159.313 |
| 181 | 0 | 0.785774 | | 124.141 | 159.313 |
| 182 | 0 | 0.7995 | 124.78 | 159.313 | |
| 183 | 0 | 0.816874 | | 125.448 | 159.313 |
| 184 | 0 | 0.830953 | | 126.138 | 159.313 |
| 185 | 0 | 0.845198 | | 126.853 | 159.313 |
| 186 | 0 | 0.863249 | | 127.598 | 159.313 |
| 187 | 0 | 0.877897 | | 128.368 | 159.313 |
| 188 | 0 | 0.892733 | | 129.165 | 159.313 |
| 189 | 0 | 0.911562 | | 129.996 | 159.313 |
| 190 | 0 | 0.926859 | | 130.855 | 159.313 |
| 191 | 0 | 0.942375 | | 131.744 | 159.313 |
| 192 | 0 | 0.9621 | 132.669 | 159.313 | |
| 193 | 0 | 0.97815 | 133.626 | 159.313 | |
| 194 | 0 | 0.994457 | | 134.615 | 159.313 |
| 195 | 0 | 1.01522 | 135.646 | 159.313 | |
| 196 | 0 | 1.03215 | 136.711 | 159.313 | |
| 197 | 0 | 1.04939 | 137.812 | 159.313 | |
| 198 | 0 | 1.07138 | 138.96 | 159.313 | |
| 199 | 0 | 1.08935 | 140.147 | 159.313 | |
| 200 | 0 | 1.10768 | 141.374 | 159.313 | |
| 201 | 0 | 1.13113 | 142.653 | 159.313 | |
| 202 | 0 | 1.15035 | 143.976 | 159.313 | |
| 203 | 0 | 1.17 | 145.345 | 159.313 | |
| 204 | 0 | 1.19522 | 146.774 | 159.313 | |
| 205 | 0 | 1.21596 | 148.252 | 159.313 | |
| 206 | 0 | 1.23724 | 149.783 | 159.313 | |
| 207 | 0 | 1.26464 | 151.382 | 159.313 | |
| 208 | 0.182322 | | 1.28727 | 153.04 | 159.548 |
| 209 | 0.262364 | | 1.31058 | 154.757 | 159.892 |
| 210 | 0.530628 | | 1.34075 | 156.555 | 160.603 |
| 211 | 0.751416 | | 1.36581 | 158.42 | 161.629 |
| 212 | 0.788457 | | 1.39175 | 160.357 | 162.727 |
| 213 | 1.02962 | 1.42554 | 162.389 | 164.194 | |
| 214 | 1.075 | 1.4538 | 164.503 | 165.757 | |
| 215 | 1.09861 | 1.48328 | 166.703 | 167.387 | |
| 216 | 1.09861 | 1.52203 | 169.02 | 169.059 | |
| 217 | 1.09861 | 1.55477 | 171.437 | 170.767 | |
| 218 | 1.1314 | 1.58927 | 173.963 | 172.565 | |
| 219 | 1.19996 | 1.63524 | 176.637 | 174.527 | |
| 220 | 1.25562 | 1.67466 | 179.441 | 176.63 | |
| 221 | 1.32972 | 1.71688 | 182.389 | 178.913 | |
| 222 | 1.37877 | 1.77438 | 185.537 | 181.36 | |
| 223 | 1.38629 | 1.82501 | 188.868 | 183.89 | |
| 224 | 1.45862 | 1.88079 | 192.405 | 186.633 | |
| 225 | 1.60944 | 1.95996 | 196.247 | 189.787 | |
| 226 | 1.72277 | 2.03352 | 200.382 | 193.291 | |
| 227 | 1.72277 | 2.12007 | 204.877 | 196.943 | |
| 228 | 1.79176 | 2.25713 | 209.971 | 200.987 | |
| 229 | 2.04122 | 2.40892 | 215.774 | 205.904 | |
| 230 | 2.20827 | 2.65209 | 222.808 | 211.761 | |

Data Set Standard Deviation = 1.13998
Numerator = 44842.7
Denominator = 66307.3

W Statistic = 0.676285 = 44842.7 / 66307.3

5% Critical value of 0.976 exceeds 0.676285
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.676285
Evidence of non-normality at 99% level of significance

# Kruskal-Wallis Non-Parametric Test

## Parameter: 1,2-Dichloropropane

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

# Kruskal Wallis Ranks

## Background Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-13 | 3/16/1999 | ND<0 | 99.5 |
| | 9/23/1999 | ND<0 | 99.5 |
| | 3/15/2000 | ND<0 | 99.5 |
| | 9/24/2003 | ND<0 | 99.5 |
| | 3/11/2004 | ND<0 | 99.5 |
| | 10/12/2004 | ND<0 | 99.5 |
| | 4/1/2005 | ND<0 | 99.5 |
| | 10/25/2005 | ND<0 | 99.5 |
| | 4/29/2006 | ND<0 | 99.5 |
| | 11/18/2006 | ND<0 | 99.5 |
| | 5/23/2007 | ND<0 | 99.5 |
| | 11/28/2007 | ND<0 | 99.5 |
| | 6/5/2008 | ND<0 | 99.5 |
| | 11/20/2008 | ND<0 | 99.5 |
| | 6/11/2009 | ND<-2.73337 | 99.5 |
| | 11/16/2009 | ND<-2.73337 | 99.5 |
| | 6/30/2010 | ND<-2.73337 | 99.5 |
| | 11/12/2010 | ND<-2.73337 U | 99.5 |
| | 11/12/2010 | ND<-2.73337 U | 99.5 |

Rank Sum = 1890.5
Rank Mean = 99.5

Background Rank Sum = 1890.5
Background Rank Mean = 99.5

## Compliance Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-9 | 7/20/1995 | ND<0 | 99.5 |
| | 8/24/1995 | ND<0 | 99.5 |
| | 9/28/1995 | ND<0 | 99.5 |
| | 10/26/1995 | ND<0 | 99.5 |
| | 11/19/1996 | ND<0 | 99.5 |
| | 12/19/1996 | ND<0 | 99.5 |
| | 3/24/1997 | ND<0 | 99.5 |
| | 9/24/1997 | ND<0 | 99.5 |
| | 4/7/1998 | ND<0 | 99.5 |
| | 9/23/1998 | ND<0 | 99.5 |
| | 3/16/1999 | ND<0 | 99.5 |
| | 9/23/1999 | ND<0 | 99.5 |
| | 3/15/2000 | ND<0 | 99.5 |
| | 9/24/2003 | ND<0 | 99.5 |
| | 3/11/2004 | ND<0 | 99.5 |
| | 10/12/2004 | ND<0 | 99.5 |
| | 4/1/2005 | ND<0 | 99.5 |
| | 10/25/2005 | ND<0 | 99.5 |
| | 4/29/2006 | ND<0 | 99.5 |

| | | | | |
|---|---|---|---|---|
| | 11/18/2006 | ND<0 | 99.5 | |
| | 5/23/2007 | ND<0 | 99.5 | |
| | 11/28/2007 | -1.46968 | J | 199 |
| | 6/5/2008 | ND<0 | 99.5 | |
| | 11/20/2008 | -1.42712 | J | 200 |
| | 6/11/2009 | ND<-2.73337 | | 99.5 |
| | 11/16/2009 | -1.10866 | J | 202 |
| | 6/30/2010 | -0.994252 | J | 203 |
| | 11/12/2010 | -1.38629 | J | 201 |
| | 11/12/2010 | ND<-2.73337 | U | 99.5 |

Rank Sum = 3393
Rank Mean = 117

| | | | | |
|---|---|---|---|---|
| MW-8 | 7/20/1995 | ND<0 | 99.5 | |
| | 8/24/1995 | ND<0 | 99.5 | |
| | 9/28/1995 | ND<0 | 99.5 | |
| | 10/26/1995 | ND<0 | 99.5 | |
| | 11/19/1996 | ND<0 | 99.5 | |
| | 12/19/1996 | ND<0 | 99.5 | |
| | 3/24/1997 | ND<0 | 99.5 | |
| | 9/24/1997 | ND<0 | 99.5 | |
| | 4/7/1998 | ND<0 | 99.5 | |
| | 9/23/1998 | ND<0 | 99.5 | |
| | 3/16/1999 | ND<0 | 99.5 | |
| | 9/23/1999 | ND<0 | 99.5 | |
| | 3/15/2000 | ND<0 | 99.5 | |
| | 9/24/2003 | ND<0 | 99.5 | |
| | 3/11/2004 | ND<0 | 99.5 | |
| | 10/12/2004 | ND<0 | 99.5 | |
| | 4/1/2005 | ND<0 | 99.5 | |
| | 10/25/2005 | ND<0 | 99.5 | |
| | 4/29/2006 | ND<0 | 99.5 | |
| | 11/18/2006 | ND<0 | 99.5 | |
| | 5/23/2007 | ND<0 | 99.5 | |
| | 11/28/2007 | ND<0 | 99.5 | |
| | 6/5/2008 | ND<0 | 99.5 | |
| | 11/20/2008 | ND<0 | 99.5 | |
| | 6/11/2009 | ND<-2.73337 | | 99.5 |
| | 6/30/2010 | ND<-2.73337 | | 99.5 |
| | 11/12/2010 | ND<-2.73337 | U | 99.5 |
| | 11/12/2010 | ND<-2.73337 | U | 99.5 |

Rank Sum = 2786
Rank Mean = 99.5

| | | | | |
|---|---|---|---|---|
| MW-10 | 7/20/1995 | -0.867501 | J | 204 |
| | 8/24/1995 | 1.1314 | 218 | |
| | 9/28/1995 | 1.60944 | | 225 |
| | 10/26/1995 | 1.09861 | | 215 |
| | 11/19/1996 | ND<0 | 99.5 | |
| | 12/19/1996 | ND<0 | 99.5 | |
| | 3/24/1997 | 1.79176 | | 228 |
| | 9/24/1997 | 2.04122 | | 229 |
| | 4/7/1998 | ND<0 | 99.5 | |
| | 9/23/1998 | 1.72277 | | 226 |
| | 3/16/1999 | 2.20827 | | 230 |
| | 9/23/1999 | 1.72277 | | 227 |
| | 3/15/2000 | ND<0 | 99.5 | |
| | 9/24/2003 | ND<0 | 99.5 | |
| | 3/11/2004 | ND<0 | 99.5 | |
| | 10/12/2004 | ND<0 | 99.5 | |
| | 4/1/2005 | 0.751416 | 211 | |
| | 10/25/2005 | 1.19996 | | 219 |

| | | | | |
|---|---|---|---|---|
| | 4/29/2006 | 1.37877 | | 222 |
| | 11/18/2006 | 1.075 | 214 | |
| | 5/23/2007 | ND<0 | 99.5 | |
| | 11/28/2007 | 1.32972 | | 221 |
| | 6/5/2008 | 1.25562 | 220 | |
| | 11/20/2008 | ND<0 | 99.5 | |
| | 6/11/2009 | 0.788457 | | 212 |
| | 11/16/2009 | 1.02962 | | 213 |
| | 6/30/2010 | 0.530628 | | 210 |
| | 11/12/2010 | ND<-2.73337 U | | 99.5 |
| | 11/12/2010 | 1.09861 | | 216 |

Rank Sum = 5155
Rank Mean = 177.759

| | | | | |
|---|---|---|---|---|
| MW-11R | 7/20/1995 | 0.182322 J | | 208 |
| | 8/24/1995 | 1.45862 | | 224 |
| | 9/28/1995 | 1.09861 | | 217 |
| | 10/26/1995 | 1.38629 | | 223 |
| | 11/19/1996 | ND<0 | 99.5 | |
| | 12/19/1996 | ND<0 | 99.5 | |
| | 3/24/1997 | ND<0 | 99.5 | |
| | 9/24/1997 | ND<0 | 99.5 | |
| | 4/7/1998 | ND<0 | 99.5 | |
| | 9/23/1998 | ND<0 | 99.5 | |
| | 3/16/1999 | ND<0 | 99.5 | |
| | 9/23/1999 | ND<0 | 99.5 | |
| | 3/15/2000 | ND<0 | 99.5 | |
| | 9/24/2003 | ND<0 | 99.5 | |
| | 3/11/2004 | ND<0 | 99.5 | |
| | 10/12/2004 | ND<0 | 99.5 | |
| | 4/1/2005 | 0.262364 J | 209 | |
| | 10/25/2005 | ND<0 | 99.5 | |
| | 4/29/2006 | -0.693147 J | | 205 |
| | 11/18/2006 | -0.510826 J | | 206 |
| | 5/23/2007 | ND<0 | 99.5 | |
| | 11/28/2007 | -0.0512933 J | | 207 |
| | 6/5/2008 | ND<0 | 99.5 | |
| | 11/20/2008 | ND<0 | 99.5 | |
| | 6/11/2009 | ND<-2.73337 | | 99.5 |
| | 11/16/2009 | ND<-2.73337 | | 99.5 |
| | 6/30/2010 | ND<-2.73337 | | 99.5 |
| | 11/12/2010 | ND<-2.73337 U | | 99.5 |
| | 11/12/2010 | ND<-2.73337 U | | 99.5 |

Rank Sum = 3788.5
Rank Mean = 130.638

| | | | | |
|---|---|---|---|---|
| MW-12AR | 3/16/1999 | ND<0 | 99.5 | |
| | 9/23/1999 | ND<0 | 99.5 | |
| | 3/15/2000 | ND<0 | 99.5 | |
| | 9/24/2003 | ND<0 | 99.5 | |
| | 3/11/2004 | ND<0 | 99.5 | |
| | 10/12/2004 | ND<0 | 99.5 | |
| | 4/1/2005 | ND<0 | 99.5 | |
| | 10/25/2005 | ND<0 | 99.5 | |
| | 4/29/2006 | ND<0 | 99.5 | |
| | 11/18/2006 | ND<0 | 99.5 | |
| | 5/23/2007 | ND<0 | 99.5 | |
| | 11/28/2007 | ND<0 | 99.5 | |
| | 6/5/2008 | ND<0 | 99.5 | |
| | 11/20/2008 | ND<0 | 99.5 | |
| | 6/11/2009 | ND<-2.73337 | | 99.5 |
| | 11/16/2009 | ND<-2.73337 | | 99.5 |

| | | | |
|---|---|---|---|
| | 6/30/2010 | ND<-2.73337 | 99.5 |
| | 11/12/2010 | ND<-2.73337 U | 99.5 |
| | 11/12/2010 | ND<-2.73337 U | 99.5 |

Rank Sum = 1890.5
Rank Mean = 99.5

| | | | |
|---|---|---|---|
| MW-12BR | 3/16/1999 | ND<0 | 99.5 |
| | 9/23/1999 | ND<0 | 99.5 |
| | 3/15/2000 | ND<0 | 99.5 |
| | 9/24/2003 | ND<0 | 99.5 |
| | 3/11/2004 | ND<0 | 99.5 |
| | 10/12/2004 | ND<0 | 99.5 |
| | 4/1/2005 | ND<0 | 99.5 |
| | 10/25/2005 | ND<0 | 99.5 |
| | 4/29/2006 | ND<0 | 99.5 |
| | 11/18/2006 | ND<0 | 99.5 |
| | 5/23/2007 | ND<0 | 99.5 |
| | 11/28/2007 | ND<0 | 99.5 |
| | 6/5/2008 | ND<0 | 99.5 |
| | 11/20/2008 | ND<0 | 99.5 |
| | 6/11/2009 | ND<-2.73337 | 99.5 |
| | 11/16/2009 | ND<-2.73337 | 99.5 |
| | 6/30/2010 | ND<-2.73337 | 99.5 |
| | 11/12/2010 | ND<-2.73337 U | 99.5 |
| | 11/12/2010 | ND<-2.73337 U | 99.5 |

Rank Sum = 1890.5
Rank Mean = 99.5

| | | | |
|---|---|---|---|
| MW-6 | 7/20/1995 | ND<0 | 99.5 |
| | 8/24/1995 | ND<0 | 99.5 |
| | 9/28/1995 | ND<0 | 99.5 |
| | 10/26/1995 | ND<0 | 99.5 |
| | 11/19/1996 | ND<0 | 99.5 |
| | 12/19/1996 | ND<0 | 99.5 |
| | 3/24/1997 | ND<0 | 99.5 |
| | 9/24/1997 | ND<0 | 99.5 |
| | 4/7/1998 | ND<0 | 99.5 |
| | 9/23/1998 | ND<0 | 99.5 |
| | 3/16/1999 | ND<0 | 99.5 |
| | 9/23/1999 | ND<0 | 99.5 |
| | 3/15/2000 | ND<0 | 99.5 |
| | 9/24/2003 | ND<0 | 99.5 |
| | 3/11/2004 | ND<0 | 99.5 |
| | 10/12/2004 | ND<0 | 99.5 |
| | 4/1/2005 | ND<0 | 99.5 |
| | 10/25/2005 | ND<0 | 99.5 |
| | 4/29/2006 | ND<0 | 99.5 |
| | 11/18/2006 | ND<0 | 99.5 |
| | 5/23/2007 | ND<0 | 99.5 |
| | 11/28/2007 | ND<0 | 99.5 |
| | 6/5/2008 | ND<0 | 99.5 |
| | 11/20/2008 | ND<0 | 99.5 |
| | 6/11/2009 | ND<-2.73337 | 99.5 |
| | 11/16/2009 | ND<-2.73337 | 99.5 |
| | 6/30/2010 | ND<-2.73337 | 99.5 |
| | 11/12/2010 | ND<-2.73337 U | 99.5 |
| | 11/12/2010 | ND<-2.73337 U | 99.5 |

Rank Sum = 2885.5
Rank Mean = 99.5

| | | | |
|---|---|---|---|
| MW-7 | 7/20/1995 | ND<0 | 99.5 |
| | 8/24/1995 | ND<0 | 99.5 |

| | | | |
|---|---|---|---|
| 9/28/1995 | ND<0 | 99.5 | |
| 10/26/1995 | ND<0 | 99.5 | |
| 11/19/1996 | ND<0 | 99.5 | |
| 12/19/1996 | ND<0 | 99.5 | |
| 3/24/1997 | ND<0 | 99.5 | |
| 9/24/1997 | ND<0 | 99.5 | |
| 4/7/1998 | ND<0 | 99.5 | |
| 9/23/1998 | ND<0 | 99.5 | |
| 3/16/1999 | ND<0 | 99.5 | |
| 9/23/1999 | ND<0 | 99.5 | |
| 3/15/2000 | ND<0 | 99.5 | |
| 9/24/2003 | ND<0 | 99.5 | |
| 3/11/2004 | ND<0 | 99.5 | |
| 10/12/2004 | ND<0 | 99.5 | |
| 4/1/2005 | ND<0 | 99.5 | |
| 10/25/2005 | ND<0 | 99.5 | |
| 4/29/2006 | ND<0 | 99.5 | |
| 11/18/2006 | ND<0 | 99.5 | |
| 5/23/2007 | ND<0 | 99.5 | |
| 11/28/2007 | ND<0 | 99.5 | |
| 6/5/2008 | ND<0 | 99.5 | |
| 11/20/2008 | ND<0 | 99.5 | |
| 6/11/2009 | ND<-2.73337 | 99.5 | |
| 11/16/2009 | ND<-2.73337 | 99.5 | |
| 6/30/2010 | ND<-2.73337 | 99.5 | |
| 11/12/2010 | ND<-2.73337 U | 99.5 | |
| 11/12/2010 | ND<-2.73337 U | 99.5 | |

Rank Sum = 2885.5
Rank Mean = 99.5

## Calculation Results:

Kruskal-Wallis H Statistic = 35.1726
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 97.1574
95% Confidence comparison value is 15.5073 at 8 degrees of freedom
35.1726 > 15.5073 indicating a significant group difference at 5% significance level
97.1574 > 15.5073 indicating a significant group difference at 5% significance level when adjusted for ties

## Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 99.5

| Well | Mean Rank | | Dif from Bkg | Critical Value |
|---|---|---|---|---|
| MW-9 | 117 | 17.5 | 45.6875 | |
| MW-8 | 99.5 | 0 | 46.0093 | |
| MW-10 | 177.759 | 78.2586 | 45.6875 | |
| MW-11R | 130.638 | 31.1379 | 45.6875 | |
| MW-12AR | 99.5 | 0 | 50.2217 | |
| MW-12BR | 99.5 | 0 | 50.2217 | |
| MW-6 | 99.5 | 0 | 45.6875 | |
| MW-7 | 99.5 | 0 | 45.6875 | |

## Individual Well Comparisons at Groupwise 5% Significance Level (0.625% Significance Level per comparison)

0.625% Z score is 2.51213
Mean background rank is 99.5

| Well | Mean Rank | | Dif from Bkg | Critical Value |
|---|---|---|---|---|
| MW-9 | 117 | 17.5 | 49.3363 | |
| MW-8 | 99.5 | 0 | 49.6838 | |
| MW-10 | 177.759 | 78.2586 | 49.3363 | |

| | | | | |
|---|---|---|---|---|
| MW-11R | 130.638 | 31.1379 | 49.3363 | |
| MW-12AR | | 99.5 | 0 | 54.2326 |
| MW-12BR | | 99.5 | 0 | 54.2326 |
| MW-6 | 99.5 | 0 | 49.3363 | |
| MW-7 | 99.5 | 0 | 49.3363 | |

# Mann-Kendall Trend Analysis

## Parameter: 1,2-Dichloropropane

## Location: MW-10

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | | Positives | Negatives |
|---|---|---|---|---|---|
| 1.1314 | -0.867501 J | 1.9989 | 1 | 0 | |
| 1.60944 | -0.867501 J | 2.47694 | 2 | 0 | |
| 1.09861 | -0.867501 J | 1.96611 | 3 | 0 | |
| ND<0 | -0.867501 J | 0.867501 | 4 | 0 | |
| ND<0 | -0.867501 J | 0.867501 | 5 | 0 | |
| 1.79176 | -0.867501 J | 2.65926 | 6 | 0 | |
| 2.04122 | -0.867501 J | 2.90872 | 7 | 0 | |
| ND<0 | -0.867501 J | 0.867501 | 8 | 0 | |
| 1.72277 | -0.867501 J | 2.59027 | 9 | 0 | |
| 2.20827 | -0.867501 J | 3.07577 | 10 | 0 | |
| 1.72277 | -0.867501 J | 2.59027 | 11 | 0 | |
| ND<0 | -0.867501 J | 0.867501 | 12 | 0 | |
| ND<0 | -0.867501 J | 0.867501 | 13 | 0 | |
| ND<0 | -0.867501 J | 0.867501 | 14 | 0 | |
| ND<0 | -0.867501 J | 0.867501 | 15 | 0 | |
| 0.751416 | -0.867501 J | 1.61892 | 16 | 0 | |
| 1.19996 | -0.867501 J | 2.06747 | 17 | 0 | |
| 1.37877 | -0.867501 J | 2.24627 | 18 | 0 | |
| 1.075 | -0.867501 J | 1.9425 | 19 | 0 | |
| ND<0 | -0.867501 J | 0.867501 | 20 | 0 | |
| 1.32972 | -0.867501 J | 2.19722 | 21 | 0 | |
| 1.25562 | -0.867501 J | 2.12312 | 22 | 0 | |
| ND<0 | -0.867501 J | 0.867501 | 23 | 0 | |
| 0.788457 | -0.867501 J | 1.65596 | 24 | 0 | |
| 1.02962 | -0.867501 J | 1.89712 | 25 | 0 | |
| 0.530628 | -0.867501 J | 1.39813 | 26 | 0 | |
| ND<-2.73337 U | -0.867501 J | -1.8658 | 26 | 1 | |
| 1.09861 | -0.867501 J | 1.96611 | 27 | 1 | |
| | | | | | |
| 1.60944 | 1.1314 | 0.478036 | 28 | 1 | |
| 1.09861 | 1.1314 | -0.0327898 | 28 | 2 | |
| ND<0 | 1.1314 | -1.1314 | 28 | 3 | |
| ND<0 | 1.1314 | -1.1314 | 28 | 4 | |
| 1.79176 | 1.1314 | 0.660357 | 29 | 4 | |
| 2.04122 | 1.1314 | 0.909818 | 30 | 4 | |
| ND<0 | 1.1314 | -1.1314 | 30 | 5 | |
| 1.72277 | 1.1314 | 0.591364 | 31 | 5 | |
| 2.20827 | 1.1314 | 1.07687 | 32 | 5 | |
| 1.72277 | 1.1314 | 0.591364 | 33 | 5 | |
| ND<0 | 1.1314 | -1.1314 | 33 | 6 | |
| ND<0 | 1.1314 | -1.1314 | 33 | 7 | |
| ND<0 | 1.1314 | -1.1314 | 33 | 8 | |
| ND<0 | 1.1314 | -1.1314 | 33 | 9 | |
| 0.751416 | 1.1314 | -0.379986 | 33 | 10 | |
| 1.19996 | 1.1314 | 0.0685627 | 34 | 10 | |
| 1.37877 | 1.1314 | 0.247364 | 35 | 10 | |
| 1.075 | 1.1314 | -0.0563997 | 35 | 11 | |
| ND<0 | 1.1314 | -1.1314 | 35 | 12 | |

| | | | | | |
|---|---|---|---|---|---|
| 1.32972 | 1.1314 | 0.198322 | 36 | 12 | |
| 1.25562 | 1.1314 | 0.124214 | 37 | 12 | |
| ND<0 | 1.1314 | -1.1314 | 37 | 13 | |
| 0.788457 | 1.1314 | -0.342945 | 37 | 14 | |
| 1.02962 | 1.1314 | -0.101783 | 37 | 15 | |
| 0.530628 | 1.1314 | -0.600774 | 37 | 16 | |
| ND<-2.73337 U | 1.1314 | -3.8647737 | 17 | | |
| 1.09861 | 1.1314 | -0.0327898 | 37 | 18 | |
| | | | | | |
| 1.09861 | 1.60944 | -0.510826 | 37 | 19 | |
| ND<0 | 1.60944 | -1.6094437 | 20 | | |
| ND<0 | 1.60944 | -1.6094437 | 21 | | |
| 1.79176 | 1.60944 | 0.182322 | 38 | 21 | |
| 2.04122 | 1.60944 | 0.431782 | 39 | 21 | |
| ND<0 | 1.60944 | -1.6094439 | 22 | | |
| 1.72277 | 1.60944 | 0.113329 | 40 | 22 | |
| 2.20827 | 1.60944 | 0.598837 | 41 | 22 | |
| 1.72277 | 1.60944 | 0.113329 | 42 | 22 | |
| ND<0 | 1.60944 | -1.6094442 | 23 | | |
| ND<0 | 1.60944 | -1.6094442 | 24 | | |
| ND<0 | 1.60944 | -1.6094442 | 25 | | |
| ND<0 | 1.60944 | -1.6094442 | 26 | | |
| 0.751416 | 1.60944 | -0.858022 | 42 | 27 | |
| 1.19996 | 1.60944 | -0.409473 | 42 | 28 | |
| 1.37877 | 1.60944 | -0.230672 | 42 | 29 | |
| 1.075 | 1.60944 | -0.534435 | 42 | 30 | |
| ND<0 | 1.60944 | -1.6094442 | 31 | | |
| 1.32972 | 1.60944 | -0.279714 | 42 | 32 | |
| 1.25562 | 1.60944 | -0.353822 | 42 | 33 | |
| ND<0 | 1.60944 | -1.6094442 | 34 | | |
| 0.788457 | 1.60944 | -0.820981 | 42 | 35 | |
| 1.02962 | 1.60944 | -0.579818 | 42 | 36 | |
| 0.530628 | 1.60944 | -1.0788142 | 37 | | |
| ND<-2.73337 U | 1.60944 | -4.3428142 | 38 | | |
| 1.09861 | 1.60944 | -0.510826 | 42 | 39 | |
| | | | | | |
| ND<0 | 1.09861 | -1.0986142 | 40 | | |
| ND<0 | 1.09861 | -1.0986142 | 41 | | |
| 1.79176 | 1.09861 | 0.693147 | 43 | 41 | |
| 2.04122 | 1.09861 | 0.942608 | 44 | 41 | |
| ND<0 | 1.09861 | -1.0986144 | 42 | | |
| 1.72277 | 1.09861 | 0.624154 | 45 | 42 | |
| 2.20827 | 1.09861 | 1.10966 | 46 | 42 | |
| 1.72277 | 1.09861 | 0.624154 | 47 | 42 | |
| ND<0 | 1.09861 | -1.0986147 | 43 | | |
| ND<0 | 1.09861 | -1.0986147 | 44 | | |
| ND<0 | 1.09861 | -1.0986147 | 45 | | |
| ND<0 | 1.09861 | -1.0986147 | 46 | | |
| 0.751416 | 1.09861 | -0.347196 | 47 | 47 | |
| 1.19996 | 1.09861 | 0.101352 | 48 | 47 | |
| 1.37877 | 1.09861 | 0.280154 | 49 | 47 | |
| 1.075 | 1.09861 | -0.0236099 | 49 | 48 | |
| ND<0 | 1.09861 | -1.0986149 | 49 | | |
| 1.32972 | 1.09861 | 0.231112 | 50 | 49 | |
| 1.25562 | 1.09861 | 0.157004 | 51 | 49 | |
| ND<0 | 1.09861 | -1.0986151 | 50 | | |
| 0.788457 | 1.09861 | -0.310155 | 51 | 51 | |
| 1.02962 | 1.09861 | -0.0689929 | 51 | 52 | |
| 0.530628 | 1.09861 | -0.567984 | 51 | 53 | |
| ND<-2.73337 U | 1.09861 | -3.8319851 | 54 | | |
| 1.09861 | 1.09861 | 0 | 51 | 54 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 51 | 54 | | |
| 1.79176 | | ND<0 | 1.79176 | 52 | 54 | |
| 2.04122 | | ND<0 | 2.04122 | 53 | 54 | |
| ND<0 | ND<0 | 0 | 53 | 54 | | |
| 1.72277 | | ND<0 | 1.72277 | 54 | 54 | |
| 2.20827 | | ND<0 | 2.20827 | 55 | 54 | |
| 1.72277 | | ND<0 | 1.72277 | 56 | 54 | |
| ND<0 | ND<0 | 0 | 56 | 54 | | |
| ND<0 | ND<0 | 0 | 56 | 54 | | |
| ND<0 | ND<0 | 0 | 56 | 54 | | |
| ND<0 | ND<0 | 0 | 56 | 54 | | |
| 0.751416 | | ND<0 | 0.751416 | | 57 | 54 |
| 1.19996 | | ND<0 | 1.19996 | 58 | 54 | |
| 1.37877 | | ND<0 | 1.37877 | 59 | 54 | |
| 1.075 | ND<0 | 1.075 | 60 | 54 | | |
| ND<0 | ND<0 | 0 | 60 | 54 | | |
| 1.32972 | | ND<0 | 1.32972 | 61 | 54 | |
| 1.25562 | | ND<0 | 1.25562 | 62 | 54 | |
| ND<0 | ND<0 | 0 | 62 | 54 | | |
| 0.788457 | | ND<0 | 0.788457 | | 63 | 54 |
| 1.02962 | | ND<0 | 1.02962 | 64 | 54 | |
| 0.530628 | | ND<0 | 0.530628 | | 65 | 54 |
| ND<-2.73337 U | | ND<0 | -2.7333 | 65 | 55 | |
| 1.09861 | | ND<0 | 1.09861 | 66 | 55 | |
| | | | | | | |
| 1.79176 | | ND<0 | 1.79176 | 67 | 55 | |
| 2.04122 | | ND<0 | 2.04122 | 68 | 55 | |
| ND<0 | ND<0 | 0 | 68 | 55 | | |
| 1.72277 | | ND<0 | 1.72277 | 69 | 55 | |
| 2.20827 | | ND<0 | 2.20827 | 70 | 55 | |
| 1.72277 | | ND<0 | 1.72277 | 71 | 55 | |
| ND<0 | ND<0 | 0 | 71 | 55 | | |
| ND<0 | ND<0 | 0 | 71 | 55 | | |
| ND<0 | ND<0 | 0 | 71 | 55 | | |
| ND<0 | ND<0 | 0 | 71 | 55 | | |
| 0.751416 | | ND<0 | 0.751416 | | 72 | 55 |
| 1.19996 | | ND<0 | 1.19996 | 73 | 55 | |
| 1.37877 | | ND<0 | 1.37877 | 74 | 55 | |
| 1.075 | ND<0 | 1.075 | 75 | 55 | | |
| ND<0 | ND<0 | 0 | 75 | 55 | | |
| 1.32972 | | ND<0 | 1.32972 | 76 | 55 | |
| 1.25562 | | ND<0 | 1.25562 | 77 | 55 | |
| ND<0 | ND<0 | 0 | 77 | 55 | | |
| 0.788457 | | ND<0 | 0.788457 | | 78 | 55 |
| 1.02962 | | ND<0 | 1.02962 | 79 | 55 | |
| 0.530628 | | ND<0 | 0.530628 | | 80 | 55 |
| ND<-2.73337 U | | ND<0 | -2.7333 | 80 | 56 | |
| 1.09861 | | ND<0 | 1.09861 | 81 | 56 | |
| | | | | | | |
| 2.04122 | | 1.79176 | | 0.249461 | 82 | 56 |
| ND<0 | 1.79176 | | -1.791768 | 2 | 57 | |
| 1.72277 | | 1.79176 | | -0.0689929 | 82 | 58 |
| 2.20827 | | 1.79176 | | 0.416515 | 83 | 58 |
| 1.72277 | | 1.79176 | | -0.0689929 | 83 | 59 |
| ND<0 | 1.79176 | | -1.791768 | 3 | 60 | |
| ND<0 | 1.79176 | | -1.791768 | 3 | 61 | |
| ND<0 | 1.79176 | | -1.791768 | 3 | 62 | |
| ND<0 | 1.79176 | | -1.791768 | 3 | 63 | |
| 0.751416 | | 1.79176 | | -1.0403483 | 64 | |
| 1.19996 | | 1.79176 | | -0.591795 | 83 | 65 |
| 1.37877 | | 1.79176 | | -0.412993 | 83 | 66 |
| 1.075 | 1.79176 | | -0.716757 | | 83 | 67 |

| | | | | | |
|---|---|---|---|---|---|
| ND<0 | 1.79176 | -1.7917683 | 68 | | |
| 1.32972 | 1.79176 | -0.462035 | 83 | 69 | |
| 1.25562 | 1.79176 | -0.536143 | 83 | 70 | |
| ND<0 | 1.79176 | -1.7917683 | 71 | | |
| 0.788457 | 1.79176 | -1.0033 | 83 | 72 | |
| 1.02962 | 1.79176 | -0.7621483 | 73 | | |
| 0.530628 | 1.79176 | -1.2611383 | 74 | | |
| ND<-2.73337 U | 1.79176 | -4.5251383 | 75 | | |
| 1.09861 | 1.79176 | -0.693147 | 83 | 76 | |
| | | | | | |
| ND<0 | 2.04122 | -2.0412283 | 77 | | |
| 1.72277 | 2.04122 | -0.318454 | 83 | 78 | |
| 2.20827 | 2.04122 | 0.167054 | 84 | 78 | |
| 1.72277 | 2.04122 | -0.318454 | 84 | 79 | |
| ND<0 | 2.04122 | -2.0412284 | 80 | | |
| ND<0 | 2.04122 | -2.0412284 | 81 | | |
| ND<0 | 2.04122 | -2.0412284 | 82 | | |
| ND<0 | 2.04122 | -2.0412284 | 83 | | |
| 0.751416 | 2.04122 | -1.2898 | 84 | 84 | |
| 1.19996 | 2.04122 | -0.841256 | 84 | 85 | |
| 1.37877 | 2.04122 | -0.662454 | 84 | 86 | |
| 1.075 | 2.04122 | -0.966218 | 84 | 87 | |
| ND<0 | 2.04122 | -2.0412284 | 88 | | |
| 1.32972 | 2.04122 | -0.711496 | 84 | 89 | |
| 1.25562 | 2.04122 | -0.785604 | 84 | 90 | |
| ND<0 | 2.04122 | -2.0412284 | 91 | | |
| 0.788457 | 2.04122 | -1.2527684 | 92 | | |
| 1.02962 | 2.04122 | -1.0116 | 84 | 93 | |
| 0.530628 | 2.04122 | -1.5105984 | 94 | | |
| ND<-2.73337 U | 2.04122 | -4.7745984 | 95 | | |
| 1.09861 | 2.04122 | -0.942608 | 84 | 96 | |
| | | | | | |
| 1.72277 | ND<0 | 1.72277 | 85 | 96 | |
| 2.20827 | ND<0 | 2.20827 | 86 | 96 | |
| 1.72277 | ND<0 | 1.72277 | 87 | 96 | |
| ND<0 | ND<0 | 0 | 87 | 96 | |
| ND<0 | ND<0 | 0 | 87 | 96 | |
| ND<0 | ND<0 | 0 | 87 | 96 | |
| ND<0 | ND<0 | 0 | 87 | 96 | |
| 0.751416 | ND<0 | 0.751416 | 88 | 96 | |
| 1.19996 | ND<0 | 1.19996 | 89 | 96 | |
| 1.37877 | ND<0 | 1.37877 | 90 | 96 | |
| 1.075 | ND<0 | 1.075 | 91 | 96 | |
| ND<0 | ND<0 | 0 | 91 | 96 | |
| 1.32972 | ND<0 | 1.32972 | 92 | 96 | |
| 1.25562 | ND<0 | 1.25562 | 93 | 96 | |
| ND<0 | ND<0 | 0 | 93 | 96 | |
| 0.788457 | ND<0 | 0.788457 | 94 | 96 | |
| 1.02962 | ND<0 | 1.02962 | 95 | 96 | |
| 0.530628 | ND<0 | 0.530628 | 96 | 96 | |
| ND<-2.73337 U | ND<0 | -2.7333796 | 97 | | |
| 1.09861 | ND<0 | 1.09861 | 97 | 97 | |
| | | | | | |
| 2.20827 | 1.72277 | 0.485508 | 98 | 97 | |
| 1.72277 | 1.72277 | 0 | 98 | 97 | |
| ND<0 | 1.72277 | -1.7227798 | 98 | | |
| ND<0 | 1.72277 | -1.7227798 | 99 | | |
| ND<0 | 1.72277 | -1.7227798 | 100 | | |
| ND<0 | 1.72277 | -1.7227798 | 101 | | |
| 0.751416 | 1.72277 | -0.971351 | 98 | 102 | |
| 1.19996 | 1.72277 | -0.522802 | 98 | 103 | |
| 1.37877 | 1.72277 | -0.344001 | 98 | 104 | |

| | | | | | |
|---|---|---|---|---|---|
| 1.075 | 1.72277 | -0.647764 | 98 | 105 | |
| ND<0 | 1.72277 | -1.7227798 | 106 | | |
| 1.32972 | 1.72277 | -0.393043 | 98 | 107 | |
| 1.25562 | 1.72277 | -0.467151 | 98 | 108 | |
| ND<0 | 1.72277 | -1.7227798 | 109 | | |
| 0.788457 | 1.72277 | -0.934309 | 98 | 110 | |
| 1.02962 | 1.72277 | -0.693147 | 98 | 111 | |
| 0.530628 | 1.72277 | -1.1921498 | 112 | | |
| ND<-2.73337 U | 1.72277 | -4.4561398 | 113 | | |
| 1.09861 | 1.72277 | -0.624154 | 98 | 114 | |
| | | | | | |
| 1.72277 | 2.20827 | -0.485508 | 98 | 115 | |
| ND<0 | 2.20827 | -2.2082798 | 116 | | |
| ND<0 | 2.20827 | -2.2082798 | 117 | | |
| ND<0 | 2.20827 | -2.2082798 | 118 | | |
| ND<0 | 2.20827 | -2.2082798 | 119 | | |
| 0.751416 | 2.20827 | -1.4568698 | 120 | | |
| 1.19996 | 2.20827 | -1.0083198 | 121 | | |
| 1.37877 | 2.20827 | -0.829508 | 98 | 122 | |
| 1.075 | 2.20827 | -1.1332798 | 123 | | |
| ND<0 | 2.20827 | -2.2082798 | 124 | | |
| 1.32972 | 2.20827 | -0.8785598 | 125 | | |
| 1.25562 | 2.20827 | -0.952658 | 98 | 126 | |
| ND<0 | 2.20827 | -2.2082798 | 127 | | |
| 0.788457 | 2.20827 | -1.4198298 | 128 | | |
| 1.02962 | 2.20827 | -1.1786598 | 129 | | |
| 0.530628 | 2.20827 | -1.6776598 | 130 | | |
| ND<-2.73337 U | 2.20827 | -4.9416498 | 131 | | |
| 1.09861 | 2.20827 | -1.1096698 | 132 | | |
| | | | | | |
| ND<0 | 1.72277 | -1.7227798 | 133 | | |
| ND<0 | 1.72277 | -1.7227798 | 134 | | |
| ND<0 | 1.72277 | -1.7227798 | 135 | | |
| ND<0 | 1.72277 | -1.7227798 | 136 | | |
| 0.751416 | 1.72277 | -0.971351 | 98 | 137 | |
| 1.19996 | 1.72277 | -0.522802 | 98 | 138 | |
| 1.37877 | 1.72277 | -0.344001 | 98 | 139 | |
| 1.075 | 1.72277 | -0.647764 | 98 | 140 | |
| ND<0 | 1.72277 | -1.7227798 | 141 | | |
| 1.32972 | 1.72277 | -0.393043 | 98 | 142 | |
| 1.25562 | 1.72277 | -0.467151 | 98 | 143 | |
| ND<0 | 1.72277 | -1.7227798 | 144 | | |
| 0.788457 | 1.72277 | -0.934309 | 98 | 145 | |
| 1.02962 | 1.72277 | -0.693147 | 98 | 146 | |
| 0.530628 | 1.72277 | -1.1921498 | 147 | | |
| ND<-2.73337 U | 1.72277 | -4.4561398 | 148 | | |
| 1.09861 | 1.72277 | -0.624154 | 98 | 149 | |
| | | | | | |
| ND<0 | ND<0 | 0 | 98 | 149 | |
| ND<0 | ND<0 | 0 | 98 | 149 | |
| ND<0 | ND<0 | 0 | 98 | 149 | |
| 0.751416 | ND<0 | 0.751416 | 99 | 149 | |
| 1.19996 | ND<0 | 1.19996 | 100 | 149 | |
| 1.37877 | ND<0 | 1.37877 | 101 | 149 | |
| 1.075 | ND<0 | 1.075 | 102 | 149 | |
| ND<0 | ND<0 | 0 | 102 | 149 | |
| 1.32972 | ND<0 | 1.32972 | 103 | 149 | |
| 1.25562 | ND<0 | 1.25562 | 104 | 149 | |
| ND<0 | ND<0 | 0 | 104 | 149 | |
| 0.788457 | ND<0 | 0.788457 | 105 | 149 | |
| 1.02962 | ND<0 | 1.02962 | 106 | 149 | |
| 0.530628 | ND<0 | 0.530628 | 107 | 149 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<-2.73337 U | ND<0 | -2.73337 | 107 | 150 | | |
| 1.09861 | ND<0 | 1.09861 | 108 | 150 | | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 108 | 150 | | |
| ND<0 | ND<0 | 0 | 108 | 150 | | |
| 0.751416 | ND<0 | 0.751416 | 109 | 150 | | |
| 1.19996 | ND<0 | 1.19996 | 110 | 150 | | |
| 1.37877 | ND<0 | 1.37877 | 111 | 150 | | |
| 1.075 | ND<0 | 1.075 | 112 | 150 | | |
| ND<0 | ND<0 | 0 | 112 | 150 | | |
| 1.32972 | ND<0 | 1.32972 | 113 | 150 | | |
| 1.25562 | ND<0 | 1.25562 | 114 | 150 | | |
| ND<0 | ND<0 | 0 | 114 | 150 | | |
| 0.788457 | ND<0 | 0.788457 | 115 | 150 | | |
| 1.02962 | ND<0 | 1.02962 | 116 | 150 | | |
| 0.530628 | ND<0 | 0.530628 | 117 | 150 | | |
| ND<-2.73337 U | ND<0 | -2.73337 | 117 | 151 | | |
| 1.09861 | ND<0 | 1.09861 | 118 | 151 | | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 118 | 151 | | |
| 0.751416 | ND<0 | 0.751416 | 119 | 151 | | |
| 1.19996 | ND<0 | 1.19996 | 120 | 151 | | |
| 1.37877 | ND<0 | 1.37877 | 121 | 151 | | |
| 1.075 | ND<0 | 1.075 | 122 | 151 | | |
| ND<0 | ND<0 | 0 | 122 | 151 | | |
| 1.32972 | ND<0 | 1.32972 | 123 | 151 | | |
| 1.25562 | ND<0 | 1.25562 | 124 | 151 | | |
| ND<0 | ND<0 | 0 | 124 | 151 | | |
| 0.788457 | ND<0 | 0.788457 | 125 | 151 | | |
| 1.02962 | ND<0 | 1.02962 | 126 | 151 | | |
| 0.530628 | ND<0 | 0.530628 | 127 | 151 | | |
| ND<-2.73337 U | ND<0 | -2.73337 | 127 | 152 | | |
| 1.09861 | ND<0 | 1.09861 | 128 | 152 | | |
| | | | | | | |
| 0.751416 | ND<0 | 0.751416 | 129 | 152 | | |
| 1.19996 | ND<0 | 1.19996 | 130 | 152 | | |
| 1.37877 | ND<0 | 1.37877 | 131 | 152 | | |
| 1.075 | ND<0 | 1.075 | 132 | 152 | | |
| ND<0 | ND<0 | 0 | 132 | 152 | | |
| 1.32972 | ND<0 | 1.32972 | 133 | 152 | | |
| 1.25562 | ND<0 | 1.25562 | 134 | 152 | | |
| ND<0 | ND<0 | 0 | 134 | 152 | | |
| 0.788457 | ND<0 | 0.788457 | 135 | 152 | | |
| 1.02962 | ND<0 | 1.02962 | 136 | 152 | | |
| 0.530628 | ND<0 | 0.530628 | 137 | 152 | | |
| ND<-2.73337 U | ND<0 | -2.73337 | 137 | 153 | | |
| 1.09861 | ND<0 | 1.09861 | 138 | 153 | | |
| | | | | | | |
| 1.19996 | 0.751416 | 0.448549 | 139 | 153 | | |
| 1.37877 | 0.751416 | 0.62735 | 140 | 153 | | |
| 1.075 | 0.751416 | 0.323586 | 141 | 153 | | |
| ND<0 | 0.751416 | -0.751416 | 141 | 154 | | |
| 1.32972 | 0.751416 | 0.578308 | 142 | 154 | | |
| 1.25562 | 0.751416 | 0.5042 | 143 | 154 | | |
| ND<0 | 0.751416 | -0.751416 | 143 | 155 | | |
| 0.788457 | 0.751416 | 0.0370413 | 144 | 155 | | |
| 1.02962 | 0.751416 | 0.278203 | 145 | 155 | | |
| 0.530628 | 0.751416 | -0.220788 | 145 | 156 | | |
| ND<-2.73337 U | 0.751416 | -3.48478 | 145 | 157 | | |
| 1.09861 | 0.751416 | 0.347196 | 146 | 157 | | |
| | | | | | | |
| 1.37877 | 1.19996 | 0.178801 | 147 | 157 | | |

| | | | | | |
|---|---|---|---|---|---|
| 1.075 | 1.19996 | -0.124962 | 147 | 158 | |
| ND<0 | 1.19996 | -1.19996 | 147 | 159 | |
| 1.32972 | 1.19996 | 0.129759 | 148 | 159 | |
| 1.25562 | 1.19996 | 0.0556513 | 149 | 159 | |
| ND<0 | 1.19996 | -1.19996 | 149 | 160 | |
| 0.788457 | 1.19996 | -0.411507 | 149 | 161 | |
| 1.02962 | 1.19996 | -0.170345 | 149 | 162 | |
| 0.530628 | 1.19996 | -0.669337 | 149 | 163 | |
| ND<-2.73337 U | 1.19996 | -3.93333 | 149 | 164 | |
| 1.09861 | 1.19996 | -0.101352 | 149 | 165 | |
| | | | | | |
| 1.075 | 1.37877 | -0.303764 | 149 | 166 | |
| ND<0 | 1.37877 | -1.37877 | 149 | 167 | |
| 1.32972 | 1.37877 | -0.0490421 | 149 | 168 | |
| 1.25562 | 1.37877 | -0.12315 | 149 | 169 | |
| ND<0 | 1.37877 | -1.37877 | 149 | 170 | |
| 0.788457 | 1.37877 | -0.590309 | 149 | 171 | |
| 1.02962 | 1.37877 | -0.349147 | 149 | 172 | |
| 0.530628 | 1.37877 | -0.848138 | 149 | 173 | |
| ND<-2.73337 U | 1.37877 | -4.11213 | 149 | 174 | |
| 1.09861 | 1.37877 | -0.280154 | 149 | 175 | |
| | | | | | |
| ND<0 | 1.075 | -1.075 | 149 | 176 | |
| 1.32972 | 1.075 | 0.254722 | 150 | 176 | |
| 1.25562 | 1.075 | 0.180614 | 151 | 176 | |
| ND<0 | 1.075 | -1.075 | 151 | 177 | |
| 0.788457 | 1.075 | -0.286545 | 151 | 178 | |
| 1.02962 | 1.075 | -0.045383 | 151 | 179 | |
| 0.530628 | 1.075 | -0.544374 | 151 | 180 | |
| ND<-2.73337 U | 1.075 | -3.80837 | 151 | 181 | |
| 1.09861 | 1.075 | 0.0236099 | 152 | 181 | |
| | | | | | |
| 1.32972 | ND<0 | 1.32972 | 153 | 181 | |
| 1.25562 | ND<0 | 1.25562 | 154 | 181 | |
| ND<0 | ND<0 | 0 | 154 | 181 | |
| 0.788457 | ND<0 | 0.788457 | 155 | 181 | |
| 1.02962 | ND<0 | 1.02962 | 156 | 181 | |
| 0.530628 | ND<0 | 0.530628 | 157 | 181 | |
| ND<-2.73337 U | ND<0 | -2.73337 | 157 | 182 | |
| 1.09861 | ND<0 | 1.09861 | 158 | 182 | |
| | | | | | |
| 1.25562 | 1.32972 | -0.074108 | 158 | 183 | |
| ND<0 | 1.32972 | -1.32972 | 158 | 184 | |
| 0.788457 | 1.32972 | -0.541267 | 158 | 185 | |
| 1.02962 | 1.32972 | -0.300105 | 158 | 186 | |
| 0.530628 | 1.32972 | -0.799096 | 158 | 187 | |
| ND<-2.73337 U | 1.32972 | -4.06309 | 158 | 188 | |
| 1.09861 | 1.32972 | -0.231112 | 158 | 189 | |
| | | | | | |
| ND<0 | 1.25562 | -1.25562 | 158 | 190 | |
| 0.788457 | 1.25562 | -0.467159 | 158 | 191 | |
| 1.02962 | 1.25562 | -0.225997 | 158 | 192 | |
| 0.530628 | 1.25562 | -0.724988 | 158 | 193 | |
| ND<-2.73337 U | 1.25562 | -3.98898 | 158 | 194 | |
| 1.09861 | 1.25562 | -0.157004 | 158 | 195 | |
| | | | | | |
| 0.788457 | ND<0 | 0.788457 | 159 | 195 | |
| 1.02962 | ND<0 | 1.02962 | 160 | 195 | |
| 0.530628 | ND<0 | 0.530628 | 161 | 195 | |
| ND<-2.73337 U | ND<0 | -2.73337 | 161 | 196 | |
| 1.09861 | ND<0 | 1.09861 | 162 | 196 | |

| | | | | |
|---|---|---|---|---|
| 1.02962 | 0.788457 | 0.241162 | 163 | 196 |
| 0.530628 | 0.788457 | -0.257829 | 163 | 197 |
| ND<-2.73337 U | 0.788457 | -3.52183163 | 198 | |
| 1.09861 | 0.788457 | 0.310155 | 164 | 198 |
| | | | | |
| 0.530628 | 1.02962 | -0.498991 | 164 | 199 |
| ND<-2.73337 U | 1.02962 | -3.76299164 | 200 | |
| 1.09861 | 1.02962 | 0.0689929 | 165 | 200 |
| | | | | |
| ND<-2.73337 U | 0.530628 | -3.264 165 | 201 | |
| 1.09861 | 0.530628 | 0.567984 | 166 | 201 |
| | | | | |
| 1.09861 | ND<-2.73337 U | Same Date | 166 | 201 |

S Statistic = 166 - 201 = -35

| Tied Group | Value | Members |
|---|---|---|
| 1 | 1.09861 | 2 |
| 2 | 0 | 9 |
| 3 | 1.72277 | 2 |

| Time Period | | Observations |
|---|---|---|
| 7/20/1995 | | 1 |
| 8/24/1995 | | 1 |
| 9/28/1995 | | 1 |
| 10/26/1995 | | 1 |
| 11/19/1996 | | 1 |
| 12/19/1996 | | 1 |
| 3/24/1997 | | 1 |
| 9/24/1997 | | 1 |
| 4/7/1998 | 1 | |
| 9/23/1998 | | 1 |
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 11/16/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 2 |

There are 1 time periods with multiple data

A = 1692
B = 18
C = 504
D = 0
E = 76
F = 2

a = 51156
b = 197316
c = 1624
Group Variance = 2747.09
Z-Score = -0.648697
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-0.648697| <= 1.97737 indicating no evidence of a trend

# Concentrations (ppb)

## Parameter: 1,4-Dichlorobenzene

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 238
Total Non-Detect: 190
Percent Non-Detects: 79.8319%
Total Background Measurements: 20
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 20 | 20 (100%) | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.28 | ND<0.28 |
| | | | 11/16/2009 | ND<0.51 | ND<0.51 |
| | | | 6/30/2010 | ND<0.28 | ND<0.28 |
| | | | 6/30/2010 | ND<0.74 | ND<0.74 |
| | | | 11/12/2010 | ND<0.74 U | ND<0.74 U |
| | | | 11/12/2010 | ND<0.28 U | ND<0.28 U |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-7 | 30 | 30 (100%) | 7/20/1995 | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 |
| | | | 9/28/1995 | ND<2 | ND<2 |
| | | | 10/26/1995 | ND<2 | ND<2 |
| | | | 11/19/1996 | ND<2 | ND<2 |
| | | | 12/19/1996 | ND<2 | ND<2 |
| | | | 3/24/1997 | ND<2 | ND<2 |
| | | | 9/24/1997 | ND<2 | ND<2 |
| | | | 4/7/1998 | ND<2 | ND<2 |
| | | | 9/23/1998 | ND<2 | ND<2 |
| | | | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.28 | | ND<0.28 |
| | | | 11/16/2009 | ND<0.47 | | ND<0.47 |
| | | | 6/30/2010 | ND<0.28 | | ND<0.28 |
| | | | 6/30/2010 | ND<0.76 | | ND<0.76 |
| | | | 11/12/2010 | ND<0.28 U | | ND<0.28 U |
| | | | 11/12/2010 | ND<0.74 U | | ND<0.74 U |
| MW-6 | 30 | 30 (100%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.28 | | ND<0.28 |
| | | | 11/16/2009 | ND<0.51 | | ND<0.51 |
| | | | 6/30/2010 | ND<0.28 | | ND<0.28 |
| | | | 6/30/2010 | ND<0.74 | | ND<0.74 |
| | | | 11/12/2010 | ND<0.74 U | | ND<0.74 U |
| | | | 11/12/2010 | ND<0.28 U | | ND<0.28 U |
| MW-12BR | 21 | 19 (90.4762%) | 3/16/1999 | | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 1.11 J | 1.11 J | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | 1.98 J | 1.98 J | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.28 | | ND<0.28 |
| | | | 11/16/2009 | ND<0.47 | | ND<0.47 |
| | | | 6/30/2010 | ND<0.28 | | ND<0.28 |
| | | | 6/30/2010 | ND<0.74 | | ND<0.74 |
| | | | 11/12/2010 | ND<0.78 U | | ND<0.78 U |
| | | | 11/12/2010 | ND<0.78 U | | ND<0.78 U |
| | | | 11/12/2010 | ND<0.28 U | | ND<0.28 U |

| | | | | | | |
|---|---|---|---|---|---|---|
| MW-12AR | 20 | 13 (65%) | 3/16/1999 | | ND<2 | ND<2 |
| | | 9/23/1999 | ND<2 | ND<2 | | |
| | | 3/15/2000 | ND<2 | ND<2 | | |
| | | 9/24/2003 | ND<2 | ND<2 | | |
| | | 3/11/2004 | ND<2 | ND<2 | | |
| | | 10/12/2004 | ND<2 | ND<2 | | |
| | | 4/1/2005 | ND<2 | ND<2 | | |
| | | 10/25/2005 | 1.05 J | 1.05 J | | |
| | | 4/29/2006 | 1.14 J | 1.14 J | | |
| | | 11/18/2006 | 0.84 J | 0.84 J | | |
| | | 5/23/2007 | ND<2 | ND<2 | | |
| | | 11/28/2007 | 0.78 J | 0.78 J | | |
| | | 6/5/2008 | 0.97 J | 0.97 J | | |
| | | 11/20/2008 | 0.49 J | 0.49 J | | |
| | | 6/11/2009 | ND<0.28 | | ND<0.28 | |
| | | 11/16/2009 | ND<0.47 | | ND<0.47 | |
| | | 6/30/2010 | ND<0.28 | | ND<0.28 | |
| | | 6/30/2010 | ND<0.74 | | ND<0.74 | |
| | | 11/12/2010 | ND<0.74 U | | ND<0.74 U | |
| | | 11/12/2010 | 0.61 J | 0.61 J | | |
| MW-9 | 30 | 19 (63.3333%) | 7/20/1995 | | ND<2 | ND<2 |
| | | 8/24/1995 | 0.51 J | 0.51 J | | |
| | | 9/28/1995 | 0.6 J | 0.6 J | | |
| | | 10/26/1995 | ND<2 | ND<2 | | |
| | | 11/19/1996 | ND<2 | ND<2 | | |
| | | 12/19/1996 | ND<2 | ND<2 | | |
| | | 3/24/1997 | ND<2 | ND<2 | | |
| | | 9/24/1997 | ND<2 | ND<2 | | |
| | | 4/7/1998 | ND<2 | ND<2 | | |
| | | 9/23/1998 | ND<2 | ND<2 | | |
| | | 3/16/1999 | ND<2 | ND<2 | | |
| | | 9/23/1999 | ND<2 | ND<2 | | |
| | | 3/15/2000 | ND<2 | ND<2 | | |
| | | 9/24/2003 | ND<2 | ND<2 | | |
| | | 3/11/2004 | ND<2 | ND<2 | | |
| | | 10/12/2004 | ND<2 | ND<2 | | |
| | | 4/1/2005 | 0.91 J | 0.91 J | | |
| | | 10/25/2005 | 0.54 J | 0.54 J | | |
| | | 4/29/2006 | 0.43 J | 0.43 J | | |
| | | 11/18/2006 | 0.4 J | 0.4 J | | |
| | | 5/23/2007 | ND<2 | ND<2 | | |
| | | 11/28/2007 | 0.66 J | 0.66 J | | |
| | | 6/5/2008 | 0.47 J | 0.47 J | | |
| | | 11/20/2008 | 0.54 J | 0.54 J | | |
| | | 6/11/2009 | 0.44 J | 0.44 J | | |
| | | 11/16/2009 | ND<0.51 | | ND<0.51 | |
| | | 6/30/2010 | ND<0.76 | | ND<0.76 | |
| | | 6/30/2010 | 0.97 J | 0.97 J | | |
| | | 11/12/2010 | ND<0.74 U | | ND<0.74 U | |
| | | 11/12/2010 | ND<0.28 U | | ND<0.28 U | |
| MW-10 | 30 | 15 (50%) | 7/20/1995 | | ND<2 | ND<2 |
| | | 8/24/1995 | 1.5 J | 1.5 J | | |
| | | 9/28/1995 | 4 | 4 | | |
| | | 10/26/1995 | 2 | 2 | | |
| | | 11/19/1996 | ND<2 | ND<2 | | |
| | | 12/19/1996 | ND<2 | ND<2 | | |
| | | 3/24/1997 | ND<2 | ND<2 | | |
| | | 9/24/1997 | ND<2 | ND<2 | | |
| | | 4/7/1998 | ND<2 | ND<2 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | 8.8 | 8.8 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 2.75 | 2.75 | |
| | | | 10/25/2005 | 3.99 | 3.99 | |
| | | | 4/29/2006 | 5.6 | 5.6 | |
| | | | 11/18/2006 | 3.9 | 3.9 | |
| | | | 5/23/2007 | 4.1 | 4.1 | |
| | | | 11/28/2007 | 5.99 | 5.99 | |
| | | | 6/5/2008 | 6.45 | 6.45 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | 3.4 | 3.4 | |
| | | | 11/16/2009 | 6.9 J | 6.9 J | |
| | | | 6/30/2010 | ND<0.74 | | ND<0.74 |
| | | | 6/30/2010 | 5.2 | 5.2 | |
| | | | 11/12/2010 | ND<0.74 U | | ND<0.74 U |
| | | | 11/12/2010 | 8.6 | 8.6 | |
| MW-11R30 | | 24 (80%) | 7/20/1995 | ND<2 | ND<2 | |
| | | | 8/24/1995 | 2.2 | 2.2 | |
| | | | 9/28/1995 | 2 | 2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | 5.4 | 5.4 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | 0.3 J | 0.3 J | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | 0.48 J | 0.48 J | |
| | | | 11/16/2009 | ND<0.47 | | ND<0.47 |
| | | | 6/30/2010 | 0.37 J | 0.37 J | |
| | | | 6/30/2010 | ND<0.74 | | ND<0.74 |
| | | | 11/12/2010 | ND<0.28 U | | ND<0.28 U |
| | | | 11/12/2010 | ND<0.74 U | | ND<0.74 U |
| MW-8 | 27 | 20 (74.0741%) | 7/20/1995 | ND<2 | ND<2 | |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |

| | | | |
|---|---|---|---|
| 9/23/1998 | ND<2 | ND<2 | |
| 3/16/1999 | ND<2 | ND<2 | |
| 9/23/1999 | ND<2 | ND<2 | |
| 3/15/2000 | ND<2 | ND<2 | |
| 9/24/2003 | ND<2 | ND<2 | |
| 3/11/2004 | ND<2 | ND<2 | |
| 10/12/2004 | ND<2 | ND<2 | |
| 4/1/2005 | ND<2 | ND<2 | |
| 10/25/2005 | 0.28 J | 0.28 J | |
| 4/29/2006 | 0.36 J | 0.36 J | |
| 11/18/2006 | 0.43 J | 0.43 J | |
| 5/23/2007 | ND<2 | ND<2 | |
| 11/28/2007 | 0.28 J | 0.28 J | |
| 6/5/2008 | 0.32 J | 0.32 J | |
| 11/20/2008 | ND<2 | ND<2 | |
| 6/11/2009 | 0.62 J | 0.62 J | |
| 6/30/2010 | ND<0.28 | | ND<0.28 |
| 11/12/2010 | 0.76 J | 0.76 J | |

There are 0 unused locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: 1,4-Dichlorobenzene

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 238

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.14 | -2.65209 | 7.03356 | -0.371292 |
| 2 | 0.14 | -2.40892 | 12.8365 | -0.708541 |
| 3 | 0.14 | -2.25713 | 17.9311 | -1.02454 |
| 4 | 0.14 | -2.14441 | 22.5296 | -1.32476 |
| 5 | 0.14 | -2.05375 | 26.7475 | -1.61228 |
| 6 | 0.14 | -1.95996 | 30.5889 | -1.88668 |
| 7 | 0.14 | -1.8957 | 34.1826 | -2.15207 |
| 8 | 0.14 | -1.83843 | 37.5624 | -2.40945 |
| 9 | 0.14 | -1.78661 | 40.7544 | -2.65958 |
| 10 | 0.14 | -1.7392 | 43.7792 | -2.90307 |
| 11 | 0.14 | -1.68494 | 46.6182 | -3.13896 |
| 12 | 0.14 | -1.64485 | 49.3237 | -3.36924 |
| 13 | 0.14 | -1.60725 | 51.907 | -3.59425 |
| 14 | 0.14 | -1.57179 | 54.3775 | -3.8143 |
| 15 | 0.14 | -1.5382 | 56.7436 | -4.02965 |
| 16 | 0.14 | -1.50626 | 59.0124 | -4.24053 |
| 17 | 0.14 | -1.46838 | 61.1686 | -4.4461 |
| 18 | 0.235 | -1.43953 | 63.2408 | -4.78439 |
| 19 | 0.235 | -1.41183 | 65.2341 | -5.11617 |
| 20 | 0.235 | -1.38517 | 67.1528 | -5.44169 |
| 21 | 0.235 | -1.35946 | 69.0009 | -5.76116 |
| 22 | 0.255 | -1.32854 | 70.7659 | -6.09994 |
| 23 | 0.255 | -1.30469 | 72.4681 | -6.43263 |
| 24 | 0.255 | -1.28155 | 74.1105 | -6.75943 |
| 25 | 0.28 | -1.25908 | 75.6958 | -7.11197 |
| 26 | 0.28 | -1.23724 | 77.2265 | -7.4584 |
| 27 | 0.3 | -1.21596 | 78.7051 | -7.82319 |
| 28 | 0.32 | -1.19012 | 80.1215 | -8.20402 |
| 29 | 0.36 | -1.17 | 81.4904 | -8.62522 |
| 30 | 0.37 | -1.15035 | 82.8137 | -9.05085 |
| 31 | 0.37 | -1.13113 | 84.0932 | -9.46937 |
| 32 | 0.37 | -1.11232 | 85.3304 | -9.88093 |
| 33 | 0.37 | -1.08935 | 86.5171 | -10.284 |
| 34 | 0.37 | -1.07138 | 87.6649 | -10.6804 |
| 35 | 0.37 | -1.05375 | 88.7753 | -11.0703 |
| 36 | 0.37 | -1.03643 | 89.8495 | -11.4538 |
| 37 | 0.37 | -1.01943 | 90.8888 | -11.831 |
| 38 | 0.37 | -1.00271 | 91.8942 | -12.202 |
| 39 | 0.37 | -0.982202 | 92.8589 | -12.5654 |
| 40 | 0.37 | -0.966088 | 93.7922 | -12.9228 |
| 41 | 0.37 | -0.950222 | 94.6951 | -13.2744 |
| 42 | 0.37 | -0.934599 | 95.5686 | -13.6202 |
| 43 | 0.37 | -0.919183 | 96.4135 | -13.9603 |
| 44 | 0.38 | -0.900227 | 97.2239 | -14.3024 |
| 45 | 0.38 | -0.885291 | 98.0077 | -14.6388 |
| 46 | 0.39 | -0.870559 | 98.7655 | -14.9783 |
| 47 | 0.39 | -0.855996 | 99.4982 | -15.3122 |
| 48 | 0.4 | -0.841621 | 100.207 | -15.6488 |
| 49 | 0.43 | -0.823893 | 100.885 | -16.0031 |

| | | | | |
|---|---|---|---|---|
| 50 | 0.43 | -0.809896 | 101.541 | -16.3513 |
| 51 | 0.44 | -0.796056 | 102.175 | -16.7016 |
| 52 | 0.47 | -0.782366 | 102.787 | -17.0693 |
| 53 | 0.48 | -0.768821 | 103.378 | -17.4383 |
| 54 | 0.49 | -0.755415 | 103.949 | -17.8085 |
| 55 | 0.51 | -0.738846 | 104.495 | -18.1853 |
| 56 | 0.54 | -0.725736 | 105.021 | -18.5772 |
| 57 | 0.54 | -0.712751 | 105.529 | -18.9621 |
| 58 | 0.6 | -0.699883 | 106.019 | -19.382 |
| 59 | 0.61 | -0.687131 | 106.491 | -19.8012 |
| 60 | 0.62 | -0.671346 | 106.942 | -20.2174 |
| 61 | 0.66 | -0.658838 | 107.376 | -20.6522 |
| 62 | 0.76 | -0.646431 | 107.794 | -21.1435 |
| 63 | 0.78 | -0.634124 | 108.196 | -21.6381 |
| 64 | 0.84 | -0.621911 | 108.583 | -22.1605 |
| 65 | 0.91 | -0.609791 | 108.955 | -22.7155 |
| 66 | 0.97 | -0.594766 | 109.309 | -23.2924 |
| 67 | 0.97 | -0.582841 | 109.648 | -23.8577 |
| 68 | 1 | -0.570999 | 109.974 | -24.4287 |
| 69 | 1 | -0.559237 | 110.287 | -24.988 |
| 70 | 1 | -0.547551 | 110.587 | -25.5355 |
| 71 | 1 | -0.533048 | 110.871 | -26.0686 |
| 72 | 1 | -0.521527 | 111.143 | -26.5901 |
| 73 | 1 | -0.510074 | 111.403 | -27.1002 |
| 74 | 1 | -0.498687 | 111.652 | -27.5989 |
| 75 | 1 | -0.487364 | 111.889 | -28.0862 |
| 76 | 1 | -0.476105 | 112.116 | -28.5623 |
| 77 | 1 | -0.462114 | 112.33 | -29.0244 |
| 78 | 1 | -0.450985 | 112.533 | -29.4754 |
| 79 | 1 | -0.439913 | 112.727 | -29.9153 |
| 80 | 1 | -0.428895 | 112.91 | -30.3442 |
| 81 | 1 | -0.417928 | 113.085 | -30.7622 |
| 82 | 1 | -0.40429 | 113.249 | -31.1665 |
| 83 | 1 | -0.393433 | 113.403 | -31.5599 |
| 84 | 1 | -0.382622 | 113.55 | -31.9425 |
| 85 | 1 | -0.371856 | 113.688 | -32.3144 |
| 86 | 1 | -0.361133 | 113.818 | -32.6755 |
| 87 | 1 | -0.347787 | 113.939 | -33.0233 |
| 88 | 1 | -0.337155 | 114.053 | -33.3604 |
| 89 | 1 | -0.326561 | 114.16 | -33.687 |
| 90 | 1 | -0.316004 | 114.26 | -34.003 |
| 91 | 1 | -0.305481 | 114.353 | -34.3085 |
| 92 | 1 | -0.294992 | 114.44 | -34.6035 |
| 93 | 1 | -0.281926 | 114.519 | -34.8854 |
| 94 | 1 | -0.271509 | 114.593 | -35.1569 |
| 95 | 1 | -0.26112 | 114.661 | -35.418 |
| 96 | 1 | -0.250759 | 114.724 | -35.6688 |
| 97 | 1 | -0.240426 | 114.782 | -35.9092 |
| 98 | 1 | -0.227545 | 114.834 | -36.1368 |
| 99 | 1 | -0.217267 | 114.881 | -36.354 |
| 100 | 1 | -0.207012 | 114.924 | -36.561 |
| 101 | 1 | -0.196779 | 114.963 | -36.7578 |
| 102 | 1 | -0.186567 | 114.997 | -36.9444 |
| 103 | 1 | -0.176374 | 115.028 | -37.1208 |
| 104 | 1 | -0.163659 | 115.055 | -37.2844 |
| 105 | 1 | -0.153505 | 115.079 | -37.4379 |
| 106 | 1 | -0.143367 | 115.099 | -37.5813 |
| 107 | 1 | -0.133244 | 115.117 | -37.7145 |
| 108 | 1 | -0.123135 | 115.132 | -37.8377 |
| 109 | 1 | -0.110516 | 115.144 | -37.9482 |
| 110 | 1 | -0.100433 | 115.155 | -38.0486 |
| 111 | 1 | -0.0903606 | 115.163 | -38.139 |

| | | | | |
|---|---|---|---|---|
| 112 | 1 | -0.0802981 | 115.169 | -38.2193 |
| 113 | 1 | -0.0702426 | 115.174 | -38.2895 |
| 114 | 1 | -0.0601949 | 115.178 | -38.3497 |
| 115 | 1 | -0.0476439 | 115.18 | -38.3974 |
| 116 | 1 | -0.0376076 | 115.181 | -38.435 |
| 117 | 1 | -0.0275759 | 115.182 | -38.4625 |
| 118 | 1 | -0.0175476 | 115.183 | -38.4801 |
| 119 | 1 | -0.00751925 | 115.183 | -38.4876 |
| 120 | 1 | 0.00751925 | 115.183 | -38.4801 |
| 121 | 1 | 0.0175476 | 115.183 | -38.4625 |
| 122 | 1 | 0.0275759 | 115.184 | -38.435 |
| 123 | 1 | 0.0376076 | 115.185 | -38.3974 |
| 124 | 1 | 0.0476439 | 115.187 | -38.3497 |
| 125 | 1 | 0.0601949 | 115.191 | -38.2895 |
| 126 | 1 | 0.0702426 | 115.196 | -38.2193 |
| 127 | 1 | 0.0802981 | 115.202 | -38.139 |
| 128 | 1 | 0.0903606 | 115.211 | -38.0486 |
| 129 | 1 | 0.100433 | 115.221 | -37.9482 |
| 130 | 1 | 0.110516 | 115.233 | -37.8377 |
| 131 | 1 | 0.123135 | 115.248 | -37.7145 |
| 132 | 1 | 0.133244 | 115.266 | -37.5813 |
| 133 | 1 | 0.143367 | 115.286 | -37.4379 |
| 134 | 1 | 0.153505 | 115.31 | -37.2844 |
| 135 | 1 | 0.163659 | 115.337 | -37.1208 |
| 136 | 1 | 0.176374 | 115.368 | -36.9444 |
| 137 | 1 | 0.186567 | 115.403 | -36.7578 |
| 138 | 1 | 0.196779 | 115.441 | -36.561 |
| 139 | 1 | 0.207012 | 115.484 | -36.354 |
| 140 | 1 | 0.217267 | 115.531 | -36.1368 |
| 141 | 1 | 0.227545 | 115.583 | -35.9092 |
| 142 | 1 | 0.240426 | 115.641 | -35.6688 |
| 143 | 1 | 0.250759 | 115.704 | -35.418 |
| 144 | 1 | 0.26112 | 115.772 | -35.1569 |
| 145 | 1 | 0.271509 | 115.846 | -34.8854 |
| 146 | 1 | 0.281926 | 115.925 | -34.6035 |
| 147 | 1 | 0.294992 | 116.012 | -34.3085 |
| 148 | 1 | 0.305481 | 116.106 | -34.003 |
| 149 | 1 | 0.316004 | 116.205 | -33.687 |
| 150 | 1 | 0.326561 | 116.312 | -33.3604 |
| 151 | 1 | 0.337155 | 116.426 | -33.0233 |
| 152 | 1 | 0.347787 | 116.547 | -32.6755 |
| 153 | 1 | 0.361133 | 116.677 | -32.3144 |
| 154 | 1 | 0.371856 | 116.815 | -31.9425 |
| 155 | 1 | 0.382622 | 116.962 | -31.5599 |
| 156 | 1 | 0.393433 | 117.117 | -31.1665 |
| 157 | 1 | 0.40429 | 117.28 | -30.7622 |
| 158 | 1 | 0.417928 | 117.455 | -30.3442 |
| 159 | 1 | 0.428895 | 117.639 | -29.9153 |
| 160 | 1 | 0.439913 | 117.832 | -29.4754 |
| 161 | 1 | 0.450985 | 118.036 | -29.0244 |
| 162 | 1 | 0.462114 | 118.249 | -28.5623 |
| 163 | 1 | 0.476105 | 118.476 | -28.0862 |
| 164 | 1 | 0.487364 | 118.713 | -27.5989 |
| 165 | 1 | 0.498687 | 118.962 | -27.1002 |
| 166 | 1 | 0.510074 | 119.222 | -26.5901 |
| 167 | 1 | 0.521527 | 119.494 | -26.0686 |
| 168 | 1 | 0.533048 | 119.778 | -25.5355 |
| 169 | 1 | 0.547551 | 120.078 | -24.988 |
| 170 | 1 | 0.559237 | 120.391 | -24.4287 |
| 171 | 1 | 0.570999 | 120.717 | -23.8577 |
| 172 | 1 | 0.582841 | 121.057 | -23.2749 |
| 173 | 1 | 0.594766 | 121.41 | -22.6801 |

| | | | | |
|---|---|---|---|---|
| 174 | 1 | 0.609791 | 121.782 | -22.0703 |
| 175 | 1 | 0.621911 | 122.169 | -21.4484 |
| 176 | 1 | 0.634124 | 122.571 | -20.8143 |
| 177 | 1 | 0.646431 | 122.989 | -20.1679 |
| 178 | 1 | 0.658838 | 123.423 | -19.509 |
| 179 | 1 | 0.671346 | 123.874 | -18.8377 |
| 180 | 1 | 0.687131 | 124.346 | -18.1506 |
| 181 | 1 | 0.699883 | 124.836 | -17.4507 |
| 182 | 1 | 0.712751 | 125.344 | -16.7379 |
| 183 | 1 | 0.725736 | 125.87 | -16.0122 |
| 184 | 1 | 0.738846 | 126.416 | -15.2733 |
| 185 | 1 | 0.755415 | 126.987 | -14.5179 |
| 186 | 1 | 0.768821 | 127.578 | -13.7491 |
| 187 | 1 | 0.782366 | 128.19 | -12.9667 |
| 188 | 1 | 0.796056 | 128.824 | -12.1707 |
| 189 | 1 | 0.809896 | 129.48 | -11.3608 |
| 190 | 1 | 0.823893 | 130.159 | -10.5369 |
| 191 | 1 | 0.841621 | 130.867 | -9.69527 |
| 192 | 1 | 0.855996 | 131.6 | -8.83928 |
| 193 | 1 | 0.87055 | 132.357 | -7.96873 |
| 194 | 1 | 0.885291 | 133.141 | -7.08343 |
| 195 | 1 | 0.900227 | 133.952 | -6.18321 |
| 196 | 1 | 0.919183 | 134.797 | -5.26402 |
| 197 | 1 | 0.93459 | 135.67 | -4.32943 |
| 198 | 1 | 0.950222 | 136.573 | -3.37921 |
| 199 | 1 | 0.966088 | 137.506 | -2.41312 |
| 200 | 1 | 0.982202 | 138.471 | -1.43092 |
| 201 | 1 | 1.00271 | 139.476 | -0.428212 |
| 202 | 1 | 1.01943 | 140.516 | 0.591216 |
| 203 | 1 | 1.03643 | 141.59 | 1.62765 |
| 204 | 1 | 1.05375 | 142.7 | 2.68139 |
| 205 | 1 | 1.07138 | 143.848 | 3.75277 |
| 206 | 1 | 1.08935 | 145.035 | 4.84212 |
| 207 | 1 | 1.11232 | 146.272 | 5.95444 |
| 208 | 1 | 1.13113 | 147.551 | 7.08557 |
| 209 | 1 | 1.15035 | 148.875 | 8.23592 |
| 210 | 1 | 1.17 | 150.244 | 9.40593 |
| 211 | 1 | 1.19012 | 151.66 | 10.596 |
| 212 | 1 | 1.21596 | 153.139 | 11.812 |
| 213 | 1 | 1.23724 | 154.669 | 13.0492 |
| 214 | 1 | 1.25908 | 156.255 | 14.3083 |
| 215 | 1 | 1.28155 | 157.897 | 15.5899 |
| 216 | 1 | 1.30469 | 159.599 | 16.8946 |
| 217 | 1.05 | 1.32854 | 161.364 | 18.2895 |
| 218 | 1.11 | 1.35946 | 163.212 | 19.7985 |
| 219 | 1.14 | 1.38517 | 165.131 | 21.3776 |
| 220 | 1.5 | 1.41183 | 167.124 | 23.4954 |
| 221 | 1.98 | 1.43953 | 169.197 | 26.3456 |
| 222 | 2 | 1.46838 | 171.353 | 29.2824 |
| 223 | 2 | 1.50626 | 173.622 | 32.2949 |
| 224 | 2.2 | 1.5382 | 175.988 | 35.679 |
| 225 | 2.75 | 1.57179 | 178.458 | 40.0014 |
| 226 | 3.4 | 1.60725 | 181.041 | 45.466 |
| 227 | 3.9 | 1.64485 | 183.747 | 51.881 |
| 228 | 3.99 | 1.68494 | 186.586 | 58.6039 |
| 229 | 4 | 1.7392 | 189.611 | 65.5607 |
| 230 | 4.1 | 1.78661 | 192.803 | 72.8858 |
| 231 | 5.2 | 1.83843 | 196.183 | 82.4456 |
| 232 | 5.4 | 1.8957 | 199.776 | 92.6824 |
| 233 | 5.6 | 1.95996 | 203.618 | 103.658 |
| 234 | 5.99 | 2.05375 | 207.836 | 115.96 |
| 235 | 6.45 | 2.14441 | 212.434 | 129.792 |

| | | | | |
|---|---|---|---|---|
| 236 | 6.9 | 2.25713 | 217.529 | 145.366 |
| 237 | 8.6 | 2.40892 | 223.332 | 166.082 |
| 238 | 8.8 | 2.65209 | 230.365 | 189.421 |

Data Set Standard Deviation = 1.20268
Numerator = 35880.2
Denominator = 78971
W Statistic = 0.454347 = 35880.2 / 78971

5% Critical value of 0.976 exceeds 0.454347
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.454347
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: 1,4-Dichlorobenzene

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 238

| i | x(i) | m(i) | sum(m^2) | sum(mx) | |
|---|---|---|---|---|---|
| 1 | -1.96611 | -2.65209 | 7.03356 | 5.2143 | |
| 2 | -1.96611 | -2.40892 | 12.8365 | 9.95052 | |
| 3 | -1.96611 | -2.25713 | 17.9311 | 14.3883 | |
| 4 | -1.96611 | -2.14441 | 22.5296 | 18.6044 | |
| 5 | -1.96611 | -2.05375 | 26.7475 | 22.6423 | |
| 6 | -1.96611 | -1.95996 | 30.5889 | 26.4958 | |
| 7 | -1.96611 | -1.8957 | 34.1826 | 30.223 | |
| 8 | -1.96611 | -1.83843 | 37.5624 | 33.8375 | |
| 9 | -1.96611 | -1.78661 | 40.7544 | 37.3502 | |
| 10 | -1.96611 | -1.7392 | 43.7792 | 40.7697 | |
| 11 | -1.96611 | -1.68494 | 46.6182 | 44.0825 | |
| 12 | -1.96611 | -1.64485 | 49.3237 | 47.3164 | |
| 13 | -1.96611 | -1.60725 | 51.907 | 50.4765 | |
| 14 | -1.96611 | -1.57179 | 54.3775 | 53.5668 | |
| 15 | -1.96611 | -1.5382 | 56.7436 | 56.5911 | |
| 16 | -1.96611 | -1.50626 | 59.0124 | 59.5525 | |
| 17 | -1.96611 | -1.46838 | 61.1686 | 62.4395 | |
| 18 | -1.44817 | -1.43953 | 63.2408 | 64.5242 | |
| 19 | -1.44817 | -1.41183 | 65.2341 | 66.5688 | |
| 20 | -1.44817 | -1.38517 | 67.1528 | 68.5748 | |
| 21 | -1.44817 | -1.35946 | 69.0009 | 70.5435 | |
| 22 | -1.36649 | -1.32854 | 70.7659 | 72.3589 | |
| 23 | -1.36649 | -1.30469 | 72.4681 | 74.1418 | |
| 24 | -1.36649 | -1.28155 | 74.1105 | 75.893 | |
| 25 | -1.27297 | -1.25908 | 75.6958 | 77.4958 | |
| 26 | -1.27297 | -1.23724 | 77.2265 | 79.0707 | |
| 27 | -1.20397 | -1.21596 | 78.7051 | 80.5347 | |
| 28 | -1.13943 | -1.19012 | 80.1215 | 81.8908 | |
| 29 | -1.02165 | -1.17 | 81.4904 | 83.0861 | |
| 30 | -0.994252 | | -1.15035 | 82.8137 | 84.2299 |
| 31 | -0.994252 | | -1.13113 | 84.0932 | 85.3545 |
| 32 | -0.994252 | | -1.11232 | 85.3304 | 86.4604 |
| 33 | -0.994252 | | -1.08935 | 86.5171 | 87.5435 |
| 34 | -0.994252 | | -1.07138 | 87.6649 | 88.6087 |
| 35 | -0.994252 | | -1.05375 | 88.7753 | 89.6564 |
| 36 | -0.994252 | | -1.03643 | 89.8495 | 90.6869 |
| 37 | -0.994252 | | -1.01943 | 90.8888 | 91.7004 |
| 38 | -0.994252 | | -1.00271 | 91.8942 | 92.6974 |
| 39 | -0.994252 | | -0.982202 | 92.8589 | 93.674 |
| 40 | -0.994252 | | -0.966088 | 93.7922 | 94.6345 |
| 41 | -0.994252 | | -0.950222 | 94.6951 | 95.5792 |
| 42 | -0.994252 | | -0.93459 | 95.5686 | 96.5085 |
| 43 | -0.994252 | | -0.919183 | 96.4135 | 97.4224 |
| 44 | -0.967584 | | -0.900227 | 97.2239 | 98.2934 |
| 45 | -0.967584 | | -0.885291 | 98.0077 | 99.15 |
| 46 | -0.941609 | | -0.87055 | 98.7655 | 99.9697 |
| 47 | -0.941609 | | -0.855996 | 99.4982 | 100.776 |
| 48 | -0.916291 | | -0.841621 | 100.207 | 101.547 |
| 49 | -0.84397 | -0.823893 | | 100.885 | 102.242 |

| | | | | |
|---|---|---|---|---|
| 50 | -0.84397 | -0.809896 | 101.541 | 102.926 |
| 51 | -0.820981 | -0.796056 | 102.175 | 103.579 |
| 52 | -0.755023 | -0.782366 | 102.787 | 104.17 |
| 53 | -0.733969 | -0.768821 | 103.378 | 104.734 |
| 54 | -0.71335 | -0.755415 | 103.949 | 105.273 |
| 55 | -0.673345 | -0.738846 | 104.495 | 105.771 |
| 56 | -0.616186 | -0.725736 | 105.021 | 106.218 |
| 57 | -0.616186 | -0.712751 | 105.529 | 106.657 |
| 58 | -0.510826 | -0.699883 | 106.019 | 107.015 |
| 59 | -0.494296 | -0.687131 | 106.491 | 107.354 |
| 60 | -0.478036 | -0.671346 | 106.942 | 107.675 |
| 61 | -0.415515 | -0.658838 | 107.376 | 107.949 |
| 62 | -0.274437 | -0.646431 | 107.794 | 108.126 |
| 63 | -0.248461 | -0.634124 | 108.196 | 108.284 |
| 64 | -0.174353 | -0.621911 | 108.583 | 108.392 |
| 65 | -0.0943107 | -0.609791 | 108.955 | 108.45 |
| 66 | -0.0304592 | -0.594766 | 109.309 | 108.468 |
| 67 | -0.0304592 | -0.582841 | 109.648 | 108.486 |
| 68 | 0 | -0.570999 | 109.974 | 108.486 |
| 69 | 0 | -0.559237 | 110.287 | 108.486 |
| 70 | 0 | -0.547551 | 110.587 | 108.486 |
| 71 | 0 | -0.533048 | 110.871 | 108.486 |
| 72 | 0 | -0.521527 | 111.143 | 108.486 |
| 73 | 0 | -0.510074 | 111.403 | 108.486 |
| 74 | 0 | -0.498687 | 111.652 | 108.486 |
| 75 | 0 | -0.487364 | 111.889 | 108.486 |
| 76 | 0 | -0.476105 | 112.116 | 108.486 |
| 77 | 0 | -0.462114 | 112.33 | 108.486 |
| 78 | 0 | -0.450985 | 112.533 | 108.486 |
| 79 | 0 | -0.439913 | 112.727 | 108.486 |
| 80 | 0 | -0.428895 | 112.91 | 108.486 |
| 81 | 0 | -0.417928 | 113.085 | 108.486 |
| 82 | 0 | -0.40429 | 113.249 | 108.486 |
| 83 | 0 | -0.393433 | 113.403 | 108.486 |
| 84 | 0 | -0.382622 | 113.55 | 108.486 |
| 85 | 0 | -0.371856 | 113.688 | 108.486 |
| 86 | 0 | -0.361133 | 113.818 | 108.486 |
| 87 | 0 | -0.347787 | 113.939 | 108.486 |
| 88 | 0 | -0.337155 | 114.053 | 108.486 |
| 89 | 0 | -0.326561 | 114.16 | 108.486 |
| 90 | 0 | -0.316004 | 114.26 | 108.486 |
| 91 | 0 | -0.305481 | 114.353 | 108.486 |
| 92 | 0 | -0.294992 | 114.44 | 108.486 |
| 93 | 0 | -0.281926 | 114.519 | 108.486 |
| 94 | 0 | -0.271509 | 114.593 | 108.486 |
| 95 | 0 | -0.26112 | 114.661 | 108.486 |
| 96 | 0 | -0.250759 | 114.724 | 108.486 |
| 97 | 0 | -0.240426 | 114.782 | 108.486 |
| 98 | 0 | -0.227545 | 114.834 | 108.486 |
| 99 | 0 | -0.217267 | 114.881 | 108.486 |
| 100 | 0 | -0.207012 | 114.924 | 108.486 |
| 101 | 0 | -0.196779 | 114.963 | 108.486 |
| 102 | 0 | -0.186567 | 114.997 | 108.486 |
| 103 | 0 | -0.176374 | 115.028 | 108.486 |
| 104 | 0 | -0.163659 | 115.055 | 108.486 |
| 105 | 0 | -0.153505 | 115.079 | 108.486 |
| 106 | 0 | -0.143367 | 115.099 | 108.486 |
| 107 | 0 | -0.133244 | 115.117 | 108.486 |
| 108 | 0 | -0.123135 | 115.132 | 108.486 |
| 109 | 0 | -0.110516 | 115.144 | 108.486 |
| 110 | 0 | -0.100433 | 115.155 | 108.486 |
| 111 | 0 | -0.0903606 | 115.163 | 108.486 |

| | | | | |
|---|---|---|---|---|
| 112 | 0 | -0.0802981 | 115.169 | 108.486 |
| 113 | 0 | -0.0702426 | 115.174 | 108.486 |
| 114 | 0 | -0.0601949 | 115.178 | 108.486 |
| 115 | 0 | -0.0476439 | 115.18 | 108.486 |
| 116 | 0 | -0.0376076 | 115.181 | 108.486 |
| 117 | 0 | -0.0275759 | 115.182 | 108.486 |
| 118 | 0 | -0.0175476 | 115.183 | 108.486 |
| 119 | 0 | -0.00751925 | 115.183 | 108.486 |
| 120 | 0 | 0.00751925 | 115.183 | 108.486 |
| 121 | 0 | 0.0175476 | 115.183 | 108.486 |
| 122 | 0 | 0.0275759 | 115.184 | 108.486 |
| 123 | 0 | 0.0376076 | 115.185 | 108.486 |
| 124 | 0 | 0.0476439 | 115.187 | 108.486 |
| 125 | 0 | 0.0601949 | 115.191 | 108.486 |
| 126 | 0 | 0.0702426 | 115.196 | 108.486 |
| 127 | 0 | 0.0802981 | 115.202 | 108.486 |
| 128 | 0 | 0.0903606 | 115.211 | 108.486 |
| 129 | 0 | 0.100433 | 115.221 | 108.486 |
| 130 | 0 | 0.110516 | 115.233 | 108.486 |
| 131 | 0 | 0.123135 | 115.248 | 108.486 |
| 132 | 0 | 0.133244 | 115.266 | 108.486 |
| 133 | 0 | 0.143367 | 115.286 | 108.486 |
| 134 | 0 | 0.153505 | 115.31 | 108.486 |
| 135 | 0 | 0.163659 | 115.337 | 108.486 |
| 136 | 0 | 0.176374 | 115.368 | 108.486 |
| 137 | 0 | 0.186567 | 115.403 | 108.486 |
| 138 | 0 | 0.196779 | 115.441 | 108.486 |
| 139 | 0 | 0.207012 | 115.484 | 108.486 |
| 140 | 0 | 0.217267 | 115.531 | 108.486 |
| 141 | 0 | 0.227545 | 115.583 | 108.486 |
| 142 | 0 | 0.240426 | 115.641 | 108.486 |
| 143 | 0 | 0.250759 | 115.704 | 108.486 |
| 144 | 0 | 0.26112 | 115.772 | 108.486 |
| 145 | 0 | 0.271509 | 115.846 | 108.486 |
| 146 | 0 | 0.281926 | 115.925 | 108.486 |
| 147 | 0 | 0.294992 | 116.012 | 108.486 |
| 148 | 0 | 0.305481 | 116.106 | 108.486 |
| 149 | 0 | 0.316004 | 116.205 | 108.486 |
| 150 | 0 | 0.326561 | 116.312 | 108.486 |
| 151 | 0 | 0.337155 | 116.426 | 108.486 |
| 152 | 0 | 0.347787 | 116.547 | 108.486 |
| 153 | 0 | 0.361133 | 116.677 | 108.486 |
| 154 | 0 | 0.371856 | 116.815 | 108.486 |
| 155 | 0 | 0.382622 | 116.962 | 108.486 |
| 156 | 0 | 0.393433 | 117.117 | 108.486 |
| 157 | 0 | 0.40429 | 117.28 | 108.486 |
| 158 | 0 | 0.417928 | 117.455 | 108.486 |
| 159 | 0 | 0.428895 | 117.639 | 108.486 |
| 160 | 0 | 0.439913 | 117.832 | 108.486 |
| 161 | 0 | 0.450985 | 118.036 | 108.486 |
| 162 | 0 | 0.462114 | 118.249 | 108.486 |
| 163 | 0 | 0.476105 | 118.476 | 108.486 |
| 164 | 0 | 0.487364 | 118.713 | 108.486 |
| 165 | 0 | 0.498687 | 118.962 | 108.486 |
| 166 | 0 | 0.510074 | 119.222 | 108.486 |
| 167 | 0 | 0.521527 | 119.494 | 108.486 |
| 168 | 0 | 0.533048 | 119.778 | 108.486 |
| 169 | 0 | 0.547551 | 120.078 | 108.486 |
| 170 | 0 | 0.559237 | 120.391 | 108.486 |
| 171 | 0 | 0.570999 | 120.717 | 108.486 |
| 172 | 0 | 0.582841 | 121.057 | 108.486 |
| 173 | 0 | 0.594766 | 121.41 | 108.486 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 0 | 0.609791 | | 121.782 | 108.486 |
| 175 | 0 | 0.621911 | | 122.169 | 108.486 |
| 176 | 0 | 0.634124 | | 122.571 | 108.486 |
| 177 | 0 | 0.646431 | | 122.989 | 108.486 |
| 178 | 0 | 0.658838 | | 123.423 | 108.486 |
| 179 | 0 | 0.671346 | | 123.874 | 108.486 |
| 180 | 0 | 0.687131 | | 124.346 | 108.486 |
| 181 | 0 | 0.699883 | | 124.836 | 108.486 |
| 182 | 0 | 0.712751 | | 125.344 | 108.486 |
| 183 | 0 | 0.725736 | | 125.87 | 108.486 |
| 184 | 0 | 0.738846 | | 126.416 | 108.486 |
| 185 | 0 | 0.755415 | | 126.987 | 108.486 |
| 186 | 0 | 0.768821 | | 127.578 | 108.486 |
| 187 | 0 | 0.782366 | | 128.19 | 108.486 |
| 188 | 0 | 0.796056 | | 128.824 | 108.486 |
| 189 | 0 | 0.809896 | | 129.48 | 108.486 |
| 190 | 0 | 0.823893 | | 130.159 | 108.486 |
| 191 | 0 | 0.841621 | | 130.867 | 108.486 |
| 192 | 0 | 0.855996 | | 131.6 | 108.486 |
| 193 | 0 | 0.87055 | 132.357 | 108.486 | |
| 194 | 0 | 0.885291 | | 133.141 | 108.486 |
| 195 | 0 | 0.900227 | | 133.952 | 108.486 |
| 196 | 0 | 0.919183 | | 134.797 | 108.486 |
| 197 | 0 | 0.93459 | 135.67 | 108.486 | |
| 198 | 0 | 0.950222 | | 136.573 | 108.486 |
| 199 | 0 | 0.966088 | | 137.506 | 108.486 |
| 200 | 0 | 0.982202 | | 138.471 | 108.486 |
| 201 | 0 | 1.00271 | 139.476 | 108.486 | |
| 202 | 0 | 1.01943 | 140.516 | 108.486 | |
| 203 | 0 | 1.03643 | 141.59 | 108.486 | |
| 204 | 0 | 1.05375 | 142.7 | 108.486 | |
| 205 | 0 | 1.07138 | 143.848 | 108.486 | |
| 206 | 0 | 1.08935 | 145.035 | 108.486 | |
| 207 | 0 | 1.11232 | 146.272 | 108.486 | |
| 208 | 0 | 1.13113 | 147.551 | 108.486 | |
| 209 | 0 | 1.15035 | 148.875 | 108.486 | |
| 210 | 0 | 1.17 | 150.244 | 108.486 | |
| 211 | 0 | 1.19012 | 151.66 | 108.486 | |
| 212 | 0 | 1.21596 | 153.139 | 108.486 | |
| 213 | 0 | 1.23724 | 154.669 | 108.486 | |
| 214 | 0 | 1.25908 | 156.255 | 108.486 | |
| 215 | 0 | 1.28155 | 157.897 | 108.486 | |
| 216 | 0 | 1.30469 | 159.599 | 108.486 | |
| 217 | 0.0487902 | | 1.32854 | 161.364 | 108.551 |
| 218 | 0.10436 | 1.35946 | 163.212 | 108.692 | |
| 219 | 0.131028 | | 1.38517 | 165.131 | 108.874 |
| 220 | 0.405465 | | 1.41183 | 167.124 | 109.446 |
| 221 | 0.683097 | | 1.43953 | 169.197 | 110.43 |
| 222 | 0.693147 | | 1.46838 | 171.353 | 111.447 |
| 223 | 0.693147 | | 1.50626 | 173.622 | 112.492 |
| 224 | 0.788457 | | 1.5382 | 175.988 | 113.704 |
| 225 | 1.0116 | 1.57179 | 178.458 | 115.294 | |
| 226 | 1.22378 | 1.60725 | 181.041 | 117.261 | |
| 227 | 1.36098 | 1.64485 | 183.747 | 119.5 | |
| 228 | 1.38379 | 1.68494 | 186.586 | 121.831 | |
| 229 | 1.38629 | 1.7392 | 189.611 | 124.243 | |
| 230 | 1.41099 | 1.78661 | 192.803 | 126.763 | |
| 231 | 1.64866 | 1.83843 | 196.183 | 129.794 | |
| 232 | 1.6864 | 1.8957 | 199.776 | 132.991 | |
| 233 | 1.72277 | 1.95996 | 203.618 | 136.368 | |
| 234 | 1.79009 | 2.05375 | 207.836 | 140.044 | |
| 235 | 1.86408 | 2.14441 | 212.434 | 144.042 | |

| | | | | |
|---|---|---|---|---|
| 236 | 1.93152 | 2.25713 | 217.529 | 148.401 |
| 237 | 2.15176 | 2.40892 | 223.332 | 153.585 |
| 238 | 2.17475 | 2.65209 | 230.365 | 159.352 |

Data Set Standard Deviation = 0.771081
Numerator = 25393.2
Denominator = 32461.2
W Statistic = 0.782261 = 25393.2 / 32461.2

5% Critical value of 0.976 exceeds 0.782261
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.782261
Evidence of non-normality at 99% level of significance

# Kruskal-Wallis Non-Parametric Test

## Parameter: 1,4-Dichlorobenzene

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

# Kruskal Wallis Ranks

## Background Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-13 | 3/16/1999 | ND<0 | 95.5 |
| | 9/23/1999 | ND<0 | 95.5 |
| | 3/15/2000 | ND<0 | 95.5 |
| | 9/24/2003 | ND<0 | 95.5 |
| | 3/11/2004 | ND<0 | 95.5 |
| | 10/12/2004 | ND<0 | 95.5 |
| | 4/1/2005 | ND<0 | 95.5 |
| | 10/25/2005 | ND<0 | 95.5 |
| | 4/29/2006 | ND<0 | 95.5 |
| | 11/18/2006 | ND<0 | 95.5 |
| | 5/23/2007 | ND<0 | 95.5 |
| | 11/28/2007 | ND<0 | 95.5 |
| | 6/5/2008 | ND<0 | 95.5 |
| | 11/20/2008 | ND<0 | 95.5 |
| | 6/11/2009 | ND<-1.96611 | 95.5 |
| | 11/16/2009 | ND<-1.36649 | 95.5 |
| | 6/30/2010 | ND<-1.96611 | 95.5 |
| | 6/30/2010 | ND<-0.994252 | 95.5 |
| | 11/12/2010 | ND<-0.994252 U | 95.5 |
| | 11/12/2010 | ND<-1.96611 U | 95.5 |

Rank Sum = 1910
Rank Mean = 95.5

Background Rank Sum = 1910
Background Rank Mean = 95.5

## Compliance Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-7 | 7/20/1995 | ND<0 | 95.5 |
| | 8/24/1995 | ND<0 | 95.5 |
| | 9/28/1995 | ND<0 | 95.5 |
| | 10/26/1995 | ND<0 | 95.5 |
| | 11/19/1996 | ND<0 | 95.5 |
| | 12/19/1996 | ND<0 | 95.5 |
| | 3/24/1997 | ND<0 | 95.5 |
| | 9/24/1997 | ND<0 | 95.5 |
| | 4/7/1998 | ND<0 | 95.5 |
| | 9/23/1998 | ND<0 | 95.5 |
| | 3/16/1999 | ND<0 | 95.5 |
| | 9/23/1999 | ND<0 | 95.5 |
| | 3/15/2000 | ND<0 | 95.5 |
| | 9/24/2003 | ND<0 | 95.5 |
| | 3/11/2004 | ND<0 | 95.5 |
| | 10/12/2004 | ND<0 | 95.5 |
| | 4/1/2005 | ND<0 | 95.5 |
| | 10/25/2005 | ND<0 | 95.5 |

| | | | | |
|---|---|---|---|---|
| | 4/29/2006 | ND<0 | 95.5 | |
| | 11/18/2006 | ND<0 | 95.5 | |
| | 5/23/2007 | ND<0 | 95.5 | |
| | 11/28/2007 | ND<0 | 95.5 | |
| | 6/5/2008 | ND<0 | 95.5 | |
| | 11/20/2008 | ND<0 | 95.5 | |
| | 6/11/2009 | ND<-1.96611 | 95.5 | |
| | 11/16/2009 | ND<-1.44817 | 95.5 | |
| | 6/30/2010 | ND<-1.96611 | 95.5 | |
| | 6/30/2010 | ND<-0.967584 | 95.5 | |
| | 11/12/2010 | ND<-1.96611 U | 95.5 | |
| | 11/12/2010 | ND<-0.994252 U | 95.5 | |

Rank Sum = 2865
Rank Mean = 95.5

| | | | | |
|---|---|---|---|---|
| MW-6 | 7/20/1995 | ND<0 | 95.5 | |
| | 8/24/1995 | ND<0 | 95.5 | |
| | 9/28/1995 | ND<0 | 95.5 | |
| | 10/26/1995 | ND<0 | 95.5 | |
| | 11/19/1996 | ND<0 | 95.5 | |
| | 12/19/1996 | ND<0 | 95.5 | |
| | 3/24/1997 | ND<0 | 95.5 | |
| | 9/24/1997 | ND<0 | 95.5 | |
| | 4/7/1998 | ND<0 | 95.5 | |
| | 9/23/1998 | ND<0 | 95.5 | |
| | 3/16/1999 | ND<0 | 95.5 | |
| | 9/23/1999 | ND<0 | 95.5 | |
| | 3/15/2000 | ND<0 | 95.5 | |
| | 9/24/2003 | ND<0 | 95.5 | |
| | 3/11/2004 | ND<0 | 95.5 | |
| | 10/12/2004 | ND<0 | 95.5 | |
| | 4/1/2005 | ND<0 | 95.5 | |
| | 10/25/2005 | ND<0 | 95.5 | |
| | 4/29/2006 | ND<0 | 95.5 | |
| | 11/18/2006 | ND<0 | 95.5 | |
| | 5/23/2007 | ND<0 | 95.5 | |
| | 11/28/2007 | ND<0 | 95.5 | |
| | 6/5/2008 | ND<0 | 95.5 | |
| | 11/20/2008 | ND<0 | 95.5 | |
| | 6/11/2009 | ND<-1.96611 | 95.5 | |
| | 11/16/2009 | ND<-1.36649 | 95.5 | |
| | 6/30/2010 | ND<-1.96611 | 95.5 | |
| | 6/30/2010 | ND<-0.994252 | 95.5 | |
| | 11/12/2010 | ND<-0.994252 U | 95.5 | |
| | 11/12/2010 | ND<-1.96611 U | 95.5 | |

Rank Sum = 2865
Rank Mean = 95.5

| | | | | |
|---|---|---|---|---|
| MW-12BR | 3/16/1999 | ND<0 | 95.5 | |
| | 9/23/1999 | ND<0 | 95.5 | |
| | 3/15/2000 | ND<0 | 95.5 | |
| | 9/24/2003 | ND<0 | 95.5 | |
| | 3/11/2004 | ND<0 | 95.5 | |
| | 10/12/2004 | ND<0 | 95.5 | |
| | 4/1/2005 | 0.10436 J | 218 | |
| | 10/25/2005 | ND<0 | 95.5 | |
| | 4/29/2006 | 0.683097 J | 221 | |
| | 11/18/2006 | ND<0 | 95.5 | |
| | 5/23/2007 | ND<0 | 95.5 | |
| | 11/28/2007 | ND<0 | 95.5 | |
| | 6/5/2008 | ND<0 | 95.5 | |
| | 11/20/2008 | ND<0 | 95.5 | |

| | | | |
|---|---|---|---|
| | 6/11/2009 | ND<-1.96611 | 95.5 |
| | 11/16/2009 | ND<-1.44817 | 95.5 |
| | 6/30/2010 | ND<-1.96611 | 95.5 |
| | 6/30/2010 | ND<-0.994252 | 95.5 |
| | 11/12/2010 | ND<-0.941609 U | 95.5 |
| | 11/12/2010 | ND<-0.941609 U | 95.5 |
| | 11/12/2010 | ND<-1.96611 U | 95.5 |

Rank Sum = 2253.5
Rank Mean = 107.31

| | | | |
|---|---|---|---|
| MW-12AR | 3/16/1999 | ND<0 | 95.5 |
| | 9/23/1999 | ND<0 | 95.5 |
| | 3/15/2000 | ND<0 | 95.5 |
| | 9/24/2003 | ND<0 | 95.5 |
| | 3/11/2004 | ND<0 | 95.5 |
| | 10/12/2004 | ND<0 | 95.5 |
| | 4/1/2005 | ND<0 | 95.5 |
| | 10/25/2005 | 0.0487902 J | 217 |
| | 4/29/2006 | 0.131028 J | 219 |
| | 11/18/2006 | -0.174353 J | 213 |
| | 5/23/2007 | ND<0 | 95.5 |
| | 11/28/2007 | -0.248461 J | 212 |
| | 6/5/2008 | -0.0304592 J | 215 |
| | 11/20/2008 | -0.71335 J | 203 |
| | 6/11/2009 | ND<-1.96611 | 95.5 |
| | 11/16/2009 | ND<-1.44817 | 95.5 |
| | 6/30/2010 | ND<-1.96611 | 95.5 |
| | 6/30/2010 | ND<-0.994252 | 95.5 |
| | 11/12/2010 | ND<-0.994252 U | 95.5 |
| | 11/12/2010 | -0.494296 J | 208 |

Rank Sum = 2728.5
Rank Mean = 136.425

| | | | |
|---|---|---|---|
| MW-9 | 7/20/1995 | ND<0 | 95.5 |
| | 8/24/1995 | -0.673345 J | 204 |
| | 9/28/1995 | -0.510826 J | 207 |
| | 10/26/1995 | ND<0 | 95.5 |
| | 11/19/1996 | ND<0 | 95.5 |
| | 12/19/1996 | ND<0 | 95.5 |
| | 3/24/1997 | ND<0 | 95.5 |
| | 9/24/1997 | ND<0 | 95.5 |
| | 4/7/1998 | ND<0 | 95.5 |
| | 9/23/1998 | ND<0 | 95.5 |
| | 3/16/1999 | ND<0 | 95.5 |
| | 9/23/1999 | ND<0 | 95.5 |
| | 3/15/2000 | ND<0 | 95.5 |
| | 9/24/2003 | ND<0 | 95.5 |
| | 3/11/2004 | ND<0 | 95.5 |
| | 10/12/2004 | ND<0 | 95.5 |
| | 4/1/2005 | -0.0943107 J | 214 |
| | 10/25/2005 | -0.616186 J | 205 |
| | 4/29/2006 | -0.84397 J | 198 |
| | 11/18/2006 | -0.916291 J | 197 |
| | 5/23/2007 | ND<0 | 95.5 |
| | 11/28/2007 | -0.415515 J | 210 |
| | 6/5/2008 | -0.755023 J | 201 |
| | 11/20/2008 | -0.616186 J | 206 |
| | 6/11/2009 | -0.820981 J | 200 |
| | 11/16/2009 | ND<-1.36649 | 95.5 |
| | 6/30/2010 | ND<-0.967584 | 95.5 |
| | 6/30/2010 | -0.0304592 J | 216 |
| | 11/12/2010 | ND<-0.994252 U | 95.5 |

| | | | | |
|---|---|---|---|---|
| | 11/12/2010 | ND<-1.96611 U | | 95.5 |

Rank Sum = 4072.5
Rank Mean = 135.75

| | | | | |
|---|---|---|---|---|
| MW-10 | 7/20/1995 | ND<0 | 95.5 | |
| | 8/24/1995 | 0.405465 J | | 220 |
| | 9/28/1995 | 1.38629 | | 229 |
| | 10/26/1995 | 0.693147 | | 222 |
| | 11/19/1996 | ND<0 | 95.5 | |
| | 12/19/1996 | ND<0 | 95.5 | |
| | 3/24/1997 | ND<0 | 95.5 | |
| | 9/24/1997 | ND<0 | 95.5 | |
| | 4/7/1998 | ND<0 | 95.5 | |
| | 9/23/1998 | ND<0 | 95.5 | |
| | 3/16/1999 | 2.17475 | | 238 |
| | 9/23/1999 | ND<0 | 95.5 | |
| | 3/15/2000 | ND<0 | 95.5 | |
| | 9/24/2003 | ND<0 | 95.5 | |
| | 3/11/2004 | ND<0 | 95.5 | |
| | 10/12/2004 | ND<0 | 95.5 | |
| | 4/1/2005 | 1.0116 | 225 | |
| | 10/25/2005 | 1.38379 | | 228 |
| | 4/29/2006 | 1.72277 | | 233 |
| | 11/18/2006 | 1.36098 | | 227 |
| | 5/23/2007 | 1.41099 | | 230 |
| | 11/28/2007 | 1.79009 | | 234 |
| | 6/5/2008 | 1.86408 | 235 | |
| | 11/20/2008 | ND<0 | 95.5 | |
| | 6/11/2009 | 1.22378 | | 226 |
| | 11/16/2009 | 1.93152 J | | 236 |
| | 6/30/2010 | ND<-0.994252 | | 95.5 |
| | 6/30/2010 | 1.64866 | | 231 |
| | 11/12/2010 | ND<-0.994252 U | | 95.5 |
| | 11/12/2010 | 2.15176 | | 237 |

Rank Sum = 4883.5
Rank Mean = 162.783

| | | | | |
|---|---|---|---|---|
| MW-11R | 7/20/1995 | ND<0 | 95.5 | |
| | 8/24/1995 | 0.788457 | | 224 |
| | 9/28/1995 | 0.693147 | | 223 |
| | 10/26/1995 | ND<0 | 95.5 | |
| | 11/19/1996 | ND<0 | 95.5 | |
| | 12/19/1996 | ND<0 | 95.5 | |
| | 3/24/1997 | ND<0 | 95.5 | |
| | 9/24/1997 | ND<0 | 95.5 | |
| | 4/7/1998 | ND<0 | 95.5 | |
| | 9/23/1998 | ND<0 | 95.5 | |
| | 3/16/1999 | ND<0 | 95.5 | |
| | 9/23/1999 | ND<0 | 95.5 | |
| | 3/15/2000 | ND<0 | 95.5 | |
| | 9/24/2003 | 1.6864 | 232 | |
| | 3/11/2004 | ND<0 | 95.5 | |
| | 10/12/2004 | ND<0 | 95.5 | |
| | 4/1/2005 | ND<0 | 95.5 | |
| | 10/25/2005 | ND<0 | 95.5 | |
| | 4/29/2006 | ND<0 | 95.5 | |
| | 11/18/2006 | ND<0 | 95.5 | |
| | 5/23/2007 | ND<0 | 95.5 | |
| | 11/28/2007 | -1.20397 J | | 193 |
| | 6/5/2008 | ND<0 | 95.5 | |
| | 11/20/2008 | ND<0 | 95.5 | |
| | 6/11/2009 | -0.733969 J | | 202 |

| | | | |
|---|---|---|---|
| | 11/16/2009 | ND<-1.44817 | 95.5 |
| | 6/30/2010 | -0.994252 J | 196 |
| | 6/30/2010 | ND<-0.994252 | 95.5 |
| | 11/12/2010 | ND<-1.96611 U | 95.5 |
| | 11/12/2010 | ND<-0.994252 U | 95.5 |

Rank Sum = 3562
Rank Mean = 118.733

| | | | |
|---|---|---|---|
| MW-8 | 7/20/1995 | ND<0 | 95.5 |
| | 8/24/1995 | ND<0 | 95.5 |
| | 9/28/1995 | ND<0 | 95.5 |
| | 10/26/1995 | ND<0 | 95.5 |
| | 11/19/1996 | ND<0 | 95.5 |
| | 12/19/1996 | ND<0 | 95.5 |
| | 3/24/1997 | ND<0 | 95.5 |
| | 9/24/1997 | ND<0 | 95.5 |
| | 4/7/1998 | ND<0 | 95.5 |
| | 9/23/1998 | ND<0 | 95.5 |
| | 3/16/1999 | ND<0 | 95.5 |
| | 9/23/1999 | ND<0 | 95.5 |
| | 3/15/2000 | ND<0 | 95.5 |
| | 9/24/2003 | ND<0 | 95.5 |
| | 3/11/2004 | ND<0 | 95.5 |
| | 10/12/2004 | ND<0 | 95.5 |
| | 4/1/2005 | ND<0 | 95.5 |
| | 10/25/2005 | -1.27297 J | 191 |
| | 4/29/2006 | -1.02165 J | 195 |
| | 11/18/2006 | -0.84397 J | 199 |
| | 5/23/2007 | ND<0 | 95.5 |
| | 11/28/2007 | -1.27297 J | 192 |
| | 6/5/2008 | -1.13943 J | 194 |
| | 11/20/2008 | ND<0 | 95.5 |
| | 6/11/2009 | -0.478036 J | 209 |
| | 6/30/2010 | ND<-1.96611 | 95.5 |
| | 11/12/2010 | -0.274437 J | 211 |

Rank Sum = 3301
Rank Mean = 122.259

## Calculation Results:

Kruskal-Wallis H Statistic = 25.1633
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 51.2256
95% Confidence comparison value is 15.5073 at 8 degrees of freedom
25.1633 > 15.5073 indicating a significant group difference at 5% significance level
51.2256 > 15.5073 indicating a significant group difference at 5% significance level when adjusted for ties

## Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 95.5

| Well | Mean Rank | Dif from Bkg | Critical Value |
|---|---|---|---|
| MW-7 | 95.5 | 0 | 46.2359 |
| MW-6 | 95.5 | 0 | 46.2359 |
| MW-12BR | 107.31 | 11.8095 | 50.0423 |
| MW-12AR | 136.425 | 40.925 | 50.6489 |
| MW-9 | 135.75 | 40.25 | 46.2359 |
| MW-10 | 162.783 | 67.2833 | 46.2359 |
| MW-11R | 118.733 | 23.2333 | 46.2359 |
| MW-8 | 122.259 | 26.7593 | 47.2522 |

## Individual Well Comparisons at Groupwise 5% Significance Level (0.625% Significance Level per comparison)

0.625% Z score is 2.51213

Mean background rank is 95.5

| Well | Mean Rank | | Dif from Bkg | Critical Value |
|---|---|---|---|---|
| MW-7 | 95.5 | 0 | 49.9285 | |
| MW-6 | 95.5 | 0 | 49.9285 | |
| MW-12BR | | 107.31 | 11.8095 | 54.0389 |
| MW-12AR | | 136.425 | 40.925 | 54.694 |
| MW-9 | 135.75 | 40.25 | 49.9285 | |
| MW-10 | 162.783 | 67.2833 | 49.9285 | |
| MW-11R | 118.733 | 23.2333 | 49.9285 | |
| MW-8 | 122.259 | 26.7593 | 51.026 | |

# Mann-Kendall Trend Analysis

## Parameter: 1,4-Dichlorobenzene

## Location: MW-10

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | Positives | Negatives |
|---|---|---|---|---|
| 0.405465 J | ND<0 | 0.405465 | 1 | 0 |
| 1.38629 | ND<0 | 1.38629 | 2 | 0 |
| 0.693147 | ND<0 | 0.693147 | 3 | 0 |
| ND<0 | ND<0 | 0 | 3 | 0 |
| ND<0 | ND<0 | 0 | 3 | 0 |
| ND<0 | ND<0 | 0 | 3 | 0 |
| ND<0 | ND<0 | 0 | 3 | 0 |
| ND<0 | ND<0 | 0 | 3 | 0 |
| ND<0 | ND<0 | 0 | 3 | 0 |
| 2.17475 | ND<0 | 2.17475 | 4 | 0 |
| ND<0 | ND<0 | 0 | 4 | 0 |
| ND<0 | ND<0 | 0 | 4 | 0 |
| ND<0 | ND<0 | 0 | 4 | 0 |
| ND<0 | ND<0 | 0 | 4 | 0 |
| ND<0 | ND<0 | 0 | 4 | 0 |
| 1.0116 | ND<0 | 1.0116 | 5 | 0 |
| 1.38379 | ND<0 | 1.38379 | 6 | 0 |
| 1.72277 | ND<0 | 1.72277 | 7 | 0 |
| 1.36098 | ND<0 | 1.36098 | 8 | 0 |
| 1.41099 | ND<0 | 1.41099 | 9 | 0 |
| 1.79009 | ND<0 | 1.79009 | 10 | 0 |
| 1.86408 | ND<0 | 1.86408 | 11 | 0 |
| ND<0 | ND<0 | 0 | 11 | 0 |
| 1.22378 | ND<0 | 1.22378 | 12 | 0 |
| 1.93152 J | ND<0 | 1.93152 | 13 | 0 |
| ND<-0.994252 | ND<0 | -0.994252 | 13 | 1 |
| 1.64866 | ND<0 | 1.64866 | 14 | 1 |
| ND<-0.994252 U | ND<0 | -0.994252 | 14 | 2 |
| 2.15176 | ND<0 | 2.15176 | 15 | 2 |
| 1.38629 | 0.405465 J | 0.980829 | 16 | 2 |
| 0.693147 | 0.405465 J | 0.287682 | 17 | 2 |
| ND<0 | 0.405465 J | -0.405465 | 17 | 3 |
| ND<0 | 0.405465 J | -0.405465 | 17 | 4 |
| ND<0 | 0.405465 J | -0.405465 | 17 | 5 |
| ND<0 | 0.405465 J | -0.405465 | 17 | 6 |
| ND<0 | 0.405465 J | -0.405465 | 17 | 7 |
| ND<0 | 0.405465 J | -0.405465 | 17 | 8 |
| 2.17475 | 0.405465 J | 1.76929 | 18 | 8 |
| ND<0 | 0.405465 J | -0.405465 | 18 | 9 |
| ND<0 | 0.405465 J | -0.405465 | 18 | 10 |
| ND<0 | 0.405465 J | -0.405465 | 18 | 11 |
| ND<0 | 0.405465 J | -0.405465 | 18 | 12 |
| ND<0 | 0.405465 J | -0.405465 | 18 | 13 |
| 1.0116 | 0.405465 J | 0.606136 | 19 | 13 |
| 1.38379 | 0.405465 J | 0.978326 | 20 | 13 |
| 1.72277 | 0.405465 J | 1.3173 | 21 | 13 |
| 1.36098 | 0.405465 J | 0.955511 | 22 | 13 |

| | | | | | |
|---|---|---|---|---|---|
| 1.41099 | 0.405465 J | 1.00552 | 23 | 13 | |
| 1.79009 | 0.405465 J | 1.38463 | 24 | 13 | |
| 1.86408 | 0.405465 J | 1.45862 | 25 | 13 | |
| ND<0 | 0.405465 J | -0.405465 | 25 | 14 | |
| 1.22378 | 0.405465 J | 0.81831 | 26 | 14 | |
| 1.93152 J | 0.405465 J | 1.52606 | 27 | 14 | |
| ND<-0.994252 | 0.405465 J | -1.3997 | 227 | 15 | |
| 1.64866 | 0.405465 J | 1.24319 | 28 | 15 | |
| ND<-0.994252 U | 0.405465 J | -1.3997 | 228 | 16 | |
| 2.15176 | 0.405465 J | 1.7463 | 29 | 16 | |
| | | | | | |
| 0.693147 | 1.38629 | -0.693147 | 29 | 17 | |
| ND<0 | 1.38629 | -1.3862 | 929 | 18 | |
| ND<0 | 1.38629 | -1.3862 | 929 | 19 | |
| ND<0 | 1.38629 | -1.3862 | 929 | 20 | |
| ND<0 | 1.38629 | -1.3862 | 929 | 21 | |
| ND<0 | 1.38629 | -1.3862 | 929 | 22 | |
| ND<0 | 1.38629 | -1.3862 | 929 | 23 | |
| 2.17475 | 1.38629 | 0.788457 | 30 | 23 | |
| ND<0 | 1.38629 | -1.3862 | 930 | 24 | |
| ND<0 | 1.38629 | -1.3862 | 930 | 25 | |
| ND<0 | 1.38629 | -1.3862 | 930 | 26 | |
| ND<0 | 1.38629 | -1.3862 | 930 | 27 | |
| ND<0 | 1.38629 | -1.3862 | 930 | 28 | |
| 1.0116 | 1.38629 | -0.374693 | 30 | 29 | |
| 1.38379 | 1.38629 | -0.00250313 | 30 | 30 | |
| 1.72277 | 1.38629 | 0.336472 | 31 | 30 | |
| 1.36098 | 1.38629 | -0.0253178 | 31 | 31 | |
| 1.41099 | 1.38629 | 0.0246926 | 32 | 31 | |
| 1.79009 | 1.38629 | 0.403797 | 33 | 31 | |
| 1.86408 | 1.38629 | 0.477786 | 34 | 31 | |
| ND<0 | 1.38629 | -1.3862 | 934 | 32 | |
| 1.22378 | 1.38629 | -0.162519 | 34 | 33 | |
| 1.93152 J | 1.38629 | 0.545227 | 35 | 33 | |
| ND<-0.994252 | 1.38629 | -2.3805 | 535 | 34 | |
| 1.64866 | 1.38629 | 0.262364 | 36 | 34 | |
| ND<-0.994252 U | 1.38629 | -2.3805 | 536 | 35 | |
| 2.15176 | 1.38629 | 0.765468 | 37 | 35 | |
| | | | | | |
| ND<0 | 0.693147 | -0.693147 | 37 | 36 | |
| ND<0 | 0.693147 | -0.693147 | 37 | 37 | |
| ND<0 | 0.693147 | -0.693147 | 37 | 38 | |
| ND<0 | 0.693147 | -0.693147 | 37 | 39 | |
| ND<0 | 0.693147 | -0.693147 | 37 | 40 | |
| ND<0 | 0.693147 | -0.693147 | 37 | 41 | |
| 2.17475 | 0.693147 | 1.4816 | 38 | 41 | |
| ND<0 | 0.693147 | -0.693147 | 38 | 42 | |
| ND<0 | 0.693147 | -0.693147 | 38 | 43 | |
| ND<0 | 0.693147 | -0.693147 | 38 | 44 | |
| ND<0 | 0.693147 | -0.693147 | 38 | 45 | |
| ND<0 | 0.693147 | -0.693147 | 38 | 46 | |
| 1.0116 | 0.693147 | 0.318454 | 39 | 46 | |
| 1.38379 | 0.693147 | 0.690644 | 40 | 46 | |
| 1.72277 | 0.693147 | 1.02962 | 41 | 46 | |
| 1.36098 | 0.693147 | 0.667829 | 42 | 46 | |
| 1.41099 | 0.693147 | 0.71784 | 43 | 46 | |
| 1.79009 | 0.693147 | 1.09694 | 44 | 46 | |
| 1.86408 | 0.693147 | 1.17093 | 45 | 46 | |
| ND<0 | 0.693147 | -0.693147 | 45 | 47 | |
| 1.22378 | 0.693147 | 0.530628 | 46 | 47 | |
| 1.93152 J | 0.693147 | 1.23837 | 47 | 47 | |
| ND<-0.994252 | 0.693147 | -1.6874 | 47 | 48 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1.64866 | | 0.693147 | | 0.955511 | | 48 | 48 |
| ND<-0.994252 U | | 0.693147 | | -1.6874 | 48 | 49 | |
| 2.15176 | | 0.693147 | | 1.45862 | 49 | 49 | |
| | | | | | | | |
| ND<0 | ND<0 | 0 | 49 | 49 | | | |
| ND<0 | ND<0 | 0 | 49 | 49 | | | |
| ND<0 | ND<0 | 0 | 49 | 49 | | | |
| ND<0 | ND<0 | 0 | 49 | 49 | | | |
| ND<0 | ND<0 | 0 | 49 | 49 | | | |
| 2.17475 | | ND<0 | 2.17475 | 50 | 49 | | |
| ND<0 | ND<0 | 0 | 50 | 49 | | | |
| ND<0 | ND<0 | 0 | 50 | 49 | | | |
| ND<0 | ND<0 | 0 | 50 | 49 | | | |
| ND<0 | ND<0 | 0 | 50 | 49 | | | |
| ND<0 | ND<0 | 0 | 50 | 49 | | | |
| 1.0116 | ND<0 | 1.0116 | 51 | 49 | | | |
| 1.38379 | | ND<0 | 1.38379 | 52 | 49 | | |
| 1.72277 | | ND<0 | 1.72277 | 53 | 49 | | |
| 1.36098 | | ND<0 | 1.36098 | 54 | 49 | | |
| 1.41099 | | ND<0 | 1.41099 | 55 | 49 | | |
| 1.79009 | | ND<0 | 1.79009 | 56 | 49 | | |
| 1.86408 | | ND<0 | 1.86408 | 57 | 49 | | |
| ND<0 | ND<0 | 0 | 57 | 49 | | | |
| 1.22378 | | ND<0 | 1.22378 | 58 | 49 | | |
| 1.93152 J | | ND<0 | 1.93152 | 59 | 49 | | |
| ND<-0.994252 | | ND<0 | -0.994252 | | 59 | 50 | |
| 1.64866 | | ND<0 | 1.64866 | 60 | 50 | | |
| ND<-0.994252 U | | ND<0 | -0.994252 | | 60 | 51 | |
| 2.15176 | | ND<0 | 2.15176 | 61 | 51 | | |
| | | | | | | | |
| ND<0 | ND<0 | 0 | 61 | 51 | | | |
| ND<0 | ND<0 | 0 | 61 | 51 | | | |
| ND<0 | ND<0 | 0 | 61 | 51 | | | |
| ND<0 | ND<0 | 0 | 61 | 51 | | | |
| 2.17475 | | ND<0 | 2.17475 | 62 | 51 | | |
| ND<0 | ND<0 | 0 | 62 | 51 | | | |
| ND<0 | ND<0 | 0 | 62 | 51 | | | |
| ND<0 | ND<0 | 0 | 62 | 51 | | | |
| ND<0 | ND<0 | 0 | 62 | 51 | | | |
| ND<0 | ND<0 | 0 | 62 | 51 | | | |
| 1.0116 | ND<0 | 1.0116 | 63 | 51 | | | |
| 1.38379 | | ND<0 | 1.38379 | 64 | 51 | | |
| 1.72277 | | ND<0 | 1.72277 | 65 | 51 | | |
| 1.36098 | | ND<0 | 1.36098 | 66 | 51 | | |
| 1.41099 | | ND<0 | 1.41099 | 67 | 51 | | |
| 1.79009 | | ND<0 | 1.79009 | 68 | 51 | | |
| 1.86408 | | ND<0 | 1.86408 | 69 | 51 | | |
| ND<0 | ND<0 | 0 | 69 | 51 | | | |
| 1.22378 | | ND<0 | 1.22378 | 70 | 51 | | |
| 1.93152 J | | ND<0 | 1.93152 | 71 | 51 | | |
| ND<-0.994252 | | ND<0 | -0.994252 | | 71 | 52 | |
| 1.64866 | | ND<0 | 1.64866 | 72 | 52 | | |
| ND<-0.994252 U | | ND<0 | -0.994252 | | 72 | 53 | |
| 2.15176 | | ND<0 | 2.15176 | 73 | 53 | | |
| | | | | | | | |
| ND<0 | ND<0 | 0 | 73 | 53 | | | |
| ND<0 | ND<0 | 0 | 73 | 53 | | | |
| ND<0 | ND<0 | 0 | 73 | 53 | | | |
| 2.17475 | | ND<0 | 2.17475 | 74 | 53 | | |
| ND<0 | ND<0 | 0 | 74 | 53 | | | |
| ND<0 | ND<0 | 0 | 74 | 53 | | | |
| ND<0 | ND<0 | 0 | 74 | 53 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 74 | 53 | | |
| ND<0 | ND<0 | 0 | 74 | 53 | | |
| 1.0116 | ND<0 | 1.0116 | 75 | 53 | | |
| 1.38379 | | ND<0 | 1.38379 | 76 | 53 | |
| 1.72277 | | ND<0 | 1.72277 | 77 | 53 | |
| 1.36098 | | ND<0 | 1.36098 | 78 | 53 | |
| 1.41099 | | ND<0 | 1.41099 | 79 | 53 | |
| 1.79009 | | ND<0 | 1.79009 | 80 | 53 | |
| 1.86408 | | ND<0 | 1.86408 | 81 | 53 | |
| ND<0 | ND<0 | 0 | 81 | 53 | | |
| 1.22378 | | ND<0 | 1.22378 | 82 | 53 | |
| 1.93152 J | | ND<0 | 1.93152 | 83 | 53 | |
| ND<-0.994252 | | ND<0 | -0.994252 | | 83 | 54 |
| 1.64866 | | ND<0 | 1.64866 | 84 | 54 | |
| ND<-0.994252 U | | ND<0 | -0.994252 | | 84 | 55 |
| 2.15176 | | ND<0 | 2.15176 | 85 | 55 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 85 | 55 | | |
| ND<0 | ND<0 | 0 | 85 | 55 | | |
| 2.17475 | | ND<0 | 2.17475 | 86 | 55 | |
| ND<0 | ND<0 | 0 | 86 | 55 | | |
| ND<0 | ND<0 | 0 | 86 | 55 | | |
| ND<0 | ND<0 | 0 | 86 | 55 | | |
| ND<0 | ND<0 | 0 | 86 | 55 | | |
| ND<0 | ND<0 | 0 | 86 | 55 | | |
| 1.0116 | ND<0 | 1.0116 | 87 | 55 | | |
| 1.38379 | | ND<0 | 1.38379 | 88 | 55 | |
| 1.72277 | | ND<0 | 1.72277 | 89 | 55 | |
| 1.36098 | | ND<0 | 1.36098 | 90 | 55 | |
| 1.41099 | | ND<0 | 1.41099 | 91 | 55 | |
| 1.79009 | | ND<0 | 1.79009 | 92 | 55 | |
| 1.86408 | | ND<0 | 1.86408 | 93 | 55 | |
| ND<0 | ND<0 | 0 | 93 | 55 | | |
| 1.22378 | | ND<0 | 1.22378 | 94 | 55 | |
| 1.93152 J | | ND<0 | 1.93152 | 95 | 55 | |
| ND<-0.994252 | | ND<0 | -0.994252 | | 95 | 56 |
| 1.64866 | | ND<0 | 1.64866 | 96 | 56 | |
| ND<-0.994252 U | | ND<0 | -0.994252 | | 96 | 57 |
| 2.15176 | | ND<0 | 2.15176 | 97 | 57 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 97 | 57 | | |
| 2.17475 | | ND<0 | 2.17475 | 98 | 57 | |
| ND<0 | ND<0 | 0 | 98 | 57 | | |
| ND<0 | ND<0 | 0 | 98 | 57 | | |
| ND<0 | ND<0 | 0 | 98 | 57 | | |
| ND<0 | ND<0 | 0 | 98 | 57 | | |
| ND<0 | ND<0 | 0 | 98 | 57 | | |
| 1.0116 | ND<0 | 1.0116 | 99 | 57 | | |
| 1.38379 | | ND<0 | 1.38379 | 100 | 57 | |
| 1.72277 | | ND<0 | 1.72277 | 101 | 57 | |
| 1.36098 | | ND<0 | 1.36098 | 102 | 57 | |
| 1.41099 | | ND<0 | 1.41099 | 103 | 57 | |
| 1.79009 | | ND<0 | 1.79009 | 104 | 57 | |
| 1.86408 | | ND<0 | 1.86408 | 105 | 57 | |
| ND<0 | ND<0 | 0 | 105 | 57 | | |
| 1.22378 | | ND<0 | 1.22378 | 106 | 57 | |
| 1.93152 J | | ND<0 | 1.93152 | 107 | 57 | |
| ND<-0.994252 | | ND<0 | -0.994252 | | 107 | 58 |
| 1.64866 | | ND<0 | 1.64866 | 108 | 58 | |
| ND<-0.994252 U | | ND<0 | -0.994252 | | 108 | 59 |
| 2.15176 | | ND<0 | 2.15176 | 109 | 59 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2.17475 | | ND<0 | 2.17475 | 110 | 59 | |
| ND<0 | ND<0 | 0 | 110 | 59 | | |
| ND<0 | ND<0 | 0 | 110 | 59 | | |
| ND<0 | ND<0 | 0 | 110 | 59 | | |
| ND<0 | ND<0 | 0 | 110 | 59 | | |
| ND<0 | ND<0 | 0 | 110 | 59 | | |
| 1.0116 | ND<0 | 1.0116 | 111 | 59 | | |
| 1.38379 | | ND<0 | 1.38379 | 112 | 59 | |
| 1.72277 | | ND<0 | 1.72277 | 113 | 59 | |
| 1.36098 | | ND<0 | 1.36098 | 114 | 59 | |
| 1.41099 | | ND<0 | 1.41099 | 115 | 59 | |
| 1.79009 | | ND<0 | 1.79009 | 116 | 59 | |
| 1.86408 | | ND<0 | 1.86408 | 117 | 59 | |
| ND<0 | ND<0 | 0 | 117 | 59 | | |
| 1.22378 | | ND<0 | 1.22378 | 118 | 59 | |
| 1.93152 J | | ND<0 | 1.93152 | 119 | 59 | |
| ND<-0.994252 | | ND<0 | -0.994252 | | 119 | 60 |
| 1.64866 | | ND<0 | 1.64866 | 120 | 60 | |
| ND<-0.994252 U | | ND<0 | -0.994252 | | 120 | 61 |
| 2.15176 | | ND<0 | 2.15176 | 121 | 61 | |
| | | | | | | |
| ND<0 | 2.17475 | | -2.17475 | 121 | 62 | |
| ND<0 | 2.17475 | | -2.17475 | 121 | 63 | |
| ND<0 | 2.17475 | | -2.17475 | 121 | 64 | |
| ND<0 | 2.17475 | | -2.17475 | 121 | 65 | |
| ND<0 | 2.17475 | | -2.17475 | 121 | 66 | |
| 1.0116 | 2.17475 | | -1.16315 | 121 | 67 | |
| 1.38379 | | 2.17475 | | -0.79096 | 121 | 68 |
| 1.72277 | | 2.17475 | | -0.451985 | | 121 | 69 |
| 1.36098 | | 2.17475 | | -0.813775 | | 121 | 70 |
| 1.41099 | | 2.17475 | | -0.763765 | | 121 | 71 |
| 1.79009 | | 2.17475 | | -0.38466 | 121 | 72 |
| 1.86408 | | 2.17475 | | -0.310672 | | 121 | 73 |
| ND<0 | 2.17475 | | -2.17475 | 121 | 74 | |
| 1.22378 | | 2.17475 | | -0.950976 | | 121 | 75 |
| 1.93152 J | | 2.17475 | | -0.24323 | 121 | 76 |
| ND<-0.994252 | | 2.17475 | | -3.169 | 121 | 77 |
| 1.64866 | | 2.17475 | | -0.526093 | | 121 | 78 |
| ND<-0.994252 U | | 2.17475 | | -3.169 | 121 | 79 |
| 2.15176 | | 2.17475 | | -0.0229895 | | 121 | 80 |
| | | | | | | |
| ND<0 | ND<0 | 0 | 121 | 80 | | |
| ND<0 | ND<0 | 0 | 121 | 80 | | |
| ND<0 | ND<0 | 0 | 121 | 80 | | |
| ND<0 | ND<0 | 0 | 121 | 80 | | |
| 1.0116 | ND<0 | 1.0116 | 122 | 80 | | |
| 1.38379 | | ND<0 | 1.38379 | 123 | 80 | |
| 1.72277 | | ND<0 | 1.72277 | 124 | 80 | |
| 1.36098 | | ND<0 | 1.36098 | 125 | 80 | |
| 1.41099 | | ND<0 | 1.41099 | 126 | 80 | |
| 1.79009 | | ND<0 | 1.79009 | 127 | 80 | |
| 1.86408 | | ND<0 | 1.86408 | 128 | 80 | |
| ND<0 | ND<0 | 0 | 128 | 80 | | |
| 1.22378 | | ND<0 | 1.22378 | 129 | 80 | |
| 1.93152 J | | ND<0 | 1.93152 | 130 | 80 | |
| ND<-0.994252 | | ND<0 | -0.994252 | | 130 | 81 |
| 1.64866 | | ND<0 | 1.64866 | 131 | 81 | |
| ND<-0.994252 U | | ND<0 | -0.994252 | | 131 | 82 |
| 2.15176 | | ND<0 | 2.15176 | 132 | 82 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 132 | 82 | | |
| ND<0 | ND<0 | 0 | 132 | 82 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 132 | 82 | | |
| 1.0116 | ND<0 | 1.0116 | 133 | 82 | | |
| 1.38379 | | ND<0 | 1.38379 | 134 | 82 | |
| 1.72277 | | ND<0 | 1.72277 | 135 | 82 | |
| 1.36098 | | ND<0 | 1.36098 | 136 | 82 | |
| 1.41099 | | ND<0 | 1.41099 | 137 | 82 | |
| 1.79009 | | ND<0 | 1.79009 | 138 | 82 | |
| 1.86408 | | ND<0 | 1.86408 | 139 | 82 | |
| ND<0 | ND<0 | 0 | 139 | 82 | | |
| 1.22378 | | ND<0 | 1.22378 | 140 | 82 | |
| 1.93152 J | | ND<0 | 1.93152 | 141 | 82 | |
| ND<-0.994252 | | ND<0 | -0.994252 | | 141 | 83 |
| 1.64866 | | ND<0 | 1.64866 | 142 | 83 | |
| ND<-0.994252 U | | ND<0 | -0.994252 | | 142 | 84 |
| 2.15176 | | ND<0 | 2.15176 | 143 | 84 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 143 | 84 | | |
| ND<0 | ND<0 | 0 | 143 | 84 | | |
| 1.0116 | ND<0 | 1.0116 | 144 | 84 | | |
| 1.38379 | | ND<0 | 1.38379 | 145 | 84 | |
| 1.72277 | | ND<0 | 1.72277 | 146 | 84 | |
| 1.36098 | | ND<0 | 1.36098 | 147 | 84 | |
| 1.41099 | | ND<0 | 1.41099 | 148 | 84 | |
| 1.79009 | | ND<0 | 1.79009 | 149 | 84 | |
| 1.86408 | | ND<0 | 1.86408 | 150 | 84 | |
| ND<0 | ND<0 | 0 | 150 | 84 | | |
| 1.22378 | | ND<0 | 1.22378 | 151 | 84 | |
| 1.93152 J | | ND<0 | 1.93152 | 152 | 84 | |
| ND<-0.994252 | | ND<0 | -0.994252 | | 152 | 85 |
| 1.64866 | | ND<0 | 1.64866 | 153 | 85 | |
| ND<-0.994252 U | | ND<0 | -0.994252 | | 153 | 86 |
| 2.15176 | | ND<0 | 2.15176 | 154 | 86 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 154 | 86 | | |
| 1.0116 | ND<0 | 1.0116 | 155 | 86 | | |
| 1.38379 | | ND<0 | 1.38379 | 156 | 86 | |
| 1.72277 | | ND<0 | 1.72277 | 157 | 86 | |
| 1.36098 | | ND<0 | 1.36098 | 158 | 86 | |
| 1.41099 | | ND<0 | 1.41099 | 159 | 86 | |
| 1.79009 | | ND<0 | 1.79009 | 160 | 86 | |
| 1.86408 | | ND<0 | 1.86408 | 161 | 86 | |
| ND<0 | ND<0 | 0 | 161 | 86 | | |
| 1.22378 | | ND<0 | 1.22378 | 162 | 86 | |
| 1.93152 J | | ND<0 | 1.93152 | 163 | 86 | |
| ND<-0.994252 | | ND<0 | -0.994252 | | 163 | 87 |
| 1.64866 | | ND<0 | 1.64866 | 164 | 87 | |
| ND<-0.994252 U | | ND<0 | -0.994252 | | 164 | 88 |
| 2.15176 | | ND<0 | 2.15176 | 165 | 88 | |
| | | | | | | |
| 1.0116 | ND<0 | 1.0116 | 166 | 88 | | |
| 1.38379 | | ND<0 | 1.38379 | 167 | 88 | |
| 1.72277 | | ND<0 | 1.72277 | 168 | 88 | |
| 1.36098 | | ND<0 | 1.36098 | 169 | 88 | |
| 1.41099 | | ND<0 | 1.41099 | 170 | 88 | |
| 1.79009 | | ND<0 | 1.79009 | 171 | 88 | |
| 1.86408 | | ND<0 | 1.86408 | 172 | 88 | |
| ND<0 | ND<0 | 0 | 172 | 88 | | |
| 1.22378 | | ND<0 | 1.22378 | 173 | 88 | |
| 1.93152 J | | ND<0 | 1.93152 | 174 | 88 | |
| ND<-0.994252 | | ND<0 | -0.994252 | | 174 | 89 |
| 1.64866 | | ND<0 | 1.64866 | 175 | 89 | |
| ND<-0.994252 U | | ND<0 | -0.994252 | | 175 | 90 |

| | | | | | |
|---|---|---|---|---|---|
| 2.15176 | ND<0 | 2.15176 | 176 | 90 | |
| | | | | | |
| 1.38379 | 1.0116 | 0.37219 | 177 | 90 | |
| 1.72277 | 1.0116 | 0.711166 | 178 | 90 | |
| 1.36098 | 1.0116 | 0.349376 | 179 | 90 | |
| 1.41099 | 1.0116 | 0.399386 | 180 | 90 | |
| 1.79009 | 1.0116 | 0.778491 | 181 | 90 | |
| 1.86408 | 1.0116 | 0.852479 | 182 | 90 | |
| ND<0 | 1.0116 | -1.0116 | 182 | 91 | |
| 1.22378 | 1.0116 | 0.212175 | 183 | 91 | |
| 1.93152 J | 1.0116 | 0.91992 | 184 | 91 | |
| ND<-0.994252 | 1.0116 | -2.00585 | 184 | 92 | |
| 1.64866 | 1.0116 | 0.637058 | 185 | 92 | |
| ND<-0.994252 U | 1.0116 | -2.00585 | 185 | 93 | |
| 2.15176 | 1.0116 | 1.14016 | 186 | 93 | |
| | | | | | |
| 1.72277 | 1.38379 | 0.338975 | 187 | 93 | |
| 1.36098 | 1.38379 | -0.0228147 | 187 | 94 | |
| 1.41099 | 1.38379 | 0.0271957 | 188 | 94 | |
| 1.79009 | 1.38379 | 0.4063 | 189 | 94 | |
| 1.86408 | 1.38379 | 0.480289 | 190 | 94 | |
| ND<0 | 1.38379 | -1.38379 | 190 | 95 | |
| 1.22378 | 1.38379 | -0.160016 | 190 | 96 | |
| 1.93152 J | 1.38379 | 0.54773 | 191 | 96 | |
| ND<-0.994252 | 1.38379 | -2.37804 | 191 | 97 | |
| 1.64866 | 1.38379 | 0.264867 | 192 | 97 | |
| ND<-0.994252 U | 1.38379 | -2.37804 | 192 | 98 | |
| 2.15176 | 1.38379 | 0.767971 | 193 | 98 | |
| | | | | | |
| 1.36098 | 1.72277 | -0.36179 | 193 | 99 | |
| 1.41099 | 1.72277 | -0.31178 | 193 | 100 | |
| 1.79009 | 1.72277 | 0.0673248 | 194 | 100 | |
| 1.86408 | 1.72277 | 0.141314 | 195 | 100 | |
| ND<0 | 1.72277 | -1.72277 | 195 | 101 | |
| 1.22378 | 1.72277 | -0.498991 | 195 | 102 | |
| 1.93152 J | 1.72277 | 0.208755 | 196 | 102 | |
| ND<-0.994252 | 1.72277 | -2.71702 | 196 | 103 | |
| 1.64866 | 1.72277 | -0.074108 | 196 | 104 | |
| ND<-0.994252 U | 1.72277 | -2.71702 | 196 | 105 | |
| 2.15176 | 1.72277 | 0.428996 | 197 | 105 | |
| | | | | | |
| 1.41099 | 1.36098 | 0.0500104 | 198 | 105 | |
| 1.79009 | 1.36098 | 0.429115 | 199 | 105 | |
| 1.86408 | 1.36098 | 0.503104 | 200 | 105 | |
| ND<0 | 1.36098 | -1.36098 | 200 | 106 | |
| 1.22378 | 1.36098 | -0.137201 | 200 | 107 | |
| 1.93152 J | 1.36098 | 0.570545 | 201 | 107 | |
| ND<-0.994252 | 1.36098 | -2.35523 | 201 | 108 | |
| 1.64866 | 1.36098 | 0.287682 | 202 | 108 | |
| ND<-0.994252 U | 1.36098 | -2.35523 | 202 | 109 | |
| 2.15176 | 1.36098 | 0.790786 | 203 | 109 | |
| | | | | | |
| 1.79009 | 1.41099 | 0.379104 | 204 | 109 | |
| 1.86408 | 1.41099 | 0.453093 | 205 | 109 | |
| ND<0 | 1.41099 | -1.41099 | 205 | 110 | |
| 1.22378 | 1.41099 | -0.187212 | 205 | 111 | |
| 1.93152 J | 1.41099 | 0.520534 | 206 | 111 | |
| ND<-0.994252 | 1.41099 | -2.40524 | 206 | 112 | |
| 1.64866 | 1.41099 | 0.237672 | 207 | 112 | |
| ND<-0.994252 U | 1.41099 | -2.40524 | 207 | 113 | |
| 2.15176 | 1.41099 | 0.740775 | 208 | 113 | |

| | | | | |
|---|---|---|---|---|
| 1.86408 | 1.79009 | 0.0739887 | 209 | 113 |
| ND<0 | 1.79009 | -1.79009 | 209 | 114 |
| 1.22378 | 1.79009 | -0.566316 | 209 | 115 |
| 1.93152 J | 1.79009 | 0.14143 | 210 | 115 |
| ND<-0.994252 | 1.79009 | -2.78434 | 210 | 116 |
| 1.64866 | 1.79009 | -0.141433 | 210 | 117 |
| ND<-0.994252 U | 1.79009 | -2.78434 | 210 | 118 |
| 2.15176 | 1.79009 | 0.361671 | 211 | 118 |
| ND<0 | 1.86408 | -1.86408 | 211 | 119 |
| 1.22378 | 1.86408 | -0.640305 | 211 | 120 |
| 1.93152 J | 1.86408 | 0.0674413 | 212 | 120 |
| ND<-0.994252 | 1.86408 | -2.85833 | 212 | 121 |
| 1.64866 | 1.86408 | -0.215422 | 212 | 122 |
| ND<-0.994252 U | 1.86408 | -2.85833 | 212 | 123 |
| 2.15176 | 1.86408 | 0.287682 | 213 | 123 |
| 1.22378 | ND<0 | 1.22378 | 214 | 123 |
| 1.93152 J | ND<0 | 1.93152 | 215 | 123 |
| ND<-0.994252 | ND<0 | -0.994252 | 215 | 124 |
| 1.64866 | ND<0 | 1.64866 | 216 | 124 |
| ND<-0.994252 U | ND<0 | -0.994252 | 216 | 125 |
| 2.15176 | ND<0 | 2.15176 | 217 | 125 |
| 1.93152 J | 1.22378 | 0.707746 | 218 | 125 |
| ND<-0.994252 | 1.22378 | -2.21803 | 218 | 126 |
| 1.64866 | 1.22378 | 0.424883 | 219 | 126 |
| ND<-0.994252 U | 1.22378 | -2.21803 | 219 | 127 |
| 2.15176 | 1.22378 | 0.927987 | 220 | 127 |
| ND<-0.994252 | 1.93152 J | -2.92577 | 220 | 128 |
| 1.64866 | 1.93152 J | -0.282863 | 220 | 129 |
| ND<-0.994252 U | 1.93152 J | -2.92577 | 220 | 130 |
| 2.15176 | 1.93152 J | 0.220241 | 221 | 130 |
| 1.64866 | ND<-0.994252 | Same Date | 221 | 130 |
| ND<-0.994252 U | ND<-0.994252 | 0 | 221 | 130 |
| 2.15176 | ND<-0.994252 | 3.14601 | 222 | 130 |
| ND<-0.994252 U | 1.64866 | -2.64291 | 222 | 131 |
| 2.15176 | 1.64866 | 0.503104 | 223 | 131 |
| 2.15176 | ND<-0.994252 U | Same Date | 223 | 131 |

S Statistic = 223 - 131 = 92

| Tied Group | Value | Members |
|---|---|---|
| 1 | 0 | 13 |
| 2 | -0.994252 | 2 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |
| 11/19/1996 | 1 |
| 12/19/1996 | 1 |
| 3/24/1997 | 1 |

| | | |
|---|---|---|
| 9/24/1997 | | 1 |
| 4/7/1998 | 1 | |
| 9/23/1998 | | 1 |
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 11/16/2009 | | 1 |
| 6/30/2010 | | 2 |
| 11/12/2010 | | 2 |

There are 2 time periods with multiple data

A = 4854
B = 36
C = 1716
D = 0
E = 158
F = 4
a = 56550
b = 219240
c = 1740
Group Variance = 2870.36
Z-Score = 1.69853
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|1.69853| <= 1.97737 indicating no evidence of a trend

# Concentrations (ppb)

## Parameter: Acetone

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 184
Percent Non-Detects: 83.2579%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 18 (100%) | 3/16/1999 | ND<4 | ND<4 |
| | | | 9/23/1999 | ND<4 | ND<4 |
| | | | 3/15/2000 | ND<4 | ND<4 |
| | | | 9/24/2003 | ND<4 | ND<4 |
| | | | 3/11/2004 | ND<4 | ND<4 |
| | | | 10/12/2004 | ND<4 | ND<4 |
| | | | 4/1/2005 | ND<4 | ND<4 |
| | | | 10/25/2005 | ND<4 | ND<4 |
| | | | 4/29/2006 | ND<4 | ND<4 |
| | | | 11/18/2006 | ND<4 | ND<4 |
| | | | 5/23/2007 | ND<4 | ND<4 |
| | | | 11/28/2007 | ND<4 | ND<4 |
| | | | 6/5/2008 | ND<4 | ND<4 |
| | | | 11/20/2008 | ND<4 | ND<4 |
| | | | 6/11/2009 | ND<5 | ND<5 |
| | | | 11/16/2009 | ND<5 | ND<5 |
| | | | 6/30/2010 | ND<5 | ND<5 |
| | | | 11/12/2010 | ND<5 U | ND<5 U |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-11R | 28 | 20 (71.4286%) | 7/20/1995 | ND<4 | ND<4 |
| | | | 8/24/1995 | ND<4 | ND<4 |
| | | | 9/28/1995 | 16 | 16 |
| | | | 10/26/1995 | ND<4 | ND<4 |
| | | | 11/19/1996 | ND<4 | ND<4 |
| | | | 12/19/1996 | ND<4 | ND<4 |
| | | | 3/24/1997 | ND<4 | ND<4 |
| | | | 9/24/1997 | ND<4 | ND<4 |
| | | | 4/7/1998 | ND<4 | ND<4 |
| | | | 9/23/1998 | ND<4 | ND<4 |
| | | | 3/16/1999 | 350 | 350 |
| | | | 9/23/1999 | ND<4 | ND<4 |
| | | | 3/15/2000 | ND<4 | ND<4 |
| | | | 9/24/2003 | 320 | 320 |
| | | | 3/11/2004 | 400 | 400 |
| | | | 10/12/2004 | 2400 | 2400 |
| | | | 4/1/2005 | ND<4 | ND<4 |
| | | | 10/25/2005 | ND<4 | ND<4 |
| | | | 4/29/2006 | ND<4 | ND<4 |
| | | | 11/18/2006 | 13.9 | 13.9 |
| | | | 5/23/2007 | 100 | 100 |
| | | | 11/28/2007 | 6.72 | 6.72 |
| | | | 6/5/2008 | ND<4 | ND<4 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/20/2008 | ND<4 | ND<4 | |
| | | | 6/11/2009 | ND<5 | ND<5 | |
| | | | 11/16/2009 | ND<5 | ND<5 | |
| | | | 6/30/2010 | ND<5 | ND<5 | |
| | | | 11/12/2010 | ND<5 U | ND<5 U | |
| MW-12AR | 18 | 18 (100%) | 3/16/1999 | ND<4 | ND<4 | |
| | | | 9/23/1999 | ND<4 | ND<4 | |
| | | | 3/15/2000 | ND<4 | ND<4 | |
| | | | 9/24/2003 | ND<4 | ND<4 | |
| | | | 3/11/2004 | ND<4 | ND<4 | |
| | | | 10/12/2004 | ND<4 | ND<4 | |
| | | | 4/1/2005 | ND<4 | ND<4 | |
| | | | 10/25/2005 | ND<4 | ND<4 | |
| | | | 4/29/2006 | ND<4 | ND<4 | |
| | | | 11/18/2006 | ND<4 | ND<4 | |
| | | | 5/23/2007 | ND<4 | ND<4 | |
| | | | 11/28/2007 | ND<4 | ND<4 | |
| | | | 6/5/2008 | ND<4 | ND<4 | |
| | | | 11/20/2008 | ND<4 | ND<4 | |
| | | | 6/11/2009 | ND<5 | ND<5 | |
| | | | 11/16/2009 | ND<5 | ND<5 | |
| | | | 6/30/2010 | ND<5 | ND<5 | |
| | | | 11/12/2010 | ND<5 U | ND<5 U | |
| MW-12BR | 18 | 18 (100%) | 3/16/1999 | ND<4 | ND<4 | |
| | | | 9/23/1999 | ND<4 | ND<4 | |
| | | | 3/15/2000 | ND<4 | ND<4 | |
| | | | 9/24/2003 | ND<4 | ND<4 | |
| | | | 3/11/2004 | ND<4 | ND<4 | |
| | | | 10/12/2004 | ND<4 | ND<4 | |
| | | | 4/1/2005 | ND<4 | ND<4 | |
| | | | 10/25/2005 | ND<4 | ND<4 | |
| | | | 4/29/2006 | ND<4 | ND<4 | |
| | | | 11/18/2006 | ND<4 | ND<4 | |
| | | | 5/23/2007 | ND<4 | ND<4 | |
| | | | 11/28/2007 | ND<4 | ND<4 | |
| | | | 6/5/2008 | ND<4 | ND<4 | |
| | | | 11/20/2008 | ND<4 | ND<4 | |
| | | | 6/11/2009 | ND<5 | ND<5 | |
| | | | 11/16/2009 | ND<5 | ND<5 | |
| | | | 6/30/2010 | ND<5 | ND<5 | |
| | | | 11/12/2010 | ND<5 U | ND<5 U | |
| MW-6 | 28 | 25 (89.2857%) | 7/20/1995 | ND<4 | ND<4 | |
| | | | 8/24/1995 | 3.9 J | 3.9 J | |
| | | | 9/28/1995 | ND<4 | ND<4 | |
| | | | 10/26/1995 | ND<4 | ND<4 | |
| | | | 11/19/1996 | ND<4 | ND<4 | |
| | | | 12/19/1996 | ND<4 | ND<4 | |
| | | | 3/24/1997 | ND<4 | ND<4 | |
| | | | 9/24/1997 | ND<4 | ND<4 | |
| | | | 4/7/1998 | ND<4 | ND<4 | |
| | | | 9/23/1998 | ND<4 | ND<4 | |
| | | | 3/16/1999 | ND<4 | ND<4 | |
| | | | 9/23/1999 | ND<4 | ND<4 | |
| | | | 3/15/2000 | ND<4 | ND<4 | |
| | | | 9/24/2003 | ND<4 | ND<4 | |
| | | | 3/11/2004 | ND<4 | ND<4 | |
| | | | 10/12/2004 | ND<4 | ND<4 | |
| | | | 4/1/2005 | ND<4 | ND<4 | |
| | | | 10/25/2005 | 2.2 J | 2.2 J | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 4/29/2006 | ND<4 | ND<4 | |
| | | | 11/18/2006 | ND<4 | ND<4 | |
| | | | 5/23/2007 | ND<4 | ND<4 | |
| | | | 11/28/2007 | ND<4 | ND<4 | |
| | | | 6/5/2008 | ND<4 | ND<4 | |
| | | | 11/20/2008 | ND<4 | ND<4 | |
| | | | 6/11/2009 | 7.6 J | 7.6 J | |
| | | | 11/16/2009 | ND<5 | ND<5 | |
| | | | 6/30/2010 | ND<5 | ND<5 | |
| | | | 11/12/2010 | ND<5 U | ND<5 U | |
| MW-7 | 28 | 15 (53.5714%) | 7/20/1995 | ND<4 | ND<4 | |
| | | | 8/24/1995 | ND<4 | ND<4 | |
| | | | 9/28/1995 | ND<4 | ND<4 | |
| | | | 10/26/1995 | ND<4 | ND<4 | |
| | | | 11/19/1996 | ND<4 | ND<4 | |
| | | | 12/19/1996 | ND<4 | ND<4 | |
| | | | 3/24/1997 | 260 | 260 | |
| | | | 9/24/1997 | ND<4 | ND<4 | |
| | | | 4/7/1998 | ND<4 | ND<4 | |
| | | | 9/23/1998 | ND<4 | ND<4 | |
| | | | 3/16/1999 | 4260 | 4260 | |
| | | | 9/23/1999 | 95.4 | 95.4 | |
| | | | 3/15/2000 | 130 | 130 | |
| | | | 9/24/2003 | ND<4 | ND<4 | |
| | | | 3/11/2004 | ND<4 | ND<4 | |
| | | | 10/12/2004 | 200 | 200 | |
| | | | 4/1/2005 | ND<4 | ND<4 | |
| | | | 10/25/2005 | 6.97 | 6.97 | |
| | | | 4/29/2006 | ND<4 | ND<4 | |
| | | | 11/18/2006 | 1.34 J | 1.34 J | |
| | | | 5/23/2007 | ND<4 | ND<4 | |
| | | | 11/28/2007 | 11.6 | 11.6 | |
| | | | 6/5/2008 | 932 | 932 | |
| | | | 11/20/2008 | 24 | 24 | |
| | | | 6/11/2009 | 52 | 52 | |
| | | | 11/16/2009 | 6 J | 6 J | |
| | | | 6/30/2010 | ND<5 | ND<5 | |
| | | | 11/12/2010 | 8.6 J | 8.6 J | |
| MW-10 | 28 | 26 (92.8571%) | 7/20/1995 | ND<4 | ND<4 | |
| | | | 8/24/1995 | ND<4 | ND<4 | |
| | | | 9/28/1995 | ND<4 | ND<4 | |
| | | | 10/26/1995 | ND<4 | ND<4 | |
| | | | 11/19/1996 | ND<4 | ND<4 | |
| | | | 12/19/1996 | ND<4 | ND<4 | |
| | | | 3/24/1997 | ND<4 | ND<4 | |
| | | | 9/24/1997 | ND<4 | ND<4 | |
| | | | 4/7/1998 | ND<4 | ND<4 | |
| | | | 9/23/1998 | ND<4 | ND<4 | |
| | | | 3/16/1999 | 67.2 | 67.2 | |
| | | | 9/23/1999 | ND<4 | ND<4 | |
| | | | 3/15/2000 | ND<4 | ND<4 | |
| | | | 9/24/2003 | ND<4 | ND<4 | |
| | | | 3/11/2004 | ND<4 | ND<4 | |
| | | | 10/12/2004 | ND<4 | ND<4 | |
| | | | 4/1/2005 | ND<4 | ND<4 | |
| | | | 10/25/2005 | ND<4 | ND<4 | |
| | | | 4/29/2006 | ND<4 | ND<4 | |
| | | | 11/18/2006 | ND<4 | ND<4 | |
| | | | 5/23/2007 | ND<4 | ND<4 | |
| | | | 11/28/2007 | ND<4 | ND<4 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 6/5/2008 | ND<4 | ND<4 | |
| | | | 11/20/2008 | | ND<4 | ND<4 |
| | | | 6/11/2009 | | ND<5 | ND<5 |
| | | | 11/16/2009 | | 26 | 26 |
| | | | 6/30/2010 | | ND<5 | ND<5 |
| | | | 11/12/2010 | | ND<5 U | ND<5 U |
| MW-8 | 27 | 20 (74.0741%) | 7/20/1995 | | ND<4 | ND<4 |
| | | | 8/24/1995 | | ND<4 | ND<4 |
| | | | 9/28/1995 | | ND<4 | ND<4 |
| | | | 10/26/1995 | | ND<4 | ND<4 |
| | | | 11/19/1996 | | ND<4 | ND<4 |
| | | | 12/19/1996 | | ND<4 | ND<4 |
| | | | 3/24/1997 | | ND<4 | ND<4 |
| | | | 9/24/1997 | | ND<4 | ND<4 |
| | | | 4/7/1998 | ND<4 | ND<4 | |
| | | | 9/23/1998 | | ND<4 | ND<4 |
| | | | 3/16/1999 | | 35.2 | 35.2 |
| | | | 9/23/1999 | | 136 | 136 |
| | | | 3/15/2000 | | ND<4 | ND<4 |
| | | | 9/24/2003 | | ND<4 | ND<4 |
| | | | 3/11/2004 | | ND<4 | ND<4 |
| | | | 10/12/2004 | | 160 | 160 |
| | | | 4/1/2005 | ND<4 | ND<4 | |
| | | | 10/25/2005 | | 1.27 J | 1.27 J |
| | | | 4/29/2006 | | ND<4 | ND<4 |
| | | | 11/18/2006 | | ND<4 | ND<4 |
| | | | 5/23/2007 | | ND<4 | ND<4 |
| | | | 11/28/2007 | | ND<4 | ND<4 |
| | | | 6/5/2008 | ND<4 | ND<4 | |
| | | | 11/20/2008 | | 9.72 | 9.72 |
| | | | 6/11/2009 | | 9.8 J | 9.8 J |
| | | | 6/30/2010 | | 5.3 J | 5.3 J |
| | | | 11/12/2010 | | ND<5 U | ND<5 U |
| MW-9 | 28 | 24 (85.7143%) | 7/20/1995 | | ND<4 | ND<4 |
| | | | 8/24/1995 | | 10 | 10 |
| | | | 9/28/1995 | | ND<4 | ND<4 |
| | | | 10/26/1995 | | ND<4 | ND<4 |
| | | | 11/19/1996 | | ND<4 | ND<4 |
| | | | 12/19/1996 | | ND<4 | ND<4 |
| | | | 3/24/1997 | | ND<4 | ND<4 |
| | | | 9/24/1997 | | ND<4 | ND<4 |
| | | | 4/7/1998 | 120 | 120 | |
| | | | 9/23/1998 | | ND<4 | ND<4 |
| | | | 3/16/1999 | | 38.3 | 38.3 |
| | | | 9/23/1999 | | ND<4 | ND<4 |
| | | | 3/15/2000 | | ND<4 | ND<4 |
| | | | 9/24/2003 | | ND<4 | ND<4 |
| | | | 3/11/2004 | | ND<4 | ND<4 |
| | | | 10/12/2004 | | ND<4 | ND<4 |
| | | | 4/1/2005 | ND<4 | ND<4 | |
| | | | 10/25/2005 | | ND<4 | ND<4 |
| | | | 4/29/2006 | | ND<4 | ND<4 |
| | | | 11/18/2006 | | ND<4 | ND<4 |
| | | | 5/23/2007 | | ND<4 | ND<4 |
| | | | 11/28/2007 | | 2.74 J | 2.74 J |
| | | | 6/5/2008 | ND<4 | ND<4 | |
| | | | 11/20/2008 | | ND<4 | ND<4 |
| | | | 6/11/2009 | | ND<5 | ND<5 |
| | | | 11/16/2009 | | ND<5 | ND<5 |
| | | | 6/30/2010 | | ND<5 | ND<5 |

| | | | |
|---|---|---|---|
| 11/12/2010 | ND<5 U | ND<5 U | |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. Original |
|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: Acetone

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 1.27 | -2.65209 | 7.03356 | -3.36815 |
| 2 | 1.34 | -2.36561 | 12.6297 | -6.53807 |
| 3 | 2 | -2.22621 | 17.5857 | -10.9905 |
| 4 | 2 | -2.09693 | 21.9828 | -15.1843 |
| 5 | 2 | -2.01409 | 26.0394 | -19.2125 |
| 6 | 2 | -1.92684 | 29.7521 | -23.0662 |
| 7 | 2 | -1.86629 | 33.2351 | -26.7988 |
| 8 | 2 | -1.79912 | 36.472 | -30.397 |
| 9 | 2 | -1.75069 | 39.5369 | -33.8984 |
| 10 | 2 | -1.6954 | 42.4112 | -37.2892 |
| 11 | 2 | -1.65463 | 45.149 | -40.5984 |
| 12 | 2 | -1.60725 | 47.7323 | -43.8129 |
| 13 | 2 | -1.57179 | 50.2028 | -46.9565 |
| 14 | 2 | -1.53007 | 52.5439 | -50.0167 |
| 15 | 2 | -1.49852 | 54.7894 | -53.0137 |
| 16 | 2 | -1.46106 | 56.9241 | -55.9358 |
| 17 | 2 | -1.4325 | 58.9762 | -58.8008 |
| 18 | 2 | -1.39838 | 60.9316 | -61.5976 |
| 19 | 2 | -1.3722 | 62.8146 | -64.342 |
| 20 | 2 | -1.34075 | 64.6122 | -67.0235 |
| 21 | 2 | -1.31652 | 66.3454 | -69.6565 |
| 22 | 2 | -1.28727 | 68.0025 | -72.2311 |
| 23 | 2 | -1.26464 | 69.6018 | -74.7603 |
| 24 | 2 | -1.23724 | 71.1326 | -77.2348 |
| 25 | 2 | -1.21596 | 72.6111 | -79.6667 |
| 26 | 2 | -1.19012 | 74.0275 | -82.047 |
| 27 | 2 | -1.17 | 75.3964 | -84.387 |
| 28 | 2 | -1.1455 | 76.7086 | -86.678 |
| 29 | 2 | -1.12639 | 77.9774 | -88.9308 |
| 30 | 2 | -1.10306 | 79.1941 | -91.1369 |
| 31 | 2 | -1.08482 | 80.371 | -93.3065 |
| 32 | 2 | -1.06252 | 81.4999 | -95.4316 |
| 33 | 2 | -1.04505 | 82.592 | -97.5217 |
| 34 | 2 | -1.02365 | 83.6399 | -99.569 |
| 35 | 2 | -1.00687 | 84.6537 | -101.583 |
| 36 | 2 | -0.986272 | 85.6264 | -103.555 |
| 37 | 2 | -0.970094 | 86.5675 | -105.495 |
| 38 | 2 | -0.950222 | 87.4704 | -107.396 |
| 39 | 2 | -0.93459 | 88.3439 | -109.265 |
| 40 | 2 | -0.915365 | 89.1818 | -111.096 |
| 41 | 2 | -0.900227 | 89.9922 | -112.896 |
| 42 | 2 | -0.881587 | 90.7694 | -114.659 |
| 43 | 2 | -0.866894 | 91.5209 | -116.393 |
| 44 | 2 | -0.848786 | 92.2413 | -118.091 |
| 45 | 2 | -0.834498 | 92.9377 | -119.76 |
| 46 | 2 | -0.816874 | 93.605 | -121.394 |
| 47 | 2 | -0.802956 | 94.2497 | -122.999 |
| 48 | 2 | -0.785774 | 94.8672 | -124.571 |
| 49 | 2 | -0.772193 | 95.4634 | -126.115 |

| | | | | |
|---|---|---|---|---|
| 50 | 2 | -0.755415 | 96.0341 | -127.626 |
| 51 | 2 | -0.742143 | 96.5849 | -129.11 |
| 52 | 2 | -0.725736 | 97.1116 | -130.562 |
| 53 | 2 | -0.712751 | 97.6196 | -131.987 |
| 54 | 2 | -0.696684 | 98.1049 | -133.381 |
| 55 | 2 | -0.683969 | 8.5727 | -134.749 |
| 56 | 2 | -0.668209 | 99.0192 | -136.085 |
| 57 | 2 | -0.655726 | 99.4492 | -137.397 |
| 58 | 2 | -0.640266 | 99.8592 | -138.677 |
| 59 | 2 | -0.628006 | 100.254 | -139.933 |
| 60 | 2 | -0.612813 | 100.629 | -141.159 |
| 61 | 2 | -0.60076 | 100.99 | -142.36 |
| 62 | 2 | -0.585815 | 101.333 | -143.532 |
| 63 | 2 | -0.573953 | 101.663 | -144.68 |
| 64 | 2 | -0.559237 | 101.975 | -145.798 |
| 65 | 2 | -0.547551 | 102.275 | -146.893 |
| 66 | 2 | -0.533048 | 102.559 | -147.96 |
| 67 | 2 | -0.521527 | 102.831 | -149.003 |
| 68 | 2 | -0.507221 | 103.089 | -150.017 |
| 69 | 2 | -0.49585 | 103.334 | -151.009 |
| 70 | 2 | -0.481728 | 103.566 | -151.972 |
| 71 | 2 | -0.470498 | 103.788 | -152.913 |
| 72 | 2 | -0.456542 | 103.996 | -153.826 |
| 73 | 2 | -0.445443 | 104.195 | -154.717 |
| 74 | 2 | -0.431644 | 104.381 | -155.58 |
| 75 | 2 | -0.420664 | 104.558 | -156.422 |
| 76 | 2 | -0.40701 | 104.724 | -157.236 |
| 77 | 2 | -0.396142 | 104.881 | -158.028 |
| 78 | 2 | -0.382622 | 105.027 | -158.793 |
| 79 | 2 | -0.371856 | 105.165 | -159.537 |
| 80 | 2 | -0.358459 | 105.294 | -160.254 |
| 81 | 2 | -0.347787 | 105.415 | -160.95 |
| 82 | 2 | -0.334503 | 105.527 | -161.619 |
| 83 | 2 | -0.323919 | 105.632 | -162.266 |
| 84 | 2 | -0.310738 | 105.728 | -162.888 |
| 85 | 2 | -0.300232 | 105.818 | -163.488 |
| 86 | 2 | -0.287147 | 105.901 | -164.063 |
| 87 | 2 | -0.276714 | 105.977 | -164.616 |
| 88 | 2 | -0.263715 | 106.047 | -165.143 |
| 89 | 2 | -0.253347 | 106.111 | -165.65 |
| 90 | 2 | -0.240426 | 106.169 | -166.131 |
| 91 | 2 | -0.230118 | 106.222 | -166.591 |
| 92 | 2 | -0.217267 | 106.269 | -167.026 |
| 93 | 2 | -0.207012 | 106.312 | -167.44 |
| 94 | 2 | -0.194225 | 106.35 | -167.828 |
| 95 | 2 | -0.184017 | 106.383 | -168.196 |
| 96 | 2 | -0.171285 | 106.413 | -168.539 |
| 97 | 2 | -0.161119 | 106.439 | -168.861 |
| 98 | 2 | -0.148434 | 106.461 | -169.158 |
| 99 | 2 | -0.138305 | 106.48 | -169.435 |
| 100 | 2 | -0.125661 | 106.496 | -169.686 |
| 101 | 2 | -0.115562 | 106.509 | -169.917 |
| 102 | 2 | -0.102953 | 106.52 | -170.123 |
| 103 | 2 | -0.0928787 | 106.528 | -170.309 |
| 104 | 2 | -0.0802981 | 106.535 | -170.469 |
| 105 | 2 | -0.0702426 | 106.54 | -170.61 |
| 106 | 2 | -0.0576847 | 106.543 | -170.725 |
| 107 | 2 | -0.0476439 | 106.545 | -170.82 |
| 108 | 2 | -0.0350997 | 106.546 | -170.891 |
| 109 | 2 | -0.0250691 | 106.547 | -170.941 |
| 110 | 2 | -0.0125328 | 106.547 | -170.966 |
| 111 | 2 | 0 | 106.547 | -170.966 |

| | | | | |
|---|---|---|---|---|
| 112 | 2 | 0.0125328 | 106.547 | -170.941 |
| 113 | 2 | 0.0250691 | 106.548 | -170.891 |
| 114 | 2 | 0.0350997 | 106.549 | -170.82 |
| 115 | 2 | 0.0476439 | 106.551 | -170.725 |
| 116 | 2 | 0.0576847 | 106.555 | -170.61 |
| 117 | 2 | 0.0702426 | 106.56 | -170.469 |
| 118 | 2 | 0.0802981 | 106.566 | -170.309 |
| 119 | 2 | 0.0928787 | 106.575 | -170.123 |
| 120 | 2 | 0.102953 | 106.585 | -169.917 |
| 121 | 2 | 0.115562 | 106.599 | -169.686 |
| 122 | 2 | 0.125661 | 106.615 | -169.435 |
| 123 | 2 | 0.138305 | 106.634 | -169.158 |
| 124 | 2 | 0.148434 | 106.656 | -168.861 |
| 125 | 2 | 0.161119 | 106.682 | -168.539 |
| 126 | 2 | 0.171285 | 106.711 | -168.196 |
| 127 | 2 | 0.184017 | 106.745 | -167.828 |
| 128 | 2 | 0.194225 | 106.783 | -167.44 |
| 129 | 2 | 0.207012 | 106.825 | -167.026 |
| 130 | 2 | 0.217267 | 106.873 | -166.591 |
| 131 | 2 | 0.230118 | 106.926 | -166.131 |
| 132 | 2 | 0.240426 | 106.983 | -165.65 |
| 133 | 2 | 0.253347 | 107.048 | -165.143 |
| 134 | 2 | 0.263715 | 107.117 | -164.616 |
| 135 | 2 | 0.276714 | 107.194 | -164.063 |
| 136 | 2 | 0.287147 | 107.276 | -163.488 |
| 137 | 2 | 0.300232 | 107.366 | -162.888 |
| 138 | 2 | 0.310738 | 107.463 | -162.266 |
| 139 | 2 | 0.323919 | 107.568 | -161.619 |
| 140 | 2 | 0.334503 | 107.68 | -160.95 |
| 141 | 2 | 0.347787 | 107.801 | -160.254 |
| 142 | 2 | 0.358459 | 107.929 | -159.537 |
| 143 | 2 | 0.371856 | 108.067 | -158.793 |
| 144 | 2 | 0.382622 | 108.214 | -158.028 |
| 145 | 2 | 0.396142 | 108.371 | -157.236 |
| 146 | 2 | 0.40701 | 108.536 | -156.422 |
| 147 | 2 | 0.420664 | 108.713 | -155.58 |
| 148 | 2 | 0.431644 | 108.9 | -154.717 |
| 149 | 2 | 0.445443 | 109.098 | -153.826 |
| 150 | 2 | 0.456542 | 109.307 | -152.913 |
| 151 | 2 | 0.470498 | 109.528 | -151.972 |
| 152 | 2 | 0.481728 | 109.76 | -151.009 |
| 153 | 2 | 0.49585 | 110.006 | -150.017 |
| 154 | 2 | 0.507221 | 110.263 | -149.003 |
| 155 | 2 | 0.521527 | 110.535 | -147.96 |
| 156 | 2 | 0.533048 | 110.819 | -146.893 |
| 157 | 2 | 0.547551 | 111.119 | -145.798 |
| 158 | 2 | 0.559237 | 111.432 | -144.68 |
| 159 | 2.2 | 0.573953 | 111.761 | -143.417 |
| 160 | 2.5 | 0.585815 | 112.104 | -141.953 |
| 161 | 2.5 | 0.60076 | 112.465 | -140.451 |
| 162 | 2.5 | 0.612813 | 112.841 | -138.919 |
| 163 | 2.5 | 0.628006 | 113.235 | -137.349 |
| 164 | 2.5 | 0.640266 | 113.645 | -135.748 |
| 165 | 2.5 | 0.655726 | 114.075 | -134.109 |
| 166 | 2.5 | 0.668209 | 114.522 | -132.438 |
| 167 | 2.5 | 0.68396 | 114.989 | -130.728 |
| 168 | 2.5 | 0.696684 | 115.475 | -128.987 |
| 169 | 2.5 | 0.712751 | 115.983 | -127.205 |
| 170 | 2.5 | 0.725736 | 116.51 | -125.39 |
| 171 | 2.5 | 0.742143 | 117.06 | -123.535 |
| 172 | 2.5 | 0.755415 | 117.631 | -121.646 |
| 173 | 2.5 | 0.772193 | 118.227 | -119.716 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 2.5 | 0.785774 | | 118.845 | -117.752 |
| 175 | 2.5 | 0.802956 | | 119.489 | -115.744 |
| 176 | 2.5 | 0.816874 | | 120.157 | -113.702 |
| 177 | 2.5 | 0.834498 | | 120.853 | -111.616 |
| 178 | 2.5 | 0.848786 | | 121.574 | -109.494 |
| 179 | 2.5 | 0.866894 | | 122.325 | -107.327 |
| 180 | 2.5 | 0.881587 | | 123.102 | -105.123 |
| 181 | 2.5 | 0.900227 | | 123.913 | -102.872 |
| 182 | 2.5 | 0.915365 | | 124.751 | -100.584 |
| 183 | 2.5 | 0.93459 | 125.624 | -98.2471 | |
| 184 | 2.5 | 0.950222 | | 126.527 | -95.8715 |
| 185 | 2.5 | 0.970094 | | 127.468 | -93.4463 |
| 186 | 2.5 | 0.986272 | | 128.441 | -90.9806 |
| 187 | 2.5 | 1.00687 | 129.455 | -88.4635 | |
| 188 | 2.74 | 1.02365 | 130.502 | -85.6586 | |
| 189 | 3.9 | 1.04505 | 131.594 | -81.583 | |
| 190 | 5.3 | 1.06252 | 132.723 | -75.9516 | |
| 191 | 6 | 1.08482 | 133.9 | -69.4427 | |
| 192 | 6.72 | 1.10306 | 135.117 | -62.0301 | |
| 193 | 6.97 | 1.12639 | 136.386 | -54.1791 | |
| 194 | 7.6 | 1.1455 | 137.698 | -45.4733 | |
| 195 | 8.6 | 1.17 | 139.067 | -35.4113 | |
| 196 | 9.72 | 1.19012 | 140.483 | -23.8433 | |
| 197 | 9.8 | 1.21596 | 141.962 | -11.9269 | |
| 198 | 10 | 1.23724 | 143.493 | 0.445432 | |
| 199 | 11.6 | 1.26464 | 145.092 | 15.1153 | |
| 200 | 13.9 | 1.28727 | 146.749 | 33.0083 | |
| 201 | 16 | 1.31652 | 148.482 | 54.0727 | |
| 202 | 24 | 1.34075 | 150.28 | 86.2508 | |
| 203 | 26 | 1.3722 | 152.163 | 121.928 | |
| 204 | 35.2 | 1.39838 | 154.118 | 171.151 | |
| 205 | 38.3 | 1.4325 | 156.17 | 226.016 | |
| 206 | 52 | 1.46106 | 158.305 | 301.991 | |
| 207 | 67.2 | 1.49852 | 160.551 | 402.691 | |
| 208 | 95.4 | 1.53007 | 162.892 | 548.659 | |
| 209 | 100 | 1.57179 | 165.362 | 705.838 | |
| 210 | 120 | 1.60725 | 167.945 | 898.708 | |
| 211 | 130 | 1.65463 | 170.683 | 1113.81 | |
| 212 | 136 | 1.6954 | 173.558 | 1344.38 | |
| 213 | 160 | 1.75069 | 176.622 | 1624.49 | |
| 214 | 200 | 1.79912 | 179.859 | 1984.32 | |
| 215 | 260 | 1.86629 | 183.342 | 2469.55 | |
| 216 | 320 | 1.92684 | 187.055 | 3086.14 | |
| 217 | 350 | 2.01409 | 191.112 | 3791.07 | |
| 218 | 400 | 2.09693 | 195.509 | 4629.85 | |
| 219 | 932 | 2.22621 | 200.465 | 6704.67 | |
| 220 | 2400 | 2.36561 | 206.061 | 12382.1 | |
| 221 | 4260 | 2.65209 | 213.094 | 23680 | |

Data Set Standard Deviation = 336.201
Numerator = 5.60744e+008
Denominator = 5.29899e+009
W Statistic = 0.105821 = 5.60744e+008 / 5.29899e+009

5% Critical value of 0.976 exceeds 0.105821
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.105821
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: Acetone

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.239017 | -2.65209 | 7.03356 | -0.633894 |
| 2 | 0.29267 | -2.36561 | 12.6297 | -1.32624 |
| 3 | 0.693147 | -2.22621 | 17.5857 | -2.86933 |
| 4 | 0.693147 | -2.09693 | 21.9828 | -4.32281 |
| 5 | 0.693147 | -2.01409 | 26.0394 | -5.71887 |
| 6 | 0.693147 | -1.92684 | 29.7521 | -7.05445 |
| 7 | 0.693147 | -1.86629 | 33.2351 | -8.34807 |
| 8 | 0.693147 | -1.79912 | 36.472 | -9.59512 |
| 9 | 0.693147 | -1.75069 | 39.5369 | -10.8086 |
| 10 | 0.693147 | -1.6954 | 42.4112 | -11.9838 |
| 11 | 0.693147 | -1.65463 | 45.149 | -13.1307 |
| 12 | 0.693147 | -1.60725 | 47.7323 | -14.2447 |
| 13 | 0.693147 | -1.57179 | 50.2028 | -15.3342 |
| 14 | 0.693147 | -1.53007 | 52.5439 | -16.3948 |
| 15 | 0.693147 | -1.49852 | 54.7894 | -17.4335 |
| 16 | 0.693147 | -1.46106 | 56.9241 | -18.4462 |
| 17 | 0.693147 | -1.4325 | 58.9762 | -19.4391 |
| 18 | 0.693147 | -1.39838 | 60.9316 | -20.4084 |
| 19 | 0.693147 | -1.3722 | 62.8146 | -21.3595 |
| 20 | 0.693147 | -1.34075 | 64.6122 | -22.2889 |
| 21 | 0.693147 | -1.31652 | 66.3454 | -23.2014 |
| 22 | 0.693147 | -1.28727 | 68.0025 | -24.0937 |
| 23 | 0.693147 | -1.26464 | 69.6018 | -24.9703 |
| 24 | 0.693147 | -1.23724 | 71.1326 | -25.8279 |
| 25 | 0.693147 | -1.21596 | 72.6111 | -26.6707 |
| 26 | 0.693147 | -1.19012 | 74.0275 | -27.4956 |
| 27 | 0.693147 | -1.17 | 75.3964 | -28.3066 |
| 28 | 0.693147 | -1.1455 | 76.7086 | -29.1006 |
| 29 | 0.693147 | -1.12639 | 77.9774 | -29.8814 |
| 30 | 0.693147 | -1.10306 | 79.1941 | -30.646 |
| 31 | 0.693147 | -1.08482 | 80.371 | -31.3979 |
| 32 | 0.693147 | -1.06252 | 81.4999 | -32.1344 |
| 33 | 0.693147 | -1.04505 | 82.592 | -32.8588 |
| 34 | 0.693147 | -1.02365 | 83.6399 | -33.5683 |
| 35 | 0.693147 | -1.00687 | 84.6537 | -34.2662 |
| 36 | 0.693147 | -0.986272 | 85.6264 | -34.9498 |
| 37 | 0.693147 | -0.970094 | 86.5675 | -35.6222 |
| 38 | 0.693147 | -0.950222 | 87.4704 | -36.2809 |
| 39 | 0.693147 | -0.93459 | 88.3439 | -36.9287 |
| 40 | 0.693147 | -0.915365 | 89.1818 | -37.5632 |
| 41 | 0.693147 | -0.900227 | 89.9922 | -38.1872 |
| 42 | 0.693147 | -0.881587 | 90.7694 | -38.7982 |
| 43 | 0.693147 | -0.866894 | 91.5209 | -39.3991 |
| 44 | 0.693147 | -0.848786 | 92.2413 | -39.9875 |
| 45 | 0.693147 | -0.834498 | 92.9377 | -40.5659 |
| 46 | 0.693147 | -0.816874 | 93.605 | -41.1321 |
| 47 | 0.693147 | -0.802956 | 94.2497 | -41.6887 |
| 48 | 0.693147 | -0.785774 | 94.8672 | -42.2333 |
| 49 | 0.693147 | -0.772193 | 95.4634 | -42.7686 |

| | | | | |
|---|---|---|---|---|
| 50 | 0.693147 | -0.755415 | 96.0341 | -43.2922 |
| 51 | 0.693147 | -0.742143 | 96.5849 | -43.8066 |
| 52 | 0.693147 | -0.725736 | 97.1116 | -44.3096 |
| 53 | 0.693147 | -0.712751 | 97.6196 | -44.8037 |
| 54 | 0.693147 | -0.696684 | 98.1049 | -45.2866 |
| 55 | 0.693147 | -0.683969 | 8.5727 | -45.7607 |
| 56 | 0.693147 | -0.668209 | 99.0192 | -46.2238 |
| 57 | 0.693147 | -0.655726 | 99.4492 | -46.6784 |
| 58 | 0.693147 | -0.640266 | 99.8592 | -47.1222 |
| 59 | 0.693147 | -0.628006 | 100.254 | -47.5575 |
| 60 | 0.693147 | -0.612813 | 100.629 | -47.9822 |
| 61 | 0.693147 | -0.60076 | 100.99 | -48.3986 |
| 62 | 0.693147 | -0.585815 | 101.333 | -48.8047 |
| 63 | 0.693147 | -0.573953 | 101.663 | -49.2025 |
| 64 | 0.693147 | -0.559237 | 101.975 | -49.5902 |
| 65 | 0.693147 | -0.547551 | 102.275 | -49.9697 |
| 66 | 0.693147 | -0.533048 | 102.559 | -50.3392 |
| 67 | 0.693147 | -0.521527 | 102.831 | -50.7007 |
| 68 | 0.693147 | -0.507221 | 103.089 | -51.0523 |
| 69 | 0.693147 | -0.49585 | 103.334 | -51.3959 |
| 70 | 0.693147 | -0.481728 | 103.566 | -51.7299 |
| 71 | 0.693147 | -0.470498 | 103.788 | -52.056 |
| 72 | 0.693147 | -0.456542 | 103.996 | -52.3724 |
| 73 | 0.693147 | -0.445443 | 104.195 | -52.6812 |
| 74 | 0.693147 | -0.431644 | 104.381 | -52.9804 |
| 75 | 0.693147 | -0.420664 | 104.558 | -53.272 |
| 76 | 0.693147 | -0.40701 | 104.724 | -53.5541 |
| 77 | 0.693147 | -0.396142 | 104.881 | -53.8287 |
| 78 | 0.693147 | -0.382622 | 105.027 | -54.0939 |
| 79 | 0.693147 | -0.371856 | 105.165 | -54.3516 |
| 80 | 0.693147 | -0.358459 | 105.294 | -54.6001 |
| 81 | 0.693147 | -0.347787 | 105.415 | -54.8412 |
| 82 | 0.693147 | -0.334503 | 105.527 | -55.073 |
| 83 | 0.693147 | -0.323919 | 105.632 | -55.2975 |
| 84 | 0.693147 | -0.310738 | 105.728 | -55.5129 |
| 85 | 0.693147 | -0.300232 | 105.818 | -55.721 |
| 86 | 0.693147 | -0.287147 | 105.901 | -55.9201 |
| 87 | 0.693147 | -0.276714 | 105.977 | -56.1119 |
| 88 | 0.693147 | -0.263715 | 106.047 | -56.2947 |
| 89 | 0.693147 | -0.253347 | 106.111 | -56.4703 |
| 90 | 0.693147 | -0.240426 | 106.169 | -56.6369 |
| 91 | 0.693147 | -0.230118 | 106.222 | -56.7964 |
| 92 | 0.693147 | -0.217267 | 106.269 | -56.947 |
| 93 | 0.693147 | -0.207012 | 106.312 | -57.0905 |
| 94 | 0.693147 | -0.194225 | 106.35 | -57.2251 |
| 95 | 0.693147 | -0.184017 | 106.383 | -57.3527 |
| 96 | 0.693147 | -0.171285 | 106.413 | -57.4714 |
| 97 | 0.693147 | -0.161119 | 106.439 | -57.5831 |
| 98 | 0.693147 | -0.148434 | 106.461 | -57.686 |
| 99 | 0.693147 | -0.138305 | 106.48 | -57.7819 |
| 100 | 0.693147 | -0.125661 | 106.496 | -57.869 |
| 101 | 0.693147 | -0.115562 | 106.509 | -57.9491 |
| 102 | 0.693147 | -0.102953 | 106.52 | -58.0204 |
| 103 | 0.693147 | -0.0928787 | 106.528 | -58.0848 |
| 104 | 0.693147 | -0.0802981 | 106.535 | -58.1405 |
| 105 | 0.693147 | -0.0702426 | 106.54 | -58.1891 |
| 106 | 0.693147 | -0.0576847 | 106.543 | -58.2291 |
| 107 | 0.693147 | -0.0476439 | 106.545 | -58.2622 |
| 108 | 0.693147 | -0.0350997 | 106.546 | -58.2865 |
| 109 | 0.693147 | -0.0250691 | 106.547 | -58.3039 |
| 110 | 0.693147 | -0.0125328 | 106.547 | -58.3125 |
| 111 | 0.693147 | 0 | 106.547 | -58.3125 |

| | | | | |
|---|---|---|---|---|
| 112 | 0.693147 | 0.0125328 | 106.547 | -58.3039 |
| 113 | 0.693147 | 0.0250691 | 106.548 | -58.2865 |
| 114 | 0.693147 | 0.0350997 | 106.549 | -58.2622 |
| 115 | 0.693147 | 0.0476439 | 106.551 | -58.2291 |
| 116 | 0.693147 | 0.0576847 | 106.555 | -58.1891 |
| 117 | 0.693147 | 0.0702426 | 106.56 | -58.1405 |
| 118 | 0.693147 | 0.0802981 | 106.566 | -58.0848 |
| 119 | 0.693147 | 0.0928787 | 106.575 | -58.0204 |
| 120 | 0.693147 | 0.102953 | 106.585 | -57.9491 |
| 121 | 0.693147 | 0.115562 | 106.599 | -57.869 |
| 122 | 0.693147 | 0.125661 | 106.615 | -57.7819 |
| 123 | 0.693147 | 0.138305 | 106.634 | -57.686 |
| 124 | 0.693147 | 0.148434 | 106.656 | -57.5831 |
| 125 | 0.693147 | 0.161119 | 106.682 | -57.4714 |
| 126 | 0.693147 | 0.171285 | 106.711 | -57.3527 |
| 127 | 0.693147 | 0.184017 | 106.745 | -57.2251 |
| 128 | 0.693147 | 0.194225 | 106.783 | -57.0905 |
| 129 | 0.693147 | 0.207012 | 106.825 | -56.947 |
| 130 | 0.693147 | 0.217267 | 106.873 | -56.7964 |
| 131 | 0.693147 | 0.230118 | 106.926 | -56.6369 |
| 132 | 0.693147 | 0.240426 | 106.983 | -56.4703 |
| 133 | 0.693147 | 0.253347 | 107.048 | -56.2947 |
| 134 | 0.693147 | 0.263715 | 107.117 | -56.1119 |
| 135 | 0.693147 | 0.276714 | 107.194 | -55.9201 |
| 136 | 0.693147 | 0.287147 | 107.276 | -55.721 |
| 137 | 0.693147 | 0.300232 | 107.366 | -55.5129 |
| 138 | 0.693147 | 0.310738 | 107.463 | -55.2975 |
| 139 | 0.693147 | 0.323919 | 107.568 | -55.073 |
| 140 | 0.693147 | 0.334503 | 107.68 | -54.8412 |
| 141 | 0.693147 | 0.347787 | 107.801 | -54.6001 |
| 142 | 0.693147 | 0.358459 | 107.929 | -54.3516 |
| 143 | 0.693147 | 0.371856 | 108.067 | -54.0939 |
| 144 | 0.693147 | 0.382622 | 108.214 | -53.8287 |
| 145 | 0.693147 | 0.396142 | 108.371 | -53.5541 |
| 146 | 0.693147 | 0.40701 | 108.536 | -53.272 |
| 147 | 0.693147 | 0.420664 | 108.713 | -52.9804 |
| 148 | 0.693147 | 0.431644 | 108.9 | -52.6812 |
| 149 | 0.693147 | 0.445443 | 109.098 | -52.3724 |
| 150 | 0.693147 | 0.456542 | 109.307 | -52.056 |
| 151 | 0.693147 | 0.470498 | 109.528 | -51.7299 |
| 152 | 0.693147 | 0.481728 | 109.76 | -51.3959 |
| 153 | 0.693147 | 0.49585 | 110.006 | -51.0523 |
| 154 | 0.693147 | 0.507221 | 110.263 | -50.7007 |
| 155 | 0.693147 | 0.521527 | 110.535 | -50.3392 |
| 156 | 0.693147 | 0.533048 | 110.819 | -49.9697 |
| 157 | 0.693147 | 0.547551 | 111.119 | -49.5902 |
| 158 | 0.693147 | 0.559237 | 111.432 | -49.2025 |
| 159 | 0.788457 | 0.573953 | 111.761 | -48.75 |
| 160 | 0.916291 | 0.585815 | 112.104 | -48.2132 |
| 161 | 0.916291 | 0.60076 | 112.465 | -47.6627 |
| 162 | 0.916291 | 0.612813 | 112.841 | -47.1012 |
| 163 | 0.916291 | 0.628006 | 113.235 | -46.5258 |
| 164 | 0.916291 | 0.640266 | 113.645 | -45.9391 |
| 165 | 0.916291 | 0.655726 | 114.075 | -45.3383 |
| 166 | 0.916291 | 0.668209 | 114.522 | -44.726 |
| 167 | 0.916291 | 0.68396 | 114.989 | -44.0993 |
| 168 | 0.916291 | 0.696684 | 115.475 | -43.4609 |
| 169 | 0.916291 | 0.712751 | 115.983 | -42.8079 |
| 170 | 0.916291 | 0.725736 | 116.51 | -42.1429 |
| 171 | 0.916291 | 0.742143 | 117.06 | -41.4629 |
| 172 | 0.916291 | 0.755415 | 117.631 | -40.7707 |
| 173 | 0.916291 | 0.772193 | 118.227 | -40.0631 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 0.916291 | | 0.785774 | 118.845 | -39.3431 |
| 175 | 0.916291 | | 0.802956 | 119.489 | -38.6074 |
| 176 | 0.916291 | | 0.816874 | 120.157 | -37.8589 |
| 177 | 0.916291 | | 0.834498 | 120.853 | -37.0942 |
| 178 | 0.916291 | | 0.848786 | 121.574 | -36.3165 |
| 179 | 0.916291 | | 0.866894 | 122.325 | -35.5222 |
| 180 | 0.916291 | | 0.881587 | 123.102 | -34.7144 |
| 181 | 0.916291 | | 0.900227 | 123.913 | -33.8895 |
| 182 | 0.916291 | | 0.915365 | 124.751 | -33.0508 |
| 183 | 0.916291 | | 0.93459 | 125.624 | -32.1944 |
| 184 | 0.916291 | | 0.950222 | 126.527 | -31.3237 |
| 185 | 0.916291 | | 0.970094 | 127.468 | -30.4349 |
| 186 | 0.916291 | | 0.986272 | 128.441 | -29.5311 |
| 187 | 0.916291 | | 1.00687 | 129.455 | -28.6086 |
| 188 | 1.00796 | 1.02365 | 130.502 | -27.5768 | |
| 189 | 1.36098 | 1.04505 | 131.594 | -26.1545 | |
| 190 | 1.66771 | 1.06252 | 132.723 | -24.3825 | |
| 191 | 1.79176 | 1.08482 | 133.9 | -22.4388 | |
| 192 | 1.90509 | 1.10306 | 135.117 | -20.3373 | |
| 193 | 1.94162 | 1.12639 | 136.386 | -18.1503 | |
| 194 | 2.02815 | 1.1455 | 137.698 | -15.8271 | |
| 195 | 2.15176 | 1.17 | 139.067 | -13.3095 | |
| 196 | 2.27419 | 1.19012 | 140.483 | -10.6029 | |
| 197 | 2.28238 | 1.21596 | 141.962 | -7.82766 | |
| 198 | 2.30259 | 1.23724 | 143.493 | -4.97882 | |
| 199 | 2.45101 | 1.26464 | 145.092 | -1.87918 | |
| 200 | 2.63189 | 1.28727 | 146.749 | 1.50878 | |
| 201 | 2.77259 | 1.31652 | 148.482 | 5.15895 | |
| 202 | 3.17805 | 1.34075 | 150.28 | 9.41994 | |
| 203 | 3.2581 | 1.3722 | 152.163 | 13.8907 | |
| 204 | 3.56105 | 1.39838 | 154.118 | 18.8704 | |
| 205 | 3.64545 | 1.4325 | 156.17 | 24.0925 | |
| 206 | 3.95124 | 1.46106 | 158.305 | 29.8655 | |
| 207 | 4.20767 | 1.49852 | 160.551 | 36.1708 | |
| 208 | 4.55808 | 1.53007 | 162.892 | 43.1449 | |
| 209 | 4.60517 | 1.57179 | 165.362 | 50.3833 | |
| 210 | 4.78749 | 1.60725 | 167.945 | 58.078 | |
| 211 | 4.86753 | 1.65463 | 170.683 | 66.1319 | |
| 212 | 4.91265 | 1.6954 | 173.558 | 74.4608 | |
| 213 | 5.07517 | 1.75069 | 176.622 | 83.3459 | |
| 214 | 5.29832 | 1.79912 | 179.859 | 92.8782 | |
| 215 | 5.56068 | 1.86629 | 183.342 | 103.256 | |
| 216 | 5.76832 | 1.92684 | 187.055 | 114.371 | |
| 217 | 5.85793 | 2.01409 | 191.112 | 126.169 | |
| 218 | 5.99146 | 2.09693 | 195.509 | 138.733 | |
| 219 | 6.83733 | 2.22621 | 200.465 | 153.954 | |
| 220 | 7.78322 | 2.36561 | 206.061 | 172.366 | |
| 221 | 8.35702 | 2.65209 | 213.094 | 194.53 | |

Data Set Standard Deviation = 1.34694
Numerator = 37841.8
Denominator = 85053.3
W Statistic = 0.444919 = 37841.8 / 85053.3

5% Critical value of 0.976 exceeds 0.444919
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.444919
Evidence of non-normality at 99% level of significance

# Kruskal-Wallis Non-Parametric Test

## Parameter: Acetone

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

# Kruskal Wallis Ranks

## Background Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-13 | 3/16/1999 | ND<0.693147 | 92.5 |
| | 9/23/1999 | ND<0.693147 | 92.5 |
| | 3/15/2000 | ND<0.693147 | 92.5 |
| | 9/24/2003 | ND<0.693147 | 92.5 |
| | 3/11/2004 | ND<0.693147 | 92.5 |
| | 10/12/2004 | ND<0.693147 | 92.5 |
| | 4/1/2005 | ND<0.693147 | 92.5 |
| | 10/25/2005 | ND<0.693147 | 92.5 |
| | 4/29/2006 | ND<0.693147 | 92.5 |
| | 11/18/2006 | ND<0.693147 | 92.5 |
| | 5/23/2007 | ND<0.693147 | 92.5 |
| | 11/28/2007 | ND<0.693147 | 92.5 |
| | 6/5/2008 | ND<0.693147 | 92.5 |
| | 11/20/2008 | ND<0.693147 | 92.5 |
| | 6/11/2009 | ND<0.916291 | 92.5 |
| | 11/16/2009 | ND<0.916291 | 92.5 |
| | 6/30/2010 | ND<0.916291 | 92.5 |
| | 11/12/2010 | ND<0.916291 U | 92.5 |

Rank Sum = 1665
Rank Mean = 92.5

Background Rank Sum = 1665
Background Rank Mean = 92.5

## Compliance Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-11R | 7/20/1995 | ND<0.693147 | 92.5 |
| | 8/24/1995 | ND<0.693147 | 92.5 |
| | 9/28/1995 | 2.77259 | 201 |
| | 10/26/1995 | ND<0.693147 | 92.5 |
| | 11/19/1996 | ND<0.693147 | 92.5 |
| | 12/19/1996 | ND<0.693147 | 92.5 |
| | 3/24/1997 | ND<0.693147 | 92.5 |
| | 9/24/1997 | ND<0.693147 | 92.5 |
| | 4/7/1998 | ND<0.693147 | 92.5 |
| | 9/23/1998 | ND<0.693147 | 92.5 |
| | 3/16/1999 | 5.85793 | 217 |
| | 9/23/1999 | ND<0.693147 | 92.5 |
| | 3/15/2000 | ND<0.693147 | 92.5 |
| | 9/24/2003 | 5.76832 | 216 |
| | 3/11/2004 | 5.99146 | 218 |
| | 10/12/2004 | 7.78322 | 220 |
| | 4/1/2005 | ND<0.693147 | 92.5 |
| | 10/25/2005 | ND<0.693147 | 92.5 |
| | 4/29/2006 | ND<0.693147 | 92.5 |
| | 11/18/2006 | 2.63189 | 200 |

| | | | |
|---|---|---|---|
| | 5/23/2007 | 4.60517 | 209 |
| | 11/28/2007 | 1.90509 | 192 |
| | 6/5/2008 | ND<0.693147 | 92.5 |
| | 11/20/2008 | ND<0.693147 | 92.5 |
| | 6/11/2009 | ND<0.916291 | 92.5 |
| | 11/16/2009 | ND<0.916291 | 92.5 |
| | 6/30/2010 | ND<0.916291 | 92.5 |
| | 11/12/2010 | ND<0.916291 U | 92.5 |

Rank Sum = 3523
Rank Mean = 125.821

| | | | |
|---|---|---|---|
| MW-12AR | 3/16/1999 | ND<0.693147 | 92.5 |
| | 9/23/1999 | ND<0.693147 | 92.5 |
| | 3/15/2000 | ND<0.693147 | 92.5 |
| | 9/24/2003 | ND<0.693147 | 92.5 |
| | 3/11/2004 | ND<0.693147 | 92.5 |
| | 10/12/2004 | ND<0.693147 | 92.5 |
| | 4/1/2005 | ND<0.693147 | 92.5 |
| | 10/25/2005 | ND<0.693147 | 92.5 |
| | 4/29/2006 | ND<0.693147 | 92.5 |
| | 11/18/2006 | ND<0.693147 | 92.5 |
| | 5/23/2007 | ND<0.693147 | 92.5 |
| | 11/28/2007 | ND<0.693147 | 92.5 |
| | 6/5/2008 | ND<0.693147 | 92.5 |
| | 11/20/2008 | ND<0.693147 | 92.5 |
| | 6/11/2009 | ND<0.916291 | 92.5 |
| | 11/16/2009 | ND<0.916291 | 92.5 |
| | 6/30/2010 | ND<0.916291 | 92.5 |
| | 11/12/2010 | ND<0.916291 U | 92.5 |

Rank Sum = 1665
Rank Mean = 92.5

| | | | |
|---|---|---|---|
| MW-12BR | 3/16/1999 | ND<0.693147 | 92.5 |
| | 9/23/1999 | ND<0.693147 | 92.5 |
| | 3/15/2000 | ND<0.693147 | 92.5 |
| | 9/24/2003 | ND<0.693147 | 92.5 |
| | 3/11/2004 | ND<0.693147 | 92.5 |
| | 10/12/2004 | ND<0.693147 | 92.5 |
| | 4/1/2005 | ND<0.693147 | 92.5 |
| | 10/25/2005 | ND<0.693147 | 92.5 |
| | 4/29/2006 | ND<0.693147 | 92.5 |
| | 11/18/2006 | ND<0.693147 | 92.5 |
| | 5/23/2007 | ND<0.693147 | 92.5 |
| | 11/28/2007 | ND<0.693147 | 92.5 |
| | 6/5/2008 | ND<0.693147 | 92.5 |
| | 11/20/2008 | ND<0.693147 | 92.5 |
| | 6/11/2009 | ND<0.916291 | 92.5 |
| | 11/16/2009 | ND<0.916291 | 92.5 |
| | 6/30/2010 | ND<0.916291 | 92.5 |
| | 11/12/2010 | ND<0.916291 U | 92.5 |

Rank Sum = 1665
Rank Mean = 92.5

| | | | |
|---|---|---|---|
| MW-6 | 7/20/1995 | ND<0.693147 | 92.5 |
| | 8/24/1995 | 1.36098 J | 189 |
| | 9/28/1995 | ND<0.693147 | 92.5 |
| | 10/26/1995 | ND<0.693147 | 92.5 |
| | 11/19/1996 | ND<0.693147 | 92.5 |
| | 12/19/1996 | ND<0.693147 | 92.5 |
| | 3/24/1997 | ND<0.693147 | 92.5 |
| | 9/24/1997 | ND<0.693147 | 92.5 |
| | 4/7/1998 | ND<0.693147 | 92.5 |

| | | | |
|---|---|---|---|
| | 9/23/1998 | ND<0.693147 | 92.5 |
| | 3/16/1999 | ND<0.693147 | 92.5 |
| | 9/23/1999 | ND<0.693147 | 92.5 |
| | 3/15/2000 | ND<0.693147 | 92.5 |
| | 9/24/2003 | ND<0.693147 | 92.5 |
| | 3/11/2004 | ND<0.693147 | 92.5 |
| | 10/12/2004 | ND<0.693147 | 92.5 |
| | 4/1/2005 | ND<0.693147 | 92.5 |
| | 10/25/2005 | 0.788457 J | 187 |
| | 4/29/2006 | ND<0.693147 | 92.5 |
| | 11/18/2006 | ND<0.693147 | 92.5 |
| | 5/23/2007 | ND<0.693147 | 92.5 |
| | 11/28/2007 | ND<0.693147 | 92.5 |
| | 6/5/2008 | ND<0.693147 | 92.5 |
| | 11/20/2008 | ND<0.693147 | 92.5 |
| | 6/11/2009 | 2.02815 J | 194 |
| | 11/16/2009 | ND<0.916291 | 92.5 |
| | 6/30/2010 | ND<0.916291 | 92.5 |
| | 11/12/2010 | ND<0.916291 U | 92.5 |

Rank Sum = 2882.5
Rank Mean = 102.946

| | | | |
|---|---|---|---|
| MW-7 | 7/20/1995 | ND<0.693147 | 92.5 |
| | 8/24/1995 | ND<0.693147 | 92.5 |
| | 9/28/1995 | ND<0.693147 | 92.5 |
| | 10/26/1995 | ND<0.693147 | 92.5 |
| | 11/19/1996 | ND<0.693147 | 92.5 |
| | 12/19/1996 | ND<0.693147 | 92.5 |
| | 3/24/1997 | 5.56068 | 215 |
| | 9/24/1997 | ND<0.693147 | 92.5 |
| | 4/7/1998 | ND<0.693147 | 92.5 |
| | 9/23/1998 | ND<0.693147 | 92.5 |
| | 3/16/1999 | 8.35702 | 221 |
| | 9/23/1999 | 4.55808 | 208 |
| | 3/15/2000 | 4.86753 | 211 |
| | 9/24/2003 | ND<0.693147 | 92.5 |
| | 3/11/2004 | ND<0.693147 | 92.5 |
| | 10/12/2004 | 5.29832 | 214 |
| | 4/1/2005 | ND<0.693147 | 92.5 |
| | 10/25/2005 | 1.94162 | 193 |
| | 4/29/2006 | ND<0.693147 | 92.5 |
| | 11/18/2006 | 0.29267 J | 186 |
| | 5/23/2007 | ND<0.693147 | 92.5 |
| | 11/28/2007 | 2.45101 | 199 |
| | 6/5/2008 | 6.83733 | 219 |
| | 11/20/2008 | 3.17805 | 202 |
| | 6/11/2009 | 3.95124 | 206 |
| | 11/16/2009 | 1.79176 J | 191 |
| | 6/30/2010 | ND<0.916291 | 92.5 |
| | 11/12/2010 | 2.15176 J | 195 |

Rank Sum = 4047.5
Rank Mean = 144.554

| | | | |
|---|---|---|---|
| MW-10 | 7/20/1995 | ND<0.693147 | 92.5 |
| | 8/24/1995 | ND<0.693147 | 92.5 |
| | 9/28/1995 | ND<0.693147 | 92.5 |
| | 10/26/1995 | ND<0.693147 | 92.5 |
| | 11/19/1996 | ND<0.693147 | 92.5 |
| | 12/19/1996 | ND<0.693147 | 92.5 |
| | 3/24/1997 | ND<0.693147 | 92.5 |
| | 9/24/1997 | ND<0.693147 | 92.5 |
| | 4/7/1998 | ND<0.693147 | 92.5 |

| | | | |
|---|---|---|---|
| | 9/23/1998 | ND<0.693147 | 92.5 |
| | 3/16/1999 | 4.20767 | 207 |
| | 9/23/1999 | ND<0.693147 | 92.5 |
| | 3/15/2000 | ND<0.693147 | 92.5 |
| | 9/24/2003 | ND<0.693147 | 92.5 |
| | 3/11/2004 | ND<0.693147 | 92.5 |
| | 10/12/2004 | ND<0.693147 | 92.5 |
| | 4/1/2005 | ND<0.693147 | 92.5 |
| | 10/25/2005 | ND<0.693147 | 92.5 |
| | 4/29/2006 | ND<0.693147 | 92.5 |
| | 11/18/2006 | ND<0.693147 | 92.5 |
| | 5/23/2007 | ND<0.693147 | 92.5 |
| | 11/28/2007 | ND<0.693147 | 92.5 |
| | 6/5/2008 | ND<0.693147 | 92.5 |
| | 11/20/2008 | ND<0.693147 | 92.5 |
| | 6/11/2009 | ND<0.916291 | 92.5 |
| | 11/16/2009 | 3.2581 | 203 |
| | 6/30/2010 | ND<0.916291 | 92.5 |
| | 11/12/2010 | ND<0.916291 U | 92.5 |

Rank Sum = 2815
Rank Mean = 100.536

| | | | |
|---|---|---|---|
| MW-8 | 7/20/1995 | ND<0.693147 | 92.5 |
| | 8/24/1995 | ND<0.693147 | 92.5 |
| | 9/28/1995 | ND<0.693147 | 92.5 |
| | 10/26/1995 | ND<0.693147 | 92.5 |
| | 11/19/1996 | ND<0.693147 | 92.5 |
| | 12/19/1996 | ND<0.693147 | 92.5 |
| | 3/24/1997 | ND<0.693147 | 92.5 |
| | 9/24/1997 | ND<0.693147 | 92.5 |
| | 4/7/1998 | ND<0.693147 | 92.5 |
| | 9/23/1998 | ND<0.693147 | 92.5 |
| | 3/16/1999 | 3.56105 | 204 |
| | 9/23/1999 | 4.91265 | 212 |
| | 3/15/2000 | ND<0.693147 | 92.5 |
| | 9/24/2003 | ND<0.693147 | 92.5 |
| | 3/11/2004 | ND<0.693147 | 92.5 |
| | 10/12/2004 | 5.07517 | 213 |
| | 4/1/2005 | ND<0.693147 | 92.5 |
| | 10/25/2005 | 0.239017 J | 185 |
| | 4/29/2006 | ND<0.693147 | 92.5 |
| | 11/18/2006 | ND<0.693147 | 92.5 |
| | 5/23/2007 | ND<0.693147 | 92.5 |
| | 11/28/2007 | ND<0.693147 | 92.5 |
| | 6/5/2008 | ND<0.693147 | 92.5 |
| | 11/20/2008 | 2.27419 | 196 |
| | 6/11/2009 | 2.28238 J | 197 |
| | 6/30/2010 | 1.66771 J | 190 |
| | 11/12/2010 | ND<0.916291 U | 92.5 |

Rank Sum = 3247
Rank Mean = 120.259

| | | | |
|---|---|---|---|
| MW-9 | 7/20/1995 | ND<0.693147 | 92.5 |
| | 8/24/1995 | 2.30259 | 198 |
| | 9/28/1995 | ND<0.693147 | 92.5 |
| | 10/26/1995 | ND<0.693147 | 92.5 |
| | 11/19/1996 | ND<0.693147 | 92.5 |
| | 12/19/1996 | ND<0.693147 | 92.5 |
| | 3/24/1997 | ND<0.693147 | 92.5 |
| | 9/24/1997 | ND<0.693147 | 92.5 |
| | 4/7/1998 | 4.78749 | 210 |
| | 9/23/1998 | ND<0.693147 | 92.5 |

| | | |
|---|---|---|
| 3/16/1999 | 3.64545 | 205 |
| 9/23/1999 | ND<0.693147 | 92.5 |
| 3/15/2000 | ND<0.693147 | 92.5 |
| 9/24/2003 | ND<0.693147 | 92.5 |
| 3/11/2004 | ND<0.693147 | 92.5 |
| 10/12/2004 | ND<0.693147 | 92.5 |
| 4/1/2005 | ND<0.693147 | 92.5 |
| 10/25/2005 | ND<0.693147 | 92.5 |
| 4/29/2006 | ND<0.693147 | 92.5 |
| 11/18/2006 | ND<0.693147 | 92.5 |
| 5/23/2007 | ND<0.693147 | 92.5 |
| 11/28/2007 | 1.00796 J | 188 |
| 6/5/2008 | ND<0.693147 | 92.5 |
| 11/20/2008 | ND<0.693147 | 92.5 |
| 6/11/2009 | ND<0.916291 | 92.5 |
| 11/16/2009 | ND<0.916291 | 92.5 |
| 6/30/2010 | ND<0.916291 | 92.5 |
| 11/12/2010 | ND<0.916291 U | 92.5 |

Rank Sum = 3021
Rank Mean = 107.893

## Calculation Results:

Kruskal-Wallis H Statistic = 15.5615
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 36.7996
95% Confidence comparison value is 15.5073 at 8 degrees of freedom
15.5615 > 15.5073 indicating a significant group difference at 5% significance level
36.7996 > 15.5073 indicating a significant group difference at 5% significance level when adjusted for ties

## Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 92.5

| Well | Mean Rank | Dif from Bkg | Critical Value |
|---|---|---|---|
| MW-11R | 125.821 | 33.3214 | 44.9386 |
| MW-12AR | 92.5 | 0 | 49.5832 |
| MW-12BR | 92.5 | 0 | 49.5832 |
| MW-6 | 102.946 | 10.4464 | 44.9386 |
| MW-7 | 144.554 | 52.0536 | 44.9386 |
| MW-10 | 100.536 | 8.03571 | 44.9386 |
| MW-8 | 120.259 | 27.7593 | 45.263 |
| MW-9 | 107.893 | 15.3929 | 44.9386 |

## Individual Well Comparisons at Groupwise 5% Significance Level (0.625% Significance Level per comparison)

0.625% Z score is 2.51213
Mean background rank is 92.5

| Well | Mean Rank | Dif from Bkg | Critical Value |
|---|---|---|---|
| MW-11R | 125.821 | 33.3214 | 48.5275 |
| MW-12AR | 92.5 | 0 | 53.5431 |
| MW-12BR | 92.5 | 0 | 53.5431 |
| MW-6 | 102.946 | 10.4464 | 48.5275 |
| MW-7 | 144.554 | 52.0536 | 48.5275 |
| MW-10 | 100.536 | 8.03571 | 48.5275 |
| MW-8 | 120.259 | 27.7593 | 48.8779 |
| MW-9 | 107.893 | 15.3929 | 48.5275 |

# Mann-Kendall Trend Analysis

## Parameter: Acetone

## Location: MW-7

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | Positives | | Negatives | |
|---|---|---|---|---|---|---|
| ND<0.693147 | | ND<0.693147 | 0 | 0 | 0 | |
| ND<0.693147 | | ND<0.693147 | 0 | 0 | 0 | |
| ND<0.693147 | | ND<0.693147 | 0 | 0 | 0 | |
| ND<0.693147 | | ND<0.693147 | 0 | 0 | 0 | |
| ND<0.693147 | | ND<0.693147 | 0 | 0 | 0 | |
| 5.56068 | | ND<0.693147 | 4.86753 | 1 | 0 | |
| ND<0.693147 | | ND<0.693147 | 0 | 1 | 0 | |
| ND<0.693147 | | ND<0.693147 | 0 | 1 | 0 | |
| ND<0.693147 | | ND<0.693147 | 0 | 1 | 0 | |
| 8.35702 | | ND<0.693147 | 7.66388 | 2 | 0 | |
| 4.55808 | | ND<0.693147 | 3.86493 | 3 | 0 | |
| 4.86753 | | ND<0.693147 | 4.17439 | 4 | 0 | |
| ND<0.693147 | | ND<0.693147 | 0 | 4 | 0 | |
| ND<0.693147 | | ND<0.693147 | 0 | 4 | 0 | |
| 5.29832 | | ND<0.693147 | 4.60517 | 5 | 0 | |
| ND<0.693147 | | ND<0.693147 | 0 | 5 | 0 | |
| 1.94162 | | ND<0.693147 | 1.24847 | 6 | 0 | |
| ND<0.693147 | | ND<0.693147 | 0 | 6 | 0 | |
| 0.29267 J | | ND<0.693147 | -0.400478 | | 6 | 1 |
| ND<0.693147 | | ND<0.693147 | 0 | 6 | 1 | |
| 2.45101 | | ND<0.693147 | 1.75786 | 7 | 1 | |
| 6.83733 | | ND<0.693147 | 6.14419 | 8 | 1 | |
| 3.17805 | | ND<0.693147 | 2.48491 | 9 | 1 | |
| 3.95124 | | ND<0.693147 | 3.2581 | 10 | 1 | |
| 1.79176 J | | ND<0.693147 | 1.09861 | 11 | 1 | |
| ND<0.916291 | | ND<0.693147 | 0.223144 | | 12 | 1 |
| 2.15176 J | | ND<0.693147 | 1.45862 | 13 | 1 | |
| | | | | | | |
| ND<0.693147 | | ND<0.693147 | 0 | 13 | 1 | |
| ND<0.693147 | | ND<0.693147 | 0 | 13 | 1 | |
| ND<0.693147 | | ND<0.693147 | 0 | 13 | 1 | |
| ND<0.693147 | | ND<0.693147 | 0 | 13 | 1 | |
| 5.56068 | | ND<0.693147 | 4.86753 | 14 | 1 | |
| ND<0.693147 | | ND<0.693147 | 0 | 14 | 1 | |
| ND<0.693147 | | ND<0.693147 | 0 | 14 | 1 | |
| ND<0.693147 | | ND<0.693147 | 0 | 14 | 1 | |
| 8.35702 | | ND<0.693147 | 7.66388 | 15 | 1 | |
| 4.55808 | | ND<0.693147 | 3.86493 | 16 | 1 | |
| 4.86753 | | ND<0.693147 | 4.17439 | 17 | 1 | |
| ND<0.693147 | | ND<0.693147 | 0 | 17 | 1 | |
| ND<0.693147 | | ND<0.693147 | 0 | 17 | 1 | |
| 5.29832 | | ND<0.693147 | 4.60517 | 18 | 1 | |
| ND<0.693147 | | ND<0.693147 | 0 | 18 | 1 | |
| 1.94162 | | ND<0.693147 | 1.24847 | 19 | 1 | |
| ND<0.693147 | | ND<0.693147 | 0 | 19 | 1 | |
| 0.29267 J | | ND<0.693147 | -0.400478 | | 19 | 2 |
| ND<0.693147 | | ND<0.693147 | 0 | 19 | 2 | |
| 2.45101 | | ND<0.693147 | 1.75786 | 20 | 2 | |

| | | | | | |
|---|---|---|---|---|---|
| 6.83733 | ND<0.693147 | 6.14419 | 21 | 2 | |
| 3.17805 | ND<0.693147 | 2.48491 | 22 | 2 | |
| 3.95124 | ND<0.693147 | 3.2581 | 23 | 2 | |
| 1.79176 J | ND<0.693147 | 1.09861 | 24 | 2 | |
| ND<0.916291 | ND<0.693147 | 0.223144 | | 25 | 2 |
| 2.15176 J | ND<0.693147 | 1.45862 | 26 | 2 | |
| | | | | | |
| ND<0.693147 | ND<0.693147 | 0 | 26 | 2 | |
| ND<0.693147 | ND<0.693147 | 0 | 26 | 2 | |
| ND<0.693147 | ND<0.693147 | 0 | 26 | 2 | |
| 5.56068 | ND<0.693147 | 4.86753 | 27 | 2 | |
| ND<0.693147 | ND<0.693147 | 0 | 27 | 2 | |
| ND<0.693147 | ND<0.693147 | 0 | 27 | 2 | |
| ND<0.693147 | ND<0.693147 | 0 | 27 | 2 | |
| 8.35702 | ND<0.693147 | 7.66388 | 28 | 2 | |
| 4.55808 | ND<0.693147 | 3.86493 | 29 | 2 | |
| 4.86753 | ND<0.693147 | 4.17439 | 30 | 2 | |
| ND<0.693147 | ND<0.693147 | 0 | 30 | 2 | |
| ND<0.693147 | ND<0.693147 | 0 | 30 | 2 | |
| 5.29832 | ND<0.693147 | 4.60517 | 31 | 2 | |
| ND<0.693147 | ND<0.693147 | 0 | 31 | 2 | |
| 1.94162 | ND<0.693147 | 1.24847 | 32 | 2 | |
| ND<0.693147 | ND<0.693147 | 0 | 32 | 2 | |
| 0.29267 J | ND<0.693147 | -0.400478 | | 32 | 3 |
| ND<0.693147 | ND<0.693147 | 0 | 32 | 3 | |
| 2.45101 | ND<0.693147 | 1.75786 | 33 | 3 | |
| 6.83733 | ND<0.693147 | 6.14419 | 34 | 3 | |
| 3.17805 | ND<0.693147 | 2.48491 | 35 | 3 | |
| 3.95124 | ND<0.693147 | 3.2581 | 36 | 3 | |
| 1.79176 J | ND<0.693147 | 1.09861 | 37 | 3 | |
| ND<0.916291 | ND<0.693147 | 0.223144 | | 38 | 3 |
| 2.15176 J | ND<0.693147 | 1.45862 | 39 | 3 | |
| | | | | | |
| ND<0.693147 | ND<0.693147 | 0 | 39 | 3 | |
| ND<0.693147 | ND<0.693147 | 0 | 39 | 3 | |
| 5.56068 | ND<0.693147 | 4.86753 | 40 | 3 | |
| ND<0.693147 | ND<0.693147 | 0 | 40 | 3 | |
| ND<0.693147 | ND<0.693147 | 0 | 40 | 3 | |
| ND<0.693147 | ND<0.693147 | 0 | 40 | 3 | |
| 8.35702 | ND<0.693147 | 7.66388 | 41 | 3 | |
| 4.55808 | ND<0.693147 | 3.86493 | 42 | 3 | |
| 4.86753 | ND<0.693147 | 4.17439 | 43 | 3 | |
| ND<0.693147 | ND<0.693147 | 0 | 43 | 3 | |
| ND<0.693147 | ND<0.693147 | 0 | 43 | 3 | |
| 5.29832 | ND<0.693147 | 4.60517 | 44 | 3 | |
| ND<0.693147 | ND<0.693147 | 0 | 44 | 3 | |
| 1.94162 | ND<0.693147 | 1.24847 | 45 | 3 | |
| ND<0.693147 | ND<0.693147 | 0 | 45 | 3 | |
| 0.29267 J | ND<0.693147 | -0.400478 | | 45 | 4 |
| ND<0.693147 | ND<0.693147 | 0 | 45 | 4 | |
| 2.45101 | ND<0.693147 | 1.75786 | 46 | 4 | |
| 6.83733 | ND<0.693147 | 6.14419 | 47 | 4 | |
| 3.17805 | ND<0.693147 | 2.48491 | 48 | 4 | |
| 3.95124 | ND<0.693147 | 3.2581 | 49 | 4 | |
| 1.79176 J | ND<0.693147 | 1.09861 | 50 | 4 | |
| ND<0.916291 | ND<0.693147 | 0.223144 | | 51 | 4 |
| 2.15176 J | ND<0.693147 | 1.45862 | 52 | 4 | |
| | | | | | |
| ND<0.693147 | ND<0.693147 | 0 | 52 | 4 | |
| 5.56068 | ND<0.693147 | 4.86753 | 53 | 4 | |
| ND<0.693147 | ND<0.693147 | 0 | 53 | 4 | |
| ND<0.693147 | ND<0.693147 | 0 | 53 | 4 | |

| | | | | | |
|---|---|---|---|---|---|
| ND<0.693147 | ND<0.693147 | 0 | 53 | 4 | |
| 8.35702 | ND<0.693147 | 7.66388 | 54 | 4 | |
| 4.55808 | ND<0.693147 | 3.86493 | 55 | 4 | |
| 4.86753 | ND<0.693147 | 4.17439 | 56 | 4 | |
| ND<0.693147 | ND<0.693147 | 0 | 56 | 4 | |
| ND<0.693147 | ND<0.693147 | 0 | 56 | 4 | |
| 5.29832 | ND<0.693147 | 4.60517 | 57 | 4 | |
| ND<0.693147 | ND<0.693147 | 0 | 57 | 4 | |
| 1.94162 | ND<0.693147 | 1.24847 | 58 | 4 | |
| ND<0.693147 | ND<0.693147 | 0 | 58 | 4 | |
| 0.29267 J | ND<0.693147 | -0.400478 | | 58 | 5 |
| ND<0.693147 | ND<0.693147 | 0 | 58 | 5 | |
| 2.45101 | ND<0.693147 | 1.75786 | 59 | 5 | |
| 6.83733 | ND<0.693147 | 6.14419 | 60 | 5 | |
| 3.17805 | ND<0.693147 | 2.48491 | 61 | 5 | |
| 3.95124 | ND<0.693147 | 3.2581 | 62 | 5 | |
| 1.79176 J | ND<0.693147 | 1.09861 | 63 | 5 | |
| ND<0.916291 | ND<0.693147 | 0.223144 | | 64 | 5 |
| 2.15176 J | ND<0.693147 | 1.45862 | 65 | 5 | |
| | | | | | |
| 5.56068 | ND<0.693147 | 4.86753 | 66 | 5 | |
| ND<0.693147 | ND<0.693147 | 0 | 66 | 5 | |
| ND<0.693147 | ND<0.693147 | 0 | 66 | 5 | |
| ND<0.693147 | ND<0.693147 | 0 | 66 | 5 | |
| 8.35702 | ND<0.693147 | 7.66388 | 67 | 5 | |
| 4.55808 | ND<0.693147 | 3.86493 | 68 | 5 | |
| 4.86753 | ND<0.693147 | 4.17439 | 69 | 5 | |
| ND<0.693147 | ND<0.693147 | 0 | 69 | 5 | |
| ND<0.693147 | ND<0.693147 | 0 | 69 | 5 | |
| 5.29832 | ND<0.693147 | 4.60517 | 70 | 5 | |
| ND<0.693147 | ND<0.693147 | 0 | 70 | 5 | |
| 1.94162 | ND<0.693147 | 1.24847 | 71 | 5 | |
| ND<0.693147 | ND<0.693147 | 0 | 71 | 5 | |
| 0.29267 J | ND<0.693147 | -0.400478 | | 71 | 6 |
| ND<0.693147 | ND<0.693147 | 0 | 71 | 6 | |
| 2.45101 | ND<0.693147 | 1.75786 | 72 | 6 | |
| 6.83733 | ND<0.693147 | 6.14419 | 73 | 6 | |
| 3.17805 | ND<0.693147 | 2.48491 | 74 | 6 | |
| 3.95124 | ND<0.693147 | 3.2581 | 75 | 6 | |
| 1.79176 J | ND<0.693147 | 1.09861 | 76 | 6 | |
| ND<0.916291 | ND<0.693147 | 0.223144 | | 77 | 6 |
| 2.15176 J | ND<0.693147 | 1.45862 | 78 | 6 | |
| | | | | | |
| ND<0.693147 | 5.56068 | -4.8675378 | | 7 | |
| ND<0.693147 | 5.56068 | -4.8675378 | | 8 | |
| ND<0.693147 | 5.56068 | -4.8675378 | | 9 | |
| 8.35702 | 5.56068 | 2.79634 | 79 | 9 | |
| 4.55808 | 5.56068 | -1.0026 | 79 | 10 | |
| 4.86753 | 5.56068 | -0.693147 | | 79 | 11 |
| ND<0.693147 | 5.56068 | -4.8675379 | | 12 | |
| ND<0.693147 | 5.56068 | -4.8675379 | | 13 | |
| 5.29832 | 5.56068 | -0.262364 | | 79 | 14 |
| ND<0.693147 | 5.56068 | -4.8675379 | | 15 | |
| 1.94162 | 5.56068 | -3.6190779 | | 16 | |
| ND<0.693147 | 5.56068 | -4.8675379 | | 17 | |
| 0.29267 J | 5.56068 | -5.2680179 | | 18 | |
| ND<0.693147 | 5.56068 | -4.8675379 | | 19 | |
| 2.45101 | 5.56068 | -3.1096879 | | 20 | |
| 6.83733 | 5.56068 | 1.27665 | 80 | 20 | |
| 3.17805 | 5.56068 | -2.3826380 | | 21 | |
| 3.95124 | 5.56068 | -1.6094480 | | 22 | |
| 1.79176 J | 5.56068 | -3.7689280 | | 23 | |

| | | | | | |
|---|---|---|---|---|---|
| ND<0.916291 | 5.56068 | -4.6443 | 980 | 24 | |
| 2.15176 J | 5.56068 | -3.4089 | 280 | 25 | |
| | | | | | |
| ND<0.693147 | ND<0.693147 | 0 | 80 | 25 | |
| ND<0.693147 | ND<0.693147 | 0 | 80 | 25 | |
| 8.35702 | ND<0.693147 | 7.66388 | 81 | 25 | |
| 4.55808 | ND<0.693147 | 3.86493 | 82 | 25 | |
| 4.86753 | ND<0.693147 | 4.17439 | 83 | 25 | |
| ND<0.693147 | ND<0.693147 | 0 | 83 | 25 | |
| ND<0.693147 | ND<0.693147 | 0 | 83 | 25 | |
| 5.29832 | ND<0.693147 | 4.60517 | 84 | 25 | |
| ND<0.693147 | ND<0.693147 | 0 | 84 | 25 | |
| 1.94162 | ND<0.693147 | 1.24847 | 85 | 25 | |
| ND<0.693147 | ND<0.693147 | 0 | 85 | 25 | |
| 0.29267 J | ND<0.693147 | -0.400478 | | 85 | 26 |
| ND<0.693147 | ND<0.693147 | 0 | 85 | 26 | |
| 2.45101 | ND<0.693147 | 1.75786 | 86 | 26 | |
| 6.83733 | ND<0.693147 | 6.14419 | 87 | 26 | |
| 3.17805 | ND<0.693147 | 2.48491 | 88 | 26 | |
| 3.95124 | ND<0.693147 | 3.2581 | 89 | 26 | |
| 1.79176 J | ND<0.693147 | 1.09861 | 90 | 26 | |
| ND<0.916291 | ND<0.693147 | 0.223144 | | 91 | 26 |
| 2.15176 J | ND<0.693147 | 1.45862 | 92 | 26 | |
| | | | | | |
| ND<0.693147 | ND<0.693147 | 0 | 92 | 26 | |
| 8.35702 | ND<0.693147 | 7.66388 | 93 | 26 | |
| 4.55808 | ND<0.693147 | 3.86493 | 94 | 26 | |
| 4.86753 | ND<0.693147 | 4.17439 | 95 | 26 | |
| ND<0.693147 | ND<0.693147 | 0 | 95 | 26 | |
| ND<0.693147 | ND<0.693147 | 0 | 95 | 26 | |
| 5.29832 | ND<0.693147 | 4.60517 | 96 | 26 | |
| ND<0.693147 | ND<0.693147 | 0 | 96 | 26 | |
| 1.94162 | ND<0.693147 | 1.24847 | 97 | 26 | |
| ND<0.693147 | ND<0.693147 | 0 | 97 | 26 | |
| 0.29267 J | ND<0.693147 | -0.400478 | | 97 | 27 |
| ND<0.693147 | ND<0.693147 | 0 | 97 | 27 | |
| 2.45101 | ND<0.693147 | 1.75786 | 98 | 27 | |
| 6.83733 | ND<0.693147 | 6.14419 | 99 | 27 | |
| 3.17805 | ND<0.693147 | 2.48491 | 100 | 27 | |
| 3.95124 | ND<0.693147 | 3.2581 | 101 | 27 | |
| 1.79176 J | ND<0.693147 | 1.09861 | 102 | 27 | |
| ND<0.916291 | ND<0.693147 | 0.223144 | | 103 | 27 |
| 2.15176 J | ND<0.693147 | 1.45862 | 104 | 27 | |
| | | | | | |
| 8.35702 | ND<0.693147 | 7.66388 | 105 | 27 | |
| 4.55808 | ND<0.693147 | 3.86493 | 106 | 27 | |
| 4.86753 | ND<0.693147 | 4.17439 | 107 | 27 | |
| ND<0.693147 | ND<0.693147 | 0 | 107 | 27 | |
| ND<0.693147 | ND<0.693147 | 0 | 107 | 27 | |
| 5.29832 | ND<0.693147 | 4.60517 | 108 | 27 | |
| ND<0.693147 | ND<0.693147 | 0 | 108 | 27 | |
| 1.94162 | ND<0.693147 | 1.24847 | 109 | 27 | |
| ND<0.693147 | ND<0.693147 | 0 | 109 | 27 | |
| 0.29267 J | ND<0.693147 | -0.400478 | | 109 | 28 |
| ND<0.693147 | ND<0.693147 | 0 | 109 | 28 | |
| 2.45101 | ND<0.693147 | 1.75786 | 110 | 28 | |
| 6.83733 | ND<0.693147 | 6.14419 | 111 | 28 | |
| 3.17805 | ND<0.693147 | 2.48491 | 112 | 28 | |
| 3.95124 | ND<0.693147 | 3.2581 | 113 | 28 | |
| 1.79176 J | ND<0.693147 | 1.09861 | 114 | 28 | |
| ND<0.916291 | ND<0.693147 | 0.223144 | | 115 | 28 |
| 2.15176 J | ND<0.693147 | 1.45862 | 116 | 28 | |

| | | | | |
|---|---|---|---|---|
| 4.55808 | 8.35702 | -3.79895 | 116 | 29 |
| 4.86753 | 8.35702 | -3.48949 | 116 | 30 |
| ND<0.693147 | 8.35702 | -7.66388 | 116 | 31 |
| ND<0.693147 | 8.35702 | -7.66388 | 116 | 32 |
| 5.29832 | 8.35702 | -3.05871 | 116 | 33 |
| ND<0.693147 | 8.35702 | -7.66388 | 116 | 34 |
| 1.94162 | 8.35702 | -6.41541 | 116 | 35 |
| ND<0.693147 | 8.35702 | -7.66388 | 116 | 36 |
| 0.29267 J | 8.35702 | -8.06435 | 116 | 37 |
| ND<0.693147 | 8.35702 | -7.66388 | 116 | 38 |
| 2.45101 | 8.35702 | -5.90602 | 116 | 39 |
| 6.83733 | 8.35702 | -1.51969 | 116 | 40 |
| 3.17805 | 8.35702 | -5.17897 | 116 | 41 |
| 3.95124 | 8.35702 | -4.40578 | 116 | 42 |
| 1.79176 J | 8.35702 | -6.56526 | 116 | 43 |
| ND<0.916291 | 8.35702 | -7.44073 | 116 | 44 |
| 2.15176 J | 8.35702 | -6.20526 | 116 | 45 |
| | | | | |
| 4.86753 | 4.55808 | 0.309456 | 117 | 45 |
| ND<0.693147 | 4.55808 | -3.86493 | 117 | 46 |
| ND<0.693147 | 4.55808 | -3.86493 | 117 | 47 |
| 5.29832 | 4.55808 | 0.740239 | 118 | 47 |
| ND<0.693147 | 4.55808 | -3.86493 | 118 | 48 |
| 1.94162 | 4.55808 | -2.61646 | 118 | 49 |
| ND<0.693147 | 4.55808 | -3.86493 | 118 | 50 |
| 0.29267 J | 4.55808 | -4.26541 | 118 | 51 |
| ND<0.693147 | 4.55808 | -3.86493 | 118 | 52 |
| 2.45101 | 4.55808 | -2.10707 | 118 | 53 |
| 6.83733 | 4.55808 | 2.27925 | 119 | 53 |
| 3.17805 | 4.55808 | -1.38002 | 119 | 54 |
| 3.95124 | 4.55808 | -0.606835 | 119 | 55 |
| 1.79176 J | 4.55808 | -2.76632 | 119 | 56 |
| ND<0.916291 | 4.55808 | -3.64179 | 119 | 57 |
| 2.15176 J | 4.55808 | -2.40632 | 119 | 58 |
| | | | | |
| ND<0.693147 | 4.86753 | -4.17439 | 119 | 59 |
| ND<0.693147 | 4.86753 | -4.17439 | 119 | 60 |
| 5.29832 | 4.86753 | 0.430783 | 120 | 60 |
| ND<0.693147 | 4.86753 | -4.17439 | 120 | 61 |
| 1.94162 | 4.86753 | -2.92592 | 120 | 62 |
| ND<0.693147 | 4.86753 | -4.17439 | 120 | 63 |
| 0.29267 J | 4.86753 | -4.57486 | 120 | 64 |
| ND<0.693147 | 4.86753 | -4.17439 | 120 | 65 |
| 2.45101 | 4.86753 | -2.41653 | 120 | 66 |
| 6.83733 | 4.86753 | 1.9698 | 121 | 66 |
| 3.17805 | 4.86753 | -1.68948 | 121 | 67 |
| 3.95124 | 4.86753 | -0.916291 | 121 | 68 |
| 1.79176 J | 4.86753 | -3.07577 | 121 | 69 |
| ND<0.916291 | 4.86753 | -3.95124 | 121 | 70 |
| 2.15176 J | 4.86753 | -2.71577 | 121 | 71 |
| | | | | |
| ND<0.693147 | ND<0.693147 | 0 | 121 | 71 |
| 5.29832 | ND<0.693147 | 4.60517 | 122 | 71 |
| ND<0.693147 | ND<0.693147 | 0 | 122 | 71 |
| 1.94162 | ND<0.693147 | 1.24847 | 123 | 71 |
| ND<0.693147 | ND<0.693147 | 0 | 123 | 71 |
| 0.29267 J | ND<0.693147 | -0.400478 | 123 | 72 |
| ND<0.693147 | ND<0.693147 | 0 | 123 | 72 |
| 2.45101 | ND<0.693147 | 1.75786 | 124 | 72 |
| 6.83733 | ND<0.693147 | 6.14419 | 125 | 72 |
| 3.17805 | ND<0.693147 | 2.48491 | 126 | 72 |

| | | | | | |
|---|---|---|---|---|---|
| 3.95124 | ND<0.693147 | 3.2581 | 127 | 72 | |
| 1.79176 J | ND<0.693147 | 1.09861 | 128 | 72 | |
| ND<0.916291 | ND<0.693147 | 0.223144 | | 129 | 72 |
| 2.15176 J | ND<0.693147 | 1.45862 | 130 | 72 | |
| | | | | | |
| 5.29832 | ND<0.693147 | 4.60517 | 131 | 72 | |
| ND<0.693147 | ND<0.693147 | 0 | 131 | 72 | |
| 1.94162 | ND<0.693147 | 1.24847 | 132 | 72 | |
| ND<0.693147 | ND<0.693147 | 0 | 132 | 72 | |
| 0.29267 J | ND<0.693147 | -0.400478 | | 132 | 73 |
| ND<0.693147 | ND<0.693147 | 0 | 132 | 73 | |
| 2.45101 | ND<0.693147 | 1.75786 | 133 | 73 | |
| 6.83733 | ND<0.693147 | 6.14419 | 134 | 73 | |
| 3.17805 | ND<0.693147 | 2.48491 | 135 | 73 | |
| 3.95124 | ND<0.693147 | 3.2581 | 136 | 73 | |
| 1.79176 J | ND<0.693147 | 1.09861 | 137 | 73 | |
| ND<0.916291 | ND<0.693147 | 0.223144 | | 138 | 73 |
| 2.15176 J | ND<0.693147 | 1.45862 | 139 | 73 | |
| | | | | | |
| ND<0.693147 | 5.29832 | -4.60517 | 139 | 74 | |
| 1.94162 | 5.29832 | -3.3567 | 139 | 75 | |
| ND<0.693147 | 5.29832 | -4.60517 | 139 | 76 | |
| 0.29267 J | 5.29832 | -5.00565 | 139 | 77 | |
| ND<0.693147 | 5.29832 | -4.60517 | 139 | 78 | |
| 2.45101 | 5.29832 | -2.84731 | 139 | 79 | |
| 6.83733 | 5.29832 | 1.53902 | 140 | 79 | |
| 3.17805 | 5.29832 | -2.12026 | 140 | 80 | |
| 3.95124 | 5.29832 | -1.34707 | 140 | 81 | |
| 1.79176 J | 5.29832 | -3.50656 | 140 | 82 | |
| ND<0.916291 | 5.29832 | -4.38203 | 140 | 83 | |
| 2.15176 J | 5.29832 | -3.14656 | 140 | 84 | |
| | | | | | |
| 1.94162 | ND<0.693147 | 1.24847 | 141 | 84 | |
| ND<0.693147 | ND<0.693147 | 0 | 141 | 84 | |
| 0.29267 J | ND<0.693147 | -0.400478 | | 141 | 85 |
| ND<0.693147 | ND<0.693147 | 0 | 141 | 85 | |
| 2.45101 | ND<0.693147 | 1.75786 | 142 | 85 | |
| 6.83733 | ND<0.693147 | 6.14419 | 143 | 85 | |
| 3.17805 | ND<0.693147 | 2.48491 | 144 | 85 | |
| 3.95124 | ND<0.693147 | 3.2581 | 145 | 85 | |
| 1.79176 J | ND<0.693147 | 1.09861 | 146 | 85 | |
| ND<0.916291 | ND<0.693147 | 0.223144 | | 147 | 85 |
| 2.15176 J | ND<0.693147 | 1.45862 | 148 | 85 | |
| | | | | | |
| ND<0.693147 | 1.94162 | -1.24847 | 148 | 86 | |
| 0.29267 J | 1.94162 | -1.64895 | 148 | 87 | |
| ND<0.693147 | 1.94162 | -1.24847 | 148 | 88 | |
| 2.45101 | 1.94162 | 0.50939 | 149 | 88 | |
| 6.83733 | 1.94162 | 4.89572 | 150 | 88 | |
| 3.17805 | 1.94162 | 1.23644 | 151 | 88 | |
| 3.95124 | 1.94162 | 2.00963 | 152 | 88 | |
| 1.79176 J | 1.94162 | -0.149856 | | 152 | 89 |
| ND<0.916291 | 1.94162 | -1.02532 | 152 | 90 | |
| 2.15176 J | 1.94162 | 0.210147 | | 153 | 90 |
| | | | | | |
| 0.29267 J | ND<0.693147 | -0.400478 | | 153 | 91 |
| ND<0.693147 | ND<0.693147 | 0 | 153 | 91 | |
| 2.45101 | ND<0.693147 | 1.75786 | 154 | 91 | |
| 6.83733 | ND<0.693147 | 6.14419 | 155 | 91 | |
| 3.17805 | ND<0.693147 | 2.48491 | 156 | 91 | |
| 3.95124 | ND<0.693147 | 3.2581 | 157 | 91 | |
| 1.79176 J | ND<0.693147 | 1.09861 | 158 | 91 | |

| | | | | |
|---|---|---|---|---|
| ND<0.916291 | ND<0.693147 | 0.223144 | 159 | 91 |
| 2.15176 J | ND<0.693147 | 1.45862 | 160 | 91 |
| | | | | |
| ND<0.693147 | 0.29267 J | 0.400478 | 161 | 91 |
| 2.45101 | 0.29267 J | 2.15834 | 162 | 91 |
| 6.83733 | 0.29267 J | 6.54466 | 163 | 91 |
| 3.17805 | 0.29267 J | 2.88538 | 164 | 91 |
| 3.95124 | 0.29267 J | 3.65857 | 165 | 91 |
| 1.79176 J | 0.29267 J | 1.49909 | 166 | 91 |
| ND<0.916291 | 0.29267 J | 0.623621 | 167 | 91 |
| 2.15176 J | 0.29267 J | 1.85909 | 168 | 91 |
| | | | | |
| 2.45101 | ND<0.693147 | 1.75786 | 169 | 91 |
| 6.83733 | ND<0.693147 | 6.14419 | 170 | 91 |
| 3.17805 | ND<0.693147 | 2.48491 | 171 | 91 |
| 3.95124 | ND<0.693147 | 3.2581 | 172 | 91 |
| 1.79176 J | ND<0.693147 | 1.09861 | 173 | 91 |
| ND<0.916291 | ND<0.693147 | 0.223144 | 174 | 91 |
| 2.15176 J | ND<0.693147 | 1.45862 | 175 | 91 |
| | | | | |
| 6.83733 | 2.45101 | 4.38633 | 176 | 91 |
| 3.17805 | 2.45101 | 0.727049 | 177 | 91 |
| 3.95124 | 2.45101 | 1.50024 | 178 | 91 |
| 1.79176 J | 2.45101 | -0.659246 | 178 | 92 |
| ND<0.916291 | 2.45101 | -1.53471 | 178 | 93 |
| 2.15176 J | 2.45101 | -0.299243 | 178 | 94 |
| | | | | |
| 3.17805 | 6.83733 | -3.65928 | 178 | 95 |
| 3.95124 | 6.83733 | -2.88609 | 178 | 96 |
| 1.79176 J | 6.83733 | -5.04557 | 178 | 97 |
| ND<0.916291 | 6.83733 | -5.92104 | 178 | 98 |
| 2.15176 J | 6.83733 | -4.68557 | 178 | 99 |
| | | | | |
| 3.95124 | 3.17805 | 0.77319 | 179 | 99 |
| 1.79176 J | 3.17805 | -1.38629 | 179 | 100 |
| ND<0.916291 | 3.17805 | -2.26176 | 179 | 101 |
| 2.15176 J | 3.17805 | -1.02629 | 179 | 102 |
| | | | | |
| 1.79176 J | 3.95124 | -2.15948 | 179 | 103 |
| ND<0.916291 | 3.95124 | -3.03495 | 179 | 104 |
| 2.15176 J | 3.95124 | -1.79948 | 179 | 105 |
| | | | | |
| ND<0.916291 | 1.79176 J | -0.875469 | 179 | 106 |
| 2.15176 J | 1.79176 J | 0.360003 | 180 | 106 |
| | | | | |
| 2.15176 J | ND<0.916291 | 1.23547 | 181 | 106 |

S Statistic = 181 - 106 = 75

| Tied Group | Value | Members |
|---|---|---|
| 1 | 0.693147 | 14 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |
| 11/19/1996 | 1 |
| 12/19/1996 | 1 |

| | | |
|---|---|---|
| 3/24/1997 | | 1 |
| 9/24/1997 | | 1 |
| 4/7/1998 | 1 | |
| 9/23/1998 | | 1 |
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 11/16/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 1 |

There are 0 time periods with multiple data

A = 6006
B = 0
C = 2184
D = 0
E = 182
F = 0
a = 46116
b = 176904
c = 1512
Group Variance = 2228.33
Z-Score = 1.56762
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|1.56762| <= 1.97737 indicating no evidence of a trend

# Concentrations (ppb)

## Parameter: Arsenic

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 133
Percent Non-Detects: 60.181%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 15 (83.3333%) | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | 37 | 37 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | 1.11 J | 1.11 J |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | 1.45 J | 1.45 J |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.4 | ND<0.4 |
| | | | 11/16/2009 | ND<0.4 | ND<0.4 |
| | | | 6/30/2010 | ND<0.4 | ND<0.4 |
| | | | 11/12/2010 | ND<0.4 U | ND<0.4 U |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-12BR | 18 | 15 (83.3333%) | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | 1.95 J | 1.95 J |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | 1.92 J | 1.92 J |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.4 | ND<0.4 |
| | | | 11/16/2009 | ND<0.4 | ND<0.4 |
| | | | 6/30/2010 | ND<0.4 | ND<0.4 |
| | | | 11/12/2010 | 0.45 J | 0.45 J |
| MW-11R | 28 | 19 (67.8571%) | 7/20/1995 | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 |
| | | | 9/28/1995 | ND<2 | ND<2 |
| | | | 10/26/1995 | ND<2 | ND<2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | 17 | 17 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | 15 | 15 | |
| | | | 4/1/2005 | 10.4 | 10.4 | |
| | | | 10/25/2005 | 7.5 | 7.5 | |
| | | | 4/29/2006 | 7.92 | 7.92 | |
| | | | 11/18/2006 | 2.65 | 2.65 | |
| | | | 5/23/2007 | 25.5 | 25.5 | |
| | | | 11/28/2007 | 4.87 | 4.87 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.4 | ND<0.4 | |
| | | | 11/16/2009 | ND<0.4 | ND<0.4 | |
| | | | 6/30/2010 | 1.7 H | 1.7 H | |
| | | | 11/12/2010 | ND<0.4 U | | ND<0.4 U |
| MW-12AR | 18 | 8 (44.4444%) | 3/16/1999 | | ND<2 | ND<2 |
| | | | 9/23/1999 | 5 | 5 | |
| | | | 3/15/2000 | 16 | 16 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | 2.02 | 2.02 | |
| | | | 4/29/2006 | 1.48 J | 1.48 J | |
| | | | 11/18/2006 | 1.05 J | 1.05 J | |
| | | | 5/23/2007 | 1.05 J | 1.05 J | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | 0.42 J | 0.42 J | |
| | | | 11/16/2009 | 0.5 J | 0.5 J | |
| | | | 6/30/2010 | 0.54 J | 0.54 J | |
| | | | 11/12/2010 | 0.75 J | 0.75 J | |
| MW-10 | 28 | 16 (57.1429%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | 4 | 4 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 1.13 J | 1.13 J | |
| | | | 10/25/2005 | ND<2 | ND<2 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 4/29/2006 | 1.31 J | 1.31 J | |
| | | | 11/18/2006 | 1.88 J | 1.88 J | |
| | | | 5/23/2007 | 3.62 | 3.62 | |
| | | | 11/28/2007 | 4.82 | 4.82 | |
| | | | 6/5/2008 | 2.23 | 2.23 | |
| | | | 11/20/2008 | 2.11 | 2.11 | |
| | | | 6/11/2009 | 3.1 | 3.1 | |
| | | | 11/16/2009 | 3.6 | 3.6 | |
| | | | 6/30/2010 | 4.2 H | 4.2 H | |
| | | | 11/12/2010 | 4.3 | 4.3 | |
| MW-6 | 28 | 24 (85.7143%) | 7/20/1995 | ND<2 | ND<2 | |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | 5 | 5 | |
| | | | 9/23/1999 | 2 | 2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | 1.09 J | 1.09 J | |
| | | | 11/20/2008 | 5.75 | 5.75 | |
| | | | 6/11/2009 | ND<0.4 | ND<0.4 | |
| | | | 11/16/2009 | ND<0.4 | ND<0.4 | |
| | | | 6/30/2010 | ND<0.4 | ND<0.4 | |
| | | | 11/12/2010 | ND<0.4 U | | ND<0.4 U |
| MW-7 | 28 | 13 (46.4286%) | 7/20/1995 | ND<2 | ND<2 | |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | 12.7 | 12.7 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | 11.7 | 11.7 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | 5 | 5 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 5.76 | 5.76 | |
| | | | 10/25/2005 | 8.44 | 8.44 | |
| | | | 4/29/2006 | 9.41 | 9.41 | |
| | | | 11/18/2006 | 4.84 | 4.84 | |
| | | | 5/23/2007 | 9.45 | 9.45 | |
| | | | 11/28/2007 | 12.3 | 12.3 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 6/5/2008 | 8.8 | 8.8 | |
| | | | 11/20/2008 | | 5.73 | 5.73 |
| | | | 6/11/2009 | | 5.2 | 5.2 |
| | | | 11/16/2009 | | 2.6 | 2.6 |
| | | | 6/30/2010 | | 6.7 H | 6.7 H |
| | | | 11/12/2010 | | 7.7 | 7.7 |
| MW-8 | 27 | 13 (48.1481%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | | ND<2 | ND<2 |
| | | | 9/28/1995 | | 12.2 | 12.2 |
| | | | 10/26/1995 | | ND<2 | ND<2 |
| | | | 11/19/1996 | | ND<2 | ND<2 |
| | | | 12/19/1996 | | ND<2 | ND<2 |
| | | | 3/24/1997 | | ND<2 | ND<2 |
| | | | 9/24/1997 | | ND<2 | ND<2 |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | | ND<2 | ND<2 |
| | | | 3/16/1999 | | 2 | 2 |
| | | | 9/23/1999 | | 40 | 40 |
| | | | 3/15/2000 | | ND<2 | ND<2 |
| | | | 9/24/2003 | | ND<2 | ND<2 |
| | | | 3/11/2004 | | ND<2 | ND<2 |
| | | | 10/12/2004 | | ND<2 | ND<2 |
| | | | 4/1/2005 | 5.17 | 5.17 | |
| | | | 10/25/2005 | | 6.67 | 6.67 |
| | | | 4/29/2006 | | 4.63 | 4.63 |
| | | | 11/18/2006 | | 3.32 | 3.32 |
| | | | 5/23/2007 | | 5.92 | 5.92 |
| | | | 11/28/2007 | | 5.85 | 5.85 |
| | | | 6/5/2008 | 2.23 | 2.23 | |
| | | | 11/20/2008 | | 1.05 J | 1.05 J |
| | | | 6/11/2009 | | 3.6 | 3.6 |
| | | | 6/30/2010 | | 1.7 H | 1.7 H |
| | | | 11/12/2010 | | 5.1 | 5.1 |
| MW-9 | 28 | 10 (35.7143%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | | ND<2 | ND<2 |
| | | | 9/28/1995 | | ND<2 | ND<2 |
| | | | 10/26/1995 | | ND<2 | ND<2 |
| | | | 11/19/1996 | | ND<2 | ND<2 |
| | | | 12/19/1996 | | ND<2 | ND<2 |
| | | | 3/24/1997 | | 17 | 17 |
| | | | 9/24/1997 | | ND<2 | ND<2 |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | | 17 | 17 |
| | | | 3/16/1999 | | 5 | 5 |
| | | | 9/23/1999 | | 5 | 5 |
| | | | 3/15/2000 | | 17 | 17 |
| | | | 9/24/2003 | | 13 | 13 |
| | | | 3/11/2004 | | ND<2 | ND<2 |
| | | | 10/12/2004 | | ND<2 | ND<2 |
| | | | 4/1/2005 | 3.91 | 3.91 | |
| | | | 10/25/2005 | | 6.28 | 6.28 |
| | | | 4/29/2006 | | 11 | 11 |
| | | | 11/18/2006 | | 11.4 | 11.4 |
| | | | 5/23/2007 | | 10.8 | 10.8 |
| | | | 11/28/2007 | | 8.98 | 8.98 |
| | | | 6/5/2008 | 8.48 | 8.48 | |
| | | | 11/20/2008 | | 13.8 | 13.8 |
| | | | 6/11/2009 | | 8.6 | 8.6 |
| | | | 11/16/2009 | | 8.7 | 8.7 |
| | | | 6/30/2010 | | 10 H | 10 H |

| | | | |
|---|---|---|---|
| 11/12/2010 | 9.1 | 9.1 | |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. Original |
|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: Arsenic

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.2 | -2.65209 | 7.03356 | -0.530417 |
| 2 | 0.2 | -2.36561 | 12.6297 | -1.00354 |
| 3 | 0.2 | -2.22621 | 17.5857 | -1.44878 |
| 4 | 0.2 | -2.09693 | 21.9828 | -1.86817 |
| 5 | 0.2 | -2.01409 | 26.0394 | -2.27099 |
| 6 | 0.2 | -1.92684 | 29.7521 | -2.65635 |
| 7 | 0.2 | -1.86629 | 33.2351 | -3.02961 |
| 8 | 0.2 | -1.79912 | 36.472 | -3.38944 |
| 9 | 0.2 | -1.75069 | 39.5369 | -3.73957 |
| 10 | 0.2 | -1.6954 | 42.4112 | -4.07865 |
| 11 | 0.2 | -1.65463 | 45.149 | -4.40958 |
| 12 | 0.2 | -1.60725 | 47.7323 | -4.73103 |
| 13 | 0.2 | -1.57179 | 50.2028 | -5.04539 |
| 14 | 0.2 | -1.53007 | 52.5439 | -5.3514 |
| 15 | 0.42 | -1.49852 | 54.7894 | -5.98078 |
| 16 | 0.45 | -1.46106 | 56.9241 | -6.63825 |
| 17 | 0.5 | -1.4325 | 58.9762 | -7.3545 |
| 18 | 0.54 | -1.39838 | 60.9316 | -8.10963 |
| 19 | 0.75 | -1.3722 | 62.8146 | -9.13878 |
| 20 | 1 | -1.34075 | 64.6122 | -10.4795 |
| 21 | 1 | -1.31652 | 66.3454 | -11.7961 |
| 22 | 1 | -1.28727 | 68.0025 | -13.0833 |
| 23 | 1 | -1.26464 | 69.6018 | -14.348 |
| 24 | 1 | -1.23724 | 71.1326 | -15.5852 |
| 25 | 1 | -1.21596 | 72.6111 | -16.8012 |
| 26 | 1 | -1.19012 | 74.0275 | -17.9913 |
| 27 | 1 | -1.17 | 75.3964 | -19.1613 |
| 28 | 1 | -1.1455 | 76.7086 | -20.3068 |
| 29 | 1 | -1.12639 | 77.9774 | -21.4332 |
| 30 | 1 | -1.10306 | 79.1941 | -22.5362 |
| 31 | 1 | -1.08482 | 80.371 | -23.6211 |
| 32 | 1 | -1.06252 | 81.4999 | -24.6836 |
| 33 | 1 | -1.04505 | 82.592 | -25.7286 |
| 34 | 1 | -1.02365 | 83.6399 | -26.7523 |
| 35 | 1 | -1.00687 | 84.6537 | -27.7592 |
| 36 | 1 | -0.986272 | 85.6264 | -28.7454 |
| 37 | 1 | -0.970094 | 86.5675 | -29.7155 |
| 38 | 1 | -0.950222 | 87.4704 | -30.6657 |
| 39 | 1 | -0.93459 | 88.3439 | -31.6003 |
| 40 | 1 | -0.915365 | 89.1818 | -32.5157 |
| 41 | 1 | -0.900227 | 89.9922 | -33.4159 |
| 42 | 1 | -0.881587 | 90.7694 | -34.2975 |
| 43 | 1 | -0.866894 | 91.5209 | -35.1644 |
| 44 | 1 | -0.848786 | 92.2413 | -36.0132 |
| 45 | 1 | -0.834498 | 92.9377 | -36.8477 |
| 46 | 1 | -0.816874 | 93.605 | -37.6646 |
| 47 | 1 | -0.802956 | 94.2497 | -38.4675 |
| 48 | 1 | -0.785774 | 94.8672 | -39.2533 |
| 49 | 1 | -0.772193 | 95.4634 | -40.0255 |

| | | | | |
|---|---|---|---|---|
| 50 | 1 | -0.755415 | 96.0341 | -40.7809 |
| 51 | 1 | -0.742143 | 96.5849 | -41.523 |
| 52 | 1 | -0.725736 | 97.1116 | -42.2488 |
| 53 | 1 | -0.712751 | 97.6196 | -42.9615 |
| 54 | 1 | -0.696684 | 98.1049 | -43.6582 |
| 55 | 1 | -0.683969 | 8.5727 | -44.3422 |
| 56 | 1 | -0.668209 | 99.0192 | -45.0104 |
| 57 | 1 | -0.655726 | 99.4492 | -45.6661 |
| 58 | 1 | -0.640266 | 99.8592 | -46.3064 |
| 59 | 1 | -0.628006 | 100.254 | -46.9344 |
| 60 | 1 | -0.612813 | 100.629 | -47.5472 |
| 61 | 1 | -0.60076 | 100.99 | -48.148 |
| 62 | 1 | -0.585815 | 101.333 | -48.7338 |
| 63 | 1 | -0.573953 | 101.663 | -49.3077 |
| 64 | 1 | -0.559237 | 101.975 | -49.867 |
| 65 | 1 | -0.547551 | 102.275 | -50.4145 |
| 66 | 1 | -0.533048 | 102.559 | -50.9476 |
| 67 | 1 | -0.521527 | 102.831 | -51.4691 |
| 68 | 1 | -0.507221 | 103.089 | -51.9763 |
| 69 | 1 | -0.49585 | 103.334 | -52.4722 |
| 70 | 1 | -0.481728 | 103.566 | -52.9539 |
| 71 | 1 | -0.470498 | 103.788 | -53.4244 |
| 72 | 1 | -0.456542 | 103.996 | -53.8809 |
| 73 | 1 | -0.445443 | 104.195 | -54.3264 |
| 74 | 1 | -0.431644 | 104.381 | -54.758 |
| 75 | 1 | -0.420664 | 104.558 | -55.1787 |
| 76 | 1 | -0.40701 | 104.724 | -55.5857 |
| 77 | 1 | -0.396142 | 104.881 | -55.9818 |
| 78 | 1 | -0.382622 | 105.027 | -56.3644 |
| 79 | 1 | -0.371856 | 105.165 | -56.7363 |
| 80 | 1 | -0.358459 | 105.294 | -57.0948 |
| 81 | 1 | -0.347787 | 105.415 | -57.4425 |
| 82 | 1 | -0.334503 | 105.527 | -57.7771 |
| 83 | 1 | -0.323919 | 105.632 | -58.101 |
| 84 | 1 | -0.310738 | 105.728 | -58.4117 |
| 85 | 1 | -0.300232 | 105.818 | -58.7119 |
| 86 | 1 | -0.287147 | 105.901 | -58.9991 |
| 87 | 1 | -0.276714 | 105.977 | -59.2758 |
| 88 | 1 | -0.263715 | 106.047 | -59.5395 |
| 89 | 1 | -0.253347 | 106.111 | -59.7929 |
| 90 | 1 | -0.240426 | 106.169 | -60.0333 |
| 91 | 1 | -0.230118 | 106.222 | -60.2634 |
| 92 | 1 | -0.217267 | 106.269 | -60.4807 |
| 93 | 1 | -0.207012 | 106.312 | -60.6877 |
| 94 | 1 | -0.194225 | 106.35 | -60.8819 |
| 95 | 1 | -0.184017 | 106.383 | -61.0659 |
| 96 | 1 | -0.171285 | 106.413 | -61.2372 |
| 97 | 1 | -0.161119 | 106.439 | -61.3983 |
| 98 | 1 | -0.148434 | 106.461 | -61.5468 |
| 99 | 1 | -0.138305 | 106.48 | -61.6851 |
| 100 | 1 | -0.125661 | 106.496 | -61.8107 |
| 101 | 1 | -0.115562 | 106.509 | -61.9263 |
| 102 | 1 | -0.102953 | 106.52 | -62.0292 |
| 103 | 1 | -0.0928787 | 106.528 | -62.1221 |
| 104 | 1 | -0.0802981 | 106.535 | -62.2024 |
| 105 | 1 | -0.0702426 | 106.54 | -62.2727 |
| 106 | 1 | -0.0576847 | 106.543 | -62.3304 |
| 107 | 1 | -0.0476439 | 106.545 | -62.378 |
| 108 | 1 | -0.0350997 | 106.546 | -62.4131 |
| 109 | 1 | -0.0250691 | 106.547 | -62.4382 |
| 110 | 1 | -0.0125328 | 106.547 | -62.4507 |
| 111 | 1 | 0 | 106.547 | -62.4507 |

| | | | | |
|---|---|---|---|---|
| 112 | 1 | 0.0125328 | 106.547 | -62.4382 |
| 113 | 1 | 0.0250691 | 106.548 | -62.4131 |
| 114 | 1 | 0.0350997 | 106.549 | -62.378 |
| 115 | 1 | 0.0476439 | 106.551 | -62.3304 |
| 116 | 1 | 0.0576847 | 106.555 | -62.2727 |
| 117 | 1 | 0.0702426 | 106.56 | -62.2024 |
| 118 | 1 | 0.0802981 | 106.566 | -62.1221 |
| 119 | 1 | 0.0928787 | 106.575 | -62.0292 |
| 120 | 1 | 0.102953 | 106.585 | -61.9263 |
| 121 | 1 | 0.115562 | 106.599 | -61.8107 |
| 122 | 1 | 0.125661 | 106.615 | -61.6851 |
| 123 | 1 | 0.138305 | 106.634 | -61.5468 |
| 124 | 1 | 0.148434 | 106.656 | -61.3983 |
| 125 | 1 | 0.161119 | 106.682 | -61.2372 |
| 126 | 1 | 0.171285 | 106.711 | -61.0659 |
| 127 | 1 | 0.184017 | 106.745 | -60.8819 |
| 128 | 1 | 0.194225 | 106.783 | -60.6877 |
| 129 | 1 | 0.207012 | 106.825 | -60.4807 |
| 130 | 1 | 0.217267 | 106.873 | -60.2634 |
| 131 | 1 | 0.230118 | 106.926 | -60.0333 |
| 132 | 1 | 0.240426 | 106.983 | -59.7929 |
| 133 | 1 | 0.253347 | 107.048 | -59.5395 |
| 134 | 1 | 0.263715 | 107.117 | -59.2758 |
| 135 | 1 | 0.276714 | 107.194 | -58.9991 |
| 136 | 1 | 0.287147 | 107.276 | -58.7119 |
| 137 | 1 | 0.300232 | 107.366 | -58.4117 |
| 138 | 1 | 0.310738 | 107.463 | -58.101 |
| 139 | 1.05 | 0.323919 | 107.568 | -57.7609 |
| 140 | 1.05 | 0.334503 | 107.68 | -57.4096 |
| 141 | 1.05 | 0.347787 | 107.801 | -57.0445 |
| 142 | 1.09 | 0.358459 | 107.929 | -56.6537 |
| 143 | 1.11 | 0.371856 | 108.067 | -56.241 |
| 144 | 1.13 | 0.382622 | 108.214 | -55.8086 |
| 145 | 1.31 | 0.396142 | 108.371 | -55.2897 |
| 146 | 1.45 | 0.40701 | 108.536 | -54.6995 |
| 147 | 1.48 | 0.420664 | 108.713 | -54.0769 |
| 148 | 1.7 | 0.431644 | 108.9 | -53.3431 |
| 149 | 1.7 | 0.445443 | 109.098 | -52.5859 |
| 150 | 1.88 | 0.456542 | 109.307 | -51.7276 |
| 151 | 1.92 | 0.470498 | 109.528 | -50.8242 |
| 152 | 1.95 | 0.481728 | 109.76 | -49.8848 |
| 153 | 2 | 0.49585 | 110.006 | -48.8931 |
| 154 | 2 | 0.507221 | 110.263 | -47.8787 |
| 155 | 2.02 | 0.521527 | 110.535 | -46.8252 |
| 156 | 2.11 | 0.533048 | 110.819 | -45.7005 |
| 157 | 2.23 | 0.547551 | 111.119 | -44.4794 |
| 158 | 2.23 | 0.559237 | 111.432 | -43.2323 |
| 159 | 2.6 | 0.573953 | 111.761 | -41.7401 |
| 160 | 2.65 | 0.585815 | 112.104 | -40.1877 |
| 161 | 3.1 | 0.60076 | 112.465 | -38.3253 |
| 162 | 3.32 | 0.612813 | 112.841 | -36.2908 |
| 163 | 3.6 | 0.628006 | 113.235 | -34.0299 |
| 164 | 3.6 | 0.640266 | 113.645 | -31.725 |
| 165 | 3.62 | 0.655726 | 114.075 | -29.3513 |
| 166 | 3.91 | 0.668209 | 114.522 | -26.7386 |
| 167 | 4 | 0.68396 | 114.989 | -24.0027 |
| 168 | 4.2 | 0.696684 | 115.475 | -21.0766 |
| 169 | 4.3 | 0.712751 | 115.983 | -18.0118 |
| 170 | 4.63 | 0.725736 | 116.51 | -14.6517 |
| 171 | 4.82 | 0.742143 | 117.06 | -11.0745 |
| 172 | 4.84 | 0.755415 | 117.631 | -7.41832 |
| 173 | 4.87 | 0.772193 | 118.227 | -3.65774 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 5 | 0.785774 | | 118.845 | 0.271126 |
| 175 | 5 | 0.802956 | | 119.489 | 4.28591 |
| 176 | 5 | 0.816874 | | 120.157 | 8.37028 |
| 177 | 5 | 0.834498 | | 120.853 | 12.5428 |
| 178 | 5 | 0.848786 | | 121.574 | 16.7867 |
| 179 | 5.1 | 0.866894 | | 122.325 | 21.2079 |
| 180 | 5.17 | 0.881587 | | 123.102 | 25.7657 |
| 181 | 5.2 | 0.900227 | | 123.913 | 30.4468 |
| 182 | 5.73 | 0.915365 | | 124.751 | 35.6919 |
| 183 | 5.75 | 0.93459 | 125.624 | 41.0658 | |
| 184 | 5.76 | 0.950222 | | 126.527 | 46.5391 |
| 185 | 5.85 | 0.970094 | | 127.468 | 52.2141 |
| 186 | 5.92 | 0.986272 | | 128.441 | 58.0528 |
| 187 | 6.28 | 1.00687 | 129.455 | 64.376 | |
| 188 | 6.67 | 1.02365 | 130.502 | 71.2037 | |
| 189 | 6.7 | 1.04505 | 131.594 | 78.2055 | |
| 190 | 7.5 | 1.06252 | 132.723 | 86.1744 | |
| 191 | 7.7 | 1.08482 | 133.9 | 94.5276 | |
| 192 | 7.92 | 1.10306 | 135.117 | 103.264 | |
| 193 | 8.44 | 1.12639 | 136.386 | 112.771 | |
| 194 | 8.48 | 1.1455 | 137.698 | 122.484 | |
| 195 | 8.6 | 1.17 | 139.067 | 132.546 | |
| 196 | 8.7 | 1.19012 | 140.483 | 142.9 | |
| 197 | 8.8 | 1.21596 | 141.962 | 153.601 | |
| 198 | 8.98 | 1.23724 | 143.493 | 164.711 | |
| 199 | 9.1 | 1.26464 | 145.092 | 176.22 | |
| 200 | 9.41 | 1.28727 | 146.749 | 188.333 | |
| 201 | 9.45 | 1.31652 | 148.482 | 200.774 | |
| 202 | 10 | 1.34075 | 150.28 | 214.181 | |
| 203 | 10.4 | 1.3722 | 152.163 | 228.452 | |
| 204 | 10.8 | 1.39838 | 154.118 | 243.555 | |
| 205 | 11 | 1.4325 | 156.17 | 259.312 | |
| 206 | 11.4 | 1.46106 | 158.305 | 275.968 | |
| 207 | 11.7 | 1.49852 | 160.551 | 293.501 | |
| 208 | 12.2 | 1.53007 | 162.892 | 312.168 | |
| 209 | 12.3 | 1.57179 | 165.362 | 331.501 | |
| 210 | 12.7 | 1.60725 | 167.945 | 351.913 | |
| 211 | 13 | 1.65463 | 170.683 | 373.423 | |
| 212 | 13.8 | 1.6954 | 173.558 | 396.82 | |
| 213 | 15 | 1.75069 | 176.622 | 423.08 | |
| 214 | 16 | 1.79912 | 179.859 | 451.866 | |
| 215 | 17 | 1.86629 | 183.342 | 483.593 | |
| 216 | 17 | 1.92684 | 187.055 | 516.349 | |
| 217 | 17 | 2.01409 | 191.112 | 550.589 | |
| 218 | 17 | 2.09693 | 195.509 | 586.236 | |
| 219 | 25.5 | 2.22621 | 200.465 | 643.005 | |
| 220 | 37 | 2.36561 | 206.061 | 730.532 | |
| 221 | 40 | 2.65209 | 213.094 | 836.616 | |

Data Set Standard Deviation = 5.27736
Numerator = 699926
Denominator = 1.30566e+006
W Statistic = 0.536073 = 699926 / 1.30566e+006

5% Critical value of 0.976 exceeds 0.536073
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.536073
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: Arsenic

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | -1.60944 | -2.65209 | 7.03356 | 4.26837 |
| 2 | -1.60944 | -2.36561 | 12.6297 | 8.07568 |
| 3 | -1.60944 | -2.22621 | 17.5857 | 11.6586 |
| 4 | -1.60944 | -2.09693 | 21.9828 | 15.0335 |
| 5 | -1.60944 | -2.01409 | 26.0394 | 18.2751 |
| 6 | -1.60944 | -1.92684 | 29.7521 | 21.3762 |
| 7 | -1.60944 | -1.86629 | 33.2351 | 24.3799 |
| 8 | -1.60944 | -1.79912 | 36.472 | 27.2754 |
| 9 | -1.60944 | -1.75069 | 39.5369 | 30.0931 |
| 10 | -1.60944 | -1.6954 | 42.4112 | 32.8217 |
| 11 | -1.60944 | -1.65463 | 45.149 | 35.4847 |
| 12 | -1.60944 | -1.60725 | 47.7323 | 38.0715 |
| 13 | -1.60944 | -1.57179 | 50.2028 | 40.6012 |
| 14 | -1.60944 | -1.53007 | 52.5439 | 43.0637 |
| 15 | -0.867501 | -1.49852 | 54.7894 | 44.3637 |
| 16 | -0.798508 | -1.46106 | 56.9241 | 45.5303 |
| 17 | -0.693147 | -1.4325 | 58.9762 | 46.5233 |
| 18 | -0.616186 | -1.39838 | 60.9316 | 47.3849 |
| 19 | -0.287682 | -1.3722 | 62.8146 | 47.7797 |
| 20 | 0 | -1.34075 | 64.6122 | 47.7797 |
| 21 | 0 | -1.31652 | 66.3454 | 47.7797 |
| 22 | 0 | -1.28727 | 68.0025 | 47.7797 |
| 23 | 0 | -1.26464 | 69.6018 | 47.7797 |
| 24 | 0 | -1.23724 | 71.1326 | 47.7797 |
| 25 | 0 | -1.21596 | 72.6111 | 47.7797 |
| 26 | 0 | -1.19012 | 74.0275 | 47.7797 |
| 27 | 0 | -1.17 | 75.3964 | 47.7797 |
| 28 | 0 | -1.1455 | 76.7086 | 47.7797 |
| 29 | 0 | -1.12639 | 77.9774 | 47.7797 |
| 30 | 0 | -1.10306 | 79.1941 | 47.7797 |
| 31 | 0 | -1.08482 | 80.371 | 47.7797 |
| 32 | 0 | -1.06252 | 81.4999 | 47.7797 |
| 33 | 0 | -1.04505 | 82.592 | 47.7797 |
| 34 | 0 | -1.02365 | 83.6399 | 47.7797 |
| 35 | 0 | -1.00687 | 84.6537 | 47.7797 |
| 36 | 0 | -0.986272 | 85.6264 | 47.7797 |
| 37 | 0 | -0.970094 | 86.5675 | 47.7797 |
| 38 | 0 | -0.950222 | 87.4704 | 47.7797 |
| 39 | 0 | -0.93459 | 88.3439 | 47.7797 |
| 40 | 0 | -0.915365 | 89.1818 | 47.7797 |
| 41 | 0 | -0.900227 | 89.9922 | 47.7797 |
| 42 | 0 | -0.881587 | 90.7694 | 47.7797 |
| 43 | 0 | -0.866894 | 91.5209 | 47.7797 |
| 44 | 0 | -0.848786 | 92.2413 | 47.7797 |
| 45 | 0 | -0.834498 | 92.9377 | 47.7797 |
| 46 | 0 | -0.816874 | 93.605 | 47.7797 |
| 47 | 0 | -0.802956 | 94.2497 | 47.7797 |
| 48 | 0 | -0.785774 | 94.8672 | 47.7797 |
| 49 | 0 | -0.772193 | 95.4634 | 47.7797 |

| | | | | |
|---|---|---|---|---|
| 50 | 0 | -0.755415 | 96.0341 | 47.7797 |
| 51 | 0 | -0.742143 | 96.5849 | 47.7797 |
| 52 | 0 | -0.725736 | 97.1116 | 47.7797 |
| 53 | 0 | -0.712751 | 97.6196 | 47.7797 |
| 54 | 0 | -0.696684 | 98.1049 | 47.7797 |
| 55 | 0 | -0.683969 | 8.5727 | 47.7797 |
| 56 | 0 | -0.668209 | 99.0192 | 47.7797 |
| 57 | 0 | -0.655726 | 99.4492 | 47.7797 |
| 58 | 0 | -0.640266 | 99.8592 | 47.7797 |
| 59 | 0 | -0.628006 | 100.254 | 47.7797 |
| 60 | 0 | -0.612813 | 100.629 | 47.7797 |
| 61 | 0 | -0.60076 | 100.99 | 47.7797 |
| 62 | 0 | -0.585815 | 101.333 | 47.7797 |
| 63 | 0 | -0.573953 | 101.663 | 47.7797 |
| 64 | 0 | -0.559237 | 101.975 | 47.7797 |
| 65 | 0 | -0.547551 | 102.275 | 47.7797 |
| 66 | 0 | -0.533048 | 102.559 | 47.7797 |
| 67 | 0 | -0.521527 | 102.831 | 47.7797 |
| 68 | 0 | -0.507221 | 103.089 | 47.7797 |
| 69 | 0 | -0.49585 | 103.334 | 47.7797 |
| 70 | 0 | -0.481728 | 103.566 | 47.7797 |
| 71 | 0 | -0.470498 | 103.788 | 47.7797 |
| 72 | 0 | -0.456542 | 103.996 | 47.7797 |
| 73 | 0 | -0.445443 | 104.195 | 47.7797 |
| 74 | 0 | -0.431644 | 104.381 | 47.7797 |
| 75 | 0 | -0.420664 | 104.558 | 47.7797 |
| 76 | 0 | -0.40701 | 104.724 | 47.7797 |
| 77 | 0 | -0.396142 | 104.881 | 47.7797 |
| 78 | 0 | -0.382622 | 105.027 | 47.7797 |
| 79 | 0 | -0.371856 | 105.165 | 47.7797 |
| 80 | 0 | -0.358459 | 105.294 | 47.7797 |
| 81 | 0 | -0.347787 | 105.415 | 47.7797 |
| 82 | 0 | -0.334503 | 105.527 | 47.7797 |
| 83 | 0 | -0.323919 | 105.632 | 47.7797 |
| 84 | 0 | -0.310738 | 105.728 | 47.7797 |
| 85 | 0 | -0.300232 | 105.818 | 47.7797 |
| 86 | 0 | -0.287147 | 105.901 | 47.7797 |
| 87 | 0 | -0.276714 | 105.977 | 47.7797 |
| 88 | 0 | -0.263715 | 106.047 | 47.7797 |
| 89 | 0 | -0.253347 | 106.111 | 47.7797 |
| 90 | 0 | -0.240426 | 106.169 | 47.7797 |
| 91 | 0 | -0.230118 | 106.222 | 47.7797 |
| 92 | 0 | -0.217267 | 106.269 | 47.7797 |
| 93 | 0 | -0.207012 | 106.312 | 47.7797 |
| 94 | 0 | -0.194225 | 106.35 | 47.7797 |
| 95 | 0 | -0.184017 | 106.383 | 47.7797 |
| 96 | 0 | -0.171285 | 106.413 | 47.7797 |
| 97 | 0 | -0.161119 | 106.439 | 47.7797 |
| 98 | 0 | -0.148434 | 106.461 | 47.7797 |
| 99 | 0 | -0.138305 | 106.48 | 47.7797 |
| 100 | 0 | -0.125661 | 106.496 | 47.7797 |
| 101 | 0 | -0.115562 | 106.509 | 47.7797 |
| 102 | 0 | -0.102953 | 106.52 | 47.7797 |
| 103 | 0 | -0.0928787 | 106.528 | 47.7797 |
| 104 | 0 | -0.0802981 | 106.535 | 47.7797 |
| 105 | 0 | -0.0702426 | 106.54 | 47.7797 |
| 106 | 0 | -0.0576847 | 106.543 | 47.7797 |
| 107 | 0 | -0.0476439 | 106.545 | 47.7797 |
| 108 | 0 | -0.0350997 | 106.546 | 47.7797 |
| 109 | 0 | -0.0250691 | 106.547 | 47.7797 |
| 110 | 0 | -0.0125328 | 106.547 | 47.7797 |
| 111 | 0 | 0 | 106.547 | 47.7797 |

| | | | | |
|---|---|---|---|---|
| 112 | 0 | 0.0125328 | 106.547 | 47.7797 |
| 113 | 0 | 0.0250691 | 106.548 | 47.7797 |
| 114 | 0 | 0.0350997 | 106.549 | 47.7797 |
| 115 | 0 | 0.0476439 | 106.551 | 47.7797 |
| 116 | 0 | 0.0576847 | 106.555 | 47.7797 |
| 117 | 0 | 0.0702426 | 106.56 | 47.7797 |
| 118 | 0 | 0.0802981 | 106.566 | 47.7797 |
| 119 | 0 | 0.0928787 | 106.575 | 47.7797 |
| 120 | 0 | 0.102953 | 106.585 | 47.7797 |
| 121 | 0 | 0.115562 | 106.599 | 47.7797 |
| 122 | 0 | 0.125661 | 106.615 | 47.7797 |
| 123 | 0 | 0.138305 | 106.634 | 47.7797 |
| 124 | 0 | 0.148434 | 106.656 | 47.7797 |
| 125 | 0 | 0.161119 | 106.682 | 47.7797 |
| 126 | 0 | 0.171285 | 106.711 | 47.7797 |
| 127 | 0 | 0.184017 | 106.745 | 47.7797 |
| 128 | 0 | 0.194225 | 106.783 | 47.7797 |
| 129 | 0 | 0.207012 | 106.825 | 47.7797 |
| 130 | 0 | 0.217267 | 106.873 | 47.7797 |
| 131 | 0 | 0.230118 | 106.926 | 47.7797 |
| 132 | 0 | 0.240426 | 106.983 | 47.7797 |
| 133 | 0 | 0.253347 | 107.048 | 47.7797 |
| 134 | 0 | 0.263715 | 107.117 | 47.7797 |
| 135 | 0 | 0.276714 | 107.194 | 47.7797 |
| 136 | 0 | 0.287147 | 107.276 | 47.7797 |
| 137 | 0 | 0.300232 | 107.366 | 47.7797 |
| 138 | 0 | 0.310738 | 107.463 | 47.7797 |
| 139 | 0.0487902 | 0.323919 | 107.568 | 47.7955 |
| 140 | 0.0487902 | 0.334503 | 107.68 | 47.8118 |
| 141 | 0.0487902 | 0.347787 | 107.801 | 47.8288 |
| 142 | 0.0861777 | 0.358459 | 107.929 | 47.8597 |
| 143 | 0.10436 | 0.371856 | 108.067 | 47.8985 |
| 144 | 0.122218 | 0.382622 | 108.214 | 47.9453 |
| 145 | 0.270027 | 0.396142 | 108.371 | 48.0522 |
| 146 | 0.371564 | 0.40701 | 108.536 | 48.2035 |
| 147 | 0.392042 | 0.420664 | 108.713 | 48.3684 |
| 148 | 0.530628 | 0.431644 | 108.9 | 48.5974 |
| 149 | 0.530628 | 0.445443 | 109.098 | 48.8338 |
| 150 | 0.631272 | 0.456542 | 109.307 | 49.122 |
| 151 | 0.652325 | 0.470498 | 109.528 | 49.4289 |
| 152 | 0.667829 | 0.481728 | 109.76 | 49.7506 |
| 153 | 0.693147 | 0.49585 | 110.006 | 50.0943 |
| 154 | 0.693147 | 0.507221 | 110.263 | 50.4459 |
| 155 | 0.703098 | 0.521527 | 110.535 | 50.8126 |
| 156 | 0.746688 | 0.533048 | 110.819 | 51.2106 |
| 157 | 0.802002 | 0.547551 | 111.119 | 51.6497 |
| 158 | 0.802002 | 0.559237 | 111.432 | 52.0982 |
| 159 | 0.955511 | 0.573953 | 111.761 | 52.6467 |
| 160 | 0.97456 | 0.585815 | 112.104 | 53.2176 |
| 161 | 1.1314 | 0.60076 | 112.465 | 53.8973 |
| 162 | 1.19996 | 0.612813 | 112.841 | 54.6326 |
| 163 | 1.28093 | 0.628006 | 113.235 | 55.4371 |
| 164 | 1.28093 | 0.640266 | 113.645 | 56.2572 |
| 165 | 1.28647 | 0.655726 | 114.075 | 57.1008 |
| 166 | 1.36354 | 0.668209 | 114.522 | 58.0119 |
| 167 | 1.38629 | 0.68396 | 114.989 | 58.9601 |
| 168 | 1.43508 | 0.696684 | 115.475 | 59.9599 |
| 169 | 1.45862 | 0.712751 | 115.983 | 60.9995 |
| 170 | 1.53256 | 0.725736 | 116.51 | 62.1117 |
| 171 | 1.57277 | 0.742143 | 117.06 | 63.279 |
| 172 | 1.57691 | 0.755415 | 117.631 | 64.4702 |
| 173 | 1.58309 | 0.772193 | 118.227 | 65.6926 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 1.60944 | 0.785774 | | 118.845 | 66.9573 |
| 175 | 1.60944 | 0.802956 | | 119.489 | 68.2496 |
| 176 | 1.60944 | 0.816874 | | 120.157 | 69.5643 |
| 177 | 1.60944 | 0.834498 | | 120.853 | 70.9074 |
| 178 | 1.60944 | 0.848786 | | 121.574 | 72.2734 |
| 179 | 1.62924 | 0.866894 | | 122.325 | 73.6858 |
| 180 | 1.64287 | 0.881587 | | 123.102 | 75.1342 |
| 181 | 1.64866 | 0.900227 | | 123.913 | 76.6183 |
| 182 | 1.74572 | 0.915365 | | 124.751 | 78.2163 |
| 183 | 1.7492 | 0.93459 | 125.624 | 79.8511 | |
| 184 | 1.75094 | 0.950222 | | 126.527 | 81.5149 |
| 185 | 1.76644 | 0.970094 | | 127.468 | 83.2285 |
| 186 | 1.77834 | 0.986272 | | 128.441 | 84.9824 |
| 187 | 1.83737 | 1.00687 | 129.455 | 86.8324 | |
| 188 | 1.89762 | 1.02365 | 130.502 | 88.7749 | |
| 189 | 1.90211 | 1.04505 | 131.594 | 90.7627 | |
| 190 | 2.0149 | 1.06252 | 132.723 | 92.9036 | |
| 191 | 2.04122 | 1.08482 | 133.9 | 95.1179 | |
| 192 | 2.06939 | 1.10306 | 135.117 | 97.4006 | |
| 193 | 2.13298 | 1.12639 | 136.386 | 99.8032 | |
| 194 | 2.13771 | 1.1455 | 137.698 | 102.252 | |
| 195 | 2.15176 | 1.17 | 139.067 | 104.769 | |
| 196 | 2.16332 | 1.19012 | 140.483 | 107.344 | |
| 197 | 2.17475 | 1.21596 | 141.962 | 109.988 | |
| 198 | 2.195 | 1.23724 | 143.493 | 112.704 | |
| 199 | 2.20827 | 1.26464 | 145.092 | 115.497 | |
| 200 | 2.24177 | 1.28727 | 146.749 | 118.383 | |
| 201 | 2.24601 | 1.31652 | 148.482 | 121.34 | |
| 202 | 2.30259 | 1.34075 | 150.28 | 124.427 | |
| 203 | 2.34181 | 1.3722 | 152.163 | 127.64 | |
| 204 | 2.37955 | 1.39838 | 154.118 | 130.968 | |
| 205 | 2.3979 | 1.4325 | 156.17 | 134.403 | |
| 206 | 2.43361 | 1.46106 | 158.305 | 137.958 | |
| 207 | 2.45959 | 1.49852 | 160.551 | 141.644 | |
| 208 | 2.50144 | 1.53007 | 162.892 | 145.471 | |
| 209 | 2.5096 | 1.57179 | 165.362 | 149.416 | |
| 210 | 2.5416 | 1.60725 | 167.945 | 153.501 | |
| 211 | 2.56495 | 1.65463 | 170.683 | 157.745 | |
| 212 | 2.62467 | 1.6954 | 173.558 | 162.195 | |
| 213 | 2.70805 | 1.75069 | 176.622 | 166.936 | |
| 214 | 2.77259 | 1.79912 | 179.859 | 171.924 | |
| 215 | 2.83321 | 1.86629 | 183.342 | 177.212 | |
| 216 | 2.83321 | 1.92684 | 187.055 | 182.671 | |
| 217 | 2.83321 | 2.01409 | 191.112 | 188.377 | |
| 218 | 2.83321 | 2.09693 | 195.509 | 194.318 | |
| 219 | 3.23868 | 2.22621 | 200.465 | 201.528 | |
| 220 | 3.61092 | 2.36561 | 206.061 | 210.07 | |
| 221 | 3.68888 | 2.65209 | 213.094 | 219.853 | |

Data Set Standard Deviation = 1.10651
Numerator = 48335.5
Denominator = 57399.1
W Statistic = 0.842097 = 48335.5 / 57399.1

5% Critical value of 0.976 exceeds 0.842097
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.842097
Evidence of non-normality at 99% level of significance

# Kruskal-Wallis Non-Parametric Test

## Parameter: Arsenic

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

# Kruskal Wallis Ranks

## Background Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-13 | 3/16/1999 | ND<0 | 67 |
| | 9/23/1999 | ND<0 | 67 |
| | 3/15/2000 | 3.61092 | 220 |
| | 9/24/2003 | ND<0 | 67 |
| | 3/11/2004 | ND<0 | 67 |
| | 10/12/2004 | ND<0 | 67 |
| | 4/1/2005 | ND<0 | 67 |
| | 10/25/2005 | ND<0 | 67 |
| | 4/29/2006 | ND<0 | 67 |
| | 11/18/2006 | ND<0 | 67 |
| | 5/23/2007 | 0.10436 J | 143 |
| | 11/28/2007 | ND<0 | 67 |
| | 6/5/2008 | 0.371564 J | 146 |
| | 11/20/2008 | ND<0 | 67 |
| | 6/11/2009 | ND<-1.60944 | 67 |
| | 11/16/2009 | ND<-1.60944 | 67 |
| | 6/30/2010 | ND<-1.60944 | 67 |
| | 11/12/2010 | ND<-1.60944 U | 67 |

Rank Sum = 1514
Rank Mean = 84.1111

Background Rank Sum = 1514
Background Rank Mean = 84.1111

## Compliance Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-12BR | 3/16/1999 | ND<0 | 67 |
| | 9/23/1999 | ND<0 | 67 |
| | 3/15/2000 | ND<0 | 67 |
| | 9/24/2003 | ND<0 | 67 |
| | 3/11/2004 | ND<0 | 67 |
| | 10/12/2004 | ND<0 | 67 |
| | 4/1/2005 | 0.667829 J | 152 |
| | 10/25/2005 | ND<0 | 67 |
| | 4/29/2006 | ND<0 | 67 |
| | 11/18/2006 | ND<0 | 67 |
| | 5/23/2007 | ND<0 | 67 |
| | 11/28/2007 | ND<0 | 67 |
| | 6/5/2008 | 0.652325 J | 151 |
| | 11/20/2008 | ND<0 | 67 |
| | 6/11/2009 | ND<-1.60944 | 67 |
| | 11/16/2009 | ND<-1.60944 | 67 |
| | 6/30/2010 | ND<-1.60944 | 67 |
| | 11/12/2010 | -0.798508 J | 135 |

Rank Sum = 1443
Rank Mean = 80.1667

| | | | | |
|---|---|---|---|---|
| MW-11R | 7/20/1995 | ND<0 | 67 | |
| | 8/24/1995 | ND<0 | 67 | |
| | 9/28/1995 | ND<0 | 67 | |
| | 10/26/1995 | ND<0 | 67 | |
| | 11/19/1996 | ND<0 | 67 | |
| | 12/19/1996 | ND<0 | 67 | |
| | 3/24/1997 | ND<0 | 67 | |
| | 9/24/1997 | ND<0 | 67 | |
| | 4/7/1998 | ND<0 | 67 | |
| | 9/23/1998 | ND<0 | 67 | |
| | 3/16/1999 | ND<0 | 67 | |
| | 9/23/1999 | ND<0 | 67 | |
| | 3/15/2000 | ND<0 | 67 | |
| | 9/24/2003 | 2.83321 | | 215 |
| | 3/11/2004 | ND<0 | 67 | |
| | 10/12/2004 | 2.70805 | | 213 |
| | 4/1/2005 | 2.34181 | 203 | |
| | 10/25/2005 | 2.0149 | 190 | |
| | 4/29/2006 | 2.06939 | | 192 |
| | 11/18/2006 | 0.97456 | | 160 |
| | 5/23/2007 | 3.23868 | | 219 |
| | 11/28/2007 | 1.58309 | | 173 |
| | 6/5/2008 | ND<0 | 67 | |
| | 11/20/2008 | ND<0 | 67 | |
| | 6/11/2009 | ND<-1.60944 | | 67 |
| | 11/16/2009 | ND<-1.60944 | | 67 |
| | 6/30/2010 | 0.530628 H | | 148 |
| | 11/12/2010 | ND<-1.60944 U | | 67 |

Rank Sum = 2986
Rank Mean = 106.643

| | | | | |
|---|---|---|---|---|
| MW-12AR | 3/16/1999 | ND<0 | 67 | |
| | 9/23/1999 | 1.60944 | | 174 |
| | 3/15/2000 | 2.77259 | | 214 |
| | 9/24/2003 | ND<0 | 67 | |
| | 3/11/2004 | ND<0 | 67 | |
| | 10/12/2004 | ND<0 | 67 | |
| | 4/1/2005 | ND<0 | 67 | |
| | 10/25/2005 | 0.703098 | | 155 |
| | 4/29/2006 | 0.392042 J | | 147 |
| | 11/18/2006 | 0.0487902 J | | 139 |
| | 5/23/2007 | 0.0487902 J | | 140 |
| | 11/28/2007 | ND<0 | 67 | |
| | 6/5/2008 | ND<0 | 67 | |
| | 11/20/2008 | ND<0 | 67 | |
| | 6/11/2009 | -0.867501 J | | 134 |
| | 11/16/2009 | -0.693147 J | | 136 |
| | 6/30/2010 | -0.616186 J | | 137 |
| | 11/12/2010 | -0.287682 J | | 138 |

Rank Sum = 2050
Rank Mean = 113.889

| | | | | |
|---|---|---|---|---|
| MW-10 | 7/20/1995 | ND<0 | 67 | |
| | 8/24/1995 | ND<0 | 67 | |
| | 9/28/1995 | ND<0 | 67 | |
| | 10/26/1995 | ND<0 | 67 | |
| | 11/19/1996 | ND<0 | 67 | |
| | 12/19/1996 | ND<0 | 67 | |
| | 3/24/1997 | ND<0 | 67 | |
| | 9/24/1997 | ND<0 | 67 | |
| | 4/7/1998 | ND<0 | 67 | |

| | | | | |
|---|---|---|---|---|
| | 9/23/1998 | ND<0 | 67 | |
| | 3/16/1999 | 1.38629 | | 167 |
| | 9/23/1999 | ND<0 | 67 | |
| | 3/15/2000 | ND<0 | 67 | |
| | 9/24/2003 | ND<0 | 67 | |
| | 3/11/2004 | ND<0 | 67 | |
| | 10/12/2004 | ND<0 | 67 | |
| | 4/1/2005 | 0.122218 J | 144 | |
| | 10/25/2005 | ND<0 | 67 | |
| | 4/29/2006 | 0.270027 J | | 145 |
| | 11/18/2006 | 0.631272 J | | 150 |
| | 5/23/2007 | 1.28647 | | 165 |
| | 11/28/2007 | 1.57277 | | 171 |
| | 6/5/2008 | 0.802002 | 157 | |
| | 11/20/2008 | 0.746688 | | 156 |
| | 6/11/2009 | 1.1314 | 161 | |
| | 11/16/2009 | 1.28093 | | 163 |
| | 6/30/2010 | 1.43508 H | | 168 |
| | 11/12/2010 | 1.45862 | | 169 |

Rank Sum = 2988
Rank Mean = 106.714

| | | | | |
|---|---|---|---|---|
| MW-6 | 7/20/1995 | ND<0 | 67 | |
| | 8/24/1995 | ND<0 | 67 | |
| | 9/28/1995 | ND<0 | 67 | |
| | 10/26/1995 | ND<0 | 67 | |
| | 11/19/1996 | ND<0 | 67 | |
| | 12/19/1996 | ND<0 | 67 | |
| | 3/24/1997 | ND<0 | 67 | |
| | 9/24/1997 | ND<0 | 67 | |
| | 4/7/1998 | ND<0 | 67 | |
| | 9/23/1998 | ND<0 | 67 | |
| | 3/16/1999 | 1.60944 | | 175 |
| | 9/23/1999 | 0.693147 | | 153 |
| | 3/15/2000 | ND<0 | 67 | |
| | 9/24/2003 | ND<0 | 67 | |
| | 3/11/2004 | ND<0 | 67 | |
| | 10/12/2004 | ND<0 | 67 | |
| | 4/1/2005 | ND<0 | 67 | |
| | 10/25/2005 | ND<0 | 67 | |
| | 4/29/2006 | ND<0 | 67 | |
| | 11/18/2006 | ND<0 | 67 | |
| | 5/23/2007 | ND<0 | 67 | |
| | 11/28/2007 | ND<0 | 67 | |
| | 6/5/2008 | 0.0861777 J | 142 | |
| | 11/20/2008 | 1.7492 | 183 | |
| | 6/11/2009 | ND<-1.60944 | | 67 |
| | 11/16/2009 | ND<-1.60944 | | 67 |
| | 6/30/2010 | ND<-1.60944 | | 67 |
| | 11/12/2010 | ND<-1.60944 U | | 67 |

Rank Sum = 2261
Rank Mean = 80.75

| | | | | |
|---|---|---|---|---|
| MW-7 | 7/20/1995 | ND<0 | 67 | |
| | 8/24/1995 | ND<0 | 67 | |
| | 9/28/1995 | 2.5416 | 210 | |
| | 10/26/1995 | ND<0 | 67 | |
| | 11/19/1996 | ND<0 | 67 | |
| | 12/19/1996 | 2.45959 | | 207 |
| | 3/24/1997 | ND<0 | 67 | |
| | 9/24/1997 | ND<0 | 67 | |
| | 4/7/1998 | ND<0 | 67 | |

| | | | | |
|---|---|---|---|---|
| | 9/23/1998 | ND<0 | 67 | |
| | 3/16/1999 | 1.60944 | | 176 |
| | 9/23/1999 | ND<0 | 67 | |
| | 3/15/2000 | ND<0 | 67 | |
| | 9/24/2003 | ND<0 | 67 | |
| | 3/11/2004 | ND<0 | 67 | |
| | 10/12/2004 | ND<0 | 67 | |
| | 4/1/2005 | 1.75094 | 184 | |
| | 10/25/2005 | 2.13298 | | 193 |
| | 4/29/2006 | 2.24177 | | 200 |
| | 11/18/2006 | 1.57691 | | 172 |
| | 5/23/2007 | 2.24601 | | 201 |
| | 11/28/2007 | 2.5096 | 209 | |
| | 6/5/2008 | 2.17475 | 197 | |
| | 11/20/2008 | 1.74572 | | 182 |
| | 6/11/2009 | 1.64866 | | 181 |
| | 11/16/2009 | 0.955511 | | 159 |
| | 6/30/2010 | 1.90211 | H | 189 |
| | 11/12/2010 | 2.04122 | | 191 |

Rank Sum = 3722
Rank Mean = 132.929

| | | | | |
|---|---|---|---|---|
| MW-8 | 7/20/1995 | ND<0 | 67 | |
| | 8/24/1995 | ND<0 | 67 | |
| | 9/28/1995 | 2.50144 | | 208 |
| | 10/26/1995 | ND<0 | 67 | |
| | 11/19/1996 | ND<0 | 67 | |
| | 12/19/1996 | ND<0 | 67 | |
| | 3/24/1997 | ND<0 | 67 | |
| | 9/24/1997 | ND<0 | 67 | |
| | 4/7/1998 | ND<0 | 67 | |
| | 9/23/1998 | ND<0 | 67 | |
| | 3/16/1999 | 0.693147 | | 154 |
| | 9/23/1999 | 3.68888 | | 221 |
| | 3/15/2000 | ND<0 | 67 | |
| | 9/24/2003 | ND<0 | 67 | |
| | 3/11/2004 | ND<0 | 67 | |
| | 10/12/2004 | ND<0 | 67 | |
| | 4/1/2005 | 1.64287 | 180 | |
| | 10/25/2005 | 1.89762 | | 188 |
| | 4/29/2006 | 1.53256 | | 170 |
| | 11/18/2006 | 1.19996 | | 162 |
| | 5/23/2007 | 1.77834 | | 186 |
| | 11/28/2007 | 1.76644 | | 185 |
| | 6/5/2008 | 0.802002 | 158 | |
| | 11/20/2008 | 0.0487902 | J | 141 |
| | 6/11/2009 | 1.28093 | | 164 |
| | 6/30/2010 | 0.530628 | H | 149 |
| | 11/12/2010 | 1.62924 | | 179 |

Rank Sum = 3316
Rank Mean = 122.815

| | | | | |
|---|---|---|---|---|
| MW-9 | 7/20/1995 | ND<0 | 67 | |
| | 8/24/1995 | ND<0 | 67 | |
| | 9/28/1995 | ND<0 | 67 | |
| | 10/26/1995 | ND<0 | 67 | |
| | 11/19/1996 | ND<0 | 67 | |
| | 12/19/1996 | ND<0 | 67 | |
| | 3/24/1997 | 2.83321 | | 216 |
| | 9/24/1997 | ND<0 | 67 | |
| | 4/7/1998 | ND<0 | 67 | |
| | 9/23/1998 | 2.83321 | | 217 |

| | | | |
|---|---|---|---|
| 3/16/1999 | 1.60944 | | 177 |
| 9/23/1999 | 1.60944 | | 178 |
| 3/15/2000 | 2.83321 | | 218 |
| 9/24/2003 | 2.56495 | | 211 |
| 3/11/2004 | ND<0 | 67 | |
| 10/12/2004 | ND<0 | 67 | |
| 4/1/2005 | 1.36354 | 166 | |
| 10/25/2005 | 1.83737 | | 187 |
| 4/29/2006 | 2.3979 | 205 | |
| 11/18/2006 | 2.43361 | | 206 |
| 5/23/2007 | 2.37955 | | 204 |
| 11/28/2007 | 2.195 | 198 | |
| 6/5/2008 | 2.13771 | 194 | |
| 11/20/2008 | 2.62467 | | 212 |
| 6/11/2009 | 2.15176 | | 195 |
| 11/16/2009 | 2.16332 | | 196 |
| 6/30/2010 | 2.30259 | H | 202 |
| 11/12/2010 | 2.20827 | | 199 |

Rank Sum = 4251
Rank Mean = 151.821

## Calculation Results:

Kruskal-Wallis H Statistic = 29.5552
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 37.7921
95% Confidence comparison value is 15.5073 at 8 degrees of freedom
29.5552 > 15.5073 indicating a significant group difference at 5% significance level
37.7921 > 15.5073 indicating a significant group difference at 5% significance level when adjusted for ties

## Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 84.1111

| Well | Mean Rank | Dif from Bkg | Critical Value |
|---|---|---|---|
| MW-12BR | 80.1667 | -3.9444 | 49.5832 |
| MW-11R | 106.643 | 22.5317 | 44.9386 |
| MW-12AR | 113.889 | 29.7778 | 49.5832 |
| MW-10 | 106.714 | 22.6032 | 44.9386 |
| MW-6 | 80.75 | -3.3611 | 44.9386 |
| MW-7 | 132.929 | 48.8175 | 44.9386 |
| MW-8 | 122.815 | 38.7037 | 45.263 |
| MW-9 | 151.821 | 67.7103 | 44.9386 |

## Individual Well Comparisons at Groupwise 5% Significance Level (0.625% Significance Level per comparison)

0.625% Z score is 2.51213
Mean background rank is 84.1111

| Well | Mean Rank | Dif from Bkg | Critical Value |
|---|---|---|---|
| MW-12BR | 80.1667 | -3.9444 | 53.5431 |
| MW-11R | 106.643 | 22.5317 | 48.5275 |
| MW-12AR | 113.889 | 29.7778 | 53.5431 |
| MW-10 | 106.714 | 22.6032 | 48.5275 |
| MW-6 | 80.75 | -3.3611 | 48.5275 |
| MW-7 | 132.929 | 48.8175 | 48.5275 |
| MW-8 | 122.815 | 38.7037 | 48.8779 |
| MW-9 | 151.821 | 67.7103 | 48.5275 |

# Mann-Kendall Trend Analysis

## Parameter: Arsenic

## Location: MW-7

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | | Positives | Negatives |
|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 0 | 0 | |
| 2.5416 | ND<0 | 2.5416 | 1 | 0 | |
| ND<0 | ND<0 | 0 | 1 | 0 | |
| ND<0 | ND<0 | 0 | 1 | 0 | |
| 2.45959 | | ND<0 | 2.45959 | 2 | 0 |
| ND<0 | ND<0 | 0 | 2 | 0 | |
| ND<0 | ND<0 | 0 | 2 | 0 | |
| ND<0 | ND<0 | 0 | 2 | 0 | |
| ND<0 | ND<0 | 0 | 2 | 0 | |
| 1.60944 | | ND<0 | 1.60944 | 3 | 0 |
| ND<0 | ND<0 | 0 | 3 | 0 | |
| ND<0 | ND<0 | 0 | 3 | 0 | |
| ND<0 | ND<0 | 0 | 3 | 0 | |
| ND<0 | ND<0 | 0 | 3 | 0 | |
| ND<0 | ND<0 | 0 | 3 | 0 | |
| 1.75094 | | ND<0 | 1.75094 | 4 | 0 |
| 2.13298 | | ND<0 | 2.13298 | 5 | 0 |
| 2.24177 | | ND<0 | 2.24177 | 6 | 0 |
| 1.57691 | | ND<0 | 1.57691 | 7 | 0 |
| 2.24601 | | ND<0 | 2.24601 | 8 | 0 |
| 2.5096 | ND<0 | 2.5096 | 9 | 0 | |
| 2.17475 | | ND<0 | 2.17475 | 10 | 0 |
| 1.74572 | | ND<0 | 1.74572 | 11 | 0 |
| 1.64866 | | ND<0 | 1.64866 | 12 | 0 |
| 0.955511 | | ND<0 | 0.955511 | 13 | 0 |
| 1.90211 H | | ND<0 | 1.90211 | 14 | 0 |
| 2.04122 | | ND<0 | 2.04122 | 15 | 0 |
| | | | | | |
| 2.5416 | ND<0 | 2.5416 | 16 | 0 | |
| ND<0 | ND<0 | 0 | 16 | 0 | |
| ND<0 | ND<0 | 0 | 16 | 0 | |
| 2.45959 | | ND<0 | 2.45959 | 17 | 0 |
| ND<0 | ND<0 | 0 | 17 | 0 | |
| ND<0 | ND<0 | 0 | 17 | 0 | |
| ND<0 | ND<0 | 0 | 17 | 0 | |
| ND<0 | ND<0 | 0 | 17 | 0 | |
| 1.60944 | | ND<0 | 1.60944 | 18 | 0 |
| ND<0 | ND<0 | 0 | 18 | 0 | |
| ND<0 | ND<0 | 0 | 18 | 0 | |
| ND<0 | ND<0 | 0 | 18 | 0 | |
| ND<0 | ND<0 | 0 | 18 | 0 | |
| ND<0 | ND<0 | 0 | 18 | 0 | |
| 1.75094 | | ND<0 | 1.75094 | 19 | 0 |
| 2.13298 | | ND<0 | 2.13298 | 20 | 0 |
| 2.24177 | | ND<0 | 2.24177 | 21 | 0 |
| 1.57691 | | ND<0 | 1.57691 | 22 | 0 |
| 2.24601 | | ND<0 | 2.24601 | 23 | 0 |
| 2.5096 | ND<0 | 2.5096 | 24 | 0 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2.17475 | | ND<0 | 2.17475 | 25 | 0 | |
| 1.74572 | | ND<0 | 1.74572 | 26 | 0 | |
| 1.64866 | | ND<0 | 1.64866 | 27 | 0 | |
| 0.955511 | | ND<0 | 0.955511 | | 28 | 0 |
| 1.90211 H | | ND<0 | 1.90211 | 29 | 0 | |
| 2.04122 | | ND<0 | 2.04122 | 30 | 0 | |
| | | | | | | |
| ND<0 | 2.5416 | -2.5416 | 30 | 1 | | |
| ND<0 | 2.5416 | -2.5416 | 30 | 2 | | |
| 2.45959 | | 2.5416 | -0.082013 | 2 | 30 | 3 |
| ND<0 | 2.5416 | -2.5416 | 30 | 4 | | |
| ND<0 | 2.5416 | -2.5416 | 30 | 5 | | |
| ND<0 | 2.5416 | -2.5416 | 30 | 6 | | |
| ND<0 | 2.5416 | -2.5416 | 30 | 7 | | |
| 1.60944 | | 2.5416 | -0.93216 | 4 | 30 | 8 |
| ND<0 | 2.5416 | -2.5416 | 30 | 9 | | |
| ND<0 | 2.5416 | -2.5416 | 30 | 10 | | |
| ND<0 | 2.5416 | -2.5416 | 30 | 11 | | |
| ND<0 | 2.5416 | -2.5416 | 30 | 12 | | |
| ND<0 | 2.5416 | -2.5416 | 30 | 13 | | |
| 1.75094 | | 2.5416 | -0.79066 | 5 | 30 | 14 |
| 2.13298 | | 2.5416 | -0.408623 | 0 | 15 | |
| 2.24177 | | 2.5416 | -0.299829 | | 30 | 16 |
| 1.57691 | | 2.5416 | -0.964687 | | 30 | 17 |
| 2.24601 | | 2.5416 | -0.295587 | | 30 | 18 |
| 2.5096 | 2.5416 | -0.032002 | 7 | 30 | 19 | |
| 2.17475 | | 2.5416 | -0.366853 | 0 | 20 | |
| 1.74572 | | 2.5416 | -0.795886 | | 30 | 21 |
| 1.64866 | | 2.5416 | -0.892943 | | 30 | 22 |
| 0.955511 | | 2.5416 | -1.586093 | 0 | 23 | |
| 1.90211 H | | 2.5416 | -0.639494 | | 30 | 24 |
| 2.04122 | | 2.5416 | -0.500382 | | 30 | 25 |
| | | | | | | |
| ND<0 | ND<0 | 0 | 30 | 25 | | |
| 2.45959 | | ND<0 | 2.45959 | 31 | 25 | |
| ND<0 | ND<0 | 0 | 31 | 25 | | |
| ND<0 | ND<0 | 0 | 31 | 25 | | |
| ND<0 | ND<0 | 0 | 31 | 25 | | |
| ND<0 | ND<0 | 0 | 31 | 25 | | |
| 1.60944 | | ND<0 | 1.60944 | 32 | 25 | |
| ND<0 | ND<0 | 0 | 32 | 25 | | |
| ND<0 | ND<0 | 0 | 32 | 25 | | |
| ND<0 | ND<0 | 0 | 32 | 25 | | |
| ND<0 | ND<0 | 0 | 32 | 25 | | |
| ND<0 | ND<0 | 0 | 32 | 25 | | |
| 1.75094 | | ND<0 | 1.75094 | 33 | 25 | |
| 2.13298 | | ND<0 | 2.13298 | 34 | 25 | |
| 2.24177 | | ND<0 | 2.24177 | 35 | 25 | |
| 1.57691 | | ND<0 | 1.57691 | 36 | 25 | |
| 2.24601 | | ND<0 | 2.24601 | 37 | 25 | |
| 2.5096 | ND<0 | 2.5096 | 38 | 25 | | |
| 2.17475 | | ND<0 | 2.17475 | 39 | 25 | |
| 1.74572 | | ND<0 | 1.74572 | 40 | 25 | |
| 1.64866 | | ND<0 | 1.64866 | 41 | 25 | |
| 0.955511 | | ND<0 | 0.955511 | | 42 | 25 |
| 1.90211 H | | ND<0 | 1.90211 | 43 | 25 | |
| 2.04122 | | ND<0 | 2.04122 | 44 | 25 | |
| | | | | | | |
| 2.45959 | | ND<0 | 2.45959 | 45 | 25 | |
| ND<0 | ND<0 | 0 | 45 | 25 | | |
| ND<0 | ND<0 | 0 | 45 | 25 | | |
| ND<0 | ND<0 | 0 | 45 | 25 | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 45 | 25 | | | |
| 1.60944 | | ND<0 | 1.60944 | 46 | 25 | | |
| ND<0 | ND<0 | 0 | 46 | 25 | | | |
| ND<0 | ND<0 | 0 | 46 | 25 | | | |
| ND<0 | ND<0 | 0 | 46 | 25 | | | |
| ND<0 | ND<0 | 0 | 46 | 25 | | | |
| ND<0 | ND<0 | 0 | 46 | 25 | | | |
| 1.75094 | | ND<0 | 1.75094 | 47 | 25 | | |
| 2.13298 | | ND<0 | 2.13298 | 48 | 25 | | |
| 2.24177 | | ND<0 | 2.24177 | 49 | 25 | | |
| 1.57691 | | ND<0 | 1.57691 | 50 | 25 | | |
| 2.24601 | | ND<0 | 2.24601 | 51 | 25 | | |
| 2.5096 | ND<0 | 2.5096 | 52 | 25 | | | |
| 2.17475 | | ND<0 | 2.17475 | 53 | 25 | | |
| 1.74572 | | ND<0 | 1.74572 | 54 | 25 | | |
| 1.64866 | | ND<0 | 1.64866 | 55 | 25 | | |
| 0.955511 | | ND<0 | 0.955511 | | 56 | 25 | |
| 1.90211 H | | ND<0 | 1.90211 | 57 | 25 | | |
| 2.04122 | | ND<0 | 2.04122 | 58 | 25 | | |
| | | | | | | | |
| ND<0 | 2.45959 | | -2.4595958 | | 26 | | |
| ND<0 | 2.45959 | | -2.4595958 | | 27 | | |
| ND<0 | 2.45959 | | -2.4595958 | | 28 | | |
| ND<0 | 2.45959 | | -2.4595958 | | 29 | | |
| 1.60944 | | 2.45959 | | -0.850151 | | 58 | 30 |
| ND<0 | 2.45959 | | -2.4595958 | | 31 | | |
| ND<0 | 2.45959 | | -2.4595958 | | 32 | | |
| ND<0 | 2.45959 | | -2.4595958 | | 33 | | |
| ND<0 | 2.45959 | | -2.4595958 | | 34 | | |
| ND<0 | 2.45959 | | -2.4595958 | | 35 | | |
| 1.75094 | | 2.45959 | | -0.708651 | | 58 | 36 |
| 2.13298 | | 2.45959 | | -0.326607 | | 58 | 37 |
| 2.24177 | | 2.45959 | | -0.217816 | | 58 | 38 |
| 1.57691 | | 2.45959 | | -0.882674 | | 58 | 39 |
| 2.24601 | | 2.45959 | | -0.213574 | | 58 | 40 |
| 2.5096 | 2.45959 | | 0.0500104 | | 59 | 40 | |
| 2.17475 | | 2.45959 | | -0.284837 | | 59 | 41 |
| 1.74572 | | 2.45959 | | -0.713873 | | 59 | 42 |
| 1.64866 | | 2.45959 | | -0.8109359 | | 43 | |
| 0.955511 | | 2.45959 | | -1.5040859 | | 44 | |
| 1.90211 H | | 2.45959 | | -0.557481 | | 59 | 45 |
| 2.04122 | | 2.45959 | | -0.418369 | | 59 | 46 |
| | | | | | | | |
| ND<0 | ND<0 | 0 | 59 | 46 | | | |
| ND<0 | ND<0 | 0 | 59 | 46 | | | |
| ND<0 | ND<0 | 0 | 59 | 46 | | | |
| 1.60944 | | ND<0 | 1.60944 | 60 | 46 | | |
| ND<0 | ND<0 | 0 | 60 | 46 | | | |
| ND<0 | ND<0 | 0 | 60 | 46 | | | |
| ND<0 | ND<0 | 0 | 60 | 46 | | | |
| ND<0 | ND<0 | 0 | 60 | 46 | | | |
| ND<0 | ND<0 | 0 | 60 | 46 | | | |
| 1.75094 | | ND<0 | 1.75094 | 61 | 46 | | |
| 2.13298 | | ND<0 | 2.13298 | 62 | 46 | | |
| 2.24177 | | ND<0 | 2.24177 | 63 | 46 | | |
| 1.57691 | | ND<0 | 1.57691 | 64 | 46 | | |
| 2.24601 | | ND<0 | 2.24601 | 65 | 46 | | |
| 2.5096 | ND<0 | 2.5096 | 66 | 46 | | | |
| 2.17475 | | ND<0 | 2.17475 | 67 | 46 | | |
| 1.74572 | | ND<0 | 1.74572 | 68 | 46 | | |
| 1.64866 | | ND<0 | 1.64866 | 69 | 46 | | |
| 0.955511 | | ND<0 | 0.955511 | | 70 | 46 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1.90211 | H | ND<0 | 1.90211 | 71 | 46 | |
| 2.04122 | | ND<0 | 2.04122 | 72 | 46 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 72 | 46 | | |
| ND<0 | ND<0 | 0 | 72 | 46 | | |
| 1.60944 | | ND<0 | 1.60944 | 73 | 46 | |
| ND<0 | ND<0 | 0 | 73 | 46 | | |
| ND<0 | ND<0 | 0 | 73 | 46 | | |
| ND<0 | ND<0 | 0 | 73 | 46 | | |
| ND<0 | ND<0 | 0 | 73 | 46 | | |
| ND<0 | ND<0 | 0 | 73 | 46 | | |
| 1.75094 | | ND<0 | 1.75094 | 74 | 46 | |
| 2.13298 | | ND<0 | 2.13298 | 75 | 46 | |
| 2.24177 | | ND<0 | 2.24177 | 76 | 46 | |
| 1.57691 | | ND<0 | 1.57691 | 77 | 46 | |
| 2.24601 | | ND<0 | 2.24601 | 78 | 46 | |
| 2.5096 | ND<0 | 2.5096 | 79 | 46 | | |
| 2.17475 | | ND<0 | 2.17475 | 80 | 46 | |
| 1.74572 | | ND<0 | 1.74572 | 81 | 46 | |
| 1.64866 | | ND<0 | 1.64866 | 82 | 46 | |
| 0.955511 | | ND<0 | 0.955511 | | 83 | 46 |
| 1.90211 | H | ND<0 | 1.90211 | 84 | 46 | |
| 2.04122 | | ND<0 | 2.04122 | 85 | 46 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 85 | 46 | | |
| 1.60944 | | ND<0 | 1.60944 | 86 | 46 | |
| ND<0 | ND<0 | 0 | 86 | 46 | | |
| ND<0 | ND<0 | 0 | 86 | 46 | | |
| ND<0 | ND<0 | 0 | 86 | 46 | | |
| ND<0 | ND<0 | 0 | 86 | 46 | | |
| ND<0 | ND<0 | 0 | 86 | 46 | | |
| 1.75094 | | ND<0 | 1.75094 | 87 | 46 | |
| 2.13298 | | ND<0 | 2.13298 | 88 | 46 | |
| 2.24177 | | ND<0 | 2.24177 | 89 | 46 | |
| 1.57691 | | ND<0 | 1.57691 | 90 | 46 | |
| 2.24601 | | ND<0 | 2.24601 | 91 | 46 | |
| 2.5096 | ND<0 | 2.5096 | 92 | 46 | | |
| 2.17475 | | ND<0 | 2.17475 | 93 | 46 | |
| 1.74572 | | ND<0 | 1.74572 | 94 | 46 | |
| 1.64866 | | ND<0 | 1.64866 | 95 | 46 | |
| 0.955511 | | ND<0 | 0.955511 | | 96 | 46 |
| 1.90211 | H | ND<0 | 1.90211 | 97 | 46 | |
| 2.04122 | | ND<0 | 2.04122 | 98 | 46 | |
| | | | | | | |
| 1.60944 | | ND<0 | 1.60944 | 99 | 46 | |
| ND<0 | ND<0 | 0 | 99 | 46 | | |
| ND<0 | ND<0 | 0 | 99 | 46 | | |
| ND<0 | ND<0 | 0 | 99 | 46 | | |
| ND<0 | ND<0 | 0 | 99 | 46 | | |
| ND<0 | ND<0 | 0 | 99 | 46 | | |
| 1.75094 | | ND<0 | 1.75094 | 100 | 46 | |
| 2.13298 | | ND<0 | 2.13298 | 101 | 46 | |
| 2.24177 | | ND<0 | 2.24177 | 102 | 46 | |
| 1.57691 | | ND<0 | 1.57691 | 103 | 46 | |
| 2.24601 | | ND<0 | 2.24601 | 104 | 46 | |
| 2.5096 | ND<0 | 2.5096 | 105 | 46 | | |
| 2.17475 | | ND<0 | 2.17475 | 106 | 46 | |
| 1.74572 | | ND<0 | 1.74572 | 107 | 46 | |
| 1.64866 | | ND<0 | 1.64866 | 108 | 46 | |
| 0.955511 | | ND<0 | 0.955511 | | 109 | 46 |
| 1.90211 | H | ND<0 | 1.90211 | 110 | 46 | |
| 2.04122 | | ND<0 | 2.04122 | 111 | 46 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | 1.60944 | | -1.60944 | 111 | 47 | |
| ND<0 | 1.60944 | | -1.60944 | 111 | 48 | |
| ND<0 | 1.60944 | | -1.60944 | 111 | 49 | |
| ND<0 | 1.60944 | | -1.60944 | 111 | 50 | |
| ND<0 | 1.60944 | | -1.60944 | 111 | 51 | |
| 1.75094 | | 1.60944 | | 0.1415 | 112 | 51 |
| 2.13298 | | 1.60944 | | 0.523544 | 113 | 51 |
| 2.24177 | | 1.60944 | | 0.632335 | 114 | 51 |
| 1.57691 | | 1.60944 | | -0.0325232 | 114 | 52 |
| 2.24601 | | 1.60944 | | 0.636577 | 115 | 52 |
| 2.5096 | 1.60944 | | 0.900161 | | 116 | 52 |
| 2.17475 | | 1.60944 | | 0.565314 | 117 | 52 |
| 1.74572 | | 1.60944 | | 0.136278 | 118 | 52 |
| 1.64866 | | 1.60944 | | 0.0392207 | 119 | 52 |
| 0.955511 | | 1.60944 | | -0.653926 | 119 | 53 |
| 1.90211 H | | 1.60944 | | 0.29267 | 120 | 53 |
| 2.04122 | | 1.60944 | | 0.431782 | 121 | 53 |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 121 | 53 | | |
| ND<0 | ND<0 | 0 | 121 | 53 | | |
| ND<0 | ND<0 | 0 | 121 | 53 | | |
| ND<0 | ND<0 | 0 | 121 | 53 | | |
| 1.75094 | | ND<0 | 1.75094 | 122 | 53 | |
| 2.13298 | | ND<0 | 2.13298 | 123 | 53 | |
| 2.24177 | | ND<0 | 2.24177 | 124 | 53 | |
| 1.57691 | | ND<0 | 1.57691 | 125 | 53 | |
| 2.24601 | | ND<0 | 2.24601 | 126 | 53 | |
| 2.5096 | ND<0 | 2.5096 | 127 | 53 | | |
| 2.17475 | | ND<0 | 2.17475 | 128 | 53 | |
| 1.74572 | | ND<0 | 1.74572 | 129 | 53 | |
| 1.64866 | | ND<0 | 1.64866 | 130 | 53 | |
| 0.955511 | | ND<0 | 0.955511 | | 131 | 53 |
| 1.90211 H | | ND<0 | 1.90211 | 132 | 53 | |
| 2.04122 | | ND<0 | 2.04122 | 133 | 53 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 133 | 53 | | |
| ND<0 | ND<0 | 0 | 133 | 53 | | |
| ND<0 | ND<0 | 0 | 133 | 53 | | |
| 1.75094 | | ND<0 | 1.75094 | 134 | 53 | |
| 2.13298 | | ND<0 | 2.13298 | 135 | 53 | |
| 2.24177 | | ND<0 | 2.24177 | 136 | 53 | |
| 1.57691 | | ND<0 | 1.57691 | 137 | 53 | |
| 2.24601 | | ND<0 | 2.24601 | 138 | 53 | |
| 2.5096 | ND<0 | 2.5096 | 139 | 53 | | |
| 2.17475 | | ND<0 | 2.17475 | 140 | 53 | |
| 1.74572 | | ND<0 | 1.74572 | 141 | 53 | |
| 1.64866 | | ND<0 | 1.64866 | 142 | 53 | |
| 0.955511 | | ND<0 | 0.955511 | | 143 | 53 |
| 1.90211 H | | ND<0 | 1.90211 | 144 | 53 | |
| 2.04122 | | ND<0 | 2.04122 | 145 | 53 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 145 | 53 | | |
| ND<0 | ND<0 | 0 | 145 | 53 | | |
| 1.75094 | | ND<0 | 1.75094 | 146 | 53 | |
| 2.13298 | | ND<0 | 2.13298 | 147 | 53 | |
| 2.24177 | | ND<0 | 2.24177 | 148 | 53 | |
| 1.57691 | | ND<0 | 1.57691 | 149 | 53 | |
| 2.24601 | | ND<0 | 2.24601 | 150 | 53 | |
| 2.5096 | ND<0 | 2.5096 | 151 | 53 | | |
| 2.17475 | | ND<0 | 2.17475 | 152 | 53 | |
| 1.74572 | | ND<0 | 1.74572 | 153 | 53 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1.64866 | | ND<0 | 1.64866 | 154 | 53 | |
| 0.955511 | | ND<0 | 0.955511 | | 155 | 53 |
| 1.90211 H | | ND<0 | 1.90211 | 156 | 53 | |
| 2.04122 | | ND<0 | 2.04122 | 157 | 53 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 157 | 53 | | |
| 1.75094 | | ND<0 | 1.75094 | 158 | 53 | |
| 2.13298 | | ND<0 | 2.13298 | 159 | 53 | |
| 2.24177 | | ND<0 | 2.24177 | 160 | 53 | |
| 1.57691 | | ND<0 | 1.57691 | 161 | 53 | |
| 2.24601 | | ND<0 | 2.24601 | 162 | 53 | |
| 2.5096 | ND<0 | 2.5096 | 163 | 53 | | |
| 2.17475 | | ND<0 | 2.17475 | 164 | 53 | |
| 1.74572 | | ND<0 | 1.74572 | 165 | 53 | |
| 1.64866 | | ND<0 | 1.64866 | 166 | 53 | |
| 0.955511 | | ND<0 | 0.955511 | | 167 | 53 |
| 1.90211 H | | ND<0 | 1.90211 | 168 | 53 | |
| 2.04122 | | ND<0 | 2.04122 | 169 | 53 | |
| | | | | | | |
| 1.75094 | | ND<0 | 1.75094 | 170 | 53 | |
| 2.13298 | | ND<0 | 2.13298 | 171 | 53 | |
| 2.24177 | | ND<0 | 2.24177 | 172 | 53 | |
| 1.57691 | | ND<0 | 1.57691 | 173 | 53 | |
| 2.24601 | | ND<0 | 2.24601 | 174 | 53 | |
| 2.5096 | ND<0 | 2.5096 | 175 | 53 | | |
| 2.17475 | | ND<0 | 2.17475 | 176 | 53 | |
| 1.74572 | | ND<0 | 1.74572 | 177 | 53 | |
| 1.64866 | | ND<0 | 1.64866 | 178 | 53 | |
| 0.955511 | | ND<0 | 0.955511 | | 179 | 53 |
| 1.90211 H | | ND<0 | 1.90211 | 180 | 53 | |
| 2.04122 | | ND<0 | 2.04122 | 181 | 53 | |
| | | | | | | |
| 2.13298 | | 1.75094 | 0.382045 | 182 | 53 | |
| 2.24177 | | 1.75094 | 0.490835 | 183 | 53 | |
| 1.57691 | | 1.75094 | -0.174023 | 183 | 54 | |
| 2.24601 | | 1.75094 | 0.495077 | 184 | 54 | |
| 2.5096 | 1.75094 | 0.758662 | 185 | 54 | | |
| 2.17475 | | 1.75094 | 0.423814 | 186 | 54 | |
| 1.74572 | | 1.75094 | -0.00522194 | 186 | 55 | |
| 1.64866 | | 1.75094 | -0.102279 | 186 | 56 | |
| 0.955511 | | 1.75094 | -0.795426 | 186 | 57 | |
| 1.90211 H | | 1.75094 | 0.15117 | 187 | 57 | |
| 2.04122 | | 1.75094 | 0.290283 | 188 | 57 | |
| | | | | | | |
| 2.24177 | | 2.13298 | 0.108791 | 189 | 57 | |
| 1.57691 | | 2.13298 | -0.556068 | 189 | 58 | |
| 2.24601 | | 2.13298 | 0.113032 | 190 | 58 | |
| 2.5096 | 2.13298 | 0.376617 | 191 | 58 | | |
| 2.17475 | | 2.13298 | 0.0417694 | 192 | 58 | |
| 1.74572 | | 2.13298 | -0.387267 | 192 | 59 | |
| 1.64866 | | 2.13298 | -0.484324 | 192 | 60 | |
| 0.955511 | | 2.13298 | -1.17747 | 192 | 61 | |
| 1.90211 H | | 2.13298 | -0.230875 | 192 | 62 | |
| 2.04122 | | 2.13298 | -0.091762 | 192 | 63 | |
| | | | | | | |
| 1.57691 | | 2.24177 | -0.664858 | 192 | 64 | |
| 2.24601 | | 2.24177 | 0.00424179 | 193 | 64 | |
| 2.5096 | 2.24177 | 0.267826 | 194 | 64 | | |
| 2.17475 | | 2.24177 | -0.0670212 | 194 | 65 | |
| 1.74572 | | 2.24177 | -0.496057 | 194 | 66 | |
| 1.64866 | | 2.24177 | -0.593114 | 194 | 67 | |
| 0.955511 | | 2.24177 | -1.28626 | 194 | 68 | |

| | | | | |
|---|---|---|---|---|
| 1.90211 H | 2.24177 | -0.339665 | 194 | 69 |
| 2.04122 | 2.24177 | -0.200553 | 194 | 70 |
| 2.24601 | 1.57691 | 0.6691 | 195 | 70 |
| 2.5096 | 1.57691 | 0.932685 | 196 | 70 |
| 2.17475 | 1.57691 | 0.597837 | 197 | 70 |
| 1.74572 | 1.57691 | 0.168801 | 198 | 70 |
| 1.64866 | 1.57691 | 0.0717439 | 199 | 70 |
| 0.955511 | 1.57691 | -0.621403 | 199 | 71 |
| 1.90211 H | 1.57691 | 0.325193 | 200 | 71 |
| 2.04122 | 1.57691 | 0.464306 | 201 | 71 |
| 2.5096 | 2.24601 | 0.263585 | 202 | 71 |
| 2.17475 | 2.24601 | -0.071263 | 202 | 72 |
| 1.74572 | 2.24601 | -0.500299 | 202 | 73 |
| 1.64866 | 2.24601 | -0.597356 | 202 | 74 |
| 0.955511 | 2.24601 | -1.2905 | 202 | 75 |
| 1.90211 H | 2.24601 | -0.343907 | 202 | 76 |
| 2.04122 | 2.24601 | -0.204794 | 202 | 77 |
| 2.17475 | 2.5096 | -0.334848 | 202 | 78 |
| 1.74572 | 2.5096 | -0.763884 | 202 | 79 |
| 1.64866 | 2.5096 | -0.860941 | 202 | 80 |
| 0.955511 | 2.5096 | -1.55409 | 202 | 81 |
| 1.90211 H | 2.5096 | -0.607492 | 202 | 82 |
| 2.04122 | 2.5096 | -0.468379 | 202 | 83 |
| 1.74572 | 2.17475 | -0.429036 | 202 | 84 |
| 1.64866 | 2.17475 | -0.526093 | 202 | 85 |
| 0.955511 | 2.17475 | -1.21924 | 202 | 86 |
| 1.90211 H | 2.17475 | -0.272644 | 202 | 87 |
| 2.04122 | 2.17475 | -0.133531 | 202 | 88 |
| 1.64866 | 1.74572 | -0.0970569 | 202 | 89 |
| 0.955511 | 1.74572 | -0.790204 | 202 | 90 |
| 1.90211 H | 1.74572 | 0.156392 | 203 | 90 |
| 2.04122 | 1.74572 | 0.295505 | 204 | 90 |
| 0.955511 | 1.64866 | -0.693147 | 204 | 91 |
| 1.90211 H | 1.64866 | 0.253449 | 205 | 91 |
| 2.04122 | 1.64866 | 0.392562 | 206 | 91 |
| 1.90211 H | 0.955511 | 0.946596 | 207 | 91 |
| 2.04122 | 0.955511 | 1.08571 | 208 | 91 |
| 2.04122 | 1.90211 H | 0.139113 | 209 | 91 |

S Statistic = 209 - 91 = 118

| Tied Group | Value | Members |
|---|---|---|
| 1 | 0 | 13 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |
| 11/19/1996 | 1 |
| 12/19/1996 | 1 |

| | | |
|---|---|---|
| 3/24/1997 | | 1 |
| 9/24/1997 | | 1 |
| 4/7/1998 | 1 | |
| 9/23/1998 | | 1 |
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 11/16/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 1 |

There are 0 time periods with multiple data

A = 4836
B = 0
C = 1716
D = 0
E = 156
F = 0
a = 46116
b = 176904
c = 1512
Group Variance = 2293.33
Z-Score = 2.44316
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|2.44316| > 1.97737 indicating a trend

# Mann-Kendall Trend Analysis

## Parameter: Arsenic

## Location: MW-9

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | | Positives | Negatives |
|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 0 | 0 | |
| ND<0 | ND<0 | 0 | 0 | 0 | |
| ND<0 | ND<0 | 0 | 0 | 0 | |
| ND<0 | ND<0 | 0 | 0 | 0 | |
| ND<0 | ND<0 | 0 | 0 | 0 | |
| 2.83321 | | ND<0 | 2.83321 | 1 | 0 |
| ND<0 | ND<0 | 0 | 1 | 0 | |
| ND<0 | ND<0 | 0 | 1 | 0 | |
| 2.83321 | | ND<0 | 2.83321 | 2 | 0 |
| 1.60944 | | ND<0 | 1.60944 | 3 | 0 |
| 1.60944 | | ND<0 | 1.60944 | 4 | 0 |
| 2.83321 | | ND<0 | 2.83321 | 5 | 0 |
| 2.56495 | | ND<0 | 2.56495 | 6 | 0 |
| ND<0 | ND<0 | 0 | 6 | 0 | |
| ND<0 | ND<0 | 0 | 6 | 0 | |
| 1.36354 | | ND<0 | 1.36354 | 7 | 0 |
| 1.83737 | | ND<0 | 1.83737 | 8 | 0 |
| 2.3979 | ND<0 | 2.3979 | 9 | 0 | |
| 2.43361 | | ND<0 | 2.43361 | 10 | 0 |
| 2.37955 | | ND<0 | 2.37955 | 11 | 0 |
| 2.195 | ND<0 | 2.195 | 12 | 0 | |
| 2.13771 | | ND<0 | 2.13771 | 13 | 0 |
| 2.62467 | | ND<0 | 2.62467 | 14 | 0 |
| 2.15176 | | ND<0 | 2.15176 | 15 | 0 |
| 2.16332 | | ND<0 | 2.16332 | 16 | 0 |
| 2.30259 H | | ND<0 | 2.30259 | 17 | 0 |
| 2.20827 | | ND<0 | 2.20827 | 18 | 0 |
| | | | | | |
| ND<0 | ND<0 | 0 | 18 | 0 | |
| ND<0 | ND<0 | 0 | 18 | 0 | |
| ND<0 | ND<0 | 0 | 18 | 0 | |
| ND<0 | ND<0 | 0 | 18 | 0 | |
| 2.83321 | | ND<0 | 2.83321 | 19 | 0 |
| ND<0 | ND<0 | 0 | 19 | 0 | |
| ND<0 | ND<0 | 0 | 19 | 0 | |
| 2.83321 | | ND<0 | 2.83321 | 20 | 0 |
| 1.60944 | | ND<0 | 1.60944 | 21 | 0 |
| 1.60944 | | ND<0 | 1.60944 | 22 | 0 |
| 2.83321 | | ND<0 | 2.83321 | 23 | 0 |
| 2.56495 | | ND<0 | 2.56495 | 24 | 0 |
| ND<0 | ND<0 | 0 | 24 | 0 | |
| ND<0 | ND<0 | 0 | 24 | 0 | |
| 1.36354 | | ND<0 | 1.36354 | 25 | 0 |
| 1.83737 | | ND<0 | 1.83737 | 26 | 0 |
| 2.3979 | ND<0 | 2.3979 | 27 | 0 | |
| 2.43361 | | ND<0 | 2.43361 | 28 | 0 |
| 2.37955 | | ND<0 | 2.37955 | 29 | 0 |
| 2.195 | ND<0 | 2.195 | 30 | 0 | |

| | | | | | |
|---|---|---|---|---|---|
| 2.13771 | | ND<0 | 2.13771 | 31 | 0 |
| 2.62467 | | ND<0 | 2.62467 | 32 | 0 |
| 2.15176 | | ND<0 | 2.15176 | 33 | 0 |
| 2.16332 | | ND<0 | 2.16332 | 34 | 0 |
| 2.30259 H | | ND<0 | 2.30259 | 35 | 0 |
| 2.20827 | | ND<0 | 2.20827 | 36 | 0 |
| | | | | | |
| ND<0 | ND<0 | 0 | 36 | 0 | |
| ND<0 | ND<0 | 0 | 36 | 0 | |
| ND<0 | ND<0 | 0 | 36 | 0 | |
| 2.83321 | | ND<0 | 2.83321 | 37 | 0 |
| ND<0 | ND<0 | 0 | 37 | 0 | |
| ND<0 | ND<0 | 0 | 37 | 0 | |
| 2.83321 | | ND<0 | 2.83321 | 38 | 0 |
| 1.60944 | | ND<0 | 1.60944 | 39 | 0 |
| 1.60944 | | ND<0 | 1.60944 | 40 | 0 |
| 2.83321 | | ND<0 | 2.83321 | 41 | 0 |
| 2.56495 | | ND<0 | 2.56495 | 42 | 0 |
| ND<0 | ND<0 | 0 | 42 | 0 | |
| ND<0 | ND<0 | 0 | 42 | 0 | |
| 1.36354 | | ND<0 | 1.36354 | 43 | 0 |
| 1.83737 | | ND<0 | 1.83737 | 44 | 0 |
| 2.3979 | ND<0 | 2.3979 | 45 | 0 | |
| 2.43361 | | ND<0 | 2.43361 | 46 | 0 |
| 2.37955 | | ND<0 | 2.37955 | 47 | 0 |
| 2.195 | ND<0 | 2.195 | 48 | 0 | |
| 2.13771 | | ND<0 | 2.13771 | 49 | 0 |
| 2.62467 | | ND<0 | 2.62467 | 50 | 0 |
| 2.15176 | | ND<0 | 2.15176 | 51 | 0 |
| 2.16332 | | ND<0 | 2.16332 | 52 | 0 |
| 2.30259 H | | ND<0 | 2.30259 | 53 | 0 |
| 2.20827 | | ND<0 | 2.20827 | 54 | 0 |
| | | | | | |
| ND<0 | ND<0 | 0 | 54 | 0 | |
| ND<0 | ND<0 | 0 | 54 | 0 | |
| 2.83321 | | ND<0 | 2.83321 | 55 | 0 |
| ND<0 | ND<0 | 0 | 55 | 0 | |
| ND<0 | ND<0 | 0 | 55 | 0 | |
| 2.83321 | | ND<0 | 2.83321 | 56 | 0 |
| 1.60944 | | ND<0 | 1.60944 | 57 | 0 |
| 1.60944 | | ND<0 | 1.60944 | 58 | 0 |
| 2.83321 | | ND<0 | 2.83321 | 59 | 0 |
| 2.56495 | | ND<0 | 2.56495 | 60 | 0 |
| ND<0 | ND<0 | 0 | 60 | 0 | |
| ND<0 | ND<0 | 0 | 60 | 0 | |
| 1.36354 | | ND<0 | 1.36354 | 61 | 0 |
| 1.83737 | | ND<0 | 1.83737 | 62 | 0 |
| 2.3979 | ND<0 | 2.3979 | 63 | 0 | |
| 2.43361 | | ND<0 | 2.43361 | 64 | 0 |
| 2.37955 | | ND<0 | 2.37955 | 65 | 0 |
| 2.195 | ND<0 | 2.195 | 66 | 0 | |
| 2.13771 | | ND<0 | 2.13771 | 67 | 0 |
| 2.62467 | | ND<0 | 2.62467 | 68 | 0 |
| 2.15176 | | ND<0 | 2.15176 | 69 | 0 |
| 2.16332 | | ND<0 | 2.16332 | 70 | 0 |
| 2.30259 H | | ND<0 | 2.30259 | 71 | 0 |
| 2.20827 | | ND<0 | 2.20827 | 72 | 0 |
| | | | | | |
| ND<0 | ND<0 | 0 | 72 | 0 | |
| 2.83321 | | ND<0 | 2.83321 | 73 | 0 |
| ND<0 | ND<0 | 0 | 73 | 0 | |
| ND<0 | ND<0 | 0 | 73 | 0 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2.83321 | | ND<0 | 2.83321 | 74 | 0 | | |
| 1.60944 | | ND<0 | 1.60944 | 75 | 0 | | |
| 1.60944 | | ND<0 | 1.60944 | 76 | 0 | | |
| 2.83321 | | ND<0 | 2.83321 | 77 | 0 | | |
| 2.56495 | | ND<0 | 2.56495 | 78 | 0 | | |
| ND<0 | ND<0 | 0 | 78 | 0 | | | |
| ND<0 | ND<0 | 0 | 78 | 0 | | | |
| 1.36354 | | ND<0 | 1.36354 | 79 | 0 | | |
| 1.83737 | | ND<0 | 1.83737 | 80 | 0 | | |
| 2.3979 | ND<0 | 2.3979 | 81 | 0 | | | |
| 2.43361 | | ND<0 | 2.43361 | 82 | 0 | | |
| 2.37955 | | ND<0 | 2.37955 | 83 | 0 | | |
| 2.195 | ND<0 | 2.195 | 84 | 0 | | | |
| 2.13771 | | ND<0 | 2.13771 | 85 | 0 | | |
| 2.62467 | | ND<0 | 2.62467 | 86 | 0 | | |
| 2.15176 | | ND<0 | 2.15176 | 87 | 0 | | |
| 2.16332 | | ND<0 | 2.16332 | 88 | 0 | | |
| 2.30259 | H | ND<0 | 2.30259 | 89 | 0 | | |
| 2.20827 | | ND<0 | 2.20827 | 90 | 0 | | |
| | | | | | | | |
| 2.83321 | | ND<0 | 2.83321 | 91 | 0 | | |
| ND<0 | ND<0 | 0 | 91 | 0 | | | |
| ND<0 | ND<0 | 0 | 91 | 0 | | | |
| 2.83321 | | ND<0 | 2.83321 | 92 | 0 | | |
| 1.60944 | | ND<0 | 1.60944 | 93 | 0 | | |
| 1.60944 | | ND<0 | 1.60944 | 94 | 0 | | |
| 2.83321 | | ND<0 | 2.83321 | 95 | 0 | | |
| 2.56495 | | ND<0 | 2.56495 | 96 | 0 | | |
| ND<0 | ND<0 | 0 | 96 | 0 | | | |
| ND<0 | ND<0 | 0 | 96 | 0 | | | |
| 1.36354 | | ND<0 | 1.36354 | 97 | 0 | | |
| 1.83737 | | ND<0 | 1.83737 | 98 | 0 | | |
| 2.3979 | ND<0 | 2.3979 | 99 | 0 | | | |
| 2.43361 | | ND<0 | 2.43361 | 100 | 0 | | |
| 2.37955 | | ND<0 | 2.37955 | 101 | 0 | | |
| 2.195 | ND<0 | 2.195 | 102 | 0 | | | |
| 2.13771 | | ND<0 | 2.13771 | 103 | 0 | | |
| 2.62467 | | ND<0 | 2.62467 | 104 | 0 | | |
| 2.15176 | | ND<0 | 2.15176 | 105 | 0 | | |
| 2.16332 | | ND<0 | 2.16332 | 106 | 0 | | |
| 2.30259 | H | ND<0 | 2.30259 | 107 | 0 | | |
| 2.20827 | | ND<0 | 2.20827 | 108 | 0 | | |
| | | | | | | | |
| ND<0 | 2.83321 | | -2.83321 | 108 | 1 | | |
| ND<0 | 2.83321 | | -2.83321 | 108 | 2 | | |
| 2.83321 | | 2.83321 | | 0 | 108 | 2 | |
| 1.60944 | | 2.83321 | | -1.22378 | 108 | 3 | |
| 1.60944 | | 2.83321 | | -1.22378 | 108 | 4 | |
| 2.83321 | | 2.83321 | | 0 | 108 | 4 | |
| 2.56495 | | 2.83321 | | -0.268264 | | 108 | 5 |
| ND<0 | 2.83321 | | -2.83321 | 108 | 6 | | |
| ND<0 | 2.83321 | | -2.83321 | 108 | 7 | | |
| 1.36354 | | 2.83321 | | -1.46968 | 108 | 8 | |
| 1.83737 | | 2.83321 | | -0.995843 | | 108 | 9 |
| 2.3979 | 2.83321 | | -0.435318 | | 108 | 10 | |
| 2.43361 | | 2.83321 | | -0.3996 | 108 | 11 | |
| 2.37955 | | 2.83321 | | -0.453667 | | 108 | 12 |
| 2.195 | 2.83321 | | -0.638213 | | 108 | 13 | |
| 2.13771 | | 2.83321 | | -0.695503 | | 108 | 14 |
| 2.62467 | | 2.83321 | | -0.208545 | | 108 | 15 |
| 2.15176 | | 2.83321 | | -0.681451 | | 108 | 16 |
| 2.16332 | | 2.83321 | | -0.66989 | 108 | 17 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2.30259 | H | 2.83321 | | -0.530628 | | 108 | 18 |
| 2.20827 | | 2.83321 | | -0.624939 | | 108 | 19 |
| | | | | | | | |
| ND<0 | ND<0 | 0 | 108 | 19 | | | |
| 2.83321 | | ND<0 | 2.83321 | 109 | 19 | | |
| 1.60944 | | ND<0 | 1.60944 | 110 | 19 | | |
| 1.60944 | | ND<0 | 1.60944 | 111 | 19 | | |
| 2.83321 | | ND<0 | 2.83321 | 112 | 19 | | |
| 2.56495 | | ND<0 | 2.56495 | 113 | 19 | | |
| ND<0 | ND<0 | 0 | 113 | 19 | | | |
| ND<0 | ND<0 | 0 | 113 | 19 | | | |
| 1.36354 | | ND<0 | 1.36354 | 114 | 19 | | |
| 1.83737 | | ND<0 | 1.83737 | 115 | 19 | | |
| 2.3979 | ND<0 | 2.3979 | 116 | 19 | | | |
| 2.43361 | | ND<0 | 2.43361 | 117 | 19 | | |
| 2.37955 | | ND<0 | 2.37955 | 118 | 19 | | |
| 2.195 | ND<0 | 2.195 | 119 | 19 | | | |
| 2.13771 | | ND<0 | 2.13771 | 120 | 19 | | |
| 2.62467 | | ND<0 | 2.62467 | 121 | 19 | | |
| 2.15176 | | ND<0 | 2.15176 | 122 | 19 | | |
| 2.16332 | | ND<0 | 2.16332 | 123 | 19 | | |
| 2.30259 | H | ND<0 | 2.30259 | 124 | 19 | | |
| 2.20827 | | ND<0 | 2.20827 | 125 | 19 | | |
| | | | | | | | |
| 2.83321 | | ND<0 | 2.83321 | 126 | 19 | | |
| 1.60944 | | ND<0 | 1.60944 | 127 | 19 | | |
| 1.60944 | | ND<0 | 1.60944 | 128 | 19 | | |
| 2.83321 | | ND<0 | 2.83321 | 129 | 19 | | |
| 2.56495 | | ND<0 | 2.56495 | 130 | 19 | | |
| ND<0 | ND<0 | 0 | 130 | 19 | | | |
| ND<0 | ND<0 | 0 | 130 | 19 | | | |
| 1.36354 | | ND<0 | 1.36354 | 131 | 19 | | |
| 1.83737 | | ND<0 | 1.83737 | 132 | 19 | | |
| 2.3979 | ND<0 | 2.3979 | 133 | 19 | | | |
| 2.43361 | | ND<0 | 2.43361 | 134 | 19 | | |
| 2.37955 | | ND<0 | 2.37955 | 135 | 19 | | |
| 2.195 | ND<0 | 2.195 | 136 | 19 | | | |
| 2.13771 | | ND<0 | 2.13771 | 137 | 19 | | |
| 2.62467 | | ND<0 | 2.62467 | 138 | 19 | | |
| 2.15176 | | ND<0 | 2.15176 | 139 | 19 | | |
| 2.16332 | | ND<0 | 2.16332 | 140 | 19 | | |
| 2.30259 | H | ND<0 | 2.30259 | 141 | 19 | | |
| 2.20827 | | ND<0 | 2.20827 | 142 | 19 | | |
| | | | | | | | |
| 1.60944 | | 2.83321 | | -1.22378 | 142 | 20 | |
| 1.60944 | | 2.83321 | | -1.22378 | 142 | 21 | |
| 2.83321 | | 2.83321 | | 0 | 142 | 21 | |
| 2.56495 | | 2.83321 | | -0.268264 | | 142 | 22 |
| ND<0 | 2.83321 | | -2.83321 | 142 | 23 | | |
| ND<0 | 2.83321 | | -2.83321 | 142 | 24 | | |
| 1.36354 | | 2.83321 | | -1.46968 | 142 | 25 | |
| 1.83737 | | 2.83321 | | -0.995843 | | 142 | 26 |
| 2.3979 | 2.83321 | | -0.435318 | | 142 | 27 | |
| 2.43361 | | 2.83321 | | -0.3996 | 142 | 28 | |
| 2.37955 | | 2.83321 | | -0.453667 | | 142 | 29 |
| 2.195 | 2.83321 | | -0.638213 | | 142 | 30 | |
| 2.13771 | | 2.83321 | | -0.695503 | | 142 | 31 |
| 2.62467 | | 2.83321 | | -0.208545 | | 142 | 32 |
| 2.15176 | | 2.83321 | | -0.681451 | | 142 | 33 |
| 2.16332 | | 2.83321 | | -0.66989 | 142 | 34 | |
| 2.30259 | H | 2.83321 | | -0.530628 | | 142 | 35 |
| 2.20827 | | 2.83321 | | -0.624939 | | 142 | 36 |

| | | | | | |
|---|---|---|---|---|---|
| 1.60944 | | 1.60944 | 0 | 142 | 36 |
| 2.83321 | | 1.60944 | 1.22378 | 143 | 36 |
| 2.56495 | | 1.60944 | 0.955511 | 144 | 36 |
| ND<0 | 1.60944 | -1.60944 | 144 | 37 | |
| ND<0 | 1.60944 | -1.60944 | 144 | 38 | |
| 1.36354 | | 1.60944 | -0.245901 | 144 | 39 |
| 1.83737 | | 1.60944 | 0.227932 | 145 | 39 |
| 2.3979 | 1.60944 | 0.788457 | 146 | 39 | |
| 2.43361 | | 1.60944 | 0.824175 | 147 | 39 |
| 2.37955 | | 1.60944 | 0.770108 | 148 | 39 |
| 2.195 | 1.60944 | 0.585562 | 149 | 39 | |
| 2.13771 | | 1.60944 | 0.528273 | 150 | 39 |
| 2.62467 | | 1.60944 | 1.01523 | 151 | 39 |
| 2.15176 | | 1.60944 | 0.542324 | 152 | 39 |
| 2.16332 | | 1.60944 | 0.553885 | 153 | 39 |
| 2.30259 H | | 1.60944 | 0.693147 | 154 | 39 |
| 2.20827 | | 1.60944 | 0.598837 | 155 | 39 |
| | | | | | |
| 2.83321 | | 1.60944 | 1.22378 | 156 | 39 |
| 2.56495 | | 1.60944 | 0.955511 | 157 | 39 |
| ND<0 | 1.60944 | -1.60944 | 157 | 40 | |
| ND<0 | 1.60944 | -1.60944 | 157 | 41 | |
| 1.36354 | | 1.60944 | -0.245901 | 157 | 42 |
| 1.83737 | | 1.60944 | 0.227932 | 158 | 42 |
| 2.3979 | 1.60944 | 0.788457 | 159 | 42 | |
| 2.43361 | | 1.60944 | 0.824175 | 160 | 42 |
| 2.37955 | | 1.60944 | 0.770108 | 161 | 42 |
| 2.195 | 1.60944 | 0.585562 | 162 | 42 | |
| 2.13771 | | 1.60944 | 0.528273 | 163 | 42 |
| 2.62467 | | 1.60944 | 1.01523 | 164 | 42 |
| 2.15176 | | 1.60944 | 0.542324 | 165 | 42 |
| 2.16332 | | 1.60944 | 0.553885 | 166 | 42 |
| 2.30259 H | | 1.60944 | 0.693147 | 167 | 42 |
| 2.20827 | | 1.60944 | 0.598837 | 168 | 42 |
| | | | | | |
| 2.56495 | | 2.83321 | -0.268264 | 168 | 43 |
| ND<0 | 2.83321 | -2.83321 | 168 | 44 | |
| ND<0 | 2.83321 | -2.83321 | 168 | 45 | |
| 1.36354 | | 2.83321 | -1.46968 | 168 | 46 |
| 1.83737 | | 2.83321 | -0.995843 | 168 | 47 |
| 2.3979 | 2.83321 | -0.435318 | 168 | 48 | |
| 2.43361 | | 2.83321 | -0.3996 | 168 | 49 |
| 2.37955 | | 2.83321 | -0.453667 | 168 | 50 |
| 2.195 | 2.83321 | -0.638213 | 168 | 51 | |
| 2.13771 | | 2.83321 | -0.695503 | 168 | 52 |
| 2.62467 | | 2.83321 | -0.208545 | 168 | 53 |
| 2.15176 | | 2.83321 | -0.681451 | 168 | 54 |
| 2.16332 | | 2.83321 | -0.66989 | 168 | 55 |
| 2.30259 H | | 2.83321 | -0.530628 | 168 | 56 |
| 2.20827 | | 2.83321 | -0.624939 | 168 | 57 |
| | | | | | |
| ND<0 | 2.56495 | -2.56495 | 168 | 58 | |
| ND<0 | 2.56495 | -2.56495 | 168 | 59 | |
| 1.36354 | | 2.56495 | -1.20141 | 168 | 60 |
| 1.83737 | | 2.56495 | -0.727579 | 168 | 61 |
| 2.3979 | 2.56495 | -0.167054 | 168 | 62 | |
| 2.43361 | | 2.56495 | -0.131336 | 168 | 63 |
| 2.37955 | | 2.56495 | -0.185403 | 168 | 64 |
| 2.195 | 2.56495 | -0.369949 | 168 | 65 | |
| 2.13771 | | 2.56495 | -0.427239 | 168 | 66 |
| 2.62467 | | 2.56495 | 0.0597192 | 169 | 66 |

| | | | | |
|---|---|---|---|---|
| 2.15176 | 2.56495 | -0.413187 | 169 | 67 |
| 2.16332 | 2.56495 | -0.401626 | 169 | 68 |
| 2.30259 H | 2.56495 | -0.262364 | 169 | 69 |
| 2.20827 | 2.56495 | -0.356675 | 169 | 70 |

| | | | | | |
|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 169 | 70 | |
| 1.36354 | ND<0 | 1.36354 | 170 | 70 | |
| 1.83737 | ND<0 | 1.83737 | 171 | 70 | |
| 2.3979 | ND<0 | 2.3979 | 172 | 70 | |
| 2.43361 | ND<0 | 2.43361 | 173 | 70 | |
| 2.37955 | ND<0 | 2.37955 | 174 | 70 | |
| 2.195 | ND<0 | 2.195 | 175 | 70 | |
| 2.13771 | ND<0 | 2.13771 | 176 | 70 | |
| 2.62467 | ND<0 | 2.62467 | 177 | 70 | |
| 2.15176 | ND<0 | 2.15176 | 178 | 70 | |
| 2.16332 | ND<0 | 2.16332 | 179 | 70 | |
| 2.30259 H | ND<0 | 2.30259 | 180 | 70 | |
| 2.20827 | ND<0 | 2.20827 | 181 | 70 | |

| | | | | | |
|---|---|---|---|---|---|
| 1.36354 | ND<0 | 1.36354 | 182 | 70 | |
| 1.83737 | ND<0 | 1.83737 | 183 | 70 | |
| 2.3979 | ND<0 | 2.3979 | 184 | 70 | |
| 2.43361 | ND<0 | 2.43361 | 185 | 70 | |
| 2.37955 | ND<0 | 2.37955 | 186 | 70 | |
| 2.195 | ND<0 | 2.195 | 187 | 70 | |
| 2.13771 | ND<0 | 2.13771 | 188 | 70 | |
| 2.62467 | ND<0 | 2.62467 | 189 | 70 | |
| 2.15176 | ND<0 | 2.15176 | 190 | 70 | |
| 2.16332 | ND<0 | 2.16332 | 191 | 70 | |
| 2.30259 H | ND<0 | 2.30259 | 192 | 70 | |
| 2.20827 | ND<0 | 2.20827 | 193 | 70 | |

| | | | | | |
|---|---|---|---|---|---|
| 1.83737 | 1.36354 | 0.473833 | 194 | 70 | |
| 2.3979 | 1.36354 | 1.03436 | 195 | 70 | |
| 2.43361 | 1.36354 | 1.07008 | 196 | 70 | |
| 2.37955 | 1.36354 | 1.01601 | 197 | 70 | |
| 2.195 | 1.36354 | 0.831463 | 198 | 70 | |
| 2.13771 | 1.36354 | 0.774173 | 199 | 70 | |
| 2.62467 | 1.36354 | 1.26113 | 200 | 70 | |
| 2.15176 | 1.36354 | 0.788225 | 201 | 70 | |
| 2.16332 | 1.36354 | 0.799786 | 202 | 70 | |
| 2.30259 H | 1.36354 | 0.939048 | 203 | 70 | |
| 2.20827 | 1.36354 | 0.844737 | 204 | 70 | |

| | | | | | |
|---|---|---|---|---|---|
| 2.3979 | 1.83737 | 0.560525 | 205 | 70 | |
| 2.43361 | 1.83737 | 0.596243 | 206 | 70 | |
| 2.37955 | 1.83737 | 0.542176 | 207 | 70 | |
| 2.195 | 1.83737 | 0.35763 | 208 | 70 | |
| 2.13771 | 1.83737 | 0.30034 | 209 | 70 | |
| 2.62467 | 1.83737 | 0.787299 | 210 | 70 | |
| 2.15176 | 1.83737 | 0.314392 | 211 | 70 | |
| 2.16332 | 1.83737 | 0.325953 | 212 | 70 | |
| 2.30259 H | 1.83737 | 0.465215 | 213 | 70 | |
| 2.20827 | 1.83737 | 0.370904 | 214 | 70 | |

| | | | | | |
|---|---|---|---|---|---|
| 2.43361 | 2.3979 | 0.0357181 | 215 | 70 | |
| 2.37955 | 2.3979 | -0.0183491 | 215 | 71 | |
| 2.195 | 2.3979 | -0.202895 | 215 | 72 | |
| 2.13771 | 2.3979 | -0.260185 | 215 | 73 | |
| 2.62467 | 2.3979 | 0.226773 | 216 | 73 | |
| 2.15176 | 2.3979 | -0.246133 | 216 | 74 | |
| 2.16332 | 2.3979 | -0.234572 | 216 | 75 | |

| | | | | | |
|---|---|---|---|---|---|
| 2.30259 H | 2.3979 | -0.0953102 | 216 | 76 | |
| 2.20827 | 2.3979 | -0.189621 | 216 | 77 | |
| 2.37955 | 2.43361 | -0.0540672 | 216 | 78 | |
| 2.195 | 2.43361 | -0.238613 | 216 | 79 | |
| 2.13771 | 2.43361 | -0.295903 | 216 | 80 | |
| 2.62467 | 2.43361 | 0.191055 | 217 | 80 | |
| 2.15176 | 2.43361 | -0.281851 | 217 | 81 | |
| 2.16332 | 2.43361 | -0.27029217 | 82 | | |
| 2.30259 H | 2.43361 | -0.131028 | 217 | 83 | |
| 2.20827 | 2.43361 | -0.225339 | 217 | 84 | |
| 2.195 | 2.37955 | -0.184546 | 217 | 85 | |
| 2.13771 | 2.37955 | -0.241836 | 217 | 86 | |
| 2.62467 | 2.37955 | 0.245122 | 218 | 86 | |
| 2.15176 | 2.37955 | -0.227784 | 218 | 87 | |
| 2.16332 | 2.37955 | -0.216223 | 218 | 88 | |
| 2.30259 H | 2.37955 | -0.076961 | 218 | 89 | |
| 2.20827 | 2.37955 | -0.171272 | 218 | 90 | |
| 2.13771 | 2.195 | -0.0572894 | 218 | 91 | |
| 2.62467 | 2.195 | 0.429669 | 219 | 91 | |
| 2.15176 | 2.195 | -0.0432377 | 219 | 92 | |
| 2.16332 | 2.195 | -0.0316769 | 219 | 93 | |
| 2.30259 H | 2.195 | 0.107585 | 220 | 93 | |
| 2.20827 | 2.195 | 0.0132745 | 221 | 93 | |
| 2.62467 | 2.13771 | 0.486958 | 222 | 93 | |
| 2.15176 | 2.13771 | 0.0140518 | 223 | 93 | |
| 2.16332 | 2.13771 | 0.0256126 | 224 | 93 | |
| 2.30259 H | 2.13771 | 0.164875 | 225 | 93 | |
| 2.20827 | 2.13771 | 0.070564 | 226 | 93 | |
| 2.15176 | 2.62467 | -0.472906 | 226 | 94 | |
| 2.16332 | 2.62467 | -0.461346 | 226 | 95 | |
| 2.30259 H | 2.62467 | -0.322083 | 226 | 96 | |
| 2.20827 | 2.62467 | -0.416394 | 226 | 97 | |
| 2.16332 | 2.15176 | 0.0115608 | 227 | 97 | |
| 2.30259 H | 2.15176 | 0.150823 | 228 | 97 | |
| 2.20827 | 2.15176 | 0.0565122 | 229 | 97 | |
| 2.30259 H | 2.16332 | 0.139262 | 230 | 97 | |
| 2.20827 | 2.16332 | 0.0449514 | 231 | 97 | |
| 2.20827 | 2.30259 H | -0.0943107 | 231 | 98 | |

S Statistic = 231 - 98 = 133

| Tied Group | Value | Members |
|---|---|---|
| 1 | 0 | 10 |
| 2 | 2.83321 | 3 |
| 3 | 1.60944 | 2 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |

| | | |
|---|---|---|
| 11/19/1996 | | 1 |
| 12/19/1996 | | 1 |
| 3/24/1997 | | 1 |
| 9/24/1997 | | 1 |
| 4/7/1998 | 1 | |
| 9/23/1998 | | 1 |
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 11/16/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 1 |

There are 0 time periods with multiple data

A = 2334
B = 0
C = 726
D = 0
E = 98
F = 0
a = 46116
b = 176904
c = 1512
Group Variance = 2432.33
Z-Score = 2.67647
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|2.67647| > 1.97737 indicating a trend

# Concentrations (ppb)

## Parameter: Barium

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 99
Percent Non-Detects: 44.7964%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 5 (27.7778%) | 3/16/1999 | 50 | 50 |
| | | | 9/23/1999 | 28 | 28 |
| | | | 3/15/2000 | ND<10 | ND<10 |
| | | | 9/24/2003 | ND<10 | ND<10 |
| | | | 3/11/2004 | ND<10 | ND<10 |
| | | | 10/12/2004 | ND<10 | ND<10 |
| | | | 4/1/2005 | 8.7 J | 8.7 J |
| | | | 10/25/2005 | ND<10 | ND<10 |
| | | | 4/29/2006 | 5 J | 5 J |
| | | | 11/18/2006 | 5.43 J | 5.43 J |
| | | | 5/23/2007 | 10.9 | 10.9 |
| | | | 11/28/2007 | 7 J | 7 J |
| | | | 6/5/2008 | 5.97 J | 5.97 J |
| | | | 11/20/2008 | 8 J | 8 J |
| | | | 6/11/2009 | 9 | 9 |
| | | | 11/16/2009 | 6.9 | 6.9 |
| | | | 6/30/2010 | 9.9 H | 9.9 H |
| | | | 11/12/2010 | 9 | 9 |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-8 | 27 | 14 (51.8519%) | 7/20/1995 | ND<10 | ND<10 |
| | | | 8/24/1995 | ND<10 | ND<10 |
| | | | 9/28/1995 | ND<10 | ND<10 |
| | | | 10/26/1995 | ND<10 | ND<10 |
| | | | 11/19/1996 | ND<10 | ND<10 |
| | | | 12/19/1996 | ND<10 | ND<10 |
| | | | 3/24/1997 | ND<10 | ND<10 |
| | | | 9/24/1997 | ND<10 | ND<10 |
| | | | 4/7/1998 | ND<10 | ND<10 |
| | | | 9/23/1998 | ND<10 | ND<10 |
| | | | 3/16/1999 | 60 | 60 |
| | | | 9/23/1999 | 41 | 41 |
| | | | 3/15/2000 | ND<10 | ND<10 |
| | | | 9/24/2003 | ND<10 | ND<10 |
| | | | 3/11/2004 | ND<10 | ND<10 |
| | | | 10/12/2004 | ND<10 | ND<10 |
| | | | 4/1/2005 | 95.7 | 95.7 |
| | | | 10/25/2005 | 65.2 | 65.2 |
| | | | 4/29/2006 | 70 | 70 |
| | | | 11/18/2006 | 85.5 | 85.5 |
| | | | 5/23/2007 | 76.3 | 76.3 |
| | | | 11/28/2007 | 100 | 100 |
| | | | 6/5/2008 | 88.4 | 88.4 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/20/2008 | 64 | 64 | |
| | | | 6/11/2009 | 55 | 55 | |
| | | | 6/30/2010 | 67 H | 67 H | |
| | | | 11/12/2010 | 70 | 70 | |
| MW-7 | 28 | 14 (50%) | 7/20/1995 | ND<10 | ND<10 | |
| | | | 8/24/1995 | ND<10 | ND<10 | |
| | | | 9/28/1995 | ND<10 | ND<10 | |
| | | | 10/26/1995 | ND<10 | ND<10 | |
| | | | 11/19/1996 | ND<10 | ND<10 | |
| | | | 12/19/1996 | ND<10 | ND<10 | |
| | | | 3/24/1997 | ND<10 | ND<10 | |
| | | | 9/24/1997 | ND<10 | ND<10 | |
| | | | 4/7/1998 | ND<10 | ND<10 | |
| | | | 9/23/1998 | ND<10 | ND<10 | |
| | | | 3/16/1999 | 60 | 60 | |
| | | | 9/23/1999 | 74 | 74 | |
| | | | 3/15/2000 | ND<10 | ND<10 | |
| | | | 9/24/2003 | ND<10 | ND<10 | |
| | | | 3/11/2004 | ND<10 | ND<10 | |
| | | | 10/12/2004 | ND<10 | ND<10 | |
| | | | 4/1/2005 | 46.8 | 46.8 | |
| | | | 10/25/2005 | 47.5 | 47.5 | |
| | | | 4/29/2006 | 50 | 50 | |
| | | | 11/18/2006 | 37.7 | 37.7 | |
| | | | 5/23/2007 | 63.2 | 63.2 | |
| | | | 11/28/2007 | 8.3 J | 8.3 J | |
| | | | 6/5/2008 | 43.8 | 43.8 | |
| | | | 11/20/2008 | 60 | 60 | |
| | | | 6/11/2009 | 47 | 47 | |
| | | | 11/16/2009 | 42 | 42 | |
| | | | 6/30/2010 | 45 H | 45 H | |
| | | | 11/12/2010 | 34 | 34 | |
| MW-6 | 28 | 15 (53.5714%) | 7/20/1995 | ND<10 | ND<10 | |
| | | | 8/24/1995 | ND<10 | ND<10 | |
| | | | 9/28/1995 | ND<10 | ND<10 | |
| | | | 10/26/1995 | ND<10 | ND<10 | |
| | | | 11/19/1996 | ND<10 | ND<10 | |
| | | | 12/19/1996 | ND<10 | ND<10 | |
| | | | 3/24/1997 | ND<10 | ND<10 | |
| | | | 9/24/1997 | ND<10 | ND<10 | |
| | | | 4/7/1998 | ND<10 | ND<10 | |
| | | | 9/23/1998 | ND<10 | ND<10 | |
| | | | 3/16/1999 | 20 | 20 | |
| | | | 9/23/1999 | 7 J | 7 J | |
| | | | 3/15/2000 | ND<10 | ND<10 | |
| | | | 9/24/2003 | ND<10 | ND<10 | |
| | | | 3/11/2004 | ND<10 | ND<10 | |
| | | | 10/12/2004 | ND<10 | ND<10 | |
| | | | 4/1/2005 | 5.7 J | 5.7 J | |
| | | | 10/25/2005 | 5.5 J | 5.5 J | |
| | | | 4/29/2006 | ND<10 | ND<10 | |
| | | | 11/18/2006 | 6.07 J | 6.07 J | |
| | | | 5/23/2007 | 7.22 | 7.22 | |
| | | | 11/28/2007 | 6.22 J | 6.22 J | |
| | | | 6/5/2008 | 6.44 J | 6.44 J | |
| | | | 11/20/2008 | 8 J | 8 J | |
| | | | 6/11/2009 | 7 | 7 | |
| | | | 11/16/2009 | 6.9 | 6.9 | |
| | | | 6/30/2010 | 7.9 H | 7.9 H | |
| | | | 11/12/2010 | 9.8 | 9.8 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| MW-12BR | 18 | 4 (22.2222%) | 3/16/1999 | | 30 | 30 |
| | | 9/23/1999 | 33 | 33 | | |
| | | 3/15/2000 | ND<10 | ND<10 | | |
| | | 9/24/2003 | ND<10 | ND<10 | | |
| | | 3/11/2004 | ND<10 | ND<10 | | |
| | | 10/12/2004 | ND<10 | ND<10 | | |
| | | 4/1/2005 | 40.1 | 40.1 | | |
| | | 10/25/2005 | 35 | 35 | | |
| | | 4/29/2006 | 30 | 30 | | |
| | | 11/18/2006 | 34.5 | 34.5 | | |
| | | 5/23/2007 | 41.5 | 41.5 | | |
| | | 11/28/2007 | 40 | 40 | | |
| | | 6/5/2008 | 36.8 | 36.8 | | |
| | | 11/20/2008 | 43 | 43 | | |
| | | 6/11/2009 | 42 | 42 | | |
| | | 11/16/2009 | 37 | 37 | | |
| | | 6/30/2010 | 40 | 40 | | |
| | | 11/12/2010 | 43 | 43 | | |
| MW-12AR | 18 | 4 (22.2222%) | 3/16/1999 | | 40 | 40 |
| | | 9/23/1999 | 40 | 40 | | |
| | | 3/15/2000 | ND<10 | ND<10 | | |
| | | 9/24/2003 | ND<10 | ND<10 | | |
| | | 3/11/2004 | ND<10 | ND<10 | | |
| | | 10/12/2004 | ND<10 | ND<10 | | |
| | | 4/1/2005 | 36 | 36 | | |
| | | 10/25/2005 | 27.7 | 27.7 | | |
| | | 4/29/2006 | 30 | 30 | | |
| | | 11/18/2006 | 33.2 | 33.2 | | |
| | | 5/23/2007 | 34.1 | 34.1 | | |
| | | 11/28/2007 | 42 | 42 | | |
| | | 6/5/2008 | 34.8 | 34.8 | | |
| | | 11/20/2008 | 45 | 45 | | |
| | | 6/11/2009 | 38 | 38 | | |
| | | 11/16/2009 | 41 | 41 | | |
| | | 6/30/2010 | 36 | 36 | | |
| | | 11/12/2010 | 41 | 41 | | |
| MW-11R | 28 | 15 (53.5714%) | 7/20/1995 | | ND<10 | ND<10 |
| | | 8/24/1995 | ND<10 | ND<10 | | |
| | | 9/28/1995 | ND<10 | ND<10 | | |
| | | 10/26/1995 | ND<10 | ND<10 | | |
| | | 11/19/1996 | ND<10 | ND<10 | | |
| | | 12/19/1996 | ND<10 | ND<10 | | |
| | | 3/24/1997 | ND<10 | ND<10 | | |
| | | 9/24/1997 | ND<10 | ND<10 | | |
| | | 4/7/1998 | ND<10 | ND<10 | | |
| | | 9/23/1998 | ND<10 | ND<10 | | |
| | | 3/16/1999 | 40 | 40 | | |
| | | 9/23/1999 | 21 | 21 | | |
| | | 3/15/2000 | ND<10 | ND<10 | | |
| | | 9/24/2003 | ND<10 | ND<10 | | |
| | | 3/11/2004 | ND<10 | ND<10 | | |
| | | 10/12/2004 | ND<10 | ND<10 | | |
| | | 4/1/2005 | 28.8 | 28.8 | | |
| | | 10/25/2005 | 19.1 | 19.1 | | |
| | | 4/29/2006 | 30 | 30 | | |
| | | 11/18/2006 | 116 | 116 | | |
| | | 5/23/2007 | 50 | 50 | | |
| | | 11/28/2007 | 34 | 34 | | |
| | | 6/5/2008 | ND<10 | ND<10 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/20/2008 | 10 | 10 | |
| | | | 6/11/2009 | 11 | 11 | |
| | | | 11/16/2009 | 7.2 | 7.2 | |
| | | | 6/30/2010 | 18 H | 18 H | |
| | | | 11/12/2010 | 8.7 | 8.7 | |
| MW-10 | 28 | 14 (50%) | 7/20/1995 | ND<10 | ND<10 | |
| | | | 8/24/1995 | ND<10 | ND<10 | |
| | | | 9/28/1995 | ND<10 | ND<10 | |
| | | | 10/26/1995 | ND<10 | ND<10 | |
| | | | 11/19/1996 | ND<10 | ND<10 | |
| | | | 12/19/1996 | ND<10 | ND<10 | |
| | | | 3/24/1997 | ND<10 | ND<10 | |
| | | | 9/24/1997 | ND<10 | ND<10 | |
| | | | 4/7/1998 | ND<10 | ND<10 | |
| | | | 9/23/1998 | ND<10 | ND<10 | |
| | | | 3/16/1999 | 90 | 90 | |
| | | | 9/23/1999 | 72 | 72 | |
| | | | 3/15/2000 | ND<10 | ND<10 | |
| | | | 9/24/2003 | ND<10 | ND<10 | |
| | | | 3/11/2004 | ND<10 | ND<10 | |
| | | | 10/12/2004 | ND<10 | ND<10 | |
| | | | 4/1/2005 | 77.9 | 77.9 | |
| | | | 10/25/2005 | 76.8 | 76.8 | |
| | | | 4/29/2006 | 11 | 11 | |
| | | | 11/18/2006 | 123 | 123 | |
| | | | 5/23/2007 | 139 | 139 | |
| | | | 11/28/2007 | 118 | 118 | |
| | | | 6/5/2008 | 150 | 150 | |
| | | | 11/20/2008 | 150 | 150 | |
| | | | 6/11/2009 | 170 | 170 | |
| | | | 11/16/2009 | 130 | 130 | |
| | | | 6/30/2010 | 160 H | 160 H | |
| | | | 11/12/2010 | 150 | 150 | |
| MW-9 | 28 | 14 (50%) | 7/20/1995 | ND<10 | ND<10 | |
| | | | 8/24/1995 | ND<10 | ND<10 | |
| | | | 9/28/1995 | ND<10 | ND<10 | |
| | | | 10/26/1995 | ND<10 | ND<10 | |
| | | | 11/19/1996 | ND<10 | ND<10 | |
| | | | 12/19/1996 | ND<10 | ND<10 | |
| | | | 3/24/1997 | ND<10 | ND<10 | |
| | | | 9/24/1997 | ND<10 | ND<10 | |
| | | | 4/7/1998 | ND<10 | ND<10 | |
| | | | 9/23/1998 | ND<10 | ND<10 | |
| | | | 3/16/1999 | 20 | 20 | |
| | | | 9/23/1999 | 52 | 52 | |
| | | | 3/15/2000 | ND<10 | ND<10 | |
| | | | 9/24/2003 | ND<10 | ND<10 | |
| | | | 3/11/2004 | ND<10 | ND<10 | |
| | | | 10/12/2004 | ND<10 | ND<10 | |
| | | | 4/1/2005 | 40.7 | 40.7 | |
| | | | 10/25/2005 | 39 | 39 | |
| | | | 4/29/2006 | 40 | 40 | |
| | | | 11/18/2006 | 49.3 | 49.3 | |
| | | | 5/23/2007 | 70.4 | 70.4 | |
| | | | 11/28/2007 | 47 | 47 | |
| | | | 6/5/2008 | 44.8 | 44.8 | |
| | | | 11/20/2008 | 49 | 49 | |
| | | | 6/11/2009 | 46 | 46 | |
| | | | 11/16/2009 | 41 | 41 | |
| | | | 6/30/2010 | 45 H | 45 H | |

| | | |
|---|---|---|
| 11/12/2010 | 41 | 41 |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. Original |
|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: Barium

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 5 | -2.65209 | 7.03356 | -13.2604 |
| 2 | 5 | -2.36561 | 12.6297 | -25.0885 |
| 3 | 5 | -2.22621 | 17.5857 | -36.2195 |
| 4 | 5 | -2.09693 | 21.9828 | -46.7042 |
| 5 | 5 | -2.01409 | 26.0394 | -56.7747 |
| 6 | 5 | -1.92684 | 29.7521 | -66.4088 |
| 7 | 5 | -1.86629 | 33.2351 | -75.7403 |
| 8 | 5 | -1.79912 | 36.472 | -84.7359 |
| 9 | 5 | -1.75069 | 39.5369 | -93.4893 |
| 10 | 5 | -1.6954 | 42.4112 | -101.966 |
| 11 | 5 | -1.65463 | 45.149 | -110.239 |
| 12 | 5 | -1.60725 | 47.7323 | -118.276 |
| 13 | 5 | -1.57179 | 50.2028 | -126.135 |
| 14 | 5 | -1.53007 | 52.5439 | -133.785 |
| 15 | 5 | -1.49852 | 54.7894 | -141.278 |
| 16 | 5 | -1.46106 | 56.9241 | -148.583 |
| 17 | 5 | -1.4325 | 58.9762 | -155.745 |
| 18 | 5 | -1.39838 | 60.9316 | -162.737 |
| 19 | 5 | -1.3722 | 62.8146 | -169.598 |
| 20 | 5 | -1.34075 | 64.6122 | -176.302 |
| 21 | 5 | -1.31652 | 66.3454 | -182.885 |
| 22 | 5 | -1.28727 | 68.0025 | -189.321 |
| 23 | 5 | -1.26464 | 69.6018 | -195.644 |
| 24 | 5 | -1.23724 | 71.1326 | -201.83 |
| 25 | 5 | -1.21596 | 72.6111 | -207.91 |
| 26 | 5 | -1.19012 | 74.0275 | -213.861 |
| 27 | 5 | -1.17 | 75.3964 | -219.711 |
| 28 | 5 | -1.1455 | 76.7086 | -225.438 |
| 29 | 5 | -1.12639 | 77.9774 | -231.07 |
| 30 | 5 | -1.10306 | 79.1941 | -236.586 |
| 31 | 5 | -1.08482 | 80.371 | -242.01 |
| 32 | 5 | -1.06252 | 81.4999 | -247.322 |
| 33 | 5 | -1.04505 | 82.592 | -252.548 |
| 34 | 5 | -1.02365 | 83.6399 | -257.666 |
| 35 | 5 | -1.00687 | 84.6537 | -262.7 |
| 36 | 5 | -0.986272 | 85.6264 | -267.631 |
| 37 | 5 | -0.970094 | 86.5675 | -272.482 |
| 38 | 5 | -0.950222 | 87.4704 | -277.233 |
| 39 | 5 | -0.93459 | 88.3439 | -281.906 |
| 40 | 5 | -0.915365 | 89.1818 | -286.483 |
| 41 | 5 | -0.900227 | 89.9922 | -290.984 |
| 42 | 5 | -0.881587 | 90.7694 | -295.392 |
| 43 | 5 | -0.866894 | 91.5209 | -299.726 |
| 44 | 5 | -0.848786 | 92.2413 | -303.97 |
| 45 | 5 | -0.834498 | 92.9377 | -308.143 |
| 46 | 5 | -0.816874 | 93.605 | -312.227 |
| 47 | 5 | -0.802956 | 94.2497 | -316.242 |
| 48 | 5 | -0.785774 | 94.8672 | -320.171 |
| 49 | 5 | -0.772193 | 95.4634 | -324.032 |

| | | | | |
|---|---|---|---|---|
| 50 | 5 | -0.755415 | 96.0341 | -327.809 |
| 51 | 5 | -0.742143 | 96.5849 | -331.52 |
| 52 | 5 | -0.725736 | 97.1116 | -335.148 |
| 53 | 5 | -0.712751 | 97.6196 | -338.712 |
| 54 | 5 | -0.696684 | 98.1049 | -342.195 |
| 55 | 5 | -0.683969 | 8.5727 | -345.615 |
| 56 | 5 | -0.668209 | 99.0192 | -348.956 |
| 57 | 5 | -0.655726 | 99.4492 | -352.235 |
| 58 | 5 | -0.640266 | 99.8592 | -355.436 |
| 59 | 5 | -0.628006 | 100.254 | -358.576 |
| 60 | 5 | -0.612813 | 100.629 | -361.64 |
| 61 | 5 | -0.60076 | 100.99 | -364.644 |
| 62 | 5 | -0.585815 | 101.333 | -367.573 |
| 63 | 5 | -0.573953 | 101.663 | -370.443 |
| 64 | 5 | -0.559237 | 101.975 | -373.239 |
| 65 | 5 | -0.547551 | 102.275 | -375.977 |
| 66 | 5 | -0.533048 | 102.559 | -378.642 |
| 67 | 5 | -0.521527 | 102.831 | -381.25 |
| 68 | 5 | -0.507221 | 103.089 | -383.786 |
| 69 | 5 | -0.49585 | 103.334 | -386.265 |
| 70 | 5 | -0.481728 | 103.566 | -388.674 |
| 71 | 5 | -0.470498 | 103.788 | -391.026 |
| 72 | 5 | -0.456542 | 103.996 | -393.309 |
| 73 | 5 | -0.445443 | 104.195 | -395.536 |
| 74 | 5 | -0.431644 | 104.381 | -397.694 |
| 75 | 5 | -0.420664 | 104.558 | -399.798 |
| 76 | 5 | -0.40701 | 104.724 | -401.833 |
| 77 | 5 | -0.396142 | 104.881 | -403.813 |
| 78 | 5 | -0.382622 | 105.027 | -405.727 |
| 79 | 5 | -0.371856 | 105.165 | -407.586 |
| 80 | 5 | -0.358459 | 105.294 | -409.378 |
| 81 | 5 | -0.347787 | 105.415 | -411.117 |
| 82 | 5 | -0.334503 | 105.527 | -412.79 |
| 83 | 5 | -0.323919 | 105.632 | -414.409 |
| 84 | 5 | -0.310738 | 105.728 | -415.963 |
| 85 | 5 | -0.300232 | 105.818 | -417.464 |
| 86 | 5 | -0.287147 | 105.901 | -418.9 |
| 87 | 5 | -0.276714 | 105.977 | -420.283 |
| 88 | 5 | -0.263715 | 106.047 | -421.602 |
| 89 | 5 | -0.253347 | 106.111 | -422.869 |
| 90 | 5 | -0.240426 | 106.169 | -424.071 |
| 91 | 5 | -0.230118 | 106.222 | -425.221 |
| 92 | 5 | -0.217267 | 106.269 | -426.308 |
| 93 | 5 | -0.207012 | 106.312 | -427.343 |
| 94 | 5 | -0.194225 | 106.35 | -428.314 |
| 95 | 5 | -0.184017 | 106.383 | -429.234 |
| 96 | 5 | -0.171285 | 106.413 | -430.09 |
| 97 | 5 | -0.161119 | 106.439 | -430.896 |
| 98 | 5 | -0.148434 | 106.461 | -431.638 |
| 99 | 5 | -0.138305 | 106.48 | -432.33 |
| 100 | 5 | -0.125661 | 106.496 | -432.958 |
| 101 | 5.43 | -0.115562 | 106.509 | -433.586 |
| 102 | 5.5 | -0.102953 | 106.52 | -434.152 |
| 103 | 5.7 | -0.0928787 | 106.528 | -434.681 |
| 104 | 5.97 | -0.0802981 | 106.535 | -435.161 |
| 105 | 6.07 | -0.0702426 | 106.54 | -435.587 |
| 106 | 6.22 | -0.0576847 | 106.543 | -435.946 |
| 107 | 6.44 | -0.0476439 | 106.545 | -436.253 |
| 108 | 6.9 | -0.0350997 | 106.546 | -436.495 |
| 109 | 6.9 | -0.0250691 | 106.547 | -436.668 |
| 110 | 7 | -0.0125328 | 106.547 | -436.755 |
| 111 | 7 | 0 | 106.547 | -436.755 |

| | | | | |
|---|---|---|---|---|
| 112 | 7 | 0.0125328 | 106.547 | -436.668 |
| 113 | 7.2 | 0.0250691 | 106.548 | -436.487 |
| 114 | 7.22 | 0.0350997 | 106.549 | -436.234 |
| 115 | 7.9 | 0.0476439 | 106.551 | -435.857 |
| 116 | 8 | 0.0576847 | 106.555 | -435.396 |
| 117 | 8 | 0.0702426 | 106.56 | -434.834 |
| 118 | 8.3 | 0.0802981 | 106.566 | -434.168 |
| 119 | 8.7 | 0.0928787 | 106.575 | -433.359 |
| 120 | 8.7 | 0.102953 | 106.585 | -432.464 |
| 121 | 9 | 0.115562 | 106.599 | -431.424 |
| 122 | 9 | 0.125661 | 106.615 | -430.293 |
| 123 | 9.8 | 0.138305 | 106.634 | -428.937 |
| 124 | 9.9 | 0.148434 | 106.656 | -427.468 |
| 125 | 10 | 0.161119 | 106.682 | -425.857 |
| 126 | 10.9 | 0.171285 | 106.711 | -423.99 |
| 127 | 11 | 0.184017 | 106.745 | -421.966 |
| 128 | 11 | 0.194225 | 106.783 | -419.829 |
| 129 | 18 | 0.207012 | 106.825 | -416.103 |
| 130 | 19.1 | 0.217267 | 106.873 | -411.953 |
| 131 | 20 | 0.230118 | 106.926 | -407.351 |
| 132 | 20 | 0.240426 | 106.983 | -402.542 |
| 133 | 21 | 0.253347 | 107.048 | -397.222 |
| 134 | 27.7 | 0.263715 | 107.117 | -389.917 |
| 135 | 28 | 0.276714 | 107.194 | -382.169 |
| 136 | 28.8 | 0.287147 | 107.276 | -373.899 |
| 137 | 30 | 0.300232 | 107.366 | -364.892 |
| 138 | 30 | 0.310738 | 107.463 | -355.57 |
| 139 | 30 | 0.323919 | 107.568 | -345.852 |
| 140 | 30 | 0.334503 | 107.68 | -335.817 |
| 141 | 33 | 0.347787 | 107.801 | -324.34 |
| 142 | 33.2 | 0.358459 | 107.929 | -312.44 |
| 143 | 34 | 0.371856 | 108.067 | -299.796 |
| 144 | 34 | 0.382622 | 108.214 | -286.787 |
| 145 | 34.1 | 0.396142 | 108.371 | -273.279 |
| 146 | 34.5 | 0.40701 | 108.536 | -259.237 |
| 147 | 34.8 | 0.420664 | 108.713 | -244.598 |
| 148 | 35 | 0.431644 | 108.9 | -229.49 |
| 149 | 36 | 0.445443 | 109.098 | -213.454 |
| 150 | 36 | 0.456542 | 109.307 | -197.019 |
| 151 | 36.8 | 0.470498 | 109.528 | -179.705 |
| 152 | 37 | 0.481728 | 109.76 | -161.881 |
| 153 | 37.7 | 0.49585 | 110.006 | -143.187 |
| 154 | 38 | 0.507221 | 110.263 | -123.913 |
| 155 | 39 | 0.521527 | 110.535 | -103.573 |
| 156 | 40 | 0.533048 | 110.819 | -82.2513 |
| 157 | 40 | 0.547551 | 111.119 | -60.3492 |
| 158 | 40 | 0.559237 | 111.432 | -37.9797 |
| 159 | 40 | 0.573953 | 111.761 | -15.0216 |
| 160 | 40 | 0.585815 | 112.104 | 8.41095 |
| 161 | 40 | 0.60076 | 112.465 | 32.4413 |
| 162 | 40.1 | 0.612813 | 112.841 | 57.0151 |
| 163 | 40.7 | 0.628006 | 113.235 | 82.575 |
| 164 | 41 | 0.640266 | 113.645 | 108.826 |
| 165 | 41 | 0.655726 | 114.075 | 135.711 |
| 166 | 41 | 0.668209 | 114.522 | 163.107 |
| 167 | 41 | 0.68396 | 114.989 | 191.15 |
| 168 | 41 | 0.696684 | 115.475 | 219.714 |
| 169 | 41.5 | 0.712751 | 115.983 | 249.293 |
| 170 | 42 | 0.725736 | 116.51 | 279.774 |
| 171 | 42 | 0.742143 | 117.06 | 310.944 |
| 172 | 42 | 0.755415 | 117.631 | 342.671 |
| 173 | 43 | 0.772193 | 118.227 | 375.875 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 43 | 0.785774 | | 118.845 | 409.664 |
| 175 | 43.8 | 0.802956 | | 119.489 | 444.833 |
| 176 | 44.8 | 0.816874 | | 120.157 | 481.429 |
| 177 | 45 | 0.834498 | | 120.853 | 518.982 |
| 178 | 45 | 0.848786 | | 121.574 | 557.177 |
| 179 | 45 | 0.866894 | | 122.325 | 596.187 |
| 180 | 46 | 0.881587 | | 123.102 | 636.74 |
| 181 | 46.8 | 0.900227 | | 123.913 | 678.871 |
| 182 | 47 | 0.915365 | | 124.751 | 721.893 |
| 183 | 47 | 0.93459 | 125.624 | 765.819 | |
| 184 | 47.5 | 0.950222 | | 126.527 | 810.954 |
| 185 | 49 | 0.970094 | | 127.468 | 858.489 |
| 186 | 49.3 | 0.986272 | | 128.441 | 907.112 |
| 187 | 50 | 1.00687 | 129.455 | 957.455 | |
| 188 | 50 | 1.02365 | 130.502 | 1008.64 | |
| 189 | 50 | 1.04505 | 131.594 | 1060.89 | |
| 190 | 52 | 1.06252 | 132.723 | 1116.14 | |
| 191 | 55 | 1.08482 | 133.9 | 1175.81 | |
| 192 | 60 | 1.10306 | 135.117 | 1241.99 | |
| 193 | 60 | 1.12639 | 136.386 | 1309.57 | |
| 194 | 60 | 1.1455 | 137.698 | 1378.3 | |
| 195 | 63.2 | 1.17 | 139.067 | 1452.25 | |
| 196 | 64 | 1.19012 | 140.483 | 1528.42 | |
| 197 | 65.2 | 1.21596 | 141.962 | 1607.7 | |
| 198 | 67 | 1.23724 | 143.493 | 1690.59 | |
| 199 | 70 | 1.26464 | 145.092 | 1779.12 | |
| 200 | 70 | 1.28727 | 146.749 | 1869.23 | |
| 201 | 70.4 | 1.31652 | 148.482 | 1961.91 | |
| 202 | 72 | 1.34075 | 150.28 | 2058.44 | |
| 203 | 74 | 1.3722 | 152.163 | 2159.99 | |
| 204 | 76.3 | 1.39838 | 154.118 | 2266.68 | |
| 205 | 76.8 | 1.4325 | 156.17 | 2376.7 | |
| 206 | 77.9 | 1.46106 | 158.305 | 2490.51 | |
| 207 | 85.5 | 1.49852 | 160.551 | 2618.64 | |
| 208 | 88.4 | 1.53007 | 162.892 | 2753.9 | |
| 209 | 90 | 1.57179 | 165.362 | 2895.36 | |
| 210 | 95.7 | 1.60725 | 167.945 | 3049.17 | |
| 211 | 100 | 1.65463 | 170.683 | 3214.63 | |
| 212 | 116 | 1.6954 | 173.558 | 3411.3 | |
| 213 | 118 | 1.75069 | 176.622 | 3617.88 | |
| 214 | 123 | 1.79912 | 179.859 | 3839.17 | |
| 215 | 130 | 1.86629 | 183.342 | 4081.79 | |
| 216 | 139 | 1.92684 | 187.055 | 4349.62 | |
| 217 | 150 | 2.01409 | 191.112 | 4651.73 | |
| 218 | 150 | 2.09693 | 195.509 | 4966.27 | |
| 219 | 150 | 2.22621 | 200.465 | 5300.2 | |
| 220 | 160 | 2.36561 | 206.061 | 5678.7 | |
| 221 | 170 | 2.65209 | 213.094 | 6129.56 | |

Data Set Standard Deviation = 33.7804
Numerator = 3.75715e+007
Denominator = 5.34964e+007
W Statistic = 0.702318 = 3.75715e+007 / 5.34964e+007

5% Critical value of 0.976 exceeds 0.702318
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.702318
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: Barium

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 1.60944 | -2.65209 | 7.03356 | -4.26837 |
| 2 | 1.60944 | -2.36561 | 12.6297 | -8.07568 |
| 3 | 1.60944 | -2.22621 | 17.5857 | -11.6586 |
| 4 | 1.60944 | -2.09693 | 21.9828 | -15.0335 |
| 5 | 1.60944 | -2.01409 | 26.0394 | -18.2751 |
| 6 | 1.60944 | -1.92684 | 29.7521 | -21.3762 |
| 7 | 1.60944 | -1.86629 | 33.2351 | -24.3799 |
| 8 | 1.60944 | -1.79912 | 36.472 | -27.2754 |
| 9 | 1.60944 | -1.75069 | 39.5369 | -30.0931 |
| 10 | 1.60944 | -1.6954 | 42.4112 | -32.8217 |
| 11 | 1.60944 | -1.65463 | 45.149 | -35.4847 |
| 12 | 1.60944 | -1.60725 | 47.7323 | -38.0715 |
| 13 | 1.60944 | -1.57179 | 50.2028 | -40.6012 |
| 14 | 1.60944 | -1.53007 | 52.5439 | -43.0637 |
| 15 | 1.60944 | -1.49852 | 54.7894 | -45.4755 |
| 16 | 1.60944 | -1.46106 | 56.9241 | -47.827 |
| 17 | 1.60944 | -1.4325 | 58.9762 | -50.1325 |
| 18 | 1.60944 | -1.39838 | 60.9316 | -52.3831 |
| 19 | 1.60944 | -1.3722 | 62.8146 | -54.5916 |
| 20 | 1.60944 | -1.34075 | 64.6122 | -56.7494 |
| 21 | 1.60944 | -1.31652 | 66.3454 | -58.8683 |
| 22 | 1.60944 | -1.28727 | 68.0025 | -60.9401 |
| 23 | 1.60944 | -1.26464 | 69.6018 | -62.9754 |
| 24 | 1.60944 | -1.23724 | 71.1326 | -64.9667 |
| 25 | 1.60944 | -1.21596 | 72.6111 | -66.9237 |
| 26 | 1.60944 | -1.19012 | 74.0275 | -68.8391 |
| 27 | 1.60944 | -1.17 | 75.3964 | -70.7222 |
| 28 | 1.60944 | -1.1455 | 76.7086 | -72.5658 |
| 29 | 1.60944 | -1.12639 | 77.9774 | -74.3786 |
| 30 | 1.60944 | -1.10306 | 79.1941 | -76.154 |
| 31 | 1.60944 | -1.08482 | 80.371 | -77.8999 |
| 32 | 1.60944 | -1.06252 | 81.4999 | -79.61 |
| 33 | 1.60944 | -1.04505 | 82.592 | -81.2919 |
| 34 | 1.60944 | -1.02365 | 83.6399 | -82.9394 |
| 35 | 1.60944 | -1.00687 | 84.6537 | -84.5599 |
| 36 | 1.60944 | -0.986272 | 85.6264 | -86.1472 |
| 37 | 1.60944 | -0.970094 | 86.5675 | -87.7086 |
| 38 | 1.60944 | -0.950222 | 87.4704 | -89.2379 |
| 39 | 1.60944 | -0.93459 | 88.3439 | -90.742 |
| 40 | 1.60944 | -0.915365 | 89.1818 | -92.2153 |
| 41 | 1.60944 | -0.900227 | 89.9922 | -93.6641 |
| 42 | 1.60944 | -0.881587 | 90.7694 | -95.083 |
| 43 | 1.60944 | -0.866894 | 91.5209 | -96.4782 |
| 44 | 1.60944 | -0.848786 | 92.2413 | -97.8443 |
| 45 | 1.60944 | -0.834498 | 92.9377 | -99.1873 |
| 46 | 1.60944 | -0.816874 | 93.605 | -100.502 |
| 47 | 1.60944 | -0.802956 | 94.2497 | -101.794 |
| 48 | 1.60944 | -0.785774 | 94.8672 | -103.059 |
| 49 | 1.60944 | -0.772193 | 95.4634 | -104.302 |

| | | | | |
|---|---|---|---|---|
| 50 | 1.60944 | -0.755415 | 96.0341 | -105.518 |
| 51 | 1.60944 | -0.742143 | 96.5849 | -106.712 |
| 52 | 1.60944 | -0.725736 | 97.1116 | -107.88 |
| 53 | 1.60944 | -0.712751 | 97.6196 | -109.027 |
| 54 | 1.60944 | -0.696684 | 98.1049 | -110.148 |
| 55 | 1.60944 | -0.683969 | 8.5727 | -111.249 |
| 56 | 1.60944 | -0.668209 | 99.0192 | -112.325 |
| 57 | 1.60944 | -0.655726 | 99.4492 | -113.38 |
| 58 | 1.60944 | -0.640266 | 99.8592 | -114.411 |
| 59 | 1.60944 | -0.628006 | 100.254 | -115.421 |
| 60 | 1.60944 | -0.612813 | 100.629 | -116.408 |
| 61 | 1.60944 | -0.60076 | 100.99 | -117.374 |
| 62 | 1.60944 | -0.585815 | 101.333 | -118.317 |
| 63 | 1.60944 | -0.573953 | 101.663 | -119.241 |
| 64 | 1.60944 | -0.559237 | 101.975 | -120.141 |
| 65 | 1.60944 | -0.547551 | 102.275 | -121.022 |
| 66 | 1.60944 | -0.533048 | 102.559 | -121.88 |
| 67 | 1.60944 | -0.521527 | 102.831 | -122.72 |
| 68 | 1.60944 | -0.507221 | 103.089 | -123.536 |
| 69 | 1.60944 | -0.49585 | 103.334 | -124.334 |
| 70 | 1.60944 | -0.481728 | 103.566 | -125.109 |
| 71 | 1.60944 | -0.470498 | 103.788 | -125.866 |
| 72 | 1.60944 | -0.456542 | 103.996 | -126.601 |
| 73 | 1.60944 | -0.445443 | 104.195 | -127.318 |
| 74 | 1.60944 | -0.431644 | 104.381 | -128.013 |
| 75 | 1.60944 | -0.420664 | 104.558 | -128.69 |
| 76 | 1.60944 | -0.40701 | 104.724 | -129.345 |
| 77 | 1.60944 | -0.396142 | 104.881 | -129.983 |
| 78 | 1.60944 | -0.382622 | 105.027 | -130.598 |
| 79 | 1.60944 | -0.371856 | 105.165 | -131.197 |
| 80 | 1.60944 | -0.358459 | 105.294 | -131.774 |
| 81 | 1.60944 | -0.347787 | 105.415 | -132.333 |
| 82 | 1.60944 | -0.334503 | 105.527 | -132.872 |
| 83 | 1.60944 | -0.323919 | 105.632 | -133.393 |
| 84 | 1.60944 | -0.310738 | 105.728 | -133.893 |
| 85 | 1.60944 | -0.300232 | 105.818 | -134.376 |
| 86 | 1.60944 | -0.287147 | 105.901 | -134.839 |
| 87 | 1.60944 | -0.276714 | 105.977 | -135.284 |
| 88 | 1.60944 | -0.263715 | 106.047 | -135.708 |
| 89 | 1.60944 | -0.253347 | 106.111 | -136.116 |
| 90 | 1.60944 | -0.240426 | 106.169 | -136.503 |
| 91 | 1.60944 | -0.230118 | 106.222 | -136.873 |
| 92 | 1.60944 | -0.217267 | 106.269 | -137.223 |
| 93 | 1.60944 | -0.207012 | 106.312 | -137.556 |
| 94 | 1.60944 | -0.194225 | 106.35 | -137.869 |
| 95 | 1.60944 | -0.184017 | 106.383 | -138.165 |
| 96 | 1.60944 | -0.171285 | 106.413 | -138.441 |
| 97 | 1.60944 | -0.161119 | 106.439 | -138.7 |
| 98 | 1.60944 | -0.148434 | 106.461 | -138.939 |
| 99 | 1.60944 | -0.138305 | 106.48 | -139.162 |
| 100 | 1.60944 | -0.125661 | 106.496 | -139.364 |
| 101 | 1.69194 | -0.115562 | 106.509 | -139.559 |
| 102 | 1.70475 | -0.102953 | 106.52 | -139.735 |
| 103 | 1.74047 | -0.0928787 | 106.528 | -139.896 |
| 104 | 1.78675 | -0.0802981 | 106.535 | -140.04 |
| 105 | 1.80336 | -0.0702426 | 106.54 | -140.167 |
| 106 | 1.82777 | -0.0576847 | 106.543 | -140.272 |
| 107 | 1.86253 | -0.0476439 | 106.545 | -140.361 |
| 108 | 1.93152 | -0.0350997 | 106.546 | -140.429 |
| 109 | 1.93152 | -0.0250691 | 106.547 | -140.477 |
| 110 | 1.94591 | -0.0125328 | 106.547 | -140.501 |
| 111 | 1.94591 | 0 | 106.547 | -140.501 |

| | | | | |
|---|---|---|---|---|
| 112 | 1.94591 | 0.0125328 | 106.547 | -140.477 |
| 113 | 1.97408 | 0.0250691 | 106.548 | -140.428 |
| 114 | 1.97685 | 0.0350997 | 106.549 | -140.358 |
| 115 | 2.06686 | 0.0476439 | 106.551 | -140.26 |
| 116 | 2.07944 | 0.0576847 | 106.555 | -140.14 |
| 117 | 2.07944 | 0.0702426 | 106.56 | -139.994 |
| 118 | 2.11626 | 0.0802981 | 106.566 | -139.824 |
| 119 | 2.16332 | 0.0928787 | 106.575 | -139.623 |
| 120 | 2.16332 | 0.102953 | 106.585 | -139.4 |
| 121 | 2.19722 | 0.115562 | 106.599 | -139.146 |
| 122 | 2.19722 | 0.125661 | 106.615 | -138.87 |
| 123 | 2.28238 | 0.138305 | 106.634 | -138.554 |
| 124 | 2.29253 | 0.148434 | 106.656 | -138.214 |
| 125 | 2.30259 | 0.161119 | 106.682 | -137.843 |
| 126 | 2.38876 | 0.171285 | 106.711 | -137.434 |
| 127 | 2.3979 | 0.184017 | 106.745 | -136.993 |
| 128 | 2.3979 | 0.194225 | 106.783 | -136.527 |
| 129 | 2.89037 | 0.207012 | 106.825 | -135.929 |
| 130 | 2.94969 | 0.217267 | 106.873 | -135.288 |
| 131 | 2.99573 | 0.230118 | 106.926 | -134.598 |
| 132 | 2.99573 | 0.240426 | 106.983 | -133.878 |
| 133 | 3.04452 | 0.253347 | 107.048 | -133.107 |
| 134 | 3.32143 | 0.263715 | 107.117 | -132.231 |
| 135 | 3.3322 | 0.276714 | 107.194 | -131.309 |
| 136 | 3.36038 | 0.287147 | 107.276 | -130.344 |
| 137 | 3.4012 | 0.300232 | 107.366 | -129.323 |
| 138 | 3.4012 | 0.310738 | 107.463 | -128.266 |
| 139 | 3.4012 | 0.323919 | 107.568 | -127.164 |
| 140 | 3.4012 | 0.334503 | 107.68 | -126.026 |
| 141 | 3.49651 | 0.347787 | 107.801 | -124.81 |
| 142 | 3.50255 | 0.358459 | 107.929 | -123.555 |
| 143 | 3.52636 | 0.371856 | 108.067 | -122.244 |
| 144 | 3.52636 | 0.382622 | 108.214 | -120.894 |
| 145 | 3.5293 | 0.396142 | 108.371 | -119.496 |
| 146 | 3.54096 | 0.40701 | 108.536 | -118.055 |
| 147 | 3.54962 | 0.420664 | 108.713 | -116.562 |
| 148 | 3.55535 | 0.431644 | 108.9 | -115.027 |
| 149 | 3.58352 | 0.445443 | 109.098 | -113.431 |
| 150 | 3.58352 | 0.456542 | 109.307 | -111.795 |
| 151 | 3.6055 | 0.470498 | 109.528 | -110.099 |
| 152 | 3.61092 | 0.481728 | 109.76 | -108.359 |
| 153 | 3.62966 | 0.49585 | 110.006 | -106.559 |
| 154 | 3.63759 | 0.507221 | 110.263 | -104.714 |
| 155 | 3.66356 | 0.521527 | 110.535 | -102.804 |
| 156 | 3.68888 | 0.533048 | 110.819 | -100.837 |
| 157 | 3.68888 | 0.547551 | 111.119 | -98.8174 |
| 158 | 3.68888 | 0.559237 | 111.432 | -96.7544 |
| 159 | 3.68888 | 0.573953 | 111.761 | -94.6372 |
| 160 | 3.68888 | 0.585815 | 112.104 | -92.4762 |
| 161 | 3.68888 | 0.60076 | 112.465 | -90.2601 |
| 162 | 3.69138 | 0.612813 | 112.841 | -87.9979 |
| 163 | 3.70623 | 0.628006 | 113.235 | -85.6704 |
| 164 | 3.71357 | 0.640266 | 113.645 | -83.2927 |
| 165 | 3.71357 | 0.655726 | 114.075 | -80.8576 |
| 166 | 3.71357 | 0.668209 | 114.522 | -78.3762 |
| 167 | 3.71357 | 0.68396 | 114.989 | -75.8363 |
| 168 | 3.71357 | 0.696684 | 115.475 | -73.2491 |
| 169 | 3.72569 | 0.712751 | 115.983 | -70.5936 |
| 170 | 3.73767 | 0.725736 | 116.51 | -67.881 |
| 171 | 3.73767 | 0.742143 | 117.06 | -65.1071 |
| 172 | 3.73767 | 0.755415 | 117.631 | -62.2836 |
| 173 | 3.7612 | 0.772193 | 118.227 | -59.3793 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 3.7612 | 0.785774 | | 118.845 | -56.4238 |
| 175 | 3.77963 | 0.802956 | | 119.489 | -53.3889 |
| 176 | 3.80221 | 0.816874 | | 120.157 | -50.283 |
| 177 | 3.80666 | 0.834498 | | 120.853 | -47.1064 |
| 178 | 3.80666 | 0.848786 | | 121.574 | -43.8753 |
| 179 | 3.80666 | 0.866894 | | 122.325 | -40.5753 |
| 180 | 3.82864 | 0.881587 | | 123.102 | -37.2001 |
| 181 | 3.84588 | 0.900227 | | 123.913 | -33.7379 |
| 182 | 3.85015 | 0.915365 | | 124.751 | -30.2136 |
| 183 | 3.85015 | 0.93459 | 125.624 | -26.6153 | |
| 184 | 3.86073 | 0.950222 | | 126.527 | -22.9467 |
| 185 | 3.89182 | 0.970094 | | 127.468 | -19.1713 |
| 186 | 3.89792 | 0.986272 | | 128.441 | -15.3269 |
| 187 | 3.91202 | 1.00687 | 129.455 | -11.388 | |
| 188 | 3.91202 | 1.02365 | 130.502 | -7.38347 | |
| 189 | 3.91202 | 1.04505 | 131.594 | -3.29521 | |
| 190 | 3.95124 | 1.06252 | 132.723 | 0.903067 | |
| 191 | 4.00733 | 1.08482 | 133.9 | 5.25031 | |
| 192 | 4.09434 | 1.10306 | 135.117 | 9.76663 | |
| 193 | 4.09434 | 1.12639 | 136.386 | 14.3785 | |
| 194 | 4.09434 | 1.1455 | 137.698 | 19.0686 | |
| 195 | 4.1463 | 1.17 | 139.067 | 23.9197 | |
| 196 | 4.15888 | 1.19012 | 140.483 | 28.8693 | |
| 197 | 4.17746 | 1.21596 | 141.962 | 33.9489 | |
| 198 | 4.20469 | 1.23724 | 143.493 | 39.1511 | |
| 199 | 4.2485 | 1.26464 | 145.092 | 44.5239 | |
| 200 | 4.2485 | 1.28727 | 146.749 | 49.9929 | |
| 201 | 4.25419 | 1.31652 | 148.482 | 55.5936 | |
| 202 | 4.27667 | 1.34075 | 150.28 | 61.3276 | |
| 203 | 4.30407 | 1.3722 | 152.163 | 67.2337 | |
| 204 | 4.33467 | 1.39838 | 154.118 | 73.2952 | |
| 205 | 4.3412 | 1.4325 | 156.17 | 79.514 | |
| 206 | 4.35543 | 1.46106 | 158.305 | 85.8775 | |
| 207 | 4.44852 | 1.49852 | 160.551 | 92.5437 | |
| 208 | 4.48187 | 1.53007 | 162.892 | 99.4012 | |
| 209 | 4.49981 | 1.57179 | 165.362 | 106.474 | |
| 210 | 4.56122 | 1.60725 | 167.945 | 113.805 | |
| 211 | 4.60517 | 1.65463 | 170.683 | 121.425 | |
| 212 | 4.75359 | 1.6954 | 173.558 | 129.484 | |
| 213 | 4.77068 | 1.75069 | 176.622 | 137.836 | |
| 214 | 4.81218 | 1.79912 | 179.859 | 146.494 | |
| 215 | 4.86753 | 1.86629 | 183.342 | 155.578 | |
| 216 | 4.93447 | 1.92684 | 187.055 | 165.086 | |
| 217 | 5.01064 | 2.01409 | 191.112 | 175.178 | |
| 218 | 5.01064 | 2.09693 | 195.509 | 185.685 | |
| 219 | 5.01064 | 2.22621 | 200.465 | 196.839 | |
| 220 | 5.07517 | 2.36561 | 206.061 | 208.845 | |
| 221 | 5.1358 | 2.65209 | 213.094 | 222.466 | |

Data Set Standard Deviation = 1.14933
Numerator = 49491.1
Denominator = 61927.7
W Statistic = 0.799175 = 49491.1 / 61927.7

5% Critical value of 0.976 exceeds 0.799175
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.799175
Evidence of non-normality at 99% level of significance

# Kruskal-Wallis Non-Parametric Test

## Parameter: Barium

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

# Kruskal Wallis Ranks

## Background Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-13 | 3/16/1999 | 3.91202 | 187 |
| | 9/23/1999 | 3.3322 | 135 |
| | 3/15/2000 | ND<1.60944 | 50 |
| | 9/24/2003 | ND<1.60944 | 50 |
| | 3/11/2004 | ND<1.60944 | 50 |
| | 10/12/2004 | ND<1.60944 | 50 |
| | 4/1/2005 | 2.16332 J | 119 |
| | 10/25/2005 | ND<1.60944 | 50 |
| | 4/29/2006 | 1.60944 J | 100 |
| | 11/18/2006 | 1.69194 J | 101 |
| | 5/23/2007 | 2.38876 | 126 |
| | 11/28/2007 | 1.94591 J | 110 |
| | 6/5/2008 | 1.78675 J | 104 |
| | 11/20/2008 | 2.07944 J | 116 |
| | 6/11/2009 | 2.19722 | 121 |
| | 11/16/2009 | 1.93152 | 108 |
| | 6/30/2010 | 2.29253 H | 124 |
| | 11/12/2010 | 2.19722 | 122 |

Rank Sum = 1823
Rank Mean = 101.278

Background Rank Sum = 1823
Background Rank Mean = 101.278

## Compliance Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-8 | 7/20/1995 | ND<1.60944 | 50 |
| | 8/24/1995 | ND<1.60944 | 50 |
| | 9/28/1995 | ND<1.60944 | 50 |
| | 10/26/1995 | ND<1.60944 | 50 |
| | 11/19/1996 | ND<1.60944 | 50 |
| | 12/19/1996 | ND<1.60944 | 50 |
| | 3/24/1997 | ND<1.60944 | 50 |
| | 9/24/1997 | ND<1.60944 | 50 |
| | 4/7/1998 | ND<1.60944 | 50 |
| | 9/23/1998 | ND<1.60944 | 50 |
| | 3/16/1999 | 4.09434 | 192 |
| | 9/23/1999 | 3.71357 | 164 |
| | 3/15/2000 | ND<1.60944 | 50 |
| | 9/24/2003 | ND<1.60944 | 50 |
| | 3/11/2004 | ND<1.60944 | 50 |
| | 10/12/2004 | ND<1.60944 | 50 |
| | 4/1/2005 | 4.56122 | 210 |
| | 10/25/2005 | 4.17746 | 197 |
| | 4/29/2006 | 4.2485 | 199 |
| | 11/18/2006 | 4.44852 | 207 |

| | | | | |
|---|---|---|---|---|
| | 5/23/2007 | 4.33467 | | 204 |
| | 11/28/2007 | 4.60517 | | 211 |
| | 6/5/2008 | 4.48187 | | 208 |
| | 11/20/2008 | 4.15888 | | 196 |
| | 6/11/2009 | 4.00733 | | 191 |
| | 6/30/2010 | 4.20469 | H | 198 |
| | 11/12/2010 | 4.2485 | | 200 |

Rank Sum = 3277
Rank Mean = 121.37

| | | | | |
|---|---|---|---|---|
| MW-7 | 7/20/1995 | ND<1.60944 | | 50 |
| | 8/24/1995 | ND<1.60944 | | 50 |
| | 9/28/1995 | ND<1.60944 | | 50 |
| | 10/26/1995 | ND<1.60944 | | 50 |
| | 11/19/1996 | ND<1.60944 | | 50 |
| | 12/19/1996 | ND<1.60944 | | 50 |
| | 3/24/1997 | ND<1.60944 | | 50 |
| | 9/24/1997 | ND<1.60944 | | 50 |
| | 4/7/1998 | ND<1.60944 | | 50 |
| | 9/23/1998 | ND<1.60944 | | 50 |
| | 3/16/1999 | 4.09434 | | 193 |
| | 9/23/1999 | 4.30407 | | 203 |
| | 3/15/2000 | ND<1.60944 | | 50 |
| | 9/24/2003 | ND<1.60944 | | 50 |
| | 3/11/2004 | ND<1.60944 | | 50 |
| | 10/12/2004 | ND<1.60944 | | 50 |
| | 4/1/2005 | 3.84588 | | 181 |
| | 10/25/2005 | 3.86073 | | 184 |
| | 4/29/2006 | 3.91202 | | 188 |
| | 11/18/2006 | 3.62966 | | 153 |
| | 5/23/2007 | 4.1463 | | 195 |
| | 11/28/2007 | 2.11626 | J | 118 |
| | 6/5/2008 | 3.77963 | | 175 |
| | 11/20/2008 | 4.09434 | | 194 |
| | 6/11/2009 | 3.85015 | | 182 |
| | 11/16/2009 | 3.73767 | | 170 |
| | 6/30/2010 | 3.80666 | H | 177 |
| | 11/12/2010 | 3.52636 | | 143 |

Rank Sum = 3156
Rank Mean = 112.714

| | | | | |
|---|---|---|---|---|
| MW-6 | 7/20/1995 | ND<1.60944 | | 50 |
| | 8/24/1995 | ND<1.60944 | | 50 |
| | 9/28/1995 | ND<1.60944 | | 50 |
| | 10/26/1995 | ND<1.60944 | | 50 |
| | 11/19/1996 | ND<1.60944 | | 50 |
| | 12/19/1996 | ND<1.60944 | | 50 |
| | 3/24/1997 | ND<1.60944 | | 50 |
| | 9/24/1997 | ND<1.60944 | | 50 |
| | 4/7/1998 | ND<1.60944 | | 50 |
| | 9/23/1998 | ND<1.60944 | | 50 |
| | 3/16/1999 | 2.99573 | | 131 |
| | 9/23/1999 | 1.94591 | J | 111 |
| | 3/15/2000 | ND<1.60944 | | 50 |
| | 9/24/2003 | ND<1.60944 | | 50 |
| | 3/11/2004 | ND<1.60944 | | 50 |
| | 10/12/2004 | ND<1.60944 | | 50 |
| | 4/1/2005 | 1.74047 | J | 103 |
| | 10/25/2005 | 1.70475 | J | 102 |
| | 4/29/2006 | ND<1.60944 | | 50 |
| | 11/18/2006 | 1.80336 | J | 105 |
| | 5/23/2007 | 1.97685 | | 114 |

| | | | | |
|---|---|---|---|---|
| | 11/28/2007 | 1.82777 | J | 106 |
| | 6/5/2008 | 1.86253 | J | 107 |
| | 11/20/2008 | 2.07944 | J | 117 |
| | 6/11/2009 | 1.94591 | | 112 |
| | 11/16/2009 | 1.93152 | | 109 |
| | 6/30/2010 | 2.06686 | H | 115 |
| | 11/12/2010 | 2.28238 | | 123 |

Rank Sum = 2205
Rank Mean = 78.75

| | | | | |
|---|---|---|---|---|
| MW-12BR | 3/16/1999 | 3.4012 | | 137 |
| | 9/23/1999 | 3.49651 | | 141 |
| | 3/15/2000 | ND<1.60944 | | 50 |
| | 9/24/2003 | ND<1.60944 | | 50 |
| | 3/11/2004 | ND<1.60944 | | 50 |
| | 10/12/2004 | ND<1.60944 | | 50 |
| | 4/1/2005 | 3.69138 | | 162 |
| | 10/25/2005 | 3.55535 | | 148 |
| | 4/29/2006 | 3.4012 | | 138 |
| | 11/18/2006 | 3.54096 | | 146 |
| | 5/23/2007 | 3.72569 | | 169 |
| | 11/28/2007 | 3.68888 | | 156 |
| | 6/5/2008 | 3.6055 | | 151 |
| | 11/20/2008 | 3.7612 | | 173 |
| | 6/11/2009 | 3.73767 | | 171 |
| | 11/16/2009 | 3.61092 | | 152 |
| | 6/30/2010 | 3.68888 | | 157 |
| | 11/12/2010 | 3.7612 | | 174 |

Rank Sum = 2375
Rank Mean = 131.944

| | | | | |
|---|---|---|---|---|
| MW-12AR | 3/16/1999 | 3.68888 | | 158 |
| | 9/23/1999 | 3.68888 | | 159 |
| | 3/15/2000 | ND<1.60944 | | 50 |
| | 9/24/2003 | ND<1.60944 | | 50 |
| | 3/11/2004 | ND<1.60944 | | 50 |
| | 10/12/2004 | ND<1.60944 | | 50 |
| | 4/1/2005 | 3.58352 | | 149 |
| | 10/25/2005 | 3.32143 | | 134 |
| | 4/29/2006 | 3.4012 | | 139 |
| | 11/18/2006 | 3.50255 | | 142 |
| | 5/23/2007 | 3.5293 | | 145 |
| | 11/28/2007 | 3.73767 | | 172 |
| | 6/5/2008 | 3.54962 | | 147 |
| | 11/20/2008 | 3.80666 | | 178 |
| | 6/11/2009 | 3.63759 | | 154 |
| | 11/16/2009 | 3.71357 | | 165 |
| | 6/30/2010 | 3.58352 | | 150 |
| | 11/12/2010 | 3.71357 | | 166 |

Rank Sum = 2358
Rank Mean = 131

| | | | | |
|---|---|---|---|---|
| MW-11R | 7/20/1995 | ND<1.60944 | | 50 |
| | 8/24/1995 | ND<1.60944 | | 50 |
| | 9/28/1995 | ND<1.60944 | | 50 |
| | 10/26/1995 | ND<1.60944 | | 50 |
| | 11/19/1996 | ND<1.60944 | | 50 |
| | 12/19/1996 | ND<1.60944 | | 50 |
| | 3/24/1997 | ND<1.60944 | | 50 |
| | 9/24/1997 | ND<1.60944 | | 50 |
| | 4/7/1998 | ND<1.60944 | | 50 |
| | 9/23/1998 | ND<1.60944 | | 50 |

| | | | | |
|---|---|---|---|---|
| | 3/16/1999 | 3.68888 | | 160 |
| | 9/23/1999 | 3.04452 | | 133 |
| | 3/15/2000 | ND<1.60944 | | 50 |
| | 9/24/2003 | ND<1.60944 | | 50 |
| | 3/11/2004 | ND<1.60944 | | 50 |
| | 10/12/2004 | ND<1.60944 | | 50 |
| | 4/1/2005 | 3.36038 | | 136 |
| | 10/25/2005 | 2.94969 | | 130 |
| | 4/29/2006 | 3.4012 | | 140 |
| | 11/18/2006 | 4.75359 | | 212 |
| | 5/23/2007 | 3.91202 | | 189 |
| | 11/28/2007 | 3.52636 | | 144 |
| | 6/5/2008 | ND<1.60944 | | 50 |
| | 11/20/2008 | 2.30259 | | 125 |
| | 6/11/2009 | 2.3979 | | 127 |
| | 11/16/2009 | 1.97408 | | 113 |
| | 6/30/2010 | 2.89037 | H | 129 |
| | 11/12/2010 | 2.16332 | | 120 |

Rank Sum = 2608
Rank Mean = 93.1429

| | | | | |
|---|---|---|---|---|
| MW-10 | 7/20/1995 | ND<1.60944 | | 50 |
| | 8/24/1995 | ND<1.60944 | | 50 |
| | 9/28/1995 | ND<1.60944 | | 50 |
| | 10/26/1995 | ND<1.60944 | | 50 |
| | 11/19/1996 | ND<1.60944 | | 50 |
| | 12/19/1996 | ND<1.60944 | | 50 |
| | 3/24/1997 | ND<1.60944 | | 50 |
| | 9/24/1997 | ND<1.60944 | | 50 |
| | 4/7/1998 | ND<1.60944 | | 50 |
| | 9/23/1998 | ND<1.60944 | | 50 |
| | 3/16/1999 | 4.49981 | | 209 |
| | 9/23/1999 | 4.27667 | | 202 |
| | 3/15/2000 | ND<1.60944 | | 50 |
| | 9/24/2003 | ND<1.60944 | | 50 |
| | 3/11/2004 | ND<1.60944 | | 50 |
| | 10/12/2004 | ND<1.60944 | | 50 |
| | 4/1/2005 | 4.35543 | | 206 |
| | 10/25/2005 | 4.3412 | | 205 |
| | 4/29/2006 | 2.3979 | | 128 |
| | 11/18/2006 | 4.81218 | | 214 |
| | 5/23/2007 | 4.93447 | | 216 |
| | 11/28/2007 | 4.77068 | | 213 |
| | 6/5/2008 | 5.01064 | | 217 |
| | 11/20/2008 | 5.01064 | | 218 |
| | 6/11/2009 | 5.1358 | | 221 |
| | 11/16/2009 | 4.86753 | | 215 |
| | 6/30/2010 | 5.07517 | H | 220 |
| | 11/12/2010 | 5.01064 | | 219 |

Rank Sum = 3603
Rank Mean = 128.679

| | | | | |
|---|---|---|---|---|
| MW-9 | 7/20/1995 | ND<1.60944 | | 50 |
| | 8/24/1995 | ND<1.60944 | | 50 |
| | 9/28/1995 | ND<1.60944 | | 50 |
| | 10/26/1995 | ND<1.60944 | | 50 |
| | 11/19/1996 | ND<1.60944 | | 50 |
| | 12/19/1996 | ND<1.60944 | | 50 |
| | 3/24/1997 | ND<1.60944 | | 50 |
| | 9/24/1997 | ND<1.60944 | | 50 |
| | 4/7/1998 | ND<1.60944 | | 50 |
| | 9/23/1998 | ND<1.60944 | | 50 |

| | | |
|---|---|---|
| 3/16/1999 | 2.99573 | 132 |
| 9/23/1999 | 3.95124 | 190 |
| 3/15/2000 | ND<1.60944 | 50 |
| 9/24/2003 | ND<1.60944 | 50 |
| 3/11/2004 | ND<1.60944 | 50 |
| 10/12/2004 | ND<1.60944 | 50 |
| 4/1/2005 | 3.70623 | 163 |
| 10/25/2005 | 3.66356 | 155 |
| 4/29/2006 | 3.68888 | 161 |
| 11/18/2006 | 3.89792 | 186 |
| 5/23/2007 | 4.25419 | 201 |
| 11/28/2007 | 3.85015 | 183 |
| 6/5/2008 | 3.80221 | 176 |
| 11/20/2008 | 3.89182 | 185 |
| 6/11/2009 | 3.82864 | 180 |
| 11/16/2009 | 3.71357 | 167 |
| 6/30/2010 | 3.80666 H | 179 |
| 11/12/2010 | 3.71357 | 168 |

Rank Sum = 3126
Rank Mean = 111.643

## Calculation Results:

Kruskal-Wallis H Statistic = 16.2887
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 17.8974
95% Confidence comparison value is 15.5073 at 8 degrees of freedom
16.2887 > 15.5073 indicating a significant group difference at 5% significance level
17.8974 > 15.5073 indicating a significant group difference at 5% significance level when adjusted for ties

## Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 101.278

| Well | Mean Rank | Dif from Bkg | Critical Value |
|---|---|---|---|
| MW-8 | 121.37 | 20.0926 | 45.263 |
| MW-7 | 112.714 | 11.4365 | 44.9386 |
| MW-6 | 78.75 | -22.5278 | 44.9386 |
| MW-12BR | 131.944 | 30.6667 | 49.5832 |
| MW-12AR | 131 | 29.7222 | 49.5832 |
| MW-11R | 93.1429 | -8.13492 | 44.9386 |
| MW-10 | 128.679 | 27.4008 | 44.9386 |
| MW-9 | 111.643 | 10.3651 | 44.9386 |

## Individual Well Comparisons at Groupwise 5% Significance Level (0.625% Significance Level per comparison)

0.625% Z score is 2.51213
Mean background rank is 101.278

| Well | Mean Rank | Dif from Bkg | Critical Value |
|---|---|---|---|
| MW-8 | 121.37 | 20.0926 | 48.8779 |
| MW-7 | 112.714 | 11.4365 | 48.5275 |
| MW-6 | 78.75 | -22.5278 | 48.5275 |
| MW-12BR | 131.944 | 30.6667 | 53.5431 |
| MW-12AR | 131 | 29.7222 | 53.5431 |
| MW-11R | 93.1429 | -8.13492 | 48.5275 |
| MW-10 | 128.679 | 27.4008 | 48.5275 |
| MW-9 | 111.643 | 10.3651 | 48.5275 |

# Non-Parametric Prediction Interval

## Inter-Well Comparison

## Parameter: Barium

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 44.7964%
Number of comparisons = 8
Future Samples (k) = 8
Recent Dates = 1
Background Samples (n) = 18
Maximum Background Concentration = 3.91202
Confidence Level = 69.2%
False Positive Rate = 30.8%

| Location | Date | Samples | Mean | Significant |
|---|---|---|---|---|
| MW-8 | 11/12/2010 | 1 | 4.2485 | TRUE |
| MW-7 | 11/12/2010 | 1 | 3.52636 | FALSE |
| MW-6 | 11/12/2010 | 1 | 2.28238 | FALSE |
| MW-12BR | 11/12/2010 | 1 | 3.7612 | FALSE |
| MW-12AR | 11/12/2010 | 1 | 3.71357 | FALSE |
| MW-11R | 11/12/2010 | 1 | 2.16332 | FALSE |
| MW-10 | 11/12/2010 | 1 | 5.01064 | TRUE |
| MW-9 | 11/12/2010 | 1 | 3.71357 | FALSE |

# Mann-Kendall Trend Analysis

## Parameter: Barium

## Location: MW-8

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | Positives | Negatives |
|---|---|---|---|---|
| ND<1.60944 | ND<1.60944 | 0 | 0 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 0 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 0 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 0 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 0 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 0 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 0 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 0 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 0 | 0 |
| 4.09434 | ND<1.60944 | 2.48491 | 1 | 0 |
| 3.71357 | ND<1.60944 | 2.10413 | 2 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 2 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 2 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 2 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 2 | 0 |
| 4.56122 | ND<1.60944 | 2.95178 | 3 | 0 |
| 4.17746 | ND<1.60944 | 2.56802 | 4 | 0 |
| 4.2485 | ND<1.60944 | 2.63906 | 5 | 0 |
| 4.44852 | ND<1.60944 | 2.83908 | 6 | 0 |
| 4.33467 | ND<1.60944 | 2.72524 | 7 | 0 |
| 4.60517 | ND<1.60944 | 2.99573 | 8 | 0 |
| 4.48187 | ND<1.60944 | 2.87243 | 9 | 0 |
| 4.15888 | ND<1.60944 | 2.54945 | 10 | 0 |
| 4.00733 | ND<1.60944 | 2.3979 | 11 | 0 |
| 4.20469 H | ND<1.60944 | 2.59525 | 12 | 0 |
| 4.2485 | ND<1.60944 | 2.63906 | 13 | 0 |
| | | | | |
| ND<1.60944 | ND<1.60944 | 0 | 13 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 13 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 13 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 13 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 13 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 13 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 13 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 13 | 0 |
| 4.09434 | ND<1.60944 | 2.48491 | 14 | 0 |
| 3.71357 | ND<1.60944 | 2.10413 | 15 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 15 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 15 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 15 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 15 | 0 |
| 4.56122 | ND<1.60944 | 2.95178 | 16 | 0 |
| 4.17746 | ND<1.60944 | 2.56802 | 17 | 0 |
| 4.2485 | ND<1.60944 | 2.63906 | 18 | 0 |
| 4.44852 | ND<1.60944 | 2.83908 | 19 | 0 |
| 4.33467 | ND<1.60944 | 2.72524 | 20 | 0 |
| 4.60517 | ND<1.60944 | 2.99573 | 21 | 0 |
| 4.48187 | ND<1.60944 | 2.87243 | 22 | 0 |

| | | | | |
|---|---|---|---|---|
| 4.15888 | ND<1.60944 | 2.54945 | 23 | 0 |
| 4.00733 | ND<1.60944 | 2.3979 | 24 | 0 |
| 4.20469 H | ND<1.60944 | 2.59525 | 25 | 0 |
| 4.2485 | ND<1.60944 | 2.63906 | 26 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 26 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 26 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 26 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 26 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 26 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 26 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 26 | 0 |
| 4.09434 | ND<1.60944 | 2.48491 | 27 | 0 |
| 3.71357 | ND<1.60944 | 2.10413 | 28 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 28 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 28 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 28 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 28 | 0 |
| 4.56122 | ND<1.60944 | 2.95178 | 29 | 0 |
| 4.17746 | ND<1.60944 | 2.56802 | 30 | 0 |
| 4.2485 | ND<1.60944 | 2.63906 | 31 | 0 |
| 4.44852 | ND<1.60944 | 2.83908 | 32 | 0 |
| 4.33467 | ND<1.60944 | 2.72524 | 33 | 0 |
| 4.60517 | ND<1.60944 | 2.99573 | 34 | 0 |
| 4.48187 | ND<1.60944 | 2.87243 | 35 | 0 |
| 4.15888 | ND<1.60944 | 2.54945 | 36 | 0 |
| 4.00733 | ND<1.60944 | 2.3979 | 37 | 0 |
| 4.20469 H | ND<1.60944 | 2.59525 | 38 | 0 |
| 4.2485 | ND<1.60944 | 2.63906 | 39 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 39 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 39 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 39 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 39 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 39 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 39 | 0 |
| 4.09434 | ND<1.60944 | 2.48491 | 40 | 0 |
| 3.71357 | ND<1.60944 | 2.10413 | 41 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 41 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 41 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 41 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 41 | 0 |
| 4.56122 | ND<1.60944 | 2.95178 | 42 | 0 |
| 4.17746 | ND<1.60944 | 2.56802 | 43 | 0 |
| 4.2485 | ND<1.60944 | 2.63906 | 44 | 0 |
| 4.44852 | ND<1.60944 | 2.83908 | 45 | 0 |
| 4.33467 | ND<1.60944 | 2.72524 | 46 | 0 |
| 4.60517 | ND<1.60944 | 2.99573 | 47 | 0 |
| 4.48187 | ND<1.60944 | 2.87243 | 48 | 0 |
| 4.15888 | ND<1.60944 | 2.54945 | 49 | 0 |
| 4.00733 | ND<1.60944 | 2.3979 | 50 | 0 |
| 4.20469 H | ND<1.60944 | 2.59525 | 51 | 0 |
| 4.2485 | ND<1.60944 | 2.63906 | 52 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 52 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 52 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 52 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 52 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 52 | 0 |
| 4.09434 | ND<1.60944 | 2.48491 | 53 | 0 |
| 3.71357 | ND<1.60944 | 2.10413 | 54 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 54 | 0 |

| | | | | |
|---|---|---|---|---|
| ND<1.60944 | ND<1.60944 | 0 | 54 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 54 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 54 | 0 |
| 4.56122 | ND<1.60944 | 2.95178 | 55 | 0 |
| 4.17746 | ND<1.60944 | 2.56802 | 56 | 0 |
| 4.2485 | ND<1.60944 | 2.63906 | 57 | 0 |
| 4.44852 | ND<1.60944 | 2.83908 | 58 | 0 |
| 4.33467 | ND<1.60944 | 2.72524 | 59 | 0 |
| 4.60517 | ND<1.60944 | 2.99573 | 60 | 0 |
| 4.48187 | ND<1.60944 | 2.87243 | 61 | 0 |
| 4.15888 | ND<1.60944 | 2.54945 | 62 | 0 |
| 4.00733 | ND<1.60944 | 2.3979 | 63 | 0 |
| 4.20469 H | ND<1.60944 | 2.59525 | 64 | 0 |
| 4.2485 | ND<1.60944 | 2.63906 | 65 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 65 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 65 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 65 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 65 | 0 |
| 4.09434 | ND<1.60944 | 2.48491 | 66 | 0 |
| 3.71357 | ND<1.60944 | 2.10413 | 67 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 67 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 67 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 67 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 67 | 0 |
| 4.56122 | ND<1.60944 | 2.95178 | 68 | 0 |
| 4.17746 | ND<1.60944 | 2.56802 | 69 | 0 |
| 4.2485 | ND<1.60944 | 2.63906 | 70 | 0 |
| 4.44852 | ND<1.60944 | 2.83908 | 71 | 0 |
| 4.33467 | ND<1.60944 | 2.72524 | 72 | 0 |
| 4.60517 | ND<1.60944 | 2.99573 | 73 | 0 |
| 4.48187 | ND<1.60944 | 2.87243 | 74 | 0 |
| 4.15888 | ND<1.60944 | 2.54945 | 75 | 0 |
| 4.00733 | ND<1.60944 | 2.3979 | 76 | 0 |
| 4.20469 H | ND<1.60944 | 2.59525 | 77 | 0 |
| 4.2485 | ND<1.60944 | 2.63906 | 78 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 78 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 78 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 78 | 0 |
| 4.09434 | ND<1.60944 | 2.48491 | 79 | 0 |
| 3.71357 | ND<1.60944 | 2.10413 | 80 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 80 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 80 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 80 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 80 | 0 |
| 4.56122 | ND<1.60944 | 2.95178 | 81 | 0 |
| 4.17746 | ND<1.60944 | 2.56802 | 82 | 0 |
| 4.2485 | ND<1.60944 | 2.63906 | 83 | 0 |
| 4.44852 | ND<1.60944 | 2.83908 | 84 | 0 |
| 4.33467 | ND<1.60944 | 2.72524 | 85 | 0 |
| 4.60517 | ND<1.60944 | 2.99573 | 86 | 0 |
| 4.48187 | ND<1.60944 | 2.87243 | 87 | 0 |
| 4.15888 | ND<1.60944 | 2.54945 | 88 | 0 |
| 4.00733 | ND<1.60944 | 2.3979 | 89 | 0 |
| 4.20469 H | ND<1.60944 | 2.59525 | 90 | 0 |
| 4.2485 | ND<1.60944 | 2.63906 | 91 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 91 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 91 | 0 |
| 4.09434 | ND<1.60944 | 2.48491 | 92 | 0 |
| 3.71357 | ND<1.60944 | 2.10413 | 93 | 0 |

| | | | | |
|---|---|---|---|---|
| ND<1.60944 | ND<1.60944 | 0 | 93 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 93 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 93 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 93 | 0 |
| 4.56122 | ND<1.60944 | 2.95178 | 94 | 0 |
| 4.17746 | ND<1.60944 | 2.56802 | 95 | 0 |
| 4.2485 | ND<1.60944 | 2.63906 | 96 | 0 |
| 4.44852 | ND<1.60944 | 2.83908 | 97 | 0 |
| 4.33467 | ND<1.60944 | 2.72524 | 98 | 0 |
| 4.60517 | ND<1.60944 | 2.99573 | 99 | 0 |
| 4.48187 | ND<1.60944 | 2.87243 | 100 | 0 |
| 4.15888 | ND<1.60944 | 2.54945 | 101 | 0 |
| 4.00733 | ND<1.60944 | 2.3979 | 102 | 0 |
| 4.20469 H | ND<1.60944 | 2.59525 | 103 | 0 |
| 4.2485 | ND<1.60944 | 2.63906 | 104 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 104 | 0 |
| 4.09434 | ND<1.60944 | 2.48491 | 105 | 0 |
| 3.71357 | ND<1.60944 | 2.10413 | 106 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 106 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 106 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 106 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 106 | 0 |
| 4.56122 | ND<1.60944 | 2.95178 | 107 | 0 |
| 4.17746 | ND<1.60944 | 2.56802 | 108 | 0 |
| 4.2485 | ND<1.60944 | 2.63906 | 109 | 0 |
| 4.44852 | ND<1.60944 | 2.83908 | 110 | 0 |
| 4.33467 | ND<1.60944 | 2.72524 | 111 | 0 |
| 4.60517 | ND<1.60944 | 2.99573 | 112 | 0 |
| 4.48187 | ND<1.60944 | 2.87243 | 113 | 0 |
| 4.15888 | ND<1.60944 | 2.54945 | 114 | 0 |
| 4.00733 | ND<1.60944 | 2.3979 | 115 | 0 |
| 4.20469 H | ND<1.60944 | 2.59525 | 116 | 0 |
| 4.2485 | ND<1.60944 | 2.63906 | 117 | 0 |
| 4.09434 | ND<1.60944 | 2.48491 | 118 | 0 |
| 3.71357 | ND<1.60944 | 2.10413 | 119 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 119 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 119 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 119 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 119 | 0 |
| 4.56122 | ND<1.60944 | 2.95178 | 120 | 0 |
| 4.17746 | ND<1.60944 | 2.56802 | 121 | 0 |
| 4.2485 | ND<1.60944 | 2.63906 | 122 | 0 |
| 4.44852 | ND<1.60944 | 2.83908 | 123 | 0 |
| 4.33467 | ND<1.60944 | 2.72524 | 124 | 0 |
| 4.60517 | ND<1.60944 | 2.99573 | 125 | 0 |
| 4.48187 | ND<1.60944 | 2.87243 | 126 | 0 |
| 4.15888 | ND<1.60944 | 2.54945 | 127 | 0 |
| 4.00733 | ND<1.60944 | 2.3979 | 128 | 0 |
| 4.20469 H | ND<1.60944 | 2.59525 | 129 | 0 |
| 4.2485 | ND<1.60944 | 2.63906 | 130 | 0 |
| 3.71357 | 4.09434 | -0.380772 | 130 | 1 |
| ND<1.60944 | 4.09434 | -2.48491 | 130 | 2 |
| ND<1.60944 | 4.09434 | -2.48491 | 130 | 3 |
| ND<1.60944 | 4.09434 | -2.48491 | 130 | 4 |
| ND<1.60944 | 4.09434 | -2.48491 | 130 | 5 |
| 4.56122 | 4.09434 | 0.466874 | 131 | 5 |
| 4.17746 | 4.09434 | 0.0831149 | 132 | 5 |
| 4.2485 | 4.09434 | 0.154151 | 133 | 5 |
| 4.44852 | 4.09434 | 0.354172 | 134 | 5 |

| | | | | |
|---|---|---|---|---|
| 4.33467 | 4.09434 | 0.240328 | 135 | 5 |
| 4.60517 | 4.09434 | 0.510826 | 136 | 5 |
| 4.48187 | 4.09434 | 0.387527 | 137 | 5 |
| 4.15888 | 4.09434 | 0.0645385 | 138 | 5 |
| 4.00733 | 4.09434 | -0.0870114 | 138 | 6 |
| 4.20469 H | 4.09434 | 0.110348 | 139 | 6 |
| 4.2485 | 4.09434 | 0.154151 | 140 | 6 |
| | | | | |
| ND<1.60944 | 3.71357 | -2.10413140 | 7 | |
| ND<1.60944 | 3.71357 | -2.10413140 | 8 | |
| ND<1.60944 | 3.71357 | -2.10413140 | 9 | |
| ND<1.60944 | 3.71357 | -2.10413140 | 10 | |
| 4.56122 | 3.71357 | 0.847646 | 141 | 10 |
| 4.17746 | 3.71357 | 0.463887 | 142 | 10 |
| 4.2485 | 3.71357 | 0.534923 | 143 | 10 |
| 4.44852 | 3.71357 | 0.734944 | 144 | 10 |
| 4.33467 | 3.71357 | 0.621101 | 145 | 10 |
| 4.60517 | 3.71357 | 0.891598 | 146 | 10 |
| 4.48187 | 3.71357 | 0.7683 | 147 | 10 |
| 4.15888 | 3.71357 | 0.445311 | 148 | 10 |
| 4.00733 | 3.71357 | 0.293761 | 149 | 10 |
| 4.20469 H | 3.71357 | 0.491121 | 150 | 10 |
| 4.2485 | 3.71357 | 0.534923 | 151 | 10 |
| | | | | |
| ND<1.60944 | ND<1.60944 | 0 | 151 | 10 |
| ND<1.60944 | ND<1.60944 | 0 | 151 | 10 |
| ND<1.60944 | ND<1.60944 | 0 | 151 | 10 |
| 4.56122 | ND<1.60944 | 2.95178 | 152 | 10 |
| 4.17746 | ND<1.60944 | 2.56802 | 153 | 10 |
| 4.2485 | ND<1.60944 | 2.63906 | 154 | 10 |
| 4.44852 | ND<1.60944 | 2.83908 | 155 | 10 |
| 4.33467 | ND<1.60944 | 2.72524 | 156 | 10 |
| 4.60517 | ND<1.60944 | 2.99573 | 157 | 10 |
| 4.48187 | ND<1.60944 | 2.87243 | 158 | 10 |
| 4.15888 | ND<1.60944 | 2.54945 | 159 | 10 |
| 4.00733 | ND<1.60944 | 2.3979 | 160 | 10 |
| 4.20469 H | ND<1.60944 | 2.59525 | 161 | 10 |
| 4.2485 | ND<1.60944 | 2.63906 | 162 | 10 |
| | | | | |
| ND<1.60944 | ND<1.60944 | 0 | 162 | 10 |
| ND<1.60944 | ND<1.60944 | 0 | 162 | 10 |
| 4.56122 | ND<1.60944 | 2.95178 | 163 | 10 |
| 4.17746 | ND<1.60944 | 2.56802 | 164 | 10 |
| 4.2485 | ND<1.60944 | 2.63906 | 165 | 10 |
| 4.44852 | ND<1.60944 | 2.83908 | 166 | 10 |
| 4.33467 | ND<1.60944 | 2.72524 | 167 | 10 |
| 4.60517 | ND<1.60944 | 2.99573 | 168 | 10 |
| 4.48187 | ND<1.60944 | 2.87243 | 169 | 10 |
| 4.15888 | ND<1.60944 | 2.54945 | 170 | 10 |
| 4.00733 | ND<1.60944 | 2.3979 | 171 | 10 |
| 4.20469 H | ND<1.60944 | 2.59525 | 172 | 10 |
| 4.2485 | ND<1.60944 | 2.63906 | 173 | 10 |
| | | | | |
| ND<1.60944 | ND<1.60944 | 0 | 173 | 10 |
| 4.56122 | ND<1.60944 | 2.95178 | 174 | 10 |
| 4.17746 | ND<1.60944 | 2.56802 | 175 | 10 |
| 4.2485 | ND<1.60944 | 2.63906 | 176 | 10 |
| 4.44852 | ND<1.60944 | 2.83908 | 177 | 10 |
| 4.33467 | ND<1.60944 | 2.72524 | 178 | 10 |
| 4.60517 | ND<1.60944 | 2.99573 | 179 | 10 |
| 4.48187 | ND<1.60944 | 2.87243 | 180 | 10 |
| 4.15888 | ND<1.60944 | 2.54945 | 181 | 10 |

| | | | | | |
|---|---|---|---|---|---|
| 4.00733 | | ND<1.60944 | 2.3979 | 182 | 10 |
| 4.20469 H | | ND<1.60944 | 2.59525 | 183 | 10 |
| 4.2485 | ND<1.60944 | 2.63906 | 184 | 10 | |
| | | | | | |
| 4.56122 | | ND<1.60944 | 2.95178 | 185 | 10 |
| 4.17746 | | ND<1.60944 | 2.56802 | 186 | 10 |
| 4.2485 | ND<1.60944 | 2.63906 | 187 | 10 | |
| 4.44852 | | ND<1.60944 | 2.83908 | 188 | 10 |
| 4.33467 | | ND<1.60944 | 2.72524 | 189 | 10 |
| 4.60517 | | ND<1.60944 | 2.99573 | 190 | 10 |
| 4.48187 | | ND<1.60944 | 2.87243 | 191 | 10 |
| 4.15888 | | ND<1.60944 | 2.54945 | 192 | 10 |
| 4.00733 | | ND<1.60944 | 2.3979 | 193 | 10 |
| 4.20469 H | | ND<1.60944 | 2.59525 | 194 | 10 |
| 4.2485 | ND<1.60944 | 2.63906 | 195 | 10 | |
| | | | | | |
| 4.17746 | | 4.56122 | -0.383759 | 195 | 11 |
| 4.2485 | 4.56122 | -0.312723 | 195 | 12 | |
| 4.44852 | | 4.56122 | -0.112702 | 195 | 13 |
| 4.33467 | | 4.56122 | -0.226545 | 195 | 14 |
| 4.60517 | | 4.56122 | 0.0439519 | 196 | 14 |
| 4.48187 | | 4.56122 | -0.0793463 | 196 | 15 |
| 4.15888 | | 4.56122 | -0.402335 | 196 | 16 |
| 4.00733 | | 4.56122 | -0.553885 | 196 | 17 |
| 4.20469 H | | 4.56122 | -0.356526 | 196 | 18 |
| 4.2485 | 4.56122 | -0.312723 | 196 | 19 | |
| | | | | | |
| 4.2485 | 4.17746 | 0.0710358 | 197 | 19 | |
| 4.44852 | | 4.17746 | 0.271057 | 198 | 19 |
| 4.33467 | | 4.17746 | 0.157213 | 199 | 19 |
| 4.60517 | | 4.17746 | 0.427711 | 200 | 19 |
| 4.48187 | | 4.17746 | 0.304413 | 201 | 19 |
| 4.15888 | | 4.17746 | -0.0185764 | 201 | 20 |
| 4.00733 | | 4.17746 | -0.170126 | 201 | 21 |
| 4.20469 H | | 4.17746 | 0.0272332 | 202 | 21 |
| 4.2485 | 4.17746 | 0.0710358 | 203 | 21 | |
| | | | | | |
| 4.44852 | | 4.2485 | 0.200021 | 204 | 21 |
| 4.33467 | | 4.2485 | 0.0861777 | 205 | 21 |
| 4.60517 | | 4.2485 | 0.356675 | 206 | 21 |
| 4.48187 | | 4.2485 | 0.233377 | 207 | 21 |
| 4.15888 | | 4.2485 | -0.0896122 | 207 | 22 |
| 4.00733 | | 4.2485 | -0.241162 | 207 | 23 |
| 4.20469 H | | 4.2485 | -0.0438026 | 207 | 24 |
| 4.2485 | 4.2485 | 0 | 207 | 24 | |
| | | | | | |
| 4.33467 | | 4.44852 | -0.113843 | 207 | 25 |
| 4.60517 | | 4.44852 | 0.156654 | 208 | 25 |
| 4.48187 | | 4.44852 | 0.0333556 | 209 | 25 |
| 4.15888 | | 4.44852 | -0.289633 | 209 | 26 |
| 4.00733 | | 4.44852 | -0.441183 | 209 | 27 |
| 4.20469 H | | 4.44852 | -0.243824 | 209 | 28 |
| 4.2485 | 4.44852 | -0.200021 | 209 | 29 | |
| | | | | | |
| 4.60517 | | 4.33467 | 0.270497 | 210 | 29 |
| 4.48187 | | 4.33467 | 0.147199 | 211 | 29 |
| 4.15888 | | 4.33467 | -0.17579211 | 30 | |
| 4.00733 | | 4.33467 | -0.32734211 | 31 | |
| 4.20469 H | | 4.33467 | -0.12998211 | 32 | |
| 4.2485 | 4.33467 | -0.0861777 | 211 | 33 | |

| | | | | |
|---|---|---|---|---|
| 4.48187 | 4.60517 | -0.123298 | 211 | 34 |
| 4.15888 | 4.60517 | -0.446287 | 211 | 35 |
| 4.00733 | 4.60517 | -0.597837 | 211 | 36 |
| 4.20469 H | 4.60517 | -0.400478 | 211 | 37 |
| 4.2485 | 4.60517 | -0.356675 | 211 | 38 |
| | | | | |
| 4.15888 | 4.48187 | -0.322989 | 211 | 39 |
| 4.00733 | 4.48187 | -0.474539 | 211 | 40 |
| 4.20469 H | 4.48187 | -0.277179 | 211 | 41 |
| 4.2485 | 4.48187 | -0.233377 | 211 | 42 |
| | | | | |
| 4.00733 | 4.15888 | -0.15155 | 211 | 43 |
| 4.20469 H | 4.15888 | 0.0458095 | 212 | 43 |
| 4.2485 | 4.15888 | 0.0896122 | 213 | 43 |
| | | | | |
| 4.20469 H | 4.00733 | 0.197359 | 214 | 43 |
| 4.2485 | 4.00733 | 0.241162 | 215 | 43 |
| | | | | |
| 4.2485 | 4.20469 H | 0.0438026 | 216 | 43 |

S Statistic = 216 - 43 = 173

| Tied Group | Value | Members |
|---|---|---|
| 1 | 1.60944 | 14 |
| 2 | 4.2485 | 2 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |
| 11/19/1996 | 1 |
| 12/19/1996 | 1 |
| 3/24/1997 | 1 |
| 9/24/1997 | 1 |
| 4/7/1998 | 1 |
| 9/23/1998 | 1 |
| 3/16/1999 | 1 |
| 9/23/1999 | 1 |
| 3/15/2000 | 1 |
| 9/24/2003 | 1 |
| 3/11/2004 | 1 |
| 10/12/2004 | 1 |
| 4/1/2005 | 1 |
| 10/25/2005 | 1 |
| 4/29/2006 | 1 |
| 11/18/2006 | 1 |
| 5/23/2007 | 1 |
| 11/28/2007 | 1 |
| 6/5/2008 | 1 |
| 11/20/2008 | 1 |
| 6/11/2009 | 1 |
| 6/30/2010 | 1 |
| 11/12/2010 | 1 |

There are 0 time periods with multiple data

A = 6024
B = 0
C = 2184

D = 0
E = 184
F = 0
a = 41418
b = 157950
c = 1404
Group Variance = 1966.33
Z-Score = 3.87882
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|3.87882| > 1.97737 indicating a trend

# Mann-Kendall Trend Analysis

## Parameter: Barium

## Location: MW-10

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | Positives | Negatives |
|---|---|---|---|---|
| ND<1.60944 | ND<1.60944 | 0 | 0 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 0 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 0 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 0 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 0 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 0 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 0 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 0 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 0 | 0 |
| 4.49981 | ND<1.60944 | 2.89037 | 1 | 0 |
| 4.27667 | ND<1.60944 | 2.66723 | 2 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 2 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 2 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 2 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 2 | 0 |
| 4.35543 | ND<1.60944 | 2.74599 | 3 | 0 |
| 4.3412 | ND<1.60944 | 2.73177 | 4 | 0 |
| 2.3979 | ND<1.60944 | 0.788457 | 5 | 0 |
| 4.81218 | ND<1.60944 | 3.20275 | 6 | 0 |
| 4.93447 | ND<1.60944 | 3.32504 | 7 | 0 |
| 4.77068 | ND<1.60944 | 3.16125 | 8 | 0 |
| 5.01064 | ND<1.60944 | 3.4012 | 9 | 0 |
| 5.01064 | ND<1.60944 | 3.4012 | 10 | 0 |
| 5.1358 | ND<1.60944 | 3.52636 | 11 | 0 |
| 4.86753 | ND<1.60944 | 3.2581 | 12 | 0 |
| 5.07517 H | ND<1.60944 | 3.46574 | 13 | 0 |
| 5.01064 | ND<1.60944 | 3.4012 | 14 | 0 |
| | | | | |
| ND<1.60944 | ND<1.60944 | 0 | 14 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 14 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 14 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 14 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 14 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 14 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 14 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 14 | 0 |
| 4.49981 | ND<1.60944 | 2.89037 | 15 | 0 |
| 4.27667 | ND<1.60944 | 2.66723 | 16 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 16 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 16 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 16 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 16 | 0 |
| 4.35543 | ND<1.60944 | 2.74599 | 17 | 0 |
| 4.3412 | ND<1.60944 | 2.73177 | 18 | 0 |
| 2.3979 | ND<1.60944 | 0.788457 | 19 | 0 |
| 4.81218 | ND<1.60944 | 3.20275 | 20 | 0 |
| 4.93447 | ND<1.60944 | 3.32504 | 21 | 0 |
| 4.77068 | ND<1.60944 | 3.16125 | 22 | 0 |

| | | | | |
|---|---|---|---|---|
| 5.01064 | ND<1.60944 | 3.4012 | 23 | 0 |
| 5.01064 | ND<1.60944 | 3.4012 | 24 | 0 |
| 5.1358 | ND<1.60944 | 3.52636 | 25 | 0 |
| 4.86753 | ND<1.60944 | 3.2581 | 26 | 0 |
| 5.07517 H | ND<1.60944 | 3.46574 | 27 | 0 |
| 5.01064 | ND<1.60944 | 3.4012 | 28 | 0 |
| | | | | |
| ND<1.60944 | ND<1.60944 | 0 | 28 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 28 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 28 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 28 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 28 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 28 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 28 | 0 |
| 4.49981 | ND<1.60944 | 2.89037 | 29 | 0 |
| 4.27667 | ND<1.60944 | 2.66723 | 30 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 30 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 30 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 30 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 30 | 0 |
| 4.35543 | ND<1.60944 | 2.74599 | 31 | 0 |
| 4.3412 | ND<1.60944 | 2.73177 | 32 | 0 |
| 2.3979 | ND<1.60944 | 0.788457 | 33 | 0 |
| 4.81218 | ND<1.60944 | 3.20275 | 34 | 0 |
| 4.93447 | ND<1.60944 | 3.32504 | 35 | 0 |
| 4.77068 | ND<1.60944 | 3.16125 | 36 | 0 |
| 5.01064 | ND<1.60944 | 3.4012 | 37 | 0 |
| 5.01064 | ND<1.60944 | 3.4012 | 38 | 0 |
| 5.1358 | ND<1.60944 | 3.52636 | 39 | 0 |
| 4.86753 | ND<1.60944 | 3.2581 | 40 | 0 |
| 5.07517 H | ND<1.60944 | 3.46574 | 41 | 0 |
| 5.01064 | ND<1.60944 | 3.4012 | 42 | 0 |
| | | | | |
| ND<1.60944 | ND<1.60944 | 0 | 42 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 42 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 42 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 42 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 42 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 42 | 0 |
| 4.49981 | ND<1.60944 | 2.89037 | 43 | 0 |
| 4.27667 | ND<1.60944 | 2.66723 | 44 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 44 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 44 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 44 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 44 | 0 |
| 4.35543 | ND<1.60944 | 2.74599 | 45 | 0 |
| 4.3412 | ND<1.60944 | 2.73177 | 46 | 0 |
| 2.3979 | ND<1.60944 | 0.788457 | 47 | 0 |
| 4.81218 | ND<1.60944 | 3.20275 | 48 | 0 |
| 4.93447 | ND<1.60944 | 3.32504 | 49 | 0 |
| 4.77068 | ND<1.60944 | 3.16125 | 50 | 0 |
| 5.01064 | ND<1.60944 | 3.4012 | 51 | 0 |
| 5.01064 | ND<1.60944 | 3.4012 | 52 | 0 |
| 5.1358 | ND<1.60944 | 3.52636 | 53 | 0 |
| 4.86753 | ND<1.60944 | 3.2581 | 54 | 0 |
| 5.07517 H | ND<1.60944 | 3.46574 | 55 | 0 |
| 5.01064 | ND<1.60944 | 3.4012 | 56 | 0 |
| | | | | |
| ND<1.60944 | ND<1.60944 | 0 | 56 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 56 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 56 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 56 | 0 |

| | | | | |
|---|---|---|---|---|
| ND<1.60944 | ND<1.60944 | 0 | 56 | 0 |
| 4.49981 | ND<1.60944 | 2.89037 | 57 | 0 |
| 4.27667 | ND<1.60944 | 2.66723 | 58 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 58 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 58 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 58 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 58 | 0 |
| 4.35543 | ND<1.60944 | 2.74599 | 59 | 0 |
| 4.3412 | ND<1.60944 | 2.73177 | 60 | 0 |
| 2.3979 | ND<1.60944 | 0.788457 | 61 | 0 |
| 4.81218 | ND<1.60944 | 3.20275 | 62 | 0 |
| 4.93447 | ND<1.60944 | 3.32504 | 63 | 0 |
| 4.77068 | ND<1.60944 | 3.16125 | 64 | 0 |
| 5.01064 | ND<1.60944 | 3.4012 | 65 | 0 |
| 5.01064 | ND<1.60944 | 3.4012 | 66 | 0 |
| 5.1358 | ND<1.60944 | 3.52636 | 67 | 0 |
| 4.86753 | ND<1.60944 | 3.2581 | 68 | 0 |
| 5.07517 H | ND<1.60944 | 3.46574 | 69 | 0 |
| 5.01064 | ND<1.60944 | 3.4012 | 70 | 0 |
| | | | | |
| ND<1.60944 | ND<1.60944 | 0 | 70 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 70 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 70 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 70 | 0 |
| 4.49981 | ND<1.60944 | 2.89037 | 71 | 0 |
| 4.27667 | ND<1.60944 | 2.66723 | 72 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 72 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 72 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 72 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 72 | 0 |
| 4.35543 | ND<1.60944 | 2.74599 | 73 | 0 |
| 4.3412 | ND<1.60944 | 2.73177 | 74 | 0 |
| 2.3979 | ND<1.60944 | 0.788457 | 75 | 0 |
| 4.81218 | ND<1.60944 | 3.20275 | 76 | 0 |
| 4.93447 | ND<1.60944 | 3.32504 | 77 | 0 |
| 4.77068 | ND<1.60944 | 3.16125 | 78 | 0 |
| 5.01064 | ND<1.60944 | 3.4012 | 79 | 0 |
| 5.01064 | ND<1.60944 | 3.4012 | 80 | 0 |
| 5.1358 | ND<1.60944 | 3.52636 | 81 | 0 |
| 4.86753 | ND<1.60944 | 3.2581 | 82 | 0 |
| 5.07517 H | ND<1.60944 | 3.46574 | 83 | 0 |
| 5.01064 | ND<1.60944 | 3.4012 | 84 | 0 |
| | | | | |
| ND<1.60944 | ND<1.60944 | 0 | 84 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 84 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 84 | 0 |
| 4.49981 | ND<1.60944 | 2.89037 | 85 | 0 |
| 4.27667 | ND<1.60944 | 2.66723 | 86 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 86 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 86 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 86 | 0 |
| ND<1.60944 | ND<1.60944 | 0 | 86 | 0 |
| 4.35543 | ND<1.60944 | 2.74599 | 87 | 0 |
| 4.3412 | ND<1.60944 | 2.73177 | 88 | 0 |
| 2.3979 | ND<1.60944 | 0.788457 | 89 | 0 |
| 4.81218 | ND<1.60944 | 3.20275 | 90 | 0 |
| 4.93447 | ND<1.60944 | 3.32504 | 91 | 0 |
| 4.77068 | ND<1.60944 | 3.16125 | 92 | 0 |
| 5.01064 | ND<1.60944 | 3.4012 | 93 | 0 |
| 5.01064 | ND<1.60944 | 3.4012 | 94 | 0 |
| 5.1358 | ND<1.60944 | 3.52636 | 95 | 0 |
| 4.86753 | ND<1.60944 | 3.2581 | 96 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| 5.07517 H | | ND<1.60944 | 3.46574 | 97 | 0 |
| 5.01064 | | ND<1.60944 | 3.4012 | 98 | 0 |
| ND<1.60944 | | ND<1.60944 | 0 | 98 | 0 |
| ND<1.60944 | | ND<1.60944 | 0 | 98 | 0 |
| 4.49981 | | ND<1.60944 | 2.89037 | 99 | 0 |
| 4.27667 | | ND<1.60944 | 2.66723 | 100 | 0 |
| ND<1.60944 | | ND<1.60944 | 0 | 100 | 0 |
| ND<1.60944 | | ND<1.60944 | 0 | 100 | 0 |
| ND<1.60944 | | ND<1.60944 | 0 | 100 | 0 |
| ND<1.60944 | | ND<1.60944 | 0 | 100 | 0 |
| 4.35543 | | ND<1.60944 | 2.74599 | 101 | 0 |
| 4.3412 | ND<1.60944 | 2.73177 | 102 | 0 | |
| 2.3979 | ND<1.60944 | 0.788457 | | 103 | 0 |
| 4.81218 | | ND<1.60944 | 3.20275 | 104 | 0 |
| 4.93447 | | ND<1.60944 | 3.32504 | 105 | 0 |
| 4.77068 | | ND<1.60944 | 3.16125 | 106 | 0 |
| 5.01064 | | ND<1.60944 | 3.4012 | 107 | 0 |
| 5.01064 | | ND<1.60944 | 3.4012 | 108 | 0 |
| 5.1358 | ND<1.60944 | 3.52636 | 109 | 0 | |
| 4.86753 | | ND<1.60944 | 3.2581 | 110 | 0 |
| 5.07517 H | | ND<1.60944 | 3.46574 | 111 | 0 |
| 5.01064 | | ND<1.60944 | 3.4012 | 112 | 0 |
| ND<1.60944 | | ND<1.60944 | 0 | 112 | 0 |
| 4.49981 | | ND<1.60944 | 2.89037 | 113 | 0 |
| 4.27667 | | ND<1.60944 | 2.66723 | 114 | 0 |
| ND<1.60944 | | ND<1.60944 | 0 | 114 | 0 |
| ND<1.60944 | | ND<1.60944 | 0 | 114 | 0 |
| ND<1.60944 | | ND<1.60944 | 0 | 114 | 0 |
| ND<1.60944 | | ND<1.60944 | 0 | 114 | 0 |
| 4.35543 | | ND<1.60944 | 2.74599 | 115 | 0 |
| 4.3412 | ND<1.60944 | 2.73177 | 116 | 0 | |
| 2.3979 | ND<1.60944 | 0.788457 | | 117 | 0 |
| 4.81218 | | ND<1.60944 | 3.20275 | 118 | 0 |
| 4.93447 | | ND<1.60944 | 3.32504 | 119 | 0 |
| 4.77068 | | ND<1.60944 | 3.16125 | 120 | 0 |
| 5.01064 | | ND<1.60944 | 3.4012 | 121 | 0 |
| 5.01064 | | ND<1.60944 | 3.4012 | 122 | 0 |
| 5.1358 | ND<1.60944 | 3.52636 | 123 | 0 | |
| 4.86753 | | ND<1.60944 | 3.2581 | 124 | 0 |
| 5.07517 H | | ND<1.60944 | 3.46574 | 125 | 0 |
| 5.01064 | | ND<1.60944 | 3.4012 | 126 | 0 |
| 4.49981 | | ND<1.60944 | 2.89037 | 127 | 0 |
| 4.27667 | | ND<1.60944 | 2.66723 | 128 | 0 |
| ND<1.60944 | | ND<1.60944 | 0 | 128 | 0 |
| ND<1.60944 | | ND<1.60944 | 0 | 128 | 0 |
| ND<1.60944 | | ND<1.60944 | 0 | 128 | 0 |
| ND<1.60944 | | ND<1.60944 | 0 | 128 | 0 |
| 4.35543 | | ND<1.60944 | 2.74599 | 129 | 0 |
| 4.3412 | ND<1.60944 | 2.73177 | 130 | 0 | |
| 2.3979 | ND<1.60944 | 0.788457 | | 131 | 0 |
| 4.81218 | | ND<1.60944 | 3.20275 | 132 | 0 |
| 4.93447 | | ND<1.60944 | 3.32504 | 133 | 0 |
| 4.77068 | | ND<1.60944 | 3.16125 | 134 | 0 |
| 5.01064 | | ND<1.60944 | 3.4012 | 135 | 0 |
| 5.01064 | | ND<1.60944 | 3.4012 | 136 | 0 |
| 5.1358 | ND<1.60944 | 3.52636 | 137 | 0 | |
| 4.86753 | | ND<1.60944 | 3.2581 | 138 | 0 |
| 5.07517 H | | ND<1.60944 | 3.46574 | 139 | 0 |
| 5.01064 | | ND<1.60944 | 3.4012 | 140 | 0 |

| | | | | |
|---|---|---|---|---|
| 4.27667 | 4.49981 | -0.223144 | 140 | 1 |
| ND<1.60944 | 4.49981 | -2.89037140 | 2 | |
| ND<1.60944 | 4.49981 | -2.89037140 | 3 | |
| ND<1.60944 | 4.49981 | -2.89037140 | 4 | |
| ND<1.60944 | 4.49981 | -2.89037140 | 5 | |
| 4.35543 | 4.49981 | -0.144384 | 140 | 6 |
| 4.3412 | 4.49981 | -0.158605 | 140 | 7 |
| 2.3979 | 4.49981 | -2.10191140 | 8 | |
| 4.81218 | 4.49981 | 0.312375 | 141 | 8 |
| 4.93447 | 4.49981 | 0.434664 | 142 | 8 |
| 4.77068 | 4.49981 | 0.270875 | 143 | 8 |
| 5.01064 | 4.49981 | 0.510826 | 144 | 8 |
| 5.01064 | 4.49981 | 0.510826 | 145 | 8 |
| 5.1358 | 4.49981 | 0.635989 | 146 | 8 |
| 4.86753 | 4.49981 | 0.367725 | 147 | 8 |
| 5.07517 H | 4.49981 | 0.575364 | 148 | 8 |
| 5.01064 | 4.49981 | 0.510826 | 149 | 8 |
| | | | | |
| ND<1.60944 | 4.27667 | -2.66723149 | 9 | |
| ND<1.60944 | 4.27667 | -2.66723149 | 10 | |
| ND<1.60944 | 4.27667 | -2.66723149 | 11 | |
| ND<1.60944 | 4.27667 | -2.66723149 | 12 | |
| 4.35543 | 4.27667 | 0.0787598 | 150 | 12 |
| 4.3412 | 4.27667 | 0.0645385 | 151 | 12 |
| 2.3979 | 4.27667 | -1.87877151 | 13 | |
| 4.81218 | 4.27667 | 0.535518 | 152 | 13 |
| 4.93447 | 4.27667 | 0.657808 | 153 | 13 |
| 4.77068 | 4.27667 | 0.494019 | 154 | 13 |
| 5.01064 | 4.27667 | 0.733969 | 155 | 13 |
| 5.01064 | 4.27667 | 0.733969 | 156 | 13 |
| 5.1358 | 4.27667 | 0.859132 | 157 | 13 |
| 4.86753 | 4.27667 | 0.590868 | 158 | 13 |
| 5.07517 H | 4.27667 | 0.798508 | 159 | 13 |
| 5.01064 | 4.27667 | 0.733969 | 160 | 13 |
| | | | | |
| ND<1.60944 | ND<1.60944 | 0 | 160 | 13 |
| ND<1.60944 | ND<1.60944 | 0 | 160 | 13 |
| ND<1.60944 | ND<1.60944 | 0 | 160 | 13 |
| 4.35543 | ND<1.60944 | 2.74599 | 161 | 13 |
| 4.3412 | ND<1.60944 | 2.73177 | 162 | 13 |
| 2.3979 | ND<1.60944 | 0.788457 | 163 | 13 |
| 4.81218 | ND<1.60944 | 3.20275 | 164 | 13 |
| 4.93447 | ND<1.60944 | 3.32504 | 165 | 13 |
| 4.77068 | ND<1.60944 | 3.16125 | 166 | 13 |
| 5.01064 | ND<1.60944 | 3.4012 | 167 | 13 |
| 5.01064 | ND<1.60944 | 3.4012 | 168 | 13 |
| 5.1358 | ND<1.60944 | 3.52636 | 169 | 13 |
| 4.86753 | ND<1.60944 | 3.2581 | 170 | 13 |
| 5.07517 H | ND<1.60944 | 3.46574 | 171 | 13 |
| 5.01064 | ND<1.60944 | 3.4012 | 172 | 13 |
| | | | | |
| ND<1.60944 | ND<1.60944 | 0 | 172 | 13 |
| ND<1.60944 | ND<1.60944 | 0 | 172 | 13 |
| 4.35543 | ND<1.60944 | 2.74599 | 173 | 13 |
| 4.3412 | ND<1.60944 | 2.73177 | 174 | 13 |
| 2.3979 | ND<1.60944 | 0.788457 | 175 | 13 |
| 4.81218 | ND<1.60944 | 3.20275 | 176 | 13 |
| 4.93447 | ND<1.60944 | 3.32504 | 177 | 13 |
| 4.77068 | ND<1.60944 | 3.16125 | 178 | 13 |
| 5.01064 | ND<1.60944 | 3.4012 | 179 | 13 |
| 5.01064 | ND<1.60944 | 3.4012 | 180 | 13 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 5.1358 | ND<1.60944 | 3.52636 | 181 | 13 | | |
| 4.86753 | ND<1.60944 | 3.2581 | 182 | 13 | | |
| 5.07517 H | ND<1.60944 | 3.46574 | 183 | 13 | | |
| 5.01064 | ND<1.60944 | 3.4012 | 184 | 13 | | |
| | | | | | | |
| ND<1.60944 | ND<1.60944 | 0 | 184 | 13 | | |
| 4.35543 | ND<1.60944 | 2.74599 | 185 | 13 | | |
| 4.3412 | ND<1.60944 | 2.73177 | 186 | 13 | | |
| 2.3979 | ND<1.60944 | 0.788457 | 187 | 13 | | |
| 4.81218 | ND<1.60944 | 3.20275 | 188 | 13 | | |
| 4.93447 | ND<1.60944 | 3.32504 | 189 | 13 | | |
| 4.77068 | ND<1.60944 | 3.16125 | 190 | 13 | | |
| 5.01064 | ND<1.60944 | 3.4012 | 191 | 13 | | |
| 5.01064 | ND<1.60944 | 3.4012 | 192 | 13 | | |
| 5.1358 | ND<1.60944 | 3.52636 | 193 | 13 | | |
| 4.86753 | ND<1.60944 | 3.2581 | 194 | 13 | | |
| 5.07517 H | ND<1.60944 | 3.46574 | 195 | 13 | | |
| 5.01064 | ND<1.60944 | 3.4012 | 196 | 13 | | |
| | | | | | | |
| 4.35543 | ND<1.60944 | 2.74599 | 197 | 13 | | |
| 4.3412 | ND<1.60944 | 2.73177 | 198 | 13 | | |
| 2.3979 | ND<1.60944 | 0.788457 | 199 | 13 | | |
| 4.81218 | ND<1.60944 | 3.20275 | 200 | 13 | | |
| 4.93447 | ND<1.60944 | 3.32504 | 201 | 13 | | |
| 4.77068 | ND<1.60944 | 3.16125 | 202 | 13 | | |
| 5.01064 | ND<1.60944 | 3.4012 | 203 | 13 | | |
| 5.01064 | ND<1.60944 | 3.4012 | 204 | 13 | | |
| 5.1358 | ND<1.60944 | 3.52636 | 205 | 13 | | |
| 4.86753 | ND<1.60944 | 3.2581 | 206 | 13 | | |
| 5.07517 H | ND<1.60944 | 3.46574 | 207 | 13 | | |
| 5.01064 | ND<1.60944 | 3.4012 | 208 | 13 | | |
| | | | | | | |
| 4.3412 | 4.35543 | -0.0142213 | 208 | 14 | | |
| 2.3979 | 4.35543 | -1.95753 | 208 | 15 | | |
| 4.81218 | 4.35543 | 0.456758 | 209 | 15 | | |
| 4.93447 | 4.35543 | 0.579048 | 210 | 15 | | |
| 4.77068 | 4.35543 | 0.415259 | 211 | 15 | | |
| 5.01064 | 4.35543 | 0.655209 | 212 | 15 | | |
| 5.01064 | 4.35543 | 0.655209 | 213 | 15 | | |
| 5.1358 | 4.35543 | 0.780372 | 214 | 15 | | |
| 4.86753 | 4.35543 | 0.512108 | 215 | 15 | | |
| 5.07517 H | 4.35543 | 0.719748 | 216 | 15 | | |
| 5.01064 | 4.35543 | 0.655209 | 217 | 15 | | |
| | | | | | | |
| 2.3979 | 4.3412 | -1.94331 | 217 | 16 | | |
| 4.81218 | 4.3412 | 0.47098 | 218 | 16 | | |
| 4.93447 | 4.3412 | 0.593269 | 219 | 16 | | |
| 4.77068 | 4.3412 | 0.42948 | 220 | 16 | | |
| 5.01064 | 4.3412 | 0.669431 | 221 | 16 | | |
| 5.01064 | 4.3412 | 0.669431 | 222 | 16 | | |
| 5.1358 | 4.3412 | 0.794594 | 223 | 16 | | |
| 4.86753 | 4.3412 | 0.52633 | 224 | 16 | | |
| 5.07517 H | 4.3412 | 0.733969 | 225 | 16 | | |
| 5.01064 | 4.3412 | 0.669431 | 226 | 16 | | |
| | | | | | | |
| 4.81218 | 2.3979 | 2.41429 | 227 | 16 | | |
| 4.93447 | 2.3979 | 2.53658 | 228 | 16 | | |
| 4.77068 | 2.3979 | 2.37279 | 229 | 16 | | |
| 5.01064 | 2.3979 | 2.61274 | 230 | 16 | | |
| 5.01064 | 2.3979 | 2.61274 | 231 | 16 | | |
| 5.1358 | 2.3979 | 2.7379 | 232 | 16 | | |
| 4.86753 | 2.3979 | 2.46964 | 233 | 16 | | |

| | | | | | |
|---|---|---|---|---|---|
| 5.07517 H | 2.3979 | 2.67728 | 234 | 16 | |
| 5.01064 | 2.3979 | 2.61274 | 235 | 16 | |
| | | | | | |
| 4.93447 | 4.81218 | 0.12229 | 236 | 16 | |
| 4.77068 | 4.81218 | -0.0414997 | 236 | 17 | |
| 5.01064 | 4.81218 | 0.198451 | 237 | 17 | |
| 5.01064 | 4.81218 | 0.198451 | 238 | 17 | |
| 5.1358 | 4.81218 | 0.323614 | 239 | 17 | |
| 4.86753 | 4.81218 | 0.0553501 | 240 | 17 | |
| 5.07517 H | 4.81218 | 0.262989 | 241 | 17 | |
| 5.01064 | 4.81218 | 0.198451 | 242 | 17 | |
| | | | | | |
| 4.77068 | 4.93447 | -0.163789 | 242 | 18 | |
| 5.01064 | 4.93447 | 0.0761614 | 243 | 18 | |
| 5.01064 | 4.93447 | 0.0761614 | 244 | 18 | |
| 5.1358 | 4.93447 | 0.201325 | 245 | 18 | |
| 4.86753 | 4.93447 | -0.0669395 | 245 | 19 | |
| 5.07517 H | 4.93447 | 0.1407 | 246 | 19 | |
| 5.01064 | 4.93447 | 0.0761614 | 247 | 19 | |
| | | | | | |
| 5.01064 | 4.77068 | 0.239951 | 248 | 19 | |
| 5.01064 | 4.77068 | 0.239951 | 249 | 19 | |
| 5.1358 | 4.77068 | 0.365114 | 250 | 19 | |
| 4.86753 | 4.77068 | 0.0968498 | 251 | 19 | |
| 5.07517 H | 4.77068 | 0.304489 | 252 | 19 | |
| 5.01064 | 4.77068 | 0.239951 | 253 | 19 | |
| | | | | | |
| 5.01064 | 5.01064 | 0 | 253 | 19 | |
| 5.1358 | 5.01064 | 0.125163 | 254 | 19 | |
| 4.86753 | 5.01064 | -0.143101 | 254 | 20 | |
| 5.07517 H | 5.01064 | 0.0645385 | 255 | 20 | |
| 5.01064 | 5.01064 | 0 | 255 | 20 | |
| | | | | | |
| 5.1358 | 5.01064 | 0.125163 | 256 | 20 | |
| 4.86753 | 5.01064 | -0.143101 | 256 | 21 | |
| 5.07517 H | 5.01064 | 0.0645385 | 257 | 21 | |
| 5.01064 | 5.01064 | 0 | 257 | 21 | |
| | | | | | |
| 4.86753 | 5.1358 | -0.268264 | 257 | 22 | |
| 5.07517 H | 5.1358 | -0.0606246 | 257 | 23 | |
| 5.01064 | 5.1358 | -0.125163 | 257 | 24 | |
| | | | | | |
| 5.07517 H | 4.86753 | 0.207639 | 258 | 24 | |
| 5.01064 | 4.86753 | 0.143101 | 259 | 24 | |
| | | | | | |
| 5.01064 | 5.07517 H | -0.0645385 | 259 | 25 | |

S Statistic = 259 - 25 = 234

| Tied Group | Value | Members |
|---|---|---|
| 1 | 1.60944 | 14 |
| 2 | 5.01064 | 3 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |
| 11/19/1996 | 1 |

| | | |
|---|---|---|
| 12/19/1996 | | 1 |
| 3/24/1997 | | 1 |
| 9/24/1997 | | 1 |
| 4/7/1998 | 1 | |
| 9/23/1998 | | 1 |
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 11/16/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 1 |

There are 0 time periods with multiple data

A = 6072
B = 0
C = 2190
D = 0
E = 188
F = 0
a = 46116
b = 176904
c = 1512
Group Variance = 2224.67
Z-Score = 4.93996
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|4.93996| > 1.97737 indicating a trend

# Concentrations (ppb)

## Parameter: Benzene

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 142
Percent Non-Detects: 64.2534%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 18 (100%) | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.25 | ND<0.25 |
| | | | 11/16/2009 | ND<0.25 | ND<0.25 |
| | | | 6/30/2010 | ND<0.25 | ND<0.25 |
| | | | 11/12/2010 | ND<0.25 U | ND<0.25 U |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-6 | 28 | 27 (96.4286%) | 7/20/1995 | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 |
| | | | 9/28/1995 | ND<2 | ND<2 |
| | | | 10/26/1995 | ND<2 | ND<2 |
| | | | 11/19/1996 | ND<2 | ND<2 |
| | | | 12/19/1996 | ND<2 | ND<2 |
| | | | 3/24/1997 | ND<2 | ND<2 |
| | | | 9/24/1997 | ND<2 | ND<2 |
| | | | 4/7/1998 | ND<2 | ND<2 |
| | | | 9/23/1998 | ND<2 | ND<2 |
| | | | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | 1.2 | 1.2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.25 | | ND<0.25 |
| | | | 11/16/2009 | ND<0.25 | | ND<0.25 |
| | | | 6/30/2010 | ND<0.25 | | ND<0.25 |
| | | | 11/12/2010 | ND<0.25 U | | ND<0.25 U |
| MW-7 | 28 | 19 (67.8571%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | 0.51 J | 0.51 J | |
| | | | 4/29/2006 | 0.68 J | 0.68 J | |
| | | | 11/18/2006 | 0.36 J | 0.36 J | |
| | | | 5/23/2007 | 1.2 | 1.2 | |
| | | | 11/28/2007 | 0.5 J | 0.5 J | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | 1.02 J | 1.02 J | |
| | | | 6/11/2009 | 0.73 J | 0.73 J | |
| | | | 11/16/2009 | ND<0.25 | | ND<0.25 |
| | | | 6/30/2010 | 0.72 J | 0.72 J | |
| | | | 11/12/2010 | 0.6 J | 0.6 J | |
| MW-8 | 27 | 12 (44.4444%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | 5.4 | 5.4 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | 5.6 | 5.6 | |
| | | | 3/16/1999 | 3.5 | 3.5 | |
| | | | 9/23/1999 | 3.6 | 3.6 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 3.22 | 3.22 | |
| | | | 10/25/2005 | 4.99 | 4.99 | |
| | | | 4/29/2006 | 2.54 | 2.54 | |
| | | | 11/18/2006 | 4.03 | 4.03 | |
| | | | 5/23/2007 | 3.2 | 3.2 | |
| | | | 11/28/2007 | 4.5 | 4.5 | |
| | | | 6/5/2008 | 4.07 | 4.07 | |
| | | | 11/20/2008 | 2.72 | 2.72 | |
| | | | 6/11/2009 | 3.6 | 3.6 | |
| | | | 6/30/2010 | 2.1 | 2.1 | |
| | | | 11/12/2010 | 2.9 | 2.9 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| MW-9 | 28 | 12 (42.8571%) | 7/20/1995 | 2.5 | 2.5 | |
| | | | 8/24/1995 | 2.6 | 2.6 | |
| | | | 9/28/1995 | 3 | 3 | |
| | | | 10/26/1995 | 3 | 3 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | 2.2 | 2.2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 1.92 J | 1.92 J | |
| | | | 10/25/2005 | 1.09 J | 1.09 J | |
| | | | 4/29/2006 | 0.71 J | 0.71 J | |
| | | | 11/18/2006 | 0.8 J | 0.8 J | |
| | | | 5/23/2007 | 2.2 | 2.2 | |
| | | | 11/28/2007 | 1.54 J | 1.54 J | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | 1.35 J | 1.35 J | |
| | | | 6/11/2009 | 1.9 | 1.9 | |
| | | | 11/16/2009 | 1.4 | 1.4 | |
| | | | 6/30/2010 | 1.8 | 1.8 | |
| | | | 11/12/2010 | 1.2 | 1.2 | |
| MW-12BR | 18 | 16 (88.8889%) | 3/16/1999 | 3.8 | 3.8 | |
| | | | 9/23/1999 | 3 | 3 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.25 | ND<0.25 | |
| | | | 11/16/2009 | ND<0.25 | ND<0.25 | |
| | | | 6/30/2010 | ND<0.25 | ND<0.25 | |
| | | | 11/12/2010 | ND<0.25 U | ND<0.25 U | |
| MW-12AR | 18 | 11 (61.1111%) | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | 1.03 J | 1.03 J | |
| | | | 4/29/2006 | 1.04 J | 1.04 J | |
| | | | 11/18/2006 | 0.76 J | 0.76 J | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | 0.84 J | 0.84 J | |
| | | | 6/5/2008 | ND<2 | ND<2 | |

| | | | | | |
|---|---|---|---|---|---|
| | | | 11/20/2008 | 0.53 J | 0.53 J |
| | | | 6/11/2009 | ND<0.25 | ND<0.25 |
| | | | 11/16/2009 | 0.26 J | 0.26 J |
| | | | 6/30/2010 | ND<0.25 | ND<0.25 |
| | | | 11/12/2010 | 0.73 J | 0.73 J |
| MW-11R | 28 | 13 (46.4286%) | 7/20/1995 | 2.1 | 2.1 |
| | | | 8/24/1995 | 6.3 | 6.3 |
| | | | 9/28/1995 | 6 | 6 |
| | | | 10/26/1995 | 8 | 8 |
| | | | 11/19/1996 | ND<2 | ND<2 |
| | | | 12/19/1996 | 9 | 9 |
| | | | 3/24/1997 | ND<2 | ND<2 |
| | | | 9/24/1997 | ND<2 | ND<2 |
| | | | 4/7/1998 | ND<2 | ND<2 |
| | | | 9/23/1998 | 5 | 5 |
| | | | 3/16/1999 | 5 | 5 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | 4.58 | 4.58 |
| | | | 10/25/2005 | 1.54 J | 1.54 J |
| | | | 4/29/2006 | 0.83 J | 0.83 J |
| | | | 11/18/2006 | 0.93 J | 0.93 J |
| | | | 5/23/2007 | 2.1 | 2.1 |
| | | | 11/28/2007 | 1.3 J | 1.3 J |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | 0.59 J | 0.59 J |
| | | | 11/16/2009 | ND<0.25 | ND<0.25 |
| | | | 6/30/2010 | 0.81 J | 0.81 J |
| | | | 11/12/2010 | ND<0.25 U | ND<0.25 U |
| MW-10 | 28 | 14 (50%) | 7/20/1995 | ND<2 | ND<2 |
| | | | 8/24/1995 | 1.2 J | 1.2 J |
| | | | 9/28/1995 | 2 | 2 |
| | | | 10/26/1995 | 2 | 2 |
| | | | 11/19/1996 | ND<2 | ND<2 |
| | | | 12/19/1996 | ND<2 | ND<2 |
| | | | 3/24/1997 | ND<2 | ND<2 |
| | | | 9/24/1997 | ND<2 | ND<2 |
| | | | 4/7/1998 | ND<2 | ND<2 |
| | | | 9/23/1998 | ND<2 | ND<2 |
| | | | 3/16/1999 | 2.2 | 2.2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | 1.8 J | 1.8 J |
| | | | 10/25/2005 | 1.32 J | 1.32 J |
| | | | 4/29/2006 | 1.31 J | 1.31 J |
| | | | 11/18/2006 | 0.96 J | 0.96 J |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | 1.38 | 1.38 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | 1 J | 1 J |
| | | | 6/11/2009 | 1 | 1 |
| | | | 11/16/2009 | 1.3 | 1.3 |
| | | | 6/30/2010 | 0.94 J | 0.94 J |

| | | | |
|---|---|---|---|
| 11/12/2010 | 1.3 | 1.3 | |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. Original |
|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: Benzene

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.125 | -2.65209 | 7.03356 | -0.331511 |
| 2 | 0.125 | -2.36561 | 12.6297 | -0.627213 |
| 3 | 0.125 | -2.22621 | 17.5857 | -0.905488 |
| 4 | 0.125 | -2.09693 | 21.9828 | -1.1676 |
| 5 | 0.125 | -2.01409 | 26.0394 | -1.41937 |
| 6 | 0.125 | -1.92684 | 29.7521 | -1.66022 |
| 7 | 0.125 | -1.86629 | 33.2351 | -1.89351 |
| 8 | 0.125 | -1.79912 | 36.472 | -2.1184 |
| 9 | 0.125 | -1.75069 | 39.5369 | -2.33723 |
| 10 | 0.125 | -1.6954 | 42.4112 | -2.54916 |
| 11 | 0.125 | -1.65463 | 45.149 | -2.75599 |
| 12 | 0.125 | -1.60725 | 47.7323 | -2.95689 |
| 13 | 0.125 | -1.57179 | 50.2028 | -3.15337 |
| 14 | 0.125 | -1.53007 | 52.5439 | -3.34462 |
| 15 | 0.125 | -1.49852 | 54.7894 | -3.53194 |
| 16 | 0.125 | -1.46106 | 56.9241 | -3.71457 |
| 17 | 0.125 | -1.4325 | 58.9762 | -3.89363 |
| 18 | 0.26 | -1.39838 | 60.9316 | -4.25721 |
| 19 | 0.36 | -1.3722 | 62.8146 | -4.75121 |
| 20 | 0.5 | -1.34075 | 64.6122 | -5.42158 |
| 21 | 0.51 | -1.31652 | 66.3454 | -6.09301 |
| 22 | 0.53 | -1.28727 | 68.0025 | -6.77526 |
| 23 | 0.59 | -1.26464 | 69.6018 | -7.5214 |
| 24 | 0.6 | -1.23724 | 71.1326 | -8.26374 |
| 25 | 0.68 | -1.21596 | 72.6111 | -9.09059 |
| 26 | 0.71 | -1.19012 | 74.0275 | -9.93558 |
| 27 | 0.72 | -1.17 | 75.3964 | -10.778 |
| 28 | 0.73 | -1.1455 | 76.7086 | -11.6142 |
| 29 | 0.73 | -1.12639 | 77.9774 | -12.4365 |
| 30 | 0.76 | -1.10306 | 79.1941 | -13.2748 |
| 31 | 0.8 | -1.08482 | 80.371 | -14.1426 |
| 32 | 0.81 | -1.06252 | 81.4999 | -15.0033 |
| 33 | 0.83 | -1.04505 | 82.592 | -15.8707 |
| 34 | 0.84 | -1.02365 | 83.6399 | -16.7305 |
| 35 | 0.93 | -1.00687 | 84.6537 | -17.6669 |
| 36 | 0.94 | -0.986272 | 85.6264 | -18.594 |
| 37 | 0.96 | -0.970094 | 86.5675 | -19.5253 |
| 38 | 1 | -0.950222 | 87.4704 | -20.4755 |
| 39 | 1 | -0.93459 | 88.3439 | -21.4101 |
| 40 | 1 | -0.915365 | 89.1818 | -22.3255 |
| 41 | 1 | -0.900227 | 89.9922 | -23.2257 |
| 42 | 1 | -0.881587 | 90.7694 | -24.1073 |
| 43 | 1 | -0.866894 | 91.5209 | -24.9742 |
| 44 | 1 | -0.848786 | 92.2413 | -25.823 |
| 45 | 1 | -0.834498 | 92.9377 | -26.6575 |
| 46 | 1 | -0.816874 | 93.605 | -27.4744 |
| 47 | 1 | -0.802956 | 94.2497 | -28.2773 |
| 48 | 1 | -0.785774 | 94.8672 | -29.0631 |
| 49 | 1 | -0.772193 | 95.4634 | -29.8353 |

| | | | | |
|---|---|---|---|---|
| 50 | 1 | -0.755415 | 96.0341 | -30.5907 |
| 51 | 1 | -0.742143 | 96.5849 | -31.3328 |
| 52 | 1 | -0.725736 | 97.1116 | -32.0586 |
| 53 | 1 | -0.712751 | 97.6196 | -32.7713 |
| 54 | 1 | -0.696684 | 98.1049 | -33.468 |
| 55 | 1 | -0.683969 | 8.5727 | -34.152 |
| 56 | 1 | -0.668209 | 99.0192 | -34.8202 |
| 57 | 1 | -0.655726 | 99.4492 | -35.4759 |
| 58 | 1 | -0.640266 | 99.8592 | -36.1162 |
| 59 | 1 | -0.628006 | 100.254 | -36.7442 |
| 60 | 1 | -0.612813 | 100.629 | -37.357 |
| 61 | 1 | -0.60076 | 100.99 | -37.9578 |
| 62 | 1 | -0.585815 | 101.333 | -38.5436 |
| 63 | 1 | -0.573953 | 101.663 | -39.1175 |
| 64 | 1 | -0.559237 | 101.975 | -39.6768 |
| 65 | 1 | -0.547551 | 102.275 | -40.2243 |
| 66 | 1 | -0.533048 | 102.559 | -40.7574 |
| 67 | 1 | -0.521527 | 102.831 | -41.2789 |
| 68 | 1 | -0.507221 | 103.089 | -41.7861 |
| 69 | 1 | -0.49585 | 103.334 | -42.282 |
| 70 | 1 | -0.481728 | 103.566 | -42.7637 |
| 71 | 1 | -0.470498 | 103.788 | -43.2342 |
| 72 | 1 | -0.456542 | 103.996 | -43.6907 |
| 73 | 1 | -0.445443 | 104.195 | -44.1362 |
| 74 | 1 | -0.431644 | 104.381 | -44.5678 |
| 75 | 1 | -0.420664 | 104.558 | -44.9885 |
| 76 | 1 | -0.40701 | 104.724 | -45.3955 |
| 77 | 1 | -0.396142 | 104.881 | -45.7916 |
| 78 | 1 | -0.382622 | 105.027 | -46.1742 |
| 79 | 1 | -0.371856 | 105.165 | -46.5461 |
| 80 | 1 | -0.358459 | 105.294 | -46.9046 |
| 81 | 1 | -0.347787 | 105.415 | -47.2524 |
| 82 | 1 | -0.334503 | 105.527 | -47.5869 |
| 83 | 1 | -0.323919 | 105.632 | -47.9108 |
| 84 | 1 | -0.310738 | 105.728 | -48.2215 |
| 85 | 1 | -0.300232 | 105.818 | -48.5217 |
| 86 | 1 | -0.287147 | 105.901 | -48.8089 |
| 87 | 1 | -0.276714 | 105.977 | -49.0856 |
| 88 | 1 | -0.263715 | 106.047 | -49.3493 |
| 89 | 1 | -0.253347 | 106.111 | -49.6027 |
| 90 | 1 | -0.240426 | 106.169 | -49.8431 |
| 91 | 1 | -0.230118 | 106.222 | -50.0732 |
| 92 | 1 | -0.217267 | 106.269 | -50.2905 |
| 93 | 1 | -0.207012 | 106.312 | -50.4975 |
| 94 | 1 | -0.194225 | 106.35 | -50.6917 |
| 95 | 1 | -0.184017 | 106.383 | -50.8757 |
| 96 | 1 | -0.171285 | 106.413 | -51.047 |
| 97 | 1 | -0.161119 | 106.439 | -51.2081 |
| 98 | 1 | -0.148434 | 106.461 | -51.3566 |
| 99 | 1 | -0.138305 | 106.48 | -51.4949 |
| 100 | 1 | -0.125661 | 106.496 | -51.6205 |
| 101 | 1 | -0.115562 | 106.509 | -51.7361 |
| 102 | 1 | -0.102953 | 106.52 | -51.839 |
| 103 | 1 | -0.0928787 | 106.528 | -51.9319 |
| 104 | 1 | -0.0802981 | 106.535 | -52.0122 |
| 105 | 1 | -0.0702426 | 106.54 | -52.0825 |
| 106 | 1 | -0.0576847 | 106.543 | -52.1402 |
| 107 | 1 | -0.0476439 | 106.545 | -52.1878 |
| 108 | 1 | -0.0350997 | 106.546 | -52.2229 |
| 109 | 1 | -0.0250691 | 106.547 | -52.248 |
| 110 | 1 | -0.0125328 | 106.547 | -52.2605 |
| 111 | 1 | 0 | 106.547 | -52.2605 |

| | | | | |
|---|---|---|---|---|
| 112 | 1 | 0.0125328 | 106.547 | -52.248 |
| 113 | 1 | 0.0250691 | 106.548 | -52.2229 |
| 114 | 1 | 0.0350997 | 106.549 | -52.1878 |
| 115 | 1 | 0.0476439 | 106.551 | -52.1402 |
| 116 | 1 | 0.0576847 | 106.555 | -52.0825 |
| 117 | 1 | 0.0702426 | 106.56 | -52.0122 |
| 118 | 1 | 0.0802981 | 106.566 | -51.9319 |
| 119 | 1 | 0.0928787 | 106.575 | -51.839 |
| 120 | 1 | 0.102953 | 106.585 | -51.7361 |
| 121 | 1 | 0.115562 | 106.599 | -51.6205 |
| 122 | 1 | 0.125661 | 106.615 | -51.4949 |
| 123 | 1 | 0.138305 | 106.634 | -51.3566 |
| 124 | 1 | 0.148434 | 106.656 | -51.2081 |
| 125 | 1 | 0.161119 | 106.682 | -51.047 |
| 126 | 1 | 0.171285 | 106.711 | -50.8757 |
| 127 | 1 | 0.184017 | 106.745 | -50.6917 |
| 128 | 1 | 0.194225 | 106.783 | -50.4975 |
| 129 | 1 | 0.207012 | 106.825 | -50.2905 |
| 130 | 1 | 0.217267 | 106.873 | -50.0732 |
| 131 | 1 | 0.230118 | 106.926 | -49.8431 |
| 132 | 1 | 0.240426 | 106.983 | -49.6027 |
| 133 | 1 | 0.253347 | 107.048 | -49.3493 |
| 134 | 1 | 0.263715 | 107.117 | -49.0856 |
| 135 | 1 | 0.276714 | 107.194 | -48.8089 |
| 136 | 1 | 0.287147 | 107.276 | -48.5217 |
| 137 | 1 | 0.300232 | 107.366 | -48.2215 |
| 138 | 1 | 0.310738 | 107.463 | -47.9108 |
| 139 | 1 | 0.323919 | 107.568 | -47.5869 |
| 140 | 1 | 0.334503 | 107.68 | -47.2524 |
| 141 | 1 | 0.347787 | 107.801 | -46.9046 |
| 142 | 1 | 0.358459 | 107.929 | -46.5461 |
| 143 | 1 | 0.371856 | 108.067 | -46.1742 |
| 144 | 1 | 0.382622 | 108.214 | -45.7916 |
| 145 | 1 | 0.396142 | 108.371 | -45.3955 |
| 146 | 1 | 0.40701 | 108.536 | -44.9885 |
| 147 | 1 | 0.420664 | 108.713 | -44.5678 |
| 148 | 1 | 0.431644 | 108.9 | -44.1362 |
| 149 | 1 | 0.445443 | 109.098 | -43.6907 |
| 150 | 1 | 0.456542 | 109.307 | -43.2342 |
| 151 | 1 | 0.470498 | 109.528 | -42.7637 |
| 152 | 1 | 0.481728 | 109.76 | -42.282 |
| 153 | 1 | 0.49585 | 110.006 | -41.7861 |
| 154 | 1 | 0.507221 | 110.263 | -41.2789 |
| 155 | 1 | 0.521527 | 110.535 | -40.7574 |
| 156 | 1 | 0.533048 | 110.819 | -40.2243 |
| 157 | 1 | 0.547551 | 111.119 | -39.6768 |
| 158 | 1 | 0.559237 | 111.432 | -39.1175 |
| 159 | 1 | 0.573953 | 111.761 | -38.5436 |
| 160 | 1 | 0.585815 | 112.104 | -37.9578 |
| 161 | 1 | 0.60076 | 112.465 | -37.357 |
| 162 | 1 | 0.612813 | 112.841 | -36.7442 |
| 163 | 1 | 0.628006 | 113.235 | -36.1162 |
| 164 | 1 | 0.640266 | 113.645 | -35.4759 |
| 165 | 1.02 | 0.655726 | 114.075 | -34.8071 |
| 166 | 1.03 | 0.668209 | 114.522 | -34.1188 |
| 167 | 1.04 | 0.68396 | 114.989 | -33.4075 |
| 168 | 1.09 | 0.696684 | 115.475 | -32.6481 |
| 169 | 1.2 | 0.712751 | 115.983 | -31.7928 |
| 170 | 1.2 | 0.725736 | 116.51 | -30.9219 |
| 171 | 1.2 | 0.742143 | 117.06 | -30.0314 |
| 172 | 1.2 | 0.755415 | 117.631 | -29.1249 |
| 173 | 1.3 | 0.772193 | 118.227 | -28.121 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 1.3 | 0.785774 | | 118.845 | -27.0995 |
| 175 | 1.3 | 0.802956 | | 119.489 | -26.0557 |
| 176 | 1.31 | 0.816874 | | 120.157 | -24.9856 |
| 177 | 1.32 | 0.834498 | | 120.853 | -23.884 |
| 178 | 1.35 | 0.848786 | | 121.574 | -22.7382 |
| 179 | 1.38 | 0.866894 | | 122.325 | -21.5418 |
| 180 | 1.4 | 0.881587 | | 123.102 | -20.3076 |
| 181 | 1.54 | 0.900227 | | 123.913 | -18.9213 |
| 182 | 1.54 | 0.915365 | | 124.751 | -17.5116 |
| 183 | 1.8 | 0.93459 | 125.624 | -15.8293 | |
| 184 | 1.8 | 0.950222 | | 126.527 | -14.1189 |
| 185 | 1.9 | 0.970094 | | 127.468 | -12.2758 |
| 186 | 1.92 | 0.986272 | | 128.441 | -10.3821 |
| 187 | 2 | 1.00687 | 129.455 | -8.36839 | |
| 188 | 2 | 1.02365 | 130.502 | -6.32109 | |
| 189 | 2.1 | 1.04505 | 131.594 | -4.12648 | |
| 190 | 2.1 | 1.06252 | 132.723 | -1.89519 | |
| 191 | 2.1 | 1.08482 | 133.9 | 0.382936 | |
| 192 | 2.2 | 1.10306 | 135.117 | 2.80967 | |
| 193 | 2.2 | 1.12639 | 136.386 | 5.28773 | |
| 194 | 2.2 | 1.1455 | 137.698 | 7.80784 | |
| 195 | 2.5 | 1.17 | 139.067 | 10.7328 | |
| 196 | 2.54 | 1.19012 | 140.483 | 13.7557 | |
| 197 | 2.6 | 1.21596 | 141.962 | 16.9172 | |
| 198 | 2.72 | 1.23724 | 143.493 | 20.2825 | |
| 199 | 2.9 | 1.26464 | 145.092 | 23.95 | |
| 200 | 3 | 1.28727 | 146.749 | 27.8118 | |
| 201 | 3 | 1.31652 | 148.482 | 31.7614 | |
| 202 | 3 | 1.34075 | 150.28 | 35.7836 | |
| 203 | 3.2 | 1.3722 | 152.163 | 40.1747 | |
| 204 | 3.22 | 1.39838 | 154.118 | 44.6774 | |
| 205 | 3.5 | 1.4325 | 156.17 | 49.6912 | |
| 206 | 3.6 | 1.46106 | 158.305 | 54.951 | |
| 207 | 3.6 | 1.49852 | 160.551 | 60.3457 | |
| 208 | 3.8 | 1.53007 | 162.892 | 66.1599 | |
| 209 | 4.03 | 1.57179 | 165.362 | 72.4942 | |
| 210 | 4.07 | 1.60725 | 167.945 | 79.0357 | |
| 211 | 4.5 | 1.65463 | 170.683 | 86.4816 | |
| 212 | 4.58 | 1.6954 | 173.558 | 94.2465 | |
| 213 | 4.99 | 1.75069 | 176.622 | 102.982 | |
| 214 | 5 | 1.79912 | 179.859 | 111.978 | |
| 215 | 5 | 1.86629 | 183.342 | 121.309 | |
| 216 | 5.4 | 1.92684 | 187.055 | 131.714 | |
| 217 | 5.6 | 2.01409 | 191.112 | 142.993 | |
| 218 | 6 | 2.09693 | 195.509 | 155.575 | |
| 219 | 6.3 | 2.22621 | 200.465 | 169.6 | |
| 220 | 8 | 2.36561 | 206.061 | 188.525 | |
| 221 | 9 | 2.65209 | 213.094 | 212.394 | |

Data Set Standard Deviation = 1.2776
Numerator = 45111.1
Denominator = 76521.9
W Statistic = 0.589519 = 45111.1 / 76521.9

5% Critical value of 0.976 exceeds 0.589519
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.589519
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: Benzene

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) | |
|---|---|---|---|---|---|
| 1 | -2.07944 | -2.65209 | 7.03356 | 5.51486 | |
| 2 | -2.07944 | -2.36561 | 12.6297 | 10.434 | |
| 3 | -2.07944 | -2.22621 | 17.5857 | 15.0633 | |
| 4 | -2.07944 | -2.09693 | 21.9828 | 19.4237 | |
| 5 | -2.07944 | -2.01409 | 26.0394 | 23.6119 | |
| 6 | -2.07944 | -1.92684 | 29.7521 | 27.6187 | |
| 7 | -2.07944 | -1.86629 | 33.2351 | 31.4995 | |
| 8 | -2.07944 | -1.79912 | 36.472 | 35.2407 | |
| 9 | -2.07944 | -1.75069 | 39.5369 | 38.8811 | |
| 10 | -2.07944 | -1.6954 | 42.4112 | 42.4066 | |
| 11 | -2.07944 | -1.65463 | 45.149 | 45.8473 | |
| 12 | -2.07944 | -1.60725 | 47.7323 | 49.1895 | |
| 13 | -2.07944 | -1.57179 | 50.2028 | 52.4579 | |
| 14 | -2.07944 | -1.53007 | 52.5439 | 55.6396 | |
| 15 | -2.07944 | -1.49852 | 54.7894 | 58.7557 | |
| 16 | -2.07944 | -1.46106 | 56.9241 | 61.7939 | |
| 17 | -2.07944 | -1.4325 | 58.9762 | 64.7727 | |
| 18 | -1.34707 | -1.39838 | 60.9316 | 66.6564 | |
| 19 | -1.02165 | -1.3722 | 62.8146 | 68.0583 | |
| 20 | -0.693147 | -1.34075 | 64.6122 | 68.9876 | |
| 21 | -0.673345 | -1.31652 | 66.3454 | 69.8741 | |
| 22 | -0.634878 | -1.28727 | 68.0025 | 70.6914 | |
| 23 | -0.527633 | -1.26464 | 69.6018 | 71.3586 | |
| 24 | -0.510826 | -1.23724 | 71.1326 | 71.9907 | |
| 25 | -0.385662 | -1.21596 | 72.6111 | 72.4596 | |
| 26 | -0.34249 | -1.19012 | 74.0275 | 72.8672 | |
| 27 | -0.328504 | -1.17 | 75.3964 | 73.2516 | |
| 28 | -0.314711 | -1.1455 | 76.7086 | 73.6121 | |
| 29 | -0.314711 | -1.12639 | 77.9774 | 73.9665 | |
| 30 | -0.274437 | -1.10306 | 79.1941 | 74.2693 | |
| 31 | -0.223144 | -1.08482 | 80.371 | 74.5113 | |
| 32 | -0.210721 | -1.06252 | 81.4999 | 74.7352 | |
| 33 | -0.18633 | -1.04505 | 82.592 | 74.93 | |
| 34 | -0.174353 | -1.02365 | 83.6399 | 75.1084 | |
| 35 | -0.0725707 | -1.00687 | 84.6537 | 75.1815 | |
| 36 | -0.0618754 | -0.986272 | 85.6264 | 75.2425 | |
| 37 | -0.040822 | -0.970094 | 86.5675 | 75.2821 | |
| 38 | 0 | -0.950222 | 87.4704 | 75.2821 | |
| 39 | 0 | -0.934598 | 88.3439 | 75.2821 | |
| 40 | 0 | -0.915365 | 89.1818 | 75.2821 | |
| 41 | 0 | -0.900227 | 89.9922 | 75.2821 | |
| 42 | 0 | -0.881587 | 90.7694 | 75.2821 | |
| 43 | 0 | -0.866894 | 91.5209 | 75.2821 | |
| 44 | 0 | -0.848786 | 92.2413 | 75.2821 | |
| 45 | 0 | -0.834498 | 92.9377 | 75.2821 | |
| 46 | 0 | -0.816874 | 93.605 | 75.2821 | |
| 47 | 0 | -0.802956 | 94.2497 | 75.2821 | |
| 48 | 0 | -0.785774 | 94.8672 | 75.2821 | |
| 49 | 0 | -0.772193 | 95.4634 | 75.2821 | |

| | | | | |
|---|---|---|---|---|
| 50 | 0 | -0.755415 | 96.0341 | 75.2821 |
| 51 | 0 | -0.742143 | 96.5849 | 75.2821 |
| 52 | 0 | -0.725736 | 97.1116 | 75.2821 |
| 53 | 0 | -0.712751 | 97.6196 | 75.2821 |
| 54 | 0 | -0.696684 | 98.1049 | 75.2821 |
| 55 | 0 | -0.683969 | 8.5727 | 75.2821 |
| 56 | 0 | -0.668209 | 99.0192 | 75.2821 |
| 57 | 0 | -0.655726 | 99.4492 | 75.2821 |
| 58 | 0 | -0.640266 | 99.8592 | 75.2821 |
| 59 | 0 | -0.628006 | 100.254 | 75.2821 |
| 60 | 0 | -0.612813 | 100.629 | 75.2821 |
| 61 | 0 | -0.60076 | 100.99 | 75.2821 |
| 62 | 0 | -0.585815 | 101.333 | 75.2821 |
| 63 | 0 | -0.573953 | 101.663 | 75.2821 |
| 64 | 0 | -0.559237 | 101.975 | 75.2821 |
| 65 | 0 | -0.547551 | 102.275 | 75.2821 |
| 66 | 0 | -0.533048 | 102.559 | 75.2821 |
| 67 | 0 | -0.521527 | 102.831 | 75.2821 |
| 68 | 0 | -0.507221 | 103.089 | 75.2821 |
| 69 | 0 | -0.49585 | 103.334 | 75.2821 |
| 70 | 0 | -0.481728 | 103.566 | 75.2821 |
| 71 | 0 | -0.470498 | 103.788 | 75.2821 |
| 72 | 0 | -0.456542 | 103.996 | 75.2821 |
| 73 | 0 | -0.445443 | 104.195 | 75.2821 |
| 74 | 0 | -0.431644 | 104.381 | 75.2821 |
| 75 | 0 | -0.420664 | 104.558 | 75.2821 |
| 76 | 0 | -0.40701 | 104.724 | 75.2821 |
| 77 | 0 | -0.396142 | 104.881 | 75.2821 |
| 78 | 0 | -0.382622 | 105.027 | 75.2821 |
| 79 | 0 | -0.371856 | 105.165 | 75.2821 |
| 80 | 0 | -0.358459 | 105.294 | 75.2821 |
| 81 | 0 | -0.347787 | 105.415 | 75.2821 |
| 82 | 0 | -0.334503 | 105.527 | 75.2821 |
| 83 | 0 | -0.323919 | 105.632 | 75.2821 |
| 84 | 0 | -0.310738 | 105.728 | 75.2821 |
| 85 | 0 | -0.300232 | 105.818 | 75.2821 |
| 86 | 0 | -0.287147 | 105.901 | 75.2821 |
| 87 | 0 | -0.276714 | 105.977 | 75.2821 |
| 88 | 0 | -0.263715 | 106.047 | 75.2821 |
| 89 | 0 | -0.253347 | 106.111 | 75.2821 |
| 90 | 0 | -0.240426 | 106.169 | 75.2821 |
| 91 | 0 | -0.230118 | 106.222 | 75.2821 |
| 92 | 0 | -0.217267 | 106.269 | 75.2821 |
| 93 | 0 | -0.207012 | 106.312 | 75.2821 |
| 94 | 0 | -0.194225 | 106.35 | 75.2821 |
| 95 | 0 | -0.184017 | 106.383 | 75.2821 |
| 96 | 0 | -0.171285 | 106.413 | 75.2821 |
| 97 | 0 | -0.161119 | 106.439 | 75.2821 |
| 98 | 0 | -0.148434 | 106.461 | 75.2821 |
| 99 | 0 | -0.138305 | 106.48 | 75.2821 |
| 100 | 0 | -0.125661 | 106.496 | 75.2821 |
| 101 | 0 | -0.115562 | 106.509 | 75.2821 |
| 102 | 0 | -0.102953 | 106.52 | 75.2821 |
| 103 | 0 | -0.0928787 | 106.528 | 75.2821 |
| 104 | 0 | -0.0802981 | 106.535 | 75.2821 |
| 105 | 0 | -0.0702426 | 106.54 | 75.2821 |
| 106 | 0 | -0.0576847 | 106.543 | 75.2821 |
| 107 | 0 | -0.0476439 | 106.545 | 75.2821 |
| 108 | 0 | -0.0350997 | 106.546 | 75.2821 |
| 109 | 0 | -0.0250691 | 106.547 | 75.2821 |
| 110 | 0 | -0.0125328 | 106.547 | 75.2821 |
| 111 | 0 | 0 | 106.547 | 75.2821 |

| | | | | |
|---|---|---|---|---|
| 112 | 0 | 0.0125328 | 106.547 | 75.2821 |
| 113 | 0 | 0.0250691 | 106.548 | 75.2821 |
| 114 | 0 | 0.0350997 | 106.549 | 75.2821 |
| 115 | 0 | 0.0476439 | 106.551 | 75.2821 |
| 116 | 0 | 0.0576847 | 106.555 | 75.2821 |
| 117 | 0 | 0.0702426 | 106.56 | 75.2821 |
| 118 | 0 | 0.0802981 | 106.566 | 75.2821 |
| 119 | 0 | 0.0928787 | 106.575 | 75.2821 |
| 120 | 0 | 0.102953 | 106.585 | 75.2821 |
| 121 | 0 | 0.115562 | 106.599 | 75.2821 |
| 122 | 0 | 0.125661 | 106.615 | 75.2821 |
| 123 | 0 | 0.138305 | 106.634 | 75.2821 |
| 124 | 0 | 0.148434 | 106.656 | 75.2821 |
| 125 | 0 | 0.161119 | 106.682 | 75.2821 |
| 126 | 0 | 0.171285 | 106.711 | 75.2821 |
| 127 | 0 | 0.184017 | 106.745 | 75.2821 |
| 128 | 0 | 0.194225 | 106.783 | 75.2821 |
| 129 | 0 | 0.207012 | 106.825 | 75.2821 |
| 130 | 0 | 0.217267 | 106.873 | 75.2821 |
| 131 | 0 | 0.230118 | 106.926 | 75.2821 |
| 132 | 0 | 0.240426 | 106.983 | 75.2821 |
| 133 | 0 | 0.253347 | 107.048 | 75.2821 |
| 134 | 0 | 0.263715 | 107.117 | 75.2821 |
| 135 | 0 | 0.276714 | 107.194 | 75.2821 |
| 136 | 0 | 0.287147 | 107.276 | 75.2821 |
| 137 | 0 | 0.300232 | 107.366 | 75.2821 |
| 138 | 0 | 0.310738 | 107.463 | 75.2821 |
| 139 | 0 | 0.323919 | 107.568 | 75.2821 |
| 140 | 0 | 0.334503 | 107.68 | 75.2821 |
| 141 | 0 | 0.347787 | 107.801 | 75.2821 |
| 142 | 0 | 0.358459 | 107.929 | 75.2821 |
| 143 | 0 | 0.371856 | 108.067 | 75.2821 |
| 144 | 0 | 0.382622 | 108.214 | 75.2821 |
| 145 | 0 | 0.396142 | 108.371 | 75.2821 |
| 146 | 0 | 0.40701 | 108.536 | 75.2821 |
| 147 | 0 | 0.420664 | 108.713 | 75.2821 |
| 148 | 0 | 0.431644 | 108.9 | 75.2821 |
| 149 | 0 | 0.445443 | 109.098 | 75.2821 |
| 150 | 0 | 0.456542 | 109.307 | 75.2821 |
| 151 | 0 | 0.470498 | 109.528 | 75.2821 |
| 152 | 0 | 0.481728 | 109.76 | 75.2821 |
| 153 | 0 | 0.49585 | 110.006 | 75.2821 |
| 154 | 0 | 0.507221 | 110.263 | 75.2821 |
| 155 | 0 | 0.521527 | 110.535 | 75.2821 |
| 156 | 0 | 0.533048 | 110.819 | 75.2821 |
| 157 | 0 | 0.547551 | 111.119 | 75.2821 |
| 158 | 0 | 0.559237 | 111.432 | 75.2821 |
| 159 | 0 | 0.573953 | 111.761 | 75.2821 |
| 160 | 0 | 0.585815 | 112.104 | 75.2821 |
| 161 | 0 | 0.60076 | 112.465 | 75.2821 |
| 162 | 0 | 0.612813 | 112.841 | 75.2821 |
| 163 | 0 | 0.628006 | 113.235 | 75.2821 |
| 164 | 0 | 0.640266 | 113.645 | 75.2821 |
| 165 | 0.0198026 | 0.655726 | 114.075 | 75.2951 |
| 166 | 0.0295588 | 0.668209 | 114.522 | 75.3149 |
| 167 | 0.0392207 | 0.68396 | 114.989 | 75.3417 |
| 168 | 0.0861777 | 0.696684 | 115.475 | 75.4017 |
| 169 | 0.182322 | 0.712751 | 115.983 | 75.5317 |
| 170 | 0.182322 | 0.725736 | 116.51 | 75.664 |
| 171 | 0.182322 | 0.742143 | 117.06 | 75.7993 |
| 172 | 0.182322 | 0.755415 | 117.631 | 75.937 |
| 173 | 0.262364 | 0.772193 | 118.227 | 76.1396 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 174 | 0.262364 | | 0.785774 | | 118.845 | 76.3458 |
| 175 | 0.262364 | | 0.802956 | | 119.489 | 76.5565 |
| 176 | 0.270027 | | 0.816874 | | 120.157 | 76.777 |
| 177 | 0.277632 | | 0.834498 | | 120.853 | 77.0087 |
| 178 | 0.300105 | | 0.848786 | | 121.574 | 77.2634 |
| 179 | 0.322083 | | 0.866894 | | 122.325 | 77.5427 |
| 180 | 0.336472 | | 0.881587 | | 123.102 | 77.8393 |
| 181 | 0.431782 | | 0.900227 | | 123.913 | 78.228 |
| 182 | 0.431782 | | 0.915365 | | 124.751 | 78.6232 |
| 183 | 0.587787 | | 0.93459 | 125.624 | 79.1726 | |
| 184 | 0.587787 | | 0.950222 | | 126.527 | 79.7311 |
| 185 | 0.641854 | | 0.970094 | | 127.468 | 80.3538 |
| 186 | 0.652325 | | 0.986272 | | 128.441 | 80.9971 |
| 187 | 0.693147 | | 1.00687 | 129.455 | 81.695 | |
| 188 | 0.693147 | | 1.02365 | 130.502 | 82.4046 | |
| 189 | 0.741937 | | 1.04505 | 131.594 | 83.1799 | |
| 190 | 0.741937 | | 1.06252 | 132.723 | 83.9683 | |
| 191 | 0.741937 | | 1.08482 | 133.9 | 84.7731 | |
| 192 | 0.788457 | | 1.10306 | 135.117 | 85.6428 | |
| 193 | 0.788457 | | 1.12639 | 136.386 | 86.531 | |
| 194 | 0.788457 | | 1.1455 | 137.698 | 87.4341 | |
| 195 | 0.916291 | | 1.17 | 139.067 | 88.5062 | |
| 196 | 0.932164 | | 1.19012 | 140.483 | 89.6156 | |
| 197 | 0.955511 | | 1.21596 | 141.962 | 90.7774 | |
| 198 | 1.00063 | 1.23724 | 143.493 | 92.0155 | | |
| 199 | 1.06471 | 1.26464 | 145.092 | 93.3619 | | |
| 200 | 1.09861 | 1.28727 | 146.749 | 94.7762 | | |
| 201 | 1.09861 | 1.31652 | 148.482 | 96.2225 | | |
| 202 | 1.09861 | 1.34075 | 150.28 | 97.6955 | | |
| 203 | 1.16315 | 1.3722 | 152.163 | 99.2915 | | |
| 204 | 1.16938 | 1.39838 | 154.118 | 100.927 | | |
| 205 | 1.25276 | 1.4325 | 156.17 | 102.721 | | |
| 206 | 1.28093 | 1.46106 | 158.305 | 104.593 | | |
| 207 | 1.28093 | 1.49852 | 160.551 | 106.512 | | |
| 208 | 1.335 | 1.53007 | 162.892 | 108.555 | | |
| 209 | 1.39377 | 1.57179 | 165.362 | 110.746 | | |
| 210 | 1.40364 | 1.60725 | 167.945 | 113.002 | | |
| 211 | 1.50408 | 1.65463 | 170.683 | 115.49 | | |
| 212 | 1.5217 | 1.6954 | 173.558 | 118.07 | | |
| 213 | 1.60744 | 1.75069 | 176.622 | 120.884 | | |
| 214 | 1.60944 | 1.79912 | 179.859 | 123.78 | | |
| 215 | 1.60944 | 1.86629 | 183.342 | 126.784 | | |
| 216 | 1.6864 | 1.92684 | 187.055 | 130.033 | | |
| 217 | 1.72277 | 2.01409 | 191.112 | 133.503 | | |
| 218 | 1.79176 | 2.09693 | 195.509 | 137.26 | | |
| 219 | 1.84055 | 2.22621 | 200.465 | 141.358 | | |
| 220 | 2.07944 | 2.36561 | 206.061 | 146.277 | | |
| 221 | 2.19722 | 2.65209 | 213.094 | 152.104 | | |

Data Set Standard Deviation = 0.80229
Numerator = 23135.6
Denominator = 30175.7
W Statistic = 0.766697 = 23135.6 / 30175.7

5% Critical value of 0.976 exceeds 0.766697
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.766697
Evidence of non-normality at 99% level of significance

# Kruskal-Wallis Non-Parametric Test

## Parameter: Benzene

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

# Kruskal Wallis Ranks

## Background Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-13 | 3/16/1999 | ND<0 | 71.5 |
| | 9/23/1999 | ND<0 | 71.5 |
| | 3/15/2000 | ND<0 | 71.5 |
| | 9/24/2003 | ND<0 | 71.5 |
| | 3/11/2004 | ND<0 | 71.5 |
| | 10/12/2004 | ND<0 | 71.5 |
| | 4/1/2005 | ND<0 | 71.5 |
| | 10/25/2005 | ND<0 | 71.5 |
| | 4/29/2006 | ND<0 | 71.5 |
| | 11/18/2006 | ND<0 | 71.5 |
| | 5/23/2007 | ND<0 | 71.5 |
| | 11/28/2007 | ND<0 | 71.5 |
| | 6/5/2008 | ND<0 | 71.5 |
| | 11/20/2008 | ND<0 | 71.5 |
| | 6/11/2009 | ND<-2.07944 | 71.5 |
| | 11/16/2009 | ND<-2.07944 | 71.5 |
| | 6/30/2010 | ND<-2.07944 | 71.5 |
| | 11/12/2010 | ND<-2.07944 U | 71.5 |

Rank Sum = 1287
Rank Mean = 71.5

Background Rank Sum = 1287
Background Rank Mean = 71.5

## Compliance Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-6 | 7/20/1995 | ND<0 | 71.5 |
| | 8/24/1995 | ND<0 | 71.5 |
| | 9/28/1995 | ND<0 | 71.5 |
| | 10/26/1995 | ND<0 | 71.5 |
| | 11/19/1996 | ND<0 | 71.5 |
| | 12/19/1996 | ND<0 | 71.5 |
| | 3/24/1997 | ND<0 | 71.5 |
| | 9/24/1997 | ND<0 | 71.5 |
| | 4/7/1998 | ND<0 | 71.5 |
| | 9/23/1998 | ND<0 | 71.5 |
| | 3/16/1999 | ND<0 | 71.5 |
| | 9/23/1999 | ND<0 | 71.5 |
| | 3/15/2000 | ND<0 | 71.5 |
| | 9/24/2003 | ND<0 | 71.5 |
| | 3/11/2004 | ND<0 | 71.5 |
| | 10/12/2004 | ND<0 | 71.5 |
| | 4/1/2005 | ND<0 | 71.5 |
| | 10/25/2005 | ND<0 | 71.5 |
| | 4/29/2006 | ND<0 | 71.5 |
| | 11/18/2006 | ND<0 | 71.5 |

| | | | |
|---|---|---|---|
| | 5/23/2007 | 0.182322 | 169 |
| | 11/28/2007 | ND<0 | 71.5 |
| | 6/5/2008 | ND<0 | 71.5 |
| | 11/20/2008 | ND<0 | 71.5 |
| | 6/11/2009 | ND<-2.07944 | 71.5 |
| | 11/16/2009 | ND<-2.07944 | 71.5 |
| | 6/30/2010 | ND<-2.07944 | 71.5 |
| | 11/12/2010 | ND<-2.07944 U | 71.5 |

Rank Sum = 2099.5
Rank Mean = 74.9821

| | | | |
|---|---|---|---|
| MW-7 | 7/20/1995 | ND<0 | 71.5 |
| | 8/24/1995 | ND<0 | 71.5 |
| | 9/28/1995 | ND<0 | 71.5 |
| | 10/26/1995 | ND<0 | 71.5 |
| | 11/19/1996 | ND<0 | 71.5 |
| | 12/19/1996 | ND<0 | 71.5 |
| | 3/24/1997 | ND<0 | 71.5 |
| | 9/24/1997 | ND<0 | 71.5 |
| | 4/7/1998 | ND<0 | 71.5 |
| | 9/23/1998 | ND<0 | 71.5 |
| | 3/16/1999 | ND<0 | 71.5 |
| | 9/23/1999 | ND<0 | 71.5 |
| | 3/15/2000 | ND<0 | 71.5 |
| | 9/24/2003 | ND<0 | 71.5 |
| | 3/11/2004 | ND<0 | 71.5 |
| | 10/12/2004 | ND<0 | 71.5 |
| | 4/1/2005 | ND<0 | 71.5 |
| | 10/25/2005 | -0.673345 J | 146 |
| | 4/29/2006 | -0.385662 J | 150 |
| | 11/18/2006 | -1.02165 J | 144 |
| | 5/23/2007 | 0.182322 | 170 |
| | 11/28/2007 | -0.693147 J | 145 |
| | 6/5/2008 | ND<0 | 71.5 |
| | 11/20/2008 | 0.0198026 J | 165 |
| | 6/11/2009 | -0.314711 J | 153 |
| | 11/16/2009 | ND<-2.07944 | 71.5 |
| | 6/30/2010 | -0.328504 J | 152 |
| | 11/12/2010 | -0.510826 J | 149 |

Rank Sum = 2732.5
Rank Mean = 97.5893

| | | | |
|---|---|---|---|
| MW-8 | 7/20/1995 | ND<0 | 71.5 |
| | 8/24/1995 | ND<0 | 71.5 |
| | 9/28/1995 | ND<0 | 71.5 |
| | 10/26/1995 | ND<0 | 71.5 |
| | 11/19/1996 | ND<0 | 71.5 |
| | 12/19/1996 | ND<0 | 71.5 |
| | 3/24/1997 | ND<0 | 71.5 |
| | 9/24/1997 | 1.6864 | 216 |
| | 4/7/1998 | ND<0 | 71.5 |
| | 9/23/1998 | 1.72277 | 217 |
| | 3/16/1999 | 1.25276 | 205 |
| | 9/23/1999 | 1.28093 | 206 |
| | 3/15/2000 | ND<0 | 71.5 |
| | 9/24/2003 | ND<0 | 71.5 |
| | 3/11/2004 | ND<0 | 71.5 |
| | 10/12/2004 | ND<0 | 71.5 |
| | 4/1/2005 | 1.16938 | 204 |
| | 10/25/2005 | 1.60744 | 213 |
| | 4/29/2006 | 0.932164 | 196 |
| | 11/18/2006 | 1.39377 | 209 |

| | | | | |
|---|---|---|---|---|
| | 5/23/2007 | 1.16315 | | 203 |
| | 11/28/2007 | 1.50408 | | 211 |
| | 6/5/2008 | 1.40364 | 210 | |
| | 11/20/2008 | 1.00063 | | 198 |
| | 6/11/2009 | 1.28093 | | 207 |
| | 6/30/2010 | 0.741937 | | 189 |
| | 11/12/2010 | 1.06471 | | 199 |

Rank Sum = 3941
Rank Mean = 145.963

| | | | | |
|---|---|---|---|---|
| MW-9 | 7/20/1995 | 0.916291 | | 195 |
| | 8/24/1995 | 0.955511 | | 197 |
| | 9/28/1995 | 1.09861 | | 200 |
| | 10/26/1995 | 1.09861 | | 201 |
| | 11/19/1996 | ND<0 | 71.5 | |
| | 12/19/1996 | ND<0 | 71.5 | |
| | 3/24/1997 | ND<0 | 71.5 | |
| | 9/24/1997 | ND<0 | 71.5 | |
| | 4/7/1998 | ND<0 | 71.5 | |
| | 9/23/1998 | ND<0 | 71.5 | |
| | 3/16/1999 | 0.788457 | | 192 |
| | 9/23/1999 | ND<0 | 71.5 | |
| | 3/15/2000 | ND<0 | 71.5 | |
| | 9/24/2003 | ND<0 | 71.5 | |
| | 3/11/2004 | ND<0 | 71.5 | |
| | 10/12/2004 | ND<0 | 71.5 | |
| | 4/1/2005 | 0.652325 J | 186 | |
| | 10/25/2005 | 0.0861777 J | | 168 |
| | 4/29/2006 | -0.34249 J | | 151 |
| | 11/18/2006 | -0.223144 J | | 156 |
| | 5/23/2007 | 0.788457 | | 193 |
| | 11/28/2007 | 0.431782 J | | 181 |
| | 6/5/2008 | ND<0 | 71.5 | |
| | 11/20/2008 | 0.300105 J | | 178 |
| | 6/11/2009 | 0.641854 | | 185 |
| | 11/16/2009 | 0.336472 | | 180 |
| | 6/30/2010 | 0.587787 | | 183 |
| | 11/12/2010 | 0.182322 | | 171 |

Rank Sum = 3775
Rank Mean = 134.821

| | | | | |
|---|---|---|---|---|
| MW-12BR | 3/16/1999 | 1.335 | | 208 |
| | 9/23/1999 | 1.09861 | | 202 |
| | 3/15/2000 | ND<0 | 71.5 | |
| | 9/24/2003 | ND<0 | 71.5 | |
| | 3/11/2004 | ND<0 | 71.5 | |
| | 10/12/2004 | ND<0 | 71.5 | |
| | 4/1/2005 | ND<0 | 71.5 | |
| | 10/25/2005 | ND<0 | 71.5 | |
| | 4/29/2006 | ND<0 | 71.5 | |
| | 11/18/2006 | ND<0 | 71.5 | |
| | 5/23/2007 | ND<0 | 71.5 | |
| | 11/28/2007 | ND<0 | 71.5 | |
| | 6/5/2008 | ND<0 | 71.5 | |
| | 11/20/2008 | ND<0 | 71.5 | |
| | 6/11/2009 | ND<-2.07944 | | 71.5 |
| | 11/16/2009 | ND<-2.07944 | | 71.5 |
| | 6/30/2010 | ND<-2.07944 | | 71.5 |
| | 11/12/2010 | ND<-2.07944 U | | 71.5 |

Rank Sum = 1554
Rank Mean = 86.3333

| | | | |
|---|---|---|---|
| MW-12AR | 3/16/1999 | ND<0 | 71.5 |
| | 9/23/1999 | ND<0 | 71.5 |
| | 3/15/2000 | ND<0 | 71.5 |
| | 9/24/2003 | ND<0 | 71.5 |
| | 3/11/2004 | ND<0 | 71.5 |
| | 10/12/2004 | ND<0 | 71.5 |
| | 4/1/2005 | ND<0 | 71.5 |
| | 10/25/2005 | 0.0295588 J | 166 |
| | 4/29/2006 | 0.0392207 J | 167 |
| | 11/18/2006 | -0.274437 J | 155 |
| | 5/23/2007 | ND<0 | 71.5 |
| | 11/28/2007 | -0.174353 J | 159 |
| | 6/5/2008 | ND<0 | 71.5 |
| | 11/20/2008 | -0.634878 J | 147 |
| | 6/11/2009 | ND<-2.07944 | 71.5 |
| | 11/16/2009 | -1.34707 J | 143 |
| | 6/30/2010 | ND<-2.07944 | 71.5 |
| | 11/12/2010 | -0.314711 J | 154 |

Rank Sum = 1877.5
Rank Mean = 104.306

| | | | |
|---|---|---|---|
| MW-11R | 7/20/1995 | 0.741937 | 190 |
| | 8/24/1995 | 1.84055 | 219 |
| | 9/28/1995 | 1.79176 | 218 |
| | 10/26/1995 | 2.07944 | 220 |
| | 11/19/1996 | ND<0 | 71.5 |
| | 12/19/1996 | 2.19722 | 221 |
| | 3/24/1997 | ND<0 | 71.5 |
| | 9/24/1997 | ND<0 | 71.5 |
| | 4/7/1998 | ND<0 | 71.5 |
| | 9/23/1998 | 1.60944 | 214 |
| | 3/16/1999 | 1.60944 | 215 |
| | 9/23/1999 | ND<0 | 71.5 |
| | 3/15/2000 | ND<0 | 71.5 |
| | 9/24/2003 | ND<0 | 71.5 |
| | 3/11/2004 | ND<0 | 71.5 |
| | 10/12/2004 | ND<0 | 71.5 |
| | 4/1/2005 | 1.5217 | 212 |
| | 10/25/2005 | 0.431782 J | 182 |
| | 4/29/2006 | -0.18633 J | 158 |
| | 11/18/2006 | -0.0725707 J | 160 |
| | 5/23/2007 | 0.741937 | 191 |
| | 11/28/2007 | 0.262364 J | 173 |
| | 6/5/2008 | ND<0 | 71.5 |
| | 11/20/2008 | ND<0 | 71.5 |
| | 6/11/2009 | -0.527633 J | 148 |
| | 11/16/2009 | ND<-2.07944 | 71.5 |
| | 6/30/2010 | -0.210721 J | 157 |
| | 11/12/2010 | ND<-2.07944 U | 71.5 |

Rank Sum = 3807.5
Rank Mean = 135.982

| | | | |
|---|---|---|---|
| MW-10 | 7/20/1995 | ND<0 | 71.5 |
| | 8/24/1995 | 0.182322 J | 172 |
| | 9/28/1995 | 0.693147 | 187 |
| | 10/26/1995 | 0.693147 | 188 |
| | 11/19/1996 | ND<0 | 71.5 |
| | 12/19/1996 | ND<0 | 71.5 |
| | 3/24/1997 | ND<0 | 71.5 |
| | 9/24/1997 | ND<0 | 71.5 |
| | 4/7/1998 | ND<0 | 71.5 |
| | 9/23/1998 | ND<0 | 71.5 |

| | | | |
|---|---|---|---|
| 3/16/1999 | 0.788457 | | 194 |
| 9/23/1999 | ND<0 | 71.5 | |
| 3/15/2000 | ND<0 | 71.5 | |
| 9/24/2003 | ND<0 | 71.5 | |
| 3/11/2004 | ND<0 | 71.5 | |
| 10/12/2004 | ND<0 | 71.5 | |
| 4/1/2005 | 0.587787 J | 184 | |
| 10/25/2005 | 0.277632 J | | 177 |
| 4/29/2006 | 0.270027 J | | 176 |
| 11/18/2006 | -0.040822 J | | 162 |
| 5/23/2007 | ND<0 | 71.5 | |
| 11/28/2007 | 0.322083 | | 179 |
| 6/5/2008 | ND<0 | 71.5 | |
| 11/20/2008 | 0 J | 163 | |
| 6/11/2009 | 0 | 164 | |
| 11/16/2009 | 0.262364 | | 174 |
| 6/30/2010 | -0.0618754 J | | 161 |
| 11/12/2010 | 0.262364 | | 175 |

Rank Sum = 3457
Rank Mean = 123.464

## Calculation Results:

Kruskal-Wallis H Statistic = 37.1583
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 50.5736
95% Confidence comparison value is 15.5073 at 8 degrees of freedom
37.1583 > 15.5073 indicating a significant group difference at 5% significance level
50.5736 > 15.5073 indicating a significant group difference at 5% significance level when adjusted for ties

## Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 71.5

| Well | Mean Rank | Dif from Bkg | Critical Value |
|---|---|---|---|
| MW-6 | 74.9821 | 3.48214 | 44.9386 |
| MW-7 | 97.5893 | 26.0893 | 44.9386 |
| MW-8 | 145.963 | 74.463 | 45.263 |
| MW-9 | 134.821 | 63.3214 | 44.9386 |
| MW-12BR | 86.3333 | 14.8333 | 49.5832 |
| MW-12AR | 104.306 | 32.8056 | 49.5832 |
| MW-11R | 135.982 | 64.4821 | 44.9386 |
| MW-10 | 123.464 | 51.9643 | 44.9386 |

## Individual Well Comparisons at Groupwise 5% Significance Level (0.625% Significance Level per comparison)

0.625% Z score is 2.51213
Mean background rank is 71.5

| Well | Mean Rank | Dif from Bkg | Critical Value |
|---|---|---|---|
| MW-6 | 74.9821 | 3.48214 | 48.5275 |
| MW-7 | 97.5893 | 26.0893 | 48.5275 |
| MW-8 | 145.963 | 74.463 | 48.8779 |
| MW-9 | 134.821 | 63.3214 | 48.5275 |
| MW-12BR | 86.3333 | 14.8333 | 53.5431 |
| MW-12AR | 104.306 | 32.8056 | 53.5431 |
| MW-11R | 135.982 | 64.4821 | 48.5275 |
| MW-10 | 123.464 | 51.9643 | 48.5275 |

# Mann-Kendall Trend Analysis

## Parameter: Benzene

## Location: MW-8

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | | Positives | Negatives |
|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 0 | 0 | |
| ND<0 | ND<0 | 0 | 0 | 0 | |
| ND<0 | ND<0 | 0 | 0 | 0 | |
| ND<0 | ND<0 | 0 | 0 | 0 | |
| ND<0 | ND<0 | 0 | 0 | 0 | |
| ND<0 | ND<0 | 0 | 0 | 0 | |
| 1.6864 | ND<0 | 1.6864 | 1 | 0 | |
| ND<0 | ND<0 | 0 | 1 | 0 | |
| 1.72277 | | ND<0 | 1.72277 | 2 | 0 |
| 1.25276 | | ND<0 | 1.25276 | 3 | 0 |
| 1.28093 | | ND<0 | 1.28093 | 4 | 0 |
| ND<0 | ND<0 | 0 | 4 | 0 | |
| ND<0 | ND<0 | 0 | 4 | 0 | |
| ND<0 | ND<0 | 0 | 4 | 0 | |
| ND<0 | ND<0 | 0 | 4 | 0 | |
| 1.16938 | | ND<0 | 1.16938 | 5 | 0 |
| 1.60744 | | ND<0 | 1.60744 | 6 | 0 |
| 0.932164 | | ND<0 | 0.932164 | 7 | 0 |
| 1.39377 | | ND<0 | 1.39377 | 8 | 0 |
| 1.16315 | | ND<0 | 1.16315 | 9 | 0 |
| 1.50408 | | ND<0 | 1.50408 | 10 | 0 |
| 1.40364 | | ND<0 | 1.40364 | 11 | 0 |
| 1.00063 | | ND<0 | 1.00063 | 12 | 0 |
| 1.28093 | | ND<0 | 1.28093 | 13 | 0 |
| 0.741937 | | ND<0 | 0.741937 | 14 | 0 |
| 1.06471 | | ND<0 | 1.06471 | 15 | 0 |
| | | | | | |
| ND<0 | ND<0 | 0 | 15 | 0 | |
| ND<0 | ND<0 | 0 | 15 | 0 | |
| ND<0 | ND<0 | 0 | 15 | 0 | |
| ND<0 | ND<0 | 0 | 15 | 0 | |
| ND<0 | ND<0 | 0 | 15 | 0 | |
| 1.6864 | ND<0 | 1.6864 | 16 | 0 | |
| ND<0 | ND<0 | 0 | 16 | 0 | |
| 1.72277 | | ND<0 | 1.72277 | 17 | 0 |
| 1.25276 | | ND<0 | 1.25276 | 18 | 0 |
| 1.28093 | | ND<0 | 1.28093 | 19 | 0 |
| ND<0 | ND<0 | 0 | 19 | 0 | |
| ND<0 | ND<0 | 0 | 19 | 0 | |
| ND<0 | ND<0 | 0 | 19 | 0 | |
| ND<0 | ND<0 | 0 | 19 | 0 | |
| 1.16938 | | ND<0 | 1.16938 | 20 | 0 |
| 1.60744 | | ND<0 | 1.60744 | 21 | 0 |
| 0.932164 | | ND<0 | 0.932164 | 22 | 0 |
| 1.39377 | | ND<0 | 1.39377 | 23 | 0 |
| 1.16315 | | ND<0 | 1.16315 | 24 | 0 |
| 1.50408 | | ND<0 | 1.50408 | 25 | 0 |
| 1.40364 | | ND<0 | 1.40364 | 26 | 0 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1.00063 | | ND<0 | 1.00063 | 27 | 0 | |
| 1.28093 | | ND<0 | 1.28093 | 28 | 0 | |
| 0.741937 | | ND<0 | 0.741937 | | 29 | 0 |
| 1.06471 | | ND<0 | 1.06471 | 30 | 0 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 30 | 0 | | |
| ND<0 | ND<0 | 0 | 30 | 0 | | |
| ND<0 | ND<0 | 0 | 30 | 0 | | |
| ND<0 | ND<0 | 0 | 30 | 0 | | |
| 1.6864 | ND<0 | 1.6864 | 31 | 0 | | |
| ND<0 | ND<0 | 0 | 31 | 0 | | |
| 1.72277 | | ND<0 | 1.72277 | 32 | 0 | |
| 1.25276 | | ND<0 | 1.25276 | 33 | 0 | |
| 1.28093 | | ND<0 | 1.28093 | 34 | 0 | |
| ND<0 | ND<0 | 0 | 34 | 0 | | |
| ND<0 | ND<0 | 0 | 34 | 0 | | |
| ND<0 | ND<0 | 0 | 34 | 0 | | |
| ND<0 | ND<0 | 0 | 34 | 0 | | |
| 1.16938 | | ND<0 | 1.16938 | 35 | 0 | |
| 1.60744 | | ND<0 | 1.60744 | 36 | 0 | |
| 0.932164 | | ND<0 | 0.932164 | | 37 | 0 |
| 1.39377 | | ND<0 | 1.39377 | 38 | 0 | |
| 1.16315 | | ND<0 | 1.16315 | 39 | 0 | |
| 1.50408 | | ND<0 | 1.50408 | 40 | 0 | |
| 1.40364 | | ND<0 | 1.40364 | 41 | 0 | |
| 1.00063 | | ND<0 | 1.00063 | 42 | 0 | |
| 1.28093 | | ND<0 | 1.28093 | 43 | 0 | |
| 0.741937 | | ND<0 | 0.741937 | | 44 | 0 |
| 1.06471 | | ND<0 | 1.06471 | 45 | 0 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 45 | 0 | | |
| ND<0 | ND<0 | 0 | 45 | 0 | | |
| ND<0 | ND<0 | 0 | 45 | 0 | | |
| 1.6864 | ND<0 | 1.6864 | 46 | 0 | | |
| ND<0 | ND<0 | 0 | 46 | 0 | | |
| 1.72277 | | ND<0 | 1.72277 | 47 | 0 | |
| 1.25276 | | ND<0 | 1.25276 | 48 | 0 | |
| 1.28093 | | ND<0 | 1.28093 | 49 | 0 | |
| ND<0 | ND<0 | 0 | 49 | 0 | | |
| ND<0 | ND<0 | 0 | 49 | 0 | | |
| ND<0 | ND<0 | 0 | 49 | 0 | | |
| ND<0 | ND<0 | 0 | 49 | 0 | | |
| 1.16938 | | ND<0 | 1.16938 | 50 | 0 | |
| 1.60744 | | ND<0 | 1.60744 | 51 | 0 | |
| 0.932164 | | ND<0 | 0.932164 | | 52 | 0 |
| 1.39377 | | ND<0 | 1.39377 | 53 | 0 | |
| 1.16315 | | ND<0 | 1.16315 | 54 | 0 | |
| 1.50408 | | ND<0 | 1.50408 | 55 | 0 | |
| 1.40364 | | ND<0 | 1.40364 | 56 | 0 | |
| 1.00063 | | ND<0 | 1.00063 | 57 | 0 | |
| 1.28093 | | ND<0 | 1.28093 | 58 | 0 | |
| 0.741937 | | ND<0 | 0.741937 | | 59 | 0 |
| 1.06471 | | ND<0 | 1.06471 | 60 | 0 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 60 | 0 | | |
| ND<0 | ND<0 | 0 | 60 | 0 | | |
| 1.6864 | ND<0 | 1.6864 | 61 | 0 | | |
| ND<0 | ND<0 | 0 | 61 | 0 | | |
| 1.72277 | | ND<0 | 1.72277 | 62 | 0 | |
| 1.25276 | | ND<0 | 1.25276 | 63 | 0 | |
| 1.28093 | | ND<0 | 1.28093 | 64 | 0 | |
| ND<0 | ND<0 | 0 | 64 | 0 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 64 | 0 | | |
| ND<0 | ND<0 | 0 | 64 | 0 | | |
| ND<0 | ND<0 | 0 | 64 | 0 | | |
| 1.16938 | | ND<0 | 1.16938 | 65 | 0 | |
| 1.60744 | | ND<0 | 1.60744 | 66 | 0 | |
| 0.932164 | | ND<0 | 0.932164 | | 67 | 0 |
| 1.39377 | | ND<0 | 1.39377 | 68 | 0 | |
| 1.16315 | | ND<0 | 1.16315 | 69 | 0 | |
| 1.50408 | | ND<0 | 1.50408 | 70 | 0 | |
| 1.40364 | | ND<0 | 1.40364 | 71 | 0 | |
| 1.00063 | | ND<0 | 1.00063 | 72 | 0 | |
| 1.28093 | | ND<0 | 1.28093 | 73 | 0 | |
| 0.741937 | | ND<0 | 0.741937 | | 74 | 0 |
| 1.06471 | | ND<0 | 1.06471 | 75 | 0 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 75 | 0 | | |
| 1.6864 | ND<0 | 1.6864 | 76 | 0 | | |
| ND<0 | ND<0 | 0 | 76 | 0 | | |
| 1.72277 | | ND<0 | 1.72277 | 77 | 0 | |
| 1.25276 | | ND<0 | 1.25276 | 78 | 0 | |
| 1.28093 | | ND<0 | 1.28093 | 79 | 0 | |
| ND<0 | ND<0 | 0 | 79 | 0 | | |
| ND<0 | ND<0 | 0 | 79 | 0 | | |
| ND<0 | ND<0 | 0 | 79 | 0 | | |
| ND<0 | ND<0 | 0 | 79 | 0 | | |
| 1.16938 | | ND<0 | 1.16938 | 80 | 0 | |
| 1.60744 | | ND<0 | 1.60744 | 81 | 0 | |
| 0.932164 | | ND<0 | 0.932164 | | 82 | 0 |
| 1.39377 | | ND<0 | 1.39377 | 83 | 0 | |
| 1.16315 | | ND<0 | 1.16315 | 84 | 0 | |
| 1.50408 | | ND<0 | 1.50408 | 85 | 0 | |
| 1.40364 | | ND<0 | 1.40364 | 86 | 0 | |
| 1.00063 | | ND<0 | 1.00063 | 87 | 0 | |
| 1.28093 | | ND<0 | 1.28093 | 88 | 0 | |
| 0.741937 | | ND<0 | 0.741937 | | 89 | 0 |
| 1.06471 | | ND<0 | 1.06471 | 90 | 0 | |
| | | | | | | |
| 1.6864 | ND<0 | 1.6864 | 91 | 0 | | |
| ND<0 | ND<0 | 0 | 91 | 0 | | |
| 1.72277 | | ND<0 | 1.72277 | 92 | 0 | |
| 1.25276 | | ND<0 | 1.25276 | 93 | 0 | |
| 1.28093 | | ND<0 | 1.28093 | 94 | 0 | |
| ND<0 | ND<0 | 0 | 94 | 0 | | |
| ND<0 | ND<0 | 0 | 94 | 0 | | |
| ND<0 | ND<0 | 0 | 94 | 0 | | |
| ND<0 | ND<0 | 0 | 94 | 0 | | |
| 1.16938 | | ND<0 | 1.16938 | 95 | 0 | |
| 1.60744 | | ND<0 | 1.60744 | 96 | 0 | |
| 0.932164 | | ND<0 | 0.932164 | | 97 | 0 |
| 1.39377 | | ND<0 | 1.39377 | 98 | 0 | |
| 1.16315 | | ND<0 | 1.16315 | 99 | 0 | |
| 1.50408 | | ND<0 | 1.50408 | 100 | 0 | |
| 1.40364 | | ND<0 | 1.40364 | 101 | 0 | |
| 1.00063 | | ND<0 | 1.00063 | 102 | 0 | |
| 1.28093 | | ND<0 | 1.28093 | 103 | 0 | |
| 0.741937 | | ND<0 | 0.741937 | | 104 | 0 |
| 1.06471 | | ND<0 | 1.06471 | 105 | 0 | |
| | | | | | | |
| ND<0 | 1.6864 | -1.6864 | 105 | 1 | | |
| 1.72277 | | 1.6864 | 0.0363676 | | 106 | 1 |
| 1.25276 | | 1.6864 | -0.433636 | | 106 | 2 |
| 1.28093 | | 1.6864 | -0.405465 | | 106 | 3 |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | 1.6864 | -1.6864 | 106 | 4 | | |
| ND<0 | 1.6864 | -1.6864 | 106 | 5 | | |
| ND<0 | 1.6864 | -1.6864 | 106 | 6 | | |
| ND<0 | 1.6864 | -1.6864 | 106 | 7 | | |
| 1.16938 | | 1.6864 | -0.517018 | | 106 | 8 |
| 1.60744 | | 1.6864 | -0.078963 | | 106 | 9 |
| 0.932164 | | 1.6864 | -0.754235 | | 106 | 10 |
| 1.39377 | | 1.6864 | -0.292633 | | 106 | 11 |
| 1.16315 | | 1.6864 | -0.523248 | | 106 | 12 |
| 1.50408 | | 1.6864 | -0.182322 | | 106 | 13 |
| 1.40364 | | 1.6864 | -0.282756 | | 106 | 14 |
| 1.00063 | | 1.6864 | -0.685767 | | 106 | 15 |
| 1.28093 | | 1.6864 | -0.405465 | | 106 | 16 |
| 0.741937 | | 1.6864 | -0.944462 | | 106 | 17 |
| 1.06471 | | 1.6864 | -0.621688 | | 106 | 18 |
| | | | | | | |
| 1.72277 | | ND<0 | 1.72277 | 107 | 18 | |
| 1.25276 | | ND<0 | 1.25276 | 108 | 18 | |
| 1.28093 | | ND<0 | 1.28093 | 109 | 18 | |
| ND<0 | ND<0 | 0 | 109 | 18 | | |
| ND<0 | ND<0 | 0 | 109 | 18 | | |
| ND<0 | ND<0 | 0 | 109 | 18 | | |
| ND<0 | ND<0 | 0 | 109 | 18 | | |
| 1.16938 | | ND<0 | 1.16938 | 110 | 18 | |
| 1.60744 | | ND<0 | 1.60744 | 111 | 18 | |
| 0.932164 | | ND<0 | 0.932164 | | 112 | 18 |
| 1.39377 | | ND<0 | 1.39377 | 113 | 18 | |
| 1.16315 | | ND<0 | 1.16315 | 114 | 18 | |
| 1.50408 | | ND<0 | 1.50408 | 115 | 18 | |
| 1.40364 | | ND<0 | 1.40364 | 116 | 18 | |
| 1.00063 | | ND<0 | 1.00063 | 117 | 18 | |
| 1.28093 | | ND<0 | 1.28093 | 118 | 18 | |
| 0.741937 | | ND<0 | 0.741937 | | 119 | 18 |
| 1.06471 | | ND<0 | 1.06471 | 120 | 18 | |
| | | | | | | |
| 1.25276 | | 1.72277 | | -0.470004 | 120 | 19 |
| 1.28093 | | 1.72277 | | -0.441833 | 120 | 20 |
| ND<0 | 1.72277 | | -1.72277 | 120 | 21 | |
| ND<0 | 1.72277 | | -1.72277 | 120 | 22 | |
| ND<0 | 1.72277 | | -1.72277 | 120 | 23 | |
| ND<0 | 1.72277 | | -1.72277 | 120 | 24 | |
| 1.16938 | | 1.72277 | | -0.553385 | 120 | 25 |
| 1.60744 | | 1.72277 | | -0.115331 | 120 | 26 |
| 0.932164 | | 1.72277 | | -0.790603 | 120 | 27 |
| 1.39377 | | 1.72277 | | -0.329 | 120 | 28 |
| 1.16315 | | 1.72277 | | -0.559616 | 120 | 29 |
| 1.50408 | | 1.72277 | | -0.218689 | 120 | 30 |
| 1.40364 | | 1.72277 | | -0.319124 | 120 | 31 |
| 1.00063 | | 1.72277 | | -0.722135 | 120 | 32 |
| 1.28093 | | 1.72277 | | -0.441833 | 120 | 33 |
| 0.741937 | | 1.72277 | | -0.980829 | 120 | 34 |
| 1.06471 | | 1.72277 | | -0.658056 | 120 | 35 |
| | | | | | | |
| 1.28093 | | 1.25276 | | 0.0281709 | 121 | 35 |
| ND<0 | 1.25276 | | -1.25276 | 121 | 36 | |
| ND<0 | 1.25276 | | -1.25276 | 121 | 37 | |
| ND<0 | 1.25276 | | -1.25276 | 121 | 38 | |
| ND<0 | 1.25276 | | -1.25276 | 121 | 39 | |
| 1.16938 | | 1.25276 | | -0.0833816 | 121 | 40 |
| 1.60744 | | 1.25276 | | 0.354673 | 122 | 40 |
| 0.932164 | | 1.25276 | | -0.320599 | 122 | 41 |
| 1.39377 | | 1.25276 | | 0.141003 | 123 | 41 |

| | | | | |
|---|---|---|---|---|
| 1.16315 | 1.25276 | -0.0896122 | 123 | 42 |
| 1.50408 | 1.25276 | 0.251314 | 124 | 42 |
| 1.40364 | 1.25276 | 0.15088 | 125 | 42 |
| 1.00063 | 1.25276 | -0.252131 | 125 | 43 |
| 1.28093 | 1.25276 | 0.0281709 | 126 | 43 |
| 0.741937 | 1.25276 | -0.510826 | 126 | 44 |
| 1.06471 | 1.25276 | -0.188052 | 126 | 45 |

| | | | | |
|---|---|---|---|---|
| ND<0 | 1.28093 | -1.28093 | 126 | 46 |
| ND<0 | 1.28093 | -1.28093 | 126 | 47 |
| ND<0 | 1.28093 | -1.28093 | 126 | 48 |
| ND<0 | 1.28093 | -1.28093 | 126 | 49 |
| 1.16938 | 1.28093 | -0.111552 | 126 | 50 |
| 1.60744 | 1.28093 | 0.326502 | 127 | 50 |
| 0.932164 | 1.28093 | -0.34877 | 127 | 51 |
| 1.39377 | 1.28093 | 0.112833 | 128 | 51 |
| 1.16315 | 1.28093 | -0.117783 | 128 | 52 |
| 1.50408 | 1.28093 | 0.223144 | 129 | 52 |
| 1.40364 | 1.28093 | 0.122709 | 130 | 52 |
| 1.00063 | 1.28093 | -0.280302 | 130 | 53 |
| 1.28093 | 1.28093 | 0 | 130 | 53 |
| 0.741937 | 1.28093 | -0.538997 | 130 | 54 |
| 1.06471 | 1.28093 | -0.216223 | 130 | 55 |

| | | | | | |
|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 130 | 55 | |
| ND<0 | ND<0 | 0 | 130 | 55 | |
| ND<0 | ND<0 | 0 | 130 | 55 | |
| 1.16938 | ND<0 | 1.16938 | 131 | 55 | |
| 1.60744 | ND<0 | 1.60744 | 132 | 55 | |
| 0.932164 | ND<0 | 0.932164 | 133 | 55 | |
| 1.39377 | ND<0 | 1.39377 | 134 | 55 | |
| 1.16315 | ND<0 | 1.16315 | 135 | 55 | |
| 1.50408 | ND<0 | 1.50408 | 136 | 55 | |
| 1.40364 | ND<0 | 1.40364 | 137 | 55 | |
| 1.00063 | ND<0 | 1.00063 | 138 | 55 | |
| 1.28093 | ND<0 | 1.28093 | 139 | 55 | |
| 0.741937 | ND<0 | 0.741937 | 140 | 55 | |
| 1.06471 | ND<0 | 1.06471 | 141 | 55 | |

| | | | | | |
|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 141 | 55 | |
| ND<0 | ND<0 | 0 | 141 | 55 | |
| 1.16938 | ND<0 | 1.16938 | 142 | 55 | |
| 1.60744 | ND<0 | 1.60744 | 143 | 55 | |
| 0.932164 | ND<0 | 0.932164 | 144 | 55 | |
| 1.39377 | ND<0 | 1.39377 | 145 | 55 | |
| 1.16315 | ND<0 | 1.16315 | 146 | 55 | |
| 1.50408 | ND<0 | 1.50408 | 147 | 55 | |
| 1.40364 | ND<0 | 1.40364 | 148 | 55 | |
| 1.00063 | ND<0 | 1.00063 | 149 | 55 | |
| 1.28093 | ND<0 | 1.28093 | 150 | 55 | |
| 0.741937 | ND<0 | 0.741937 | 151 | 55 | |
| 1.06471 | ND<0 | 1.06471 | 152 | 55 | |

| | | | | | |
|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 152 | 55 | |
| 1.16938 | ND<0 | 1.16938 | 153 | 55 | |
| 1.60744 | ND<0 | 1.60744 | 154 | 55 | |
| 0.932164 | ND<0 | 0.932164 | 155 | 55 | |
| 1.39377 | ND<0 | 1.39377 | 156 | 55 | |
| 1.16315 | ND<0 | 1.16315 | 157 | 55 | |
| 1.50408 | ND<0 | 1.50408 | 158 | 55 | |
| 1.40364 | ND<0 | 1.40364 | 159 | 55 | |
| 1.00063 | ND<0 | 1.00063 | 160 | 55 | |

| | | | | | |
|---|---|---|---|---|---|
| 1.28093 | ND<0 | 1.28093 | 161 | 55 | |
| 0.741937 | ND<0 | 0.741937 | | 162 | 55 |
| 1.06471 | ND<0 | 1.06471 | 163 | 55 | |
| | | | | | |
| 1.16938 | ND<0 | 1.16938 | 164 | 55 | |
| 1.60744 | ND<0 | 1.60744 | 165 | 55 | |
| 0.932164 | ND<0 | 0.932164 | | 166 | 55 |
| 1.39377 | ND<0 | 1.39377 | 167 | 55 | |
| 1.16315 | ND<0 | 1.16315 | 168 | 55 | |
| 1.50408 | ND<0 | 1.50408 | 169 | 55 | |
| 1.40364 | ND<0 | 1.40364 | 170 | 55 | |
| 1.00063 | ND<0 | 1.00063 | 171 | 55 | |
| 1.28093 | ND<0 | 1.28093 | 172 | 55 | |
| 0.741937 | ND<0 | 0.741937 | | 173 | 55 |
| 1.06471 | ND<0 | 1.06471 | 174 | 55 | |
| | | | | | |
| 1.60744 | 1.16938 | 0.438055 | | 175 | 55 |
| 0.932164 | 1.16938 | -0.237217 | | 175 | 56 |
| 1.39377 | 1.16938 | 0.224385 | | 176 | 56 |
| 1.16315 | 1.16938 | -0.00623055 | | 176 | 57 |
| 1.50408 | 1.16938 | 0.334696 | | 177 | 57 |
| 1.40364 | 1.16938 | 0.234262 | | 178 | 57 |
| 1.00063 | 1.16938 | -0.168749 | | 178 | 58 |
| 1.28093 | 1.16938 | 0.111552 | | 179 | 58 |
| 0.741937 | 1.16938 | -0.427444 | | 179 | 59 |
| 1.06471 | 1.16938 | -0.104671 | | 179 | 60 |
| | | | | | |
| 0.932164 | 1.60744 | -0.675272 | | 179 | 61 |
| 1.39377 | 1.60744 | -0.21367179 | | 62 | |
| 1.16315 | 1.60744 | -0.444285 | | 179 | 63 |
| 1.50408 | 1.60744 | -0.103359 | | 179 | 64 |
| 1.40364 | 1.60744 | -0.203793 | | 179 | 65 |
| 1.00063 | 1.60744 | -0.606804 | | 179 | 66 |
| 1.28093 | 1.60744 | -0.326502 | | 179 | 67 |
| 0.741937 | 1.60744 | -0.865499 | | 179 | 68 |
| 1.06471 | 1.60744 | -0.542725 | | 179 | 69 |
| | | | | | |
| 1.39377 | 0.932164 | 0.461602 | | 180 | 69 |
| 1.16315 | 0.932164 | 0.230987 | | 181 | 69 |
| 1.50408 | 0.932164 | 0.571913 | | 182 | 69 |
| 1.40364 | 0.932164 | 0.471479 | | 183 | 69 |
| 1.00063 | 0.932164 | 0.0684678 | | 184 | 69 |
| 1.28093 | 0.932164 | 0.34877 | 185 | 69 | |
| 0.741937 | 0.932164 | -0.190227 | | 185 | 70 |
| 1.06471 | 0.932164 | 0.132547 | | 186 | 70 |
| | | | | | |
| 1.16315 | 1.39377 | -0.230616 | | 186 | 71 |
| 1.50408 | 1.39377 | 0.110311 | | 187 | 71 |
| 1.40364 | 1.39377 | 0.00987662 | | 188 | 71 |
| 1.00063 | 1.39377 | -0.393134 | | 188 | 72 |
| 1.28093 | 1.39377 | -0.112833 | | 188 | 73 |
| 0.741937 | 1.39377 | -0.651829 | | 188 | 74 |
| 1.06471 | 1.39377 | -0.329056 | | 188 | 75 |
| | | | | | |
| 1.50408 | 1.16315 | 0.340927 | | 189 | 75 |
| 1.40364 | 1.16315 | 0.240492 | | 190 | 75 |
| 1.00063 | 1.16315 | -0.162519 | | 190 | 76 |
| 1.28093 | 1.16315 | 0.117783 | | 191 | 76 |
| 0.741937 | 1.16315 | -0.421213 | | 191 | 77 |
| 1.06471 | 1.16315 | -0.0984401 | | 191 | 78 |

| | | | | |
|---|---|---|---|---|
| 1.40364 | 1.50408 | -0.100434 | 191 | 79 |
| 1.00063 | 1.50408 | -0.503446 | 191 | 80 |
| 1.28093 | 1.50408 | -0.223144 | 191 | 81 |
| 0.741937 | 1.50408 | -0.76214191 | 82 | |
| 1.06471 | 1.50408 | -0.439367 | 191 | 83 |
| | | | | |
| 1.00063 | 1.40364 | -0.403011 | 191 | 84 |
| 1.28093 | 1.40364 | -0.122709 | 191 | 85 |
| 0.741937 | 1.40364 | -0.661706 | 191 | 86 |
| 1.06471 | 1.40364 | -0.338932 | 191 | 87 |
| | | | | |
| 1.28093 | 1.00063 | 0.280302 | 192 | 87 |
| 0.741937 | 1.00063 | -0.258695 | 192 | 88 |
| 1.06471 | 1.00063 | 0.0640789 | 193 | 88 |
| | | | | |
| 0.741937 | 1.28093 | -0.538997 | 193 | 89 |
| 1.06471 | 1.28093 | -0.216223 | 193 | 90 |
| | | | | |
| 1.06471 | 0.741937 | 0.322773 | 194 | 90 |

S Statistic = 194 - 90 = 104

| Tied Group | Value | Members |
|---|---|---|
| 1 | 0 | 12 |
| 2 | 1.28093 | 2 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |
| 11/19/1996 | 1 |
| 12/19/1996 | 1 |
| 3/24/1997 | 1 |
| 9/24/1997 | 1 |
| 4/7/1998 | 1 |
| 9/23/1998 | 1 |
| 3/16/1999 | 1 |
| 9/23/1999 | 1 |
| 3/15/2000 | 1 |
| 9/24/2003 | 1 |
| 3/11/2004 | 1 |
| 10/12/2004 | 1 |
| 4/1/2005 | 1 |
| 10/25/2005 | 1 |
| 4/29/2006 | 1 |
| 11/18/2006 | 1 |
| 5/23/2007 | 1 |
| 11/28/2007 | 1 |
| 6/5/2008 | 1 |
| 11/20/2008 | 1 |
| 6/11/2009 | 1 |
| 6/30/2010 | 1 |
| 11/12/2010 | 1 |

There are 0 time periods with multiple data

A = 3846
B = 0
C = 1320

D = 0
E = 134
F = 0
a = 41418
b = 157950
c = 1404
Group Variance = 2087.33
Z-Score = 2.25445
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|2.25445| > 1.97737 indicating a trend

# Mann-Kendall Trend Analysis

## Parameter: Benzene

## Location: MW-9

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | Positives | Negatives | |
|---|---|---|---|---|---|
| 0.955511 | | 0.916291 | 0.0392207 | 1 | 0 |
| 1.09861 | | 0.916291 | 0.182322 | 2 | 0 |
| 1.09861 | | 0.916291 | 0.182322 | 3 | 0 |
| ND<0 | 0.916291 | -0.916291 | 3 | 1 | |
| ND<0 | 0.916291 | -0.916291 | 3 | 2 | |
| ND<0 | 0.916291 | -0.916291 | 3 | 3 | |
| ND<0 | 0.916291 | -0.916291 | 3 | 4 | |
| ND<0 | 0.916291 | -0.916291 | 3 | 5 | |
| ND<0 | 0.916291 | -0.916291 | 3 | 6 | |
| 0.788457 | | 0.916291 | -0.127833 | 3 | 7 |
| ND<0 | 0.916291 | -0.916291 | 3 | 8 | |
| ND<0 | 0.916291 | -0.916291 | 3 | 9 | |
| ND<0 | 0.916291 | -0.916291 | 3 | 10 | |
| ND<0 | 0.916291 | -0.916291 | 3 | 11 | |
| ND<0 | 0.916291 | -0.916291 | 3 | 12 | |
| 0.652325 J | | 0.916291 | -0.263966 | 3 | 13 |
| 0.0861777 J | | 0.916291 | -0.830113 | 3 | 14 |
| -0.34249 J | | 0.916291 | -1.258783 | 15 | |
| -0.223144 J | | 0.916291 | -1.139433 | 16 | |
| 0.788457 | | 0.916291 | -0.127833 | 3 | 17 |
| 0.431782 J | | 0.916291 | -0.484508 | 3 | 18 |
| ND<0 | 0.916291 | -0.916291 | 3 | 19 | |
| 0.300105 J | | 0.916291 | -0.616186 | 3 | 20 |
| 0.641854 | | 0.916291 | -0.274437 | 3 | 21 |
| 0.336472 | | 0.916291 | -0.579818 | 3 | 22 |
| 0.587787 | | 0.916291 | -0.328504 | 3 | 23 |
| 0.182322 | | 0.916291 | -0.733969 | 3 | 24 |
| | | | | | |
| 1.09861 | | 0.955511 | 0.143101 | 4 | 24 |
| 1.09861 | | 0.955511 | 0.143101 | 5 | 24 |
| ND<0 | 0.955511 | -0.955511 | 5 | 25 | |
| ND<0 | 0.955511 | -0.955511 | 5 | 26 | |
| ND<0 | 0.955511 | -0.955511 | 5 | 27 | |
| ND<0 | 0.955511 | -0.955511 | 5 | 28 | |
| ND<0 | 0.955511 | -0.955511 | 5 | 29 | |
| ND<0 | 0.955511 | -0.955511 | 5 | 30 | |
| 0.788457 | | 0.955511 | -0.167054 | 5 | 31 |
| ND<0 | 0.955511 | -0.955511 | 5 | 32 | |
| ND<0 | 0.955511 | -0.955511 | 5 | 33 | |
| ND<0 | 0.955511 | -0.955511 | 5 | 34 | |
| ND<0 | 0.955511 | -0.955511 | 5 | 35 | |
| ND<0 | 0.955511 | -0.955511 | 5 | 36 | |
| 0.652325 J | | 0.955511 | -0.303186 | 5 | 37 |
| 0.0861777 J | | 0.955511 | -0.869334 | 5 | 38 |
| -0.34249 J | | 0.955511 | -1.298 5 | 39 | |
| -0.223144 J | | 0.955511 | -1.178655 | 40 | |
| 0.788457 | | 0.955511 | -0.167054 | 5 | 41 |
| 0.431782 J | | 0.955511 | -0.523729 | 5 | 42 |

| | | | | | |
|---|---|---|---|---|---|
| ND<0 | 0.955511 | -0.955511 | 5 | 43 | |
| 0.300105 J | 0.955511 | -0.655407 | 5 | 44 | |
| 0.641854 | 0.955511 | -0.313658 | 5 | 45 | |
| 0.336472 | 0.955511 | -0.619039 | 5 | 46 | |
| 0.587787 | 0.955511 | -0.367725 | 5 | 47 | |
| 0.182322 | 0.955511 | -0.773195 | 48 | | |
| | | | | | |
| 1.09861 | 1.09861 | 0 | 5 | 48 | |
| ND<0 | 1.09861 | -1.098615 | 49 | | |
| ND<0 | 1.09861 | -1.098615 | 50 | | |
| ND<0 | 1.09861 | -1.098615 | 51 | | |
| ND<0 | 1.09861 | -1.098615 | 52 | | |
| ND<0 | 1.09861 | -1.098615 | 53 | | |
| ND<0 | 1.09861 | -1.098615 | 54 | | |
| 0.788457 | 1.09861 | -0.310155 | 5 | 55 | |
| ND<0 | 1.09861 | -1.098615 | 56 | | |
| ND<0 | 1.09861 | -1.098615 | 57 | | |
| ND<0 | 1.09861 | -1.098615 | 58 | | |
| ND<0 | 1.09861 | -1.098615 | 59 | | |
| ND<0 | 1.09861 | -1.098615 | 60 | | |
| 0.652325 J | 1.09861 | -0.446287 | 5 | 61 | |
| 0.0861777 J | 1.09861 | -1.012435 | 62 | | |
| -0.34249 J | 1.09861 | -1.4411 5 | 63 | | |
| -0.223144 J | 1.09861 | -1.321765 | 64 | | |
| 0.788457 | 1.09861 | -0.310155 | 5 | 65 | |
| 0.431782 J | 1.09861 | -0.666835 | 66 | | |
| ND<0 | 1.09861 | -1.098615 | 67 | | |
| 0.300105 J | 1.09861 | -0.798508 | 5 | 68 | |
| 0.641854 | 1.09861 | -0.456758 | 5 | 69 | |
| 0.336472 | 1.09861 | -0.762145 | 70 | | |
| 0.587787 | 1.09861 | -0.510826 | 5 | 71 | |
| 0.182322 | 1.09861 | -0.916291 | 5 | 72 | |
| | | | | | |
| ND<0 | 1.09861 | -1.098615 | 73 | | |
| ND<0 | 1.09861 | -1.098615 | 74 | | |
| ND<0 | 1.09861 | -1.098615 | 75 | | |
| ND<0 | 1.09861 | -1.098615 | 76 | | |
| ND<0 | 1.09861 | -1.098615 | 77 | | |
| ND<0 | 1.09861 | -1.098615 | 78 | | |
| 0.788457 | 1.09861 | -0.310155 | 5 | 79 | |
| ND<0 | 1.09861 | -1.098615 | 80 | | |
| ND<0 | 1.09861 | -1.098615 | 81 | | |
| ND<0 | 1.09861 | -1.098615 | 82 | | |
| ND<0 | 1.09861 | -1.098615 | 83 | | |
| ND<0 | 1.09861 | -1.098615 | 84 | | |
| 0.652325 J | 1.09861 | -0.446287 | 5 | 85 | |
| 0.0861777 J | 1.09861 | -1.012435 | 86 | | |
| -0.34249 J | 1.09861 | -1.4411 5 | 87 | | |
| -0.223144 J | 1.09861 | -1.321765 | 88 | | |
| 0.788457 | 1.09861 | -0.310155 | 5 | 89 | |
| 0.431782 J | 1.09861 | -0.666835 | 90 | | |
| ND<0 | 1.09861 | -1.098615 | 91 | | |
| 0.300105 J | 1.09861 | -0.798508 | 5 | 92 | |
| 0.641854 | 1.09861 | -0.456758 | 5 | 93 | |
| 0.336472 | 1.09861 | -0.762145 | 94 | | |
| 0.587787 | 1.09861 | -0.510826 | 5 | 95 | |
| 0.182322 | 1.09861 | -0.916291 | 5 | 96 | |
| | | | | | |
| ND<0 | ND<0 | 0 | 5 | 96 | |
| ND<0 | ND<0 | 0 | 5 | 96 | |
| ND<0 | ND<0 | 0 | 5 | 96 | |
| ND<0 | ND<0 | 0 | 5 | 96 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 5 | 96 | | |
| 0.788457 | | ND<0 | 0.788457 | | 6 | 96 |
| ND<0 | ND<0 | 0 | 6 | 96 | | |
| ND<0 | ND<0 | 0 | 6 | 96 | | |
| ND<0 | ND<0 | 0 | 6 | 96 | | |
| ND<0 | ND<0 | 0 | 6 | 96 | | |
| ND<0 | ND<0 | 0 | 6 | 96 | | |
| 0.652325 J | | ND<0 | 0.652325 | | 7 | 96 |
| 0.0861777 J | | ND<0 | 0.0861777 | | 8 | 96 |
| -0.34249 J | | ND<0 | -0.342498 | | 97 | |
| -0.223144 J | | ND<0 | -0.223144 | | 8 | 98 |
| 0.788457 | | ND<0 | 0.788457 | | 9 | 98 |
| 0.431782 J | | ND<0 | 0.431782 | | 10 | 98 |
| ND<0 | ND<0 | 0 | 10 | 98 | | |
| 0.300105 J | | ND<0 | 0.300105 | | 11 | 98 |
| 0.641854 | | ND<0 | 0.641854 | | 12 | 98 |
| 0.336472 | | ND<0 | 0.336472 | | 13 | 98 |
| 0.587787 | | ND<0 | 0.587787 | | 14 | 98 |
| 0.182322 | | ND<0 | 0.182322 | | 15 | 98 |
| | | | | | | |
| ND<0 | ND<0 | 0 | 15 | 98 | | |
| ND<0 | ND<0 | 0 | 15 | 98 | | |
| ND<0 | ND<0 | 0 | 15 | 98 | | |
| ND<0 | ND<0 | 0 | 15 | 98 | | |
| 0.788457 | | ND<0 | 0.788457 | | 16 | 98 |
| ND<0 | ND<0 | 0 | 16 | 98 | | |
| ND<0 | ND<0 | 0 | 16 | 98 | | |
| ND<0 | ND<0 | 0 | 16 | 98 | | |
| ND<0 | ND<0 | 0 | 16 | 98 | | |
| ND<0 | ND<0 | 0 | 16 | 98 | | |
| 0.652325 J | | ND<0 | 0.652325 | | 17 | 98 |
| 0.0861777 J | | ND<0 | 0.0861777 | | 18 | 98 |
| -0.34249 J | | ND<0 | -0.3424918 | | 99 | |
| -0.223144 J | | ND<0 | -0.223144 | | 18 | 100 |
| 0.788457 | | ND<0 | 0.788457 | | 19 | 100 |
| 0.431782 J | | ND<0 | 0.431782 | | 20 | 100 |
| ND<0 | ND<0 | 0 | 20 | 100 | | |
| 0.300105 J | | ND<0 | 0.300105 | | 21 | 100 |
| 0.641854 | | ND<0 | 0.641854 | | 22 | 100 |
| 0.336472 | | ND<0 | 0.336472 | | 23 | 100 |
| 0.587787 | | ND<0 | 0.587787 | | 24 | 100 |
| 0.182322 | | ND<0 | 0.182322 | | 25 | 100 |
| | | | | | | |
| ND<0 | ND<0 | 0 | 25 | 100 | | |
| ND<0 | ND<0 | 0 | 25 | 100 | | |
| ND<0 | ND<0 | 0 | 25 | 100 | | |
| 0.788457 | | ND<0 | 0.788457 | | 26 | 100 |
| ND<0 | ND<0 | 0 | 26 | 100 | | |
| ND<0 | ND<0 | 0 | 26 | 100 | | |
| ND<0 | ND<0 | 0 | 26 | 100 | | |
| ND<0 | ND<0 | 0 | 26 | 100 | | |
| ND<0 | ND<0 | 0 | 26 | 100 | | |
| 0.652325 J | | ND<0 | 0.652325 | | 27 | 100 |
| 0.0861777 J | | ND<0 | 0.0861777 | | 28 | 100 |
| -0.34249 J | | ND<0 | -0.3424928 | | 101 | |
| -0.223144 J | | ND<0 | -0.223144 | | 28 | 102 |
| 0.788457 | | ND<0 | 0.788457 | | 29 | 102 |
| 0.431782 J | | ND<0 | 0.431782 | | 30 | 102 |
| ND<0 | ND<0 | 0 | 30 | 102 | | |
| 0.300105 J | | ND<0 | 0.300105 | | 31 | 102 |
| 0.641854 | | ND<0 | 0.641854 | | 32 | 102 |
| 0.336472 | | ND<0 | 0.336472 | | 33 | 102 |

| | | | | | |
|---|---|---|---|---|---|
| 0.587787 | | ND<0 | 0.587787 | 34 | 102 |
| 0.182322 | | ND<0 | 0.182322 | 35 | 102 |
| | | | | | |
| ND<0 | ND<0 | 0 | 35 | 102 | |
| ND<0 | ND<0 | 0 | 35 | 102 | |
| 0.788457 | | ND<0 | 0.788457 | 36 | 102 |
| ND<0 | ND<0 | 0 | 36 | 102 | |
| ND<0 | ND<0 | 0 | 36 | 102 | |
| ND<0 | ND<0 | 0 | 36 | 102 | |
| ND<0 | ND<0 | 0 | 36 | 102 | |
| ND<0 | ND<0 | 0 | 36 | 102 | |
| 0.652325 J | | ND<0 | 0.652325 | 37 | 102 |
| 0.0861777 J | | ND<0 | 0.0861777 | 38 | 102 |
| -0.34249 J | | ND<0 | -0.3424938 | 103 | |
| -0.223144 J | | ND<0 | -0.223144 | 38 | 104 |
| 0.788457 | | ND<0 | 0.788457 | 39 | 104 |
| 0.431782 J | | ND<0 | 0.431782 | 40 | 104 |
| ND<0 | ND<0 | 0 | 40 | 104 | |
| 0.300105 J | | ND<0 | 0.300105 | 41 | 104 |
| 0.641854 | | ND<0 | 0.641854 | 42 | 104 |
| 0.336472 | | ND<0 | 0.336472 | 43 | 104 |
| 0.587787 | | ND<0 | 0.587787 | 44 | 104 |
| 0.182322 | | ND<0 | 0.182322 | 45 | 104 |
| | | | | | |
| ND<0 | ND<0 | 0 | 45 | 104 | |
| 0.788457 | | ND<0 | 0.788457 | 46 | 104 |
| ND<0 | ND<0 | 0 | 46 | 104 | |
| ND<0 | ND<0 | 0 | 46 | 104 | |
| ND<0 | ND<0 | 0 | 46 | 104 | |
| ND<0 | ND<0 | 0 | 46 | 104 | |
| ND<0 | ND<0 | 0 | 46 | 104 | |
| 0.652325 J | | ND<0 | 0.652325 | 47 | 104 |
| 0.0861777 J | | ND<0 | 0.0861777 | 48 | 104 |
| -0.34249 J | | ND<0 | -0.3424948 | 105 | |
| -0.223144 J | | ND<0 | -0.223144 | 48 | 106 |
| 0.788457 | | ND<0 | 0.788457 | 49 | 106 |
| 0.431782 J | | ND<0 | 0.431782 | 50 | 106 |
| ND<0 | ND<0 | 0 | 50 | 106 | |
| 0.300105 J | | ND<0 | 0.300105 | 51 | 106 |
| 0.641854 | | ND<0 | 0.641854 | 52 | 106 |
| 0.336472 | | ND<0 | 0.336472 | 53 | 106 |
| 0.587787 | | ND<0 | 0.587787 | 54 | 106 |
| 0.182322 | | ND<0 | 0.182322 | 55 | 106 |
| | | | | | |
| 0.788457 | | ND<0 | 0.788457 | 56 | 106 |
| ND<0 | ND<0 | 0 | 56 | 106 | |
| ND<0 | ND<0 | 0 | 56 | 106 | |
| ND<0 | ND<0 | 0 | 56 | 106 | |
| ND<0 | ND<0 | 0 | 56 | 106 | |
| ND<0 | ND<0 | 0 | 56 | 106 | |
| 0.652325 J | | ND<0 | 0.652325 | 57 | 106 |
| 0.0861777 J | | ND<0 | 0.0861777 | 58 | 106 |
| -0.34249 J | | ND<0 | -0.3424958 | 107 | |
| -0.223144 J | | ND<0 | -0.223144 | 58 | 108 |
| 0.788457 | | ND<0 | 0.788457 | 59 | 108 |
| 0.431782 J | | ND<0 | 0.431782 | 60 | 108 |
| ND<0 | ND<0 | 0 | 60 | 108 | |
| 0.300105 J | | ND<0 | 0.300105 | 61 | 108 |
| 0.641854 | | ND<0 | 0.641854 | 62 | 108 |
| 0.336472 | | ND<0 | 0.336472 | 63 | 108 |
| 0.587787 | | ND<0 | 0.587787 | 64 | 108 |
| 0.182322 | | ND<0 | 0.182322 | 65 | 108 |

| | | | | |
|---|---|---|---|---|
| ND<0 | 0.788457 | -0.788457 | 65 | 109 |
| ND<0 | 0.788457 | -0.788457 | 65 | 110 |
| ND<0 | 0.788457 | -0.788457 | 65 | 111 |
| ND<0 | 0.788457 | -0.788457 | 65 | 112 |
| ND<0 | 0.788457 | -0.788457 | 65 | 113 |
| 0.652325 J | 0.788457 | -0.136132 | 65 | 114 |
| 0.0861777 J | 0.788457 | -0.702265 | 115 | |
| -0.34249 J | 0.788457 | -1.130965 | 116 | |
| -0.223144 J | 0.788457 | -1.0116 65 | 117 | |
| 0.788457 | 0.788457 | 0 65 | 117 | |
| 0.431782 J | 0.788457 | -0.356675 | 65 | 118 |
| ND<0 | 0.788457 | -0.788457 | 65 | 119 |
| 0.300105 J | 0.788457 | -0.488353 | 65 | 120 |
| 0.641854 | 0.788457 | -0.146603 | 65 | 121 |
| 0.336472 | 0.788457 | -0.451985 | 65 | 122 |
| 0.587787 | 0.788457 | -0.200671 | 65 | 123 |
| 0.182322 | 0.788457 | -0.606136 | 65 | 124 |

| | | | | |
|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 65 | 124 |
| ND<0 | ND<0 | 0 | 65 | 124 |
| ND<0 | ND<0 | 0 | 65 | 124 |
| ND<0 | ND<0 | 0 | 65 | 124 |
| 0.652325 J | ND<0 | 0.652325 | 66 | 124 |
| 0.0861777 J | ND<0 | 0.0861777 | 67 | 124 |
| -0.34249 J | ND<0 | -0.3424967 | 125 | |
| -0.223144 J | ND<0 | -0.223144 | 67 | 126 |
| 0.788457 | ND<0 | 0.788457 | 68 | 126 |
| 0.431782 J | ND<0 | 0.431782 | 69 | 126 |
| ND<0 | ND<0 | 0 | 69 | 126 |
| 0.300105 J | ND<0 | 0.300105 | 70 | 126 |
| 0.641854 | ND<0 | 0.641854 | 71 | 126 |
| 0.336472 | ND<0 | 0.336472 | 72 | 126 |
| 0.587787 | ND<0 | 0.587787 | 73 | 126 |
| 0.182322 | ND<0 | 0.182322 | 74 | 126 |

| | | | | |
|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 74 | 126 |
| ND<0 | ND<0 | 0 | 74 | 126 |
| ND<0 | ND<0 | 0 | 74 | 126 |
| 0.652325 J | ND<0 | 0.652325 | 75 | 126 |
| 0.0861777 J | ND<0 | 0.0861777 | 76 | 126 |
| -0.34249 J | ND<0 | -0.3424976 | 127 | |
| -0.223144 J | ND<0 | -0.223144 | 76 | 128 |
| 0.788457 | ND<0 | 0.788457 | 77 | 128 |
| 0.431782 J | ND<0 | 0.431782 | 78 | 128 |
| ND<0 | ND<0 | 0 | 78 | 128 |
| 0.300105 J | ND<0 | 0.300105 | 79 | 128 |
| 0.641854 | ND<0 | 0.641854 | 80 | 128 |
| 0.336472 | ND<0 | 0.336472 | 81 | 128 |
| 0.587787 | ND<0 | 0.587787 | 82 | 128 |
| 0.182322 | ND<0 | 0.182322 | 83 | 128 |

| | | | | |
|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 83 | 128 |
| ND<0 | ND<0 | 0 | 83 | 128 |
| 0.652325 J | ND<0 | 0.652325 | 84 | 128 |
| 0.0861777 J | ND<0 | 0.0861777 | 85 | 128 |
| -0.34249 J | ND<0 | -0.3424985 | 129 | |
| -0.223144 J | ND<0 | -0.223144 | 85 | 130 |
| 0.788457 | ND<0 | 0.788457 | 86 | 130 |
| 0.431782 J | ND<0 | 0.431782 | 87 | 130 |
| ND<0 | ND<0 | 0 | 87 | 130 |
| 0.300105 J | ND<0 | 0.300105 | 88 | 130 |

| | | | | |
|---|---|---|---|---|
| 0.641854 | ND<0 | 0.641854 | 89 | 130 |
| 0.336472 | ND<0 | 0.336472 | 90 | 130 |
| 0.587787 | ND<0 | 0.587787 | 91 | 130 |
| 0.182322 | ND<0 | 0.182322 | 92 | 130 |

| | | | | |
|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 92 | 130 |
| 0.652325 J | ND<0 | 0.652325 | 93 | 130 |
| 0.0861777 J | ND<0 | 0.0861777 | 94 | 130 |
| -0.34249 J | ND<0 | -0.3424994 | 131 | |
| -0.223144 J | ND<0 | -0.223144 | 94 | 132 |
| 0.788457 | ND<0 | 0.788457 | 95 | 132 |
| 0.431782 J | ND<0 | 0.431782 | 96 | 132 |
| ND<0 | ND<0 | 0 | 96 | 132 |
| 0.300105 J | ND<0 | 0.300105 | 97 | 132 |
| 0.641854 | ND<0 | 0.641854 | 98 | 132 |
| 0.336472 | ND<0 | 0.336472 | 99 | 132 |
| 0.587787 | ND<0 | 0.587787 | 100 | 132 |
| 0.182322 | ND<0 | 0.182322 | 101 | 132 |

| | | | | |
|---|---|---|---|---|
| 0.652325 J | ND<0 | 0.652325 | 102 | 132 |
| 0.0861777 J | ND<0 | 0.0861777 | 103 | 132 |
| -0.34249 J | ND<0 | -0.34249103 | 133 | |
| -0.223144 J | ND<0 | -0.223144 | 103 | 134 |
| 0.788457 | ND<0 | 0.788457 | 104 | 134 |
| 0.431782 J | ND<0 | 0.431782 | 105 | 134 |
| ND<0 | ND<0 | 0 | 105 | 134 |
| 0.300105 J | ND<0 | 0.300105 | 106 | 134 |
| 0.641854 | ND<0 | 0.641854 | 107 | 134 |
| 0.336472 | ND<0 | 0.336472 | 108 | 134 |
| 0.587787 | ND<0 | 0.587787 | 109 | 134 |
| 0.182322 | ND<0 | 0.182322 | 110 | 134 |

| | | | | |
|---|---|---|---|---|
| 0.0861777 J | 0.652325 J | -0.566147 | 110 | 135 |
| -0.34249 J | 0.652325 J | -0.994815 | 110 | 136 |
| -0.223144 J | 0.652325 J | -0.875469 | 110 | 137 |
| 0.788457 | 0.652325 J | 0.136132 | 111 | 137 |
| 0.431782 J | 0.652325 J | -0.220543 | 111 | 138 |
| ND<0 | 0.652325 J | -0.652325 | 111 | 139 |
| 0.300105 J | 0.652325 J | -0.352221 | 111 | 140 |
| 0.641854 | 0.652325 J | -0.0104713 | 111 | 141 |
| 0.336472 | 0.652325 J | -0.315853 | 111 | 142 |
| 0.587787 | 0.652325 J | -0.0645385 | 111 | 143 |
| 0.182322 | 0.652325 J | -0.470004 | 111 | 144 |

| | | | | |
|---|---|---|---|---|
| -0.34249 J | 0.0861777 J | -0.428668 | 111 | 145 |
| -0.223144 J | 0.0861777 J | -0.309321 | 111 | 146 |
| 0.788457 | 0.0861777 J | 0.70228 | 112 | 146 |
| 0.431782 J | 0.0861777 J | 0.345605 | 113 | 146 |
| ND<0 | 0.0861777 J | -0.0861777 | 113 | 147 |
| 0.300105 J | 0.0861777 J | 0.213927 | 114 | 147 |
| 0.641854 | 0.0861777 J | 0.555676 | 115 | 147 |
| 0.336472 | 0.0861777 J | 0.250295 | 116 | 147 |
| 0.587787 | 0.0861777 J | 0.501609 | 117 | 147 |
| 0.182322 | 0.0861777 J | 0.0961439 | 118 | 147 |

| | | | | |
|---|---|---|---|---|
| -0.223144 J | -0.34249 J | 0.119347 | 119 | 147 |
| 0.788457 | -0.34249 J | 1.13095 | 120 | 147 |
| 0.431782 J | -0.34249 J | 0.774273 | 121 | 147 |
| ND<0 | -0.34249 J | 0.34249 | 122 | 147 |
| 0.300105 J | -0.34249 J | 0.642595 | 123 | 147 |
| 0.641854 | -0.34249 J | 0.984344 | 124 | 147 |
| 0.336472 | -0.34249 J | 0.678963 | 125 | 147 |

| | | | | |
|---|---|---|---|---|
| 0.587787 | -0.34249 J | 0.930277 | 126 | 147 |
| 0.182322 | -0.34249 J | 0.524812 | 127 | 147 |
| | | | | |
| 0.788457 | -0.223144 J | 1.0116 | 128 | 147 |
| 0.431782 J | -0.223144 J | 0.654926 | 129 | 147 |
| ND<0 | -0.223144 J | 0.223144 | 130 | 147 |
| 0.300105 J | -0.223144 J | 0.523248 | 131 | 147 |
| 0.641854 | -0.223144 J | 0.864997 | 132 | 147 |
| 0.336472 | -0.223144 J | 0.559616 | 133 | 147 |
| 0.587787 | -0.223144 J | 0.81093 | 134 | 147 |
| 0.182322 | -0.223144 J | 0.405465 | 135 | 147 |
| | | | | |
| 0.431782 J | 0.788457 | -0.356675 | 135 | 148 |
| ND<0 | 0.788457 | -0.788457 | 135 | 149 |
| 0.300105 J | 0.788457 | -0.488353 | 135 | 150 |
| 0.641854 | 0.788457 | -0.146603 | 135 | 151 |
| 0.336472 | 0.788457 | -0.451985 | 135 | 152 |
| 0.587787 | 0.788457 | -0.200671 | 135 | 153 |
| 0.182322 | 0.788457 | -0.606136 | 135 | 154 |
| | | | | |
| ND<0 | 0.431782 J | -0.431782 | 135 | 155 |
| 0.300105 J | 0.431782 J | -0.131678 | 135 | 156 |
| 0.641854 | 0.431782 J | 0.210071 | 136 | 156 |
| 0.336472 | 0.431782 J | -0.0953102 | 136 | 157 |
| 0.587787 | 0.431782 J | 0.156004 | 137 | 157 |
| 0.182322 | 0.431782 J | -0.249461 | 137 | 158 |
| | | | | |
| 0.300105 J | ND<0 | 0.300105 | 138 | 158 |
| 0.641854 | ND<0 | 0.641854 | 139 | 158 |
| 0.336472 | ND<0 | 0.336472 | 140 | 158 |
| 0.587787 | ND<0 | 0.587787 | 141 | 158 |
| 0.182322 | ND<0 | 0.182322 | 142 | 158 |
| | | | | |
| 0.641854 | 0.300105 J | 0.341749 | 143 | 158 |
| 0.336472 | 0.300105 J | 0.0363676 | 144 | 158 |
| 0.587787 | 0.300105 J | 0.287682 | 145 | 158 |
| 0.182322 | 0.300105 J | -0.117783 | 145 | 159 |
| | | | | |
| 0.336472 | 0.641854 | -0.305382 | 145 | 160 |
| 0.587787 | 0.641854 | -0.0540672 | 145 | 161 |
| 0.182322 | 0.641854 | -0.459532 | 145 | 162 |
| | | | | |
| 0.587787 | 0.336472 | 0.251314 | 146 | 162 |
| 0.182322 | 0.336472 | -0.154151 | 146 | 163 |
| | | | | |
| 0.182322 | 0.587787 | -0.405465 | 146 | 164 |

S Statistic = 146 - 164 = -18

| Tied Group | Value | Members |
|---|---|---|
| 1 | 1.09861 | 2 |
| 2 | 0 | 12 |
| 3 | 0.788457 | 2 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |

| | | |
|---|---|---|
| 11/19/1996 | | 1 |
| 12/19/1996 | | 1 |
| 3/24/1997 | | 1 |
| 9/24/1997 | | 1 |
| 4/7/1998 | 1 | |
| 9/23/1998 | | 1 |
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 11/16/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 1 |

There are 0 time periods with multiple data

A = 3864
B = 0
C = 1320
D = 0
E = 136
F = 0
a = 46116
b = 176904
c = 1512
Group Variance = 2347.33
Z-Score = -0.350882
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-0.350882| <= 1.97737 indicating no evidence of a trend

# Mann-Kendall Trend Analysis

## Parameter: Benzene

## Location: MW-11R

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | Positives | Negatives |
|---|---|---|---|---|
| 1.84055 | 0.741937 | 1.09861 | 1 | 0 |
| 1.79176 | 0.741937 | 1.04982 | 2 | 0 |
| 2.07944 | 0.741937 | 1.3375 | 3 | 0 |
| ND<0 | 0.741937 | -0.741937 | 3 | 1 |
| 2.19722 | 0.741937 | 1.45529 | 4 | 1 |
| ND<0 | 0.741937 | -0.741937 | 4 | 2 |
| ND<0 | 0.741937 | -0.741937 | 4 | 3 |
| ND<0 | 0.741937 | -0.741937 | 4 | 4 |
| 1.60944 | 0.741937 | 0.867501 | 5 | 4 |
| 1.60944 | 0.741937 | 0.867501 | 6 | 4 |
| ND<0 | 0.741937 | -0.741937 | 6 | 5 |
| ND<0 | 0.741937 | -0.741937 | 6 | 6 |
| ND<0 | 0.741937 | -0.741937 | 6 | 7 |
| ND<0 | 0.741937 | -0.741937 | 6 | 8 |
| ND<0 | 0.741937 | -0.741937 | 6 | 9 |
| 1.5217 | 0.741937 | 0.779762 | 7 | 9 |
| 0.431782 J | 0.741937 | -0.310155 | 7 | 10 |
| -0.18633 J | 0.741937 | -0.928267 | 7 | 11 |
| -0.0725707 J | 0.741937 | -0.814508 | 7 | 12 |
| 0.741937 | 0.741937 | 0 | 7 | 12 |
| 0.262364 J | 0.741937 | -0.479573 | 7 | 13 |
| ND<0 | 0.741937 | -0.741937 | 7 | 14 |
| ND<0 | 0.741937 | -0.741937 | 7 | 15 |
| -0.527633 J | 0.741937 | -1.269577 | 7 | 16 |
| ND<-2.07944 | 0.741937 | -2.821387 | 7 | 17 |
| -0.210721 J | 0.741937 | -0.952658 | 7 | 18 |
| ND<-2.07944 U | 0.741937 | -2.821387 | 7 | 19 |
| | | | | |
| 1.79176 | 1.84055 | -0.0487902 | 7 | 20 |
| 2.07944 | 1.84055 | 0.238892 | 8 | 20 |
| ND<0 | 1.84055 | -1.840558 | 21 | |
| 2.19722 | 1.84055 | 0.356675 | 9 | 21 |
| ND<0 | 1.84055 | -1.840559 | 22 | |
| ND<0 | 1.84055 | -1.840559 | 23 | |
| ND<0 | 1.84055 | -1.840559 | 24 | |
| 1.60944 | 1.84055 | -0.231112 | 9 | 25 |
| 1.60944 | 1.84055 | -0.231112 | 9 | 26 |
| ND<0 | 1.84055 | -1.840559 | 27 | |
| ND<0 | 1.84055 | -1.840559 | 28 | |
| ND<0 | 1.84055 | -1.840559 | 29 | |
| ND<0 | 1.84055 | -1.840559 | 30 | |
| ND<0 | 1.84055 | -1.840559 | 31 | |
| 1.5217 | 1.84055 | -0.318851 | 9 | 32 |
| 0.431782 J | 1.84055 | -1.408779 | 33 | |
| -0.18633 J | 1.84055 | -2.026889 | 34 | |
| -0.0725707 J | 1.84055 | -1.913129 | 35 | |
| 0.741937 | 1.84055 | -1.098619 | 36 | |
| 0.262364 J | 1.84055 | -1.578199 | 37 | |

| | | | | | |
|---|---|---|---|---|---|
| ND<0 | 1.84055 | -1.840559 | 38 | | |
| ND<0 | 1.84055 | -1.840559 | 39 | | |
| -0.527633 J | 1.84055 | -2.368189 | 40 | | |
| ND<-2.07944 | 1.84055 | -3.919999 | 41 | | |
| -0.210721 J | 1.84055 | -2.051279 | 42 | | |
| ND<-2.07944 U | 1.84055 | -3.919999 | 43 | | |
| | | | | | |
| 2.07944 | 1.79176 | 0.287682 | 10 | 43 | |
| ND<0 | 1.79176 | -1.7917610 | 44 | | |
| 2.19722 | 1.79176 | 0.405465 | 11 | 44 | |
| ND<0 | 1.79176 | -1.7917611 | 45 | | |
| ND<0 | 1.79176 | -1.7917611 | 46 | | |
| ND<0 | 1.79176 | -1.7917611 | 47 | | |
| 1.60944 | 1.79176 | -0.182322 | 11 | 48 | |
| 1.60944 | 1.79176 | -0.182322 | 11 | 49 | |
| ND<0 | 1.79176 | -1.7917611 | 50 | | |
| ND<0 | 1.79176 | -1.7917611 | 51 | | |
| ND<0 | 1.79176 | -1.7917611 | 52 | | |
| ND<0 | 1.79176 | -1.7917611 | 53 | | |
| ND<0 | 1.79176 | -1.7917611 | 54 | | |
| 1.5217 | 1.79176 | -0.2700611 | 55 | | |
| 0.431782 J | 1.79176 | -1.3599811 | 56 | | |
| -0.18633 J | 1.79176 | -1.9780911 | 57 | | |
| -0.0725707 J | 1.79176 | -1.8643311 | 58 | | |
| 0.741937 | 1.79176 | -1.0498211 | 59 | | |
| 0.262364 J | 1.79176 | -1.5294 11 | 60 | | |
| ND<0 | 1.79176 | -1.7917611 | 61 | | |
| ND<0 | 1.79176 | -1.7917611 | 62 | | |
| -0.527633 J | 1.79176 | -2.3193911 | 63 | | |
| ND<-2.07944 | 1.79176 | -3.8712 11 | 64 | | |
| -0.210721 J | 1.79176 | -2.0024811 | 65 | | |
| ND<-2.07944 U | 1.79176 | -3.8712 11 | 66 | | |
| | | | | | |
| ND<0 | 2.07944 | -2.0794411 | 67 | | |
| 2.19722 | 2.07944 | 0.117783 | 12 | 67 | |
| ND<0 | 2.07944 | -2.0794412 | 68 | | |
| ND<0 | 2.07944 | -2.0794412 | 69 | | |
| ND<0 | 2.07944 | -2.0794412 | 70 | | |
| 1.60944 | 2.07944 | -0.470004 | 12 | 71 | |
| 1.60944 | 2.07944 | -0.470004 | 12 | 72 | |
| ND<0 | 2.07944 | -2.0794412 | 73 | | |
| ND<0 | 2.07944 | -2.0794412 | 74 | | |
| ND<0 | 2.07944 | -2.0794412 | 75 | | |
| ND<0 | 2.07944 | -2.0794412 | 76 | | |
| ND<0 | 2.07944 | -2.0794412 | 77 | | |
| 1.5217 | 2.07944 | -0.557743 | 12 | 78 | |
| 0.431782 J | 2.07944 | -1.6476612 | 79 | | |
| -0.18633 J | 2.07944 | -2.2657712 | 80 | | |
| -0.0725707 J | 2.07944 | -2.1520112 | 81 | | |
| 0.741937 | 2.07944 | -1.3375 12 | 82 | | |
| 0.262364 J | 2.07944 | -1.8170812 | 83 | | |
| ND<0 | 2.07944 | -2.0794412 | 84 | | |
| ND<0 | 2.07944 | -2.0794412 | 85 | | |
| -0.527633 J | 2.07944 | -2.6070712 | 86 | | |
| ND<-2.07944 | 2.07944 | -4.1588812 | 87 | | |
| -0.210721 J | 2.07944 | -2.2901612 | 88 | | |
| ND<-2.07944 U | 2.07944 | -4.1588812 | 89 | | |
| | | | | | |
| 2.19722 | ND<0 | 2.19722 13 | 89 | | |
| ND<0 | ND<0 | 0 | 13 | 89 | |
| ND<0 | ND<0 | 0 | 13 | 89 | |
| ND<0 | ND<0 | 0 | 13 | 89 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1.60944 | | ND<0 | 1.60944 | 14 | 89 | |
| 1.60944 | | ND<0 | 1.60944 | 15 | 89 | |
| ND<0 | ND<0 | 0 | 15 | 89 | | |
| ND<0 | ND<0 | 0 | 15 | 89 | | |
| ND<0 | ND<0 | 0 | 15 | 89 | | |
| ND<0 | ND<0 | 0 | 15 | 89 | | |
| ND<0 | ND<0 | 0 | 15 | 89 | | |
| 1.5217 | ND<0 | 1.5217 | 16 | 89 | | |
| 0.431782 J | | ND<0 | 0.431782 | | 17 | 89 |
| -0.18633 J | | ND<0 | -0.1863317 | | 90 | |
| -0.0725707 J | | ND<0 | -0.0725707 | | 17 | 91 |
| 0.741937 | | ND<0 | 0.741937 | | 18 | 91 |
| 0.262364 J | | ND<0 | 0.262364 | | 19 | 91 |
| ND<0 | ND<0 | 0 | 19 | 91 | | |
| ND<0 | ND<0 | 0 | 19 | 91 | | |
| -0.527633 J | | ND<0 | -0.527633 | | 19 | 92 |
| ND<-2.07944 | | ND<0 | -2.0794419 | | 93 | |
| -0.210721 J | | ND<0 | -0.210721 | | 19 | 94 |
| ND<-2.07944 U | | ND<0 | -2.0794419 | | 95 | |
| | | | | | | |
| ND<0 | 2.19722 | | -2.1972219 | | 96 | |
| ND<0 | 2.19722 | | -2.1972219 | | 97 | |
| ND<0 | 2.19722 | | -2.1972219 | | 98 | |
| 1.60944 | | 2.19722 | | -0.587787 | 19 | 99 |
| 1.60944 | | 2.19722 | | -0.587787 | 19 | 100 |
| ND<0 | 2.19722 | | -2.1972219 | | 101 | |
| ND<0 | 2.19722 | | -2.1972219 | | 102 | |
| ND<0 | 2.19722 | | -2.1972219 | | 103 | |
| ND<0 | 2.19722 | | -2.1972219 | | 104 | |
| ND<0 | 2.19722 | | -2.1972219 | | 105 | |
| 1.5217 | 2.19722 | | -0.675526 | | 19 | 106 |
| 0.431782 J | | 2.19722 | | -1.7654 | 19 | 107 |
| -0.18633 J | | 2.19722 | | -2.3835 | 19 | 108 |
| -0.0725707 J | | 2.19722 | | -2.2698 | 19 | 109 |
| 0.741937 | | 2.19722 | | -1.4552 | 19 | 110 |
| 0.262364 J | | 2.19722 | | -1.9348 | 19 | 111 |
| ND<0 | 2.19722 | | -2.1972219 | | 112 | |
| ND<0 | 2.19722 | | -2.1972219 | | 113 | |
| -0.527633 J | | 2.19722 | | -2.7248 | 19 | 114 |
| ND<-2.07944 | | 2.19722 | | -4.2766 | 19 | 115 |
| -0.210721 J | | 2.19722 | | -2.4079 | 19 | 116 |
| ND<-2.07944 U | | 2.19722 | | -4.2766 | 19 | 117 |
| | | | | | | |
| ND<0 | ND<0 | 0 | 19 | 117 | | |
| ND<0 | ND<0 | 0 | 19 | 117 | | |
| 1.60944 | | ND<0 | 1.60944 | 20 | 117 | |
| 1.60944 | | ND<0 | 1.60944 | 21 | 117 | |
| ND<0 | ND<0 | 0 | 21 | 117 | | |
| ND<0 | ND<0 | 0 | 21 | 117 | | |
| ND<0 | ND<0 | 0 | 21 | 117 | | |
| ND<0 | ND<0 | 0 | 21 | 117 | | |
| ND<0 | ND<0 | 0 | 21 | 117 | | |
| 1.5217 | ND<0 | 1.5217 | 22 | 117 | | |
| 0.431782 J | | ND<0 | 0.431782 | | 23 | 117 |
| -0.18633 J | | ND<0 | -0.1863323 | | 118 | |
| -0.0725707 J | | ND<0 | -0.0725707 | | 23 | 119 |
| 0.741937 | | ND<0 | 0.741937 | | 24 | 119 |
| 0.262364 J | | ND<0 | 0.262364 | | 25 | 119 |
| ND<0 | ND<0 | 0 | 25 | 119 | | |
| ND<0 | ND<0 | 0 | 25 | 119 | | |
| -0.527633 J | | ND<0 | -0.527633 | | 25 | 120 |
| ND<-2.07944 | | ND<0 | -2.0794425 | | 121 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| -0.210721 J | | ND<0 | -0.210721 | | 25 | 122 |
| ND<-2.07944 U | | ND<0 | -2.0794 | 25 | 123 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 25 | 123 | | |
| 1.60944 | | ND<0 | 1.60944 | 26 | 123 | |
| 1.60944 | | ND<0 | 1.60944 | 27 | 123 | |
| ND<0 | ND<0 | 0 | 27 | 123 | | |
| ND<0 | ND<0 | 0 | 27 | 123 | | |
| ND<0 | ND<0 | 0 | 27 | 123 | | |
| ND<0 | ND<0 | 0 | 27 | 123 | | |
| ND<0 | ND<0 | 0 | 27 | 123 | | |
| 1.5217 | ND<0 | 1.5217 | 28 | 123 | | |
| 0.431782 J | | ND<0 | 0.431782 | | 29 | 123 |
| -0.18633 J | | ND<0 | -0.1863 | 29 | 124 | |
| -0.0725707 J | | ND<0 | -0.0725707 | | 29 | 125 |
| 0.741937 | | ND<0 | 0.741937 | | 30 | 125 |
| 0.262364 J | | ND<0 | 0.262364 | | 31 | 125 |
| ND<0 | ND<0 | 0 | 31 | 125 | | |
| ND<0 | ND<0 | 0 | 31 | 125 | | |
| -0.527633 J | | ND<0 | -0.527633 | | 31 | 126 |
| ND<-2.07944 | | ND<0 | -2.0794 | 31 | 127 | |
| -0.210721 J | | ND<0 | -0.210721 | | 31 | 128 |
| ND<-2.07944 U | | ND<0 | -2.0794 | 31 | 129 | |
| | | | | | | |
| 1.60944 | | ND<0 | 1.60944 | 32 | 129 | |
| 1.60944 | | ND<0 | 1.60944 | 33 | 129 | |
| ND<0 | ND<0 | 0 | 33 | 129 | | |
| ND<0 | ND<0 | 0 | 33 | 129 | | |
| ND<0 | ND<0 | 0 | 33 | 129 | | |
| ND<0 | ND<0 | 0 | 33 | 129 | | |
| ND<0 | ND<0 | 0 | 33 | 129 | | |
| 1.5217 | ND<0 | 1.5217 | 34 | 129 | | |
| 0.431782 J | | ND<0 | 0.431782 | | 35 | 129 |
| -0.18633 J | | ND<0 | -0.1863 | 35 | 130 | |
| -0.0725707 J | | ND<0 | -0.0725707 | | 35 | 131 |
| 0.741937 | | ND<0 | 0.741937 | | 36 | 131 |
| 0.262364 J | | ND<0 | 0.262364 | | 37 | 131 |
| ND<0 | ND<0 | 0 | 37 | 131 | | |
| ND<0 | ND<0 | 0 | 37 | 131 | | |
| -0.527633 J | | ND<0 | -0.527633 | | 37 | 132 |
| ND<-2.07944 | | ND<0 | -2.0794 | 37 | 133 | |
| -0.210721 J | | ND<0 | -0.210721 | | 37 | 134 |
| ND<-2.07944 U | | ND<0 | -2.0794 | 37 | 135 | |
| | | | | | | |
| 1.60944 | | 1.60944 | | 0 | 37 | 135 |
| ND<0 | 1.60944 | | -1.6094 | 37 | 136 | |
| ND<0 | 1.60944 | | -1.6094 | 37 | 137 | |
| ND<0 | 1.60944 | | -1.6094 | 37 | 138 | |
| ND<0 | 1.60944 | | -1.6094 | 37 | 139 | |
| ND<0 | 1.60944 | | -1.6094 | 37 | 140 | |
| 1.5217 | 1.60944 | | -0.0877 | 389 | 37 | 141 |
| 0.431782 J | | 1.60944 | | -1.1776 | 37 | 142 |
| -0.18633 J | | 1.60944 | | -1.7957 | 37 | 143 |
| -0.0725707 J | | 1.60944 | | -1.6820 | 137 | 144 |
| 0.741937 | | 1.60944 | | -0.867501 | 37 | 145 |
| 0.262364 J | | 1.60944 | | -1.3470 | 37 | 146 |
| ND<0 | 1.60944 | | -1.6094 | 37 | 147 | |
| ND<0 | 1.60944 | | -1.6094 | 37 | 148 | |
| -0.527633 J | | 1.60944 | | -2.1370 | 37 | 149 |
| ND<-2.07944 | | 1.60944 | | -3.6888 | 37 | 150 |
| -0.210721 J | | 1.60944 | | -1.8201 | 37 | 151 |
| ND<-2.07944 U | | 1.60944 | | -3.6888 | 37 | 152 |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | 1.60944 | -1.6094437 | 153 | | | |
| ND<0 | 1.60944 | -1.6094437 | 154 | | | |
| ND<0 | 1.60944 | -1.6094437 | 155 | | | |
| ND<0 | 1.60944 | -1.6094437 | 156 | | | |
| ND<0 | 1.60944 | -1.6094437 | 157 | | | |
| 1.5217 | 1.60944 | -0.0877389 | 37 | 158 | | |
| 0.431782 J | 1.60944 | -1.1776637 | 159 | | | |
| -0.18633 J | 1.60944 | -1.7957737 | 160 | | | |
| -0.0725707 J | 1.60944 | -1.6820137 | 161 | | | |
| 0.741937 | 1.60944 | -0.867501 | 37 | 162 | | |
| 0.262364 J | 1.60944 | -1.3470737 | 163 | | | |
| ND<0 | 1.60944 | -1.6094437 | 164 | | | |
| ND<0 | 1.60944 | -1.6094437 | 165 | | | |
| -0.527633 J | 1.60944 | -2.1370737 | 166 | | | |
| ND<-2.07944 | 1.60944 | -3.6888837 | 167 | | | |
| -0.210721 J | 1.60944 | -1.8201637 | 168 | | | |
| ND<-2.07944 U | 1.60944 | -3.6888837 | 169 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 37 | 169 | | |
| ND<0 | ND<0 | 0 | 37 | 169 | | |
| ND<0 | ND<0 | 0 | 37 | 169 | | |
| ND<0 | ND<0 | 0 | 37 | 169 | | |
| 1.5217 | ND<0 | 1.5217 | 38 | 169 | | |
| 0.431782 J | ND<0 | 0.431782 | 39 | 169 | | |
| -0.18633 J | ND<0 | -0.1863339 | 170 | | | |
| -0.0725707 J | ND<0 | -0.0725707 | 39 | 171 | | |
| 0.741937 | ND<0 | 0.741937 | 40 | 171 | | |
| 0.262364 J | ND<0 | 0.262364 | 41 | 171 | | |
| ND<0 | ND<0 | 0 | 41 | 171 | | |
| ND<0 | ND<0 | 0 | 41 | 171 | | |
| -0.527633 J | ND<0 | -0.527633 | 41 | 172 | | |
| ND<-2.07944 | ND<0 | -2.0794441 | 173 | | | |
| -0.210721 J | ND<0 | -0.210721 | 41 | 174 | | |
| ND<-2.07944 U | ND<0 | -2.0794441 | 175 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 41 | 175 | | |
| ND<0 | ND<0 | 0 | 41 | 175 | | |
| ND<0 | ND<0 | 0 | 41 | 175 | | |
| 1.5217 | ND<0 | 1.5217 | 42 | 175 | | |
| 0.431782 J | ND<0 | 0.431782 | 43 | 175 | | |
| -0.18633 J | ND<0 | -0.1863343 | 176 | | | |
| -0.0725707 J | ND<0 | -0.0725707 | 43 | 177 | | |
| 0.741937 | ND<0 | 0.741937 | 44 | 177 | | |
| 0.262364 J | ND<0 | 0.262364 | 45 | 177 | | |
| ND<0 | ND<0 | 0 | 45 | 177 | | |
| ND<0 | ND<0 | 0 | 45 | 177 | | |
| -0.527633 J | ND<0 | -0.527633 | 45 | 178 | | |
| ND<-2.07944 | ND<0 | -2.0794445 | 179 | | | |
| -0.210721 J | ND<0 | -0.210721 | 45 | 180 | | |
| ND<-2.07944 U | ND<0 | -2.0794445 | 181 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 45 | 181 | | |
| ND<0 | ND<0 | 0 | 45 | 181 | | |
| 1.5217 | ND<0 | 1.5217 | 46 | 181 | | |
| 0.431782 J | ND<0 | 0.431782 | 47 | 181 | | |
| -0.18633 J | ND<0 | -0.1863347 | 182 | | | |
| -0.0725707 J | ND<0 | -0.0725707 | 47 | 183 | | |
| 0.741937 | ND<0 | 0.741937 | 48 | 183 | | |
| 0.262364 J | ND<0 | 0.262364 | 49 | 183 | | |
| ND<0 | ND<0 | 0 | 49 | 183 | | |
| ND<0 | ND<0 | 0 | 49 | 183 | | |

| | | | | |
|---|---|---|---|---|
| -0.527633 J | ND<0 | -0.527633 | 49 | 184 |
| ND<-2.07944 | ND<0 | -2.0794449 | 185 | |
| -0.210721 J | ND<0 | -0.210721 | 49 | 186 |
| ND<-2.07944 U | ND<0 | -2.0794449 | 187 | |

| | | | | |
|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 49 | 187 |
| 1.5217 | ND<0 | 1.5217 | 50 | 187 |
| 0.431782 J | ND<0 | 0.431782 | 51 | 187 |
| -0.18633 J | ND<0 | -0.1863351 | 188 | |
| -0.0725707 J | ND<0 | -0.0725707 | 51 | 189 |
| 0.741937 | ND<0 | 0.741937 | 52 | 189 |
| 0.262364 J | ND<0 | 0.262364 | 53 | 189 |
| ND<0 | ND<0 | 0 | 53 | 189 |
| ND<0 | ND<0 | 0 | 53 | 189 |
| -0.527633 J | ND<0 | -0.527633 | 53 | 190 |
| ND<-2.07944 | ND<0 | -2.0794453 | 191 | |
| -0.210721 J | ND<0 | -0.210721 | 53 | 192 |
| ND<-2.07944 U | ND<0 | -2.0794453 | 193 | |

| | | | | |
|---|---|---|---|---|
| 1.5217 | ND<0 | 1.5217 | 54 | 193 |
| 0.431782 J | ND<0 | 0.431782 | 55 | 193 |
| -0.18633 J | ND<0 | -0.1863355 | 194 | |
| -0.0725707 J | ND<0 | -0.0725707 | 55 | 195 |
| 0.741937 | ND<0 | 0.741937 | 56 | 195 |
| 0.262364 J | ND<0 | 0.262364 | 57 | 195 |
| ND<0 | ND<0 | 0 | 57 | 195 |
| ND<0 | ND<0 | 0 | 57 | 195 |
| -0.527633 J | ND<0 | -0.527633 | 57 | 196 |
| ND<-2.07944 | ND<0 | -2.0794457 | 197 | |
| -0.210721 J | ND<0 | -0.210721 | 57 | 198 |
| ND<-2.07944 U | ND<0 | -2.0794457 | 199 | |

| | | | | |
|---|---|---|---|---|
| 0.431782 J | 1.5217 | -1.0899257 | 200 | |
| -0.18633 J | 1.5217 | -1.7080357 | 201 | |
| -0.0725707 J | 1.5217 | -1.5942757 | 202 | |
| 0.741937 | 1.5217 | -0.779762 | 57 | 203 |
| 0.262364 J | 1.5217 | -1.2593357 | 204 | |
| ND<0 | 1.5217 | -1.5217 | 57 | 205 |
| ND<0 | 1.5217 | -1.5217 | 57 | 206 |
| -0.527633 J | 1.5217 | -2.0493357 | 207 | |
| ND<-2.07944 | 1.5217 | -3.6011457 | 208 | |
| -0.210721 J | 1.5217 | -1.7324257 | 209 | |
| ND<-2.07944 U | 1.5217 | -3.6011457 | 210 | |

| | | | | |
|---|---|---|---|---|
| -0.18633 J | 0.431782 J | -0.618112 | 57 | 211 |
| -0.0725707 J | 0.431782 J | -0.504353 | 57 | 212 |
| 0.741937 | 0.431782 J | 0.310155 | 58 | 212 |
| 0.262364 J | 0.431782 J | -0.169418 | 58 | 213 |
| ND<0 | 0.431782 J | -0.431782 | 58 | 214 |
| ND<0 | 0.431782 J | -0.431782 | 58 | 215 |
| -0.527633 J | 0.431782 J | -0.959415 | 58 | 216 |
| ND<-2.07944 | 0.431782 J | -2.5112258 | 217 | |
| -0.210721 J | 0.431782 J | -0.642503 | 58 | 218 |
| ND<-2.07944 U | 0.431782 J | -2.5112258 | 219 | |

| | | | | |
|---|---|---|---|---|
| -0.0725707 J | -0.18633 J | 0.113759 | 59 | 219 |
| 0.741937 | -0.18633 J | 0.928267 | 60 | 219 |
| 0.262364 J | -0.18633 J | 0.448694 | 61 | 219 |
| ND<0 | -0.18633 J | 0.18633 | 62 | 219 |
| ND<0 | -0.18633 J | 0.18633 | 63 | 219 |
| -0.527633 J | -0.18633 J | -0.341303 | 63 | 220 |
| ND<-2.07944 | -0.18633 J | -1.8931163 | 221 | |

| | | | | |
|---|---|---|---|---|
| -0.210721 J | -0.18633 J | -0.0243915 | 63 | 222 |
| ND<-2.07944 U | -0.18633 J | -1.8931163 | 223 | |
| | | | | |
| 0.741937 | -0.0725707 J | 0.814508 | 64 | 223 |
| 0.262364 J | -0.0725707 J | 0.334935 | 65 | 223 |
| ND<0 | -0.0725707 J | 0.0725707 | 66 | 223 |
| ND<0 | -0.0725707 J | 0.0725707 | 67 | 223 |
| -0.527633 J | -0.0725707 J | -0.455062 | 67 | 224 |
| ND<-2.07944 | -0.0725707 J | -2.0068767 | 225 | |
| -0.210721 J | -0.0725707 J | -0.1381567 | 226 | |
| ND<-2.07944 U | -0.0725707 J | -2.0068767 | 227 | |
| | | | | |
| 0.262364 J | 0.741937 | -0.479573 | 67 | 228 |
| ND<0 | 0.741937 | -0.741937 | 67 | 229 |
| ND<0 | 0.741937 | -0.741937 | 67 | 230 |
| -0.527633 J | 0.741937 | -1.2695767 | 231 | |
| ND<-2.07944 | 0.741937 | -2.8213867 | 232 | |
| -0.210721 J | 0.741937 | -0.952658 | 67 | 233 |
| ND<-2.07944 U | 0.741937 | -2.8213867 | 234 | |
| | | | | |
| ND<0 | 0.262364 J | -0.262364 | 67 | 235 |
| ND<0 | 0.262364 J | -0.262364 | 67 | 236 |
| -0.527633 J | 0.262364 J | -0.789997 | 67 | 237 |
| ND<-2.07944 | 0.262364 J | -2.3418167 | 238 | |
| -0.210721 J | 0.262364 J | -0.473085 | 67 | 239 |
| ND<-2.07944 U | 0.262364 J | -2.3418167 | 240 | |
| | | | | |
| ND<0 | ND<0 | 0 | 67 | 240 |
| -0.527633 J | ND<0 | -0.527633 | 67 | 241 |
| ND<-2.07944 | ND<0 | -2.0794467 | 242 | |
| -0.210721 J | ND<0 | -0.210721 | 67 | 243 |
| ND<-2.07944 U | ND<0 | -2.0794467 | 244 | |
| | | | | |
| -0.527633 J | ND<0 | -0.527633 | 67 | 245 |
| ND<-2.07944 | ND<0 | -2.0794467 | 246 | |
| -0.210721 J | ND<0 | -0.210721 | 67 | 247 |
| ND<-2.07944 U | ND<0 | -2.0794467 | 248 | |
| | | | | |
| ND<-2.07944 | -0.527633 J | -1.5518167 | 249 | |
| -0.210721 J | -0.527633 J | 0.316912 | 68 | 249 |
| ND<-2.07944 U | -0.527633 J | -1.5518168 | 250 | |
| | | | | |
| -0.210721 J | ND<-2.07944 | 1.86872 | 69 | 250 |
| ND<-2.07944 U | ND<-2.07944 | 0 | 69 | 250 |
| | | | | |
| ND<-2.07944 U | -0.210721 J | -1.8687269 | 251 | |

S Statistic = 69 - 251 = -182

| Tied Group | Value | Members |
|---|---|---|
| 1 | 0.741937 | 2 |
| 2 | 0 | 11 |
| 3 | 1.60944 | 2 |
| 4 | -2.07944 | 2 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |

| | | |
|---|---|---|
| 10/26/1995 | | 1 |
| 11/19/1996 | | 1 |
| 12/19/1996 | | 1 |
| 3/24/1997 | | 1 |
| 9/24/1997 | | 1 |
| 4/7/1998 | 1 | |
| 9/23/1998 | | 1 |
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 11/16/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 1 |

There are 0 time periods with multiple data

A = 3024
B = 0
C = 990
D = 0
E = 116
F = 0
a = 46116
b = 176904
c = 1512
Group Variance = 2394
Z-Score = -3.69927
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-3.69927| > 1.97737 indicating a trend

# Mann-Kendall Trend Analysis

## Parameter: Benzene

## Location: MW-10

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | Positives | Negatives |
|---|---|---|---|---|
| 0.182322 J | ND<0 | 0.182322 | 1 | 0 |
| 0.693147 | ND<0 | 0.693147 | 2 | 0 |
| 0.693147 | ND<0 | 0.693147 | 3 | 0 |
| ND<0 | ND<0 | 0 | 3 | 0 |
| ND<0 | ND<0 | 0 | 3 | 0 |
| ND<0 | ND<0 | 0 | 3 | 0 |
| ND<0 | ND<0 | 0 | 3 | 0 |
| ND<0 | ND<0 | 0 | 3 | 0 |
| ND<0 | ND<0 | 0 | 3 | 0 |
| 0.788457 | ND<0 | 0.788457 | 4 | 0 |
| ND<0 | ND<0 | 0 | 4 | 0 |
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| ND<0 | ND<0 | 0 | 4 | 0 |
| ND<0 | ND<0 | 0 | 4 | 0 |
| ND<0 | ND<0 | 0 | 4 | 0 |
| 0.587787 J | ND<0 | 0.587787 | 5 | 0 |
| 0.277632 J | ND<0 | 0.277632 | 6 | 0 |
| 0.270027 J | ND<0 | 0.270027 | 7 | 0 |
| -0.040822 J | ND<0 | -0.040822 | 7 | 1 |
| ND<0 | ND<0 | 0 | 7 | 1 |
| 0.322083 | ND<0 | 0.322083 | 8 | 1 |
| ND<0 | ND<0 | 0 | 8 | 1 |
| 0 J | ND<0 | 0 | 8 | 1 |
| 0 | ND<0 | 0 | 8 | 1 |
| 0.262364 | ND<0 | 0.262364 | 9 | 1 |
| -0.0618754 J | ND<0 | -0.0618754 | 9 | 2 |
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| 0.693147 | 0.182322 J | 0.510826 | 11 | 2 |
| 0.693147 | 0.182322 J | 0.510826 | 12 | 2 |
| ND<0 | 0.182322 J | -0.182322 | 12 | 3 |
| ND<0 | 0.182322 J | -0.182322 | 12 | 4 |
| ND<0 | 0.182322 J | -0.182322 | 12 | 5 |
| ND<0 | 0.182322 J | -0.182322 | 12 | 6 |
| ND<0 | 0.182322 J | -0.182322 | 12 | 7 |
| ND<0 | 0.182322 J | -0.182322 | 12 | 8 |
| 0.788457 | 0.182322 J | 0.606136 | 13 | 8 |
| ND<0 | 0.182322 J | -0.182322 | 13 | 9 |
| ND<0 | 0.182322 J | -0.182322 | 13 | 10 |
| ND<0 | 0.182322 J | -0.182322 | 13 | 11 |
| ND<0 | 0.182322 J | -0.182322 | 13 | 12 |
| ND<0 | 0.182322 J | -0.182322 | 13 | 13 |
| 0.587787 J | 0.182322 J | 0.405465 | 14 | 13 |
| 0.277632 J | 0.182322 J | 0.0953102 | 15 | 13 |
| 0.270027 J | 0.182322 J | 0.0877056 | 16 | 13 |
| -0.040822 J | 0.182322 J | -0.223144 | 16 | 14 |
| ND<0 | 0.182322 J | -0.182322 | 16 | 15 |
| 0.322083 | 0.182322 J | 0.139762 | 17 | 15 |

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|---|---|---|---|---|
| ND<0 | 0.182322 J | -0.182322 | 17 | 16 |
| 0 J | 0.182322 J | -0.182322 | 17 | 17 |
| 0 | 0.182322 J | -0.182322 | 17 | 18 |
| 0.262364 | 0.182322 J | 0.0800427 | 18 | 18 |
| -0.0618754 J | 0.182322 J | -0.244197 | 18 | 19 |
| 0.262364 | 0.182322 J | 0.0800427 | 19 | 19 |
| | | | | |
| 0.693147 | 0.693147 | 0 | 19 | 19 |
| ND<0 | 0.693147 | -0.693147 | 19 | 20 |
| ND<0 | 0.693147 | -0.693147 | 19 | 21 |
| ND<0 | 0.693147 | -0.693147 | 19 | 22 |
| ND<0 | 0.693147 | -0.693147 | 19 | 23 |
| ND<0 | 0.693147 | -0.693147 | 19 | 24 |
| ND<0 | 0.693147 | -0.693147 | 19 | 25 |
| 0.788457 | 0.693147 | 0.0953102 | 20 | 25 |
| ND<0 | 0.693147 | -0.693147 | 20 | 26 |
| ND<0 | 0.693147 | -0.693147 | 20 | 27 |
| ND<0 | 0.693147 | -0.693147 | 20 | 28 |
| ND<0 | 0.693147 | -0.693147 | 20 | 29 |
| ND<0 | 0.693147 | -0.693147 | 20 | 30 |
| 0.587787 J | 0.693147 | -0.105361 | 20 | 31 |
| 0.277632 J | 0.693147 | -0.415515 | 20 | 32 |
| 0.270027 J | 0.693147 | -0.4231220 | 33 | |
| -0.040822 J | 0.693147 | -0.733969 | 20 | 34 |
| ND<0 | 0.693147 | -0.693147 | 20 | 35 |
| 0.322083 | 0.693147 | -0.371064 | 20 | 36 |
| ND<0 | 0.693147 | -0.693147 | 20 | 37 |
| 0 J | 0.693147 | -0.693147 | 20 | 38 |
| 0 | 0.693147 | -0.693147 | 20 | 39 |
| 0.262364 | 0.693147 | -0.430783 | 20 | 40 |
| -0.0618754 J | 0.693147 | -0.755023 | 20 | 41 |
| 0.262364 | 0.693147 | -0.430783 | 20 | 42 |
| | | | | |
| ND<0 | 0.693147 | -0.693147 | 20 | 43 |
| ND<0 | 0.693147 | -0.693147 | 20 | 44 |
| ND<0 | 0.693147 | -0.693147 | 20 | 45 |
| ND<0 | 0.693147 | -0.693147 | 20 | 46 |
| ND<0 | 0.693147 | -0.693147 | 20 | 47 |
| ND<0 | 0.693147 | -0.693147 | 20 | 48 |
| 0.788457 | 0.693147 | 0.0953102 | 21 | 48 |
| ND<0 | 0.693147 | -0.693147 | 21 | 49 |
| ND<0 | 0.693147 | -0.693147 | 21 | 50 |
| ND<0 | 0.693147 | -0.693147 | 21 | 51 |
| ND<0 | 0.693147 | -0.693147 | 21 | 52 |
| ND<0 | 0.693147 | -0.693147 | 21 | 53 |
| 0.587787 J | 0.693147 | -0.105361 | 21 | 54 |
| 0.277632 J | 0.693147 | -0.415515 | 21 | 55 |
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| -0.040822 J | 0.693147 | -0.733969 | 21 | 57 |
| ND<0 | 0.693147 | -0.693147 | 21 | 58 |
| 0.322083 | 0.693147 | -0.371064 | 21 | 59 |
| ND<0 | 0.693147 | -0.693147 | 21 | 60 |
| 0 J | 0.693147 | -0.693147 | 21 | 61 |
| 0 | 0.693147 | -0.693147 | 21 | 62 |
| 0.262364 | 0.693147 | -0.430783 | 21 | 63 |
| -0.0618754 J | 0.693147 | -0.755023 | 21 | 64 |
| 0.262364 | 0.693147 | -0.430783 | 21 | 65 |
| | | | | |
| ND<0 | ND<0 | 0 | 21 | 65 |
| ND<0 | ND<0 | 0 | 21 | 65 |
| ND<0 | ND<0 | 0 | 21 | 65 |
| ND<0 | ND<0 | 0 | 21 | 65 |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 21 | 65 | | |
| 0.788457 | | ND<0 | 0.788457 | | 22 | 65 |
| ND<0 | ND<0 | 0 | 22 | 65 | | |
| ND<0 | ND<0 | 0 | 22 | 65 | | |
| ND<0 | ND<0 | 0 | 22 | 65 | | |
| ND<0 | ND<0 | 0 | 22 | 65 | | |
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| 0.587787 J | | ND<0 | 0.587787 | | 23 | 65 |
| 0.277632 J | | ND<0 | 0.277632 | | 24 | 65 |
| 0.270027 J | | ND<0 | 0.270027 | | 25 | 65 |
| -0.040822 J | | ND<0 | -0.040822 | | 25 | 66 |
| ND<0 | ND<0 | 0 | 25 | 66 | | |
| 0.322083 | | ND<0 | 0.322083 | | 26 | 66 |
| ND<0 | ND<0 | 0 | 26 | 66 | | |
| 0 J | ND<0 | 0 | 26 | 66 | | |
| 0 | ND<0 | 0 | 26 | 66 | | |
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| -0.0618754 J | | ND<0 | -0.0618754 | | 27 | 67 |
| 0.262364 | | ND<0 | 0.262364 | | 28 | 67 |
| | | | | | | |
| ND<0 | ND<0 | 0 | 28 | 67 | | |
| ND<0 | ND<0 | 0 | 28 | 67 | | |
| ND<0 | ND<0 | 0 | 28 | 67 | | |
| ND<0 | ND<0 | 0 | 28 | 67 | | |
| 0.788457 | | ND<0 | 0.788457 | | 29 | 67 |
| ND<0 | ND<0 | 0 | 29 | 67 | | |
| ND<0 | ND<0 | 0 | 29 | 67 | | |
| ND<0 | ND<0 | 0 | 29 | 67 | | |
| ND<0 | ND<0 | 0 | 29 | 67 | | |
| ND<0 | ND<0 | 0 | 29 | 67 | | |
| 0.587787 J | | ND<0 | 0.587787 | | 30 | 67 |
| 0.277632 J | | ND<0 | 0.277632 | | 31 | 67 |
| 0.270027 J | | ND<0 | 0.270027 | | 32 | 67 |
| -0.040822 J | | ND<0 | -0.040822 | | 32 | 68 |
| ND<0 | ND<0 | 0 | 32 | 68 | | |
| 0.322083 | | ND<0 | 0.322083 | | 33 | 68 |
| ND<0 | ND<0 | 0 | 33 | 68 | | |
| 0 J | ND<0 | 0 | 33 | 68 | | |
| 0 | ND<0 | 0 | 33 | 68 | | |
| 0.262364 | | ND<0 | 0.262364 | | 34 | 68 |
| -0.0618754 J | | ND<0 | -0.0618754 | | 34 | 69 |
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| | | | | | | |
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| ND<0 | ND<0 | 0 | 35 | 69 | | |
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| ND<0 | ND<0 | 0 | 36 | 69 | | |
| ND<0 | ND<0 | 0 | 36 | 69 | | |
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| 0.587787 J | | ND<0 | 0.587787 | | 37 | 69 |
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| -0.040822 J | | ND<0 | -0.040822 | | 39 | 70 |
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| 0.322083 | | ND<0 | 0.322083 | | 40 | 70 |
| ND<0 | ND<0 | 0 | 40 | 70 | | |
| 0 J | ND<0 | 0 | 40 | 70 | | |
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|---|---|---|---|---|---|
| -0.0618754 J | | ND<0 | -0.0618754 | 41 | 71 |
| 0.262364 | | ND<0 | 0.262364 | 42 | 71 |
| ND<0 | ND<0 | 0 | 42 | 71 | |
| ND<0 | ND<0 | 0 | 42 | 71 | |
| 0.788457 | | ND<0 | 0.788457 | 43 | 71 |
| ND<0 | ND<0 | 0 | 43 | 71 | |
| ND<0 | ND<0 | 0 | 43 | 71 | |
| ND<0 | ND<0 | 0 | 43 | 71 | |
| ND<0 | ND<0 | 0 | 43 | 71 | |
| ND<0 | ND<0 | 0 | 43 | 71 | |
| 0.587787 J | | ND<0 | 0.587787 | 44 | 71 |
| 0.277632 J | | ND<0 | 0.277632 | 45 | 71 |
| 0.270027 J | | ND<0 | 0.270027 | 46 | 71 |
| -0.040822 J | | ND<0 | -0.040822 | 46 | 72 |
| ND<0 | ND<0 | 0 | 46 | 72 | |
| 0.322083 | | ND<0 | 0.322083 | 47 | 72 |
| ND<0 | ND<0 | 0 | 47 | 72 | |
| 0 J | ND<0 | 0 | 47 | 72 | |
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| -0.0618754 J | | ND<0 | -0.0618754 | 48 | 73 |
| 0.262364 | | ND<0 | 0.262364 | 49 | 73 |
| ND<0 | ND<0 | 0 | 49 | 73 | |
| 0.788457 | | ND<0 | 0.788457 | 50 | 73 |
| ND<0 | ND<0 | 0 | 50 | 73 | |
| ND<0 | ND<0 | 0 | 50 | 73 | |
| ND<0 | ND<0 | 0 | 50 | 73 | |
| ND<0 | ND<0 | 0 | 50 | 73 | |
| ND<0 | ND<0 | 0 | 50 | 73 | |
| 0.587787 J | | ND<0 | 0.587787 | 51 | 73 |
| 0.277632 J | | ND<0 | 0.277632 | 52 | 73 |
| 0.270027 J | | ND<0 | 0.270027 | 53 | 73 |
| -0.040822 J | | ND<0 | -0.040822 | 53 | 74 |
| ND<0 | ND<0 | 0 | 53 | 74 | |
| 0.322083 | | ND<0 | 0.322083 | 54 | 74 |
| ND<0 | ND<0 | 0 | 54 | 74 | |
| 0 J | ND<0 | 0 | 54 | 74 | |
| 0 | ND<0 | 0 | 54 | 74 | |
| 0.262364 | | ND<0 | 0.262364 | 55 | 74 |
| -0.0618754 J | | ND<0 | -0.0618754 | 55 | 75 |
| 0.262364 | | ND<0 | 0.262364 | 56 | 75 |
| 0.788457 | | ND<0 | 0.788457 | 57 | 75 |
| ND<0 | ND<0 | 0 | 57 | 75 | |
| ND<0 | ND<0 | 0 | 57 | 75 | |
| ND<0 | ND<0 | 0 | 57 | 75 | |
| ND<0 | ND<0 | 0 | 57 | 75 | |
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| 0.277632 J | | ND<0 | 0.277632 | 59 | 75 |
| 0.270027 J | | ND<0 | 0.270027 | 60 | 75 |
| -0.040822 J | | ND<0 | -0.040822 | 60 | 76 |
| ND<0 | ND<0 | 0 | 60 | 76 | |
| 0.322083 | | ND<0 | 0.322083 | 61 | 76 |
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| 0 J | ND<0 | 0 | 61 | 76 | |
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| 0.262364 | | ND<0 | 0.262364 | 62 | 76 |
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| 0.262364 | | ND<0 | 0.262364 | 63 | 77 |

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| ND<0 | 0.788457 | -0.788457 | 63 | 78 |
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| 0.587787 J | 0.788457 | -0.200671 | 63 | 83 |
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| 0.270027 J | 0.788457 | -0.5184363 | 85 | |
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| -0.0618754 J | 0.788457 | -0.850333 | 63 | 93 |
| 0.262364 | 0.788457 | -0.526093 | 63 | 94 |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 63 | 94 | | |
| ND<0 | ND<0 | 0 | 63 | 94 | | |
| ND<0 | ND<0 | 0 | 63 | 94 | | |
| ND<0 | ND<0 | 0 | 63 | 94 | | |
| 0.587787 J | | ND<0 | 0.587787 | | 64 | 94 |
| 0.277632 J | | ND<0 | 0.277632 | | 65 | 94 |
| 0.270027 J | | ND<0 | 0.270027 | | 66 | 94 |
| -0.040822 J | | ND<0 | -0.040822 | | 66 | 95 |
| ND<0 | ND<0 | 0 | 66 | 95 | | |
| 0.322083 | | ND<0 | 0.322083 | | 67 | 95 |
| ND<0 | ND<0 | 0 | 67 | 95 | | |
| 0 J | ND<0 | 0 | 67 | 95 | | |
| 0 | ND<0 | 0 | 67 | 95 | | |
| 0.262364 | | ND<0 | 0.262364 | | 68 | 95 |
| -0.0618754 J | | ND<0 | -0.0618754 | | 68 | 96 |
| 0.262364 | | ND<0 | 0.262364 | | 69 | 96 |

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|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 69 | 96 | | |
| ND<0 | ND<0 | 0 | 69 | 96 | | |
| ND<0 | ND<0 | 0 | 69 | 96 | | |
| 0.587787 J | | ND<0 | 0.587787 | | 70 | 96 |
| 0.277632 J | | ND<0 | 0.277632 | | 71 | 96 |
| 0.270027 J | | ND<0 | 0.270027 | | 72 | 96 |
| -0.040822 J | | ND<0 | -0.040822 | | 72 | 97 |
| ND<0 | ND<0 | 0 | 72 | 97 | | |
| 0.322083 | | ND<0 | 0.322083 | | 73 | 97 |
| ND<0 | ND<0 | 0 | 73 | 97 | | |
| 0 J | ND<0 | 0 | 73 | 97 | | |
| 0 | ND<0 | 0 | 73 | 97 | | |
| 0.262364 | | ND<0 | 0.262364 | | 74 | 97 |
| -0.0618754 J | | ND<0 | -0.0618754 | | 74 | 98 |
| 0.262364 | | ND<0 | 0.262364 | | 75 | 98 |

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|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 75 | 98 | | |
| ND<0 | ND<0 | 0 | 75 | 98 | | |
| 0.587787 J | | ND<0 | 0.587787 | | 76 | 98 |
| 0.277632 J | | ND<0 | 0.277632 | | 77 | 98 |
| 0.270027 J | | ND<0 | 0.270027 | | 78 | 98 |
| -0.040822 J | | ND<0 | -0.040822 | | 78 | 99 |
| ND<0 | ND<0 | 0 | 78 | 99 | | |
| 0.322083 | | ND<0 | 0.322083 | | 79 | 99 |
| ND<0 | ND<0 | 0 | 79 | 99 | | |
| 0 J | ND<0 | 0 | 79 | 99 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 0 | ND<0 | 0 | 79 | 99 | | |
| 0.262364 | | ND<0 | 0.262364 | | 80 | 99 |
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| 0.262364 | | ND<0 | 0.262364 | | 81 | 100 |
| | | | | | | |
| ND<0 | ND<0 | 0 | 81 | 100 | | |
| 0.587787 J | | ND<0 | 0.587787 | | 82 | 100 |
| 0.277632 J | | ND<0 | 0.277632 | | 83 | 100 |
| 0.270027 J | | ND<0 | 0.270027 | | 84 | 100 |
| -0.040822 J | | ND<0 | -0.040822 | | 84 | 101 |
| ND<0 | ND<0 | 0 | 84 | 101 | | |
| 0.322083 | | ND<0 | 0.322083 | | 85 | 101 |
| ND<0 | ND<0 | 0 | 85 | 101 | | |
| 0 J | ND<0 | 0 | 85 | 101 | | |
| 0 | ND<0 | 0 | 85 | 101 | | |
| 0.262364 | | ND<0 | 0.262364 | | 86 | 101 |
| -0.0618754 J | | ND<0 | -0.0618754 | | 86 | 102 |
| 0.262364 | | ND<0 | 0.262364 | | 87 | 102 |
| | | | | | | |
| 0.587787 J | | ND<0 | 0.587787 | | 88 | 102 |
| 0.277632 J | | ND<0 | 0.277632 | | 89 | 102 |
| 0.270027 J | | ND<0 | 0.270027 | | 90 | 102 |
| -0.040822 J | | ND<0 | -0.040822 | | 90 | 103 |
| ND<0 | ND<0 | 0 | 90 | 103 | | |
| 0.322083 | | ND<0 | 0.322083 | | 91 | 103 |
| ND<0 | ND<0 | 0 | 91 | 103 | | |
| 0 J | ND<0 | 0 | 91 | 103 | | |
| 0 | ND<0 | 0 | 91 | 103 | | |
| 0.262364 | | ND<0 | 0.262364 | | 92 | 103 |
| -0.0618754 J | | ND<0 | -0.0618754 | | 92 | 104 |
| 0.262364 | | ND<0 | 0.262364 | | 93 | 104 |
| | | | | | | |
| 0.277632 J | | 0.587787 J | | -0.310155 | 93 | 105 |
| 0.270027 J | | 0.587787 J | | -0.3177693 | 106 | |
| -0.040822 J | | 0.587787 J | | -0.628609 | 93 | 107 |
| ND<0 | 0.587787 J | | -0.587787 | | 93 | 108 |
| 0.322083 | | 0.587787 J | | -0.265703 | 93 | 109 |
| ND<0 | 0.587787 J | | -0.587787 | | 93 | 110 |
| 0 J | 0.587787 J | | -0.587787 | | 93 | 111 |
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| 0.262364 | | 0.587787 J | | -0.325422 | 93 | 113 |
| -0.0618754 J | | 0.587787 J | | -0.649662 | 93 | 114 |
| 0.262364 | | 0.587787 J | | -0.325422 | 93 | 115 |
| | | | | | | |
| 0.270027 J | | 0.277632 J | | -0.0076046 | 93 | 116 |
| -0.040822 J | | 0.277632 J | | -0.318454 | 93 | 117 |
| ND<0 | 0.277632 J | | -0.277632 | | 93 | 118 |
| 0.322083 | | 0.277632 J | | 0.0444518 | 94 | 118 |
| ND<0 | 0.277632 J | | -0.277632 | | 94 | 119 |
| 0 J | 0.277632 J | | -0.277632 | | 94 | 120 |
| 0 | 0.277632 J | | -0.277632 | | 94 | 121 |
| 0.262364 | | 0.277632 J | | -0.0152675 | 94 | 122 |
| -0.0618754 J | | 0.277632 J | | -0.339507 | 94 | 123 |
| 0.262364 | | 0.277632 J | | -0.0152675 | 94 | 124 |
| | | | | | | |
| -0.040822 J | | 0.270027 J | | -0.310849 | 94 | 125 |
| ND<0 | 0.270027 J | | -0.270027 | | 94 | 126 |
| 0.322083 | | 0.270027 J | | 0.0520564 | 95 | 126 |
| ND<0 | 0.270027 J | | -0.270027 | | 95 | 127 |
| 0 J | 0.270027 J | | -0.270027 | | 95 | 128 |
| 0 | 0.270027 J | | -0.270027 | | 95 | 129 |
| 0.262364 | | 0.270027 J | | -0.00766287 | 95 | 130 |

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| -0.0618754 J | 0.270027 J | -0.331903 | 95 | 131 |
| 0.262364 | 0.270027 J | -0.00766287 | 95 | 132 |

| | | | | |
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| ND<0 | -0.040822 J | 0.040822 | 96 | 132 |
| 0.322083 | -0.040822 J | 0.362905 | 97 | 132 |
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| 0 J | -0.040822 J | 0.040822 | 99 | 132 |
| 0 | -0.040822 J | 0.040822 | 100 | 132 |
| 0.262364 | -0.040822 J | 0.303186 | 101 | 132 |
| -0.0618754 J | -0.040822 J | -0.0210534 | 101 | 133 |
| 0.262364 | -0.040822 J | 0.303186 | 102 | 133 |

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|---|---|---|---|---|
| 0.322083 | ND<0 | 0.322083 | 103 | 133 |
| ND<0 | ND<0 | 0 | 103 | 133 |
| 0 J | ND<0 | 0 | 103 | 133 |
| 0 | ND<0 | 0 | 103 | 133 |
| 0.262364 | ND<0 | 0.262364 | 104 | 133 |
| -0.0618754 J | ND<0 | -0.0618754 | 104 | 134 |
| 0.262364 | ND<0 | 0.262364 | 105 | 134 |

| | | | | |
|---|---|---|---|---|
| ND<0 | 0.322083 | -0.322083 | 105 | 135 |
| 0 J | 0.322083 | -0.322083 | 105 | 136 |
| 0 | 0.322083 | -0.322083 | 105 | 137 |
| 0.262364 | 0.322083 | -0.0597192 | 105 | 138 |
| -0.0618754 J | 0.322083 | -0.383959 | 105 | 139 |
| 0.262364 | 0.322083 | -0.0597192 | 105 | 140 |

| | | | | |
|---|---|---|---|---|
| 0 J | ND<0 | 0 | 105 | 140 |
| 0 | ND<0 | 0 | 105 | 140 |
| 0.262364 | ND<0 | 0.262364 | 106 | 140 |
| -0.0618754 J | ND<0 | -0.0618754 | 106 | 141 |
| 0.262364 | ND<0 | 0.262364 | 107 | 141 |

| | | | | |
|---|---|---|---|---|
| 0 | 0 J | 0 | 107 | 141 |
| 0.262364 | 0 J | 0.262364 | 108 | 141 |
| -0.0618754 J | 0 J | -0.0618754 | 108 | 142 |
| 0.262364 | 0 J | 0.262364 | 109 | 142 |

| | | | | |
|---|---|---|---|---|
| 0.262364 | 0 | 0.262364 | 110 | 142 |
| -0.0618754 J | 0 | -0.0618754 | 110 | 143 |
| 0.262364 | 0 | 0.262364 | 111 | 143 |

| | | | | |
|---|---|---|---|---|
| -0.0618754 J | 0.262364 | -0.32424 | 111 | 144 |
| 0.262364 | 0.262364 | 0 | 111 | 144 |

| | | | | |
|---|---|---|---|---|
| 0.262364 | -0.0618754 J | 0.32424 | 112 | 144 |

S Statistic = 112 - 144 = -32

| Tied Group | Value | Members |
|---|---|---|
| 1 | 0 | 16 |
| 2 | 0.693147 | 2 |
| 3 | 0.262364 | 2 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |

| | | |
|---|---|---|
| 11/19/1996 | | 1 |
| 12/19/1996 | | 1 |
| 3/24/1997 | | 1 |
| 9/24/1997 | | 1 |
| 4/7/1998 | 1 | |
| 9/23/1998 | | 1 |
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 11/16/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 1 |

There are 0 time periods with multiple data

A = 8916
B = 0
C = 3360
D = 0
E = 244
F = 0
a = 46116
b = 176904
c = 1512
Group Variance = 2066.67
Z-Score = -0.681909
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-0.681909| <= 1.97737 indicating no evidence of a trend

# Concentrations (ppb)

## Parameter: Beryllium

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 208
Percent Non-Detects: 94.1176%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 17 (94.4444%) | 3/16/1999 | ND<10 | ND<10 |
| | | | 9/23/1999 | ND<10 | ND<10 |
| | | | 3/15/2000 | 2 J | 2 J |
| | | | 9/24/2003 | ND<10 | ND<10 |
| | | | 3/11/2004 | ND<10 | ND<10 |
| | | | 10/12/2004 | ND<10 | ND<10 |
| | | | 4/1/2005 | ND<10 | ND<10 |
| | | | 10/25/2005 | ND<10 | ND<10 |
| | | | 4/29/2006 | ND<10 | ND<10 |
| | | | 11/18/2006 | ND<10 | ND<10 |
| | | | 5/23/2007 | ND<10 | ND<10 |
| | | | 11/28/2007 | ND<10 | ND<10 |
| | | | 6/5/2008 | ND<10 | ND<10 |
| | | | 11/20/2008 | ND<10 | ND<10 |
| | | | 6/11/2009 | ND<0.07 | ND<0.07 |
| | | | 11/16/2009 | ND<0.07 | ND<0.07 |
| | | | 6/30/2010 | ND<0.07 | ND<0.07 |
| | | | 11/12/2010 | ND<0.07 U | ND<0.07 U |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-8 | 27 | 26 (96.2963%) | 7/20/1995 | ND<10 | ND<10 |
| | | | 8/24/1995 | ND<10 | ND<10 |
| | | | 9/28/1995 | ND<10 | ND<10 |
| | | | 10/26/1995 | ND<10 | ND<10 |
| | | | 11/19/1996 | ND<10 | ND<10 |
| | | | 12/19/1996 | ND<10 | ND<10 |
| | | | 3/24/1997 | ND<10 | ND<10 |
| | | | 9/24/1997 | ND<10 | ND<10 |
| | | | 4/7/1998 | ND<10 | ND<10 |
| | | | 9/23/1998 | ND<10 | ND<10 |
| | | | 3/16/1999 | ND<10 | ND<10 |
| | | | 9/23/1999 | ND<10 | ND<10 |
| | | | 3/15/2000 | ND<10 | ND<10 |
| | | | 9/24/2003 | ND<10 | ND<10 |
| | | | 3/11/2004 | ND<10 | ND<10 |
| | | | 10/12/2004 | ND<10 | ND<10 |
| | | | 4/1/2005 | ND<10 | ND<10 |
| | | | 10/25/2005 | ND<10 | ND<10 |
| | | | 4/29/2006 | ND<10 | ND<10 |
| | | | 11/18/2006 | ND<10 | ND<10 |
| | | | 5/23/2007 | ND<10 | ND<10 |
| | | | 11/28/2007 | ND<10 | ND<10 |
| | | | 6/5/2008 | ND<10 | ND<10 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/20/2008 | 46 | 46 | |
| | | | 6/11/2009 | ND<0.07 | | ND<0.07 |
| | | | 6/30/2010 | ND<0.07 | | ND<0.07 |
| | | | 11/12/2010 | ND<0.35 U | | ND<0.35 U |
| MW-11R | 28 | 28 (100%) | 7/20/1995 | ND<10 | ND<10 | |
| | | | 8/24/1995 | ND<10 | ND<10 | |
| | | | 9/28/1995 | ND<10 | ND<10 | |
| | | | 10/26/1995 | ND<10 | ND<10 | |
| | | | 11/19/1996 | ND<10 | ND<10 | |
| | | | 12/19/1996 | ND<10 | ND<10 | |
| | | | 3/24/1997 | ND<10 | ND<10 | |
| | | | 9/24/1997 | ND<10 | ND<10 | |
| | | | 4/7/1998 | ND<10 | ND<10 | |
| | | | 9/23/1998 | ND<10 | ND<10 | |
| | | | 3/16/1999 | ND<10 | ND<10 | |
| | | | 9/23/1999 | ND<10 | ND<10 | |
| | | | 3/15/2000 | ND<10 | ND<10 | |
| | | | 9/24/2003 | ND<10 | ND<10 | |
| | | | 3/11/2004 | ND<10 | ND<10 | |
| | | | 10/12/2004 | ND<10 | ND<10 | |
| | | | 4/1/2005 | ND<10 | ND<10 | |
| | | | 10/25/2005 | ND<10 | ND<10 | |
| | | | 4/29/2006 | ND<10 | ND<10 | |
| | | | 11/18/2006 | ND<10 | ND<10 | |
| | | | 5/23/2007 | ND<10 | ND<10 | |
| | | | 11/28/2007 | ND<10 | ND<10 | |
| | | | 6/5/2008 | ND<10 | ND<10 | |
| | | | 11/20/2008 | ND<10 | ND<10 | |
| | | | 6/11/2009 | ND<0.07 | | ND<0.07 |
| | | | 11/16/2009 | ND<0.07 | | ND<0.07 |
| | | | 6/30/2010 | ND<0.07 | | ND<0.07 |
| | | | 11/12/2010 | ND<0.07 U | | ND<0.07 U |
| MW-12BR | 18 | 14 (77.7778%) | 3/16/1999 | ND<10 | ND<10 | |
| | | | 9/23/1999 | ND<10 | ND<10 | |
| | | | 3/15/2000 | ND<10 | ND<10 | |
| | | | 9/24/2003 | ND<10 | ND<10 | |
| | | | 3/11/2004 | ND<10 | ND<10 | |
| | | | 10/12/2004 | ND<10 | ND<10 | |
| | | | 4/1/2005 | ND<10 | ND<10 | |
| | | | 10/25/2005 | ND<10 | ND<10 | |
| | | | 4/29/2006 | ND<10 | ND<10 | |
| | | | 11/18/2006 | ND<10 | ND<10 | |
| | | | 5/23/2007 | ND<10 | ND<10 | |
| | | | 11/28/2007 | ND<10 | ND<10 | |
| | | | 6/5/2008 | ND<10 | ND<10 | |
| | | | 11/20/2008 | ND<10 | ND<10 | |
| | | | 6/11/2009 | 0.36 | 0.36 | |
| | | | 11/16/2009 | 0.33 | 0.33 | |
| | | | 6/30/2010 | 0.37 | 0.37 | |
| | | | 11/12/2010 | 0.34 | 0.34 | |
| MW-10 | 28 | 27 (96.4286%) | 7/20/1995 | ND<10 | ND<10 | |
| | | | 8/24/1995 | ND<10 | ND<10 | |
| | | | 9/28/1995 | ND<10 | ND<10 | |
| | | | 10/26/1995 | ND<10 | ND<10 | |
| | | | 11/19/1996 | ND<10 | ND<10 | |
| | | | 12/19/1996 | ND<10 | ND<10 | |
| | | | 3/24/1997 | ND<10 | ND<10 | |
| | | | 9/24/1997 | ND<10 | ND<10 | |
| | | | 4/7/1998 | ND<10 | ND<10 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 9/23/1998 | ND<10 | ND<10 | |
| | | | 3/16/1999 | ND<10 | ND<10 | |
| | | | 9/23/1999 | ND<10 | ND<10 | |
| | | | 3/15/2000 | ND<10 | ND<10 | |
| | | | 9/24/2003 | ND<10 | ND<10 | |
| | | | 3/11/2004 | ND<10 | ND<10 | |
| | | | 10/12/2004 | ND<10 | ND<10 | |
| | | | 4/1/2005 | ND<10 | ND<10 | |
| | | | 10/25/2005 | ND<10 | ND<10 | |
| | | | 4/29/2006 | ND<10 | ND<10 | |
| | | | 11/18/2006 | ND<10 | ND<10 | |
| | | | 5/23/2007 | ND<10 | ND<10 | |
| | | | 11/28/2007 | ND<10 | ND<10 | |
| | | | 6/5/2008 | ND<10 | ND<10 | |
| | | | 11/20/2008 | 56 | 56 | |
| | | | 6/11/2009 | ND<0.07 | | ND<0.07 |
| | | | 11/16/2009 | ND<0.07 | | ND<0.07 |
| | | | 6/30/2010 | ND<0.07 | | ND<0.07 |
| | | | 11/12/2010 | ND<0.35 U | | ND<0.35 U |
| MW-6 | 28 | 28 (100%) | 7/20/1995 | ND<10 | ND<10 | |
| | | | 8/24/1995 | ND<10 | ND<10 | |
| | | | 9/28/1995 | ND<10 | ND<10 | |
| | | | 10/26/1995 | ND<10 | ND<10 | |
| | | | 11/19/1996 | ND<10 | ND<10 | |
| | | | 12/19/1996 | ND<10 | ND<10 | |
| | | | 3/24/1997 | ND<10 | ND<10 | |
| | | | 9/24/1997 | ND<10 | ND<10 | |
| | | | 4/7/1998 | ND<10 | ND<10 | |
| | | | 9/23/1998 | ND<10 | ND<10 | |
| | | | 3/16/1999 | ND<10 | ND<10 | |
| | | | 9/23/1999 | ND<10 | ND<10 | |
| | | | 3/15/2000 | ND<10 | ND<10 | |
| | | | 9/24/2003 | ND<10 | ND<10 | |
| | | | 3/11/2004 | ND<10 | ND<10 | |
| | | | 10/12/2004 | ND<10 | ND<10 | |
| | | | 4/1/2005 | ND<10 | ND<10 | |
| | | | 10/25/2005 | ND<10 | ND<10 | |
| | | | 4/29/2006 | ND<10 | ND<10 | |
| | | | 11/18/2006 | ND<10 | ND<10 | |
| | | | 5/23/2007 | ND<10 | ND<10 | |
| | | | 11/28/2007 | ND<10 | ND<10 | |
| | | | 6/5/2008 | ND<10 | ND<10 | |
| | | | 11/20/2008 | ND<10 | ND<10 | |
| | | | 6/11/2009 | ND<0.07 | | ND<0.07 |
| | | | 11/16/2009 | ND<0.07 | | ND<0.07 |
| | | | 6/30/2010 | ND<0.07 | | ND<0.07 |
| | | | 11/12/2010 | ND<0.07 U | | ND<0.07 U |
| MW-7 | 28 | 27 (96.4286%) | 7/20/1995 | ND<10 | ND<10 | |
| | | | 8/24/1995 | ND<10 | ND<10 | |
| | | | 9/28/1995 | ND<10 | ND<10 | |
| | | | 10/26/1995 | ND<10 | ND<10 | |
| | | | 11/19/1996 | ND<10 | ND<10 | |
| | | | 12/19/1996 | ND<10 | ND<10 | |
| | | | 3/24/1997 | ND<10 | ND<10 | |
| | | | 9/24/1997 | ND<10 | ND<10 | |
| | | | 4/7/1998 | ND<10 | ND<10 | |
| | | | 9/23/1998 | ND<10 | ND<10 | |
| | | | 3/16/1999 | ND<10 | ND<10 | |
| | | | 9/23/1999 | ND<10 | ND<10 | |
| | | | 3/15/2000 | ND<10 | ND<10 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 9/24/2003 | ND<10 | ND<10 | |
| | | | 3/11/2004 | ND<10 | ND<10 | |
| | | | 10/12/2004 | ND<10 | ND<10 | |
| | | | 4/1/2005 | ND<10 | ND<10 | |
| | | | 10/25/2005 | ND<10 | ND<10 | |
| | | | 4/29/2006 | ND<10 | ND<10 | |
| | | | 11/18/2006 | ND<10 | ND<10 | |
| | | | 5/23/2007 | ND<10 | ND<10 | |
| | | | 11/28/2007 | ND<10 | ND<10 | |
| | | | 6/5/2008 | ND<10 | ND<10 | |
| | | | 11/20/2008 | 44 | 44 | |
| | | | 6/11/2009 | ND<0.07 | | ND<0.07 |
| | | | 11/16/2009 | ND<0.07 | | ND<0.07 |
| | | | 6/30/2010 | ND<0.07 | | ND<0.07 |
| | | | 11/12/2010 | ND<0.07 U | | ND<0.07 U |
| MW-9 | 28 | 27 (96.4286%) | 7/20/1995 | | ND<10 | ND<10 |
| | | | 8/24/1995 | ND<10 | ND<10 | |
| | | | 9/28/1995 | ND<10 | ND<10 | |
| | | | 10/26/1995 | ND<10 | ND<10 | |
| | | | 11/19/1996 | ND<10 | ND<10 | |
| | | | 12/19/1996 | ND<10 | ND<10 | |
| | | | 3/24/1997 | ND<10 | ND<10 | |
| | | | 9/24/1997 | ND<10 | ND<10 | |
| | | | 4/7/1998 | ND<10 | ND<10 | |
| | | | 9/23/1998 | ND<10 | ND<10 | |
| | | | 3/16/1999 | ND<10 | ND<10 | |
| | | | 9/23/1999 | ND<10 | ND<10 | |
| | | | 3/15/2000 | ND<10 | ND<10 | |
| | | | 9/24/2003 | ND<10 | ND<10 | |
| | | | 3/11/2004 | ND<10 | ND<10 | |
| | | | 10/12/2004 | ND<10 | ND<10 | |
| | | | 4/1/2005 | ND<10 | ND<10 | |
| | | | 10/25/2005 | ND<10 | ND<10 | |
| | | | 4/29/2006 | ND<10 | ND<10 | |
| | | | 11/18/2006 | ND<10 | ND<10 | |
| | | | 5/23/2007 | ND<10 | ND<10 | |
| | | | 11/28/2007 | ND<10 | ND<10 | |
| | | | 6/5/2008 | ND<10 | ND<10 | |
| | | | 11/20/2008 | 41 | 41 | |
| | | | 6/11/2009 | ND<0.07 | | ND<0.07 |
| | | | 11/16/2009 | ND<0.07 | | ND<0.07 |
| | | | 6/30/2010 | ND<0.07 | | ND<0.07 |
| | | | 11/12/2010 | ND<0.07 U | | ND<0.07 U |
| MW-12AR | 18 | 14 (77.7778%) | 3/16/1999 | | ND<10 | ND<10 |
| | | | 9/23/1999 | ND<10 | ND<10 | |
| | | | 3/15/2000 | ND<10 | ND<10 | |
| | | | 9/24/2003 | ND<10 | ND<10 | |
| | | | 3/11/2004 | ND<10 | ND<10 | |
| | | | 10/12/2004 | ND<10 | ND<10 | |
| | | | 4/1/2005 | ND<10 | ND<10 | |
| | | | 10/25/2005 | ND<10 | ND<10 | |
| | | | 4/29/2006 | ND<10 | ND<10 | |
| | | | 11/18/2006 | ND<10 | ND<10 | |
| | | | 5/23/2007 | ND<10 | ND<10 | |
| | | | 11/28/2007 | ND<10 | ND<10 | |
| | | | 6/5/2008 | ND<10 | ND<10 | |
| | | | 11/20/2008 | ND<10 | ND<10 | |
| | | | 6/11/2009 | 0.13 J | 0.13 J | |
| | | | 11/16/2009 | 0.12 J | 0.12 J | |
| | | | 6/30/2010 | 0.12 J | 0.12 J | |

| | | | |
|---|---|---|---|
| 11/12/2010 | 0.07 J | 0.07 J | |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. Original |
|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: Beryllium

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.035 | -2.65209 | 7.03356 | -0.092823 |
| 2 | 0.035 | -2.36561 | 12.6297 | -0.17562 |
| 3 | 0.035 | -2.22621 | 17.5857 | -0.253537 |
| 4 | 0.035 | -2.09693 | 21.9828 | -0.326929 |
| 5 | 0.035 | -2.01409 | 26.0394 | -0.397423 |
| 6 | 0.035 | -1.92684 | 29.7521 | -0.464862 |
| 7 | 0.035 | -1.86629 | 33.2351 | -0.530182 |
| 8 | 0.035 | -1.79912 | 36.472 | -0.593151 |
| 9 | 0.035 | -1.75069 | 39.5369 | -0.654425 |
| 10 | 0.035 | -1.6954 | 42.4112 | -0.713764 |
| 11 | 0.035 | -1.65463 | 45.149 | -0.771676 |
| 12 | 0.035 | -1.60725 | 47.7323 | -0.82793 |
| 13 | 0.035 | -1.57179 | 50.2028 | -0.882942 |
| 14 | 0.035 | -1.53007 | 52.5439 | -0.936495 |
| 15 | 0.035 | -1.49852 | 54.7894 | -0.988943 |
| 16 | 0.035 | -1.46106 | 56.9241 | -1.04008 |
| 17 | 0.035 | -1.4325 | 58.9762 | -1.09022 |
| 18 | 0.035 | -1.39838 | 60.9316 | -1.13916 |
| 19 | 0.035 | -1.3722 | 62.8146 | -1.18719 |
| 20 | 0.035 | -1.34075 | 64.6122 | -1.23411 |
| 21 | 0.035 | -1.31652 | 66.3454 | -1.28019 |
| 22 | 0.035 | -1.28727 | 68.0025 | -1.32525 |
| 23 | 0.035 | -1.26464 | 69.6018 | -1.36951 |
| 24 | 0.035 | -1.23724 | 71.1326 | -1.41281 |
| 25 | 0.035 | -1.21596 | 72.6111 | -1.45537 |
| 26 | 0.07 | -1.19012 | 74.0275 | -1.53868 |
| 27 | 0.12 | -1.17 | 75.3964 | -1.67908 |
| 28 | 0.12 | -1.1455 | 76.7086 | -1.81654 |
| 29 | 0.13 | -1.12639 | 77.9774 | -1.96297 |
| 30 | 0.175 | -1.10306 | 79.1941 | -2.15601 |
| 31 | 0.175 | -1.08482 | 80.371 | -2.34585 |
| 32 | 0.33 | -1.06252 | 81.4999 | -2.69648 |
| 33 | 0.34 | -1.04505 | 82.592 | -3.0518 |
| 34 | 0.36 | -1.02365 | 83.6399 | -3.42031 |
| 35 | 0.37 | -1.00687 | 84.6537 | -3.79285 |
| 36 | 2 | -0.986272 | 85.6264 | -5.7654 |
| 37 | 5 | -0.970094 | 86.5675 | -10.6159 |
| 38 | 5 | -0.950222 | 87.4704 | -15.367 |
| 39 | 5 | -0.93459 | 88.3439 | -20.0399 |
| 40 | 5 | -0.915365 | 89.1818 | -24.6168 |
| 41 | 5 | -0.900227 | 89.9922 | -29.1179 |
| 42 | 5 | -0.881587 | 90.7694 | -33.5258 |
| 43 | 5 | -0.866894 | 91.5209 | -37.8603 |
| 44 | 5 | -0.848786 | 92.2413 | -42.1042 |
| 45 | 5 | -0.834498 | 92.9377 | -46.2767 |
| 46 | 5 | -0.816874 | 93.605 | -50.3611 |
| 47 | 5 | -0.802956 | 94.2497 | -54.3759 |
| 48 | 5 | -0.785774 | 94.8672 | -58.3047 |
| 49 | 5 | -0.772193 | 95.4634 | -62.1657 |

| | | | | |
|---|---|---|---|---|
| 50 | 5 | -0.755415 | 96.0341 | -65.9428 |
| 51 | 5 | -0.742143 | 96.5849 | -69.6535 |
| 52 | 5 | -0.725736 | 97.1116 | -73.2822 |
| 53 | 5 | -0.712751 | 97.6196 | -76.8459 |
| 54 | 5 | -0.696684 | 98.1049 | -80.3293 |
| 55 | 5 | -0.683969 | 8.5727 | -83.7491 |
| 56 | 5 | -0.668209 | 99.0192 | -87.0902 |
| 57 | 5 | -0.655726 | 99.4492 | -90.3688 |
| 58 | 5 | -0.640266 | 99.8592 | -93.5702 |
| 59 | 5 | -0.628006 | 100.254 | -96.7102 |
| 60 | 5 | -0.612813 | 100.629 | -99.7742 |
| 61 | 5 | -0.60076 | 100.99 | -102.778 |
| 62 | 5 | -0.585815 | 101.333 | -105.707 |
| 63 | 5 | -0.573953 | 101.663 | -108.577 |
| 64 | 5 | -0.559237 | 101.975 | -111.373 |
| 65 | 5 | -0.547551 | 102.275 | -114.111 |
| 66 | 5 | -0.533048 | 102.559 | -116.776 |
| 67 | 5 | -0.521527 | 102.831 | -119.384 |
| 68 | 5 | -0.507221 | 103.089 | -121.92 |
| 69 | 5 | -0.49585 | 103.334 | -124.399 |
| 70 | 5 | -0.481728 | 103.566 | -126.808 |
| 71 | 5 | -0.470498 | 103.788 | -129.16 |
| 72 | 5 | -0.456542 | 103.996 | -131.443 |
| 73 | 5 | -0.445443 | 104.195 | -133.67 |
| 74 | 5 | -0.431644 | 104.381 | -135.828 |
| 75 | 5 | -0.420664 | 104.558 | -137.932 |
| 76 | 5 | -0.40701 | 104.724 | -139.967 |
| 77 | 5 | -0.396142 | 104.881 | -141.947 |
| 78 | 5 | -0.382622 | 105.027 | -143.861 |
| 79 | 5 | -0.371856 | 105.165 | -145.72 |
| 80 | 5 | -0.358459 | 105.294 | -147.512 |
| 81 | 5 | -0.347787 | 105.415 | -149.251 |
| 82 | 5 | -0.334503 | 105.527 | -150.924 |
| 83 | 5 | -0.323919 | 105.632 | -152.543 |
| 84 | 5 | -0.310738 | 105.728 | -154.097 |
| 85 | 5 | -0.300232 | 105.818 | -155.598 |
| 86 | 5 | -0.287147 | 105.901 | -157.034 |
| 87 | 5 | -0.276714 | 105.977 | -158.417 |
| 88 | 5 | -0.263715 | 106.047 | -159.736 |
| 89 | 5 | -0.253347 | 106.111 | -161.003 |
| 90 | 5 | -0.240426 | 106.169 | -162.205 |
| 91 | 5 | -0.230118 | 106.222 | -163.355 |
| 92 | 5 | -0.217267 | 106.269 | -164.442 |
| 93 | 5 | -0.207012 | 106.312 | -165.477 |
| 94 | 5 | -0.194225 | 106.35 | -166.448 |
| 95 | 5 | -0.184017 | 106.383 | -167.368 |
| 96 | 5 | -0.171285 | 106.413 | -168.224 |
| 97 | 5 | -0.161119 | 106.439 | -169.03 |
| 98 | 5 | -0.148434 | 106.461 | -169.772 |
| 99 | 5 | -0.138305 | 106.48 | -170.464 |
| 100 | 5 | -0.125661 | 106.496 | -171.092 |
| 101 | 5 | -0.115562 | 106.509 | -171.67 |
| 102 | 5 | -0.102953 | 106.52 | -172.185 |
| 103 | 5 | -0.0928787 | 106.528 | -172.649 |
| 104 | 5 | -0.0802981 | 106.535 | -173.05 |
| 105 | 5 | -0.0702426 | 106.54 | -173.402 |
| 106 | 5 | -0.0576847 | 106.543 | -173.69 |
| 107 | 5 | -0.0476439 | 106.545 | -173.928 |
| 108 | 5 | -0.0350997 | 106.546 | -174.104 |
| 109 | 5 | -0.0250691 | 106.547 | -174.229 |
| 110 | 5 | -0.0125328 | 106.547 | -174.292 |
| 111 | 5 | 0 | 106.547 | -174.292 |

| | | | | |
|---|---|---|---|---|
| 112 | 5 | 0.0125328 | 106.547 | -174.229 |
| 113 | 5 | 0.0250691 | 106.548 | -174.104 |
| 114 | 5 | 0.0350997 | 106.549 | -173.928 |
| 115 | 5 | 0.0476439 | 106.551 | -173.69 |
| 116 | 5 | 0.0576847 | 106.555 | -173.402 |
| 117 | 5 | 0.0702426 | 106.56 | -173.05 |
| 118 | 5 | 0.0802981 | 106.566 | -172.649 |
| 119 | 5 | 0.0928787 | 106.575 | -172.185 |
| 120 | 5 | 0.102953 | 106.585 | -171.67 |
| 121 | 5 | 0.115562 | 106.599 | -171.092 |
| 122 | 5 | 0.125661 | 106.615 | -170.464 |
| 123 | 5 | 0.138305 | 106.634 | -169.772 |
| 124 | 5 | 0.148434 | 106.656 | -169.03 |
| 125 | 5 | 0.161119 | 106.682 | -168.224 |
| 126 | 5 | 0.171285 | 106.711 | -167.368 |
| 127 | 5 | 0.184017 | 106.745 | -166.448 |
| 128 | 5 | 0.194225 | 106.783 | -165.477 |
| 129 | 5 | 0.207012 | 106.825 | -164.442 |
| 130 | 5 | 0.217267 | 106.873 | -163.355 |
| 131 | 5 | 0.230118 | 106.926 | -162.205 |
| 132 | 5 | 0.240426 | 106.983 | -161.003 |
| 133 | 5 | 0.253347 | 107.048 | -159.736 |
| 134 | 5 | 0.263715 | 107.117 | -158.417 |
| 135 | 5 | 0.276714 | 107.194 | -157.034 |
| 136 | 5 | 0.287147 | 107.276 | -155.598 |
| 137 | 5 | 0.300232 | 107.366 | -154.097 |
| 138 | 5 | 0.310738 | 107.463 | -152.543 |
| 139 | 5 | 0.323919 | 107.568 | -150.924 |
| 140 | 5 | 0.334503 | 107.68 | -149.251 |
| 141 | 5 | 0.347787 | 107.801 | -147.512 |
| 142 | 5 | 0.358459 | 107.929 | -145.72 |
| 143 | 5 | 0.371856 | 108.067 | -143.861 |
| 144 | 5 | 0.382622 | 108.214 | -141.947 |
| 145 | 5 | 0.396142 | 108.371 | -139.967 |
| 146 | 5 | 0.40701 | 108.536 | -137.932 |
| 147 | 5 | 0.420664 | 108.713 | -135.828 |
| 148 | 5 | 0.431644 | 108.9 | -133.67 |
| 149 | 5 | 0.445443 | 109.098 | -131.443 |
| 150 | 5 | 0.456542 | 109.307 | -129.16 |
| 151 | 5 | 0.470498 | 109.528 | -126.808 |
| 152 | 5 | 0.481728 | 109.76 | -124.399 |
| 153 | 5 | 0.49585 | 110.006 | -121.92 |
| 154 | 5 | 0.507221 | 110.263 | -119.384 |
| 155 | 5 | 0.521527 | 110.535 | -116.776 |
| 156 | 5 | 0.533048 | 110.819 | -114.111 |
| 157 | 5 | 0.547551 | 111.119 | -111.373 |
| 158 | 5 | 0.559237 | 111.432 | -108.577 |
| 159 | 5 | 0.573953 | 111.761 | -105.707 |
| 160 | 5 | 0.585815 | 112.104 | -102.778 |
| 161 | 5 | 0.60076 | 112.465 | -99.7742 |
| 162 | 5 | 0.612813 | 112.841 | -96.7102 |
| 163 | 5 | 0.628006 | 113.235 | -93.5702 |
| 164 | 5 | 0.640266 | 113.645 | -90.3688 |
| 165 | 5 | 0.655726 | 114.075 | -87.0902 |
| 166 | 5 | 0.668209 | 114.522 | -83.7491 |
| 167 | 5 | 0.68396 | 114.989 | -80.3293 |
| 168 | 5 | 0.696684 | 115.475 | -76.8459 |
| 169 | 5 | 0.712751 | 115.983 | -73.2822 |
| 170 | 5 | 0.725736 | 116.51 | -69.6535 |
| 171 | 5 | 0.742143 | 117.06 | -65.9428 |
| 172 | 5 | 0.755415 | 117.631 | -62.1657 |
| 173 | 5 | 0.772193 | 118.227 | -58.3047 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 5 | 0.785774 | | 118.845 | -54.3759 |
| 175 | 5 | 0.802956 | | 119.489 | -50.3611 |
| 176 | 5 | 0.816874 | | 120.157 | -46.2767 |
| 177 | 5 | 0.834498 | | 120.853 | -42.1042 |
| 178 | 5 | 0.848786 | | 121.574 | -37.8603 |
| 179 | 5 | 0.866894 | | 122.325 | -33.5258 |
| 180 | 5 | 0.881587 | | 123.102 | -29.1179 |
| 181 | 5 | 0.900227 | | 123.913 | -24.6168 |
| 182 | 5 | 0.915365 | | 124.751 | -20.0399 |
| 183 | 5 | 0.93459 | 125.624 | -15.367 | |
| 184 | 5 | 0.950222 | | 126.527 | -10.6159 |
| 185 | 5 | 0.970094 | | 127.468 | -5.7654 |
| 186 | 5 | 0.986272 | | 128.441 | -0.834038 |
| 187 | 5 | 1.00687 | 129.455 | 4.20029 | |
| 188 | 5 | 1.02365 | 130.502 | 9.31855 | |
| 189 | 5 | 1.04505 | 131.594 | 14.5438 | |
| 190 | 5 | 1.06252 | 132.723 | 19.8564 | |
| 191 | 5 | 1.08482 | 133.9 | 25.2805 | |
| 192 | 5 | 1.10306 | 135.117 | 30.7958 | |
| 193 | 5 | 1.12639 | 136.386 | 36.4278 | |
| 194 | 5 | 1.1455 | 137.698 | 42.1553 | |
| 195 | 5 | 1.17 | 139.067 | 48.0053 | |
| 196 | 5 | 1.19012 | 140.483 | 53.9559 | |
| 197 | 5 | 1.21596 | 141.962 | 60.0357 | |
| 198 | 5 | 1.23724 | 143.493 | 66.2219 | |
| 199 | 5 | 1.26464 | 145.092 | 72.5451 | |
| 200 | 5 | 1.28727 | 146.749 | 78.9814 | |
| 201 | 5 | 1.31652 | 148.482 | 85.564 | |
| 202 | 5 | 1.34075 | 150.28 | 92.2678 | |
| 203 | 5 | 1.3722 | 152.163 | 99.1288 | |
| 204 | 5 | 1.39838 | 154.118 | 106.121 | |
| 205 | 5 | 1.4325 | 156.17 | 113.283 | |
| 206 | 5 | 1.46106 | 158.305 | 120.589 | |
| 207 | 5 | 1.49852 | 160.551 | 128.081 | |
| 208 | 5 | 1.53007 | 162.892 | 135.731 | |
| 209 | 5 | 1.57179 | 165.362 | 143.59 | |
| 210 | 5 | 1.60725 | 167.945 | 151.627 | |
| 211 | 5 | 1.65463 | 170.683 | 159.9 | |
| 212 | 5 | 1.6954 | 173.558 | 168.377 | |
| 213 | 5 | 1.75069 | 176.622 | 177.13 | |
| 214 | 5 | 1.79912 | 179.859 | 186.126 | |
| 215 | 5 | 1.86629 | 183.342 | 195.457 | |
| 216 | 5 | 1.92684 | 187.055 | 205.091 | |
| 217 | 5 | 2.01409 | 191.112 | 215.162 | |
| 218 | 41 | 2.09693 | 195.509 | 301.136 | |
| 219 | 44 | 2.22621 | 200.465 | 399.089 | |
| 220 | 46 | 2.36561 | 206.061 | 507.907 | |
| 221 | 56 | 2.65209 | 213.094 | 656.424 | |

Data Set Standard Deviation = 6.01237
Numerator = 430893
Denominator = 1.69468e+006
W Statistic = 0.254263 = 430893 / 1.69468e+006

5% Critical value of 0.976 exceeds 0.254263
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.254263
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: Beryllium

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | -3.35241 | -2.65209 | 7.03356 | 8.89087 |
| 2 | -3.35241 | -2.36561 | 12.6297 | 16.8214 |
| 3 | -3.35241 | -2.22621 | 17.5857 | 24.2845 |
| 4 | -3.35241 | -2.09693 | 21.9828 | 31.3143 |
| 5 | -3.35241 | -2.01409 | 26.0394 | 38.0664 |
| 6 | -3.35241 | -1.92684 | 29.7521 | 44.5259 |
| 7 | -3.35241 | -1.86629 | 33.2351 | 50.7825 |
| 8 | -3.35241 | -1.79912 | 36.472 | 56.8138 |
| 9 | -3.35241 | -1.75069 | 39.5369 | 62.6829 |
| 10 | -3.35241 | -1.6954 | 42.4112 | 68.3665 |
| 11 | -3.35241 | -1.65463 | 45.149 | 73.9135 |
| 12 | -3.35241 | -1.60725 | 47.7323 | 79.3017 |
| 13 | -3.35241 | -1.57179 | 50.2028 | 84.5709 |
| 14 | -3.35241 | -1.53007 | 52.5439 | 89.7003 |
| 15 | -3.35241 | -1.49852 | 54.7894 | 94.724 |
| 16 | -3.35241 | -1.46106 | 56.9241 | 99.622 |
| 17 | -3.35241 | -1.4325 | 58.9762 | 104.424 |
| 18 | -3.35241 | -1.39838 | 60.9316 | 109.112 |
| 19 | -3.35241 | -1.3722 | 62.8146 | 113.712 |
| 20 | -3.35241 | -1.34075 | 64.6122 | 118.207 |
| 21 | -3.35241 | -1.31652 | 66.3454 | 122.621 |
| 22 | -3.35241 | -1.28727 | 68.0025 | 126.936 |
| 23 | -3.35241 | -1.26464 | 69.6018 | 131.176 |
| 24 | -3.35241 | -1.23724 | 71.1326 | 135.324 |
| 25 | -3.35241 | -1.21596 | 72.6111 | 139.4 |
| 26 | -2.65926 | -1.19012 | 74.0275 | 142.565 |
| 27 | -2.12026 | -1.17 | 75.3964 | 145.045 |
| 28 | -2.12026 | -1.1455 | 76.7086 | 147.474 |
| 29 | -2.04022 | -1.12639 | 77.9774 | 149.772 |
| 30 | -1.74297 | -1.10306 | 79.1941 | 151.695 |
| 31 | -1.74297 | -1.08482 | 80.371 | 153.586 |
| 32 | -1.10866 | -1.06252 | 81.4999 | 154.764 |
| 33 | -1.07881 | -1.04505 | 82.592 | 155.891 |
| 34 | -1.02165 | -1.02365 | 83.6399 | 156.937 |
| 35 | -0.994252 | -1.00687 | 84.6537 | 157.938 |
| 36 | 0.693147 | -0.986272 | 85.6264 | 157.254 |
| 37 | 1.60944 | -0.970094 | 86.5675 | 155.693 |
| 38 | 1.60944 | -0.950222 | 87.4704 | 154.164 |
| 39 | 1.60944 | -0.934598 | 88.3439 | 152.66 |
| 40 | 1.60944 | -0.915365 | 89.1818 | 151.186 |
| 41 | 1.60944 | -0.900227 | 89.9922 | 149.738 |
| 42 | 1.60944 | -0.881587 | 90.7694 | 148.319 |
| 43 | 1.60944 | -0.866894 | 91.5209 | 146.923 |
| 44 | 1.60944 | -0.848786 | 92.2413 | 145.557 |
| 45 | 1.60944 | -0.834498 | 92.9377 | 144.214 |
| 46 | 1.60944 | -0.816874 | 93.605 | 142.9 |
| 47 | 1.60944 | -0.802956 | 94.2497 | 141.607 |
| 48 | 1.60944 | -0.785774 | 94.8672 | 140.343 |
| 49 | 1.60944 | -0.772193 | 95.4634 | 139.1 |

| | | | | |
|---|---|---|---|---|
| 50 | 1.60944 | -0.755415 | 96.0341 | 137.884 |
| 51 | 1.60944 | -0.742143 | 96.5849 | 136.69 |
| 52 | 1.60944 | -0.725736 | 97.1116 | 135.522 |
| 53 | 1.60944 | -0.712751 | 97.6196 | 134.374 |
| 54 | 1.60944 | -0.696684 | 98.1049 | 133.253 |
| 55 | 1.60944 | -0.683969 | 8.5727 | 132.152 |
| 56 | 1.60944 | -0.668209 | 99.0192 | 131.077 |
| 57 | 1.60944 | -0.655726 | 99.4492 | 130.022 |
| 58 | 1.60944 | -0.640266 | 99.8592 | 128.991 |
| 59 | 1.60944 | -0.628006 | 100.254 | 127.98 |
| 60 | 1.60944 | -0.612813 | 100.629 | 126.994 |
| 61 | 1.60944 | -0.60076 | 100.99 | 126.027 |
| 62 | 1.60944 | -0.585815 | 101.333 | 125.084 |
| 63 | 1.60944 | -0.573953 | 101.663 | 124.161 |
| 64 | 1.60944 | -0.559237 | 101.975 | 123.261 |
| 65 | 1.60944 | -0.547551 | 102.275 | 122.379 |
| 66 | 1.60944 | -0.533048 | 102.559 | 121.521 |
| 67 | 1.60944 | -0.521527 | 102.831 | 120.682 |
| 68 | 1.60944 | -0.507221 | 103.089 | 119.866 |
| 69 | 1.60944 | -0.49585 | 103.334 | 119.068 |
| 70 | 1.60944 | -0.481728 | 103.566 | 118.292 |
| 71 | 1.60944 | -0.470498 | 103.788 | 117.535 |
| 72 | 1.60944 | -0.456542 | 103.996 | 116.8 |
| 73 | 1.60944 | -0.445443 | 104.195 | 116.083 |
| 74 | 1.60944 | -0.431644 | 104.381 | 115.389 |
| 75 | 1.60944 | -0.420664 | 104.558 | 114.712 |
| 76 | 1.60944 | -0.40701 | 104.724 | 114.057 |
| 77 | 1.60944 | -0.396142 | 104.881 | 113.419 |
| 78 | 1.60944 | -0.382622 | 105.027 | 112.803 |
| 79 | 1.60944 | -0.371856 | 105.165 | 112.205 |
| 80 | 1.60944 | -0.358459 | 105.294 | 111.628 |
| 81 | 1.60944 | -0.347787 | 105.415 | 111.068 |
| 82 | 1.60944 | -0.334503 | 105.527 | 110.53 |
| 83 | 1.60944 | -0.323919 | 105.632 | 110.008 |
| 84 | 1.60944 | -0.310738 | 105.728 | 109.508 |
| 85 | 1.60944 | -0.300232 | 105.818 | 109.025 |
| 86 | 1.60944 | -0.287147 | 105.901 | 108.563 |
| 87 | 1.60944 | -0.276714 | 105.977 | 108.118 |
| 88 | 1.60944 | -0.263715 | 106.047 | 107.693 |
| 89 | 1.60944 | -0.253347 | 106.111 | 107.285 |
| 90 | 1.60944 | -0.240426 | 106.169 | 106.899 |
| 91 | 1.60944 | -0.230118 | 106.222 | 106.528 |
| 92 | 1.60944 | -0.217267 | 106.269 | 106.178 |
| 93 | 1.60944 | -0.207012 | 106.312 | 105.845 |
| 94 | 1.60944 | -0.194225 | 106.35 | 105.533 |
| 95 | 1.60944 | -0.184017 | 106.383 | 105.237 |
| 96 | 1.60944 | -0.171285 | 106.413 | 104.961 |
| 97 | 1.60944 | -0.161119 | 106.439 | 104.702 |
| 98 | 1.60944 | -0.148434 | 106.461 | 104.463 |
| 99 | 1.60944 | -0.138305 | 106.48 | 104.24 |
| 100 | 1.60944 | -0.125661 | 106.496 | 104.038 |
| 101 | 1.60944 | -0.115562 | 106.509 | 103.852 |
| 102 | 1.60944 | -0.102953 | 106.52 | 103.686 |
| 103 | 1.60944 | -0.0928787 | 106.528 | 103.537 |
| 104 | 1.60944 | -0.0802981 | 106.535 | 103.407 |
| 105 | 1.60944 | -0.0702426 | 106.54 | 103.294 |
| 106 | 1.60944 | -0.0576847 | 106.543 | 103.202 |
| 107 | 1.60944 | -0.0476439 | 106.545 | 103.125 |
| 108 | 1.60944 | -0.0350997 | 106.546 | 103.068 |
| 109 | 1.60944 | -0.0250691 | 106.547 | 103.028 |
| 110 | 1.60944 | -0.0125328 | 106.547 | 103.008 |
| 111 | 1.60944 | 0 | 106.547 | 103.008 |

| | | | | |
|---|---|---|---|---|
| 112 | 1.60944 | 0.0125328 | 106.547 | 103.028 |
| 113 | 1.60944 | 0.0250691 | 106.548 | 103.068 |
| 114 | 1.60944 | 0.0350997 | 106.549 | 103.125 |
| 115 | 1.60944 | 0.0476439 | 106.551 | 103.202 |
| 116 | 1.60944 | 0.0576847 | 106.555 | 103.294 |
| 117 | 1.60944 | 0.0702426 | 106.56 | 103.407 |
| 118 | 1.60944 | 0.0802981 | 106.566 | 103.537 |
| 119 | 1.60944 | 0.0928787 | 106.575 | 103.686 |
| 120 | 1.60944 | 0.102953 | 106.585 | 103.852 |
| 121 | 1.60944 | 0.115562 | 106.599 | 104.038 |
| 122 | 1.60944 | 0.125661 | 106.615 | 104.24 |
| 123 | 1.60944 | 0.138305 | 106.634 | 104.463 |
| 124 | 1.60944 | 0.148434 | 106.656 | 104.702 |
| 125 | 1.60944 | 0.161119 | 106.682 | 104.961 |
| 126 | 1.60944 | 0.171285 | 106.711 | 105.237 |
| 127 | 1.60944 | 0.184017 | 106.745 | 105.533 |
| 128 | 1.60944 | 0.194225 | 106.783 | 105.845 |
| 129 | 1.60944 | 0.207012 | 106.825 | 106.178 |
| 130 | 1.60944 | 0.217267 | 106.873 | 106.528 |
| 131 | 1.60944 | 0.230118 | 106.926 | 106.899 |
| 132 | 1.60944 | 0.240426 | 106.983 | 107.285 |
| 133 | 1.60944 | 0.253347 | 107.048 | 107.693 |
| 134 | 1.60944 | 0.263715 | 107.117 | 108.118 |
| 135 | 1.60944 | 0.276714 | 107.194 | 108.563 |
| 136 | 1.60944 | 0.287147 | 107.276 | 109.025 |
| 137 | 1.60944 | 0.300232 | 107.366 | 109.508 |
| 138 | 1.60944 | 0.310738 | 107.463 | 110.008 |
| 139 | 1.60944 | 0.323919 | 107.568 | 110.53 |
| 140 | 1.60944 | 0.334503 | 107.68 | 111.068 |
| 141 | 1.60944 | 0.347787 | 107.801 | 111.628 |
| 142 | 1.60944 | 0.358459 | 107.929 | 112.205 |
| 143 | 1.60944 | 0.371856 | 108.067 | 112.803 |
| 144 | 1.60944 | 0.382622 | 108.214 | 113.419 |
| 145 | 1.60944 | 0.396142 | 108.371 | 114.057 |
| 146 | 1.60944 | 0.40701 | 108.536 | 114.712 |
| 147 | 1.60944 | 0.420664 | 108.713 | 115.389 |
| 148 | 1.60944 | 0.431644 | 108.9 | 116.083 |
| 149 | 1.60944 | 0.445443 | 109.098 | 116.8 |
| 150 | 1.60944 | 0.456542 | 109.307 | 117.535 |
| 151 | 1.60944 | 0.470498 | 109.528 | 118.292 |
| 152 | 1.60944 | 0.481728 | 109.76 | 119.068 |
| 153 | 1.60944 | 0.49585 | 110.006 | 119.866 |
| 154 | 1.60944 | 0.507221 | 110.263 | 120.682 |
| 155 | 1.60944 | 0.521527 | 110.535 | 121.521 |
| 156 | 1.60944 | 0.533048 | 110.819 | 122.379 |
| 157 | 1.60944 | 0.547551 | 111.119 | 123.261 |
| 158 | 1.60944 | 0.559237 | 111.432 | 124.161 |
| 159 | 1.60944 | 0.573953 | 111.761 | 125.084 |
| 160 | 1.60944 | 0.585815 | 112.104 | 126.027 |
| 161 | 1.60944 | 0.60076 | 112.465 | 126.994 |
| 162 | 1.60944 | 0.612813 | 112.841 | 127.98 |
| 163 | 1.60944 | 0.628006 | 113.235 | 128.991 |
| 164 | 1.60944 | 0.640266 | 113.645 | 130.022 |
| 165 | 1.60944 | 0.655726 | 114.075 | 131.077 |
| 166 | 1.60944 | 0.668209 | 114.522 | 132.152 |
| 167 | 1.60944 | 0.68396 | 114.989 | 133.253 |
| 168 | 1.60944 | 0.696684 | 115.475 | 134.374 |
| 169 | 1.60944 | 0.712751 | 115.983 | 135.522 |
| 170 | 1.60944 | 0.725736 | 116.51 | 136.69 |
| 171 | 1.60944 | 0.742143 | 117.06 | 137.884 |
| 172 | 1.60944 | 0.755415 | 117.631 | 139.1 |
| 173 | 1.60944 | 0.772193 | 118.227 | 140.343 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 1.60944 | 0.785774 | | 118.845 | 141.607 |
| 175 | 1.60944 | 0.802956 | | 119.489 | 142.9 |
| 176 | 1.60944 | 0.816874 | | 120.157 | 144.214 |
| 177 | 1.60944 | 0.834498 | | 120.853 | 145.557 |
| 178 | 1.60944 | 0.848786 | | 121.574 | 146.923 |
| 179 | 1.60944 | 0.866894 | | 122.325 | 148.319 |
| 180 | 1.60944 | 0.881587 | | 123.102 | 149.738 |
| 181 | 1.60944 | 0.900227 | | 123.913 | 151.186 |
| 182 | 1.60944 | 0.915365 | | 124.751 | 152.66 |
| 183 | 1.60944 | 0.93459 | 125.624 | 154.164 | |
| 184 | 1.60944 | 0.950222 | | 126.527 | 155.693 |
| 185 | 1.60944 | 0.970094 | | 127.468 | 157.254 |
| 186 | 1.60944 | 0.986272 | | 128.441 | 158.842 |
| 187 | 1.60944 | 1.00687 | 129.455 | 160.462 | |
| 188 | 1.60944 | 1.02365 | 130.502 | 162.11 | |
| 189 | 1.60944 | 1.04505 | 131.594 | 163.792 | |
| 190 | 1.60944 | 1.06252 | 132.723 | 165.502 | |
| 191 | 1.60944 | 1.08482 | 133.9 | 167.248 | |
| 192 | 1.60944 | 1.10306 | 135.117 | 169.023 | |
| 193 | 1.60944 | 1.12639 | 136.386 | 170.836 | |
| 194 | 1.60944 | 1.1455 | 137.698 | 172.679 | |
| 195 | 1.60944 | 1.17 | 139.067 | 174.563 | |
| 196 | 1.60944 | 1.19012 | 140.483 | 176.478 | |
| 197 | 1.60944 | 1.21596 | 141.962 | 178.435 | |
| 198 | 1.60944 | 1.23724 | 143.493 | 180.426 | |
| 199 | 1.60944 | 1.26464 | 145.092 | 182.462 | |
| 200 | 1.60944 | 1.28727 | 146.749 | 184.533 | |
| 201 | 1.60944 | 1.31652 | 148.482 | 186.652 | |
| 202 | 1.60944 | 1.34075 | 150.28 | 188.81 | |
| 203 | 1.60944 | 1.3722 | 152.163 | 191.019 | |
| 204 | 1.60944 | 1.39838 | 154.118 | 193.269 | |
| 205 | 1.60944 | 1.4325 | 156.17 | 195.575 | |
| 206 | 1.60944 | 1.46106 | 158.305 | 197.926 | |
| 207 | 1.60944 | 1.49852 | 160.551 | 200.338 | |
| 208 | 1.60944 | 1.53007 | 162.892 | 202.8 | |
| 209 | 1.60944 | 1.57179 | 165.362 | 205.33 | |
| 210 | 1.60944 | 1.60725 | 167.945 | 207.917 | |
| 211 | 1.60944 | 1.65463 | 170.683 | 210.58 | |
| 212 | 1.60944 | 1.6954 | 173.558 | 213.309 | |
| 213 | 1.60944 | 1.75069 | 176.622 | 216.126 | |
| 214 | 1.60944 | 1.79912 | 179.859 | 219.022 | |
| 215 | 1.60944 | 1.86629 | 183.342 | 222.025 | |
| 216 | 1.60944 | 1.92684 | 187.055 | 225.127 | |
| 217 | 1.60944 | 2.01409 | 191.112 | 228.368 | |
| 218 | 3.71357 | 2.09693 | 195.509 | 236.155 | |
| 219 | 3.78419 | 2.22621 | 200.465 | 244.58 | |
| 220 | 3.82864 | 2.36561 | 206.061 | 253.637 | |
| 221 | 4.02535 | 2.65209 | 213.094 | 264.312 | |

Data Set Standard Deviation = 1.71393
Numerator = 69861
Denominator = 137715
W Statistic = 0.507287 = 69861 / 137715

5% Critical value of 0.976 exceeds 0.507287
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.507287
Evidence of non-normality at 99% level of significance

# Non-Parametric Prediction Interval

## Inter-Well Comparison

## Parameter: Beryllium

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 94.1176%
Number of comparisons = 8
Future Samples (k) = 8
Recent Dates = 1
Background Samples (n) = 18
Maximum Background Concentration = 1.60944
Confidence Level = 69.2%
False Positive Rate = 30.8%

| Location | Date | Samples | Mean | Significant |
|---|---|---|---|---|
| MW-8 | 11/12/2010 | 1 | -1.74297 | FALSE |
| MW-11R | 11/12/2010 | 1 | -3.35241 | FALSE |
| MW-12BR | 11/12/2010 | 1 | -1.07881 | FALSE |
| MW-10 | 11/12/2010 | 1 | -1.74297 | FALSE |
| MW-6 | 11/12/2010 | 1 | -3.35241 | FALSE |
| MW-7 | 11/12/2010 | 1 | -3.35241 | FALSE |
| MW-9 | 11/12/2010 | 1 | -3.35241 | FALSE |
| MW-12AR | 11/12/2010 | 1 | -2.65926 | FALSE |

# Concentrations (ppb)

## Parameter: Chlorobenzene

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 177
Percent Non-Detects: 80.0905%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 18 (100%) | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.25 | ND<0.25 |
| | | | 11/16/2009 | ND<0.25 | ND<0.25 |
| | | | 6/30/2010 | ND<0.25 | ND<0.25 |
| | | | 11/12/2010 | ND<0.25 U | ND<0.25 U |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-11R | 28 | 28 (100%) | 7/20/1995 | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 |
| | | | 9/28/1995 | ND<2 | ND<2 |
| | | | 10/26/1995 | ND<2 | ND<2 |
| | | | 11/19/1996 | ND<2 | ND<2 |
| | | | 12/19/1996 | ND<2 | ND<2 |
| | | | 3/24/1997 | ND<2 | ND<2 |
| | | | 9/24/1997 | ND<2 | ND<2 |
| | | | 4/7/1998 | ND<2 | ND<2 |
| | | | 9/23/1998 | ND<2 | ND<2 |
| | | | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.25 | | ND<0.25 |
| | | | 11/16/2009 | ND<0.25 | | ND<0.25 |
| | | | 6/30/2010 | ND<0.25 | | ND<0.25 |
| | | | 11/12/2010 | ND<0.25 U | | ND<0.25 U |
| MW-12BR | 18 | 17 (94.4444%) | 3/16/1999 | | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 1.01 J | 1.01 J | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.25 | | ND<0.25 |
| | | | 11/16/2009 | ND<0.25 | | ND<0.25 |
| | | | 6/30/2010 | ND<0.25 | | ND<0.25 |
| | | | 11/12/2010 | ND<0.25 U | | ND<0.25 U |
| MW-6 | 28 | 28 (100%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.25 | | ND<0.25 |
| | | | 11/16/2009 | ND<0.25 | | ND<0.25 |
| | | | 6/30/2010 | ND<0.25 | | ND<0.25 |
| | | | 11/12/2010 | ND<0.25 U | | ND<0.25 U |
| MW-7 | 28 | 25 (89.2857%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | 0.29 J | 0.29 J | |
| | | | 6/11/2009 | ND<0.25 | | ND<0.25 |
| | | | 11/16/2009 | ND<0.25 | | ND<0.25 |
| | | | 6/30/2010 | 0.59 J | 0.59 J | |
| | | | 11/12/2010 | 0.36 J | 0.36 J | |
| MW-9 | 28 | 14 (50%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | 0.3 J | 0.3 J | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | 0.3 J | 0.3 J | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 0.52 J | 0.52 J | |
| | | | 10/25/2005 | 0.34 J | 0.34 J | |
| | | | 4/29/2006 | 0.25 J | 0.25 J | |
| | | | 11/18/2006 | 0.28 J | 0.28 J | |
| | | | 5/23/2007 | 1.1 | 1.1 | |
| | | | 11/28/2007 | 0.74 J | 0.74 J | |
| | | | 6/5/2008 | 0.56 J | 0.56 J | |
| | | | 11/20/2008 | 0.65 J | 0.65 J | |
| | | | 6/11/2009 | 0.81 J | 0.81 J | |
| | | | 11/16/2009 | 0.8 J | 0.8 J | |
| | | | 6/30/2010 | 1.4 | 1.4 | |
| | | | 11/12/2010 | 1 | 1 | |
| MW-10 | 28 | 18 (64.2857%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 0.33 J | 0.33 J | |
| | | | 10/25/2005 | 0.43 J | 0.43 J | |
| | | | 4/29/2006 | 0.59 J | 0.59 J | |
| | | | 11/18/2006 | 0.4 J | 0.4 J | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | 0.59 J | 0.59 J | |
| | | | 6/5/2008 | 0.6 J | 0.6 J | |
| | | | 11/20/2008 | 0.62 J | 0.62 J | |
| | | | 6/11/2009 | 0.45 J | 0.45 J | |
| | | | 11/16/2009 | 0.63 J | 0.63 J | |
| | | | 6/30/2010 | ND<0.25 | | ND<0.25 |
| | | | 11/12/2010 | 0.69 J | 0.69 J | |
| MW-8 | 27 | 18 (66.6667%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | 2.75 | 2.75 | |
| | | | 4/29/2006 | 1.69 J | 1.69 J | |
| | | | 11/18/2006 | 3.46 | 3.46 | |
| | | | 5/23/2007 | 2.2 | 2.2 | |
| | | | 11/28/2007 | 3.36 | 3.36 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | 2.18 | 2.18 | |
| | | | 6/11/2009 | 4.8 | 4.8 | |
| | | | 6/30/2010 | 1.9 | 1.9 | |
| | | | 11/12/2010 | 4.4 | 4.4 | |
| MW-12AR | 18 | 11 (61.1111%) | 3/16/1999 | | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | 0.57 J | 0.57 J | |
| | | | 4/29/2006 | 0.62 J | 0.62 J | |
| | | | 11/18/2006 | 0.53 J | 0.53 J | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | 0.56 J | 0.56 J | |
| | | | 6/5/2008 | 0.65 J | 0.65 J | |
| | | | 11/20/2008 | 0.4 J | 0.4 J | |
| | | | 6/11/2009 | ND<0.25 | | ND<0.25 |
| | | | 11/16/2009 | ND<0.25 | | ND<0.25 |
| | | | 6/30/2010 | ND<0.25 | | ND<0.25 |

| | | | |
|---|---|---|---|
| 11/12/2010 | 0.73 J | 0.73 J | |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. Original |
|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: Chlorobenzene

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.125 | -2.65209 | 7.03356 | -0.331511 |
| 2 | 0.125 | -2.36561 | 12.6297 | -0.627213 |
| 3 | 0.125 | -2.22621 | 17.5857 | -0.905488 |
| 4 | 0.125 | -2.09693 | 21.9828 | -1.1676 |
| 5 | 0.125 | -2.01409 | 26.0394 | -1.41937 |
| 6 | 0.125 | -1.92684 | 29.7521 | -1.66022 |
| 7 | 0.125 | -1.86629 | 33.2351 | -1.89351 |
| 8 | 0.125 | -1.79912 | 36.472 | -2.1184 |
| 9 | 0.125 | -1.75069 | 39.5369 | -2.33723 |
| 10 | 0.125 | -1.6954 | 42.4112 | -2.54916 |
| 11 | 0.125 | -1.65463 | 45.149 | -2.75599 |
| 12 | 0.125 | -1.60725 | 47.7323 | -2.95689 |
| 13 | 0.125 | -1.57179 | 50.2028 | -3.15337 |
| 14 | 0.125 | -1.53007 | 52.5439 | -3.34462 |
| 15 | 0.125 | -1.49852 | 54.7894 | -3.53194 |
| 16 | 0.125 | -1.46106 | 56.9241 | -3.71457 |
| 17 | 0.125 | -1.4325 | 58.9762 | -3.89363 |
| 18 | 0.125 | -1.39838 | 60.9316 | -4.06843 |
| 19 | 0.125 | -1.3722 | 62.8146 | -4.23996 |
| 20 | 0.125 | -1.34075 | 64.6122 | -4.40755 |
| 21 | 0.125 | -1.31652 | 66.3454 | -4.57212 |
| 22 | 0.125 | -1.28727 | 68.0025 | -4.73302 |
| 23 | 0.25 | -1.26464 | 69.6018 | -5.04918 |
| 24 | 0.28 | -1.23724 | 71.1326 | -5.39561 |
| 25 | 0.29 | -1.21596 | 72.6111 | -5.74824 |
| 26 | 0.3 | -1.19012 | 74.0275 | -6.10528 |
| 27 | 0.3 | -1.17 | 75.3964 | -6.45628 |
| 28 | 0.33 | -1.1455 | 76.7086 | -6.83429 |
| 29 | 0.34 | -1.12639 | 77.9774 | -7.21726 |
| 30 | 0.36 | -1.10306 | 79.1941 | -7.61437 |
| 31 | 0.4 | -1.08482 | 80.371 | -8.0483 |
| 32 | 0.4 | -1.06252 | 81.4999 | -8.4733 |
| 33 | 0.43 | -1.04505 | 82.592 | -8.92268 |
| 34 | 0.45 | -1.02365 | 83.6399 | -9.38332 |
| 35 | 0.52 | -1.00687 | 84.6537 | -9.90689 |
| 36 | 0.53 | -0.986272 | 85.6264 | -10.4296 |
| 37 | 0.56 | -0.970094 | 86.5675 | -10.9729 |
| 38 | 0.56 | -0.950222 | 87.4704 | -11.505 |
| 39 | 0.57 | -0.93459 | 88.3439 | -12.0377 |
| 40 | 0.59 | -0.915365 | 89.1818 | -12.5778 |
| 41 | 0.59 | -0.900227 | 89.9922 | -13.1089 |
| 42 | 0.59 | -0.881587 | 90.7694 | -13.629 |
| 43 | 0.6 | -0.866894 | 91.5209 | -14.1492 |
| 44 | 0.62 | -0.848786 | 92.2413 | -14.6754 |
| 45 | 0.62 | -0.834498 | 92.9377 | -15.1928 |
| 46 | 0.63 | -0.816874 | 93.605 | -15.7074 |
| 47 | 0.65 | -0.802956 | 94.2497 | -16.2294 |
| 48 | 0.65 | -0.785774 | 94.8672 | -16.7401 |
| 49 | 0.69 | -0.772193 | 95.4634 | -17.2729 |

| | | | | |
|---|---|---|---|---|
| 50 | 0.73 | -0.755415 | 96.0341 | -17.8244 |
| 51 | 0.74 | -0.742143 | 96.5849 | -18.3736 |
| 52 | 0.8 | -0.725736 | 97.1116 | -18.9542 |
| 53 | 0.81 | -0.712751 | 97.6196 | -19.5315 |
| 54 | 1 | -0.696684 | 98.1049 | -20.2282 |
| 55 | 1 | -0.683969 | 8.5727 | -20.9121 |
| 56 | 1 | -0.668209 | 99.0192 | -21.5803 |
| 57 | 1 | -0.655726 | 99.4492 | -22.2361 |
| 58 | 1 | -0.640266 | 99.8592 | -22.8763 |
| 59 | 1 | -0.628006 | 100.254 | -23.5043 |
| 60 | 1 | -0.612813 | 100.629 | -24.1172 |
| 61 | 1 | -0.60076 | 100.99 | -24.7179 |
| 62 | 1 | -0.585815 | 101.333 | -25.3037 |
| 63 | 1 | -0.573953 | 101.663 | -25.8777 |
| 64 | 1 | -0.559237 | 101.975 | -26.4369 |
| 65 | 1 | -0.547551 | 102.275 | -26.9845 |
| 66 | 1 | -0.533048 | 102.559 | -27.5175 |
| 67 | 1 | -0.521527 | 102.831 | -28.039 |
| 68 | 1 | -0.507221 | 103.089 | -28.5463 |
| 69 | 1 | -0.49585 | 103.334 | -29.0421 |
| 70 | 1 | -0.481728 | 103.566 | -29.5238 |
| 71 | 1 | -0.470498 | 103.788 | -29.9943 |
| 72 | 1 | -0.456542 | 103.996 | -30.4509 |
| 73 | 1 | -0.445443 | 104.195 | -30.8963 |
| 74 | 1 | -0.431644 | 104.381 | -31.328 |
| 75 | 1 | -0.420664 | 104.558 | -31.7486 |
| 76 | 1 | -0.40701 | 104.724 | -32.1556 |
| 77 | 1 | -0.396142 | 104.881 | -32.5518 |
| 78 | 1 | -0.382622 | 105.027 | -32.9344 |
| 79 | 1 | -0.371856 | 105.165 | -33.3063 |
| 80 | 1 | -0.358459 | 105.294 | -33.6647 |
| 81 | 1 | -0.347787 | 105.415 | -34.0125 |
| 82 | 1 | -0.334503 | 105.527 | -34.347 |
| 83 | 1 | -0.323919 | 105.632 | -34.6709 |
| 84 | 1 | -0.310738 | 105.728 | -34.9817 |
| 85 | 1 | -0.300232 | 105.818 | -35.2819 |
| 86 | 1 | -0.287147 | 105.901 | -35.569 |
| 87 | 1 | -0.276714 | 105.977 | -35.8458 |
| 88 | 1 | -0.263715 | 106.047 | -36.1095 |
| 89 | 1 | -0.253347 | 106.111 | -36.3628 |
| 90 | 1 | -0.240426 | 106.169 | -36.6032 |
| 91 | 1 | -0.230118 | 106.222 | -36.8334 |
| 92 | 1 | -0.217267 | 106.269 | -37.0506 |
| 93 | 1 | -0.207012 | 106.312 | -37.2576 |
| 94 | 1 | -0.194225 | 106.35 | -37.4519 |
| 95 | 1 | -0.184017 | 106.383 | -37.6359 |
| 96 | 1 | -0.171285 | 106.413 | -37.8072 |
| 97 | 1 | -0.161119 | 106.439 | -37.9683 |
| 98 | 1 | -0.148434 | 106.461 | -38.1167 |
| 99 | 1 | -0.138305 | 106.48 | -38.255 |
| 100 | 1 | -0.125661 | 106.496 | -38.3807 |
| 101 | 1 | -0.115562 | 106.509 | -38.4963 |
| 102 | 1 | -0.102953 | 106.52 | -38.5992 |
| 103 | 1 | -0.0928787 | 106.528 | -38.6921 |
| 104 | 1 | -0.0802981 | 106.535 | -38.7724 |
| 105 | 1 | -0.0702426 | 106.54 | -38.8426 |
| 106 | 1 | -0.0576847 | 106.543 | -38.9003 |
| 107 | 1 | -0.0476439 | 106.545 | -38.948 |
| 108 | 1 | -0.0350997 | 106.546 | -38.9831 |
| 109 | 1 | -0.0250691 | 106.547 | -39.0081 |
| 110 | 1 | -0.0125328 | 106.547 | -39.0207 |
| 111 | 1 | 0 | 106.547 | -39.0207 |

| | | | | |
|---|---|---|---|---|
| 112 | 1 | 0.0125328 | 106.547 | -39.0081 |
| 113 | 1 | 0.0250691 | 106.548 | -38.9831 |
| 114 | 1 | 0.0350997 | 106.549 | -38.948 |
| 115 | 1 | 0.0476439 | 106.551 | -38.9003 |
| 116 | 1 | 0.0576847 | 106.555 | -38.8426 |
| 117 | 1 | 0.0702426 | 106.56 | -38.7724 |
| 118 | 1 | 0.0802981 | 106.566 | -38.6921 |
| 119 | 1 | 0.0928787 | 106.575 | -38.5992 |
| 120 | 1 | 0.102953 | 106.585 | -38.4963 |
| 121 | 1 | 0.115562 | 106.599 | -38.3807 |
| 122 | 1 | 0.125661 | 106.615 | -38.255 |
| 123 | 1 | 0.138305 | 106.634 | -38.1167 |
| 124 | 1 | 0.148434 | 106.656 | -37.9683 |
| 125 | 1 | 0.161119 | 106.682 | -37.8072 |
| 126 | 1 | 0.171285 | 106.711 | -37.6359 |
| 127 | 1 | 0.184017 | 106.745 | -37.4519 |
| 128 | 1 | 0.194225 | 106.783 | -37.2576 |
| 129 | 1 | 0.207012 | 106.825 | -37.0506 |
| 130 | 1 | 0.217267 | 106.873 | -36.8334 |
| 131 | 1 | 0.230118 | 106.926 | -36.6032 |
| 132 | 1 | 0.240426 | 106.983 | -36.3628 |
| 133 | 1 | 0.253347 | 107.048 | -36.1095 |
| 134 | 1 | 0.263715 | 107.117 | -35.8458 |
| 135 | 1 | 0.276714 | 107.194 | -35.569 |
| 136 | 1 | 0.287147 | 107.276 | -35.2819 |
| 137 | 1 | 0.300232 | 107.366 | -34.9817 |
| 138 | 1 | 0.310738 | 107.463 | -34.6709 |
| 139 | 1 | 0.323919 | 107.568 | -34.347 |
| 140 | 1 | 0.334503 | 107.68 | -34.0125 |
| 141 | 1 | 0.347787 | 107.801 | -33.6647 |
| 142 | 1 | 0.358459 | 107.929 | -33.3063 |
| 143 | 1 | 0.371856 | 108.067 | -32.9344 |
| 144 | 1 | 0.382622 | 108.214 | -32.5518 |
| 145 | 1 | 0.396142 | 108.371 | -32.1556 |
| 146 | 1 | 0.40701 | 108.536 | -31.7486 |
| 147 | 1 | 0.420664 | 108.713 | -31.328 |
| 148 | 1 | 0.431644 | 108.9 | -30.8963 |
| 149 | 1 | 0.445443 | 109.098 | -30.4509 |
| 150 | 1 | 0.456542 | 109.307 | -29.9943 |
| 151 | 1 | 0.470498 | 109.528 | -29.5238 |
| 152 | 1 | 0.481728 | 109.76 | -29.0421 |
| 153 | 1 | 0.49585 | 110.006 | -28.5463 |
| 154 | 1 | 0.507221 | 110.263 | -28.039 |
| 155 | 1 | 0.521527 | 110.535 | -27.5175 |
| 156 | 1 | 0.533048 | 110.819 | -26.9845 |
| 157 | 1 | 0.547551 | 111.119 | -26.4369 |
| 158 | 1 | 0.559237 | 111.432 | -25.8777 |
| 159 | 1 | 0.573953 | 111.761 | -25.3037 |
| 160 | 1 | 0.585815 | 112.104 | -24.7179 |
| 161 | 1 | 0.60076 | 112.465 | -24.1172 |
| 162 | 1 | 0.612813 | 112.841 | -23.5043 |
| 163 | 1 | 0.628006 | 113.235 | -22.8763 |
| 164 | 1 | 0.640266 | 113.645 | -22.2361 |
| 165 | 1 | 0.655726 | 114.075 | -21.5803 |
| 166 | 1 | 0.668209 | 114.522 | -20.9121 |
| 167 | 1 | 0.68396 | 114.989 | -20.2282 |
| 168 | 1 | 0.696684 | 115.475 | -19.5315 |
| 169 | 1 | 0.712751 | 115.983 | -18.8187 |
| 170 | 1 | 0.725736 | 116.51 | -18.093 |
| 171 | 1 | 0.742143 | 117.06 | -17.3509 |
| 172 | 1 | 0.755415 | 117.631 | -16.5954 |
| 173 | 1 | 0.772193 | 118.227 | -15.8233 |

| | | | | |
|---|---|---|---|---|
| 174 | 1 | 0.785774 | 118.845 | -15.0375 |
| 175 | 1 | 0.802956 | 119.489 | -14.2345 |
| 176 | 1 | 0.816874 | 120.157 | -13.4176 |
| 177 | 1 | 0.834498 | 120.853 | -12.5831 |
| 178 | 1 | 0.848786 | 121.574 | -11.7344 |
| 179 | 1 | 0.866894 | 122.325 | -10.8675 |
| 180 | 1 | 0.881587 | 123.102 | -9.98588 |
| 181 | 1 | 0.900227 | 123.913 | -9.08566 |
| 182 | 1 | 0.915365 | 124.751 | -8.17029 |
| 183 | 1 | 0.93459 | 125.624 | -7.2357 |
| 184 | 1 | 0.950222 | 126.527 | -6.28548 |
| 185 | 1 | 0.970094 | 127.468 | -5.31538 |
| 186 | 1 | 0.986272 | 128.441 | -4.32911 |
| 187 | 1 | 1.00687 | 129.455 | -3.32225 |
| 188 | 1 | 1.02365 | 130.502 | -2.29859 |
| 189 | 1 | 1.04505 | 131.594 | -1.25354 |
| 190 | 1 | 1.06252 | 132.723 | -0.191025 |
| 191 | 1 | 1.08482 | 133.9 | 0.893798 |
| 192 | 1 | 1.10306 | 135.117 | 1.99686 |
| 193 | 1 | 1.12639 | 136.386 | 3.12325 |
| 194 | 1 | 1.1455 | 137.698 | 4.26876 |
| 195 | 1 | 1.17 | 139.067 | 5.43876 |
| 196 | 1 | 1.19012 | 140.483 | 6.62888 |
| 197 | 1 | 1.21596 | 141.962 | 7.84484 |
| 198 | 1 | 1.23724 | 143.493 | 9.08207 |
| 199 | 1 | 1.26464 | 145.092 | 10.3467 |
| 200 | 1 | 1.28727 | 146.749 | 11.634 |
| 201 | 1 | 1.31652 | 148.482 | 12.9505 |
| 202 | 1 | 1.34075 | 150.28 | 14.2913 |
| 203 | 1 | 1.3722 | 152.163 | 15.6635 |
| 204 | 1 | 1.39838 | 154.118 | 17.0618 |
| 205 | 1 | 1.4325 | 156.17 | 18.4943 |
| 206 | 1 | 1.46106 | 158.305 | 19.9554 |
| 207 | 1 | 1.49852 | 160.551 | 21.4539 |
| 208 | 1 | 1.53007 | 162.892 | 22.984 |
| 209 | 1 | 1.57179 | 165.362 | 24.5558 |
| 210 | 1.01 | 1.60725 | 167.945 | 26.1791 |
| 211 | 1.1 | 1.65463 | 170.683 | 27.9992 |
| 212 | 1.4 | 1.6954 | 173.558 | 30.3727 |
| 213 | 1.69 | 1.75069 | 176.622 | 33.3314 |
| 214 | 1.9 | 1.79912 | 179.859 | 36.7497 |
| 215 | 2.18 | 1.86629 | 183.342 | 40.8182 |
| 216 | 2.2 | 1.92684 | 187.055 | 45.0573 |
| 217 | 2.75 | 2.01409 | 191.112 | 50.596 |
| 218 | 3.36 | 2.09693 | 195.509 | 57.6417 |
| 219 | 3.46 | 2.22621 | 200.465 | 65.3444 |
| 220 | 4.4 | 2.36561 | 206.061 | 75.7531 |
| 221 | 4.8 | 2.65209 | 213.094 | 88.4831 |

Data Set Standard Deviation = 0.558249
Numerator = 7829.26
Denominator = 14610
W Statistic = 0.535884 = 7829.26 / 14610

5% Critical value of 0.976 exceeds 0.535884
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.535884
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: Chlorobenzene

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) | |
|---|---|---|---|---|---|
| 1 | -2.07944 | -2.65209 | 7.03356 | 5.51486 | |
| 2 | -2.07944 | -2.36561 | 12.6297 | 10.434 | |
| 3 | -2.07944 | -2.22621 | 17.5857 | 15.0633 | |
| 4 | -2.07944 | -2.09693 | 21.9828 | 19.4237 | |
| 5 | -2.07944 | -2.01409 | 26.0394 | 23.6119 | |
| 6 | -2.07944 | -1.92684 | 29.7521 | 27.6187 | |
| 7 | -2.07944 | -1.86629 | 33.2351 | 31.4995 | |
| 8 | -2.07944 | -1.79912 | 36.472 | 35.2407 | |
| 9 | -2.07944 | -1.75069 | 39.5369 | 38.8811 | |
| 10 | -2.07944 | -1.6954 | 42.4112 | 42.4066 | |
| 11 | -2.07944 | -1.65463 | 45.149 | 45.8473 | |
| 12 | -2.07944 | -1.60725 | 47.7323 | 49.1895 | |
| 13 | -2.07944 | -1.57179 | 50.2028 | 52.4579 | |
| 14 | -2.07944 | -1.53007 | 52.5439 | 55.6396 | |
| 15 | -2.07944 | -1.49852 | 54.7894 | 58.7557 | |
| 16 | -2.07944 | -1.46106 | 56.9241 | 61.7939 | |
| 17 | -2.07944 | -1.4325 | 58.9762 | 64.7727 | |
| 18 | -2.07944 | -1.39838 | 60.9316 | 67.6805 | |
| 19 | -2.07944 | -1.3722 | 62.8146 | 70.5339 | |
| 20 | -2.07944 | -1.34075 | 64.6122 | 73.322 | |
| 21 | -2.07944 | -1.31652 | 66.3454 | 76.0596 | |
| 22 | -2.07944 | -1.28727 | 68.0025 | 78.7364 | |
| 23 | -1.38629 | -1.26464 | 69.6018 | 80.4895 | |
| 24 | -1.27297 | -1.23724 | 71.1326 | 82.0645 | |
| 25 | -1.23787 | -1.21596 | 72.6111 | 83.5697 | |
| 26 | -1.20397 | -1.19012 | 74.0275 | 85.0026 | |
| 27 | -1.20397 | -1.17 | 75.3964 | 86.4112 | |
| 28 | -1.10866 | -1.1455 | 76.7086 | 87.6812 | |
| 29 | -1.07881 | -1.12639 | 77.9774 | 88.8964 | |
| 30 | -1.02165 | -1.10306 | 79.1941 | 90.0233 | |
| 31 | -0.916291 | | -1.08482 | 80.371 | 91.0173 |
| 32 | -0.916291 | | -1.06252 | 81.4999 | 91.9909 |
| 33 | -0.84397 | -1.04505 | 82.592 | 92.8729 | |
| 34 | -0.798508 | | -1.02365 | 83.6399 | 93.6903 |
| 35 | -0.653926 | | -1.00687 | 84.6537 | 94.3487 |
| 36 | -0.634878 | | -0.986272 | 85.6264 | 94.9749 |
| 37 | -0.579818 | | -0.970094 | 86.5675 | 95.5374 |
| 38 | -0.579818 | | -0.950222 | 87.4704 | 96.0883 |
| 39 | -0.562119 | | -0.93459 | 88.3439 | 96.6137 |
| 40 | -0.527633 | | -0.915365 | 89.1818 | 97.0966 |
| 41 | -0.527633 | | -0.900227 | 89.9922 | 97.5716 |
| 42 | -0.527633 | | -0.881587 | 90.7694 | 98.0368 |
| 43 | -0.510826 | | -0.866894 | 91.5209 | 98.4796 |
| 44 | -0.478036 | | -0.848786 | 92.2413 | 98.8854 |
| 45 | -0.478036 | | -0.834498 | 92.9377 | 99.2843 |
| 46 | -0.462035 | | -0.816874 | 93.605 | 99.6617 |
| 47 | -0.430783 | | -0.802956 | 94.2497 | 100.008 |
| 48 | -0.430783 | | -0.785774 | 94.8672 | 100.346 |
| 49 | -0.371064 | | -0.772193 | 95.4634 | 100.633 |

| | | | | |
|---|---|---|---|---|
| 50 | -0.314711 | -0.755415 | 96.0341 | 100.87 |
| 51 | -0.301105 | -0.742143 | 96.5849 | 101.094 |
| 52 | -0.223144 | -0.725736 | 97.1116 | 101.256 |
| 53 | -0.210721 | -0.712751 | 97.6196 | 101.406 |
| 54 | 0 | -0.696684 | 98.1049 | 101.406 |
| 55 | 0 | -0.683969 | 8.5727 | 101.406 |
| 56 | 0 | -0.668209 | 99.0192 | 101.406 |
| 57 | 0 | -0.655726 | 99.4492 | 101.406 |
| 58 | 0 | -0.640266 | 99.8592 | 101.406 |
| 59 | 0 | -0.628006 | 100.254 | 101.406 |
| 60 | 0 | -0.612813 | 100.629 | 101.406 |
| 61 | 0 | -0.60076 | 100.99 | 101.406 |
| 62 | 0 | -0.585815 | 101.333 | 101.406 |
| 63 | 0 | -0.573953 | 101.663 | 101.406 |
| 64 | 0 | -0.559237 | 101.975 | 101.406 |
| 65 | 0 | -0.547551 | 102.275 | 101.406 |
| 66 | 0 | -0.533048 | 102.559 | 101.406 |
| 67 | 0 | -0.521527 | 102.831 | 101.406 |
| 68 | 0 | -0.507221 | 103.089 | 101.406 |
| 69 | 0 | -0.49585 | 103.334 | 101.406 |
| 70 | 0 | -0.481728 | 103.566 | 101.406 |
| 71 | 0 | -0.470498 | 103.788 | 101.406 |
| 72 | 0 | -0.456542 | 103.996 | 101.406 |
| 73 | 0 | -0.445443 | 104.195 | 101.406 |
| 74 | 0 | -0.431644 | 104.381 | 101.406 |
| 75 | 0 | -0.420664 | 104.558 | 101.406 |
| 76 | 0 | -0.40701 | 104.724 | 101.406 |
| 77 | 0 | -0.396142 | 104.881 | 101.406 |
| 78 | 0 | -0.382622 | 105.027 | 101.406 |
| 79 | 0 | -0.371856 | 105.165 | 101.406 |
| 80 | 0 | -0.358459 | 105.294 | 101.406 |
| 81 | 0 | -0.347787 | 105.415 | 101.406 |
| 82 | 0 | -0.334503 | 105.527 | 101.406 |
| 83 | 0 | -0.323919 | 105.632 | 101.406 |
| 84 | 0 | -0.310738 | 105.728 | 101.406 |
| 85 | 0 | -0.300232 | 105.818 | 101.406 |
| 86 | 0 | -0.287147 | 105.901 | 101.406 |
| 87 | 0 | -0.276714 | 105.977 | 101.406 |
| 88 | 0 | -0.263715 | 106.047 | 101.406 |
| 89 | 0 | -0.253347 | 106.111 | 101.406 |
| 90 | 0 | -0.240426 | 106.169 | 101.406 |
| 91 | 0 | -0.230118 | 106.222 | 101.406 |
| 92 | 0 | -0.217267 | 106.269 | 101.406 |
| 93 | 0 | -0.207012 | 106.312 | 101.406 |
| 94 | 0 | -0.194225 | 106.35 | 101.406 |
| 95 | 0 | -0.184017 | 106.383 | 101.406 |
| 96 | 0 | -0.171285 | 106.413 | 101.406 |
| 97 | 0 | -0.161119 | 106.439 | 101.406 |
| 98 | 0 | -0.148434 | 106.461 | 101.406 |
| 99 | 0 | -0.138305 | 106.48 | 101.406 |
| 100 | 0 | -0.125661 | 106.496 | 101.406 |
| 101 | 0 | -0.115562 | 106.509 | 101.406 |
| 102 | 0 | -0.102953 | 106.52 | 101.406 |
| 103 | 0 | -0.0928787 | 106.528 | 101.406 |
| 104 | 0 | -0.0802981 | 106.535 | 101.406 |
| 105 | 0 | -0.0702426 | 106.54 | 101.406 |
| 106 | 0 | -0.0576847 | 106.543 | 101.406 |
| 107 | 0 | -0.0476439 | 106.545 | 101.406 |
| 108 | 0 | -0.0350997 | 106.546 | 101.406 |
| 109 | 0 | -0.0250691 | 106.547 | 101.406 |
| 110 | 0 | -0.0125328 | 106.547 | 101.406 |
| 111 | 0 | 0 | 106.547 | 101.406 |

| | | | | |
|---|---|---|---|---|
| 112 | 0 | 0.0125328 | 106.547 | 101.406 |
| 113 | 0 | 0.0250691 | 106.548 | 101.406 |
| 114 | 0 | 0.0350997 | 106.549 | 101.406 |
| 115 | 0 | 0.0476439 | 106.551 | 101.406 |
| 116 | 0 | 0.0576847 | 106.555 | 101.406 |
| 117 | 0 | 0.0702426 | 106.56 | 101.406 |
| 118 | 0 | 0.0802981 | 106.566 | 101.406 |
| 119 | 0 | 0.0928787 | 106.575 | 101.406 |
| 120 | 0 | 0.102953 | 106.585 | 101.406 |
| 121 | 0 | 0.115562 | 106.599 | 101.406 |
| 122 | 0 | 0.125661 | 106.615 | 101.406 |
| 123 | 0 | 0.138305 | 106.634 | 101.406 |
| 124 | 0 | 0.148434 | 106.656 | 101.406 |
| 125 | 0 | 0.161119 | 106.682 | 101.406 |
| 126 | 0 | 0.171285 | 106.711 | 101.406 |
| 127 | 0 | 0.184017 | 106.745 | 101.406 |
| 128 | 0 | 0.194225 | 106.783 | 101.406 |
| 129 | 0 | 0.207012 | 106.825 | 101.406 |
| 130 | 0 | 0.217267 | 106.873 | 101.406 |
| 131 | 0 | 0.230118 | 106.926 | 101.406 |
| 132 | 0 | 0.240426 | 106.983 | 101.406 |
| 133 | 0 | 0.253347 | 107.048 | 101.406 |
| 134 | 0 | 0.263715 | 107.117 | 101.406 |
| 135 | 0 | 0.276714 | 107.194 | 101.406 |
| 136 | 0 | 0.287147 | 107.276 | 101.406 |
| 137 | 0 | 0.300232 | 107.366 | 101.406 |
| 138 | 0 | 0.310738 | 107.463 | 101.406 |
| 139 | 0 | 0.323919 | 107.568 | 101.406 |
| 140 | 0 | 0.334503 | 107.68 | 101.406 |
| 141 | 0 | 0.347787 | 107.801 | 101.406 |
| 142 | 0 | 0.358459 | 107.929 | 101.406 |
| 143 | 0 | 0.371856 | 108.067 | 101.406 |
| 144 | 0 | 0.382622 | 108.214 | 101.406 |
| 145 | 0 | 0.396142 | 108.371 | 101.406 |
| 146 | 0 | 0.40701 | 108.536 | 101.406 |
| 147 | 0 | 0.420664 | 108.713 | 101.406 |
| 148 | 0 | 0.431644 | 108.9 | 101.406 |
| 149 | 0 | 0.445443 | 109.098 | 101.406 |
| 150 | 0 | 0.456542 | 109.307 | 101.406 |
| 151 | 0 | 0.470498 | 109.528 | 101.406 |
| 152 | 0 | 0.481728 | 109.76 | 101.406 |
| 153 | 0 | 0.49585 | 110.006 | 101.406 |
| 154 | 0 | 0.507221 | 110.263 | 101.406 |
| 155 | 0 | 0.521527 | 110.535 | 101.406 |
| 156 | 0 | 0.533048 | 110.819 | 101.406 |
| 157 | 0 | 0.547551 | 111.119 | 101.406 |
| 158 | 0 | 0.559237 | 111.432 | 101.406 |
| 159 | 0 | 0.573953 | 111.761 | 101.406 |
| 160 | 0 | 0.585815 | 112.104 | 101.406 |
| 161 | 0 | 0.60076 | 112.465 | 101.406 |
| 162 | 0 | 0.612813 | 112.841 | 101.406 |
| 163 | 0 | 0.628006 | 113.235 | 101.406 |
| 164 | 0 | 0.640266 | 113.645 | 101.406 |
| 165 | 0 | 0.655726 | 114.075 | 101.406 |
| 166 | 0 | 0.668209 | 114.522 | 101.406 |
| 167 | 0 | 0.68396 | 114.989 | 101.406 |
| 168 | 0 | 0.696684 | 115.475 | 101.406 |
| 169 | 0 | 0.712751 | 115.983 | 101.406 |
| 170 | 0 | 0.725736 | 116.51 | 101.406 |
| 171 | 0 | 0.742143 | 117.06 | 101.406 |
| 172 | 0 | 0.755415 | 117.631 | 101.406 |
| 173 | 0 | 0.772193 | 118.227 | 101.406 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 0 | 0.785774 | | 118.845 | 101.406 |
| 175 | 0 | 0.802956 | | 119.489 | 101.406 |
| 176 | 0 | 0.816874 | | 120.157 | 101.406 |
| 177 | 0 | 0.834498 | | 120.853 | 101.406 |
| 178 | 0 | 0.848786 | | 121.574 | 101.406 |
| 179 | 0 | 0.866894 | | 122.325 | 101.406 |
| 180 | 0 | 0.881587 | | 123.102 | 101.406 |
| 181 | 0 | 0.900227 | | 123.913 | 101.406 |
| 182 | 0 | 0.915365 | | 124.751 | 101.406 |
| 183 | 0 | 0.93459 | 125.624 | 101.406 | |
| 184 | 0 | 0.950222 | | 126.527 | 101.406 |
| 185 | 0 | 0.970094 | | 127.468 | 101.406 |
| 186 | 0 | 0.986272 | | 128.441 | 101.406 |
| 187 | 0 | 1.00687 | 129.455 | 101.406 | |
| 188 | 0 | 1.02365 | 130.502 | 101.406 | |
| 189 | 0 | 1.04505 | 131.594 | 101.406 | |
| 190 | 0 | 1.06252 | 132.723 | 101.406 | |
| 191 | 0 | 1.08482 | 133.9 | 101.406 | |
| 192 | 0 | 1.10306 | 135.117 | 101.406 | |
| 193 | 0 | 1.12639 | 136.386 | 101.406 | |
| 194 | 0 | 1.1455 | 137.698 | 101.406 | |
| 195 | 0 | 1.17 | 139.067 | 101.406 | |
| 196 | 0 | 1.19012 | 140.483 | 101.406 | |
| 197 | 0 | 1.21596 | 141.962 | 101.406 | |
| 198 | 0 | 1.23724 | 143.493 | 101.406 | |
| 199 | 0 | 1.26464 | 145.092 | 101.406 | |
| 200 | 0 | 1.28727 | 146.749 | 101.406 | |
| 201 | 0 | 1.31652 | 148.482 | 101.406 | |
| 202 | 0 | 1.34075 | 150.28 | 101.406 | |
| 203 | 0 | 1.3722 | 152.163 | 101.406 | |
| 204 | 0 | 1.39838 | 154.118 | 101.406 | |
| 205 | 0 | 1.4325 | 156.17 | 101.406 | |
| 206 | 0 | 1.46106 | 158.305 | 101.406 | |
| 207 | 0 | 1.49852 | 160.551 | 101.406 | |
| 208 | 0 | 1.53007 | 162.892 | 101.406 | |
| 209 | 0 | 1.57179 | 165.362 | 101.406 | |
| 210 | 0.00995033 | | 1.60725 | 167.945 | 101.422 |
| 211 | 0.0953102 | | 1.65463 | 170.683 | 101.58 |
| 212 | 0.336472 | | 1.6954 | 173.558 | 102.15 |
| 213 | 0.524729 | | 1.75069 | 176.622 | 103.069 |
| 214 | 0.641854 | | 1.79912 | 179.859 | 104.224 |
| 215 | 0.779325 | | 1.86629 | 183.342 | 105.678 |
| 216 | 0.788457 | | 1.92684 | 187.055 | 107.197 |
| 217 | 1.0116 | 2.01409 | 191.112 | 109.235 | |
| 218 | 1.21194 | 2.09693 | 195.509 | 111.776 | |
| 219 | 1.24127 | 2.22621 | 200.465 | 114.539 | |
| 220 | 1.4816 | 2.36561 | 206.061 | 118.044 | |
| 221 | 1.56862 | 2.65209 | 213.094 | 122.204 | |

Data Set Standard Deviation = 0.7056
Numerator = 14933.9
Denominator = 23340.6
W Statistic = 0.639826 = 14933.9 / 23340.6

5% Critical value of 0.976 exceeds 0.639826
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.639826
Evidence of non-normality at 99% level of significance

# Kruskal-Wallis Non-Parametric Test

## Parameter: Chlorobenzene

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

# Kruskal Wallis Ranks

## Background Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-13 | 3/16/1999 | ND<0 | 89 |
| | 9/23/1999 | ND<0 | 89 |
| | 3/15/2000 | ND<0 | 89 |
| | 9/24/2003 | ND<0 | 89 |
| | 3/11/2004 | ND<0 | 89 |
| | 10/12/2004 | ND<0 | 89 |
| | 4/1/2005 | ND<0 | 89 |
| | 10/25/2005 | ND<0 | 89 |
| | 4/29/2006 | ND<0 | 89 |
| | 11/18/2006 | ND<0 | 89 |
| | 5/23/2007 | ND<0 | 89 |
| | 11/28/2007 | ND<0 | 89 |
| | 6/5/2008 | ND<0 | 89 |
| | 11/20/2008 | ND<0 | 89 |
| | 6/11/2009 | ND<-2.07944 | 89 |
| | 11/16/2009 | ND<-2.07944 | 89 |
| | 6/30/2010 | ND<-2.07944 | 89 |
| | 11/12/2010 | ND<-2.07944 U | 89 |

Rank Sum = 1602
Rank Mean = 89

Background Rank Sum = 1602
Background Rank Mean = 89

## Compliance Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-11R | 7/20/1995 | ND<0 | 89 |
| | 8/24/1995 | ND<0 | 89 |
| | 9/28/1995 | ND<0 | 89 |
| | 10/26/1995 | ND<0 | 89 |
| | 11/19/1996 | ND<0 | 89 |
| | 12/19/1996 | ND<0 | 89 |
| | 3/24/1997 | ND<0 | 89 |
| | 9/24/1997 | ND<0 | 89 |
| | 4/7/1998 | ND<0 | 89 |
| | 9/23/1998 | ND<0 | 89 |
| | 3/16/1999 | ND<0 | 89 |
| | 9/23/1999 | ND<0 | 89 |
| | 3/15/2000 | ND<0 | 89 |
| | 9/24/2003 | ND<0 | 89 |
| | 3/11/2004 | ND<0 | 89 |
| | 10/12/2004 | ND<0 | 89 |
| | 4/1/2005 | ND<0 | 89 |
| | 10/25/2005 | ND<0 | 89 |
| | 4/29/2006 | ND<0 | 89 |
| | 11/18/2006 | ND<0 | 89 |

| | | | |
|---|---|---|---|
| | 5/23/2007 | ND<0 | 89 |
| | 11/28/2007 | ND<0 | 89 |
| | 6/5/2008 | ND<0 | 89 |
| | 11/20/2008 | ND<0 | 89 |
| | 6/11/2009 | ND<-2.07944 | 89 |
| | 11/16/2009 | ND<-2.07944 | 89 |
| | 6/30/2010 | ND<-2.07944 | 89 |
| | 11/12/2010 | ND<-2.07944 U | 89 |

Rank Sum = 2492
Rank Mean = 89

| | | | |
|---|---|---|---|
| MW-12BR | 3/16/1999 | ND<0 | 89 |
| | 9/23/1999 | ND<0 | 89 |
| | 3/15/2000 | ND<0 | 89 |
| | 9/24/2003 | ND<0 | 89 |
| | 3/11/2004 | ND<0 | 89 |
| | 10/12/2004 | ND<0 | 89 |
| | 4/1/2005 | 0.00995033 J | 210 |
| | 10/25/2005 | ND<0 | 89 |
| | 4/29/2006 | ND<0 | 89 |
| | 11/18/2006 | ND<0 | 89 |
| | 5/23/2007 | ND<0 | 89 |
| | 11/28/2007 | ND<0 | 89 |
| | 6/5/2008 | ND<0 | 89 |
| | 11/20/2008 | ND<0 | 89 |
| | 6/11/2009 | ND<-2.07944 | 89 |
| | 11/16/2009 | ND<-2.07944 | 89 |
| | 6/30/2010 | ND<-2.07944 | 89 |
| | 11/12/2010 | ND<-2.07944 U | 89 |

Rank Sum = 1723
Rank Mean = 95.7222

| | | | |
|---|---|---|---|
| MW-6 | 7/20/1995 | ND<0 | 89 |
| | 8/24/1995 | ND<0 | 89 |
| | 9/28/1995 | ND<0 | 89 |
| | 10/26/1995 | ND<0 | 89 |
| | 11/19/1996 | ND<0 | 89 |
| | 12/19/1996 | ND<0 | 89 |
| | 3/24/1997 | ND<0 | 89 |
| | 9/24/1997 | ND<0 | 89 |
| | 4/7/1998 | ND<0 | 89 |
| | 9/23/1998 | ND<0 | 89 |
| | 3/16/1999 | ND<0 | 89 |
| | 9/23/1999 | ND<0 | 89 |
| | 3/15/2000 | ND<0 | 89 |
| | 9/24/2003 | ND<0 | 89 |
| | 3/11/2004 | ND<0 | 89 |
| | 10/12/2004 | ND<0 | 89 |
| | 4/1/2005 | ND<0 | 89 |
| | 10/25/2005 | ND<0 | 89 |
| | 4/29/2006 | ND<0 | 89 |
| | 11/18/2006 | ND<0 | 89 |
| | 5/23/2007 | ND<0 | 89 |
| | 11/28/2007 | ND<0 | 89 |
| | 6/5/2008 | ND<0 | 89 |
| | 11/20/2008 | ND<0 | 89 |
| | 6/11/2009 | ND<-2.07944 | 89 |
| | 11/16/2009 | ND<-2.07944 | 89 |
| | 6/30/2010 | ND<-2.07944 | 89 |
| | 11/12/2010 | ND<-2.07944 U | 89 |

Rank Sum = 2492
Rank Mean = 89

| | | | | |
|---|---|---|---|---|
| MW-7 | 7/20/1995 | ND<0 | 89 | |
| | 8/24/1995 | ND<0 | 89 | |
| | 9/28/1995 | ND<0 | 89 | |
| | 10/26/1995 | ND<0 | 89 | |
| | 11/19/1996 | ND<0 | 89 | |
| | 12/19/1996 | ND<0 | 89 | |
| | 3/24/1997 | ND<0 | 89 | |
| | 9/24/1997 | ND<0 | 89 | |
| | 4/7/1998 | ND<0 | 89 | |
| | 9/23/1998 | ND<0 | 89 | |
| | 3/16/1999 | ND<0 | 89 | |
| | 9/23/1999 | ND<0 | 89 | |
| | 3/15/2000 | ND<0 | 89 | |
| | 9/24/2003 | ND<0 | 89 | |
| | 3/11/2004 | ND<0 | 89 | |
| | 10/12/2004 | ND<0 | 89 | |
| | 4/1/2005 | ND<0 | 89 | |
| | 10/25/2005 | ND<0 | 89 | |
| | 4/29/2006 | ND<0 | 89 | |
| | 11/18/2006 | ND<0 | 89 | |
| | 5/23/2007 | ND<0 | 89 | |
| | 11/28/2007 | ND<0 | 89 | |
| | 6/5/2008 | ND<0 | 89 | |
| | 11/20/2008 | -1.23787 J | | 180 |
| | 6/11/2009 | ND<-2.07944 | | 89 |
| | 11/16/2009 | ND<-2.07944 | | 89 |
| | 6/30/2010 | -0.527633 J | | 195 |
| | 11/12/2010 | -1.02165 J | | 185 |

Rank Sum = 2785
Rank Mean = 99.4643

| | | | | |
|---|---|---|---|---|
| MW-9 | 7/20/1995 | ND<0 | 89 | |
| | 8/24/1995 | -1.20397 J | | 181 |
| | 9/28/1995 | ND<0 | 89 | |
| | 10/26/1995 | -1.20397 J | | 182 |
| | 11/19/1996 | ND<0 | 89 | |
| | 12/19/1996 | ND<0 | 89 | |
| | 3/24/1997 | ND<0 | 89 | |
| | 9/24/1997 | ND<0 | 89 | |
| | 4/7/1998 | ND<0 | 89 | |
| | 9/23/1998 | ND<0 | 89 | |
| | 3/16/1999 | ND<0 | 89 | |
| | 9/23/1999 | ND<0 | 89 | |
| | 3/15/2000 | ND<0 | 89 | |
| | 9/24/2003 | ND<0 | 89 | |
| | 3/11/2004 | ND<0 | 89 | |
| | 10/12/2004 | ND<0 | 89 | |
| | 4/1/2005 | -0.653926 J | 190 | |
| | 10/25/2005 | -1.07881 J | | 184 |
| | 4/29/2006 | -1.38629 J | | 178 |
| | 11/18/2006 | -1.27297 J | | 179 |
| | 5/23/2007 | 0.0953102 | | 211 |
| | 11/28/2007 | -0.301105 J | | 206 |
| | 6/5/2008 | -0.579818 J | 192 | |
| | 11/20/2008 | -0.430783 J | | 202 |
| | 6/11/2009 | -0.210721 J | | 208 |
| | 11/16/2009 | -0.223144 J | | 207 |
| | 6/30/2010 | 0.336472 | | 212 |
| | 11/12/2010 | 0 | 209 | |

Rank Sum = 3987
Rank Mean = 142.393

| | | | | |
|---|---|---|---|---|
| MW-10 | 7/20/1995 | ND<0 | 89 | |
| | 8/24/1995 | ND<0 | 89 | |
| | 9/28/1995 | ND<0 | 89 | |
| | 10/26/1995 | ND<0 | 89 | |
| | 11/19/1996 | ND<0 | 89 | |
| | 12/19/1996 | ND<0 | 89 | |
| | 3/24/1997 | ND<0 | 89 | |
| | 9/24/1997 | ND<0 | 89 | |
| | 4/7/1998 | ND<0 | 89 | |
| | 9/23/1998 | ND<0 | 89 | |
| | 3/16/1999 | ND<0 | 89 | |
| | 9/23/1999 | ND<0 | 89 | |
| | 3/15/2000 | ND<0 | 89 | |
| | 9/24/2003 | ND<0 | 89 | |
| | 3/11/2004 | ND<0 | 89 | |
| | 10/12/2004 | ND<0 | 89 | |
| | 4/1/2005 | -1.10866 J | 183 | |
| | 10/25/2005 | -0.84397 J | | 188 |
| | 4/29/2006 | -0.527633 J | | 196 |
| | 11/18/2006 | -0.916291 J | | 186 |
| | 5/23/2007 | ND<0 | 89 | |
| | 11/28/2007 | -0.527633 J | | 197 |
| | 6/5/2008 | -0.510826 J | 198 | |
| | 11/20/2008 | -0.478036 J | | 199 |
| | 6/11/2009 | -0.798508 J | | 189 |
| | 11/16/2009 | -0.462035 J | | 201 |
| | 6/30/2010 | ND<-2.07944 | | 89 |
| | 11/12/2010 | -0.371064 J | | 204 |

Rank Sum = 3543
Rank Mean = 126.536

| | | | | |
|---|---|---|---|---|
| MW-8 | 7/20/1995 | ND<0 | 89 | |
| | 8/24/1995 | ND<0 | 89 | |
| | 9/28/1995 | ND<0 | 89 | |
| | 10/26/1995 | ND<0 | 89 | |
| | 11/19/1996 | ND<0 | 89 | |
| | 12/19/1996 | ND<0 | 89 | |
| | 3/24/1997 | ND<0 | 89 | |
| | 9/24/1997 | ND<0 | 89 | |
| | 4/7/1998 | ND<0 | 89 | |
| | 9/23/1998 | ND<0 | 89 | |
| | 3/16/1999 | ND<0 | 89 | |
| | 9/23/1999 | ND<0 | 89 | |
| | 3/15/2000 | ND<0 | 89 | |
| | 9/24/2003 | ND<0 | 89 | |
| | 3/11/2004 | ND<0 | 89 | |
| | 10/12/2004 | ND<0 | 89 | |
| | 4/1/2005 | ND<0 | 89 | |
| | 10/25/2005 | 1.0116 | 217 | |
| | 4/29/2006 | 0.524729 J | | 213 |
| | 11/18/2006 | 1.24127 | | 219 |
| | 5/23/2007 | 0.788457 | | 216 |
| | 11/28/2007 | 1.21194 | | 218 |
| | 6/5/2008 | ND<0 | 89 | |
| | 11/20/2008 | 0.779325 | | 215 |
| | 6/11/2009 | 1.56862 | | 221 |
| | 6/30/2010 | 0.641854 | | 214 |
| | 11/12/2010 | 1.4816 | 220 | |

Rank Sum = 3555
Rank Mean = 131.667

| | | | | |
|---|---|---|---|---|
| MW-12AR | 3/16/1999 | ND<0 | 89 | |
| | 9/23/1999 | ND<0 | 89 | |
| | 3/15/2000 | ND<0 | 89 | |
| | 9/24/2003 | ND<0 | 89 | |
| | 3/11/2004 | ND<0 | 89 | |
| | 10/12/2004 | ND<0 | 89 | |
| | 4/1/2005 | ND<0 | 89 | |
| | 10/25/2005 | -0.562119 | J | 194 |
| | 4/29/2006 | -0.478036 | J | 200 |
| | 11/18/2006 | -0.634878 | J | 191 |
| | 5/23/2007 | ND<0 | 89 | |
| | 11/28/2007 | -0.579818 | J | 193 |
| | 6/5/2008 | -0.430783 | J | 203 |
| | 11/20/2008 | -0.916291 | J | 187 |
| | 6/11/2009 | ND<-2.07944 | 89 | |
| | 11/16/2009 | ND<-2.07944 | 89 | |
| | 6/30/2010 | ND<-2.07944 | 89 | |
| | 11/12/2010 | -0.314711 | J | 205 |

Rank Sum = 2352
Rank Mean = 130.667

## Calculation Results:

Kruskal-Wallis H Statistic = 23.6247
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 48.584
95% Confidence comparison value is 15.5073 at 8 degrees of freedom
23.6247 > 15.5073 indicating a significant group difference at 5% significance level
48.584 > 15.5073 indicating a significant group difference at 5% significance level when adjusted for ties

## Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 89

| Well | Mean Rank | Dif from Bkg | Critical Value |
|---|---|---|---|
| MW-11R | 89 | 0 | 44.9386 |
| MW-12BR | 95.7222 | 6.72222 | 49.5832 |
| MW-6 | 89 | 0 | 44.9386 |
| MW-7 | 99.4643 | 10.4643 | 44.9386 |
| MW-9 | 142.393 | 53.3929 | 44.9386 |
| MW-10 | 126.536 | 37.5357 | 44.9386 |
| MW-8 | 131.667 | 42.6667 | 45.263 |
| MW-12AR | 130.667 | 41.6667 | 49.5832 |

## Individual Well Comparisons at Groupwise 5% Significance Level (0.625% Significance Level per comparison)

0.625% Z score is 2.51213
Mean background rank is 89

| Well | Mean Rank | Dif from Bkg | Critical Value |
|---|---|---|---|
| MW-11R | 89 | 0 | 48.5275 |
| MW-12BR | 95.7222 | 6.72222 | 53.5431 |
| MW-6 | 89 | 0 | 48.5275 |
| MW-7 | 99.4643 | 10.4643 | 48.5275 |
| MW-9 | 142.393 | 53.3929 | 48.5275 |
| MW-10 | 126.536 | 37.5357 | 48.5275 |
| MW-8 | 131.667 | 42.6667 | 48.8779 |
| MW-12AR | 130.667 | 41.6667 | 53.5431 |

# Mann-Kendall Trend Analysis

## Parameter: Chlorobenzene

## Location: MW-9

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | | Positives | Negatives | |
|---|---|---|---|---|---|---|
| -1.20397 J | ND<0 | -1.20397 | 0 | 1 | | |
| ND<0 | ND<0 | 0 | 0 | 1 | | |
| -1.20397 J | ND<0 | -1.20397 | 0 | 2 | | |
| ND<0 | ND<0 | 0 | 0 | 2 | | |
| ND<0 | ND<0 | 0 | 0 | 2 | | |
| ND<0 | ND<0 | 0 | 0 | 2 | | |
| ND<0 | ND<0 | 0 | 0 | 2 | | |
| ND<0 | ND<0 | 0 | 0 | 2 | | |
| ND<0 | ND<0 | 0 | 0 | 2 | | |
| ND<0 | ND<0 | 0 | 0 | 2 | | |
| ND<0 | ND<0 | 0 | 0 | 2 | | |
| ND<0 | ND<0 | 0 | 0 | 2 | | |
| ND<0 | ND<0 | 0 | 0 | 2 | | |
| ND<0 | ND<0 | 0 | 0 | 2 | | |
| -0.653926 J | ND<0 | -0.653926 | | 0 | 3 | |
| -1.07881 J | ND<0 | -1.07881 | 0 | 4 | | |
| -1.38629 J | ND<0 | -1.38629 | 0 | 5 | | |
| -1.27297 J | ND<0 | -1.27297 | 0 | 6 | | |
| 0.0953102 | ND<0 | 0.0953102 | | 1 | 6 | |
| -0.301105 J | ND<0 | -0.301105 | | 1 | 7 | |
| -0.579818 J | ND<0 | -0.579818 | | 1 | 8 | |
| -0.430783 J | ND<0 | -0.430783 | | 1 | 9 | |
| -0.210721 J | ND<0 | -0.210721 | | 1 | 10 | |
| -0.223144 J | ND<0 | -0.223144 | | 1 | 11 | |
| 0.336472 | ND<0 | 0.336472 | | 2 | 11 | |
| 0 | ND<0 | 0 | 2 | 11 | | |
| | | | | | | |
| ND<0 | -1.20397 J | 1.20397 | 3 | 11 | | |
| -1.20397 J | -1.20397 J | 0 | 3 | 11 | | |
| ND<0 | -1.20397 J | 1.20397 | 4 | 11 | | |
| ND<0 | -1.20397 J | 1.20397 | 5 | 11 | | |
| ND<0 | -1.20397 J | 1.20397 | 6 | 11 | | |
| ND<0 | -1.20397 J | 1.20397 | 7 | 11 | | |
| ND<0 | -1.20397 J | 1.20397 | 8 | 11 | | |
| ND<0 | -1.20397 J | 1.20397 | 9 | 11 | | |
| ND<0 | -1.20397 J | 1.20397 | 10 | 11 | | |
| ND<0 | -1.20397 J | 1.20397 | 11 | 11 | | |
| ND<0 | -1.20397 J | 1.20397 | 12 | 11 | | |
| ND<0 | -1.20397 J | 1.20397 | 13 | 11 | | |
| ND<0 | -1.20397 J | 1.20397 | 14 | 11 | | |
| ND<0 | -1.20397 J | 1.20397 | 15 | 11 | | |
| -0.653926 J | -1.20397 J | 0.550046 | | 16 | 11 | |
| -1.07881 J | -1.20397 J | 0.125163 | | 17 | 11 | |
| -1.38629 J | -1.20397 J | -0.182322 | | 17 | 12 | |
| -1.27297 J | -1.20397 J | -0.0689929 | | 17 | 13 | |
| 0.0953102 | -1.20397 J | 1.29928 | 18 | 13 | | |
| -0.301105 J | -1.20397 J | 0.902868 | | 19 | 13 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| -0.579818 J | -1.20397 J | 0.624154 | 20 | 13 | | |
| -0.430783 J | -1.20397 J | 0.77319 | 21 | 13 | | |
| -0.210721 J | -1.20397 J | 0.993252 | 22 | 13 | | |
| -0.223144 J | -1.20397 J | 0.980829 | 23 | 13 | | |
| 0.336472 | -1.20397 J | 1.54045 | 24 | 13 | | |
| 0 | -1.20397 J | 1.20397 | 25 | 13 | | |
| | | | | | | |
| -1.20397 J | ND<0 | -1.2039 | 25 | 14 | | |
| ND<0 | ND<0 | 0 | 25 | 14 | | |
| ND<0 | ND<0 | 0 | 25 | 14 | | |
| ND<0 | ND<0 | 0 | 25 | 14 | | |
| ND<0 | ND<0 | 0 | 25 | 14 | | |
| ND<0 | ND<0 | 0 | 25 | 14 | | |
| ND<0 | ND<0 | 0 | 25 | 14 | | |
| ND<0 | ND<0 | 0 | 25 | 14 | | |
| ND<0 | ND<0 | 0 | 25 | 14 | | |
| ND<0 | ND<0 | 0 | 25 | 14 | | |
| ND<0 | ND<0 | 0 | 25 | 14 | | |
| ND<0 | ND<0 | 0 | 25 | 14 | | |
| ND<0 | ND<0 | 0 | 25 | 14 | | |
| -0.653926 J | ND<0 | -0.653926 | 25 | 15 | | |
| -1.07881 J | ND<0 | -1.0788 | 25 | 16 | | |
| -1.38629 J | ND<0 | -1.3862 | 25 | 17 | | |
| -1.27297 J | ND<0 | -1.2729 | 25 | 18 | | |
| 0.0953102 | ND<0 | 0.0953102 | 26 | 18 | | |
| -0.301105 J | ND<0 | -0.301105 | 26 | 19 | | |
| -0.579818 J | ND<0 | -0.579818 | 26 | 20 | | |
| -0.430783 J | ND<0 | -0.430783 | 26 | 21 | | |
| -0.210721 J | ND<0 | -0.210721 | 26 | 22 | | |
| -0.223144 J | ND<0 | -0.223144 | 26 | 23 | | |
| 0.336472 | ND<0 | 0.336472 | 27 | 23 | | |
| 0 | ND<0 | 0 | 27 | 23 | | |
| | | | | | | |
| ND<0 | -1.20397 J | 1.20397 | 28 | 23 | | |
| ND<0 | -1.20397 J | 1.20397 | 29 | 23 | | |
| ND<0 | -1.20397 J | 1.20397 | 30 | 23 | | |
| ND<0 | -1.20397 J | 1.20397 | 31 | 23 | | |
| ND<0 | -1.20397 J | 1.20397 | 32 | 23 | | |
| ND<0 | -1.20397 J | 1.20397 | 33 | 23 | | |
| ND<0 | -1.20397 J | 1.20397 | 34 | 23 | | |
| ND<0 | -1.20397 J | 1.20397 | 35 | 23 | | |
| ND<0 | -1.20397 J | 1.20397 | 36 | 23 | | |
| ND<0 | -1.20397 J | 1.20397 | 37 | 23 | | |
| ND<0 | -1.20397 J | 1.20397 | 38 | 23 | | |
| ND<0 | -1.20397 J | 1.20397 | 39 | 23 | | |
| -0.653926 J | -1.20397 J | 0.550046 | 40 | 23 | | |
| -1.07881 J | -1.20397 J | 0.125163 | 41 | 23 | | |
| -1.38629 J | -1.20397 J | -0.182322 | 41 | 24 | | |
| -1.27297 J | -1.20397 J | -0.0689929 | 41 | 25 | | |
| 0.0953102 | -1.20397 J | 1.29928 | 42 | 25 | | |
| -0.301105 J | -1.20397 J | 0.902868 | 43 | 25 | | |
| -0.579818 J | -1.20397 J | 0.624154 | 44 | 25 | | |
| -0.430783 J | -1.20397 J | 0.77319 | 45 | 25 | | |
| -0.210721 J | -1.20397 J | 0.993252 | 46 | 25 | | |
| -0.223144 J | -1.20397 J | 0.980829 | 47 | 25 | | |
| 0.336472 | -1.20397 J | 1.54045 | 48 | 25 | | |
| 0 | -1.20397 J | 1.20397 | 49 | 25 | | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 49 | 25 | | |
| ND<0 | ND<0 | 0 | 49 | 25 | | |
| ND<0 | ND<0 | 0 | 49 | 25 | | |
| ND<0 | ND<0 | 0 | 49 | 25 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 49 | 25 | | |
| ND<0 | ND<0 | 0 | 49 | 25 | | |
| ND<0 | ND<0 | 0 | 49 | 25 | | |
| ND<0 | ND<0 | 0 | 49 | 25 | | |
| ND<0 | ND<0 | 0 | 49 | 25 | | |
| ND<0 | ND<0 | 0 | 49 | 25 | | |
| ND<0 | ND<0 | 0 | 49 | 25 | | |
| -0.653926 J | | ND<0 | -0.653926 | | 49 | 26 |
| -1.07881 J | | ND<0 | -1.0788149 | | 27 | |
| -1.38629 J | | ND<0 | -1.3862949 | | 28 | |
| -1.27297 J | | ND<0 | -1.2729749 | | 29 | |
| 0.0953102 | | ND<0 | 0.0953102 | | 50 | 29 |
| -0.301105 J | | ND<0 | -0.301105 | | 50 | 30 |
| -0.579818 J | | ND<0 | -0.579818 | | 50 | 31 |
| -0.430783 J | | ND<0 | -0.430783 | | 50 | 32 |
| -0.210721 J | | ND<0 | -0.210721 | | 50 | 33 |
| -0.223144 J | | ND<0 | -0.223144 | | 50 | 34 |
| 0.336472 | | ND<0 | 0.336472 | | 51 | 34 |
| 0 | ND<0 | 0 | 51 | 34 | | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 51 | 34 | | |
| ND<0 | ND<0 | 0 | 51 | 34 | | |
| ND<0 | ND<0 | 0 | 51 | 34 | | |
| ND<0 | ND<0 | 0 | 51 | 34 | | |
| ND<0 | ND<0 | 0 | 51 | 34 | | |
| ND<0 | ND<0 | 0 | 51 | 34 | | |
| ND<0 | ND<0 | 0 | 51 | 34 | | |
| ND<0 | ND<0 | 0 | 51 | 34 | | |
| ND<0 | ND<0 | 0 | 51 | 34 | | |
| ND<0 | ND<0 | 0 | 51 | 34 | | |
| -0.653926 J | | ND<0 | -0.653926 | | 51 | 35 |
| -1.07881 J | | ND<0 | -1.0788151 | | 36 | |
| -1.38629 J | | ND<0 | -1.3862951 | | 37 | |
| -1.27297 J | | ND<0 | -1.2729751 | | 38 | |
| 0.0953102 | | ND<0 | 0.0953102 | | 52 | 38 |
| -0.301105 J | | ND<0 | -0.301105 | | 52 | 39 |
| -0.579818 J | | ND<0 | -0.579818 | | 52 | 40 |
| -0.430783 J | | ND<0 | -0.430783 | | 52 | 41 |
| -0.210721 J | | ND<0 | -0.210721 | | 52 | 42 |
| -0.223144 J | | ND<0 | -0.223144 | | 52 | 43 |
| 0.336472 | | ND<0 | 0.336472 | | 53 | 43 |
| 0 | ND<0 | 0 | 53 | 43 | | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 53 | 43 | | |
| ND<0 | ND<0 | 0 | 53 | 43 | | |
| ND<0 | ND<0 | 0 | 53 | 43 | | |
| ND<0 | ND<0 | 0 | 53 | 43 | | |
| ND<0 | ND<0 | 0 | 53 | 43 | | |
| ND<0 | ND<0 | 0 | 53 | 43 | | |
| ND<0 | ND<0 | 0 | 53 | 43 | | |
| ND<0 | ND<0 | 0 | 53 | 43 | | |
| ND<0 | ND<0 | 0 | 53 | 43 | | |
| -0.653926 J | | ND<0 | -0.653926 | | 53 | 44 |
| -1.07881 J | | ND<0 | -1.0788153 | | 45 | |
| -1.38629 J | | ND<0 | -1.3862953 | | 46 | |
| -1.27297 J | | ND<0 | -1.2729753 | | 47 | |
| 0.0953102 | | ND<0 | 0.0953102 | | 54 | 47 |
| -0.301105 J | | ND<0 | -0.301105 | | 54 | 48 |
| -0.579818 J | | ND<0 | -0.579818 | | 54 | 49 |
| -0.430783 J | | ND<0 | -0.430783 | | 54 | 50 |
| -0.210721 J | | ND<0 | -0.210721 | | 54 | 51 |
| -0.223144 J | | ND<0 | -0.223144 | | 54 | 52 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 0.336472 | | ND<0 | 0.336472 | | 55 | 52 |
| 0 | ND<0 | 0 | 55 | 52 | | |
| ND<0 | ND<0 | 0 | 55 | 52 | | |
| ND<0 | ND<0 | 0 | 55 | 52 | | |
| ND<0 | ND<0 | 0 | 55 | 52 | | |
| ND<0 | ND<0 | 0 | 55 | 52 | | |
| ND<0 | ND<0 | 0 | 55 | 52 | | |
| ND<0 | ND<0 | 0 | 55 | 52 | | |
| ND<0 | ND<0 | 0 | 55 | 52 | | |
| ND<0 | ND<0 | 0 | 55 | 52 | | |
| -0.653926 J | | ND<0 | -0.653926 | | 55 | 53 |
| -1.07881 J | | ND<0 | -1.0788155 | | 54 | |
| -1.38629 J | | ND<0 | -1.3862955 | | 55 | |
| -1.27297 J | | ND<0 | -1.2729755 | | 56 | |
| 0.0953102 | | ND<0 | 0.0953102 | | 56 | 56 |
| -0.301105 J | | ND<0 | -0.301105 | | 56 | 57 |
| -0.579818 J | | ND<0 | -0.579818 | | 56 | 58 |
| -0.430783 J | | ND<0 | -0.430783 | | 56 | 59 |
| -0.210721 J | | ND<0 | -0.210721 | | 56 | 60 |
| -0.223144 J | | ND<0 | -0.223144 | | 56 | 61 |
| 0.336472 | | ND<0 | 0.336472 | | 57 | 61 |
| 0 | ND<0 | 0 | 57 | 61 | | |
| ND<0 | ND<0 | 0 | 57 | 61 | | |
| ND<0 | ND<0 | 0 | 57 | 61 | | |
| ND<0 | ND<0 | 0 | 57 | 61 | | |
| ND<0 | ND<0 | 0 | 57 | 61 | | |
| ND<0 | ND<0 | 0 | 57 | 61 | | |
| ND<0 | ND<0 | 0 | 57 | 61 | | |
| ND<0 | ND<0 | 0 | 57 | 61 | | |
| -0.653926 J | | ND<0 | -0.653926 | | 57 | 62 |
| -1.07881 J | | ND<0 | -1.0788157 | | 63 | |
| -1.38629 J | | ND<0 | -1.3862957 | | 64 | |
| -1.27297 J | | ND<0 | -1.2729757 | | 65 | |
| 0.0953102 | | ND<0 | 0.0953102 | | 58 | 65 |
| -0.301105 J | | ND<0 | -0.301105 | | 58 | 66 |
| -0.579818 J | | ND<0 | -0.579818 | | 58 | 67 |
| -0.430783 J | | ND<0 | -0.430783 | | 58 | 68 |
| -0.210721 J | | ND<0 | -0.210721 | | 58 | 69 |
| -0.223144 J | | ND<0 | -0.223144 | | 58 | 70 |
| 0.336472 | | ND<0 | 0.336472 | | 59 | 70 |
| 0 | ND<0 | 0 | 59 | 70 | | |
| ND<0 | ND<0 | 0 | 59 | 70 | | |
| ND<0 | ND<0 | 0 | 59 | 70 | | |
| ND<0 | ND<0 | 0 | 59 | 70 | | |
| ND<0 | ND<0 | 0 | 59 | 70 | | |
| ND<0 | ND<0 | 0 | 59 | 70 | | |
| ND<0 | ND<0 | 0 | 59 | 70 | | |
| -0.653926 J | | ND<0 | -0.653926 | | 59 | 71 |
| -1.07881 J | | ND<0 | -1.0788159 | | 72 | |
| -1.38629 J | | ND<0 | -1.3862959 | | 73 | |
| -1.27297 J | | ND<0 | -1.2729759 | | 74 | |
| 0.0953102 | | ND<0 | 0.0953102 | | 60 | 74 |
| -0.301105 J | | ND<0 | -0.301105 | | 60 | 75 |
| -0.579818 J | | ND<0 | -0.579818 | | 60 | 76 |
| -0.430783 J | | ND<0 | -0.430783 | | 60 | 77 |
| -0.210721 J | | ND<0 | -0.210721 | | 60 | 78 |
| -0.223144 J | | ND<0 | -0.223144 | | 60 | 79 |
| 0.336472 | | ND<0 | 0.336472 | | 61 | 79 |
| 0 | ND<0 | 0 | 61 | 79 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 61 | 79 | | |
| ND<0 | ND<0 | 0 | 61 | 79 | | |
| ND<0 | ND<0 | 0 | 61 | 79 | | |
| ND<0 | ND<0 | 0 | 61 | 79 | | |
| ND<0 | ND<0 | 0 | 61 | 79 | | |
| -0.653926 J | | ND<0 | -0.653926 | | 61 | 80 |
| -1.07881 J | | ND<0 | -1.0788161 | | 81 | |
| -1.38629 J | | ND<0 | -1.3862961 | | 82 | |
| -1.27297 J | | ND<0 | -1.2729761 | | 83 | |
| 0.0953102 | | ND<0 | 0.0953102 | | 62 | 83 |
| -0.301105 J | | ND<0 | -0.301105 | | 62 | 84 |
| -0.579818 J | | ND<0 | -0.579818 | | 62 | 85 |
| -0.430783 J | | ND<0 | -0.430783 | | 62 | 86 |
| -0.210721 J | | ND<0 | -0.210721 | | 62 | 87 |
| -0.223144 J | | ND<0 | -0.223144 | | 62 | 88 |
| 0.336472 | | ND<0 | 0.336472 | | 63 | 88 |
| 0 | ND<0 | 0 | 63 | 88 | | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 63 | 88 | | |
| ND<0 | ND<0 | 0 | 63 | 88 | | |
| ND<0 | ND<0 | 0 | 63 | 88 | | |
| ND<0 | ND<0 | 0 | 63 | 88 | | |
| -0.653926 J | | ND<0 | -0.653926 | | 63 | 89 |
| -1.07881 J | | ND<0 | -1.0788163 | | 90 | |
| -1.38629 J | | ND<0 | -1.3862963 | | 91 | |
| -1.27297 J | | ND<0 | -1.2729763 | | 92 | |
| 0.0953102 | | ND<0 | 0.0953102 | | 64 | 92 |
| -0.301105 J | | ND<0 | -0.301105 | | 64 | 93 |
| -0.579818 J | | ND<0 | -0.579818 | | 64 | 94 |
| -0.430783 J | | ND<0 | -0.430783 | | 64 | 95 |
| -0.210721 J | | ND<0 | -0.210721 | | 64 | 96 |
| -0.223144 J | | ND<0 | -0.223144 | | 64 | 97 |
| 0.336472 | | ND<0 | 0.336472 | | 65 | 97 |
| 0 | ND<0 | 0 | 65 | 97 | | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 65 | 97 | | |
| ND<0 | ND<0 | 0 | 65 | 97 | | |
| ND<0 | ND<0 | 0 | 65 | 97 | | |
| -0.653926 J | | ND<0 | -0.653926 | | 65 | 98 |
| -1.07881 J | | ND<0 | -1.0788165 | | 99 | |
| -1.38629 J | | ND<0 | -1.3862965 | | 100 | |
| -1.27297 J | | ND<0 | -1.2729765 | | 101 | |
| 0.0953102 | | ND<0 | 0.0953102 | | 66 | 101 |
| -0.301105 J | | ND<0 | -0.301105 | | 66 | 102 |
| -0.579818 J | | ND<0 | -0.579818 | | 66 | 103 |
| -0.430783 J | | ND<0 | -0.430783 | | 66 | 104 |
| -0.210721 J | | ND<0 | -0.210721 | | 66 | 105 |
| -0.223144 J | | ND<0 | -0.223144 | | 66 | 106 |
| 0.336472 | | ND<0 | 0.336472 | | 67 | 106 |
| 0 | ND<0 | 0 | 67 | 106 | | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 67 | 106 | | |
| ND<0 | ND<0 | 0 | 67 | 106 | | |
| -0.653926 J | | ND<0 | -0.653926 | | 67 | 107 |
| -1.07881 J | | ND<0 | -1.0788167 | | 108 | |
| -1.38629 J | | ND<0 | -1.3862967 | | 109 | |
| -1.27297 J | | ND<0 | -1.2729767 | | 110 | |
| 0.0953102 | | ND<0 | 0.0953102 | | 68 | 110 |
| -0.301105 J | | ND<0 | -0.301105 | | 68 | 111 |
| -0.579818 J | | ND<0 | -0.579818 | | 68 | 112 |
| -0.430783 J | | ND<0 | -0.430783 | | 68 | 113 |

| | | | | |
|---|---|---|---|---|
| -0.210721 J | ND<0 | -0.210721 | 68 | 114 |
| -0.223144 J | ND<0 | -0.223144 | 68 | 115 |
| 0.336472 | ND<0 | 0.336472 | 69 | 115 |
| 0 | ND<0 | 0 | 69 | 115 |
| ND<0 | ND<0 | 0 | 69 | 115 |
| -0.653926 J | ND<0 | -0.653926 | 69 | 116 |
| -1.07881 J | ND<0 | -1.0788169 | 117 | |
| -1.38629 J | ND<0 | -1.3862969 | 118 | |
| -1.27297 J | ND<0 | -1.2729769 | 119 | |
| 0.0953102 | ND<0 | 0.0953102 | 70 | 119 |
| -0.301105 J | ND<0 | -0.301105 | 70 | 120 |
| -0.579818 J | ND<0 | -0.579818 | 70 | 121 |
| -0.430783 J | ND<0 | -0.430783 | 70 | 122 |
| -0.210721 J | ND<0 | -0.210721 | 70 | 123 |
| -0.223144 J | ND<0 | -0.223144 | 70 | 124 |
| 0.336472 | ND<0 | 0.336472 | 71 | 124 |
| 0 | ND<0 | 0 | 71 | 124 |
| -0.653926 J | ND<0 | -0.653926 | 71 | 125 |
| -1.07881 J | ND<0 | -1.0788171 | 126 | |
| -1.38629 J | ND<0 | -1.3862971 | 127 | |
| -1.27297 J | ND<0 | -1.2729771 | 128 | |
| 0.0953102 | ND<0 | 0.0953102 | 72 | 128 |
| -0.301105 J | ND<0 | -0.301105 | 72 | 129 |
| -0.579818 J | ND<0 | -0.579818 | 72 | 130 |
| -0.430783 J | ND<0 | -0.430783 | 72 | 131 |
| -0.210721 J | ND<0 | -0.210721 | 72 | 132 |
| -0.223144 J | ND<0 | -0.223144 | 72 | 133 |
| 0.336472 | ND<0 | 0.336472 | 73 | 133 |
| 0 | ND<0 | 0 | 73 | 133 |
| -1.07881 J | -0.653926 J | -0.424883 | 73 | 134 |
| -1.38629 J | -0.653926 J | -0.732368 | 73 | 135 |
| -1.27297 J | -0.653926 J | -0.619039 | 73 | 136 |
| 0.0953102 | -0.653926 J | 0.749237 | 74 | 136 |
| -0.301105 J | -0.653926 J | 0.352821 | 75 | 136 |
| -0.579818 J | -0.653926 J | 0.074108 | 76 | 136 |
| -0.430783 J | -0.653926 J | 0.223144 | 77 | 136 |
| -0.210721 J | -0.653926 J | 0.443205 | 78 | 136 |
| -0.223144 J | -0.653926 J | 0.430783 | 79 | 136 |
| 0.336472 | -0.653926 J | 0.990399 | 80 | 136 |
| 0 | -0.653926 J | 0.653926 | 81 | 136 |
| -1.38629 J | -1.07881 J | -0.307485 | 81 | 137 |
| -1.27297 J | -1.07881 J | -0.194156 | 81 | 138 |
| 0.0953102 | -1.07881 J | 1.17412 | 82 | 138 |
| -0.301105 J | -1.07881 J | 0.777705 | 83 | 138 |
| -0.579818 J | -1.07881 J | 0.498991 | 84 | 138 |
| -0.430783 J | -1.07881 J | 0.648027 | 85 | 138 |
| -0.210721 J | -1.07881 J | 0.868089 | 86 | 138 |
| -0.223144 J | -1.07881 J | 0.855666 | 87 | 138 |
| 0.336472 | -1.07881 J | 1.41528 | 88 | 138 |
| 0 | -1.07881 J | 1.07881 | 89 | 138 |
| -1.27297 J | -1.38629 J | 0.113329 | 90 | 138 |
| 0.0953102 | -1.38629 J | 1.4816 | 91 | 138 |
| -0.301105 J | -1.38629 J | 1.08519 | 92 | 138 |
| -0.579818 J | -1.38629 J | 0.806476 | 93 | 138 |
| -0.430783 J | -1.38629 J | 0.955511 | 94 | 138 |
| -0.210721 J | -1.38629 J | 1.17557 | 95 | 138 |
| -0.223144 J | -1.38629 J | 1.16315 | 96 | 138 |

| | | | | | |
|---|---|---|---|---|---|
| 0.336472 | -1.38629 J | 1.72277 | 97 | 138 | |
| 0 | -1.38629 J | 1.38629 | 98 | 138 | |
| | | | | | |
| 0.0953102 | -1.27297 J | 1.36828 | 99 | 138 | |
| -0.301105 J | -1.27297 J | 0.971861 | 100 | 138 | |
| -0.579818 J | -1.27297 J | 0.693147 | 101 | 138 | |
| -0.430783 J | -1.27297 J | 0.842183 | 102 | 138 | |
| -0.210721 J | -1.27297 J | 1.06224 | 103 | 138 | |
| -0.223144 J | -1.27297 J | 1.04982 | 104 | 138 | |
| 0.336472 | -1.27297 J | 1.60944 | 105 | 138 | |
| 0 | -1.27297 J | 1.27297 | 106 | 138 | |
| | | | | | |
| -0.301105 J | 0.0953102 | -0.396415 | 106 | 139 | |
| -0.579818 J | 0.0953102 | -0.675129 | 106 | 140 | |
| -0.430783 J | 0.0953102 | -0.526093 | 106 | 141 | |
| -0.210721 J | 0.0953102 | -0.306031 | 106 | 142 | |
| -0.223144 J | 0.0953102 | -0.318454 | 106 | 143 | |
| 0.336472 | 0.0953102 | 0.241162 | 107 | 143 | |
| 0 | 0.0953102 | -0.0953102 | 107 | 144 | |
| | | | | | |
| -0.579818 J | -0.301105 J | -0.278713 | 107 | 145 | |
| -0.430783 J | -0.301105 J | -0.129678 | 107 | 146 | |
| -0.210721 J | -0.301105 J | 0.0903841 | 108 | 146 | |
| -0.223144 J | -0.301105 J | 0.0779615 | 109 | 146 | |
| 0.336472 | -0.301105 J | 0.637577 | 110 | 146 | |
| 0 | -0.301105 J | 0.301105 | 111 | 146 | |
| | | | | | |
| -0.430783 J | -0.579818 J | 0.149036 | 112 | 146 | |
| -0.210721 J | -0.579818 J | 0.369097 | 113 | 146 | |
| -0.223144 J | -0.579818 J | 0.356675 | 114 | 146 | |
| 0.336472 | -0.579818 J | 0.916291 | 115 | 146 | |
| 0 | -0.579818 J | 0.579818 | 116 | 146 | |
| | | | | | |
| -0.210721 J | -0.430783 J | 0.220062 | 117 | 146 | |
| -0.223144 J | -0.430783 J | 0.207639 | 118 | 146 | |
| 0.336472 | -0.430783 J | 0.767255 | 119 | 146 | |
| 0 | -0.430783 J | 0.430783 | 120 | 146 | |
| | | | | | |
| -0.223144 J | -0.210721 J | -0.0124225 | 120 | 147 | |
| 0.336472 | -0.210721 J | 0.547193 | 121 | 147 | |
| 0 | -0.210721 J | 0.210721 | 122 | 147 | |
| | | | | | |
| 0.336472 | -0.223144 J | 0.559616 | 123 | 147 | |
| 0 | -0.223144 J | 0.223144 | 124 | 147 | |
| | | | | | |
| 0 | 0.336472 | -0.336472 | 124 | 148 | |

S Statistic = 124 - 148 = -24

| Tied Group | Value | Members |
|---|---|---|
| 1 | 0 | 15 |
| 2 | -1.203972 | |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |
| 11/19/1996 | 1 |

| | | |
|---|---|---|
| 12/19/1996 | | 1 |
| 3/24/1997 | | 1 |
| 9/24/1997 | | 1 |
| 4/7/1998 | 1 | |
| 9/23/1998 | | 1 |
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 11/16/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 1 |

There are 0 time periods with multiple data

A = 7368
B = 0
C = 2730
D = 0
E = 212
F = 0
a = 46116
b = 176904
c = 1512
Group Variance = 2152.67
Z-Score = -0.495723
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-0.495723| <= 1.97737 indicating no evidence of a trend

# Concentrations (ppb)

## Parameter: Chloroform

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 203
Percent Non-Detects: 91.8552%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 18 (100%) | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.14 | ND<0.14 |
| | | | 11/16/2009 | ND<0.14 | ND<0.14 |
| | | | 6/30/2010 | ND<0.14 | ND<0.14 |
| | | | 11/12/2010 | ND<0.14 U | ND<0.14 U |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-7 | 28 | 28 (100%) | 7/20/1995 | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 |
| | | | 9/28/1995 | ND<2 | ND<2 |
| | | | 10/26/1995 | ND<2 | ND<2 |
| | | | 11/19/1996 | ND<2 | ND<2 |
| | | | 12/19/1996 | ND<2 | ND<2 |
| | | | 3/24/1997 | ND<2 | ND<2 |
| | | | 9/24/1997 | ND<2 | ND<2 |
| | | | 4/7/1998 | ND<2 | ND<2 |
| | | | 9/23/1998 | ND<2 | ND<2 |
| | | | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.14 | | ND<0.14 |
| | | | 11/16/2009 | ND<0.14 | | ND<0.14 |
| | | | 6/30/2010 | ND<0.14 | | ND<0.14 |
| | | | 11/12/2010 | ND<0.14 U | | ND<0.14 U |
| MW-10 | 28 | 28 (100%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.14 | | ND<0.14 |
| | | | 11/16/2009 | ND<0.14 | | ND<0.14 |
| | | | 6/30/2010 | ND<0.14 | | ND<0.14 |
| | | | 11/12/2010 | ND<0.14 U | | ND<0.14 U |
| MW-6 | 28 | 20 (71.4286%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 0.24 J | 0.24 J | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | 0.27 J | 0.27 J | |
| | | | 6/5/2008 | 0.21 J | 0.21 J | |
| | | | 11/20/2008 | 0.21 J | 0.21 J | |
| | | | 6/11/2009 | 0.31 J | 0.31 J | |
| | | | 11/16/2009 | 0.37 J | 0.37 J | |
| | | | 6/30/2010 | 0.44 J | 0.44 J | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | 11/12/2010 | 0.51 J | 0.51 J | | |
| MW-12BR | 18 | 18 (100%) | 3/16/1999 | | ND<2 | ND<2 |
| | | 9/23/1999 | ND<2 | ND<2 | | |
| | | 3/15/2000 | ND<2 | ND<2 | | |
| | | 9/24/2003 | ND<2 | ND<2 | | |
| | | 3/11/2004 | ND<2 | ND<2 | | |
| | | 10/12/2004 | ND<2 | ND<2 | | |
| | | 4/1/2005 | ND<2 | ND<2 | | |
| | | 10/25/2005 | ND<2 | ND<2 | | |
| | | 4/29/2006 | ND<2 | ND<2 | | |
| | | 11/18/2006 | ND<2 | ND<2 | | |
| | | 5/23/2007 | ND<2 | ND<2 | | |
| | | 11/28/2007 | ND<2 | ND<2 | | |
| | | 6/5/2008 | ND<2 | ND<2 | | |
| | | 11/20/2008 | ND<2 | ND<2 | | |
| | | 6/11/2009 | ND<0.14 | | ND<0.14 | |
| | | 11/16/2009 | ND<0.14 | | ND<0.14 | |
| | | 6/30/2010 | ND<0.14 | | ND<0.14 | |
| | | 11/12/2010 | ND<0.14 U | | ND<0.14 U | |
| MW-12AR | 18 | 18 (100%) | 3/16/1999 | | ND<2 | ND<2 |
| | | 9/23/1999 | ND<2 | ND<2 | | |
| | | 3/15/2000 | ND<2 | ND<2 | | |
| | | 9/24/2003 | ND<2 | ND<2 | | |
| | | 3/11/2004 | ND<2 | ND<2 | | |
| | | 10/12/2004 | ND<2 | ND<2 | | |
| | | 4/1/2005 | ND<2 | ND<2 | | |
| | | 10/25/2005 | ND<2 | ND<2 | | |
| | | 4/29/2006 | ND<2 | ND<2 | | |
| | | 11/18/2006 | ND<2 | ND<2 | | |
| | | 5/23/2007 | ND<2 | ND<2 | | |
| | | 11/28/2007 | ND<2 | ND<2 | | |
| | | 6/5/2008 | ND<2 | ND<2 | | |
| | | 11/20/2008 | ND<2 | ND<2 | | |
| | | 6/11/2009 | ND<0.14 | | ND<0.14 | |
| | | 11/16/2009 | ND<0.14 | | ND<0.14 | |
| | | 6/30/2010 | ND<0.14 | | ND<0.14 | |
| | | 11/12/2010 | ND<0.14 U | | ND<0.14 U | |
| MW-11R | 28 | 22 (78.5714%) | 7/20/1995 | 0.38 J | 0.38 J | |
| | | 8/24/1995 | ND<2 | ND<2 | | |
| | | 9/28/1995 | 0.6 J | 0.6 J | | |
| | | 10/26/1995 | 0.9 J | 0.9 J | | |
| | | 11/19/1996 | ND<2 | ND<2 | | |
| | | 12/19/1996 | ND<2 | ND<2 | | |
| | | 3/24/1997 | ND<2 | ND<2 | | |
| | | 9/24/1997 | ND<2 | ND<2 | | |
| | | 4/7/1998 | ND<2 | ND<2 | | |
| | | 9/23/1998 | ND<2 | ND<2 | | |
| | | 3/16/1999 | ND<2 | ND<2 | | |
| | | 9/23/1999 | ND<2 | ND<2 | | |
| | | 3/15/2000 | ND<2 | ND<2 | | |
| | | 9/24/2003 | ND<2 | ND<2 | | |
| | | 3/11/2004 | ND<2 | ND<2 | | |
| | | 10/12/2004 | ND<2 | ND<2 | | |
| | | 4/1/2005 | ND<2 | ND<2 | | |
| | | 10/25/2005 | ND<2 | ND<2 | | |
| | | 4/29/2006 | ND<2 | ND<2 | | |
| | | 11/18/2006 | ND<2 | ND<2 | | |
| | | 5/23/2007 | ND<2 | ND<2 | | |
| | | 11/28/2007 | ND<2 | ND<2 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | 0.22 J | 0.22 J | |
| | | | 6/11/2009 | ND<0.14 | | ND<0.14 |
| | | | 11/16/2009 | 0.23 J | 0.23 J | |
| | | | 6/30/2010 | ND<0.14 | | ND<0.14 |
| | | | 11/12/2010 | 0.18 J | 0.18 J | |
| MW-8 | 27 | 27 (100%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.14 | | ND<0.14 |
| | | | 6/30/2010 | ND<0.14 | | ND<0.14 |
| | | | 11/12/2010 | ND<0.14 U | | ND<0.14 U |
| MW-9 | 28 | 24 (85.7143%) | 7/20/1995 | | 0.96 J | 0.96 J |
| | | | 8/24/1995 | 0.6 J | 0.6 J | |
| | | | 9/28/1995 | 0.5 J | 0.5 J | |
| | | | 10/26/1995 | 0.5 J | 0.5 J | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.14 | | ND<0.14 |
| | | | 11/16/2009 | ND<0.14 | | ND<0.14 |
| | | | 6/30/2010 | ND<0.14 | | ND<0.14 |

| | | | |
|---|---|---|---|
| | 11/12/2010 | ND<0.14 U | ND<0.14 U |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. | Original |
|---|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: Chloroform

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.07 | -2.65209 | 7.03356 | -0.185646 |
| 2 | 0.07 | -2.36561 | 12.6297 | -0.351239 |
| 3 | 0.07 | -2.22621 | 17.5857 | -0.507073 |
| 4 | 0.07 | -2.09693 | 21.9828 | -0.653859 |
| 5 | 0.07 | -2.01409 | 26.0394 | -0.794845 |
| 6 | 0.07 | -1.92684 | 29.7521 | -0.929724 |
| 7 | 0.07 | -1.86629 | 33.2351 | -1.06036 |
| 8 | 0.07 | -1.79912 | 36.472 | -1.1863 |
| 9 | 0.07 | -1.75069 | 39.5369 | -1.30885 |
| 10 | 0.07 | -1.6954 | 42.4112 | -1.42753 |
| 11 | 0.07 | -1.65463 | 45.149 | -1.54335 |
| 12 | 0.07 | -1.60725 | 47.7323 | -1.65586 |
| 13 | 0.07 | -1.57179 | 50.2028 | -1.76588 |
| 14 | 0.07 | -1.53007 | 52.5439 | -1.87299 |
| 15 | 0.07 | -1.49852 | 54.7894 | -1.97789 |
| 16 | 0.07 | -1.46106 | 56.9241 | -2.08016 |
| 17 | 0.07 | -1.4325 | 58.9762 | -2.18043 |
| 18 | 0.07 | -1.39838 | 60.9316 | -2.27832 |
| 19 | 0.07 | -1.3722 | 62.8146 | -2.37438 |
| 20 | 0.07 | -1.34075 | 64.6122 | -2.46823 |
| 21 | 0.07 | -1.31652 | 66.3454 | -2.56038 |
| 22 | 0.07 | -1.28727 | 68.0025 | -2.65049 |
| 23 | 0.07 | -1.26464 | 69.6018 | -2.73902 |
| 24 | 0.07 | -1.23724 | 71.1326 | -2.82563 |
| 25 | 0.07 | -1.21596 | 72.6111 | -2.91074 |
| 26 | 0.07 | -1.19012 | 74.0275 | -2.99405 |
| 27 | 0.07 | -1.17 | 75.3964 | -3.07595 |
| 28 | 0.07 | -1.1455 | 76.7086 | -3.15614 |
| 29 | 0.07 | -1.12639 | 77.9774 | -3.23498 |
| 30 | 0.18 | -1.10306 | 79.1941 | -3.43353 |
| 31 | 0.21 | -1.08482 | 80.371 | -3.66135 |
| 32 | 0.21 | -1.06252 | 81.4999 | -3.88448 |
| 33 | 0.22 | -1.04505 | 82.592 | -4.11439 |
| 34 | 0.23 | -1.02365 | 83.6399 | -4.34983 |
| 35 | 0.24 | -1.00687 | 84.6537 | -4.59148 |
| 36 | 0.27 | -0.986272 | 85.6264 | -4.85777 |
| 37 | 0.31 | -0.970094 | 86.5675 | -5.1585 |
| 38 | 0.37 | -0.950222 | 87.4704 | -5.51008 |
| 39 | 0.38 | -0.93459 | 88.3439 | -5.86522 |
| 40 | 0.44 | -0.915365 | 89.1818 | -6.26799 |
| 41 | 0.5 | -0.900227 | 89.9922 | -6.7181 |
| 42 | 0.5 | -0.881587 | 90.7694 | -7.15889 |
| 43 | 0.51 | -0.866894 | 91.5209 | -7.60101 |
| 44 | 0.6 | -0.848786 | 92.2413 | -8.11028 |
| 45 | 0.6 | -0.834498 | 92.9377 | -8.61098 |
| 46 | 0.9 | -0.816874 | 93.605 | -9.34616 |
| 47 | 0.96 | -0.802956 | 94.2497 | -10.117 |
| 48 | 1 | -0.785774 | 94.8672 | -10.9028 |
| 49 | 1 | -0.772193 | 95.4634 | -11.675 |

| | | | | |
|---|---|---|---|---|
| 50 | 1 | -0.755415 | 96.0341 | -12.4304 |
| 51 | 1 | -0.742143 | 96.5849 | -13.1725 |
| 52 | 1 | -0.725736 | 97.1116 | -13.8983 |
| 53 | 1 | -0.712751 | 97.6196 | -14.611 |
| 54 | 1 | -0.696684 | 98.1049 | -15.3077 |
| 55 | 1 | -0.683969 | 8.5727 | -15.9917 |
| 56 | 1 | -0.668209 | 99.0192 | -16.6599 |
| 57 | 1 | -0.655726 | 99.4492 | -17.3156 |
| 58 | 1 | -0.640266 | 99.8592 | -17.9559 |
| 59 | 1 | -0.628006 | 100.254 | -18.5839 |
| 60 | 1 | -0.612813 | 100.629 | -19.1967 |
| 61 | 1 | -0.60076 | 100.99 | -19.7974 |
| 62 | 1 | -0.585815 | 101.333 | -20.3833 |
| 63 | 1 | -0.573953 | 101.663 | -20.9572 |
| 64 | 1 | -0.559237 | 101.975 | -21.5164 |
| 65 | 1 | -0.547551 | 102.275 | -22.064 |
| 66 | 1 | -0.533048 | 102.559 | -22.597 |
| 67 | 1 | -0.521527 | 102.831 | -23.1186 |
| 68 | 1 | -0.507221 | 103.089 | -23.6258 |
| 69 | 1 | -0.49585 | 103.334 | -24.1216 |
| 70 | 1 | -0.481728 | 103.566 | -24.6034 |
| 71 | 1 | -0.470498 | 103.788 | -25.0739 |
| 72 | 1 | -0.456542 | 103.996 | -25.5304 |
| 73 | 1 | -0.445443 | 104.195 | -25.9759 |
| 74 | 1 | -0.431644 | 104.381 | -26.4075 |
| 75 | 1 | -0.420664 | 104.558 | -26.8282 |
| 76 | 1 | -0.40701 | 104.724 | -27.2352 |
| 77 | 1 | -0.396142 | 104.881 | -27.6313 |
| 78 | 1 | -0.382622 | 105.027 | -28.0139 |
| 79 | 1 | -0.371856 | 105.165 | -28.3858 |
| 80 | 1 | -0.358459 | 105.294 | -28.7442 |
| 81 | 1 | -0.347787 | 105.415 | -29.092 |
| 82 | 1 | -0.334503 | 105.527 | -29.4265 |
| 83 | 1 | -0.323919 | 105.632 | -29.7505 |
| 84 | 1 | -0.310738 | 105.728 | -30.0612 |
| 85 | 1 | -0.300232 | 105.818 | -30.3614 |
| 86 | 1 | -0.287147 | 105.901 | -30.6486 |
| 87 | 1 | -0.276714 | 105.977 | -30.9253 |
| 88 | 1 | -0.263715 | 106.047 | -31.189 |
| 89 | 1 | -0.253347 | 106.111 | -31.4423 |
| 90 | 1 | -0.240426 | 106.169 | -31.6828 |
| 91 | 1 | -0.230118 | 106.222 | -31.9129 |
| 92 | 1 | -0.217267 | 106.269 | -32.1302 |
| 93 | 1 | -0.207012 | 106.312 | -32.3372 |
| 94 | 1 | -0.194225 | 106.35 | -32.5314 |
| 95 | 1 | -0.184017 | 106.383 | -32.7154 |
| 96 | 1 | -0.171285 | 106.413 | -32.8867 |
| 97 | 1 | -0.161119 | 106.439 | -33.0478 |
| 98 | 1 | -0.148434 | 106.461 | -33.1963 |
| 99 | 1 | -0.138305 | 106.48 | -33.3346 |
| 100 | 1 | -0.125661 | 106.496 | -33.4602 |
| 101 | 1 | -0.115562 | 106.509 | -33.5758 |
| 102 | 1 | -0.102953 | 106.52 | -33.6787 |
| 103 | 1 | -0.0928787 | 106.528 | -33.7716 |
| 104 | 1 | -0.0802981 | 106.535 | -33.8519 |
| 105 | 1 | -0.0702426 | 106.54 | -33.9222 |
| 106 | 1 | -0.0576847 | 106.543 | -33.9798 |
| 107 | 1 | -0.0476439 | 106.545 | -34.0275 |
| 108 | 1 | -0.0350997 | 106.546 | -34.0626 |
| 109 | 1 | -0.0250691 | 106.547 | -34.0876 |
| 110 | 1 | -0.0125328 | 106.547 | -34.1002 |
| 111 | 1 | 0 | 106.547 | -34.1002 |

| | | | | |
|---|---|---|---|---|
| 112 | 1 | 0.0125328 | 106.547 | -34.0876 |
| 113 | 1 | 0.0250691 | 106.548 | -34.0626 |
| 114 | 1 | 0.0350997 | 106.549 | -34.0275 |
| 115 | 1 | 0.0476439 | 106.551 | -33.9798 |
| 116 | 1 | 0.0576847 | 106.555 | -33.9222 |
| 117 | 1 | 0.0702426 | 106.56 | -33.8519 |
| 118 | 1 | 0.0802981 | 106.566 | -33.7716 |
| 119 | 1 | 0.0928787 | 106.575 | -33.6787 |
| 120 | 1 | 0.102953 | 106.585 | -33.5758 |
| 121 | 1 | 0.115562 | 106.599 | -33.4602 |
| 122 | 1 | 0.125661 | 106.615 | -33.3346 |
| 123 | 1 | 0.138305 | 106.634 | -33.1963 |
| 124 | 1 | 0.148434 | 106.656 | -33.0478 |
| 125 | 1 | 0.161119 | 106.682 | -32.8867 |
| 126 | 1 | 0.171285 | 106.711 | -32.7154 |
| 127 | 1 | 0.184017 | 106.745 | -32.5314 |
| 128 | 1 | 0.194225 | 106.783 | -32.3372 |
| 129 | 1 | 0.207012 | 106.825 | -32.1302 |
| 130 | 1 | 0.217267 | 106.873 | -31.9129 |
| 131 | 1 | 0.230118 | 106.926 | -31.6828 |
| 132 | 1 | 0.240426 | 106.983 | -31.4423 |
| 133 | 1 | 0.253347 | 107.048 | -31.189 |
| 134 | 1 | 0.263715 | 107.117 | -30.9253 |
| 135 | 1 | 0.276714 | 107.194 | -30.6486 |
| 136 | 1 | 0.287147 | 107.276 | -30.3614 |
| 137 | 1 | 0.300232 | 107.366 | -30.0612 |
| 138 | 1 | 0.310738 | 107.463 | -29.7505 |
| 139 | 1 | 0.323919 | 107.568 | -29.4265 |
| 140 | 1 | 0.334503 | 107.68 | -29.092 |
| 141 | 1 | 0.347787 | 107.801 | -28.7442 |
| 142 | 1 | 0.358459 | 107.929 | -28.3858 |
| 143 | 1 | 0.371856 | 108.067 | -28.0139 |
| 144 | 1 | 0.382622 | 108.214 | -27.6313 |
| 145 | 1 | 0.396142 | 108.371 | -27.2352 |
| 146 | 1 | 0.40701 | 108.536 | -26.8282 |
| 147 | 1 | 0.420664 | 108.713 | -26.4075 |
| 148 | 1 | 0.431644 | 108.9 | -25.9759 |
| 149 | 1 | 0.445443 | 109.098 | -25.5304 |
| 150 | 1 | 0.456542 | 109.307 | -25.0739 |
| 151 | 1 | 0.470498 | 109.528 | -24.6034 |
| 152 | 1 | 0.481728 | 109.76 | -24.1216 |
| 153 | 1 | 0.49585 | 110.006 | -23.6258 |
| 154 | 1 | 0.507221 | 110.263 | -23.1186 |
| 155 | 1 | 0.521527 | 110.535 | -22.597 |
| 156 | 1 | 0.533048 | 110.819 | -22.064 |
| 157 | 1 | 0.547551 | 111.119 | -21.5164 |
| 158 | 1 | 0.559237 | 111.432 | -20.9572 |
| 159 | 1 | 0.573953 | 111.761 | -20.3833 |
| 160 | 1 | 0.585815 | 112.104 | -19.7974 |
| 161 | 1 | 0.60076 | 112.465 | -19.1967 |
| 162 | 1 | 0.612813 | 112.841 | -18.5839 |
| 163 | 1 | 0.628006 | 113.235 | -17.9559 |
| 164 | 1 | 0.640266 | 113.645 | -17.3156 |
| 165 | 1 | 0.655726 | 114.075 | -16.6599 |
| 166 | 1 | 0.668209 | 114.522 | -15.9917 |
| 167 | 1 | 0.68396 | 114.989 | -15.3077 |
| 168 | 1 | 0.696684 | 115.475 | -14.611 |
| 169 | 1 | 0.712751 | 115.983 | -13.8983 |
| 170 | 1 | 0.725736 | 116.51 | -13.1725 |
| 171 | 1 | 0.742143 | 117.06 | -12.4304 |
| 172 | 1 | 0.755415 | 117.631 | -11.675 |
| 173 | 1 | 0.772193 | 118.227 | -10.9028 |

| | | | | |
|---|---|---|---|---|
| 174 | 1 | 0.785774 | 118.845 | -10.117 |
| 175 | 1 | 0.802956 | 119.489 | -9.31405 |
| 176 | 1 | 0.816874 | 120.157 | -8.49717 |
| 177 | 1 | 0.834498 | 120.853 | -7.66267 |
| 178 | 1 | 0.848786 | 121.574 | -6.81389 |
| 179 | 1 | 0.866894 | 122.325 | -5.94699 |
| 180 | 1 | 0.881587 | 123.102 | -5.06541 |
| 181 | 1 | 0.900227 | 123.913 | -4.16518 |
| 182 | 1 | 0.915365 | 124.751 | -3.24982 |
| 183 | 1 | 0.93459 | 125.624 | -2.31523 |
| 184 | 1 | 0.950222 | 126.527 | -1.365 |
| 185 | 1 | 0.970094 | 127.468 | -0.394909 |
| 186 | 1 | 0.986272 | 128.441 | 0.591363 |
| 187 | 1 | 1.00687 | 129.455 | 1.59823 |
| 188 | 1 | 1.02365 | 130.502 | 2.62188 |
| 189 | 1 | 1.04505 | 131.594 | 3.66693 |
| 190 | 1 | 1.06252 | 132.723 | 4.72945 |
| 191 | 1 | 1.08482 | 133.9 | 5.81427 |
| 192 | 1 | 1.10306 | 135.117 | 6.91733 |
| 193 | 1 | 1.12639 | 136.386 | 8.04373 |
| 194 | 1 | 1.1455 | 137.698 | 9.18923 |
| 195 | 1 | 1.17 | 139.067 | 10.3592 |
| 196 | 1 | 1.19012 | 140.483 | 11.5494 |
| 197 | 1 | 1.21596 | 141.962 | 12.7653 |
| 198 | 1 | 1.23724 | 143.493 | 14.0025 |
| 199 | 1 | 1.26464 | 145.092 | 15.2672 |
| 200 | 1 | 1.28727 | 146.749 | 16.5545 |
| 201 | 1 | 1.31652 | 148.482 | 17.871 |
| 202 | 1 | 1.34075 | 150.28 | 19.2117 |
| 203 | 1 | 1.3722 | 152.163 | 20.5839 |
| 204 | 1 | 1.39838 | 154.118 | 21.9823 |
| 205 | 1 | 1.4325 | 156.17 | 23.4148 |
| 206 | 1 | 1.46106 | 158.305 | 24.8759 |
| 207 | 1 | 1.49852 | 160.551 | 26.3744 |
| 208 | 1 | 1.53007 | 162.892 | 27.9045 |
| 209 | 1 | 1.57179 | 165.362 | 29.4762 |
| 210 | 1 | 1.60725 | 167.945 | 31.0835 |
| 211 | 1 | 1.65463 | 170.683 | 32.7381 |
| 212 | 1 | 1.6954 | 173.558 | 34.4335 |
| 213 | 1 | 1.75069 | 176.622 | 36.1842 |
| 214 | 1 | 1.79912 | 179.859 | 37.9833 |
| 215 | 1 | 1.86629 | 183.342 | 39.8496 |
| 216 | 1 | 1.92684 | 187.055 | 41.7765 |
| 217 | 1 | 2.01409 | 191.112 | 43.7905 |
| 218 | 1 | 2.09693 | 195.509 | 45.8875 |
| 219 | 1 | 2.22621 | 200.465 | 48.1137 |
| 220 | 1 | 2.36561 | 206.061 | 50.4793 |
| 221 | 1 | 2.65209 | 213.094 | 53.1314 |

Data Set Standard Deviation = 0.341443
Numerator = 2822.94
Denominator = 5465.5
W Statistic = 0.516502 = 2822.94 / 5465.5

5% Critical value of 0.976 exceeds 0.516502
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.516502
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: Chloroform

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | -2.65926 | -2.65209 | 7.03356 | 7.05259 |
| 2 | -2.65926 | -2.36561 | 12.6297 | 13.3434 |
| 3 | -2.65926 | -2.22621 | 17.5857 | 19.2634 |
| 4 | -2.65926 | -2.09693 | 21.9828 | 24.8397 |
| 5 | -2.65926 | -2.01409 | 26.0394 | 30.1957 |
| 6 | -2.65926 | -1.92684 | 29.7521 | 35.3197 |
| 7 | -2.65926 | -1.86629 | 33.2351 | 40.2826 |
| 8 | -2.65926 | -1.79912 | 36.472 | 45.067 |
| 9 | -2.65926 | -1.75069 | 39.5369 | 49.7225 |
| 10 | -2.65926 | -1.6954 | 42.4112 | 54.231 |
| 11 | -2.65926 | -1.65463 | 45.149 | 58.6311 |
| 12 | -2.65926 | -1.60725 | 47.7323 | 62.9052 |
| 13 | -2.65926 | -1.57179 | 50.2028 | 67.085 |
| 14 | -2.65926 | -1.53007 | 52.5439 | 71.1538 |
| 15 | -2.65926 | -1.49852 | 54.7894 | 75.1387 |
| 16 | -2.65926 | -1.46106 | 56.9241 | 79.0241 |
| 17 | -2.65926 | -1.4325 | 58.9762 | 82.8335 |
| 18 | -2.65926 | -1.39838 | 60.9316 | 86.5521 |
| 19 | -2.65926 | -1.3722 | 62.8146 | 90.2012 |
| 20 | -2.65926 | -1.34075 | 64.6122 | 93.7666 |
| 21 | -2.65926 | -1.31652 | 66.3454 | 97.2676 |
| 22 | -2.65926 | -1.28727 | 68.0025 | 100.691 |
| 23 | -2.65926 | -1.26464 | 69.6018 | 104.054 |
| 24 | -2.65926 | -1.23724 | 71.1326 | 107.344 |
| 25 | -2.65926 | -1.21596 | 72.6111 | 110.577 |
| 26 | -2.65926 | -1.19012 | 74.0275 | 113.742 |
| 27 | -2.65926 | -1.17 | 75.3964 | 116.854 |
| 28 | -2.65926 | -1.1455 | 76.7086 | 119.9 |
| 29 | -2.65926 | -1.12639 | 77.9774 | 122.895 |
| 30 | -1.7148 | -1.10306 | 79.1941 | 124.787 |
| 31 | -1.56065 | -1.08482 | 80.371 | 126.48 |
| 32 | -1.56065 | -1.06252 | 81.4999 | 128.138 |
| 33 | -1.51413 | -1.04505 | 82.592 | 129.72 |
| 34 | -1.46968 | -1.02365 | 83.6399 | 131.225 |
| 35 | -1.42712 | -1.00687 | 84.6537 | 132.662 |
| 36 | -1.30933 | -0.986272 | 85.6264 | 133.953 |
| 37 | -1.17118 | -0.970094 | 86.5675 | 135.089 |
| 38 | -0.994252 | -0.950222 | 87.4704 | 136.034 |
| 39 | -0.967584 | -0.93459 | 88.3439 | 136.938 |
| 40 | -0.820981 | -0.915365 | 89.1818 | 137.69 |
| 41 | -0.693147 | -0.900227 | 89.9922 | 138.314 |
| 42 | -0.693147 | -0.881587 | 90.7694 | 138.925 |
| 43 | -0.673345 | -0.866894 | 91.5209 | 139.508 |
| 44 | -0.510826 | -0.848786 | 92.2413 | 139.942 |
| 45 | -0.510826 | -0.834498 | 92.9377 | 140.368 |
| 46 | -0.105361 | -0.816874 | 93.605 | 140.454 |
| 47 | -0.040822 | -0.802956 | 94.2497 | 140.487 |
| 48 | 0 | -0.785774 | 94.8672 | 140.487 |
| 49 | 0 | -0.772193 | 95.4634 | 140.487 |

| | | | | |
|---|---|---|---|---|
| 50 | 0 | -0.755415 | 96.0341 | 140.487 |
| 51 | 0 | -0.742143 | 96.5849 | 140.487 |
| 52 | 0 | -0.725736 | 97.1116 | 140.487 |
| 53 | 0 | -0.712751 | 97.6196 | 140.487 |
| 54 | 0 | -0.696684 | 98.1049 | 140.487 |
| 55 | 0 | -0.683969 | 8.5727 | 140.487 |
| 56 | 0 | -0.668209 | 99.0192 | 140.487 |
| 57 | 0 | -0.655726 | 99.4492 | 140.487 |
| 58 | 0 | -0.640266 | 99.8592 | 140.487 |
| 59 | 0 | -0.628006 | 100.254 | 140.487 |
| 60 | 0 | -0.612813 | 100.629 | 140.487 |
| 61 | 0 | -0.60076 | 100.99 | 140.487 |
| 62 | 0 | -0.585815 | 101.333 | 140.487 |
| 63 | 0 | -0.573953 | 101.663 | 140.487 |
| 64 | 0 | -0.559237 | 101.975 | 140.487 |
| 65 | 0 | -0.547551 | 102.275 | 140.487 |
| 66 | 0 | -0.533048 | 102.559 | 140.487 |
| 67 | 0 | -0.521527 | 102.831 | 140.487 |
| 68 | 0 | -0.507221 | 103.089 | 140.487 |
| 69 | 0 | -0.49585 | 103.334 | 140.487 |
| 70 | 0 | -0.481728 | 103.566 | 140.487 |
| 71 | 0 | -0.470498 | 103.788 | 140.487 |
| 72 | 0 | -0.456542 | 103.996 | 140.487 |
| 73 | 0 | -0.445443 | 104.195 | 140.487 |
| 74 | 0 | -0.431644 | 104.381 | 140.487 |
| 75 | 0 | -0.420664 | 104.558 | 140.487 |
| 76 | 0 | -0.40701 | 104.724 | 140.487 |
| 77 | 0 | -0.396142 | 104.881 | 140.487 |
| 78 | 0 | -0.382622 | 105.027 | 140.487 |
| 79 | 0 | -0.371856 | 105.165 | 140.487 |
| 80 | 0 | -0.358459 | 105.294 | 140.487 |
| 81 | 0 | -0.347787 | 105.415 | 140.487 |
| 82 | 0 | -0.334503 | 105.527 | 140.487 |
| 83 | 0 | -0.323919 | 105.632 | 140.487 |
| 84 | 0 | -0.310738 | 105.728 | 140.487 |
| 85 | 0 | -0.300232 | 105.818 | 140.487 |
| 86 | 0 | -0.287147 | 105.901 | 140.487 |
| 87 | 0 | -0.276714 | 105.977 | 140.487 |
| 88 | 0 | -0.263715 | 106.047 | 140.487 |
| 89 | 0 | -0.253347 | 106.111 | 140.487 |
| 90 | 0 | -0.240426 | 106.169 | 140.487 |
| 91 | 0 | -0.230118 | 106.222 | 140.487 |
| 92 | 0 | -0.217267 | 106.269 | 140.487 |
| 93 | 0 | -0.207012 | 106.312 | 140.487 |
| 94 | 0 | -0.194225 | 106.35 | 140.487 |
| 95 | 0 | -0.184017 | 106.383 | 140.487 |
| 96 | 0 | -0.171285 | 106.413 | 140.487 |
| 97 | 0 | -0.161119 | 106.439 | 140.487 |
| 98 | 0 | -0.148434 | 106.461 | 140.487 |
| 99 | 0 | -0.138305 | 106.48 | 140.487 |
| 100 | 0 | -0.125661 | 106.496 | 140.487 |
| 101 | 0 | -0.115562 | 106.509 | 140.487 |
| 102 | 0 | -0.102953 | 106.52 | 140.487 |
| 103 | 0 | -0.0928787 | 106.528 | 140.487 |
| 104 | 0 | -0.0802981 | 106.535 | 140.487 |
| 105 | 0 | -0.0702426 | 106.54 | 140.487 |
| 106 | 0 | -0.0576847 | 106.543 | 140.487 |
| 107 | 0 | -0.0476439 | 106.545 | 140.487 |
| 108 | 0 | -0.0350997 | 106.546 | 140.487 |
| 109 | 0 | -0.0250691 | 106.547 | 140.487 |
| 110 | 0 | -0.0125328 | 106.547 | 140.487 |
| 111 | 0 | 0 | 106.547 | 140.487 |

| | | | | |
|---|---|---|---|---|
| 112 | 0 | 0.0125328 | 106.547 | 140.487 |
| 113 | 0 | 0.0250691 | 106.548 | 140.487 |
| 114 | 0 | 0.0350997 | 106.549 | 140.487 |
| 115 | 0 | 0.0476439 | 106.551 | 140.487 |
| 116 | 0 | 0.0576847 | 106.555 | 140.487 |
| 117 | 0 | 0.0702426 | 106.56 | 140.487 |
| 118 | 0 | 0.0802981 | 106.566 | 140.487 |
| 119 | 0 | 0.0928787 | 106.575 | 140.487 |
| 120 | 0 | 0.102953 | 106.585 | 140.487 |
| 121 | 0 | 0.115562 | 106.599 | 140.487 |
| 122 | 0 | 0.125661 | 106.615 | 140.487 |
| 123 | 0 | 0.138305 | 106.634 | 140.487 |
| 124 | 0 | 0.148434 | 106.656 | 140.487 |
| 125 | 0 | 0.161119 | 106.682 | 140.487 |
| 126 | 0 | 0.171285 | 106.711 | 140.487 |
| 127 | 0 | 0.184017 | 106.745 | 140.487 |
| 128 | 0 | 0.194225 | 106.783 | 140.487 |
| 129 | 0 | 0.207012 | 106.825 | 140.487 |
| 130 | 0 | 0.217267 | 106.873 | 140.487 |
| 131 | 0 | 0.230118 | 106.926 | 140.487 |
| 132 | 0 | 0.240426 | 106.983 | 140.487 |
| 133 | 0 | 0.253347 | 107.048 | 140.487 |
| 134 | 0 | 0.263715 | 107.117 | 140.487 |
| 135 | 0 | 0.276714 | 107.194 | 140.487 |
| 136 | 0 | 0.287147 | 107.276 | 140.487 |
| 137 | 0 | 0.300232 | 107.366 | 140.487 |
| 138 | 0 | 0.310738 | 107.463 | 140.487 |
| 139 | 0 | 0.323919 | 107.568 | 140.487 |
| 140 | 0 | 0.334503 | 107.68 | 140.487 |
| 141 | 0 | 0.347787 | 107.801 | 140.487 |
| 142 | 0 | 0.358459 | 107.929 | 140.487 |
| 143 | 0 | 0.371856 | 108.067 | 140.487 |
| 144 | 0 | 0.382622 | 108.214 | 140.487 |
| 145 | 0 | 0.396142 | 108.371 | 140.487 |
| 146 | 0 | 0.40701 | 108.536 | 140.487 |
| 147 | 0 | 0.420664 | 108.713 | 140.487 |
| 148 | 0 | 0.431644 | 108.9 | 140.487 |
| 149 | 0 | 0.445443 | 109.098 | 140.487 |
| 150 | 0 | 0.456542 | 109.307 | 140.487 |
| 151 | 0 | 0.470498 | 109.528 | 140.487 |
| 152 | 0 | 0.481728 | 109.76 | 140.487 |
| 153 | 0 | 0.49585 | 110.006 | 140.487 |
| 154 | 0 | 0.507221 | 110.263 | 140.487 |
| 155 | 0 | 0.521527 | 110.535 | 140.487 |
| 156 | 0 | 0.533048 | 110.819 | 140.487 |
| 157 | 0 | 0.547551 | 111.119 | 140.487 |
| 158 | 0 | 0.559237 | 111.432 | 140.487 |
| 159 | 0 | 0.573953 | 111.761 | 140.487 |
| 160 | 0 | 0.585815 | 112.104 | 140.487 |
| 161 | 0 | 0.60076 | 112.465 | 140.487 |
| 162 | 0 | 0.612813 | 112.841 | 140.487 |
| 163 | 0 | 0.628006 | 113.235 | 140.487 |
| 164 | 0 | 0.640266 | 113.645 | 140.487 |
| 165 | 0 | 0.655726 | 114.075 | 140.487 |
| 166 | 0 | 0.668209 | 114.522 | 140.487 |
| 167 | 0 | 0.68396 | 114.989 | 140.487 |
| 168 | 0 | 0.696684 | 115.475 | 140.487 |
| 169 | 0 | 0.712751 | 115.983 | 140.487 |
| 170 | 0 | 0.725736 | 116.51 | 140.487 |
| 171 | 0 | 0.742143 | 117.06 | 140.487 |
| 172 | 0 | 0.755415 | 117.631 | 140.487 |
| 173 | 0 | 0.772193 | 118.227 | 140.487 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 0 | 0.785774 | | 118.845 | 140.487 |
| 175 | 0 | 0.802956 | | 119.489 | 140.487 |
| 176 | 0 | 0.816874 | | 120.157 | 140.487 |
| 177 | 0 | 0.834498 | | 120.853 | 140.487 |
| 178 | 0 | 0.848786 | | 121.574 | 140.487 |
| 179 | 0 | 0.866894 | | 122.325 | 140.487 |
| 180 | 0 | 0.881587 | | 123.102 | 140.487 |
| 181 | 0 | 0.900227 | | 123.913 | 140.487 |
| 182 | 0 | 0.915365 | | 124.751 | 140.487 |
| 183 | 0 | 0.93459 | 125.624 | 140.487 | |
| 184 | 0 | 0.950222 | | 126.527 | 140.487 |
| 185 | 0 | 0.970094 | | 127.468 | 140.487 |
| 186 | 0 | 0.986272 | | 128.441 | 140.487 |
| 187 | 0 | 1.00687 | 129.455 | 140.487 | |
| 188 | 0 | 1.02365 | 130.502 | 140.487 | |
| 189 | 0 | 1.04505 | 131.594 | 140.487 | |
| 190 | 0 | 1.06252 | 132.723 | 140.487 | |
| 191 | 0 | 1.08482 | 133.9 | 140.487 | |
| 192 | 0 | 1.10306 | 135.117 | 140.487 | |
| 193 | 0 | 1.12639 | 136.386 | 140.487 | |
| 194 | 0 | 1.1455 | 137.698 | 140.487 | |
| 195 | 0 | 1.17 | 139.067 | 140.487 | |
| 196 | 0 | 1.19012 | 140.483 | 140.487 | |
| 197 | 0 | 1.21596 | 141.962 | 140.487 | |
| 198 | 0 | 1.23724 | 143.493 | 140.487 | |
| 199 | 0 | 1.26464 | 145.092 | 140.487 | |
| 200 | 0 | 1.28727 | 146.749 | 140.487 | |
| 201 | 0 | 1.31652 | 148.482 | 140.487 | |
| 202 | 0 | 1.34075 | 150.28 | 140.487 | |
| 203 | 0 | 1.3722 | 152.163 | 140.487 | |
| 204 | 0 | 1.39838 | 154.118 | 140.487 | |
| 205 | 0 | 1.4325 | 156.17 | 140.487 | |
| 206 | 0 | 1.46106 | 158.305 | 140.487 | |
| 207 | 0 | 1.49852 | 160.551 | 140.487 | |
| 208 | 0 | 1.53007 | 162.892 | 140.487 | |
| 209 | 0 | 1.57179 | 165.362 | 140.487 | |
| 210 | 0 | 1.60725 | 167.945 | 140.487 | |
| 211 | 0 | 1.65463 | 170.683 | 140.487 | |
| 212 | 0 | 1.6954 | 173.558 | 140.487 | |
| 213 | 0 | 1.75069 | 176.622 | 140.487 | |
| 214 | 0 | 1.79912 | 179.859 | 140.487 | |
| 215 | 0 | 1.86629 | 183.342 | 140.487 | |
| 216 | 0 | 1.92684 | 187.055 | 140.487 | |
| 217 | 0 | 2.01409 | 191.112 | 140.487 | |
| 218 | 0 | 2.09693 | 195.509 | 140.487 | |
| 219 | 0 | 2.22621 | 200.465 | 140.487 | |
| 220 | 0 | 2.36561 | 206.061 | 140.487 | |
| 221 | 0 | 2.65209 | 213.094 | 140.487 | |

Data Set Standard Deviation = 0.920225
Numerator = 19736.7
Denominator = 39699.3
W Statistic = 0.497153 = 19736.7 / 39699.3

5% Critical value of 0.976 exceeds 0.497153
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.497153
Evidence of non-normality at 99% level of significance

# Non-Parametric Prediction Interval

## Inter-Well Comparison

## Parameter: Chloroform

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 91.8552%
Number of comparisons = 8
Future Samples (k) = 8
Recent Dates = 1
Background Samples (n) = 18
Maximum Background Concentration = 0
Confidence Level = 69.2%
False Positive Rate = 30.8%

| Location | Date | Samples | Mean | Significant |
|---|---|---|---|---|
| MW-7 | 11/12/2010 | 1 | -2.65926 | FALSE |
| MW-10 | 11/12/2010 | 1 | -2.65926 | FALSE |
| MW-6 | 11/12/2010 | 1 | -0.673345 | FALSE |
| MW-12BR | 11/12/2010 | 1 | -2.65926 | FALSE |
| MW-12AR | 11/12/2010 | 1 | -2.65926 | FALSE |
| MW-11R | 11/12/2010 | 1 | -1.7148 | FALSE |
| MW-8 | 11/12/2010 | 1 | -2.65926 | FALSE |
| MW-9 | 11/12/2010 | 1 | -2.65926 | FALSE |

# Concentrations (ppb)

## Parameter: Chromium

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 151
Percent Non-Detects: 68.3258%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 11 (61.1111%) | 3/16/1999 | 40 | 40 |
| | | | 9/23/1999 | 14 J | 14 J |
| | | | 3/15/2000 | 150 | 150 |
| | | | 9/24/2003 | ND<20 | ND<20 |
| | | | 3/11/2004 | ND<20 | ND<20 |
| | | | 10/12/2004 | ND<20 | ND<20 |
| | | | 4/1/2005 | ND<20 | ND<20 |
| | | | 10/25/2005 | ND<20 | ND<20 |
| | | | 4/29/2006 | ND<20 | ND<20 |
| | | | 11/18/2006 | ND<20 | ND<20 |
| | | | 5/23/2007 | ND<20 | ND<20 |
| | | | 11/28/2007 | ND<20 | ND<20 |
| | | | 6/5/2008 | 5.63 J | 5.63 J |
| | | | 11/20/2008 | ND<20 | ND<20 |
| | | | 6/11/2009 | 0.17 J | 0.17 J |
| | | | 11/16/2009 | 0.19 J | 0.19 J |
| | | | 6/30/2010 | ND<0.16 | ND<0.16 |
| | | | 11/12/2010 | 0.26 J | 0.26 J |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-8 | 27 | 19 (70.3704%) | 7/20/1995 | ND<20 | ND<20 |
| | | | 8/24/1995 | ND<20 | ND<20 |
| | | | 9/28/1995 | 56.2 | 56.2 |
| | | | 10/26/1995 | ND<20 | ND<20 |
| | | | 11/19/1996 | ND<20 | ND<20 |
| | | | 12/19/1996 | 30.1 | 30.1 |
| | | | 3/24/1997 | ND<20 | ND<20 |
| | | | 9/24/1997 | ND<20 | ND<20 |
| | | | 4/7/1998 | ND<20 | ND<20 |
| | | | 9/23/1998 | 18 J | 18 J |
| | | | 3/16/1999 | ND<20 | ND<20 |
| | | | 9/23/1999 | 32 | 32 |
| | | | 3/15/2000 | ND<20 | ND<20 |
| | | | 9/24/2003 | ND<20 | ND<20 |
| | | | 3/11/2004 | ND<20 | ND<20 |
| | | | 10/12/2004 | ND<20 | ND<20 |
| | | | 4/1/2005 | ND<20 | ND<20 |
| | | | 10/25/2005 | ND<20 | ND<20 |
| | | | 4/29/2006 | ND<20 | ND<20 |
| | | | 11/18/2006 | ND<20 | ND<20 |
| | | | 5/23/2007 | ND<20 | ND<20 |
| | | | 11/28/2007 | ND<20 | ND<20 |
| | | | 6/5/2008 | 7.9 J | 7.9 J |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/20/2008 | ND<20 | ND<20 | |
| | | | 6/11/2009 | 0.2 J | 0.2 J | |
| | | | 6/30/2010 | 0.24 J H | 0.24 J H | |
| | | | 11/12/2010 | 0.24 J | 0.24 J | |
| MW-10 | 28 | 20 (71.4286%) | 7/20/1995 | ND<20 | ND<20 | |
| | | | 8/24/1995 | ND<20 | ND<20 | |
| | | | 9/28/1995 | ND<20 | ND<20 | |
| | | | 10/26/1995 | ND<20 | ND<20 | |
| | | | 11/19/1996 | ND<20 | ND<20 | |
| | | | 12/19/1996 | 15 J | 15 J | |
| | | | 3/24/1997 | ND<20 | ND<20 | |
| | | | 9/24/1997 | 14 | 14 | |
| | | | 4/7/1998 | ND<20 | ND<20 | |
| | | | 9/23/1998 | ND<20 | ND<20 | |
| | | | 3/16/1999 | ND<20 | ND<20 | |
| | | | 9/23/1999 | 29 | 29 | |
| | | | 3/15/2000 | ND<20 | ND<20 | |
| | | | 9/24/2003 | ND<20 | ND<20 | |
| | | | 3/11/2004 | ND<20 | ND<20 | |
| | | | 10/12/2004 | ND<20 | ND<20 | |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | ND<20 | ND<20 | |
| | | | 4/29/2006 | ND<20 | ND<20 | |
| | | | 11/18/2006 | ND<20 | ND<20 | |
| | | | 5/23/2007 | ND<20 | ND<20 | |
| | | | 11/28/2007 | ND<20 | ND<20 | |
| | | | 6/5/2008 | 3.11 J | 3.11 J | |
| | | | 11/20/2008 | ND<20 | ND<20 | |
| | | | 6/11/2009 | 0.22 J | 0.22 J | |
| | | | 11/16/2009 | 0.27 J B | 0.27 J B | |
| | | | 6/30/2010 | 0.16 J H | 0.16 J H | |
| | | | 11/12/2010 | 0.2 J | 0.2 J | |
| MW-11R | 28 | 18 (64.2857%) | 7/20/1995 | ND<20 | ND<20 | |
| | | | 8/24/1995 | ND<20 | ND<20 | |
| | | | 9/28/1995 | ND<20 | ND<20 | |
| | | | 10/26/1995 | 25.8 | 25.8 | |
| | | | 11/19/1996 | ND<20 | ND<20 | |
| | | | 12/19/1996 | 16 J | 16 J | |
| | | | 3/24/1997 | ND<20 | ND<20 | |
| | | | 9/24/1997 | ND<20 | ND<20 | |
| | | | 4/7/1998 | 14 J | 14 J | |
| | | | 9/23/1998 | ND<20 | ND<20 | |
| | | | 3/16/1999 | 7 J | 7 J | |
| | | | 9/23/1999 | 11 J | 11 J | |
| | | | 3/15/2000 | 12 J | 12 J | |
| | | | 9/24/2003 | ND<20 | ND<20 | |
| | | | 3/11/2004 | ND<20 | ND<20 | |
| | | | 10/12/2004 | ND<20 | ND<20 | |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | ND<20 | ND<20 | |
| | | | 4/29/2006 | ND<20 | ND<20 | |
| | | | 11/18/2006 | ND<20 | ND<20 | |
| | | | 5/23/2007 | 4.61 J | 4.61 J | |
| | | | 11/28/2007 | ND<20 | ND<20 | |
| | | | 6/5/2008 | ND<20 | ND<20 | |
| | | | 11/20/2008 | ND<20 | ND<20 | |
| | | | 6/11/2009 | 0.17 J | 0.17 J | |
| | | | 11/16/2009 | 0.22 J B | 0.22 J B | |
| | | | 6/30/2010 | 0.18 J H | 0.18 J H | |
| | | | 11/12/2010 | ND<0.16 U | ND<0.16 U | |

| | | | | | | |
|---|---|---|---|---|---|---|
| MW-12AR | 18 | 11 (61.1111%) | 3/16/1999 | | ND<20 | ND<20 |
| | | 9/23/1999 | ND<20 | ND<20 | | |
| | | 3/15/2000 | 82 | 82 | | |
| | | 9/24/2003 | ND<20 | ND<20 | | |
| | | 3/11/2004 | 12 J | 12 J | | |
| | | 10/12/2004 | ND<20 | ND<20 | | |
| | | 4/1/2005 | ND<20 | ND<20 | | |
| | | 10/25/2005 | ND<20 | ND<20 | | |
| | | 4/29/2006 | ND<20 | ND<20 | | |
| | | 11/18/2006 | ND<20 | ND<20 | | |
| | | 5/23/2007 | ND<20 | ND<20 | | |
| | | 11/28/2007 | ND<20 | ND<20 | | |
| | | 6/5/2008 | 4.5 J | 4.5 J | | |
| | | 11/20/2008 | ND<20 | ND<20 | | |
| | | 6/11/2009 | 0.3 J | 0.3 J | | |
| | | 11/16/2009 | 0.74 J B | 0.74 J B | | |
| | | 6/30/2010 | 0.4 J | 0.4 J | | |
| | | 11/12/2010 | 0.6 J | 0.6 J | | |
| MW-12BR | 18 | 13 (72.2222%) | 3/16/1999 | | 8 J | 8 J |
| | | 9/23/1999 | 12 J | 12 J | | |
| | | 3/15/2000 | ND<20 | ND<20 | | |
| | | 9/24/2003 | ND<20 | ND<20 | | |
| | | 3/11/2004 | ND<20 | ND<20 | | |
| | | 10/12/2004 | ND<20 | ND<20 | | |
| | | 4/1/2005 | ND<20 | ND<20 | | |
| | | 10/25/2005 | ND<20 | ND<20 | | |
| | | 4/29/2006 | ND<20 | ND<20 | | |
| | | 11/18/2006 | ND<20 | ND<20 | | |
| | | 5/23/2007 | ND<20 | ND<20 | | |
| | | 11/28/2007 | ND<20 | ND<20 | | |
| | | 6/5/2008 | 5.66 J | 5.66 J | | |
| | | 11/20/2008 | ND<20 | ND<20 | | |
| | | 6/11/2009 | ND<0.16 | | ND<0.16 | |
| | | 11/16/2009 | ND<0.16 | | ND<0.16 | |
| | | 6/30/2010 | 0.32 J | 0.32 J | | |
| | | 11/12/2010 | 0.52 J | 0.52 J | | |
| MW-7 | 28 | 15 (53.5714%) | 7/20/1995 | | ND<20 | ND<20 |
| | | 8/24/1995 | 12.8 J | 12.8 J | | |
| | | 9/28/1995 | 79.9 | 79.9 | | |
| | | 10/26/1995 | ND<20 | ND<20 | | |
| | | 11/19/1996 | ND<20 | ND<20 | | |
| | | 12/19/1996 | 36.6 | 36.6 | | |
| | | 3/24/1997 | ND<20 | ND<20 | | |
| | | 9/24/1997 | 14 J | 14 J | | |
| | | 4/7/1998 | 28 | 28 | | |
| | | 9/23/1998 | ND<20 | ND<20 | | |
| | | 3/16/1999 | 40 | 40 | | |
| | | 9/23/1999 | 42 | 42 | | |
| | | 3/15/2000 | 10 J | 10 J | | |
| | | 9/24/2003 | ND<20 | ND<20 | | |
| | | 3/11/2004 | ND<20 | ND<20 | | |
| | | 10/12/2004 | ND<20 | ND<20 | | |
| | | 4/1/2005 | ND<20 | ND<20 | | |
| | | 10/25/2005 | ND<20 | ND<20 | | |
| | | 4/29/2006 | ND<20 | ND<20 | | |
| | | 11/18/2006 | ND<20 | ND<20 | | |
| | | 5/23/2007 | ND<20 | ND<20 | | |
| | | 11/28/2007 | ND<20 | ND<20 | | |
| | | 6/5/2008 | 8.11 J | 8.11 J | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/20/2008 | ND<20 | ND<20 | |
| | | | 6/11/2009 | 0.71 J | 0.71 J | |
| | | | 11/16/2009 | 0.67 J B | 0.67 J B | |
| | | | 6/30/2010 | 0.32 J H | 0.32 J H | |
| | | | 11/12/2010 | 0.51 J | 0.51 J | |
| MW-9 | 28 | 24 (85.7143%) | 7/20/1995 | ND<20 | ND<20 | |
| | | | 8/24/1995 | ND<20 | ND<20 | |
| | | | 9/28/1995 | ND<20 | ND<20 | |
| | | | 10/26/1995 | ND<20 | ND<20 | |
| | | | 11/19/1996 | ND<20 | ND<20 | |
| | | | 12/19/1996 | ND<20 | ND<20 | |
| | | | 3/24/1997 | ND<20 | ND<20 | |
| | | | 9/24/1997 | ND<20 | ND<20 | |
| | | | 4/7/1998 | ND<20 | ND<20 | |
| | | | 9/23/1998 | ND<20 | ND<20 | |
| | | | 3/16/1999 | ND<20 | ND<20 | |
| | | | 9/23/1999 | 11 J | 11 J | |
| | | | 3/15/2000 | ND<20 | ND<20 | |
| | | | 9/24/2003 | ND<20 | ND<20 | |
| | | | 3/11/2004 | ND<20 | ND<20 | |
| | | | 10/12/2004 | ND<20 | ND<20 | |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | ND<20 | ND<20 | |
| | | | 4/29/2006 | ND<20 | ND<20 | |
| | | | 11/18/2006 | ND<20 | ND<20 | |
| | | | 5/23/2007 | ND<20 | ND<20 | |
| | | | 11/28/2007 | ND<20 | ND<20 | |
| | | | 6/5/2008 | 5.2 J | 5.2 J | |
| | | | 11/20/2008 | ND<20 | ND<20 | |
| | | | 6/11/2009 | 0.62 J | 0.62 J | |
| | | | 11/16/2009 | ND<0.16 | ND<0.16 | |
| | | | 6/30/2010 | 0.23 J H | 0.23 J H | |
| | | | 11/12/2010 | ND<0.16 U | ND<0.16 U | |
| MW-6 | 28 | 20 (71.4286%) | 7/20/1995 | 12.4 J | 12.4 J | |
| | | | 8/24/1995 | ND<20 | ND<20 | |
| | | | 9/28/1995 | ND<20 | ND<20 | |
| | | | 10/26/1995 | 13.8 J | 13.8 J | |
| | | | 11/19/1996 | ND<20 | ND<20 | |
| | | | 12/19/1996 | 16.1 J | 16.1 J | |
| | | | 3/24/1997 | 14 J | 14 J | |
| | | | 9/24/1997 | ND<20 | ND<20 | |
| | | | 4/7/1998 | 23 | 23 | |
| | | | 9/23/1998 | 14 J | 14 J | |
| | | | 3/16/1999 | ND<20 | ND<20 | |
| | | | 9/23/1999 | ND<20 | ND<20 | |
| | | | 3/15/2000 | 32 | 32 | |
| | | | 9/24/2003 | ND<20 | ND<20 | |
| | | | 3/11/2004 | ND<20 | ND<20 | |
| | | | 10/12/2004 | ND<20 | ND<20 | |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | ND<20 | ND<20 | |
| | | | 4/29/2006 | ND<20 | ND<20 | |
| | | | 11/18/2006 | ND<20 | ND<20 | |
| | | | 5/23/2007 | ND<20 | ND<20 | |
| | | | 11/28/2007 | ND<20 | ND<20 | |
| | | | 6/5/2008 | 5.12 | 5.12 | |
| | | | 11/20/2008 | ND<20 | ND<20 | |
| | | | 6/11/2009 | ND<0.16 | ND<0.16 | |
| | | | 11/16/2009 | ND<0.16 | ND<0.16 | |
| | | | 6/30/2010 | ND<0.16 | ND<0.16 | |

| | | | |
|---|---|---|---|
| | 11/12/2010 | ND<0.16 U | ND<0.16 U |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. | Original |
|---|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: Chromium

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.08 | -2.65209 | 7.03356 | -0.212167 |
| 2 | 0.08 | -2.36561 | 12.6297 | -0.401416 |
| 3 | 0.08 | -2.22621 | 17.5857 | -0.579513 |
| 4 | 0.08 | -2.09693 | 21.9828 | -0.747267 |
| 5 | 0.08 | -2.01409 | 26.0394 | -0.908395 |
| 6 | 0.08 | -1.92684 | 29.7521 | -1.06254 |
| 7 | 0.08 | -1.86629 | 33.2351 | -1.21184 |
| 8 | 0.08 | -1.79912 | 36.472 | -1.35577 |
| 9 | 0.08 | -1.75069 | 39.5369 | -1.49583 |
| 10 | 0.08 | -1.6954 | 42.4112 | -1.63146 |
| 11 | 0.16 | -1.65463 | 45.149 | -1.8962 |
| 12 | 0.17 | -1.60725 | 47.7323 | -2.16943 |
| 13 | 0.17 | -1.57179 | 50.2028 | -2.43664 |
| 14 | 0.18 | -1.53007 | 52.5439 | -2.71205 |
| 15 | 0.19 | -1.49852 | 54.7894 | -2.99677 |
| 16 | 0.2 | -1.46106 | 56.9241 | -3.28898 |
| 17 | 0.2 | -1.4325 | 58.9762 | -3.57548 |
| 18 | 0.22 | -1.39838 | 60.9316 | -3.88312 |
| 19 | 0.22 | -1.3722 | 62.8146 | -4.18501 |
| 20 | 0.23 | -1.34075 | 64.6122 | -4.49338 |
| 21 | 0.24 | -1.31652 | 66.3454 | -4.80935 |
| 22 | 0.24 | -1.28727 | 68.0025 | -5.11829 |
| 23 | 0.26 | -1.26464 | 69.6018 | -5.4471 |
| 24 | 0.27 | -1.23724 | 71.1326 | -5.78115 |
| 25 | 0.3 | -1.21596 | 72.6111 | -6.14594 |
| 26 | 0.32 | -1.19012 | 74.0275 | -6.52678 |
| 27 | 0.32 | -1.17 | 75.3964 | -6.90118 |
| 28 | 0.4 | -1.1455 | 76.7086 | -7.35938 |
| 29 | 0.51 | -1.12639 | 77.9774 | -7.93384 |
| 30 | 0.52 | -1.10306 | 79.1941 | -8.50743 |
| 31 | 0.6 | -1.08482 | 80.371 | -9.15833 |
| 32 | 0.62 | -1.06252 | 81.4999 | -9.81709 |
| 33 | 0.67 | -1.04505 | 82.592 | -10.5173 |
| 34 | 0.71 | -1.02365 | 83.6399 | -11.2441 |
| 35 | 0.74 | -1.00687 | 84.6537 | -11.9891 |
| 36 | 3.11 | -0.986272 | 85.6264 | -15.0565 |
| 37 | 4.5 | -0.970094 | 86.5675 | -19.4219 |
| 38 | 4.61 | -0.950222 | 87.4704 | -23.8024 |
| 39 | 5.12 | -0.93459 | 88.3439 | -28.5875 |
| 40 | 5.2 | -0.915365 | 89.1818 | -33.3474 |
| 41 | 5.63 | -0.900227 | 89.9922 | -38.4157 |
| 42 | 5.66 | -0.881587 | 90.7694 | -43.4055 |
| 43 | 7 | -0.866894 | 91.5209 | -49.4737 |
| 44 | 7.9 | -0.848786 | 92.2413 | -56.1791 |
| 45 | 8 | -0.834498 | 92.9377 | -62.8551 |
| 46 | 8.11 | -0.816874 | 93.605 | -69.48 |
| 47 | 10 | -0.802956 | 94.2497 | -77.5095 |
| 48 | 10 | -0.785774 | 94.8672 | -85.3673 |
| 49 | 10 | -0.772193 | 95.4634 | -93.0892 |

| | | | | |
|---|---|---|---|---|
| 50 | 10 | -0.755415 | 96.0341 | -100.643 |
| 51 | 10 | -0.742143 | 96.5849 | -108.065 |
| 52 | 10 | -0.725736 | 97.1116 | -115.322 |
| 53 | 10 | -0.712751 | 97.6196 | -122.45 |
| 54 | 10 | -0.696684 | 98.1049 | -129.416 |
| 55 | 10 | -0.683969 | 8.5727 | -136.256 |
| 56 | 10 | -0.668209 | 99.0192 | -142.938 |
| 57 | 10 | -0.655726 | 99.4492 | -149.495 |
| 58 | 10 | -0.640266 | 99.8592 | -155.898 |
| 59 | 10 | -0.628006 | 100.254 | -162.178 |
| 60 | 10 | -0.612813 | 100.629 | -168.306 |
| 61 | 10 | -0.60076 | 100.99 | -174.314 |
| 62 | 10 | -0.585815 | 101.333 | -180.172 |
| 63 | 10 | -0.573953 | 101.663 | -185.912 |
| 64 | 10 | -0.559237 | 101.975 | -191.504 |
| 65 | 10 | -0.547551 | 102.275 | -196.979 |
| 66 | 10 | -0.533048 | 102.559 | -202.31 |
| 67 | 10 | -0.521527 | 102.831 | -207.525 |
| 68 | 10 | -0.507221 | 103.089 | -212.597 |
| 69 | 10 | -0.49585 | 103.334 | -217.556 |
| 70 | 10 | -0.481728 | 103.566 | -222.373 |
| 71 | 10 | -0.470498 | 103.788 | -227.078 |
| 72 | 10 | -0.456542 | 103.996 | -231.644 |
| 73 | 10 | -0.445443 | 104.195 | -236.098 |
| 74 | 10 | -0.431644 | 104.381 | -240.414 |
| 75 | 10 | -0.420664 | 104.558 | -244.621 |
| 76 | 10 | -0.40701 | 104.724 | -248.691 |
| 77 | 10 | -0.396142 | 104.881 | -252.653 |
| 78 | 10 | -0.382622 | 105.027 | -256.479 |
| 79 | 10 | -0.371856 | 105.165 | -260.197 |
| 80 | 10 | -0.358459 | 105.294 | -263.782 |
| 81 | 10 | -0.347787 | 105.415 | -267.26 |
| 82 | 10 | -0.334503 | 105.527 | -270.605 |
| 83 | 10 | -0.323919 | 105.632 | -273.844 |
| 84 | 10 | -0.310738 | 105.728 | -276.951 |
| 85 | 10 | -0.300232 | 105.818 | -279.954 |
| 86 | 10 | -0.287147 | 105.901 | -282.825 |
| 87 | 10 | -0.276714 | 105.977 | -285.592 |
| 88 | 10 | -0.263715 | 106.047 | -288.23 |
| 89 | 10 | -0.253347 | 106.111 | -290.763 |
| 90 | 10 | -0.240426 | 106.169 | -293.167 |
| 91 | 10 | -0.230118 | 106.222 | -295.468 |
| 92 | 10 | -0.217267 | 106.269 | -297.641 |
| 93 | 10 | -0.207012 | 106.312 | -299.711 |
| 94 | 10 | -0.194225 | 106.35 | -301.653 |
| 95 | 10 | -0.184017 | 106.383 | -303.494 |
| 96 | 10 | -0.171285 | 106.413 | -305.206 |
| 97 | 10 | -0.161119 | 106.439 | -306.818 |
| 98 | 10 | -0.148434 | 106.461 | -308.302 |
| 99 | 10 | -0.138305 | 106.48 | -309.685 |
| 100 | 10 | -0.125661 | 106.496 | -310.942 |
| 101 | 10 | -0.115562 | 106.509 | -312.097 |
| 102 | 10 | -0.102953 | 106.52 | -313.127 |
| 103 | 10 | -0.0928787 | 106.528 | -314.056 |
| 104 | 10 | -0.0802981 | 106.535 | -314.859 |
| 105 | 10 | -0.0702426 | 106.54 | -315.561 |
| 106 | 10 | -0.0576847 | 106.543 | -316.138 |
| 107 | 10 | -0.0476439 | 106.545 | -316.614 |
| 108 | 10 | -0.0350997 | 106.546 | -316.965 |
| 109 | 10 | -0.0250691 | 106.547 | -317.216 |
| 110 | 10 | -0.0125328 | 106.547 | -317.341 |
| 111 | 10 | 0 | 106.547 | -317.341 |

| | | | | |
|---|---|---|---|---|
| 112 | 10 | 0.0125328 | 106.547 | -317.216 |
| 113 | 10 | 0.0250691 | 106.548 | -316.965 |
| 114 | 10 | 0.0350997 | 106.549 | -316.614 |
| 115 | 10 | 0.0476439 | 106.551 | -316.138 |
| 116 | 10 | 0.0576847 | 106.555 | -315.561 |
| 117 | 10 | 0.0702426 | 106.56 | -314.859 |
| 118 | 10 | 0.0802981 | 106.566 | -314.056 |
| 119 | 10 | 0.0928787 | 106.575 | -313.127 |
| 120 | 10 | 0.102953 | 106.585 | -312.097 |
| 121 | 10 | 0.115562 | 106.599 | -310.942 |
| 122 | 10 | 0.125661 | 106.615 | -309.685 |
| 123 | 10 | 0.138305 | 106.634 | -308.302 |
| 124 | 10 | 0.148434 | 106.656 | -306.818 |
| 125 | 10 | 0.161119 | 106.682 | -305.206 |
| 126 | 10 | 0.171285 | 106.711 | -303.494 |
| 127 | 10 | 0.184017 | 106.745 | -301.653 |
| 128 | 10 | 0.194225 | 106.783 | -299.711 |
| 129 | 10 | 0.207012 | 106.825 | -297.641 |
| 130 | 10 | 0.217267 | 106.873 | -295.468 |
| 131 | 10 | 0.230118 | 106.926 | -293.167 |
| 132 | 10 | 0.240426 | 106.983 | -290.763 |
| 133 | 10 | 0.253347 | 107.048 | -288.23 |
| 134 | 10 | 0.263715 | 107.117 | -285.592 |
| 135 | 10 | 0.276714 | 107.194 | -282.825 |
| 136 | 10 | 0.287147 | 107.276 | -279.954 |
| 137 | 10 | 0.300232 | 107.366 | -276.951 |
| 138 | 10 | 0.310738 | 107.463 | -273.844 |
| 139 | 10 | 0.323919 | 107.568 | -270.605 |
| 140 | 10 | 0.334503 | 107.68 | -267.26 |
| 141 | 10 | 0.347787 | 107.801 | -263.782 |
| 142 | 10 | 0.358459 | 107.929 | -260.197 |
| 143 | 10 | 0.371856 | 108.067 | -256.479 |
| 144 | 10 | 0.382622 | 108.214 | -252.653 |
| 145 | 10 | 0.396142 | 108.371 | -248.691 |
| 146 | 10 | 0.40701 | 108.536 | -244.621 |
| 147 | 10 | 0.420664 | 108.713 | -240.414 |
| 148 | 10 | 0.431644 | 108.9 | -236.098 |
| 149 | 10 | 0.445443 | 109.098 | -231.644 |
| 150 | 10 | 0.456542 | 109.307 | -227.078 |
| 151 | 10 | 0.470498 | 109.528 | -222.373 |
| 152 | 10 | 0.481728 | 109.76 | -217.556 |
| 153 | 10 | 0.49585 | 110.006 | -212.597 |
| 154 | 10 | 0.507221 | 110.263 | -207.525 |
| 155 | 10 | 0.521527 | 110.535 | -202.31 |
| 156 | 10 | 0.533048 | 110.819 | -196.979 |
| 157 | 10 | 0.547551 | 111.119 | -191.504 |
| 158 | 10 | 0.559237 | 111.432 | -185.912 |
| 159 | 10 | 0.573953 | 111.761 | -180.172 |
| 160 | 10 | 0.585815 | 112.104 | -174.314 |
| 161 | 10 | 0.60076 | 112.465 | -168.306 |
| 162 | 10 | 0.612813 | 112.841 | -162.178 |
| 163 | 10 | 0.628006 | 113.235 | -155.898 |
| 164 | 10 | 0.640266 | 113.645 | -149.495 |
| 165 | 10 | 0.655726 | 114.075 | -142.938 |
| 166 | 10 | 0.668209 | 114.522 | -136.256 |
| 167 | 10 | 0.68396 | 114.989 | -129.416 |
| 168 | 10 | 0.696684 | 115.475 | -122.45 |
| 169 | 10 | 0.712751 | 115.983 | -115.322 |
| 170 | 10 | 0.725736 | 116.51 | -108.065 |
| 171 | 10 | 0.742143 | 117.06 | -100.643 |
| 172 | 10 | 0.755415 | 117.631 | -93.0892 |
| 173 | 10 | 0.772193 | 118.227 | -85.3673 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 10 | 0.785774 | | 118.845 | -77.5095 |
| 175 | 10 | 0.802956 | | 119.489 | -69.48 |
| 176 | 10 | 0.816874 | | 120.157 | -61.3112 |
| 177 | 10 | 0.834498 | | 120.853 | -52.9662 |
| 178 | 10 | 0.848786 | | 121.574 | -44.4784 |
| 179 | 10 | 0.866894 | | 122.325 | -35.8094 |
| 180 | 10 | 0.881587 | | 123.102 | -26.9936 |
| 181 | 10 | 0.900227 | | 123.913 | -17.9913 |
| 182 | 10 | 0.915365 | | 124.751 | -8.83764 |
| 183 | 10 | 0.93459 | 125.624 | 0.508254 | |
| 184 | 10 | 0.950222 | | 126.527 | 10.0105 |
| 185 | 10 | 0.970094 | | 127.468 | 19.7114 |
| 186 | 10 | 0.986272 | | 128.441 | 29.5741 |
| 187 | 10 | 1.00687 | 129.455 | 39.6428 | |
| 188 | 10 | 1.02365 | 130.502 | 49.8793 | |
| 189 | 11 | 1.04505 | 131.594 | 61.3749 | |
| 190 | 11 | 1.06252 | 132.723 | 73.0626 | |
| 191 | 12 | 1.08482 | 133.9 | 86.0804 | |
| 192 | 12 | 1.10306 | 135.117 | 99.3172 | |
| 193 | 12 | 1.12639 | 136.386 | 112.834 | |
| 194 | 12.4 | 1.1455 | 137.698 | 127.038 | |
| 195 | 12.8 | 1.17 | 139.067 | 142.014 | |
| 196 | 13.8 | 1.19012 | 140.483 | 158.438 | |
| 197 | 14 | 1.21596 | 141.962 | 175.461 | |
| 198 | 14 | 1.23724 | 143.493 | 192.783 | |
| 199 | 14 | 1.26464 | 145.092 | 210.488 | |
| 200 | 14 | 1.28727 | 146.749 | 228.509 | |
| 201 | 14 | 1.31652 | 148.482 | 246.941 | |
| 202 | 14 | 1.34075 | 150.28 | 265.711 | |
| 203 | 15 | 1.3722 | 152.163 | 286.294 | |
| 204 | 16 | 1.39838 | 154.118 | 308.668 | |
| 205 | 16.1 | 1.4325 | 156.17 | 331.732 | |
| 206 | 18 | 1.46106 | 158.305 | 358.031 | |
| 207 | 23 | 1.49852 | 160.551 | 392.496 | |
| 208 | 25.8 | 1.53007 | 162.892 | 431.972 | |
| 209 | 28 | 1.57179 | 165.362 | 475.982 | |
| 210 | 29 | 1.60725 | 167.945 | 522.592 | |
| 211 | 30.1 | 1.65463 | 170.683 | 572.397 | |
| 212 | 32 | 1.6954 | 173.558 | 626.649 | |
| 213 | 32 | 1.75069 | 176.622 | 682.671 | |
| 214 | 36.6 | 1.79912 | 179.859 | 748.519 | |
| 215 | 40 | 1.86629 | 183.342 | 823.171 | |
| 216 | 40 | 1.92684 | 187.055 | 900.244 | |
| 217 | 42 | 2.01409 | 191.112 | 984.836 | |
| 218 | 56.2 | 2.09693 | 195.509 | 1102.68 | |
| 219 | 79.9 | 2.22621 | 200.465 | 1280.56 | |
| 220 | 82 | 2.36561 | 206.061 | 1474.54 | |
| 221 | 150 | 2.65209 | 213.094 | 1872.35 | |

Data Set Standard Deviation = 13.708
Numerator = 3.5057e+006
Denominator = 8.80939e+006
W Statistic = 0.39795 = 3.5057e+006 / 8.80939e+006

5% Critical value of 0.976 exceeds 0.39795
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.39795
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: Chromium

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | -2.52573 | -2.65209 | 7.03356 | 6.69845 |
| 2 | -2.52573 | -2.36561 | 12.6297 | 12.6733 |
| 3 | -2.52573 | -2.22621 | 17.5857 | 18.2961 |
| 4 | -2.52573 | -2.09693 | 21.9828 | 23.5924 |
| 5 | -2.52573 | -2.01409 | 26.0394 | 28.6795 |
| 6 | -2.52573 | -1.92684 | 29.7521 | 33.5461 |
| 7 | -2.52573 | -1.86629 | 33.2351 | 38.2599 |
| 8 | -2.52573 | -1.79912 | 36.472 | 42.804 |
| 9 | -2.52573 | -1.75069 | 39.5369 | 47.2257 |
| 10 | -2.52573 | -1.6954 | 42.4112 | 51.5078 |
| 11 | -1.83258 | -1.65463 | 45.149 | 54.5401 |
| 12 | -1.77196 | -1.60725 | 47.7323 | 57.3881 |
| 13 | -1.77196 | -1.57179 | 50.2028 | 60.1732 |
| 14 | -1.7148 | -1.53007 | 52.5439 | 62.797 |
| 15 | -1.66073 | -1.49852 | 54.7894 | 65.2856 |
| 16 | -1.60944 | -1.46106 | 56.9241 | 67.6371 |
| 17 | -1.60944 | -1.4325 | 58.9762 | 69.9426 |
| 18 | -1.51413 | -1.39838 | 60.9316 | 72.0599 |
| 19 | -1.51413 | -1.3722 | 62.8146 | 74.1376 |
| 20 | -1.46968 | -1.34075 | 64.6122 | 76.1081 |
| 21 | -1.42712 | -1.31652 | 66.3454 | 77.9869 |
| 22 | -1.42712 | -1.28727 | 68.0025 | 79.824 |
| 23 | -1.34707 | -1.26464 | 69.6018 | 81.5276 |
| 24 | -1.30933 | -1.23724 | 71.1326 | 83.1475 |
| 25 | -1.20397 | -1.21596 | 72.6111 | 84.6115 |
| 26 | -1.13943 | -1.19012 | 74.0275 | 85.9676 |
| 27 | -1.13943 | -1.17 | 75.3964 | 87.3007 |
| 28 | -0.916291 | | -1.1455 | 76.7086 | 88.3503 |
| 29 | -0.673345 | | -1.12639 | 77.9774 | 89.1088 |
| 30 | -0.653926 | | -1.10306 | 79.1941 | 89.8301 |
| 31 | -0.510826 | | -1.08482 | 80.371 | 90.3842 |
| 32 | -0.478036 | | -1.06252 | 81.4999 | 90.8922 |
| 33 | -0.400478 | | -1.04505 | 82.592 | 91.3107 |
| 34 | -0.34249 | -1.02365 | 83.6399 | 91.6613 |
| 35 | -0.301105 | | -1.00687 | 84.6537 | 91.9644 |
| 36 | 1.13462 | -0.986272 | | 85.6264 | 90.8454 |
| 37 | 1.50408 | -0.970094 | | 86.5675 | 89.3863 |
| 38 | 1.52823 | -0.950222 | | 87.4704 | 87.9341 |
| 39 | 1.63315 | -0.93459 | 88.3439 | 86.4078 |
| 40 | 1.64866 | -0.915365 | | 89.1818 | 84.8987 |
| 41 | 1.72811 | -0.900227 | | 89.9922 | 83.343 |
| 42 | 1.73342 | -0.881587 | | 90.7694 | 81.8148 |
| 43 | 1.94591 | -0.866894 | | 91.5209 | 80.1279 |
| 44 | 2.06686 | -0.848786 | | 92.2413 | 78.3736 |
| 45 | 2.07944 | -0.834498 | | 92.9377 | 76.6383 |
| 46 | 2.0931 | -0.816874 | | 93.605 | 74.9285 |
| 47 | 2.30259 | -0.802956 | | 94.2497 | 73.0797 |
| 48 | 2.30259 | -0.785774 | | 94.8672 | 71.2703 |
| 49 | 2.30259 | -0.772193 | | 95.4634 | 69.4923 |

| | | | | |
|---|---|---|---|---|
| 50 | 2.30259 | -0.755415 | 96.0341 | 67.7529 |
| 51 | 2.30259 | -0.742143 | 96.5849 | 66.0441 |
| 52 | 2.30259 | -0.725736 | 97.1116 | 64.373 |
| 53 | 2.30259 | -0.712751 | 97.6196 | 62.7318 |
| 54 | 2.30259 | -0.696684 | 98.1049 | 61.1276 |
| 55 | 2.30259 | -0.683969 | 8.5727 | 59.5528 |
| 56 | 2.30259 | -0.668209 | 99.0192 | 58.0142 |
| 57 | 2.30259 | -0.655726 | 99.4492 | 56.5043 |
| 58 | 2.30259 | -0.640266 | 99.8592 | 55.03 |
| 59 | 2.30259 | -0.628006 | 100.254 | 53.584 |
| 60 | 2.30259 | -0.612813 | 100.629 | 52.1729 |
| 61 | 2.30259 | -0.60076 | 100.99 | 50.7896 |
| 62 | 2.30259 | -0.585815 | 101.333 | 49.4407 |
| 63 | 2.30259 | -0.573953 | 101.663 | 48.1192 |
| 64 | 2.30259 | -0.559237 | 101.975 | 46.8315 |
| 65 | 2.30259 | -0.547551 | 102.275 | 45.5707 |
| 66 | 2.30259 | -0.533048 | 102.559 | 44.3433 |
| 67 | 2.30259 | -0.521527 | 102.831 | 43.1424 |
| 68 | 2.30259 | -0.507221 | 103.089 | 41.9745 |
| 69 | 2.30259 | -0.49585 | 103.334 | 40.8328 |
| 70 | 2.30259 | -0.481728 | 103.566 | 39.7236 |
| 71 | 2.30259 | -0.470498 | 103.788 | 38.6402 |
| 72 | 2.30259 | -0.456542 | 103.996 | 37.589 |
| 73 | 2.30259 | -0.445443 | 104.195 | 36.5633 |
| 74 | 2.30259 | -0.431644 | 104.381 | 35.5694 |
| 75 | 2.30259 | -0.420664 | 104.558 | 34.6008 |
| 76 | 2.30259 | -0.40701 | 104.724 | 33.6636 |
| 77 | 2.30259 | -0.396142 | 104.881 | 32.7515 |
| 78 | 2.30259 | -0.382622 | 105.027 | 31.8705 |
| 79 | 2.30259 | -0.371856 | 105.165 | 31.0142 |
| 80 | 2.30259 | -0.358459 | 105.294 | 30.1888 |
| 81 | 2.30259 | -0.347787 | 105.415 | 29.388 |
| 82 | 2.30259 | -0.334503 | 105.527 | 28.6178 |
| 83 | 2.30259 | -0.323919 | 105.632 | 27.872 |
| 84 | 2.30259 | -0.310738 | 105.728 | 27.1565 |
| 85 | 2.30259 | -0.300232 | 105.818 | 26.4651 |
| 86 | 2.30259 | -0.287147 | 105.901 | 25.804 |
| 87 | 2.30259 | -0.276714 | 105.977 | 25.1668 |
| 88 | 2.30259 | -0.263715 | 106.047 | 24.5596 |
| 89 | 2.30259 | -0.253347 | 106.111 | 23.9762 |
| 90 | 2.30259 | -0.240426 | 106.169 | 23.4226 |
| 91 | 2.30259 | -0.230118 | 106.222 | 22.8928 |
| 92 | 2.30259 | -0.217267 | 106.269 | 22.3925 |
| 93 | 2.30259 | -0.207012 | 106.312 | 21.9158 |
| 94 | 2.30259 | -0.194225 | 106.35 | 21.4686 |
| 95 | 2.30259 | -0.184017 | 106.383 | 21.0449 |
| 96 | 2.30259 | -0.171285 | 106.413 | 20.6505 |
| 97 | 2.30259 | -0.161119 | 106.439 | 20.2795 |
| 98 | 2.30259 | -0.148434 | 106.461 | 19.9377 |
| 99 | 2.30259 | -0.138305 | 106.48 | 19.6193 |
| 100 | 2.30259 | -0.125661 | 106.496 | 19.3299 |
| 101 | 2.30259 | -0.115562 | 106.509 | 19.0638 |
| 102 | 2.30259 | -0.102953 | 106.52 | 18.8268 |
| 103 | 2.30259 | -0.0928787 | 106.528 | 18.6129 |
| 104 | 2.30259 | -0.0802981 | 106.535 | 18.428 |
| 105 | 2.30259 | -0.0702426 | 106.54 | 18.2663 |
| 106 | 2.30259 | -0.0576847 | 106.543 | 18.1334 |
| 107 | 2.30259 | -0.0476439 | 106.545 | 18.0237 |
| 108 | 2.30259 | -0.0350997 | 106.546 | 17.9429 |
| 109 | 2.30259 | -0.0250691 | 106.547 | 17.8852 |
| 110 | 2.30259 | -0.0125328 | 106.547 | 17.8563 |
| 111 | 2.30259 | 0 | 106.547 | 17.8563 |

| | | | | |
|---|---|---|---|---|
| 112 | 2.30259 | 0.0125328 | 106.547 | 17.8852 |
| 113 | 2.30259 | 0.0250691 | 106.548 | 17.9429 |
| 114 | 2.30259 | 0.0350997 | 106.549 | 18.0237 |
| 115 | 2.30259 | 0.0476439 | 106.551 | 18.1334 |
| 116 | 2.30259 | 0.0576847 | 106.555 | 18.2663 |
| 117 | 2.30259 | 0.0702426 | 106.56 | 18.428 |
| 118 | 2.30259 | 0.0802981 | 106.566 | 18.6129 |
| 119 | 2.30259 | 0.0928787 | 106.575 | 18.8268 |
| 120 | 2.30259 | 0.102953 | 106.585 | 19.0638 |
| 121 | 2.30259 | 0.115562 | 106.599 | 19.3299 |
| 122 | 2.30259 | 0.125661 | 106.615 | 19.6193 |
| 123 | 2.30259 | 0.138305 | 106.634 | 19.9377 |
| 124 | 2.30259 | 0.148434 | 106.656 | 20.2795 |
| 125 | 2.30259 | 0.161119 | 106.682 | 20.6505 |
| 126 | 2.30259 | 0.171285 | 106.711 | 21.0449 |
| 127 | 2.30259 | 0.184017 | 106.745 | 21.4686 |
| 128 | 2.30259 | 0.194225 | 106.783 | 21.9158 |
| 129 | 2.30259 | 0.207012 | 106.825 | 22.3925 |
| 130 | 2.30259 | 0.217267 | 106.873 | 22.8928 |
| 131 | 2.30259 | 0.230118 | 106.926 | 23.4226 |
| 132 | 2.30259 | 0.240426 | 106.983 | 23.9762 |
| 133 | 2.30259 | 0.253347 | 107.048 | 24.5596 |
| 134 | 2.30259 | 0.263715 | 107.117 | 25.1668 |
| 135 | 2.30259 | 0.276714 | 107.194 | 25.804 |
| 136 | 2.30259 | 0.287147 | 107.276 | 26.4651 |
| 137 | 2.30259 | 0.300232 | 107.366 | 27.1565 |
| 138 | 2.30259 | 0.310738 | 107.463 | 27.872 |
| 139 | 2.30259 | 0.323919 | 107.568 | 28.6178 |
| 140 | 2.30259 | 0.334503 | 107.68 | 29.388 |
| 141 | 2.30259 | 0.347787 | 107.801 | 30.1888 |
| 142 | 2.30259 | 0.358459 | 107.929 | 31.0142 |
| 143 | 2.30259 | 0.371856 | 108.067 | 31.8705 |
| 144 | 2.30259 | 0.382622 | 108.214 | 32.7515 |
| 145 | 2.30259 | 0.396142 | 108.371 | 33.6636 |
| 146 | 2.30259 | 0.40701 | 108.536 | 34.6008 |
| 147 | 2.30259 | 0.420664 | 108.713 | 35.5694 |
| 148 | 2.30259 | 0.431644 | 108.9 | 36.5633 |
| 149 | 2.30259 | 0.445443 | 109.098 | 37.589 |
| 150 | 2.30259 | 0.456542 | 109.307 | 38.6402 |
| 151 | 2.30259 | 0.470498 | 109.528 | 39.7236 |
| 152 | 2.30259 | 0.481728 | 109.76 | 40.8328 |
| 153 | 2.30259 | 0.49585 | 110.006 | 41.9745 |
| 154 | 2.30259 | 0.507221 | 110.263 | 43.1424 |
| 155 | 2.30259 | 0.521527 | 110.535 | 44.3433 |
| 156 | 2.30259 | 0.533048 | 110.819 | 45.5707 |
| 157 | 2.30259 | 0.547551 | 111.119 | 46.8315 |
| 158 | 2.30259 | 0.559237 | 111.432 | 48.1192 |
| 159 | 2.30259 | 0.573953 | 111.761 | 49.4407 |
| 160 | 2.30259 | 0.585815 | 112.104 | 50.7896 |
| 161 | 2.30259 | 0.60076 | 112.465 | 52.1729 |
| 162 | 2.30259 | 0.612813 | 112.841 | 53.584 |
| 163 | 2.30259 | 0.628006 | 113.235 | 55.03 |
| 164 | 2.30259 | 0.640266 | 113.645 | 56.5043 |
| 165 | 2.30259 | 0.655726 | 114.075 | 58.0142 |
| 166 | 2.30259 | 0.668209 | 114.522 | 59.5528 |
| 167 | 2.30259 | 0.68396 | 114.989 | 61.1276 |
| 168 | 2.30259 | 0.696684 | 115.475 | 62.7318 |
| 169 | 2.30259 | 0.712751 | 115.983 | 64.373 |
| 170 | 2.30259 | 0.725736 | 116.51 | 66.0441 |
| 171 | 2.30259 | 0.742143 | 117.06 | 67.7529 |
| 172 | 2.30259 | 0.755415 | 117.631 | 69.4923 |
| 173 | 2.30259 | 0.772193 | 118.227 | 71.2703 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 2.30259 | 0.785774 | | 118.845 | 73.0797 |
| 175 | 2.30259 | 0.802956 | | 119.489 | 74.9285 |
| 176 | 2.30259 | 0.816874 | | 120.157 | 76.8095 |
| 177 | 2.30259 | 0.834498 | | 120.853 | 78.731 |
| 178 | 2.30259 | 0.848786 | | 121.574 | 80.6854 |
| 179 | 2.30259 | 0.866894 | | 122.325 | 82.6815 |
| 180 | 2.30259 | 0.881587 | | 123.102 | 84.7114 |
| 181 | 2.30259 | 0.900227 | | 123.913 | 86.7842 |
| 182 | 2.30259 | 0.915365 | | 124.751 | 88.8919 |
| 183 | 2.30259 | 0.93459 | 125.624 | 91.0439 | |
| 184 | 2.30259 | 0.950222 | | 126.527 | 93.2319 |
| 185 | 2.30259 | 0.970094 | | 127.468 | 95.4656 |
| 186 | 2.30259 | 0.986272 | | 128.441 | 97.7366 |
| 187 | 2.30259 | 1.00687 | 129.455 | 100.055 | |
| 188 | 2.30259 | 1.02365 | 130.502 | 102.412 | |
| 189 | 2.3979 | 1.04505 | 131.594 | 104.918 | |
| 190 | 2.3979 | 1.06252 | 132.723 | 107.466 | |
| 191 | 2.48491 | 1.08482 | 133.9 | 110.161 | |
| 192 | 2.48491 | 1.10306 | 135.117 | 112.902 | |
| 193 | 2.48491 | 1.12639 | 136.386 | 115.701 | |
| 194 | 2.5177 | 1.1455 | 137.698 | 118.585 | |
| 195 | 2.54945 | 1.17 | 139.067 | 121.568 | |
| 196 | 2.62467 | 1.19012 | 140.483 | 124.692 | |
| 197 | 2.63906 | 1.21596 | 141.962 | 127.901 | |
| 198 | 2.63906 | 1.23724 | 143.493 | 131.166 | |
| 199 | 2.63906 | 1.26464 | 145.092 | 134.504 | |
| 200 | 2.63906 | 1.28727 | 146.749 | 137.901 | |
| 201 | 2.63906 | 1.31652 | 148.482 | 141.375 | |
| 202 | 2.63906 | 1.34075 | 150.28 | 144.913 | |
| 203 | 2.70805 | 1.3722 | 152.163 | 148.629 | |
| 204 | 2.77259 | 1.39838 | 154.118 | 152.507 | |
| 205 | 2.77882 | 1.4325 | 156.17 | 156.487 | |
| 206 | 2.89037 | 1.46106 | 158.305 | 160.71 | |
| 207 | 3.13549 | 1.49852 | 160.551 | 165.409 | |
| 208 | 3.25037 | 1.53007 | 162.892 | 170.382 | |
| 209 | 3.3322 | 1.57179 | 165.362 | 175.62 | |
| 210 | 3.3673 | 1.60725 | 167.945 | 181.032 | |
| 211 | 3.40453 | 1.65463 | 170.683 | 186.665 | |
| 212 | 3.46574 | 1.6954 | 173.558 | 192.541 | |
| 213 | 3.46574 | 1.75069 | 176.622 | 198.608 | |
| 214 | 3.60005 | 1.79912 | 179.859 | 205.085 | |
| 215 | 3.68888 | 1.86629 | 183.342 | 211.97 | |
| 216 | 3.68888 | 1.92684 | 187.055 | 219.077 | |
| 217 | 3.73767 | 2.01409 | 191.112 | 226.605 | |
| 218 | 4.02892 | 2.09693 | 195.509 | 235.054 | |
| 219 | 4.38078 | 2.22621 | 200.465 | 244.806 | |
| 220 | 4.40672 | 2.36561 | 206.061 | 255.231 | |
| 221 | 5.01064 | 2.65209 | 213.094 | 268.52 | |

Data Set Standard Deviation = 1.54492
Numerator = 72102.8
Denominator = 111893
W Statistic = 0.644388 = 72102.8 / 111893

5% Critical value of 0.976 exceeds 0.644388
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.644388
Evidence of non-normality at 99% level of significance

# Kruskal-Wallis Non-Parametric Test

## Parameter: Chromium

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

# Kruskal Wallis Ranks

## Background Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-13 | 3/16/1999 | 3.68888 | 215 |
| | 9/23/1999 | 2.63906 J | 197 |
| | 3/15/2000 | 5.01064 | 221 |
| | 9/24/2003 | ND<2.30259 | 76 |
| | 3/11/2004 | ND<2.30259 | 76 |
| | 10/12/2004 | ND<2.30259 | 76 |
| | 4/1/2005 | ND<2.30259 | 76 |
| | 10/25/2005 | ND<2.30259 | 76 |
| | 4/29/2006 | ND<2.30259 | 76 |
| | 11/18/2006 | ND<2.30259 | 76 |
| | 5/23/2007 | ND<2.30259 | 76 |
| | 11/28/2007 | ND<2.30259 | 76 |
| | 6/5/2008 | 1.72811 J | 182 |
| | 11/20/2008 | ND<2.30259 | 76 |
| | 6/11/2009 | -1.77196 J | 153 |
| | 11/16/2009 | -1.66073 J | 156 |
| | 6/30/2010 | ND<-2.52573 | 76 |
| | 11/12/2010 | -1.34707 J | 164 |

Rank Sum = 2124
Rank Mean = 118

Background Rank Sum = 2124
Background Rank Mean = 118

## Compliance Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-8 | 7/20/1995 | ND<2.30259 | 76 |
| | 8/24/1995 | ND<2.30259 | 76 |
| | 9/28/1995 | 4.02892 | 218 |
| | 10/26/1995 | ND<2.30259 | 76 |
| | 11/19/1996 | ND<2.30259 | 76 |
| | 12/19/1996 | 3.40453 | 211 |
| | 3/24/1997 | ND<2.30259 | 76 |
| | 9/24/1997 | ND<2.30259 | 76 |
| | 4/7/1998 | ND<2.30259 | 76 |
| | 9/23/1998 | 2.89037 J | 206 |
| | 3/16/1999 | ND<2.30259 | 76 |
| | 9/23/1999 | 3.46574 | 212 |
| | 3/15/2000 | ND<2.30259 | 76 |
| | 9/24/2003 | ND<2.30259 | 76 |
| | 3/11/2004 | ND<2.30259 | 76 |
| | 10/12/2004 | ND<2.30259 | 76 |
| | 4/1/2005 | ND<2.30259 | 76 |
| | 10/25/2005 | ND<2.30259 | 76 |
| | 4/29/2006 | ND<2.30259 | 76 |
| | 11/18/2006 | ND<2.30259 | 76 |

| | | | | |
|---|---|---|---|---|
| | 5/23/2007 | ND<2.30259 | | 76 |
| | 11/28/2007 | ND<2.30259 | | 76 |
| | 6/5/2008 | 2.06686 | J | 185 |
| | 11/20/2008 | ND<2.30259 | | 76 |
| | 6/11/2009 | -1.60944 | J | 157 |
| | 6/30/2010 | -1.42712 | J H | 162 |
| | 11/12/2010 | -1.42712 | J | 163 |

Rank Sum = 2958
Rank Mean = 109.556

| | | | | |
|---|---|---|---|---|
| MW-10 | 7/20/1995 | ND<2.30259 | | 76 |
| | 8/24/1995 | ND<2.30259 | | 76 |
| | 9/28/1995 | ND<2.30259 | | 76 |
| | 10/26/1995 | ND<2.30259 | | 76 |
| | 11/19/1996 | ND<2.30259 | | 76 |
| | 12/19/1996 | 2.70805 | J | 203 |
| | 3/24/1997 | ND<2.30259 | | 76 |
| | 9/24/1997 | 2.63906 | | 198 |
| | 4/7/1998 | ND<2.30259 | | 76 |
| | 9/23/1998 | ND<2.30259 | | 76 |
| | 3/16/1999 | ND<2.30259 | | 76 |
| | 9/23/1999 | 3.3673 | | 210 |
| | 3/15/2000 | ND<2.30259 | | 76 |
| | 9/24/2003 | ND<2.30259 | | 76 |
| | 3/11/2004 | ND<2.30259 | | 76 |
| | 10/12/2004 | ND<2.30259 | | 76 |
| | 4/1/2005 | ND<2.30259 | | 76 |
| | 10/25/2005 | ND<2.30259 | | 76 |
| | 4/29/2006 | ND<2.30259 | | 76 |
| | 11/18/2006 | ND<2.30259 | | 76 |
| | 5/23/2007 | ND<2.30259 | | 76 |
| | 11/28/2007 | ND<2.30259 | | 76 |
| | 6/5/2008 | 1.13462 | J | 177 |
| | 11/20/2008 | ND<2.30259 | | 76 |
| | 6/11/2009 | -1.51413 | J | 159 |
| | 11/16/2009 | -1.30933 | J B | 165 |
| | 6/30/2010 | -1.83258 | J H | 152 |
| | 11/12/2010 | -1.60944 | J | 158 |

Rank Sum = 2942
Rank Mean = 105.071

| | | | | |
|---|---|---|---|---|
| MW-11R | 7/20/1995 | ND<2.30259 | | 76 |
| | 8/24/1995 | ND<2.30259 | | 76 |
| | 9/28/1995 | ND<2.30259 | | 76 |
| | 10/26/1995 | 3.25037 | | 208 |
| | 11/19/1996 | ND<2.30259 | | 76 |
| | 12/19/1996 | 2.77259 | J | 204 |
| | 3/24/1997 | ND<2.30259 | | 76 |
| | 9/24/1997 | ND<2.30259 | | 76 |
| | 4/7/1998 | 2.63906 | J | 199 |
| | 9/23/1998 | ND<2.30259 | | 76 |
| | 3/16/1999 | 1.94591 | J | 184 |
| | 9/23/1999 | 2.3979 | J | 189 |
| | 3/15/2000 | 2.48491 | J | 191 |
| | 9/24/2003 | ND<2.30259 | | 76 |
| | 3/11/2004 | ND<2.30259 | | 76 |
| | 10/12/2004 | ND<2.30259 | | 76 |
| | 4/1/2005 | ND<2.30259 | | 76 |
| | 10/25/2005 | ND<2.30259 | | 76 |
| | 4/29/2006 | ND<2.30259 | | 76 |
| | 11/18/2006 | ND<2.30259 | | 76 |
| | 5/23/2007 | 1.52823 | J | 179 |

| | | | |
|---|---|---|---|
| | 11/28/2007 | ND<2.30259 | 76 |
| | 6/5/2008 | ND<2.30259 | 76 |
| | 11/20/2008 | ND<2.30259 | 76 |
| | 6/11/2009 | -1.77196 J | 154 |
| | 11/16/2009 | -1.51413 J B | 160 |
| | 6/30/2010 | -1.7148 J H | 155 |
| | 11/12/2010 | ND<-2.52573 U | 76 |

Rank Sum = 3191
Rank Mean = 113.964

| | | | |
|---|---|---|---|
| MW-12AR | 3/16/1999 | ND<2.30259 | 76 |
| | 9/23/1999 | ND<2.30259 | 76 |
| | 3/15/2000 | 4.40672 | 220 |
| | 9/24/2003 | ND<2.30259 | 76 |
| | 3/11/2004 | 2.48491 J | 192 |
| | 10/12/2004 | ND<2.30259 | 76 |
| | 4/1/2005 | ND<2.30259 | 76 |
| | 10/25/2005 | ND<2.30259 | 76 |
| | 4/29/2006 | ND<2.30259 | 76 |
| | 11/18/2006 | ND<2.30259 | 76 |
| | 5/23/2007 | ND<2.30259 | 76 |
| | 11/28/2007 | ND<2.30259 | 76 |
| | 6/5/2008 | 1.50408 J | 178 |
| | 11/20/2008 | ND<2.30259 | 76 |
| | 6/11/2009 | -1.20397 J | 166 |
| | 11/16/2009 | -0.301105 J B | 176 |
| | 6/30/2010 | -0.916291 J | 169 |
| | 11/12/2010 | -0.510826 J | 172 |

Rank Sum = 2109
Rank Mean = 117.167

| | | | |
|---|---|---|---|
| MW-12BR | 3/16/1999 | 2.07944 J | 186 |
| | 9/23/1999 | 2.48491 J | 193 |
| | 3/15/2000 | ND<2.30259 | 76 |
| | 9/24/2003 | ND<2.30259 | 76 |
| | 3/11/2004 | ND<2.30259 | 76 |
| | 10/12/2004 | ND<2.30259 | 76 |
| | 4/1/2005 | ND<2.30259 | 76 |
| | 10/25/2005 | ND<2.30259 | 76 |
| | 4/29/2006 | ND<2.30259 | 76 |
| | 11/18/2006 | ND<2.30259 | 76 |
| | 5/23/2007 | ND<2.30259 | 76 |
| | 11/28/2007 | ND<2.30259 | 76 |
| | 6/5/2008 | 1.73342 J | 183 |
| | 11/20/2008 | ND<2.30259 | 76 |
| | 6/11/2009 | ND<-2.52573 | 76 |
| | 11/16/2009 | ND<-2.52573 | 76 |
| | 6/30/2010 | -1.13943 J | 167 |
| | 11/12/2010 | -0.653926 J | 171 |

Rank Sum = 1888
Rank Mean = 104.889

| | | | |
|---|---|---|---|
| MW-7 | 7/20/1995 | ND<2.30259 | 76 |
| | 8/24/1995 | 2.54945 J | 195 |
| | 9/28/1995 | 4.38078 | 219 |
| | 10/26/1995 | ND<2.30259 | 76 |
| | 11/19/1996 | ND<2.30259 | 76 |
| | 12/19/1996 | 3.60005 | 214 |
| | 3/24/1997 | ND<2.30259 | 76 |
| | 9/24/1997 | 2.63906 J | 200 |
| | 4/7/1998 | 3.3322 | 209 |
| | 9/23/1998 | ND<2.30259 | 76 |

| | | | |
|---|---|---|---|
| | 3/16/1999 | 3.68888 | 216 |
| | 9/23/1999 | 3.73767 | 217 |
| | 3/15/2000 | 2.30259 J | 188 |
| | 9/24/2003 | ND<2.30259 | 76 |
| | 3/11/2004 | ND<2.30259 | 76 |
| | 10/12/2004 | ND<2.30259 | 76 |
| | 4/1/2005 | ND<2.30259 | 76 |
| | 10/25/2005 | ND<2.30259 | 76 |
| | 4/29/2006 | ND<2.30259 | 76 |
| | 11/18/2006 | ND<2.30259 | 76 |
| | 5/23/2007 | ND<2.30259 | 76 |
| | 11/28/2007 | ND<2.30259 | 76 |
| | 6/5/2008 | 2.0931 J | 187 |
| | 11/20/2008 | ND<2.30259 | 76 |
| | 6/11/2009 | -0.34249 J | 175 |
| | 11/16/2009 | -0.400478 J B | 174 |
| | 6/30/2010 | -1.13943 J H | 168 |
| | 11/12/2010 | -0.673345 J | 170 |

Rank Sum = 3672
Rank Mean = 131.143

| | | | |
|---|---|---|---|
| MW-9 | 7/20/1995 | ND<2.30259 | 76 |
| | 8/24/1995 | ND<2.30259 | 76 |
| | 9/28/1995 | ND<2.30259 | 76 |
| | 10/26/1995 | ND<2.30259 | 76 |
| | 11/19/1996 | ND<2.30259 | 76 |
| | 12/19/1996 | ND<2.30259 | 76 |
| | 3/24/1997 | ND<2.30259 | 76 |
| | 9/24/1997 | ND<2.30259 | 76 |
| | 4/7/1998 | ND<2.30259 | 76 |
| | 9/23/1998 | ND<2.30259 | 76 |
| | 3/16/1999 | ND<2.30259 | 76 |
| | 9/23/1999 | 2.3979 J | 190 |
| | 3/15/2000 | ND<2.30259 | 76 |
| | 9/24/2003 | ND<2.30259 | 76 |
| | 3/11/2004 | ND<2.30259 | 76 |
| | 10/12/2004 | ND<2.30259 | 76 |
| | 4/1/2005 | ND<2.30259 | 76 |
| | 10/25/2005 | ND<2.30259 | 76 |
| | 4/29/2006 | ND<2.30259 | 76 |
| | 11/18/2006 | ND<2.30259 | 76 |
| | 5/23/2007 | ND<2.30259 | 76 |
| | 11/28/2007 | ND<2.30259 | 76 |
| | 6/5/2008 | 1.64866 J | 181 |
| | 11/20/2008 | ND<2.30259 | 76 |
| | 6/11/2009 | -0.478036 J | 173 |
| | 11/16/2009 | ND<-2.52573 | 76 |
| | 6/30/2010 | -1.46968 J H | 161 |
| | 11/12/2010 | ND<-2.52573 U | 76 |

Rank Sum = 2529
Rank Mean = 90.3214

| | | | |
|---|---|---|---|
| MW-6 | 7/20/1995 | 2.5177 J | 194 |
| | 8/24/1995 | ND<2.30259 | 76 |
| | 9/28/1995 | ND<2.30259 | 76 |
| | 10/26/1995 | 2.62467 J | 196 |
| | 11/19/1996 | ND<2.30259 | 76 |
| | 12/19/1996 | 2.77882 J | 205 |
| | 3/24/1997 | 2.63906 J | 201 |
| | 9/24/1997 | ND<2.30259 | 76 |
| | 4/7/1998 | 3.13549 | 207 |
| | 9/23/1998 | 2.63906 J | 202 |

| | | |
|---|---|---|
| 3/16/1999 | ND<2.30259 | 76 |
| 9/23/1999 | ND<2.30259 | 76 |
| 3/15/2000 | 3.46574 | 213 |
| 9/24/2003 | ND<2.30259 | 76 |
| 3/11/2004 | ND<2.30259 | 76 |
| 10/12/2004 | ND<2.30259 | 76 |
| 4/1/2005 | ND<2.30259 | 76 |
| 10/25/2005 | ND<2.30259 | 76 |
| 4/29/2006 | ND<2.30259 | 76 |
| 11/18/2006 | ND<2.30259 | 76 |
| 5/23/2007 | ND<2.30259 | 76 |
| 11/28/2007 | ND<2.30259 | 76 |
| 6/5/2008 | 1.63315 | 180 |
| 11/20/2008 | ND<2.30259 | 76 |
| 6/11/2009 | ND<-2.52573 | 76 |
| 11/16/2009 | ND<-2.52573 | 76 |
| 6/30/2010 | ND<-2.52573 | 76 |
| 11/12/2010 | ND<-2.52573 U | 76 |

Rank Sum = 3118
Rank Mean = 111.357

## Calculation Results:

Kruskal-Wallis H Statistic = 6.5702
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 9.64739
95% Confidence comparison value is 15.5073 at 8 degrees of freedom
6.5702 < 15.5073 indicating no significant group difference at 5% significance level
9.64739 < 15.5073 indicating no significant group difference at 5% significance level when adjusted for ties

# Concentrations (ppb)

## Parameter: cis-1,2-Dichloroethene

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 213
Total Non-Detect: 117
Percent Non-Detects: 54.9296%
Total Background Measurements: 17
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 17 | 17 (100%) | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.15 | ND<0.15 |
| | | | 6/30/2010 | ND<0.15 | ND<0.15 |
| | | | 11/12/2010 | ND<0.15 U | ND<0.15 U |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-9 | 27 | 12 (44.4444%) | 7/20/1995 | 1.2 J | 1.2 J |
| | | | 8/24/1995 | 1.1 J | 1.1 J |
| | | | 9/28/1995 | 1 J | 1 J |
| | | | 10/26/1995 | 1 J | 1 J |
| | | | 11/19/1996 | ND<2 | ND<2 |
| | | | 12/19/1996 | ND<2 | ND<2 |
| | | | 3/24/1997 | ND<2 | ND<2 |
| | | | 9/24/1997 | ND<2 | ND<2 |
| | | | 4/7/1998 | ND<2 | ND<2 |
| | | | 9/23/1998 | ND<2 | ND<2 |
| | | | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | 64 | 64 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | 1.78 J | 1.78 J |
| | | | 10/25/2005 | 1.26 J | 1.26 J |
| | | | 4/29/2006 | 0.88 J | 0.88 J |
| | | | 11/18/2006 | 0.71 J | 0.71 J |
| | | | 5/23/2007 | 3 | 3 |
| | | | 11/28/2007 | ND<0 J | ND<0 J |
| | | | 6/5/2008 | 0.5 J | 0.5 J |
| | | | 11/20/2008 | 1.79 J | 1.79 J |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 6/11/2009 | 2.3 | 2.3 | |
| | | | 6/30/2010 | 2.3 | 2.3 | |
| | | | 11/12/2010 | 1.8 | 1.8 | |
| MW-8 | 27 | 2 (7.40741%) | 7/20/1995 | 1.1 J | 1.1 J | |
| | | | 8/24/1995 | 20 | 20 | |
| | | | 9/28/1995 | 17 | 17 | |
| | | | 10/26/1995 | 2 | 2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | 130 | 130 | |
| | | | 3/24/1997 | 160 | 160 | |
| | | | 9/24/1997 | 280 | 280 | |
| | | | 4/7/1998 | 180 | 180 | |
| | | | 9/23/1998 | 360 | 360 | |
| | | | 3/16/1999 | 159 | 159 | |
| | | | 9/23/1999 | 139 | 139 | |
| | | | 3/15/2000 | 330 | 330 | |
| | | | 9/24/2003 | 35 | 35 | |
| | | | 3/11/2004 | 130 | 130 | |
| | | | 10/12/2004 | 140 | 140 | |
| | | | 4/1/2005 | 55.9 | 55.9 | |
| | | | 10/25/2005 | 105 | 105 | |
| | | | 4/29/2006 | 42.5 | 42.5 | |
| | | | 11/18/2006 | 42.4 | 42.4 | |
| | | | 5/23/2007 | 25 | 25 | |
| | | | 11/28/2007 | 60.9 | 60.9 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | 35 | 35 | |
| | | | 6/11/2009 | 39 | 39 | |
| | | | 6/30/2010 | 43 | 43 | |
| | | | 11/12/2010 | 58 | 58 | |
| MW-7 | 27 | 26 (96.2963%) | 7/20/1995 | ND<2 | ND<2 | |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 0.21 J | 0.21 J | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.15 | ND<0.15 | |
| | | | 6/30/2010 | ND<0.15 | ND<0.15 | |
| | | | 11/12/2010 | ND<0.15 U | ND<0.15 U | |
| MW-12BR | 17 | 15 (88.2353%) | 3/16/1999 | 14.8 | 14.8 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | 3/15/2000 | ND<2 | ND<2 | | |
| | | 9/24/2003 | ND<2 | ND<2 | | |
| | | 3/11/2004 | ND<2 | ND<2 | | |
| | | 10/12/2004 | ND<2 | ND<2 | | |
| | | 4/1/2005 | 10.7 | 10.7 | | |
| | | 10/25/2005 | ND<2 | ND<2 | | |
| | | 4/29/2006 | ND<2 | ND<2 | | |
| | | 11/18/2006 | ND<2 | ND<2 | | |
| | | 5/23/2007 | ND<2 | ND<2 | | |
| | | 11/28/2007 | ND<2 | ND<2 | | |
| | | 6/5/2008 | ND<2 | ND<2 | | |
| | | 11/20/2008 | ND<2 | ND<2 | | |
| | | 6/11/2009 | ND<0.15 | | ND<0.15 | |
| | | 6/30/2010 | ND<0.15 | | ND<0.15 | |
| | | 11/12/2010 | ND<0.15 U | | ND<0.15 U | |
| MW-12AR | 17 | 7 (41.1765%) | 3/16/1999 | | ND<2 | ND<2 |
| | | 9/23/1999 | ND<2 | ND<2 | | |
| | | 3/15/2000 | 14 | 14 | | |
| | | 9/24/2003 | 10 | 10 | | |
| | | 3/11/2004 | 10 | 10 | | |
| | | 10/12/2004 | 9.4 | 9.4 | | |
| | | 4/1/2005 | ND<2 | ND<2 | | |
| | | 10/25/2005 | 2.9 | 2.9 | | |
| | | 4/29/2006 | 3.19 | 3.19 | | |
| | | 11/18/2006 | 1.09 J | 1.09 J | | |
| | | 5/23/2007 | ND<2 | ND<2 | | |
| | | 11/28/2007 | 1.22 J | 1.22 J | | |
| | | 6/5/2008 | ND<2 | ND<2 | | |
| | | 11/20/2008 | 0.83 J | 0.83 J | | |
| | | 6/11/2009 | ND<0.15 | | ND<0.15 | |
| | | 6/30/2010 | ND<0.15 | | ND<0.15 | |
| | | 11/12/2010 | 0.92 J | 0.92 J | | |
| MW-11R | 27 | 7 (25.9259%) | 7/20/1995 | 5.4 | 5.4 | |
| | | 8/24/1995 | 11 | 11 | | |
| | | 9/28/1995 | 10 | 10 | | |
| | | 10/26/1995 | 15 | 15 | | |
| | | 11/19/1996 | ND<2 | ND<2 | | |
| | | 12/19/1996 | 16 | 16 | | |
| | | 3/24/1997 | 12 | 12 | | |
| | | 9/24/1997 | ND<2 | ND<2 | | |
| | | 4/7/1998 | 5.2 | 5.2 | | |
| | | 9/23/1998 | 13 | 13 | | |
| | | 3/16/1999 | 11.1 | 11.1 | | |
| | | 9/23/1999 | ND<2 | ND<2 | | |
| | | 3/15/2000 | 12 | 12 | | |
| | | 9/24/2003 | 10 | 10 | | |
| | | 3/11/2004 | 11 | 11 | | |
| | | 10/12/2004 | ND<2 | ND<2 | | |
| | | 4/1/2005 | 9.47 | 9.47 | | |
| | | 10/25/2005 | 4.56 | 4.56 | | |
| | | 4/29/2006 | 2.88 | 2.88 | | |
| | | 11/18/2006 | 1.71 J | 1.71 J | | |
| | | 5/23/2007 | 5.7 | 5.7 | | |
| | | 11/28/2007 | 3.24 | 3.24 | | |
| | | 6/5/2008 | ND<2 | ND<2 | | |
| | | 11/20/2008 | ND<2 | ND<2 | | |
| | | 6/11/2009 | 1.3 | 1.3 | | |
| | | 6/30/2010 | 1.6 | 1.6 | | |
| | | 11/12/2010 | ND<0.15 U | | ND<0.15 U | |

| | | | | | | |
|---|---|---|---|---|---|---|
| MW-10 | 27 | 4 (14.8148%) | 7/20/1995 | | 4 | 4 |
| | | | 8/24/1995 | 15 | 15 | |
| | | | 9/28/1995 | 32 | 32 | |
| | | | 10/26/1995 | 26 | 26 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | 40 | 40 | |
| | | | 3/24/1997 | 26 | 26 | |
| | | | 9/24/1997 | 38 | 38 | |
| | | | 4/7/1998 | 7.6 | 7.6 | |
| | | | 9/23/1998 | 32 | 32 | |
| | | | 3/16/1999 | 42.7 | 42.7 | |
| | | | 9/23/1999 | 24.9 | 24.9 | |
| | | | 3/15/2000 | 11 | 11 | |
| | | | 9/24/2003 | 11 | 11 | |
| | | | 3/11/2004 | 7.1 | 7.1 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | 13.4 | 13.4 | |
| | | | 4/29/2006 | 15.8 | 15.8 | |
| | | | 11/18/2006 | 8.96 | 8.96 | |
| | | | 5/23/2007 | 9.1 | 9.1 | |
| | | | 11/28/2007 | 13.6 | 13.6 | |
| | | | 6/5/2008 | 13.5 | 13.5 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | 9 | 9 | |
| | | | 6/30/2010 | 5.8 | 5.8 | |
| | | | 11/12/2010 | 8.6 | 8.6 | |
| MW-6 | 27 | 27 (100%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.15 | | ND<0.15 |
| | | | 6/30/2010 | ND<0.15 | | ND<0.15 |
| | | | 11/12/2010 | ND<0.15 U | | ND<0.15 U |

There are 0 unused locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: cis-1,2-Dichloroethene

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 213

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0 | -2.65209 | 7.03356 | 0 |
| 2 | 0.075 | -2.3656 | 112.6297 | -0.177421 |
| 3 | 0.075 | -2.1972 | 817.4578 | -0.342217 |
| 4 | 0.075 | -2.0969 | 321.8549 | -0.499487 |
| 5 | 0.075 | -1.9953 | 925.8365 | -0.649142 |
| 6 | 0.075 | -1.9110 | 329.4885 | -0.792469 |
| 7 | 0.075 | -1.8521 | 832.9191 | -0.931382 |
| 8 | 0.075 | -1.7866 | 136.111 | -1.06538 |
| 9 | 0.075 | -1.7279 | 339.0968 | -1.19497 |
| 10 | 0.075 | -1.6849 | 441.9358 | -1.32134 |
| 11 | 0.075 | -1.6352 | 444.6098 | -1.44399 |
| 12 | 0.075 | -1.5892 | 747.1356 | -1.56318 |
| 13 | 0.075 | -1.5547 | 749.5529 | -1.67979 |
| 14 | 0.075 | -1.5141 | 51.8454 | -1.79335 |
| 15 | 0.075 | -1.4757 | 954.0234 | -1.90403 |
| 16 | 0.075 | -1.4466 | 356.1161 | -2.01253 |
| 17 | 0.21 | -1.4118 | 358.1094 | -2.30901 |
| 18 | 0.5 | -1.3786 | 660.0101 | -2.99834 |
| 19 | 0.71 | -1.3531 | 761.8412 | -3.9591 |
| 20 | 0.83 | -1.3225 | 163.5902 | -5.05677 |
| 21 | 0.88 | -1.2930 | 365.2621 | -6.19464 |
| 22 | 0.92 | -1.2702 | 466.8756 | -7.36326 |
| 23 | 1 | -1.2426 | 468.4198 | -8.6059 |
| 24 | 1 | -1.2159 | 669.8983 | -9.82186 |
| 25 | 1 | -1.1952 | 271.3269 | -11.0171 |
| 26 | 1 | -1.17 | 72.6958 | -12.1871 |
| 27 | 1 | -1.1455 | 74.008 | -13.3326 |
| 28 | 1 | -1.1263 | 975.2767 | -14.459 |
| 29 | 1 | -1.1030 | 676.4935 | -15.562 |
| 30 | 1 | -1.0803 | 277.6606 | -16.6424 |
| 31 | 1 | -1.0625 | 278.7895 | -17.7049 |
| 32 | 1 | -1.0407 | 379.8726 | -18.7456 |
| 33 | 1 | -1.0194 | 380.9119 | -19.765 |
| 34 | 1 | -1.0027 | 181.9173 | -20.7678 |
| 35 | 1 | -0.982202 | 82.882 | -21.75 |
| 36 | 1 | -0.9621 | 83.8077 | -22.7121 |
| 37 | 1 | -0.946291 | 84.7031 | -23.6583 |
| 38 | 1 | -0.926859 | 85.5622 | -24.5852 |
| 39 | 1 | -0.907769 | 86.3862 | -25.493 |
| 40 | 1 | -0.892733 | 87.1832 | -26.3857 |
| 41 | 1 | -0.874218 | 87.9475 | -27.2599 |
| 42 | 1 | -0.855996 | 88.6802 | -28.1159 |
| 43 | 1 | -0.841621 | 89.3885 | -28.9575 |
| 44 | 1 | -0.823893 | 90.0673 | -29.7814 |
| 45 | 1 | -0.806422 | 90.7176 | -30.5879 |
| 46 | 1 | -0.792618 | 91.3459 | -31.3805 |
| 47 | 1 | -0.775574 | 91.9474 | -32.1561 |
| 48 | 1 | -0.758753 | 92.5231 | -32.9148 |
| 49 | 1 | -0.745449 | 93.0788 | -33.6603 |

| | | | | |
|---|---|---|---|---|
| 50 | 1 | -0.729003 | 93.6102 | -34.3893 |
| 51 | 1 | -0.712751 | 94.1183 | -35.102 |
| 52 | 1 | -0.699883 | 94.6081 | -35.8019 |
| 53 | 1 | -0.683969 | 95.0759 | -36.4859 |
| 54 | 1 | -0.668209 | 95.5224 | -37.1541 |
| 55 | 1 | -0.652622 | 95.9483 | -37.8067 |
| 56 | 1 | -0.640266 | 96.3583 | -38.4469 |
| 57 | 1 | -0.624956 | 96.7488 | -39.0719 |
| 58 | 1 | -0.609791 | 97.1207 | -39.6817 |
| 59 | 1 | -0.597761 | 97.478 | -40.2795 |
| 60 | 1 | -0.582841 | 97.8177 | -40.8623 |
| 61 | 1 | -0.568052 | 98.1404 | -41.4303 |
| 62 | 1 | -0.556308 | 98.4499 | -41.9867 |
| 63 | 1 | -0.541736 | 98.7433 | -42.5284 |
| 64 | 1 | -0.527289 | 99.0214 | -43.0557 |
| 65 | 1 | -0.515791 | 99.2874 | -43.5715 |
| 66 | 1 | -0.501527 | 99.5389 | -44.073 |
| 67 | 1 | -0.487364 | 99.7764 | -44.5604 |
| 68 | 1 | -0.476105 | 100.003 | -45.0365 |
| 69 | 1 | -0.462114 | 100.217 | -45.4986 |
| 70 | 1 | -0.448213 | 100.418 | -45.9468 |
| 71 | 1 | -0.437153 | 100.609 | -46.3839 |
| 72 | 1 | -0.423405 | 100.788 | -46.8073 |
| 73 | 1 | -0.409735 | 100.956 | -47.2171 |
| 74 | 1 | -0.398855 | 101.115 | -47.6159 |
| 75 | 1 | -0.385321 | 101.263 | -48.0013 |
| 76 | 1 | -0.371856 | 101.402 | -48.3731 |
| 77 | 1 | -0.361133 | 101.532 | -48.7342 |
| 78 | 1 | -0.347787 | 101.653 | -49.082 |
| 79 | 1 | -0.334503 | 101.765 | -49.4165 |
| 80 | 1 | -0.323919 | 101.87 | -49.7405 |
| 81 | 1 | -0.310738 | 101.966 | -50.0512 |
| 82 | 1 | -0.297612 | 102.055 | -50.3488 |
| 83 | 1 | -0.287147 | 102.137 | -50.636 |
| 84 | 1 | -0.27411 | 102.213 | -50.9101 |
| 85 | 1 | -0.26112 | 102.281 | -51.1712 |
| 86 | 1 | -0.250759 | 102.344 | -51.4219 |
| 87 | 1 | -0.237847 | 102.4 | -51.6598 |
| 88 | 1 | -0.224974 | 102.451 | -51.8848 |
| 89 | 1 | -0.214702 | 102.497 | -52.0995 |
| 90 | 1 | -0.201894 | 102.538 | -52.3014 |
| 91 | 1 | -0.189118 | 102.573 | -52.4905 |
| 92 | 1 | -0.17892 | 102.605 | -52.6694 |
| 93 | 1 | -0.166199 | 102.633 | -52.8356 |
| 94 | 1 | -0.153505 | 102.657 | -52.9891 |
| 95 | 1 | -0.143367 | 102.677 | -53.1325 |
| 96 | 1 | -0.130716 | 102.694 | -53.2632 |
| 97 | 1 | -0.118085 | 102.708 | -53.3813 |
| 98 | 1 | -0.107995 | 102.72 | -53.4893 |
| 99 | 1 | -0.0953969 | 102.729 | -53.5847 |
| 100 | 1 | -0.0828129 | 102.736 | -53.6675 |
| 101 | 1 | -0.0727562 | 102.741 | -53.7402 |
| 102 | 1 | -0.0601949 | 102.745 | -53.8004 |
| 103 | 1 | -0.0476439 | 102.747 | -53.8481 |
| 104 | 1 | -0.0376076 | 102.748 | -53.8857 |
| 105 | 1 | -0.0250691 | 102.749 | -53.9107 |
| 106 | 1 | -0.0125328 | 102.749 | -53.9233 |
| 107 | 1 | 0 | 102.749 | -53.9233 |
| 108 | 1 | 0.0125328 | 102.749 | -53.9107 |
| 109 | 1 | 0.0250691 | 102.75 | -53.8857 |
| 110 | 1 | 0.0376076 | 102.751 | -53.8481 |
| 111 | 1 | 0.0476439 | 102.754 | -53.8004 |

| | | | | |
|---|---|---|---|---|
| 112 | 1 | 0.0601949 | 102.757 | -53.7402 |
| 113 | 1 | 0.0727562 | 102.763 | -53.6675 |
| 114 | 1 | 0.0828129 | 102.769 | -53.5847 |
| 115 | 1 | 0.0953969 | 102.779 | -53.4893 |
| 116 | 1 | 0.107995 | 102.79 | -53.3813 |
| 117 | 1 | 0.118085 | 102.804 | -53.2632 |
| 118 | 1 | 0.130716 | 102.821 | -53.1325 |
| 119 | 1 | 0.143367 | 102.842 | -52.9891 |
| 120 | 1 | 0.153505 | 102.865 | -52.8356 |
| 121 | 1 | 0.166199 | 102.893 | -52.6694 |
| 122 | 1 | 0.17892 | 102.925 | -52.4905 |
| 123 | 1 | 0.189118 | 102.961 | -52.3014 |
| 124 | 1 | 0.201894 | 103.002 | -52.0995 |
| 125 | 1 | 0.214702 | 103.048 | -51.8848 |
| 126 | 1.09 | 0.224974 | 103.098 | -51.6395 |
| 127 | 1.1 | 0.237847 | 103.155 | -51.3779 |
| 128 | 1.1 | 0.250759 | 103.218 | -51.1021 |
| 129 | 1.2 | 0.26112 | 103.286 | -50.7887 |
| 130 | 1.22 | 0.27411 | 103.361 | -50.4543 |
| 131 | 1.26 | 0.287147 | 103.443 | -50.0925 |
| 132 | 1.3 | 0.297612 | 103.532 | -49.7056 |
| 133 | 1.6 | 0.310738 | 103.629 | -49.2084 |
| 134 | 1.71 | 0.323919 | 103.734 | -48.6545 |
| 135 | 1.78 | 0.334503 | 103.845 | -48.0591 |
| 136 | 1.79 | 0.347787 | 103.966 | -47.4366 |
| 137 | 1.8 | 0.361133 | 104.097 | -46.7865 |
| 138 | 2 | 0.371856 | 104.235 | -46.0428 |
| 139 | 2.3 | 0.385321 | 104.384 | -45.1566 |
| 140 | 2.3 | 0.398855 | 104.543 | -44.2392 |
| 141 | 2.88 | 0.409735 | 104.711 | -43.0592 |
| 142 | 2.9 | 0.423405 | 104.89 | -41.8313 |
| 143 | 3 | 0.437153 | 105.081 | -40.5198 |
| 144 | 3.19 | 0.448213 | 105.282 | -39.09 |
| 145 | 3.24 | 0.462114 | 105.495 | -37.5928 |
| 146 | 4 | 0.476105 | 105.722 | -35.6884 |
| 147 | 4.56 | 0.487364 | 105.96 | -33.466 |
| 148 | 5.2 | 0.501527 | 106.211 | -30.8581 |
| 149 | 5.4 | 0.515791 | 106.477 | -28.0728 |
| 150 | 5.7 | 0.52728 | 106.755 | -25.0673 |
| 151 | 5.8 | 0.541736 | 107.049 | -21.9252 |
| 152 | 7.1 | 0.556308 | 107.358 | -17.9754 |
| 153 | 7.6 | 0.568052 | 107.681 | -13.6582 |
| 154 | 8.6 | 0.582841 | 108.02 | -8.64581 |
| 155 | 8.96 | 0.597761 | 108.378 | -3.28987 |
| 156 | 9 | 0.609791 | 108.75 | 2.19825 |
| 157 | 9.1 | 0.624956 | 109.14 | 7.88535 |
| 158 | 9.4 | 0.640266 | 109.55 | 13.9038 |
| 159 | 9.47 | 0.652622 | 109.976 | 20.0842 |
| 160 | 10 | 0.668209 | 110.423 | 26.7663 |
| 161 | 10 | 0.68396 | 110.89 | 33.6059 |
| 162 | 10 | 0.699883 | 111.38 | 40.6047 |
| 163 | 10 | 0.712751 | 111.888 | 47.7322 |
| 164 | 10.7 | 0.729003 | 112.42 | 55.5325 |
| 165 | 11 | 0.745449 | 112.975 | 63.7325 |
| 166 | 11 | 0.758753 | 113.551 | 72.0788 |
| 167 | 11 | 0.775574 | 114.153 | 80.6101 |
| 168 | 11 | 0.792618 | 114.781 | 89.3289 |
| 169 | 11.1 | 0.806422 | 115.431 | 98.2802 |
| 170 | 12 | 0.823893 | 116.11 | 108.167 |
| 171 | 12 | 0.841621 | 116.818 | 118.266 |
| 172 | 13 | 0.855996 | 117.551 | 129.394 |
| 173 | 13.4 | 0.874218 | 118.315 | 141.109 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 13.5 | 0.892733 | | 119.112 | 153.161 |
| 175 | 13.6 | 0.907769 | | 119.936 | 165.506 |
| 176 | 14 | 0.926859 | | 120.795 | 178.482 |
| 177 | 14.8 | 0.946291 | | 121.691 | 192.487 |
| 178 | 15 | 0.9621 | 122.616 | 206.919 | |
| 179 | 15 | 0.982202 | | 123.581 | 221.652 |
| 180 | 15.8 | 1.00271 | 124.587 | 237.495 | |
| 181 | 16 | 1.01943 | 125.626 | 253.806 | |
| 182 | 17 | 1.04073 | 126.709 | 271.498 | |
| 183 | 20 | 1.06252 | 127.838 | 292.749 | |
| 184 | 24.9 | 1.08032 | 129.005 | 319.649 | |
| 185 | 25 | 1.10306 | 130.222 | 347.225 | |
| 186 | 26 | 1.12639 | 131.49 | 376.511 | |
| 187 | 26 | 1.1455 | 132.803 | 406.294 | |
| 188 | 32 | 1.17 | 134.172 | 443.734 | |
| 189 | 32 | 1.19522 | 135.6 | 481.981 | |
| 190 | 35 | 1.21596 | 137.079 | 524.54 | |
| 191 | 35 | 1.24264 | 138.623 | 568.033 | |
| 192 | 38 | 1.27024 | 140.236 | 616.302 | |
| 193 | 39 | 1.29303 | 141.908 | 666.73 | |
| 194 | 40 | 1.32251 | 143.657 | 719.63 | |
| 195 | 42.4 | 1.35317 | 145.488 | 777.005 | |
| 196 | 42.5 | 1.37866 | 147.389 | 835.598 | |
| 197 | 42.7 | 1.41183 | 149.382 | 895.883 | |
| 198 | 43 | 1.44663 | 151.475 | 958.088 | |
| 199 | 55.9 | 1.47579 | 153.653 | 1040.58 | |
| 200 | 58 | 1.5141 | 155.946 | 1128.4 | |
| 201 | 60.9 | 1.55477 | 158.363 | 1223.09 | |
| 202 | 64 | 1.58927 | 160.889 | 1324.8 | |
| 203 | 105 | 1.63524 | 163.563 | 1496.5 | |
| 204 | 130 | 1.68494 | 166.402 | 1715.54 | |
| 205 | 130 | 1.72793 | 169.387 | 1940.17 | |
| 206 | 139 | 1.78661 | 172.579 | 2188.51 | |
| 207 | 140 | 1.85218 | 176.01 | 2447.82 | |
| 208 | 159 | 1.91103 | 179.662 | 2751.67 | |
| 209 | 160 | 1.99539 | 183.644 | 3070.94 | |
| 210 | 180 | 2.09693 | 188.041 | 3448.38 | |
| 211 | 280 | 2.19728 | 192.869 | 4063.62 | |
| 212 | 330 | 2.36561 | 198.465 | 4844.28 | |
| 213 | 360 | 2.65209 | 205.498 | 5799.03 | |

Data Set Standard Deviation = 46.9326
Numerator = 3.36287e+007
Denominator = 9.59608e+007
W Statistic = 0.350442 = 3.36287e+007 / 9.59608e+007

5% Critical value of 0.976 exceeds 0.350442
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.350442
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: cis-1,2-Dichloroethene

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 213

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | -2.59027 | -2.65209 | 7.03356 | 6.86961 |
| 2 | -2.59027 | -2.36561 | 12.6297 | 12.9972 |
| 3 | -2.59027 | -2.19728 | 17.4578 | 18.6887 |
| 4 | -2.59027 | -2.09693 | 21.8549 | 24.1204 |
| 5 | -2.59027 | -1.99539 | 25.8365 | 29.289 |
| 6 | -2.59027 | -1.91103 | 29.4885 | 34.239 |
| 7 | -2.59027 | -1.85218 | 32.9191 | 39.0367 |
| 8 | -2.59027 | -1.78661 | 36.111 | 43.6645 |
| 9 | -2.59027 | -1.72793 | 39.0968 | 48.1403 |
| 10 | -2.59027 | -1.68494 | 41.9358 | 52.5047 |
| 11 | -2.59027 | -1.63524 | 44.6098 | 56.7404 |
| 12 | -2.59027 | -1.58927 | 47.1356 | 60.857 |
| 13 | -2.59027 | -1.55477 | 49.5529 | 64.8843 |
| 14 | -2.59027 | -1.5141 | 51.8454 | 68.8063 |
| 15 | -2.59027 | -1.47579 | 54.0234 | 72.6289 |
| 16 | -1.56065 | -1.44663 | 56.1161 | 74.8866 |
| 17 | -0.693147 | -1.41183 | 58.1094 | 75.8652 |
| 18 | -0.34249 | -1.37866 | 60.0101 | 76.3374 |
| 19 | -0.18633 | -1.35317 | 61.8412 | 76.5895 |
| 20 | -0.127833 | -1.32251 | 63.5902 | 76.7586 |
| 21 | -0.0833816 | -1.29303 | 65.2621 | 76.8664 |
| 22 | 0 | -1.27024 | 66.8756 | 76.8664 |
| 23 | 0 | -1.24264 | 68.4198 | 76.8664 |
| 24 | 0 | -1.21596 | 69.8983 | 76.8664 |
| 25 | 0 | -1.19522 | 71.3269 | 76.8664 |
| 26 | 0 | -1.17 | 72.6958 | 76.8664 |
| 27 | 0 | -1.1455 | 74.008 | 76.8664 |
| 28 | 0 | -1.12639 | 75.2767 | 76.8664 |
| 29 | 0 | -1.10306 | 76.4935 | 76.8664 |
| 30 | 0 | -1.08032 | 77.6606 | 76.8664 |
| 31 | 0 | -1.06252 | 78.7895 | 76.8664 |
| 32 | 0 | -1.04073 | 79.8726 | 76.8664 |
| 33 | 0 | -1.01943 | 80.9119 | 76.8664 |
| 34 | 0 | -1.00271 | 81.9173 | 76.8664 |
| 35 | 0 | -0.982202 | 82.882 | 76.8664 |
| 36 | 0 | -0.9621 | 83.8077 | 76.8664 |
| 37 | 0 | -0.946291 | 84.7031 | 76.8664 |
| 38 | 0 | -0.926859 | 85.5622 | 76.8664 |
| 39 | 0 | -0.907769 | 86.3862 | 76.8664 |
| 40 | 0 | -0.892733 | 87.1832 | 76.8664 |
| 41 | 0 | -0.874218 | 87.9475 | 76.8664 |
| 42 | 0 | -0.855996 | 88.6802 | 76.8664 |
| 43 | 0 | -0.841621 | 89.3885 | 76.8664 |
| 44 | 0 | -0.823893 | 90.0673 | 76.8664 |
| 45 | 0 | -0.806422 | 90.7176 | 76.8664 |
| 46 | 0 | -0.792618 | 91.3459 | 76.8664 |
| 47 | 0 | -0.775574 | 91.9474 | 76.8664 |
| 48 | 0 | -0.758753 | 92.5231 | 76.8664 |
| 49 | 0 | -0.745449 | 93.0788 | 76.8664 |

| | | | | |
|---|---|---|---|---|
| 50 | 0 | -0.729003 | 93.6102 | 76.8664 |
| 51 | 0 | -0.712751 | 94.1183 | 76.8664 |
| 52 | 0 | -0.699883 | 94.6081 | 76.8664 |
| 53 | 0 | -0.6839695.0759 | 76.8664 | |
| 54 | 0 | -0.668209 | 95.5224 | 76.8664 |
| 55 | 0 | -0.652622 | 95.9483 | 76.8664 |
| 56 | 0 | -0.640266 | 96.3583 | 76.8664 |
| 57 | 0 | -0.624956 | 96.7488 | 76.8664 |
| 58 | 0 | -0.609791 | 97.1207 | 76.8664 |
| 59 | 0 | -0.597761 | 97.478 | 76.8664 |
| 60 | 0 | -0.582841 | 97.8177 | 76.8664 |
| 61 | 0 | -0.568052 | 98.1404 | 76.8664 |
| 62 | 0 | -0.556308 | 98.4499 | 76.8664 |
| 63 | 0 | -0.541736 | 98.7433 | 76.8664 |
| 64 | 0 | -0.5272899.0214 | 76.8664 | |
| 65 | 0 | -0.515791 | 99.2874 | 76.8664 |
| 66 | 0 | -0.501527 | 99.5389 | 76.8664 |
| 67 | 0 | -0.487364 | 99.7764 | 76.8664 |
| 68 | 0 | -0.476105 | 100.003 | 76.8664 |
| 69 | 0 | -0.462114 | 100.217 | 76.8664 |
| 70 | 0 | -0.448213 | 100.418 | 76.8664 |
| 71 | 0 | -0.437153 | 100.609 | 76.8664 |
| 72 | 0 | -0.423405 | 100.788 | 76.8664 |
| 73 | 0 | -0.409735 | 100.956 | 76.8664 |
| 74 | 0 | -0.398855 | 101.115 | 76.8664 |
| 75 | 0 | -0.385321 | 101.263 | 76.8664 |
| 76 | 0 | -0.371856 | 101.402 | 76.8664 |
| 77 | 0 | -0.361133 | 101.532 | 76.8664 |
| 78 | 0 | -0.347787 | 101.653 | 76.8664 |
| 79 | 0 | -0.334503 | 101.765 | 76.8664 |
| 80 | 0 | -0.323919 | 101.87 | 76.8664 |
| 81 | 0 | -0.310738 | 101.966 | 76.8664 |
| 82 | 0 | -0.297612 | 102.055 | 76.8664 |
| 83 | 0 | -0.287147 | 102.137 | 76.8664 |
| 84 | 0 | -0.27411102.213 | 76.8664 | |
| 85 | 0 | -0.26112102.281 | 76.8664 | |
| 86 | 0 | -0.250759 | 102.344 | 76.8664 |
| 87 | 0 | -0.237847 | 102.4 | 76.8664 |
| 88 | 0 | -0.224974 | 102.451 | 76.8664 |
| 89 | 0 | -0.214702 | 102.497 | 76.8664 |
| 90 | 0 | -0.201894 | 102.538 | 76.8664 |
| 91 | 0 | -0.189118 | 102.573 | 76.8664 |
| 92 | 0 | -0.17892102.605 | 76.8664 | |
| 93 | 0 | -0.166199 | 102.633 | 76.8664 |
| 94 | 0 | -0.153505 | 102.657 | 76.8664 |
| 95 | 0 | -0.143367 | 102.677 | 76.8664 |
| 96 | 0 | -0.130716 | 102.694 | 76.8664 |
| 97 | 0 | -0.118085 | 102.708 | 76.8664 |
| 98 | 0 | -0.107995 | 102.72 | 76.8664 |
| 99 | 0 | -0.0953969 | 102.729 | 76.8664 |
| 100 | 0 | -0.0828129 | 102.736 | 76.8664 |
| 101 | 0 | -0.0727562 | 102.741 | 76.8664 |
| 102 | 0 | -0.0601949 | 102.745 | 76.8664 |
| 103 | 0 | -0.0476439 | 102.747 | 76.8664 |
| 104 | 0 | -0.0376076 | 102.748 | 76.8664 |
| 105 | 0 | -0.0250691 | 102.749 | 76.8664 |
| 106 | 0 | -0.0125328 | 102.749 | 76.8664 |
| 107 | 0 | 0 | 102.749 | 76.8664 |
| 108 | 0 | 0.0125328 | 102.749 | 76.8664 |
| 109 | 0 | 0.0250691 | 102.75 | 76.8664 |
| 110 | 0 | 0.0376076 | 102.751 | 76.8664 |
| 111 | 0 | 0.0476439 | 102.754 | 76.8664 |

| | | | | | |
|---|---|---|---|---|---|
| 112 | 0 | 0.0601949 | 102.757 | 76.8664 | |
| 113 | 0 | 0.0727562 | 102.763 | 76.8664 | |
| 114 | 0 | 0.0828129 | 102.769 | 76.8664 | |
| 115 | 0 | 0.0953969 | 102.779 | 76.8664 | |
| 116 | 0 | 0.107995 | 102.79 | 76.8664 | |
| 117 | 0 | 0.118085 | 102.804 | 76.8664 | |
| 118 | 0 | 0.130716 | 102.821 | 76.8664 | |
| 119 | 0 | 0.143367 | 102.842 | 76.8664 | |
| 120 | 0 | 0.153505 | 102.865 | 76.8664 | |
| 121 | 0 | 0.166199 | 102.893 | 76.8664 | |
| 122 | 0 | 0.17892 | 102.925 | 76.8664 | |
| 123 | 0 | 0.189118 | 102.961 | 76.8664 | |
| 124 | 0 | 0.201894 | 103.002 | 76.8664 | |
| 125 | 0 | 0.214702 | 103.048 | 76.8664 | |
| 126 | 0.0861777 | 0.224974 | 103.098 | 76.8858 | |
| 127 | 0.0953102 | 0.237847 | 103.155 | 76.9085 | |
| 128 | 0.0953102 | 0.250759 | 103.218 | 76.9324 | |
| 129 | 0.182322 | 0.26112 | 103.286 | 76.98 | |
| 130 | 0.198851 | 0.27411 | 103.361 | 77.0345 | |
| 131 | 0.231112 | 0.287147 | 103.443 | 77.1009 | |
| 132 | 0.262364 | 0.297612 | 103.532 | 77.1789 | |
| 133 | 0.470004 | 0.310738 | 103.629 | 77.325 | |
| 134 | 0.536493 | 0.323919 | 103.734 | 77.4988 | |
| 135 | 0.576613 | 0.334503 | 103.845 | 77.6917 | |
| 136 | 0.582216 | 0.347787 | 103.966 | 77.8941 | |
| 137 | 0.587787 | 0.361133 | 104.097 | 78.1064 | |
| 138 | 0.693147 | 0.371856 | 104.235 | 78.3642 | |
| 139 | 0.832909 | 0.385321 | 104.384 | 78.6851 | |
| 140 | 0.832909 | 0.398855 | 104.543 | 79.0173 | |
| 141 | 1.05779 | 0.409735 | 104.711 | 79.4507 | |
| 142 | 1.06471 | 0.423405 | 104.89 | 79.9015 | |
| 143 | 1.09861 | 0.437153 | 105.081 | 80.3818 | |
| 144 | 1.16002 | 0.448213 | 105.282 | 80.9017 | |
| 145 | 1.17557 | 0.462114 | 105.495 | 81.445 | |
| 146 | 1.38629 | 0.476105 | 105.722 | 82.105 | |
| 147 | 1.51732 | 0.487364 | 105.96 | 82.8445 | |
| 148 | 1.64866 | 0.501527 | 106.211 | 83.6713 | |
| 149 | 1.6864 | 0.515791 | 106.477 | 84.5412 | |
| 150 | 1.74047 | 0.52728 | 106.755 | 85.4589 | |
| 151 | 1.75786 | 0.541736 | 107.049 | 86.4112 | |
| 152 | 1.96009 | 0.556308 | 107.358 | 87.5016 | |
| 153 | 2.02815 | 0.568052 | 107.681 | 88.6537 | |
| 154 | 2.15176 | 0.582841 | 108.02 | 89.9078 | |
| 155 | 2.19277 | 0.597761 | 108.378 | 91.2186 | |
| 156 | 2.19722 | 0.609791 | 108.75 | 92.5584 | |
| 157 | 2.20827 | 0.624956 | 109.14 | 93.9385 | |
| 158 | 2.24071 | 0.640266 | 109.55 | 95.3731 | |
| 159 | 2.24813 | 0.652622 | 109.976 | 96.8403 | |
| 160 | 2.30259 | 0.668209 | 110.423 | 98.3789 | |
| 161 | 2.30259 | 0.68396 | 110.89 | 99.9538 | |
| 162 | 2.30259 | 0.699883 | 111.38 | 101.565 | |
| 163 | 2.30259 | 0.712751 | 111.888 | 103.207 | |
| 164 | 2.37024 | 0.729003 | 112.42 | 104.934 | |
| 165 | 2.3979 | 0.745449 | 112.975 | 106.722 | |
| 166 | 2.3979 | 0.758753 | 113.551 | 108.541 | |
| 167 | 2.3979 | 0.775574 | 114.153 | 110.401 | |
| 168 | 2.3979 | 0.792618 | 114.781 | 112.302 | |
| 169 | 2.40695 | 0.806422 | 115.431 | 114.243 | |
| 170 | 2.48491 | 0.823893 | 116.11 | 116.29 | |
| 171 | 2.48491 | 0.841621 | 116.818 | 118.381 | |
| 172 | 2.56495 | 0.855996 | 117.551 | 120.577 | |
| 173 | 2.59525 | 0.874218 | 118.315 | 122.846 | |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 2.60269 | 0.892733 | | 119.112 | 125.169 |
| 175 | 2.61007 | 0.907769 | | 119.936 | 127.539 |
| 176 | 2.63906 | 0.926859 | | 120.795 | 129.985 |
| 177 | 2.69463 | 0.946291 | | 121.691 | 132.535 |
| 178 | 2.70805 | 0.9621 | 122.616 | 135.14 | |
| 179 | 2.70805 | 0.982202 | | 123.581 | 137.8 |
| 180 | 2.76001 | 1.00271 | 124.587 | 140.567 | |
| 181 | 2.77259 | 1.01943 | 125.626 | 143.394 | |
| 182 | 2.83321 | 1.04073 | 126.709 | 146.342 | |
| 183 | 2.99573 | 1.06252 | 127.838 | 149.525 | |
| 184 | 3.21487 | 1.08032 | 129.005 | 152.998 | |
| 185 | 3.21888 | 1.10306 | 130.222 | 156.549 | |
| 186 | 3.2581 | 1.12639 | 131.49 | 160.219 | |
| 187 | 3.2581 | 1.1455 | 132.803 | 163.951 | |
| 188 | 3.46574 | 1.17 | 134.172 | 168.006 | |
| 189 | 3.46574 | 1.19522 | 135.6 | 172.148 | |
| 190 | 3.55535 | 1.21596 | 137.079 | 176.472 | |
| 191 | 3.55535 | 1.24264 | 138.623 | 180.89 | |
| 192 | 3.63759 | 1.27024 | 140.236 | 185.51 | |
| 193 | 3.66356 | 1.29303 | 141.908 | 190.247 | |
| 194 | 3.68888 | 1.32251 | 143.657 | 195.126 | |
| 195 | 3.74715 | 1.35317 | 145.488 | 200.196 | |
| 196 | 3.7495 | 1.37866 | 147.389 | 205.366 | |
| 197 | 3.7542 | 1.41183 | 149.382 | 210.666 | |
| 198 | 3.7612 | 1.44663 | 151.475 | 216.107 | |
| 199 | 4.02356 | 1.47579 | 153.653 | 222.045 | |
| 200 | 4.06044 | 1.5141 | 155.946 | 228.193 | |
| 201 | 4.10923 | 1.55477 | 158.363 | 234.582 | |
| 202 | 4.15888 | 1.58927 | 160.889 | 241.191 | |
| 203 | 4.65396 | 1.63524 | 163.563 | 248.802 | |
| 204 | 4.86753 | 1.68494 | 166.402 | 257.003 | |
| 205 | 4.86753 | 1.72793 | 169.387 | 265.414 | |
| 206 | 4.93447 | 1.78661 | 172.579 | 274.23 | |
| 207 | 4.94164 | 1.85218 | 176.01 | 283.383 | |
| 208 | 5.0689 | 1.91103 | 179.662 | 293.07 | |
| 209 | 5.07517 | 1.99539 | 183.644 | 303.197 | |
| 210 | 5.19296 | 2.09693 | 188.041 | 314.086 | |
| 211 | 5.63479 | 2.19728 | 192.869 | 326.467 | |
| 212 | 5.79909 | 2.36561 | 198.465 | 340.186 | |
| 213 | 5.8861 | 2.65209 | 205.498 | 355.796 | |

Data Set Standard Deviation = 1.83554
Numerator = 126591
Denominator = 146782
W Statistic = 0.862444 = 126591 / 146782

5% Critical value of 0.976 exceeds 0.862444
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.862444
Evidence of non-normality at 99% level of significance

# Kruskal-Wallis Non-Parametric Test

## Parameter: cis-1,2-Dichloroethene

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

# Kruskal Wallis Ranks

## Background Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-13 | 3/16/1999 | ND<0 | 59 |
| | 9/23/1999 | ND<0 | 59 |
| | 3/15/2000 | ND<0 | 59 |
| | 9/24/2003 | ND<0 | 59 |
| | 3/11/2004 | ND<0 | 59 |
| | 10/12/2004 | ND<0 | 59 |
| | 4/1/2005 | ND<0 | 59 |
| | 10/25/2005 | ND<0 | 59 |
| | 4/29/2006 | ND<0 | 59 |
| | 11/18/2006 | ND<0 | 59 |
| | 5/23/2007 | ND<0 | 59 |
| | 11/28/2007 | ND<0 | 59 |
| | 6/5/2008 | ND<0 | 59 |
| | 11/20/2008 | ND<0 | 59 |
| | 6/11/2009 | ND<-2.59027 | 59 |
| | 6/30/2010 | ND<-2.59027 | 59 |
| | 11/12/2010 | ND<-2.59027 U | 59 |

Rank Sum = 1003
Rank Mean = 59

Background Rank Sum = 1003
Background Rank Mean = 59

## Compliance Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-9 | 7/20/1995 | 0.182322 J | 129 |
| | 8/24/1995 | 0.0953102 J | 127 |
| | 9/28/1995 | 0 J | 124 |
| | 10/26/1995 | 0 J | 125 |
| | 11/19/1996 | ND<0 | 59 |
| | 12/19/1996 | ND<0 | 59 |
| | 3/24/1997 | ND<0 | 59 |
| | 9/24/1997 | ND<0 | 59 |
| | 4/7/1998 | ND<0 | 59 |
| | 9/23/1998 | ND<0 | 59 |
| | 3/16/1999 | ND<0 | 59 |
| | 9/23/1999 | ND<0 | 59 |
| | 3/15/2000 | ND<0 | 59 |
| | 9/24/2003 | ND<0 | 59 |
| | 3/11/2004 | 4.15888 | 202 |
| | 10/12/2004 | ND<0 | 59 |
| | 4/1/2005 | 0.576613 J | 135 |
| | 10/25/2005 | 0.231112 J | 131 |
| | 4/29/2006 | -0.127833 J | 122 |
| | 11/18/2006 | -0.34249 J | 120 |
| | 5/23/2007 | 1.09861 | 143 |

| | | | | |
|---|---|---|---|---|
| | 11/28/2007 | ND<0 | J | 59 |
| | 6/5/2008 | -0.693147 | J | 119 |
| | 11/20/2008 | 0.582216 | J | 136 |
| | 6/11/2009 | 0.832909 | | 139 |
| | 6/30/2010 | 0.832909 | | 140 |
| | 11/12/2010 | 0.587787 | | 137 |

Rank Sum = 2737
Rank Mean = 101.37

| | | | | |
|---|---|---|---|---|
| MW-8 | 7/20/1995 | 0.0953102 | J | 128 |
| | 8/24/1995 | 2.99573 | | 183 |
| | 9/28/1995 | 2.83321 | | 182 |
| | 10/26/1995 | 0.693147 | | 138 |
| | 11/19/1996 | ND<0 | | 59 |
| | 12/19/1996 | 4.86753 | | 204 |
| | 3/24/1997 | 5.07517 | | 209 |
| | 9/24/1997 | 5.63479 | | 211 |
| | 4/7/1998 | 5.19296 | | 210 |
| | 9/23/1998 | 5.8861 | | 213 |
| | 3/16/1999 | 5.0689 | | 208 |
| | 9/23/1999 | 4.93447 | | 206 |
| | 3/15/2000 | 5.79909 | | 212 |
| | 9/24/2003 | 3.55535 | | 190 |
| | 3/11/2004 | 4.86753 | | 205 |
| | 10/12/2004 | 4.94164 | | 207 |
| | 4/1/2005 | 4.02356 | | 199 |
| | 10/25/2005 | 4.65396 | | 203 |
| | 4/29/2006 | 3.7495 | | 196 |
| | 11/18/2006 | 3.74715 | | 195 |
| | 5/23/2007 | 3.21888 | | 185 |
| | 11/28/2007 | 4.10923 | | 201 |
| | 6/5/2008 | ND<0 | | 59 |
| | 11/20/2008 | 3.55535 | | 191 |
| | 6/11/2009 | 3.66356 | | 193 |
| | 6/30/2010 | 3.7612 | | 198 |
| | 11/12/2010 | 4.06044 | | 200 |

Rank Sum = 4985
Rank Mean = 184.63

| | | | | |
|---|---|---|---|---|
| MW-7 | 7/20/1995 | ND<0 | | 59 |
| | 8/24/1995 | ND<0 | | 59 |
| | 9/28/1995 | ND<0 | | 59 |
| | 10/26/1995 | ND<0 | | 59 |
| | 11/19/1996 | ND<0 | | 59 |
| | 12/19/1996 | ND<0 | | 59 |
| | 3/24/1997 | ND<0 | | 59 |
| | 9/24/1997 | ND<0 | | 59 |
| | 4/7/1998 | ND<0 | | 59 |
| | 9/23/1998 | ND<0 | | 59 |
| | 3/16/1999 | ND<0 | | 59 |
| | 9/23/1999 | ND<0 | | 59 |
| | 3/15/2000 | ND<0 | | 59 |
| | 9/24/2003 | ND<0 | | 59 |
| | 3/11/2004 | ND<0 | | 59 |
| | 10/12/2004 | ND<0 | | 59 |
| | 4/1/2005 | -1.56065 | J | 118 |
| | 10/25/2005 | ND<0 | | 59 |
| | 4/29/2006 | ND<0 | | 59 |
| | 11/18/2006 | ND<0 | | 59 |
| | 5/23/2007 | ND<0 | | 59 |
| | 11/28/2007 | ND<0 | | 59 |
| | 6/5/2008 | ND<0 | | 59 |

| | | | |
|---|---|---|---|
| | 11/20/2008 | ND<0 | 59 |
| | 6/11/2009 | ND<-2.59027 | 59 |
| | 6/30/2010 | ND<-2.59027 | 59 |
| | 11/12/2010 | ND<-2.59027 U | 59 |

Rank Sum = 1652
Rank Mean = 61.1852

| | | | |
|---|---|---|---|
| MW-12BR | 3/16/1999 | 2.69463 | 177 |
| | 9/23/1999 | ND<0 | 59 |
| | 3/15/2000 | ND<0 | 59 |
| | 9/24/2003 | ND<0 | 59 |
| | 3/11/2004 | ND<0 | 59 |
| | 10/12/2004 | ND<0 | 59 |
| | 4/1/2005 | 2.37024 | 164 |
| | 10/25/2005 | ND<0 | 59 |
| | 4/29/2006 | ND<0 | 59 |
| | 11/18/2006 | ND<0 | 59 |
| | 5/23/2007 | ND<0 | 59 |
| | 11/28/2007 | ND<0 | 59 |
| | 6/5/2008 | ND<0 | 59 |
| | 11/20/2008 | ND<0 | 59 |
| | 6/11/2009 | ND<-2.59027 | 59 |
| | 6/30/2010 | ND<-2.59027 | 59 |
| | 11/12/2010 | ND<-2.59027 U | 59 |

Rank Sum = 1226
Rank Mean = 72.1176

| | | | |
|---|---|---|---|
| MW-12AR | 3/16/1999 | ND<0 | 59 |
| | 9/23/1999 | ND<0 | 59 |
| | 3/15/2000 | 2.63906 | 176 |
| | 9/24/2003 | 2.30259 | 160 |
| | 3/11/2004 | 2.30259 | 161 |
| | 10/12/2004 | 2.24071 | 158 |
| | 4/1/2005 | ND<0 | 59 |
| | 10/25/2005 | 1.06471 | 142 |
| | 4/29/2006 | 1.16002 | 144 |
| | 11/18/2006 | 0.0861777 J | 126 |
| | 5/23/2007 | ND<0 | 59 |
| | 11/28/2007 | 0.198851 J | 130 |
| | 6/5/2008 | ND<0 | 59 |
| | 11/20/2008 | -0.18633 J | 121 |
| | 6/11/2009 | ND<-2.59027 | 59 |
| | 6/30/2010 | ND<-2.59027 | 59 |
| | 11/12/2010 | -0.0833816 J | 123 |

Rank Sum = 1854
Rank Mean = 109.059

| | | | |
|---|---|---|---|
| MW-11R | 7/20/1995 | 1.6864 | 149 |
| | 8/24/1995 | 2.3979 | 165 |
| | 9/28/1995 | 2.30259 | 162 |
| | 10/26/1995 | 2.70805 | 178 |
| | 11/19/1996 | ND<0 | 59 |
| | 12/19/1996 | 2.77259 | 181 |
| | 3/24/1997 | 2.48491 | 170 |
| | 9/24/1997 | ND<0 | 59 |
| | 4/7/1998 | 1.64866 | 148 |
| | 9/23/1998 | 2.56495 | 172 |
| | 3/16/1999 | 2.40695 | 169 |
| | 9/23/1999 | ND<0 | 59 |
| | 3/15/2000 | 2.48491 | 171 |
| | 9/24/2003 | 2.30259 | 163 |
| | 3/11/2004 | 2.3979 | 166 |

| | | | | |
|---|---|---|---|---|
| | 10/12/2004 | ND<0 | 59 | |
| | 4/1/2005 | 2.24813 | 159 | |
| | 10/25/2005 | 1.51732 | | 147 |
| | 4/29/2006 | 1.05779 | | 141 |
| | 11/18/2006 | 0.536493 J | | 134 |
| | 5/23/2007 | 1.74047 | | 150 |
| | 11/28/2007 | 1.17557 | | 145 |
| | 6/5/2008 | ND<0 | 59 | |
| | 11/20/2008 | ND<0 | 59 | |
| | 6/11/2009 | 0.262364 | | 132 |
| | 6/30/2010 | 0.470004 | | 133 |
| | 11/12/2010 | ND<-2.59027 U | | 59 |

Rank Sum = 3548
Rank Mean = 131.407

| | | | | |
|---|---|---|---|---|
| MW-10 | 7/20/1995 | 1.38629 | | 146 |
| | 8/24/1995 | 2.70805 | | 179 |
| | 9/28/1995 | 3.46574 | | 188 |
| | 10/26/1995 | 3.2581 | 186 | |
| | 11/19/1996 | ND<0 | 59 | |
| | 12/19/1996 | 3.68888 | | 194 |
| | 3/24/1997 | 3.2581 | 187 | |
| | 9/24/1997 | 3.63759 | | 192 |
| | 4/7/1998 | 2.02815 | 153 | |
| | 9/23/1998 | 3.46574 | | 189 |
| | 3/16/1999 | 3.7542 | 197 | |
| | 9/23/1999 | 3.21487 | | 184 |
| | 3/15/2000 | 2.3979 | 167 | |
| | 9/24/2003 | 2.3979 | 168 | |
| | 3/11/2004 | 1.96009 | | 152 |
| | 10/12/2004 | ND<0 | 59 | |
| | 4/1/2005 | ND<0 | 59 | |
| | 10/25/2005 | 2.59525 | | 173 |
| | 4/29/2006 | 2.76001 | | 180 |
| | 11/18/2006 | 2.19277 | | 155 |
| | 5/23/2007 | 2.20827 | | 157 |
| | 11/28/2007 | 2.61007 | | 175 |
| | 6/5/2008 | 2.60269 | 174 | |
| | 11/20/2008 | ND<0 | 59 | |
| | 6/11/2009 | 2.19722 | | 156 |
| | 6/30/2010 | 1.75786 | | 151 |
| | 11/12/2010 | 2.15176 | | 154 |

Rank Sum = 4193
Rank Mean = 155.296

| | | | |
|---|---|---|---|
| MW-6 | 7/20/1995 | ND<0 | 59 |
| | 8/24/1995 | ND<0 | 59 |
| | 9/28/1995 | ND<0 | 59 |
| | 10/26/1995 | ND<0 | 59 |
| | 11/19/1996 | ND<0 | 59 |
| | 12/19/1996 | ND<0 | 59 |
| | 3/24/1997 | ND<0 | 59 |
| | 9/24/1997 | ND<0 | 59 |
| | 4/7/1998 | ND<0 | 59 |
| | 9/23/1998 | ND<0 | 59 |
| | 3/16/1999 | ND<0 | 59 |
| | 9/23/1999 | ND<0 | 59 |
| | 3/15/2000 | ND<0 | 59 |
| | 9/24/2003 | ND<0 | 59 |
| | 3/11/2004 | ND<0 | 59 |
| | 10/12/2004 | ND<0 | 59 |
| | 4/1/2005 | ND<0 | 59 |

| | | | |
|---|---|---|---|
| 10/25/2005 | ND<0 | 59 | |
| 4/29/2006 | ND<0 | 59 | |
| 11/18/2006 | ND<0 | 59 | |
| 5/23/2007 | ND<0 | 59 | |
| 11/28/2007 | ND<0 | 59 | |
| 6/5/2008 | ND<0 | 59 | |
| 11/20/2008 | ND<0 | 59 | |
| 6/11/2009 | ND<-2.59027 | 59 | |
| 6/30/2010 | ND<-2.59027 | 59 | |
| 11/12/2010 | ND<-2.59027 U | 59 | |

Rank Sum = 1593
Rank Mean = 59

## Calculation Results:

Kruskal-Wallis H Statistic = 110.948
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 132.988
95% Confidence comparison value is 15.5073 at 8 degrees of freedom
110.948 > 15.5073 indicating a significant group difference at 5% significance level
132.988 > 15.5073 indicating a significant group difference at 5% significance level when adjusted for ties

## Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 59

| Well | Mean Rank | | Dif from Bkg | Critical Value |
|---|---|---|---|---|
| MW-9 | 101.37 | 42.3704 | 44.3915 | |
| MW-8 | 184.63 | 125.63 | 44.3915 | |
| MW-7 | 61.1852 | 2.18519 | 44.3915 | |
| MW-12BR | | 72.1176 | 13.1176 | 49.1779 |
| MW-12AR | | 109.059 | 50.0588 | 49.1779 |
| MW-11R | 131.407 | 72.4074 | 44.3915 | |
| MW-10 | 155.296 | 96.2963 | 44.3915 | |
| MW-6 | 59 | 0 | 44.3915 | |

## Individual Well Comparisons at Groupwise 5% Significance Level (0.625% Significance Level per comparison)

0.625% Z score is 2.51213
Mean background rank is 59

| Well | Mean Rank | | Dif from Bkg | Critical Value |
|---|---|---|---|---|
| MW-9 | 101.37 | 42.3704 | 47.9368 | |
| MW-8 | 184.63 | 125.63 | 47.9368 | |
| MW-7 | 61.1852 | 2.18519 | 47.9368 | |
| MW-12BR | | 72.1176 | 13.1176 | 53.1055 |
| MW-12AR | | 109.059 | 50.0588 | 53.1055 |
| MW-11R | 131.407 | 72.4074 | 47.9368 | |
| MW-10 | 155.296 | 96.2963 | 47.9368 | |
| MW-6 | 59 | 0 | 47.9368 | |

# Mann-Kendall Trend Analysis

## Parameter: cis-1,2-Dichloroethene

## Location: MW-8

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | Positives | Negatives |
|---|---|---|---|---|
| 2.99573 | 0.0953102 J | 2.90042 | 1 | 0 |
| 2.83321 | 0.0953102 J | 2.7379 | 2 | 0 |
| 0.693147 | 0.0953102 J | 0.597837 | 3 | 0 |
| ND<0 | 0.0953102 J | -0.0953102 | 3 | 1 |
| 4.86753 | 0.0953102 J | 4.77222 | 4 | 1 |
| 5.07517 | 0.0953102 J | 4.97986 | 5 | 1 |
| 5.63479 | 0.0953102 J | 5.53948 | 6 | 1 |
| 5.19296 | 0.0953102 J | 5.09765 | 7 | 1 |
| 5.8861 | 0.0953102 J | 5.79079 | 8 | 1 |
| 5.0689 | 0.0953102 J | 4.97359 | 9 | 1 |
| 4.93447 | 0.0953102 J | 4.83916 | 10 | 1 |
| 5.79909 | 0.0953102 J | 5.70378 | 11 | 1 |
| 3.55535 | 0.0953102 J | 3.46004 | 12 | 1 |
| 4.86753 | 0.0953102 J | 4.77222 | 13 | 1 |
| 4.94164 | 0.0953102 J | 4.84633 | 14 | 1 |
| 4.02356 | 0.0953102 J | 3.92825 | 15 | 1 |
| 4.65396 | 0.0953102 J | 4.55865 | 16 | 1 |
| 3.7495 | 0.0953102 J | 3.65419 | 17 | 1 |
| 3.74715 | 0.0953102 J | 3.65184 | 18 | 1 |
| 3.21888 | 0.0953102 J | 3.12357 | 19 | 1 |
| 4.10923 | 0.0953102 J | 4.01392 | 20 | 1 |
| ND<0 | 0.0953102 J | -0.0953102 | 20 | 2 |
| 3.55535 | 0.0953102 J | 3.46004 | 21 | 2 |
| 3.66356 | 0.0953102 J | 3.56825 | 22 | 2 |
| 3.7612 | 0.0953102 J | 3.66589 | 23 | 2 |
| 4.06044 | 0.0953102 J | 3.96513 | 24 | 2 |
| | | | | |
| 2.83321 | 2.99573 | -0.162519 | 24 | 3 |
| 0.693147 | 2.99573 | -2.302924 | 24 | 4 |
| ND<0 | 2.99573 | -2.995724 | 5 | |
| 4.86753 | 2.99573 | 1.8718 | 25 | 5 |
| 5.07517 | 2.99573 | 2.07944 | 26 | 5 |
| 5.63479 | 2.99573 | 2.63906 | 27 | 5 |
| 5.19296 | 2.99573 | 2.19722 | 28 | 5 |
| 5.8861 | 2.99573 | 2.89037 | 29 | 5 |
| 5.0689 | 2.99573 | 2.07317 | 30 | 5 |
| 4.93447 | 2.99573 | 1.93874 | 31 | 5 |
| 5.79909 | 2.99573 | 2.80336 | 32 | 5 |
| 3.55535 | 2.99573 | 0.559616 | 33 | 5 |
| 4.86753 | 2.99573 | 1.8718 | 34 | 5 |
| 4.94164 | 2.99573 | 1.94591 | 35 | 5 |
| 4.02356 | 2.99573 | 1.02783 | 36 | 5 |
| 4.65396 | 2.99573 | 1.65823 | 37 | 5 |
| 3.7495 | 2.99573 | 0.753772 | 38 | 5 |
| 3.74715 | 2.99573 | 0.751416 | 39 | 5 |
| 3.21888 | 2.99573 | 0.223144 | 40 | 5 |
| 4.10923 | 2.99573 | 1.1135 | 41 | 5 |
| ND<0 | 2.99573 | -2.995741 | 6 | |

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|---|---|---|---|---|---|
| 3.55535 | 2.99573 | 0.559616 | 42 | 6 | |
| 3.66356 | 2.99573 | 0.667829 | 43 | 6 | |
| 3.7612 | 2.99573 | 0.765468 | 44 | 6 | |
| 4.06044 | 2.99573 | 1.06471 | 45 | 6 | |
| | | | | | |
| 0.693147 | 2.83321 | -2.140074 | 5 | 7 | |
| ND<0 | 2.83321 | -2.833214 | 5 | 8 | |
| 4.86753 | 2.83321 | 2.03432 | 46 | 8 | |
| 5.07517 | 2.83321 | 2.24196 | 47 | 8 | |
| 5.63479 | 2.83321 | 2.80158 | 48 | 8 | |
| 5.19296 | 2.83321 | 2.35974 | 49 | 8 | |
| 5.8861 | 2.83321 | 3.05289 | 50 | 8 | |
| 5.0689 | 2.83321 | 2.23569 | 51 | 8 | |
| 4.93447 | 2.83321 | 2.10126 | 52 | 8 | |
| 5.79909 | 2.83321 | 2.96588 | 53 | 8 | |
| 3.55535 | 2.83321 | 0.722135 | 54 | 8 | |
| 4.86753 | 2.83321 | 2.03432 | 55 | 8 | |
| 4.94164 | 2.83321 | 2.10843 | 56 | 8 | |
| 4.02356 | 2.83321 | 1.19035 | 57 | 8 | |
| 4.65396 | 2.83321 | 1.82075 | 58 | 8 | |
| 3.7495 | 2.83321 | 0.916291 | 59 | 8 | |
| 3.74715 | 2.83321 | 0.913935 | 60 | 8 | |
| 3.21888 | 2.83321 | 0.385662 | 61 | 8 | |
| 4.10923 | 2.83321 | 1.27602 | 62 | 8 | |
| ND<0 | 2.83321 | -2.833216 | 2 | 9 | |
| 3.55535 | 2.83321 | 0.722135 | 63 | 9 | |
| 3.66356 | 2.83321 | 0.830348 | 64 | 9 | |
| 3.7612 | 2.83321 | 0.927987 | 65 | 9 | |
| 4.06044 | 2.83321 | 1.22723 | 66 | 9 | |
| | | | | | |
| ND<0 | 0.693147 | -0.693147 | 66 | 10 | |
| 4.86753 | 0.693147 | 4.17439 | 67 | 10 | |
| 5.07517 | 0.693147 | 4.38203 | 68 | 10 | |
| 5.63479 | 0.693147 | 4.94164 | 69 | 10 | |
| 5.19296 | 0.693147 | 4.49981 | 70 | 10 | |
| 5.8861 | 0.693147 | 5.19296 | 71 | 10 | |
| 5.0689 | 0.693147 | 4.37576 | 72 | 10 | |
| 4.93447 | 0.693147 | 4.24133 | 73 | 10 | |
| 5.79909 | 0.693147 | 5.10595 | 74 | 10 | |
| 3.55535 | 0.693147 | 2.8622 | 75 | 10 | |
| 4.86753 | 0.693147 | 4.17439 | 76 | 10 | |
| 4.94164 | 0.693147 | 4.2485 | 77 | 10 | |
| 4.02356 | 0.693147 | 3.33042 | 78 | 10 | |
| 4.65396 | 0.693147 | 3.96081 | 79 | 10 | |
| 3.7495 | 0.693147 | 3.05636 | 80 | 10 | |
| 3.74715 | 0.693147 | 3.054 | 81 | 10 | |
| 3.21888 | 0.693147 | 2.52573 | 82 | 10 | |
| 4.10923 | 0.693147 | 3.41609 | 83 | 10 | |
| ND<0 | 0.693147 | -0.693147 | 83 | 11 | |
| 3.55535 | 0.693147 | 2.8622 | 84 | 11 | |
| 3.66356 | 0.693147 | 2.97041 | 85 | 11 | |
| 3.7612 | 0.693147 | 3.06805 | 86 | 11 | |
| 4.06044 | 0.693147 | 3.3673 | 87 | 11 | |
| | | | | | |
| 4.86753 | ND<0 | 4.86753 | 88 | 11 | |
| 5.07517 | ND<0 | 5.07517 | 89 | 11 | |
| 5.63479 | ND<0 | 5.63479 | 90 | 11 | |
| 5.19296 | ND<0 | 5.19296 | 91 | 11 | |
| 5.8861 | ND<0 | 5.8861 | 92 | 11 | |
| 5.0689 | ND<0 | 5.0689 | 93 | 11 | |
| 4.93447 | ND<0 | 4.93447 | 94 | 11 | |
| 5.79909 | ND<0 | 5.79909 | 95 | 11 | |

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|---|---|---|---|---|---|
| 3.55535 | | ND<0 | 3.55535 | 96 | 11 |
| 4.86753 | | ND<0 | 4.86753 | 97 | 11 |
| 4.94164 | | ND<0 | 4.94164 | 98 | 11 |
| 4.02356 | | ND<0 | 4.02356 | 99 | 11 |
| 4.65396 | | ND<0 | 4.65396 | 100 | 11 |
| 3.7495 | ND<0 | 3.7495 | 101 | 11 | |
| 3.74715 | | ND<0 | 3.74715 | 102 | 11 |
| 3.21888 | | ND<0 | 3.21888 | 103 | 11 |
| 4.10923 | | ND<0 | 4.10923 | 104 | 11 |
| ND<0 | ND<0 | 0 | 104 | 11 | |
| 3.55535 | | ND<0 | 3.55535 | 105 | 11 |
| 3.66356 | | ND<0 | 3.66356 | 106 | 11 |
| 3.7612 | ND<0 | 3.7612 | 107 | 11 | |
| 4.06044 | | ND<0 | 4.06044 | 108 | 11 |

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|---|---|---|---|---|---|
| 5.07517 | | 4.86753 | 0.207639 | 109 | 11 |
| 5.63479 | | 4.86753 | 0.767255 | 110 | 11 |
| 5.19296 | | 4.86753 | 0.325422 | 111 | 11 |
| 5.8861 | 4.86753 | 1.01857 | 112 | 11 | |
| 5.0689 | 4.86753 | 0.20137 | 113 | 11 | |
| 4.93447 | | 4.86753 | 0.0669395 | 114 | 11 |
| 5.79909 | | 4.86753 | 0.931558 | 115 | 11 |
| 3.55535 | | 4.86753 | -1.31219 | 115 | 12 |
| 4.86753 | | 4.86753 | 0 | 115 | 12 |
| 4.94164 | | 4.86753 | 0.074108 | 116 | 12 |
| 4.02356 | | 4.86753 | -0.84397 | 116 | 13 |
| 4.65396 | | 4.86753 | -0.213574 | 116 | 14 |
| 3.7495 | 4.86753 | -1.11803 | 116 | 15 | |
| 3.74715 | | 4.86753 | -1.12039 | 116 | 16 |
| 3.21888 | | 4.86753 | -1.64866 | 116 | 17 |
| 4.10923 | | 4.86753 | -0.758301 | 116 | 18 |
| ND<0 | 4.86753 | -4.86753 | 116 | 19 | |
| 3.55535 | | 4.86753 | -1.31219 | 116 | 20 |
| 3.66356 | | 4.86753 | -1.20397 | 116 | 21 |
| 3.7612 | 4.86753 | -1.10633 | 116 | 22 | |
| 4.06044 | | 4.86753 | -0.807091 | 116 | 23 |

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|---|---|---|---|---|---|
| 5.63479 | | 5.07517 | 0.559616 | 117 | 23 |
| 5.19296 | | 5.07517 | 0.117783 | 118 | 23 |
| 5.8861 | 5.07517 | 0.81093 | 119 | 23 | |
| 5.0689 | 5.07517 | -0.00626961 | 119 | 24 | |
| 4.93447 | | 5.07517 | -0.1407 | 119 | 25 |
| 5.79909 | | 5.07517 | 0.723919 | 120 | 25 |
| 3.55535 | | 5.07517 | -1.51983 | 120 | 26 |
| 4.86753 | | 5.07517 | -0.207639 | 120 | 27 |
| 4.94164 | | 5.07517 | -0.133531 | 120 | 28 |
| 4.02356 | | 5.07517 | -1.05161 | 120 | 29 |
| 4.65396 | | 5.07517 | -0.421213 | 120 | 30 |
| 3.7495 | 5.07517 | -1.32567 | 120 | 31 | |
| 3.74715 | | 5.07517 | -1.32803 | 120 | 32 |
| 3.21888 | | 5.07517 | -1.8563 | 120 | 33 |
| 4.10923 | | 5.07517 | -0.965941 | 120 | 34 |
| ND<0 | 5.07517 | -5.07517 | 120 | 35 | |
| 3.55535 | | 5.07517 | -1.51983 | 120 | 36 |
| 3.66356 | | 5.07517 | -1.41161 | 120 | 37 |
| 3.7612 | 5.07517 | -1.31397 | 120 | 38 | |
| 4.06044 | | 5.07517 | -1.01473 | 120 | 39 |

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|---|---|---|---|---|---|
| 5.19296 | | 5.63479 | -0.441833 | 120 | 40 |
| 5.8861 | 5.63479 | 0.251314 | 121 | 40 | |
| 5.0689 | 5.63479 | -0.565885 | 121 | 41 | |
| 4.93447 | | 5.63479 | -0.700316 | 121 | 42 |

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|---|---|---|---|---|---|
| 5.79909 | 5.63479 | 0.164303 | 122 | 42 | |
| 3.55535 | 5.63479 | -2.07944 | 122 | 43 | |
| 4.86753 | 5.63479 | -0.767255 | 122 | 44 | |
| 4.94164 | 5.63479 | -0.693147 | 122 | 45 | |
| 4.02356 | 5.63479 | -1.61123 | 122 | 46 | |
| 4.65396 | 5.63479 | -0.980829 | 122 | 47 | |
| 3.7495 | 5.63479 | -1.88529 | 122 | 48 | |
| 3.74715 | 5.63479 | -1.88764 | 122 | 49 | |
| 3.21888 | 5.63479 | -2.41591 | 122 | 50 | |
| 4.10923 | 5.63479 | -1.52556 | 122 | 51 | |
| ND<0 | 5.63479 | -5.63479 | 122 | 52 | |
| 3.55535 | 5.63479 | -2.07944 | 122 | 53 | |
| 3.66356 | 5.63479 | -1.97123 | 122 | 54 | |
| 3.7612 | 5.63479 | -1.87359 | 122 | 55 | |
| 4.06044 | 5.63479 | -1.57435 | 122 | 56 | |
| | | | | | |
| 5.8861 | 5.19296 | 0.693147 | 123 | 56 | |
| 5.0689 | 5.19296 | -0.124053 | 123 | 57 | |
| 4.93447 | 5.19296 | -0.258483 | 123 | 58 | |
| 5.79909 | 5.19296 | 0.606136 | 124 | 58 | |
| 3.55535 | 5.19296 | -1.63761 | 124 | 59 | |
| 4.86753 | 5.19296 | -0.325422 | 124 | 60 | |
| 4.94164 | 5.19296 | -0.251314 | 124 | 61 | |
| 4.02356 | 5.19296 | -1.16939 | 124 | 62 | |
| 4.65396 | 5.19296 | -0.538997 | 124 | 63 | |
| 3.7495 | 5.19296 | -1.44345 | 124 | 64 | |
| 3.74715 | 5.19296 | -1.44581 | 124 | 65 | |
| 3.21888 | 5.19296 | -1.97408 | 124 | 66 | |
| 4.10923 | 5.19296 | -1.08372 | 124 | 67 | |
| ND<0 | 5.19296 | -5.19296 | 124 | 68 | |
| 3.55535 | 5.19296 | -1.63761 | 124 | 69 | |
| 3.66356 | 5.19296 | -1.5294 | 124 | 70 | |
| 3.7612 | 5.19296 | -1.43176 | 124 | 71 | |
| 4.06044 | 5.19296 | -1.13251 | 124 | 72 | |
| | | | | | |
| 5.0689 | 5.8861 | -0.8172 | 124 | 73 | |
| 4.93447 | 5.8861 | -0.95163 | 124 | 74 | |
| 5.79909 | 5.8861 | -0.087011 | 4 | 124 | 75 |
| 3.55535 | 5.8861 | -2.33076 | 124 | 76 | |
| 4.86753 | 5.8861 | -1.01857 | 124 | 77 | |
| 4.94164 | 5.8861 | -0.944462 | 124 | 78 | |
| 4.02356 | 5.8861 | -1.86254 | 124 | 79 | |
| 4.65396 | 5.8861 | -1.23214 | 124 | 80 | |
| 3.7495 | 5.8861 | -2.1366 | 124 | 81 | |
| 3.74715 | 5.8861 | -2.13896 | 124 | 82 | |
| 3.21888 | 5.8861 | -2.66723 | 124 | 83 | |
| 4.10923 | 5.8861 | -1.77687 | 124 | 84 | |
| ND<0 | 5.8861 | -5.8861 | 124 | 85 | |
| 3.55535 | 5.8861 | -2.33076 | 124 | 86 | |
| 3.66356 | 5.8861 | -2.22254 | 124 | 87 | |
| 3.7612 | 5.8861 | -2.1249 | 124 | 88 | |
| 4.06044 | 5.8861 | -1.82566 | 124 | 89 | |
| | | | | | |
| 4.93447 | 5.0689 | -0.13443 | 124 | 90 | |
| 5.79909 | 5.0689 | 0.730188 | 125 | 90 | |
| 3.55535 | 5.0689 | -1.51356 | 125 | 91 | |
| 4.86753 | 5.0689 | -0.20137 | 125 | 92 | |
| 4.94164 | 5.0689 | -0.127262 | 125 | 93 | |
| 4.02356 | 5.0689 | -1.04534 | 125 | 94 | |
| 4.65396 | 5.0689 | -0.414944 | 125 | 95 | |
| 3.7495 | 5.0689 | -1.3194 | 125 | 96 | |
| 3.74715 | 5.0689 | -1.32176 | 125 | 97 | |

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|---|---|---|---|---|---|---|
| 3.21888 | | 5.0689 | -1.85003 | 125 | 98 | |
| 4.10923 | | 5.0689 | -0.959671 | | 125 | 99 |
| ND<0 | 5.0689 | -5.0689 | 125 | 100 | | |
| 3.55535 | | 5.0689 | -1.51356 | 125 | 101 | |
| 3.66356 | | 5.0689 | -1.40534 | 125 | 102 | |
| 3.7612 | 5.0689 | -1.3077 | 125 | 103 | | |
| 4.06044 | | 5.0689 | -1.00846 | 125 | 104 | |
| | | | | | | |
| 5.79909 | | 4.93447 | 0.864619 | | 126 | 104 |
| 3.55535 | | 4.93447 | -1.37913 | 126 | 105 | |
| 4.86753 | | 4.93447 | -0.0669395 | | 126 | 106 |
| 4.94164 | | 4.93447 | 0.00716849 | | 127 | 106 |
| 4.02356 | | 4.93447 | -0.91091 | 127 | 107 | |
| 4.65396 | | 4.93447 | -0.280514 | | 127 | 108 |
| 3.7495 | 4.93447 | | -1.18497 | 127 | 109 | |
| 3.74715 | | 4.93447 | -1.18733 | 127 | 110 | |
| 3.21888 | | 4.93447 | -1.7156 | 127 | 111 | |
| 4.10923 | | 4.93447 | -0.825241 | | 127 | 112 |
| ND<0 | 4.93447 | | -4.93447 | 127 | 113 | |
| 3.55535 | | 4.93447 | -1.37913 | 127 | 114 | |
| 3.66356 | | 4.93447 | -1.27091 | 127 | 115 | |
| 3.7612 | 4.93447 | | -1.17327 | 127 | 116 | |
| 4.06044 | | 4.93447 | -0.874031 | | 127 | 117 |
| | | | | | | |
| 3.55535 | | 5.79909 | -2.24374 | 127 | 118 | |
| 4.86753 | | 5.79909 | -0.931558 | | 127 | 119 |
| 4.94164 | | 5.79909 | -0.85745 | 127 | 120 | |
| 4.02356 | | 5.79909 | -1.77553 | 127 | 121 | |
| 4.65396 | | 5.79909 | -1.14513 | 127 | 122 | |
| 3.7495 | 5.79909 | | -2.04959 | 127 | 123 | |
| 3.74715 | | 5.79909 | -2.05194 | 127 | 124 | |
| 3.21888 | | 5.79909 | -2.58022 | 127 | 125 | |
| 4.10923 | | 5.79909 | -1.68986 | 127 | 126 | |
| ND<0 | 5.79909 | | -5.79909 | 127 | 127 | |
| 3.55535 | | 5.79909 | -2.24374 | 127 | 128 | |
| 3.66356 | | 5.79909 | -2.13553 | 127 | 129 | |
| 3.7612 | 5.79909 | | -2.03789 | 127 | 130 | |
| 4.06044 | | 5.79909 | -1.73865 | 127 | 131 | |
| | | | | | | |
| 4.86753 | | 3.55535 | 1.31219 | 128 | 131 | |
| 4.94164 | | 3.55535 | 1.38629 | 129 | 131 | |
| 4.02356 | | 3.55535 | 0.468216 | | 130 | 131 |
| 4.65396 | | 3.55535 | 1.09861 | 131 | 131 | |
| 3.7495 | 3.55535 | | 0.194156 | | 132 | 131 |
| 3.74715 | | 3.55535 | 0.1918 | 133 | 131 | |
| 3.21888 | | 3.55535 | -0.336472 | | 133 | 132 |
| 4.10923 | | 3.55535 | 0.553885 | | 134 | 132 |
| ND<0 | 3.55535 | | -3.55535 | 134 | 133 | |
| 3.55535 | | 3.55535 | 0 | 134 | 133 | |
| 3.66356 | | 3.55535 | 0.108214 | | 135 | 133 |
| 3.7612 | 3.55535 | | 0.205852 | | 136 | 133 |
| 4.06044 | | 3.55535 | 0.505095 | | 137 | 133 |
| | | | | | | |
| 4.94164 | | 4.86753 | 0.074108 | | 138 | 133 |
| 4.02356 | | 4.86753 | -0.84397 | 138 | 134 | |
| 4.65396 | | 4.86753 | -0.213574 | | 138 | 135 |
| 3.7495 | 4.86753 | | -1.11803 | 138 | 136 | |
| 3.74715 | | 4.86753 | -1.12039 | 138 | 137 | |
| 3.21888 | | 4.86753 | -1.64866 | 138 | 138 | |
| 4.10923 | | 4.86753 | -0.758301 | | 138 | 139 |
| ND<0 | 4.86753 | | -4.86753 | 138 | 140 | |
| 3.55535 | | 4.86753 | -1.31219 | 138 | 141 | |

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|---|---|---|---|---|---|
| 3.66356 | 4.86753 | -1.20397 | 138 | 142 | |
| 3.7612 | 4.86753 | -1.10633 | 138 | 143 | |
| 4.06044 | 4.86753 | -0.807091 | 138 | 144 | |
| | | | | | |
| 4.02356 | 4.94164 | -0.918078 | 138 | 145 | |
| 4.65396 | 4.94164 | -0.287682 | 138 | 146 | |
| 3.7495 | 4.94164 | -1.19214 | 138 | 147 | |
| 3.74715 | 4.94164 | -1.19449 | 138 | 148 | |
| 3.21888 | 4.94164 | -1.72277 | 138 | 149 | |
| 4.10923 | 4.94164 | -0.832409 | 138 | 150 | |
| ND<0 | 4.94164 | -4.94164 | 138 | 151 | |
| 3.55535 | 4.94164 | -1.38629 | 138 | 152 | |
| 3.66356 | 4.94164 | -1.27808 | 138 | 153 | |
| 3.7612 | 4.94164 | -1.18044 | 138 | 154 | |
| 4.06044 | 4.94164 | -0.881199 | 138 | 155 | |
| | | | | | |
| 4.65396 | 4.02356 | 0.630396 | 139 | 155 | |
| 3.7495 | 4.02356 | -0.27406 | 139 | 156 | |
| 3.74715 | 4.02356 | -0.276416 | 139 | 157 | |
| 3.21888 | 4.02356 | -0.804689 | 139 | 158 | |
| 4.10923 | 4.02356 | 0.0856688 | 140 | 158 | |
| ND<0 | 4.02356 | -4.02356 | 140 | 159 | |
| 3.55535 | 4.02356 | -0.468216 | 140 | 160 | |
| 3.66356 | 4.02356 | -0.360003 | 140 | 161 | |
| 3.7612 | 4.02356 | -0.262364 | 140 | 162 | |
| 4.06044 | 4.02356 | 0.0368786 | 141 | 162 | |
| | | | | | |
| 3.7495 | 4.65396 | -0.904456 | 141 | 163 | |
| 3.74715 | 4.65396 | -0.906812 | 141 | 164 | |
| 3.21888 | 4.65396 | -1.43508 | 141 | 165 | |
| 4.10923 | 4.65396 | -0.544727 | 141 | 166 | |
| ND<0 | 4.65396 | -4.65396 | 141 | 167 | |
| 3.55535 | 4.65396 | -1.09861 | 141 | 168 | |
| 3.66356 | 4.65396 | -0.990399 | 141 | 169 | |
| 3.7612 | 4.65396 | -0.89276 | 141 | 170 | |
| 4.06044 | 4.65396 | -0.593517 | 141 | 171 | |
| | | | | | |
| 3.74715 | 3.7495 | -0.00235571 | 141 | 172 | |
| 3.21888 | 3.7495 | -0.530628 | 141 | 173 | |
| 4.10923 | 3.7495 | 0.359729 | 142 | 173 | |
| ND<0 | 3.7495 | -3.7495 | 142 | 174 | |
| 3.55535 | 3.7495 | -0.194156 | 142 | 175 | |
| 3.66356 | 3.7495 | -0.0859424 | 142 | 176 | |
| 3.7612 | 3.7495 | 0.011696 | 143 | 176 | |
| 4.06044 | 3.7495 | 0.310939 | 144 | 176 | |
| | | | | | |
| 3.21888 | 3.74715 | -0.528273 | 144 | 177 | |
| 4.10923 | 3.74715 | 0.362085 | 145 | 177 | |
| ND<0 | 3.74715 | -3.74715 | 145 | 178 | |
| 3.55535 | 3.74715 | -0.1918 | 145 | 179 | |
| 3.66356 | 3.74715 | -0.0835867 | 145 | 180 | |
| 3.7612 | 3.74715 | 0.0140518 | 146 | 180 | |
| 4.06044 | 3.74715 | 0.313295 | 147 | 180 | |
| | | | | | |
| 4.10923 | 3.21888 | 0.890357 | 148 | 180 | |
| ND<0 | 3.21888 | -3.21888 | 148 | 181 | |
| 3.55535 | 3.21888 | 0.336472 | 149 | 181 | |
| 3.66356 | 3.21888 | 0.444686 | 150 | 181 | |
| 3.7612 | 3.21888 | 0.542324 | 151 | 181 | |
| 4.06044 | 3.21888 | 0.841567 | 152 | 181 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | 4.10923 | -4.10923 | 152 | 182 | | |
| 3.55535 | 4.10923 | -0.553885 | 152 | 183 | | |
| 3.66356 | 4.10923 | -0.445672 | 152 | 184 | | |
| 3.7612 | 4.10923 | -0.348033 | 152 | 185 | | |
| 4.06044 | 4.10923 | -0.0487902 | 152 | 186 | | |
| | | | | | | |
| 3.55535 | ND<0 | 3.55535 | 153 | 186 | | |
| 3.66356 | ND<0 | 3.66356 | 154 | 186 | | |
| 3.7612 | ND<0 | 3.7612 | 155 | 186 | | |
| 4.06044 | ND<0 | 4.06044 | 156 | 186 | | |
| | | | | | | |
| 3.66356 | 3.55535 | 0.108214 | 157 | 186 | | |
| 3.7612 | 3.55535 | 0.205852 | 158 | 186 | | |
| 4.06044 | 3.55535 | 0.505095 | 159 | 186 | | |
| | | | | | | |
| 3.7612 | 3.66356 | 0.0976385 | 160 | 186 | | |
| 4.06044 | 3.66356 | 0.396881 | 161 | 186 | | |
| | | | | | | |
| 4.06044 | 3.7612 | 0.299243 | 162 | 186 | | |

S Statistic = 162 - 186 = -24

| Tied Group | Value | Members |
|---|---|---|
| 1 | 0 | 2 |
| 2 | 4.86753 | 2 |
| 3 | 3.55535 | 2 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |
| 11/19/1996 | 1 |
| 12/19/1996 | 1 |
| 3/24/1997 | 1 |
| 9/24/1997 | 1 |
| 4/7/1998 | 1 |
| 9/23/1998 | 1 |
| 3/16/1999 | 1 |
| 9/23/1999 | 1 |
| 3/15/2000 | 1 |
| 9/24/2003 | 1 |
| 3/11/2004 | 1 |
| 10/12/2004 | 1 |
| 4/1/2005 | 1 |
| 10/25/2005 | 1 |
| 4/29/2006 | 1 |
| 11/18/2006 | 1 |
| 5/23/2007 | 1 |
| 11/28/2007 | 1 |
| 6/5/2008 | 1 |
| 11/20/2008 | 1 |
| 6/11/2009 | 1 |
| 6/30/2010 | 1 |
| 11/12/2010 | 1 |

There are 0 time periods with multiple data

A = 54
B = 0

C = 0
D = 0
E = 6
F = 0
a = 41418
b = 157950
c = 1404
Group Variance = 2298
Z-Score = -0.479792
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-0.479792| <= 1.97737 indicating no evidence of a trend

# Mann-Kendall Trend Analysis

## Parameter: cis-1,2-Dichloroethene

## Location: MW-12AR

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | | Positives | Negatives | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 0 | 0 | | |
| 2.63906 | | ND<0 | 2.63906 | 1 | 0 | |
| 2.30259 | | ND<0 | 2.30259 | 2 | 0 | |
| 2.30259 | | ND<0 | 2.30259 | 3 | 0 | |
| 2.24071 | | ND<0 | 2.24071 | 4 | 0 | |
| ND<0 | ND<0 | 0 | 4 | 0 | | |
| 1.06471 | | ND<0 | 1.06471 | 5 | 0 | |
| 1.16002 | | ND<0 | 1.16002 | 6 | 0 | |
| 0.0861777 J | | ND<0 | 0.0861777 | 7 | 0 | |
| ND<0 | ND<0 | 0 | 7 | 0 | | |
| 0.198851 J | | ND<0 | 0.198851 | 8 | 0 | |
| ND<0 | ND<0 | 0 | 8 | 0 | | |
| -0.18633 J | | ND<0 | -0.186338 | 1 | | |
| ND<-2.59027 | | ND<0 | -2.590278 | 2 | | |
| ND<-2.59027 | | ND<0 | -2.590278 | 3 | | |
| -0.0833816 J | | ND<0 | -0.0833816 | 8 | 4 | |
| | | | | | | |
| 2.63906 | | ND<0 | 2.63906 | 9 | 4 | |
| 2.30259 | | ND<0 | 2.30259 | 10 | 4 | |
| 2.30259 | | ND<0 | 2.30259 | 11 | 4 | |
| 2.24071 | | ND<0 | 2.24071 | 12 | 4 | |
| ND<0 | ND<0 | 0 | 12 | 4 | | |
| 1.06471 | | ND<0 | 1.06471 | 13 | 4 | |
| 1.16002 | | ND<0 | 1.16002 | 14 | 4 | |
| 0.0861777 J | | ND<0 | 0.0861777 | 15 | 4 | |
| ND<0 | ND<0 | 0 | 15 | 4 | | |
| 0.198851 J | | ND<0 | 0.198851 | 16 | 4 | |
| ND<0 | ND<0 | 0 | 16 | 4 | | |
| -0.18633 J | | ND<0 | -0.186331 | 6 | 5 | |
| ND<-2.59027 | | ND<0 | -2.590271 | 6 | 6 | |
| ND<-2.59027 | | ND<0 | -2.590271 | 6 | 7 | |
| -0.0833816 J | | ND<0 | -0.0833816 | 16 | 8 | |
| | | | | | | |
| 2.30259 | | 2.63906 | -0.336472 | 16 | 9 | |
| 2.30259 | | 2.63906 | -0.336472 | 16 | 10 | |
| 2.24071 | | 2.63906 | -0.398348 | 16 | 11 | |
| ND<0 | 2.63906 | -2.63906 | 16 | 12 | | |
| 1.06471 | | 2.63906 | -1.574351 | 6 | 13 | |
| 1.16002 | | 2.63906 | -1.479041 | 6 | 14 | |
| 0.0861777 J | | 2.63906 | -2.552881 | 6 | 15 | |
| ND<0 | 2.63906 | -2.63906 | 16 | 16 | | |
| 0.198851 J | | 2.63906 | -2.440211 | 6 | 17 | |
| ND<0 | 2.63906 | -2.63906 | 16 | 18 | | |
| -0.18633 J | | 2.63906 | -2.825391 | 6 | 19 | |
| ND<-2.59027 | | 2.63906 | -5.229321 | 6 | 20 | |
| ND<-2.59027 | | 2.63906 | -5.229321 | 6 | 21 | |
| -0.0833816 J | | 2.63906 | -2.722441 | 6 | 22 | |

2.30259 2.30259 0 16 22
2.24071 2.30259 -0.0618754 16 23
ND<0 2.30259 -2.3025916 24
1.06471 2.30259 -1.2378716 25
1.16002 2.30259 -1.1425616 26
0.0861777 J 2.30259 -2.2164116 27
ND<0 2.30259 -2.3025916 28
0.198851 J 2.30259 -2.1037316 29
ND<0 2.30259 -2.3025916 30
-0.18633 J 2.30259 -2.4889116 31
ND<-2.59027 2.30259 -4.8928516 32
ND<-2.59027 2.30259 -4.8928516 33
-0.0833816 J 2.30259 -2.3859716 34

2.24071 2.30259 -0.0618754 16 35
ND<0 2.30259 -2.3025916 36
1.06471 2.30259 -1.2378716 37
1.16002 2.30259 -1.1425616 38
0.0861777 J 2.30259 -2.2164116 39
ND<0 2.30259 -2.3025916 40
0.198851 J 2.30259 -2.1037316 41
ND<0 2.30259 -2.3025916 42
-0.18633 J 2.30259 -2.4889116 43
ND<-2.59027 2.30259 -4.8928516 44
ND<-2.59027 2.30259 -4.8928516 45
-0.0833816 J 2.30259 -2.3859716 46

ND<0 2.24071 -2.2407116 47
1.06471 2.24071 -1.176 16 48
1.16002 2.24071 -1.0806916 49
0.0861777 J 2.24071 -2.1545316 50
ND<0 2.24071 -2.2407116 51
0.198851 J 2.24071 -2.0418616 52
ND<0 2.24071 -2.2407116 53
-0.18633 J 2.24071 -2.4270416 54
ND<-2.59027 2.24071 -4.8309816 55
ND<-2.59027 2.24071 -4.8309816 56
-0.0833816 J 2.24071 -2.3240916 57

1.06471 ND<0 1.06471 17 57
1.16002 ND<0 1.16002 18 57
0.0861777 J ND<0 0.0861777 19 57
ND<0 ND<0 0 19 57
0.198851 J ND<0 0.198851 20 57
ND<0 ND<0 0 20 57
-0.18633 J ND<0 -0.1863320 58
ND<-2.59027 ND<0 -2.5902720 59
ND<-2.59027 ND<0 -2.5902720 60
-0.0833816 J ND<0 -0.0833816 20 61

1.16002 1.06471 0.0953102 21 61
0.0861777 J 1.06471 -0.978533 21 62
ND<0 1.06471 -1.0647121 63
0.198851 J 1.06471 -0.8658621 64
ND<0 1.06471 -1.0647121 65
-0.18633 J 1.06471 -1.2510421 66
ND<-2.59027 1.06471 -3.6549821 67
ND<-2.59027 1.06471 -3.6549821 68
-0.0833816 J 1.06471 -1.1480921 69

0.0861777 J 1.16002 -1.0738421 70
ND<0 1.16002 -1.1600221 71

| | | | | | |
|---|---|---|---|---|---|
| 0.198851 J | 1.16002 | -0.9611721 | 72 | | |
| ND<0 | 1.16002 | -1.1600221 | 73 | | |
| -0.18633 J | 1.16002 | -1.3463521 | 74 | | |
| ND<-2.59027 | 1.16002 | -3.7502921 | 75 | | |
| ND<-2.59027 | 1.16002 | -3.7502921 | 76 | | |
| -0.0833816 J | 1.16002 | -1.2434 21 | 77 | | |
| | | | | | |
| ND<0 | 0.0861777 J | -0.0861777 | 21 | 78 | |
| 0.198851 J | 0.0861777 J | 0.112673 | 22 | 78 | |
| ND<0 | 0.0861777 J | -0.0861777 | 22 | 79 | |
| -0.18633 J | 0.0861777 J | -0.272507 | 22 | 80 | |
| ND<-2.59027 | 0.0861777 J | -2.6764422 | 81 | | |
| ND<-2.59027 | 0.0861777 J | -2.6764422 | 82 | | |
| -0.0833816 J | 0.0861777 J | -0.169559 | 22 | 83 | |
| | | | | | |
| 0.198851 J | ND<0 | 0.198851 | 23 | 83 | |
| ND<0 | ND<0 | 0 | 23 | 83 | |
| -0.18633 J | ND<0 | -0.1863323 | 84 | | |
| ND<-2.59027 | ND<0 | -2.5902723 | 85 | | |
| ND<-2.59027 | ND<0 | -2.5902723 | 86 | | |
| -0.0833816 J | ND<0 | -0.0833816 | 23 | 87 | |
| | | | | | |
| ND<0 | 0.198851 J | -0.198851 | 23 | 88 | |
| -0.18633 J | 0.198851 J | -0.3851823 | 89 | | |
| ND<-2.59027 | 0.198851 J | -2.7891223 | 90 | | |
| ND<-2.59027 | 0.198851 J | -2.7891223 | 91 | | |
| -0.0833816 J | 0.198851 J | -0.282232 | 23 | 92 | |
| | | | | | |
| -0.18633 J | ND<0 | -0.1863323 | 93 | | |
| ND<-2.59027 | ND<0 | -2.5902723 | 94 | | |
| ND<-2.59027 | ND<0 | -2.5902723 | 95 | | |
| -0.0833816 J | ND<0 | -0.0833816 | 23 | 96 | |
| | | | | | |
| ND<-2.59027 | -0.18633 J | -2.4039423 | 97 | | |
| ND<-2.59027 | -0.18633 J | -2.4039423 | 98 | | |
| -0.0833816 J | -0.18633 J | 0.102948 | 24 | 98 | |
| | | | | | |
| ND<-2.59027 | ND<-2.59027 | 0 | 24 | 98 | |
| -0.0833816 J | ND<-2.59027 | 2.50689 | 25 | 98 | |
| | | | | | |
| -0.0833816 J | ND<-2.59027 | 2.50689 | 26 | 98 | |

S Statistic = 26 - 98 = -72

| Tied Group | Value | Members |
|---|---|---|
| 1 | 0 | 5 |
| 2 | 2.30259 | 2 |
| 3 | -2.59027 | 2 |

| Time Period | Observations |
|---|---|
| 3/16/1999 | 1 |
| 9/23/1999 | 1 |
| 3/15/2000 | 1 |
| 9/24/2003 | 1 |
| 3/11/2004 | 1 |
| 10/12/2004 | 1 |
| 4/1/2005 | 1 |
| 10/25/2005 | 1 |
| 4/29/2006 | 1 |

| | | |
|---|---|---|
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 1 |

There are 0 time periods with multiple data

A = 336
B = 0
C = 60
D = 0
E = 24
F = 0
a = 10608
b = 36720
c = 544
Group Variance = 570.667
Z-Score = -2.97213
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-2.97213| > 1.97737 indicating a trend

# Mann-Kendall Trend Analysis

## Parameter: cis-1,2-Dichloroethene

## Location: MW-11R

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | Positives | Negatives |
|---|---|---|---|---|
| 2.3979 | 1.6864 | 0.711496 | 1 | 0 |
| 2.30259 | 1.6864 | 0.616186 | 2 | 0 |
| 2.70805 | 1.6864 | 1.02165 | 3 | 0 |
| ND<0 | 1.6864 | -1.6864 | 3 | 1 |
| 2.77259 | 1.6864 | 1.08619 | 4 | 1 |
| 2.48491 | 1.6864 | 0.798508 | 5 | 1 |
| ND<0 | 1.6864 | -1.6864 | 5 | 2 |
| 1.64866 | 1.6864 | -0.0377403 | 5 | 3 |
| 2.56495 | 1.6864 | 0.87855 | 6 | 3 |
| 2.40695 | 1.6864 | 0.720546 | 7 | 3 |
| ND<0 | 1.6864 | -1.6864 | 7 | 4 |
| 2.48491 | 1.6864 | 0.798508 | 8 | 4 |
| 2.30259 | 1.6864 | 0.616186 | 9 | 4 |
| 2.3979 | 1.6864 | 0.711496 | 10 | 4 |
| ND<0 | 1.6864 | -1.6864 | 10 | 5 |
| 2.24813 | 1.6864 | 0.56173 | 11 | 5 |
| 1.51732 | 1.6864 | -0.169076 | 11 | 6 |
| 1.05779 | 1.6864 | -0.628609 | 11 | 7 |
| 0.536493 J | 1.6864 | -1.1499 | 11 | 8 |
| 1.74047 | 1.6864 | 0.0540672 | 12 | 8 |
| 1.17557 | 1.6864 | -0.510826 | 12 | 9 |
| ND<0 | 1.6864 | -1.6864 | 12 | 10 |
| ND<0 | 1.6864 | -1.6864 | 12 | 11 |
| 0.262364 | 1.6864 | -1.4240 | 12 | 12 |
| 0.470004 | 1.6864 | -1.2164 | 12 | 13 |
| ND<-2.59027 U | 1.6864 | -4.2766 | 12 | 14 |
| | | | | |
| 2.30259 | 2.3979 | -0.0953102 | 12 | 15 |
| 2.70805 | 2.3979 | 0.310155 | 13 | 15 |
| ND<0 | 2.3979 | -2.3979 | 13 | 16 |
| 2.77259 | 2.3979 | 0.374693 | 14 | 16 |
| 2.48491 | 2.3979 | 0.0870114 | 15 | 16 |
| ND<0 | 2.3979 | -2.3979 | 15 | 17 |
| 1.64866 | 2.3979 | -0.749237 | 15 | 18 |
| 2.56495 | 2.3979 | 0.167054 | 16 | 18 |
| 2.40695 | 2.3979 | 0.00904984 | 17 | 18 |
| ND<0 | 2.3979 | -2.3979 | 17 | 19 |
| 2.48491 | 2.3979 | 0.0870114 | 18 | 19 |
| 2.30259 | 2.3979 | -0.0953102 | 18 | 20 |
| 2.3979 | 2.3979 | 0 | 18 | 20 |
| ND<0 | 2.3979 | -2.3979 | 18 | 21 |
| 2.24813 | 2.3979 | -0.149766 | 18 | 22 |
| 1.51732 | 2.3979 | -0.880573 | 18 | 23 |
| 1.05779 | 2.3979 | -1.3401 | 18 | 24 |
| 0.536493 J | 2.3979 | -1.8614 | 18 | 25 |
| 1.74047 | 2.3979 | -0.657429 | 18 | 26 |
| 1.17557 | 2.3979 | -1.2223 | 18 | 27 |
| ND<0 | 2.3979 | -2.3979 | 18 | 28 |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | 2.3979 | -2.3979 | 18 | 29 | | |
| 0.262364 | | 2.3979 | -2.135531 | 8 | 30 | |
| 0.470004 | | 2.3979 | -1.927891 | 8 | 31 | |
| ND<-2.59027 U | | 2.3979 | -4.988161 | 8 | 32 | |
| | | | | | | |
| 2.70805 | | 2.30259 | 0.405465 | | 19 | 32 |
| ND<0 | 2.30259 | | -2.302591 | 9 | 33 | |
| 2.77259 | | 2.30259 | 0.470004 | | 20 | 33 |
| 2.48491 | | 2.30259 | 0.182322 | | 21 | 33 |
| ND<0 | 2.30259 | | -2.302592 | 1 | 34 | |
| 1.64866 | | 2.30259 | -0.653926 | | 21 | 35 |
| 2.56495 | | 2.30259 | 0.262364 | | 22 | 35 |
| 2.40695 | | 2.30259 | 0.10436 | 23 | 35 | |
| ND<0 | 2.30259 | | -2.302592 | 3 | 36 | |
| 2.48491 | | 2.30259 | 0.182322 | | 24 | 36 |
| 2.30259 | | 2.30259 | 0 | 24 | 36 | |
| 2.3979 | 2.30259 | | 0.0953102 | | 25 | 36 |
| ND<0 | 2.30259 | | -2.302592 | 5 | 37 | |
| 2.24813 | | 2.30259 | -0.0544562 | | 25 | 38 |
| 1.51732 | | 2.30259 | -0.785262 | | 25 | 39 |
| 1.05779 | | 2.30259 | -1.244792 | 5 | 40 | |
| 0.536493 J | | 2.30259 | -1.766092 | 5 | 41 | |
| 1.74047 | | 2.30259 | -0.562119 | | 25 | 42 |
| 1.17557 | | 2.30259 | -1.127012 | 5 | 43 | |
| ND<0 | 2.30259 | | -2.302592 | 5 | 44 | |
| ND<0 | 2.30259 | | -2.302592 | 5 | 45 | |
| 0.262364 | | 2.30259 | -2.040222 | 5 | 46 | |
| 0.470004 | | 2.30259 | -1.832582 | 5 | 47 | |
| ND<-2.59027 U | | 2.30259 | -4.892852 | 5 | 48 | |
| | | | | | | |
| ND<0 | 2.70805 | | -2.708052 | 5 | 49 | |
| 2.77259 | | 2.70805 | 0.0645385 | | 26 | 49 |
| 2.48491 | | 2.70805 | -0.223144 | | 26 | 50 |
| ND<0 | 2.70805 | | -2.708052 | 6 | 51 | |
| 1.64866 | | 2.70805 | -1.059392 | 6 | 52 | |
| 2.56495 | | 2.70805 | -0.143101 | | 26 | 53 |
| 2.40695 | | 2.70805 | -0.301105 | | 26 | 54 |
| ND<0 | 2.70805 | | -2.708052 | 6 | 55 | |
| 2.48491 | | 2.70805 | -0.223144 | | 26 | 56 |
| 2.30259 | | 2.70805 | -0.405465 | | 26 | 57 |
| 2.3979 | 2.70805 | | -0.310155 | | 26 | 58 |
| ND<0 | 2.70805 | | -2.708052 | 6 | 59 | |
| 2.24813 | | 2.70805 | -0.459921 | | 26 | 60 |
| 1.51732 | | 2.70805 | -1.190732 | 6 | 61 | |
| 1.05779 | | 2.70805 | -1.650262 | 6 | 62 | |
| 0.536493 J | | 2.70805 | -2.171562 | 6 | 63 | |
| 1.74047 | | 2.70805 | -0.967584 | | 26 | 64 |
| 1.17557 | | 2.70805 | -1.532482 | 6 | 65 | |
| ND<0 | 2.70805 | | -2.708052 | 6 | 66 | |
| ND<0 | 2.70805 | | -2.708052 | 6 | 67 | |
| 0.262364 | | 2.70805 | -2.445692 | 6 | 68 | |
| 0.470004 | | 2.70805 | -2.238052 | 6 | 69 | |
| ND<-2.59027 U | | 2.70805 | -5.298322 | 6 | 70 | |
| | | | | | | |
| 2.77259 | | ND<0 | 2.77259 | 27 | 70 | |
| 2.48491 | | ND<0 | 2.48491 | 28 | 70 | |
| ND<0 | ND<0 | 0 | 28 | 70 | | |
| 1.64866 | | ND<0 | 1.64866 | 29 | 70 | |
| 2.56495 | | ND<0 | 2.56495 | 30 | 70 | |
| 2.40695 | | ND<0 | 2.40695 | 31 | 70 | |
| ND<0 | ND<0 | 0 | 31 | 70 | | |
| 2.48491 | | ND<0 | 2.48491 | 32 | 70 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2.30259 | | ND<0 | 2.30259 | 33 | 70 | | |
| 2.3979 | ND<0 | 2.3979 | 34 | 70 | | | |
| ND<0 | ND<0 | 0 | 34 | 70 | | | |
| 2.24813 | | ND<0 | 2.24813 | 35 | 70 | | |
| 1.51732 | | ND<0 | 1.51732 | 36 | 70 | | |
| 1.05779 | | ND<0 | 1.05779 | 37 | 70 | | |
| 0.536493 J | | ND<0 | 0.536493 | 38 | 70 | | |
| 1.74047 | | ND<0 | 1.74047 | 39 | 70 | | |
| 1.17557 | | ND<0 | 1.17557 | 40 | 70 | | |
| ND<0 | ND<0 | 0 | 40 | 70 | | | |
| ND<0 | ND<0 | 0 | 40 | 70 | | | |
| 0.262364 | | ND<0 | 0.262364 | 41 | 70 | | |
| 0.470004 | | ND<0 | 0.470004 | 42 | 70 | | |
| ND<-2.59027 U | | ND<0 | -2.59027 | 42 | 71 | | |
| | | | | | | | |
| 2.48491 | | 2.77259 | -0.287682 | 42 | 72 | | |
| ND<0 | 2.77259 | -2.77259 | 42 | 73 | | | |
| 1.64866 | | 2.77259 | -1.12393 | 42 | 74 | | |
| 2.56495 | | 2.77259 | -0.207639 | 42 | 75 | | |
| 2.40695 | | 2.77259 | -0.365644 | 42 | 76 | | |
| ND<0 | 2.77259 | -2.77259 | 42 | 77 | | | |
| 2.48491 | | 2.77259 | -0.287682 | 42 | 78 | | |
| 2.30259 | | 2.77259 | -0.470004 | 42 | 79 | | |
| 2.3979 | 2.77259 | -0.374693 | 42 | 80 | | | |
| ND<0 | 2.77259 | -2.77259 | 42 | 81 | | | |
| 2.24813 | | 2.77259 | -0.524464 | 42 | 82 | | |
| 1.51732 | | 2.77259 | -1.255274 | 42 | 83 | | |
| 1.05779 | | 2.77259 | -1.7148 | 42 | 84 | | |
| 0.536493 J | | 2.77259 | -2.2361 | 42 | 85 | | |
| 1.74047 | | 2.77259 | -1.032124 | 42 | 86 | | |
| 1.17557 | | 2.77259 | -1.597024 | 42 | 87 | | |
| ND<0 | 2.77259 | -2.77259 | 42 | 88 | | | |
| ND<0 | 2.77259 | -2.77259 | 42 | 89 | | | |
| 0.262364 | | 2.77259 | -2.510224 | 42 | 90 | | |
| 0.470004 | | 2.77259 | -2.302594 | 42 | 91 | | |
| ND<-2.59027 U | | 2.77259 | -5.362864 | 42 | 92 | | |
| | | | | | | | |
| ND<0 | 2.48491 | -2.48491 | 42 | 93 | | | |
| 1.64866 | | 2.48491 | -0.836248 | 42 | 94 | | |
| 2.56495 | | 2.48491 | 0.0800427 | 43 | 94 | | |
| 2.40695 | | 2.48491 | -0.077961 | 5 43 | 95 | | |
| ND<0 | 2.48491 | -2.48491 | 43 | 96 | | | |
| 2.48491 | | 2.48491 | 0 | 43 | 96 | | |
| 2.30259 | | 2.48491 | -0.182322 | 43 | 97 | | |
| 2.3979 | 2.48491 | -0.087011 | 4 43 | 98 | | | |
| ND<0 | 2.48491 | -2.48491 | 43 | 99 | | | |
| 2.24813 | | 2.48491 | -0.236778 | 43 | 100 | | |
| 1.51732 | | 2.48491 | -0.967584 | 43 | 101 | | |
| 1.05779 | | 2.48491 | -1.427124 | 3 | 102 | | |
| 0.536493 J | | 2.48491 | -1.948414 | 3 | 103 | | |
| 1.74047 | | 2.48491 | -0.744443 | | 104 | | |
| 1.17557 | | 2.48491 | -1.309334 | 3 | 105 | | |
| ND<0 | 2.48491 | -2.48491 | 43 | 106 | | | |
| ND<0 | 2.48491 | -2.48491 | 43 | 107 | | | |
| 0.262364 | | 2.48491 | -2.222544 | 3 | 108 | | |
| 0.470004 | | 2.48491 | -2.0149 | 43 | 109 | | |
| ND<-2.59027 U | | 2.48491 | -5.075174 | 3 | 110 | | |
| | | | | | | | |
| 1.64866 | | ND<0 | 1.64866 | 44 | 110 | | |
| 2.56495 | | ND<0 | 2.56495 | 45 | 110 | | |
| 2.40695 | | ND<0 | 2.40695 | 46 | 110 | | |
| ND<0 | ND<0 | 0 | 46 | 110 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2.48491 | | ND<0 | 2.48491 | 47 | 110 | |
| 2.30259 | | ND<0 | 2.30259 | 48 | 110 | |
| 2.3979 | ND<0 | 2.3979 | 49 | 110 | | |
| ND<0 | ND<0 | 0 | 49 | 110 | | |
| 2.24813 | | ND<0 | 2.24813 | 50 | 110 | |
| 1.51732 | | ND<0 | 1.51732 | 51 | 110 | |
| 1.05779 | | ND<0 | 1.05779 | 52 | 110 | |
| 0.536493 J | | ND<0 | 0.536493 | 53 | 110 | |
| 1.74047 | | ND<0 | 1.74047 | 54 | 110 | |
| 1.17557 | | ND<0 | 1.17557 | 55 | 110 | |
| ND<0 | ND<0 | 0 | 55 | 110 | | |
| ND<0 | ND<0 | 0 | 55 | 110 | | |
| 0.262364 | | ND<0 | 0.262364 | 56 | 110 | |
| 0.470004 | | ND<0 | 0.470004 | 57 | 110 | |
| ND<-2.59027 U | | ND<0 | -2.5902757 | 111 | | |

| | | | | | |
|---|---|---|---|---|---|
| 2.56495 | 1.64866 | 0.916291 | 58 | 111 | |
| 2.40695 | 1.64866 | 0.758286 | 59 | 111 | |
| ND<0 | 1.64866 | -1.6486659 | 112 | | |
| 2.48491 | 1.64866 | 0.836248 | 60 | 112 | |
| 2.30259 | 1.64866 | 0.653926 | 61 | 112 | |
| 2.3979 | 1.64866 | 0.749237 | 62 | 112 | |
| ND<0 | 1.64866 | -1.6486662 | 113 | | |
| 2.24813 | 1.64866 | 0.59947 | 63 | 113 | |
| 1.51732 | 1.64866 | -0.131336 | 63 | 114 | |
| 1.05779 | 1.64866 | -0.590868 | 63 | 115 | |
| 0.536493 J | 1.64866 | -1.1121763 | 116 | | |
| 1.74047 | 1.64866 | 0.0918075 | 64 | 116 | |
| 1.17557 | 1.64866 | -0.473085 | 64 | 117 | |
| ND<0 | 1.64866 | -1.6486664 | 118 | | |
| ND<0 | 1.64866 | -1.6486664 | 119 | | |
| 0.262364 | 1.64866 | -1.3862964 | 120 | | |
| 0.470004 | 1.64866 | -1.1786564 | 121 | | |
| ND<-2.59027 U | 1.64866 | -4.2389364 | 122 | | |

| | | | | | |
|---|---|---|---|---|---|
| 2.40695 | 2.56495 | -0.158004 | 64 | 123 | |
| ND<0 | 2.56495 | -2.5649564 | 124 | | |
| 2.48491 | 2.56495 | -0.0800427 | 64 | 125 | |
| 2.30259 | 2.56495 | -0.262364 | 64 | 126 | |
| 2.3979 | 2.56495 | -0.167054 | 64 | 127 | |
| ND<0 | 2.56495 | -2.5649564 | 128 | | |
| 2.24813 | 2.56495 | -0.3168264 | 129 | | |
| 1.51732 | 2.56495 | -1.0476364 | 130 | | |
| 1.05779 | 2.56495 | -1.5071664 | 131 | | |
| 0.536493 J | 2.56495 | -2.0284664 | 132 | | |
| 1.74047 | 2.56495 | -0.824483 | 64 | 133 | |
| 1.17557 | 2.56495 | -1.3893864 | 134 | | |
| ND<0 | 2.56495 | -2.5649564 | 135 | | |
| ND<0 | 2.56495 | -2.5649564 | 136 | | |
| 0.262364 | 2.56495 | -2.3025964 | 137 | | |
| 0.470004 | 2.56495 | -2.0949564 | 138 | | |
| ND<-2.59027 U | 2.56495 | -5.1552264 | 139 | | |

| | | | | | |
|---|---|---|---|---|---|
| ND<0 | 2.40695 | -2.4069564 | 140 | | |
| 2.48491 | 2.40695 | 0.0779615 | 65 | 140 | |
| 2.30259 | 2.40695 | -0.1043665 | 141 | | |
| 2.3979 | 2.40695 | -0.00904984 | 65 | 142 | |
| ND<0 | 2.40695 | -2.4069565 | 143 | | |
| 2.24813 | 2.40695 | -0.158816 | 65 | 144 | |
| 1.51732 | 2.40695 | -0.889622 | 65 | 145 | |
| 1.05779 | 2.40695 | -1.3491565 | 146 | | |
| 0.536493 J | 2.40695 | -1.8704565 | 147 | | |

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|---|---|---|---|---|---|---|
| 1.74047 | | 2.40695 | | -0.666479 | 65 | 148 |
| 1.17557 | | 2.40695 | | -1.2313765 | 149 | |
| ND<0 | 2.40695 | | -2.4069565 | 150 | | |
| ND<0 | 2.40695 | | -2.4069565 | 151 | | |
| 0.262364 | | 2.40695 | | -2.1445865 | 152 | |
| 0.470004 | | 2.40695 | | -1.9369465 | 153 | |
| ND<-2.59027 U | | 2.40695 | | -4.9972165 | 154 | |
| | | | | | | |
| 2.48491 | | ND<0 | 2.48491 66 | 154 | | |
| 2.30259 | | ND<0 | 2.30259 67 | 154 | | |
| 2.3979 | ND<0 | 2.3979 | 68 | 154 | | |
| ND<0 | ND<0 | 0 | 68 | 154 | | |
| 2.24813 | | ND<0 | 2.24813 69 | 154 | | |
| 1.51732 | | ND<0 | 1.51732 70 | 154 | | |
| 1.05779 | | ND<0 | 1.05779 71 | 154 | | |
| 0.536493 J | | ND<0 | 0.536493 | 72 | 154 | |
| 1.74047 | | ND<0 | 1.74047 73 | 154 | | |
| 1.17557 | | ND<0 | 1.17557 74 | 154 | | |
| ND<0 | ND<0 | 0 | 74 | 154 | | |
| ND<0 | ND<0 | 0 | 74 | 154 | | |
| 0.262364 | | ND<0 | 0.262364 | 75 | 154 | |
| 0.470004 | | ND<0 | 0.470004 | 76 | 154 | |
| ND<-2.59027 U | | ND<0 | -2.5902776 | 155 | | |
| | | | | | | |
| 2.30259 | | 2.48491 | | -0.182322 | 76 | 156 |
| 2.3979 | 2.48491 | | -0.0870114 | 76 | 157 | |
| ND<0 | 2.48491 | | -2.4849176 | 158 | | |
| 2.24813 | | 2.48491 | | -0.236778 | 76 | 159 |
| 1.51732 | | 2.48491 | | -0.967584 | 76 | 160 |
| 1.05779 | | 2.48491 | | -1.4271276 | 161 | |
| 0.536493 J | | 2.48491 | | -1.9484176 | 162 | |
| 1.74047 | | 2.48491 | | -0.7444476 | 163 | |
| 1.17557 | | 2.48491 | | -1.3093376 | 164 | |
| ND<0 | 2.48491 | | -2.4849176 | 165 | | |
| ND<0 | 2.48491 | | -2.4849176 | 166 | | |
| 0.262364 | | 2.48491 | | -2.2225476 | 167 | |
| 0.470004 | | 2.48491 | | -2.0149 76 | 168 | |
| ND<-2.59027 U | | 2.48491 | | -5.0751776 | 169 | |
| | | | | | | |
| 2.3979 | 2.30259 | | 0.0953102 | 77 | 169 | |
| ND<0 | 2.30259 | | -2.3025977 | 170 | | |
| 2.24813 | | 2.30259 | | -0.0544562 | 77 | 171 |
| 1.51732 | | 2.30259 | | -0.785262 | 77 | 172 |
| 1.05779 | | 2.30259 | | -1.2447977 | 173 | |
| 0.536493 J | | 2.30259 | | -1.7660977 | 174 | |
| 1.74047 | | 2.30259 | | -0.562119 | 77 | 175 |
| 1.17557 | | 2.30259 | | -1.1270177 | 176 | |
| ND<0 | 2.30259 | | -2.3025977 | 177 | | |
| ND<0 | 2.30259 | | -2.3025977 | 178 | | |
| 0.262364 | | 2.30259 | | -2.0402277 | 179 | |
| 0.470004 | | 2.30259 | | -1.8325877 | 180 | |
| ND<-2.59027 U | | 2.30259 | | -4.8928577 | 181 | |
| | | | | | | |
| ND<0 | 2.3979 | -2.3979 | 77 | 182 | | |
| 2.24813 | | 2.3979 | -0.149766 | 77 | 183 | |
| 1.51732 | | 2.3979 | -0.880573 | 77 | 184 | |
| 1.05779 | | 2.3979 | -1.3401 77 | 185 | | |
| 0.536493 J | | 2.3979 | -1.8614 77 | 186 | | |
| 1.74047 | | 2.3979 | -0.657429 | 77 | 187 | |
| 1.17557 | | 2.3979 | -1.2223277 | 188 | | |
| ND<0 | 2.3979 | -2.3979 | 77 | 189 | | |
| ND<0 | 2.3979 | -2.3979 | 77 | 190 | | |

| | | | | |
|---|---|---|---|---|
| 0.262364 | 2.3979 | -2.1355377 | 191 | |
| 0.470004 | 2.3979 | -1.9278977 | 192 | |
| ND<-2.59027 U | 2.3979 | -4.9881677 | 193 | |

| | | | | | |
|---|---|---|---|---|---|
| 2.24813 | ND<0 | 2.24813 | 78 | 193 | |
| 1.51732 | ND<0 | 1.51732 | 79 | 193 | |
| 1.05779 | ND<0 | 1.05779 | 80 | 193 | |
| 0.536493 J | ND<0 | 0.536493 | 81 | 193 | |
| 1.74047 | ND<0 | 1.74047 | 82 | 193 | |
| 1.17557 | ND<0 | 1.17557 | 83 | 193 | |
| ND<0 | ND<0 | 0 | 83 | 193 | |
| ND<0 | ND<0 | 0 | 83 | 193 | |
| 0.262364 | ND<0 | 0.262364 | 84 | 193 | |
| 0.470004 | ND<0 | 0.470004 | 85 | 193 | |
| ND<-2.59027 U | ND<0 | -2.5902785 | 194 | | |

| | | | | | |
|---|---|---|---|---|---|
| 1.51732 | 2.24813 | -0.730806 | 85 | 195 | |
| 1.05779 | 2.24813 | -1.1903485 | 196 | | |
| 0.536493 J | 2.24813 | -1.7116485 | 197 | | |
| 1.74047 | 2.24813 | -0.507663 | 85 | 198 | |
| 1.17557 | 2.24813 | -1.0725685 | 199 | | |
| ND<0 | 2.24813 | -2.2481385 | 200 | | |
| ND<0 | 2.24813 | -2.2481385 | 201 | | |
| 0.262364 | 2.24813 | -1.9857685 | 202 | | |
| 0.470004 | 2.24813 | -1.7781385 | 203 | | |
| ND<-2.59027 U | 2.24813 | -4.8384 85 | 204 | | |

| | | | | | |
|---|---|---|---|---|---|
| 1.05779 | 1.51732 | -0.459532 | 85 | 205 | |
| 0.536493 J | 1.51732 | -0.980829 | 85 | 206 | |
| 1.74047 | 1.51732 | 0.223144 | 86 | 206 | |
| 1.17557 | 1.51732 | -0.341749 | 86 | 207 | |
| ND<0 | 1.51732 | -1.5173286 | 208 | | |
| ND<0 | 1.51732 | -1.5173286 | 209 | | |
| 0.262364 | 1.51732 | -1.2549686 | 210 | | |
| 0.470004 | 1.51732 | -1.0473286 | 211 | | |
| ND<-2.59027 U | 1.51732 | -4.1075986 | 212 | | |

| | | | | | |
|---|---|---|---|---|---|
| 0.536493 J | 1.05779 | -0.521297 | 86 | 213 | |
| 1.74047 | 1.05779 | 0.682676 | 87 | 213 | |
| 1.17557 | 1.05779 | 0.117783 | 88 | 213 | |
| ND<0 | 1.05779 | -1.0577988 | 214 | | |
| ND<0 | 1.05779 | -1.0577988 | 215 | | |
| 0.262364 | 1.05779 | -0.795426 | 88 | 216 | |
| 0.470004 | 1.05779 | -0.587787 | 88 | 217 | |
| ND<-2.59027 U | 1.05779 | -3.6480688 | 218 | | |

| | | | | | |
|---|---|---|---|---|---|
| 1.74047 | 0.536493 J | 1.20397 89 | 218 | | |
| 1.17557 | 0.536493 J | 0.63908 90 | 218 | | |
| ND<0 | 0.536493 J | -0.536493 | 90 | 219 | |
| ND<0 | 0.536493 J | -0.536493 | 90 | 220 | |
| 0.262364 | 0.536493 J | -0.274129 | 90 | 221 | |
| 0.470004 | 0.536493 J | -0.0664897 | 90 | 222 | |
| ND<-2.59027 U | 0.536493 J | -3.1267690 | 223 | | |

| | | | | | |
|---|---|---|---|---|---|
| 1.17557 | 1.74047 | -0.564893 | 90 | 224 | |
| ND<0 | 1.74047 | -1.7404790 | 225 | | |
| ND<0 | 1.74047 | -1.7404790 | 226 | | |
| 0.262364 | 1.74047 | -1.4781 90 | 227 | | |
| 0.470004 | 1.74047 | -1.2704690 | 228 | | |
| ND<-2.59027 U | 1.74047 | -4.3307390 | 229 | | |

| | | | | |
|---|---|---|---|---|
| ND<0 | 1.17557 | -1.1755790 | 230 | |
| ND<0 | 1.17557 | -1.1755790 | 231 | |
| 0.262364 | 1.17557 | -0.913209 | 90 | 232 |
| 0.470004 | 1.17557 | -0.7055790 | 233 | |
| ND<-2.59027 U | 1.17557 | -3.7658490 | 234 | |

| | | | | |
|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 90 | 234 |
| 0.262364 | ND<0 | 0.262364 | 91 | 234 |
| 0.470004 | ND<0 | 0.470004 | 92 | 234 |
| ND<-2.59027 U | ND<0 | -2.5902792 | 235 | |
| | | | | |
| 0.262364 | ND<0 | 0.262364 | 93 | 235 |
| 0.470004 | ND<0 | 0.470004 | 94 | 235 |
| ND<-2.59027 U | ND<0 | -2.5902794 | 236 | |
| | | | | |
| 0.470004 | 0.262364 | 0.207639 | 95 | 236 |
| ND<-2.59027 U | 0.262364 | -2.8526395 | 237 | |
| | | | | |
| ND<-2.59027 U | 0.470004 | -3.0602795 | 238 | |

S Statistic = 95 - 238 = -143

| Tied Group | Value | Members |
|---|---|---|
| 1 | 2.3979 | 2 |
| 2 | 2.30259 | 2 |
| 3 | 0 | 6 |
| 4 | 2.48491 | 2 |

| Time Period | | Observations |
|---|---|---|
| 7/20/1995 | | 1 |
| 8/24/1995 | | 1 |
| 9/28/1995 | | 1 |
| 10/26/1995 | | 1 |
| 11/19/1996 | | 1 |
| 12/19/1996 | | 1 |
| 3/24/1997 | | 1 |
| 9/24/1997 | | 1 |
| 4/7/1998 | 1 | |
| 9/23/1998 | | 1 |
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 1 |

There are 0 time periods with multiple data

A = 564

B = 0
C = 120
D = 0
E = 36
F = 0
a = 41418
b = 157950
c = 1404
Group Variance = 2269.67
Z-Score = -2.98062
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-2.98062| > 1.97737 indicating a trend

# Mann-Kendall Trend Analysis

## Parameter: cis-1,2-Dichloroethene

## Location: MW-10

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | Positives | Negatives |
|---|---|---|---|---|
| 2.70805 | 1.38629 | 1.32176 | 1 | 0 |
| 3.46574 | 1.38629 | 2.07944 | 2 | 0 |
| 3.2581 | 1.38629 | 1.8718 | 3 | 0 |
| ND<0 | 1.38629 | -1.38629 | 3 | 1 |
| 3.68888 | 1.38629 | 2.30259 | 4 | 1 |
| 3.2581 | 1.38629 | 1.8718 | 5 | 1 |
| 3.63759 | 1.38629 | 2.25129 | 6 | 1 |
| 2.02815 | 1.38629 | 0.641854 | 7 | 1 |
| 3.46574 | 1.38629 | 2.07944 | 8 | 1 |
| 3.7542 | 1.38629 | 2.3679 | 9 | 1 |
| 3.21487 | 1.38629 | 1.82857 | 10 | 1 |
| 2.3979 | 1.38629 | 1.0116 | 11 | 1 |
| 2.3979 | 1.38629 | 1.0116 | 12 | 1 |
| 1.96009 | 1.38629 | 0.5738 | 13 | 1 |
| ND<0 | 1.38629 | -1.38629 | 13 | 2 |
| ND<0 | 1.38629 | -1.38629 | 13 | 3 |
| 2.59525 | 1.38629 | 1.20896 | 14 | 3 |
| 2.76001 | 1.38629 | 1.37372 | 15 | 3 |
| 2.19277 | 1.38629 | 0.806476 | 16 | 3 |
| 2.20827 | 1.38629 | 0.82198 | 17 | 3 |
| 2.61007 | 1.38629 | 1.22378 | 18 | 3 |
| 2.60269 | 1.38629 | 1.2164 | 19 | 3 |
| ND<0 | 1.38629 | -1.38629 | 19 | 4 |
| 2.19722 | 1.38629 | 0.81093 | 20 | 4 |
| 1.75786 | 1.38629 | 0.371564 | 21 | 4 |
| 2.15176 | 1.38629 | 0.765468 | 22 | 4 |
| | | | | |
| 3.46574 | 2.70805 | 0.757686 | 23 | 4 |
| 3.2581 | 2.70805 | 0.550046 | 24 | 4 |
| ND<0 | 2.70805 | -2.70805 | 24 | 5 |
| 3.68888 | 2.70805 | 0.980829 | 25 | 5 |
| 3.2581 | 2.70805 | 0.550046 | 26 | 5 |
| 3.63759 | 2.70805 | 0.929536 | 27 | 5 |
| 2.02815 | 2.70805 | -0.679902 | 27 | 6 |
| 3.46574 | 2.70805 | 0.757686 | 28 | 6 |
| 3.7542 | 2.70805 | 1.04615 | 29 | 6 |
| 3.21487 | 2.70805 | 0.506818 | 30 | 6 |
| 2.3979 | 2.70805 | -0.310155 | 30 | 7 |
| 2.3979 | 2.70805 | -0.310155 | 30 | 8 |
| 1.96009 | 2.70805 | -0.747955 | 30 | 9 |
| ND<0 | 2.70805 | -2.70805 | 30 | 10 |
| ND<0 | 2.70805 | -2.70805 | 30 | 11 |
| 2.59525 | 2.70805 | -0.112795 | 30 | 12 |
| 2.76001 | 2.70805 | 0.0519597 | 31 | 12 |
| 2.19277 | 2.70805 | -0.515283 | 31 | 13 |
| 2.20827 | 2.70805 | -0.499776 | 31 | 14 |
| 2.61007 | 2.70805 | -0.0979804 | 31 | 15 |
| 2.60269 | 2.70805 | -0.105361 | 31 | 16 |

| | | | | | |
|---|---|---|---|---|---|
| ND<0 | 2.70805 | -2.708053 | 1 | 17 | |
| 2.19722 | 2.70805 | -0.510826 | 31 | 18 | |
| 1.75786 | 2.70805 | -0.950192 | 31 | 19 | |
| 2.15176 | 2.70805 | -0.556288 | 31 | 20 | |
| | | | | | |
| 3.2581 | 3.46574 | -0.207639 | 31 | 21 | |
| ND<0 | 3.46574 | -3.465743 | 1 | 22 | |
| 3.68888 | 3.46574 | 0.223144 | 32 | 22 | |
| 3.2581 | 3.46574 | -0.207639 | 32 | 23 | |
| 3.63759 | 3.46574 | 0.17185 | 33 | 23 | |
| 2.02815 | 3.46574 | -1.437593 | 3 | 24 | |
| 3.46574 | 3.46574 | 0 | 33 | 24 | |
| 3.7542 | 3.46574 | 0.288463 | 34 | 24 | |
| 3.21487 | 3.46574 | -0.250868 | 34 | 25 | |
| 2.3979 | 3.46574 | -1.067843 | 4 | 26 | |
| 2.3979 | 3.46574 | -1.067843 | 4 | 27 | |
| 1.96009 | 3.46574 | -1.505643 | 4 | 28 | |
| ND<0 | 3.46574 | -3.465743 | 4 | 29 | |
| ND<0 | 3.46574 | -3.465743 | 4 | 30 | |
| 2.59525 | 3.46574 | -0.870481 | 34 | 31 | |
| 2.76001 | 3.46574 | -0.705726 | 34 | 32 | |
| 2.19277 | 3.46574 | -1.272973 | 4 | 33 | |
| 2.20827 | 3.46574 | -1.257463 | 4 | 34 | |
| 2.61007 | 3.46574 | -0.855666 | 34 | 35 | |
| 2.60269 | 3.46574 | -0.863046 | 34 | 36 | |
| ND<0 | 3.46574 | -3.465743 | 4 | 37 | |
| 2.19722 | 3.46574 | -1.268513 | 4 | 38 | |
| 1.75786 | 3.46574 | -1.707883 | 4 | 39 | |
| 2.15176 | 3.46574 | -1.313973 | 4 | 40 | |
| | | | | | |
| ND<0 | 3.2581 | -3.2581 | 34 | 41 | |
| 3.68888 | 3.2581 | 0.430783 | 35 | 41 | |
| 3.2581 | 3.2581 | 0 | 35 | 41 | |
| 3.63759 | 3.2581 | 0.37949 | 36 | 41 | |
| 2.02815 | 3.2581 | -1.229953 | 6 | 42 | |
| 3.46574 | 3.2581 | 0.207639 | 37 | 42 | |
| 3.7542 | 3.2581 | 0.496102 | 38 | 42 | |
| 3.21487 | 3.2581 | -0.043228 | 7 | 38 | 43 |
| 2.3979 | 3.2581 | -0.860201 | 38 | 44 | |
| 2.3979 | 3.2581 | -0.860201 | 38 | 45 | |
| 1.96009 | 3.2581 | -1.298 | 38 | 46 | |
| ND<0 | 3.2581 | -3.2581 | 38 | 47 | |
| ND<0 | 3.2581 | -3.2581 | 38 | 48 | |
| 2.59525 | 3.2581 | -0.662842 | 38 | 49 | |
| 2.76001 | 3.2581 | -0.498087 | 38 | 50 | |
| 2.19277 | 3.2581 | -1.065333 | 8 | 51 | |
| 2.20827 | 3.2581 | -1.049823 | 8 | 52 | |
| 2.61007 | 3.2581 | -0.648027 | 38 | 53 | |
| 2.60269 | 3.2581 | -0.655407 | 38 | 54 | |
| ND<0 | 3.2581 | -3.2581 | 38 | 55 | |
| 2.19722 | 3.2581 | -1.060873 | 8 | 56 | |
| 1.75786 | 3.2581 | -1.500243 | 8 | 57 | |
| 2.15176 | 3.2581 | -1.106333 | 8 | 58 | |
| | | | | | |
| 3.68888 | ND<0 | 3.68888 | 39 | 58 | |
| 3.2581 | ND<0 | 3.2581 | 40 | 58 | |
| 3.63759 | ND<0 | 3.63759 | 41 | 58 | |
| 2.02815 | ND<0 | 2.02815 | 42 | 58 | |
| 3.46574 | ND<0 | 3.46574 | 43 | 58 | |
| 3.7542 | ND<0 | 3.7542 | 44 | 58 | |
| 3.21487 | ND<0 | 3.21487 | 45 | 58 | |
| 2.3979 | ND<0 | 2.3979 | 46 | 58 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2.3979 | ND<0 | 2.3979 | 47 | 58 | | | |
| 1.96009 | | ND<0 | 1.96009 | 48 | 58 | | |
| ND<0 | ND<0 | 0 | 48 | 58 | | | |
| ND<0 | ND<0 | 0 | 48 | 58 | | | |
| 2.59525 | | ND<0 | 2.59525 | 49 | 58 | | |
| 2.76001 | | ND<0 | 2.76001 | 50 | 58 | | |
| 2.19277 | | ND<0 | 2.19277 | 51 | 58 | | |
| 2.20827 | | ND<0 | 2.20827 | 52 | 58 | | |
| 2.61007 | | ND<0 | 2.61007 | 53 | 58 | | |
| 2.60269 | | ND<0 | 2.60269 | 54 | 58 | | |
| ND<0 | ND<0 | 0 | 54 | 58 | | | |
| 2.19722 | | ND<0 | 2.19722 | 55 | 58 | | |
| 1.75786 | | ND<0 | 1.75786 | 56 | 58 | | |
| 2.15176 | | ND<0 | 2.15176 | 57 | 58 | | |
| | | | | | | | |
| 3.2581 | 3.68888 | | -0.430783 | 57 | 59 | | |
| 3.63759 | | 3.68888 | | -0.0512933 | 57 | 60 | |
| 2.02815 | | 3.68888 | | -1.6607357 | 61 | | |
| 3.46574 | | 3.68888 | | -0.223144 | 57 | 62 | |
| 3.7542 | 3.68888 | | 0.0653195 | 58 | 62 | | |
| 3.21487 | | 3.68888 | | -0.474012 | 58 | 63 | |
| 2.3979 | 3.68888 | | -1.2909858 | 64 | | | |
| 2.3979 | 3.68888 | | -1.2909858 | 65 | | | |
| 1.96009 | | 3.68888 | | -1.7287858 | 66 | | |
| ND<0 | 3.68888 | | -3.6888858 | 67 | | | |
| ND<0 | 3.68888 | | -3.6888858 | 68 | | | |
| 2.59525 | | 3.68888 | | -1.0936258 | 69 | | |
| 2.76001 | | 3.68888 | | -0.9288758 | 70 | | |
| 2.19277 | | 3.68888 | | -1.4961158 | 71 | | |
| 2.20827 | | 3.68888 | | -1.4806158 | 72 | | |
| 2.61007 | | 3.68888 | | -1.0788158 | 73 | | |
| 2.60269 | | 3.68888 | | -1.0861958 | 74 | | |
| ND<0 | 3.68888 | | -3.6888858 | 75 | | | |
| 2.19722 | | 3.68888 | | -1.4916558 | 76 | | |
| 1.75786 | | 3.68888 | | -1.9310258 | 77 | | |
| 2.15176 | | 3.68888 | | -1.5371258 | 78 | | |
| | | | | | | | |
| 3.63759 | | 3.2581 | 0.37949 | 59 | 78 | | |
| 2.02815 | | 3.2581 | -1.2299559 | 79 | | | |
| 3.46574 | | 3.2581 | 0.207639 | 60 | 79 | | |
| 3.7542 | 3.2581 | 0.496102 | 61 | 79 | | | |
| 3.21487 | | 3.2581 | -0.0432287 | 61 | 80 | | |
| 2.3979 | 3.2581 | -0.860201 | 61 | 81 | | | |
| 2.3979 | 3.2581 | -0.860201 | 61 | 82 | | | |
| 1.96009 | | 3.2581 | -1.298 | 61 | 83 | | |
| ND<0 | 3.2581 | -3.2581 | 61 | 84 | | | |
| ND<0 | 3.2581 | -3.2581 | 61 | 85 | | | |
| 2.59525 | | 3.2581 | -0.662842 | 61 | 86 | | |
| 2.76001 | | 3.2581 | -0.498087 | 61 | 87 | | |
| 2.19277 | | 3.2581 | -1.0653361 | 88 | | | |
| 2.20827 | | 3.2581 | -1.0498261 | 89 | | | |
| 2.61007 | | 3.2581 | -0.648027 | 61 | 90 | | |
| 2.60269 | | 3.2581 | -0.655407 | 61 | 91 | | |
| ND<0 | 3.2581 | -3.2581 | 61 | 92 | | | |
| 2.19722 | | 3.2581 | -1.0608761 | 93 | | | |
| 1.75786 | | 3.2581 | -1.5002461 | 94 | | | |
| 2.15176 | | 3.2581 | -1.1063361 | 95 | | | |
| | | | | | | | |
| 2.02815 | | 3.63759 | | -1.6094461 | 96 | | |
| 3.46574 | | 3.63759 | | -0.1718561 | 97 | | |
| 3.7542 | 3.63759 | | 0.116613 | 62 | 97 | | |
| 3.21487 | | 3.63759 | | -0.422718 | 62 | 98 | |

| | | | | | |
|---|---|---|---|---|---|
| 2.3979 | 3.63759 | -1.2396962 | 99 | | |
| 2.3979 | 3.63759 | -1.2396962 | 100 | | |
| 1.96009 | 3.63759 | -1.6774962 | 101 | | |
| ND<0 | 3.63759 | -3.6375962 | 102 | | |
| ND<0 | 3.63759 | -3.6375962 | 103 | | |
| 2.59525 | 3.63759 | -1.0423362 | 104 | | |
| 2.76001 | 3.63759 | -0.877576 | 62 | 105 | |
| 2.19277 | 3.63759 | -1.4448262 | 106 | | |
| 2.20827 | 3.63759 | -1.4293162 | 107 | | |
| 2.61007 | 3.63759 | -1.0275262 | 108 | | |
| 2.60269 | 3.63759 | -1.0349 62 | 109 | | |
| ND<0 | 3.63759 | -3.6375962 | 110 | | |
| 2.19722 | 3.63759 | -1.4403662 | 111 | | |
| 1.75786 | 3.63759 | -1.8797362 | 112 | | |
| 2.15176 | 3.63759 | -1.4858262 | 113 | | |
| | | | | | |
| 3.46574 | 2.02815 | 1.43759 63 | 113 | | |
| 3.7542 | 2.02815 | 1.72605 64 | 113 | | |
| 3.21487 | 2.02815 | 1.18672 65 | 113 | | |
| 2.3979 | 2.02815 | 0.369747 | 66 | 113 | |
| 2.3979 | 2.02815 | 0.369747 | 67 | 113 | |
| 1.96009 | 2.02815 | -0.0680535 | 67 | 114 | |
| ND<0 | 2.02815 | -2.0281567 | 115 | | |
| ND<0 | 2.02815 | -2.0281567 | 116 | | |
| 2.59525 | 2.02815 | 0.567106 | 68 | 116 | |
| 2.76001 | 2.02815 | 0.731862 | 69 | 116 | |
| 2.19277 | 2.02815 | 0.164622 | 70 | 116 | |
| 2.20827 | 2.02815 | 0.180126 | 71 | 116 | |
| 2.61007 | 2.02815 | 0.581922 | 72 | 116 | |
| 2.60269 | 2.02815 | 0.574541 | 73 | 116 | |
| ND<0 | 2.02815 | -2.0281573 | 117 | | |
| 2.19722 | 2.02815 | 0.169076 | 74 | 117 | |
| 1.75786 | 2.02815 | -0.2702974 | 118 | | |
| 2.15176 | 2.02815 | 0.123614 | 75 | 118 | |
| | | | | | |
| 3.7542 | 3.46574 | 0.288463 | 76 | 118 | |
| 3.21487 | 3.46574 | -0.250868 | 76 | 119 | |
| 2.3979 | 3.46574 | -1.0678476 | 120 | | |
| 2.3979 | 3.46574 | -1.0678476 | 121 | | |
| 1.96009 | 3.46574 | -1.5056476 | 122 | | |
| ND<0 | 3.46574 | -3.4657476 | 123 | | |
| ND<0 | 3.46574 | -3.4657476 | 124 | | |
| 2.59525 | 3.46574 | -0.870481 | 76 | 125 | |
| 2.76001 | 3.46574 | -0.705726 | 76 | 126 | |
| 2.19277 | 3.46574 | -1.2729776 | 127 | | |
| 2.20827 | 3.46574 | -1.2574676 | 128 | | |
| 2.61007 | 3.46574 | -0.855666 | 76 | 129 | |
| 2.60269 | 3.46574 | -0.863046 | 76 | 130 | |
| ND<0 | 3.46574 | -3.4657476 | 131 | | |
| 2.19722 | 3.46574 | -1.2685176 | 132 | | |
| 1.75786 | 3.46574 | -1.7078876 | 133 | | |
| 2.15176 | 3.46574 | -1.3139776 | 134 | | |
| | | | | | |
| 3.21487 | 3.7542 | -0.539331 | 76 | 135 | |
| 2.3979 | 3.7542 | -1.3563 76 | 136 | | |
| 2.3979 | 3.7542 | -1.3563 76 | 137 | | |
| 1.96009 | 3.7542 | -1.7941 76 | 138 | | |
| ND<0 | 3.7542 | -3.7542 76 | 139 | | |
| ND<0 | 3.7542 | -3.7542 76 | 140 | | |
| 2.59525 | 3.7542 | -1.1589476 | 141 | | |
| 2.76001 | 3.7542 | -0.994189 | 76 | 142 | |
| 2.19277 | 3.7542 | -1.5614376 | 143 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2.20827 | | 3.7542 | -1.5459 | 276 | 144 | |
| 2.61007 | | 3.7542 | -1.1441 | 376 | 145 | |
| 2.60269 | | 3.7542 | -1.1515 | 176 | 146 | |
| ND<0 | 3.7542 | -3.7542 | 76 | 147 | | |
| 2.19722 | | 3.7542 | -1.5569 | 776 | 148 | |
| 1.75786 | | 3.7542 | -1.9963 | 476 | 149 | |
| 2.15176 | | 3.7542 | -1.6024 | 476 | 150 | |
| | | | | | | |
| 2.3979 | 3.21487 | | -0.816973 | 76 | 151 | |
| 2.3979 | 3.21487 | | -0.816973 | 76 | 152 | |
| 1.96009 | | 3.21487 | -1.2547 | 776 | 153 | |
| ND<0 | 3.21487 | | -3.2148 | 776 | 154 | |
| ND<0 | 3.21487 | | -3.2148 | 776 | 155 | |
| 2.59525 | | 3.21487 | -0.619613 | 76 | 156 | |
| 2.76001 | | 3.21487 | -0.454858 | 76 | 157 | |
| 2.19277 | | 3.21487 | -1.0221 | 76 | 158 | |
| 2.20827 | | 3.21487 | -1.0065 | 976 | 159 | |
| 2.61007 | | 3.21487 | -0.604798 | 76 | 160 | |
| 2.60269 | | 3.21487 | -0.612178 | 76 | 161 | |
| ND<0 | 3.21487 | | -3.2148 | 776 | 162 | |
| 2.19722 | | 3.21487 | -1.0176 | 476 | 163 | |
| 1.75786 | | 3.21487 | -1.4570 | 176 | 164 | |
| 2.15176 | | 3.21487 | -1.0631 | 176 | 165 | |
| | | | | | | |
| 2.3979 | 2.3979 | 0 | 76 | 165 | | |
| 1.96009 | | 2.3979 | -0.4378 | 76 | 166 | |
| ND<0 | 2.3979 | -2.3979 | 76 | 167 | | |
| ND<0 | 2.3979 | -2.3979 | 76 | 168 | | |
| 2.59525 | | 2.3979 | 0.197359 | 77 | 168 | |
| 2.76001 | | 2.3979 | 0.362115 | 78 | 168 | |
| 2.19277 | | 2.3979 | -0.205125 | 78 | 169 | |
| 2.20827 | | 2.3979 | -0.189621 | 78 | 170 | |
| 2.61007 | | 2.3979 | 0.212175 | 79 | 170 | |
| 2.60269 | | 2.3979 | 0.204794 | 80 | 170 | |
| ND<0 | 2.3979 | -2.3979 | 80 | 171 | | |
| 2.19722 | | 2.3979 | -0.200671 | 80 | 172 | |
| 1.75786 | | 2.3979 | -0.640037 | 80 | 173 | |
| 2.15176 | | 2.3979 | -0.246133 | 80 | 174 | |
| | | | | | | |
| 1.96009 | | 2.3979 | -0.4378 | 80 | 175 | |
| ND<0 | 2.3979 | -2.3979 | 80 | 176 | | |
| ND<0 | 2.3979 | -2.3979 | 80 | 177 | | |
| 2.59525 | | 2.3979 | 0.197359 | 81 | 177 | |
| 2.76001 | | 2.3979 | 0.362115 | 82 | 177 | |
| 2.19277 | | 2.3979 | -0.205125 | 82 | 178 | |
| 2.20827 | | 2.3979 | -0.189621 | 82 | 179 | |
| 2.61007 | | 2.3979 | 0.212175 | 83 | 179 | |
| 2.60269 | | 2.3979 | 0.204794 | 84 | 179 | |
| ND<0 | 2.3979 | -2.3979 | 84 | 180 | | |
| 2.19722 | | 2.3979 | -0.200671 | 84 | 181 | |
| 1.75786 | | 2.3979 | -0.640037 | 84 | 182 | |
| 2.15176 | | 2.3979 | -0.246133 | 84 | 183 | |
| | | | | | | |
| ND<0 | 1.96009 | | -1.9600 | 984 | 184 | |
| ND<0 | 1.96009 | | -1.9600 | 984 | 185 | |
| 2.59525 | | 1.96009 | 0.63516 | 85 | 185 | |
| 2.76001 | | 1.96009 | 0.799915 | 86 | 185 | |
| 2.19277 | | 1.96009 | 0.232675 | 87 | 185 | |
| 2.20827 | | 1.96009 | 0.24818 | 88 | 185 | |
| 2.61007 | | 1.96009 | 0.649975 | 89 | 185 | |
| 2.60269 | | 1.96009 | 0.642595 | 90 | 185 | |
| ND<0 | 1.96009 | | -1.9600 | 990 | 186 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2.19722 | | 1.96009 | | 0.23713 | 91 | 186 |
| 1.75786 | | 1.96009 | | -0.202237 | 91 | 187 |
| 2.15176 | | 1.96009 | | 0.191667 | 92 | 187 |
| | | | | | | |
| ND<0 | ND<0 | 0 | 92 | 187 | | |
| 2.59525 | | ND<0 | 2.59525 | 93 | 187 | |
| 2.76001 | | ND<0 | 2.76001 | 94 | 187 | |
| 2.19277 | | ND<0 | 2.19277 | 95 | 187 | |
| 2.20827 | | ND<0 | 2.20827 | 96 | 187 | |
| 2.61007 | | ND<0 | 2.61007 | 97 | 187 | |
| 2.60269 | | ND<0 | 2.60269 | 98 | 187 | |
| ND<0 | ND<0 | 0 | 98 | 187 | | |
| 2.19722 | | ND<0 | 2.19722 | 99 | 187 | |
| 1.75786 | | ND<0 | 1.75786 | 100 | 187 | |
| 2.15176 | | ND<0 | 2.15176 | 101 | 187 | |
| | | | | | | |
| 2.59525 | | ND<0 | 2.59525 | 102 | 187 | |
| 2.76001 | | ND<0 | 2.76001 | 103 | 187 | |
| 2.19277 | | ND<0 | 2.19277 | 104 | 187 | |
| 2.20827 | | ND<0 | 2.20827 | 105 | 187 | |
| 2.61007 | | ND<0 | 2.61007 | 106 | 187 | |
| 2.60269 | | ND<0 | 2.60269 | 107 | 187 | |
| ND<0 | ND<0 | 0 | 107 | 187 | | |
| 2.19722 | | ND<0 | 2.19722 | 108 | 187 | |
| 1.75786 | | ND<0 | 1.75786 | 109 | 187 | |
| 2.15176 | | ND<0 | 2.15176 | 110 | 187 | |
| | | | | | | |
| 2.76001 | | 2.59525 | | 0.164755 | 111 | 187 |
| 2.19277 | | 2.59525 | | -0.402484 | 111 | 188 |
| 2.20827 | | 2.59525 | | -0.38698 | 111 | 189 |
| 2.61007 | | 2.59525 | | 0.0148151 | 112 | 189 |
| 2.60269 | | 2.59525 | | 0.00743498 | 113 | 189 |
| ND<0 | 2.59525 | | -2.59525 | 113 | 190 | |
| 2.19722 | | 2.59525 | | -0.39803 | 113 | 191 |
| 1.75786 | | 2.59525 | | -0.837397 | 113 | 192 |
| 2.15176 | | 2.59525 | | -0.443493 | 113 | 193 |
| | | | | | | |
| 2.19277 | | 2.76001 | | -0.56724 | 113 | 194 |
| 2.20827 | | 2.76001 | | -0.551736 | 113 | 195 |
| 2.61007 | | 2.76001 | | -0.14994 | 113 | 196 |
| 2.60269 | | 2.76001 | | -0.15732 | 113 | 197 |
| ND<0 | 2.76001 | | -2.76001 | 113 | 198 | |
| 2.19722 | | 2.76001 | | -0.562785 | 113 | 199 |
| 1.75786 | | 2.76001 | | -1.00215 | 113 | 200 |
| 2.15176 | | 2.76001 | | -0.608248 | 113 | 201 |
| | | | | | | |
| 2.20827 | | 2.19277 | | 0.0155042 | 114 | 201 |
| 2.61007 | | 2.19277 | | 0.4173 | 115 | 201 |
| 2.60269 | | 2.19277 | | 0.409919 | 116 | 201 |
| ND<0 | 2.19277 | | -2.19277 | 116 | 202 | |
| 2.19722 | | 2.19277 | | 0.00445435 | 117 | 202 |
| 1.75786 | | 2.19277 | | -0.434912 | 117 | 203 |
| 2.15176 | | 2.19277 | | -0.041008 | 117 | 204 |
| | | | | | | |
| 2.61007 | | 2.20827 | | 0.401795 | 118 | 204 |
| 2.60269 | | 2.20827 | | 0.394415 | 119 | 204 |
| ND<0 | 2.20827 | | -2.20827 | 119 | 205 | |
| 2.19722 | | 2.20827 | | -0.0110498 | 119 | 206 |
| 1.75786 | | 2.20827 | | -0.450416 | 119 | 207 |
| 2.15176 | | 2.20827 | | -0.0565122 | 119 | 208 |

| | | | | | |
|---|---|---|---|---|---|
| 2.60269 | 2.61007 | -0.00738011 | 119 | 209 | |
| ND<0 | 2.61007 | -2.61007 | 119 | 210 | |
| 2.19722 | 2.61007 | -0.412845 | 119 | 211 | |
| 1.75786 | 2.61007 | -0.852212 | 119 | 212 | |
| 2.15176 | 2.61007 | -0.458308 | 119 | 213 | |
| ND<0 | 2.60269 | -2.60269 | 119 | 214 | |
| 2.19722 | 2.60269 | -0.405465 | 119 | 215 | |
| 1.75786 | 2.60269 | -0.844832 | 119 | 216 | |
| 2.15176 | 2.60269 | -0.450927 | 119 | 217 | |
| 2.19722 | ND<0 | 2.19722 | 120 | 217 | |
| 1.75786 | ND<0 | 1.75786 | 121 | 217 | |
| 2.15176 | ND<0 | 2.15176 | 122 | 217 | |
| 1.75786 | 2.19722 | -0.439367 | 122 | 218 | |
| 2.15176 | 2.19722 | -0.0454624 | 122 | 219 | |
| 2.15176 | 1.75786 | 0.393904 | 123 | 219 | |

S Statistic = 123 - 219 = -96

| Tied Group | Value | Members |
|---|---|---|
| 1 | 3.46574 | 2 |
| 2 | 3.2581 | 2 |
| 3 | 0 | 4 |
| 4 | 2.3979 | 2 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |
| 11/19/1996 | 1 |
| 12/19/1996 | 1 |
| 3/24/1997 | 1 |
| 9/24/1997 | 1 |
| 4/7/1998 | 1 |
| 9/23/1998 | 1 |
| 3/16/1999 | 1 |
| 9/23/1999 | 1 |
| 3/15/2000 | 1 |
| 9/24/2003 | 1 |
| 3/11/2004 | 1 |
| 10/12/2004 | 1 |
| 4/1/2005 | 1 |
| 10/25/2005 | 1 |
| 4/29/2006 | 1 |
| 11/18/2006 | 1 |
| 5/23/2007 | 1 |
| 11/28/2007 | 1 |
| 6/5/2008 | 1 |
| 11/20/2008 | 1 |
| 6/11/2009 | 1 |
| 6/30/2010 | 1 |
| 11/12/2010 | 1 |

There are 0 time periods with multiple data

A = 210

B = 0
C = 24
D = 0
E = 18
F = 0
a = 41418
b = 157950
c = 1404
Group Variance = 2289.33
Z-Score = -1.9855
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.9855| > 1.97737 indicating a trend

# Concentrations (ppb)

## Parameter: Cobalt

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 167
Percent Non-Detects: 75.5656%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 14 (77.7778%) | 3/16/1999 | ND<20 | ND<20 |
| | | | 9/23/1999 | ND<20 | ND<20 |
| | | | 3/15/2000 | ND<20 | ND<20 |
| | | | 9/24/2003 | ND<20 | ND<20 |
| | | | 3/11/2004 | ND<20 | ND<20 |
| | | | 10/12/2004 | ND<20 | ND<20 |
| | | | 4/1/2005 | ND<20 | ND<20 |
| | | | 10/25/2005 | ND<20 | ND<20 |
| | | | 4/29/2006 | ND<20 | ND<20 |
| | | | 11/18/2006 | ND<20 | ND<20 |
| | | | 5/23/2007 | ND<20 | ND<20 |
| | | | 11/28/2007 | ND<20 | ND<20 |
| | | | 6/5/2008 | ND<20 | ND<20 |
| | | | 11/20/2008 | ND<20 | ND<20 |
| | | | 6/11/2009 | 0.11 J | 0.11 J |
| | | | 11/16/2009 | 0.083 J | 0.083 J |
| | | | 6/30/2010 | 0.1 J H | 0.1 J H |
| | | | 11/12/2010 | 0.11 J | 0.11 J |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-12BR | 18 | 12 (66.6667%) | 3/16/1999 | ND<20 | ND<20 |
| | | | 9/23/1999 | ND<20 | ND<20 |
| | | | 3/15/2000 | ND<20 | ND<20 |
| | | | 9/24/2003 | ND<20 | ND<20 |
| | | | 3/11/2004 | ND<20 | ND<20 |
| | | | 10/12/2004 | ND<20 | ND<20 |
| | | | 4/1/2005 | ND<20 | ND<20 |
| | | | 10/25/2005 | ND<20 | ND<20 |
| | | | 4/29/2006 | ND<20 | ND<20 |
| | | | 11/18/2006 | 1.46 J | 1.46 J |
| | | | 5/23/2007 | ND<20 | ND<20 |
| | | | 11/28/2007 | ND<20 | ND<20 |
| | | | 6/5/2008 | 1.48 J | 1.48 J |
| | | | 11/20/2008 | ND<20 | ND<20 |
| | | | 6/11/2009 | 1.1 | 1.1 |
| | | | 11/16/2009 | 1 | 1 |
| | | | 6/30/2010 | 1.1 | 1.1 |
| | | | 11/12/2010 | 1.1 | 1.1 |
| MW-6 | 28 | 24 (85.7143%) | 7/20/1995 | ND<20 | ND<20 |
| | | | 8/24/1995 | ND<20 | ND<20 |
| | | | 9/28/1995 | ND<20 | ND<20 |
| | | | 10/26/1995 | ND<20 | ND<20 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/19/1996 | ND<20 | ND<20 | |
| | | | 12/19/1996 | ND<20 | ND<20 | |
| | | | 3/24/1997 | ND<20 | ND<20 | |
| | | | 9/24/1997 | ND<20 | ND<20 | |
| | | | 4/7/1998 | ND<20 | ND<20 | |
| | | | 9/23/1998 | ND<20 | ND<20 | |
| | | | 3/16/1999 | ND<20 | ND<20 | |
| | | | 9/23/1999 | ND<20 | ND<20 | |
| | | | 3/15/2000 | ND<20 | ND<20 | |
| | | | 9/24/2003 | ND<20 | ND<20 | |
| | | | 3/11/2004 | ND<20 | ND<20 | |
| | | | 10/12/2004 | ND<20 | ND<20 | |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | ND<20 | ND<20 | |
| | | | 4/29/2006 | ND<20 | ND<20 | |
| | | | 11/18/2006 | ND<20 | ND<20 | |
| | | | 5/23/2007 | ND<20 | ND<20 | |
| | | | 11/28/2007 | ND<20 | ND<20 | |
| | | | 6/5/2008 | ND<20 | ND<20 | |
| | | | 11/20/2008 | ND<20 | ND<20 | |
| | | | 6/11/2009 | 0.13 J | 0.13 J | |
| | | | 11/16/2009 | 0.13 J | 0.13 J | |
| | | | 6/30/2010 | 0.13 J H | 0.13 J H | |
| | | | 11/12/2010 | 0.21 | 0.21 | |
| MW-9 | 28 | 21 (75%) | 7/20/1995 | ND<20 | ND<20 | ND<20 |
| | | | 8/24/1995 | ND<20 | ND<20 | |
| | | | 9/28/1995 | ND<20 | ND<20 | |
| | | | 10/26/1995 | ND<20 | ND<20 | |
| | | | 11/19/1996 | ND<20 | ND<20 | |
| | | | 12/19/1996 | ND<20 | ND<20 | |
| | | | 3/24/1997 | ND<20 | ND<20 | |
| | | | 9/24/1997 | ND<20 | ND<20 | |
| | | | 4/7/1998 | ND<20 | ND<20 | |
| | | | 9/23/1998 | ND<20 | ND<20 | |
| | | | 3/16/1999 | ND<20 | ND<20 | |
| | | | 9/23/1999 | ND<20 | ND<20 | |
| | | | 3/15/2000 | ND<20 | ND<20 | |
| | | | 9/24/2003 | ND<20 | ND<20 | |
| | | | 3/11/2004 | ND<20 | ND<20 | |
| | | | 10/12/2004 | ND<20 | ND<20 | |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | ND<20 | ND<20 | |
| | | | 4/29/2006 | ND<20 | ND<20 | |
| | | | 11/18/2006 | 1.25 J | 1.25 J | |
| | | | 5/23/2007 | ND<20 | ND<20 | |
| | | | 11/28/2007 | ND<20 | ND<20 | |
| | | | 6/5/2008 | 1.02 J | 1.02 J | |
| | | | 11/20/2008 | 3 J | 3 J | |
| | | | 6/11/2009 | 1 | 1 | |
| | | | 11/16/2009 | 0.93 | 0.93 | |
| | | | 6/30/2010 | 0.73 H | 0.73 H | |
| | | | 11/12/2010 | 0.52 | 0.52 | |
| MW-8 | 27 | 22 (81.4815%) | 7/20/1995 | ND<20 | ND<20 | ND<20 |
| | | | 8/24/1995 | ND<20 | ND<20 | |
| | | | 9/28/1995 | ND<20 | ND<20 | |
| | | | 10/26/1995 | ND<20 | ND<20 | |
| | | | 11/19/1996 | ND<20 | ND<20 | |
| | | | 12/19/1996 | ND<20 | ND<20 | |
| | | | 3/24/1997 | ND<20 | ND<20 | |
| | | | 9/24/1997 | ND<20 | ND<20 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 4/7/1998 | ND<20 | ND<20 | |
| | | | 9/23/1998 | | ND<20 | ND<20 |
| | | | 3/16/1999 | | ND<20 | ND<20 |
| | | | 9/23/1999 | | ND<20 | ND<20 |
| | | | 3/15/2000 | | ND<20 | ND<20 |
| | | | 9/24/2003 | | ND<20 | ND<20 |
| | | | 3/11/2004 | | ND<20 | ND<20 |
| | | | 10/12/2004 | | ND<20 | ND<20 |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | | ND<20 | ND<20 |
| | | | 4/29/2006 | | ND<20 | ND<20 |
| | | | 11/18/2006 | | 1 J | 1 J |
| | | | 5/23/2007 | | ND<20 | ND<20 |
| | | | 11/28/2007 | | ND<20 | ND<20 |
| | | | 6/5/2008 | 0.609 J | 0.609 J | |
| | | | 11/20/2008 | | ND<20 | ND<20 |
| | | | 6/11/2009 | | 0.4 | 0.4 |
| | | | 6/30/2010 | | 0.51 H | 0.51 H |
| | | | 11/12/2010 | | 2.4 | 2.4 |
| MW-11R | 28 | 22 (78.5714%) | 7/20/1995 | | ND<20 | ND<20 |
| | | | 8/24/1995 | | ND<20 | ND<20 |
| | | | 9/28/1995 | | ND<20 | ND<20 |
| | | | 10/26/1995 | | ND<20 | ND<20 |
| | | | 11/19/1996 | | ND<20 | ND<20 |
| | | | 12/19/1996 | | ND<20 | ND<20 |
| | | | 3/24/1997 | | ND<20 | ND<20 |
| | | | 9/24/1997 | | ND<20 | ND<20 |
| | | | 4/7/1998 | ND<20 | ND<20 | |
| | | | 9/23/1998 | | ND<20 | ND<20 |
| | | | 3/16/1999 | | ND<20 | ND<20 |
| | | | 9/23/1999 | | ND<20 | ND<20 |
| | | | 3/15/2000 | | ND<20 | ND<20 |
| | | | 9/24/2003 | | ND<20 | ND<20 |
| | | | 3/11/2004 | | ND<20 | ND<20 |
| | | | 10/12/2004 | | ND<20 | ND<20 |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | | ND<20 | ND<20 |
| | | | 4/29/2006 | | ND<20 | ND<20 |
| | | | 11/18/2006 | | 2.13 J | 2.13 J |
| | | | 5/23/2007 | | 1.02 J | 1.02 J |
| | | | 11/28/2007 | | ND<20 | ND<20 |
| | | | 6/5/2008 | ND<20 | ND<20 | |
| | | | 11/20/2008 | | ND<20 | ND<20 |
| | | | 6/11/2009 | | 0.25 | 0.25 |
| | | | 11/16/2009 | | 0.15 J | 0.15 J |
| | | | 6/30/2010 | | 0.58 H | 0.58 H |
| | | | 11/12/2010 | | 0.18 J | 0.18 J |
| MW-7 | 28 | 22 (78.5714%) | 7/20/1995 | | ND<20 | ND<20 |
| | | | 8/24/1995 | | ND<20 | ND<20 |
| | | | 9/28/1995 | | ND<20 | ND<20 |
| | | | 10/26/1995 | | ND<20 | ND<20 |
| | | | 11/19/1996 | | ND<20 | ND<20 |
| | | | 12/19/1996 | | ND<20 | ND<20 |
| | | | 3/24/1997 | | ND<20 | ND<20 |
| | | | 9/24/1997 | | ND<20 | ND<20 |
| | | | 4/7/1998 | ND<20 | ND<20 | |
| | | | 9/23/1998 | | ND<20 | ND<20 |
| | | | 3/16/1999 | | ND<20 | ND<20 |
| | | | 9/23/1999 | | ND<20 | ND<20 |
| | | | 3/15/2000 | | ND<20 | ND<20 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 9/24/2003 | ND<20 | ND<20 | |
| | | | 3/11/2004 | ND<20 | ND<20 | |
| | | | 10/12/2004 | ND<20 | ND<20 | |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | ND<20 | ND<20 | |
| | | | 4/29/2006 | ND<20 | ND<20 | |
| | | | 11/18/2006 | 0.586 J | 0.586 J | |
| | | | 5/23/2007 | ND<20 | ND<20 | |
| | | | 11/28/2007 | ND<20 | ND<20 | |
| | | | 6/5/2008 | 0.989 J | 0.989 J | |
| | | | 11/20/2008 | ND<20 | ND<20 | |
| | | | 6/11/2009 | 0.48 | 0.48 | |
| | | | 11/16/2009 | 0.41 | 0.41 | |
| | | | 6/30/2010 | 0.37 H | 0.37 H | |
| | | | 11/12/2010 | 0.34 | 0.34 | |
| MW-12AR | 18 | 12 (66.6667%) | 3/16/1999 | ND<20 | ND<20 | |
| | | | 9/23/1999 | ND<20 | ND<20 | |
| | | | 3/15/2000 | ND<20 | ND<20 | |
| | | | 9/24/2003 | ND<20 | ND<20 | |
| | | | 3/11/2004 | ND<20 | ND<20 | |
| | | | 10/12/2004 | ND<20 | ND<20 | |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | ND<20 | ND<20 | |
| | | | 4/29/2006 | ND<20 | ND<20 | |
| | | | 11/18/2006 | 0.698 J | 0.698 J | |
| | | | 5/23/2007 | ND<20 | ND<20 | |
| | | | 11/28/2007 | ND<20 | ND<20 | |
| | | | 6/5/2008 | 1.48 J | 1.48 J | |
| | | | 11/20/2008 | ND<20 | ND<20 | |
| | | | 6/11/2009 | 0.69 | 0.69 | |
| | | | 11/16/2009 | 0.8 | 0.8 | |
| | | | 6/30/2010 | 0.65 | 0.65 | |
| | | | 11/12/2010 | 0.89 | 0.89 | |
| MW-10 | 28 | 18 (64.2857%) | 7/20/1995 | ND<20 | ND<20 | |
| | | | 8/24/1995 | ND<20 | ND<20 | |
| | | | 9/28/1995 | ND<20 | ND<20 | |
| | | | 10/26/1995 | ND<20 | ND<20 | |
| | | | 11/19/1996 | ND<20 | ND<20 | |
| | | | 12/19/1996 | ND<20 | ND<20 | |
| | | | 3/24/1997 | ND<20 | ND<20 | |
| | | | 9/24/1997 | ND<20 | ND<20 | |
| | | | 4/7/1998 | ND<20 | ND<20 | |
| | | | 9/23/1998 | ND<20 | ND<20 | |
| | | | 3/16/1999 | 5 | 5 | |
| | | | 9/23/1999 | 25 | 25 | |
| | | | 3/15/2000 | ND<20 | ND<20 | |
| | | | 9/24/2003 | ND<20 | ND<20 | |
| | | | 3/11/2004 | ND<20 | ND<20 | |
| | | | 10/12/2004 | ND<20 | ND<20 | |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | ND<20 | ND<20 | |
| | | | 4/29/2006 | ND<20 | ND<20 | |
| | | | 11/18/2006 | 1.45 J | 1.45 J | |
| | | | 5/23/2007 | ND<20 | ND<20 | |
| | | | 11/28/2007 | 3 J | 3 J | |
| | | | 6/5/2008 | 2.72 J | 2.72 J | |
| | | | 11/20/2008 | 6 J | 6 J | |
| | | | 6/11/2009 | 2 | 2 | |
| | | | 11/16/2009 | 2.8 | 2.8 | |
| | | | 6/30/2010 | 2.7 H | 2.7 H | |

| | | | |
|---|---|---|---|
| 11/12/2010 | 3.3 | 3.3 | |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. Original |
|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: Cobalt

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.083 | -2.65209 | 7.03356 | -0.220123 |
| 2 | 0.1 | -2.36561 | 12.6297 | -0.456685 |
| 3 | 0.11 | -2.22621 | 17.5857 | -0.701567 |
| 4 | 0.11 | -2.09693 | 21.9828 | -0.93223 |
| 5 | 0.13 | -2.01409 | 26.0394 | -1.19406 |
| 6 | 0.13 | -1.92684 | 29.7521 | -1.44455 |
| 7 | 0.13 | -1.86629 | 33.2351 | -1.68717 |
| 8 | 0.15 | -1.79912 | 36.472 | -1.95704 |
| 9 | 0.18 | -1.75069 | 39.5369 | -2.27216 |
| 10 | 0.21 | -1.6954 | 42.4112 | -2.62819 |
| 11 | 0.25 | -1.65463 | 45.149 | -3.04185 |
| 12 | 0.34 | -1.60725 | 47.7323 | -3.58831 |
| 13 | 0.37 | -1.57179 | 50.2028 | -4.16988 |
| 14 | 0.4 | -1.53007 | 52.5439 | -4.7819 |
| 15 | 0.41 | -1.49852 | 54.7894 | -5.39629 |
| 16 | 0.48 | -1.46106 | 56.9241 | -6.0976 |
| 17 | 0.51 | -1.4325 | 58.9762 | -6.82818 |
| 18 | 0.52 | -1.39838 | 60.9316 | -7.55533 |
| 19 | 0.58 | -1.3722 | 62.8146 | -8.35121 |
| 20 | 0.586 | -1.34075 | 64.6122 | -9.1369 |
| 21 | 0.609 | -1.31652 | 66.3454 | -9.93866 |
| 22 | 0.65 | -1.28727 | 68.0025 | -10.7754 |
| 23 | 0.69 | -1.26464 | 69.6018 | -11.648 |
| 24 | 0.698 | -1.23724 | 71.1326 | -12.5116 |
| 25 | 0.73 | -1.21596 | 72.6111 | -13.3992 |
| 26 | 0.8 | -1.19012 | 74.0275 | -14.3513 |
| 27 | 0.89 | -1.17 | 75.3964 | -15.3926 |
| 28 | 0.93 | -1.1455 | 76.7086 | -16.4579 |
| 29 | 0.989 | -1.12639 | 77.9774 | -17.5719 |
| 30 | 1 | -1.10306 | 79.1941 | -18.675 |
| 31 | 1 | -1.08482 | 80.371 | -19.7598 |
| 32 | 1 | -1.06252 | 81.4999 | -20.8223 |
| 33 | 1.02 | -1.04505 | 82.592 | -21.8883 |
| 34 | 1.02 | -1.02365 | 83.6399 | -22.9324 |
| 35 | 1.1 | -1.00687 | 84.6537 | -24.04 |
| 36 | 1.1 | -0.986272 | 85.6264 | -25.1249 |
| 37 | 1.1 | -0.970094 | 86.5675 | -26.192 |
| 38 | 1.25 | -0.950222 | 87.4704 | -27.3798 |
| 39 | 1.45 | -0.934598 | 88.3439 | -28.7349 |
| 40 | 1.46 | -0.915365 | 89.1818 | -30.0713 |
| 41 | 1.48 | -0.900227 | 89.9922 | -31.4037 |
| 42 | 1.48 | -0.881587 | 90.7694 | -32.7084 |
| 43 | 2 | -0.866894 | 91.5209 | -34.4422 |
| 44 | 2.13 | -0.848786 | 92.2413 | -36.2501 |
| 45 | 2.4 | -0.834498 | 92.9377 | -38.2529 |
| 46 | 2.7 | -0.816874 | 93.605 | -40.4585 |
| 47 | 2.72 | -0.802956 | 94.2497 | -42.6425 |
| 48 | 2.8 | -0.785774 | 94.8672 | -44.8427 |
| 49 | 3 | -0.772193 | 95.4634 | -47.1593 |

| | | | | |
|---|---|---|---|---|
| 50 | 3 | -0.755415 | 96.0341 | -49.4255 |
| 51 | 3.3 | -0.742143 | 96.5849 | -51.8746 |
| 52 | 5 | -0.725736 | 97.1116 | -55.5033 |
| 53 | 6 | -0.712751 | 97.6196 | -59.7798 |
| 54 | 10 | -0.696684 | 98.1049 | -66.7466 |
| 55 | 10 | -0.683969 | 8.5727 | -73.5862 |
| 56 | 10 | -0.668209 | 99.0192 | -80.2683 |
| 57 | 10 | -0.655726 | 99.4492 | -86.8256 |
| 58 | 10 | -0.640266 | 99.8592 | -93.2282 |
| 59 | 10 | -0.628006 | 100.254 | -99.5083 |
| 60 | 10 | -0.612813 | 100.629 | -105.636 |
| 61 | 10 | -0.60076 | 100.99 | -111.644 |
| 62 | 10 | -0.585815 | 101.333 | -117.502 |
| 63 | 10 | -0.573953 | 101.663 | -123.242 |
| 64 | 10 | -0.559237 | 101.975 | -128.834 |
| 65 | 10 | -0.547551 | 102.275 | -134.31 |
| 66 | 10 | -0.533048 | 102.559 | -139.64 |
| 67 | 10 | -0.521527 | 102.831 | -144.855 |
| 68 | 10 | -0.507221 | 103.089 | -149.928 |
| 69 | 10 | -0.49585 | 103.334 | -154.886 |
| 70 | 10 | -0.481728 | 103.566 | -159.703 |
| 71 | 10 | -0.470498 | 103.788 | -164.408 |
| 72 | 10 | -0.456542 | 103.996 | -168.974 |
| 73 | 10 | -0.445443 | 104.195 | -173.428 |
| 74 | 10 | -0.431644 | 104.381 | -177.745 |
| 75 | 10 | -0.420664 | 104.558 | -181.951 |
| 76 | 10 | -0.40701 | 104.724 | -186.021 |
| 77 | 10 | -0.396142 | 104.881 | -189.983 |
| 78 | 10 | -0.382622 | 105.027 | -193.809 |
| 79 | 10 | -0.371856 | 105.165 | -197.528 |
| 80 | 10 | -0.358459 | 105.294 | -201.112 |
| 81 | 10 | -0.347787 | 105.415 | -204.59 |
| 82 | 10 | -0.334503 | 105.527 | -207.935 |
| 83 | 10 | -0.323919 | 105.632 | -211.174 |
| 84 | 10 | -0.310738 | 105.728 | -214.282 |
| 85 | 10 | -0.300232 | 105.818 | -217.284 |
| 86 | 10 | -0.287147 | 105.901 | -220.155 |
| 87 | 10 | -0.276714 | 105.977 | -222.923 |
| 88 | 10 | -0.263715 | 106.047 | -225.56 |
| 89 | 10 | -0.253347 | 106.111 | -228.093 |
| 90 | 10 | -0.240426 | 106.169 | -230.497 |
| 91 | 10 | -0.230118 | 106.222 | -232.799 |
| 92 | 10 | -0.217267 | 106.269 | -234.971 |
| 93 | 10 | -0.207012 | 106.312 | -237.041 |
| 94 | 10 | -0.194225 | 106.35 | -238.984 |
| 95 | 10 | -0.184017 | 106.383 | -240.824 |
| 96 | 10 | -0.171285 | 106.413 | -242.537 |
| 97 | 10 | -0.161119 | 106.439 | -244.148 |
| 98 | 10 | -0.148434 | 106.461 | -245.632 |
| 99 | 10 | -0.138305 | 106.48 | -247.015 |
| 100 | 10 | -0.125661 | 106.496 | -248.272 |
| 101 | 10 | -0.115562 | 106.509 | -249.427 |
| 102 | 10 | -0.102953 | 106.52 | -250.457 |
| 103 | 10 | -0.0928787 | 106.528 | -251.386 |
| 104 | 10 | -0.0802981 | 106.535 | -252.189 |
| 105 | 10 | -0.0702426 | 106.54 | -252.891 |
| 106 | 10 | -0.0576847 | 106.543 | -253.468 |
| 107 | 10 | -0.0476439 | 106.545 | -253.944 |
| 108 | 10 | -0.0350997 | 106.546 | -254.295 |
| 109 | 10 | -0.0250691 | 106.547 | -254.546 |
| 110 | 10 | -0.0125328 | 106.547 | -254.671 |
| 111 | 10 | 0 | 106.547 | -254.671 |

| | | | | |
|---|---|---|---|---|
| 112 | 10 | 0.0125328 | 106.547 | -254.546 |
| 113 | 10 | 0.0250691 | 106.548 | -254.295 |
| 114 | 10 | 0.0350997 | 106.549 | -253.944 |
| 115 | 10 | 0.0476439 | 106.551 | -253.468 |
| 116 | 10 | 0.0576847 | 106.555 | -252.891 |
| 117 | 10 | 0.0702426 | 106.56 | -252.189 |
| 118 | 10 | 0.0802981 | 106.566 | -251.386 |
| 119 | 10 | 0.0928787 | 106.575 | -250.457 |
| 120 | 10 | 0.102953 | 106.585 | -249.427 |
| 121 | 10 | 0.115562 | 106.599 | -248.272 |
| 122 | 10 | 0.125661 | 106.615 | -247.015 |
| 123 | 10 | 0.138305 | 106.634 | -245.632 |
| 124 | 10 | 0.148434 | 106.656 | -244.148 |
| 125 | 10 | 0.161119 | 106.682 | -242.537 |
| 126 | 10 | 0.171285 | 106.711 | -240.824 |
| 127 | 10 | 0.184017 | 106.745 | -238.984 |
| 128 | 10 | 0.194225 | 106.783 | -237.041 |
| 129 | 10 | 0.207012 | 106.825 | -234.971 |
| 130 | 10 | 0.217267 | 106.873 | -232.799 |
| 131 | 10 | 0.230118 | 106.926 | -230.497 |
| 132 | 10 | 0.240426 | 106.983 | -228.093 |
| 133 | 10 | 0.253347 | 107.048 | -225.56 |
| 134 | 10 | 0.263715 | 107.117 | -222.923 |
| 135 | 10 | 0.276714 | 107.194 | -220.155 |
| 136 | 10 | 0.287147 | 107.276 | -217.284 |
| 137 | 10 | 0.300232 | 107.366 | -214.282 |
| 138 | 10 | 0.310738 | 107.463 | -211.174 |
| 139 | 10 | 0.323919 | 107.568 | -207.935 |
| 140 | 10 | 0.334503 | 107.68 | -204.59 |
| 141 | 10 | 0.347787 | 107.801 | -201.112 |
| 142 | 10 | 0.358459 | 107.929 | -197.528 |
| 143 | 10 | 0.371856 | 108.067 | -193.809 |
| 144 | 10 | 0.382622 | 108.214 | -189.983 |
| 145 | 10 | 0.396142 | 108.371 | -186.021 |
| 146 | 10 | 0.40701 | 108.536 | -181.951 |
| 147 | 10 | 0.420664 | 108.713 | -177.745 |
| 148 | 10 | 0.431644 | 108.9 | -173.428 |
| 149 | 10 | 0.445443 | 109.098 | -168.974 |
| 150 | 10 | 0.456542 | 109.307 | -164.408 |
| 151 | 10 | 0.470498 | 109.528 | -159.703 |
| 152 | 10 | 0.481728 | 109.76 | -154.886 |
| 153 | 10 | 0.49585 | 110.006 | -149.928 |
| 154 | 10 | 0.507221 | 110.263 | -144.855 |
| 155 | 10 | 0.521527 | 110.535 | -139.64 |
| 156 | 10 | 0.533048 | 110.819 | -134.31 |
| 157 | 10 | 0.547551 | 111.119 | -128.834 |
| 158 | 10 | 0.559237 | 111.432 | -123.242 |
| 159 | 10 | 0.573953 | 111.761 | -117.502 |
| 160 | 10 | 0.585815 | 112.104 | -111.644 |
| 161 | 10 | 0.60076 | 112.465 | -105.636 |
| 162 | 10 | 0.612813 | 112.841 | -99.5083 |
| 163 | 10 | 0.628006 | 113.235 | -93.2282 |
| 164 | 10 | 0.640266 | 113.645 | -86.8256 |
| 165 | 10 | 0.655726 | 114.075 | -80.2683 |
| 166 | 10 | 0.668209 | 114.522 | -73.5862 |
| 167 | 10 | 0.68396 | 114.989 | -66.7466 |
| 168 | 10 | 0.696684 | 115.475 | -59.7798 |
| 169 | 10 | 0.712751 | 115.983 | -52.6523 |
| 170 | 10 | 0.725736 | 116.51 | -45.3949 |
| 171 | 10 | 0.742143 | 117.06 | -37.9735 |
| 172 | 10 | 0.755415 | 117.631 | -30.4193 |
| 173 | 10 | 0.772193 | 118.227 | -22.6974 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 10 | 0.785774 | | 118.845 | -14.8397 |
| 175 | 10 | 0.802956 | | 119.489 | -6.8101 |
| 176 | 10 | 0.816874 | | 120.157 | 1.35864 |
| 177 | 10 | 0.834498 | | 120.853 | 9.70362 |
| 178 | 10 | 0.848786 | | 121.574 | 18.1915 |
| 179 | 10 | 0.866894 | | 122.325 | 26.8604 |
| 180 | 10 | 0.881587 | | 123.102 | 35.6763 |
| 181 | 10 | 0.900227 | | 123.913 | 44.6786 |
| 182 | 10 | 0.915365 | | 124.751 | 53.8322 |
| 183 | 10 | 0.93459 | 125.624 | 63.1781 | |
| 184 | 10 | 0.950222 | | 126.527 | 72.6803 |
| 185 | 10 | 0.970094 | | 127.468 | 82.3813 |
| 186 | 10 | 0.986272 | | 128.441 | 92.244 |
| 187 | 10 | 1.00687 | 129.455 | 102.313 | |
| 188 | 10 | 1.02365 | 130.502 | 112.549 | |
| 189 | 10 | 1.04505 | 131.594 | 123 | |
| 190 | 10 | 1.06252 | 132.723 | 133.625 | |
| 191 | 10 | 1.08482 | 133.9 | 144.473 | |
| 192 | 10 | 1.10306 | 135.117 | 155.504 | |
| 193 | 10 | 1.12639 | 136.386 | 166.768 | |
| 194 | 10 | 1.1455 | 137.698 | 178.223 | |
| 195 | 10 | 1.17 | 139.067 | 189.923 | |
| 196 | 10 | 1.19012 | 140.483 | 201.824 | |
| 197 | 10 | 1.21596 | 141.962 | 213.983 | |
| 198 | 10 | 1.23724 | 143.493 | 226.356 | |
| 199 | 10 | 1.26464 | 145.092 | 239.002 | |
| 200 | 10 | 1.28727 | 146.749 | 251.875 | |
| 201 | 10 | 1.31652 | 148.482 | 265.04 | |
| 202 | 10 | 1.34075 | 150.28 | 278.448 | |
| 203 | 10 | 1.3722 | 152.163 | 292.17 | |
| 204 | 10 | 1.39838 | 154.118 | 306.154 | |
| 205 | 10 | 1.4325 | 156.17 | 320.479 | |
| 206 | 10 | 1.46106 | 158.305 | 335.089 | |
| 207 | 10 | 1.49852 | 160.551 | 350.074 | |
| 208 | 10 | 1.53007 | 162.892 | 365.375 | |
| 209 | 10 | 1.57179 | 165.362 | 381.093 | |
| 210 | 10 | 1.60725 | 167.945 | 397.165 | |
| 211 | 10 | 1.65463 | 170.683 | 413.712 | |
| 212 | 10 | 1.6954 | 173.558 | 430.666 | |
| 213 | 10 | 1.75069 | 176.622 | 448.172 | |
| 214 | 10 | 1.79912 | 179.859 | 466.164 | |
| 215 | 10 | 1.86629 | 183.342 | 484.827 | |
| 216 | 10 | 1.92684 | 187.055 | 504.095 | |
| 217 | 10 | 2.01409 | 191.112 | 524.236 | |
| 218 | 10 | 2.09693 | 195.509 | 545.205 | |
| 219 | 10 | 2.22621 | 200.465 | 567.467 | |
| 220 | 10 | 2.36561 | 206.061 | 591.123 | |
| 221 | 25 | 2.65209 | 213.094 | 657.426 | |

Data Set Standard Deviation = 3.9827
Numerator = 432208
Denominator = 743617
W Statistic = 0.581224 = 432208 / 743617

5% Critical value of 0.976 exceeds 0.581224
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.581224
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: Cobalt

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) | |
|---|---|---|---|---|---|
| 1 | -2.48891 | -2.65209 | 7.03356 | 6.60082 | |
| 2 | -2.30259 | -2.36561 | 12.6297 | 12.0478 | |
| 3 | -2.20727 | -2.22621 | 17.5857 | 16.9617 | |
| 4 | -2.20727 | -2.09693 | 21.9828 | 21.5902 | |
| 5 | -2.04022 | -2.01409 | 26.0394 | 25.6994 | |
| 6 | -2.04022 | -1.92684 | 29.7521 | 29.6306 | |
| 7 | -2.04022 | -1.86629 | 33.2351 | 33.4382 | |
| 8 | -1.89712 | -1.79912 | 36.472 | 36.8514 | |
| 9 | -1.7148 | -1.75069 | 39.5369 | 39.8534 | |
| 10 | -1.56065 | -1.6954 | 42.4112 | 42.4994 | |
| 11 | -1.38629 | -1.65463 | 45.149 | 44.7931 | |
| 12 | -1.07881 | -1.60725 | 47.7323 | 46.5271 | |
| 13 | -0.994252 | -1.57179 | 50.2028 | 48.0898 | |
| 14 | -0.916291 | -1.53007 | 52.5439 | 49.4918 | |
| 15 | -0.891598 | -1.49852 | 54.7894 | 50.8279 | |
| 16 | -0.733969 | -1.46106 | 56.9241 | 51.9002 | |
| 17 | -0.673345 | -1.4325 | 58.9762 | 52.8648 | |
| 18 | -0.653926 | -1.39838 | 60.9316 | 53.7793 | |
| 19 | -0.544727 | -1.3722 | 62.8146 | 54.5267 | |
| 20 | -0.534435 | -1.34075 | 64.6122 | 55.2433 | |
| 21 | -0.495937 | -1.31652 | 66.3454 | 55.8962 | |
| 22 | -0.430783 | -1.28727 | 68.0025 | 56.4507 | |
| 23 | -0.371064 | -1.26464 | 69.6018 | 56.92 | |
| 24 | -0.359536 | -1.23724 | 71.1326 | 57.3648 | |
| 25 | -0.314711 | -1.21596 | 72.6111 | 57.7475 | |
| 26 | -0.223144 | -1.19012 | 74.0275 | 58.0131 | |
| 27 | -0.116534 | -1.17 | 75.3964 | 58.1494 | |
| 28 | -0.0725707 | -1.1455 | 76.7086 | 58.2325 | |
| 29 | -0.0110609 | -1.12639 | 77.9774 | 58.245 | |
| 30 | 0 | -1.10306 | 79.1941 | 58.245 | |
| 31 | 0 | -1.08482 | 80.371 | 58.245 | |
| 32 | 0 | -1.06252 | 81.4999 | 58.245 | |
| 33 | 0.0198026 | -1.04505 | 82.592 | 58.2243 | |
| 34 | 0.0198026 | -1.02365 | 83.6399 | 58.204 | |
| 35 | 0.0953102 | -1.00687 | 84.6537 | 58.1081 | |
| 36 | 0.0953102 | -0.986272 | 85.6264 | 58.0141 | |
| 37 | 0.0953102 | -0.970094 | 86.5675 | 57.9216 | |
| 38 | 0.223144 | -0.950222 | 87.4704 | 57.7096 | |
| 39 | 0.371564 | -0.93459 | 88.3439 | 57.3623 | |
| 40 | 0.378436 | -0.915365 | 89.1818 | 57.0159 | |
| 41 | 0.392042 | -0.900227 | 89.9922 | 56.663 | |
| 42 | 0.392042 | -0.881587 | 90.7694 | 56.3174 | |
| 43 | 0.693147 | -0.866894 | 91.5209 | 55.7165 | |
| 44 | 0.756122 | -0.848786 | 92.2413 | 55.0747 | |
| 45 | 0.875469 | -0.834498 | 92.9377 | 54.3441 | |
| 46 | 0.993252 | -0.816874 | 93.605 | 53.5327 | |
| 47 | 1.00063 | -0.802956 | 94.2497 | 52.7293 | |
| 48 | 1.02962 | -0.785774 | 94.8672 | 51.9202 | |
| 49 | 1.09861 | -0.772193 | 95.4634 | 51.0719 | |

| | | | | |
|---|---|---|---|---|
| 50 | 1.09861 | -0.755415 | 96.0341 | 50.242 |
| 51 | 1.19392 | -0.742143 | 96.5849 | 49.3559 |
| 52 | 1.60944 | -0.725736 | 97.1116 | 48.1879 |
| 53 | 1.79176 | -0.712751 | 97.6196 | 46.9108 |
| 54 | 2.30259 | -0.696684 | 98.1049 | 45.3066 |
| 55 | 2.30259 | -0.683969 | 8.5727 | 43.7318 |
| 56 | 2.30259 | -0.668209 | 99.0192 | 42.1932 |
| 57 | 2.30259 | -0.655726 | 99.4492 | 40.6833 |
| 58 | 2.30259 | -0.640266 | 99.8592 | 39.209 |
| 59 | 2.30259 | -0.628006 | 100.254 | 37.763 |
| 60 | 2.30259 | -0.612813 | 100.629 | 36.3519 |
| 61 | 2.30259 | -0.60076 | 100.99 | 34.9686 |
| 62 | 2.30259 | -0.585815 | 101.333 | 33.6197 |
| 63 | 2.30259 | -0.573953 | 101.663 | 32.2982 |
| 64 | 2.30259 | -0.559237 | 101.975 | 31.0105 |
| 65 | 2.30259 | -0.547551 | 102.275 | 29.7497 |
| 66 | 2.30259 | -0.533048 | 102.559 | 28.5223 |
| 67 | 2.30259 | -0.521527 | 102.831 | 27.3214 |
| 68 | 2.30259 | -0.507221 | 103.089 | 26.1535 |
| 69 | 2.30259 | -0.49585 | 103.334 | 25.0118 |
| 70 | 2.30259 | -0.481728 | 103.566 | 23.9026 |
| 71 | 2.30259 | -0.470498 | 103.788 | 22.8192 |
| 72 | 2.30259 | -0.456542 | 103.996 | 21.768 |
| 73 | 2.30259 | -0.445443 | 104.195 | 20.7423 |
| 74 | 2.30259 | -0.431644 | 104.381 | 19.7484 |
| 75 | 2.30259 | -0.420664 | 104.558 | 18.7798 |
| 76 | 2.30259 | -0.40701 | 104.724 | 17.8426 |
| 77 | 2.30259 | -0.396142 | 104.881 | 16.9305 |
| 78 | 2.30259 | -0.382622 | 105.027 | 16.0495 |
| 79 | 2.30259 | -0.371856 | 105.165 | 15.1932 |
| 80 | 2.30259 | -0.358459 | 105.294 | 14.3678 |
| 81 | 2.30259 | -0.347787 | 105.415 | 13.567 |
| 82 | 2.30259 | -0.334503 | 105.527 | 12.7968 |
| 83 | 2.30259 | -0.323919 | 105.632 | 12.051 |
| 84 | 2.30259 | -0.310738 | 105.728 | 11.3355 |
| 85 | 2.30259 | -0.300232 | 105.818 | 10.6442 |
| 86 | 2.30259 | -0.287147 | 105.901 | 9.98297 |
| 87 | 2.30259 | -0.276714 | 105.977 | 9.34581 |
| 88 | 2.30259 | -0.263715 | 106.047 | 8.73859 |
| 89 | 2.30259 | -0.253347 | 106.111 | 8.15524 |
| 90 | 2.30259 | -0.240426 | 106.169 | 7.60163 |
| 91 | 2.30259 | -0.230118 | 106.222 | 7.07177 |
| 92 | 2.30259 | -0.217267 | 106.269 | 6.57149 |
| 93 | 2.30259 | -0.207012 | 106.312 | 6.09483 |
| 94 | 2.30259 | -0.194225 | 106.35 | 5.64761 |
| 95 | 2.30259 | -0.184017 | 106.383 | 5.22389 |
| 96 | 2.30259 | -0.171285 | 106.413 | 4.8295 |
| 97 | 2.30259 | -0.161119 | 106.439 | 4.45851 |
| 98 | 2.30259 | -0.148434 | 106.461 | 4.11672 |
| 99 | 2.30259 | -0.138305 | 106.48 | 3.79826 |
| 100 | 2.30259 | -0.125661 | 106.496 | 3.50892 |
| 101 | 2.30259 | -0.115562 | 106.509 | 3.24283 |
| 102 | 2.30259 | -0.102953 | 106.52 | 3.00577 |
| 103 | 2.30259 | -0.0928787 | 106.528 | 2.79191 |
| 104 | 2.30259 | -0.0802981 | 106.535 | 2.60702 |
| 105 | 2.30259 | -0.0702426 | 106.54 | 2.44528 |
| 106 | 2.30259 | -0.0576847 | 106.543 | 2.31245 |
| 107 | 2.30259 | -0.0476439 | 106.545 | 2.20275 |
| 108 | 2.30259 | -0.0350997 | 106.546 | 2.12193 |
| 109 | 2.30259 | -0.0250691 | 106.547 | 2.06421 |
| 110 | 2.30259 | -0.0125328 | 106.547 | 2.03535 |
| 111 | 2.30259 | 0 | 106.547 | 2.03535 |

| | | | | |
|---|---|---|---|---|
| 112 | 2.30259 | 0.0125328 | 106.547 | 2.06421 |
| 113 | 2.30259 | 0.0250691 | 106.548 | 2.12193 |
| 114 | 2.30259 | 0.0350997 | 106.549 | 2.20275 |
| 115 | 2.30259 | 0.0476439 | 106.551 | 2.31245 |
| 116 | 2.30259 | 0.0576847 | 106.555 | 2.44528 |
| 117 | 2.30259 | 0.0702426 | 106.56 | 2.60702 |
| 118 | 2.30259 | 0.0802981 | 106.566 | 2.79191 |
| 119 | 2.30259 | 0.0928787 | 106.575 | 3.00577 |
| 120 | 2.30259 | 0.102953 | 106.585 | 3.24283 |
| 121 | 2.30259 | 0.115562 | 106.599 | 3.50892 |
| 122 | 2.30259 | 0.125661 | 106.615 | 3.79826 |
| 123 | 2.30259 | 0.138305 | 106.634 | 4.11672 |
| 124 | 2.30259 | 0.148434 | 106.656 | 4.45851 |
| 125 | 2.30259 | 0.161119 | 106.682 | 4.8295 |
| 126 | 2.30259 | 0.171285 | 106.711 | 5.22389 |
| 127 | 2.30259 | 0.184017 | 106.745 | 5.64761 |
| 128 | 2.30259 | 0.194225 | 106.783 | 6.09483 |
| 129 | 2.30259 | 0.207012 | 106.825 | 6.57149 |
| 130 | 2.30259 | 0.217267 | 106.873 | 7.07177 |
| 131 | 2.30259 | 0.230118 | 106.926 | 7.60163 |
| 132 | 2.30259 | 0.240426 | 106.983 | 8.15524 |
| 133 | 2.30259 | 0.253347 | 107.048 | 8.73859 |
| 134 | 2.30259 | 0.263715 | 107.117 | 9.34581 |
| 135 | 2.30259 | 0.276714 | 107.194 | 9.98297 |
| 136 | 2.30259 | 0.287147 | 107.276 | 10.6442 |
| 137 | 2.30259 | 0.300232 | 107.366 | 11.3355 |
| 138 | 2.30259 | 0.310738 | 107.463 | 12.051 |
| 139 | 2.30259 | 0.323919 | 107.568 | 12.7968 |
| 140 | 2.30259 | 0.334503 | 107.68 | 13.567 |
| 141 | 2.30259 | 0.347787 | 107.801 | 14.3678 |
| 142 | 2.30259 | 0.358459 | 107.929 | 15.1932 |
| 143 | 2.30259 | 0.371856 | 108.067 | 16.0495 |
| 144 | 2.30259 | 0.382622 | 108.214 | 16.9305 |
| 145 | 2.30259 | 0.396142 | 108.371 | 17.8426 |
| 146 | 2.30259 | 0.40701 | 108.536 | 18.7798 |
| 147 | 2.30259 | 0.420664 | 108.713 | 19.7484 |
| 148 | 2.30259 | 0.431644 | 108.9 | 20.7423 |
| 149 | 2.30259 | 0.445443 | 109.098 | 21.768 |
| 150 | 2.30259 | 0.456542 | 109.307 | 22.8192 |
| 151 | 2.30259 | 0.470498 | 109.528 | 23.9026 |
| 152 | 2.30259 | 0.481728 | 109.76 | 25.0118 |
| 153 | 2.30259 | 0.49585 | 110.006 | 26.1535 |
| 154 | 2.30259 | 0.507221 | 110.263 | 27.3214 |
| 155 | 2.30259 | 0.521527 | 110.535 | 28.5223 |
| 156 | 2.30259 | 0.533048 | 110.819 | 29.7497 |
| 157 | 2.30259 | 0.547551 | 111.119 | 31.0105 |
| 158 | 2.30259 | 0.559237 | 111.432 | 32.2982 |
| 159 | 2.30259 | 0.573953 | 111.761 | 33.6197 |
| 160 | 2.30259 | 0.585815 | 112.104 | 34.9686 |
| 161 | 2.30259 | 0.60076 | 112.465 | 36.3519 |
| 162 | 2.30259 | 0.612813 | 112.841 | 37.763 |
| 163 | 2.30259 | 0.628006 | 113.235 | 39.209 |
| 164 | 2.30259 | 0.640266 | 113.645 | 40.6833 |
| 165 | 2.30259 | 0.655726 | 114.075 | 42.1932 |
| 166 | 2.30259 | 0.668209 | 114.522 | 43.7318 |
| 167 | 2.30259 | 0.68396 | 114.989 | 45.3066 |
| 168 | 2.30259 | 0.696684 | 115.475 | 46.9108 |
| 169 | 2.30259 | 0.712751 | 115.983 | 48.552 |
| 170 | 2.30259 | 0.725736 | 116.51 | 50.2231 |
| 171 | 2.30259 | 0.742143 | 117.06 | 51.9319 |
| 172 | 2.30259 | 0.755415 | 117.631 | 53.6713 |
| 173 | 2.30259 | 0.772193 | 118.227 | 55.4493 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 2.30259 | 0.785774 | | 118.845 | 57.2587 |
| 175 | 2.30259 | 0.802956 | | 119.489 | 59.1075 |
| 176 | 2.30259 | 0.816874 | | 120.157 | 60.9885 |
| 177 | 2.30259 | 0.834498 | | 120.853 | 62.91 |
| 178 | 2.30259 | 0.848786 | | 121.574 | 64.8644 |
| 179 | 2.30259 | 0.866894 | | 122.325 | 66.8605 |
| 180 | 2.30259 | 0.881587 | | 123.102 | 68.8904 |
| 181 | 2.30259 | 0.900227 | | 123.913 | 70.9632 |
| 182 | 2.30259 | 0.915365 | | 124.751 | 73.0709 |
| 183 | 2.30259 | 0.93459 | 125.624 | 75.2229 | |
| 184 | 2.30259 | 0.950222 | | 126.527 | 77.4109 |
| 185 | 2.30259 | 0.970094 | | 127.468 | 79.6446 |
| 186 | 2.30259 | 0.986272 | | 128.441 | 81.9156 |
| 187 | 2.30259 | 1.00687 | 129.455 | 84.234 | |
| 188 | 2.30259 | 1.02365 | 130.502 | 86.591 | |
| 189 | 2.30259 | 1.04505 | 131.594 | 88.9973 | |
| 190 | 2.30259 | 1.06252 | 132.723 | 91.4439 | |
| 191 | 2.30259 | 1.08482 | 133.9 | 93.9418 | |
| 192 | 2.30259 | 1.10306 | 135.117 | 96.4817 | |
| 193 | 2.30259 | 1.12639 | 136.386 | 99.0753 | |
| 194 | 2.30259 | 1.1455 | 137.698 | 101.713 | |
| 195 | 2.30259 | 1.17 | 139.067 | 104.407 | |
| 196 | 2.30259 | 1.19012 | 140.483 | 107.147 | |
| 197 | 2.30259 | 1.21596 | 141.962 | 109.947 | |
| 198 | 2.30259 | 1.23724 | 143.493 | 112.796 | |
| 199 | 2.30259 | 1.26464 | 145.092 | 115.708 | |
| 200 | 2.30259 | 1.28727 | 146.749 | 118.672 | |
| 201 | 2.30259 | 1.31652 | 148.482 | 121.703 | |
| 202 | 2.30259 | 1.34075 | 150.28 | 124.791 | |
| 203 | 2.30259 | 1.3722 | 152.163 | 127.95 | |
| 204 | 2.30259 | 1.39838 | 154.118 | 131.17 | |
| 205 | 2.30259 | 1.4325 | 156.17 | 134.469 | |
| 206 | 2.30259 | 1.46106 | 158.305 | 137.833 | |
| 207 | 2.30259 | 1.49852 | 160.551 | 141.283 | |
| 208 | 2.30259 | 1.53007 | 162.892 | 144.806 | |
| 209 | 2.30259 | 1.57179 | 165.362 | 148.425 | |
| 210 | 2.30259 | 1.60725 | 167.945 | 152.126 | |
| 211 | 2.30259 | 1.65463 | 170.683 | 155.936 | |
| 212 | 2.30259 | 1.6954 | 173.558 | 159.84 | |
| 213 | 2.30259 | 1.75069 | 176.622 | 163.871 | |
| 214 | 2.30259 | 1.79912 | 179.859 | 168.014 | |
| 215 | 2.30259 | 1.86629 | 183.342 | 172.311 | |
| 216 | 2.30259 | 1.92684 | 187.055 | 176.748 | |
| 217 | 2.30259 | 2.01409 | 191.112 | 181.385 | |
| 218 | 2.30259 | 2.09693 | 195.509 | 186.214 | |
| 219 | 2.30259 | 2.22621 | 200.465 | 191.34 | |
| 220 | 2.30259 | 2.36561 | 206.061 | 196.787 | |
| 221 | 3.21888 | 2.65209 | 213.094 | 205.324 | |

Data Set Standard Deviation = 1.24412
Numerator = 42157.8
Denominator = 72563.7
W Statistic = 0.580976 = 42157.8 / 72563.7

5% Critical value of 0.976 exceeds 0.580976
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.580976
Evidence of non-normality at 99% level of significance

# Kruskal-Wallis Non-Parametric Test

## Parameter: Cobalt

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

# Kruskal Wallis Ranks

## Background Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-13 | 3/16/1999 | ND<2.30259 | 84 |
| | 9/23/1999 | ND<2.30259 | 84 |
| | 3/15/2000 | ND<2.30259 | 84 |
| | 9/24/2003 | ND<2.30259 | 84 |
| | 3/11/2004 | ND<2.30259 | 84 |
| | 10/12/2004 | ND<2.30259 | 84 |
| | 4/1/2005 | ND<2.30259 | 84 |
| | 10/25/2005 | ND<2.30259 | 84 |
| | 4/29/2006 | ND<2.30259 | 84 |
| | 11/18/2006 | ND<2.30259 | 84 |
| | 5/23/2007 | ND<2.30259 | 84 |
| | 11/28/2007 | ND<2.30259 | 84 |
| | 6/5/2008 | ND<2.30259 | 84 |
| | 11/20/2008 | ND<2.30259 | 84 |
| | 6/11/2009 | -2.20727 J | 170 |
| | 11/16/2009 | -2.48891 J | 168 |
| | 6/30/2010 | -2.30259 J H | 169 |
| | 11/12/2010 | -2.20727 J | 171 |

Rank Sum = 1854
Rank Mean = 103

Background Rank Sum = 1854
Background Rank Mean = 103

## Compliance Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-12BR | 3/16/1999 | ND<2.30259 | 84 |
| | 9/23/1999 | ND<2.30259 | 84 |
| | 3/15/2000 | ND<2.30259 | 84 |
| | 9/24/2003 | ND<2.30259 | 84 |
| | 3/11/2004 | ND<2.30259 | 84 |
| | 10/12/2004 | ND<2.30259 | 84 |
| | 4/1/2005 | ND<2.30259 | 84 |
| | 10/25/2005 | ND<2.30259 | 84 |
| | 4/29/2006 | ND<2.30259 | 84 |
| | 11/18/2006 | 0.378436 J | 207 |
| | 5/23/2007 | ND<2.30259 | 84 |
| | 11/28/2007 | ND<2.30259 | 84 |
| | 6/5/2008 | 0.392042 J | 208 |
| | 11/20/2008 | ND<2.30259 | 84 |
| | 6/11/2009 | 0.0953102 | 202 |
| | 11/16/2009 | 0 | 197 |
| | 6/30/2010 | 0.0953102 | 203 |
| | 11/12/2010 | 0.0953102 | 204 |

Rank Sum = 2229
Rank Mean = 123.833

| | | | |
|---|---|---|---|
| MW-6 | 7/20/1995 | ND<2.30259 | 84 |
| | 8/24/1995 | ND<2.30259 | 84 |
| | 9/28/1995 | ND<2.30259 | 84 |
| | 10/26/1995 | ND<2.30259 | 84 |
| | 11/19/1996 | ND<2.30259 | 84 |
| | 12/19/1996 | ND<2.30259 | 84 |
| | 3/24/1997 | ND<2.30259 | 84 |
| | 9/24/1997 | ND<2.30259 | 84 |
| | 4/7/1998 | ND<2.30259 | 84 |
| | 9/23/1998 | ND<2.30259 | 84 |
| | 3/16/1999 | ND<2.30259 | 84 |
| | 9/23/1999 | ND<2.30259 | 84 |
| | 3/15/2000 | ND<2.30259 | 84 |
| | 9/24/2003 | ND<2.30259 | 84 |
| | 3/11/2004 | ND<2.30259 | 84 |
| | 10/12/2004 | ND<2.30259 | 84 |
| | 4/1/2005 | ND<2.30259 | 84 |
| | 10/25/2005 | ND<2.30259 | 84 |
| | 4/29/2006 | ND<2.30259 | 84 |
| | 11/18/2006 | ND<2.30259 | 84 |
| | 5/23/2007 | ND<2.30259 | 84 |
| | 11/28/2007 | ND<2.30259 | 84 |
| | 6/5/2008 | ND<2.30259 | 84 |
| | 11/20/2008 | ND<2.30259 | 84 |
| | 6/11/2009 | -2.04022 J | 172 |
| | 11/16/2009 | -2.04022 J | 173 |
| | 6/30/2010 | -2.04022 J H | 174 |
| | 11/12/2010 | -1.56065 | 177 |

Rank Sum = 2712
Rank Mean = 96.8571

| | | | |
|---|---|---|---|
| MW-9 | 7/20/1995 | ND<2.30259 | 84 |
| | 8/24/1995 | ND<2.30259 | 84 |
| | 9/28/1995 | ND<2.30259 | 84 |
| | 10/26/1995 | ND<2.30259 | 84 |
| | 11/19/1996 | ND<2.30259 | 84 |
| | 12/19/1996 | ND<2.30259 | 84 |
| | 3/24/1997 | ND<2.30259 | 84 |
| | 9/24/1997 | ND<2.30259 | 84 |
| | 4/7/1998 | ND<2.30259 | 84 |
| | 9/23/1998 | ND<2.30259 | 84 |
| | 3/16/1999 | ND<2.30259 | 84 |
| | 9/23/1999 | ND<2.30259 | 84 |
| | 3/15/2000 | ND<2.30259 | 84 |
| | 9/24/2003 | ND<2.30259 | 84 |
| | 3/11/2004 | ND<2.30259 | 84 |
| | 10/12/2004 | ND<2.30259 | 84 |
| | 4/1/2005 | ND<2.30259 | 84 |
| | 10/25/2005 | ND<2.30259 | 84 |
| | 4/29/2006 | ND<2.30259 | 84 |
| | 11/18/2006 | 0.223144 J | 205 |
| | 5/23/2007 | ND<2.30259 | 84 |
| | 11/28/2007 | ND<2.30259 | 84 |
| | 6/5/2008 | 0.0198026 J | 200 |
| | 11/20/2008 | 1.09861 J | 216 |
| | 6/11/2009 | 0 | 198 |
| | 11/16/2009 | -0.0725707 | 195 |
| | 6/30/2010 | -0.314711 H | 192 |
| | 11/12/2010 | -0.653926 | 185 |

Rank Sum = 3155
Rank Mean = 112.679

| | | | |
|---|---|---|---|
| MW-8 | 7/20/1995 | ND<2.30259 | 84 |
| | 8/24/1995 | ND<2.30259 | 84 |
| | 9/28/1995 | ND<2.30259 | 84 |
| | 10/26/1995 | ND<2.30259 | 84 |
| | 11/19/1996 | ND<2.30259 | 84 |
| | 12/19/1996 | ND<2.30259 | 84 |
| | 3/24/1997 | ND<2.30259 | 84 |
| | 9/24/1997 | ND<2.30259 | 84 |
| | 4/7/1998 | ND<2.30259 | 84 |
| | 9/23/1998 | ND<2.30259 | 84 |
| | 3/16/1999 | ND<2.30259 | 84 |
| | 9/23/1999 | ND<2.30259 | 84 |
| | 3/15/2000 | ND<2.30259 | 84 |
| | 9/24/2003 | ND<2.30259 | 84 |
| | 3/11/2004 | ND<2.30259 | 84 |
| | 10/12/2004 | ND<2.30259 | 84 |
| | 4/1/2005 | ND<2.30259 | 84 |
| | 10/25/2005 | ND<2.30259 | 84 |
| | 4/29/2006 | ND<2.30259 | 84 |
| | 11/18/2006 | 0 J | 199 |
| | 5/23/2007 | ND<2.30259 | 84 |
| | 11/28/2007 | ND<2.30259 | 84 |
| | 6/5/2008 | -0.495937 J | 188 |
| | 11/20/2008 | ND<2.30259 | 84 |
| | 6/11/2009 | -0.916291 | 181 |
| | 6/30/2010 | -0.673345 H | 184 |
| | 11/12/2010 | 0.875469 | 212 |

Rank Sum = 2812
Rank Mean = 104.148

| | | | |
|---|---|---|---|
| MW-11R | 7/20/1995 | ND<2.30259 | 84 |
| | 8/24/1995 | ND<2.30259 | 84 |
| | 9/28/1995 | ND<2.30259 | 84 |
| | 10/26/1995 | ND<2.30259 | 84 |
| | 11/19/1996 | ND<2.30259 | 84 |
| | 12/19/1996 | ND<2.30259 | 84 |
| | 3/24/1997 | ND<2.30259 | 84 |
| | 9/24/1997 | ND<2.30259 | 84 |
| | 4/7/1998 | ND<2.30259 | 84 |
| | 9/23/1998 | ND<2.30259 | 84 |
| | 3/16/1999 | ND<2.30259 | 84 |
| | 9/23/1999 | ND<2.30259 | 84 |
| | 3/15/2000 | ND<2.30259 | 84 |
| | 9/24/2003 | ND<2.30259 | 84 |
| | 3/11/2004 | ND<2.30259 | 84 |
| | 10/12/2004 | ND<2.30259 | 84 |
| | 4/1/2005 | ND<2.30259 | 84 |
| | 10/25/2005 | ND<2.30259 | 84 |
| | 4/29/2006 | ND<2.30259 | 84 |
| | 11/18/2006 | 0.756122 J | 211 |
| | 5/23/2007 | 0.0198026 J | 201 |
| | 11/28/2007 | ND<2.30259 | 84 |
| | 6/5/2008 | ND<2.30259 | 84 |
| | 11/20/2008 | ND<2.30259 | 84 |
| | 6/11/2009 | -1.38629 | 178 |
| | 11/16/2009 | -1.89712 J | 175 |
| | 6/30/2010 | -0.544727 H | 186 |
| | 11/12/2010 | -1.7148 J | 176 |

Rank Sum = 2975
Rank Mean = 106.25

| | | | |
|---|---|---|---|
| MW-7 | 7/20/1995 | ND<2.30259 | 84 |
| | 8/24/1995 | ND<2.30259 | 84 |
| | 9/28/1995 | ND<2.30259 | 84 |
| | 10/26/1995 | ND<2.30259 | 84 |
| | 11/19/1996 | ND<2.30259 | 84 |
| | 12/19/1996 | ND<2.30259 | 84 |
| | 3/24/1997 | ND<2.30259 | 84 |
| | 9/24/1997 | ND<2.30259 | 84 |
| | 4/7/1998 | ND<2.30259 | 84 |
| | 9/23/1998 | ND<2.30259 | 84 |
| | 3/16/1999 | ND<2.30259 | 84 |
| | 9/23/1999 | ND<2.30259 | 84 |
| | 3/15/2000 | ND<2.30259 | 84 |
| | 9/24/2003 | ND<2.30259 | 84 |
| | 3/11/2004 | ND<2.30259 | 84 |
| | 10/12/2004 | ND<2.30259 | 84 |
| | 4/1/2005 | ND<2.30259 | 84 |
| | 10/25/2005 | ND<2.30259 | 84 |
| | 4/29/2006 | ND<2.30259 | 84 |
| | 11/18/2006 | -0.534435 J | 187 |
| | 5/23/2007 | ND<2.30259 | 84 |
| | 11/28/2007 | ND<2.30259 | 84 |
| | 6/5/2008 | -0.0110609 J | 196 |
| | 11/20/2008 | ND<2.30259 | 84 |
| | 6/11/2009 | -0.733969 | 183 |
| | 11/16/2009 | -0.891598 | 182 |
| | 6/30/2010 | -0.994252 H | 180 |
| | 11/12/2010 | -1.07881 | 179 |

Rank Sum = 2955
Rank Mean = 105.536

| | | | |
|---|---|---|---|
| MW-12AR | 3/16/1999 | ND<2.30259 | 84 |
| | 9/23/1999 | ND<2.30259 | 84 |
| | 3/15/2000 | ND<2.30259 | 84 |
| | 9/24/2003 | ND<2.30259 | 84 |
| | 3/11/2004 | ND<2.30259 | 84 |
| | 10/12/2004 | ND<2.30259 | 84 |
| | 4/1/2005 | ND<2.30259 | 84 |
| | 10/25/2005 | ND<2.30259 | 84 |
| | 4/29/2006 | ND<2.30259 | 84 |
| | 11/18/2006 | -0.359536 J | 191 |
| | 5/23/2007 | ND<2.30259 | 84 |
| | 11/28/2007 | ND<2.30259 | 84 |
| | 6/5/2008 | 0.392042 J | 209 |
| | 11/20/2008 | ND<2.30259 | 84 |
| | 6/11/2009 | -0.371064 | 190 |
| | 11/16/2009 | -0.223144 | 193 |
| | 6/30/2010 | -0.430783 | 189 |
| | 11/12/2010 | -0.116534 | 194 |

Rank Sum = 2174
Rank Mean = 120.778

| | | | |
|---|---|---|---|
| MW-10 | 7/20/1995 | ND<2.30259 | 84 |
| | 8/24/1995 | ND<2.30259 | 84 |
| | 9/28/1995 | ND<2.30259 | 84 |
| | 10/26/1995 | ND<2.30259 | 84 |
| | 11/19/1996 | ND<2.30259 | 84 |
| | 12/19/1996 | ND<2.30259 | 84 |
| | 3/24/1997 | ND<2.30259 | 84 |
| | 9/24/1997 | ND<2.30259 | 84 |
| | 4/7/1998 | ND<2.30259 | 84 |
| | 9/23/1998 | ND<2.30259 | 84 |

| | | | |
|---|---|---|---|
| 3/16/1999 | 1.60944 | | 219 |
| 9/23/1999 | 3.21888 | | 221 |
| 3/15/2000 | ND<2.30259 | | 84 |
| 9/24/2003 | ND<2.30259 | | 84 |
| 3/11/2004 | ND<2.30259 | | 84 |
| 10/12/2004 | ND<2.30259 | | 84 |
| 4/1/2005 | ND<2.30259 | 84 | |
| 10/25/2005 | ND<2.30259 | | 84 |
| 4/29/2006 | ND<2.30259 | | 84 |
| 11/18/2006 | 0.371564 | J | 206 |
| 5/23/2007 | ND<2.30259 | | 84 |
| 11/28/2007 | 1.09861 | J | 217 |
| 6/5/2008 | 1.00063 | J | 214 |
| 11/20/2008 | 1.79176 | J | 220 |
| 6/11/2009 | 0.693147 | | 210 |
| 11/16/2009 | 1.02962 | | 215 |
| 6/30/2010 | 0.993252 | H | 213 |
| 11/12/2010 | 1.19392 | | 218 |

Rank Sum = 3665
Rank Mean = 130.893

## Calculation Results:

Kruskal-Wallis H Statistic = 6.19605
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 10.8987
95% Confidence comparison value is 15.5073 at 8 degrees of freedom
6.19605 < 15.5073 indicating no significant group difference at 5% significance level
10.8987 < 15.5073 indicating no significant group difference at 5% significance level when adjusted for ties

# Concentrations (ppb)

## Parameter: Copper

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 167
Percent Non-Detects: 75.5656%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 13 (72.2222%) | 3/16/1999 | 10 J | 10 J |
| | | | 9/23/1999 | 9 J | 9 J |
| | | | 3/15/2000 | ND<20 | ND<20 |
| | | | 9/24/2003 | ND<20 | ND<20 |
| | | | 3/11/2004 | ND<20 | ND<20 |
| | | | 10/12/2004 | ND<20 | ND<20 |
| | | | 4/1/2005 | ND<20 | ND<20 |
| | | | 10/25/2005 | ND<20 | ND<20 |
| | | | 4/29/2006 | ND<20 | ND<20 |
| | | | 11/18/2006 | ND<20 | ND<20 |
| | | | 5/23/2007 | ND<20 | ND<20 |
| | | | 11/28/2007 | ND<20 | ND<20 |
| | | | 6/5/2008 | ND<20 | ND<20 |
| | | | 11/20/2008 | ND<20 | ND<20 |
| | | | 6/11/2009 | 0.5 J | 0.5 J |
| | | | 11/16/2009 | 0.3 J | 0.3 J |
| | | | 6/30/2010 | 0.35 J H | 0.35 J H |
| | | | 11/12/2010 | ND<0.21 U | ND<0.21 U |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-12BR | 18 | 13 (72.2222%) | 3/16/1999 | ND<20 | ND<20 |
| | | | 9/23/1999 | ND<20 | ND<20 |
| | | | 3/15/2000 | ND<20 | ND<20 |
| | | | 9/24/2003 | ND<20 | ND<20 |
| | | | 3/11/2004 | ND<20 | ND<20 |
| | | | 10/12/2004 | ND<20 | ND<20 |
| | | | 4/1/2005 | ND<20 | ND<20 |
| | | | 10/25/2005 | ND<20 | ND<20 |
| | | | 4/29/2006 | ND<20 | ND<20 |
| | | | 11/18/2006 | ND<20 | ND<20 |
| | | | 5/23/2007 | ND<20 | ND<20 |
| | | | 11/28/2007 | 6 J | 6 J |
| | | | 6/5/2008 | ND<20 | ND<20 |
| | | | 11/20/2008 | ND<20 | ND<20 |
| | | | 6/11/2009 | 1.6 | 1.6 |
| | | | 11/16/2009 | 1.2 | 1.2 |
| | | | 6/30/2010 | 3.4 | 3.4 |
| | | | 11/12/2010 | 2.2 | 2.2 |
| MW-10 | 28 | 24 (85.7143%) | 7/20/1995 | ND<20 | ND<20 |
| | | | 8/24/1995 | ND<20 | ND<20 |
| | | | 9/28/1995 | ND<20 | ND<20 |
| | | | 10/26/1995 | ND<20 | ND<20 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/19/1996 | ND<20 | ND<20 | |
| | | | 12/19/1996 | ND<20 | ND<20 | |
| | | | 3/24/1997 | ND<20 | ND<20 | |
| | | | 9/24/1997 | ND<20 | ND<20 | |
| | | | 4/7/1998 | ND<20 | ND<20 | |
| | | | 9/23/1998 | ND<20 | ND<20 | |
| | | | 3/16/1999 | ND<20 | ND<20 | |
| | | | 9/23/1999 | ND<20 | ND<20 | |
| | | | 3/15/2000 | ND<20 | ND<20 | |
| | | | 9/24/2003 | ND<20 | ND<20 | |
| | | | 3/11/2004 | ND<20 | ND<20 | |
| | | | 10/12/2004 | ND<20 | ND<20 | |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | ND<20 | ND<20 | |
| | | | 4/29/2006 | ND<20 | ND<20 | |
| | | | 11/18/2006 | ND<20 | ND<20 | |
| | | | 5/23/2007 | 6.64 J | 6.64 J | |
| | | | 11/28/2007 | ND<20 | ND<20 | |
| | | | 6/5/2008 | ND<20 | ND<20 | |
| | | | 11/20/2008 | ND<20 | ND<20 | |
| | | | 6/11/2009 | 0.39 J | 0.39 J | |
| | | | 11/16/2009 | 0.37 J | 0.37 J | |
| | | | 6/30/2010 | 0.93 J H | 0.93 J H | |
| | | | 11/12/2010 | ND<0.21 U | | ND<0.21 U |
| MW-12AR | | 18 | 15 (83.3333%) | 3/16/1999 | | ND<20 ND<20 |
| | | | 9/23/1999 | ND<20 | ND<20 | |
| | | | 3/15/2000 | ND<20 | ND<20 | |
| | | | 9/24/2003 | ND<20 | ND<20 | |
| | | | 3/11/2004 | ND<20 | ND<20 | |
| | | | 10/12/2004 | ND<20 | ND<20 | |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | ND<20 | ND<20 | |
| | | | 4/29/2006 | ND<20 | ND<20 | |
| | | | 11/18/2006 | ND<20 | ND<20 | |
| | | | 5/23/2007 | ND<20 | ND<20 | |
| | | | 11/28/2007 | ND<20 | ND<20 | |
| | | | 6/5/2008 | ND<20 | ND<20 | |
| | | | 11/20/2008 | ND<20 | ND<20 | |
| | | | 6/11/2009 | 0.37 J | 0.37 J | |
| | | | 11/16/2009 | 0.53 J | 0.53 J | |
| | | | 6/30/2010 | 2 | 2 | |
| | | | 11/12/2010 | ND<0.21 U | | ND<0.21 U |
| MW-6 | 28 | 23 (82.1429%) | 7/20/1995 | | ND<20 | ND<20 |
| | | | 8/24/1995 | ND<20 | ND<20 | |
| | | | 9/28/1995 | ND<20 | ND<20 | |
| | | | 10/26/1995 | ND<20 | ND<20 | |
| | | | 11/19/1996 | ND<20 | ND<20 | |
| | | | 12/19/1996 | ND<20 | ND<20 | |
| | | | 3/24/1997 | ND<20 | ND<20 | |
| | | | 9/24/1997 | ND<20 | ND<20 | |
| | | | 4/7/1998 | ND<20 | ND<20 | |
| | | | 9/23/1998 | ND<20 | ND<20 | |
| | | | 3/16/1999 | ND<20 | ND<20 | |
| | | | 9/23/1999 | ND<20 | ND<20 | |
| | | | 3/15/2000 | ND<20 | ND<20 | |
| | | | 9/24/2003 | ND<20 | ND<20 | |
| | | | 3/11/2004 | ND<20 | ND<20 | |
| | | | 10/12/2004 | ND<20 | ND<20 | |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | ND<20 | ND<20 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 4/29/2006 | ND<20 | ND<20 | |
| | | | 11/18/2006 | ND<20 | ND<20 | |
| | | | 5/23/2007 | ND<20 | ND<20 | |
| | | | 11/28/2007 | 5.16 J | 5.16 J | |
| | | | 6/5/2008 | ND<20 | ND<20 | |
| | | | 11/20/2008 | ND<20 | ND<20 | |
| | | | 6/11/2009 | 1.2 | 1.2 | |
| | | | 11/16/2009 | 1.3 | 1.3 | |
| | | | 6/30/2010 | 1.6 H | 1.6 H | |
| | | | 11/12/2010 | 0.35 J | 0.35 J | |
| MW-7 | 28 | 16 (57.1429%) | 7/20/1995 | | ND<20 | ND<20 |
| | | | 8/24/1995 | ND<20 | ND<20 | |
| | | | 9/28/1995 | 78.2 | 78.2 | |
| | | | 10/26/1995 | 26.1 | 26.1 | |
| | | | 11/19/1996 | ND<20 | ND<20 | |
| | | | 12/19/1996 | ND<20 | ND<20 | |
| | | | 3/24/1997 | ND<20 | ND<20 | |
| | | | 9/24/1997 | ND<20 | ND<20 | |
| | | | 4/7/1998 | ND<20 | ND<20 | |
| | | | 9/23/1998 | ND<20 | ND<20 | |
| | | | 3/16/1999 | 50 | 50 | |
| | | | 9/23/1999 | 10 J | 10 J | |
| | | | 3/15/2000 | ND<20 | ND<20 | |
| | | | 9/24/2003 | ND<20 | ND<20 | |
| | | | 3/11/2004 | ND<20 | ND<20 | |
| | | | 10/12/2004 | ND<20 | ND<20 | |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | ND<20 | ND<20 | |
| | | | 4/29/2006 | ND<20 | ND<20 | |
| | | | 11/18/2006 | ND<20 | ND<20 | |
| | | | 5/23/2007 | 10.8 | 10.8 | |
| | | | 11/28/2007 | 7.06 J | 7.06 J | |
| | | | 6/5/2008 | 7.55 J | 7.55 J | |
| | | | 11/20/2008 | 6 J | 6 J | |
| | | | 6/11/2009 | 2.3 | 2.3 | |
| | | | 11/16/2009 | 1.4 | 1.4 | |
| | | | 6/30/2010 | 2.1 H | 2.1 H | |
| | | | 11/12/2010 | 1.8 | 1.8 | |
| MW-8 | 27 | 22 (81.4815%) | 7/20/1995 | | ND<20 | ND<20 |
| | | | 8/24/1995 | ND<20 | ND<20 | |
| | | | 9/28/1995 | 51.1 | 51.1 | |
| | | | 10/26/1995 | ND<20 | ND<20 | |
| | | | 11/19/1996 | ND<20 | ND<20 | |
| | | | 12/19/1996 | ND<20 | ND<20 | |
| | | | 3/24/1997 | ND<20 | ND<20 | |
| | | | 9/24/1997 | ND<20 | ND<20 | |
| | | | 4/7/1998 | ND<20 | ND<20 | |
| | | | 9/23/1998 | ND<20 | ND<20 | |
| | | | 3/16/1999 | 30 | 30 | |
| | | | 9/23/1999 | ND<20 | ND<20 | |
| | | | 3/15/2000 | ND<20 | ND<20 | |
| | | | 9/24/2003 | ND<20 | ND<20 | |
| | | | 3/11/2004 | ND<20 | ND<20 | |
| | | | 10/12/2004 | ND<20 | ND<20 | |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | ND<20 | ND<20 | |
| | | | 4/29/2006 | ND<20 | ND<20 | |
| | | | 11/18/2006 | ND<20 | ND<20 | |
| | | | 5/23/2007 | ND<20 | ND<20 | |
| | | | 11/28/2007 | ND<20 | ND<20 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 6/5/2008 | ND<20 | ND<20 | |
| | | | 11/20/2008 | | ND<20 | ND<20 |
| | | | 6/11/2009 | | 0.31 J | 0.31 J |
| | | | 6/30/2010 | | 0.62 J H | 0.62 J H |
| | | | 11/12/2010 | | 1.1 | 1.1 |
| MW-9 | 28 | 20 (71.4286%) | 7/20/1995 | | ND<20 | ND<20 |
| | | | 8/24/1995 | | ND<20 | ND<20 |
| | | | 9/28/1995 | | ND<20 | ND<20 |
| | | | 10/26/1995 | | ND<20 | ND<20 |
| | | | 11/19/1996 | | ND<20 | ND<20 |
| | | | 12/19/1996 | | ND<20 | ND<20 |
| | | | 3/24/1997 | | ND<20 | ND<20 |
| | | | 9/24/1997 | | ND<20 | ND<20 |
| | | | 4/7/1998 | ND<20 | ND<20 | |
| | | | 9/23/1998 | | ND<20 | ND<20 |
| | | | 3/16/1999 | | 20 | 20 |
| | | | 9/23/1999 | | ND<20 | ND<20 |
| | | | 3/15/2000 | | ND<20 | ND<20 |
| | | | 9/24/2003 | | ND<20 | ND<20 |
| | | | 3/11/2004 | | ND<20 | ND<20 |
| | | | 10/12/2004 | | ND<20 | ND<20 |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | | ND<20 | ND<20 |
| | | | 4/29/2006 | | 0.01 J | 0.01 J |
| | | | 11/18/2006 | | 13.8 | 13.8 |
| | | | 5/23/2007 | | 5.59 J | 5.59 J |
| | | | 11/28/2007 | | ND<20 | ND<20 |
| | | | 6/5/2008 | ND<20 | ND<20 | |
| | | | 11/20/2008 | | ND<20 | ND<20 |
| | | | 6/11/2009 | | 0.76 J | 0.76 J |
| | | | 11/16/2009 | | 0.33 J | 0.33 J |
| | | | 6/30/2010 | | 1 H | 1 H |
| | | | 11/12/2010 | | 0.65 J | 0.65 J |
| MW-11R | 28 | 21 (75%) | 7/20/1995 | | ND<20 | ND<20 |
| | | | 8/24/1995 | | ND<20 | ND<20 |
| | | | 9/28/1995 | | ND<20 | ND<20 |
| | | | 10/26/1995 | | ND<20 | ND<20 |
| | | | 11/19/1996 | | ND<20 | ND<20 |
| | | | 12/19/1996 | | ND<20 | ND<20 |
| | | | 3/24/1997 | | ND<20 | ND<20 |
| | | | 9/24/1997 | | ND<20 | ND<20 |
| | | | 4/7/1998 | ND<20 | ND<20 | |
| | | | 9/23/1998 | | ND<20 | ND<20 |
| | | | 3/16/1999 | | ND<20 | ND<20 |
| | | | 9/23/1999 | | 32 | 32 |
| | | | 3/15/2000 | | ND<20 | ND<20 |
| | | | 9/24/2003 | | ND<20 | ND<20 |
| | | | 3/11/2004 | | ND<20 | ND<20 |
| | | | 10/12/2004 | | ND<20 | ND<20 |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | | ND<20 | ND<20 |
| | | | 4/29/2006 | | 10 J | 10 J |
| | | | 11/18/2006 | | ND<20 | ND<20 |
| | | | 5/23/2007 | | ND<20 | ND<20 |
| | | | 11/28/2007 | | 8 J | 8 J |
| | | | 6/5/2008 | ND<20 | ND<20 | |
| | | | 11/20/2008 | | ND<20 | ND<20 |
| | | | 6/11/2009 | | 0.59 J | 0.59 J |
| | | | 11/16/2009 | | 0.73 J | 0.73 J |
| | | | 6/30/2010 | | 0.6 J H | 0.6 J H |

| | | | |
|---|---|---|---|
| 11/12/2010 | 0.6 J | 0.6 J | |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. Original |
|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: Copper

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.01 | -2.65209 | 7.03356 | -0.0265209 |
| 2 | 0.105 | -2.36561 | 12.6297 | -0.27491 |
| 3 | 0.105 | -2.22621 | 17.5857 | -0.508662 |
| 4 | 0.105 | -2.09693 | 21.9828 | -0.72884 |
| 5 | 0.3 | -2.01409 | 26.0394 | -1.33307 |
| 6 | 0.31 | -1.92684 | 29.7521 | -1.93039 |
| 7 | 0.33 | -1.86629 | 33.2351 | -2.54626 |
| 8 | 0.35 | -1.79912 | 36.472 | -3.17595 |
| 9 | 0.35 | -1.75069 | 39.5369 | -3.7887 |
| 10 | 0.37 | -1.6954 | 42.4112 | -4.41599 |
| 11 | 0.37 | -1.65463 | 45.149 | -5.0282 |
| 12 | 0.39 | -1.60725 | 47.7323 | -5.65503 |
| 13 | 0.5 | -1.57179 | 50.2028 | -6.44093 |
| 14 | 0.53 | -1.53007 | 52.5439 | -7.25186 |
| 15 | 0.59 | -1.49852 | 54.7894 | -8.13598 |
| 16 | 0.6 | -1.46106 | 56.9241 | -9.01262 |
| 17 | 0.6 | -1.4325 | 58.9762 | -9.87212 |
| 18 | 0.62 | -1.39838 | 60.9316 | -10.7391 |
| 19 | 0.65 | -1.3722 | 62.8146 | -11.631 |
| 20 | 0.73 | -1.34075 | 64.6122 | -12.6098 |
| 21 | 0.76 | -1.31652 | 66.3454 | -13.6104 |
| 22 | 0.93 | -1.28727 | 68.0025 | -14.8075 |
| 23 | 1 | -1.26464 | 69.6018 | -16.0722 |
| 24 | 1.1 | -1.23724 | 71.1326 | -17.4331 |
| 25 | 1.2 | -1.21596 | 72.6111 | -18.8923 |
| 26 | 1.2 | -1.19012 | 74.0275 | -20.3204 |
| 27 | 1.3 | -1.17 | 75.3964 | -21.8414 |
| 28 | 1.4 | -1.1455 | 76.7086 | -23.4451 |
| 29 | 1.6 | -1.12639 | 77.9774 | -25.2473 |
| 30 | 1.6 | -1.10306 | 79.1941 | -27.0122 |
| 31 | 1.8 | -1.08482 | 80.371 | -28.9649 |
| 32 | 2 | -1.06252 | 81.4999 | -31.09 |
| 33 | 2.1 | -1.04505 | 82.592 | -33.2846 |
| 34 | 2.2 | -1.02365 | 83.6399 | -35.5366 |
| 35 | 2.3 | -1.00687 | 84.6537 | -37.8524 |
| 36 | 3.4 | -0.986272 | 85.6264 | -41.2057 |
| 37 | 5.16 | -0.970094 | 86.5675 | -46.2114 |
| 38 | 5.59 | -0.950222 | 87.4704 | -51.5231 |
| 39 | 6 | -0.93459 | 88.3439 | -57.1307 |
| 40 | 6 | -0.915365 | 89.1818 | -62.6229 |
| 41 | 6.64 | -0.900227 | 89.9922 | -68.6004 |
| 42 | 7.06 | -0.881587 | 90.7694 | -74.8244 |
| 43 | 7.55 | -0.866894 | 91.5209 | -81.3694 |
| 44 | 8 | -0.848786 | 92.2413 | -88.1597 |
| 45 | 9 | -0.834498 | 92.9377 | -95.6702 |
| 46 | 10 | -0.816874 | 93.605 | -103.839 |
| 47 | 10 | -0.802956 | 94.2497 | -111.869 |
| 48 | 10 | -0.785774 | 94.8672 | -119.726 |
| 49 | 10 | -0.772193 | 95.4634 | -127.448 |

| | | | | |
|---|---|---|---|---|
| 50 | 10 | -0.755415 | 96.0341 | -135.002 |
| 51 | 10 | -0.742143 | 96.5849 | -142.424 |
| 52 | 10 | -0.725736 | 97.1116 | -149.681 |
| 53 | 10 | -0.712751 | 97.6196 | -156.809 |
| 54 | 10 | -0.696684 | 98.1049 | -163.775 |
| 55 | 10 | -0.683969 | 8.5727 | -170.615 |
| 56 | 10 | -0.668209 | 99.0192 | -177.297 |
| 57 | 10 | -0.655726 | 99.4492 | -183.854 |
| 58 | 10 | -0.640266 | 99.8592 | -190.257 |
| 59 | 10 | -0.628006 | 100.254 | -196.537 |
| 60 | 10 | -0.612813 | 100.629 | -202.665 |
| 61 | 10 | -0.60076 | 100.99 | -208.673 |
| 62 | 10 | -0.585815 | 101.333 | -214.531 |
| 63 | 10 | -0.573953 | 101.663 | -220.271 |
| 64 | 10 | -0.559237 | 101.975 | -225.863 |
| 65 | 10 | -0.547551 | 102.275 | -231.338 |
| 66 | 10 | -0.533048 | 102.559 | -236.669 |
| 67 | 10 | -0.521527 | 102.831 | -241.884 |
| 68 | 10 | -0.507221 | 103.089 | -246.956 |
| 69 | 10 | -0.49585 | 103.334 | -251.915 |
| 70 | 10 | -0.481728 | 103.566 | -256.732 |
| 71 | 10 | -0.470498 | 103.788 | -261.437 |
| 72 | 10 | -0.456542 | 103.996 | -266.003 |
| 73 | 10 | -0.445443 | 104.195 | -270.457 |
| 74 | 10 | -0.431644 | 104.381 | -274.773 |
| 75 | 10 | -0.420664 | 104.558 | -278.98 |
| 76 | 10 | -0.40701 | 104.724 | -283.05 |
| 77 | 10 | -0.396142 | 104.881 | -287.012 |
| 78 | 10 | -0.382622 | 105.027 | -290.838 |
| 79 | 10 | -0.371856 | 105.165 | -294.556 |
| 80 | 10 | -0.358459 | 105.294 | -298.141 |
| 81 | 10 | -0.347787 | 105.415 | -301.619 |
| 82 | 10 | -0.334503 | 105.527 | -304.964 |
| 83 | 10 | -0.323919 | 105.632 | -308.203 |
| 84 | 10 | -0.310738 | 105.728 | -311.31 |
| 85 | 10 | -0.300232 | 105.818 | -314.313 |
| 86 | 10 | -0.287147 | 105.901 | -317.184 |
| 87 | 10 | -0.276714 | 105.977 | -319.951 |
| 88 | 10 | -0.263715 | 106.047 | -322.589 |
| 89 | 10 | -0.253347 | 106.111 | -325.122 |
| 90 | 10 | -0.240426 | 106.169 | -327.526 |
| 91 | 10 | -0.230118 | 106.222 | -329.827 |
| 92 | 10 | -0.217267 | 106.269 | -332 |
| 93 | 10 | -0.207012 | 106.312 | -334.07 |
| 94 | 10 | -0.194225 | 106.35 | -336.012 |
| 95 | 10 | -0.184017 | 106.383 | -337.853 |
| 96 | 10 | -0.171285 | 106.413 | -339.565 |
| 97 | 10 | -0.161119 | 106.439 | -341.177 |
| 98 | 10 | -0.148434 | 106.461 | -342.661 |
| 99 | 10 | -0.138305 | 106.48 | -344.044 |
| 100 | 10 | -0.125661 | 106.496 | -345.301 |
| 101 | 10 | -0.115562 | 106.509 | -346.456 |
| 102 | 10 | -0.102953 | 106.52 | -347.486 |
| 103 | 10 | -0.0928787 | 106.528 | -348.415 |
| 104 | 10 | -0.0802981 | 106.535 | -349.218 |
| 105 | 10 | -0.0702426 | 106.54 | -349.92 |
| 106 | 10 | -0.0576847 | 106.543 | -350.497 |
| 107 | 10 | -0.0476439 | 106.545 | -350.973 |
| 108 | 10 | -0.0350997 | 106.546 | -351.324 |
| 109 | 10 | -0.0250691 | 106.547 | -351.575 |
| 110 | 10 | -0.0125328 | 106.547 | -351.7 |
| 111 | 10 | 0 | 106.547 | -351.7 |

| | | | | |
|---|---|---|---|---|
| 112 | 10 | 0.0125328 | 106.547 | -351.575 |
| 113 | 10 | 0.0250691 | 106.548 | -351.324 |
| 114 | 10 | 0.0350997 | 106.549 | -350.973 |
| 115 | 10 | 0.0476439 | 106.551 | -350.497 |
| 116 | 10 | 0.0576847 | 106.555 | -349.92 |
| 117 | 10 | 0.0702426 | 106.56 | -349.218 |
| 118 | 10 | 0.0802981 | 106.566 | -348.415 |
| 119 | 10 | 0.0928787 | 106.575 | -347.486 |
| 120 | 10 | 0.102953 | 106.585 | -346.456 |
| 121 | 10 | 0.115562 | 106.599 | -345.301 |
| 122 | 10 | 0.125661 | 106.615 | -344.044 |
| 123 | 10 | 0.138305 | 106.634 | -342.661 |
| 124 | 10 | 0.148434 | 106.656 | -341.177 |
| 125 | 10 | 0.161119 | 106.682 | -339.565 |
| 126 | 10 | 0.171285 | 106.711 | -337.853 |
| 127 | 10 | 0.184017 | 106.745 | -336.012 |
| 128 | 10 | 0.194225 | 106.783 | -334.07 |
| 129 | 10 | 0.207012 | 106.825 | -332 |
| 130 | 10 | 0.217267 | 106.873 | -329.827 |
| 131 | 10 | 0.230118 | 106.926 | -327.526 |
| 132 | 10 | 0.240426 | 106.983 | -325.122 |
| 133 | 10 | 0.253347 | 107.048 | -322.589 |
| 134 | 10 | 0.263715 | 107.117 | -319.951 |
| 135 | 10 | 0.276714 | 107.194 | -317.184 |
| 136 | 10 | 0.287147 | 107.276 | -314.313 |
| 137 | 10 | 0.300232 | 107.366 | -311.31 |
| 138 | 10 | 0.310738 | 107.463 | -308.203 |
| 139 | 10 | 0.323919 | 107.568 | -304.964 |
| 140 | 10 | 0.334503 | 107.68 | -301.619 |
| 141 | 10 | 0.347787 | 107.801 | -298.141 |
| 142 | 10 | 0.358459 | 107.929 | -294.556 |
| 143 | 10 | 0.371856 | 108.067 | -290.838 |
| 144 | 10 | 0.382622 | 108.214 | -287.012 |
| 145 | 10 | 0.396142 | 108.371 | -283.05 |
| 146 | 10 | 0.40701 | 108.536 | -278.98 |
| 147 | 10 | 0.420664 | 108.713 | -274.773 |
| 148 | 10 | 0.431644 | 108.9 | -270.457 |
| 149 | 10 | 0.445443 | 109.098 | -266.003 |
| 150 | 10 | 0.456542 | 109.307 | -261.437 |
| 151 | 10 | 0.470498 | 109.528 | -256.732 |
| 152 | 10 | 0.481728 | 109.76 | -251.915 |
| 153 | 10 | 0.49585 | 110.006 | -246.956 |
| 154 | 10 | 0.507221 | 110.263 | -241.884 |
| 155 | 10 | 0.521527 | 110.535 | -236.669 |
| 156 | 10 | 0.533048 | 110.819 | -231.338 |
| 157 | 10 | 0.547551 | 111.119 | -225.863 |
| 158 | 10 | 0.559237 | 111.432 | -220.271 |
| 159 | 10 | 0.573953 | 111.761 | -214.531 |
| 160 | 10 | 0.585815 | 112.104 | -208.673 |
| 161 | 10 | 0.60076 | 112.465 | -202.665 |
| 162 | 10 | 0.612813 | 112.841 | -196.537 |
| 163 | 10 | 0.628006 | 113.235 | -190.257 |
| 164 | 10 | 0.640266 | 113.645 | -183.854 |
| 165 | 10 | 0.655726 | 114.075 | -177.297 |
| 166 | 10 | 0.668209 | 114.522 | -170.615 |
| 167 | 10 | 0.68396 | 114.989 | -163.775 |
| 168 | 10 | 0.696684 | 115.475 | -156.809 |
| 169 | 10 | 0.712751 | 115.983 | -149.681 |
| 170 | 10 | 0.725736 | 116.51 | -142.424 |
| 171 | 10 | 0.742143 | 117.06 | -135.002 |
| 172 | 10 | 0.755415 | 117.631 | -127.448 |
| 173 | 10 | 0.772193 | 118.227 | -119.726 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 10 | 0.785774 | | 118.845 | -111.869 |
| 175 | 10 | 0.802956 | | 119.489 | -103.839 |
| 176 | 10 | 0.816874 | | 120.157 | -95.6702 |
| 177 | 10 | 0.834498 | | 120.853 | -87.3252 |
| 178 | 10 | 0.848786 | | 121.574 | -78.8374 |
| 179 | 10 | 0.866894 | | 122.325 | -70.1684 |
| 180 | 10 | 0.881587 | | 123.102 | -61.3526 |
| 181 | 10 | 0.900227 | | 123.913 | -52.3503 |
| 182 | 10 | 0.915365 | | 124.751 | -43.1966 |
| 183 | 10 | 0.93459 | 125.624 | -33.8507 | |
| 184 | 10 | 0.950222 | | 126.527 | -24.3485 |
| 185 | 10 | 0.970094 | | 127.468 | -14.6476 |
| 186 | 10 | 0.986272 | | 128.441 | -4.78486 |
| 187 | 10 | 1.00687 | 129.455 | 5.2838 | |
| 188 | 10 | 1.02365 | 130.502 | 15.5203 | |
| 189 | 10 | 1.04505 | 131.594 | 25.9708 | |
| 190 | 10 | 1.06252 | 132.723 | 36.596 | |
| 191 | 10 | 1.08482 | 133.9 | 47.4442 | |
| 192 | 10 | 1.10306 | 135.117 | 58.4749 | |
| 193 | 10 | 1.12639 | 136.386 | 69.7388 | |
| 194 | 10 | 1.1455 | 137.698 | 81.1938 | |
| 195 | 10 | 1.17 | 139.067 | 92.8938 | |
| 196 | 10 | 1.19012 | 140.483 | 104.795 | |
| 197 | 10 | 1.21596 | 141.962 | 116.955 | |
| 198 | 10 | 1.23724 | 143.493 | 129.327 | |
| 199 | 10 | 1.26464 | 145.092 | 141.973 | |
| 200 | 10 | 1.28727 | 146.749 | 154.846 | |
| 201 | 10 | 1.31652 | 148.482 | 168.011 | |
| 202 | 10 | 1.34075 | 150.28 | 181.419 | |
| 203 | 10 | 1.3722 | 152.163 | 195.141 | |
| 204 | 10 | 1.39838 | 154.118 | 209.125 | |
| 205 | 10 | 1.4325 | 156.17 | 223.45 | |
| 206 | 10 | 1.46106 | 158.305 | 238.06 | |
| 207 | 10 | 1.49852 | 160.551 | 253.045 | |
| 208 | 10 | 1.53007 | 162.892 | 268.346 | |
| 209 | 10 | 1.57179 | 165.362 | 284.064 | |
| 210 | 10 | 1.60725 | 167.945 | 300.136 | |
| 211 | 10 | 1.65463 | 170.683 | 316.683 | |
| 212 | 10 | 1.6954 | 173.558 | 333.637 | |
| 213 | 10.8 | 1.75069 | 176.622 | 352.544 | |
| 214 | 13.8 | 1.79912 | 179.859 | 377.372 | |
| 215 | 20 | 1.86629 | 183.342 | 414.698 | |
| 216 | 26.1 | 1.92684 | 187.055 | 464.988 | |
| 217 | 30 | 2.01409 | 191.112 | 525.411 | |
| 218 | 32 | 2.09693 | 195.509 | 592.513 | |
| 219 | 50 | 2.22621 | 200.465 | 703.823 | |
| 220 | 51.1 | 2.36561 | 206.061 | 824.706 | |
| 221 | 78.2 | 2.65209 | 213.094 | 1032.1 | |

Data Set Standard Deviation = 7.44701
Numerator = 1.06523e+006
Denominator = 2.59991e+006
W Statistic = 0.409717 = 1.06523e+006 / 2.59991e+006

5% Critical value of 0.976 exceeds 0.409717
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.409717
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: Copper

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | -4.60517 | -2.65209 | 7.03356 | 12.2133 |
| 2 | -2.25379 | -2.36561 | 12.6297 | 17.5449 |
| 3 | -2.25379 | -2.22621 | 17.5857 | 22.5623 |
| 4 | -2.25379 | -2.09693 | 21.9828 | 27.2884 |
| 5 | -1.20397 | -2.01409 | 26.0394 | 29.7133 |
| 6 | -1.17118 | -1.92684 | 29.7521 | 31.97 |
| 7 | -1.10866 | -1.86629 | 33.2351 | 34.0391 |
| 8 | -1.04982 | -1.79912 | 36.472 | 35.9278 |
| 9 | -1.04982 | -1.75069 | 39.5369 | 37.7657 |
| 10 | -0.994252 | -1.6954 | 42.4112 | 39.4514 |
| 11 | -0.994252 | -1.65463 | 45.149 | 41.0965 |
| 12 | -0.941609 | -1.60725 | 47.7323 | 42.6099 |
| 13 | -0.693147 | -1.57179 | 50.2028 | 43.6994 |
| 14 | -0.634878 | -1.53007 | 52.5439 | 44.6708 |
| 15 | -0.527633 | -1.49852 | 54.7894 | 45.4614 |
| 16 | -0.510826 | -1.46106 | 56.9241 | 46.2078 |
| 17 | -0.510826 | -1.4325 | 58.9762 | 46.9396 |
| 18 | -0.478036 | -1.39838 | 60.9316 | 47.608 |
| 19 | -0.430783 | -1.3722 | 62.8146 | 48.1992 |
| 20 | -0.314711 | -1.34075 | 64.6122 | 48.6211 |
| 21 | -0.274437 | -1.31652 | 66.3454 | 48.9824 |
| 22 | -0.0725707 | -1.28727 | 68.0025 | 49.0758 |
| 23 | 0 | -1.26464 | 69.6018 | 49.0758 |
| 24 | 0.0953102 | -1.23724 | 71.1326 | 48.9579 |
| 25 | 0.182322 | -1.21596 | 72.6111 | 48.7362 |
| 26 | 0.182322 | -1.19012 | 74.0275 | 48.5192 |
| 27 | 0.262364 | -1.17 | 75.3964 | 48.2123 |
| 28 | 0.336472 | -1.1455 | 76.7086 | 47.8268 |
| 29 | 0.470004 | -1.12639 | 77.9774 | 47.2974 |
| 30 | 0.470004 | -1.10306 | 79.1941 | 46.779 |
| 31 | 0.587787 | -1.08482 | 80.371 | 46.1413 |
| 32 | 0.693147 | -1.06252 | 81.4999 | 45.4048 |
| 33 | 0.741937 | -1.04505 | 82.592 | 44.6295 |
| 34 | 0.788457 | -1.02365 | 83.6399 | 43.8224 |
| 35 | 0.832909 | -1.00687 | 84.6537 | 42.9837 |
| 36 | 1.22378 | -0.986272 | 85.6264 | 41.7768 |
| 37 | 1.64094 | -0.970094 | 86.5675 | 40.1849 |
| 38 | 1.72098 | -0.950222 | 87.4704 | 38.5496 |
| 39 | 1.79176 | -0.93459 | 88.3439 | 36.875 |
| 40 | 1.79176 | -0.915365 | 89.1818 | 35.2349 |
| 41 | 1.89311 | -0.900227 | 89.9922 | 33.5307 |
| 42 | 1.95445 | -0.881587 | 90.7694 | 31.8077 |
| 43 | 2.02155 | -0.866894 | 91.5209 | 30.0552 |
| 44 | 2.07944 | -0.848786 | 92.2413 | 28.2902 |
| 45 | 2.19722 | -0.834498 | 92.9377 | 26.4566 |
| 46 | 2.30259 | -0.816874 | 93.605 | 24.5757 |
| 47 | 2.30259 | -0.802956 | 94.2497 | 22.7268 |
| 48 | 2.30259 | -0.785774 | 94.8672 | 20.9175 |
| 49 | 2.30259 | -0.772193 | 95.4634 | 19.1395 |

| | | | | |
|---|---|---|---|---|
| 50 | 2.30259 | -0.755415 | 96.0341 | 17.4001 |
| 51 | 2.30259 | -0.742143 | 96.5849 | 15.6912 |
| 52 | 2.30259 | -0.725736 | 97.1116 | 14.0202 |
| 53 | 2.30259 | -0.712751 | 97.6196 | 12.379 |
| 54 | 2.30259 | -0.696684 | 98.1049 | 10.7748 |
| 55 | 2.30259 | -0.683969 | 8.5727 | 9.19994 |
| 56 | 2.30259 | -0.668209 | 99.0192 | 7.66133 |
| 57 | 2.30259 | -0.655726 | 99.4492 | 6.15147 |
| 58 | 2.30259 | -0.640266 | 99.8592 | 4.6772 |
| 59 | 2.30259 | -0.628006 | 100.254 | 3.23116 |
| 60 | 2.30259 | -0.612813 | 100.629 | 1.82011 |
| 61 | 2.30259 | -0.60076 | 100.99 | 0.436806 |
| 62 | 2.30259 | -0.585815 | 101.333 | -0.912082 |
| 63 | 2.30259 | -0.573953 | 101.663 | -2.23366 |
| 64 | 2.30259 | -0.559237 | 101.975 | -3.52135 |
| 65 | 2.30259 | -0.547551 | 102.275 | -4.78213 |
| 66 | 2.30259 | -0.533048 | 102.559 | -6.00952 |
| 67 | 2.30259 | -0.521527 | 102.831 | -7.21038 |
| 68 | 2.30259 | -0.507221 | 103.089 | -8.3783 |
| 69 | 2.30259 | -0.49585 | 103.334 | -9.52003 |
| 70 | 2.30259 | -0.481728 | 103.566 | -10.6293 |
| 71 | 2.30259 | -0.470498 | 103.788 | -11.7126 |
| 72 | 2.30259 | -0.456542 | 103.996 | -12.7638 |
| 73 | 2.30259 | -0.445443 | 104.195 | -13.7895 |
| 74 | 2.30259 | -0.431644 | 104.381 | -14.7834 |
| 75 | 2.30259 | -0.420664 | 104.558 | -15.752 |
| 76 | 2.30259 | -0.40701 | 104.724 | -16.6892 |
| 77 | 2.30259 | -0.396142 | 104.881 | -17.6013 |
| 78 | 2.30259 | -0.382622 | 105.027 | -18.4824 |
| 79 | 2.30259 | -0.371856 | 105.165 | -19.3386 |
| 80 | 2.30259 | -0.358459 | 105.294 | -20.164 |
| 81 | 2.30259 | -0.347787 | 105.415 | -20.9648 |
| 82 | 2.30259 | -0.334503 | 105.527 | -21.735 |
| 83 | 2.30259 | -0.323919 | 105.632 | -22.4809 |
| 84 | 2.30259 | -0.310738 | 105.728 | -23.1964 |
| 85 | 2.30259 | -0.300232 | 105.818 | -23.8877 |
| 86 | 2.30259 | -0.287147 | 105.901 | -24.5489 |
| 87 | 2.30259 | -0.276714 | 105.977 | -25.186 |
| 88 | 2.30259 | -0.263715 | 106.047 | -25.7932 |
| 89 | 2.30259 | -0.253347 | 106.111 | -26.3766 |
| 90 | 2.30259 | -0.240426 | 106.169 | -26.9302 |
| 91 | 2.30259 | -0.230118 | 106.222 | -27.4601 |
| 92 | 2.30259 | -0.217267 | 106.269 | -27.9603 |
| 93 | 2.30259 | -0.207012 | 106.312 | -28.437 |
| 94 | 2.30259 | -0.194225 | 106.35 | -28.8842 |
| 95 | 2.30259 | -0.184017 | 106.383 | -29.3079 |
| 96 | 2.30259 | -0.171285 | 106.413 | -29.7023 |
| 97 | 2.30259 | -0.161119 | 106.439 | -30.0733 |
| 98 | 2.30259 | -0.148434 | 106.461 | -30.4151 |
| 99 | 2.30259 | -0.138305 | 106.48 | -30.7336 |
| 100 | 2.30259 | -0.125661 | 106.496 | -31.0229 |
| 101 | 2.30259 | -0.115562 | 106.509 | -31.289 |
| 102 | 2.30259 | -0.102953 | 106.52 | -31.5261 |
| 103 | 2.30259 | -0.0928787 | 106.528 | -31.7399 |
| 104 | 2.30259 | -0.0802981 | 106.535 | -31.9248 |
| 105 | 2.30259 | -0.0702426 | 106.54 | -32.0865 |
| 106 | 2.30259 | -0.0576847 | 106.543 | -32.2194 |
| 107 | 2.30259 | -0.0476439 | 106.545 | -32.3291 |
| 108 | 2.30259 | -0.0350997 | 106.546 | -32.4099 |
| 109 | 2.30259 | -0.0250691 | 106.547 | -32.4676 |
| 110 | 2.30259 | -0.0125328 | 106.547 | -32.4965 |
| 111 | 2.30259 | 0 | 106.547 | -32.4965 |

| | | | | |
|---|---|---|---|---|
| 112 | 2.30259 | 0.0125328 | 106.547 | -32.4676 |
| 113 | 2.30259 | 0.0250691 | 106.548 | -32.4099 |
| 114 | 2.30259 | 0.0350997 | 106.549 | -32.3291 |
| 115 | 2.30259 | 0.0476439 | 106.551 | -32.2194 |
| 116 | 2.30259 | 0.0576847 | 106.555 | -32.0865 |
| 117 | 2.30259 | 0.0702426 | 106.56 | -31.9248 |
| 118 | 2.30259 | 0.0802981 | 106.566 | -31.7399 |
| 119 | 2.30259 | 0.0928787 | 106.575 | -31.5261 |
| 120 | 2.30259 | 0.102953 | 106.585 | -31.289 |
| 121 | 2.30259 | 0.115562 | 106.599 | -31.0229 |
| 122 | 2.30259 | 0.125661 | 106.615 | -30.7336 |
| 123 | 2.30259 | 0.138305 | 106.634 | -30.4151 |
| 124 | 2.30259 | 0.148434 | 106.656 | -30.0733 |
| 125 | 2.30259 | 0.161119 | 106.682 | -29.7023 |
| 126 | 2.30259 | 0.171285 | 106.711 | -29.3079 |
| 127 | 2.30259 | 0.184017 | 106.745 | -28.8842 |
| 128 | 2.30259 | 0.194225 | 106.783 | -28.437 |
| 129 | 2.30259 | 0.207012 | 106.825 | -27.9603 |
| 130 | 2.30259 | 0.217267 | 106.873 | -27.4601 |
| 131 | 2.30259 | 0.230118 | 106.926 | -26.9302 |
| 132 | 2.30259 | 0.240426 | 106.983 | -26.3766 |
| 133 | 2.30259 | 0.253347 | 107.048 | -25.7932 |
| 134 | 2.30259 | 0.263715 | 107.117 | -25.186 |
| 135 | 2.30259 | 0.276714 | 107.194 | -24.5489 |
| 136 | 2.30259 | 0.287147 | 107.276 | -23.8877 |
| 137 | 2.30259 | 0.300232 | 107.366 | -23.1964 |
| 138 | 2.30259 | 0.310738 | 107.463 | -22.4809 |
| 139 | 2.30259 | 0.323919 | 107.568 | -21.735 |
| 140 | 2.30259 | 0.334503 | 107.68 | -20.9648 |
| 141 | 2.30259 | 0.347787 | 107.801 | -20.164 |
| 142 | 2.30259 | 0.358459 | 107.929 | -19.3386 |
| 143 | 2.30259 | 0.371856 | 108.067 | -18.4824 |
| 144 | 2.30259 | 0.382622 | 108.214 | -17.6013 |
| 145 | 2.30259 | 0.396142 | 108.371 | -16.6892 |
| 146 | 2.30259 | 0.40701 | 108.536 | -15.752 |
| 147 | 2.30259 | 0.420664 | 108.713 | -14.7834 |
| 148 | 2.30259 | 0.431644 | 108.9 | -13.7895 |
| 149 | 2.30259 | 0.445443 | 109.098 | -12.7638 |
| 150 | 2.30259 | 0.456542 | 109.307 | -11.7126 |
| 151 | 2.30259 | 0.470498 | 109.528 | -10.6293 |
| 152 | 2.30259 | 0.481728 | 109.76 | -9.52003 |
| 153 | 2.30259 | 0.49585 | 110.006 | -8.3783 |
| 154 | 2.30259 | 0.507221 | 110.263 | -7.21038 |
| 155 | 2.30259 | 0.521527 | 110.535 | -6.00952 |
| 156 | 2.30259 | 0.533048 | 110.819 | -4.78213 |
| 157 | 2.30259 | 0.547551 | 111.119 | -3.52135 |
| 158 | 2.30259 | 0.559237 | 111.432 | -2.23366 |
| 159 | 2.30259 | 0.573953 | 111.761 | -0.912082 |
| 160 | 2.30259 | 0.585815 | 112.104 | 0.436806 |
| 161 | 2.30259 | 0.60076 | 112.465 | 1.82011 |
| 162 | 2.30259 | 0.612813 | 112.841 | 3.23116 |
| 163 | 2.30259 | 0.628006 | 113.235 | 4.6772 |
| 164 | 2.30259 | 0.640266 | 113.645 | 6.15147 |
| 165 | 2.30259 | 0.655726 | 114.075 | 7.66133 |
| 166 | 2.30259 | 0.668209 | 114.522 | 9.19994 |
| 167 | 2.30259 | 0.68396 | 114.989 | 10.7748 |
| 168 | 2.30259 | 0.696684 | 115.475 | 12.379 |
| 169 | 2.30259 | 0.712751 | 115.983 | 14.0202 |
| 170 | 2.30259 | 0.725736 | 116.51 | 15.6912 |
| 171 | 2.30259 | 0.742143 | 117.06 | 17.4001 |
| 172 | 2.30259 | 0.755415 | 117.631 | 19.1395 |
| 173 | 2.30259 | 0.772193 | 118.227 | 20.9175 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 2.30259 | 0.785774 | | 118.845 | 22.7268 |
| 175 | 2.30259 | 0.802956 | | 119.489 | 24.5757 |
| 176 | 2.30259 | 0.816874 | | 120.157 | 26.4566 |
| 177 | 2.30259 | 0.834498 | | 120.853 | 28.3781 |
| 178 | 2.30259 | 0.848786 | | 121.574 | 30.3325 |
| 179 | 2.30259 | 0.866894 | | 122.325 | 32.3286 |
| 180 | 2.30259 | 0.881587 | | 123.102 | 34.3586 |
| 181 | 2.30259 | 0.900227 | | 123.913 | 36.4314 |
| 182 | 2.30259 | 0.915365 | | 124.751 | 38.5391 |
| 183 | 2.30259 | 0.93459 | 125.624 | 40.6911 | |
| 184 | 2.30259 | 0.950222 | | 126.527 | 42.8791 |
| 185 | 2.30259 | 0.970094 | | 127.468 | 45.1128 |
| 186 | 2.30259 | 0.986272 | | 128.441 | 47.3838 |
| 187 | 2.30259 | 1.00687 | 129.455 | 49.7022 | |
| 188 | 2.30259 | 1.02365 | 130.502 | 52.0592 | |
| 189 | 2.30259 | 1.04505 | 131.594 | 54.4655 | |
| 190 | 2.30259 | 1.06252 | 132.723 | 56.9121 | |
| 191 | 2.30259 | 1.08482 | 133.9 | 59.41 | |
| 192 | 2.30259 | 1.10306 | 135.117 | 61.9498 | |
| 193 | 2.30259 | 1.12639 | 136.386 | 64.5435 | |
| 194 | 2.30259 | 1.1455 | 137.698 | 67.1811 | |
| 195 | 2.30259 | 1.17 | 139.067 | 69.8751 | |
| 196 | 2.30259 | 1.19012 | 140.483 | 72.6155 | |
| 197 | 2.30259 | 1.21596 | 141.962 | 75.4153 | |
| 198 | 2.30259 | 1.23724 | 143.493 | 78.2641 | |
| 199 | 2.30259 | 1.26464 | 145.092 | 81.1761 | |
| 200 | 2.30259 | 1.28727 | 146.749 | 84.1401 | |
| 201 | 2.30259 | 1.31652 | 148.482 | 87.1715 | |
| 202 | 2.30259 | 1.34075 | 150.28 | 90.2587 | |
| 203 | 2.30259 | 1.3722 | 152.163 | 93.4184 | |
| 204 | 2.30259 | 1.39838 | 154.118 | 96.6382 | |
| 205 | 2.30259 | 1.4325 | 156.17 | 99.9367 | |
| 206 | 2.30259 | 1.46106 | 158.305 | 103.301 | |
| 207 | 2.30259 | 1.49852 | 160.551 | 106.751 | |
| 208 | 2.30259 | 1.53007 | 162.892 | 110.274 | |
| 209 | 2.30259 | 1.57179 | 165.362 | 113.894 | |
| 210 | 2.30259 | 1.60725 | 167.945 | 117.594 | |
| 211 | 2.30259 | 1.65463 | 170.683 | 121.404 | |
| 212 | 2.30259 | 1.6954 | 173.558 | 125.308 | |
| 213 | 2.37955 | 1.75069 | 176.622 | 129.474 | |
| 214 | 2.62467 | 1.79912 | 179.859 | 134.196 | |
| 215 | 2.99573 | 1.86629 | 183.342 | 139.787 | |
| 216 | 3.26194 | 1.92684 | 187.055 | 146.072 | |
| 217 | 3.4012 | 2.01409 | 191.112 | 152.923 | |
| 218 | 3.46574 | 2.09693 | 195.509 | 160.19 | |
| 219 | 3.91202 | 2.22621 | 200.465 | 168.899 | |
| 220 | 3.93378 | 2.36561 | 206.061 | 178.205 | |
| 221 | 4.35927 | 2.65209 | 213.094 | 189.766 | |

Data Set Standard Deviation = 1.16578
Numerator = 36011.1
Denominator = 63712.5
W Statistic = 0.565213 = 36011.1 / 63712.5

5% Critical value of 0.976 exceeds 0.565213
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.565213
Evidence of non-normality at 99% level of significance

# Kruskal-Wallis Non-Parametric Test

## Parameter: Copper

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

# Kruskal Wallis Ranks

## Background Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-13 | 3/16/1999 | 2.30259 J | 210 |
| | 9/23/1999 | 2.19722 J | 209 |
| | 3/15/2000 | ND<2.30259 | 84 |
| | 9/24/2003 | ND<2.30259 | 84 |
| | 3/11/2004 | ND<2.30259 | 84 |
| | 10/12/2004 | ND<2.30259 | 84 |
| | 4/1/2005 | ND<2.30259 | 84 |
| | 10/25/2005 | ND<2.30259 | 84 |
| | 4/29/2006 | ND<2.30259 | 84 |
| | 11/18/2006 | ND<2.30259 | 84 |
| | 5/23/2007 | ND<2.30259 | 84 |
| | 11/28/2007 | ND<2.30259 | 84 |
| | 6/5/2008 | ND<2.30259 | 84 |
| | 11/20/2008 | ND<2.30259 | 84 |
| | 6/11/2009 | -0.693147 J | 177 |
| | 11/16/2009 | -1.20397 J | 169 |
| | 6/30/2010 | -1.04982 J H | 172 |
| | 11/12/2010 | ND<-2.25379 U | 84 |

Rank Sum = 2029
Rank Mean = 112.722

Background Rank Sum = 2029
Background Rank Mean = 112.722

## Compliance Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-12BR | 3/16/1999 | ND<2.30259 | 84 |
| | 9/23/1999 | ND<2.30259 | 84 |
| | 3/15/2000 | ND<2.30259 | 84 |
| | 9/24/2003 | ND<2.30259 | 84 |
| | 3/11/2004 | ND<2.30259 | 84 |
| | 10/12/2004 | ND<2.30259 | 84 |
| | 4/1/2005 | ND<2.30259 | 84 |
| | 10/25/2005 | ND<2.30259 | 84 |
| | 4/29/2006 | ND<2.30259 | 84 |
| | 11/18/2006 | ND<2.30259 | 84 |
| | 5/23/2007 | ND<2.30259 | 84 |
| | 11/28/2007 | 1.79176 J | 203 |
| | 6/5/2008 | ND<2.30259 | 84 |
| | 11/20/2008 | ND<2.30259 | 84 |
| | 6/11/2009 | 0.470004 | 193 |
| | 11/16/2009 | 0.182322 | 189 |
| | 6/30/2010 | 1.22378 | 200 |
| | 11/12/2010 | 0.788457 | 198 |

Rank Sum = 2075
Rank Mean = 115.278

| | | | |
|---|---|---|---|
| MW-10 | 7/20/1995 | ND<2.30259 | 84 |
| | 8/24/1995 | ND<2.30259 | 84 |
| | 9/28/1995 | ND<2.30259 | 84 |
| | 10/26/1995 | ND<2.30259 | 84 |
| | 11/19/1996 | ND<2.30259 | 84 |
| | 12/19/1996 | ND<2.30259 | 84 |
| | 3/24/1997 | ND<2.30259 | 84 |
| | 9/24/1997 | ND<2.30259 | 84 |
| | 4/7/1998 | ND<2.30259 | 84 |
| | 9/23/1998 | ND<2.30259 | 84 |
| | 3/16/1999 | ND<2.30259 | 84 |
| | 9/23/1999 | ND<2.30259 | 84 |
| | 3/15/2000 | ND<2.30259 | 84 |
| | 9/24/2003 | ND<2.30259 | 84 |
| | 3/11/2004 | ND<2.30259 | 84 |
| | 10/12/2004 | ND<2.30259 | 84 |
| | 4/1/2005 | ND<2.30259 | 84 |
| | 10/25/2005 | ND<2.30259 | 84 |
| | 4/29/2006 | ND<2.30259 | 84 |
| | 11/18/2006 | ND<2.30259 | 84 |
| | 5/23/2007 | 1.89311 J | 205 |
| | 11/28/2007 | ND<2.30259 | 84 |
| | 6/5/2008 | ND<2.30259 | 84 |
| | 11/20/2008 | ND<2.30259 | 84 |
| | 6/11/2009 | -0.941609 J | 176 |
| | 11/16/2009 | -0.994252 J | 174 |
| | 6/30/2010 | -0.0725707 J H | 186 |
| | 11/12/2010 | ND<-2.25379 U | 84 |

Rank Sum = 2757
Rank Mean = 98.4643

| | | | |
|---|---|---|---|
| MW-12AR | 3/16/1999 | ND<2.30259 | 84 |
| | 9/23/1999 | ND<2.30259 | 84 |
| | 3/15/2000 | ND<2.30259 | 84 |
| | 9/24/2003 | ND<2.30259 | 84 |
| | 3/11/2004 | ND<2.30259 | 84 |
| | 10/12/2004 | ND<2.30259 | 84 |
| | 4/1/2005 | ND<2.30259 | 84 |
| | 10/25/2005 | ND<2.30259 | 84 |
| | 4/29/2006 | ND<2.30259 | 84 |
| | 11/18/2006 | ND<2.30259 | 84 |
| | 5/23/2007 | ND<2.30259 | 84 |
| | 11/28/2007 | ND<2.30259 | 84 |
| | 6/5/2008 | ND<2.30259 | 84 |
| | 11/20/2008 | ND<2.30259 | 84 |
| | 6/11/2009 | -0.994252 J | 175 |
| | 11/16/2009 | -0.634878 J | 178 |
| | 6/30/2010 | 0.693147 | 196 |
| | 11/12/2010 | ND<-2.25379 U | 84 |

Rank Sum = 1809
Rank Mean = 100.5

| | | | |
|---|---|---|---|
| MW-6 | 7/20/1995 | ND<2.30259 | 84 |
| | 8/24/1995 | ND<2.30259 | 84 |
| | 9/28/1995 | ND<2.30259 | 84 |
| | 10/26/1995 | ND<2.30259 | 84 |
| | 11/19/1996 | ND<2.30259 | 84 |
| | 12/19/1996 | ND<2.30259 | 84 |
| | 3/24/1997 | ND<2.30259 | 84 |
| | 9/24/1997 | ND<2.30259 | 84 |
| | 4/7/1998 | ND<2.30259 | 84 |

| | | | |
|---|---|---|---|
| | 9/23/1998 | ND<2.30259 | 84 |
| | 3/16/1999 | ND<2.30259 | 84 |
| | 9/23/1999 | ND<2.30259 | 84 |
| | 3/15/2000 | ND<2.30259 | 84 |
| | 9/24/2003 | ND<2.30259 | 84 |
| | 3/11/2004 | ND<2.30259 | 84 |
| | 10/12/2004 | ND<2.30259 | 84 |
| | 4/1/2005 | ND<2.30259 | 84 |
| | 10/25/2005 | ND<2.30259 | 84 |
| | 4/29/2006 | ND<2.30259 | 84 |
| | 11/18/2006 | ND<2.30259 | 84 |
| | 5/23/2007 | ND<2.30259 | 84 |
| | 11/28/2007 | 1.64094 J | 201 |
| | 6/5/2008 | ND<2.30259 | 84 |
| | 11/20/2008 | ND<2.30259 | 84 |
| | 6/11/2009 | 0.182322 | 190 |
| | 11/16/2009 | 0.262364 | 191 |
| | 6/30/2010 | 0.470004 H | 194 |
| | 11/12/2010 | -1.04982 J | 173 |

Rank Sum = 2881
Rank Mean = 102.893

| | | | |
|---|---|---|---|
| MW-7 | 7/20/1995 | ND<2.30259 | 84 |
| | 8/24/1995 | ND<2.30259 | 84 |
| | 9/28/1995 | 4.35927 | 221 |
| | 10/26/1995 | 3.26194 | 216 |
| | 11/19/1996 | ND<2.30259 | 84 |
| | 12/19/1996 | ND<2.30259 | 84 |
| | 3/24/1997 | ND<2.30259 | 84 |
| | 9/24/1997 | ND<2.30259 | 84 |
| | 4/7/1998 | ND<2.30259 | 84 |
| | 9/23/1998 | ND<2.30259 | 84 |
| | 3/16/1999 | 3.91202 | 219 |
| | 9/23/1999 | 2.30259 J | 211 |
| | 3/15/2000 | ND<2.30259 | 84 |
| | 9/24/2003 | ND<2.30259 | 84 |
| | 3/11/2004 | ND<2.30259 | 84 |
| | 10/12/2004 | ND<2.30259 | 84 |
| | 4/1/2005 | ND<2.30259 | 84 |
| | 10/25/2005 | ND<2.30259 | 84 |
| | 4/29/2006 | ND<2.30259 | 84 |
| | 11/18/2006 | ND<2.30259 | 84 |
| | 5/23/2007 | 2.37955 | 213 |
| | 11/28/2007 | 1.95445 J | 206 |
| | 6/5/2008 | 2.02155 J | 207 |
| | 11/20/2008 | 1.79176 J | 204 |
| | 6/11/2009 | 0.832909 | 199 |
| | 11/16/2009 | 0.336472 | 192 |
| | 6/30/2010 | 0.741937 H | 197 |
| | 11/12/2010 | 0.587787 | 195 |

Rank Sum = 3824
Rank Mean = 136.571

| | | | |
|---|---|---|---|
| MW-8 | 7/20/1995 | ND<2.30259 | 84 |
| | 8/24/1995 | ND<2.30259 | 84 |
| | 9/28/1995 | 3.93378 | 220 |
| | 10/26/1995 | ND<2.30259 | 84 |
| | 11/19/1996 | ND<2.30259 | 84 |
| | 12/19/1996 | ND<2.30259 | 84 |
| | 3/24/1997 | ND<2.30259 | 84 |
| | 9/24/1997 | ND<2.30259 | 84 |
| | 4/7/1998 | ND<2.30259 | 84 |

| | | | |
|---|---|---|---|
| | 9/23/1998 | ND<2.30259 | 84 |
| | 3/16/1999 | 3.4012 | 217 |
| | 9/23/1999 | ND<2.30259 | 84 |
| | 3/15/2000 | ND<2.30259 | 84 |
| | 9/24/2003 | ND<2.30259 | 84 |
| | 3/11/2004 | ND<2.30259 | 84 |
| | 10/12/2004 | ND<2.30259 | 84 |
| | 4/1/2005 | ND<2.30259 | 84 |
| | 10/25/2005 | ND<2.30259 | 84 |
| | 4/29/2006 | ND<2.30259 | 84 |
| | 11/18/2006 | ND<2.30259 | 84 |
| | 5/23/2007 | ND<2.30259 | 84 |
| | 11/28/2007 | ND<2.30259 | 84 |
| | 6/5/2008 | ND<2.30259 | 84 |
| | 11/20/2008 | ND<2.30259 | 84 |
| | 6/11/2009 | -1.17118 J | 170 |
| | 6/30/2010 | -0.478036 J H | 182 |
| | 11/12/2010 | 0.0953102 | 188 |

Rank Sum = 2825
Rank Mean = 104.63

| | | | |
|---|---|---|---|
| MW-9 | 7/20/1995 | ND<2.30259 | 84 |
| | 8/24/1995 | ND<2.30259 | 84 |
| | 9/28/1995 | ND<2.30259 | 84 |
| | 10/26/1995 | ND<2.30259 | 84 |
| | 11/19/1996 | ND<2.30259 | 84 |
| | 12/19/1996 | ND<2.30259 | 84 |
| | 3/24/1997 | ND<2.30259 | 84 |
| | 9/24/1997 | ND<2.30259 | 84 |
| | 4/7/1998 | ND<2.30259 | 84 |
| | 9/23/1998 | ND<2.30259 | 84 |
| | 3/16/1999 | 2.99573 | 215 |
| | 9/23/1999 | ND<2.30259 | 84 |
| | 3/15/2000 | ND<2.30259 | 84 |
| | 9/24/2003 | ND<2.30259 | 84 |
| | 3/11/2004 | ND<2.30259 | 84 |
| | 10/12/2004 | ND<2.30259 | 84 |
| | 4/1/2005 | ND<2.30259 | 84 |
| | 10/25/2005 | ND<2.30259 | 84 |
| | 4/29/2006 | -4.60517 J | 168 |
| | 11/18/2006 | 2.62467 | 214 |
| | 5/23/2007 | 1.72098 J | 202 |
| | 11/28/2007 | ND<2.30259 | 84 |
| | 6/5/2008 | ND<2.30259 | 84 |
| | 11/20/2008 | ND<2.30259 | 84 |
| | 6/11/2009 | -0.274437 J | 185 |
| | 11/16/2009 | -1.10866 J | 171 |
| | 6/30/2010 | 0 H | 187 |
| | 11/12/2010 | -0.430783 J | 183 |

Rank Sum = 3205
Rank Mean = 114.464

| | | | |
|---|---|---|---|
| MW-11R | 7/20/1995 | ND<2.30259 | 84 |
| | 8/24/1995 | ND<2.30259 | 84 |
| | 9/28/1995 | ND<2.30259 | 84 |
| | 10/26/1995 | ND<2.30259 | 84 |
| | 11/19/1996 | ND<2.30259 | 84 |
| | 12/19/1996 | ND<2.30259 | 84 |
| | 3/24/1997 | ND<2.30259 | 84 |
| | 9/24/1997 | ND<2.30259 | 84 |
| | 4/7/1998 | ND<2.30259 | 84 |
| | 9/23/1998 | ND<2.30259 | 84 |

| | | |
|---|---|---|
| 3/16/1999 | ND<2.30259 | 84 |
| 9/23/1999 | 3.46574 | 218 |
| 3/15/2000 | ND<2.30259 | 84 |
| 9/24/2003 | ND<2.30259 | 84 |
| 3/11/2004 | ND<2.30259 | 84 |
| 10/12/2004 | ND<2.30259 | 84 |
| 4/1/2005 | ND<2.30259 | 84 |
| 10/25/2005 | ND<2.30259 | 84 |
| 4/29/2006 | 2.30259 J | 212 |
| 11/18/2006 | ND<2.30259 | 84 |
| 5/23/2007 | ND<2.30259 | 84 |
| 11/28/2007 | 2.07944 J | 208 |
| 6/5/2008 | ND<2.30259 | 84 |
| 11/20/2008 | ND<2.30259 | 84 |
| 6/11/2009 | -0.527633 J | 179 |
| 11/16/2009 | -0.314711 J | 184 |
| 6/30/2010 | -0.510826 J H | 180 |
| 11/12/2010 | -0.510826 J | 181 |

Rank Sum = 3126
Rank Mean = 111.643

## Calculation Results:

Kruskal-Wallis H Statistic = 6.93655
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 12.2012
95% Confidence comparison value is 15.5073 at 8 degrees of freedom
6.93655 < 15.5073 indicating no significant group difference at 5% significance level
12.2012 < 15.5073 indicating no significant group difference at 5% significance level when adjusted for ties

# Concentrations (ppb)

## Parameter: Dieldrin

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 220
Total Non-Detect: 218
Percent Non-Detects: 99.0909%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 18 (100%) | 3/16/1999 | ND<0.1 | ND<0.1 |
| | | | 9/23/1999 | ND<0.1 | ND<0.1 |
| | | | 3/15/2000 | ND<0.1 | ND<0.1 |
| | | | 9/24/2003 | ND<0.1 | ND<0.1 |
| | | | 3/11/2004 | ND<0.1 | ND<0.1 |
| | | | 10/12/2004 | ND<0.1 | ND<0.1 |
| | | | 4/1/2005 | ND<0.1 | ND<0.1 |
| | | | 10/25/2005 | ND<0.1 | ND<0.1 |
| | | | 4/29/2006 | ND<0.1 | ND<0.1 |
| | | | 11/18/2006 | ND<0.1 | ND<0.1 |
| | | | 5/23/2007 | ND<0.1 | ND<0.1 |
| | | | 11/28/2007 | ND<0.1 | ND<0.1 |
| | | | 6/5/2008 | ND<0.1 | ND<0.1 |
| | | | 11/20/2008 | ND<0.1 | ND<0.1 |
| | | | 6/11/2009 | ND<0.0093 | ND<0.0093 |
| | | | 11/16/2009 | ND<0.0086 | ND<0.0086 |
| | | | 6/30/2010 | ND<0.84 | ND<0.84 |
| | | | 11/12/2010 | ND<0.83 U | ND<0.83 U |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-10 | 28 | 28 (100%) | 7/20/1995 | ND<0.1 | ND<0.1 |
| | | | 8/24/1995 | ND<0.1 | ND<0.1 |
| | | | 9/28/1995 | ND<0.1 | ND<0.1 |
| | | | 10/26/1995 | ND<0.1 | ND<0.1 |
| | | | 11/19/1996 | ND<0.1 | ND<0.1 |
| | | | 12/19/1996 | ND<0.1 | ND<0.1 |
| | | | 3/24/1997 | ND<0.1 | ND<0.1 |
| | | | 9/24/1997 | ND<0.1 | ND<0.1 |
| | | | 4/7/1998 | ND<0.1 | ND<0.1 |
| | | | 9/23/1998 | ND<0.1 | ND<0.1 |
| | | | 3/16/1999 | ND<0.1 | ND<0.1 |
| | | | 9/23/1999 | ND<0.1 | ND<0.1 |
| | | | 3/15/2000 | ND<0.1 | ND<0.1 |
| | | | 9/24/2003 | ND<0.1 | ND<0.1 |
| | | | 3/11/2004 | ND<0.1 | ND<0.1 |
| | | | 10/12/2004 | ND<0.1 | ND<0.1 |
| | | | 4/1/2005 | ND<0.1 | ND<0.1 |
| | | | 10/25/2005 | ND<0.1 | ND<0.1 |
| | | | 4/29/2006 | ND<0.1 | ND<0.1 |
| | | | 11/18/2006 | ND<0.1 | ND<0.1 |
| | | | 5/23/2007 | ND<0.1 | ND<0.1 |
| | | | 11/28/2007 | ND<0.1 | ND<0.1 |
| | | | 6/5/2008 | ND<0.1 | ND<0.1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/20/2008 | ND<0.1 | ND<0.1 | |
| | | | 6/11/2009 | ND<0.0093 | | ND<0.0093 |
| | | | 11/16/2009 | ND<0.0086 | | ND<0.0086 |
| | | | 6/30/2010 | ND<0.84 | | ND<0.84 |
| | | | 11/12/2010 | ND<0.84 U | | ND<0.84 U |
| MW-7 | 28 | 27 (96.4286%) | 7/20/1995 | | ND<0.1 | ND<0.1 |
| | | | 8/24/1995 | ND<0.1 | ND<0.1 | |
| | | | 9/28/1995 | ND<0.1 | ND<0.1 | |
| | | | 10/26/1995 | ND<0.1 | ND<0.1 | |
| | | | 11/19/1996 | ND<0.1 | ND<0.1 | |
| | | | 12/19/1996 | ND<0.1 | ND<0.1 | |
| | | | 3/24/1997 | ND<0.1 | ND<0.1 | |
| | | | 9/24/1997 | ND<0.1 | ND<0.1 | |
| | | | 4/7/1998 | ND<0.1 | ND<0.1 | |
| | | | 9/23/1998 | ND<0.1 | ND<0.1 | |
| | | | 3/16/1999 | ND<0.1 | ND<0.1 | |
| | | | 9/23/1999 | ND<0.1 | ND<0.1 | |
| | | | 3/15/2000 | ND<0.1 | ND<0.1 | |
| | | | 9/24/2003 | ND<0.1 | ND<0.1 | |
| | | | 3/11/2004 | ND<0.1 | ND<0.1 | |
| | | | 10/12/2004 | ND<0.1 | ND<0.1 | |
| | | | 4/1/2005 | ND<0.1 | ND<0.1 | |
| | | | 10/25/2005 | ND<0.1 | ND<0.1 | |
| | | | 4/29/2006 | ND<0.1 | ND<0.1 | |
| | | | 11/18/2006 | ND<0.1 | ND<0.1 | |
| | | | 5/23/2007 | ND<0.1 | ND<0.1 | |
| | | | 11/28/2007 | ND<0.1 | ND<0.1 | |
| | | | 6/5/2008 | 0.064 J | 0.064 J | |
| | | | 11/20/2008 | ND<0.1 | ND<0.1 | |
| | | | 6/11/2009 | ND<0.0093 | | ND<0.0093 |
| | | | 11/16/2009 | ND<0.0086 | | ND<0.0086 |
| | | | 6/30/2010 | ND<0.85 | | ND<0.85 |
| | | | 11/12/2010 | ND<0.83 U | | ND<0.83 U |
| MW-6 | 28 | 28 (100%) | 7/20/1995 | | ND<0.1 | ND<0.1 |
| | | | 8/24/1995 | ND<0.1 | ND<0.1 | |
| | | | 9/28/1995 | ND<0.1 | ND<0.1 | |
| | | | 10/26/1995 | ND<0.1 | ND<0.1 | |
| | | | 11/19/1996 | ND<0.1 | ND<0.1 | |
| | | | 12/19/1996 | ND<0.1 | ND<0.1 | |
| | | | 3/24/1997 | ND<0.1 | ND<0.1 | |
| | | | 9/24/1997 | ND<0.1 | ND<0.1 | |
| | | | 4/7/1998 | ND<0.1 | ND<0.1 | |
| | | | 9/23/1998 | ND<0.1 | ND<0.1 | |
| | | | 3/16/1999 | ND<0.1 | ND<0.1 | |
| | | | 9/23/1999 | ND<0.1 | ND<0.1 | |
| | | | 3/15/2000 | ND<0.1 | ND<0.1 | |
| | | | 9/24/2003 | ND<0.1 | ND<0.1 | |
| | | | 3/11/2004 | ND<0.1 | ND<0.1 | |
| | | | 10/12/2004 | ND<0.1 | ND<0.1 | |
| | | | 4/1/2005 | ND<0.1 | ND<0.1 | |
| | | | 10/25/2005 | ND<0.1 | ND<0.1 | |
| | | | 4/29/2006 | ND<0.1 | ND<0.1 | |
| | | | 11/18/2006 | ND<0.1 | ND<0.1 | |
| | | | 5/23/2007 | ND<0.1 | ND<0.1 | |
| | | | 11/28/2007 | ND<0.1 | ND<0.1 | |
| | | | 6/5/2008 | ND<0.1 | ND<0.1 | |
| | | | 11/20/2008 | ND<0.1 | ND<0.1 | |
| | | | 6/11/2009 | ND<0.0093 | | ND<0.0093 |
| | | | 11/16/2009 | ND<0.0086 | | ND<0.0086 |
| | | | 6/30/2010 | ND<0.84 | | ND<0.84 |

| | | | | | |
|---|---|---|---|---|---|
| | | | 11/12/2010 | ND<0.83 U | ND<0.83 U |
| MW-12BR | 19 | 19 (100%) | 3/16/1999 | ND<0.1 | ND<0.1 |
| | | | 9/23/1999 | ND<0.1 | ND<0.1 |
| | | | 3/15/2000 | ND<0.1 | ND<0.1 |
| | | | 9/24/2003 | ND<0.1 | ND<0.1 |
| | | | 3/11/2004 | ND<0.1 | ND<0.1 |
| | | | 10/12/2004 | ND<0.1 | ND<0.1 |
| | | | 4/1/2005 | ND<0.1 | ND<0.1 |
| | | | 10/25/2005 | ND<0.1 | ND<0.1 |
| | | | 4/29/2006 | ND<0.1 | ND<0.1 |
| | | | 11/18/2006 | ND<0.1 | ND<0.1 |
| | | | 5/23/2007 | ND<0.1 | ND<0.1 |
| | | | 11/28/2007 | ND<0.1 | ND<0.1 |
| | | | 6/5/2008 | ND<0.1 | ND<0.1 |
| | | | 11/20/2008 | ND<0.1 | ND<0.1 |
| | | | 6/11/2009 | ND<0.0091 | ND<0.0091 |
| | | | 11/16/2009 | ND<0.0086 | ND<0.0086 |
| | | | 6/30/2010 | ND<0.83 | ND<0.83 |
| | | | 11/12/2010 | ND<0.88 U | ND<0.88 U |
| | | | 11/12/2010 | ND<0.88 U | ND<0.88 U |
| MW-11R | 28 | 28 (100%) | 7/20/1995 | ND<0.1 | ND<0.1 |
| | | | 8/24/1995 | ND<0.1 | ND<0.1 |
| | | | 9/28/1995 | ND<0.1 | ND<0.1 |
| | | | 10/26/1995 | ND<0.1 | ND<0.1 |
| | | | 11/19/1996 | ND<0.1 | ND<0.1 |
| | | | 12/19/1996 | ND<0.1 | ND<0.1 |
| | | | 3/24/1997 | ND<0.1 | ND<0.1 |
| | | | 9/24/1997 | ND<0.1 | ND<0.1 |
| | | | 4/7/1998 | ND<0.1 | ND<0.1 |
| | | | 9/23/1998 | ND<0.1 | ND<0.1 |
| | | | 3/16/1999 | ND<0.1 | ND<0.1 |
| | | | 9/23/1999 | ND<0.1 | ND<0.1 |
| | | | 3/15/2000 | ND<0.1 | ND<0.1 |
| | | | 9/24/2003 | ND<0.1 | ND<0.1 |
| | | | 3/11/2004 | ND<0.1 | ND<0.1 |
| | | | 10/12/2004 | ND<0.1 | ND<0.1 |
| | | | 4/1/2005 | ND<0.1 | ND<0.1 |
| | | | 10/25/2005 | ND<0.1 | ND<0.1 |
| | | | 4/29/2006 | ND<0.1 | ND<0.1 |
| | | | 11/18/2006 | ND<0.1 | ND<0.1 |
| | | | 5/23/2007 | ND<0.1 | ND<0.1 |
| | | | 11/28/2007 | ND<0.1 | ND<0.1 |
| | | | 6/5/2008 | ND<0.1 | ND<0.1 |
| | | | 11/20/2008 | ND<0.1 | ND<0.1 |
| | | | 6/11/2009 | ND<0.0093 | ND<0.0093 |
| | | | 11/16/2009 | ND<0.0086 | ND<0.0086 |
| | | | 6/30/2010 | ND<0.84 | ND<0.84 |
| | | | 11/12/2010 | ND<0.84 U | ND<0.84 U |
| MW-9 | 28 | 27 (96.4286%) | 7/20/1995 | ND<0.1 | ND<0.1 |
| | | | 8/24/1995 | ND<0.1 | ND<0.1 |
| | | | 9/28/1995 | ND<0.1 | ND<0.1 |
| | | | 10/26/1995 | ND<0.1 | ND<0.1 |
| | | | 11/19/1996 | ND<0.1 | ND<0.1 |
| | | | 12/19/1996 | ND<0.1 | ND<0.1 |
| | | | 3/24/1997 | ND<0.1 | ND<0.1 |
| | | | 9/24/1997 | ND<0.1 | ND<0.1 |
| | | | 4/7/1998 | ND<0.1 | ND<0.1 |
| | | | 9/23/1998 | ND<0.1 | ND<0.1 |
| | | | 3/16/1999 | ND<0.1 | ND<0.1 |

| | | | | | |
|---|---|---|---|---|---|
| | | | 9/23/1999 | ND<0.1 | ND<0.1 |
| | | | 3/15/2000 | ND<0.1 | ND<0.1 |
| | | | 9/24/2003 | ND<0.1 | ND<0.1 |
| | | | 3/11/2004 | ND<0.1 | ND<0.1 |
| | | | 10/12/2004 | ND<0.1 | ND<0.1 |
| | | | 4/1/2005 | ND<0.1 | ND<0.1 |
| | | | 10/25/2005 | ND<0.1 | ND<0.1 |
| | | | 4/29/2006 | ND<0.1 | ND<0.1 |
| | | | 11/18/2006 | ND<0.1 | ND<0.1 |
| | | | 5/23/2007 | ND<0.1 | ND<0.1 |
| | | | 11/28/2007 | ND<0.1 | ND<0.1 |
| | | | 6/5/2008 | ND<0.1 | ND<0.1 |
| | | | 11/20/2008 | ND<0.1 | ND<0.1 |
| | | | 6/11/2009 | ND<0.0091 | ND<0.0091 |
| | | | 11/16/2009 | ND<0.0086 | ND<0.0086 |
| | | | 6/30/2010 | ND<0.85 | ND<0.85 |
| | | | 11/12/2010 | 0.92 J | 0.92 J |
| MW-12AR | 18 | 18 (100%) | 3/16/1999 | ND<0.1 | ND<0.1 |
| | | | 9/23/1999 | ND<0.1 | ND<0.1 |
| | | | 3/15/2000 | ND<0.1 | ND<0.1 |
| | | | 9/24/2003 | ND<0.1 | ND<0.1 |
| | | | 3/11/2004 | ND<0.1 | ND<0.1 |
| | | | 10/12/2004 | ND<0.1 | ND<0.1 |
| | | | 4/1/2005 | ND<0.1 | ND<0.1 |
| | | | 10/25/2005 | ND<0.1 | ND<0.1 |
| | | | 4/29/2006 | ND<0.1 | ND<0.1 |
| | | | 11/18/2006 | ND<0.1 | ND<0.1 |
| | | | 5/23/2007 | ND<0.1 | ND<0.1 |
| | | | 11/28/2007 | ND<0.1 | ND<0.1 |
| | | | 6/5/2008 | ND<0.1 | ND<0.1 |
| | | | 11/20/2008 | ND<0.1 | ND<0.1 |
| | | | 6/11/2009 | ND<0.0093 | ND<0.0093 |
| | | | 11/16/2009 | ND<0.0088 | ND<0.0088 |
| | | | 6/30/2010 | ND<0.83 | ND<0.83 |
| | | | 11/12/2010 | ND<0.83 U | ND<0.83 U |
| MW-8 | 25 | 25 (100%) | 7/20/1995 | ND<0.1 | ND<0.1 |
| | | | 8/24/1995 | ND<0.1 | ND<0.1 |
| | | | 9/28/1995 | ND<0.1 | ND<0.1 |
| | | | 10/26/1995 | ND<0.1 | ND<0.1 |
| | | | 11/19/1996 | ND<0.1 | ND<0.1 |
| | | | 12/19/1996 | ND<0.1 | ND<0.1 |
| | | | 3/24/1997 | ND<0.1 | ND<0.1 |
| | | | 9/24/1997 | ND<0.1 | ND<0.1 |
| | | | 4/7/1998 | ND<0.1 | ND<0.1 |
| | | | 9/23/1998 | ND<0.1 | ND<0.1 |
| | | | 3/16/1999 | ND<0.1 | ND<0.1 |
| | | | 9/23/1999 | ND<0.1 | ND<0.1 |
| | | | 3/15/2000 | ND<0.1 | ND<0.1 |
| | | | 9/24/2003 | ND<0.1 | ND<0.1 |
| | | | 3/11/2004 | ND<0.1 | ND<0.1 |
| | | | 10/12/2004 | ND<0.1 | ND<0.1 |
| | | | 4/1/2005 | ND<0.1 | ND<0.1 |
| | | | 10/25/2005 | ND<0.1 | ND<0.1 |
| | | | 4/29/2006 | ND<0.1 | ND<0.1 |
| | | | 11/18/2006 | ND<0.1 | ND<0.1 |
| | | | 5/23/2007 | ND<0.1 | ND<0.1 |
| | | | 11/28/2007 | ND<0.1 | ND<0.1 |
| | | | 6/5/2008 | ND<0.1 | ND<0.1 |
| | | | 11/20/2008 | ND<0.1 | ND<0.1 |
| | | | 6/11/2009 | ND<0.0093 | ND<0.0093 |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. Original |
|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: Dieldrin

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 220

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.0043 | -2.65209 | 7.03356 | -0.011404 |
| 2 | 0.0043 | -2.3656 | 12.6297 | -0.0215761 |
| 3 | 0.0043 | -2.2262 | 17.5857 | -0.0311488 |
| 4 | 0.0043 | -2.0969 | 21.9828 | -0.0401656 |
| 5 | 0.0043 | -2.0140 | 26.0394 | -0.0488262 |
| 6 | 0.0043 | -1.9268 | 29.7521 | -0.0571116 |
| 7 | 0.0043 | -1.8662 | 33.2351 | -0.0651367 |
| 8 | 0.0044 | -1.7991 | 36.472 | -0.0730528 |
| 9 | 0.00455 | -1.7506 | 39.5369 | -0.0810184 |
| 10 | 0.00455 | -1.6954 | 42.4112 | -0.0887325 |
| 11 | 0.00465 | -1.6546 | 45.149 | -0.0964265 |
| 12 | 0.00465 | -1.6072 | 47.7323 | -0.1039 |
| 13 | 0.00465 | -1.5717 | 50.2028 | -0.111209 |
| 14 | 0.00465 | -1.5300 | 52.5439 | -0.118324 |
| 15 | 0.00465 | -1.4985 | 54.7894 | -0.125292 |
| 16 | 0.00465 | -1.4610 | 56.9241 | -0.132086 |
| 17 | 0.00465 | -1.4325 | 58.9762 | -0.138747 |
| 18 | 0.05 | -1.3983 | 60.9316 | -0.208666 |
| 19 | 0.05 | -1.3722 | 62.8146 | -0.277276 |
| 20 | 0.05 | -1.3407 | 64.6122 | -0.344314 |
| 21 | 0.05 | -1.3105 | 66.3298 | -0.409843 |
| 22 | 0.05 | -1.2872 | 67.9869 | -0.474206 |
| 23 | 0.05 | -1.2590 | 69.5722 | -0.53716 |
| 24 | 0.05 | -1.2372 | 71.1029 | -0.599022 |
| 25 | 0.05 | -1.2107 | 72.5688 | -0.659559 |
| 26 | 0.05 | -1.1901 | 73.9852 | -0.719065 |
| 27 | 0.05 | -1.1650 | 75.3425 | -0.777317 |
| 28 | 0.05 | -1.1455 | 76.6547 | -0.834592 |
| 29 | 0.05 | -1.1216 | 77.9129 | -0.890676 |
| 30 | 0.05 | -1.1030 | 79.1296 | -0.945829 |
| 31 | 0.05 | -1.0803 | 80.2967 | -0.999845 |
| 32 | 0.05 | -1.0625 | 81.4257 | -1.05297 |
| 33 | 0.05 | -1.0407 | 82.5088 | -1.10501 |
| 34 | 0.05 | -1.0236 | 83.5566 | -1.15619 |
| 35 | 0.05 | -1.0027 | 84.5621 | -1.20633 |
| 36 | 0.05 | -0.986272 | 85.5348 | -1.25564 |
| 37 | 0.05 | -0.966088 | 86.4681 | -1.30394 |
| 38 | 0.05 | -0.950222 | 87.3711 | -1.35146 |
| 39 | 0.05 | -0.930718 | 88.2373 | -1.39799 |
| 40 | 0.05 | -0.915365 | 89.0752 | -1.44376 |
| 41 | 0.05 | -0.896473 | 89.8788 | -1.48858 |
| 42 | 0.05 | -0.877897 | 90.6496 | -1.53248 |
| 43 | 0.05 | -0.863249 | 91.3947 | -1.57564 |
| 44 | 0.05 | -0.845198 | 92.1091 | -1.6179 |
| 45 | 0.05 | -0.830953 | 92.7996 | -1.65945 |
| 46 | 0.05 | -0.813379 | 93.4612 | -1.70012 |
| 47 | 0.05 | -0.7995 | 94.1004 | -1.74009 |
| 48 | 0.05 | -0.782366 | 94.7125 | -1.77921 |
| 49 | 0.05 | -0.768821 | 95.3036 | -1.81765 |

| | | | | |
|---|---|---|---|---|
| 50 | 0.05 | -0.752084 | 95.8692 | -1.85526 |
| 51 | 0.05 | -0.738846 | 96.4151 | -1.8922 |
| 52 | 0.05 | -0.722479 | 96.9371 | -1.92832 |
| 53 | 0.05 | -0.709522 | 97.4405 | -1.9638 |
| 54 | 0.05 | -0.693493 | 97.9214 | -1.99847 |
| 55 | 0.05 | -0.680797 | 98.3849 | -2.03251 |
| 56 | 0.05 | -0.665079 | 98.8272 | -2.06577 |
| 57 | 0.05 | -0.652622 | 99.2531 | -2.0984 |
| 58 | 0.05 | -0.637192 | 99.6592 | -2.13026 |
| 59 | 0.05 | -0.624956 | 100.05 | -2.1615 |
| 60 | 0.05 | -0.609791 | 100.422 | -2.19199 |
| 61 | 0.05 | -0.594766 | 100.775 | -2.22173 |
| 62 | 0.05 | -0.582841 | 101.115 | -2.25087 |
| 63 | 0.05 | -0.568052 | 101.438 | -2.27928 |
| 64 | 0.05 | -0.556308 | 101.747 | -2.30709 |
| 65 | 0.05 | -0.541736 | 102.041 | -2.33418 |
| 66 | 0.05 | -0.530162 | 102.322 | -2.36069 |
| 67 | 0.05 | -0.515791 | 102.588 | -2.38648 |
| 68 | 0.05 | -0.504372 | 102.842 | -2.4117 |
| 69 | 0.05 | -0.490189 | 103.082 | -2.4362 |
| 70 | 0.05 | -0.478914 | 103.312 | -2.46015 |
| 71 | 0.05 | -0.464904 | 103.528 | -2.4834 |
| 72 | 0.05 | -0.453763 | 103.734 | -2.50608 |
| 73 | 0.05 | -0.439913 | 103.927 | -2.52808 |
| 74 | 0.05 | -0.428895 | 104.111 | -2.54952 |
| 75 | 0.05 | -0.415193 | 104.284 | -2.57028 |
| 76 | 0.05 | -0.40429 | 104.447 | -2.5905 |
| 77 | 0.05 | -0.390726 | 104.6 | -2.61003 |
| 78 | 0.05 | -0.379927 | 104.744 | -2.62903 |
| 79 | 0.05 | -0.36649 | 104.878 | -2.64736 |
| 80 | 0.05 | -0.355788 | 105.005 | -2.66514 |
| 81 | 0.05 | -0.342466 | 105.122 | -2.68227 |
| 82 | 0.05 | -0.329206 | 105.231 | -2.69873 |
| 83 | 0.05 | -0.318639 | 105.332 | -2.71466 |
| 84 | 0.05 | -0.305481 | 105.426 | -2.72993 |
| 85 | 0.05 | -0.294992 | 105.513 | -2.74468 |
| 86 | 0.05 | -0.281926 | 105.592 | -2.75878 |
| 87 | 0.05 | -0.271509 | 105.666 | -2.77236 |
| 88 | 0.05 | -0.258527 | 105.733 | -2.78528 |
| 89 | 0.05 | -0.248174 | 105.794 | -2.79769 |
| 90 | 0.05 | -0.235269 | 105.85 | -2.80945 |
| 91 | 0.05 | -0.224974 | 105.9 | -2.8207 |
| 92 | 0.05 | -0.212137 | 105.945 | -2.83131 |
| 93 | 0.05 | -0.201894 | 105.986 | -2.8414 |
| 94 | 0.05 | -0.189118 | 106.022 | -2.85086 |
| 95 | 0.05 | -0.17892 | 106.054 | -2.85981 |
| 96 | 0.05 | -0.166199 | 106.081 | -2.86812 |
| 97 | 0.05 | -0.156042 | 106.106 | -2.87592 |
| 98 | 0.05 | -0.143367 | 106.126 | -2.88309 |
| 99 | 0.05 | -0.133244 | 106.144 | -2.88975 |
| 100 | 0.05 | -0.12061 | 106.159 | -2.89578 |
| 101 | 0.05 | -0.107995 | 106.17 | -2.90118 |
| 102 | 0.05 | -0.0979139 | 106.18 | -2.90608 |
| 103 | 0.05 | -0.0853288 | 106.187 | -2.91034 |
| 104 | 0.05 | -0.0752698 | 106.193 | -2.91411 |
| 105 | 0.05 | -0.0627062 | 106.197 | -2.91724 |
| 106 | 0.05 | -0.0526632 | 106.199 | -2.91987 |
| 107 | 0.05 | -0.0401167 | 106.201 | -2.92188 |
| 108 | 0.05 | -0.0300838 | 106.202 | -2.92338 |
| 109 | 0.05 | -0.0175476 | 106.202 | -2.92426 |
| 110 | 0.05 | -0.00751925 | 106.202 | -2.92464 |
| 111 | 0.05 | 0.00751925 | 106.202 | -2.92426 |

| | | | | |
|---|---|---|---|---|
| 112 | 0.05 | 0.0175476 | 106.203 | -2.92338 |
| 113 | 0.05 | 0.0300838 | 106.204 | -2.92188 |
| 114 | 0.05 | 0.0401167 | 106.205 | -2.91987 |
| 115 | 0.05 | 0.0526632 | 106.208 | -2.91724 |
| 116 | 0.05 | 0.0627062 | 106.212 | -2.91411 |
| 117 | 0.05 | 0.0752698 | 106.218 | -2.91034 |
| 118 | 0.05 | 0.0853288 | 106.225 | -2.90608 |
| 119 | 0.05 | 0.0979139 | 106.234 | -2.90118 |
| 120 | 0.05 | 0.107995 | 106.246 | -2.89578 |
| 121 | 0.05 | 0.12061 | 106.261 | -2.88975 |
| 122 | 0.05 | 0.133244 | 106.278 | -2.88309 |
| 123 | 0.05 | 0.143367 | 106.299 | -2.87592 |
| 124 | 0.05 | 0.156042 | 106.323 | -2.86812 |
| 125 | 0.05 | 0.166199 | 106.351 | -2.85981 |
| 126 | 0.05 | 0.17892 | 106.383 | -2.85086 |
| 127 | 0.05 | 0.189118 | 106.419 | -2.8414 |
| 128 | 0.05 | 0.201894 | 106.459 | -2.83131 |
| 129 | 0.05 | 0.212137 | 106.504 | -2.8207 |
| 130 | 0.05 | 0.224974 | 106.555 | -2.80945 |
| 131 | 0.05 | 0.235269 | 106.61 | -2.79769 |
| 132 | 0.05 | 0.248174 | 106.672 | -2.78528 |
| 133 | 0.05 | 0.258527 | 106.739 | -2.77236 |
| 134 | 0.05 | 0.271509 | 106.813 | -2.75878 |
| 135 | 0.05 | 0.281926 | 106.892 | -2.74468 |
| 136 | 0.05 | 0.294992 | 106.979 | -2.72993 |
| 137 | 0.05 | 0.305481 | 107.072 | -2.71466 |
| 138 | 0.05 | 0.318639 | 107.174 | -2.69873 |
| 139 | 0.05 | 0.329206 | 107.282 | -2.68227 |
| 140 | 0.05 | 0.342466 | 107.4 | -2.66514 |
| 141 | 0.05 | 0.355788 | 107.526 | -2.64736 |
| 142 | 0.05 | 0.36649 | 107.661 | -2.62903 |
| 143 | 0.05 | 0.379927 | 107.805 | -2.61003 |
| 144 | 0.05 | 0.390726 | 107.958 | -2.5905 |
| 145 | 0.05 | 0.40429 | 108.121 | -2.57028 |
| 146 | 0.05 | 0.415193 | 108.293 | -2.54952 |
| 147 | 0.05 | 0.428895 | 108.477 | -2.52808 |
| 148 | 0.05 | 0.439913 | 108.671 | -2.50608 |
| 149 | 0.05 | 0.453763 | 108.877 | -2.4834 |
| 150 | 0.05 | 0.464904 | 109.093 | -2.46015 |
| 151 | 0.05 | 0.478914 | 109.322 | -2.4362 |
| 152 | 0.05 | 0.490189 | 109.563 | -2.4117 |
| 153 | 0.05 | 0.504372 | 109.817 | -2.38648 |
| 154 | 0.05 | 0.515791 | 110.083 | -2.36069 |
| 155 | 0.05 | 0.530162 | 110.364 | -2.33418 |
| 156 | 0.05 | 0.541736 | 110.657 | -2.30709 |
| 157 | 0.05 | 0.556308 | 110.967 | -2.27928 |
| 158 | 0.05 | 0.568052 | 111.29 | -2.25087 |
| 159 | 0.05 | 0.582841 | 111.629 | -2.22173 |
| 160 | 0.05 | 0.594766 | 111.983 | -2.19199 |
| 161 | 0.05 | 0.609791 | 112.355 | -2.1615 |
| 162 | 0.05 | 0.624956 | 112.746 | -2.13026 |
| 163 | 0.05 | 0.637192 | 113.152 | -2.0984 |
| 164 | 0.05 | 0.652622 | 113.577 | -2.06577 |
| 165 | 0.05 | 0.665079 | 114.02 | -2.03251 |
| 166 | 0.05 | 0.680797 | 114.483 | -1.99847 |
| 167 | 0.05 | 0.693493 | 114.964 | -1.9638 |
| 168 | 0.05 | 0.709522 | 115.468 | -1.92832 |
| 169 | 0.05 | 0.722479 | 115.99 | -1.8922 |
| 170 | 0.05 | 0.738846 | 116.535 | -1.85526 |
| 171 | 0.05 | 0.752084 | 117.101 | -1.81765 |
| 172 | 0.05 | 0.768821 | 117.692 | -1.77921 |
| 173 | 0.05 | 0.782366 | 118.304 | -1.74009 |

| | | | | |
|---|---|---|---|---|
| 174 | 0.05 | 0.7995 | 118.943 | -1.70012 |
| 175 | 0.05 | 0.813379 | 119.605 | -1.65945 |
| 176 | 0.05 | 0.830953 | 120.296 | -1.6179 |
| 177 | 0.05 | 0.845198 | 121.01 | -1.57564 |
| 178 | 0.05 | 0.863249 | 121.755 | -1.53248 |
| 179 | 0.05 | 0.877897 | 122.526 | -1.48858 |
| 180 | 0.05 | 0.896473 | 123.329 | -1.44376 |
| 181 | 0.05 | 0.915365 | 124.167 | -1.39799 |
| 182 | 0.05 | 0.930718 | 125.034 | -1.35146 |
| 183 | 0.05 | 0.950222 | 125.937 | -1.30394 |
| 184 | 0.05 | 0.966088 | 126.87 | -1.25564 |
| 185 | 0.05 | 0.986272 | 127.843 | -1.20633 |
| 186 | 0.05 | 1.00271 | 128.848 | -1.15619 |
| 187 | 0.05 | 1.02365 | 129.896 | -1.10501 |
| 188 | 0.05 | 1.04073 | 130.979 | -1.05297 |
| 189 | 0.05 | 1.06252 | 132.108 | -0.999845 |
| 190 | 0.05 | 1.08032 | 133.275 | -0.945829 |
| 191 | 0.05 | 1.10306 | 134.492 | -0.890676 |
| 192 | 0.05 | 1.12168 | 135.75 | -0.834592 |
| 193 | 0.05 | 1.1455 | 137.062 | -0.777317 |
| 194 | 0.05 | 1.16505 | 138.419 | -0.719065 |
| 195 | 0.05 | 1.19012 | 139.836 | -0.659559 |
| 196 | 0.05 | 1.21073 | 141.302 | -0.599022 |
| 197 | 0.05 | 1.23724 | 142.832 | -0.53716 |
| 198 | 0.05 | 1.25908 | 144.418 | -0.474206 |
| 199 | 0.05 | 1.28727 | 146.075 | -0.409843 |
| 200 | 0.05 | 1.31058 | 147.792 | -0.344314 |
| 201 | 0.05 | 1.34075 | 149.59 | -0.277276 |
| 202 | 0.05 | 1.3722 | 151.473 | -0.208666 |
| 203 | 0.064 | 1.39838 | 153.428 | -0.11917 |
| 204 | 0.415 | 1.4325 | 155.481 | 0.47532 |
| 205 | 0.415 | 1.46106 | 157.615 | 1.08166 |
| 206 | 0.415 | 1.49852 | 159.861 | 1.70354 |
| 207 | 0.415 | 1.53007 | 162.202 | 2.33852 |
| 208 | 0.415 | 1.57179 | 164.672 | 2.99081 |
| 209 | 0.415 | 1.60725 | 167.256 | 3.65782 |
| 210 | 0.42 | 1.65463 | 169.993 | 4.35276 |
| 211 | 0.42 | 1.6954 | 172.868 | 5.06483 |
| 212 | 0.42 | 1.75069 | 175.933 | 5.80012 |
| 213 | 0.42 | 1.79912 | 179.17 | 6.55575 |
| 214 | 0.42 | 1.86629 | 182.653 | 7.33959 |
| 215 | 0.42 | 1.92684 | 186.365 | 8.14886 |
| 216 | 0.425 | 2.01409 | 190.422 | 9.00485 |
| 217 | 0.425 | 2.09693 | 194.819 | 9.89605 |
| 218 | 0.44 | 2.22621 | 199.775 | 10.8756 |
| 219 | 0.44 | 2.36561 | 205.371 | 11.9164 |
| 220 | 0.92 | 2.65209 | 212.405 | 14.3564 |

Data Set Standard Deviation = 0.11372
Numerator = 206.105
Denominator = 601.56
W Statistic = 0.342618 = 206.105 / 601.56

5% Critical value of 0.976 exceeds 0.342618
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.342618
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: Dieldrin

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 220

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | -5.44914 | -2.65209 | 7.03356 | 14.4516 |
| 2 | -5.44914 | -2.36561 | 12.6297 | 27.3422 |
| 3 | -5.44914 | -2.22621 | 17.5857 | 39.4731 |
| 4 | -5.44914 | -2.09693 | 21.9828 | 50.8995 |
| 5 | -5.44914 | -2.01409 | 26.0394 | 61.8746 |
| 6 | -5.44914 | -1.92684 | 29.7521 | 72.3742 |
| 7 | -5.44914 | -1.86629 | 33.2351 | 82.5439 |
| 8 | -5.42615 | -1.79912 | 36.472 | 92.3062 |
| 9 | -5.39263 | -1.75069 | 39.5369 | 101.747 |
| 10 | -5.39263 | -1.6954 | 42.4112 | 110.89 |
| 11 | -5.37089 | -1.65463 | 45.149 | 119.776 |
| 12 | -5.37089 | -1.60725 | 47.7323 | 128.409 |
| 13 | -5.37089 | -1.57179 | 50.2028 | 136.851 |
| 14 | -5.37089 | -1.53007 | 52.5439 | 145.069 |
| 15 | -5.37089 | -1.49852 | 54.7894 | 153.117 |
| 16 | -5.37089 | -1.46106 | 56.9241 | 160.964 |
| 17 | -5.37089 | -1.4325 | 58.9762 | 168.658 |
| 18 | -2.99573 | -1.39838 | 60.9316 | 172.847 |
| 19 | -2.99573 | -1.3722 | 62.8146 | 176.958 |
| 20 | -2.99573 | -1.34075 | 64.6122 | 180.974 |
| 21 | -2.99573 | -1.31058 | 66.3298 | 184.9 |
| 22 | -2.99573 | -1.28727 | 67.9869 | 188.757 |
| 23 | -2.99573 | -1.25908 | 69.5722 | 192.529 |
| 24 | -2.99573 | -1.23724 | 71.1029 | 196.235 |
| 25 | -2.99573 | -1.21073 | 72.5688 | 199.862 |
| 26 | -2.99573 | -1.19012 | 73.9852 | 203.427 |
| 27 | -2.99573 | -1.16505 | 75.3425 | 206.918 |
| 28 | -2.99573 | -1.1455 | 76.6547 | 210.349 |
| 29 | -2.99573 | -1.12168 | 77.9129 | 213.709 |
| 30 | -2.99573 | -1.10306 | 79.1296 | 217.014 |
| 31 | -2.99573 | -1.08032 | 80.2967 | 220.25 |
| 32 | -2.99573 | -1.06252 | 81.4257 | 223.433 |
| 33 | -2.99573 | -1.04073 | 82.5088 | 226.551 |
| 34 | -2.99573 | -1.02365 | 83.5566 | 229.618 |
| 35 | -2.99573 | -1.00271 | 84.5621 | 232.621 |
| 36 | -2.99573 | -0.986272 | 85.5348 | 235.576 |
| 37 | -2.99573 | -0.966088 | 86.4681 | 238.47 |
| 38 | -2.99573 | -0.950222 | 87.3711 | 241.317 |
| 39 | -2.99573 | -0.930718 | 88.2373 | 244.105 |
| 40 | -2.99573 | -0.915365 | 89.0752 | 246.847 |
| 41 | -2.99573 | -0.896473 | 89.8788 | 249.533 |
| 42 | -2.99573 | -0.877897 | 90.6496 | 252.163 |
| 43 | -2.99573 | -0.863249 | 91.3947 | 254.749 |
| 44 | -2.99573 | -0.845198 | 92.1091 | 257.281 |
| 45 | -2.99573 | -0.830953 | 92.7996 | 259.77 |
| 46 | -2.99573 | -0.813379 | 93.4612 | 262.207 |
| 47 | -2.99573 | -0.7995 | 94.1004 | 264.602 |
| 48 | -2.99573 | -0.782366 | 94.7125 | 266.946 |
| 49 | -2.99573 | -0.768821 | 95.3036 | 269.249 |

| | | | |
|---|---|---|---|
| 50 | -2.99573 | -0.752084 | 95.8692 | 271.502 |
| 51 | -2.99573 | -0.738846 | 96.4151 | 273.715 |
| 52 | -2.99573 | -0.722479 | 96.9371 | 275.88 |
| 53 | -2.99573 | -0.709522 | 97.4405 | 278.005 |
| 54 | -2.99573 | -0.693493 | 97.9214 | 280.083 |
| 55 | -2.99573 | -0.680797 | 98.3849 | 282.122 |
| 56 | -2.99573 | -0.665079 | 98.8272 | 284.115 |
| 57 | -2.99573 | -0.652622 | 99.2531 | 286.07 |
| 58 | -2.99573 | -0.637192 | 99.6592 | 287.978 |
| 59 | -2.99573 | -0.624956 | 100.05 | 289.851 |
| 60 | -2.99573 | -0.609791 | 100.422 | 291.677 |
| 61 | -2.99573 | -0.594766 | 100.775 | 293.459 |
| 62 | -2.99573 | -0.582841 | 101.115 | 295.205 |
| 63 | -2.99573 | -0.568052 | 101.438 | 296.907 |
| 64 | -2.99573 | -0.556308 | 101.747 | 298.574 |
| 65 | -2.99573 | -0.541736 | 102.041 | 300.196 |
| 66 | -2.99573 | -0.530162 | 102.322 | 301.785 |
| 67 | -2.99573 | -0.515791 | 102.588 | 303.33 |
| 68 | -2.99573 | -0.504372 | 102.842 | 304.841 |
| 69 | -2.99573 | -0.490189 | 103.082 | 306.309 |
| 70 | -2.99573 | -0.478914 | 103.312 | 307.744 |
| 71 | -2.99573 | -0.464904 | 103.528 | 309.137 |
| 72 | -2.99573 | -0.453763 | 103.734 | 310.496 |
| 73 | -2.99573 | -0.439913 | 103.927 | 311.814 |
| 74 | -2.99573 | -0.428895 | 104.111 | 313.099 |
| 75 | -2.99573 | -0.415193 | 104.284 | 314.343 |
| 76 | -2.99573 | -0.40429 | 104.447 | 315.554 |
| 77 | -2.99573 | -0.390726 | 104.6 | 316.724 |
| 78 | -2.99573 | -0.379927 | 104.744 | 317.862 |
| 79 | -2.99573 | -0.36649 | 104.878 | 318.96 |
| 80 | -2.99573 | -0.355788 | 105.005 | 320.026 |
| 81 | -2.99573 | -0.342466 | 105.122 | 321.052 |
| 82 | -2.99573 | -0.329206 | 105.231 | 322.038 |
| 83 | -2.99573 | -0.318639 | 105.332 | 322.993 |
| 84 | -2.99573 | -0.305481 | 105.426 | 323.908 |
| 85 | -2.99573 | -0.294992 | 105.513 | 324.792 |
| 86 | -2.99573 | -0.281926 | 105.592 | 325.636 |
| 87 | -2.99573 | -0.271509 | 105.666 | 326.45 |
| 88 | -2.99573 | -0.258527 | 105.733 | 327.224 |
| 89 | -2.99573 | -0.248174 | 105.794 | 327.968 |
| 90 | -2.99573 | -0.235269 | 105.85 | 328.672 |
| 91 | -2.99573 | -0.224974 | 105.9 | 329.346 |
| 92 | -2.99573 | -0.212137 | 105.945 | 329.982 |
| 93 | -2.99573 | -0.201894 | 105.986 | 330.587 |
| 94 | -2.99573 | -0.189118 | 106.022 | 331.153 |
| 95 | -2.99573 | -0.17892 | 106.054 | 331.689 |
| 96 | -2.99573 | -0.166199 | 106.081 | 332.187 |
| 97 | -2.99573 | -0.156042 | 106.106 | 332.655 |
| 98 | -2.99573 | -0.143367 | 106.126 | 333.084 |
| 99 | -2.99573 | -0.133244 | 106.144 | 333.483 |
| 100 | -2.99573 | -0.12061 | 106.159 | 333.845 |
| 101 | -2.99573 | -0.107995 | 106.17 | 334.168 |
| 102 | -2.99573 | -0.0979139 | 106.18 | 334.461 |
| 103 | -2.99573 | -0.0853288 | 106.187 | 334.717 |
| 104 | -2.99573 | -0.0752698 | 106.193 | 334.942 |
| 105 | -2.99573 | -0.0627062 | 106.197 | 335.13 |
| 106 | -2.99573 | -0.0526632 | 106.199 | 335.288 |
| 107 | -2.99573 | -0.0401167 | 106.201 | 335.408 |
| 108 | -2.99573 | -0.0300838 | 106.202 | 335.498 |
| 109 | -2.99573 | -0.0175476 | 106.202 | 335.551 |
| 110 | -2.99573 | -0.00751925 | 106.202 | 335.573 |
| 111 | -2.99573 | 0.00751925 | 106.202 | 335.551 |

| | | | |
|---|---|---|---|
| 112 | -2.995730.0175476 | 106.203 | 335.498 |
| 113 | -2.995730.0300838 | 106.204 | 335.408 |
| 114 | -2.995730.0401167 | 106.205 | 335.288 |
| 115 | -2.995730.0526632 | 106.208 | 335.13 |
| 116 | -2.995730.0627062 | 106.212 | 334.942 |
| 117 | -2.995730.0752698 | 106.218 | 334.717 |
| 118 | -2.995730.0853288 | 106.225 | 334.461 |
| 119 | -2.995730.0979139 | 106.234 | 334.168 |
| 120 | -2.995730.107995 | 106.246 | 333.845 |
| 121 | -2.995730.12061 | 106.261 | 333.483 |
| 122 | -2.995730.133244 | 106.278 | 333.084 |
| 123 | -2.995730.143367 | 106.299 | 332.655 |
| 124 | -2.995730.156042 | 106.323 | 332.187 |
| 125 | -2.995730.166199 | 106.351 | 331.689 |
| 126 | -2.995730.17892 | 106.383 | 331.153 |
| 127 | -2.995730.189118 | 106.419 | 330.587 |
| 128 | -2.995730.201894 | 106.459 | 329.982 |
| 129 | -2.995730.212137 | 106.504 | 329.346 |
| 130 | -2.995730.224974 | 106.555 | 328.672 |
| 131 | -2.995730.235269 | 106.61 | 327.968 |
| 132 | -2.995730.248174 | 106.672 | 327.224 |
| 133 | -2.995730.258527 | 106.739 | 326.45 |
| 134 | -2.995730.271509 | 106.813 | 325.636 |
| 135 | -2.995730.281926 | 106.892 | 324.792 |
| 136 | -2.995730.294992 | 106.979 | 323.908 |
| 137 | -2.995730.305481 | 107.072 | 322.993 |
| 138 | -2.995730.318639 | 107.174 | 322.038 |
| 139 | -2.995730.329206 | 107.282 | 321.052 |
| 140 | -2.995730.342466 | 107.4 | 320.026 |
| 141 | -2.995730.355788 | 107.526 | 318.96 |
| 142 | -2.995730.36649 | 107.661 | 317.862 |
| 143 | -2.995730.379927 | 107.805 | 316.724 |
| 144 | -2.995730.390726 | 107.958 | 315.554 |
| 145 | -2.995730.40429 | 108.121 | 314.343 |
| 146 | -2.995730.415193 | 108.293 | 313.099 |
| 147 | -2.995730.428895 | 108.477 | 311.814 |
| 148 | -2.995730.439913 | 108.671 | 310.496 |
| 149 | -2.995730.453763 | 108.877 | 309.137 |
| 150 | -2.995730.464904 | 109.093 | 307.744 |
| 151 | -2.995730.478914 | 109.322 | 306.309 |
| 152 | -2.995730.490189 | 109.563 | 304.841 |
| 153 | -2.995730.504372 | 109.817 | 303.33 |
| 154 | -2.995730.515791 | 110.083 | 301.785 |
| 155 | -2.995730.530162 | 110.364 | 300.196 |
| 156 | -2.995730.541736 | 110.657 | 298.574 |
| 157 | -2.995730.556308 | 110.967 | 296.907 |
| 158 | -2.995730.568052 | 111.29 | 295.205 |
| 159 | -2.995730.582841 | 111.629 | 293.459 |
| 160 | -2.995730.594766 | 111.983 | 291.677 |
| 161 | -2.995730.609791 | 112.355 | 289.851 |
| 162 | -2.995730.624956 | 112.746 | 287.978 |
| 163 | -2.995730.637192 | 113.152 | 286.07 |
| 164 | -2.995730.652622 | 113.577 | 284.115 |
| 165 | -2.995730.665079 | 114.02 | 282.122 |
| 166 | -2.995730.680797 | 114.483 | 280.083 |
| 167 | -2.995730.693493 | 114.964 | 278.005 |
| 168 | -2.995730.709522 | 115.468 | 275.88 |
| 169 | -2.995730.722479 | 115.99 | 273.715 |
| 170 | -2.995730.738846 | 116.535 | 271.502 |
| 171 | -2.995730.752084 | 117.101 | 269.249 |
| 172 | -2.995730.768821 | 117.692 | 266.946 |
| 173 | -2.995730.782366 | 118.304 | 264.602 |

| | | | | |
|---|---|---|---|---|
| 174 | -2.995730.7995 | 118.943 | 262.207 | |
| 175 | -2.995730.813379 | | 119.605 | 259.77 |
| 176 | -2.995730.830953 | | 120.296 | 257.281 |
| 177 | -2.995730.845198 | | 121.01 | 254.749 |
| 178 | -2.995730.863249 | | 121.755 | 252.163 |
| 179 | -2.995730.877897 | | 122.526 | 249.533 |
| 180 | -2.995730.896473 | | 123.329 | 246.847 |
| 181 | -2.995730.915365 | | 124.167 | 244.105 |
| 182 | -2.995730.930718 | | 125.034 | 241.317 |
| 183 | -2.995730.950222 | | 125.937 | 238.47 |
| 184 | -2.995730.966088 | | 126.87 | 235.576 |
| 185 | -2.995730.986272 | | 127.843 | 232.621 |
| 186 | -2.995731.00271 | 128.848 | 229.618 | |
| 187 | -2.995731.02365 | 129.896 | 226.551 | |
| 188 | -2.995731.04073 | 130.979 | 223.433 | |
| 189 | -2.995731.06252 | 132.108 | 220.25 | |
| 190 | -2.995731.08032 | 133.275 | 217.014 | |
| 191 | -2.995731.10306 | 134.492 | 213.709 | |
| 192 | -2.995731.12168 | 135.75 | 210.349 | |
| 193 | -2.995731.1455 | 137.062 | 206.918 | |
| 194 | -2.995731.16505 | 138.419 | 203.427 | |
| 195 | -2.995731.19012 | 139.836 | 199.862 | |
| 196 | -2.995731.21073 | 141.302 | 196.235 | |
| 197 | -2.995731.23724 | 142.832 | 192.529 | |
| 198 | -2.995731.25908 | 144.418 | 188.757 | |
| 199 | -2.995731.28727 | 146.075 | 184.9 | |
| 200 | -2.995731.31058 | 147.792 | 180.974 | |
| 201 | -2.995731.34075 | 149.59 | 176.958 | |
| 202 | -2.995731.3722 | 151.473 | 172.847 | |
| 203 | -2.748871.39838 | 153.428 | 169.003 | |
| 204 | -0.879477 | 1.4325 | 155.481 | 167.743 |
| 205 | -0.879477 | 1.46106 | 157.615 | 166.458 |
| 206 | -0.879477 | 1.49852 | 159.861 | 165.14 |
| 207 | -0.879477 | 1.53007 | 162.202 | 163.795 |
| 208 | -0.879477 | 1.57179 | 164.672 | 162.412 |
| 209 | -0.879477 | 1.60725 | 167.256 | 160.999 |
| 210 | -0.867501 | 1.65463 | 169.993 | 159.563 |
| 211 | -0.867501 | 1.6954 | 172.868 | 158.093 |
| 212 | -0.867501 | 1.75069 | 175.933 | 156.574 |
| 213 | -0.867501 | 1.79912 | 179.17 | 155.013 |
| 214 | -0.867501 | 1.86629 | 182.653 | 153.394 |
| 215 | -0.867501 | 1.92684 | 186.365 | 151.723 |
| 216 | -0.855666 | 2.01409 | 190.422 | 149.999 |
| 217 | -0.855666 | 2.09693 | 194.819 | 148.205 |
| 218 | -0.820981 | 2.22621 | 199.775 | 146.377 |
| 219 | -0.820981 | 2.36561 | 205.371 | 144.435 |
| 220 | -0.0833816 | 2.65209 | 212.405 | 144.214 |

Data Set Standard Deviation = 0.907014
Numerator = 20797.7
Denominator = 38268
W Statistic = 0.543474 = 20797.7 / 38268

5% Critical value of 0.976 exceeds 0.543474
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.543474
Evidence of non-normality at 99% level of significance

# Non-Parametric Prediction Interval

## Inter-Well Comparison

## Parameter: Dieldrin

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 99.0909%
Number of comparisons = 8
Future Samples (k) = 8
Recent Dates = 1
Background Samples (n) = 18
Maximum Background Concentration = 0
Confidence Level = 69.2%
False Positive Rate = 30.8%

| Location | Date | Samples | Mean | Significant |
|---|---|---|---|---|
| MW-10 | 11/12/2010 | 1 | -0.867501 | FALSE |
| MW-7 | 11/12/2010 | 1 | -0.879477 | FALSE |
| MW-6 | 11/12/2010 | 1 | -0.879477 | FALSE |
| MW-12BR | 11/12/2010 | 2 | -0.820981 | FALSE |
| MW-11R | 11/12/2010 | 1 | -0.867501 | FALSE |
| MW-9 | 11/12/2010 | 1 | -0.0833816 | FALSE |
| MW-12AR | 11/12/2010 | 1 | -0.879477 | FALSE |
| MW-8 | 6/11/2009 | 1 | -5.37089 | FALSE |

# Concentrations (ppb)

## Parameter: Ethyl Chloride

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 190
Percent Non-Detects: 85.9729%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 18 (100%) | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<1 | ND<1 |
| | | | 11/16/2009 | ND<1 | ND<1 |
| | | | 6/30/2010 | ND<1 | ND<1 |
| | | | 11/12/2010 | ND<1 U | ND<1 U |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-7 | 28 | 17 (60.7143%) | 7/20/1995 | 1.2 J | 1.2 J |
| | | | 8/24/1995 | 0.75 J | 0.75 J |
| | | | 9/28/1995 | 0.9 J | 0.9 J |
| | | | 10/26/1995 | 0.9 J | 0.9 J |
| | | | 11/19/1996 | ND<2 | ND<2 |
| | | | 12/19/1996 | ND<2 | ND<2 |
| | | | 3/24/1997 | ND<2 | ND<2 |
| | | | 9/24/1997 | ND<2 | ND<2 |
| | | | 4/7/1998 | ND<2 | ND<2 |
| | | | 9/23/1998 | ND<2 | ND<2 |
| | | | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | 2.74 | 2.74 |
| | | | 10/25/2005 | 1.47 J | 1.47 J |
| | | | 4/29/2006 | 2.27 | 2.27 |
| | | | 11/18/2006 | 0.72 J | 0.72 J |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | 0.98 J | 0.98 J |
| | | | 6/5/2008 | 0.83 J | 0.83 J |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/20/2008 | 1.23 J | 1.23 J | |
| | | | 6/11/2009 | ND<1 | ND<1 | |
| | | | 11/16/2009 | ND<1 | ND<1 | |
| | | | 6/30/2010 | ND<1 | ND<1 | |
| | | | 11/12/2010 | ND<1 U | ND<1 U | |
| MW-6 | 28 | 28 (100%) | 7/20/1995 | ND<2 | ND<2 | |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<1 | ND<1 | |
| | | | 11/16/2009 | ND<1 | ND<1 | |
| | | | 6/30/2010 | ND<1 | ND<1 | |
| | | | 11/12/2010 | ND<1 U | ND<1 U | |
| MW-12BR | 18 | 17 (94.4444%) | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 0.4 J | 0.4 J | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<1 | ND<1 | |
| | | | 11/16/2009 | ND<1 | ND<1 | |
| | | | 6/30/2010 | ND<1 | ND<1 | |
| | | | 11/12/2010 | ND<1 U | ND<1 U | |
| MW-12AR | 18 | 18 (100%) | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |

| | | | | | |
|---|---|---|---|---|---|
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<1 | ND<1 |
| | | | 11/16/2009 | ND<1 | ND<1 |
| | | | 6/30/2010 | ND<1 | ND<1 |
| | | | 11/12/2010 | ND<1 U | ND<1 U |
| MW-11R | 28 | 21 (75%) | 7/20/1995 | 0.4 J | 0.4 J |
| | | | 8/24/1995 | ND<2 | ND<2 |
| | | | 9/28/1995 | 0.4 J | 0.4 J |
| | | | 10/26/1995 | 0.7 J | 0.7 J |
| | | | 11/19/1996 | ND<2 | ND<2 |
| | | | 12/19/1996 | ND<2 | ND<2 |
| | | | 3/24/1997 | ND<2 | ND<2 |
| | | | 9/24/1997 | ND<2 | ND<2 |
| | | | 4/7/1998 | ND<2 | ND<2 |
| | | | 9/23/1998 | ND<2 | ND<2 |
| | | | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | 0.42 J | 0.42 J |
| | | | 4/29/2006 | 0.56 J | 0.56 J |
| | | | 11/18/2006 | 0.82 J | 0.82 J |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | 0.2 J | 0.2 J |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<1 | ND<1 |
| | | | 11/16/2009 | ND<1 | ND<1 |
| | | | 6/30/2010 | ND<1 | ND<1 |
| | | | 11/12/2010 | ND<1 U | ND<1 U |
| MW-10 | 28 | 26 (92.8571%) | 7/20/1995 | ND<2 | ND<2 |
| | | | 8/24/1995 | 0.27 J | 0.27 J |
| | | | 9/28/1995 | ND<2 | ND<2 |
| | | | 10/26/1995 | 0.4 J | 0.4 J |
| | | | 11/19/1996 | ND<2 | ND<2 |
| | | | 12/19/1996 | ND<2 | ND<2 |
| | | | 3/24/1997 | ND<2 | ND<2 |
| | | | 9/24/1997 | ND<2 | ND<2 |
| | | | 4/7/1998 | ND<2 | ND<2 |
| | | | 9/23/1998 | ND<2 | ND<2 |
| | | | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | | ND<2 | ND<2 |
| | | | 6/11/2009 | | ND<1 | ND<1 |
| | | | 11/16/2009 | | ND<1 | ND<1 |
| | | | 6/30/2010 | | ND<1 | ND<1 |
| | | | 11/12/2010 | | ND<1 U | ND<1 U |
| MW-9 | 28 | 25 (89.2857%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | | ND<2 | ND<2 |
| | | | 9/28/1995 | | ND<2 | ND<2 |
| | | | 10/26/1995 | | ND<2 | ND<2 |
| | | | 11/19/1996 | | ND<2 | ND<2 |
| | | | 12/19/1996 | | ND<2 | ND<2 |
| | | | 3/24/1997 | | ND<2 | ND<2 |
| | | | 9/24/1997 | | ND<2 | ND<2 |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | | ND<2 | ND<2 |
| | | | 3/16/1999 | | ND<2 | ND<2 |
| | | | 9/23/1999 | | ND<2 | ND<2 |
| | | | 3/15/2000 | | ND<2 | ND<2 |
| | | | 9/24/2003 | | ND<2 | ND<2 |
| | | | 3/11/2004 | | ND<2 | ND<2 |
| | | | 10/12/2004 | | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | | ND<2 | ND<2 |
| | | | 4/29/2006 | | ND<2 | ND<2 |
| | | | 11/18/2006 | | 0.22 J | 0.22 J |
| | | | 5/23/2007 | | ND<2 | ND<2 |
| | | | 11/28/2007 | | 0.53 J | 0.53 J |
| | | | 6/5/2008 | 0.43 J | 0.43 J | |
| | | | 11/20/2008 | | ND<2 | ND<2 |
| | | | 6/11/2009 | | ND<1 | ND<1 |
| | | | 11/16/2009 | | ND<1 | ND<1 |
| | | | 6/30/2010 | | ND<1 | ND<1 |
| | | | 11/12/2010 | | ND<1 U | ND<1 U |
| MW-8 | 27 | 20 (74.0741%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | | ND<2 | ND<2 |
| | | | 9/28/1995 | | ND<2 | ND<2 |
| | | | 10/26/1995 | | ND<2 | ND<2 |
| | | | 11/19/1996 | | ND<2 | ND<2 |
| | | | 12/19/1996 | | ND<2 | ND<2 |
| | | | 3/24/1997 | | ND<2 | ND<2 |
| | | | 9/24/1997 | | ND<2 | ND<2 |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | | ND<2 | ND<2 |
| | | | 3/16/1999 | | ND<2 | ND<2 |
| | | | 9/23/1999 | | ND<2 | ND<2 |
| | | | 3/15/2000 | | ND<2 | ND<2 |
| | | | 9/24/2003 | | ND<2 | ND<2 |
| | | | 3/11/2004 | | ND<2 | ND<2 |
| | | | 10/12/2004 | | ND<2 | ND<2 |
| | | | 4/1/2005 | 0.76 J | 0.76 J | |
| | | | 10/25/2005 | | 0.96 J | 0.96 J |
| | | | 4/29/2006 | | 0.3 J | 0.3 J |
| | | | 11/18/2006 | | 0.38 J | 0.38 J |
| | | | 5/23/2007 | | ND<2 | ND<2 |
| | | | 11/28/2007 | | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | | 1.1 J | 1.1 J |
| | | | 6/11/2009 | | 9.1 | 9.1 |
| | | | 6/30/2010 | | ND<1 | ND<1 |

| | | | |
|---|---|---|---|
| 11/12/2010 | 1.9 | 1.9 | |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. Original |
|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: Ethyl Chloride

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.2 | -2.65209 | 7.03356 | -0.530417 |
| 2 | 0.22 | -2.36561 | 12.6297 | -1.05085 |
| 3 | 0.27 | -2.22621 | 17.5857 | -1.65193 |
| 4 | 0.3 | -2.09693 | 21.9828 | -2.28101 |
| 5 | 0.38 | -2.01409 | 26.0394 | -3.04636 |
| 6 | 0.4 | -1.92684 | 29.7521 | -3.8171 |
| 7 | 0.4 | -1.86629 | 33.2351 | -4.56362 |
| 8 | 0.4 | -1.79912 | 36.472 | -5.28326 |
| 9 | 0.4 | -1.75069 | 39.5369 | -5.98354 |
| 10 | 0.42 | -1.6954 | 42.4112 | -6.6956 |
| 11 | 0.43 | -1.65463 | 45.149 | -7.40709 |
| 12 | 0.5 | -1.60725 | 47.7323 | -8.21072 |
| 13 | 0.5 | -1.57179 | 50.2028 | -8.99661 |
| 14 | 0.5 | -1.53007 | 52.5439 | -9.76164 |
| 15 | 0.5 | -1.49852 | 54.7894 | -10.5109 |
| 16 | 0.5 | -1.46106 | 56.9241 | -11.2414 |
| 17 | 0.5 | -1.4325 | 58.9762 | -11.9577 |
| 18 | 0.5 | -1.39838 | 60.9316 | -12.6569 |
| 19 | 0.5 | -1.3722 | 62.8146 | -13.343 |
| 20 | 0.5 | -1.34075 | 64.6122 | -14.0134 |
| 21 | 0.5 | -1.31652 | 66.3454 | -14.6716 |
| 22 | 0.5 | -1.28727 | 68.0025 | -15.3152 |
| 23 | 0.5 | -1.26464 | 69.6018 | -15.9476 |
| 24 | 0.5 | -1.23724 | 71.1326 | -16.5662 |
| 25 | 0.5 | -1.21596 | 72.6111 | -17.1742 |
| 26 | 0.5 | -1.19012 | 74.0275 | -17.7692 |
| 27 | 0.5 | -1.17 | 75.3964 | -18.3542 |
| 28 | 0.5 | -1.1455 | 76.7086 | -18.927 |
| 29 | 0.5 | -1.12639 | 77.9774 | -19.4902 |
| 30 | 0.5 | -1.10306 | 79.1941 | -20.0417 |
| 31 | 0.5 | -1.08482 | 80.371 | -20.5841 |
| 32 | 0.5 | -1.06252 | 81.4999 | -21.1154 |
| 33 | 0.5 | -1.04505 | 82.592 | -21.6379 |
| 34 | 0.5 | -1.02365 | 83.6399 | -22.1497 |
| 35 | 0.5 | -1.00687 | 84.6537 | -22.6532 |
| 36 | 0.5 | -0.986272 | 85.6264 | -23.1463 |
| 37 | 0.5 | -0.970094 | 86.5675 | -23.6313 |
| 38 | 0.5 | -0.950222 | 87.4704 | -24.1065 |
| 39 | 0.5 | -0.93459 | 88.3439 | -24.5737 |
| 40 | 0.5 | -0.915365 | 89.1818 | -25.0314 |
| 41 | 0.5 | -0.900227 | 89.9922 | -25.4815 |
| 42 | 0.5 | -0.881587 | 90.7694 | -25.9223 |
| 43 | 0.5 | -0.866894 | 91.5209 | -26.3558 |
| 44 | 0.5 | -0.848786 | 92.2413 | -26.7802 |
| 45 | 0.53 | -0.834498 | 92.9377 | -27.2225 |
| 46 | 0.56 | -0.816874 | 93.605 | -27.6799 |
| 47 | 0.7 | -0.802956 | 94.2497 | -28.242 |
| 48 | 0.72 | -0.785774 | 94.8672 | -28.8077 |
| 49 | 0.75 | -0.772193 | 95.4634 | -29.3869 |

| | | | | |
|---|---|---|---|---|
| 50 | 0.76 | -0.755415 | 96.0341 | -29.961 |
| 51 | 0.82 | -0.742143 | 96.5849 | -30.5696 |
| 52 | 0.83 | -0.725736 | 97.1116 | -31.1719 |
| 53 | 0.9 | -0.712751 | 97.6196 | -31.8134 |
| 54 | 0.9 | -0.696684 | 98.1049 | -32.4404 |
| 55 | 0.96 | -0.683969 | 8.5727 | -33.097 |
| 56 | 0.98 | -0.668209 | 99.0192 | -33.7519 |
| 57 | 1 | -0.655726 | 99.4492 | -34.4076 |
| 58 | 1 | -0.640266 | 99.8592 | -35.0478 |
| 59 | 1 | -0.628006 | 100.254 | -35.6759 |
| 60 | 1 | -0.612813 | 100.629 | -36.2887 |
| 61 | 1 | -0.60076 | 100.99 | -36.8894 |
| 62 | 1 | -0.585815 | 101.333 | -37.4752 |
| 63 | 1 | -0.573953 | 101.663 | -38.0492 |
| 64 | 1 | -0.559237 | 101.975 | -38.6084 |
| 65 | 1 | -0.547551 | 102.275 | -39.156 |
| 66 | 1 | -0.533048 | 102.559 | -39.689 |
| 67 | 1 | -0.521527 | 102.831 | -40.2106 |
| 68 | 1 | -0.507221 | 103.089 | -40.7178 |
| 69 | 1 | -0.49585 | 103.334 | -41.2136 |
| 70 | 1 | -0.481728 | 103.566 | -41.6954 |
| 71 | 1 | -0.470498 | 103.788 | -42.1659 |
| 72 | 1 | -0.456542 | 103.996 | -42.6224 |
| 73 | 1 | -0.445443 | 104.195 | -43.0678 |
| 74 | 1 | -0.431644 | 104.381 | -43.4995 |
| 75 | 1 | -0.420664 | 104.558 | -43.9201 |
| 76 | 1 | -0.40701 | 104.724 | -44.3272 |
| 77 | 1 | -0.396142 | 104.881 | -44.7233 |
| 78 | 1 | -0.382622 | 105.027 | -45.1059 |
| 79 | 1 | -0.371856 | 105.165 | -45.4778 |
| 80 | 1 | -0.358459 | 105.294 | -45.8362 |
| 81 | 1 | -0.347787 | 105.415 | -46.184 |
| 82 | 1 | -0.334503 | 105.527 | -46.5185 |
| 83 | 1 | -0.323919 | 105.632 | -46.8424 |
| 84 | 1 | -0.310738 | 105.728 | -47.1532 |
| 85 | 1 | -0.300232 | 105.818 | -47.4534 |
| 86 | 1 | -0.287147 | 105.901 | -47.7406 |
| 87 | 1 | -0.276714 | 105.977 | -48.0173 |
| 88 | 1 | -0.263715 | 106.047 | -48.281 |
| 89 | 1 | -0.253347 | 106.111 | -48.5343 |
| 90 | 1 | -0.240426 | 106.169 | -48.7748 |
| 91 | 1 | -0.230118 | 106.222 | -49.0049 |
| 92 | 1 | -0.217267 | 106.269 | -49.2221 |
| 93 | 1 | -0.207012 | 106.312 | -49.4292 |
| 94 | 1 | -0.194225 | 106.35 | -49.6234 |
| 95 | 1 | -0.184017 | 106.383 | -49.8074 |
| 96 | 1 | -0.171285 | 106.413 | -49.9787 |
| 97 | 1 | -0.161119 | 106.439 | -50.1398 |
| 98 | 1 | -0.148434 | 106.461 | -50.2882 |
| 99 | 1 | -0.138305 | 106.48 | -50.4265 |
| 100 | 1 | -0.125661 | 106.496 | -50.5522 |
| 101 | 1 | -0.115562 | 106.509 | -50.6678 |
| 102 | 1 | -0.102953 | 106.52 | -50.7707 |
| 103 | 1 | -0.0928787 | 106.528 | -50.8636 |
| 104 | 1 | -0.0802981 | 106.535 | -50.9439 |
| 105 | 1 | -0.0702426 | 106.54 | -51.0141 |
| 106 | 1 | -0.0576847 | 106.543 | -51.0718 |
| 107 | 1 | -0.0476439 | 106.545 | -51.1195 |
| 108 | 1 | -0.0350997 | 106.546 | -51.1546 |
| 109 | 1 | -0.0250691 | 106.547 | -51.1796 |
| 110 | 1 | -0.0125328 | 106.547 | -51.1922 |
| 111 | 1 | 0 | 106.547 | -51.1922 |

| | | | | |
|---|---|---|---|---|
| 112 | 1 | 0.0125328 | 106.547 | -51.1796 |
| 113 | 1 | 0.0250691 | 106.548 | -51.1546 |
| 114 | 1 | 0.0350997 | 106.549 | -51.1195 |
| 115 | 1 | 0.0476439 | 106.551 | -51.0718 |
| 116 | 1 | 0.0576847 | 106.555 | -51.0141 |
| 117 | 1 | 0.0702426 | 106.56 | -50.9439 |
| 118 | 1 | 0.0802981 | 106.566 | -50.8636 |
| 119 | 1 | 0.0928787 | 106.575 | -50.7707 |
| 120 | 1 | 0.102953 | 106.585 | -50.6678 |
| 121 | 1 | 0.115562 | 106.599 | -50.5522 |
| 122 | 1 | 0.125661 | 106.615 | -50.4265 |
| 123 | 1 | 0.138305 | 106.634 | -50.2882 |
| 124 | 1 | 0.148434 | 106.656 | -50.1398 |
| 125 | 1 | 0.161119 | 106.682 | -49.9787 |
| 126 | 1 | 0.171285 | 106.711 | -49.8074 |
| 127 | 1 | 0.184017 | 106.745 | -49.6234 |
| 128 | 1 | 0.194225 | 106.783 | -49.4292 |
| 129 | 1 | 0.207012 | 106.825 | -49.2221 |
| 130 | 1 | 0.217267 | 106.873 | -49.0049 |
| 131 | 1 | 0.230118 | 106.926 | -48.7748 |
| 132 | 1 | 0.240426 | 106.983 | -48.5343 |
| 133 | 1 | 0.253347 | 107.048 | -48.281 |
| 134 | 1 | 0.263715 | 107.117 | -48.0173 |
| 135 | 1 | 0.276714 | 107.194 | -47.7406 |
| 136 | 1 | 0.287147 | 107.276 | -47.4534 |
| 137 | 1 | 0.300232 | 107.366 | -47.1532 |
| 138 | 1 | 0.310738 | 107.463 | -46.8424 |
| 139 | 1 | 0.323919 | 107.568 | -46.5185 |
| 140 | 1 | 0.334503 | 107.68 | -46.184 |
| 141 | 1 | 0.347787 | 107.801 | -45.8362 |
| 142 | 1 | 0.358459 | 107.929 | -45.4778 |
| 143 | 1 | 0.371856 | 108.067 | -45.1059 |
| 144 | 1 | 0.382622 | 108.214 | -44.7233 |
| 145 | 1 | 0.396142 | 108.371 | -44.3272 |
| 146 | 1 | 0.40701 | 108.536 | -43.9201 |
| 147 | 1 | 0.420664 | 108.713 | -43.4995 |
| 148 | 1 | 0.431644 | 108.9 | -43.0678 |
| 149 | 1 | 0.445443 | 109.098 | -42.6224 |
| 150 | 1 | 0.456542 | 109.307 | -42.1659 |
| 151 | 1 | 0.470498 | 109.528 | -41.6954 |
| 152 | 1 | 0.481728 | 109.76 | -41.2136 |
| 153 | 1 | 0.49585 | 110.006 | -40.7178 |
| 154 | 1 | 0.507221 | 110.263 | -40.2106 |
| 155 | 1 | 0.521527 | 110.535 | -39.689 |
| 156 | 1 | 0.533048 | 110.819 | -39.156 |
| 157 | 1 | 0.547551 | 111.119 | -38.6084 |
| 158 | 1 | 0.559237 | 111.432 | -38.0492 |
| 159 | 1 | 0.573953 | 111.761 | -37.4752 |
| 160 | 1 | 0.585815 | 112.104 | -36.8894 |
| 161 | 1 | 0.60076 | 112.465 | -36.2887 |
| 162 | 1 | 0.612813 | 112.841 | -35.6759 |
| 163 | 1 | 0.628006 | 113.235 | -35.0478 |
| 164 | 1 | 0.640266 | 113.645 | -34.4076 |
| 165 | 1 | 0.655726 | 114.075 | -33.7519 |
| 166 | 1 | 0.668209 | 114.522 | -33.0836 |
| 167 | 1 | 0.68396 | 114.989 | -32.3997 |
| 168 | 1 | 0.696684 | 115.475 | -31.703 |
| 169 | 1 | 0.712751 | 115.983 | -30.9902 |
| 170 | 1 | 0.725736 | 116.51 | -30.2645 |
| 171 | 1 | 0.742143 | 117.06 | -29.5224 |
| 172 | 1 | 0.755415 | 117.631 | -28.767 |
| 173 | 1 | 0.772193 | 118.227 | -27.9948 |

| | | | | |
|---|---|---|---|---|
| 174 | 1 | 0.785774 | 118.845 | -27.209 |
| 175 | 1 | 0.802956 | 119.489 | -26.406 |
| 176 | 1 | 0.816874 | 120.157 | -25.5892 |
| 177 | 1 | 0.834498 | 120.853 | -24.7547 |
| 178 | 1 | 0.848786 | 121.574 | -23.9059 |
| 179 | 1 | 0.866894 | 122.325 | -23.039 |
| 180 | 1 | 0.881587 | 123.102 | -22.1574 |
| 181 | 1 | 0.900227 | 123.913 | -21.2572 |
| 182 | 1 | 0.915365 | 124.751 | -20.3418 |
| 183 | 1 | 0.93459 | 125.624 | -19.4072 |
| 184 | 1 | 0.950222 | 126.527 | -18.457 |
| 185 | 1 | 0.970094 | 127.468 | -17.4869 |
| 186 | 1 | 0.986272 | 128.441 | -16.5006 |
| 187 | 1 | 1.00687 | 129.455 | -15.4938 |
| 188 | 1 | 1.02365 | 130.502 | -14.4701 |
| 189 | 1 | 1.04505 | 131.594 | -13.4251 |
| 190 | 1 | 1.06252 | 132.723 | -12.3625 |
| 191 | 1 | 1.08482 | 133.9 | -11.2777 |
| 192 | 1 | 1.10306 | 135.117 | -10.1747 |
| 193 | 1 | 1.12639 | 136.386 | -9.04826 |
| 194 | 1 | 1.1455 | 137.698 | -7.90276 |
| 195 | 1 | 1.17 | 139.067 | -6.73276 |
| 196 | 1 | 1.19012 | 140.483 | -5.54264 |
| 197 | 1 | 1.21596 | 141.962 | -4.32668 |
| 198 | 1 | 1.23724 | 143.493 | -3.08944 |
| 199 | 1 | 1.26464 | 145.092 | -1.8248 |
| 200 | 1 | 1.28727 | 146.749 | -0.537527 |
| 201 | 1 | 1.31652 | 148.482 | 0.778994 |
| 202 | 1 | 1.34075 | 150.28 | 2.11975 |
| 203 | 1 | 1.3722 | 152.163 | 3.49195 |
| 204 | 1 | 1.39838 | 154.118 | 4.89033 |
| 205 | 1 | 1.4325 | 156.17 | 6.32283 |
| 206 | 1 | 1.46106 | 158.305 | 7.78389 |
| 207 | 1 | 1.49852 | 160.551 | 9.28241 |
| 208 | 1 | 1.53007 | 162.892 | 10.8125 |
| 209 | 1 | 1.57179 | 165.362 | 12.3843 |
| 210 | 1 | 1.60725 | 167.945 | 13.9915 |
| 211 | 1 | 1.65463 | 170.683 | 15.6461 |
| 212 | 1 | 1.6954 | 173.558 | 17.3415 |
| 213 | 1 | 1.75069 | 176.622 | 19.0922 |
| 214 | 1.1 | 1.79912 | 179.859 | 21.0712 |
| 215 | 1.2 | 1.86629 | 183.342 | 23.3108 |
| 216 | 1.23 | 1.92684 | 187.055 | 25.6808 |
| 217 | 1.47 | 2.01409 | 191.112 | 28.6415 |
| 218 | 1.9 | 2.09693 | 195.509 | 32.6257 |
| 219 | 2.27 | 2.22621 | 200.465 | 37.6792 |
| 220 | 2.74 | 2.36561 | 206.061 | 44.161 |
| 221 | 9.1 | 2.65209 | 213.094 | 68.295 |

Data Set Standard Deviation = 0.619318
Numerator = 4664.2
Denominator = 17981.3
W Statistic = 0.259391 = 4664.2 / 17981.3

5% Critical value of 0.976 exceeds 0.259391
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.259391
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: Ethyl Chloride

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | -1.60944 | -2.65209 | 7.03356 | 4.26837 |
| 2 | -1.51413 | -2.36561 | 12.6297 | 7.85021 |
| 3 | -1.30933 | -2.22621 | 17.5857 | 10.7651 |
| 4 | -1.20397 | -2.09693 | 21.9828 | 13.2897 |
| 5 | -0.967584 | -2.01409 | 26.0394 | 15.2385 |
| 6 | -0.916291 | -1.92684 | 29.7521 | 17.0041 |
| 7 | -0.916291 | -1.86629 | 33.2351 | 18.7141 |
| 8 | -0.916291 | -1.79912 | 36.472 | 20.3626 |
| 9 | -0.916291 | -1.75069 | 39.5369 | 21.9668 |
| 10 | -0.867501 | -1.6954 | 42.4112 | 23.4375 |
| 11 | -0.84397 | -1.65463 | 45.149 | 24.834 |
| 12 | -0.693147 | -1.60725 | 47.7323 | 25.948 |
| 13 | -0.693147 | -1.57179 | 50.2028 | 27.0375 |
| 14 | -0.693147 | -1.53007 | 52.5439 | 28.0981 |
| 15 | -0.693147 | -1.49852 | 54.7894 | 29.1368 |
| 16 | -0.693147 | -1.46106 | 56.9241 | 30.1495 |
| 17 | -0.693147 | -1.4325 | 58.9762 | 31.1424 |
| 18 | -0.693147 | -1.39838 | 60.9316 | 32.1117 |
| 19 | -0.693147 | -1.3722 | 62.8146 | 33.0629 |
| 20 | -0.693147 | -1.34075 | 64.6122 | 33.9922 |
| 21 | -0.693147 | -1.31652 | 66.3454 | 34.9047 |
| 22 | -0.693147 | -1.28727 | 68.0025 | 35.797 |
| 23 | -0.693147 | -1.26464 | 69.6018 | 36.6736 |
| 24 | -0.693147 | -1.23724 | 71.1326 | 37.5312 |
| 25 | -0.693147 | -1.21596 | 72.6111 | 38.374 |
| 26 | -0.693147 | -1.19012 | 74.0275 | 39.199 |
| 27 | -0.693147 | -1.17 | 75.3964 | 40.0099 |
| 28 | -0.693147 | -1.1455 | 76.7086 | 40.8039 |
| 29 | -0.693147 | -1.12639 | 77.9774 | 41.5847 |
| 30 | -0.693147 | -1.10306 | 79.1941 | 42.3493 |
| 31 | -0.693147 | -1.08482 | 80.371 | 43.1012 |
| 32 | -0.693147 | -1.06252 | 81.4999 | 43.8377 |
| 33 | -0.693147 | -1.04505 | 82.592 | 44.5621 |
| 34 | -0.693147 | -1.02365 | 83.6399 | 45.2716 |
| 35 | -0.693147 | -1.00687 | 84.6537 | 45.9695 |
| 36 | -0.693147 | -0.986272 | 85.6264 | 46.6532 |
| 37 | -0.693147 | -0.970094 | 86.5675 | 47.3256 |
| 38 | -0.693147 | -0.950222 | 87.4704 | 47.9842 |
| 39 | -0.693147 | -0.93459 | 88.3439 | 48.632 |
| 40 | -0.693147 | -0.915365 | 89.1818 | 49.2665 |
| 41 | -0.693147 | -0.900227 | 89.9922 | 49.8905 |
| 42 | -0.693147 | -0.881587 | 90.7694 | 50.5016 |
| 43 | -0.693147 | -0.866894 | 91.5209 | 51.1024 |
| 44 | -0.693147 | -0.848786 | 92.2413 | 51.6908 |
| 45 | -0.634878 | -0.834498 | 92.9377 | 52.2206 |
| 46 | -0.579818 | -0.816874 | 93.605 | 52.6942 |
| 47 | -0.356675 | -0.802956 | 94.2497 | 52.9806 |
| 48 | -0.328504 | -0.785774 | 94.8672 | 53.2388 |
| 49 | -0.287682 | -0.772193 | 95.4634 | 53.4609 |

| | | | | |
|---|---|---|---|---|
| 50 | -0.274437 | -0.755415 | 96.0341 | 53.6682 |
| 51 | -0.198451 | -0.742143 | 96.5849 | 53.8155 |
| 52 | -0.18633 | -0.725736 | 97.1116 | 53.9507 |
| 53 | -0.105361 | -0.712751 | 97.6196 | 54.0258 |
| 54 | -0.105361 | -0.696684 | 98.1049 | 54.0992 |
| 55 | -0.040822 | -0.683 | 98.5727 | 54.1271 |
| 56 | -0.0202027 | -0.668209 | 99.0192 | 54.1406 |
| 57 | 0 | -0.655726 | 99.4492 | 54.1406 |
| 58 | 0 | -0.640266 | 99.8592 | 54.1406 |
| 59 | 0 | -0.628006 | 100.254 | 54.1406 |
| 60 | 0 | -0.612813 | 100.629 | 54.1406 |
| 61 | 0 | -0.60076 | 100.99 | 54.1406 |
| 62 | 0 | -0.585815 | 101.333 | 54.1406 |
| 63 | 0 | -0.573953 | 101.663 | 54.1406 |
| 64 | 0 | -0.559237 | 101.975 | 54.1406 |
| 65 | 0 | -0.547551 | 102.275 | 54.1406 |
| 66 | 0 | -0.533048 | 102.559 | 54.1406 |
| 67 | 0 | -0.521527 | 102.831 | 54.1406 |
| 68 | 0 | -0.507221 | 103.089 | 54.1406 |
| 69 | 0 | -0.49585 | 103.334 | 54.1406 |
| 70 | 0 | -0.481728 | 103.566 | 54.1406 |
| 71 | 0 | -0.470498 | 103.788 | 54.1406 |
| 72 | 0 | -0.456542 | 103.996 | 54.1406 |
| 73 | 0 | -0.445443 | 104.195 | 54.1406 |
| 74 | 0 | -0.431644 | 104.381 | 54.1406 |
| 75 | 0 | -0.420664 | 104.558 | 54.1406 |
| 76 | 0 | -0.40701 | 104.724 | 54.1406 |
| 77 | 0 | -0.396142 | 104.881 | 54.1406 |
| 78 | 0 | -0.382622 | 105.027 | 54.1406 |
| 79 | 0 | -0.371856 | 105.165 | 54.1406 |
| 80 | 0 | -0.358459 | 105.294 | 54.1406 |
| 81 | 0 | -0.347787 | 105.415 | 54.1406 |
| 82 | 0 | -0.334503 | 105.527 | 54.1406 |
| 83 | 0 | -0.323919 | 105.632 | 54.1406 |
| 84 | 0 | -0.310738 | 105.728 | 54.1406 |
| 85 | 0 | -0.300232 | 105.818 | 54.1406 |
| 86 | 0 | -0.287147 | 105.901 | 54.1406 |
| 87 | 0 | -0.276714 | 105.977 | 54.1406 |
| 88 | 0 | -0.263715 | 106.047 | 54.1406 |
| 89 | 0 | -0.253347 | 106.111 | 54.1406 |
| 90 | 0 | -0.240426 | 106.169 | 54.1406 |
| 91 | 0 | -0.230118 | 106.222 | 54.1406 |
| 92 | 0 | -0.217267 | 106.269 | 54.1406 |
| 93 | 0 | -0.207012 | 106.312 | 54.1406 |
| 94 | 0 | -0.194225 | 106.35 | 54.1406 |
| 95 | 0 | -0.184017 | 106.383 | 54.1406 |
| 96 | 0 | -0.171285 | 106.413 | 54.1406 |
| 97 | 0 | -0.161119 | 106.439 | 54.1406 |
| 98 | 0 | -0.148434 | 106.461 | 54.1406 |
| 99 | 0 | -0.138305 | 106.48 | 54.1406 |
| 100 | 0 | -0.125661 | 106.496 | 54.1406 |
| 101 | 0 | -0.115562 | 106.509 | 54.1406 |
| 102 | 0 | -0.102953 | 106.52 | 54.1406 |
| 103 | 0 | -0.0928787 | 106.528 | 54.1406 |
| 104 | 0 | -0.0802981 | 106.535 | 54.1406 |
| 105 | 0 | -0.0702426 | 106.54 | 54.1406 |
| 106 | 0 | -0.0576847 | 106.543 | 54.1406 |
| 107 | 0 | -0.0476439 | 106.545 | 54.1406 |
| 108 | 0 | -0.0350997 | 106.546 | 54.1406 |
| 109 | 0 | -0.0250691 | 106.547 | 54.1406 |
| 110 | 0 | -0.0125328 | 106.547 | 54.1406 |
| 111 | 0 | 0 | 106.547 | 54.1406 |

| | | | | |
|---|---|---|---|---|
| 112 | 0 | 0.0125328 | 106.547 | 54.1406 |
| 113 | 0 | 0.0250691 | 106.548 | 54.1406 |
| 114 | 0 | 0.0350997 | 106.549 | 54.1406 |
| 115 | 0 | 0.0476439 | 106.551 | 54.1406 |
| 116 | 0 | 0.0576847 | 106.555 | 54.1406 |
| 117 | 0 | 0.0702426 | 106.56 | 54.1406 |
| 118 | 0 | 0.0802981 | 106.566 | 54.1406 |
| 119 | 0 | 0.0928787 | 106.575 | 54.1406 |
| 120 | 0 | 0.102953 | 106.585 | 54.1406 |
| 121 | 0 | 0.115562 | 106.599 | 54.1406 |
| 122 | 0 | 0.125661 | 106.615 | 54.1406 |
| 123 | 0 | 0.138305 | 106.634 | 54.1406 |
| 124 | 0 | 0.148434 | 106.656 | 54.1406 |
| 125 | 0 | 0.161119 | 106.682 | 54.1406 |
| 126 | 0 | 0.171285 | 106.711 | 54.1406 |
| 127 | 0 | 0.184017 | 106.745 | 54.1406 |
| 128 | 0 | 0.194225 | 106.783 | 54.1406 |
| 129 | 0 | 0.207012 | 106.825 | 54.1406 |
| 130 | 0 | 0.217267 | 106.873 | 54.1406 |
| 131 | 0 | 0.230118 | 106.926 | 54.1406 |
| 132 | 0 | 0.240426 | 106.983 | 54.1406 |
| 133 | 0 | 0.253347 | 107.048 | 54.1406 |
| 134 | 0 | 0.263715 | 107.117 | 54.1406 |
| 135 | 0 | 0.276714 | 107.194 | 54.1406 |
| 136 | 0 | 0.287147 | 107.276 | 54.1406 |
| 137 | 0 | 0.300232 | 107.366 | 54.1406 |
| 138 | 0 | 0.310738 | 107.463 | 54.1406 |
| 139 | 0 | 0.323919 | 107.568 | 54.1406 |
| 140 | 0 | 0.334503 | 107.68 | 54.1406 |
| 141 | 0 | 0.347787 | 107.801 | 54.1406 |
| 142 | 0 | 0.358459 | 107.929 | 54.1406 |
| 143 | 0 | 0.371856 | 108.067 | 54.1406 |
| 144 | 0 | 0.382622 | 108.214 | 54.1406 |
| 145 | 0 | 0.396142 | 108.371 | 54.1406 |
| 146 | 0 | 0.40701 | 108.536 | 54.1406 |
| 147 | 0 | 0.420664 | 108.713 | 54.1406 |
| 148 | 0 | 0.431644 | 108.9 | 54.1406 |
| 149 | 0 | 0.445443 | 109.098 | 54.1406 |
| 150 | 0 | 0.456542 | 109.307 | 54.1406 |
| 151 | 0 | 0.470498 | 109.528 | 54.1406 |
| 152 | 0 | 0.481728 | 109.76 | 54.1406 |
| 153 | 0 | 0.49585 | 110.006 | 54.1406 |
| 154 | 0 | 0.507221 | 110.263 | 54.1406 |
| 155 | 0 | 0.521527 | 110.535 | 54.1406 |
| 156 | 0 | 0.533048 | 110.819 | 54.1406 |
| 157 | 0 | 0.547551 | 111.119 | 54.1406 |
| 158 | 0 | 0.559237 | 111.432 | 54.1406 |
| 159 | 0 | 0.573953 | 111.761 | 54.1406 |
| 160 | 0 | 0.585815 | 112.104 | 54.1406 |
| 161 | 0 | 0.60076 | 112.465 | 54.1406 |
| 162 | 0 | 0.612813 | 112.841 | 54.1406 |
| 163 | 0 | 0.628006 | 113.235 | 54.1406 |
| 164 | 0 | 0.640266 | 113.645 | 54.1406 |
| 165 | 0 | 0.655726 | 114.075 | 54.1406 |
| 166 | 0 | 0.668209 | 114.522 | 54.1406 |
| 167 | 0 | 0.68396 | 114.989 | 54.1406 |
| 168 | 0 | 0.696684 | 115.475 | 54.1406 |
| 169 | 0 | 0.712751 | 115.983 | 54.1406 |
| 170 | 0 | 0.725736 | 116.51 | 54.1406 |
| 171 | 0 | 0.742143 | 117.06 | 54.1406 |
| 172 | 0 | 0.755415 | 117.631 | 54.1406 |
| 173 | 0 | 0.772193 | 118.227 | 54.1406 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 0 | 0.785774 | | 118.845 | 54.1406 |
| 175 | 0 | 0.802956 | | 119.489 | 54.1406 |
| 176 | 0 | 0.816874 | | 120.157 | 54.1406 |
| 177 | 0 | 0.834498 | | 120.853 | 54.1406 |
| 178 | 0 | 0.848786 | | 121.574 | 54.1406 |
| 179 | 0 | 0.866894 | | 122.325 | 54.1406 |
| 180 | 0 | 0.881587 | | 123.102 | 54.1406 |
| 181 | 0 | 0.900227 | | 123.913 | 54.1406 |
| 182 | 0 | 0.915365 | | 124.751 | 54.1406 |
| 183 | 0 | 0.93459 | 125.624 | 54.1406 | |
| 184 | 0 | 0.950222 | | 126.527 | 54.1406 |
| 185 | 0 | 0.970094 | | 127.468 | 54.1406 |
| 186 | 0 | 0.986272 | | 128.441 | 54.1406 |
| 187 | 0 | 1.00687 | 129.455 | 54.1406 | |
| 188 | 0 | 1.02365 | 130.502 | 54.1406 | |
| 189 | 0 | 1.04505 | 131.594 | 54.1406 | |
| 190 | 0 | 1.06252 | 132.723 | 54.1406 | |
| 191 | 0 | 1.08482 | 133.9 | 54.1406 | |
| 192 | 0 | 1.10306 | 135.117 | 54.1406 | |
| 193 | 0 | 1.12639 | 136.386 | 54.1406 | |
| 194 | 0 | 1.1455 | 137.698 | 54.1406 | |
| 195 | 0 | 1.17 | 139.067 | 54.1406 | |
| 196 | 0 | 1.19012 | 140.483 | 54.1406 | |
| 197 | 0 | 1.21596 | 141.962 | 54.1406 | |
| 198 | 0 | 1.23724 | 143.493 | 54.1406 | |
| 199 | 0 | 1.26464 | 145.092 | 54.1406 | |
| 200 | 0 | 1.28727 | 146.749 | 54.1406 | |
| 201 | 0 | 1.31652 | 148.482 | 54.1406 | |
| 202 | 0 | 1.34075 | 150.28 | 54.1406 | |
| 203 | 0 | 1.3722 | 152.163 | 54.1406 | |
| 204 | 0 | 1.39838 | 154.118 | 54.1406 | |
| 205 | 0 | 1.4325 | 156.17 | 54.1406 | |
| 206 | 0 | 1.46106 | 158.305 | 54.1406 | |
| 207 | 0 | 1.49852 | 160.551 | 54.1406 | |
| 208 | 0 | 1.53007 | 162.892 | 54.1406 | |
| 209 | 0 | 1.57179 | 165.362 | 54.1406 | |
| 210 | 0 | 1.60725 | 167.945 | 54.1406 | |
| 211 | 0 | 1.65463 | 170.683 | 54.1406 | |
| 212 | 0 | 1.6954 | 173.558 | 54.1406 | |
| 213 | 0 | 1.75069 | 176.622 | 54.1406 | |
| 214 | 0.0953102 | | 1.79912 | 179.859 | 54.3121 |
| 215 | 0.182322 | | 1.86629 | 183.342 | 54.6524 |
| 216 | 0.207014 | | 1.92684 | 187.055 | 55.0513 |
| 217 | 0.385262 | | 2.01409 | 191.112 | 55.8272 |
| 218 | 0.641854 | | 2.09693 | 195.509 | 57.1731 |
| 219 | 0.81978 | 2.22621 | 200.465 | 58.9981 | |
| 220 | 1.00796 | 2.36561 | 206.061 | 61.3826 | |
| 221 | 2.20827 | 2.65209 | 213.094 | 67.2391 | |

Data Set Standard Deviation = 0.389315
Numerator = 4521.1
Denominator = 7105.52
W Statistic = 0.636279 = 4521.1 / 7105.52

5% Critical value of 0.976 exceeds 0.636279
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.636279
Evidence of non-normality at 99% level of significance

# Kruskal-Wallis Non-Parametric Test

## Parameter: Ethyl Chloride

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

# Kruskal Wallis Ranks

## Background Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-13 | 3/16/1999 | ND<0 | 95.5 |
| | 9/23/1999 | ND<0 | 95.5 |
| | 3/15/2000 | ND<0 | 95.5 |
| | 9/24/2003 | ND<0 | 95.5 |
| | 3/11/2004 | ND<0 | 95.5 |
| | 10/12/2004 | ND<0 | 95.5 |
| | 4/1/2005 | ND<0 | 95.5 |
| | 10/25/2005 | ND<0 | 95.5 |
| | 4/29/2006 | ND<0 | 95.5 |
| | 11/18/2006 | ND<0 | 95.5 |
| | 5/23/2007 | ND<0 | 95.5 |
| | 11/28/2007 | ND<0 | 95.5 |
| | 6/5/2008 | ND<0 | 95.5 |
| | 11/20/2008 | ND<0 | 95.5 |
| | 6/11/2009 | ND<-0.693147 | 95.5 |
| | 11/16/2009 | ND<-0.693147 | 95.5 |
| | 6/30/2010 | ND<-0.693147 | 95.5 |
| | 11/12/2010 | ND<-0.693147 U | 95.5 |

Rank Sum = 1719
Rank Mean = 95.5

Background Rank Sum = 1719
Background Rank Mean = 95.5

## Compliance Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-7 | 7/20/1995 | 0.182322 J | 215 |
| | 8/24/1995 | -0.287682 J | 206 |
| | 9/28/1995 | -0.105361 J | 210 |
| | 10/26/1995 | -0.105361 J | 211 |
| | 11/19/1996 | ND<0 | 95.5 |
| | 12/19/1996 | ND<0 | 95.5 |
| | 3/24/1997 | ND<0 | 95.5 |
| | 9/24/1997 | ND<0 | 95.5 |
| | 4/7/1998 | ND<0 | 95.5 |
| | 9/23/1998 | ND<0 | 95.5 |
| | 3/16/1999 | ND<0 | 95.5 |
| | 9/23/1999 | ND<0 | 95.5 |
| | 3/15/2000 | ND<0 | 95.5 |
| | 9/24/2003 | ND<0 | 95.5 |
| | 3/11/2004 | ND<0 | 95.5 |
| | 10/12/2004 | ND<0 | 95.5 |
| | 4/1/2005 | 1.00796 | 220 |
| | 10/25/2005 | 0.385262 J | 217 |
| | 4/29/2006 | 0.81978 | 219 |
| | 11/18/2006 | -0.328504 J | 205 |

| | | | | |
|---|---|---|---|---|
| | 5/23/2007 | ND<0 | 95.5 | |
| | 11/28/2007 | -0.0202027 J | | 213 |
| | 6/5/2008 | -0.18633 J | 209 | |
| | 11/20/2008 | 0.207014 J | | 216 |
| | 6/11/2009 | ND<-0.693147 | | 95.5 |
| | 11/16/2009 | ND<-0.693147 | | 95.5 |
| | 6/30/2010 | ND<-0.693147 | | 95.5 |
| | 11/12/2010 | ND<-0.693147 U | | 95.5 |

Rank Sum = 3964.5
Rank Mean = 141.589

| | | | | |
|---|---|---|---|---|
| MW-6 | 7/20/1995 | ND<0 | 95.5 | |
| | 8/24/1995 | ND<0 | 95.5 | |
| | 9/28/1995 | ND<0 | 95.5 | |
| | 10/26/1995 | ND<0 | 95.5 | |
| | 11/19/1996 | ND<0 | 95.5 | |
| | 12/19/1996 | ND<0 | 95.5 | |
| | 3/24/1997 | ND<0 | 95.5 | |
| | 9/24/1997 | ND<0 | 95.5 | |
| | 4/7/1998 | ND<0 | 95.5 | |
| | 9/23/1998 | ND<0 | 95.5 | |
| | 3/16/1999 | ND<0 | 95.5 | |
| | 9/23/1999 | ND<0 | 95.5 | |
| | 3/15/2000 | ND<0 | 95.5 | |
| | 9/24/2003 | ND<0 | 95.5 | |
| | 3/11/2004 | ND<0 | 95.5 | |
| | 10/12/2004 | ND<0 | 95.5 | |
| | 4/1/2005 | ND<0 | 95.5 | |
| | 10/25/2005 | ND<0 | 95.5 | |
| | 4/29/2006 | ND<0 | 95.5 | |
| | 11/18/2006 | ND<0 | 95.5 | |
| | 5/23/2007 | ND<0 | 95.5 | |
| | 11/28/2007 | ND<0 | 95.5 | |
| | 6/5/2008 | ND<0 | 95.5 | |
| | 11/20/2008 | ND<0 | 95.5 | |
| | 6/11/2009 | ND<-0.693147 | | 95.5 |
| | 11/16/2009 | ND<-0.693147 | | 95.5 |
| | 6/30/2010 | ND<-0.693147 | | 95.5 |
| | 11/12/2010 | ND<-0.693147 U | | 95.5 |

Rank Sum = 2674
Rank Mean = 95.5

| | | | | |
|---|---|---|---|---|
| MW-12BR | 3/16/1999 | ND<0 | 95.5 | |
| | 9/23/1999 | ND<0 | 95.5 | |
| | 3/15/2000 | ND<0 | 95.5 | |
| | 9/24/2003 | ND<0 | 95.5 | |
| | 3/11/2004 | ND<0 | 95.5 | |
| | 10/12/2004 | ND<0 | 95.5 | |
| | 4/1/2005 | -0.916291 J | 196 | |
| | 10/25/2005 | ND<0 | 95.5 | |
| | 4/29/2006 | ND<0 | 95.5 | |
| | 11/18/2006 | ND<0 | 95.5 | |
| | 5/23/2007 | ND<0 | 95.5 | |
| | 11/28/2007 | ND<0 | 95.5 | |
| | 6/5/2008 | ND<0 | 95.5 | |
| | 11/20/2008 | ND<0 | 95.5 | |
| | 6/11/2009 | ND<-0.693147 | | 95.5 |
| | 11/16/2009 | ND<-0.693147 | | 95.5 |
| | 6/30/2010 | ND<-0.693147 | | 95.5 |
| | 11/12/2010 | ND<-0.693147 U | | 95.5 |

Rank Sum = 1819.5
Rank Mean = 101.083

| | | | | |
|---|---|---|---|---|
| MW-12AR | 3/16/1999 | ND<0 | | 95.5 |
| | 9/23/1999 | ND<0 | | 95.5 |
| | 3/15/2000 | ND<0 | | 95.5 |
| | 9/24/2003 | ND<0 | | 95.5 |
| | 3/11/2004 | ND<0 | | 95.5 |
| | 10/12/2004 | ND<0 | | 95.5 |
| | 4/1/2005 | ND<0 | | 95.5 |
| | 10/25/2005 | ND<0 | | 95.5 |
| | 4/29/2006 | ND<0 | | 95.5 |
| | 11/18/2006 | ND<0 | | 95.5 |
| | 5/23/2007 | ND<0 | | 95.5 |
| | 11/28/2007 | ND<0 | | 95.5 |
| | 6/5/2008 | ND<0 | | 95.5 |
| | 11/20/2008 | ND<0 | | 95.5 |
| | 6/11/2009 | ND<-0.693147 | | 95.5 |
| | 11/16/2009 | ND<-0.693147 | | 95.5 |
| | 6/30/2010 | ND<-0.693147 | | 95.5 |
| | 11/12/2010 | ND<-0.693147 | U | 95.5 |

Rank Sum = 1719
Rank Mean = 95.5

| | | | | |
|---|---|---|---|---|
| MW-11R | 7/20/1995 | -0.916291 | J | 197 |
| | 8/24/1995 | ND<0 | | 95.5 |
| | 9/28/1995 | -0.916291 | J | 198 |
| | 10/26/1995 | -0.356675 | J | 204 |
| | 11/19/1996 | ND<0 | | 95.5 |
| | 12/19/1996 | ND<0 | | 95.5 |
| | 3/24/1997 | ND<0 | | 95.5 |
| | 9/24/1997 | ND<0 | | 95.5 |
| | 4/7/1998 | ND<0 | | 95.5 |
| | 9/23/1998 | ND<0 | | 95.5 |
| | 3/16/1999 | ND<0 | | 95.5 |
| | 9/23/1999 | ND<0 | | 95.5 |
| | 3/15/2000 | ND<0 | | 95.5 |
| | 9/24/2003 | ND<0 | | 95.5 |
| | 3/11/2004 | ND<0 | | 95.5 |
| | 10/12/2004 | ND<0 | | 95.5 |
| | 4/1/2005 | ND<0 | | 95.5 |
| | 10/25/2005 | -0.867501 | J | 200 |
| | 4/29/2006 | -0.579818 | J | 203 |
| | 11/18/2006 | -0.198451 | J | 208 |
| | 5/23/2007 | ND<0 | | 95.5 |
| | 11/28/2007 | -1.60944 | J | 191 |
| | 6/5/2008 | ND<0 | | 95.5 |
| | 11/20/2008 | ND<0 | | 95.5 |
| | 6/11/2009 | ND<-0.693147 | | 95.5 |
| | 11/16/2009 | ND<-0.693147 | | 95.5 |
| | 6/30/2010 | ND<-0.693147 | | 95.5 |
| | 11/12/2010 | ND<-0.693147 | U | 95.5 |

Rank Sum = 3406.5
Rank Mean = 121.661

| | | | | |
|---|---|---|---|---|
| MW-10 | 7/20/1995 | ND<0 | | 95.5 |
| | 8/24/1995 | -1.30933 | J | 193 |
| | 9/28/1995 | ND<0 | | 95.5 |
| | 10/26/1995 | -0.916291 | J | 199 |
| | 11/19/1996 | ND<0 | | 95.5 |
| | 12/19/1996 | ND<0 | | 95.5 |
| | 3/24/1997 | ND<0 | | 95.5 |
| | 9/24/1997 | ND<0 | | 95.5 |
| | 4/7/1998 | ND<0 | | 95.5 |

| | | | | |
|---|---|---|---|---|
| | 9/23/1998 | ND<0 | 95.5 | |
| | 3/16/1999 | ND<0 | 95.5 | |
| | 9/23/1999 | ND<0 | 95.5 | |
| | 3/15/2000 | ND<0 | 95.5 | |
| | 9/24/2003 | ND<0 | 95.5 | |
| | 3/11/2004 | ND<0 | 95.5 | |
| | 10/12/2004 | ND<0 | 95.5 | |
| | 4/1/2005 | ND<0 | 95.5 | |
| | 10/25/2005 | ND<0 | 95.5 | |
| | 4/29/2006 | ND<0 | 95.5 | |
| | 11/18/2006 | ND<0 | 95.5 | |
| | 5/23/2007 | ND<0 | 95.5 | |
| | 11/28/2007 | ND<0 | 95.5 | |
| | 6/5/2008 | ND<0 | 95.5 | |
| | 11/20/2008 | ND<0 | 95.5 | |
| | 6/11/2009 | ND<-0.693147 | | 95.5 |
| | 11/16/2009 | ND<-0.693147 | | 95.5 |
| | 6/30/2010 | ND<-0.693147 | | 95.5 |
| | 11/12/2010 | ND<-0.693147 U | | 95.5 |

Rank Sum = 2875
Rank Mean = 102.679

| | | | | |
|---|---|---|---|---|
| MW-9 | 7/20/1995 | ND<0 | 95.5 | |
| | 8/24/1995 | ND<0 | 95.5 | |
| | 9/28/1995 | ND<0 | 95.5 | |
| | 10/26/1995 | ND<0 | 95.5 | |
| | 11/19/1996 | ND<0 | 95.5 | |
| | 12/19/1996 | ND<0 | 95.5 | |
| | 3/24/1997 | ND<0 | 95.5 | |
| | 9/24/1997 | ND<0 | 95.5 | |
| | 4/7/1998 | ND<0 | 95.5 | |
| | 9/23/1998 | ND<0 | 95.5 | |
| | 3/16/1999 | ND<0 | 95.5 | |
| | 9/23/1999 | ND<0 | 95.5 | |
| | 3/15/2000 | ND<0 | 95.5 | |
| | 9/24/2003 | ND<0 | 95.5 | |
| | 3/11/2004 | ND<0 | 95.5 | |
| | 10/12/2004 | ND<0 | 95.5 | |
| | 4/1/2005 | ND<0 | 95.5 | |
| | 10/25/2005 | ND<0 | 95.5 | |
| | 4/29/2006 | ND<0 | 95.5 | |
| | 11/18/2006 | -1.51413 J | | 192 |
| | 5/23/2007 | ND<0 | 95.5 | |
| | 11/28/2007 | -0.634878 J | | 202 |
| | 6/5/2008 | -0.84397 J | 201 | |
| | 11/20/2008 | ND<0 | 95.5 | |
| | 6/11/2009 | ND<-0.693147 | | 95.5 |
| | 11/16/2009 | ND<-0.693147 | | 95.5 |
| | 6/30/2010 | ND<-0.693147 | | 95.5 |
| | 11/12/2010 | ND<-0.693147 U | | 95.5 |

Rank Sum = 2982.5
Rank Mean = 106.518

| | | | | |
|---|---|---|---|---|
| MW-8 | 7/20/1995 | ND<0 | 95.5 | |
| | 8/24/1995 | ND<0 | 95.5 | |
| | 9/28/1995 | ND<0 | 95.5 | |
| | 10/26/1995 | ND<0 | 95.5 | |
| | 11/19/1996 | ND<0 | 95.5 | |
| | 12/19/1996 | ND<0 | 95.5 | |
| | 3/24/1997 | ND<0 | 95.5 | |
| | 9/24/1997 | ND<0 | 95.5 | |
| | 4/7/1998 | ND<0 | 95.5 | |

| | | | |
|---|---|---|---|
| 9/23/1998 | ND<0 | 95.5 | |
| 3/16/1999 | ND<0 | 95.5 | |
| 9/23/1999 | ND<0 | 95.5 | |
| 3/15/2000 | ND<0 | 95.5 | |
| 9/24/2003 | ND<0 | 95.5 | |
| 3/11/2004 | ND<0 | 95.5 | |
| 10/12/2004 | ND<0 | 95.5 | |
| 4/1/2005 | -0.274437 J | 207 | |
| 10/25/2005 | -0.040822 J | | 212 |
| 4/29/2006 | -1.20397 J | | 194 |
| 11/18/2006 | -0.967584 J | | 195 |
| 5/23/2007 | ND<0 | 95.5 | |
| 11/28/2007 | ND<0 | 95.5 | |
| 6/5/2008 | ND<0 | 95.5 | |
| 11/20/2008 | 0.0953102 J | | 214 |
| 6/11/2009 | 2.20827 | | 221 |
| 6/30/2010 | ND<-0.693147 | | 95.5 |
| 11/12/2010 | 0.641854 | | 218 |

Rank Sum = 3371
Rank Mean = 124.852

## Calculation Results:

Kruskal-Wallis H Statistic = 13.2592
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 36.3712
95% Confidence comparison value is 15.5073 at 8 degrees of freedom
13.2592 < 15.5073 indicating no significant group difference at 5% significance level
36.3712 > 15.5073 indicating a significant group difference at 5% significance level when adjusted for ties

## Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 95.5

| Well | Mean Rank | Dif from Bkg | Critical Value |
|---|---|---|---|
| MW-7 | 141.589 | 46.0893 | 44.9386 |
| MW-6 | 95.5 | 0 | 44.9386 |
| MW-12BR | 101.083 | 5.58333 | 49.5832 |
| MW-12AR | 95.5 | 0 | 49.5832 |
| MW-11R | 121.661 | 26.1607 | 44.9386 |
| MW-10 | 102.679 | 7.17857 | 44.9386 |
| MW-9 | 106.518 | 11.0179 | 44.9386 |
| MW-8 | 124.852 | 29.3519 | 45.263 |

## Individual Well Comparisons at Groupwise 5% Significance Level (0.625% Significance Level per comparison)

0.625% Z score is 2.51213
Mean background rank is 95.5

| Well | Mean Rank | Dif from Bkg | Critical Value |
|---|---|---|---|
| MW-7 | 141.589 | 46.0893 | 48.5275 |
| MW-6 | 95.5 | 0 | 48.5275 |
| MW-12BR | 101.083 | 5.58333 | 53.5431 |
| MW-12AR | 95.5 | 0 | 53.5431 |
| MW-11R | 121.661 | 26.1607 | 48.5275 |
| MW-10 | 102.679 | 7.17857 | 48.5275 |
| MW-9 | 106.518 | 11.0179 | 48.5275 |
| MW-8 | 124.852 | 29.3519 | 48.8779 |

# Mann-Kendall Trend Analysis

## Parameter: Ethyl Chloride

## Location: MW-7

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | Positives | Negatives |
|---|---|---|---|---|
| -0.287682 J | 0.182322 J | -0.470004 | 0 | 1 |
| -0.105361 J | 0.182322 J | -0.287682 | 0 | 2 |
| -0.105361 J | 0.182322 J | -0.287682 | 0 | 3 |
| ND<0 | 0.182322 J | -0.182322 | 0 | 4 |
| ND<0 | 0.182322 J | -0.182322 | 0 | 5 |
| ND<0 | 0.182322 J | -0.182322 | 0 | 6 |
| ND<0 | 0.182322 J | -0.182322 | 0 | 7 |
| ND<0 | 0.182322 J | -0.182322 | 0 | 8 |
| ND<0 | 0.182322 J | -0.182322 | 0 | 9 |
| ND<0 | 0.182322 J | -0.182322 | 0 | 10 |
| ND<0 | 0.182322 J | -0.182322 | 0 | 11 |
| ND<0 | 0.182322 J | -0.182322 | 0 | 12 |
| ND<0 | 0.182322 J | -0.182322 | 0 | 13 |
| ND<0 | 0.182322 J | -0.182322 | 0 | 14 |
| ND<0 | 0.182322 J | -0.182322 | 0 | 15 |
| 1.00796 | 0.182322 J | 0.825636 | 1 | 15 |
| 0.385262 J | 0.182322 J | 0.202941 | 2 | 15 |
| 0.81978 | 0.182322 J | 0.637458 | 3 | 15 |
| -0.328504 J | 0.182322 J | -0.510826 | 3 | 16 |
| ND<0 | 0.182322 J | -0.182322 | 3 | 17 |
| -0.0202027 J | 0.182322 J | -0.202524 | 3 | 18 |
| -0.18633 J | 0.182322 J | -0.368651 | 3 | 19 |
| 0.207014 J | 0.182322 J | 0.0246926 | 4 | 19 |
| ND<-0.693147 | 0.182322 J | -0.875469 | 4 | 20 |
| ND<-0.693147 | 0.182322 J | -0.875469 | 4 | 21 |
| ND<-0.693147 | 0.182322 J | -0.875469 | 4 | 22 |
| ND<-0.693147 U | 0.182322 J | -0.875469 | 4 | 23 |
| | | | | |
| -0.105361 J | -0.287682 J | 0.182322 | 5 | 23 |
| -0.105361 J | -0.287682 J | 0.182322 | 6 | 23 |
| ND<0 | -0.287682 J | 0.287682 | 7 | 23 |
| ND<0 | -0.287682 J | 0.287682 | 8 | 23 |
| ND<0 | -0.287682 J | 0.287682 | 9 | 23 |
| ND<0 | -0.287682 J | 0.287682 | 10 | 23 |
| ND<0 | -0.287682 J | 0.287682 | 11 | 23 |
| ND<0 | -0.287682 J | 0.287682 | 12 | 23 |
| ND<0 | -0.287682 J | 0.287682 | 13 | 23 |
| ND<0 | -0.287682 J | 0.287682 | 14 | 23 |
| ND<0 | -0.287682 J | 0.287682 | 15 | 23 |
| ND<0 | -0.287682 J | 0.287682 | 16 | 23 |
| ND<0 | -0.287682 J | 0.287682 | 17 | 23 |
| ND<0 | -0.287682 J | 0.287682 | 18 | 23 |
| 1.00796 | -0.287682 J | 1.29564 | 19 | 23 |
| 0.385262 J | -0.287682 J | 0.672944 | 20 | 23 |
| 0.81978 | -0.287682 J | 1.10746 | 21 | 23 |
| -0.328504 J | -0.287682 J | -0.040822 | 21 | 24 |
| ND<0 | -0.287682 J | 0.287682 | 22 | 24 |
| -0.0202027 J | -0.287682 J | 0.267479 | 23 | 24 |

| | | | | |
|---|---|---|---|---|
| -0.18633 J | -0.287682 J | 0.101352 | 24 | 24 |
| 0.207014 J | -0.287682 J | 0.494696 | 25 | 24 |
| ND<-0.693147 | -0.287682 J | -0.405465 | 25 | 25 |
| ND<-0.693147 | -0.287682 J | -0.405465 | 25 | 26 |
| ND<-0.693147 | -0.287682 J | -0.405465 | 25 | 27 |
| ND<-0.693147 U | -0.287682 J | -0.405465 | 25 | 28 |

| | | | | |
|---|---|---|---|---|
| -0.105361 J | -0.105361 J | 0 | 25 | 28 |
| ND<0 | -0.105361 J | 0.105361 | 26 | 28 |
| ND<0 | -0.105361 J | 0.105361 | 27 | 28 |
| ND<0 | -0.105361 J | 0.105361 | 28 | 28 |
| ND<0 | -0.105361 J | 0.105361 | 29 | 28 |
| ND<0 | -0.105361 J | 0.105361 | 30 | 28 |
| ND<0 | -0.105361 J | 0.105361 | 31 | 28 |
| ND<0 | -0.105361 J | 0.105361 | 32 | 28 |
| ND<0 | -0.105361 J | 0.105361 | 33 | 28 |
| ND<0 | -0.105361 J | 0.105361 | 34 | 28 |
| ND<0 | -0.105361 J | 0.105361 | 35 | 28 |
| ND<0 | -0.105361 J | 0.105361 | 36 | 28 |
| ND<0 | -0.105361 J | 0.105361 | 37 | 28 |
| 1.00796 | -0.105361 J | 1.11332 | 38 | 28 |
| 0.385262 J | -0.105361 J | 0.490623 | 39 | 28 |
| 0.81978 | -0.105361 J | 0.92514 | 40 | 28 |
| -0.328504 J | -0.105361 J | -0.223144 | 40 | 29 |
| ND<0 | -0.105361 J | 0.105361 | 41 | 29 |
| -0.0202027 J | -0.105361 J | 0.0851578 | 42 | 29 |
| -0.18633 J | -0.105361 J | -0.0809691 | 42 | 30 |
| 0.207014 J | -0.105361 J | 0.312375 | 43 | 30 |
| ND<-0.693147 | -0.105361 J | -0.587787 | 43 | 31 |
| ND<-0.693147 | -0.105361 J | -0.587787 | 43 | 32 |
| ND<-0.693147 | -0.105361 J | -0.587787 | 43 | 33 |
| ND<-0.693147 U | -0.105361 J | -0.587787 | 43 | 34 |

| | | | | |
|---|---|---|---|---|
| ND<0 | -0.105361 J | 0.105361 | 44 | 34 |
| ND<0 | -0.105361 J | 0.105361 | 45 | 34 |
| ND<0 | -0.105361 J | 0.105361 | 46 | 34 |
| ND<0 | -0.105361 J | 0.105361 | 47 | 34 |
| ND<0 | -0.105361 J | 0.105361 | 48 | 34 |
| ND<0 | -0.105361 J | 0.105361 | 49 | 34 |
| ND<0 | -0.105361 J | 0.105361 | 50 | 34 |
| ND<0 | -0.105361 J | 0.105361 | 51 | 34 |
| ND<0 | -0.105361 J | 0.105361 | 52 | 34 |
| ND<0 | -0.105361 J | 0.105361 | 53 | 34 |
| ND<0 | -0.105361 J | 0.105361 | 54 | 34 |
| ND<0 | -0.105361 J | 0.105361 | 55 | 34 |
| 1.00796 | -0.105361 J | 1.11332 | 56 | 34 |
| 0.385262 J | -0.105361 J | 0.490623 | 57 | 34 |
| 0.81978 | -0.105361 J | 0.92514 | 58 | 34 |
| -0.328504 J | -0.105361 J | -0.223144 | 58 | 35 |
| ND<0 | -0.105361 J | 0.105361 | 59 | 35 |
| -0.0202027 J | -0.105361 J | 0.0851578 | 60 | 35 |
| -0.18633 J | -0.105361 J | -0.0809691 | 60 | 36 |
| 0.207014 J | -0.105361 J | 0.312375 | 61 | 36 |
| ND<-0.693147 | -0.105361 J | -0.587787 | 61 | 37 |
| ND<-0.693147 | -0.105361 J | -0.587787 | 61 | 38 |
| ND<-0.693147 | -0.105361 J | -0.587787 | 61 | 39 |
| ND<-0.693147 U | -0.105361 J | -0.587787 | 61 | 40 |

| | | | | |
|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 61 | 40 |
| ND<0 | ND<0 | 0 | 61 | 40 |
| ND<0 | ND<0 | 0 | 61 | 40 |
| ND<0 | ND<0 | 0 | 61 | 40 |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 61 | 40 | | |
| ND<0 | ND<0 | 0 | 61 | 40 | | |
| ND<0 | ND<0 | 0 | 61 | 40 | | |
| ND<0 | ND<0 | 0 | 61 | 40 | | |
| ND<0 | ND<0 | 0 | 61 | 40 | | |
| ND<0 | ND<0 | 0 | 61 | 40 | | |
| ND<0 | ND<0 | 0 | 61 | 40 | | |
| 1.00796 | | ND<0 | 1.00796 | 62 | 40 | |
| 0.385262 J | | ND<0 | 0.385262 | | 63 | 40 |
| 0.81978 | | ND<0 | 0.81978 | 64 | 40 | |
| -0.328504 J | | ND<0 | -0.328504 | | 64 | 41 |
| ND<0 | ND<0 | 0 | 64 | 41 | | |
| -0.0202027 J | | ND<0 | -0.0202027 | | 64 | 42 |
| -0.18633 J | | ND<0 | -0.1863364 | | 43 | |
| 0.207014 J | | ND<0 | 0.207014 | | 65 | 43 |
| ND<-0.693147 | | ND<0 | -0.693147 | | 65 | 44 |
| ND<-0.693147 | | ND<0 | -0.693147 | | 65 | 45 |
| ND<-0.693147 | | ND<0 | -0.693147 | | 65 | 46 |
| ND<-0.693147 U | | ND<0 | -0.693147 | | 65 | 47 |
| | | | | | | |
| ND<0 | ND<0 | 0 | 65 | 47 | | |
| ND<0 | ND<0 | 0 | 65 | 47 | | |
| ND<0 | ND<0 | 0 | 65 | 47 | | |
| ND<0 | ND<0 | 0 | 65 | 47 | | |
| ND<0 | ND<0 | 0 | 65 | 47 | | |
| ND<0 | ND<0 | 0 | 65 | 47 | | |
| ND<0 | ND<0 | 0 | 65 | 47 | | |
| ND<0 | ND<0 | 0 | 65 | 47 | | |
| ND<0 | ND<0 | 0 | 65 | 47 | | |
| ND<0 | ND<0 | 0 | 65 | 47 | | |
| 1.00796 | | ND<0 | 1.00796 | 66 | 47 | |
| 0.385262 J | | ND<0 | 0.385262 | | 67 | 47 |
| 0.81978 | | ND<0 | 0.81978 | 68 | 47 | |
| -0.328504 J | | ND<0 | -0.328504 | | 68 | 48 |
| ND<0 | ND<0 | 0 | 68 | 48 | | |
| -0.0202027 J | | ND<0 | -0.0202027 | | 68 | 49 |
| -0.18633 J | | ND<0 | -0.1863368 | | 50 | |
| 0.207014 J | | ND<0 | 0.207014 | | 69 | 50 |
| ND<-0.693147 | | ND<0 | -0.693147 | | 69 | 51 |
| ND<-0.693147 | | ND<0 | -0.693147 | | 69 | 52 |
| ND<-0.693147 | | ND<0 | -0.693147 | | 69 | 53 |
| ND<-0.693147 U | | ND<0 | -0.693147 | | 69 | 54 |
| | | | | | | |
| ND<0 | ND<0 | 0 | 69 | 54 | | |
| ND<0 | ND<0 | 0 | 69 | 54 | | |
| ND<0 | ND<0 | 0 | 69 | 54 | | |
| ND<0 | ND<0 | 0 | 69 | 54 | | |
| ND<0 | ND<0 | 0 | 69 | 54 | | |
| ND<0 | ND<0 | 0 | 69 | 54 | | |
| ND<0 | ND<0 | 0 | 69 | 54 | | |
| ND<0 | ND<0 | 0 | 69 | 54 | | |
| ND<0 | ND<0 | 0 | 69 | 54 | | |
| 1.00796 | | ND<0 | 1.00796 | 70 | 54 | |
| 0.385262 J | | ND<0 | 0.385262 | | 71 | 54 |
| 0.81978 | | ND<0 | 0.81978 | 72 | 54 | |
| -0.328504 J | | ND<0 | -0.328504 | | 72 | 55 |
| ND<0 | ND<0 | 0 | 72 | 55 | | |
| -0.0202027 J | | ND<0 | -0.0202027 | | 72 | 56 |
| -0.18633 J | | ND<0 | -0.1863372 | | 57 | |
| 0.207014 J | | ND<0 | 0.207014 | | 73 | 57 |
| ND<-0.693147 | | ND<0 | -0.693147 | | 73 | 58 |
| ND<-0.693147 | | ND<0 | -0.693147 | | 73 | 59 |

| | | | | | |
|---|---|---|---|---|---|
| ND<-0.693147 | ND<0 | -0.693147 | 73 | 60 | |
| ND<-0.693147 U | ND<0 | -0.693147 | 73 | 61 | |
| | | | | | |
| ND<0 | ND<0 | 0 | 73 | 61 | |
| ND<0 | ND<0 | 0 | 73 | 61 | |
| ND<0 | ND<0 | 0 | 73 | 61 | |
| ND<0 | ND<0 | 0 | 73 | 61 | |
| ND<0 | ND<0 | 0 | 73 | 61 | |
| ND<0 | ND<0 | 0 | 73 | 61 | |
| ND<0 | ND<0 | 0 | 73 | 61 | |
| ND<0 | ND<0 | 0 | 73 | 61 | |
| 1.00796 | ND<0 | 1.00796 | 74 | 61 | |
| 0.385262 J | ND<0 | 0.385262 | 75 | 61 | |
| 0.81978 | ND<0 | 0.81978 | 76 | 61 | |
| -0.328504 J | ND<0 | -0.328504 | 76 | 62 | |
| ND<0 | ND<0 | 0 | 76 | 62 | |
| -0.0202027 J | ND<0 | -0.0202027 | 76 | 63 | |
| -0.18633 J | ND<0 | -0.1863376 | 64 | | |
| 0.207014 J | ND<0 | 0.207014 | 77 | 64 | |
| ND<-0.693147 | ND<0 | -0.693147 | 77 | 65 | |
| ND<-0.693147 | ND<0 | -0.693147 | 77 | 66 | |
| ND<-0.693147 | ND<0 | -0.693147 | 77 | 67 | |
| ND<-0.693147 U | ND<0 | -0.693147 | 77 | 68 | |
| | | | | | |
| ND<0 | ND<0 | 0 | 77 | 68 | |
| ND<0 | ND<0 | 0 | 77 | 68 | |
| ND<0 | ND<0 | 0 | 77 | 68 | |
| ND<0 | ND<0 | 0 | 77 | 68 | |
| ND<0 | ND<0 | 0 | 77 | 68 | |
| ND<0 | ND<0 | 0 | 77 | 68 | |
| ND<0 | ND<0 | 0 | 77 | 68 | |
| 1.00796 | ND<0 | 1.00796 | 78 | 68 | |
| 0.385262 J | ND<0 | 0.385262 | 79 | 68 | |
| 0.81978 | ND<0 | 0.81978 | 80 | 68 | |
| -0.328504 J | ND<0 | -0.328504 | 80 | 69 | |
| ND<0 | ND<0 | 0 | 80 | 69 | |
| -0.0202027 J | ND<0 | -0.0202027 | 80 | 70 | |
| -0.18633 J | ND<0 | -0.1863380 | 71 | | |
| 0.207014 J | ND<0 | 0.207014 | 81 | 71 | |
| ND<-0.693147 | ND<0 | -0.693147 | 81 | 72 | |
| ND<-0.693147 | ND<0 | -0.693147 | 81 | 73 | |
| ND<-0.693147 | ND<0 | -0.693147 | 81 | 74 | |
| ND<-0.693147 U | ND<0 | -0.693147 | 81 | 75 | |
| | | | | | |
| ND<0 | ND<0 | 0 | 81 | 75 | |
| ND<0 | ND<0 | 0 | 81 | 75 | |
| ND<0 | ND<0 | 0 | 81 | 75 | |
| ND<0 | ND<0 | 0 | 81 | 75 | |
| ND<0 | ND<0 | 0 | 81 | 75 | |
| ND<0 | ND<0 | 0 | 81 | 75 | |
| 1.00796 | ND<0 | 1.00796 | 82 | 75 | |
| 0.385262 J | ND<0 | 0.385262 | 83 | 75 | |
| 0.81978 | ND<0 | 0.81978 | 84 | 75 | |
| -0.328504 J | ND<0 | -0.328504 | 84 | 76 | |
| ND<0 | ND<0 | 0 | 84 | 76 | |
| -0.0202027 J | ND<0 | -0.0202027 | 84 | 77 | |
| -0.18633 J | ND<0 | -0.1863384 | 78 | | |
| 0.207014 J | ND<0 | 0.207014 | 85 | 78 | |
| ND<-0.693147 | ND<0 | -0.693147 | 85 | 79 | |
| ND<-0.693147 | ND<0 | -0.693147 | 85 | 80 | |
| ND<-0.693147 | ND<0 | -0.693147 | 85 | 81 | |
| ND<-0.693147 U | ND<0 | -0.693147 | 85 | 82 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 85 | 82 | | |
| ND<0 | ND<0 | 0 | 85 | 82 | | |
| ND<0 | ND<0 | 0 | 85 | 82 | | |
| ND<0 | ND<0 | 0 | 85 | 82 | | |
| ND<0 | ND<0 | 0 | 85 | 82 | | |
| 1.00796 | | ND<0 | 1.00796 | 86 | 82 | |
| 0.385262 J | | ND<0 | 0.385262 | | 87 | 82 |
| 0.81978 | | ND<0 | 0.81978 | 88 | 82 | |
| -0.328504 J | | ND<0 | -0.328504 | | 88 | 83 |
| ND<0 | ND<0 | 0 | 88 | 83 | | |
| -0.0202027 J | | ND<0 | -0.0202027 | | 88 | 84 |
| -0.18633 J | | ND<0 | -0.1863388 | | 85 | |
| 0.207014 J | | ND<0 | 0.207014 | | 89 | 85 |
| ND<-0.693147 | | ND<0 | -0.693147 | | 89 | 86 |
| ND<-0.693147 | | ND<0 | -0.693147 | | 89 | 87 |
| ND<-0.693147 | | ND<0 | -0.693147 | | 89 | 88 |
| ND<-0.693147 U | | ND<0 | -0.693147 | | 89 | 89 |
| | | | | | | |
| ND<0 | ND<0 | 0 | 89 | 89 | | |
| ND<0 | ND<0 | 0 | 89 | 89 | | |
| ND<0 | ND<0 | 0 | 89 | 89 | | |
| ND<0 | ND<0 | 0 | 89 | 89 | | |
| 1.00796 | | ND<0 | 1.00796 | 90 | 89 | |
| 0.385262 J | | ND<0 | 0.385262 | | 91 | 89 |
| 0.81978 | | ND<0 | 0.81978 | 92 | 89 | |
| -0.328504 J | | ND<0 | -0.328504 | | 92 | 90 |
| ND<0 | ND<0 | 0 | 92 | 90 | | |
| -0.0202027 J | | ND<0 | -0.0202027 | | 92 | 91 |
| -0.18633 J | | ND<0 | -0.1863392 | | 92 | |
| 0.207014 J | | ND<0 | 0.207014 | | 93 | 92 |
| ND<-0.693147 | | ND<0 | -0.693147 | | 93 | 93 |
| ND<-0.693147 | | ND<0 | -0.693147 | | 93 | 94 |
| ND<-0.693147 | | ND<0 | -0.693147 | | 93 | 95 |
| ND<-0.693147 U | | ND<0 | -0.693147 | | 93 | 96 |
| | | | | | | |
| ND<0 | ND<0 | 0 | 93 | 96 | | |
| ND<0 | ND<0 | 0 | 93 | 96 | | |
| ND<0 | ND<0 | 0 | 93 | 96 | | |
| 1.00796 | | ND<0 | 1.00796 | 94 | 96 | |
| 0.385262 J | | ND<0 | 0.385262 | | 95 | 96 |
| 0.81978 | | ND<0 | 0.81978 | 96 | 96 | |
| -0.328504 J | | ND<0 | -0.328504 | | 96 | 97 |
| ND<0 | ND<0 | 0 | 96 | 97 | | |
| -0.0202027 J | | ND<0 | -0.0202027 | | 96 | 98 |
| -0.18633 J | | ND<0 | -0.1863396 | | 99 | |
| 0.207014 J | | ND<0 | 0.207014 | | 97 | 99 |
| ND<-0.693147 | | ND<0 | -0.693147 | | 97 | 100 |
| ND<-0.693147 | | ND<0 | -0.693147 | | 97 | 101 |
| ND<-0.693147 | | ND<0 | -0.693147 | | 97 | 102 |
| ND<-0.693147 U | | ND<0 | -0.693147 | | 97 | 103 |
| | | | | | | |
| ND<0 | ND<0 | 0 | 97 | 103 | | |
| ND<0 | ND<0 | 0 | 97 | 103 | | |
| 1.00796 | | ND<0 | 1.00796 | 98 | 103 | |
| 0.385262 J | | ND<0 | 0.385262 | | 99 | 103 |
| 0.81978 | | ND<0 | 0.81978 | 100 | 103 | |
| -0.328504 J | | ND<0 | -0.328504 | | 100 | 104 |
| ND<0 | ND<0 | 0 | 100 | 104 | | |
| -0.0202027 J | | ND<0 | -0.0202027 | | 100 | 105 |
| -0.18633 J | | ND<0 | -0.18633100 | | 106 | |
| 0.207014 J | | ND<0 | 0.207014 | | 101 | 106 |

| | | | | |
|---|---|---|---|---|
| ND<-0.693147 | ND<0 | -0.693147 | 101 | 107 |
| ND<-0.693147 | ND<0 | -0.693147 | 101 | 108 |
| ND<-0.693147 | ND<0 | -0.693147 | 101 | 109 |
| ND<-0.693147 U | ND<0 | -0.693147 | 101 | 110 |

| | | | | |
|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 101 | 110 |
| 1.00796 | ND<0 | 1.00796 | 102 | 110 |
| 0.385262 J | ND<0 | 0.385262 | 103 | 110 |
| 0.81978 | ND<0 | 0.81978 | 104 | 110 |
| -0.328504 J | ND<0 | -0.328504 | 104 | 111 |
| ND<0 | ND<0 | 0 | 104 | 111 |
| -0.0202027 J | ND<0 | -0.0202027 | 104 | 112 |
| -0.18633 J | ND<0 | -0.18633 | 104 | 113 |
| 0.207014 J | ND<0 | 0.207014 | 105 | 113 |
| ND<-0.693147 | ND<0 | -0.693147 | 105 | 114 |
| ND<-0.693147 | ND<0 | -0.693147 | 105 | 115 |
| ND<-0.693147 | ND<0 | -0.693147 | 105 | 116 |
| ND<-0.693147 U | ND<0 | -0.693147 | 105 | 117 |

| | | | | |
|---|---|---|---|---|
| 1.00796 | ND<0 | 1.00796 | 106 | 117 |
| 0.385262 J | ND<0 | 0.385262 | 107 | 117 |
| 0.81978 | ND<0 | 0.81978 | 108 | 117 |
| -0.328504 J | ND<0 | -0.328504 | 108 | 118 |
| ND<0 | ND<0 | 0 | 108 | 118 |
| -0.0202027 J | ND<0 | -0.0202027 | 108 | 119 |
| -0.18633 J | ND<0 | -0.18633 | 108 | 120 |
| 0.207014 J | ND<0 | 0.207014 | 109 | 120 |
| ND<-0.693147 | ND<0 | -0.693147 | 109 | 121 |
| ND<-0.693147 | ND<0 | -0.693147 | 109 | 122 |
| ND<-0.693147 | ND<0 | -0.693147 | 109 | 123 |
| ND<-0.693147 U | ND<0 | -0.693147 | 109 | 124 |

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|---|---|---|---|---|
| 0.385262 J | 1.00796 | -0.622696 | 109 | 125 |
| 0.81978 | 1.00796 | -0.188178 | 109 | 126 |
| -0.328504 J | 1.00796 | -1.33646 | 109 | 127 |
| ND<0 | 1.00796 | -1.00796 | 109 | 128 |
| -0.0202027 J | 1.00796 | -1.02816 | 109 | 129 |
| -0.18633 J | 1.00796 | -1.19429 | 109 | 130 |
| 0.207014 J | 1.00796 | -0.800944 | 109 | 131 |
| ND<-0.693147 | 1.00796 | -1.70111 | 109 | 132 |
| ND<-0.693147 | 1.00796 | -1.70111 | 109 | 133 |
| ND<-0.693147 | 1.00796 | -1.70111 | 109 | 134 |
| ND<-0.693147 U | 1.00796 | -1.70111 | 109 | 135 |

| | | | | |
|---|---|---|---|---|
| 0.81978 | 0.385262 J | 0.434517 | 110 | 135 |
| -0.328504 J | 0.385262 J | -0.713766 | 110 | 136 |
| ND<0 | 0.385262 J | -0.385262 | 110 | 137 |
| -0.0202027 J | 0.385262 J | -0.405465 | 110 | 138 |
| -0.18633 J | 0.385262 J | -0.571592 | 110 | 139 |
| 0.207014 J | 0.385262 J | -0.178248 | 110 | 140 |
| ND<-0.693147 | 0.385262 J | -1.07841 | 110 | 141 |
| ND<-0.693147 | 0.385262 J | -1.07841 | 110 | 142 |
| ND<-0.693147 | 0.385262 J | -1.07841 | 110 | 143 |
| ND<-0.693147 U | 0.385262 J | -1.07841 | 110 | 144 |

| | | | | |
|---|---|---|---|---|
| -0.328504 J | 0.81978 | -1.14828 | 110 | 145 |
| ND<0 | 0.81978 | -0.81978 | 110 | 146 |
| -0.0202027 J | 0.81978 | -0.839983 | 110 | 147 |
| -0.18633 J | 0.81978 | -1.00611 | 110 | 148 |
| 0.207014 J | 0.81978 | -0.612766 | 110 | 149 |
| ND<-0.693147 | 0.81978 | -1.51293 | 110 | 150 |
| ND<-0.693147 | 0.81978 | -1.51293 | 110 | 151 |

| | | | | |
|---|---|---|---|---|
| ND<-0.693147 | 0.81978 | -1.51293110 | 152 | |
| ND<-0.693147 U | 0.81978 | -1.51293110 | 153 | |
| | | | | |
| ND<0 | -0.328504 J | 0.328504 | 111 | 153 |
| -0.0202027 J | -0.328504 J | 0.308301 | 112 | 153 |
| -0.18633 J | -0.328504 J | 0.142174 | 113 | 153 |
| 0.207014 J | -0.328504 J | 0.535518 | 114 | 153 |
| ND<-0.693147 | -0.328504 J | -0.364643 | 114 | 154 |
| ND<-0.693147 | -0.328504 J | -0.364643 | 114 | 155 |
| ND<-0.693147 | -0.328504 J | -0.364643 | 114 | 156 |
| ND<-0.693147 U | -0.328504 J | -0.364643 | 114 | 157 |
| | | | | |
| -0.0202027 J | ND<0 | -0.0202027 | 114 | 158 |
| -0.18633 J | ND<0 | -0.18633114 | 159 | |
| 0.207014 J | ND<0 | 0.207014 | 115 | 159 |
| ND<-0.693147 | ND<0 | -0.693147 | 115 | 160 |
| ND<-0.693147 | ND<0 | -0.693147 | 115 | 161 |
| ND<-0.693147 | ND<0 | -0.693147 | 115 | 162 |
| ND<-0.693147 U | ND<0 | -0.693147 | 115 | 163 |
| | | | | |
| -0.18633 J | -0.0202027 J | -0.166127 | 115 | 164 |
| 0.207014 J | -0.0202027 J | 0.227217 | 116 | 164 |
| ND<-0.693147 | -0.0202027 J | -0.672944 | 116 | 165 |
| ND<-0.693147 | -0.0202027 J | -0.672944 | 116 | 166 |
| ND<-0.693147 | -0.0202027 J | -0.672944 | 116 | 167 |
| ND<-0.693147 U | -0.0202027 J | -0.672944 | 116 | 168 |
| | | | | |
| 0.207014 J | -0.18633 J | 0.393344 | 117 | 168 |
| ND<-0.693147 | -0.18633 J | -0.506818 | 117 | 169 |
| ND<-0.693147 | -0.18633 J | -0.506818 | 117 | 170 |
| ND<-0.693147 | -0.18633 J | -0.506818 | 117 | 171 |
| ND<-0.693147 U | -0.18633 J | -0.506818 | 117 | 172 |
| | | | | |
| ND<-0.693147 | 0.207014 J | -0.900161 | 117 | 173 |
| ND<-0.693147 | 0.207014 J | -0.900161 | 117 | 174 |
| ND<-0.693147 | 0.207014 J | -0.900161 | 117 | 175 |
| ND<-0.693147 U | 0.207014 J | -0.900161 | 117 | 176 |
| | | | | |
| ND<-0.693147 | ND<-0.693147 | 0 | 117 | 176 |
| ND<-0.693147 | ND<-0.693147 | 0 | 117 | 176 |
| ND<-0.693147 U | ND<-0.693147 | 0 | 117 | 176 |
| | | | | |
| ND<-0.693147 | ND<-0.693147 | 0 | 117 | 176 |
| ND<-0.693147 U | ND<-0.693147 | 0 | 117 | 176 |
| | | | | |
| ND<-0.693147 U | ND<-0.693147 | 0 | 117 | 176 |

S Statistic = 117 - 176 = -59

| Tied Group | Value | Members |
|---|---|---|
| 1 | -0.105361 | 2 |
| 2 | 0 | 13 |
| 3 | -0.693147 | 4 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |

| | | |
|---|---|---|
| 11/19/1996 | | 1 |
| 12/19/1996 | | 1 |
| 3/24/1997 | | 1 |
| 9/24/1997 | | 1 |
| 4/7/1998 | 1 | |
| 9/23/1998 | | 1 |
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 11/16/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 1 |

There are 0 time periods with multiple data

A = 5010
B = 0
C = 1740
D = 0
E = 170
F = 0
a = 46116
b = 176904
c = 1512
Group Variance = 2283.67
Z-Score = -1.2137
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.2137| <= 1.97737 indicating no evidence of a trend

# Concentrations (ppb)

## Parameter: Lead

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 158
Percent Non-Detects: 71.4932%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 14 (77.7778%) | 3/16/1999 | 5 | 5 |
| | | | 9/23/1999 | 8 | 8 |
| | | | 3/15/2000 | 21 | 21 |
| | | | 9/24/2003 | ND<1 | ND<1 |
| | | | 3/11/2004 | ND<1 | ND<1 |
| | | | 10/12/2004 | ND<1 | ND<1 |
| | | | 4/1/2005 | ND<1 | ND<1 |
| | | | 10/25/2005 | ND<1 | ND<1 |
| | | | 4/29/2006 | ND<1 | ND<1 |
| | | | 11/18/2006 | ND<1 | ND<1 |
| | | | 5/23/2007 | ND<1 | ND<1 |
| | | | 11/28/2007 | ND<1 | ND<1 |
| | | | 6/5/2008 | ND<1 | ND<1 |
| | | | 11/20/2008 | ND<1 | ND<1 |
| | | | 6/11/2009 | ND<0.08 | ND<0.08 |
| | | | 11/16/2009 | ND<0.08 | ND<0.08 |
| | | | 6/30/2010 | ND<0.08 | ND<0.08 |
| | | | 11/12/2010 | 0.12 J | 0.12 J |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-10 | 28 | 25 (89.2857%) | 7/20/1995 | ND<1 | ND<1 |
| | | | 8/24/1995 | 4.8 | 4.8 |
| | | | 9/28/1995 | ND<1 | ND<1 |
| | | | 10/26/1995 | ND<1 | ND<1 |
| | | | 11/19/1996 | ND<1 | ND<1 |
| | | | 12/19/1996 | ND<1 | ND<1 |
| | | | 3/24/1997 | ND<1 | ND<1 |
| | | | 9/24/1997 | ND<1 | ND<1 |
| | | | 4/7/1998 | ND<1 | ND<1 |
| | | | 9/23/1998 | ND<1 | ND<1 |
| | | | 3/16/1999 | ND<1 | ND<1 |
| | | | 9/23/1999 | 5 | 5 |
| | | | 3/15/2000 | ND<1 | ND<1 |
| | | | 9/24/2003 | ND<1 | ND<1 |
| | | | 3/11/2004 | ND<1 | ND<1 |
| | | | 10/12/2004 | ND<1 | ND<1 |
| | | | 4/1/2005 | ND<1 | ND<1 |
| | | | 10/25/2005 | ND<1 | ND<1 |
| | | | 4/29/2006 | ND<1 | ND<1 |
| | | | 11/18/2006 | ND<1 | ND<1 |
| | | | 5/23/2007 | ND<1 | ND<1 |
| | | | 11/28/2007 | ND<1 | ND<1 |
| | | | 6/5/2008 | ND<1 | ND<1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/20/2008 | ND<1 | ND<1 | |
| | | | 6/11/2009 | 0.14 J | 0.14 J | |
| | | | 11/16/2009 | ND<0.08 | | ND<0.08 |
| | | | 6/30/2010 | ND<0.08 | | ND<0.08 |
| | | | 11/12/2010 | ND<0.08 U | | ND<0.08 U |
| MW-11R | 28 | 21 (75%) | 7/20/1995 | 3.8 | 3.8 | |
| | | | 8/24/1995 | 6 | 6 | |
| | | | 9/28/1995 | 3.7 | 3.7 | |
| | | | 10/26/1995 | 11.9 | 11.9 | |
| | | | 11/19/1996 | ND<1 | ND<1 | |
| | | | 12/19/1996 | ND<1 | ND<1 | |
| | | | 3/24/1997 | ND<1 | ND<1 | |
| | | | 9/24/1997 | ND<1 | ND<1 | |
| | | | 4/7/1998 | ND<1 | ND<1 | |
| | | | 9/23/1998 | ND<1 | ND<1 | |
| | | | 3/16/1999 | ND<1 | ND<1 | |
| | | | 9/23/1999 | 9 | 9 | |
| | | | 3/15/2000 | ND<1 | ND<1 | |
| | | | 9/24/2003 | ND<1 | ND<1 | |
| | | | 3/11/2004 | ND<1 | ND<1 | |
| | | | 10/12/2004 | ND<1 | ND<1 | |
| | | | 4/1/2005 | ND<1 | ND<1 | |
| | | | 10/25/2005 | ND<1 | ND<1 | |
| | | | 4/29/2006 | 1.22 | 1.22 | |
| | | | 11/18/2006 | ND<1 | ND<1 | |
| | | | 5/23/2007 | ND<1 | ND<1 | |
| | | | 11/28/2007 | ND<1 | ND<1 | |
| | | | 6/5/2008 | ND<1 | ND<1 | |
| | | | 11/20/2008 | 0.636 J | 0.636 J | |
| | | | 6/11/2009 | ND<0.08 | | ND<0.08 |
| | | | 11/16/2009 | ND<0.08 | | ND<0.08 |
| | | | 6/30/2010 | ND<0.08 | | ND<0.08 |
| | | | 11/12/2010 | ND<0.08 U | | ND<0.08 U |
| MW-12AR | 18 | 9 (50%) | 3/16/1999 | ND<1 | ND<1 | |
| | | | 9/23/1999 | 6 | 6 | |
| | | | 3/15/2000 | 11 | 11 | |
| | | | 9/24/2003 | ND<1 | ND<1 | |
| | | | 3/11/2004 | ND<1 | ND<1 | |
| | | | 10/12/2004 | ND<1 | ND<1 | |
| | | | 4/1/2005 | ND<1 | ND<1 | |
| | | | 10/25/2005 | ND<1 | ND<1 | |
| | | | 4/29/2006 | 0.68 J | 0.68 J | |
| | | | 11/18/2006 | ND<1 | ND<1 | |
| | | | 5/23/2007 | 0.819 J | 0.819 J | |
| | | | 11/28/2007 | ND<1 | ND<1 | |
| | | | 6/5/2008 | ND<1 | ND<1 | |
| | | | 11/20/2008 | 0.738 J | 0.738 J | |
| | | | 6/11/2009 | 0.34 | 0.34 | |
| | | | 11/16/2009 | 0.44 | 0.44 | |
| | | | 6/30/2010 | 0.45 | 0.45 | |
| | | | 11/12/2010 | 0.49 | 0.49 | |
| MW-12BR | 18 | 10 (55.5556%) | 3/16/1999 | ND<1 | ND<1 | |
| | | | 9/23/1999 | 6 | 6 | |
| | | | 3/15/2000 | ND<1 | ND<1 | |
| | | | 9/24/2003 | ND<1 | ND<1 | |
| | | | 3/11/2004 | ND<1 | ND<1 | |
| | | | 10/12/2004 | ND<1 | ND<1 | |
| | | | 4/1/2005 | ND<1 | ND<1 | |
| | | | 10/25/2005 | 0.623 J | 0.623 J | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 4/29/2006 | 0.5 J | 0.5 J | |
| | | | 11/18/2006 | ND<1 | ND<1 | |
| | | | 5/23/2007 | ND<1 | ND<1 | |
| | | | 11/28/2007 | ND<1 | ND<1 | |
| | | | 6/5/2008 | ND<1 | ND<1 | |
| | | | 11/20/2008 | 2.72 | 2.72 | |
| | | | 6/11/2009 | 0.17 J | 0.17 J | |
| | | | 11/16/2009 | 0.26 J | 0.26 J | |
| | | | 6/30/2010 | 0.27 J | 0.27 J | |
| | | | 11/12/2010 | 0.72 | 0.72 | |
| MW-6 | 28 | 20 (71.4286%) | 7/20/1995 | 8.1 | 8.1 | |
| | | | 8/24/1995 | 5.9 | 5.9 | |
| | | | 9/28/1995 | 3.4 | 3.4 | |
| | | | 10/26/1995 | ND<1 | ND<1 | |
| | | | 11/19/1996 | ND<1 | ND<1 | |
| | | | 12/19/1996 | 10.3 | 10.3 | |
| | | | 3/24/1997 | ND<1 | ND<1 | |
| | | | 9/24/1997 | 12 | 12 | |
| | | | 4/7/1998 | 13 | 13 | |
| | | | 9/23/1998 | ND<1 | ND<1 | |
| | | | 3/16/1999 | ND<1 | ND<1 | |
| | | | 9/23/1999 | ND<1 | ND<1 | |
| | | | 3/15/2000 | ND<1 | ND<1 | |
| | | | 9/24/2003 | ND<1 | ND<1 | |
| | | | 3/11/2004 | ND<1 | ND<1 | |
| | | | 10/12/2004 | ND<1 | ND<1 | |
| | | | 4/1/2005 | ND<1 | ND<1 | |
| | | | 10/25/2005 | ND<1 | ND<1 | |
| | | | 4/29/2006 | ND<1 | ND<1 | |
| | | | 11/18/2006 | ND<1 | ND<1 | |
| | | | 5/23/2007 | ND<1 | ND<1 | |
| | | | 11/28/2007 | ND<1 | ND<1 | |
| | | | 6/5/2008 | ND<1 | ND<1 | |
| | | | 11/20/2008 | ND<1 | ND<1 | |
| | | | 6/11/2009 | ND<0.08 | | ND<0.08 |
| | | | 11/16/2009 | 0.085 J | 0.085 J | |
| | | | 6/30/2010 | ND<0.08 | | ND<0.08 |
| | | | 11/12/2010 | 0.11 J | 0.11 J | |
| MW-9 | 28 | 23 (82.1429%) | 7/20/1995 | 4 | 4 | |
| | | | 8/24/1995 | 3 | 3 | |
| | | | 9/28/1995 | 3.5 | 3.5 | |
| | | | 10/26/1995 | ND<1 | ND<1 | |
| | | | 11/19/1996 | ND<1 | ND<1 | |
| | | | 12/19/1996 | ND<1 | ND<1 | |
| | | | 3/24/1997 | ND<1 | ND<1 | |
| | | | 9/24/1997 | 22 | 22 | |
| | | | 4/7/1998 | ND<1 | ND<1 | |
| | | | 9/23/1998 | ND<1 | ND<1 | |
| | | | 3/16/1999 | ND<1 | ND<1 | |
| | | | 9/23/1999 | ND<1 | ND<1 | |
| | | | 3/15/2000 | ND<1 | ND<1 | |
| | | | 9/24/2003 | ND<1 | ND<1 | |
| | | | 3/11/2004 | ND<1 | ND<1 | |
| | | | 10/12/2004 | ND<1 | ND<1 | |
| | | | 4/1/2005 | ND<1 | ND<1 | |
| | | | 10/25/2005 | ND<1 | ND<1 | |
| | | | 4/29/2006 | 0.66 J | 0.66 J | |
| | | | 11/18/2006 | ND<1 | ND<1 | |
| | | | 5/23/2007 | ND<1 | ND<1 | |
| | | | 11/28/2007 | ND<1 | ND<1 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 6/5/2008 | ND<1 | ND<1 | |
| | | | 11/20/2008 | ND<1 | ND<1 | |
| | | | 6/11/2009 | ND<0.08 | | ND<0.08 |
| | | | 11/16/2009 | ND<0.08 | | ND<0.08 |
| | | | 6/30/2010 | ND<0.08 | | ND<0.08 |
| | | | 11/12/2010 | ND<0.08 U | | ND<0.08 U |
| MW-7 | 28 | 16 (57.1429%) | 7/20/1995 | | ND<1 | ND<1 |
| | | | 8/24/1995 | 12.8 | 12.8 | |
| | | | 9/28/1995 | 40.6 | 40.6 | |
| | | | 10/26/1995 | 14.1 | 14.1 | |
| | | | 11/19/1996 | ND<1 | ND<1 | |
| | | | 12/19/1996 | 21.5 | 21.5 | |
| | | | 3/24/1997 | ND<1 | ND<1 | |
| | | | 9/24/1997 | ND<1 | ND<1 | |
| | | | 4/7/1998 | ND<1 | ND<1 | |
| | | | 9/23/1998 | ND<1 | ND<1 | |
| | | | 3/16/1999 | 9 | 9 | |
| | | | 9/23/1999 | 5 | 5 | |
| | | | 3/15/2000 | ND<1 | ND<1 | |
| | | | 9/24/2003 | ND<1 | ND<1 | |
| | | | 3/11/2004 | ND<1 | ND<1 | |
| | | | 10/12/2004 | ND<1 | ND<1 | |
| | | | 4/1/2005 | ND<1 | ND<1 | |
| | | | 10/25/2005 | ND<1 | ND<1 | |
| | | | 4/29/2006 | ND<1 | ND<1 | |
| | | | 11/18/2006 | ND<1 | ND<1 | |
| | | | 5/23/2007 | ND<1 | ND<1 | |
| | | | 11/28/2007 | ND<1 | ND<1 | |
| | | | 6/5/2008 | 0.522 J | 0.522 J | |
| | | | 11/20/2008 | 0.734 J | 0.734 J | |
| | | | 6/11/2009 | 0.17 J | 0.17 J | |
| | | | 11/16/2009 | 0.16 J | 0.16 J | |
| | | | 6/30/2010 | 0.16 J H | 0.16 J H | |
| | | | 11/12/2010 | 0.18 J | 0.18 J | |
| MW-8 | 27 | 20 (74.0741%) | 7/20/1995 | | 3 | 3 |
| | | | 8/24/1995 | 8.9 | 8.9 | |
| | | | 9/28/1995 | 19.6 | 19.6 | |
| | | | 10/26/1995 | ND<1 | ND<1 | |
| | | | 11/19/1996 | ND<1 | ND<1 | |
| | | | 12/19/1996 | 13.3 | 13.3 | |
| | | | 3/24/1997 | ND<1 | ND<1 | |
| | | | 9/24/1997 | ND<1 | ND<1 | |
| | | | 4/7/1998 | ND<1 | ND<1 | |
| | | | 9/23/1998 | 13 | 13 | |
| | | | 3/16/1999 | ND<1 | ND<1 | |
| | | | 9/23/1999 | 73 | 73 | |
| | | | 3/15/2000 | ND<1 | ND<1 | |
| | | | 9/24/2003 | ND<1 | ND<1 | |
| | | | 3/11/2004 | ND<1 | ND<1 | |
| | | | 10/12/2004 | ND<1 | ND<1 | |
| | | | 4/1/2005 | ND<1 | ND<1 | |
| | | | 10/25/2005 | ND<1 | ND<1 | |
| | | | 4/29/2006 | ND<1 | ND<1 | |
| | | | 11/18/2006 | ND<1 | ND<1 | |
| | | | 5/23/2007 | ND<1 | ND<1 | |
| | | | 11/28/2007 | ND<1 | ND<1 | |
| | | | 6/5/2008 | ND<1 | ND<1 | |
| | | | 11/20/2008 | 0.658 J | 0.658 J | |
| | | | 6/11/2009 | ND<0.08 | | ND<0.08 |
| | | | 6/30/2010 | ND<0.08 | | ND<0.08 |

| | | | |
|---|---|---|---|
| | 11/12/2010 | ND<0.08 U | ND<0.08 U |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. | Original |
|---|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: Lead

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.04 | -2.65209 | 7.03356 | -0.106083 |
| 2 | 0.04 | -2.36561 | 12.6297 | -0.200708 |
| 3 | 0.04 | -2.22621 | 17.5857 | -0.289756 |
| 4 | 0.04 | -2.09693 | 21.9828 | -0.373634 |
| 5 | 0.04 | -2.01409 | 26.0394 | -0.454197 |
| 6 | 0.04 | -1.92684 | 29.7521 | -0.531271 |
| 7 | 0.04 | -1.86629 | 33.2351 | -0.605922 |
| 8 | 0.04 | -1.79912 | 36.472 | -0.677887 |
| 9 | 0.04 | -1.75069 | 39.5369 | -0.747915 |
| 10 | 0.04 | -1.6954 | 42.4112 | -0.815731 |
| 11 | 0.04 | -1.65463 | 45.149 | -0.881916 |
| 12 | 0.04 | -1.60725 | 47.7323 | -0.946206 |
| 13 | 0.04 | -1.57179 | 50.2028 | -1.00908 |
| 14 | 0.04 | -1.53007 | 52.5439 | -1.07028 |
| 15 | 0.04 | -1.49852 | 54.7894 | -1.13022 |
| 16 | 0.04 | -1.46106 | 56.9241 | -1.18866 |
| 17 | 0.04 | -1.4325 | 58.9762 | -1.24596 |
| 18 | 0.04 | -1.39838 | 60.9316 | -1.3019 |
| 19 | 0.04 | -1.3722 | 62.8146 | -1.35679 |
| 20 | 0.085 | -1.34075 | 64.6122 | -1.47075 |
| 21 | 0.11 | -1.31652 | 66.3454 | -1.61557 |
| 22 | 0.12 | -1.28727 | 68.0025 | -1.77004 |
| 23 | 0.14 | -1.26464 | 69.6018 | -1.94709 |
| 24 | 0.16 | -1.23724 | 71.1326 | -2.14505 |
| 25 | 0.16 | -1.21596 | 72.6111 | -2.3396 |
| 26 | 0.17 | -1.19012 | 74.0275 | -2.54192 |
| 27 | 0.17 | -1.17 | 75.3964 | -2.74082 |
| 28 | 0.18 | -1.1455 | 76.7086 | -2.94701 |
| 29 | 0.26 | -1.12639 | 77.9774 | -3.23987 |
| 30 | 0.27 | -1.10306 | 79.1941 | -3.5377 |
| 31 | 0.34 | -1.08482 | 80.371 | -3.90654 |
| 32 | 0.44 | -1.06252 | 81.4999 | -4.37405 |
| 33 | 0.45 | -1.04505 | 82.592 | -4.84432 |
| 34 | 0.49 | -1.02365 | 83.6399 | -5.34591 |
| 35 | 0.5 | -1.00687 | 84.6537 | -5.84934 |
| 36 | 0.5 | -0.986272 | 85.6264 | -6.34248 |
| 37 | 0.5 | -0.970094 | 86.5675 | -6.82753 |
| 38 | 0.5 | -0.950222 | 87.4704 | -7.30264 |
| 39 | 0.5 | -0.93459 | 88.3439 | -7.76993 |
| 40 | 0.5 | -0.915365 | 89.1818 | -8.22762 |
| 41 | 0.5 | -0.900227 | 89.9922 | -8.67773 |
| 42 | 0.5 | -0.881587 | 90.7694 | -9.11852 |
| 43 | 0.5 | -0.866894 | 91.5209 | -9.55197 |
| 44 | 0.5 | -0.848786 | 92.2413 | -9.97636 |
| 45 | 0.5 | -0.834498 | 92.9377 | -10.3936 |
| 46 | 0.5 | -0.816874 | 93.605 | -10.802 |
| 47 | 0.5 | -0.802956 | 94.2497 | -11.2035 |
| 48 | 0.5 | -0.785774 | 94.8672 | -11.5964 |
| 49 | 0.5 | -0.772193 | 95.4634 | -11.9825 |

| | | | | |
|---|---|---|---|---|
| 50 | 0.5 | -0.755415 | 96.0341 | -12.3602 |
| 51 | 0.5 | -0.742143 | 96.5849 | -12.7313 |
| 52 | 0.5 | -0.725736 | 97.1116 | -13.0942 |
| 53 | 0.5 | -0.712751 | 97.6196 | -13.4505 |
| 54 | 0.5 | -0.696684 | 98.1049 | -13.7989 |
| 55 | 0.5 | -0.683969 | 8.5727 | -14.1409 |
| 56 | 0.5 | -0.668209 | 99.0192 | -14.475 |
| 57 | 0.5 | -0.655726 | 99.4492 | -14.8028 |
| 58 | 0.5 | -0.640266 | 99.8592 | -15.123 |
| 59 | 0.5 | -0.628006 | 100.254 | -15.437 |
| 60 | 0.5 | -0.612813 | 100.629 | -15.7434 |
| 61 | 0.5 | -0.60076 | 100.99 | -16.0437 |
| 62 | 0.5 | -0.585815 | 101.333 | -16.3367 |
| 63 | 0.5 | -0.573953 | 101.663 | -16.6236 |
| 64 | 0.5 | -0.559237 | 101.975 | -16.9032 |
| 65 | 0.5 | -0.547551 | 102.275 | -17.177 |
| 66 | 0.5 | -0.533048 | 102.559 | -17.4435 |
| 67 | 0.5 | -0.521527 | 102.831 | -17.7043 |
| 68 | 0.5 | -0.507221 | 103.089 | -17.9579 |
| 69 | 0.5 | -0.49585 | 103.334 | -18.2058 |
| 70 | 0.5 | -0.481728 | 103.566 | -18.4467 |
| 71 | 0.5 | -0.470498 | 103.788 | -18.682 |
| 72 | 0.5 | -0.456542 | 103.996 | -18.9102 |
| 73 | 0.5 | -0.445443 | 104.195 | -19.133 |
| 74 | 0.5 | -0.431644 | 104.381 | -19.3488 |
| 75 | 0.5 | -0.420664 | 104.558 | -19.5591 |
| 76 | 0.5 | -0.40701 | 104.724 | -19.7626 |
| 77 | 0.5 | -0.396142 | 104.881 | -19.9607 |
| 78 | 0.5 | -0.382622 | 105.027 | -20.152 |
| 79 | 0.5 | -0.371856 | 105.165 | -20.3379 |
| 80 | 0.5 | -0.358459 | 105.294 | -20.5171 |
| 81 | 0.5 | -0.347787 | 105.415 | -20.691 |
| 82 | 0.5 | -0.334503 | 105.527 | -20.8583 |
| 83 | 0.5 | -0.323919 | 105.632 | -21.0203 |
| 84 | 0.5 | -0.310738 | 105.728 | -21.1756 |
| 85 | 0.5 | -0.300232 | 105.818 | -21.3257 |
| 86 | 0.5 | -0.287147 | 105.901 | -21.4693 |
| 87 | 0.5 | -0.276714 | 105.977 | -21.6077 |
| 88 | 0.5 | -0.263715 | 106.047 | -21.7395 |
| 89 | 0.5 | -0.253347 | 106.111 | -21.8662 |
| 90 | 0.5 | -0.240426 | 106.169 | -21.9864 |
| 91 | 0.5 | -0.230118 | 106.222 | -22.1015 |
| 92 | 0.5 | -0.217267 | 106.269 | -22.2101 |
| 93 | 0.5 | -0.207012 | 106.312 | -22.3136 |
| 94 | 0.5 | -0.194225 | 106.35 | -22.4107 |
| 95 | 0.5 | -0.184017 | 106.383 | -22.5027 |
| 96 | 0.5 | -0.171285 | 106.413 | -22.5884 |
| 97 | 0.5 | -0.161119 | 106.439 | -22.6689 |
| 98 | 0.5 | -0.148434 | 106.461 | -22.7432 |
| 99 | 0.5 | -0.138305 | 106.48 | -22.8123 |
| 100 | 0.5 | -0.125661 | 106.496 | -22.8751 |
| 101 | 0.5 | -0.115562 | 106.509 | -22.9329 |
| 102 | 0.5 | -0.102953 | 106.52 | -22.9844 |
| 103 | 0.5 | -0.0928787 | 106.528 | -23.0308 |
| 104 | 0.5 | -0.0802981 | 106.535 | -23.071 |
| 105 | 0.5 | -0.0702426 | 106.54 | -23.1061 |
| 106 | 0.5 | -0.0576847 | 106.543 | -23.1349 |
| 107 | 0.5 | -0.0476439 | 106.545 | -23.1588 |
| 108 | 0.5 | -0.0350997 | 106.546 | -23.1763 |
| 109 | 0.5 | -0.0250691 | 106.547 | -23.1889 |
| 110 | 0.5 | -0.0125328 | 106.547 | -23.1951 |
| 111 | 0.5 | 0 | 106.547 | -23.1951 |

| | | | | |
|---|---|---|---|---|
| 112 | 0.5 | 0.0125328 | 106.547 | -23.1889 |
| 113 | 0.5 | 0.0250691 | 106.548 | -23.1763 |
| 114 | 0.5 | 0.0350997 | 106.549 | -23.1588 |
| 115 | 0.5 | 0.0476439 | 106.551 | -23.1349 |
| 116 | 0.5 | 0.0576847 | 106.555 | -23.1061 |
| 117 | 0.5 | 0.0702426 | 106.56 | -23.071 |
| 118 | 0.5 | 0.0802981 | 106.566 | -23.0308 |
| 119 | 0.5 | 0.0928787 | 106.575 | -22.9844 |
| 120 | 0.5 | 0.102953 | 106.585 | -22.9329 |
| 121 | 0.5 | 0.115562 | 106.599 | -22.8751 |
| 122 | 0.5 | 0.125661 | 106.615 | -22.8123 |
| 123 | 0.5 | 0.138305 | 106.634 | -22.7432 |
| 124 | 0.5 | 0.148434 | 106.656 | -22.6689 |
| 125 | 0.5 | 0.161119 | 106.682 | -22.5884 |
| 126 | 0.5 | 0.171285 | 106.711 | -22.5027 |
| 127 | 0.5 | 0.184017 | 106.745 | -22.4107 |
| 128 | 0.5 | 0.194225 | 106.783 | -22.3136 |
| 129 | 0.5 | 0.207012 | 106.825 | -22.2101 |
| 130 | 0.5 | 0.217267 | 106.873 | -22.1015 |
| 131 | 0.5 | 0.230118 | 106.926 | -21.9864 |
| 132 | 0.5 | 0.240426 | 106.983 | -21.8662 |
| 133 | 0.5 | 0.253347 | 107.048 | -21.7395 |
| 134 | 0.5 | 0.263715 | 107.117 | -21.6077 |
| 135 | 0.5 | 0.276714 | 107.194 | -21.4693 |
| 136 | 0.5 | 0.287147 | 107.276 | -21.3257 |
| 137 | 0.5 | 0.300232 | 107.366 | -21.1756 |
| 138 | 0.5 | 0.310738 | 107.463 | -21.0203 |
| 139 | 0.5 | 0.323919 | 107.568 | -20.8583 |
| 140 | 0.5 | 0.334503 | 107.68 | -20.691 |
| 141 | 0.5 | 0.347787 | 107.801 | -20.5171 |
| 142 | 0.5 | 0.358459 | 107.929 | -20.3379 |
| 143 | 0.5 | 0.371856 | 108.067 | -20.152 |
| 144 | 0.5 | 0.382622 | 108.214 | -19.9607 |
| 145 | 0.5 | 0.396142 | 108.371 | -19.7626 |
| 146 | 0.5 | 0.40701 | 108.536 | -19.5591 |
| 147 | 0.5 | 0.420664 | 108.713 | -19.3488 |
| 148 | 0.5 | 0.431644 | 108.9 | -19.133 |
| 149 | 0.5 | 0.445443 | 109.098 | -18.9102 |
| 150 | 0.5 | 0.456542 | 109.307 | -18.682 |
| 151 | 0.5 | 0.470498 | 109.528 | -18.4467 |
| 152 | 0.5 | 0.481728 | 109.76 | -18.2058 |
| 153 | 0.5 | 0.49585 | 110.006 | -17.9579 |
| 154 | 0.5 | 0.507221 | 110.263 | -17.7043 |
| 155 | 0.5 | 0.521527 | 110.535 | -17.4435 |
| 156 | 0.5 | 0.533048 | 110.819 | -17.177 |
| 157 | 0.5 | 0.547551 | 111.119 | -16.9032 |
| 158 | 0.5 | 0.559237 | 111.432 | -16.6236 |
| 159 | 0.5 | 0.573953 | 111.761 | -16.3367 |
| 160 | 0.5 | 0.585815 | 112.104 | -16.0437 |
| 161 | 0.5 | 0.60076 | 112.465 | -15.7434 |
| 162 | 0.5 | 0.612813 | 112.841 | -15.437 |
| 163 | 0.5 | 0.628006 | 113.235 | -15.123 |
| 164 | 0.5 | 0.640266 | 113.645 | -14.8028 |
| 165 | 0.5 | 0.655726 | 114.075 | -14.475 |
| 166 | 0.5 | 0.668209 | 114.522 | -14.1409 |
| 167 | 0.5 | 0.68396 | 114.989 | -13.7989 |
| 168 | 0.5 | 0.696684 | 115.475 | -13.4505 |
| 169 | 0.5 | 0.712751 | 115.983 | -13.0942 |
| 170 | 0.5 | 0.725736 | 116.51 | -12.7313 |
| 171 | 0.5 | 0.742143 | 117.06 | -12.3602 |
| 172 | 0.5 | 0.755415 | 117.631 | -11.9825 |
| 173 | 0.5 | 0.772193 | 118.227 | -11.5964 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 0.5 | 0.785774 | | 118.845 | -11.2035 |
| 175 | 0.522 | 0.802956 | | 119.489 | -10.7844 |
| 176 | 0.623 | 0.816874 | | 120.157 | -10.2755 |
| 177 | 0.636 | 0.834498 | | 120.853 | -9.74473 |
| 178 | 0.658 | 0.848786 | | 121.574 | -9.18623 |
| 179 | 0.66 | 0.866894 | | 122.325 | -8.61408 |
| 180 | 0.68 | 0.881587 | | 123.102 | -8.0146 |
| 181 | 0.72 | 0.900227 | | 123.913 | -7.36644 |
| 182 | 0.734 | 0.915365 | | 124.751 | -6.69456 |
| 183 | 0.738 | 0.93459 | 125.624 | -6.00483 | |
| 184 | 0.819 | 0.950222 | | 126.527 | -5.2266 |
| 185 | 1.22 | 0.970094 | | 127.468 | -4.04308 |
| 186 | 2.72 | 0.986272 | | 128.441 | -1.36042 |
| 187 | 3 | 1.00687 | 129.455 | 1.66017 | |
| 188 | 3 | 1.02365 | 130.502 | 4.73113 | |
| 189 | 3.4 | 1.04505 | 131.594 | 8.2843 | |
| 190 | 3.5 | 1.06252 | 132.723 | 12.0031 | |
| 191 | 3.7 | 1.08482 | 133.9 | 16.017 | |
| 192 | 3.8 | 1.10306 | 135.117 | 20.2086 | |
| 193 | 4 | 1.12639 | 136.386 | 24.7142 | |
| 194 | 4.8 | 1.1455 | 137.698 | 30.2126 | |
| 195 | 5 | 1.17 | 139.067 | 36.0626 | |
| 196 | 5 | 1.19012 | 140.483 | 42.0132 | |
| 197 | 5 | 1.21596 | 141.962 | 48.093 | |
| 198 | 5.9 | 1.23724 | 143.493 | 55.3927 | |
| 199 | 6 | 1.26464 | 145.092 | 62.9805 | |
| 200 | 6 | 1.28727 | 146.749 | 70.7042 | |
| 201 | 6 | 1.31652 | 148.482 | 78.6033 | |
| 202 | 8 | 1.34075 | 150.28 | 89.3293 | |
| 203 | 8.1 | 1.3722 | 152.163 | 100.444 | |
| 204 | 8.9 | 1.39838 | 154.118 | 112.89 | |
| 205 | 9 | 1.4325 | 156.17 | 125.782 | |
| 206 | 9 | 1.46106 | 158.305 | 138.932 | |
| 207 | 10.3 | 1.49852 | 160.551 | 154.366 | |
| 208 | 11 | 1.53007 | 162.892 | 171.197 | |
| 209 | 11.9 | 1.57179 | 165.362 | 189.901 | |
| 210 | 12 | 1.60725 | 167.945 | 209.188 | |
| 211 | 12.8 | 1.65463 | 170.683 | 230.368 | |
| 212 | 13 | 1.6954 | 173.558 | 252.408 | |
| 213 | 13 | 1.75069 | 176.622 | 275.167 | |
| 214 | 13.3 | 1.79912 | 179.859 | 299.095 | |
| 215 | 14.1 | 1.86629 | 183.342 | 325.41 | |
| 216 | 19.6 | 1.92684 | 187.055 | 363.176 | |
| 217 | 21 | 2.01409 | 191.112 | 405.472 | |
| 218 | 21.5 | 2.09693 | 195.509 | 450.556 | |
| 219 | 22 | 2.22621 | 200.465 | 499.532 | |
| 220 | 40.6 | 2.36561 | 206.061 | 595.576 | |
| 221 | 73 | 2.65209 | 213.094 | 789.179 | |

Data Set Standard Deviation = 6.65079
Numerator = 622803
Denominator = 2.07368e+006
W Statistic = 0.300337 = 622803 / 2.07368e+006

5% Critical value of 0.976 exceeds 0.300337
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.300337
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: Lead

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | -3.21888 | -2.65209 | 7.03356 | 8.53674 |
| 2 | -3.21888 | -2.36561 | 12.6297 | 16.1514 |
| 3 | -3.21888 | -2.22621 | 17.5857 | 23.3172 |
| 4 | -3.21888 | -2.09693 | 21.9828 | 30.067 |
| 5 | -3.21888 | -2.01409 | 26.0394 | 36.5501 |
| 6 | -3.21888 | -1.92684 | 29.7521 | 42.7524 |
| 7 | -3.21888 | -1.86629 | 33.2351 | 48.7597 |
| 8 | -3.21888 | -1.79912 | 36.472 | 54.5509 |
| 9 | -3.21888 | -1.75069 | 39.5369 | 60.1861 |
| 10 | -3.21888 | -1.6954 | 42.4112 | 65.6434 |
| 11 | -3.21888 | -1.65463 | 45.149 | 70.9694 |
| 12 | -3.21888 | -1.60725 | 47.7323 | 76.143 |
| 13 | -3.21888 | -1.57179 | 50.2028 | 81.2023 |
| 14 | -3.21888 | -1.53007 | 52.5439 | 86.1274 |
| 15 | -3.21888 | -1.49852 | 54.7894 | 90.951 |
| 16 | -3.21888 | -1.46106 | 56.9241 | 95.6539 |
| 17 | -3.21888 | -1.4325 | 58.9762 | 100.265 |
| 18 | -3.21888 | -1.39838 | 60.9316 | 104.766 |
| 19 | -3.21888 | -1.3722 | 62.8146 | 109.183 |
| 20 | -2.4651 | -1.34075 | 64.6122 | 112.488 |
| 21 | -2.20727 | -1.31652 | 66.3454 | 115.394 |
| 22 | -2.12026 | -1.28727 | 68.0025 | 118.124 |
| 23 | -1.96611 | -1.26464 | 69.6018 | 120.61 |
| 24 | -1.83258 | -1.23724 | 71.1326 | 122.877 |
| 25 | -1.83258 | -1.21596 | 72.6111 | 125.106 |
| 26 | -1.77196 | -1.19012 | 74.0275 | 127.214 |
| 27 | -1.77196 | -1.17 | 75.3964 | 129.288 |
| 28 | -1.7148 | -1.1455 | 76.7086 | 131.252 |
| 29 | -1.34707 | -1.12639 | 77.9774 | 132.769 |
| 30 | -1.30933 | -1.10306 | 79.1941 | 134.214 |
| 31 | -1.07881 | -1.08482 | 80.371 | 135.384 |
| 32 | -0.820981 | -1.06252 | 81.4999 | 136.256 |
| 33 | -0.798508 | -1.04505 | 82.592 | 137.091 |
| 34 | -0.71335 | -1.02365 | 83.6399 | 137.821 |
| 35 | -0.693147 | -1.00687 | 84.6537 | 138.519 |
| 36 | -0.693147 | -0.986272 | 85.6264 | 139.202 |
| 37 | -0.693147 | -0.970094 | 86.5675 | 139.875 |
| 38 | -0.693147 | -0.950222 | 87.4704 | 140.534 |
| 39 | -0.693147 | -0.93459 | 88.3439 | 141.181 |
| 40 | -0.693147 | -0.915365 | 89.1818 | 141.816 |
| 41 | -0.693147 | -0.900227 | 89.9922 | 142.44 |
| 42 | -0.693147 | -0.881587 | 90.7694 | 143.051 |
| 43 | -0.693147 | -0.866894 | 91.5209 | 143.652 |
| 44 | -0.693147 | -0.848786 | 92.2413 | 144.24 |
| 45 | -0.693147 | -0.834498 | 92.9377 | 144.819 |
| 46 | -0.693147 | -0.816874 | 93.605 | 145.385 |
| 47 | -0.693147 | -0.802956 | 94.2497 | 145.941 |
| 48 | -0.693147 | -0.785774 | 94.8672 | 146.486 |
| 49 | -0.693147 | -0.772193 | 95.4634 | 147.021 |

| | | | | |
|---|---|---|---|---|
| 50 | -0.693147 | -0.755415 | 96.0341 | 147.545 |
| 51 | -0.693147 | -0.742143 | 96.5849 | 148.059 |
| 52 | -0.693147 | -0.725736 | 97.1116 | 148.562 |
| 53 | -0.693147 | -0.712751 | 97.6196 | 149.056 |
| 54 | -0.693147 | -0.696684 | 98.1049 | 149.539 |
| 55 | -0.693147 | -0.683969 | 8.5727 | 150.013 |
| 56 | -0.693147 | -0.668209 | 99.0192 | 150.476 |
| 57 | -0.693147 | -0.655726 | 99.4492 | 150.931 |
| 58 | -0.693147 | -0.640266 | 99.8592 | 151.375 |
| 59 | -0.693147 | -0.628006 | 100.254 | 151.81 |
| 60 | -0.693147 | -0.612813 | 100.629 | 152.235 |
| 61 | -0.693147 | -0.60076 | 100.99 | 152.651 |
| 62 | -0.693147 | -0.585815 | 101.333 | 153.057 |
| 63 | -0.693147 | -0.573953 | 101.663 | 153.455 |
| 64 | -0.693147 | -0.559237 | 101.975 | 153.843 |
| 65 | -0.693147 | -0.547551 | 102.275 | 154.222 |
| 66 | -0.693147 | -0.533048 | 102.559 | 154.592 |
| 67 | -0.693147 | -0.521527 | 102.831 | 154.953 |
| 68 | -0.693147 | -0.507221 | 103.089 | 155.305 |
| 69 | -0.693147 | -0.49585 | 103.334 | 155.649 |
| 70 | -0.693147 | -0.481728 | 103.566 | 155.982 |
| 71 | -0.693147 | -0.470498 | 103.788 | 156.309 |
| 72 | -0.693147 | -0.456542 | 103.996 | 156.625 |
| 73 | -0.693147 | -0.445443 | 104.195 | 156.934 |
| 74 | -0.693147 | -0.431644 | 104.381 | 157.233 |
| 75 | -0.693147 | -0.420664 | 104.558 | 157.525 |
| 76 | -0.693147 | -0.40701 | 104.724 | 157.807 |
| 77 | -0.693147 | -0.396142 | 104.881 | 158.081 |
| 78 | -0.693147 | -0.382622 | 105.027 | 158.346 |
| 79 | -0.693147 | -0.371856 | 105.165 | 158.604 |
| 80 | -0.693147 | -0.358459 | 105.294 | 158.853 |
| 81 | -0.693147 | -0.347787 | 105.415 | 159.094 |
| 82 | -0.693147 | -0.334503 | 105.527 | 159.326 |
| 83 | -0.693147 | -0.323919 | 105.632 | 159.55 |
| 84 | -0.693147 | -0.310738 | 105.728 | 159.766 |
| 85 | -0.693147 | -0.300232 | 105.818 | 159.974 |
| 86 | -0.693147 | -0.287147 | 105.901 | 160.173 |
| 87 | -0.693147 | -0.276714 | 105.977 | 160.364 |
| 88 | -0.693147 | -0.263715 | 106.047 | 160.547 |
| 89 | -0.693147 | -0.253347 | 106.111 | 160.723 |
| 90 | -0.693147 | -0.240426 | 106.169 | 160.89 |
| 91 | -0.693147 | -0.230118 | 106.222 | 161.049 |
| 92 | -0.693147 | -0.217267 | 106.269 | 161.2 |
| 93 | -0.693147 | -0.207012 | 106.312 | 161.343 |
| 94 | -0.693147 | -0.194225 | 106.35 | 161.478 |
| 95 | -0.693147 | -0.184017 | 106.383 | 161.605 |
| 96 | -0.693147 | -0.171285 | 106.413 | 161.724 |
| 97 | -0.693147 | -0.161119 | 106.439 | 161.836 |
| 98 | -0.693147 | -0.148434 | 106.461 | 161.939 |
| 99 | -0.693147 | -0.138305 | 106.48 | 162.034 |
| 100 | -0.693147 | -0.125661 | 106.496 | 162.122 |
| 101 | -0.693147 | -0.115562 | 106.509 | 162.202 |
| 102 | -0.693147 | -0.102953 | 106.52 | 162.273 |
| 103 | -0.693147 | -0.0928787 | 106.528 | 162.337 |
| 104 | -0.693147 | -0.0802981 | 106.535 | 162.393 |
| 105 | -0.693147 | -0.0702426 | 106.54 | 162.442 |
| 106 | -0.693147 | -0.0576847 | 106.543 | 162.482 |
| 107 | -0.693147 | -0.0476439 | 106.545 | 162.515 |
| 108 | -0.693147 | -0.0350997 | 106.546 | 162.539 |
| 109 | -0.693147 | -0.0250691 | 106.547 | 162.556 |
| 110 | -0.693147 | -0.0125328 | 106.547 | 162.565 |
| 111 | -0.693147 | 0 | 106.547 | 162.565 |

| | | | | |
|---|---|---|---|---|
| 112 | -0.693147 | 0.0125328 | 106.547 | 162.556 |
| 113 | -0.693147 | 0.0250691 | 106.548 | 162.539 |
| 114 | -0.693147 | 0.0350997 | 106.549 | 162.515 |
| 115 | -0.693147 | 0.0476439 | 106.551 | 162.482 |
| 116 | -0.693147 | 0.0576847 | 106.555 | 162.442 |
| 117 | -0.693147 | 0.0702426 | 106.56 | 162.393 |
| 118 | -0.693147 | 0.0802981 | 106.566 | 162.337 |
| 119 | -0.693147 | 0.0928787 | 106.575 | 162.273 |
| 120 | -0.693147 | 0.102953 | 106.585 | 162.202 |
| 121 | -0.693147 | 0.115562 | 106.599 | 162.122 |
| 122 | -0.693147 | 0.125661 | 106.615 | 162.034 |
| 123 | -0.693147 | 0.138305 | 106.634 | 161.939 |
| 124 | -0.693147 | 0.148434 | 106.656 | 161.836 |
| 125 | -0.693147 | 0.161119 | 106.682 | 161.724 |
| 126 | -0.693147 | 0.171285 | 106.711 | 161.605 |
| 127 | -0.693147 | 0.184017 | 106.745 | 161.478 |
| 128 | -0.693147 | 0.194225 | 106.783 | 161.343 |
| 129 | -0.693147 | 0.207012 | 106.825 | 161.2 |
| 130 | -0.693147 | 0.217267 | 106.873 | 161.049 |
| 131 | -0.693147 | 0.230118 | 106.926 | 160.89 |
| 132 | -0.693147 | 0.240426 | 106.983 | 160.723 |
| 133 | -0.693147 | 0.253347 | 107.048 | 160.547 |
| 134 | -0.693147 | 0.263715 | 107.117 | 160.364 |
| 135 | -0.693147 | 0.276714 | 107.194 | 160.173 |
| 136 | -0.693147 | 0.287147 | 107.276 | 159.974 |
| 137 | -0.693147 | 0.300232 | 107.366 | 159.766 |
| 138 | -0.693147 | 0.310738 | 107.463 | 159.55 |
| 139 | -0.693147 | 0.323919 | 107.568 | 159.326 |
| 140 | -0.693147 | 0.334503 | 107.68 | 159.094 |
| 141 | -0.693147 | 0.347787 | 107.801 | 158.853 |
| 142 | -0.693147 | 0.358459 | 107.929 | 158.604 |
| 143 | -0.693147 | 0.371856 | 108.067 | 158.346 |
| 144 | -0.693147 | 0.382622 | 108.214 | 158.081 |
| 145 | -0.693147 | 0.396142 | 108.371 | 157.807 |
| 146 | -0.693147 | 0.40701 | 108.536 | 157.525 |
| 147 | -0.693147 | 0.420664 | 108.713 | 157.233 |
| 148 | -0.693147 | 0.431644 | 108.9 | 156.934 |
| 149 | -0.693147 | 0.445443 | 109.098 | 156.625 |
| 150 | -0.693147 | 0.456542 | 109.307 | 156.309 |
| 151 | -0.693147 | 0.470498 | 109.528 | 155.982 |
| 152 | -0.693147 | 0.481728 | 109.76 | 155.649 |
| 153 | -0.693147 | 0.49585 | 110.006 | 155.305 |
| 154 | -0.693147 | 0.507221 | 110.263 | 154.953 |
| 155 | -0.693147 | 0.521527 | 110.535 | 154.592 |
| 156 | -0.693147 | 0.533048 | 110.819 | 154.222 |
| 157 | -0.693147 | 0.547551 | 111.119 | 153.843 |
| 158 | -0.693147 | 0.559237 | 111.432 | 153.455 |
| 159 | -0.693147 | 0.573953 | 111.761 | 153.057 |
| 160 | -0.693147 | 0.585815 | 112.104 | 152.651 |
| 161 | -0.693147 | 0.60076 | 112.465 | 152.235 |
| 162 | -0.693147 | 0.612813 | 112.841 | 151.81 |
| 163 | -0.693147 | 0.628006 | 113.235 | 151.375 |
| 164 | -0.693147 | 0.640266 | 113.645 | 150.931 |
| 165 | -0.693147 | 0.655726 | 114.075 | 150.476 |
| 166 | -0.693147 | 0.668209 | 114.522 | 150.013 |
| 167 | -0.693147 | 0.68396 | 114.989 | 149.539 |
| 168 | -0.693147 | 0.696684 | 115.475 | 149.056 |
| 169 | -0.693147 | 0.712751 | 115.983 | 148.562 |
| 170 | -0.693147 | 0.725736 | 116.51 | 148.059 |
| 171 | -0.693147 | 0.742143 | 117.06 | 147.545 |
| 172 | -0.693147 | 0.755415 | 117.631 | 147.021 |
| 173 | -0.693147 | 0.772193 | 118.227 | 146.486 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 174 | -0.693147 | | 0.785774 | | 118.845 | 145.941 |
| 175 | -0.650088 | | 0.802956 | | 119.489 | 145.419 |
| 176 | -0.473209 | | 0.816874 | | 120.157 | 145.033 |
| 177 | -0.452557 | | 0.834498 | | 120.853 | 144.655 |
| 178 | -0.418550 | 0.848786 | | 121.574 | 144.3 | |
| 179 | -0.415515 | | 0.866894 | | 122.325 | 143.94 |
| 180 | -0.385662 | | 0.881587 | | 123.102 | 143.6 |
| 181 | -0.328504 | | 0.900227 | | 123.913 | 143.304 |
| 182 | -0.309246 | | 0.915365 | | 124.751 | 143.021 |
| 183 | -0.303811 | | 0.93459 | 125.624 | 142.737 | |
| 184 | -0.199671 | | 0.950222 | | 126.527 | 142.547 |
| 185 | 0.198851 | | 0.970094 | | 127.468 | 142.74 |
| 186 | 1.00063 | 0.986272 | | 128.441 | 143.727 | |
| 187 | 1.09861 | 1.00687 | 129.455 | 144.833 | | |
| 188 | 1.09861 | 1.02365 | 130.502 | 145.958 | | |
| 189 | 1.22378 | 1.04505 | 131.594 | 147.237 | | |
| 190 | 1.25276 | 1.06252 | 132.723 | 148.568 | | |
| 191 | 1.30833 | 1.08482 | 133.9 | 149.987 | | |
| 192 | 1.335 | 1.10306 | 135.117 | 151.46 | | |
| 193 | 1.38629 | 1.12639 | 136.386 | 153.021 | | |
| 194 | 1.56862 | 1.1455 | 137.698 | 154.818 | | |
| 195 | 1.60944 | 1.17 | 139.067 | 156.701 | | |
| 196 | 1.60944 | 1.19012 | 140.483 | 158.616 | | |
| 197 | 1.60944 | 1.21596 | 141.962 | 160.573 | | |
| 198 | 1.77495 | 1.23724 | 143.493 | 162.769 | | |
| 199 | 1.79176 | 1.26464 | 145.092 | 165.035 | | |
| 200 | 1.79176 | 1.28727 | 146.749 | 167.342 | | |
| 201 | 1.79176 | 1.31652 | 148.482 | 169.701 | | |
| 202 | 2.07944 | 1.34075 | 150.28 | 172.489 | | |
| 203 | 2.09186 | 1.3722 | 152.163 | 175.359 | | |
| 204 | 2.18605 | 1.39838 | 154.118 | 178.416 | | |
| 205 | 2.19722 | 1.4325 | 156.17 | 181.564 | | |
| 206 | 2.19722 | 1.46106 | 158.305 | 184.774 | | |
| 207 | 2.33214 | 1.49852 | 160.551 | 188.269 | | |
| 208 | 2.3979 | 1.53007 | 162.892 | 191.938 | | |
| 209 | 2.47654 | 1.57179 | 165.362 | 195.83 | | |
| 210 | 2.48491 | 1.60725 | 167.945 | 199.824 | | |
| 211 | 2.54945 | 1.65463 | 170.683 | 204.043 | | |
| 212 | 2.56495 | 1.6954 | 173.558 | 208.391 | | |
| 213 | 2.56495 | 1.75069 | 176.622 | 212.882 | | |
| 214 | 2.58776 | 1.79912 | 179.859 | 217.537 | | |
| 215 | 2.64617 | 1.86629 | 183.342 | 222.476 | | |
| 216 | 2.97553 | 1.92684 | 187.055 | 228.209 | | |
| 217 | 3.04452 | 2.01409 | 191.112 | 234.341 | | |
| 218 | 3.06805 | 2.09693 | 195.509 | 240.775 | | |
| 219 | 3.09104 | 2.22621 | 200.465 | 247.656 | | |
| 220 | 3.70377 | 2.36561 | 206.061 | 256.418 | | |
| 221 | 4.29046 | 2.65209 | 213.094 | 267.796 | | |

Data Set Standard Deviation = 1.41109
Numerator = 71714.8
Denominator = 93347.2
W Statistic = 0.768259 = 71714.8 / 93347.2

5% Critical value of 0.976 exceeds 0.768259
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.768259
Evidence of non-normality at 99% level of significance

# Kruskal-Wallis Non-Parametric Test

## Parameter: Lead

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

# Kruskal Wallis Ranks

## Background Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-13 | 3/16/1999 | 1.60944 | 195 |
| | 9/23/1999 | 2.07944 | 202 |
| | 3/15/2000 | 3.04452 | 217 |
| | 9/24/2003 | ND<-0.693147 | 79.5 |
| | 3/11/2004 | ND<-0.693147 | 79.5 |
| | 10/12/2004 | ND<-0.693147 | 79.5 |
| | 4/1/2005 | ND<-0.693147 | 79.5 |
| | 10/25/2005 | ND<-0.693147 | 79.5 |
| | 4/29/2006 | ND<-0.693147 | 79.5 |
| | 11/18/2006 | ND<-0.693147 | 79.5 |
| | 5/23/2007 | ND<-0.693147 | 79.5 |
| | 11/28/2007 | ND<-0.693147 | 79.5 |
| | 6/5/2008 | ND<-0.693147 | 79.5 |
| | 11/20/2008 | ND<-0.693147 | 79.5 |
| | 6/11/2009 | ND<-3.21888 | 79.5 |
| | 11/16/2009 | ND<-3.21888 | 79.5 |
| | 6/30/2010 | ND<-3.21888 | 79.5 |
| | 11/12/2010 | -2.12026 J | 161 |

Rank Sum = 1888
Rank Mean = 104.889

Background Rank Sum = 1888
Background Rank Mean = 104.889

## Compliance Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-10 | 7/20/1995 | ND<-0.693147 | 79.5 |
| | 8/24/1995 | 1.56862 | 194 |
| | 9/28/1995 | ND<-0.693147 | 79.5 |
| | 10/26/1995 | ND<-0.693147 | 79.5 |
| | 11/19/1996 | ND<-0.693147 | 79.5 |
| | 12/19/1996 | ND<-0.693147 | 79.5 |
| | 3/24/1997 | ND<-0.693147 | 79.5 |
| | 9/24/1997 | ND<-0.693147 | 79.5 |
| | 4/7/1998 | ND<-0.693147 | 79.5 |
| | 9/23/1998 | ND<-0.693147 | 79.5 |
| | 3/16/1999 | ND<-0.693147 | 79.5 |
| | 9/23/1999 | 1.60944 | 196 |
| | 3/15/2000 | ND<-0.693147 | 79.5 |
| | 9/24/2003 | ND<-0.693147 | 79.5 |
| | 3/11/2004 | ND<-0.693147 | 79.5 |
| | 10/12/2004 | ND<-0.693147 | 79.5 |
| | 4/1/2005 | ND<-0.693147 | 79.5 |
| | 10/25/2005 | ND<-0.693147 | 79.5 |
| | 4/29/2006 | ND<-0.693147 | 79.5 |
| | 11/18/2006 | ND<-0.693147 | 79.5 |

| | | | |
|---|---|---|---|
| | 5/23/2007 | ND<-0.693147 | 79.5 |
| | 11/28/2007 | ND<-0.693147 | 79.5 |
| | 6/5/2008 | ND<-0.693147 | 79.5 |
| | 11/20/2008 | ND<-0.693147 | 79.5 |
| | 6/11/2009 | -1.96611 J | 162 |
| | 11/16/2009 | ND<-3.21888 | 79.5 |
| | 6/30/2010 | ND<-3.21888 | 79.5 |
| | 11/12/2010 | ND<-3.21888 U | 79.5 |

Rank Sum = 2539.5
Rank Mean = 90.6964

| | | | |
|---|---|---|---|
| MW-11R | 7/20/1995 | 1.335 | 192 |
| | 8/24/1995 | 1.79176 | 199 |
| | 9/28/1995 | 1.30833 | 191 |
| | 10/26/1995 | 2.47654 | 209 |
| | 11/19/1996 | ND<-0.693147 | 79.5 |
| | 12/19/1996 | ND<-0.693147 | 79.5 |
| | 3/24/1997 | ND<-0.693147 | 79.5 |
| | 9/24/1997 | ND<-0.693147 | 79.5 |
| | 4/7/1998 | ND<-0.693147 | 79.5 |
| | 9/23/1998 | ND<-0.693147 | 79.5 |
| | 3/16/1999 | ND<-0.693147 | 79.5 |
| | 9/23/1999 | 2.19722 | 205 |
| | 3/15/2000 | ND<-0.693147 | 79.5 |
| | 9/24/2003 | ND<-0.693147 | 79.5 |
| | 3/11/2004 | ND<-0.693147 | 79.5 |
| | 10/12/2004 | ND<-0.693147 | 79.5 |
| | 4/1/2005 | ND<-0.693147 | 79.5 |
| | 10/25/2005 | ND<-0.693147 | 79.5 |
| | 4/29/2006 | 0.198851 | 185 |
| | 11/18/2006 | ND<-0.693147 | 79.5 |
| | 5/23/2007 | ND<-0.693147 | 79.5 |
| | 11/28/2007 | ND<-0.693147 | 79.5 |
| | 6/5/2008 | ND<-0.693147 | 79.5 |
| | 11/20/2008 | -0.452557 J | 177 |
| | 6/11/2009 | ND<-3.21888 | 79.5 |
| | 11/16/2009 | ND<-3.21888 | 79.5 |
| | 6/30/2010 | ND<-3.21888 | 79.5 |
| | 11/12/2010 | ND<-3.21888 U | 79.5 |

Rank Sum = 3027.5
Rank Mean = 108.125

| | | | |
|---|---|---|---|
| MW-12AR | 3/16/1999 | ND<-0.693147 | 79.5 |
| | 9/23/1999 | 1.79176 | 200 |
| | 3/15/2000 | 2.3979 | 208 |
| | 9/24/2003 | ND<-0.693147 | 79.5 |
| | 3/11/2004 | ND<-0.693147 | 79.5 |
| | 10/12/2004 | ND<-0.693147 | 79.5 |
| | 4/1/2005 | ND<-0.693147 | 79.5 |
| | 10/25/2005 | ND<-0.693147 | 79.5 |
| | 4/29/2006 | -0.385662 J | 180 |
| | 11/18/2006 | ND<-0.693147 | 79.5 |
| | 5/23/2007 | -0.199671 J | 184 |
| | 11/28/2007 | ND<-0.693147 | 79.5 |
| | 6/5/2008 | ND<-0.693147 | 79.5 |
| | 11/20/2008 | -0.303811 J | 183 |
| | 6/11/2009 | -1.07881 | 170 |
| | 11/16/2009 | -0.820981 | 171 |
| | 6/30/2010 | -0.798508 | 172 |
| | 11/12/2010 | -0.71335 | 173 |

Rank Sum = 2356.5
Rank Mean = 130.917

| | | | |
|---|---|---|---|
| MW-12BR | 3/16/1999 | ND<-0.693147 | 79.5 |
| | 9/23/1999 | 1.79176 | 201 |
| | 3/15/2000 | ND<-0.693147 | 79.5 |
| | 9/24/2003 | ND<-0.693147 | 79.5 |
| | 3/11/2004 | ND<-0.693147 | 79.5 |
| | 10/12/2004 | ND<-0.693147 | 79.5 |
| | 4/1/2005 | ND<-0.693147 | 79.5 |
| | 10/25/2005 | -0.473209 J | 176 |
| | 4/29/2006 | -0.693147 J | 174 |
| | 11/18/2006 | ND<-0.693147 | 79.5 |
| | 5/23/2007 | ND<-0.693147 | 79.5 |
| | 11/28/2007 | ND<-0.693147 | 79.5 |
| | 6/5/2008 | ND<-0.693147 | 79.5 |
| | 11/20/2008 | 1.00063 | 186 |
| | 6/11/2009 | -1.77196 J | 165 |
| | 11/16/2009 | -1.34707 J | 168 |
| | 6/30/2010 | -1.30933 J | 169 |
| | 11/12/2010 | -0.328504 | 181 |

Rank Sum = 2215
Rank Mean = 123.056

| | | | |
|---|---|---|---|
| MW-6 | 7/20/1995 | 2.09186 | 203 |
| | 8/24/1995 | 1.77495 | 198 |
| | 9/28/1995 | 1.22378 | 189 |
| | 10/26/1995 | ND<-0.693147 | 79.5 |
| | 11/19/1996 | ND<-0.693147 | 79.5 |
| | 12/19/1996 | 2.33214 | 207 |
| | 3/24/1997 | ND<-0.693147 | 79.5 |
| | 9/24/1997 | 2.48491 | 210 |
| | 4/7/1998 | 2.56495 | 212 |
| | 9/23/1998 | ND<-0.693147 | 79.5 |
| | 3/16/1999 | ND<-0.693147 | 79.5 |
| | 9/23/1999 | ND<-0.693147 | 79.5 |
| | 3/15/2000 | ND<-0.693147 | 79.5 |
| | 9/24/2003 | ND<-0.693147 | 79.5 |
| | 3/11/2004 | ND<-0.693147 | 79.5 |
| | 10/12/2004 | ND<-0.693147 | 79.5 |
| | 4/1/2005 | ND<-0.693147 | 79.5 |
| | 10/25/2005 | ND<-0.693147 | 79.5 |
| | 4/29/2006 | ND<-0.693147 | 79.5 |
| | 11/18/2006 | ND<-0.693147 | 79.5 |
| | 5/23/2007 | ND<-0.693147 | 79.5 |
| | 11/28/2007 | ND<-0.693147 | 79.5 |
| | 6/5/2008 | ND<-0.693147 | 79.5 |
| | 11/20/2008 | ND<-0.693147 | 79.5 |
| | 6/11/2009 | ND<-3.21888 | 79.5 |
| | 11/16/2009 | -2.4651 J | 159 |
| | 6/30/2010 | ND<-3.21888 | 79.5 |
| | 11/12/2010 | -2.20727 J | 160 |

Rank Sum = 3128
Rank Mean = 111.714

| | | | |
|---|---|---|---|
| MW-9 | 7/20/1995 | 1.38629 | 193 |
| | 8/24/1995 | 1.09861 | 187 |
| | 9/28/1995 | 1.25276 | 190 |
| | 10/26/1995 | ND<-0.693147 | 79.5 |
| | 11/19/1996 | ND<-0.693147 | 79.5 |
| | 12/19/1996 | ND<-0.693147 | 79.5 |
| | 3/24/1997 | ND<-0.693147 | 79.5 |
| | 9/24/1997 | 3.09104 | 219 |
| | 4/7/1998 | ND<-0.693147 | 79.5 |

| | | | |
|---|---|---|---|
| | 9/23/1998 | ND<-0.693147 | 79.5 |
| | 3/16/1999 | ND<-0.693147 | 79.5 |
| | 9/23/1999 | ND<-0.693147 | 79.5 |
| | 3/15/2000 | ND<-0.693147 | 79.5 |
| | 9/24/2003 | ND<-0.693147 | 79.5 |
| | 3/11/2004 | ND<-0.693147 | 79.5 |
| | 10/12/2004 | ND<-0.693147 | 79.5 |
| | 4/1/2005 | ND<-0.693147 | 79.5 |
| | 10/25/2005 | ND<-0.693147 | 79.5 |
| | 4/29/2006 | -0.415515 J | 179 |
| | 11/18/2006 | ND<-0.693147 | 79.5 |
| | 5/23/2007 | ND<-0.693147 | 79.5 |
| | 11/28/2007 | ND<-0.693147 | 79.5 |
| | 6/5/2008 | ND<-0.693147 | 79.5 |
| | 11/20/2008 | ND<-0.693147 | 79.5 |
| | 6/11/2009 | ND<-3.21888 | 79.5 |
| | 11/16/2009 | ND<-3.21888 | 79.5 |
| | 6/30/2010 | ND<-3.21888 | 79.5 |
| | 11/12/2010 | ND<-3.21888 U | 79.5 |

Rank Sum = 2796.5
Rank Mean = 99.875

| | | | |
|---|---|---|---|
| MW-7 | 7/20/1995 | ND<-0.693147 | 79.5 |
| | 8/24/1995 | 2.54945 | 211 |
| | 9/28/1995 | 3.70377 | 220 |
| | 10/26/1995 | 2.64617 | 215 |
| | 11/19/1996 | ND<-0.693147 | 79.5 |
| | 12/19/1996 | 3.06805 | 218 |
| | 3/24/1997 | ND<-0.693147 | 79.5 |
| | 9/24/1997 | ND<-0.693147 | 79.5 |
| | 4/7/1998 | ND<-0.693147 | 79.5 |
| | 9/23/1998 | ND<-0.693147 | 79.5 |
| | 3/16/1999 | 2.19722 | 206 |
| | 9/23/1999 | 1.60944 | 197 |
| | 3/15/2000 | ND<-0.693147 | 79.5 |
| | 9/24/2003 | ND<-0.693147 | 79.5 |
| | 3/11/2004 | ND<-0.693147 | 79.5 |
| | 10/12/2004 | ND<-0.693147 | 79.5 |
| | 4/1/2005 | ND<-0.693147 | 79.5 |
| | 10/25/2005 | ND<-0.693147 | 79.5 |
| | 4/29/2006 | ND<-0.693147 | 79.5 |
| | 11/18/2006 | ND<-0.693147 | 79.5 |
| | 5/23/2007 | ND<-0.693147 | 79.5 |
| | 11/28/2007 | ND<-0.693147 | 79.5 |
| | 6/5/2008 | -0.650088 J | 175 |
| | 11/20/2008 | -0.309246 J | 182 |
| | 6/11/2009 | -1.77196 J | 166 |
| | 11/16/2009 | -1.83258 J | 163 |
| | 6/30/2010 | -1.83258 J H | 164 |
| | 11/12/2010 | -1.7148 J | 167 |

Rank Sum = 3556
Rank Mean = 127

| | | | |
|---|---|---|---|
| MW-8 | 7/20/1995 | 1.09861 | 188 |
| | 8/24/1995 | 2.18605 | 204 |
| | 9/28/1995 | 2.97553 | 216 |
| | 10/26/1995 | ND<-0.693147 | 79.5 |
| | 11/19/1996 | ND<-0.693147 | 79.5 |
| | 12/19/1996 | 2.58776 | 214 |
| | 3/24/1997 | ND<-0.693147 | 79.5 |
| | 9/24/1997 | ND<-0.693147 | 79.5 |
| | 4/7/1998 | ND<-0.693147 | 79.5 |

| | | |
|---|---|---|
| 9/23/1998 | 2.56495 | 213 |
| 3/16/1999 | ND<-0.693147 | 79.5 |
| 9/23/1999 | 4.29046 | 221 |
| 3/15/2000 | ND<-0.693147 | 79.5 |
| 9/24/2003 | ND<-0.693147 | 79.5 |
| 3/11/2004 | ND<-0.693147 | 79.5 |
| 10/12/2004 | ND<-0.693147 | 79.5 |
| 4/1/2005 | ND<-0.693147 | 79.5 |
| 10/25/2005 | ND<-0.693147 | 79.5 |
| 4/29/2006 | ND<-0.693147 | 79.5 |
| 11/18/2006 | ND<-0.693147 | 79.5 |
| 5/23/2007 | ND<-0.693147 | 79.5 |
| 11/28/2007 | ND<-0.693147 | 79.5 |
| 6/5/2008 | ND<-0.693147 | 79.5 |
| 11/20/2008 | -0.41855 J | 178 |
| 6/11/2009 | ND<-3.21888 | 79.5 |
| 6/30/2010 | ND<-3.21888 | 79.5 |
| 11/12/2010 | ND<-3.21888 U | 79.5 |

Rank Sum = 3024
Rank Mean = 112

## Calculation Results:

Kruskal-Wallis H Statistic = 8.04137
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 12.6719
95% Confidence comparison value is 15.5073 at 8 degrees of freedom
8.04137 < 15.5073 indicating no significant group difference at 5% significance level
12.6719 < 15.5073 indicating no significant group difference at 5% significance level when adjusted for ties

# Concentrations (ppb)

## Parameter: Mercury

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 206
Percent Non-Detects: 93.2127%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 16 (88.8889%) | 3/16/1999 | 0.5 | 0.5 |
| | | | 9/23/1999 | ND<0.5 | ND<0.5 |
| | | | 3/15/2000 | ND<0.5 | ND<0.5 |
| | | | 9/24/2003 | ND<0.5 | ND<0.5 |
| | | | 3/11/2004 | ND<0.5 | ND<0.5 |
| | | | 10/12/2004 | ND<0.5 | ND<0.5 |
| | | | 4/1/2005 | ND<0.5 | ND<0.5 |
| | | | 10/25/2005 | ND<0.5 | ND<0.5 |
| | | | 4/29/2006 | ND<0.5 | ND<0.5 |
| | | | 11/18/2006 | ND<0.5 | ND<0.5 |
| | | | 5/23/2007 | 0.12 J | 0.12 J |
| | | | 11/28/2007 | ND<0.5 | ND<0.5 |
| | | | 6/5/2008 | ND<0.5 | ND<0.5 |
| | | | 11/20/2008 | ND<0.5 | ND<0.5 |
| | | | 6/11/2009 | ND<0.091 | ND<0.091 |
| | | | 11/16/2009 | ND<0.091 | ND<0.091 |
| | | | 6/30/2010 | ND<0.091 | ND<0.091 |
| | | | 11/12/2010 | ND<0.091 U | ND<0.091 U |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-11R | 28 | 24 (85.7143%) | 7/20/1995 | ND<0.5 | ND<0.5 |
| | | | 8/24/1995 | ND<0.5 | ND<0.5 |
| | | | 9/28/1995 | ND<0.5 | ND<0.5 |
| | | | 10/26/1995 | ND<0.5 | ND<0.5 |
| | | | 11/19/1996 | ND<0.5 | ND<0.5 |
| | | | 12/19/1996 | ND<0.5 | ND<0.5 |
| | | | 3/24/1997 | ND<0.5 | ND<0.5 |
| | | | 9/24/1997 | ND<0.5 | ND<0.5 |
| | | | 4/7/1998 | ND<0.5 | ND<0.5 |
| | | | 9/23/1998 | ND<0.5 | ND<0.5 |
| | | | 3/16/1999 | 1.5 | 1.5 |
| | | | 9/23/1999 | ND<0.5 | ND<0.5 |
| | | | 3/15/2000 | ND<0.5 | ND<0.5 |
| | | | 9/24/2003 | ND<0.5 | ND<0.5 |
| | | | 3/11/2004 | ND<0.5 | ND<0.5 |
| | | | 10/12/2004 | ND<0.5 | ND<0.5 |
| | | | 4/1/2005 | ND<0.5 | ND<0.5 |
| | | | 10/25/2005 | ND<0.5 | ND<0.5 |
| | | | 4/29/2006 | ND<0.5 | ND<0.5 |
| | | | 11/18/2006 | ND<0.5 | ND<0.5 |
| | | | 5/23/2007 | ND<0.5 | ND<0.5 |
| | | | 11/28/2007 | ND<0.5 | ND<0.5 |
| | | | 6/5/2008 | ND<0.5 | ND<0.5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/20/2008 | 0.2 J | 0.2 J | |
| | | | 6/11/2009 | 0.11 J | 0.11 J | |
| | | | 11/16/2009 | ND<0.091 | | ND<0.091 |
| | | | 6/30/2010 | ND<0.091 | | ND<0.091 |
| | | | 11/12/2010 | 0.11 J | 0.11 J | |
| MW-10 | 28 | 27 (96.4286%) | 7/20/1995 | | ND<0.5 | ND<0.5 |
| | | | 8/24/1995 | ND<0.5 | ND<0.5 | |
| | | | 9/28/1995 | ND<0.5 | ND<0.5 | |
| | | | 10/26/1995 | ND<0.5 | ND<0.5 | |
| | | | 11/19/1996 | ND<0.5 | ND<0.5 | |
| | | | 12/19/1996 | ND<0.5 | ND<0.5 | |
| | | | 3/24/1997 | ND<0.5 | ND<0.5 | |
| | | | 9/24/1997 | ND<0.5 | ND<0.5 | |
| | | | 4/7/1998 | ND<0.5 | ND<0.5 | |
| | | | 9/23/1998 | ND<0.5 | ND<0.5 | |
| | | | 3/16/1999 | 1 | 1 | |
| | | | 9/23/1999 | ND<0.5 | ND<0.5 | |
| | | | 3/15/2000 | ND<0.5 | ND<0.5 | |
| | | | 9/24/2003 | ND<0.5 | ND<0.5 | |
| | | | 3/11/2004 | ND<0.5 | ND<0.5 | |
| | | | 10/12/2004 | ND<0.5 | ND<0.5 | |
| | | | 4/1/2005 | ND<0.5 | ND<0.5 | |
| | | | 10/25/2005 | ND<0.5 | ND<0.5 | |
| | | | 4/29/2006 | ND<0.5 | ND<0.5 | |
| | | | 11/18/2006 | ND<0.5 | ND<0.5 | |
| | | | 5/23/2007 | ND<0.5 | ND<0.5 | |
| | | | 11/28/2007 | ND<0.5 | ND<0.5 | |
| | | | 6/5/2008 | ND<0.5 | ND<0.5 | |
| | | | 11/20/2008 | ND<0.5 | ND<0.5 | |
| | | | 6/11/2009 | ND<0.091 | | ND<0.091 |
| | | | 11/16/2009 | ND<0.091 | | ND<0.091 |
| | | | 6/30/2010 | ND<0.091 | | ND<0.091 |
| | | | 11/12/2010 | ND<0.091 U | | ND<0.091 U |
| MW-7 | 28 | 27 (96.4286%) | 7/20/1995 | | ND<0.5 | ND<0.5 |
| | | | 8/24/1995 | ND<0.5 | ND<0.5 | |
| | | | 9/28/1995 | ND<0.5 | ND<0.5 | |
| | | | 10/26/1995 | ND<0.5 | ND<0.5 | |
| | | | 11/19/1996 | ND<0.5 | ND<0.5 | |
| | | | 12/19/1996 | ND<0.5 | ND<0.5 | |
| | | | 3/24/1997 | ND<0.5 | ND<0.5 | |
| | | | 9/24/1997 | ND<0.5 | ND<0.5 | |
| | | | 4/7/1998 | ND<0.5 | ND<0.5 | |
| | | | 9/23/1998 | ND<0.5 | ND<0.5 | |
| | | | 3/16/1999 | 1.4 | 1.4 | |
| | | | 9/23/1999 | ND<0.5 | ND<0.5 | |
| | | | 3/15/2000 | ND<0.5 | ND<0.5 | |
| | | | 9/24/2003 | ND<0.5 | ND<0.5 | |
| | | | 3/11/2004 | ND<0.5 | ND<0.5 | |
| | | | 10/12/2004 | ND<0.5 | ND<0.5 | |
| | | | 4/1/2005 | ND<0.5 | ND<0.5 | |
| | | | 10/25/2005 | ND<0.5 | ND<0.5 | |
| | | | 4/29/2006 | ND<0.5 | ND<0.5 | |
| | | | 11/18/2006 | ND<0.5 | ND<0.5 | |
| | | | 5/23/2007 | ND<0.5 | ND<0.5 | |
| | | | 11/28/2007 | ND<0.5 | ND<0.5 | |
| | | | 6/5/2008 | ND<0.5 | ND<0.5 | |
| | | | 11/20/2008 | ND<0.5 | ND<0.5 | |
| | | | 6/11/2009 | ND<0.091 | | ND<0.091 |
| | | | 11/16/2009 | ND<0.091 | | ND<0.091 |
| | | | 6/30/2010 | ND<0.091 | | ND<0.091 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/12/2010 | ND<0.091 U | ND<0.091 U | |
| MW-6 | 28 | 26 (92.8571%) | 7/20/1995 | ND<0.5 | ND<0.5 | |
| | | | 8/24/1995 | ND<0.5 | ND<0.5 | |
| | | | 9/28/1995 | ND<0.5 | ND<0.5 | |
| | | | 10/26/1995 | ND<0.5 | ND<0.5 | |
| | | | 11/19/1996 | 5.19 | 5.19 | |
| | | | 12/19/1996 | ND<0.5 | ND<0.5 | |
| | | | 3/24/1997 | ND<0.5 | ND<0.5 | |
| | | | 9/24/1997 | ND<0.5 | ND<0.5 | |
| | | | 4/7/1998 | ND<0.5 | ND<0.5 | |
| | | | 9/23/1998 | ND<0.5 | ND<0.5 | |
| | | | 3/16/1999 | ND<0.5 | ND<0.5 | |
| | | | 9/23/1999 | ND<0.5 | ND<0.5 | |
| | | | 3/15/2000 | ND<0.5 | ND<0.5 | |
| | | | 9/24/2003 | ND<0.5 | ND<0.5 | |
| | | | 3/11/2004 | ND<0.5 | ND<0.5 | |
| | | | 10/12/2004 | ND<0.5 | ND<0.5 | |
| | | | 4/1/2005 | ND<0.5 | ND<0.5 | |
| | | | 10/25/2005 | ND<0.5 | ND<0.5 | |
| | | | 4/29/2006 | ND<0.5 | ND<0.5 | |
| | | | 11/18/2006 | ND<0.5 | ND<0.5 | |
| | | | 5/23/2007 | ND<0.5 | ND<0.5 | |
| | | | 11/28/2007 | ND<0.5 | ND<0.5 | |
| | | | 6/5/2008 | ND<0.5 | ND<0.5 | |
| | | | 11/20/2008 | ND<0.5 | ND<0.5 | |
| | | | 6/11/2009 | ND<0.091 | ND<0.091 | |
| | | | 11/16/2009 | ND<0.091 | ND<0.091 | |
| | | | 6/30/2010 | ND<0.091 | ND<0.091 | |
| | | | 11/12/2010 | 0.37 | 0.37 | |
| MW-12BR | 18 | 17 (94.4444%) | 3/16/1999 | 0.5 | 0.5 | |
| | | | 9/23/1999 | ND<0.5 | ND<0.5 | |
| | | | 3/15/2000 | ND<0.5 | ND<0.5 | |
| | | | 9/24/2003 | ND<0.5 | ND<0.5 | |
| | | | 3/11/2004 | ND<0.5 | ND<0.5 | |
| | | | 10/12/2004 | ND<0.5 | ND<0.5 | |
| | | | 4/1/2005 | ND<0.5 | ND<0.5 | |
| | | | 10/25/2005 | ND<0.5 | ND<0.5 | |
| | | | 4/29/2006 | ND<0.5 | ND<0.5 | |
| | | | 11/18/2006 | ND<0.5 | ND<0.5 | |
| | | | 5/23/2007 | ND<0.5 | ND<0.5 | |
| | | | 11/28/2007 | ND<0.5 | ND<0.5 | |
| | | | 6/5/2008 | ND<0.5 | ND<0.5 | |
| | | | 11/20/2008 | ND<0.5 | ND<0.5 | |
| | | | 6/11/2009 | ND<0.091 | ND<0.091 | |
| | | | 11/16/2009 | ND<0.091 | ND<0.091 | |
| | | | 6/30/2010 | ND<0.091 | ND<0.091 | |
| | | | 11/12/2010 | ND<0.091 U | ND<0.091 U | |
| MW-12AR | 18 | 18 (100%) | 3/16/1999 | ND<0.5 | ND<0.5 | |
| | | | 9/23/1999 | ND<0.5 | ND<0.5 | |
| | | | 3/15/2000 | ND<0.5 | ND<0.5 | |
| | | | 9/24/2003 | ND<0.5 | ND<0.5 | |
| | | | 3/11/2004 | ND<0.5 | ND<0.5 | |
| | | | 10/12/2004 | ND<0.5 | ND<0.5 | |
| | | | 4/1/2005 | ND<0.5 | ND<0.5 | |
| | | | 10/25/2005 | ND<0.5 | ND<0.5 | |
| | | | 4/29/2006 | ND<0.5 | ND<0.5 | |
| | | | 11/18/2006 | ND<0.5 | ND<0.5 | |
| | | | 5/23/2007 | ND<0.5 | ND<0.5 | |
| | | | 11/28/2007 | ND<0.5 | ND<0.5 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 6/5/2008 | ND<0.5 | ND<0.5 | |
| | | | 11/20/2008 | ND<0.5 | ND<0.5 | |
| | | | 6/11/2009 | ND<0.091 | | ND<0.091 |
| | | | 11/16/2009 | ND<0.091 | | ND<0.091 |
| | | | 6/30/2010 | ND<0.091 | | ND<0.091 |
| | | | 11/12/2010 | ND<0.091 U | | ND<0.091 U |
| MW-8 | 27 | 23 (85.1852%) | 7/20/1995 | | ND<0.5 | ND<0.5 |
| | | | 8/24/1995 | ND<0.5 | ND<0.5 | |
| | | | 9/28/1995 | ND<0.5 | ND<0.5 | |
| | | | 10/26/1995 | ND<0.5 | ND<0.5 | |
| | | | 11/19/1996 | 1.03 | 1.03 | |
| | | | 12/19/1996 | 1.62 | 1.62 | |
| | | | 3/24/1997 | ND<0.5 | ND<0.5 | |
| | | | 9/24/1997 | ND<0.5 | ND<0.5 | |
| | | | 4/7/1998 | 1.2 | 1.2 | |
| | | | 9/23/1998 | ND<0.5 | ND<0.5 | |
| | | | 3/16/1999 | 0.4 J | 0.4 J | |
| | | | 9/23/1999 | ND<0.5 | ND<0.5 | |
| | | | 3/15/2000 | ND<0.5 | ND<0.5 | |
| | | | 9/24/2003 | ND<0.5 | ND<0.5 | |
| | | | 3/11/2004 | ND<0.5 | ND<0.5 | |
| | | | 10/12/2004 | ND<0.5 | ND<0.5 | |
| | | | 4/1/2005 | ND<0.5 | ND<0.5 | |
| | | | 10/25/2005 | ND<0.5 | ND<0.5 | |
| | | | 4/29/2006 | ND<0.5 | ND<0.5 | |
| | | | 11/18/2006 | ND<0.5 | ND<0.5 | |
| | | | 5/23/2007 | ND<0.5 | ND<0.5 | |
| | | | 11/28/2007 | ND<0.5 | ND<0.5 | |
| | | | 6/5/2008 | ND<0.5 | ND<0.5 | |
| | | | 11/20/2008 | ND<0.5 | ND<0.5 | |
| | | | 6/11/2009 | ND<0.091 | | ND<0.091 |
| | | | 6/30/2010 | ND<0.091 | | ND<0.091 |
| | | | 11/12/2010 | ND<0.091 U | | ND<0.091 U |
| MW-9 | 28 | 28 (100%) | 7/20/1995 | | ND<0.5 | ND<0.5 |
| | | | 8/24/1995 | ND<0.5 | ND<0.5 | |
| | | | 9/28/1995 | ND<0.5 | ND<0.5 | |
| | | | 10/26/1995 | ND<0.5 | ND<0.5 | |
| | | | 11/19/1996 | ND<0.5 | ND<0.5 | |
| | | | 12/19/1996 | ND<0.5 | ND<0.5 | |
| | | | 3/24/1997 | ND<0.5 | ND<0.5 | |
| | | | 9/24/1997 | ND<0.5 | ND<0.5 | |
| | | | 4/7/1998 | ND<0.5 | ND<0.5 | |
| | | | 9/23/1998 | ND<0.5 | ND<0.5 | |
| | | | 3/16/1999 | ND<0.5 | ND<0.5 | |
| | | | 9/23/1999 | ND<0.5 | ND<0.5 | |
| | | | 3/15/2000 | ND<0.5 | ND<0.5 | |
| | | | 9/24/2003 | ND<0.5 | ND<0.5 | |
| | | | 3/11/2004 | ND<0.5 | ND<0.5 | |
| | | | 10/12/2004 | ND<0.5 | ND<0.5 | |
| | | | 4/1/2005 | ND<0.5 | ND<0.5 | |
| | | | 10/25/2005 | ND<0.5 | ND<0.5 | |
| | | | 4/29/2006 | ND<0.5 | ND<0.5 | |
| | | | 11/18/2006 | ND<0.5 | ND<0.5 | |
| | | | 5/23/2007 | ND<0.5 | ND<0.5 | |
| | | | 11/28/2007 | ND<0.5 | ND<0.5 | |
| | | | 6/5/2008 | ND<0.5 | ND<0.5 | |
| | | | 11/20/2008 | ND<0.5 | ND<0.5 | |
| | | | 6/11/2009 | ND<0.091 | | ND<0.091 |
| | | | 11/16/2009 | ND<0.091 | | ND<0.091 |
| | | | 6/30/2010 | ND<0.091 | | ND<0.091 |

| | | | |
|---|---|---|---|
| | 11/12/2010 | ND<0.091 U | ND<0.091 U |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. | Original |
|---|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: Mercury

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.0455 | -2.65209 | 7.03356 | -0.12067 |
| 2 | 0.0455 | -2.36561 | 12.6297 | -0.228305 |
| 3 | 0.0455 | -2.22621 | 17.5857 | -0.329598 |
| 4 | 0.0455 | -2.09693 | 21.9828 | -0.425008 |
| 5 | 0.0455 | -2.01409 | 26.0394 | -0.516649 |
| 6 | 0.0455 | -1.92684 | 29.7521 | -0.604321 |
| 7 | 0.0455 | -1.86629 | 33.2351 | -0.689237 |
| 8 | 0.0455 | -1.79912 | 36.472 | -0.771097 |
| 9 | 0.0455 | -1.75069 | 39.5369 | -0.850753 |
| 10 | 0.0455 | -1.6954 | 42.4112 | -0.927893 |
| 11 | 0.0455 | -1.65463 | 45.149 | -1.00318 |
| 12 | 0.0455 | -1.60725 | 47.7323 | -1.07631 |
| 13 | 0.0455 | -1.57179 | 50.2028 | -1.14783 |
| 14 | 0.0455 | -1.53007 | 52.5439 | -1.21744 |
| 15 | 0.0455 | -1.49852 | 54.7894 | -1.28563 |
| 16 | 0.0455 | -1.46106 | 56.9241 | -1.3521 |
| 17 | 0.0455 | -1.4325 | 58.9762 | -1.41728 |
| 18 | 0.0455 | -1.39838 | 60.9316 | -1.48091 |
| 19 | 0.0455 | -1.3722 | 62.8146 | -1.54334 |
| 20 | 0.0455 | -1.34075 | 64.6122 | -1.60435 |
| 21 | 0.0455 | -1.31652 | 66.3454 | -1.66425 |
| 22 | 0.0455 | -1.28727 | 68.0025 | -1.72282 |
| 23 | 0.0455 | -1.26464 | 69.6018 | -1.78036 |
| 24 | 0.0455 | -1.23724 | 71.1326 | -1.83666 |
| 25 | 0.0455 | -1.21596 | 72.6111 | -1.89198 |
| 26 | 0.0455 | -1.19012 | 74.0275 | -1.94613 |
| 27 | 0.0455 | -1.17 | 75.3964 | -1.99937 |
| 28 | 0.0455 | -1.1455 | 76.7086 | -2.05149 |
| 29 | 0.0455 | -1.12639 | 77.9774 | -2.10274 |
| 30 | 0.0455 | -1.10306 | 79.1941 | -2.15293 |
| 31 | 0.0455 | -1.08482 | 80.371 | -2.20229 |
| 32 | 0.0455 | -1.06252 | 81.4999 | -2.25063 |
| 33 | 0.11 | -1.04505 | 82.592 | -2.36559 |
| 34 | 0.11 | -1.02365 | 83.6399 | -2.47819 |
| 35 | 0.12 | -1.00687 | 84.6537 | -2.59901 |
| 36 | 0.2 | -0.986272 | 85.6264 | -2.79627 |
| 37 | 0.25 | -0.970094 | 86.5675 | -3.03879 |
| 38 | 0.25 | -0.950222 | 87.4704 | -3.27635 |
| 39 | 0.25 | -0.93459 | 88.3439 | -3.50999 |
| 40 | 0.25 | -0.915365 | 89.1818 | -3.73884 |
| 41 | 0.25 | -0.900227 | 89.9922 | -3.96389 |
| 42 | 0.25 | -0.881587 | 90.7694 | -4.18429 |
| 43 | 0.25 | -0.866894 | 91.5209 | -4.40101 |
| 44 | 0.25 | -0.848786 | 92.2413 | -4.61321 |
| 45 | 0.25 | -0.834498 | 92.9377 | -4.82183 |
| 46 | 0.25 | -0.816874 | 93.605 | -5.02605 |
| 47 | 0.25 | -0.802956 | 94.2497 | -5.22679 |
| 48 | 0.25 | -0.785774 | 94.8672 | -5.42324 |
| 49 | 0.25 | -0.772193 | 95.4634 | -5.61628 |

| | | | | |
|---|---|---|---|---|
| 50 | 0.25 | -0.755415 | 96.0341 | -5.80514 |
| 51 | 0.25 | -0.742143 | 96.5849 | -5.99067 |
| 52 | 0.25 | -0.725736 | 97.1116 | -6.17211 |
| 53 | 0.25 | -0.712751 | 97.6196 | -6.35029 |
| 54 | 0.25 | -0.696684 | 98.1049 | -6.52447 |
| 55 | 0.25 | -0.683969 | 8.5727 | -6.69546 |
| 56 | 0.25 | -0.668209 | 99.0192 | -6.86251 |
| 57 | 0.25 | -0.655726 | 99.4492 | -7.02644 |
| 58 | 0.25 | -0.640266 | 99.8592 | -7.18651 |
| 59 | 0.25 | -0.628006 | 100.254 | -7.34351 |
| 60 | 0.25 | -0.612813 | 100.629 | -7.49671 |
| 61 | 0.25 | -0.60076 | 100.99 | -7.6469 |
| 62 | 0.25 | -0.585815 | 101.333 | -7.79335 |
| 63 | 0.25 | -0.573953 | 101.663 | -7.93684 |
| 64 | 0.25 | -0.559237 | 101.975 | -8.07665 |
| 65 | 0.25 | -0.547551 | 102.275 | -8.21354 |
| 66 | 0.25 | -0.533048 | 102.559 | -8.3468 |
| 67 | 0.25 | -0.521527 | 102.831 | -8.47718 |
| 68 | 0.25 | -0.507221 | 103.089 | -8.60399 |
| 69 | 0.25 | -0.49585 | 103.334 | -8.72795 |
| 70 | 0.25 | -0.481728 | 103.566 | -8.84838 |
| 71 | 0.25 | -0.470498 | 103.788 | -8.96601 |
| 72 | 0.25 | -0.456542 | 103.996 | -9.08014 |
| 73 | 0.25 | -0.445443 | 104.195 | -9.1915 |
| 74 | 0.25 | -0.431644 | 104.381 | -9.29941 |
| 75 | 0.25 | -0.420664 | 104.558 | -9.40458 |
| 76 | 0.25 | -0.40701 | 104.724 | -9.50633 |
| 77 | 0.25 | -0.396142 | 104.881 | -9.60537 |
| 78 | 0.25 | -0.382622 | 105.027 | -9.70102 |
| 79 | 0.25 | -0.371856 | 105.165 | -9.79399 |
| 80 | 0.25 | -0.358459 | 105.294 | -9.8836 |
| 81 | 0.25 | -0.347787 | 105.415 | -9.97055 |
| 82 | 0.25 | -0.334503 | 105.527 | -10.0542 |
| 83 | 0.25 | -0.323919 | 105.632 | -10.1352 |
| 84 | 0.25 | -0.310738 | 105.728 | -10.2128 |
| 85 | 0.25 | -0.300232 | 105.818 | -10.2879 |
| 86 | 0.25 | -0.287147 | 105.901 | -10.3597 |
| 87 | 0.25 | -0.276714 | 105.977 | -10.4289 |
| 88 | 0.25 | -0.263715 | 106.047 | -10.4948 |
| 89 | 0.25 | -0.253347 | 106.111 | -10.5581 |
| 90 | 0.25 | -0.240426 | 106.169 | -10.6182 |
| 91 | 0.25 | -0.230118 | 106.222 | -10.6758 |
| 92 | 0.25 | -0.217267 | 106.269 | -10.7301 |
| 93 | 0.25 | -0.207012 | 106.312 | -10.7818 |
| 94 | 0.25 | -0.194225 | 106.35 | -10.8304 |
| 95 | 0.25 | -0.184017 | 106.383 | -10.8764 |
| 96 | 0.25 | -0.171285 | 106.413 | -10.9192 |
| 97 | 0.25 | -0.161119 | 106.439 | -10.9595 |
| 98 | 0.25 | -0.148434 | 106.461 | -10.9966 |
| 99 | 0.25 | -0.138305 | 106.48 | -11.0312 |
| 100 | 0.25 | -0.125661 | 106.496 | -11.0626 |
| 101 | 0.25 | -0.115562 | 106.509 | -11.0915 |
| 102 | 0.25 | -0.102953 | 106.52 | -11.1172 |
| 103 | 0.25 | -0.0928787 | 106.528 | -11.1404 |
| 104 | 0.25 | -0.0802981 | 106.535 | -11.1605 |
| 105 | 0.25 | -0.0702426 | 106.54 | -11.1781 |
| 106 | 0.25 | -0.0576847 | 106.543 | -11.1925 |
| 107 | 0.25 | -0.0476439 | 106.545 | -11.2044 |
| 108 | 0.25 | -0.0350997 | 106.546 | -11.2132 |
| 109 | 0.25 | -0.0250691 | 106.547 | -11.2195 |
| 110 | 0.25 | -0.0125328 | 106.547 | -11.2226 |
| 111 | 0.25 | 0 | 106.547 | -11.2226 |

| | | | | |
|---|---|---|---|---|
| 112 | 0.25 | 0.0125328 | 106.547 | -11.2195 |
| 113 | 0.25 | 0.0250691 | 106.548 | -11.2132 |
| 114 | 0.25 | 0.0350997 | 106.549 | -11.2044 |
| 115 | 0.25 | 0.0476439 | 106.551 | -11.1925 |
| 116 | 0.25 | 0.0576847 | 106.555 | -11.1781 |
| 117 | 0.25 | 0.0702426 | 106.56 | -11.1605 |
| 118 | 0.25 | 0.0802981 | 106.566 | -11.1404 |
| 119 | 0.25 | 0.0928787 | 106.575 | -11.1172 |
| 120 | 0.25 | 0.102953 | 106.585 | -11.0915 |
| 121 | 0.25 | 0.115562 | 106.599 | -11.0626 |
| 122 | 0.25 | 0.125661 | 106.615 | -11.0312 |
| 123 | 0.25 | 0.138305 | 106.634 | -10.9966 |
| 124 | 0.25 | 0.148434 | 106.656 | -10.9595 |
| 125 | 0.25 | 0.161119 | 106.682 | -10.9192 |
| 126 | 0.25 | 0.171285 | 106.711 | -10.8764 |
| 127 | 0.25 | 0.184017 | 106.745 | -10.8304 |
| 128 | 0.25 | 0.194225 | 106.783 | -10.7818 |
| 129 | 0.25 | 0.207012 | 106.825 | -10.7301 |
| 130 | 0.25 | 0.217267 | 106.873 | -10.6758 |
| 131 | 0.25 | 0.230118 | 106.926 | -10.6182 |
| 132 | 0.25 | 0.240426 | 106.983 | -10.5581 |
| 133 | 0.25 | 0.253347 | 107.048 | -10.4948 |
| 134 | 0.25 | 0.263715 | 107.117 | -10.4289 |
| 135 | 0.25 | 0.276714 | 107.194 | -10.3597 |
| 136 | 0.25 | 0.287147 | 107.276 | -10.2879 |
| 137 | 0.25 | 0.300232 | 107.366 | -10.2128 |
| 138 | 0.25 | 0.310738 | 107.463 | -10.1352 |
| 139 | 0.25 | 0.323919 | 107.568 | -10.0542 |
| 140 | 0.25 | 0.334503 | 107.68 | -9.97055 |
| 141 | 0.25 | 0.347787 | 107.801 | -9.8836 |
| 142 | 0.25 | 0.358459 | 107.929 | -9.79399 |
| 143 | 0.25 | 0.371856 | 108.067 | -9.70102 |
| 144 | 0.25 | 0.382622 | 108.214 | -9.60537 |
| 145 | 0.25 | 0.396142 | 108.371 | -9.50633 |
| 146 | 0.25 | 0.40701 | 108.536 | -9.40458 |
| 147 | 0.25 | 0.420664 | 108.713 | -9.29941 |
| 148 | 0.25 | 0.431644 | 108.9 | -9.1915 |
| 149 | 0.25 | 0.445443 | 109.098 | -9.08014 |
| 150 | 0.25 | 0.456542 | 109.307 | -8.96601 |
| 151 | 0.25 | 0.470498 | 109.528 | -8.84838 |
| 152 | 0.25 | 0.481728 | 109.76 | -8.72795 |
| 153 | 0.25 | 0.49585 | 110.006 | -8.60399 |
| 154 | 0.25 | 0.507221 | 110.263 | -8.47718 |
| 155 | 0.25 | 0.521527 | 110.535 | -8.3468 |
| 156 | 0.25 | 0.533048 | 110.819 | -8.21354 |
| 157 | 0.25 | 0.547551 | 111.119 | -8.07665 |
| 158 | 0.25 | 0.559237 | 111.432 | -7.93684 |
| 159 | 0.25 | 0.573953 | 111.761 | -7.79335 |
| 160 | 0.25 | 0.585815 | 112.104 | -7.6469 |
| 161 | 0.25 | 0.60076 | 112.465 | -7.49671 |
| 162 | 0.25 | 0.612813 | 112.841 | -7.34351 |
| 163 | 0.25 | 0.628006 | 113.235 | -7.18651 |
| 164 | 0.25 | 0.640266 | 113.645 | -7.02644 |
| 165 | 0.25 | 0.655726 | 114.075 | -6.86251 |
| 166 | 0.25 | 0.668209 | 114.522 | -6.69546 |
| 167 | 0.25 | 0.68396 | 114.989 | -6.52447 |
| 168 | 0.25 | 0.696684 | 115.475 | -6.35029 |
| 169 | 0.25 | 0.712751 | 115.983 | -6.17211 |
| 170 | 0.25 | 0.725736 | 116.51 | -5.99067 |
| 171 | 0.25 | 0.742143 | 117.06 | -5.80514 |
| 172 | 0.25 | 0.755415 | 117.631 | -5.61628 |
| 173 | 0.25 | 0.772193 | 118.227 | -5.42324 |

| | | | | |
|---|---|---|---|---|
| 174 | 0.25 | 0.785774 | 118.845 | -5.22679 |
| 175 | 0.25 | 0.802956 | 119.489 | -5.02605 |
| 176 | 0.25 | 0.816874 | 120.157 | -4.82183 |
| 177 | 0.25 | 0.834498 | 120.853 | -4.61321 |
| 178 | 0.25 | 0.848786 | 121.574 | -4.40101 |
| 179 | 0.25 | 0.866894 | 122.325 | -4.18429 |
| 180 | 0.25 | 0.881587 | 123.102 | -3.96389 |
| 181 | 0.25 | 0.900227 | 123.913 | -3.73884 |
| 182 | 0.25 | 0.915365 | 124.751 | -3.50999 |
| 183 | 0.25 | 0.93459 | 125.624 | -3.27635 |
| 184 | 0.25 | 0.950222 | 126.527 | -3.03879 |
| 185 | 0.25 | 0.970094 | 127.468 | -2.79627 |
| 186 | 0.25 | 0.986272 | 128.441 | -2.5497 |
| 187 | 0.25 | 1.00687 | 129.455 | -2.29798 |
| 188 | 0.25 | 1.02365 | 130.502 | -2.04207 |
| 189 | 0.25 | 1.04505 | 131.594 | -1.78081 |
| 190 | 0.25 | 1.06252 | 132.723 | -1.51518 |
| 191 | 0.25 | 1.08482 | 133.9 | -1.24397 |
| 192 | 0.25 | 1.10306 | 135.117 | -0.968207 |
| 193 | 0.25 | 1.12639 | 136.386 | -0.686609 |
| 194 | 0.25 | 1.1455 | 137.698 | -0.400233 |
| 195 | 0.25 | 1.17 | 139.067 | -0.107733 |
| 196 | 0.25 | 1.19012 | 140.483 | 0.189797 |
| 197 | 0.25 | 1.21596 | 141.962 | 0.493787 |
| 198 | 0.25 | 1.23724 | 143.493 | 0.803096 |
| 199 | 0.25 | 1.26464 | 145.092 | 1.11926 |
| 200 | 0.25 | 1.28727 | 146.749 | 1.44107 |
| 201 | 0.25 | 1.31652 | 148.482 | 1.7702 |
| 202 | 0.25 | 1.34075 | 150.28 | 2.10539 |
| 203 | 0.25 | 1.3722 | 152.163 | 2.44844 |
| 204 | 0.25 | 1.39838 | 154.118 | 2.79804 |
| 205 | 0.25 | 1.4325 | 156.17 | 3.15616 |
| 206 | 0.25 | 1.46106 | 158.305 | 3.52143 |
| 207 | 0.25 | 1.49852 | 160.551 | 3.89606 |
| 208 | 0.25 | 1.53007 | 162.892 | 4.27857 |
| 209 | 0.25 | 1.57179 | 165.362 | 4.67152 |
| 210 | 0.25 | 1.60725 | 167.945 | 5.07333 |
| 211 | 0.37 | 1.65463 | 170.683 | 5.68554 |
| 212 | 0.4 | 1.6954 | 173.558 | 6.3637 |
| 213 | 0.5 | 1.75069 | 176.622 | 7.23905 |
| 214 | 0.5 | 1.79912 | 179.859 | 8.13861 |
| 215 | 1 | 1.86629 | 183.342 | 10.0049 |
| 216 | 1.03 | 1.92684 | 187.055 | 11.9895 |
| 217 | 1.2 | 2.01409 | 191.112 | 14.4065 |
| 218 | 1.4 | 2.09693 | 195.509 | 17.3422 |
| 219 | 1.5 | 2.22621 | 200.465 | 20.6815 |
| 220 | 1.62 | 2.36561 | 206.061 | 24.5138 |
| 221 | 5.19 | 2.65209 | 213.094 | 38.2781 |

Data Set Standard Deviation = 0.385454
Numerator = 1465.21
Denominator = 6965.31
W Statistic = 0.210358 = 1465.21 / 6965.31

5% Critical value of 0.976 exceeds 0.210358
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.210358
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: Mercury

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | -3.09004 | -2.65209 | 7.03356 | 8.19506 |
| 2 | -3.09004 | -2.36561 | 12.6297 | 15.5049 |
| 3 | -3.09004 | -2.22621 | 17.5857 | 22.384 |
| 4 | -3.09004 | -2.09693 | 21.9828 | 28.8636 |
| 5 | -3.09004 | -2.01409 | 26.0394 | 35.0872 |
| 6 | -3.09004 | -1.92684 | 29.7521 | 41.0412 |
| 7 | -3.09004 | -1.86629 | 33.2351 | 46.8082 |
| 8 | -3.09004 | -1.79912 | 36.472 | 52.3675 |
| 9 | -3.09004 | -1.75069 | 39.5369 | 57.7772 |
| 10 | -3.09004 | -1.6954 | 42.4112 | 63.0161 |
| 11 | -3.09004 | -1.65463 | 45.149 | 68.1289 |
| 12 | -3.09004 | -1.60725 | 47.7323 | 73.0954 |
| 13 | -3.09004 | -1.57179 | 50.2028 | 77.9523 |
| 14 | -3.09004 | -1.53007 | 52.5439 | 82.6803 |
| 15 | -3.09004 | -1.49852 | 54.7894 | 87.3107 |
| 16 | -3.09004 | -1.46106 | 56.9241 | 91.8255 |
| 17 | -3.09004 | -1.4325 | 58.9762 | 96.252 |
| 18 | -3.09004 | -1.39838 | 60.9316 | 100.573 |
| 19 | -3.09004 | -1.3722 | 62.8146 | 104.813 |
| 20 | -3.09004 | -1.34075 | 64.6122 | 108.956 |
| 21 | -3.09004 | -1.31652 | 66.3454 | 113.024 |
| 22 | -3.09004 | -1.28727 | 68.0025 | 117.002 |
| 23 | -3.09004 | -1.26464 | 69.6018 | 120.91 |
| 24 | -3.09004 | -1.23724 | 71.1326 | 124.733 |
| 25 | -3.09004 | -1.21596 | 72.6111 | 128.49 |
| 26 | -3.09004 | -1.19012 | 74.0275 | 132.168 |
| 27 | -3.09004 | -1.17 | 75.3964 | 135.783 |
| 28 | -3.09004 | -1.1455 | 76.7086 | 139.323 |
| 29 | -3.09004 | -1.12639 | 77.9774 | 142.803 |
| 30 | -3.09004 | -1.10306 | 79.1941 | 146.212 |
| 31 | -3.09004 | -1.08482 | 80.371 | 149.564 |
| 32 | -3.09004 | -1.06252 | 81.4999 | 152.847 |
| 33 | -2.20727 | -1.04505 | 82.592 | 155.154 |
| 34 | -2.20727 | -1.02365 | 83.6399 | 157.413 |
| 35 | -2.12026 | -1.00687 | 84.6537 | 159.548 |
| 36 | -1.60944 | -0.986272 | 85.6264 | 161.136 |
| 37 | -1.38629 | -0.970094 | 86.5675 | 162.48 |
| 38 | -1.38629 | -0.950222 | 87.4704 | 163.798 |
| 39 | -1.38629 | -0.934598 | 88.3439 | 165.093 |
| 40 | -1.38629 | -0.915365 | 89.1818 | 166.362 |
| 41 | -1.38629 | -0.900227 | 89.9922 | 167.61 |
| 42 | -1.38629 | -0.881587 | 90.7694 | 168.832 |
| 43 | -1.38629 | -0.866894 | 91.5209 | 170.034 |
| 44 | -1.38629 | -0.848786 | 92.2413 | 171.211 |
| 45 | -1.38629 | -0.834498 | 92.9377 | 172.368 |
| 46 | -1.38629 | -0.816874 | 93.605 | 173.5 |
| 47 | -1.38629 | -0.802956 | 94.2497 | 174.613 |
| 48 | -1.38629 | -0.785774 | 94.8672 | 175.703 |
| 49 | -1.38629 | -0.772193 | 95.4634 | 176.773 |

| | | | | |
|---|---|---|---|---|
| 50 | -1.38629 | -0.755415 | 96.0341 | 177.82 |
| 51 | -1.38629 | -0.742143 | 96.5849 | 178.849 |
| 52 | -1.38629 | -0.725736 | 97.1116 | 179.855 |
| 53 | -1.38629 | -0.712751 | 97.6196 | 180.843 |
| 54 | -1.38629 | -0.696684 | 98.1049 | 181.809 |
| 55 | -1.38629 | -0.683969 | 8.5727 | 182.757 |
| 56 | -1.38629 | -0.668209 | 99.0192 | 183.684 |
| 57 | -1.38629 | -0.655726 | 99.4492 | 184.593 |
| 58 | -1.38629 | -0.640266 | 99.8592 | 185.48 |
| 59 | -1.38629 | -0.628006 | 100.254 | 186.351 |
| 60 | -1.38629 | -0.612813 | 100.629 | 187.2 |
| 61 | -1.38629 | -0.60076 | 100.99 | 188.033 |
| 62 | -1.38629 | -0.585815 | 101.333 | 188.845 |
| 63 | -1.38629 | -0.573953 | 101.663 | 189.641 |
| 64 | -1.38629 | -0.559237 | 101.975 | 190.416 |
| 65 | -1.38629 | -0.547551 | 102.275 | 191.175 |
| 66 | -1.38629 | -0.533048 | 102.559 | 191.914 |
| 67 | -1.38629 | -0.521527 | 102.831 | 192.637 |
| 68 | -1.38629 | -0.507221 | 103.089 | 193.34 |
| 69 | -1.38629 | -0.49585 | 103.334 | 194.028 |
| 70 | -1.38629 | -0.481728 | 103.566 | 194.696 |
| 71 | -1.38629 | -0.470498 | 103.788 | 195.348 |
| 72 | -1.38629 | -0.456542 | 103.996 | 195.981 |
| 73 | -1.38629 | -0.445443 | 104.195 | 196.598 |
| 74 | -1.38629 | -0.431644 | 104.381 | 197.197 |
| 75 | -1.38629 | -0.420664 | 104.558 | 197.78 |
| 76 | -1.38629 | -0.40701 | 104.724 | 198.344 |
| 77 | -1.38629 | -0.396142 | 104.881 | 198.893 |
| 78 | -1.38629 | -0.382622 | 105.027 | 199.424 |
| 79 | -1.38629 | -0.371856 | 105.165 | 199.939 |
| 80 | -1.38629 | -0.358459 | 105.294 | 200.436 |
| 81 | -1.38629 | -0.347787 | 105.415 | 200.918 |
| 82 | -1.38629 | -0.334503 | 105.527 | 201.382 |
| 83 | -1.38629 | -0.323919 | 105.632 | 201.831 |
| 84 | -1.38629 | -0.310738 | 105.728 | 202.262 |
| 85 | -1.38629 | -0.300232 | 105.818 | 202.678 |
| 86 | -1.38629 | -0.287147 | 105.901 | 203.076 |
| 87 | -1.38629 | -0.276714 | 105.977 | 203.46 |
| 88 | -1.38629 | -0.263715 | 106.047 | 203.825 |
| 89 | -1.38629 | -0.253347 | 106.111 | 204.177 |
| 90 | -1.38629 | -0.240426 | 106.169 | 204.51 |
| 91 | -1.38629 | -0.230118 | 106.222 | 204.829 |
| 92 | -1.38629 | -0.217267 | 106.269 | 205.13 |
| 93 | -1.38629 | -0.207012 | 106.312 | 205.417 |
| 94 | -1.38629 | -0.194225 | 106.35 | 205.686 |
| 95 | -1.38629 | -0.184017 | 106.383 | 205.941 |
| 96 | -1.38629 | -0.171285 | 106.413 | 206.179 |
| 97 | -1.38629 | -0.161119 | 106.439 | 206.402 |
| 98 | -1.38629 | -0.148434 | 106.461 | 206.608 |
| 99 | -1.38629 | -0.138305 | 106.48 | 206.8 |
| 100 | -1.38629 | -0.125661 | 106.496 | 206.974 |
| 101 | -1.38629 | -0.115562 | 106.509 | 207.134 |
| 102 | -1.38629 | -0.102953 | 106.52 | 207.277 |
| 103 | -1.38629 | -0.0928787 | 106.528 | 207.406 |
| 104 | -1.38629 | -0.0802981 | 106.535 | 207.517 |
| 105 | -1.38629 | -0.0702426 | 106.54 | 207.614 |
| 106 | -1.38629 | -0.0576847 | 106.543 | 207.694 |
| 107 | -1.38629 | -0.0476439 | 106.545 | 207.76 |
| 108 | -1.38629 | -0.0350997 | 106.546 | 207.809 |
| 109 | -1.38629 | -0.0250691 | 106.547 | 207.844 |
| 110 | -1.38629 | -0.0125328 | 106.547 | 207.861 |
| 111 | -1.386290 | 106.547 | 207.861 | |

| | | | |
|---|---|---|---|
| 112 | -1.386290.0125328 | 106.547 | 207.844 |
| 113 | -1.386290.0250691 | 106.548 | 207.809 |
| 114 | -1.386290.0350997 | 106.549 | 207.76 |
| 115 | -1.386290.0476439 | 106.551 | 207.694 |
| 116 | -1.386290.0576847 | 106.555 | 207.614 |
| 117 | -1.386290.0702426 | 106.56 | 207.517 |
| 118 | -1.386290.0802981 | 106.566 | 207.406 |
| 119 | -1.386290.0928787 | 106.575 | 207.277 |
| 120 | -1.386290.102953 | 106.585 | 207.134 |
| 121 | -1.386290.115562 | 106.599 | 206.974 |
| 122 | -1.386290.125661 | 106.615 | 206.8 |
| 123 | -1.386290.138305 | 106.634 | 206.608 |
| 124 | -1.386290.148434 | 106.656 | 206.402 |
| 125 | -1.386290.161119 | 106.682 | 206.179 |
| 126 | -1.386290.171285 | 106.711 | 205.941 |
| 127 | -1.386290.184017 | 106.745 | 205.686 |
| 128 | -1.386290.194225 | 106.783 | 205.417 |
| 129 | -1.386290.207012 | 106.825 | 205.13 |
| 130 | -1.386290.217267 | 106.873 | 204.829 |
| 131 | -1.386290.230118 | 106.926 | 204.51 |
| 132 | -1.386290.240426 | 106.983 | 204.177 |
| 133 | -1.386290.253347 | 107.048 | 203.825 |
| 134 | -1.386290.263715 | 107.117 | 203.46 |
| 135 | -1.386290.276714 | 107.194 | 203.076 |
| 136 | -1.386290.287147 | 107.276 | 202.678 |
| 137 | -1.386290.300232 | 107.366 | 202.262 |
| 138 | -1.386290.310738 | 107.463 | 201.831 |
| 139 | -1.386290.323919 | 107.568 | 201.382 |
| 140 | -1.386290.334503 | 107.68 | 200.918 |
| 141 | -1.386290.347787 | 107.801 | 200.436 |
| 142 | -1.386290.358459 | 107.929 | 199.939 |
| 143 | -1.386290.371856 | 108.067 | 199.424 |
| 144 | -1.386290.382622 | 108.214 | 198.893 |
| 145 | -1.386290.396142 | 108.371 | 198.344 |
| 146 | -1.386290.40701 | 108.536 | 197.78 |
| 147 | -1.386290.420664 | 108.713 | 197.197 |
| 148 | -1.386290.431644 | 108.9 | 196.598 |
| 149 | -1.386290.445443 | 109.098 | 195.981 |
| 150 | -1.386290.456542 | 109.307 | 195.348 |
| 151 | -1.386290.470498 | 109.528 | 194.696 |
| 152 | -1.386290.481728 | 109.76 | 194.028 |
| 153 | -1.386290.49585 | 110.006 | 193.34 |
| 154 | -1.386290.507221 | 110.263 | 192.637 |
| 155 | -1.386290.521527 | 110.535 | 191.914 |
| 156 | -1.386290.533048 | 110.819 | 191.175 |
| 157 | -1.386290.547551 | 111.119 | 190.416 |
| 158 | -1.386290.559237 | 111.432 | 189.641 |
| 159 | -1.386290.573953 | 111.761 | 188.845 |
| 160 | -1.386290.585815 | 112.104 | 188.033 |
| 161 | -1.386290.60076 | 112.465 | 187.2 |
| 162 | -1.386290.612813 | 112.841 | 186.351 |
| 163 | -1.386290.628006 | 113.235 | 185.48 |
| 164 | -1.386290.640266 | 113.645 | 184.593 |
| 165 | -1.386290.655726 | 114.075 | 183.684 |
| 166 | -1.386290.668209 | 114.522 | 182.757 |
| 167 | -1.386290.68396 | 114.989 | 181.809 |
| 168 | -1.386290.696684 | 115.475 | 180.843 |
| 169 | -1.386290.712751 | 115.983 | 179.855 |
| 170 | -1.386290.725736 | 116.51 | 178.849 |
| 171 | -1.386290.742143 | 117.06 | 177.82 |
| 172 | -1.386290.755415 | 117.631 | 176.773 |
| 173 | -1.386290.772193 | 118.227 | 175.703 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | -1.386290.785774 | | | 118.845 | 174.613 |
| 175 | -1.386290.802956 | | | 119.489 | 173.5 |
| 176 | -1.386290.816874 | | | 120.157 | 172.368 |
| 177 | -1.386290.834498 | | | 120.853 | 171.211 |
| 178 | -1.386290.848786 | | | 121.574 | 170.034 |
| 179 | -1.386290.866894 | | | 122.325 | 168.832 |
| 180 | -1.386290.881587 | | | 123.102 | 167.61 |
| 181 | -1.386290.900227 | | | 123.913 | 166.362 |
| 182 | -1.386290.915365 | | | 124.751 | 165.093 |
| 183 | -1.386290.93459 | | 125.624 | 163.798 | |
| 184 | -1.386290.950222 | | | 126.527 | 162.48 |
| 185 | -1.386290.970094 | | | 127.468 | 161.136 |
| 186 | -1.386290.986272 | | | 128.441 | 159.768 |
| 187 | -1.386291.00687 | | 129.455 | 158.373 | |
| 188 | -1.386291.02365 | | 130.502 | 156.953 | |
| 189 | -1.386291.04505 | | 131.594 | 155.505 | |
| 190 | -1.386291.06252 | | 132.723 | 154.032 | |
| 191 | -1.386291.08482 | | 133.9 | 152.528 | |
| 192 | -1.386291.10306 | | 135.117 | 150.999 | |
| 193 | -1.386291.12639 | | 136.386 | 149.437 | |
| 194 | -1.386291.1455 | | 137.698 | 147.849 | |
| 195 | -1.386291.17 | | 139.067 | 146.227 | |
| 196 | -1.386291.19012 | | 140.483 | 144.577 | |
| 197 | -1.386291.21596 | | 141.962 | 142.892 | |
| 198 | -1.386291.23724 | | 143.493 | 141.177 | |
| 199 | -1.386291.26464 | | 145.092 | 139.423 | |
| 200 | -1.386291.28727 | | 146.749 | 137.639 | |
| 201 | -1.386291.31652 | | 148.482 | 135.814 | |
| 202 | -1.386291.34075 | | 150.28 | 133.955 | |
| 203 | -1.386291.3722 | | 152.163 | 132.053 | |
| 204 | -1.386291.39838 | | 154.118 | 130.114 | |
| 205 | -1.386291.4325 | | 156.17 | 128.128 | |
| 206 | -1.386291.46106 | | 158.305 | 126.103 | |
| 207 | -1.386291.49852 | | 160.551 | 124.026 | |
| 208 | -1.386291.53007 | | 162.892 | 121.904 | |
| 209 | -1.386291.57179 | | 165.362 | 119.725 | |
| 210 | -1.386291.60725 | | 167.945 | 117.497 | |
| 211 | -0.994252 | | 1.65463 | 170.683 | 115.852 |
| 212 | -0.916291 | | 1.6954 | 173.558 | 114.299 |
| 213 | -0.693147 | | 1.75069 | 176.622 | 113.085 |
| 214 | -0.693147 | | 1.79912 | 179.859 | 111.838 |
| 215 | 0 | 1.86629 | 183.342 | 111.838 | |
| 216 | 0.0295588 | | 1.92684 | 187.055 | 111.895 |
| 217 | 0.182322 | | 2.01409 | 191.112 | 112.262 |
| 218 | 0.336472 | | 2.09693 | 195.509 | 112.968 |
| 219 | 0.405465 | | 2.22621 | 200.465 | 113.871 |
| 220 | 0.482426 | | 2.36561 | 206.061 | 115.012 |
| 221 | 1.64673 | 2.65209 | 213.094 | 119.379 | |

Data Set Standard Deviation = 0.717962
Numerator = 14251.4
Denominator = 24165.6
W Statistic = 0.589737 = 14251.4 / 24165.6

5% Critical value of 0.976 exceeds 0.589737
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.589737
Evidence of non-normality at 99% level of significance

# Non-Parametric Prediction Interval

## Inter-Well Comparison

## Parameter: Mercury

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 93.2127%
Number of comparisons = 8
Future Samples (k) = 8
Recent Dates = 1
Background Samples (n) = 18
Maximum Background Concentration = 0
Confidence Level = 69.2%
False Positive Rate = 30.8%

| Location | Date | Samples | Mean | Significant |
|---|---|---|---|---|
| MW-11R | 11/12/2010 | 1 | -2.20727 | FALSE |
| MW-10 | 11/12/2010 | 1 | -3.09004 | FALSE |
| MW-7 | 11/12/2010 | 1 | -3.09004 | FALSE |
| MW-6 | 11/12/2010 | 1 | -0.994252 | FALSE |
| MW-12BR | 11/12/2010 | 1 | -3.09004 | FALSE |
| MW-12AR | 11/12/2010 | 1 | -3.09004 | FALSE |
| MW-8 | 11/12/2010 | 1 | -3.09004 | FALSE |
| MW-9 | 11/12/2010 | 1 | -3.09004 | FALSE |

# Concentrations (ppb)

## Parameter: Nickel

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 168
Percent Non-Detects: 76.0181%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 13 (72.2222%) | 3/16/1999 | 6 J | 6 J |
| | | | 9/23/1999 | ND<50 | ND<50 |
| | | | 3/15/2000 | ND<50 | ND<50 |
| | | | 9/24/2003 | ND<50 | ND<50 |
| | | | 3/11/2004 | ND<50 | ND<50 |
| | | | 10/12/2004 | ND<50 | ND<50 |
| | | | 4/1/2005 | ND<50 | ND<50 |
| | | | 10/25/2005 | ND<50 | ND<50 |
| | | | 4/29/2006 | ND<50 | ND<50 |
| | | | 11/18/2006 | 1.27 J | 1.27 J |
| | | | 5/23/2007 | ND<50 | ND<50 |
| | | | 11/28/2007 | ND<50 | ND<50 |
| | | | 6/5/2008 | 1.04 J | 1.04 J |
| | | | 11/20/2008 | ND<50 | ND<50 |
| | | | 6/11/2009 | 0.36 J | 0.36 J |
| | | | 11/16/2009 | 0.42 J | 0.42 J |
| | | | 6/30/2010 | ND<0.4 | ND<0.4 |
| | | | 11/12/2010 | ND<0.4 U | ND<0.4 U |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-9 | 28 | 23 (82.1429%) | 7/20/1995 | ND<50 | ND<50 |
| | | | 8/24/1995 | ND<50 | ND<50 |
| | | | 9/28/1995 | ND<50 | ND<50 |
| | | | 10/26/1995 | ND<50 | ND<50 |
| | | | 11/19/1996 | ND<50 | ND<50 |
| | | | 12/19/1996 | ND<50 | ND<50 |
| | | | 3/24/1997 | ND<50 | ND<50 |
| | | | 9/24/1997 | ND<50 | ND<50 |
| | | | 4/7/1998 | 72 | 72 |
| | | | 9/23/1998 | ND<50 | ND<50 |
| | | | 3/16/1999 | ND<50 | ND<50 |
| | | | 9/23/1999 | ND<50 | ND<50 |
| | | | 3/15/2000 | ND<50 | ND<50 |
| | | | 9/24/2003 | ND<50 | ND<50 |
| | | | 3/11/2004 | ND<50 | ND<50 |
| | | | 10/12/2004 | ND<50 | ND<50 |
| | | | 4/1/2005 | ND<50 | ND<50 |
| | | | 10/25/2005 | ND<50 | ND<50 |
| | | | 4/29/2006 | ND<50 | ND<50 |
| | | | 11/18/2006 | ND<50 | ND<50 |
| | | | 5/23/2007 | ND<50 | ND<50 |
| | | | 11/28/2007 | ND<50 | ND<50 |
| | | | 6/5/2008 | 1.03 J | 1.03 J |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/20/2008 | ND<50 | ND<50 | |
| | | | 6/11/2009 | 0.87 | 0.87 | |
| | | | 11/16/2009 | 0.69 J | 0.69 J | |
| | | | 6/30/2010 | 0.53 J H | 0.53 J H | |
| | | | 11/12/2010 | ND<0.4 U | | ND<0.4 U |
| MW-8 | 27 | 22 (81.4815%) | 7/20/1995 | | ND<50 | ND<50 |
| | | | 8/24/1995 | ND<50 | ND<50 | |
| | | | 9/28/1995 | ND<50 | ND<50 | |
| | | | 10/26/1995 | ND<50 | ND<50 | |
| | | | 11/19/1996 | ND<50 | ND<50 | |
| | | | 12/19/1996 | ND<50 | ND<50 | |
| | | | 3/24/1997 | ND<50 | ND<50 | |
| | | | 9/24/1997 | ND<50 | ND<50 | |
| | | | 4/7/1998 | 60 | 60 | |
| | | | 9/23/1998 | ND<50 | ND<50 | |
| | | | 3/16/1999 | ND<50 | ND<50 | |
| | | | 9/23/1999 | ND<50 | ND<50 | |
| | | | 3/15/2000 | ND<50 | ND<50 | |
| | | | 9/24/2003 | ND<50 | ND<50 | |
| | | | 3/11/2004 | ND<50 | ND<50 | |
| | | | 10/12/2004 | ND<50 | ND<50 | |
| | | | 4/1/2005 | ND<50 | ND<50 | |
| | | | 10/25/2005 | ND<50 | ND<50 | |
| | | | 4/29/2006 | ND<50 | ND<50 | |
| | | | 11/18/2006 | ND<50 | ND<50 | |
| | | | 5/23/2007 | ND<50 | ND<50 | |
| | | | 11/28/2007 | ND<50 | ND<50 | |
| | | | 6/5/2008 | 1.03 J | 1.03 J | |
| | | | 11/20/2008 | ND<50 | ND<50 | |
| | | | 6/11/2009 | 0.54 J | 0.54 J | |
| | | | 6/30/2010 | 0.68 J H | 0.68 J H | |
| | | | 11/12/2010 | 1.9 | 1.9 | |
| MW-7 | 28 | 19 (67.8571%) | 7/20/1995 | | ND<50 | ND<50 |
| | | | 8/24/1995 | ND<50 | ND<50 | |
| | | | 9/28/1995 | ND<50 | ND<50 | |
| | | | 10/26/1995 | ND<50 | ND<50 | |
| | | | 11/19/1996 | ND<50 | ND<50 | |
| | | | 12/19/1996 | ND<50 | ND<50 | |
| | | | 3/24/1997 | ND<50 | ND<50 | |
| | | | 9/24/1997 | ND<50 | ND<50 | |
| | | | 4/7/1998 | 63 | 63 | |
| | | | 9/23/1998 | ND<50 | ND<50 | |
| | | | 3/16/1999 | 6 | 6 | |
| | | | 9/23/1999 | ND<50 | ND<50 | |
| | | | 3/15/2000 | ND<50 | ND<50 | |
| | | | 9/24/2003 | ND<50 | ND<50 | |
| | | | 3/11/2004 | ND<50 | ND<50 | |
| | | | 10/12/2004 | ND<50 | ND<50 | |
| | | | 4/1/2005 | ND<50 | ND<50 | |
| | | | 10/25/2005 | ND<50 | ND<50 | |
| | | | 4/29/2006 | ND<50 | ND<50 | |
| | | | 11/18/2006 | 1.74 J | 1.74 J | |
| | | | 5/23/2007 | ND<50 | ND<50 | |
| | | | 11/28/2007 | ND<50 | ND<50 | |
| | | | 6/5/2008 | 1.89 J | 1.89 J | |
| | | | 11/20/2008 | 16 J | 16 J | |
| | | | 6/11/2009 | 0.71 | 0.71 | |
| | | | 11/16/2009 | 1.5 | 1.5 | |
| | | | 6/30/2010 | 0.5 J H | 0.5 J H | |
| | | | 11/12/2010 | 1.7 | 1.7 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| MW-6 | 28 | 24 (85.7143%) | 7/20/1995 | ND<50 | ND<50 | |
| | | | 8/24/1995 | ND<50 | ND<50 | |
| | | | 9/28/1995 | ND<50 | ND<50 | |
| | | | 10/26/1995 | ND<50 | ND<50 | |
| | | | 11/19/1996 | ND<50 | ND<50 | |
| | | | 12/19/1996 | ND<50 | ND<50 | |
| | | | 3/24/1997 | ND<50 | ND<50 | |
| | | | 9/24/1997 | ND<50 | ND<50 | |
| | | | 4/7/1998 | ND<50 | ND<50 | |
| | | | 9/23/1998 | ND<50 | ND<50 | |
| | | | 3/16/1999 | ND<50 | ND<50 | |
| | | | 9/23/1999 | 10 J | 10 J | |
| | | | 3/15/2000 | ND<50 | ND<50 | |
| | | | 9/24/2003 | ND<50 | ND<50 | |
| | | | 3/11/2004 | ND<50 | ND<50 | |
| | | | 10/12/2004 | ND<50 | ND<50 | |
| | | | 4/1/2005 | ND<50 | ND<50 | |
| | | | 10/25/2005 | ND<50 | ND<50 | |
| | | | 4/29/2006 | ND<50 | ND<50 | |
| | | | 11/18/2006 | 4.96 J | 4.96 J | |
| | | | 5/23/2007 | ND<50 | ND<50 | |
| | | | 11/28/2007 | ND<50 | ND<50 | |
| | | | 6/5/2008 | ND<50 | ND<50 | |
| | | | 11/20/2008 | ND<50 | ND<50 | |
| | | | 6/11/2009 | 0.35 J | 0.35 J | |
| | | | 11/16/2009 | 0.32 J | 0.32 J | |
| | | | 6/30/2010 | ND<0.4 | ND<0.4 | |
| | | | 11/12/2010 | ND<0.4 U | ND<0.4 U | |
| MW-12BR | 18 | 11 (61.1111%) | 3/16/1999 | ND<50 | ND<50 | |
| | | | 9/23/1999 | ND<50 | ND<50 | |
| | | | 3/15/2000 | ND<50 | ND<50 | |
| | | | 9/24/2003 | ND<50 | ND<50 | |
| | | | 3/11/2004 | ND<50 | ND<50 | |
| | | | 10/12/2004 | ND<50 | ND<50 | |
| | | | 4/1/2005 | ND<50 | ND<50 | |
| | | | 10/25/2005 | ND<50 | ND<50 | |
| | | | 4/29/2006 | ND<50 | ND<50 | |
| | | | 11/18/2006 | 2.29 J | 2.29 J | |
| | | | 5/23/2007 | ND<50 | ND<50 | |
| | | | 11/28/2007 | 4 J | 4 J | |
| | | | 6/5/2008 | 3.1 J | 3.1 J | |
| | | | 11/20/2008 | ND<50 | ND<50 | |
| | | | 6/11/2009 | 2.2 | 2.2 | |
| | | | 11/16/2009 | 1.8 | 1.8 | |
| | | | 6/30/2010 | 2.1 | 2.1 | |
| | | | 11/12/2010 | 2.6 | 2.6 | |
| MW-12AR | 18 | 13 (72.2222%) | 3/16/1999 | ND<50 | ND<50 | |
| | | | 9/23/1999 | ND<50 | ND<50 | |
| | | | 3/15/2000 | ND<50 | ND<50 | |
| | | | 9/24/2003 | ND<50 | ND<50 | |
| | | | 3/11/2004 | ND<50 | ND<50 | |
| | | | 10/12/2004 | ND<50 | ND<50 | |
| | | | 4/1/2005 | ND<50 | ND<50 | |
| | | | 10/25/2005 | ND<50 | ND<50 | |
| | | | 4/29/2006 | ND<50 | ND<50 | |
| | | | 11/18/2006 | ND<50 | ND<50 | |
| | | | 5/23/2007 | ND<50 | ND<50 | |
| | | | 11/28/2007 | ND<50 | ND<50 | |
| | | | 6/5/2008 | 1.25 J | 1.25 J | |

| | | | | | |
|---|---|---|---|---|---|
| | | | 11/20/2008 | ND<50 | ND<50 |
| | | | 6/11/2009 | 1.1 | 1.1 |
| | | | 11/16/2009 | 1 | 1 |
| | | | 6/30/2010 | 0.97 J | 0.97 J |
| | | | 11/12/2010 | 0.64 J | 0.64 J |
| MW-11R | 28 | 21 (75%) | 7/20/1995 | ND<50 | ND<50 |
| | | | 8/24/1995 | ND<50 | ND<50 |
| | | | 9/28/1995 | ND<50 | ND<50 |
| | | | 10/26/1995 | ND<50 | ND<50 |
| | | | 11/19/1996 | ND<50 | ND<50 |
| | | | 12/19/1996 | ND<50 | ND<50 |
| | | | 3/24/1997 | ND<50 | ND<50 |
| | | | 9/24/1997 | 10 J | 10 J |
| | | | 4/7/1998 | ND<50 | ND<50 |
| | | | 9/23/1998 | ND<50 | ND<50 |
| | | | 3/16/1999 | ND<50 | ND<50 |
| | | | 9/23/1999 | 6 J | 6 J |
| | | | 3/15/2000 | ND<50 | ND<50 |
| | | | 9/24/2003 | ND<50 | ND<50 |
| | | | 3/11/2004 | ND<50 | ND<50 |
| | | | 10/12/2004 | ND<50 | ND<50 |
| | | | 4/1/2005 | ND<50 | ND<50 |
| | | | 10/25/2005 | ND<50 | ND<50 |
| | | | 4/29/2006 | ND<50 | ND<50 |
| | | | 11/18/2006 | 1.41 J | 1.41 J |
| | | | 5/23/2007 | ND<50 | ND<50 |
| | | | 11/28/2007 | ND<50 | ND<50 |
| | | | 6/5/2008 | ND<50 | ND<50 |
| | | | 11/20/2008 | ND<50 | ND<50 |
| | | | 6/11/2009 | 0.63 | 0.63 |
| | | | 11/16/2009 | 0.58 | 0.58 |
| | | | 6/30/2010 | 0.62 J H | 0.62 J H |
| | | | 11/12/2010 | 0.44 J | 0.44 J |
| MW-10 | 28 | 22 (78.5714%) | 7/20/1995 | ND<50 | ND<50 |
| | | | 8/24/1995 | ND<50 | ND<50 |
| | | | 9/28/1995 | ND<50 | ND<50 |
| | | | 10/26/1995 | ND<50 | ND<50 |
| | | | 11/19/1996 | ND<50 | ND<50 |
| | | | 12/19/1996 | ND<50 | ND<50 |
| | | | 3/24/1997 | ND<50 | ND<50 |
| | | | 9/24/1997 | ND<50 | ND<50 |
| | | | 4/7/1998 | 180 | 180 |
| | | | 9/23/1998 | ND<50 | ND<50 |
| | | | 3/16/1999 | 5 J | 5 J |
| | | | 9/23/1999 | 38 J | 38 J |
| | | | 3/15/2000 | ND<50 | ND<50 |
| | | | 9/24/2003 | ND<50 | ND<50 |
| | | | 3/11/2004 | ND<50 | ND<50 |
| | | | 10/12/2004 | ND<50 | ND<50 |
| | | | 4/1/2005 | ND<50 | ND<50 |
| | | | 10/25/2005 | ND<50 | ND<50 |
| | | | 4/29/2006 | ND<50 | ND<50 |
| | | | 11/18/2006 | ND<50 | ND<50 |
| | | | 5/23/2007 | ND<50 | ND<50 |
| | | | 11/28/2007 | ND<50 | ND<50 |
| | | | 6/5/2008 | 1.31 J | 1.31 J |
| | | | 11/20/2008 | ND<50 | ND<50 |
| | | | 6/11/2009 | 0.59 J | 0.59 J |
| | | | 11/16/2009 | ND<0.2 | ND<0.2 |
| | | | 6/30/2010 | ND<0.4 | ND<0.4 |

| | | | |
|---|---|---|---|
| 11/12/2010 | 0.46 J | 0.46 J | |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. Original |
|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: Nickel

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.1 | -2.65209 | 7.03356 | -0.265209 |
| 2 | 0.2 | -2.36561 | 12.6297 | -0.738331 |
| 3 | 0.2 | -2.22621 | 17.5857 | -1.18357 |
| 4 | 0.2 | -2.09693 | 21.9828 | -1.60296 |
| 5 | 0.2 | -2.01409 | 26.0394 | -2.00578 |
| 6 | 0.2 | -1.92684 | 29.7521 | -2.39115 |
| 7 | 0.2 | -1.86629 | 33.2351 | -2.7644 |
| 8 | 0.32 | -1.79912 | 36.472 | -3.34012 |
| 9 | 0.35 | -1.75069 | 39.5369 | -3.95286 |
| 10 | 0.36 | -1.6954 | 42.4112 | -4.5632 |
| 11 | 0.42 | -1.65463 | 45.149 | -5.25815 |
| 12 | 0.44 | -1.60725 | 47.7323 | -5.96534 |
| 13 | 0.46 | -1.57179 | 50.2028 | -6.68836 |
| 14 | 0.5 | -1.53007 | 52.5439 | -7.45339 |
| 15 | 0.53 | -1.49852 | 54.7894 | -8.24761 |
| 16 | 0.54 | -1.46106 | 56.9241 | -9.03658 |
| 17 | 0.58 | -1.4325 | 58.9762 | -9.86743 |
| 18 | 0.59 | -1.39838 | 60.9316 | -10.6925 |
| 19 | 0.62 | -1.3722 | 62.8146 | -11.5432 |
| 20 | 0.63 | -1.34075 | 64.6122 | -12.3879 |
| 21 | 0.64 | -1.31652 | 66.3454 | -13.2305 |
| 22 | 0.68 | -1.28727 | 68.0025 | -14.1058 |
| 23 | 0.69 | -1.26464 | 69.6018 | -14.9784 |
| 24 | 0.71 | -1.23724 | 71.1326 | -15.8569 |
| 25 | 0.87 | -1.21596 | 72.6111 | -16.9148 |
| 26 | 0.97 | -1.19012 | 74.0275 | -18.0692 |
| 27 | 1 | -1.17 | 75.3964 | -19.2392 |
| 28 | 1.03 | -1.1455 | 76.7086 | -20.419 |
| 29 | 1.03 | -1.12639 | 77.9774 | -21.5792 |
| 30 | 1.04 | -1.10306 | 79.1941 | -22.7264 |
| 31 | 1.1 | -1.08482 | 80.371 | -23.9197 |
| 32 | 1.25 | -1.06252 | 81.4999 | -25.2479 |
| 33 | 1.27 | -1.04505 | 82.592 | -26.5751 |
| 34 | 1.31 | -1.02365 | 83.6399 | -27.9161 |
| 35 | 1.41 | -1.00687 | 84.6537 | -29.3357 |
| 36 | 1.5 | -0.986272 | 85.6264 | -30.8152 |
| 37 | 1.7 | -0.970094 | 86.5675 | -32.4643 |
| 38 | 1.74 | -0.950222 | 87.4704 | -34.1177 |
| 39 | 1.8 | -0.93459 | 88.3439 | -35.8 |
| 40 | 1.89 | -0.915365 | 89.1818 | -37.53 |
| 41 | 1.9 | -0.900227 | 89.9922 | -39.2404 |
| 42 | 2.1 | -0.881587 | 90.7694 | -41.0918 |
| 43 | 2.2 | -0.866894 | 91.5209 | -42.9989 |
| 44 | 2.29 | -0.848786 | 92.2413 | -44.9426 |
| 45 | 2.6 | -0.834498 | 92.9377 | -47.1123 |
| 46 | 3.1 | -0.816874 | 93.605 | -49.6447 |
| 47 | 4 | -0.802956 | 94.2497 | -52.8565 |
| 48 | 4.96 | -0.785774 | 94.8672 | -56.7539 |
| 49 | 5 | -0.772193 | 95.4634 | -60.6149 |

| | | | | |
|---|---|---|---|---|
| 50 | 6 | -0.755415 | 96.0341 | -65.1474 |
| 51 | 6 | -0.742143 | 96.5849 | -69.6002 |
| 52 | 6 | -0.725736 | 97.1116 | -73.9546 |
| 53 | 10 | -0.712751 | 97.6196 | -81.0822 |
| 54 | 10 | -0.696684 | 98.1049 | -88.049 |
| 55 | 16 | -0.683969 | 8.5727 | -98.9924 |
| 56 | 25 | -0.668209 | 99.0192 | -115.698 |
| 57 | 25 | -0.655726 | 99.4492 | -132.091 |
| 58 | 25 | -0.640266 | 99.8592 | -148.097 |
| 59 | 25 | -0.628006 | 100.254 | -163.798 |
| 60 | 25 | -0.612813 | 100.629 | -179.118 |
| 61 | 25 | -0.60076 | 100.99 | -194.137 |
| 62 | 25 | -0.585815 | 101.333 | -208.782 |
| 63 | 25 | -0.573953 | 101.663 | -223.131 |
| 64 | 25 | -0.559237 | 101.975 | -237.112 |
| 65 | 25 | -0.547551 | 102.275 | -250.801 |
| 66 | 25 | -0.533048 | 102.559 | -264.127 |
| 67 | 25 | -0.521527 | 102.831 | -277.165 |
| 68 | 25 | -0.507221 | 103.089 | -289.846 |
| 69 | 25 | -0.49585 | 103.334 | -302.242 |
| 70 | 25 | -0.481728 | 103.566 | -314.285 |
| 71 | 25 | -0.470498 | 103.788 | -326.048 |
| 72 | 25 | -0.456542 | 103.996 | -337.461 |
| 73 | 25 | -0.445443 | 104.195 | -348.597 |
| 74 | 25 | -0.431644 | 104.381 | -359.388 |
| 75 | 25 | -0.420664 | 104.558 | -369.905 |
| 76 | 25 | -0.40701 | 104.724 | -380.08 |
| 77 | 25 | -0.396142 | 104.881 | -389.984 |
| 78 | 25 | -0.382622 | 105.027 | -399.549 |
| 79 | 25 | -0.371856 | 105.165 | -408.846 |
| 80 | 25 | -0.358459 | 105.294 | -417.807 |
| 81 | 25 | -0.347787 | 105.415 | -426.502 |
| 82 | 25 | -0.334503 | 105.527 | -434.864 |
| 83 | 25 | -0.323919 | 105.632 | -442.962 |
| 84 | 25 | -0.310738 | 105.728 | -450.731 |
| 85 | 25 | -0.300232 | 105.818 | -458.237 |
| 86 | 25 | -0.287147 | 105.901 | -465.415 |
| 87 | 25 | -0.276714 | 105.977 | -472.333 |
| 88 | 25 | -0.263715 | 106.047 | -478.926 |
| 89 | 25 | -0.253347 | 106.111 | -485.26 |
| 90 | 25 | -0.240426 | 106.169 | -491.27 |
| 91 | 25 | -0.230118 | 106.222 | -497.023 |
| 92 | 25 | -0.217267 | 106.269 | -502.455 |
| 93 | 25 | -0.207012 | 106.312 | -507.63 |
| 94 | 25 | -0.194225 | 106.35 | -512.486 |
| 95 | 25 | -0.184017 | 106.383 | -517.086 |
| 96 | 25 | -0.171285 | 106.413 | -521.368 |
| 97 | 25 | -0.161119 | 106.439 | -525.396 |
| 98 | 25 | -0.148434 | 106.461 | -529.107 |
| 99 | 25 | -0.138305 | 106.48 | -532.565 |
| 100 | 25 | -0.125661 | 106.496 | -535.706 |
| 101 | 25 | -0.115562 | 106.509 | -538.595 |
| 102 | 25 | -0.102953 | 106.52 | -541.169 |
| 103 | 25 | -0.0928787 | 106.528 | -543.491 |
| 104 | 25 | -0.0802981 | 106.535 | -545.499 |
| 105 | 25 | -0.0702426 | 106.54 | -547.255 |
| 106 | 25 | -0.0576847 | 106.543 | -548.697 |
| 107 | 25 | -0.0476439 | 106.545 | -549.888 |
| 108 | 25 | -0.0350997 | 106.546 | -550.765 |
| 109 | 25 | -0.0250691 | 106.547 | -551.392 |
| 110 | 25 | -0.0125328 | 106.547 | -551.705 |
| 111 | 25 | 0 | 106.547 | -551.705 |

| | | | | |
|---|---|---|---|---|
| 112 | 25 | 0.0125328 | 106.547 | -551.392 |
| 113 | 25 | 0.0250691 | 106.548 | -550.765 |
| 114 | 25 | 0.0350997 | 106.549 | -549.888 |
| 115 | 25 | 0.0476439 | 106.551 | -548.697 |
| 116 | 25 | 0.0576847 | 106.555 | -547.255 |
| 117 | 25 | 0.0702426 | 106.56 | -545.499 |
| 118 | 25 | 0.0802981 | 106.566 | -543.491 |
| 119 | 25 | 0.0928787 | 106.575 | -541.169 |
| 120 | 25 | 0.102953 | 106.585 | -538.595 |
| 121 | 25 | 0.115562 | 106.599 | -535.706 |
| 122 | 25 | 0.125661 | 106.615 | -532.565 |
| 123 | 25 | 0.138305 | 106.634 | -529.107 |
| 124 | 25 | 0.148434 | 106.656 | -525.396 |
| 125 | 25 | 0.161119 | 106.682 | -521.368 |
| 126 | 25 | 0.171285 | 106.711 | -517.086 |
| 127 | 25 | 0.184017 | 106.745 | -512.486 |
| 128 | 25 | 0.194225 | 106.783 | -507.63 |
| 129 | 25 | 0.207012 | 106.825 | -502.455 |
| 130 | 25 | 0.217267 | 106.873 | -497.023 |
| 131 | 25 | 0.230118 | 106.926 | -491.27 |
| 132 | 25 | 0.240426 | 106.983 | -485.26 |
| 133 | 25 | 0.253347 | 107.048 | -478.926 |
| 134 | 25 | 0.263715 | 107.117 | -472.333 |
| 135 | 25 | 0.276714 | 107.194 | -465.415 |
| 136 | 25 | 0.287147 | 107.276 | -458.237 |
| 137 | 25 | 0.300232 | 107.366 | -450.731 |
| 138 | 25 | 0.310738 | 107.463 | -442.962 |
| 139 | 25 | 0.323919 | 107.568 | -434.864 |
| 140 | 25 | 0.334503 | 107.68 | -426.502 |
| 141 | 25 | 0.347787 | 107.801 | -417.807 |
| 142 | 25 | 0.358459 | 107.929 | -408.846 |
| 143 | 25 | 0.371856 | 108.067 | -399.549 |
| 144 | 25 | 0.382622 | 108.214 | -389.984 |
| 145 | 25 | 0.396142 | 108.371 | -380.08 |
| 146 | 25 | 0.40701 | 108.536 | -369.905 |
| 147 | 25 | 0.420664 | 108.713 | -359.388 |
| 148 | 25 | 0.431644 | 108.9 | -348.597 |
| 149 | 25 | 0.445443 | 109.098 | -337.461 |
| 150 | 25 | 0.456542 | 109.307 | -326.048 |
| 151 | 25 | 0.470498 | 109.528 | -314.285 |
| 152 | 25 | 0.481728 | 109.76 | -302.242 |
| 153 | 25 | 0.49585 | 110.006 | -289.846 |
| 154 | 25 | 0.507221 | 110.263 | -277.165 |
| 155 | 25 | 0.521527 | 110.535 | -264.127 |
| 156 | 25 | 0.533048 | 110.819 | -250.801 |
| 157 | 25 | 0.547551 | 111.119 | -237.112 |
| 158 | 25 | 0.559237 | 111.432 | -223.131 |
| 159 | 25 | 0.573953 | 111.761 | -208.782 |
| 160 | 25 | 0.585815 | 112.104 | -194.137 |
| 161 | 25 | 0.60076 | 112.465 | -179.118 |
| 162 | 25 | 0.612813 | 112.841 | -163.798 |
| 163 | 25 | 0.628006 | 113.235 | -148.097 |
| 164 | 25 | 0.640266 | 113.645 | -132.091 |
| 165 | 25 | 0.655726 | 114.075 | -115.698 |
| 166 | 25 | 0.668209 | 114.522 | -98.9924 |
| 167 | 25 | 0.68396 | 114.989 | -81.8933 |
| 168 | 25 | 0.696684 | 115.475 | -64.4762 |
| 169 | 25 | 0.712751 | 115.983 | -46.6575 |
| 170 | 25 | 0.725736 | 116.51 | -28.5141 |
| 171 | 25 | 0.742143 | 117.06 | -9.9605 |
| 172 | 25 | 0.755415 | 117.631 | 8.92487 |
| 173 | 25 | 0.772193 | 118.227 | 28.2297 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 25 | 0.785774 | | 118.845 | 47.874 |
| 175 | 25 | 0.802956 | | 119.489 | 67.9479 |
| 176 | 25 | 0.816874 | | 120.157 | 88.3698 |
| 177 | 25 | 0.834498 | | 120.853 | 109.232 |
| 178 | 25 | 0.848786 | | 121.574 | 130.452 |
| 179 | 25 | 0.866894 | | 122.325 | 152.124 |
| 180 | 25 | 0.881587 | | 123.102 | 174.164 |
| 181 | 25 | 0.900227 | | 123.913 | 196.67 |
| 182 | 25 | 0.915365 | | 124.751 | 219.554 |
| 183 | 25 | 0.93459 | 125.624 | 242.918 | |
| 184 | 25 | 0.950222 | | 126.527 | 266.674 |
| 185 | 25 | 0.970094 | | 127.468 | 290.926 |
| 186 | 25 | 0.986272 | | 128.441 | 315.583 |
| 187 | 25 | 1.00687 | 129.455 | 340.755 | |
| 188 | 25 | 1.02365 | 130.502 | 366.346 | |
| 189 | 25 | 1.04505 | 131.594 | 392.472 | |
| 190 | 25 | 1.06252 | 132.723 | 419.035 | |
| 191 | 25 | 1.08482 | 133.9 | 446.156 | |
| 192 | 25 | 1.10306 | 135.117 | 473.732 | |
| 193 | 25 | 1.12639 | 136.386 | 501.892 | |
| 194 | 25 | 1.1455 | 137.698 | 530.53 | |
| 195 | 25 | 1.17 | 139.067 | 559.78 | |
| 196 | 25 | 1.19012 | 140.483 | 589.533 | |
| 197 | 25 | 1.21596 | 141.962 | 619.932 | |
| 198 | 25 | 1.23724 | 143.493 | 650.863 | |
| 199 | 25 | 1.26464 | 145.092 | 682.479 | |
| 200 | 25 | 1.28727 | 146.749 | 714.661 | |
| 201 | 25 | 1.31652 | 148.482 | 747.574 | |
| 202 | 25 | 1.34075 | 150.28 | 781.092 | |
| 203 | 25 | 1.3722 | 152.163 | 815.398 | |
| 204 | 25 | 1.39838 | 154.118 | 850.357 | |
| 205 | 25 | 1.4325 | 156.17 | 886.17 | |
| 206 | 25 | 1.46106 | 158.305 | 922.696 | |
| 207 | 25 | 1.49852 | 160.551 | 960.159 | |
| 208 | 25 | 1.53007 | 162.892 | 998.411 | |
| 209 | 25 | 1.57179 | 165.362 | 1037.71 | |
| 210 | 25 | 1.60725 | 167.945 | 1077.89 | |
| 211 | 25 | 1.65463 | 170.683 | 1119.25 | |
| 212 | 25 | 1.6954 | 173.558 | 1161.64 | |
| 213 | 25 | 1.75069 | 176.622 | 1205.4 | |
| 214 | 25 | 1.79912 | 179.859 | 1250.38 | |
| 215 | 25 | 1.86629 | 183.342 | 1297.04 | |
| 216 | 25 | 1.92684 | 187.055 | 1345.21 | |
| 217 | 38 | 2.01409 | 191.112 | 1421.75 | |
| 218 | 60 | 2.09693 | 195.509 | 1547.56 | |
| 219 | 63 | 2.22621 | 200.465 | 1687.81 | |
| 220 | 72 | 2.36561 | 206.061 | 1858.14 | |
| 221 | 180 | 2.65209 | 213.094 | 2335.51 | |

Data Set Standard Deviation = 15.6939
Numerator = 5.45462e+006
Denominator = 1.15466e+007
W Statistic = 0.4724 = 5.45462e+006 / 1.15466e+007

5% Critical value of 0.976 exceeds 0.4724
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.4724
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: Nickel

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | -2.30259 | -2.65209 | 7.03356 | 6.10665 |
| 2 | -1.60944 | -2.36561 | 12.6297 | 9.91396 |
| 3 | -1.60944 | -2.22621 | 17.5857 | 13.4969 |
| 4 | -1.60944 | -2.09693 | 21.9828 | 16.8718 |
| 5 | -1.60944 | -2.01409 | 26.0394 | 20.1133 |
| 6 | -1.60944 | -1.92684 | 29.7521 | 23.2145 |
| 7 | -1.60944 | -1.86629 | 33.2351 | 26.2182 |
| 8 | -1.13943 | -1.79912 | 36.472 | 28.2681 |
| 9 | -1.04982 | -1.75069 | 39.5369 | 30.106 |
| 10 | -1.02165 | -1.6954 | 42.4112 | 31.8381 |
| 11 | -0.867501 | -1.65463 | 45.149 | 33.2735 |
| 12 | -0.820981 | -1.60725 | 47.7323 | 34.5931 |
| 13 | -0.776529 | -1.57179 | 50.2028 | 35.8136 |
| 14 | -0.693147 | -1.53007 | 52.5439 | 36.8742 |
| 15 | -0.634878 | -1.49852 | 54.7894 | 37.8255 |
| 16 | -0.616186 | -1.46106 | 56.9241 | 38.7258 |
| 17 | -0.544727 | -1.4325 | 58.9762 | 39.5061 |
| 18 | -0.527633 | -1.39838 | 60.9316 | 40.244 |
| 19 | -0.478036 | -1.3722 | 62.8146 | 40.8999 |
| 20 | -0.462035 | -1.34075 | 64.6122 | 41.5194 |
| 21 | -0.446287 | -1.31652 | 66.3454 | 42.1069 |
| 22 | -0.385662 | -1.28727 | 68.0025 | 42.6034 |
| 23 | -0.371064 | -1.26464 | 69.6018 | 43.0727 |
| 24 | -0.34249 | -1.23724 | 71.1326 | 43.4964 |
| 25 | -0.139262 | -1.21596 | 72.6111 | 43.6657 |
| 26 | -0.0304592 | -1.19012 | 74.0275 | 43.702 |
| 27 | 0 | -1.17 | 75.3964 | 43.702 |
| 28 | 0.0295588 | -1.1455 | 76.7086 | 43.6681 |
| 29 | 0.0295588 | -1.12639 | 77.9774 | 43.6348 |
| 30 | 0.0392207 | -1.10306 | 79.1941 | 43.5916 |
| 31 | 0.0953102 | -1.08482 | 80.371 | 43.4882 |
| 32 | 0.223144 | -1.06252 | 81.4999 | 43.2511 |
| 33 | 0.239017 | -1.04505 | 82.592 | 43.0013 |
| 34 | 0.270027 | -1.02365 | 83.6399 | 42.7249 |
| 35 | 0.34359 | -1.00687 | 84.6537 | 42.3789 |
| 36 | 0.405465 | -0.986272 | 85.6264 | 41.979 |
| 37 | 0.530628 | -0.970094 | 86.5675 | 41.4643 |
| 38 | 0.553885 | -0.950222 | 87.4704 | 40.938 |
| 39 | 0.587787 | -0.93459 | 88.3439 | 40.3886 |
| 40 | 0.636577 | -0.915365 | 89.1818 | 39.8059 |
| 41 | 0.641854 | -0.900227 | 89.9922 | 39.2281 |
| 42 | 0.741937 | -0.881587 | 90.7694 | 38.574 |
| 43 | 0.788457 | -0.866894 | 91.5209 | 37.8905 |
| 44 | 0.828552 | -0.848786 | 92.2413 | 37.1873 |
| 45 | 0.955511 | -0.834498 | 92.9377 | 36.3899 |
| 46 | 1.1314 | -0.816874 | 93.605 | 35.4657 |
| 47 | 1.38629 | -0.802956 | 94.2497 | 34.3525 |
| 48 | 1.60141 | -0.785774 | 94.8672 | 33.0942 |
| 49 | 1.60944 | -0.772193 | 95.4634 | 31.8514 |

| | | | | |
|---|---|---|---|---|
| 50 | 1.79176 | -0.755415 | 96.0341 | 30.4979 |
| 51 | 1.79176 | -0.742143 | 96.5849 | 29.1681 |
| 52 | 1.79176 | -0.725736 | 97.1116 | 27.8678 |
| 53 | 2.30259 | -0.712751 | 97.6196 | 26.2266 |
| 54 | 2.30259 | -0.696684 | 98.1049 | 24.6224 |
| 55 | 2.77259 | -0.683969 | 8.5727 | 22.7261 |
| 56 | 3.21888 | -0.668209 | 99.0192 | 20.5752 |
| 57 | 3.21888 | -0.655726 | 99.4492 | 18.4645 |
| 58 | 3.21888 | -0.640266 | 99.8592 | 16.4036 |
| 59 | 3.21888 | -0.628006 | 100.254 | 14.3821 |
| 60 | 3.21888 | -0.612813 | 100.629 | 12.4095 |
| 61 | 3.21888 | -0.60076 | 100.99 | 10.4758 |
| 62 | 3.21888 | -0.585815 | 101.333 | 8.59011 |
| 63 | 3.21888 | -0.573953 | 101.663 | 6.74262 |
| 64 | 3.21888 | -0.559237 | 101.975 | 4.94251 |
| 65 | 3.21888 | -0.547551 | 102.275 | 3.18001 |
| 66 | 3.21888 | -0.533048 | 102.559 | 1.4642 |
| 67 | 3.21888 | -0.521527 | 102.831 | -0.214535 |
| 68 | 3.21888 | -0.507221 | 103.089 | -1.84722 |
| 69 | 3.21888 | -0.49585 | 103.334 | -3.44329 |
| 70 | 3.21888 | -0.481728 | 103.566 | -4.99392 |
| 71 | 3.21888 | -0.470498 | 103.788 | -6.50839 |
| 72 | 3.21888 | -0.456542 | 103.996 | -7.97794 |
| 73 | 3.21888 | -0.445443 | 104.195 | -9.41177 |
| 74 | 3.21888 | -0.431644 | 104.381 | -10.8012 |
| 75 | 3.21888 | -0.420664 | 104.558 | -12.1552 |
| 76 | 3.21888 | -0.40701 | 104.724 | -13.4654 |
| 77 | 3.21888 | -0.396142 | 104.881 | -14.7405 |
| 78 | 3.21888 | -0.382622 | 105.027 | -15.9721 |
| 79 | 3.21888 | -0.371856 | 105.165 | -17.1691 |
| 80 | 3.21888 | -0.358459 | 105.294 | -18.3229 |
| 81 | 3.21888 | -0.347787 | 105.415 | -19.4424 |
| 82 | 3.21888 | -0.334503 | 105.527 | -20.5191 |
| 83 | 3.21888 | -0.323919 | 105.632 | -21.5618 |
| 84 | 3.21888 | -0.310738 | 105.728 | -22.562 |
| 85 | 3.21888 | -0.300232 | 105.818 | -23.5284 |
| 86 | 3.21888 | -0.287147 | 105.901 | -24.4527 |
| 87 | 3.21888 | -0.276714 | 105.977 | -25.3434 |
| 88 | 3.21888 | -0.263715 | 106.047 | -26.1923 |
| 89 | 3.21888 | -0.253347 | 106.111 | -27.0077 |
| 90 | 3.21888 | -0.240426 | 106.169 | -27.7817 |
| 91 | 3.21888 | -0.230118 | 106.222 | -28.5224 |
| 92 | 3.21888 | -0.217267 | 106.269 | -29.2217 |
| 93 | 3.21888 | -0.207012 | 106.312 | -29.8881 |
| 94 | 3.21888 | -0.194225 | 106.35 | -30.5133 |
| 95 | 3.21888 | -0.184017 | 106.383 | -31.1056 |
| 96 | 3.21888 | -0.171285 | 106.413 | -31.6569 |
| 97 | 3.21888 | -0.161119 | 106.439 | -32.1756 |
| 98 | 3.21888 | -0.148434 | 106.461 | -32.6533 |
| 99 | 3.21888 | -0.138305 | 106.48 | -33.0985 |
| 100 | 3.21888 | -0.125661 | 106.496 | -33.503 |
| 101 | 3.21888 | -0.115562 | 106.509 | -33.875 |
| 102 | 3.21888 | -0.102953 | 106.52 | -34.2064 |
| 103 | 3.21888 | -0.0928787 | 106.528 | -34.5054 |
| 104 | 3.21888 | -0.0802981 | 106.535 | -34.7638 |
| 105 | 3.21888 | -0.0702426 | 106.54 | -34.9899 |
| 106 | 3.21888 | -0.0576847 | 106.543 | -35.1756 |
| 107 | 3.21888 | -0.0476439 | 106.545 | -35.329 |
| 108 | 3.21888 | -0.0350997 | 106.546 | -35.4419 |
| 109 | 3.21888 | -0.0250691 | 106.547 | -35.5226 |
| 110 | 3.21888 | -0.0125328 | 106.547 | -35.563 |
| 111 | 3.21888 | 0 | 106.547 | -35.563 |

| | | | | |
|---|---|---|---|---|
| 112 | 3.21888 | 0.0125328 | 106.547 | -35.5226 |
| 113 | 3.21888 | 0.0250691 | 106.548 | -35.4419 |
| 114 | 3.21888 | 0.0350997 | 106.549 | -35.329 |
| 115 | 3.21888 | 0.0476439 | 106.551 | -35.1756 |
| 116 | 3.21888 | 0.0576847 | 106.555 | -34.9899 |
| 117 | 3.21888 | 0.0702426 | 106.56 | -34.7638 |
| 118 | 3.21888 | 0.0802981 | 106.566 | -34.5054 |
| 119 | 3.21888 | 0.0928787 | 106.575 | -34.2064 |
| 120 | 3.21888 | 0.102953 | 106.585 | -33.875 |
| 121 | 3.21888 | 0.115562 | 106.599 | -33.503 |
| 122 | 3.21888 | 0.125661 | 106.615 | -33.0985 |
| 123 | 3.21888 | 0.138305 | 106.634 | -32.6533 |
| 124 | 3.21888 | 0.148434 | 106.656 | -32.1756 |
| 125 | 3.21888 | 0.161119 | 106.682 | -31.6569 |
| 126 | 3.21888 | 0.171285 | 106.711 | -31.1056 |
| 127 | 3.21888 | 0.184017 | 106.745 | -30.5133 |
| 128 | 3.21888 | 0.194225 | 106.783 | -29.8881 |
| 129 | 3.21888 | 0.207012 | 106.825 | -29.2217 |
| 130 | 3.21888 | 0.217267 | 106.873 | -28.5224 |
| 131 | 3.21888 | 0.230118 | 106.926 | -27.7817 |
| 132 | 3.21888 | 0.240426 | 106.983 | -27.0077 |
| 133 | 3.21888 | 0.253347 | 107.048 | -26.1923 |
| 134 | 3.21888 | 0.263715 | 107.117 | -25.3434 |
| 135 | 3.21888 | 0.276714 | 107.194 | -24.4527 |
| 136 | 3.21888 | 0.287147 | 107.276 | -23.5284 |
| 137 | 3.21888 | 0.300232 | 107.366 | -22.562 |
| 138 | 3.21888 | 0.310738 | 107.463 | -21.5618 |
| 139 | 3.21888 | 0.323919 | 107.568 | -20.5191 |
| 140 | 3.21888 | 0.334503 | 107.68 | -19.4424 |
| 141 | 3.21888 | 0.347787 | 107.801 | -18.3229 |
| 142 | 3.21888 | 0.358459 | 107.929 | -17.1691 |
| 143 | 3.21888 | 0.371856 | 108.067 | -15.9721 |
| 144 | 3.21888 | 0.382622 | 108.214 | -14.7405 |
| 145 | 3.21888 | 0.396142 | 108.371 | -13.4654 |
| 146 | 3.21888 | 0.40701 | 108.536 | -12.1552 |
| 147 | 3.21888 | 0.420664 | 108.713 | -10.8012 |
| 148 | 3.21888 | 0.431644 | 108.9 | -9.41177 |
| 149 | 3.21888 | 0.445443 | 109.098 | -7.97794 |
| 150 | 3.21888 | 0.456542 | 109.307 | -6.50839 |
| 151 | 3.21888 | 0.470498 | 109.528 | -4.99392 |
| 152 | 3.21888 | 0.481728 | 109.76 | -3.44329 |
| 153 | 3.21888 | 0.49585 | 110.006 | -1.84722 |
| 154 | 3.21888 | 0.507221 | 110.263 | -0.214535 |
| 155 | 3.21888 | 0.521527 | 110.535 | 1.4642 |
| 156 | 3.21888 | 0.533048 | 110.819 | 3.18001 |
| 157 | 3.21888 | 0.547551 | 111.119 | 4.94251 |
| 158 | 3.21888 | 0.559237 | 111.432 | 6.74262 |
| 159 | 3.21888 | 0.573953 | 111.761 | 8.59011 |
| 160 | 3.21888 | 0.585815 | 112.104 | 10.4758 |
| 161 | 3.21888 | 0.60076 | 112.465 | 12.4095 |
| 162 | 3.21888 | 0.612813 | 112.841 | 14.3821 |
| 163 | 3.21888 | 0.628006 | 113.235 | 16.4036 |
| 164 | 3.21888 | 0.640266 | 113.645 | 18.4645 |
| 165 | 3.21888 | 0.655726 | 114.075 | 20.5752 |
| 166 | 3.21888 | 0.668209 | 114.522 | 22.7261 |
| 167 | 3.21888 | 0.68396 | 114.989 | 24.9277 |
| 168 | 3.21888 | 0.696684 | 115.475 | 27.1702 |
| 169 | 3.21888 | 0.712751 | 115.983 | 29.4645 |
| 170 | 3.21888 | 0.725736 | 116.51 | 31.8005 |
| 171 | 3.21888 | 0.742143 | 117.06 | 34.1894 |
| 172 | 3.21888 | 0.755415 | 117.631 | 36.621 |
| 173 | 3.21888 | 0.772193 | 118.227 | 39.1066 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 3.21888 | 0.785774 | | 118.845 | 41.6359 |
| 175 | 3.21888 | 0.802956 | | 119.489 | 44.2205 |
| 176 | 3.21888 | 0.816874 | | 120.157 | 46.8499 |
| 177 | 3.21888 | 0.834498 | | 120.853 | 49.5361 |
| 178 | 3.21888 | 0.848786 | | 121.574 | 52.2682 |
| 179 | 3.21888 | 0.866894 | | 122.325 | 55.0586 |
| 180 | 3.21888 | 0.881587 | | 123.102 | 57.8964 |
| 181 | 3.21888 | 0.900227 | | 123.913 | 60.7941 |
| 182 | 3.21888 | 0.915365 | | 124.751 | 63.7405 |
| 183 | 3.21888 | 0.93459 | 125.624 | 66.7488 | |
| 184 | 3.21888 | 0.950222 | | 126.527 | 69.8075 |
| 185 | 3.21888 | 0.970094 | | 127.468 | 72.9301 |
| 186 | 3.21888 | 0.986272 | | 128.441 | 76.1048 |
| 187 | 3.21888 | 1.00687 | 129.455 | 79.3458 | |
| 188 | 3.21888 | 1.02365 | 130.502 | 82.6408 | |
| 189 | 3.21888 | 1.04505 | 131.594 | 86.0047 | |
| 190 | 3.21888 | 1.06252 | 132.723 | 89.4248 | |
| 191 | 3.21888 | 1.08482 | 133.9 | 92.9167 | |
| 192 | 3.21888 | 1.10306 | 135.117 | 96.4673 | |
| 193 | 3.21888 | 1.12639 | 136.386 | 100.093 | |
| 194 | 3.21888 | 1.1455 | 137.698 | 103.78 | |
| 195 | 3.21888 | 1.17 | 139.067 | 107.546 | |
| 196 | 3.21888 | 1.19012 | 140.483 | 111.377 | |
| 197 | 3.21888 | 1.21596 | 141.962 | 115.291 | |
| 198 | 3.21888 | 1.23724 | 143.493 | 119.274 | |
| 199 | 3.21888 | 1.26464 | 145.092 | 123.344 | |
| 200 | 3.21888 | 1.28727 | 146.749 | 127.488 | |
| 201 | 3.21888 | 1.31652 | 148.482 | 131.726 | |
| 202 | 3.21888 | 1.34075 | 150.28 | 136.041 | |
| 203 | 3.21888 | 1.3722 | 152.163 | 140.458 | |
| 204 | 3.21888 | 1.39838 | 154.118 | 144.96 | |
| 205 | 3.21888 | 1.4325 | 156.17 | 149.571 | |
| 206 | 3.21888 | 1.46106 | 158.305 | 154.274 | |
| 207 | 3.21888 | 1.49852 | 160.551 | 159.097 | |
| 208 | 3.21888 | 1.53007 | 162.892 | 164.022 | |
| 209 | 3.21888 | 1.57179 | 165.362 | 169.082 | |
| 210 | 3.21888 | 1.60725 | 167.945 | 174.255 | |
| 211 | 3.21888 | 1.65463 | 170.683 | 179.581 | |
| 212 | 3.21888 | 1.6954 | 173.558 | 185.038 | |
| 213 | 3.21888 | 1.75069 | 176.622 | 190.674 | |
| 214 | 3.21888 | 1.79912 | 179.859 | 196.465 | |
| 215 | 3.21888 | 1.86629 | 183.342 | 202.472 | |
| 216 | 3.21888 | 1.92684 | 187.055 | 208.674 | |
| 217 | 3.63759 | 2.01409 | 191.112 | 216.001 | |
| 218 | 4.09434 | 2.09693 | 195.509 | 224.586 | |
| 219 | 4.14313 | 2.22621 | 200.465 | 233.81 | |
| 220 | 4.27667 | 2.36561 | 206.061 | 243.927 | |
| 221 | 5.19296 | 2.65209 | 213.094 | 257.699 | |

Data Set Standard Deviation = 1.50512
Numerator = 66408.8
Denominator = 106203
W Statistic = 0.6253 = 66408.8 / 106203

5% Critical value of 0.976 exceeds 0.6253
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.6253
Evidence of non-normality at 99% level of significance

# Kruskal-Wallis Non-Parametric Test

## Parameter: Nickel

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

# Kruskal Wallis Ranks

## Background Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-13 | 3/16/1999 | 1.79176 J | 211 |
| | 9/23/1999 | ND<3.21888 | 84.5 |
| | 3/15/2000 | ND<3.21888 | 84.5 |
| | 9/24/2003 | ND<3.21888 | 84.5 |
| | 3/11/2004 | ND<3.21888 | 84.5 |
| | 10/12/2004 | ND<3.21888 | 84.5 |
| | 4/1/2005 | ND<3.21888 | 84.5 |
| | 10/25/2005 | ND<3.21888 | 84.5 |
| | 4/29/2006 | ND<3.21888 | 84.5 |
| | 11/18/2006 | 0.239017 J | 194 |
| | 5/23/2007 | ND<3.21888 | 84.5 |
| | 11/28/2007 | ND<3.21888 | 84.5 |
| | 6/5/2008 | 0.0392207 J | 191 |
| | 11/20/2008 | ND<3.21888 | 84.5 |
| | 6/11/2009 | -1.02165 J | 171 |
| | 11/16/2009 | -0.867501 J | 172 |
| | 6/30/2010 | ND<-1.60944 | 84.5 |
| | 11/12/2010 | ND<-1.60944 U | 84.5 |

Rank Sum = 2037.5
Rank Mean = 113.194

Background Rank Sum = 2037.5
Background Rank Mean = 113.194

## Compliance Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-9 | 7/20/1995 | ND<3.21888 | 84.5 |
| | 8/24/1995 | ND<3.21888 | 84.5 |
| | 9/28/1995 | ND<3.21888 | 84.5 |
| | 10/26/1995 | ND<3.21888 | 84.5 |
| | 11/19/1996 | ND<3.21888 | 84.5 |
| | 12/19/1996 | ND<3.21888 | 84.5 |
| | 3/24/1997 | ND<3.21888 | 84.5 |
| | 9/24/1997 | ND<3.21888 | 84.5 |
| | 4/7/1998 | 4.27667 | 220 |
| | 9/23/1998 | ND<3.21888 | 84.5 |
| | 3/16/1999 | ND<3.21888 | 84.5 |
| | 9/23/1999 | ND<3.21888 | 84.5 |
| | 3/15/2000 | ND<3.21888 | 84.5 |
| | 9/24/2003 | ND<3.21888 | 84.5 |
| | 3/11/2004 | ND<3.21888 | 84.5 |
| | 10/12/2004 | ND<3.21888 | 84.5 |
| | 4/1/2005 | ND<3.21888 | 84.5 |
| | 10/25/2005 | ND<3.21888 | 84.5 |
| | 4/29/2006 | ND<3.21888 | 84.5 |
| | 11/18/2006 | ND<3.21888 | 84.5 |

| | | | |
|---|---|---|---|
| | 5/23/2007 | ND<3.21888 | 84.5 |
| | 11/28/2007 | ND<3.21888 | 84.5 |
| | 6/5/2008 | 0.0295588 J | 189 |
| | 11/20/2008 | ND<3.21888 | 84.5 |
| | 6/11/2009 | -0.139262 | 186 |
| | 11/16/2009 | -0.371064 J | 184 |
| | 6/30/2010 | -0.634878 J H | 176 |
| | 11/12/2010 | ND<-1.60944 U | 84.5 |

Rank Sum = 2898.5
Rank Mean = 103.518

| | | | |
|---|---|---|---|
| MW-8 | 7/20/1995 | ND<3.21888 | 84.5 |
| | 8/24/1995 | ND<3.21888 | 84.5 |
| | 9/28/1995 | ND<3.21888 | 84.5 |
| | 10/26/1995 | ND<3.21888 | 84.5 |
| | 11/19/1996 | ND<3.21888 | 84.5 |
| | 12/19/1996 | ND<3.21888 | 84.5 |
| | 3/24/1997 | ND<3.21888 | 84.5 |
| | 9/24/1997 | ND<3.21888 | 84.5 |
| | 4/7/1998 | 4.09434 | 218 |
| | 9/23/1998 | ND<3.21888 | 84.5 |
| | 3/16/1999 | ND<3.21888 | 84.5 |
| | 9/23/1999 | ND<3.21888 | 84.5 |
| | 3/15/2000 | ND<3.21888 | 84.5 |
| | 9/24/2003 | ND<3.21888 | 84.5 |
| | 3/11/2004 | ND<3.21888 | 84.5 |
| | 10/12/2004 | ND<3.21888 | 84.5 |
| | 4/1/2005 | ND<3.21888 | 84.5 |
| | 10/25/2005 | ND<3.21888 | 84.5 |
| | 4/29/2006 | ND<3.21888 | 84.5 |
| | 11/18/2006 | ND<3.21888 | 84.5 |
| | 5/23/2007 | ND<3.21888 | 84.5 |
| | 11/28/2007 | ND<3.21888 | 84.5 |
| | 6/5/2008 | 0.0295588 J | 190 |
| | 11/20/2008 | ND<3.21888 | 84.5 |
| | 6/11/2009 | -0.616186 J | 177 |
| | 6/30/2010 | -0.385662 J H | 183 |
| | 11/12/2010 | 0.641854 | 202 |

Rank Sum = 2829
Rank Mean = 104.778

| | | | |
|---|---|---|---|
| MW-7 | 7/20/1995 | ND<3.21888 | 84.5 |
| | 8/24/1995 | ND<3.21888 | 84.5 |
| | 9/28/1995 | ND<3.21888 | 84.5 |
| | 10/26/1995 | ND<3.21888 | 84.5 |
| | 11/19/1996 | ND<3.21888 | 84.5 |
| | 12/19/1996 | ND<3.21888 | 84.5 |
| | 3/24/1997 | ND<3.21888 | 84.5 |
| | 9/24/1997 | ND<3.21888 | 84.5 |
| | 4/7/1998 | 4.14313 | 219 |
| | 9/23/1998 | ND<3.21888 | 84.5 |
| | 3/16/1999 | 1.79176 | 212 |
| | 9/23/1999 | ND<3.21888 | 84.5 |
| | 3/15/2000 | ND<3.21888 | 84.5 |
| | 9/24/2003 | ND<3.21888 | 84.5 |
| | 3/11/2004 | ND<3.21888 | 84.5 |
| | 10/12/2004 | ND<3.21888 | 84.5 |
| | 4/1/2005 | ND<3.21888 | 84.5 |
| | 10/25/2005 | ND<3.21888 | 84.5 |
| | 4/29/2006 | ND<3.21888 | 84.5 |
| | 11/18/2006 | 0.553885 J | 199 |
| | 5/23/2007 | ND<3.21888 | 84.5 |

| | | | |
|---|---|---|---|
| | 11/28/2007 | ND<3.21888 | 84.5 |
| | 6/5/2008 | 0.636577 J | 201 |
| | 11/20/2008 | 2.77259 J | 216 |
| | 6/11/2009 | -0.34249 | 185 |
| | 11/16/2009 | 0.405465 | 197 |
| | 6/30/2010 | -0.693147 J H | 175 |
| | 11/12/2010 | 0.530628 | 198 |

Rank Sum = 3407.5
Rank Mean = 121.696

| | | | |
|---|---|---|---|
| MW-6 | 7/20/1995 | ND<3.21888 | 84.5 |
| | 8/24/1995 | ND<3.21888 | 84.5 |
| | 9/28/1995 | ND<3.21888 | 84.5 |
| | 10/26/1995 | ND<3.21888 | 84.5 |
| | 11/19/1996 | ND<3.21888 | 84.5 |
| | 12/19/1996 | ND<3.21888 | 84.5 |
| | 3/24/1997 | ND<3.21888 | 84.5 |
| | 9/24/1997 | ND<3.21888 | 84.5 |
| | 4/7/1998 | ND<3.21888 | 84.5 |
| | 9/23/1998 | ND<3.21888 | 84.5 |
| | 3/16/1999 | ND<3.21888 | 84.5 |
| | 9/23/1999 | 2.30259 J | 214 |
| | 3/15/2000 | ND<3.21888 | 84.5 |
| | 9/24/2003 | ND<3.21888 | 84.5 |
| | 3/11/2004 | ND<3.21888 | 84.5 |
| | 10/12/2004 | ND<3.21888 | 84.5 |
| | 4/1/2005 | ND<3.21888 | 84.5 |
| | 10/25/2005 | ND<3.21888 | 84.5 |
| | 4/29/2006 | ND<3.21888 | 84.5 |
| | 11/18/2006 | 1.60141 J | 209 |
| | 5/23/2007 | ND<3.21888 | 84.5 |
| | 11/28/2007 | ND<3.21888 | 84.5 |
| | 6/5/2008 | ND<3.21888 | 84.5 |
| | 11/20/2008 | ND<3.21888 | 84.5 |
| | 6/11/2009 | -1.04982 J | 170 |
| | 11/16/2009 | -1.13943 J | 169 |
| | 6/30/2010 | ND<-1.60944 | 84.5 |
| | 11/12/2010 | ND<-1.60944 U | 84.5 |

Rank Sum = 2790
Rank Mean = 99.6429

| | | | |
|---|---|---|---|
| MW-12BR | 3/16/1999 | ND<3.21888 | 84.5 |
| | 9/23/1999 | ND<3.21888 | 84.5 |
| | 3/15/2000 | ND<3.21888 | 84.5 |
| | 9/24/2003 | ND<3.21888 | 84.5 |
| | 3/11/2004 | ND<3.21888 | 84.5 |
| | 10/12/2004 | ND<3.21888 | 84.5 |
| | 4/1/2005 | ND<3.21888 | 84.5 |
| | 10/25/2005 | ND<3.21888 | 84.5 |
| | 4/29/2006 | ND<3.21888 | 84.5 |
| | 11/18/2006 | 0.828552 J | 205 |
| | 5/23/2007 | ND<3.21888 | 84.5 |
| | 11/28/2007 | 1.38629 J | 208 |
| | 6/5/2008 | 1.1314 J | 207 |
| | 11/20/2008 | ND<3.21888 | 84.5 |
| | 6/11/2009 | 0.788457 | 204 |
| | 11/16/2009 | 0.587787 | 200 |
| | 6/30/2010 | 0.741937 | 203 |
| | 11/12/2010 | 0.955511 | 206 |

Rank Sum = 2362.5
Rank Mean = 131.25

| | | | |
|---|---|---|---|
| MW-12AR | 3/16/1999 | ND<3.21888 | 84.5 |
| | 9/23/1999 | ND<3.21888 | 84.5 |
| | 3/15/2000 | ND<3.21888 | 84.5 |
| | 9/24/2003 | ND<3.21888 | 84.5 |
| | 3/11/2004 | ND<3.21888 | 84.5 |
| | 10/12/2004 | ND<3.21888 | 84.5 |
| | 4/1/2005 | ND<3.21888 | 84.5 |
| | 10/25/2005 | ND<3.21888 | 84.5 |
| | 4/29/2006 | ND<3.21888 | 84.5 |
| | 11/18/2006 | ND<3.21888 | 84.5 |
| | 5/23/2007 | ND<3.21888 | 84.5 |
| | 11/28/2007 | ND<3.21888 | 84.5 |
| | 6/5/2008 | 0.223144 J | 193 |
| | 11/20/2008 | ND<3.21888 | 84.5 |
| | 6/11/2009 | 0.0953102 | 192 |
| | 11/16/2009 | 0 | 188 |
| | 6/30/2010 | -0.0304592 J | 187 |
| | 11/12/2010 | -0.446287 J | 182 |

Rank Sum = 2040.5
Rank Mean = 113.361

| | | | |
|---|---|---|---|
| MW-11R | 7/20/1995 | ND<3.21888 | 84.5 |
| | 8/24/1995 | ND<3.21888 | 84.5 |
| | 9/28/1995 | ND<3.21888 | 84.5 |
| | 10/26/1995 | ND<3.21888 | 84.5 |
| | 11/19/1996 | ND<3.21888 | 84.5 |
| | 12/19/1996 | ND<3.21888 | 84.5 |
| | 3/24/1997 | ND<3.21888 | 84.5 |
| | 9/24/1997 | 2.30259 J | 215 |
| | 4/7/1998 | ND<3.21888 | 84.5 |
| | 9/23/1998 | ND<3.21888 | 84.5 |
| | 3/16/1999 | ND<3.21888 | 84.5 |
| | 9/23/1999 | 1.79176 J | 213 |
| | 3/15/2000 | ND<3.21888 | 84.5 |
| | 9/24/2003 | ND<3.21888 | 84.5 |
| | 3/11/2004 | ND<3.21888 | 84.5 |
| | 10/12/2004 | ND<3.21888 | 84.5 |
| | 4/1/2005 | ND<3.21888 | 84.5 |
| | 10/25/2005 | ND<3.21888 | 84.5 |
| | 4/29/2006 | ND<3.21888 | 84.5 |
| | 11/18/2006 | 0.34359 J | 196 |
| | 5/23/2007 | ND<3.21888 | 84.5 |
| | 11/28/2007 | ND<3.21888 | 84.5 |
| | 6/5/2008 | ND<3.21888 | 84.5 |
| | 11/20/2008 | ND<3.21888 | 84.5 |
| | 6/11/2009 | -0.462035 | 181 |
| | 11/16/2009 | -0.544727 | 178 |
| | 6/30/2010 | -0.478036 J H | 180 |
| | 11/12/2010 | -0.820981 J | 173 |

Rank Sum = 3110.5
Rank Mean = 111.089

| | | | |
|---|---|---|---|
| MW-10 | 7/20/1995 | ND<3.21888 | 84.5 |
| | 8/24/1995 | ND<3.21888 | 84.5 |
| | 9/28/1995 | ND<3.21888 | 84.5 |
| | 10/26/1995 | ND<3.21888 | 84.5 |
| | 11/19/1996 | ND<3.21888 | 84.5 |
| | 12/19/1996 | ND<3.21888 | 84.5 |
| | 3/24/1997 | ND<3.21888 | 84.5 |
| | 9/24/1997 | ND<3.21888 | 84.5 |
| | 4/7/1998 | 5.19296 | 221 |
| | 9/23/1998 | ND<3.21888 | 84.5 |

| | | |
|---|---|---|
| 3/16/1999 | 1.60944 J | 210 |
| 9/23/1999 | 3.63759 J | 217 |
| 3/15/2000 | ND<3.21888 | 84.5 |
| 9/24/2003 | ND<3.21888 | 84.5 |
| 3/11/2004 | ND<3.21888 | 84.5 |
| 10/12/2004 | ND<3.21888 | 84.5 |
| 4/1/2005 | ND<3.21888 | 84.5 |
| 10/25/2005 | ND<3.21888 | 84.5 |
| 4/29/2006 | ND<3.21888 | 84.5 |
| 11/18/2006 | ND<3.21888 | 84.5 |
| 5/23/2007 | ND<3.21888 | 84.5 |
| 11/28/2007 | ND<3.21888 | 84.5 |
| 6/5/2008 | 0.270027 J | 195 |
| 11/20/2008 | ND<3.21888 | 84.5 |
| 6/11/2009 | -0.527633 J | 179 |
| 11/16/2009 | ND<-2.30259 | 84.5 |
| 6/30/2010 | ND<-1.60944 | 84.5 |
| 11/12/2010 | -0.776529 J | 174 |

Rank Sum = 3055
Rank Mean = 109.107

## Calculation Results:

Kruskal-Wallis H Statistic = 4.18165
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 7.45769
95% Confidence comparison value is 15.5073 at 8 degrees of freedom
4.18165 < 15.5073 indicating no significant group difference at 5% significance level
7.45769 < 15.5073 indicating no significant group difference at 5% significance level when adjusted for ties

# Concentrations (ppb)

## Parameter: Nitrate

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 171
Total Non-Detect: 134
Percent Non-Detects: 78.3626%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 12 (66.6667%) | 3/16/1999 | ND<30 | ND<30 |
| | | | 9/23/1999 | ND<30 | ND<30 |
| | | | 3/15/2000 | ND<30 | ND<30 |
| | | | 9/24/2003 | ND<30 | ND<30 |
| | | | 3/11/2004 | ND<30 | ND<30 |
| | | | 10/12/2004 | ND<30 | ND<30 |
| | | | 4/1/2005 | ND<40 | ND<40 |
| | | | 10/25/2005 | ND<40 | ND<40 |
| | | | 4/29/2006 | 68 | 68 |
| | | | 11/18/2006 | 94 | 94 |
| | | | 5/23/2007 | 14 J | 14 J |
| | | | 11/28/2007 | ND<30 | ND<30 |
| | | | 6/5/2008 | ND<30 | ND<30 |
| | | | 11/20/2008 | ND<30 | ND<30 |
| | | | 6/11/2009 | 420 J | 420 J |
| | | | 11/16/2009 | ND<360 | ND<360 |
| | | | 6/30/2010 | 61 J | 61 J |
| | | | 11/12/2010 | 0.56 J | 0.56 J |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-8 | 18 | 15 (83.3333%) | 9/23/1998 | ND<30 | ND<30 |
| | | | 3/16/1999 | ND<30 | ND<30 |
| | | | 9/23/1999 | ND<30 | ND<30 |
| | | | 3/15/2000 | ND<30 | ND<30 |
| | | | 9/24/2003 | ND<30 | ND<30 |
| | | | 3/11/2004 | ND<30 | ND<30 |
| | | | 10/12/2004 | ND<30 | ND<30 |
| | | | 4/1/2005 | ND<40 | ND<40 |
| | | | 10/25/2005 | ND<40 | ND<40 |
| | | | 4/29/2006 | ND<40 | ND<40 |
| | | | 11/18/2006 | 17 J | 17 J |
| | | | 5/23/2007 | 35 | 35 |
| | | | 11/28/2007 | ND<30 | ND<30 |
| | | | 6/5/2008 | ND<30 | ND<30 |
| | | | 11/20/2008 | ND<30 | ND<30 |
| | | | 6/11/2009 | ND<100 | ND<100 |
| | | | 6/30/2010 | 60 J | 60 J |
| | | | 11/12/2010 | ND<0.36 U | ND<0.36 U |
| MW-11R | 20 | 15 (75%) | 9/23/1998 | ND<30 | ND<30 |
| | | | 3/16/1999 | ND<30 | ND<30 |
| | | | 9/23/1999 | ND<30 | ND<30 |
| | | | 3/15/2000 | ND<30 | ND<30 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 9/24/2003 | ND<30 | ND<30 | |
| | | | 3/11/2004 | ND<30 | ND<30 | |
| | | | 10/12/2004 | ND<30 | ND<30 | |
| | | | 4/1/2005 | ND<40 | ND<40 | |
| | | | 10/25/2005 | ND<40 | ND<40 | |
| | | | 4/29/2006 | 18 J | 18 J | |
| | | | 11/18/2006 | 60 | 60 | |
| | | | 5/23/2007 | 33 | 33 | |
| | | | 11/28/2007 | ND<30 | ND<30 | |
| | | | 6/5/2008 | ND<30 | ND<30 | |
| | | | 11/20/2008 | ND<30 | ND<30 | |
| | | | 6/11/2009 | 270 J M | 270 J M | |
| | | | 11/16/2009 | ND<360 | | ND<360 |
| | | | 11/16/2009 | ND<360 | | ND<360 |
| | | | 6/30/2010 | 55 J | 55 J | |
| | | | 11/12/2010 | ND<0.36 U | | ND<0.36 U |
| MW-12AR | 18 | 13 (72.2222%) | 3/16/1999 | | ND<30 | ND<30 |
| | | | 9/23/1999 | ND<30 | ND<30 | |
| | | | 3/15/2000 | ND<30 | ND<30 | |
| | | | 9/24/2003 | ND<30 | ND<30 | |
| | | | 3/11/2004 | ND<30 | ND<30 | |
| | | | 10/12/2004 | ND<30 | ND<30 | |
| | | | 4/1/2005 | ND<40 | ND<40 | |
| | | | 10/25/2005 | ND<40 | ND<40 | |
| | | | 4/29/2006 | 160 | 160 | |
| | | | 11/18/2006 | 276 | 276 | |
| | | | 5/23/2007 | 217 | 217 | |
| | | | 11/28/2007 | ND<30 | ND<30 | |
| | | | 6/5/2008 | ND<30 | ND<30 | |
| | | | 11/20/2008 | ND<30 | ND<30 | |
| | | | 6/11/2009 | 240 J M | 240 J M | |
| | | | 11/12/2009 | 640000 J | | 640000 J |
| | | | 6/30/2010 | ND<36 | ND<36 | |
| | | | 11/12/2010 | ND<0.36 U | | ND<0.36 U |
| MW-12BR | 19 | 15 (78.9474%) | 3/16/1999 | | ND<30 | ND<30 |
| | | | 9/23/1999 | ND<30 | ND<30 | |
| | | | 3/15/2000 | ND<30 | ND<30 | |
| | | | 9/24/2003 | ND<30 | ND<30 | |
| | | | 3/11/2004 | ND<30 | ND<30 | |
| | | | 10/12/2004 | ND<30 | ND<30 | |
| | | | 4/1/2005 | ND<40 | ND<40 | |
| | | | 10/25/2005 | ND<40 | ND<40 | |
| | | | 4/29/2006 | 33 J | 33 J | |
| | | | 11/18/2006 | 22 J | 22 J | |
| | | | 5/23/2007 | 20 J | 20 J | |
| | | | 11/28/2007 | ND<30 | ND<30 | |
| | | | 6/5/2008 | ND<30 | ND<30 | |
| | | | 11/20/2008 | ND<30 | ND<30 | |
| | | | 6/11/2009 | 150 J M | 150 J M | |
| | | | 11/16/2009 | ND<360 | | ND<360 |
| | | | 11/16/2009 | ND<360 | | ND<360 |
| | | | 6/30/2010 | ND<36 | ND<36 | |
| | | | 11/12/2010 | ND<0.36 U | | ND<0.36 U |
| MW-6 | 19 | 15 (78.9474%) | 9/23/1998 | | ND<30 | ND<30 |
| | | | 3/16/1999 | ND<30 | ND<30 | |
| | | | 9/23/1999 | ND<30 | ND<30 | |
| | | | 3/15/2000 | ND<30 | ND<30 | |
| | | | 9/24/2003 | ND<30 | ND<30 | |
| | | | 3/11/2004 | ND<30 | ND<30 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 10/12/2004 | ND<30 | ND<30 | |
| | | | 4/1/2005 | ND<40 | ND<40 | |
| | | | 10/25/2005 | ND<40 | ND<40 | |
| | | | 4/29/2006 | 55 | 55 | |
| | | | 11/18/2006 | 21 J | 21 J | |
| | | | 5/23/2007 | 36 | 36 | |
| | | | 11/28/2007 | ND<30 | ND<30 | |
| | | | 6/5/2008 | ND<30 | ND<30 | |
| | | | 11/20/2008 | ND<30 | ND<30 | |
| | | | 6/11/2009 | 200 J M | 200 J M | |
| | | | 11/16/2009 | ND<360 | | ND<360 |
| | | | 6/30/2010 | ND<36 | ND<36 | |
| | | | 11/12/2010 | ND<0.36 U | | ND<0.36 U |
| MW-7 | 20 | 15 (75%) | 9/23/1998 | | ND<30 | ND<30 |
| | | | 3/16/1999 | ND<30 | ND<30 | |
| | | | 9/23/1999 | ND<30 | ND<30 | |
| | | | 3/15/2000 | ND<30 | ND<30 | |
| | | | 9/24/2003 | ND<30 | ND<30 | |
| | | | 3/11/2004 | ND<30 | ND<30 | |
| | | | 10/12/2004 | ND<30 | ND<30 | |
| | | | 4/1/2005 | ND<40 | ND<40 | |
| | | | 10/25/2005 | ND<40 | ND<40 | |
| | | | 4/29/2006 | 22 J | 22 J | |
| | | | 11/18/2006 | 58 | 58 | |
| | | | 5/23/2007 | 74 | 74 | |
| | | | 11/28/2007 | ND<30 | ND<30 | |
| | | | 6/5/2008 | ND<30 | ND<30 | |
| | | | 11/20/2008 | ND<30 | ND<30 | |
| | | | 6/11/2009 | 180 J M | 180 J M | |
| | | | 11/16/2009 | ND<360 | | ND<360 |
| | | | 11/16/2009 | ND<360 | | ND<360 |
| | | | 6/30/2010 | ND<36 | ND<36 | |
| | | | 11/12/2010 | 0.46 J | 0.46 J | |
| MW-9 | 19 | 16 (84.2105%) | 9/23/1998 | | ND<30 | ND<30 |
| | | | 3/16/1999 | ND<30 | ND<30 | |
| | | | 9/23/1999 | ND<30 | ND<30 | |
| | | | 3/15/2000 | ND<30 | ND<30 | |
| | | | 9/24/2003 | ND<30 | ND<30 | |
| | | | 3/11/2004 | ND<30 | ND<30 | |
| | | | 10/12/2004 | ND<30 | ND<30 | |
| | | | 4/1/2005 | ND<40 | ND<40 | |
| | | | 10/25/2005 | ND<40 | ND<40 | |
| | | | 4/29/2006 | 10 J | 10 J | |
| | | | 11/18/2006 | 15 J | 15 J | |
| | | | 5/23/2007 | 29 J | 29 J | |
| | | | 11/28/2007 | ND<30 | ND<30 | |
| | | | 6/5/2008 | ND<30 | ND<30 | |
| | | | 11/20/2008 | ND<30 | ND<30 | |
| | | | 6/11/2009 | ND<100 | | ND<100 |
| | | | 11/16/2009 | ND<360 | | ND<360 |
| | | | 6/30/2010 | ND<36 | ND<36 | |
| | | | 11/12/2010 | ND<0.36 U | | ND<0.36 U |
| MW-10 | 20 | 18 (90%) | 9/23/1998 | | ND<30 | ND<30 |
| | | | 3/16/1999 | ND<30 | ND<30 | |
| | | | 9/23/1999 | ND<30 | ND<30 | |
| | | | 3/15/2000 | ND<30 | ND<30 | |
| | | | 9/24/2003 | ND<30 | ND<30 | |
| | | | 3/11/2004 | ND<30 | ND<30 | |
| | | | 10/12/2004 | ND<30 | ND<30 | |

| | | | |
|---|---|---|---|
| 4/1/2005 | ND<40 | ND<40 | |
| 10/25/2005 | | ND<40 | ND<40 |
| 4/29/2006 | | 38 J | 38 J |
| 11/18/2006 | | ND<30 | ND<30 |
| 5/23/2007 | | 38 | 38 |
| 11/28/2007 | | ND<30 | ND<30 |
| 6/5/2008 | ND<30 | ND<30 | |
| 11/20/2008 | | ND<30 | ND<30 |
| 6/11/2009 | | ND<100 | ND<100 |
| 11/16/2009 | | ND<360 | ND<360 |
| 11/16/2009 | | ND<360 | ND<360 |
| 6/30/2010 | | ND<36 | ND<36 |
| 11/12/2010 | | ND<0.36 U | ND<0.36 U |

There are 0 unused locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: Nitrate

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 171

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.18 | -2.575836 | 3.63492 | -0.46365 |
| 2 | 0.18 | -2.290361 | 1.8807 | -0.875915 |
| 3 | 0.18 | -2.120071 | 6.3754 | -1.25753 |
| 4 | 0.18 | -1.995392 | 0.357 | -1.6167 |
| 5 | 0.18 | -1.8957 | 23.9506 | -1.95792 |
| 6 | 0.18 | -1.825012 | 7.2813 | -2.28643 |
| 7 | 0.18 | -1.750693 | 0.3462 | -2.60155 |
| 8 | 0.46 | -1.684943 | 3.1852 | -3.37662 |
| 9 | 0.56 | -1.625763 | 5.8283 | -4.28705 |
| 10 | 10 | -1.571793 | 8.2988 | -20.0049 |
| 11 | 14 | -1.530074 | 0.6399 | -41.4259 |
| 12 | 15 | -1.483284 | 2.8401 | -63.6751 |
| 13 | 15 | -1.439534 | 4.9123 | -85.268 |
| 14 | 15 | -1.398384 | 6.8678 | -106.244 |
| 15 | 15 | -1.359464 | 8.7159 | -126.636 |
| 16 | 15 | -1.322515 | 0.4649 | -146.473 |
| 17 | 15 | -1.293035 | 2.1368 | -165.869 |
| 18 | 15 | -1.259085 | 3.7221 | -184.755 |
| 19 | 15 | -1.226535 | 5.2265 | -203.153 |
| 20 | 15 | -1.195225 | 6.6551 | -221.081 |
| 21 | 15 | -1.165055 | 8.0124 | -238.557 |
| 22 | 15 | -1.140695 | 9.3136 | -255.667 |
| 23 | 15 | -1.112326 | 0.5508 | -272.352 |
| 24 | 15 | -1.084826 | 1.7277 | -288.624 |
| 25 | 15 | -1.058126 | 2.8473 | -304.496 |
| 26 | 15 | -1.032156 | 3.9126 | -319.979 |
| 27 | 15 | -1.011046 | 4.9348 | -335.144 |
| 28 | 15 | -0.986272 | 65.9076 | -349.938 |
| 29 | 15 | -0.9621 | 66.8332 | -364.37 |
| 30 | 15 | -0.938476 | 67.7139 | -378.447 |
| 31 | 15 | -0.915365 | 68.5518 | -392.177 |
| 32 | 15 | -0.892733 | 69.3488 | -405.568 |
| 33 | 15 | -0.874218 | 70.1131 | -418.681 |
| 34 | 15 | -0.852385 | 70.8396 | -431.467 |
| 35 | 15 | -0.830953 | 71.5301 | -443.932 |
| 36 | 15 | -0.809896 | 72.186 | -456.08 |
| 37 | 15 | -0.789191 | 72.8089 | -467.918 |
| 38 | 15 | -0.772193 | 73.4051 | -479.501 |
| 39 | 15 | -0.752084 | 73.9708 | -490.782 |
| 40 | 15 | -0.732275 | 74.507 | -501.766 |
| 41 | 15 | -0.712751 | 75.015 | -512.457 |
| 42 | 15 | -0.693493 | 75.4959 | -522.86 |
| 43 | 15 | -0.674497 | 5.9509 | -532.977 |
| 44 | 15 | -0.658838 | 76.3849 | -542.86 |
| 45 | 15 | -0.640266 | 76.7949 | -552.464 |
| 46 | 15 | -0.621911 | 77.1817 | -561.792 |
| 47 | 15 | -0.603765 | 77.5462 | -570.849 |
| 48 | 15 | -0.585815 | 77.8894 | -579.636 |
| 49 | 15 | -0.570999 | 78.2154 | -588.201 |

| | | | | |
|---|---|---|---|---|
| 50 | 15 | -0.553384 | 78.5216 | -596.502 |
| 51 | 15 | -0.5359478.8089 | -604.541 | |
| 52 | 15 | -0.518658 | 79.0779 | -612.321 |
| 53 | 15 | -0.501527 | 79.3294 | -619.844 |
| 54 | 15 | -0.487364 | 79.5669 | -627.154 |
| 55 | 15 | -0.470498 | 79.7883 | -634.212 |
| 56 | 15 | -0.453763 | 79.9942 | -641.018 |
| 57 | 15 | -0.437153 | 80.1853 | -647.575 |
| 58 | 15 | -0.420664 | 80.3623 | -653.885 |
| 59 | 15 | -0.4042980.5257 | -659.95 | |
| 60 | 15 | -0.390726 | 80.6784 | -665.811 |
| 61 | 15 | -0.374544 | 80.8187 | -671.429 |
| 62 | 15 | -0.358459 | 80.9472 | -676.806 |
| 63 | 15 | -0.342466 | 81.0644 | -681.943 |
| 64 | 15 | -0.326561 | 81.1711 | -686.841 |
| 65 | 15 | -0.3133781.2693 | -691.542 | |
| 66 | 15 | -0.297612 | 81.3579 | -696.006 |
| 67 | 15 | -0.281926 | 81.4373 | -700.235 |
| 68 | 15 | -0.266311 | 81.5083 | -704.229 |
| 69 | 15 | -0.250759 | 81.5711 | -707.991 |
| 70 | 15 | -0.237847 | 81.6277 | -711.558 |
| 71 | 15 | -0.222403 | 81.6772 | -714.894 |
| 72 | 15 | -0.207012 | 81.72 | -718 |
| 73 | 15 | -0.191671 | 81.7568 | -720.875 |
| 74 | 15 | -0.176374 | 81.7879 | -723.52 |
| 75 | 15 | -0.161119 | 81.8138 | -725.937 |
| 76 | 15 | -0.148434 | 81.8359 | -728.164 |
| 77 | 15 | -0.133244 | 81.8536 | -730.162 |
| 78 | 15 | -0.118085 | 81.8676 | -731.934 |
| 79 | 15 | -0.102953 | 81.8782 | -733.478 |
| 80 | 15 | -0.0878447 | 81.8859 | -734.795 |
| 81 | 15 | -0.0752698 | 81.8915 | -735.925 |
| 82 | 15 | -0.0601949 | 81.8952 | -736.827 |
| 83 | 15 | -0.0451348 | 81.8972 | -737.504 |
| 84 | 15 | -0.0300838 | 81.8981 | -737.956 |
| 85 | 15 | -0.0150408 | 81.8983 | -738.181 |
| 86 | 15 | 0 81.8983 | -738.181 | |
| 87 | 15 | 0.0150408 | 81.8986 | -737.956 |
| 88 | 15 | 0.0300838 | 81.8995 | -737.504 |
| 89 | 15 | 0.0451348 | 81.9015 | -736.827 |
| 90 | 15 | 0.0601949 | 81.9051 | -735.925 |
| 91 | 15 | 0.0752698 | 81.9108 | -734.795 |
| 92 | 15 | 0.0878447 | 81.9185 | -733.478 |
| 93 | 15 | 0.102953 | 81.9291 | -731.934 |
| 94 | 15 | 0.118085 | 81.9431 | -730.162 |
| 95 | 15 | 0.133244 | 81.9608 | -728.164 |
| 96 | 15 | 0.148434 | 81.9828 | -725.937 |
| 97 | 15 | 0.161119 | 82.0088 | -723.52 |
| 98 | 15 | 0.176374 | 82.0399 | -720.875 |
| 99 | 15 | 0.191671 | 82.0766 | -718 |
| 100 | 15 | 0.207012 | 82.1195 | -714.894 |
| 101 | 17 | 0.222403 | 82.169 | -711.114 |
| 102 | 18 | 0.237847 | 82.2255 | -706.832 |
| 103 | 18 | 0.250759 | 82.2884 | -702.319 |
| 104 | 18 | 0.266311 | 82.3593 | -697.525 |
| 105 | 18 | 0.281926 | 82.4388 | -692.45 |
| 106 | 18 | 0.297612 | 82.5274 | -687.093 |
| 107 | 18 | 0.31337 82.6256 | -681.453 | |
| 108 | 18 | 0.326561 | 82.7322 | -675.575 |
| 109 | 20 | 0.342466 | 82.8495 | -668.725 |
| 110 | 20 | 0.358459 | 82.978 | -661.556 |
| 111 | 20 | 0.374544 | 83.1183 | -654.065 |

| | | | | | |
|---|---|---|---|---|---|
| 112 | 20 | 0.390726 | | 83.271 | -646.251 |
| 113 | 20 | 0.40429 | 83.4344 | -638.165 | |
| 114 | 20 | 0.420664 | | 83.6114 | -629.752 |
| 115 | 20 | 0.437153 | | 83.8025 | -621.009 |
| 116 | 20 | 0.453763 | | 84.0084 | -611.933 |
| 117 | 20 | 0.470498 | | 84.2297 | -602.523 |
| 118 | 20 | 0.487364 | | 84.4673 | -592.776 |
| 119 | 20 | 0.501527 | | 84.7188 | -582.746 |
| 120 | 20 | 0.518658 | | 84.9878 | -572.372 |
| 121 | 20 | 0.53594 | 85.275 | -561.654 | |
| 122 | 20 | 0.553384 | | 85.5813 | -550.586 |
| 123 | 20 | 0.570999 | | 85.9073 | -539.166 |
| 124 | 20 | 0.585815 | | 86.2505 | -527.45 |
| 125 | 20 | 0.603765 | | 86.615 | -515.374 |
| 126 | 20 | 0.621911 | | 87.0018 | -502.936 |
| 127 | 20 | 0.640266 | | 87.4117 | -490.131 |
| 128 | 20 | 0.658838 | | 87.8458 | -476.954 |
| 129 | 21 | 0.67449 | 88.3007 | -462.79 | |
| 130 | 22 | 0.693493 | | 88.7817 | -447.533 |
| 131 | 22 | 0.712751 | | 89.2897 | -431.852 |
| 132 | 29 | 0.732275 | | 89.8259 | -410.616 |
| 133 | 33 | 0.752084 | | 90.3915 | -385.798 |
| 134 | 33 | 0.772193 | | 90.9878 | -360.315 |
| 135 | 35 | 0.789191 | | 91.6106 | -332.694 |
| 136 | 36 | 0.809896 | | 92.2666 | -303.537 |
| 137 | 38 | 0.830953 | | 92.9571 | -271.961 |
| 138 | 38 | 0.852385 | | 93.6836 | -239.57 |
| 139 | 50 | 0.874218 | | 94.4479 | -195.86 |
| 140 | 50 | 0.892733 | | 95.2448 | -151.223 |
| 141 | 50 | 0.915365 | | 96.0827 | -105.455 |
| 142 | 55 | 0.938476 | | 96.9635 | -53.8385 |
| 143 | 55 | 0.9621 | 97.8891 | -0.923023 | |
| 144 | 58 | 0.986272 | | 98.8618 | 56.2808 |
| 145 | 60 | 1.01104 | 99.884 | 116.943 | |
| 146 | 60 | 1.03215 | 100.949 | 178.872 | |
| 147 | 61 | 1.05812 | 102.069 | 243.418 | |
| 148 | 68 | 1.08482 | 103.246 | 317.185 | |
| 149 | 74 | 1.11232 | 104.483 | 399.497 | |
| 150 | 94 | 1.14069 | 105.784 | 506.722 | |
| 151 | 150 | 1.16505 | 107.142 | 681.479 | |
| 152 | 160 | 1.19522 | 108.57 | 872.714 | |
| 153 | 180 | 1.22653 | 110.075 | 1093.49 | |
| 154 | 180 | 1.25908 | 111.66 | 1320.12 | |
| 155 | 180 | 1.29303 | 113.332 | 1552.87 | |
| 156 | 180 | 1.32251 | 115.081 | 1790.92 | |
| 157 | 180 | 1.35946 | 116.929 | 2035.62 | |
| 158 | 180 | 1.39838 | 118.884 | 2287.33 | |
| 159 | 180 | 1.43953 | 120.957 | 2546.45 | |
| 160 | 180 | 1.48328 | 123.157 | 2813.44 | |
| 161 | 180 | 1.53007 | 125.498 | 3088.85 | |
| 162 | 180 | 1.57179 | 127.968 | 3371.77 | |
| 163 | 180 | 1.62576 | 130.611 | 3664.41 | |
| 164 | 180 | 1.68494 | 133.45 | 3967.7 | |
| 165 | 200 | 1.75069 | 136.515 | 4317.84 | |
| 166 | 217 | 1.82501 | 139.846 | 4713.86 | |
| 167 | 240 | 1.8957 | 143.44 | 5168.83 | |
| 168 | 270 | 1.99539 | 147.421 | 5707.59 | |
| 169 | 276 | 2.12007 | 151.916 | 6292.72 | |
| 170 | 420 | 2.29036 | 157.162 | 7254.68 | |
| 171 | 640000 | 2.57583 | 163.797 | 1.65579e+006 | |

Data Set Standard Deviation = 48938.9
Numerator = 2.74164e+012
Denominator = 6.66903e+013
W Statistic = 0.04111 = 2.74164e+012 / 6.66903e+013

5% Critical value of 0.976 exceeds 0.04111
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.04111
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: Nitrate

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 171

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | -1.7148 | -2.57583 | 6.63492 | 4.41704 |
| 2 | -1.7148 | -2.29036 | 11.8807 | 8.34455 |
| 3 | -1.7148 | -2.12007 | 16.3754 | 11.98 |
| 4 | -1.7148 | -1.99539 | 20.357 | 15.4017 |
| 5 | -1.7148 | -1.8957 | 23.9506 | 18.6525 |
| 6 | -1.7148 | -1.82501 | 27.2813 | 21.782 |
| 7 | -1.7148 | -1.75069 | 30.3462 | 24.7841 |
| 8 | -0.776529 | -1.68494 | 33.1852 | 26.0925 |
| 9 | -0.579818 | -1.62576 | 35.8283 | 27.0351 |
| 10 | 2.30259 | -1.57179 | 38.2988 | 23.4159 |
| 11 | 2.63906 | -1.53007 | 40.6399 | 19.378 |
| 12 | 2.70805 | -1.48328 | 42.8401 | 15.3612 |
| 13 | 2.70805 | -1.43953 | 44.9123 | 11.4629 |
| 14 | 2.70805 | -1.39838 | 46.8678 | 7.67602 |
| 15 | 2.70805 | -1.35946 | 48.7159 | 3.99452 |
| 16 | 2.70805 | -1.32251 | 50.4649 | 0.413113 |
| 17 | 2.70805 | -1.29303 | 52.1368 | -3.08849 |
| 18 | 2.70805 | -1.25908 | 53.7221 | -6.49815 |
| 19 | 2.70805 | -1.22653 | 55.2265 | -9.81965 |
| 20 | 2.70805 | -1.19522 | 56.6551 | -13.0564 |
| 21 | 2.70805 | -1.16505 | 58.0124 | -16.2114 |
| 22 | 2.70805 | -1.14069 | 59.3136 | -19.3004 |
| 23 | 2.70805 | -1.11232 | 60.5508 | -22.3126 |
| 24 | 2.70805 | -1.08482 | 61.7277 | -25.2504 |
| 25 | 2.70805 | -1.05812 | 62.8473 | -28.1158 |
| 26 | 2.70805 | -1.03215 | 63.9126 | -30.911 |
| 27 | 2.70805 | -1.01104 | 64.9348 | -33.6489 |
| 28 | 2.70805 | -0.986272 | 65.9076 | -36.3198 |
| 29 | 2.70805 | -0.9621 | 66.8332 | -38.9252 |
| 30 | 2.70805 | -0.938476 | 67.7139 | -41.4666 |
| 31 | 2.70805 | -0.915365 | 68.5518 | -43.9455 |
| 32 | 2.70805 | -0.892733 | 69.3488 | -46.363 |
| 33 | 2.70805 | -0.874218 | 70.1131 | -48.7305 |
| 34 | 2.70805 | -0.852385 | 70.8396 | -51.0388 |
| 35 | 2.70805 | -0.830953 | 71.5301 | -53.289 |
| 36 | 2.70805 | -0.809896 | 72.186 | -55.4823 |
| 37 | 2.70805 | -0.789191 | 72.8089 | -57.6194 |
| 38 | 2.70805 | -0.772193 | 73.4051 | -59.7106 |
| 39 | 2.70805 | -0.752084 | 73.9708 | -61.7473 |
| 40 | 2.70805 | -0.732275 | 74.507 | -63.7303 |
| 41 | 2.70805 | -0.712751 | 75.015 | -65.6605 |
| 42 | 2.70805 | -0.693493 | 75.4959 | -67.5385 |
| 43 | 2.70805 | -0.674497 | 75.9509 | -69.365 |
| 44 | 2.70805 | -0.658838 | 76.3849 | -71.1492 |
| 45 | 2.70805 | -0.640266 | 76.7949 | -72.8831 |
| 46 | 2.70805 | -0.621911 | 77.1817 | -74.5672 |
| 47 | 2.70805 | -0.603765 | 77.5462 | -76.2023 |
| 48 | 2.70805 | -0.585815 | 77.8894 | -77.7887 |
| 49 | 2.70805 | -0.570999 | 78.2154 | -79.335 |

| | | | | |
|---|---|---|---|---|
| 50 | 2.70805 | -0.553384 | 78.5216 | -80.8336 |
| 51 | 2.70805 | -0.5359478.8089 | -82.2849 | |
| 52 | 2.70805 | -0.518658 | 79.0779 | -83.6895 |
| 53 | 2.70805 | -0.501527 | 79.3294 | -85.0476 |
| 54 | 2.70805 | -0.487364 | 79.5669 | -86.3674 |
| 55 | 2.70805 | -0.470498 | 79.7883 | -87.6416 |
| 56 | 2.70805 | -0.453763 | 79.9942 | -88.8704 |
| 57 | 2.70805 | -0.437153 | 80.1853 | -90.0542 |
| 58 | 2.70805 | -0.420664 | 80.3623 | -91.1934 |
| 59 | 2.70805 | -0.4042980.5257 | -92.2882 | |
| 60 | 2.70805 | -0.390726 | 80.6784 | -93.3463 |
| 61 | 2.70805 | -0.374544 | 80.8187 | -94.3606 |
| 62 | 2.70805 | -0.358459 | 80.9472 | -95.3313 |
| 63 | 2.70805 | -0.342466 | 81.0644 | -96.2588 |
| 64 | 2.70805 | -0.326561 | 81.1711 | -97.1431 |
| 65 | 2.70805 | -0.3133781.2693 | -97.9917 | |
| 66 | 2.70805 | -0.297612 | 81.3579 | -98.7977 |
| 67 | 2.70805 | -0.281926 | 81.4373 | -99.5611 |
| 68 | 2.70805 | -0.266311 | 81.5083 | -100.282 |
| 69 | 2.70805 | -0.250759 | 81.5711 | -100.961 |
| 70 | 2.70805 | -0.237847 | 81.6277 | -101.605 |
| 71 | 2.70805 | -0.222403 | 81.6772 | -102.208 |
| 72 | 2.70805 | -0.207012 | 81.72 | -102.768 |
| 73 | 2.70805 | -0.191671 | 81.7568 | -103.287 |
| 74 | 2.70805 | -0.176374 | 81.7879 | -103.765 |
| 75 | 2.70805 | -0.161119 | 81.8138 | -104.201 |
| 76 | 2.70805 | -0.148434 | 81.8359 | -104.603 |
| 77 | 2.70805 | -0.133244 | 81.8536 | -104.964 |
| 78 | 2.70805 | -0.118085 | 81.8676 | -105.284 |
| 79 | 2.70805 | -0.102953 | 81.8782 | -105.563 |
| 80 | 2.70805 | -0.0878447 | 81.8859 | -105.801 |
| 81 | 2.70805 | -0.0752698 | 81.8915 | -106.004 |
| 82 | 2.70805 | -0.0601949 | 81.8952 | -106.167 |
| 83 | 2.70805 | -0.0451348 | 81.8972 | -106.29 |
| 84 | 2.70805 | -0.0300838 | 81.8981 | -106.371 |
| 85 | 2.70805 | -0.0150408 | 81.8983 | -106.412 |
| 86 | 2.70805 | 0 | 81.8983 | -106.412 |
| 87 | 2.70805 | 0.0150408 | 81.8986 | -106.371 |
| 88 | 2.70805 | 0.0300838 | 81.8995 | -106.29 |
| 89 | 2.70805 | 0.0451348 | 81.9015 | -106.167 |
| 90 | 2.70805 | 0.0601949 | 81.9051 | -106.004 |
| 91 | 2.70805 | 0.0752698 | 81.9108 | -105.801 |
| 92 | 2.70805 | 0.0878447 | 81.9185 | -105.563 |
| 93 | 2.70805 | 0.102953 | 81.9291 | -105.284 |
| 94 | 2.70805 | 0.118085 | 81.9431 | -104.964 |
| 95 | 2.70805 | 0.133244 | 81.9608 | -104.603 |
| 96 | 2.70805 | 0.148434 | 81.9828 | -104.201 |
| 97 | 2.70805 | 0.161119 | 82.0088 | -103.765 |
| 98 | 2.70805 | 0.176374 | 82.0399 | -103.287 |
| 99 | 2.70805 | 0.191671 | 82.0766 | -102.768 |
| 100 | 2.70805 | 0.207012 | 82.1195 | -102.208 |
| 101 | 2.83321 | 0.222403 | 82.169 | -101.578 |
| 102 | 2.89037 | 0.237847 | 82.2255 | -100.89 |
| 103 | 2.89037 | 0.250759 | 82.2884 | -100.165 |
| 104 | 2.89037 | 0.266311 | 82.3593 | -99.3957 |
| 105 | 2.89037 | 0.281926 | 82.4388 | -98.5808 |
| 106 | 2.89037 | 0.297612 | 82.5274 | -97.7206 |
| 107 | 2.89037 | 0.31337 82.6256 | -96.8148 | |
| 108 | 2.89037 | 0.326561 | 82.7322 | -95.8709 |
| 109 | 2.99573 | 0.342466 | 82.8495 | -94.845 |
| 110 | 2.99573 | 0.358459 | 82.978 | -93.7712 |
| 111 | 2.99573 | 0.374544 | 83.1183 | -92.6491 |

| | | | | | |
|---|---|---|---|---|---|
| 112 | 2.99573 | 0.390726 | | 83.271 | -91.4786 |
| 113 | 2.99573 | 0.40429 | 83.4344 | -90.2675 | |
| 114 | 2.99573 | 0.420664 | | 83.6114 | -89.0073 |
| 115 | 2.99573 | 0.437153 | | 83.8025 | -87.6977 |
| 116 | 2.99573 | 0.453763 | | 84.0084 | -86.3383 |
| 117 | 2.99573 | 0.470498 | | 84.2297 | -84.9288 |
| 118 | 2.99573 | 0.487364 | | 84.4673 | -83.4688 |
| 119 | 2.99573 | 0.501527 | | 84.7188 | -81.9664 |
| 120 | 2.99573 | 0.518658 | | 84.9878 | -80.4126 |
| 121 | 2.99573 | 0.53594 | 85.275 | -78.8071 | |
| 122 | 2.99573 | 0.553384 | | 85.5813 | -77.1493 |
| 123 | 2.99573 | 0.570999 | | 85.9073 | -75.4388 |
| 124 | 2.99573 | 0.585815 | | 86.2505 | -73.6838 |
| 125 | 2.99573 | 0.603765 | | 86.615 | -71.8751 |
| 126 | 2.99573 | 0.621911 | | 87.0018 | -70.012 |
| 127 | 2.99573 | 0.640266 | | 87.4117 | -68.0939 |
| 128 | 2.99573 | 0.658838 | | 87.8458 | -66.1202 |
| 129 | 3.04452 | 0.67449 | 88.3007 | -64.0667 | |
| 130 | 3.09104 | 0.693493 | | 88.7817 | -61.9231 |
| 131 | 3.09104 | 0.712751 | | 89.2897 | -59.72 |
| 132 | 3.3673 | 0.732275 | | 89.8259 | -57.2542 |
| 133 | 3.49651 | 0.752084 | | 90.3915 | -54.6245 |
| 134 | 3.49651 | 0.772193 | | 90.9878 | -51.9246 |
| 135 | 3.55535 | 0.789191 | | 91.6106 | -49.1187 |
| 136 | 3.58352 | 0.809896 | | 92.2666 | -46.2164 |
| 137 | 3.63759 | 0.830953 | | 92.9571 | -43.1938 |
| 138 | 3.63759 | 0.852385 | | 93.6836 | -40.0931 |
| 139 | 3.91202 | 0.874218 | | 94.4479 | -36.6732 |
| 140 | 3.91202 | 0.892733 | | 95.2448 | -33.1808 |
| 141 | 3.91202 | 0.915365 | | 96.0827 | -29.5999 |
| 142 | 4.00733 | 0.938476 | | 96.9635 | -25.8391 |
| 143 | 4.00733 | 0.9621 | 97.8891 | -21.9836 | |
| 144 | 4.06044 | 0.986272 | | 98.8618 | -17.9789 |
| 145 | 4.09434 | 1.01104 | 99.884 | -13.8394 | |
| 146 | 4.09434 | 1.03215 | 100.949 | -9.61339 | |
| 147 | 4.11087 | 1.05812 | 102.069 | -5.26359 | |
| 148 | 4.21951 | 1.08482 | 103.246 | -0.686171 | |
| 149 | 4.30407 | 1.11232 | 104.483 | 4.10133 | |
| 150 | 4.54329 | 1.14069 | 105.784 | 9.28381 | |
| 151 | 5.01064 | 1.16505 | 107.142 | 15.1214 | |
| 152 | 5.07517 | 1.19522 | 108.57 | 21.1874 | |
| 153 | 5.19296 | 1.22653 | 110.075 | 27.5567 | |
| 154 | 5.19296 | 1.25908 | 111.66 | 34.0951 | |
| 155 | 5.19296 | 1.29303 | 113.332 | 40.8097 | |
| 156 | 5.19296 | 1.32251 | 115.081 | 47.6775 | |
| 157 | 5.19296 | 1.35946 | 116.929 | 54.7371 | |
| 158 | 5.19296 | 1.39838 | 118.884 | 61.9988 | |
| 159 | 5.19296 | 1.43953 | 120.957 | 69.4742 | |
| 160 | 5.19296 | 1.48328 | 123.157 | 77.1768 | |
| 161 | 5.19296 | 1.53007 | 125.498 | 85.1224 | |
| 162 | 5.19296 | 1.57179 | 127.968 | 93.2846 | |
| 163 | 5.19296 | 1.62576 | 130.611 | 101.727 | |
| 164 | 5.19296 | 1.68494 | 133.45 | 110.477 | |
| 165 | 5.29832 | 1.75069 | 136.515 | 119.753 | |
| 166 | 5.3799 | 1.82501 | 139.846 | 129.571 | |
| 167 | 5.48064 | 1.8957 | 143.44 | 139.961 | |
| 168 | 5.59842 | 1.99539 | 147.421 | 151.132 | |
| 169 | 5.6204 | 2.12007 | 151.916 | 163.047 | |
| 170 | 6.04025 | 2.29036 | 157.162 | 176.882 | |
| 171 | 13.3692 | 2.57583 | 163.797 | 211.319 | |

Data Set Standard Deviation = 1.57434
Numerator = 44655.5
Denominator = 69015.8
W Statistic = 0.647033 = 44655.5 / 69015.8

5% Critical value of 0.976 exceeds 0.647033
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.647033
Evidence of non-normality at 99% level of significance

# Kruskal-Wallis Non-Parametric Test

## Parameter: Nitrate

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

# Kruskal Wallis Ranks

## Background Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-13 | 3/16/1999 | ND<2.70805 | 67.5 |
| | 9/23/1999 | ND<2.70805 | 67.5 |
| | 3/15/2000 | ND<2.70805 | 67.5 |
| | 9/24/2003 | ND<2.70805 | 67.5 |
| | 3/11/2004 | ND<2.70805 | 67.5 |
| | 10/12/2004 | ND<2.70805 | 67.5 |
| | 4/1/2005 | ND<2.99573 | 67.5 |
| | 10/25/2005 | ND<2.99573 | 67.5 |
| | 4/29/2006 | 4.21951 | 159 |
| | 11/18/2006 | 4.54329 | 161 |
| | 5/23/2007 | 2.63906 J | 138 |
| | 11/28/2007 | ND<2.70805 | 67.5 |
| | 6/5/2008 | ND<2.70805 | 67.5 |
| | 11/20/2008 | ND<2.70805 | 67.5 |
| | 6/11/2009 | 6.04025 J | 170 |
| | 11/16/2009 | ND<5.19296 | 67.5 |
| | 6/30/2010 | 4.11087 J | 158 |
| | 11/12/2010 | -0.579818 J | 136 |

Rank Sum = 1732
Rank Mean = 96.2222

Background Rank Sum = 1732
Background Rank Mean = 96.2222

## Compliance Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-8 | 9/23/1998 | ND<2.70805 | 67.5 |
| | 3/16/1999 | ND<2.70805 | 67.5 |
| | 9/23/1999 | ND<2.70805 | 67.5 |
| | 3/15/2000 | ND<2.70805 | 67.5 |
| | 9/24/2003 | ND<2.70805 | 67.5 |
| | 3/11/2004 | ND<2.70805 | 67.5 |
| | 10/12/2004 | ND<2.70805 | 67.5 |
| | 4/1/2005 | ND<2.99573 | 67.5 |
| | 10/25/2005 | ND<2.99573 | 67.5 |
| | 4/29/2006 | ND<2.99573 | 67.5 |
| | 11/18/2006 | 2.83321 J | 140 |
| | 5/23/2007 | 3.55535 | 149 |
| | 11/28/2007 | ND<2.70805 | 67.5 |
| | 6/5/2008 | ND<2.70805 | 67.5 |
| | 11/20/2008 | ND<2.70805 | 67.5 |
| | 6/11/2009 | ND<3.91202 | 67.5 |
| | 6/30/2010 | 4.09434 J | 156 |
| | 11/12/2010 | ND<-1.7148 U | 67.5 |

Rank Sum = 1457.5
Rank Mean = 80.9722

| | | | |
|---|---|---|---|
| MW-11R | 9/23/1998 | ND<2.70805 | 67.5 |
| | 3/16/1999 | ND<2.70805 | 67.5 |
| | 9/23/1999 | ND<2.70805 | 67.5 |
| | 3/15/2000 | ND<2.70805 | 67.5 |
| | 9/24/2003 | ND<2.70805 | 67.5 |
| | 3/11/2004 | ND<2.70805 | 67.5 |
| | 10/12/2004 | ND<2.70805 | 67.5 |
| | 4/1/2005 | ND<2.99573 | 67.5 |
| | 10/25/2005 | ND<2.99573 | 67.5 |
| | 4/29/2006 | 2.89037 J | 141 |
| | 11/18/2006 | 4.09434 | 157 |
| | 5/23/2007 | 3.49651 | 147 |
| | 11/28/2007 | ND<2.70805 | 67.5 |
| | 6/5/2008 | ND<2.70805 | 67.5 |
| | 11/20/2008 | ND<2.70805 | 67.5 |
| | 6/11/2009 | 5.59842 J M | 168 |
| | 11/16/2009 | ND<5.19296 | 67.5 |
| | 11/16/2009 | ND<5.19296 | 67.5 |
| | 6/30/2010 | 4.00733 J | 153 |
| | 11/12/2010 | ND<-1.7148 U | 67.5 |

Rank Sum = 1778.5
Rank Mean = 88.925

| | | | |
|---|---|---|---|
| MW-12AR | 3/16/1999 | ND<2.70805 | 67.5 |
| | 9/23/1999 | ND<2.70805 | 67.5 |
| | 3/15/2000 | ND<2.70805 | 67.5 |
| | 9/24/2003 | ND<2.70805 | 67.5 |
| | 3/11/2004 | ND<2.70805 | 67.5 |
| | 10/12/2004 | ND<2.70805 | 67.5 |
| | 4/1/2005 | ND<2.99573 | 67.5 |
| | 10/25/2005 | ND<2.99573 | 67.5 |
| | 4/29/2006 | 5.07517 | 163 |
| | 11/18/2006 | 5.6204 | 169 |
| | 5/23/2007 | 5.3799 | 166 |
| | 11/28/2007 | ND<2.70805 | 67.5 |
| | 6/5/2008 | ND<2.70805 | 67.5 |
| | 11/20/2008 | ND<2.70805 | 67.5 |
| | 6/11/2009 | 5.48064 J M | 167 |
| | 11/12/2009 | 13.3692 J | 171 |
| | 6/30/2010 | ND<2.89037 | 67.5 |
| | 11/12/2010 | ND<-1.7148 U | 67.5 |

Rank Sum = 1713.5
Rank Mean = 95.1944

| | | | |
|---|---|---|---|
| MW-12BR | 3/16/1999 | ND<2.70805 | 67.5 |
| | 9/23/1999 | ND<2.70805 | 67.5 |
| | 3/15/2000 | ND<2.70805 | 67.5 |
| | 9/24/2003 | ND<2.70805 | 67.5 |
| | 3/11/2004 | ND<2.70805 | 67.5 |
| | 10/12/2004 | ND<2.70805 | 67.5 |
| | 4/1/2005 | ND<2.99573 | 67.5 |
| | 10/25/2005 | ND<2.99573 | 67.5 |
| | 4/29/2006 | 3.49651 J | 148 |
| | 11/18/2006 | 3.09104 J | 144 |
| | 5/23/2007 | 2.99573 J | 142 |
| | 11/28/2007 | ND<2.70805 | 67.5 |
| | 6/5/2008 | ND<2.70805 | 67.5 |
| | 11/20/2008 | ND<2.70805 | 67.5 |
| | 6/11/2009 | 5.01064 J M | 162 |
| | 11/16/2009 | ND<5.19296 | 67.5 |
| | 11/16/2009 | ND<5.19296 | 67.5 |

| | | | |
|---|---|---|---|
| | 6/30/2010 | ND<2.89037 | 67.5 |
| | 11/12/2010 | ND<-1.7148 U | 67.5 |

Rank Sum = 1608.5
Rank Mean = 84.6579

| | | | |
|---|---|---|---|
| MW-6 | 9/23/1998 | ND<2.70805 | 67.5 |
| | 3/16/1999 | ND<2.70805 | 67.5 |
| | 9/23/1999 | ND<2.70805 | 67.5 |
| | 3/15/2000 | ND<2.70805 | 67.5 |
| | 9/24/2003 | ND<2.70805 | 67.5 |
| | 3/11/2004 | ND<2.70805 | 67.5 |
| | 10/12/2004 | ND<2.70805 | 67.5 |
| | 4/1/2005 | ND<2.99573 | 67.5 |
| | 10/25/2005 | ND<2.99573 | 67.5 |
| | 4/29/2006 | 4.00733 | 154 |
| | 11/18/2006 | 3.04452 J | 143 |
| | 5/23/2007 | 3.58352 | 150 |
| | 11/28/2007 | ND<2.70805 | 67.5 |
| | 6/5/2008 | ND<2.70805 | 67.5 |
| | 11/20/2008 | ND<2.70805 | 67.5 |
| | 6/11/2009 | 5.29832 J M | 165 |
| | 11/16/2009 | ND<5.19296 | 67.5 |
| | 6/30/2010 | ND<2.89037 | 67.5 |
| | 11/12/2010 | ND<-1.7148 U | 67.5 |

Rank Sum = 1624.5
Rank Mean = 85.5

| | | | |
|---|---|---|---|
| MW-7 | 9/23/1998 | ND<2.70805 | 67.5 |
| | 3/16/1999 | ND<2.70805 | 67.5 |
| | 9/23/1999 | ND<2.70805 | 67.5 |
| | 3/15/2000 | ND<2.70805 | 67.5 |
| | 9/24/2003 | ND<2.70805 | 67.5 |
| | 3/11/2004 | ND<2.70805 | 67.5 |
| | 10/12/2004 | ND<2.70805 | 67.5 |
| | 4/1/2005 | ND<2.99573 | 67.5 |
| | 10/25/2005 | ND<2.99573 | 67.5 |
| | 4/29/2006 | 3.09104 J | 145 |
| | 11/18/2006 | 4.06044 | 155 |
| | 5/23/2007 | 4.30407 | 160 |
| | 11/28/2007 | ND<2.70805 | 67.5 |
| | 6/5/2008 | ND<2.70805 | 67.5 |
| | 11/20/2008 | ND<2.70805 | 67.5 |
| | 6/11/2009 | 5.19296 J M | 164 |
| | 11/16/2009 | ND<5.19296 | 67.5 |
| | 11/16/2009 | ND<5.19296 | 67.5 |
| | 6/30/2010 | ND<2.89037 | 67.5 |
| | 11/12/2010 | -0.776529 J | 135 |

Rank Sum = 1771.5
Rank Mean = 88.575

| | | | |
|---|---|---|---|
| MW-9 | 9/23/1998 | ND<2.70805 | 67.5 |
| | 3/16/1999 | ND<2.70805 | 67.5 |
| | 9/23/1999 | ND<2.70805 | 67.5 |
| | 3/15/2000 | ND<2.70805 | 67.5 |
| | 9/24/2003 | ND<2.70805 | 67.5 |
| | 3/11/2004 | ND<2.70805 | 67.5 |
| | 10/12/2004 | ND<2.70805 | 67.5 |
| | 4/1/2005 | ND<2.99573 | 67.5 |
| | 10/25/2005 | ND<2.99573 | 67.5 |
| | 4/29/2006 | 2.30259 J | 137 |
| | 11/18/2006 | 2.70805 J | 139 |
| | 5/23/2007 | 3.3673 J | 146 |

| | | | |
|---|---|---|---|
| | 11/28/2007 | ND<2.70805 | 67.5 |
| | 6/5/2008 | ND<2.70805 | 67.5 |
| | 11/20/2008 | ND<2.70805 | 67.5 |
| | 6/11/2009 | ND<3.91202 | 67.5 |
| | 11/16/2009 | ND<5.19296 | 67.5 |
| | 6/30/2010 | ND<2.89037 | 67.5 |
| | 11/12/2010 | ND<-1.7148 U | 67.5 |

Rank Sum = 1502
Rank Mean = 79.0526

| | | | |
|---|---|---|---|
| MW-10 | 9/23/1998 | ND<2.70805 | 67.5 |
| | 3/16/1999 | ND<2.70805 | 67.5 |
| | 9/23/1999 | ND<2.70805 | 67.5 |
| | 3/15/2000 | ND<2.70805 | 67.5 |
| | 9/24/2003 | ND<2.70805 | 67.5 |
| | 3/11/2004 | ND<2.70805 | 67.5 |
| | 10/12/2004 | ND<2.70805 | 67.5 |
| | 4/1/2005 | ND<2.99573 | 67.5 |
| | 10/25/2005 | ND<2.99573 | 67.5 |
| | 4/29/2006 | 3.63759 J | 151 |
| | 11/18/2006 | ND<2.70805 | 67.5 |
| | 5/23/2007 | 3.63759 | 152 |
| | 11/28/2007 | ND<2.70805 | 67.5 |
| | 6/5/2008 | ND<2.70805 | 67.5 |
| | 11/20/2008 | ND<2.70805 | 67.5 |
| | 6/11/2009 | ND<3.91202 | 67.5 |
| | 11/16/2009 | ND<5.19296 | 67.5 |
| | 11/16/2009 | ND<5.19296 | 67.5 |
| | 6/30/2010 | ND<2.89037 | 67.5 |
| | 11/12/2010 | ND<-1.7148 U | 67.5 |

Rank Sum = 1518
Rank Mean = 75.9

## Calculation Results:

Kruskal-Wallis H Statistic = 2.92025
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 5.62875
95% Confidence comparison value is 15.5073 at 8 degrees of freedom
2.92025 < 15.5073 indicating no significant group difference at 5% significance level
5.62875 < 15.5073 indicating no significant group difference at 5% significance level when adjusted for ties

# Concentrations (ppb)

## Parameter: Selenium

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 194
Percent Non-Detects: 87.7828%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 18 (100%) | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.21 | ND<0.21 |
| | | | 11/16/2009 | ND<0.21 | ND<0.21 |
| | | | 6/30/2010 | ND<0.21 | ND<0.21 |
| | | | 11/12/2010 | ND<0.21 U | ND<0.21 U |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-11R | 28 | 25 (89.2857%) | 7/20/1995 | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 |
| | | | 9/28/1995 | ND<2 | ND<2 |
| | | | 10/26/1995 | ND<2 | ND<2 |
| | | | 11/19/1996 | ND<2 | ND<2 |
| | | | 12/19/1996 | ND<2 | ND<2 |
| | | | 3/24/1997 | ND<2 | ND<2 |
| | | | 9/24/1997 | ND<2 | ND<2 |
| | | | 4/7/1998 | 20 | 20 |
| | | | 9/23/1998 | ND<2 | ND<2 |
| | | | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | 1.39 J | 1.39 J |
| | | | 11/18/2006 | 1.12 J | 1.12 J |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.21 | | ND<0.21 |
| | | | 11/16/2009 | ND<0.21 | | ND<0.21 |
| | | | 6/30/2010 | ND<0.21 | | ND<0.21 |
| | | | 11/12/2010 | ND<0.21 U | | ND<0.21 U |
| MW-12AR | 18 | 16 (88.8889%) | 3/16/1999 | | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | 1.54 J | 1.54 J | |
| | | | 4/29/2006 | 1.83 J | 1.83 J | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.21 | | ND<0.21 |
| | | | 11/16/2009 | ND<0.21 | | ND<0.21 |
| | | | 6/30/2010 | ND<0.21 | | ND<0.21 |
| | | | 11/12/2010 | ND<0.21 U | | ND<0.21 U |
| MW-10 | 28 | 21 (75%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | 160 | 160 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | 1.04 J | 1.04 J | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | 2.06 | 2.06 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | 0.25 J | 0.25 J | |
| | | | 11/16/2009 | 0.25 J | 0.25 J | |
| | | | 6/30/2010 | 0.28 J H | 0.28 J H | |
| | | | 11/12/2010 | 0.38 J | 0.38 J | |
| MW-6 | 28 | 28 (100%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.21 | | ND<0.21 |
| | | | 11/16/2009 | ND<0.21 | | ND<0.21 |
| | | | 6/30/2010 | ND<0.21 | | ND<0.21 |
| | | | 11/12/2010 | ND<0.21 U | | ND<0.21 U |
| MW-9 | 28 | 23 (82.1429%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | 27 | 27 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | 68 | 68 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 1.54 J | 1.54 J | |
| | | | 10/25/2005 | 1.83 J | 1.83 J | |
| | | | 4/29/2006 | 1.32 J | 1.32 J | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.21 | | ND<0.21 |
| | | | 11/16/2009 | ND<0.21 | | ND<0.21 |
| | | | 6/30/2010 | ND<0.21 | | ND<0.21 |
| | | | 11/12/2010 | ND<0.21 U | | ND<0.21 U |
| MW-8 | 27 | 22 (81.4815%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | 52 | 52 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 1.63 J | 1.63 J | |
| | | | 10/25/2005 | 1.52 J | 1.52 J | |
| | | | 4/29/2006 | 1.04 J | 1.04 J | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.21 | | ND<0.21 |
| | | | 6/30/2010 | ND<0.21 | | ND<0.21 |
| | | | 11/12/2010 | 0.22 J | 0.22 J | |
| MW-7 | 28 | 24 (85.7143%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | 58 | 58 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | 90 | 90 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | 1.34 J | 1.34 J | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | 0.27 J | 0.27 J | |
| | | | 11/16/2009 | ND<0.21 | | ND<0.21 |
| | | | 6/30/2010 | ND<0.21 | | ND<0.21 |
| | | | 11/12/2010 | ND<0.21 U | | ND<0.21 U |
| MW-12BR | 18 | 17 (94.4444%) | 3/16/1999 | | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 1.89 J | 1.89 J | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.21 | | ND<0.21 |
| | | | 11/16/2009 | ND<0.21 | | ND<0.21 |
| | | | 6/30/2010 | ND<0.21 | | ND<0.21 |

| | | | |
|---|---|---|---|
| | 11/12/2010 | ND<0.21 U | ND<0.21 U |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. | Original |
|---|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: Selenium

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.105 | -2.65209 | 7.03356 | -0.278469 |
| 2 | 0.105 | -2.36561 | 12.6297 | -0.526859 |
| 3 | 0.105 | -2.22621 | 17.5857 | -0.76061 |
| 4 | 0.105 | -2.09693 | 21.9828 | -0.980788 |
| 5 | 0.105 | -2.01409 | 26.0394 | -1.19227 |
| 6 | 0.105 | -1.92684 | 29.7521 | -1.39459 |
| 7 | 0.105 | -1.86629 | 33.2351 | -1.59055 |
| 8 | 0.105 | -1.79912 | 36.472 | -1.77945 |
| 9 | 0.105 | -1.75069 | 39.5369 | -1.96328 |
| 10 | 0.105 | -1.6954 | 42.4112 | -2.14129 |
| 11 | 0.105 | -1.65463 | 45.149 | -2.31503 |
| 12 | 0.105 | -1.60725 | 47.7323 | -2.48379 |
| 13 | 0.105 | -1.57179 | 50.2028 | -2.64883 |
| 14 | 0.105 | -1.53007 | 52.5439 | -2.80948 |
| 15 | 0.105 | -1.49852 | 54.7894 | -2.96683 |
| 16 | 0.105 | -1.46106 | 56.9241 | -3.12024 |
| 17 | 0.105 | -1.4325 | 58.9762 | -3.27065 |
| 18 | 0.105 | -1.39838 | 60.9316 | -3.41748 |
| 19 | 0.105 | -1.3722 | 62.8146 | -3.56156 |
| 20 | 0.105 | -1.34075 | 64.6122 | -3.70234 |
| 21 | 0.105 | -1.31652 | 66.3454 | -3.84058 |
| 22 | 0.105 | -1.28727 | 68.0025 | -3.97574 |
| 23 | 0.105 | -1.26464 | 69.6018 | -4.10853 |
| 24 | 0.105 | -1.23724 | 71.1326 | -4.23844 |
| 25 | 0.105 | -1.21596 | 72.6111 | -4.36611 |
| 26 | 0.105 | -1.19012 | 74.0275 | -4.49108 |
| 27 | 0.105 | -1.17 | 75.3964 | -4.61393 |
| 28 | 0.105 | -1.1455 | 76.7086 | -4.7342 |
| 29 | 0.105 | -1.12639 | 77.9774 | -4.85248 |
| 30 | 0.22 | -1.10306 | 79.1941 | -5.09515 |
| 31 | 0.25 | -1.08482 | 80.371 | -5.36635 |
| 32 | 0.25 | -1.06252 | 81.4999 | -5.63198 |
| 33 | 0.27 | -1.04505 | 82.592 | -5.91415 |
| 34 | 0.28 | -1.02365 | 83.6399 | -6.20077 |
| 35 | 0.38 | -1.00687 | 84.6537 | -6.58338 |
| 36 | 1 | -0.986272 | 85.6264 | -7.56965 |
| 37 | 1 | -0.970094 | 86.5675 | -8.53975 |
| 38 | 1 | -0.950222 | 87.4704 | -9.48997 |
| 39 | 1 | -0.93459 | 88.3439 | -10.4246 |
| 40 | 1 | -0.915365 | 89.1818 | -11.3399 |
| 41 | 1 | -0.900227 | 89.9922 | -12.2402 |
| 42 | 1 | -0.881587 | 90.7694 | -13.1217 |
| 43 | 1 | -0.866894 | 91.5209 | -13.9886 |
| 44 | 1 | -0.848786 | 92.2413 | -14.8374 |
| 45 | 1 | -0.834498 | 92.9377 | -15.6719 |
| 46 | 1 | -0.816874 | 93.605 | -16.4888 |
| 47 | 1 | -0.802956 | 94.2497 | -17.2917 |
| 48 | 1 | -0.785774 | 94.8672 | -18.0775 |
| 49 | 1 | -0.772193 | 95.4634 | -18.8497 |

| | | | | |
|---|---|---|---|---|
| 50 | 1 | -0.755415 | 96.0341 | -19.6051 |
| 51 | 1 | -0.742143 | 96.5849 | -20.3473 |
| 52 | 1 | -0.725736 | 97.1116 | -21.073 |
| 53 | 1 | -0.712751 | 97.6196 | -21.7858 |
| 54 | 1 | -0.696684 | 98.1049 | -22.4824 |
| 55 | 1 | -0.683969 | 8.5727 | -23.1664 |
| 56 | 1 | -0.668209 | 99.0192 | -23.8346 |
| 57 | 1 | -0.655726 | 99.4492 | -24.4903 |
| 58 | 1 | -0.640266 | 99.8592 | -25.1306 |
| 59 | 1 | -0.628006 | 100.254 | -25.7586 |
| 60 | 1 | -0.612813 | 100.629 | -26.3714 |
| 61 | 1 | -0.60076 | 100.99 | -26.9722 |
| 62 | 1 | -0.585815 | 101.333 | -27.558 |
| 63 | 1 | -0.573953 | 101.663 | -28.1319 |
| 64 | 1 | -0.559237 | 101.975 | -28.6912 |
| 65 | 1 | -0.547551 | 102.275 | -29.2387 |
| 66 | 1 | -0.533048 | 102.559 | -29.7718 |
| 67 | 1 | -0.521527 | 102.831 | -30.2933 |
| 68 | 1 | -0.507221 | 103.089 | -30.8005 |
| 69 | 1 | -0.49585 | 103.334 | -31.2964 |
| 70 | 1 | -0.481728 | 103.566 | -31.7781 |
| 71 | 1 | -0.470498 | 103.788 | -32.2486 |
| 72 | 1 | -0.456542 | 103.996 | -32.7051 |
| 73 | 1 | -0.445443 | 104.195 | -33.1506 |
| 74 | 1 | -0.431644 | 104.381 | -33.5822 |
| 75 | 1 | -0.420664 | 104.558 | -34.0029 |
| 76 | 1 | -0.40701 | 104.724 | -34.4099 |
| 77 | 1 | -0.396142 | 104.881 | -34.8061 |
| 78 | 1 | -0.382622 | 105.027 | -35.1887 |
| 79 | 1 | -0.371856 | 105.165 | -35.5605 |
| 80 | 1 | -0.358459 | 105.294 | -35.919 |
| 81 | 1 | -0.347787 | 105.415 | -36.2668 |
| 82 | 1 | -0.334503 | 105.527 | -36.6013 |
| 83 | 1 | -0.323919 | 105.632 | -36.9252 |
| 84 | 1 | -0.310738 | 105.728 | -37.2359 |
| 85 | 1 | -0.300232 | 105.818 | -37.5362 |
| 86 | 1 | -0.287147 | 105.901 | -37.8233 |
| 87 | 1 | -0.276714 | 105.977 | -38.1 |
| 88 | 1 | -0.263715 | 106.047 | -38.3637 |
| 89 | 1 | -0.253347 | 106.111 | -38.6171 |
| 90 | 1 | -0.240426 | 106.169 | -38.8575 |
| 91 | 1 | -0.230118 | 106.222 | -39.0876 |
| 92 | 1 | -0.217267 | 106.269 | -39.3049 |
| 93 | 1 | -0.207012 | 106.312 | -39.5119 |
| 94 | 1 | -0.194225 | 106.35 | -39.7061 |
| 95 | 1 | -0.184017 | 106.383 | -39.8902 |
| 96 | 1 | -0.171285 | 106.413 | -40.0614 |
| 97 | 1 | -0.161119 | 106.439 | -40.2226 |
| 98 | 1 | -0.148434 | 106.461 | -40.371 |
| 99 | 1 | -0.138305 | 106.48 | -40.5093 |
| 100 | 1 | -0.125661 | 106.496 | -40.635 |
| 101 | 1 | -0.115562 | 106.509 | -40.7505 |
| 102 | 1 | -0.102953 | 106.52 | -40.8535 |
| 103 | 1 | -0.0928787 | 106.528 | -40.9464 |
| 104 | 1 | -0.0802981 | 106.535 | -41.0267 |
| 105 | 1 | -0.0702426 | 106.54 | -41.0969 |
| 106 | 1 | -0.0576847 | 106.543 | -41.1546 |
| 107 | 1 | -0.0476439 | 106.545 | -41.2022 |
| 108 | 1 | -0.0350997 | 106.546 | -41.2373 |
| 109 | 1 | -0.0250691 | 106.547 | -41.2624 |
| 110 | 1 | -0.0125328 | 106.547 | -41.2749 |
| 111 | 1 | 0 | 106.547 | -41.2749 |

| | | | | |
|---|---|---|---|---|
| 112 | 1 | 0.0125328 | 106.547 | -41.2624 |
| 113 | 1 | 0.0250691 | 106.548 | -41.2373 |
| 114 | 1 | 0.0350997 | 106.549 | -41.2022 |
| 115 | 1 | 0.0476439 | 106.551 | -41.1546 |
| 116 | 1 | 0.0576847 | 106.555 | -41.0969 |
| 117 | 1 | 0.0702426 | 106.56 | -41.0267 |
| 118 | 1 | 0.0802981 | 106.566 | -40.9464 |
| 119 | 1 | 0.0928787 | 106.575 | -40.8535 |
| 120 | 1 | 0.102953 | 106.585 | -40.7505 |
| 121 | 1 | 0.115562 | 106.599 | -40.635 |
| 122 | 1 | 0.125661 | 106.615 | -40.5093 |
| 123 | 1 | 0.138305 | 106.634 | -40.371 |
| 124 | 1 | 0.148434 | 106.656 | -40.2226 |
| 125 | 1 | 0.161119 | 106.682 | -40.0614 |
| 126 | 1 | 0.171285 | 106.711 | -39.8902 |
| 127 | 1 | 0.184017 | 106.745 | -39.7061 |
| 128 | 1 | 0.194225 | 106.783 | -39.5119 |
| 129 | 1 | 0.207012 | 106.825 | -39.3049 |
| 130 | 1 | 0.217267 | 106.873 | -39.0876 |
| 131 | 1 | 0.230118 | 106.926 | -38.8575 |
| 132 | 1 | 0.240426 | 106.983 | -38.6171 |
| 133 | 1 | 0.253347 | 107.048 | -38.3637 |
| 134 | 1 | 0.263715 | 107.117 | -38.1 |
| 135 | 1 | 0.276714 | 107.194 | -37.8233 |
| 136 | 1 | 0.287147 | 107.276 | -37.5362 |
| 137 | 1 | 0.300232 | 107.366 | -37.2359 |
| 138 | 1 | 0.310738 | 107.463 | -36.9252 |
| 139 | 1 | 0.323919 | 107.568 | -36.6013 |
| 140 | 1 | 0.334503 | 107.68 | -36.2668 |
| 141 | 1 | 0.347787 | 107.801 | -35.919 |
| 142 | 1 | 0.358459 | 107.929 | -35.5605 |
| 143 | 1 | 0.371856 | 108.067 | -35.1887 |
| 144 | 1 | 0.382622 | 108.214 | -34.8061 |
| 145 | 1 | 0.396142 | 108.371 | -34.4099 |
| 146 | 1 | 0.40701 | 108.536 | -34.0029 |
| 147 | 1 | 0.420664 | 108.713 | -33.5822 |
| 148 | 1 | 0.431644 | 108.9 | -33.1506 |
| 149 | 1 | 0.445443 | 109.098 | -32.7051 |
| 150 | 1 | 0.456542 | 109.307 | -32.2486 |
| 151 | 1 | 0.470498 | 109.528 | -31.7781 |
| 152 | 1 | 0.481728 | 109.76 | -31.2964 |
| 153 | 1 | 0.49585 | 110.006 | -30.8005 |
| 154 | 1 | 0.507221 | 110.263 | -30.2933 |
| 155 | 1 | 0.521527 | 110.535 | -29.7718 |
| 156 | 1 | 0.533048 | 110.819 | -29.2387 |
| 157 | 1 | 0.547551 | 111.119 | -28.6912 |
| 158 | 1 | 0.559237 | 111.432 | -28.1319 |
| 159 | 1 | 0.573953 | 111.761 | -27.558 |
| 160 | 1 | 0.585815 | 112.104 | -26.9722 |
| 161 | 1 | 0.60076 | 112.465 | -26.3714 |
| 162 | 1 | 0.612813 | 112.841 | -25.7586 |
| 163 | 1 | 0.628006 | 113.235 | -25.1306 |
| 164 | 1 | 0.640266 | 113.645 | -24.4903 |
| 165 | 1 | 0.655726 | 114.075 | -23.8346 |
| 166 | 1 | 0.668209 | 114.522 | -23.1664 |
| 167 | 1 | 0.68396 | 114.989 | -22.4824 |
| 168 | 1 | 0.696684 | 115.475 | -21.7858 |
| 169 | 1 | 0.712751 | 115.983 | -21.073 |
| 170 | 1 | 0.725736 | 116.51 | -20.3473 |
| 171 | 1 | 0.742143 | 117.06 | -19.6051 |
| 172 | 1 | 0.755415 | 117.631 | -18.8497 |
| 173 | 1 | 0.772193 | 118.227 | -18.0775 |

| | | | | |
|---|---|---|---|---|
| 174 | 1 | 0.785774 | 118.845 | -17.2917 |
| 175 | 1 | 0.802956 | 119.489 | -16.4888 |
| 176 | 1 | 0.816874 | 120.157 | -15.6719 |
| 177 | 1 | 0.834498 | 120.853 | -14.8374 |
| 178 | 1 | 0.848786 | 121.574 | -13.9886 |
| 179 | 1 | 0.866894 | 122.325 | -13.1217 |
| 180 | 1 | 0.881587 | 123.102 | -12.2402 |
| 181 | 1 | 0.900227 | 123.913 | -11.3399 |
| 182 | 1 | 0.915365 | 124.751 | -10.4246 |
| 183 | 1 | 0.93459 | 125.624 | -9.48997 |
| 184 | 1 | 0.950222 | 126.527 | -8.53975 |
| 185 | 1 | 0.970094 | 127.468 | -7.56965 |
| 186 | 1 | 0.986272 | 128.441 | -6.58338 |
| 187 | 1 | 1.00687 | 129.455 | -5.57651 |
| 188 | 1 | 1.02365 | 130.502 | -4.55286 |
| 189 | 1 | 1.04505 | 131.594 | -3.50781 |
| 190 | 1 | 1.06252 | 132.723 | -2.44529 |
| 191 | 1 | 1.08482 | 133.9 | -1.36047 |
| 192 | 1 | 1.10306 | 135.117 | -0.257407 |
| 193 | 1 | 1.12639 | 136.386 | 0.868984 |
| 194 | 1 | 1.1455 | 137.698 | 2.01449 |
| 195 | 1 | 1.17 | 139.067 | 3.18449 |
| 196 | 1 | 1.19012 | 140.483 | 4.37461 |
| 197 | 1 | 1.21596 | 141.962 | 5.59057 |
| 198 | 1 | 1.23724 | 143.493 | 6.8278 |
| 199 | 1 | 1.26464 | 145.092 | 8.09245 |
| 200 | 1 | 1.28727 | 146.749 | 9.37972 |
| 201 | 1.04 | 1.31652 | 148.482 | 10.7489 |
| 202 | 1.04 | 1.34075 | 150.28 | 12.1433 |
| 203 | 1.12 | 1.3722 | 152.163 | 13.6802 |
| 204 | 1.32 | 1.39838 | 154.118 | 15.526 |
| 205 | 1.34 | 1.4325 | 156.17 | 17.4456 |
| 206 | 1.39 | 1.46106 | 158.305 | 19.4764 |
| 207 | 1.52 | 1.49852 | 160.551 | 21.7542 |
| 208 | 1.54 | 1.53007 | 162.892 | 24.1105 |
| 209 | 1.54 | 1.57179 | 165.362 | 26.531 |
| 210 | 1.63 | 1.60725 | 167.945 | 29.1509 |
| 211 | 1.83 | 1.65463 | 170.683 | 32.1788 |
| 212 | 1.83 | 1.6954 | 173.558 | 35.2814 |
| 213 | 1.89 | 1.75069 | 176.622 | 38.5902 |
| 214 | 2.06 | 1.79912 | 179.859 | 42.2964 |
| 215 | 20 | 1.86629 | 183.342 | 79.6222 |
| 216 | 27 | 1.92684 | 187.055 | 131.647 |
| 217 | 52 | 2.01409 | 191.112 | 236.38 |
| 218 | 58 | 2.09693 | 195.509 | 358.002 |
| 219 | 68 | 2.22621 | 200.465 | 509.384 |
| 220 | 90 | 2.36561 | 206.061 | 722.289 |
| 221 | 160 | 2.65209 | 213.094 | 1146.62 |

Data Set Standard Deviation = 14.0961
Numerator = 1.31474e+006
Denominator = 9.31524e+006
W Statistic = 0.141139 = 1.31474e+006 / 9.31524e+006

5% Critical value of 0.976 exceeds 0.141139
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.141139
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: Selenium

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | -2.25379 | -2.65209 | 7.03356 | 5.97726 |
| 2 | -2.25379 | -2.36561 | 12.6297 | 11.3089 |
| 3 | -2.25379 | -2.22621 | 17.5857 | 16.3263 |
| 4 | -2.25379 | -2.09693 | 21.9828 | 21.0523 |
| 5 | -2.25379 | -2.01409 | 26.0394 | 25.5917 |
| 6 | -2.25379 | -1.92684 | 29.7521 | 29.9344 |
| 7 | -2.25379 | -1.86629 | 33.2351 | 34.1406 |
| 8 | -2.25379 | -1.79912 | 36.472 | 38.1955 |
| 9 | -2.25379 | -1.75069 | 39.5369 | 42.1412 |
| 10 | -2.25379 | -1.6954 | 42.4112 | 45.9622 |
| 11 | -2.25379 | -1.65463 | 45.149 | 49.6914 |
| 12 | -2.25379 | -1.60725 | 47.7323 | 53.3138 |
| 13 | -2.25379 | -1.57179 | 50.2028 | 56.8563 |
| 14 | -2.25379 | -1.53007 | 52.5439 | 60.3048 |
| 15 | -2.25379 | -1.49852 | 54.7894 | 63.6821 |
| 16 | -2.25379 | -1.46106 | 56.9241 | 66.975 |
| 17 | -2.25379 | -1.4325 | 58.9762 | 70.2036 |
| 18 | -2.25379 | -1.39838 | 60.9316 | 73.3553 |
| 19 | -2.25379 | -1.3722 | 62.8146 | 76.4479 |
| 20 | -2.25379 | -1.34075 | 64.6122 | 79.4697 |
| 21 | -2.25379 | -1.31652 | 66.3454 | 82.4369 |
| 22 | -2.25379 | -1.28727 | 68.0025 | 85.3381 |
| 23 | -2.25379 | -1.26464 | 69.6018 | 88.1884 |
| 24 | -2.25379 | -1.23724 | 71.1326 | 90.9769 |
| 25 | -2.25379 | -1.21596 | 72.6111 | 93.7174 |
| 26 | -2.25379 | -1.19012 | 74.0275 | 96.3997 |
| 27 | -2.25379 | -1.17 | 75.3964 | 99.0366 |
| 28 | -2.25379 | -1.1455 | 76.7086 | 101.618 |
| 29 | -2.25379 | -1.12639 | 77.9774 | 104.157 |
| 30 | -1.51413 | -1.10306 | 79.1941 | 105.827 |
| 31 | -1.38629 | -1.08482 | 80.371 | 107.331 |
| 32 | -1.38629 | -1.06252 | 81.4999 | 108.804 |
| 33 | -1.30933 | -1.04505 | 82.592 | 110.172 |
| 34 | -1.27297 | -1.02365 | 83.6399 | 111.475 |
| 35 | -0.967584 | -1.00687 | 84.6537 | 112.45 |
| 36 | 0 | -0.986272 | 85.6264 | 112.45 |
| 37 | 0 | -0.970094 | 86.5675 | 112.45 |
| 38 | 0 | -0.950222 | 87.4704 | 112.45 |
| 39 | 0 | -0.934598 | 88.3439 | 112.45 |
| 40 | 0 | -0.915365 | 89.1818 | 112.45 |
| 41 | 0 | -0.900227 | 89.9922 | 112.45 |
| 42 | 0 | -0.881587 | 90.7694 | 112.45 |
| 43 | 0 | -0.866894 | 91.5209 | 112.45 |
| 44 | 0 | -0.848786 | 92.2413 | 112.45 |
| 45 | 0 | -0.834498 | 92.9377 | 112.45 |
| 46 | 0 | -0.816874 | 93.605 | 112.45 |
| 47 | 0 | -0.802956 | 94.2497 | 112.45 |
| 48 | 0 | -0.785774 | 94.8672 | 112.45 |
| 49 | 0 | -0.772193 | 95.4634 | 112.45 |

| | | | | |
|---|---|---|---|---|
| 50 | 0 | -0.755415 | 96.0341 | 112.45 |
| 51 | 0 | -0.742143 | 96.5849 | 112.45 |
| 52 | 0 | -0.725736 | 97.1116 | 112.45 |
| 53 | 0 | -0.712751 | 97.6196 | 112.45 |
| 54 | 0 | -0.696684 | 98.1049 | 112.45 |
| 55 | 0 | -0.683969 | 8.5727 | 112.45 |
| 56 | 0 | -0.668209 | 99.0192 | 112.45 |
| 57 | 0 | -0.655726 | 99.4492 | 112.45 |
| 58 | 0 | -0.640266 | 99.8592 | 112.45 |
| 59 | 0 | -0.628006 | 100.254 | 112.45 |
| 60 | 0 | -0.612813 | 100.629 | 112.45 |
| 61 | 0 | -0.60076 | 100.99 | 112.45 |
| 62 | 0 | -0.585815 | 101.333 | 112.45 |
| 63 | 0 | -0.573953 | 101.663 | 112.45 |
| 64 | 0 | -0.559237 | 101.975 | 112.45 |
| 65 | 0 | -0.547551 | 102.275 | 112.45 |
| 66 | 0 | -0.533048 | 102.559 | 112.45 |
| 67 | 0 | -0.521527 | 102.831 | 112.45 |
| 68 | 0 | -0.507221 | 103.089 | 112.45 |
| 69 | 0 | -0.49585 | 103.334 | 112.45 |
| 70 | 0 | -0.481728 | 103.566 | 112.45 |
| 71 | 0 | -0.470498 | 103.788 | 112.45 |
| 72 | 0 | -0.456542 | 103.996 | 112.45 |
| 73 | 0 | -0.445443 | 104.195 | 112.45 |
| 74 | 0 | -0.431644 | 104.381 | 112.45 |
| 75 | 0 | -0.420664 | 104.558 | 112.45 |
| 76 | 0 | -0.40701 | 104.724 | 112.45 |
| 77 | 0 | -0.396142 | 104.881 | 112.45 |
| 78 | 0 | -0.382622 | 105.027 | 112.45 |
| 79 | 0 | -0.371856 | 105.165 | 112.45 |
| 80 | 0 | -0.358459 | 105.294 | 112.45 |
| 81 | 0 | -0.347787 | 105.415 | 112.45 |
| 82 | 0 | -0.334503 | 105.527 | 112.45 |
| 83 | 0 | -0.323919 | 105.632 | 112.45 |
| 84 | 0 | -0.310738 | 105.728 | 112.45 |
| 85 | 0 | -0.300232 | 105.818 | 112.45 |
| 86 | 0 | -0.287147 | 105.901 | 112.45 |
| 87 | 0 | -0.276714 | 105.977 | 112.45 |
| 88 | 0 | -0.263715 | 106.047 | 112.45 |
| 89 | 0 | -0.253347 | 106.111 | 112.45 |
| 90 | 0 | -0.240426 | 106.169 | 112.45 |
| 91 | 0 | -0.230118 | 106.222 | 112.45 |
| 92 | 0 | -0.217267 | 106.269 | 112.45 |
| 93 | 0 | -0.207012 | 106.312 | 112.45 |
| 94 | 0 | -0.194225 | 106.35 | 112.45 |
| 95 | 0 | -0.184017 | 106.383 | 112.45 |
| 96 | 0 | -0.171285 | 106.413 | 112.45 |
| 97 | 0 | -0.161119 | 106.439 | 112.45 |
| 98 | 0 | -0.148434 | 106.461 | 112.45 |
| 99 | 0 | -0.138305 | 106.48 | 112.45 |
| 100 | 0 | -0.125661 | 106.496 | 112.45 |
| 101 | 0 | -0.115562 | 106.509 | 112.45 |
| 102 | 0 | -0.102953 | 106.52 | 112.45 |
| 103 | 0 | -0.0928787 | 106.528 | 112.45 |
| 104 | 0 | -0.0802981 | 106.535 | 112.45 |
| 105 | 0 | -0.0702426 | 106.54 | 112.45 |
| 106 | 0 | -0.0576847 | 106.543 | 112.45 |
| 107 | 0 | -0.0476439 | 106.545 | 112.45 |
| 108 | 0 | -0.0350997 | 106.546 | 112.45 |
| 109 | 0 | -0.0250691 | 106.547 | 112.45 |
| 110 | 0 | -0.0125328 | 106.547 | 112.45 |
| 111 | 0 | 0 | 106.547 | 112.45 |

| | | | | |
|---|---|---|---|---|
| 112 | 0 | 0.0125328 | 106.547 | 112.45 |
| 113 | 0 | 0.0250691 | 106.548 | 112.45 |
| 114 | 0 | 0.0350997 | 106.549 | 112.45 |
| 115 | 0 | 0.0476439 | 106.551 | 112.45 |
| 116 | 0 | 0.0576847 | 106.555 | 112.45 |
| 117 | 0 | 0.0702426 | 106.56 | 112.45 |
| 118 | 0 | 0.0802981 | 106.566 | 112.45 |
| 119 | 0 | 0.0928787 | 106.575 | 112.45 |
| 120 | 0 | 0.102953 | 106.585 | 112.45 |
| 121 | 0 | 0.115562 | 106.599 | 112.45 |
| 122 | 0 | 0.125661 | 106.615 | 112.45 |
| 123 | 0 | 0.138305 | 106.634 | 112.45 |
| 124 | 0 | 0.148434 | 106.656 | 112.45 |
| 125 | 0 | 0.161119 | 106.682 | 112.45 |
| 126 | 0 | 0.171285 | 106.711 | 112.45 |
| 127 | 0 | 0.184017 | 106.745 | 112.45 |
| 128 | 0 | 0.194225 | 106.783 | 112.45 |
| 129 | 0 | 0.207012 | 106.825 | 112.45 |
| 130 | 0 | 0.217267 | 106.873 | 112.45 |
| 131 | 0 | 0.230118 | 106.926 | 112.45 |
| 132 | 0 | 0.240426 | 106.983 | 112.45 |
| 133 | 0 | 0.253347 | 107.048 | 112.45 |
| 134 | 0 | 0.263715 | 107.117 | 112.45 |
| 135 | 0 | 0.276714 | 107.194 | 112.45 |
| 136 | 0 | 0.287147 | 107.276 | 112.45 |
| 137 | 0 | 0.300232 | 107.366 | 112.45 |
| 138 | 0 | 0.310738 | 107.463 | 112.45 |
| 139 | 0 | 0.323919 | 107.568 | 112.45 |
| 140 | 0 | 0.334503 | 107.68 | 112.45 |
| 141 | 0 | 0.347787 | 107.801 | 112.45 |
| 142 | 0 | 0.358459 | 107.929 | 112.45 |
| 143 | 0 | 0.371856 | 108.067 | 112.45 |
| 144 | 0 | 0.382622 | 108.214 | 112.45 |
| 145 | 0 | 0.396142 | 108.371 | 112.45 |
| 146 | 0 | 0.40701 | 108.536 | 112.45 |
| 147 | 0 | 0.420664 | 108.713 | 112.45 |
| 148 | 0 | 0.431644 | 108.9 | 112.45 |
| 149 | 0 | 0.445443 | 109.098 | 112.45 |
| 150 | 0 | 0.456542 | 109.307 | 112.45 |
| 151 | 0 | 0.470498 | 109.528 | 112.45 |
| 152 | 0 | 0.481728 | 109.76 | 112.45 |
| 153 | 0 | 0.49585 | 110.006 | 112.45 |
| 154 | 0 | 0.507221 | 110.263 | 112.45 |
| 155 | 0 | 0.521527 | 110.535 | 112.45 |
| 156 | 0 | 0.533048 | 110.819 | 112.45 |
| 157 | 0 | 0.547551 | 111.119 | 112.45 |
| 158 | 0 | 0.559237 | 111.432 | 112.45 |
| 159 | 0 | 0.573953 | 111.761 | 112.45 |
| 160 | 0 | 0.585815 | 112.104 | 112.45 |
| 161 | 0 | 0.60076 | 112.465 | 112.45 |
| 162 | 0 | 0.612813 | 112.841 | 112.45 |
| 163 | 0 | 0.628006 | 113.235 | 112.45 |
| 164 | 0 | 0.640266 | 113.645 | 112.45 |
| 165 | 0 | 0.655726 | 114.075 | 112.45 |
| 166 | 0 | 0.668209 | 114.522 | 112.45 |
| 167 | 0 | 0.68396 | 114.989 | 112.45 |
| 168 | 0 | 0.696684 | 115.475 | 112.45 |
| 169 | 0 | 0.712751 | 115.983 | 112.45 |
| 170 | 0 | 0.725736 | 116.51 | 112.45 |
| 171 | 0 | 0.742143 | 117.06 | 112.45 |
| 172 | 0 | 0.755415 | 117.631 | 112.45 |
| 173 | 0 | 0.772193 | 118.227 | 112.45 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 0 | 0.785774 | | 118.845 | 112.45 |
| 175 | 0 | 0.802956 | | 119.489 | 112.45 |
| 176 | 0 | 0.816874 | | 120.157 | 112.45 |
| 177 | 0 | 0.834498 | | 120.853 | 112.45 |
| 178 | 0 | 0.848786 | | 121.574 | 112.45 |
| 179 | 0 | 0.866894 | | 122.325 | 112.45 |
| 180 | 0 | 0.881587 | | 123.102 | 112.45 |
| 181 | 0 | 0.900227 | | 123.913 | 112.45 |
| 182 | 0 | 0.915365 | | 124.751 | 112.45 |
| 183 | 0 | 0.93459 | 125.624 | 112.45 | |
| 184 | 0 | 0.950222 | | 126.527 | 112.45 |
| 185 | 0 | 0.970094 | | 127.468 | 112.45 |
| 186 | 0 | 0.986272 | | 128.441 | 112.45 |
| 187 | 0 | 1.00687 | 129.455 | 112.45 | |
| 188 | 0 | 1.02365 | 130.502 | 112.45 | |
| 189 | 0 | 1.04505 | 131.594 | 112.45 | |
| 190 | 0 | 1.06252 | 132.723 | 112.45 | |
| 191 | 0 | 1.08482 | 133.9 | 112.45 | |
| 192 | 0 | 1.10306 | 135.117 | 112.45 | |
| 193 | 0 | 1.12639 | 136.386 | 112.45 | |
| 194 | 0 | 1.1455 | 137.698 | 112.45 | |
| 195 | 0 | 1.17 | 139.067 | 112.45 | |
| 196 | 0 | 1.19012 | 140.483 | 112.45 | |
| 197 | 0 | 1.21596 | 141.962 | 112.45 | |
| 198 | 0 | 1.23724 | 143.493 | 112.45 | |
| 199 | 0 | 1.26464 | 145.092 | 112.45 | |
| 200 | 0 | 1.28727 | 146.749 | 112.45 | |
| 201 | 0.0392207 | | 1.31652 | 148.482 | 112.501 |
| 202 | 0.0392207 | | 1.34075 | 150.28 | 112.554 |
| 203 | 0.113329 | | 1.3722 | 152.163 | 112.709 |
| 204 | 0.277632 | | 1.39838 | 154.118 | 113.098 |
| 205 | 0.29267 | 1.4325 | 156.17 | 113.517 | |
| 206 | 0.329304 | | 1.46106 | 158.305 | 113.998 |
| 207 | 0.41871 | 1.49852 | 160.551 | 114.625 | |
| 208 | 0.431782 | | 1.53007 | 162.892 | 115.286 |
| 209 | 0.431782 | | 1.57179 | 165.362 | 115.965 |
| 210 | 0.48858 | 1.60725 | 167.945 | 116.75 | |
| 211 | 0.604316 | | 1.65463 | 170.683 | 117.75 |
| 212 | 0.604316 | | 1.6954 | 173.558 | 118.774 |
| 213 | 0.636577 | | 1.75069 | 176.622 | 119.889 |
| 214 | 0.722706 | | 1.79912 | 179.859 | 121.189 |
| 215 | 2.99573 | 1.86629 | 183.342 | 126.78 | |
| 216 | 3.29584 | 1.92684 | 187.055 | 133.131 | |
| 217 | 3.95124 | 2.01409 | 191.112 | 141.089 | |
| 218 | 4.06044 | 2.09693 | 195.509 | 149.603 | |
| 219 | 4.21951 | 2.22621 | 200.465 | 158.997 | |
| 220 | 4.49981 | 2.36561 | 206.061 | 169.642 | |
| 221 | 5.07517 | 2.65209 | 213.094 | 183.101 | |

Data Set Standard Deviation = 1.10592
Numerator = 33526.1
Denominator = 57338
W Statistic = 0.58471 = 33526.1 / 57338

5% Critical value of 0.976 exceeds 0.58471
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.58471
Evidence of non-normality at 99% level of significance

# Kruskal-Wallis Non-Parametric Test

## Parameter: Selenium

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

# Kruskal Wallis Ranks

## Background Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-13 | 3/16/1999 | ND<0 | 97.5 |
| | 9/23/1999 | ND<0 | 97.5 |
| | 3/15/2000 | ND<0 | 97.5 |
| | 9/24/2003 | ND<0 | 97.5 |
| | 3/11/2004 | ND<0 | 97.5 |
| | 10/12/2004 | ND<0 | 97.5 |
| | 4/1/2005 | ND<0 | 97.5 |
| | 10/25/2005 | ND<0 | 97.5 |
| | 4/29/2006 | ND<0 | 97.5 |
| | 11/18/2006 | ND<0 | 97.5 |
| | 5/23/2007 | ND<0 | 97.5 |
| | 11/28/2007 | ND<0 | 97.5 |
| | 6/5/2008 | ND<0 | 97.5 |
| | 11/20/2008 | ND<0 | 97.5 |
| | 6/11/2009 | ND<-2.25379 | 97.5 |
| | 11/16/2009 | ND<-2.25379 | 97.5 |
| | 6/30/2010 | ND<-2.25379 | 97.5 |
| | 11/12/2010 | ND<-2.25379 U | 97.5 |

Rank Sum = 1755
Rank Mean = 97.5

Background Rank Sum = 1755
Background Rank Mean = 97.5

## Compliance Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-11R | 7/20/1995 | ND<0 | 97.5 |
| | 8/24/1995 | ND<0 | 97.5 |
| | 9/28/1995 | ND<0 | 97.5 |
| | 10/26/1995 | ND<0 | 97.5 |
| | 11/19/1996 | ND<0 | 97.5 |
| | 12/19/1996 | ND<0 | 97.5 |
| | 3/24/1997 | ND<0 | 97.5 |
| | 9/24/1997 | ND<0 | 97.5 |
| | 4/7/1998 | 2.99573 | 215 |
| | 9/23/1998 | ND<0 | 97.5 |
| | 3/16/1999 | ND<0 | 97.5 |
| | 9/23/1999 | ND<0 | 97.5 |
| | 3/15/2000 | ND<0 | 97.5 |
| | 9/24/2003 | ND<0 | 97.5 |
| | 3/11/2004 | ND<0 | 97.5 |
| | 10/12/2004 | ND<0 | 97.5 |
| | 4/1/2005 | ND<0 | 97.5 |
| | 10/25/2005 | ND<0 | 97.5 |
| | 4/29/2006 | 0.329304 J | 206 |
| | 11/18/2006 | 0.113329 J | 203 |

| | | | | |
|---|---|---|---|---|
| | 5/23/2007 | ND<0 | 97.5 | |
| | 11/28/2007 | ND<0 | 97.5 | |
| | 6/5/2008 | ND<0 | 97.5 | |
| | 11/20/2008 | ND<0 | 97.5 | |
| | 6/11/2009 | ND<-2.25379 | | 97.5 |
| | 11/16/2009 | ND<-2.25379 | | 97.5 |
| | 6/30/2010 | ND<-2.25379 | | 97.5 |
| | 11/12/2010 | ND<-2.25379 U | | 97.5 |

Rank Sum = 3061.5
Rank Mean = 109.339

| | | | | |
|---|---|---|---|---|
| MW-12AR | 3/16/1999 | ND<0 | 97.5 | |
| | 9/23/1999 | ND<0 | 97.5 | |
| | 3/15/2000 | ND<0 | 97.5 | |
| | 9/24/2003 | ND<0 | 97.5 | |
| | 3/11/2004 | ND<0 | 97.5 | |
| | 10/12/2004 | ND<0 | 97.5 | |
| | 4/1/2005 | ND<0 | 97.5 | |
| | 10/25/2005 | 0.431782 J | | 208 |
| | 4/29/2006 | 0.604316 J | | 211 |
| | 11/18/2006 | ND<0 | 97.5 | |
| | 5/23/2007 | ND<0 | 97.5 | |
| | 11/28/2007 | ND<0 | 97.5 | |
| | 6/5/2008 | ND<0 | 97.5 | |
| | 11/20/2008 | ND<0 | 97.5 | |
| | 6/11/2009 | ND<-2.25379 | | 97.5 |
| | 11/16/2009 | ND<-2.25379 | | 97.5 |
| | 6/30/2010 | ND<-2.25379 | | 97.5 |
| | 11/12/2010 | ND<-2.25379 U | | 97.5 |

Rank Sum = 1979
Rank Mean = 109.944

| | | | | |
|---|---|---|---|---|
| MW-10 | 7/20/1995 | ND<0 | 97.5 | |
| | 8/24/1995 | ND<0 | 97.5 | |
| | 9/28/1995 | ND<0 | 97.5 | |
| | 10/26/1995 | ND<0 | 97.5 | |
| | 11/19/1996 | ND<0 | 97.5 | |
| | 12/19/1996 | ND<0 | 97.5 | |
| | 3/24/1997 | ND<0 | 97.5 | |
| | 9/24/1997 | ND<0 | 97.5 | |
| | 4/7/1998 | 5.07517 | 221 | |
| | 9/23/1998 | ND<0 | 97.5 | |
| | 3/16/1999 | ND<0 | 97.5 | |
| | 9/23/1999 | ND<0 | 97.5 | |
| | 3/15/2000 | ND<0 | 97.5 | |
| | 9/24/2003 | ND<0 | 97.5 | |
| | 3/11/2004 | ND<0 | 97.5 | |
| | 10/12/2004 | ND<0 | 97.5 | |
| | 4/1/2005 | ND<0 | 97.5 | |
| | 10/25/2005 | ND<0 | 97.5 | |
| | 4/29/2006 | ND<0 | 97.5 | |
| | 11/18/2006 | 0.0392207 J | | 201 |
| | 5/23/2007 | ND<0 | 97.5 | |
| | 11/28/2007 | ND<0 | 97.5 | |
| | 6/5/2008 | 0.722706 | 214 | |
| | 11/20/2008 | ND<0 | 97.5 | |
| | 6/11/2009 | -1.38629 J | | 196 |
| | 11/16/2009 | -1.38629 J | | 197 |
| | 6/30/2010 | -1.27297 J H | | 199 |
| | 11/12/2010 | -0.967584 J | | 200 |

Rank Sum = 3475.5
Rank Mean = 124.125

| | | | | |
|---|---|---|---|---|
| MW-6 | 7/20/1995 | ND<0 | 97.5 | |
| | 8/24/1995 | ND<0 | 97.5 | |
| | 9/28/1995 | ND<0 | 97.5 | |
| | 10/26/1995 | ND<0 | 97.5 | |
| | 11/19/1996 | ND<0 | 97.5 | |
| | 12/19/1996 | ND<0 | 97.5 | |
| | 3/24/1997 | ND<0 | 97.5 | |
| | 9/24/1997 | ND<0 | 97.5 | |
| | 4/7/1998 | ND<0 | 97.5 | |
| | 9/23/1998 | ND<0 | 97.5 | |
| | 3/16/1999 | ND<0 | 97.5 | |
| | 9/23/1999 | ND<0 | 97.5 | |
| | 3/15/2000 | ND<0 | 97.5 | |
| | 9/24/2003 | ND<0 | 97.5 | |
| | 3/11/2004 | ND<0 | 97.5 | |
| | 10/12/2004 | ND<0 | 97.5 | |
| | 4/1/2005 | ND<0 | 97.5 | |
| | 10/25/2005 | ND<0 | 97.5 | |
| | 4/29/2006 | ND<0 | 97.5 | |
| | 11/18/2006 | ND<0 | 97.5 | |
| | 5/23/2007 | ND<0 | 97.5 | |
| | 11/28/2007 | ND<0 | 97.5 | |
| | 6/5/2008 | ND<0 | 97.5 | |
| | 11/20/2008 | ND<0 | 97.5 | |
| | 6/11/2009 | ND<-2.25379 | | 97.5 |
| | 11/16/2009 | ND<-2.25379 | | 97.5 |
| | 6/30/2010 | ND<-2.25379 | | 97.5 |
| | 11/12/2010 | ND<-2.25379 U | | 97.5 |

Rank Sum = 2730
Rank Mean = 97.5

| | | | | |
|---|---|---|---|---|
| MW-9 | 7/20/1995 | ND<0 | 97.5 | |
| | 8/24/1995 | ND<0 | 97.5 | |
| | 9/28/1995 | ND<0 | 97.5 | |
| | 10/26/1995 | ND<0 | 97.5 | |
| | 11/19/1996 | ND<0 | 97.5 | |
| | 12/19/1996 | ND<0 | 97.5 | |
| | 3/24/1997 | 3.29584 | | 216 |
| | 9/24/1997 | ND<0 | 97.5 | |
| | 4/7/1998 | 4.21951 | 219 | |
| | 9/23/1998 | ND<0 | 97.5 | |
| | 3/16/1999 | ND<0 | 97.5 | |
| | 9/23/1999 | ND<0 | 97.5 | |
| | 3/15/2000 | ND<0 | 97.5 | |
| | 9/24/2003 | ND<0 | 97.5 | |
| | 3/11/2004 | ND<0 | 97.5 | |
| | 10/12/2004 | ND<0 | 97.5 | |
| | 4/1/2005 | 0.431782 J | 209 | |
| | 10/25/2005 | 0.604316 J | | 212 |
| | 4/29/2006 | 0.277632 J | | 204 |
| | 11/18/2006 | ND<0 | 97.5 | |
| | 5/23/2007 | ND<0 | 97.5 | |
| | 11/28/2007 | ND<0 | 97.5 | |
| | 6/5/2008 | ND<0 | 97.5 | |
| | 11/20/2008 | ND<0 | 97.5 | |
| | 6/11/2009 | ND<-2.25379 | | 97.5 |
| | 11/16/2009 | ND<-2.25379 | | 97.5 |
| | 6/30/2010 | ND<-2.25379 | | 97.5 |
| | 11/12/2010 | ND<-2.25379 U | | 97.5 |

Rank Sum = 3302.5
Rank Mean = 117.946

| | | | | |
|---|---|---|---|---|
| MW-8 | 7/20/1995 | ND<0 | 97.5 | |
| | 8/24/1995 | ND<0 | 97.5 | |
| | 9/28/1995 | ND<0 | 97.5 | |
| | 10/26/1995 | ND<0 | 97.5 | |
| | 11/19/1996 | ND<0 | 97.5 | |
| | 12/19/1996 | ND<0 | 97.5 | |
| | 3/24/1997 | ND<0 | 97.5 | |
| | 9/24/1997 | ND<0 | 97.5 | |
| | 4/7/1998 | 3.95124 | 217 | |
| | 9/23/1998 | ND<0 | 97.5 | |
| | 3/16/1999 | ND<0 | 97.5 | |
| | 9/23/1999 | ND<0 | 97.5 | |
| | 3/15/2000 | ND<0 | 97.5 | |
| | 9/24/2003 | ND<0 | 97.5 | |
| | 3/11/2004 | ND<0 | 97.5 | |
| | 10/12/2004 | ND<0 | 97.5 | |
| | 4/1/2005 | 0.48858 J | 210 | |
| | 10/25/2005 | 0.41871 J | | 207 |
| | 4/29/2006 | 0.0392207 J | | 202 |
| | 11/18/2006 | ND<0 | 97.5 | |
| | 5/23/2007 | ND<0 | 97.5 | |
| | 11/28/2007 | ND<0 | 97.5 | |
| | 6/5/2008 | ND<0 | 97.5 | |
| | 11/20/2008 | ND<0 | 97.5 | |
| | 6/11/2009 | ND<-2.25379 | | 97.5 |
| | 6/30/2010 | ND<-2.25379 | | 97.5 |
| | 11/12/2010 | -1.51413 J | | 195 |

Rank Sum = 3176
Rank Mean = 117.63

| | | | | |
|---|---|---|---|---|
| MW-7 | 7/20/1995 | ND<0 | 97.5 | |
| | 8/24/1995 | ND<0 | 97.5 | |
| | 9/28/1995 | ND<0 | 97.5 | |
| | 10/26/1995 | ND<0 | 97.5 | |
| | 11/19/1996 | ND<0 | 97.5 | |
| | 12/19/1996 | ND<0 | 97.5 | |
| | 3/24/1997 | ND<0 | 97.5 | |
| | 9/24/1997 | ND<0 | 97.5 | |
| | 4/7/1998 | 4.06044 | 218 | |
| | 9/23/1998 | ND<0 | 97.5 | |
| | 3/16/1999 | 4.49981 | | 220 |
| | 9/23/1999 | ND<0 | 97.5 | |
| | 3/15/2000 | ND<0 | 97.5 | |
| | 9/24/2003 | ND<0 | 97.5 | |
| | 3/11/2004 | ND<0 | 97.5 | |
| | 10/12/2004 | ND<0 | 97.5 | |
| | 4/1/2005 | ND<0 | 97.5 | |
| | 10/25/2005 | ND<0 | 97.5 | |
| | 4/29/2006 | 0.29267 J | | 205 |
| | 11/18/2006 | ND<0 | 97.5 | |
| | 5/23/2007 | ND<0 | 97.5 | |
| | 11/28/2007 | ND<0 | 97.5 | |
| | 6/5/2008 | ND<0 | 97.5 | |
| | 11/20/2008 | ND<0 | 97.5 | |
| | 6/11/2009 | -1.30933 J | | 198 |
| | 11/16/2009 | ND<-2.25379 | | 97.5 |
| | 6/30/2010 | ND<-2.25379 | | 97.5 |
| | 11/12/2010 | ND<-2.25379 U | | 97.5 |

Rank Sum = 3181
Rank Mean = 113.607

| | | | | |
|---|---|---|---|---|
| MW-12BR | 3/16/1999 | ND<0 | 97.5 | |
| | 9/23/1999 | ND<0 | 97.5 | |
| | 3/15/2000 | ND<0 | 97.5 | |
| | 9/24/2003 | ND<0 | 97.5 | |
| | 3/11/2004 | ND<0 | 97.5 | |
| | 10/12/2004 | ND<0 | 97.5 | |
| | 4/1/2005 | 0.636577 J | 213 | |
| | 10/25/2005 | ND<0 | 97.5 | |
| | 4/29/2006 | ND<0 | 97.5 | |
| | 11/18/2006 | ND<0 | 97.5 | |
| | 5/23/2007 | ND<0 | 97.5 | |
| | 11/28/2007 | ND<0 | 97.5 | |
| | 6/5/2008 | ND<0 | 97.5 | |
| | 11/20/2008 | ND<0 | 97.5 | |
| | 6/11/2009 | ND<-2.25379 | 97.5 | |
| | 11/16/2009 | ND<-2.25379 | 97.5 | |
| | 6/30/2010 | ND<-2.25379 | 97.5 | |
| | 11/12/2010 | ND<-2.25379 U | 97.5 | |

Rank Sum = 1870.5
Rank Mean = 103.917

## Calculation Results:

Kruskal-Wallis H Statistic = 4.14222
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 12.8018
95% Confidence comparison value is 15.5073 at 8 degrees of freedom
4.14222 < 15.5073 indicating no significant group difference at 5% significance level
12.8018 < 15.5073 indicating no significant group difference at 5% significance level when adjusted for ties

# Concentrations (mg/L)

## Parameter: Sulfide

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 215
Percent Non-Detects: 97.2851%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 17 (94.4444%) | 3/16/1999 | ND<0.2 | ND<0.2 |
| | | | 9/23/1999 | ND<0.2 | ND<0.2 |
| | | | 3/15/2000 | ND<0.2 | ND<0.2 |
| | | | 9/24/2003 | ND<0.2 | ND<0.2 |
| | | | 3/11/2004 | ND<0.2 | ND<0.2 |
| | | | 10/12/2004 | ND<0.2 | ND<0.2 |
| | | | 4/1/2005 | ND<0.2 | ND<0.2 |
| | | | 10/25/2005 | ND<0.2 | ND<0.2 |
| | | | 4/29/2006 | ND<0.2 | ND<0.2 |
| | | | 11/18/2006 | ND<0.2 | ND<0.2 |
| | | | 5/23/2007 | ND<0.2 | ND<0.2 |
| | | | 11/28/2007 | ND<0.2 | ND<0.2 |
| | | | 6/5/2008 | ND<0.2 | ND<0.2 |
| | | | 11/20/2008 | ND<0.2 | ND<0.2 |
| | | | 6/11/2009 | ND<1 | ND<1 |
| | | | 11/16/2009 | ND<1 | ND<1 |
| | | | 6/30/2010 | ND<10 | ND<10 |
| | | | 11/12/2010 | 28 | 28 |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-7 | 28 | 28 (100%) | 7/20/1995 | ND<0.2 | ND<0.2 |
| | | | 8/24/1995 | ND<0.2 | ND<0.2 |
| | | | 9/28/1995 | ND<0.2 | ND<0.2 |
| | | | 10/26/1995 | ND<0.2 | ND<0.2 |
| | | | 11/19/1996 | ND<0.2 | ND<0.2 |
| | | | 12/19/1996 | ND<0.2 | ND<0.2 |
| | | | 3/24/1997 | ND<0.2 | ND<0.2 |
| | | | 9/24/1997 | ND<0.2 | ND<0.2 |
| | | | 4/7/1998 | ND<0.2 | ND<0.2 |
| | | | 9/23/1998 | ND<0.2 | ND<0.2 |
| | | | 3/16/1999 | ND<0.2 | ND<0.2 |
| | | | 9/23/1999 | ND<0.2 | ND<0.2 |
| | | | 3/15/2000 | ND<0.2 | ND<0.2 |
| | | | 9/24/2003 | ND<0.2 | ND<0.2 |
| | | | 3/11/2004 | ND<0.2 | ND<0.2 |
| | | | 10/12/2004 | ND<0.2 | ND<0.2 |
| | | | 4/1/2005 | ND<0.2 | ND<0.2 |
| | | | 10/25/2005 | ND<0.2 | ND<0.2 |
| | | | 4/29/2006 | ND<0.2 | ND<0.2 |
| | | | 11/18/2006 | ND<0.2 | ND<0.2 |
| | | | 5/23/2007 | ND<0.2 | ND<0.2 |
| | | | 11/28/2007 | ND<0.2 | ND<0.2 |
| | | | 6/5/2008 | ND<0.2 | ND<0.2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/20/2008 | ND<0.2 | ND<0.2 | |
| | | | 6/11/2009 | ND<1 | ND<1 | |
| | | | 11/13/2009 | ND<1 | ND<1 | |
| | | | 6/30/2010 | ND<10 | ND<10 | |
| | | | 11/12/2010 | ND<10 U | | ND<10 U |
| MW-8 | 27 | 25 (92.5926%) | 7/20/1995 | | ND<0.2 | ND<0.2 |
| | | | 8/24/1995 | ND<0.2 | ND<0.2 | |
| | | | 9/28/1995 | ND<0.2 | ND<0.2 | |
| | | | 10/26/1995 | ND<0.2 | ND<0.2 | |
| | | | 11/19/1996 | ND<0.2 | ND<0.2 | |
| | | | 12/19/1996 | ND<0.2 | ND<0.2 | |
| | | | 3/24/1997 | ND<0.2 | ND<0.2 | |
| | | | 9/24/1997 | ND<0.2 | ND<0.2 | |
| | | | 4/7/1998 | ND<0.2 | ND<0.2 | |
| | | | 9/23/1998 | ND<0.2 | ND<0.2 | |
| | | | 3/16/1999 | ND<0.2 | ND<0.2 | |
| | | | 9/23/1999 | ND<0.2 | ND<0.2 | |
| | | | 3/15/2000 | ND<0.2 | ND<0.2 | |
| | | | 9/24/2003 | ND<0.2 | ND<0.2 | |
| | | | 3/11/2004 | ND<0.2 | ND<0.2 | |
| | | | 10/12/2004 | ND<0.2 | ND<0.2 | |
| | | | 4/1/2005 | ND<0.2 | ND<0.2 | |
| | | | 10/25/2005 | ND<0.2 | ND<0.2 | |
| | | | 4/29/2006 | ND<0.2 | ND<0.2 | |
| | | | 11/18/2006 | ND<0.2 | ND<0.2 | |
| | | | 5/23/2007 | ND<0.2 | ND<0.2 | |
| | | | 11/28/2007 | ND<0.2 | ND<0.2 | |
| | | | 6/5/2008 | 0.4 | 0.4 | |
| | | | 11/20/2008 | ND<0.2 | ND<0.2 | |
| | | | 6/11/2009 | ND<1 | ND<1 | |
| | | | 6/30/2010 | ND<10 | ND<10 | |
| | | | 11/12/2010 | 18 | 18 | |
| MW-6 | 28 | 27 (96.4286%) | 7/20/1995 | | ND<0.2 | ND<0.2 |
| | | | 8/24/1995 | ND<0.2 | ND<0.2 | |
| | | | 9/28/1995 | ND<0.2 | ND<0.2 | |
| | | | 10/26/1995 | ND<0.2 | ND<0.2 | |
| | | | 11/19/1996 | ND<0.2 | ND<0.2 | |
| | | | 12/19/1996 | ND<0.2 | ND<0.2 | |
| | | | 3/24/1997 | ND<0.2 | ND<0.2 | |
| | | | 9/24/1997 | ND<0.2 | ND<0.2 | |
| | | | 4/7/1998 | ND<0.2 | ND<0.2 | |
| | | | 9/23/1998 | ND<0.2 | ND<0.2 | |
| | | | 3/16/1999 | ND<0.2 | ND<0.2 | |
| | | | 9/23/1999 | ND<0.2 | ND<0.2 | |
| | | | 3/15/2000 | ND<0.2 | ND<0.2 | |
| | | | 9/24/2003 | ND<0.2 | ND<0.2 | |
| | | | 3/11/2004 | ND<0.2 | ND<0.2 | |
| | | | 10/12/2004 | ND<0.2 | ND<0.2 | |
| | | | 4/1/2005 | ND<0.2 | ND<0.2 | |
| | | | 10/25/2005 | ND<0.2 | ND<0.2 | |
| | | | 4/29/2006 | ND<0.2 | ND<0.2 | |
| | | | 11/18/2006 | ND<0.2 | ND<0.2 | |
| | | | 5/23/2007 | ND<0.2 | ND<0.2 | |
| | | | 11/28/2007 | ND<0.2 | ND<0.2 | |
| | | | 6/5/2008 | ND<0.2 | ND<0.2 | |
| | | | 11/20/2008 | ND<0.2 | ND<0.2 | |
| | | | 6/11/2009 | ND<1 | ND<1 | |
| | | | 11/16/2009 | ND<1 | ND<1 | |
| | | | 6/30/2010 | ND<10 | ND<10 | |
| | | | 11/12/2010 | 43 | 43 | |

| | | | | | |
|---|---|---|---|---|---|
| MW-12BR | 18 | 18 (100%) | 3/16/1999 | ND<0.2 | ND<0.2 |
| | | 9/23/1999 | ND<0.2 | ND<0.2 | |
| | | 3/15/2000 | ND<0.2 | ND<0.2 | |
| | | 9/24/2003 | ND<0.2 | ND<0.2 | |
| | | 3/11/2004 | ND<0.2 | ND<0.2 | |
| | | 10/12/2004 | ND<0.2 | ND<0.2 | |
| | | 4/1/2005 | ND<0.2 | ND<0.2 | |
| | | 10/25/2005 | ND<0.2 | ND<0.2 | |
| | | 4/29/2006 | ND<0.2 | ND<0.2 | |
| | | 11/18/2006 | ND<0.2 | ND<0.2 | |
| | | 5/23/2007 | ND<0.2 | ND<0.2 | |
| | | 11/28/2007 | ND<0.2 | ND<0.2 | |
| | | 6/5/2008 | ND<0.2 | ND<0.2 | |
| | | 11/20/2008 | ND<0.2 | ND<0.2 | |
| | | 6/11/2009 | ND<1 | ND<1 | |
| | | 11/13/2009 | ND<1 | ND<1 | |
| | | 6/30/2010 | ND<10 | ND<10 | |
| | | 11/12/2010 | ND<10 U | ND<10 U | |
| MW-12AR | 18 | 18 (100%) | 3/16/1999 | ND<0.2 | ND<0.2 |
| | | 9/23/1999 | ND<0.2 | ND<0.2 | |
| | | 3/15/2000 | ND<0.2 | ND<0.2 | |
| | | 9/24/2003 | ND<0.2 | ND<0.2 | |
| | | 3/11/2004 | ND<0.2 | ND<0.2 | |
| | | 10/12/2004 | ND<0.2 | ND<0.2 | |
| | | 4/1/2005 | ND<0.2 | ND<0.2 | |
| | | 10/25/2005 | ND<0.2 | ND<0.2 | |
| | | 4/29/2006 | ND<0.2 | ND<0.2 | |
| | | 11/18/2006 | ND<0.2 | ND<0.2 | |
| | | 5/23/2007 | ND<0.2 | ND<0.2 | |
| | | 11/28/2007 | ND<0.2 | ND<0.2 | |
| | | 6/5/2008 | ND<0.2 | ND<0.2 | |
| | | 11/20/2008 | ND<0.2 | ND<0.2 | |
| | | 6/11/2009 | ND<1 | ND<1 | |
| | | 11/12/2009 | ND<1 | ND<1 | |
| | | 6/30/2010 | ND<10 | ND<10 | |
| | | 11/12/2010 | ND<10 U | ND<10 U | |
| MW-9 | 28 | 27 (96.4286%) | 7/20/1995 | ND<0.2 | ND<0.2 |
| | | 8/24/1995 | ND<0.2 | ND<0.2 | |
| | | 9/28/1995 | ND<0.2 | ND<0.2 | |
| | | 10/26/1995 | ND<0.2 | ND<0.2 | |
| | | 11/19/1996 | ND<0.2 | ND<0.2 | |
| | | 12/19/1996 | ND<0.2 | ND<0.2 | |
| | | 3/24/1997 | ND<0.2 | ND<0.2 | |
| | | 9/24/1997 | ND<0.2 | ND<0.2 | |
| | | 4/7/1998 | ND<0.2 | ND<0.2 | |
| | | 9/23/1998 | ND<0.2 | ND<0.2 | |
| | | 3/16/1999 | ND<0.2 | ND<0.2 | |
| | | 9/23/1999 | ND<0.2 | ND<0.2 | |
| | | 3/15/2000 | ND<0.2 | ND<0.2 | |
| | | 9/24/2003 | ND<0.2 | ND<0.2 | |
| | | 3/11/2004 | ND<0.2 | ND<0.2 | |
| | | 10/12/2004 | ND<0.2 | ND<0.2 | |
| | | 4/1/2005 | ND<0.2 | ND<0.2 | |
| | | 10/25/2005 | ND<0.2 | ND<0.2 | |
| | | 4/29/2006 | ND<0.2 | ND<0.2 | |
| | | 11/18/2006 | ND<0.2 | ND<0.2 | |
| | | 5/23/2007 | ND<0.2 | ND<0.2 | |
| | | 11/28/2007 | ND<0.2 | ND<0.2 | |
| | | 6/5/2008 | 0.153 J | 0.153 J | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/20/2008 | ND<0.2 | ND<0.2 | |
| | | | 6/11/2009 | ND<1 | ND<1 | |
| | | | 11/16/2009 | ND<1 | ND<1 | |
| | | | 6/30/2010 | ND<10 | ND<10 | |
| | | | 11/12/2010 | ND<10 U | | ND<10 U |
| MW-10 | 28 | 27 (96.4286%) | 7/20/1995 | | ND<0.2 | ND<0.2 |
| | | | 8/24/1995 | ND<0.2 | ND<0.2 | |
| | | | 9/28/1995 | ND<0.2 | ND<0.2 | |
| | | | 10/26/1995 | ND<0.2 | ND<0.2 | |
| | | | 11/19/1996 | ND<0.2 | ND<0.2 | |
| | | | 12/19/1996 | ND<0.2 | ND<0.2 | |
| | | | 3/24/1997 | ND<0.2 | ND<0.2 | |
| | | | 9/24/1997 | ND<0.2 | ND<0.2 | |
| | | | 4/7/1998 | ND<0.2 | ND<0.2 | |
| | | | 9/23/1998 | ND<0.2 | ND<0.2 | |
| | | | 3/16/1999 | ND<0.2 | ND<0.2 | |
| | | | 9/23/1999 | ND<0.2 | ND<0.2 | |
| | | | 3/15/2000 | ND<0.2 | ND<0.2 | |
| | | | 9/24/2003 | ND<0.2 | ND<0.2 | |
| | | | 3/11/2004 | ND<0.2 | ND<0.2 | |
| | | | 10/12/2004 | ND<0.2 | ND<0.2 | |
| | | | 4/1/2005 | ND<0.2 | ND<0.2 | |
| | | | 10/25/2005 | ND<0.2 | ND<0.2 | |
| | | | 4/29/2006 | ND<0.2 | ND<0.2 | |
| | | | 11/18/2006 | ND<0.2 | ND<0.2 | |
| | | | 5/23/2007 | ND<0.2 | ND<0.2 | |
| | | | 11/28/2007 | ND<0.2 | ND<0.2 | |
| | | | 6/5/2008 | 0.056 J | 0.056 J | |
| | | | 11/20/2008 | ND<0.2 | ND<0.2 | |
| | | | 6/11/2009 | ND<1 | ND<1 | |
| | | | 11/13/2009 | ND<1 | ND<1 | |
| | | | 6/30/2010 | ND<10 | ND<10 | |
| | | | 11/12/2010 | ND<10 U | | ND<10 U |
| MW-11R | 28 | 28 (100%) | 7/20/1995 | | ND<0.2 | ND<0.2 |
| | | | 8/24/1995 | ND<0.2 | ND<0.2 | |
| | | | 9/28/1995 | ND<0.2 | ND<0.2 | |
| | | | 10/26/1995 | ND<0.2 | ND<0.2 | |
| | | | 11/19/1996 | ND<0.2 | ND<0.2 | |
| | | | 12/19/1996 | ND<0.2 | ND<0.2 | |
| | | | 3/24/1997 | ND<0.2 | ND<0.2 | |
| | | | 9/24/1997 | ND<0.2 | ND<0.2 | |
| | | | 4/7/1998 | ND<0.2 | ND<0.2 | |
| | | | 9/23/1998 | ND<0.2 | ND<0.2 | |
| | | | 3/16/1999 | ND<0.2 | ND<0.2 | |
| | | | 9/23/1999 | ND<0.2 | ND<0.2 | |
| | | | 3/15/2000 | ND<0.2 | ND<0.2 | |
| | | | 9/24/2003 | ND<0.2 | ND<0.2 | |
| | | | 3/11/2004 | ND<0.2 | ND<0.2 | |
| | | | 10/12/2004 | ND<0.2 | ND<0.2 | |
| | | | 4/1/2005 | ND<0.2 | ND<0.2 | |
| | | | 10/25/2005 | ND<0.2 | ND<0.2 | |
| | | | 4/29/2006 | ND<0.2 | ND<0.2 | |
| | | | 11/18/2006 | ND<0.2 | ND<0.2 | |
| | | | 5/23/2007 | ND<0.2 | ND<0.2 | |
| | | | 11/28/2007 | ND<0.2 | ND<0.2 | |
| | | | 6/5/2008 | ND<0.2 | ND<0.2 | |
| | | | 11/20/2008 | ND<0.2 | ND<0.2 | |
| | | | 6/11/2009 | ND<1 | ND<1 | |
| | | | 11/13/2009 | ND<1 | ND<1 | |
| | | | 6/30/2010 | ND<10 | ND<10 | |

| | | | |
|---|---|---|---|
| | 11/12/2010 | ND<10 U | ND<10 U |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. Original |
|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: Sulfide

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.056 | -2.65209 | 7.03356 | -0.148517 |
| 2 | 0.1 | -2.36561 | 12.6297 | -0.385078 |
| 3 | 0.1 | -2.22621 | 17.5857 | -0.607699 |
| 4 | 0.1 | -2.09693 | 21.9828 | -0.817392 |
| 5 | 0.1 | -2.01409 | 26.0394 | -1.0188 |
| 6 | 0.1 | -1.92684 | 29.7521 | -1.21149 |
| 7 | 0.1 | -1.86629 | 33.2351 | -1.39811 |
| 8 | 0.1 | -1.79912 | 36.472 | -1.57803 |
| 9 | 0.1 | -1.75069 | 39.5369 | -1.75309 |
| 10 | 0.1 | -1.6954 | 42.4112 | -1.92263 |
| 11 | 0.1 | -1.65463 | 45.149 | -2.0881 |
| 12 | 0.1 | -1.60725 | 47.7323 | -2.24882 |
| 13 | 0.1 | -1.57179 | 50.2028 | -2.406 |
| 14 | 0.1 | -1.53007 | 52.5439 | -2.55901 |
| 15 | 0.1 | -1.49852 | 54.7894 | -2.70886 |
| 16 | 0.1 | -1.46106 | 56.9241 | -2.85496 |
| 17 | 0.1 | -1.4325 | 58.9762 | -2.99822 |
| 18 | 0.1 | -1.39838 | 60.9316 | -3.13805 |
| 19 | 0.1 | -1.3722 | 62.8146 | -3.27527 |
| 20 | 0.1 | -1.34075 | 64.6122 | -3.40935 |
| 21 | 0.1 | -1.31652 | 66.3454 | -3.541 |
| 22 | 0.1 | -1.28727 | 68.0025 | -3.66973 |
| 23 | 0.1 | -1.26464 | 69.6018 | -3.79619 |
| 24 | 0.1 | -1.23724 | 71.1326 | -3.91992 |
| 25 | 0.1 | -1.21596 | 72.6111 | -4.04151 |
| 26 | 0.1 | -1.19012 | 74.0275 | -4.16052 |
| 27 | 0.1 | -1.17 | 75.3964 | -4.27752 |
| 28 | 0.1 | -1.1455 | 76.7086 | -4.39207 |
| 29 | 0.1 | -1.12639 | 77.9774 | -4.50471 |
| 30 | 0.1 | -1.10306 | 79.1941 | -4.61502 |
| 31 | 0.1 | -1.08482 | 80.371 | -4.7235 |
| 32 | 0.1 | -1.06252 | 81.4999 | -4.82975 |
| 33 | 0.1 | -1.04505 | 82.592 | -4.93426 |
| 34 | 0.1 | -1.02365 | 83.6399 | -5.03662 |
| 35 | 0.1 | -1.00687 | 84.6537 | -5.13731 |
| 36 | 0.1 | -0.986272 | 85.6264 | -5.23594 |
| 37 | 0.1 | -0.970094 | 86.5675 | -5.33295 |
| 38 | 0.1 | -0.950222 | 87.4704 | -5.42797 |
| 39 | 0.1 | -0.934598 | 88.3439 | -5.52143 |
| 40 | 0.1 | -0.915365 | 89.1818 | -5.61296 |
| 41 | 0.1 | -0.900227 | 89.9922 | -5.70299 |
| 42 | 0.1 | -0.881587 | 90.7694 | -5.79115 |
| 43 | 0.1 | -0.866894 | 91.5209 | -5.87784 |
| 44 | 0.1 | -0.848786 | 92.2413 | -5.96271 |
| 45 | 0.1 | -0.834498 | 92.9377 | -6.04616 |
| 46 | 0.1 | -0.816874 | 93.605 | -6.12785 |
| 47 | 0.1 | -0.802956 | 94.2497 | -6.20815 |
| 48 | 0.1 | -0.785774 | 94.8672 | -6.28672 |
| 49 | 0.1 | -0.772193 | 95.4634 | -6.36394 |

| | | | | |
|---|---|---|---|---|
| 50 | 0.1 | -0.755415 | 96.0341 | -6.43949 |
| 51 | 0.1 | -0.742143 | 96.5849 | -6.5137 |
| 52 | 0.1 | -0.725736 | 97.1116 | -6.58627 |
| 53 | 0.1 | -0.712751 | 97.6196 | -6.65755 |
| 54 | 0.1 | -0.696684 | 98.1049 | -6.72722 |
| 55 | 0.1 | -0.683969 | 8.5727 | -6.79561 |
| 56 | 0.1 | -0.668209 | 99.0192 | -6.86243 |
| 57 | 0.1 | -0.655726 | 99.4492 | -6.92801 |
| 58 | 0.1 | -0.640266 | 99.8592 | -6.99203 |
| 59 | 0.1 | -0.628006 | 100.254 | -7.05483 |
| 60 | 0.1 | -0.612813 | 100.629 | -7.11611 |
| 61 | 0.1 | -0.60076 | 100.99 | -7.17619 |
| 62 | 0.1 | -0.585815 | 101.333 | -7.23477 |
| 63 | 0.1 | -0.573953 | 101.663 | -7.29217 |
| 64 | 0.1 | -0.559237 | 101.975 | -7.34809 |
| 65 | 0.1 | -0.547551 | 102.275 | -7.40285 |
| 66 | 0.1 | -0.533048 | 102.559 | -7.45615 |
| 67 | 0.1 | -0.521527 | 102.831 | -7.5083 |
| 68 | 0.1 | -0.507221 | 103.089 | -7.55903 |
| 69 | 0.1 | -0.49585 | 103.334 | -7.60861 |
| 70 | 0.1 | -0.481728 | 103.566 | -7.65678 |
| 71 | 0.1 | -0.470498 | 103.788 | -7.70383 |
| 72 | 0.1 | -0.456542 | 103.996 | -7.74949 |
| 73 | 0.1 | -0.445443 | 104.195 | -7.79403 |
| 74 | 0.1 | -0.431644 | 104.381 | -7.8372 |
| 75 | 0.1 | -0.420664 | 104.558 | -7.87926 |
| 76 | 0.1 | -0.40701 | 104.724 | -7.91996 |
| 77 | 0.1 | -0.396142 | 104.881 | -7.95958 |
| 78 | 0.1 | -0.382622 | 105.027 | -7.99784 |
| 79 | 0.1 | -0.371856 | 105.165 | -8.03503 |
| 80 | 0.1 | -0.358459 | 105.294 | -8.07087 |
| 81 | 0.1 | -0.347787 | 105.415 | -8.10565 |
| 82 | 0.1 | -0.334503 | 105.527 | -8.1391 |
| 83 | 0.1 | -0.323919 | 105.632 | -8.17149 |
| 84 | 0.1 | -0.310738 | 105.728 | -8.20257 |
| 85 | 0.1 | -0.300232 | 105.818 | -8.23259 |
| 86 | 0.1 | -0.287147 | 105.901 | -8.2613 |
| 87 | 0.1 | -0.276714 | 105.977 | -8.28898 |
| 88 | 0.1 | -0.263715 | 106.047 | -8.31535 |
| 89 | 0.1 | -0.253347 | 106.111 | -8.34068 |
| 90 | 0.1 | -0.240426 | 106.169 | -8.36472 |
| 91 | 0.1 | -0.230118 | 106.222 | -8.38774 |
| 92 | 0.1 | -0.217267 | 106.269 | -8.40946 |
| 93 | 0.1 | -0.207012 | 106.312 | -8.43016 |
| 94 | 0.1 | -0.194225 | 106.35 | -8.44959 |
| 95 | 0.1 | -0.184017 | 106.383 | -8.46799 |
| 96 | 0.1 | -0.171285 | 106.413 | -8.48512 |
| 97 | 0.1 | -0.161119 | 106.439 | -8.50123 |
| 98 | 0.1 | -0.148434 | 106.461 | -8.51607 |
| 99 | 0.1 | -0.138305 | 106.48 | -8.5299 |
| 100 | 0.1 | -0.125661 | 106.496 | -8.54247 |
| 101 | 0.1 | -0.115562 | 106.509 | -8.55402 |
| 102 | 0.1 | -0.102953 | 106.52 | -8.56432 |
| 103 | 0.1 | -0.0928787 | 106.528 | -8.57361 |
| 104 | 0.1 | -0.0802981 | 106.535 | -8.58164 |
| 105 | 0.1 | -0.0702426 | 106.54 | -8.58866 |
| 106 | 0.1 | -0.0576847 | 106.543 | -8.59443 |
| 107 | 0.1 | -0.0476439 | 106.545 | -8.59919 |
| 108 | 0.1 | -0.0350997 | 106.546 | -8.6027 |
| 109 | 0.1 | -0.0250691 | 106.547 | -8.60521 |
| 110 | 0.1 | -0.0125328 | 106.547 | -8.60646 |
| 111 | 0.1 | 0 | 106.547 | -8.60646 |

| | | | | |
|---|---|---|---|---|
| 112 | 0.1 | 0.0125328 | 106.547 | -8.60521 |
| 113 | 0.1 | 0.0250691 | 106.548 | -8.6027 |
| 114 | 0.1 | 0.0350997 | 106.549 | -8.59919 |
| 115 | 0.1 | 0.0476439 | 106.551 | -8.59443 |
| 116 | 0.1 | 0.0576847 | 106.555 | -8.58866 |
| 117 | 0.1 | 0.0702426 | 106.56 | -8.58164 |
| 118 | 0.1 | 0.0802981 | 106.566 | -8.57361 |
| 119 | 0.1 | 0.0928787 | 106.575 | -8.56432 |
| 120 | 0.1 | 0.102953 | 106.585 | -8.55402 |
| 121 | 0.1 | 0.115562 | 106.599 | -8.54247 |
| 122 | 0.1 | 0.125661 | 106.615 | -8.5299 |
| 123 | 0.1 | 0.138305 | 106.634 | -8.51607 |
| 124 | 0.1 | 0.148434 | 106.656 | -8.50123 |
| 125 | 0.1 | 0.161119 | 106.682 | -8.48512 |
| 126 | 0.1 | 0.171285 | 106.711 | -8.46799 |
| 127 | 0.1 | 0.184017 | 106.745 | -8.44959 |
| 128 | 0.1 | 0.194225 | 106.783 | -8.43016 |
| 129 | 0.1 | 0.207012 | 106.825 | -8.40946 |
| 130 | 0.1 | 0.217267 | 106.873 | -8.38774 |
| 131 | 0.1 | 0.230118 | 106.926 | -8.36472 |
| 132 | 0.1 | 0.240426 | 106.983 | -8.34068 |
| 133 | 0.1 | 0.253347 | 107.048 | -8.31535 |
| 134 | 0.1 | 0.263715 | 107.117 | -8.28898 |
| 135 | 0.1 | 0.276714 | 107.194 | -8.2613 |
| 136 | 0.1 | 0.287147 | 107.276 | -8.23259 |
| 137 | 0.1 | 0.300232 | 107.366 | -8.20257 |
| 138 | 0.1 | 0.310738 | 107.463 | -8.17149 |
| 139 | 0.1 | 0.323919 | 107.568 | -8.1391 |
| 140 | 0.1 | 0.334503 | 107.68 | -8.10565 |
| 141 | 0.1 | 0.347787 | 107.801 | -8.07087 |
| 142 | 0.1 | 0.358459 | 107.929 | -8.03503 |
| 143 | 0.1 | 0.371856 | 108.067 | -7.99784 |
| 144 | 0.1 | 0.382622 | 108.214 | -7.95958 |
| 145 | 0.1 | 0.396142 | 108.371 | -7.91996 |
| 146 | 0.1 | 0.40701 | 108.536 | -7.87926 |
| 147 | 0.1 | 0.420664 | 108.713 | -7.8372 |
| 148 | 0.1 | 0.431644 | 108.9 | -7.79403 |
| 149 | 0.1 | 0.445443 | 109.098 | -7.74949 |
| 150 | 0.1 | 0.456542 | 109.307 | -7.70383 |
| 151 | 0.1 | 0.470498 | 109.528 | -7.65678 |
| 152 | 0.1 | 0.481728 | 109.76 | -7.60861 |
| 153 | 0.1 | 0.49585 | 110.006 | -7.55903 |
| 154 | 0.1 | 0.507221 | 110.263 | -7.5083 |
| 155 | 0.1 | 0.521527 | 110.535 | -7.45615 |
| 156 | 0.1 | 0.533048 | 110.819 | -7.40285 |
| 157 | 0.1 | 0.547551 | 111.119 | -7.34809 |
| 158 | 0.1 | 0.559237 | 111.432 | -7.29217 |
| 159 | 0.1 | 0.573953 | 111.761 | -7.23477 |
| 160 | 0.1 | 0.585815 | 112.104 | -7.17619 |
| 161 | 0.1 | 0.60076 | 112.465 | -7.11611 |
| 162 | 0.1 | 0.612813 | 112.841 | -7.05483 |
| 163 | 0.1 | 0.628006 | 113.235 | -6.99203 |
| 164 | 0.1 | 0.640266 | 113.645 | -6.92801 |
| 165 | 0.1 | 0.655726 | 114.075 | -6.86243 |
| 166 | 0.1 | 0.668209 | 114.522 | -6.79561 |
| 167 | 0.1 | 0.68396 | 114.989 | -6.72722 |
| 168 | 0.1 | 0.696684 | 115.475 | -6.65755 |
| 169 | 0.1 | 0.712751 | 115.983 | -6.58627 |
| 170 | 0.1 | 0.725736 | 116.51 | -6.5137 |
| 171 | 0.1 | 0.742143 | 117.06 | -6.43949 |
| 172 | 0.1 | 0.755415 | 117.631 | -6.36394 |
| 173 | 0.1 | 0.772193 | 118.227 | -6.28672 |

| | | | | |
|---|---|---|---|---|
| 174 | 0.1 | 0.785774 | 118.845 | -6.20815 |
| 175 | 0.1 | 0.802956 | 119.489 | -6.12785 |
| 176 | 0.1 | 0.816874 | 120.157 | -6.04616 |
| 177 | 0.1 | 0.834498 | 120.853 | -5.96271 |
| 178 | 0.1 | 0.848786 | 121.574 | -5.87784 |
| 179 | 0.1 | 0.866894 | 122.325 | -5.79115 |
| 180 | 0.1 | 0.881587 | 123.102 | -5.70299 |
| 181 | 0.1 | 0.900227 | 123.913 | -5.61296 |
| 182 | 0.1 | 0.915365 | 124.751 | -5.52143 |
| 183 | 0.1 | 0.93459 | 125.624 | -5.42797 |
| 184 | 0.1 | 0.950222 | 126.527 | -5.33295 |
| 185 | 0.153 | 0.970094 | 127.468 | -5.18452 |
| 186 | 0.4 | 0.986272 | 128.441 | -4.79001 |
| 187 | 0.5 | 1.00687 | 129.455 | -4.28658 |
| 188 | 0.5 | 1.02365 | 130.502 | -3.77476 |
| 189 | 0.5 | 1.04505 | 131.594 | -3.25223 |
| 190 | 0.5 | 1.06252 | 132.723 | -2.72097 |
| 191 | 0.5 | 1.08482 | 133.9 | -2.17856 |
| 192 | 0.5 | 1.10306 | 135.117 | -1.62703 |
| 193 | 0.5 | 1.12639 | 136.386 | -1.06383 |
| 194 | 0.5 | 1.1455 | 137.698 | -0.49108 |
| 195 | 0.5 | 1.17 | 139.067 | 0.0939205 |
| 196 | 0.5 | 1.19012 | 140.483 | 0.68898 |
| 197 | 0.5 | 1.21596 | 141.962 | 1.29696 |
| 198 | 0.5 | 1.23724 | 143.493 | 1.91558 |
| 199 | 0.5 | 1.26464 | 145.092 | 2.5479 |
| 200 | 0.5 | 1.28727 | 146.749 | 3.19153 |
| 201 | 0.5 | 1.31652 | 148.482 | 3.84979 |
| 202 | 0.5 | 1.34075 | 150.28 | 4.52017 |
| 203 | 0.5 | 1.3722 | 152.163 | 5.20627 |
| 204 | 5 | 1.39838 | 154.118 | 12.1982 |
| 205 | 5 | 1.4325 | 156.17 | 19.3607 |
| 206 | 5 | 1.46106 | 158.305 | 26.666 |
| 207 | 5 | 1.49852 | 160.551 | 34.1585 |
| 208 | 5 | 1.53007 | 162.892 | 41.8089 |
| 209 | 5 | 1.57179 | 165.362 | 49.6678 |
| 210 | 5 | 1.60725 | 167.945 | 57.7041 |
| 211 | 5 | 1.65463 | 170.683 | 65.9772 |
| 212 | 5 | 1.6954 | 173.558 | 74.4542 |
| 213 | 5 | 1.75069 | 176.622 | 83.2076 |
| 214 | 5 | 1.79912 | 179.859 | 92.2032 |
| 215 | 5 | 1.86629 | 183.342 | 101.535 |
| 216 | 5 | 1.92684 | 187.055 | 111.169 |
| 217 | 5 | 2.01409 | 191.112 | 121.239 |
| 218 | 5 | 2.09693 | 195.509 | 131.724 |
| 219 | 18 | 2.22621 | 200.465 | 171.796 |
| 220 | 28 | 2.36561 | 206.061 | 238.033 |
| 221 | 43 | 2.65209 | 213.094 | 352.073 |

Data Set Standard Deviation = 3.79742
Numerator = 123955
Denominator = 676039
W Statistic = 0.183355 = 123955 / 676039

5% Critical value of 0.976 exceeds 0.183355
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.183355
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: Sulfide

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | -2.8824 | -2.65209 | 7.03356 | 7.64438 |
| 2 | -2.30259 | -2.36561 | 12.6297 | 13.0914 |
| 3 | -2.30259 | -2.22621 | 17.5857 | 18.2174 |
| 4 | -2.30259 | -2.09693 | 21.9828 | 23.0458 |
| 5 | -2.30259 | -2.01409 | 26.0394 | 27.6834 |
| 6 | -2.30259 | -1.92684 | 29.7521 | 32.1201 |
| 7 | -2.30259 | -1.86629 | 33.2351 | 36.4174 |
| 8 | -2.30259 | -1.79912 | 36.472 | 40.56 |
| 9 | -2.30259 | -1.75069 | 39.5369 | 44.5912 |
| 10 | -2.30259 | -1.6954 | 42.4112 | 48.495 |
| 11 | -2.30259 | -1.65463 | 45.149 | 52.3049 |
| 12 | -2.30259 | -1.60725 | 47.7323 | 56.0057 |
| 13 | -2.30259 | -1.57179 | 50.2028 | 59.6249 |
| 14 | -2.30259 | -1.53007 | 52.5439 | 63.148 |
| 15 | -2.30259 | -1.49852 | 54.7894 | 66.5984 |
| 16 | -2.30259 | -1.46106 | 56.9241 | 69.9627 |
| 17 | -2.30259 | -1.4325 | 58.9762 | 73.2611 |
| 18 | -2.30259 | -1.39838 | 60.9316 | 76.481 |
| 19 | -2.30259 | -1.3722 | 62.8146 | 79.6406 |
| 20 | -2.30259 | -1.34075 | 64.6122 | 82.7278 |
| 21 | -2.30259 | -1.31652 | 66.3454 | 85.7592 |
| 22 | -2.30259 | -1.28727 | 68.0025 | 88.7233 |
| 23 | -2.30259 | -1.26464 | 69.6018 | 91.6352 |
| 24 | -2.30259 | -1.23724 | 71.1326 | 94.484 |
| 25 | -2.30259 | -1.21596 | 72.6111 | 97.2839 |
| 26 | -2.30259 | -1.19012 | 74.0275 | 100.024 |
| 27 | -2.30259 | -1.17 | 75.3964 | 102.718 |
| 28 | -2.30259 | -1.1455 | 76.7086 | 105.356 |
| 29 | -2.30259 | -1.12639 | 77.9774 | 107.95 |
| 30 | -2.30259 | -1.10306 | 79.1941 | 110.489 |
| 31 | -2.30259 | -1.08482 | 80.371 | 112.987 |
| 32 | -2.30259 | -1.06252 | 81.4999 | 115.434 |
| 33 | -2.30259 | -1.04505 | 82.592 | 117.84 |
| 34 | -2.30259 | -1.02365 | 83.6399 | 120.197 |
| 35 | -2.30259 | -1.00687 | 84.6537 | 122.516 |
| 36 | -2.30259 | -0.986272 | 85.6264 | 124.787 |
| 37 | -2.30259 | -0.970094 | 86.5675 | 127.02 |
| 38 | -2.30259 | -0.950222 | 87.4704 | 129.208 |
| 39 | -2.30259 | -0.93459 | 88.3439 | 131.36 |
| 40 | -2.30259 | -0.915365 | 89.1818 | 133.468 |
| 41 | -2.30259 | -0.900227 | 89.9922 | 135.541 |
| 42 | -2.30259 | -0.881587 | 90.7694 | 137.571 |
| 43 | -2.30259 | -0.866894 | 91.5209 | 139.567 |
| 44 | -2.30259 | -0.848786 | 92.2413 | 141.521 |
| 45 | -2.30259 | -0.834498 | 92.9377 | 143.443 |
| 46 | -2.30259 | -0.816874 | 93.605 | 145.324 |
| 47 | -2.30259 | -0.802956 | 94.2497 | 147.173 |
| 48 | -2.30259 | -0.785774 | 94.8672 | 148.982 |
| 49 | -2.30259 | -0.772193 | 95.4634 | 150.76 |

| | | | |
|---|---|---|---|
| 50 | -2.30259 | -0.755415 | 96.0341 | 152.499 |
| 51 | -2.30259 | -0.742143 | 96.5849 | 154.208 |
| 52 | -2.30259 | -0.725736 | 97.1116 | 155.879 |
| 53 | -2.30259 | -0.712751 | 97.6196 | 157.52 |
| 54 | -2.30259 | -0.696684 | 98.1049 | 159.125 |
| 55 | -2.30259 | -0.683969 | 8.5727 | 160.699 |
| 56 | -2.30259 | -0.668209 | 99.0192 | 162.238 |
| 57 | -2.30259 | -0.655726 | 99.4492 | 163.748 |
| 58 | -2.30259 | -0.640266 | 99.8592 | 165.222 |
| 59 | -2.30259 | -0.628006 | 100.254 | 166.668 |
| 60 | -2.30259 | -0.612813 | 100.629 | 168.079 |
| 61 | -2.30259 | -0.60076 | 100.99 | 169.463 |
| 62 | -2.30259 | -0.585815 | 101.333 | 170.811 |
| 63 | -2.30259 | -0.573953 | 101.663 | 172.133 |
| 64 | -2.30259 | -0.559237 | 101.975 | 173.421 |
| 65 | -2.30259 | -0.547551 | 102.275 | 174.681 |
| 66 | -2.30259 | -0.533048 | 102.559 | 175.909 |
| 67 | -2.30259 | -0.521527 | 102.831 | 177.11 |
| 68 | -2.30259 | -0.507221 | 103.089 | 178.278 |
| 69 | -2.30259 | -0.49585 | 103.334 | 179.419 |
| 70 | -2.30259 | -0.481728 | 103.566 | 180.529 |
| 71 | -2.30259 | -0.470498 | 103.788 | 181.612 |
| 72 | -2.30259 | -0.456542 | 103.996 | 182.663 |
| 73 | -2.30259 | -0.445443 | 104.195 | 183.689 |
| 74 | -2.30259 | -0.431644 | 104.381 | 184.683 |
| 75 | -2.30259 | -0.420664 | 104.558 | 185.651 |
| 76 | -2.30259 | -0.40701 | 104.724 | 186.589 |
| 77 | -2.30259 | -0.396142 | 104.881 | 187.501 |
| 78 | -2.30259 | -0.382622 | 105.027 | 188.382 |
| 79 | -2.30259 | -0.371856 | 105.165 | 189.238 |
| 80 | -2.30259 | -0.358459 | 105.294 | 190.063 |
| 81 | -2.30259 | -0.347787 | 105.415 | 190.864 |
| 82 | -2.30259 | -0.334503 | 105.527 | 191.634 |
| 83 | -2.30259 | -0.323919 | 105.632 | 192.38 |
| 84 | -2.30259 | -0.310738 | 105.728 | 193.096 |
| 85 | -2.30259 | -0.300232 | 105.818 | 193.787 |
| 86 | -2.30259 | -0.287147 | 105.901 | 194.448 |
| 87 | -2.30259 | -0.276714 | 105.977 | 195.085 |
| 88 | -2.30259 | -0.263715 | 106.047 | 195.693 |
| 89 | -2.30259 | -0.253347 | 106.111 | 196.276 |
| 90 | -2.30259 | -0.240426 | 106.169 | 196.83 |
| 91 | -2.30259 | -0.230118 | 106.222 | 197.359 |
| 92 | -2.30259 | -0.217267 | 106.269 | 197.86 |
| 93 | -2.30259 | -0.207012 | 106.312 | 198.336 |
| 94 | -2.30259 | -0.194225 | 106.35 | 198.784 |
| 95 | -2.30259 | -0.184017 | 106.383 | 199.207 |
| 96 | -2.30259 | -0.171285 | 106.413 | 199.602 |
| 97 | -2.30259 | -0.161119 | 106.439 | 199.973 |
| 98 | -2.30259 | -0.148434 | 106.461 | 200.314 |
| 99 | -2.30259 | -0.138305 | 106.48 | 200.633 |
| 100 | -2.30259 | -0.125661 | 106.496 | 200.922 |
| 101 | -2.30259 | -0.115562 | 106.509 | 201.188 |
| 102 | -2.30259 | -0.102953 | 106.52 | 201.425 |
| 103 | -2.30259 | -0.0928787 | 106.528 | 201.639 |
| 104 | -2.30259 | -0.0802981 | 106.535 | 201.824 |
| 105 | -2.30259 | -0.0702426 | 106.54 | 201.986 |
| 106 | -2.30259 | -0.0576847 | 106.543 | 202.119 |
| 107 | -2.30259 | -0.0476439 | 106.545 | 202.228 |
| 108 | -2.30259 | -0.0350997 | 106.546 | 202.309 |
| 109 | -2.30259 | -0.0250691 | 106.547 | 202.367 |
| 110 | -2.30259 | -0.0125328 | 106.547 | 202.396 |
| 111 | -2.302590 | 106.547 | 202.396 | |

| | | | |
|---|---|---|---|
| 112 | -2.302590.0125328 | 106.547 | 202.367 |
| 113 | -2.302590.0250691 | 106.548 | 202.309 |
| 114 | -2.302590.0350997 | 106.549 | 202.228 |
| 115 | -2.302590.0476439 | 106.551 | 202.119 |
| 116 | -2.302590.0576847 | 106.555 | 201.986 |
| 117 | -2.302590.0702426 | 106.56 | 201.824 |
| 118 | -2.302590.0802981 | 106.566 | 201.639 |
| 119 | -2.302590.0928787 | 106.575 | 201.425 |
| 120 | -2.302590.102953 | 106.585 | 201.188 |
| 121 | -2.302590.115562 | 106.599 | 200.922 |
| 122 | -2.302590.125661 | 106.615 | 200.633 |
| 123 | -2.302590.138305 | 106.634 | 200.314 |
| 124 | -2.302590.148434 | 106.656 | 199.973 |
| 125 | -2.302590.161119 | 106.682 | 199.602 |
| 126 | -2.302590.171285 | 106.711 | 199.207 |
| 127 | -2.302590.184017 | 106.745 | 198.784 |
| 128 | -2.302590.194225 | 106.783 | 198.336 |
| 129 | -2.302590.207012 | 106.825 | 197.86 |
| 130 | -2.302590.217267 | 106.873 | 197.359 |
| 131 | -2.302590.230118 | 106.926 | 196.83 |
| 132 | -2.302590.240426 | 106.983 | 196.276 |
| 133 | -2.302590.253347 | 107.048 | 195.693 |
| 134 | -2.302590.263715 | 107.117 | 195.085 |
| 135 | -2.302590.276714 | 107.194 | 194.448 |
| 136 | -2.302590.287147 | 107.276 | 193.787 |
| 137 | -2.302590.300232 | 107.366 | 193.096 |
| 138 | -2.302590.310738 | 107.463 | 192.38 |
| 139 | -2.302590.323919 | 107.568 | 191.634 |
| 140 | -2.302590.334503 | 107.68 | 190.864 |
| 141 | -2.302590.347787 | 107.801 | 190.063 |
| 142 | -2.302590.358459 | 107.929 | 189.238 |
| 143 | -2.302590.371856 | 108.067 | 188.382 |
| 144 | -2.302590.382622 | 108.214 | 187.501 |
| 145 | -2.302590.396142 | 108.371 | 186.589 |
| 146 | -2.302590.40701 | 108.536 | 185.651 |
| 147 | -2.302590.420664 | 108.713 | 184.683 |
| 148 | -2.302590.431644 | 108.9 | 183.689 |
| 149 | -2.302590.445443 | 109.098 | 182.663 |
| 150 | -2.302590.456542 | 109.307 | 181.612 |
| 151 | -2.302590.470498 | 109.528 | 180.529 |
| 152 | -2.302590.481728 | 109.76 | 179.419 |
| 153 | -2.302590.49585 | 110.006 | 178.278 |
| 154 | -2.302590.507221 | 110.263 | 177.11 |
| 155 | -2.302590.521527 | 110.535 | 175.909 |
| 156 | -2.302590.533048 | 110.819 | 174.681 |
| 157 | -2.302590.547551 | 111.119 | 173.421 |
| 158 | -2.302590.559237 | 111.432 | 172.133 |
| 159 | -2.302590.573953 | 111.761 | 170.811 |
| 160 | -2.302590.585815 | 112.104 | 169.463 |
| 161 | -2.302590.60076 | 112.465 | 168.079 |
| 162 | -2.302590.612813 | 112.841 | 166.668 |
| 163 | -2.302590.628006 | 113.235 | 165.222 |
| 164 | -2.302590.640266 | 113.645 | 163.748 |
| 165 | -2.302590.655726 | 114.075 | 162.238 |
| 166 | -2.302590.668209 | 114.522 | 160.699 |
| 167 | -2.302590.68396 | 114.989 | 159.125 |
| 168 | -2.302590.696684 | 115.475 | 157.52 |
| 169 | -2.302590.712751 | 115.983 | 155.879 |
| 170 | -2.302590.725736 | 116.51 | 154.208 |
| 171 | -2.302590.742143 | 117.06 | 152.499 |
| 172 | -2.302590.755415 | 117.631 | 150.76 |
| 173 | -2.302590.772193 | 118.227 | 148.982 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 174 | -2.30259 | 0.785774 | | 118.845 | 147.173 | |
| 175 | -2.30259 | 0.802956 | | 119.489 | 145.324 | |
| 176 | -2.30259 | 0.816874 | | 120.157 | 143.443 | |
| 177 | -2.30259 | 0.834498 | | 120.853 | 141.521 | |
| 178 | -2.30259 | 0.848786 | | 121.574 | 139.567 | |
| 179 | -2.30259 | 0.866894 | | 122.325 | 137.571 | |
| 180 | -2.30259 | 0.881587 | | 123.102 | 135.541 | |
| 181 | -2.30259 | 0.900227 | | 123.913 | 133.468 | |
| 182 | -2.30259 | 0.915365 | | 124.751 | 131.36 | |
| 183 | -2.30259 | 0.93459 | 125.624 | 129.208 | | |
| 184 | -2.30259 | 0.950222 | | 126.527 | 127.02 | |
| 185 | -1.87732 | 0.970094 | | 127.468 | 125.199 | |
| 186 | -0.916291 | | 0.986272 | | 128.441 | 124.295 |
| 187 | -0.693147 | | 1.00687 | 129.455 | 123.598 | |
| 188 | -0.693147 | | 1.02365 | 130.502 | 122.888 | |
| 189 | -0.693147 | | 1.04505 | 131.594 | 122.164 | |
| 190 | -0.693147 | | 1.06252 | 132.723 | 121.427 | |
| 191 | -0.693147 | | 1.08482 | 133.9 | 120.675 | |
| 192 | -0.693147 | | 1.10306 | 135.117 | 119.911 | |
| 193 | -0.693147 | | 1.12639 | 136.386 | 119.13 | |
| 194 | -0.693147 | | 1.1455 | 137.698 | 118.336 | |
| 195 | -0.693147 | | 1.17 | 139.067 | 117.525 | |
| 196 | -0.693147 | | 1.19012 | 140.483 | 116.7 | |
| 197 | -0.693147 | | 1.21596 | 141.962 | 115.857 | |
| 198 | -0.693147 | | 1.23724 | 143.493 | 114.999 | |
| 199 | -0.693147 | | 1.26464 | 145.092 | 114.123 | |
| 200 | -0.693147 | | 1.28727 | 146.749 | 113.231 | |
| 201 | -0.693147 | | 1.31652 | 148.482 | 112.318 | |
| 202 | -0.693147 | | 1.34075 | 150.28 | 111.389 | |
| 203 | -0.693147 | | 1.3722 | 152.163 | 110.438 | |
| 204 | 1.60944 | 1.39838 | 154.118 | 112.688 | | |
| 205 | 1.60944 | 1.4325 | 156.17 | 114.994 | | |
| 206 | 1.60944 | 1.46106 | 158.305 | 117.345 | | |
| 207 | 1.60944 | 1.49852 | 160.551 | 119.757 | | |
| 208 | 1.60944 | 1.53007 | 162.892 | 122.22 | | |
| 209 | 1.60944 | 1.57179 | 165.362 | 124.749 | | |
| 210 | 1.60944 | 1.60725 | 167.945 | 127.336 | | |
| 211 | 1.60944 | 1.65463 | 170.683 | 129.999 | | |
| 212 | 1.60944 | 1.6954 | 173.558 | 132.728 | | |
| 213 | 1.60944 | 1.75069 | 176.622 | 135.545 | | |
| 214 | 1.60944 | 1.79912 | 179.859 | 138.441 | | |
| 215 | 1.60944 | 1.86629 | 183.342 | 141.445 | | |
| 216 | 1.60944 | 1.92684 | 187.055 | 144.546 | | |
| 217 | 1.60944 | 2.01409 | 191.112 | 147.787 | | |
| 218 | 1.60944 | 2.09693 | 195.509 | 151.162 | | |
| 219 | 2.89037 | 2.22621 | 200.465 | 157.597 | | |
| 220 | 3.3322 | 2.36561 | 206.061 | 165.479 | | |
| 221 | 3.7612 | 2.65209 | 213.094 | 175.454 | | |

Data Set Standard Deviation = 1.2106
Numerator = 30784.2
Denominator = 68706.8
W Statistic = 0.448053 = 30784.2 / 68706.8

5% Critical value of 0.976 exceeds 0.448053
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.448053
Evidence of non-normality at 99% level of significance

# Non-Parametric Prediction Interval

## Inter-Well Comparison

## Parameter: Sulfide

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 97.2851%
Number of comparisons = 8
Future Samples (k) = 8
Recent Dates = 1
Background Samples (n) = 18
Maximum Background Concentration = 3.3322
Confidence Level = 69.2%
False Positive Rate = 30.8%

| Location | Date | Samples | Mean | Significant |
|---|---|---|---|---|
| MW-7 | 11/12/2010 | 1 | 1.60944 | FALSE |
| MW-8 | 11/12/2010 | 1 | 2.89037 | FALSE |
| MW-6 | 11/12/2010 | 1 | 3.7612 | TRUE |
| MW-12BR | 11/12/2010 | 1 | 1.60944 | FALSE |
| MW-12AR | 11/12/2010 | 1 | 1.60944 | FALSE |
| MW-9 | 11/12/2010 | 1 | 1.60944 | FALSE |
| MW-10 | 11/12/2010 | 1 | 1.60944 | FALSE |
| MW-11R | 11/12/2010 | 1 | 1.60944 | FALSE |

# Mann-Kendall Trend Analysis

## Parameter: Sulfide

## Location: MW-6

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | Positives | Negatives |
|---|---|---|---|---|
| ND<-2.30259 | ND<-2.30259 | 0 | 0 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 0 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 0 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 0 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 0 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 0 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 0 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 0 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 0 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 0 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 0 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 0 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 0 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 0 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 0 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 0 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 0 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 0 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 0 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 0 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 0 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 0 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 0 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 0 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 1 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 2 | 0 |
| ND<1.60944 | ND<-2.30259 | 3.91202 | 3 | 0 |
| 3.7612 | ND<-2.30259 | 6.06379 | 4 | 0 |
| | | | | |
| ND<-2.30259 | ND<-2.30259 | 0 | 4 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 4 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 4 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 4 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 4 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 4 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 4 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 4 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 4 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 4 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 4 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 4 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 4 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 4 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 4 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 4 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 4 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 4 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 4 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 4 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 4 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 4 | 0 |

| | | | | |
|---|---|---|---|---|
| ND<-2.30259 | ND<-2.30259 | 0 | 4 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 4 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 5 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 6 | 0 |
| ND<1.60944 | ND<-2.30259 | 3.91202 | 7 | 0 |
| 3.7612 | ND<-2.30259 | 6.06379 | 8 | 0 |
| | | | | |
| ND<-2.30259 | ND<-2.30259 | 0 | 8 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 8 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 8 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 8 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 8 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 8 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 8 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 8 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 8 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 8 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 8 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 8 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 8 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 8 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 8 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 8 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 8 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 8 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 8 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 8 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 8 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 9 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 10 | 0 |
| ND<1.60944 | ND<-2.30259 | 3.91202 | 11 | 0 |
| 3.7612 | ND<-2.30259 | 6.06379 | 12 | 0 |
| | | | | |
| ND<-2.30259 | ND<-2.30259 | 0 | 12 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 12 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 12 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 12 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 12 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 12 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 12 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 12 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 12 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 12 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 12 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 12 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 12 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 12 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 12 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 12 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 12 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 12 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 12 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 12 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 13 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 14 | 0 |
| ND<1.60944 | ND<-2.30259 | 3.91202 | 15 | 0 |
| 3.7612 | ND<-2.30259 | 6.06379 | 16 | 0 |
| | | | | |
| ND<-2.30259 | ND<-2.30259 | 0 | 16 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 16 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 16 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 16 | 0 |

| | | | | |
|---|---|---|---|---|
| ND<-2.30259 | ND<-2.30259 | 0 | 16 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 16 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 16 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 16 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 16 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 16 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 16 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 16 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 16 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 16 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 16 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 16 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 16 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 16 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 16 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 17 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 18 | 0 |
| ND<1.60944 | ND<-2.30259 | 3.91202 | 19 | 0 |
| 3.7612 | ND<-2.30259 | 6.06379 | 20 | 0 |

| | | | | |
|---|---|---|---|---|
| ND<-2.30259 | ND<-2.30259 | 0 | 20 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 20 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 20 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 20 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 20 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 20 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 20 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 20 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 20 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 20 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 20 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 20 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 20 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 20 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 20 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 20 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 20 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 20 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 21 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 22 | 0 |
| ND<1.60944 | ND<-2.30259 | 3.91202 | 23 | 0 |
| 3.7612 | ND<-2.30259 | 6.06379 | 24 | 0 |

| | | | | |
|---|---|---|---|---|
| ND<-2.30259 | ND<-2.30259 | 0 | 24 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 24 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 24 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 24 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 24 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 24 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 24 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 24 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 24 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 24 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 24 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 24 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 24 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 24 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 24 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 24 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 24 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 25 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 26 | 0 |

| | | | | |
|---|---|---|---|---|
| ND<1.60944 | ND<-2.30259 | 3.91202 | 27 | 0 |
| 3.7612 | ND<-2.30259 | 6.06379 | 28 | 0 |
| | | | | |
| ND<-2.30259 | ND<-2.30259 | 0 | 28 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 28 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 28 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 28 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 28 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 28 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 28 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 28 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 28 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 28 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 28 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 28 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 28 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 28 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 28 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 29 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 30 | 0 |
| ND<1.60944 | ND<-2.30259 | 3.91202 | 31 | 0 |
| 3.7612 | ND<-2.30259 | 6.06379 | 32 | 0 |
| | | | | |
| ND<-2.30259 | ND<-2.30259 | 0 | 32 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 32 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 32 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 32 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 32 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 32 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 32 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 32 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 32 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 32 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 32 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 32 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 32 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 32 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 32 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 33 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 34 | 0 |
| ND<1.60944 | ND<-2.30259 | 3.91202 | 35 | 0 |
| 3.7612 | ND<-2.30259 | 6.06379 | 36 | 0 |
| | | | | |
| ND<-2.30259 | ND<-2.30259 | 0 | 36 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 36 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 36 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 36 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 36 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 36 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 36 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 36 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 36 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 36 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 36 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 36 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 36 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 36 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 37 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 38 | 0 |
| ND<1.60944 | ND<-2.30259 | 3.91202 | 39 | 0 |
| 3.7612 | ND<-2.30259 | 6.06379 | 40 | 0 |

| | | | | |
|---|---|---|---|---|
| ND<-2.30259 | ND<-2.30259 | 0 | 40 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 40 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 40 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 40 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 40 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 40 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 40 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 40 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 40 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 40 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 40 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 40 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 40 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 41 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 42 | 0 |
| ND<1.60944 | ND<-2.30259 | 3.91202 | 43 | 0 |
| 3.7612 | ND<-2.30259 | 6.06379 | 44 | 0 |

| | | | | |
|---|---|---|---|---|
| ND<-2.30259 | ND<-2.30259 | 0 | 44 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 44 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 44 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 44 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 44 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 44 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 44 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 44 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 44 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 44 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 44 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 44 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 44 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 45 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 46 | 0 |
| ND<1.60944 | ND<-2.30259 | 3.91202 | 47 | 0 |
| 3.7612 | ND<-2.30259 | 6.06379 | 48 | 0 |

| | | | | |
|---|---|---|---|---|
| ND<-2.30259 | ND<-2.30259 | 0 | 48 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 48 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 48 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 48 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 48 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 48 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 48 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 48 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 48 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 48 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 48 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 49 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 50 | 0 |
| ND<1.60944 | ND<-2.30259 | 3.91202 | 51 | 0 |
| 3.7612 | ND<-2.30259 | 6.06379 | 52 | 0 |

| | | | | |
|---|---|---|---|---|
| ND<-2.30259 | ND<-2.30259 | 0 | 52 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 52 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 52 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 52 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 52 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 52 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 52 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 52 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 52 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 52 | 0 |

| | | | | |
|---|---|---|---|---|
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 53 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 54 | 0 |
| ND<1.60944 | ND<-2.30259 | 3.91202 | 55 | 0 |
| 3.7612 | ND<-2.30259 | 6.06379 | 56 | 0 |
| | | | | |
| ND<-2.30259 | ND<-2.30259 | 0 | 56 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 56 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 56 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 56 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 56 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 56 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 56 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 56 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 56 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 57 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 58 | 0 |
| ND<1.60944 | ND<-2.30259 | 3.91202 | 59 | 0 |
| 3.7612 | ND<-2.30259 | 6.06379 | 60 | 0 |
| | | | | |
| ND<-2.30259 | ND<-2.30259 | 0 | 60 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 60 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 60 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 60 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 60 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 60 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 60 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 60 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 61 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 62 | 0 |
| ND<1.60944 | ND<-2.30259 | 3.91202 | 63 | 0 |
| 3.7612 | ND<-2.30259 | 6.06379 | 64 | 0 |
| | | | | |
| ND<-2.30259 | ND<-2.30259 | 0 | 64 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 64 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 64 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 64 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 64 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 64 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 64 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 65 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 66 | 0 |
| ND<1.60944 | ND<-2.30259 | 3.91202 | 67 | 0 |
| 3.7612 | ND<-2.30259 | 6.06379 | 68 | 0 |
| | | | | |
| ND<-2.30259 | ND<-2.30259 | 0 | 68 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 68 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 68 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 68 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 68 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 68 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 69 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 70 | 0 |
| ND<1.60944 | ND<-2.30259 | 3.91202 | 71 | 0 |
| 3.7612 | ND<-2.30259 | 6.06379 | 72 | 0 |
| | | | | |
| ND<-2.30259 | ND<-2.30259 | 0 | 72 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 72 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 72 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 72 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 72 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 73 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 74 | 0 |

| | | | | |
|---|---|---|---|---|
| ND<1.60944 | ND<-2.30259 | 3.91202 | 75 | 0 |
| 3.7612 | ND<-2.30259 | 6.06379 | 76 | 0 |
| | | | | |
| ND<-2.30259 | ND<-2.30259 | 0 | 76 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 76 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 76 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 76 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 77 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 78 | 0 |
| ND<1.60944 | ND<-2.30259 | 3.91202 | 79 | 0 |
| 3.7612 | ND<-2.30259 | 6.06379 | 80 | 0 |
| | | | | |
| ND<-2.30259 | ND<-2.30259 | 0 | 80 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 80 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 80 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 81 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 82 | 0 |
| ND<1.60944 | ND<-2.30259 | 3.91202 | 83 | 0 |
| 3.7612 | ND<-2.30259 | 6.06379 | 84 | 0 |
| | | | | |
| ND<-2.30259 | ND<-2.30259 | 0 | 84 | 0 |
| ND<-2.30259 | ND<-2.30259 | 0 | 84 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 85 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 86 | 0 |
| ND<1.60944 | ND<-2.30259 | 3.91202 | 87 | 0 |
| 3.7612 | ND<-2.30259 | 6.06379 | 88 | 0 |
| | | | | |
| ND<-2.30259 | ND<-2.30259 | 0 | 88 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 89 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 90 | 0 |
| ND<1.60944 | ND<-2.30259 | 3.91202 | 91 | 0 |
| 3.7612 | ND<-2.30259 | 6.06379 | 92 | 0 |
| | | | | |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 93 | 0 |
| ND<-0.693147 | ND<-2.30259 | 1.60944 | 94 | 0 |
| ND<1.60944 | ND<-2.30259 | 3.91202 | 95 | 0 |
| 3.7612 | ND<-2.30259 | 6.06379 | 96 | 0 |
| | | | | |
| ND<-0.693147 | ND<-0.693147 | 0 | 96 | 0 |
| ND<1.60944 | ND<-0.693147 | 2.30259 | 97 | 0 |
| 3.7612 | ND<-0.693147 | 4.45435 | 98 | 0 |
| | | | | |
| ND<1.60944 | ND<-0.693147 | 2.30259 | 99 | 0 |
| 3.7612 | ND<-0.693147 | 4.45435 | 100 | 0 |
| | | | | |
| 3.7612 | ND<1.60944 | 2.15176 | 101 | 0 |

S Statistic = 101 - 0 = 101

| Tied Group | Value | Members |
|---|---|---|
| 1 | -2.3025924 | |
| 2 | -0.693147 | 2 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |
| 11/19/1996 | 1 |

| | | |
|---|---|---|
| 12/19/1996 | | 1 |
| 3/24/1997 | | 1 |
| 9/24/1997 | | 1 |
| 4/7/1998 | 1 | |
| 9/23/1998 | | 1 |
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 11/16/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 1 |

There are 0 time periods with multiple data

A = 29274
B = 0
C = 12144
D = 0
E = 554
F = 0
a = 46116
b = 176904
c = 1512
Group Variance = 935.667
Z-Score = 3.26918
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|3.26918| > 1.97737 indicating a trend

# Concentrations (ppb)

## Parameter: Tetrachloroethene

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 155
Percent Non-Detects: 70.1357%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 18 (100%) | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.15 | ND<0.15 |
| | | | 11/16/2009 | ND<0.15 | ND<0.15 |
| | | | 6/30/2010 | ND<0.15 | ND<0.15 |
| | | | 11/12/2010 | ND<0.15 U | ND<0.15 U |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-8 | 27 | 7 (25.9259%) | 7/20/1995 | 3.2 | 3.2 |
| | | | 8/24/1995 | 99 | 99 |
| | | | 9/28/1995 | 88 | 88 |
| | | | 10/26/1995 | 8 | 8 |
| | | | 11/19/1996 | ND<2 | ND<2 |
| | | | 12/19/1996 | 59 | 59 |
| | | | 3/24/1997 | 49 | 49 |
| | | | 9/24/1997 | 34 | 34 |
| | | | 4/7/1998 | ND<2 | ND<2 |
| | | | 9/23/1998 | 31 | 31 |
| | | | 3/16/1999 | 30.4 | 30.4 |
| | | | 9/23/1999 | 32.2 | 32.2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | 6 | 6 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | 5.34 | 5.34 |
| | | | 10/25/2005 | 2.18 | 2.18 |
| | | | 4/29/2006 | 2.4 | 2.4 |
| | | | 11/18/2006 | 2.69 | 2.69 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | 0.54 J | 0.54 J |
| | | | 6/5/2008 | 0.84 J | 0.84 J |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/20/2008 | 0.65 J | 0.65 J | |
| | | | 6/11/2009 | 0.8 J | 0.8 J | |
| | | | 6/30/2010 | 0.24 J | 0.24 J | |
| | | | 11/12/2010 | ND<0.15 U | | ND<0.15 U |
| MW-9 | 28 | 14 (50%) | 7/20/1995 | 0.43 J | 0.43 J | |
| | | | 8/24/1995 | 0.51 J | 0.51 J | |
| | | | 9/28/1995 | 0.8 J | 0.8 J | |
| | | | 10/26/1995 | 0.9 J | 0.9 J | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 0.32 J | 0.32 J | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | 0.29 J | 0.29 J | |
| | | | 11/18/2006 | 0.21 J | 0.21 J | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | 0.28 J | 0.28 J | |
| | | | 6/5/2008 | 0.41 J | 0.41 J | |
| | | | 11/20/2008 | 0.41 J | 0.41 J | |
| | | | 6/11/2009 | 0.39 J | 0.39 J | |
| | | | 11/16/2009 | 0.58 J | 0.58 J | |
| | | | 6/30/2010 | 0.68 J | 0.68 J | |
| | | | 11/12/2010 | 0.53 J | 0.53 J | |
| MW-7 | 28 | 24 (85.7143%) | 7/20/1995 | 0.86 J | 0.86 J | |
| | | | 8/24/1995 | 0.67 J | 0.67 J | |
| | | | 9/28/1995 | 0.8 J | 0.8 J | |
| | | | 10/26/1995 | 0.9 J | 0.9 J | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.15 | | ND<0.15 |
| | | | 11/16/2009 | ND<0.15 | | ND<0.15 |
| | | | 6/30/2010 | ND<0.15 | | ND<0.15 |
| | | | 11/12/2010 | ND<0.15 U | | ND<0.15 U |

| | | | | | | |
|---|---|---|---|---|---|---|
| MW-10 | 28 | 18 (64.2857%) | 7/20/1995 | 0.71 J | 0.71 J | |
| | | | 8/24/1995 | 1.6 | 1.6 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | 2 | 2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 0.75 J | 0.75 J | |
| | | | 10/25/2005 | 0.71 J | 0.71 J | |
| | | | 4/29/2006 | 0.96 J | 0.96 J | |
| | | | 11/18/2006 | 0.55 J | 0.55 J | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | 0.31 J | 0.31 J | |
| | | | 6/5/2008 | 0.36 J | 0.36 J | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.15 | ND<0.15 | |
| | | | 11/16/2009 | 0.29 J | 0.29 J | |
| | | | 6/30/2010 | ND<0.15 | ND<0.15 | |
| | | | 11/12/2010 | ND<0.15 U | ND<0.15 U | |
| MW-11R | 28 | 15 (53.5714%) | 7/20/1995 | 2.1 | 2.1 | |
| | | | 8/24/1995 | 4.4 | 4.4 | |
| | | | 9/28/1995 | 2 | 2 | |
| | | | 10/26/1995 | 4 | 4 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | 2.7 | 2.7 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 2.64 | 2.64 | |
| | | | 10/25/2005 | 0.46 J | 0.46 J | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | 0.49 J | 0.49 J | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | 0.38 J | 0.38 J | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | 0.4 J | 0.4 J | |
| | | | 6/11/2009 | 2.3 | 2.3 | |
| | | | 11/16/2009 | 0.3 J | 0.3 J | |
| | | | 6/30/2010 | 1.2 | 1.2 | |
| | | | 11/12/2010 | ND<0.15 U | ND<0.15 U | |
| MW-12AR | 18 | 14 (77.7778%) | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | 0.32 J | 0.32 J | |
| | | | 4/29/2006 | 0.35 J | 0.35 J | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | 0.3 J | 0.3 J | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.15 | | ND<0.15 |
| | | | 11/16/2009 | ND<0.15 | | ND<0.15 |
| | | | 6/30/2010 | ND<0.15 | | ND<0.15 |
| | | | 11/12/2010 | 0.16 J | 0.16 J | |
| MW-12BR | 18 | 17 (94.4444%) | 3/16/1999 | | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 0.42 J | 0.42 J | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.15 | | ND<0.15 |
| | | | 11/16/2009 | ND<0.15 | | ND<0.15 |
| | | | 6/30/2010 | ND<0.15 | | ND<0.15 |
| | | | 11/12/2010 | ND<0.15 U | | ND<0.15 U |
| MW-6 | 28 | 28 (100%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.15 | | ND<0.15 |
| | | | 11/16/2009 | ND<0.15 | | ND<0.15 |
| | | | 6/30/2010 | ND<0.15 | | ND<0.15 |

| | | | |
|---|---|---|---|
| | 11/12/2010 | ND<0.15 U | ND<0.15 U |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. | Original |
|---|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: Tetrachloroethene

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.075 | -2.65209 | 7.03356 | -0.198906 |
| 2 | 0.075 | -2.36561 | 12.6297 | -0.376328 |
| 3 | 0.075 | -2.22621 | 17.5857 | -0.543293 |
| 4 | 0.075 | -2.09693 | 21.9828 | -0.700563 |
| 5 | 0.075 | -2.01409 | 26.0394 | -0.85162 |
| 6 | 0.075 | -1.92684 | 29.7521 | -0.996133 |
| 7 | 0.075 | -1.86629 | 33.2351 | -1.1361 |
| 8 | 0.075 | -1.79912 | 36.472 | -1.27104 |
| 9 | 0.075 | -1.75069 | 39.5369 | -1.40234 |
| 10 | 0.075 | -1.6954 | 42.4112 | -1.52949 |
| 11 | 0.075 | -1.65463 | 45.149 | -1.65359 |
| 12 | 0.075 | -1.60725 | 47.7323 | -1.77414 |
| 13 | 0.075 | -1.57179 | 50.2028 | -1.89202 |
| 14 | 0.075 | -1.53007 | 52.5439 | -2.00677 |
| 15 | 0.075 | -1.49852 | 54.7894 | -2.11916 |
| 16 | 0.075 | -1.46106 | 56.9241 | -2.22874 |
| 17 | 0.075 | -1.4325 | 58.9762 | -2.33618 |
| 18 | 0.075 | -1.39838 | 60.9316 | -2.44106 |
| 19 | 0.075 | -1.3722 | 62.8146 | -2.54397 |
| 20 | 0.075 | -1.34075 | 64.6122 | -2.64453 |
| 21 | 0.075 | -1.31652 | 66.3454 | -2.74327 |
| 22 | 0.075 | -1.28727 | 68.0025 | -2.83981 |
| 23 | 0.075 | -1.26464 | 69.6018 | -2.93466 |
| 24 | 0.075 | -1.23724 | 71.1326 | -3.02746 |
| 25 | 0.16 | -1.21596 | 72.6111 | -3.22201 |
| 26 | 0.21 | -1.19012 | 74.0275 | -3.47193 |
| 27 | 0.24 | -1.17 | 75.3964 | -3.75273 |
| 28 | 0.28 | -1.1455 | 76.7086 | -4.07348 |
| 29 | 0.29 | -1.12639 | 77.9774 | -4.40013 |
| 30 | 0.29 | -1.10306 | 79.1941 | -4.72002 |
| 31 | 0.3 | -1.08482 | 80.371 | -5.04546 |
| 32 | 0.3 | -1.06252 | 81.4999 | -5.36422 |
| 33 | 0.31 | -1.04505 | 82.592 | -5.68819 |
| 34 | 0.32 | -1.02365 | 83.6399 | -6.01575 |
| 35 | 0.32 | -1.00687 | 84.6537 | -6.33795 |
| 36 | 0.35 | -0.986272 | 85.6264 | -6.68315 |
| 37 | 0.36 | -0.970094 | 86.5675 | -7.03238 |
| 38 | 0.38 | -0.950222 | 87.4704 | -7.39346 |
| 39 | 0.39 | -0.93459 | 88.3439 | -7.75795 |
| 40 | 0.4 | -0.915365 | 89.1818 | -8.1241 |
| 41 | 0.41 | -0.900227 | 89.9922 | -8.49319 |
| 42 | 0.41 | -0.881587 | 90.7694 | -8.85464 |
| 43 | 0.42 | -0.866894 | 91.5209 | -9.21874 |
| 44 | 0.43 | -0.848786 | 92.2413 | -9.58372 |
| 45 | 0.46 | -0.834498 | 92.9377 | -9.96759 |
| 46 | 0.49 | -0.816874 | 93.605 | -10.3679 |
| 47 | 0.51 | -0.802956 | 94.2497 | -10.7774 |
| 48 | 0.53 | -0.785774 | 94.8672 | -11.1938 |
| 49 | 0.54 | -0.772193 | 95.4634 | -11.6108 |

| | | | | |
|---|---|---|---|---|
| 50 | 0.55 | -0.755415 | 96.0341 | -12.0263 |
| 51 | 0.58 | -0.742143 | 96.5849 | -12.4567 |
| 52 | 0.65 | -0.725736 | 97.1116 | -12.9285 |
| 53 | 0.67 | -0.712751 | 97.6196 | -13.406 |
| 54 | 0.68 | -0.696684 | 98.1049 | -13.8797 |
| 55 | 0.71 | -0.683969 | 8.5727 | -14.3654 |
| 56 | 0.71 | -0.668209 | 99.0192 | -14.8398 |
| 57 | 0.75 | -0.655726 | 99.4492 | -15.3316 |
| 58 | 0.8 | -0.640266 | 99.8592 | -15.8438 |
| 59 | 0.8 | -0.628006 | 100.254 | -16.3462 |
| 60 | 0.8 | -0.612813 | 100.629 | -16.8364 |
| 61 | 0.84 | -0.60076 | 100.99 | -17.3411 |
| 62 | 0.86 | -0.585815 | 101.333 | -17.8449 |
| 63 | 0.9 | -0.573953 | 101.663 | -18.3614 |
| 64 | 0.9 | -0.559237 | 101.975 | -18.8648 |
| 65 | 0.96 | -0.547551 | 102.275 | -19.3904 |
| 66 | 1 | -0.533048 | 102.559 | -19.9235 |
| 67 | 1 | -0.521527 | 102.831 | -20.445 |
| 68 | 1 | -0.507221 | 103.089 | -20.9522 |
| 69 | 1 | -0.49585 | 103.334 | -21.4481 |
| 70 | 1 | -0.481728 | 103.566 | -21.9298 |
| 71 | 1 | -0.470498 | 103.788 | -22.4003 |
| 72 | 1 | -0.456542 | 103.996 | -22.8568 |
| 73 | 1 | -0.445443 | 104.195 | -23.3023 |
| 74 | 1 | -0.431644 | 104.381 | -23.7339 |
| 75 | 1 | -0.420664 | 104.558 | -24.1546 |
| 76 | 1 | -0.40701 | 104.724 | -24.5616 |
| 77 | 1 | -0.396142 | 104.881 | -24.9577 |
| 78 | 1 | -0.382622 | 105.027 | -25.3403 |
| 79 | 1 | -0.371856 | 105.165 | -25.7122 |
| 80 | 1 | -0.358459 | 105.294 | -26.0707 |
| 81 | 1 | -0.347787 | 105.415 | -26.4184 |
| 82 | 1 | -0.334503 | 105.527 | -26.753 |
| 83 | 1 | -0.323919 | 105.632 | -27.0769 |
| 84 | 1 | -0.310738 | 105.728 | -27.3876 |
| 85 | 1 | -0.300232 | 105.818 | -27.6878 |
| 86 | 1 | -0.287147 | 105.901 | -27.975 |
| 87 | 1 | -0.276714 | 105.977 | -28.2517 |
| 88 | 1 | -0.263715 | 106.047 | -28.5154 |
| 89 | 1 | -0.253347 | 106.111 | -28.7688 |
| 90 | 1 | -0.240426 | 106.169 | -29.0092 |
| 91 | 1 | -0.230118 | 106.222 | -29.2393 |
| 92 | 1 | -0.217267 | 106.269 | -29.4566 |
| 93 | 1 | -0.207012 | 106.312 | -29.6636 |
| 94 | 1 | -0.194225 | 106.35 | -29.8578 |
| 95 | 1 | -0.184017 | 106.383 | -30.0418 |
| 96 | 1 | -0.171285 | 106.413 | -30.2131 |
| 97 | 1 | -0.161119 | 106.439 | -30.3742 |
| 98 | 1 | -0.148434 | 106.461 | -30.5227 |
| 99 | 1 | -0.138305 | 106.48 | -30.661 |
| 100 | 1 | -0.125661 | 106.496 | -30.7866 |
| 101 | 1 | -0.115562 | 106.509 | -30.9022 |
| 102 | 1 | -0.102953 | 106.52 | -31.0051 |
| 103 | 1 | -0.0928787 | 106.528 | -31.098 |
| 104 | 1 | -0.0802981 | 106.535 | -31.1783 |
| 105 | 1 | -0.0702426 | 106.54 | -31.2486 |
| 106 | 1 | -0.0576847 | 106.543 | -31.3062 |
| 107 | 1 | -0.0476439 | 106.545 | -31.3539 |
| 108 | 1 | -0.0350997 | 106.546 | -31.389 |
| 109 | 1 | -0.0250691 | 106.547 | -31.4141 |
| 110 | 1 | -0.0125328 | 106.547 | -31.4266 |
| 111 | 1 | 0 | 106.547 | -31.4266 |

| | | | | |
|---|---|---|---|---|
| 112 | 1 | 0.0125328 | 106.547 | -31.4141 |
| 113 | 1 | 0.0250691 | 106.548 | -31.389 |
| 114 | 1 | 0.0350997 | 106.549 | -31.3539 |
| 115 | 1 | 0.0476439 | 106.551 | -31.3062 |
| 116 | 1 | 0.0576847 | 106.555 | -31.2486 |
| 117 | 1 | 0.0702426 | 106.56 | -31.1783 |
| 118 | 1 | 0.0802981 | 106.566 | -31.098 |
| 119 | 1 | 0.0928787 | 106.575 | -31.0051 |
| 120 | 1 | 0.102953 | 106.585 | -30.9022 |
| 121 | 1 | 0.115562 | 106.599 | -30.7866 |
| 122 | 1 | 0.125661 | 106.615 | -30.661 |
| 123 | 1 | 0.138305 | 106.634 | -30.5227 |
| 124 | 1 | 0.148434 | 106.656 | -30.3742 |
| 125 | 1 | 0.161119 | 106.682 | -30.2131 |
| 126 | 1 | 0.171285 | 106.711 | -30.0418 |
| 127 | 1 | 0.184017 | 106.745 | -29.8578 |
| 128 | 1 | 0.194225 | 106.783 | -29.6636 |
| 129 | 1 | 0.207012 | 106.825 | -29.4566 |
| 130 | 1 | 0.217267 | 106.873 | -29.2393 |
| 131 | 1 | 0.230118 | 106.926 | -29.0092 |
| 132 | 1 | 0.240426 | 106.983 | -28.7688 |
| 133 | 1 | 0.253347 | 107.048 | -28.5154 |
| 134 | 1 | 0.263715 | 107.117 | -28.2517 |
| 135 | 1 | 0.276714 | 107.194 | -27.975 |
| 136 | 1 | 0.287147 | 107.276 | -27.6878 |
| 137 | 1 | 0.300232 | 107.366 | -27.3876 |
| 138 | 1 | 0.310738 | 107.463 | -27.0769 |
| 139 | 1 | 0.323919 | 107.568 | -26.753 |
| 140 | 1 | 0.334503 | 107.68 | -26.4184 |
| 141 | 1 | 0.347787 | 107.801 | -26.0707 |
| 142 | 1 | 0.358459 | 107.929 | -25.7122 |
| 143 | 1 | 0.371856 | 108.067 | -25.3403 |
| 144 | 1 | 0.382622 | 108.214 | -24.9577 |
| 145 | 1 | 0.396142 | 108.371 | -24.5616 |
| 146 | 1 | 0.40701 | 108.536 | -24.1546 |
| 147 | 1 | 0.420664 | 108.713 | -23.7339 |
| 148 | 1 | 0.431644 | 108.9 | -23.3023 |
| 149 | 1 | 0.445443 | 109.098 | -22.8568 |
| 150 | 1 | 0.456542 | 109.307 | -22.4003 |
| 151 | 1 | 0.470498 | 109.528 | -21.9298 |
| 152 | 1 | 0.481728 | 109.76 | -21.4481 |
| 153 | 1 | 0.49585 | 110.006 | -20.9522 |
| 154 | 1 | 0.507221 | 110.263 | -20.445 |
| 155 | 1 | 0.521527 | 110.535 | -19.9235 |
| 156 | 1 | 0.533048 | 110.819 | -19.3904 |
| 157 | 1 | 0.547551 | 111.119 | -18.8429 |
| 158 | 1 | 0.559237 | 111.432 | -18.2836 |
| 159 | 1 | 0.573953 | 111.761 | -17.7097 |
| 160 | 1 | 0.585815 | 112.104 | -17.1239 |
| 161 | 1 | 0.60076 | 112.465 | -16.5231 |
| 162 | 1 | 0.612813 | 112.841 | -15.9103 |
| 163 | 1 | 0.628006 | 113.235 | -15.2823 |
| 164 | 1 | 0.640266 | 113.645 | -14.642 |
| 165 | 1 | 0.655726 | 114.075 | -13.9863 |
| 166 | 1 | 0.668209 | 114.522 | -13.3181 |
| 167 | 1 | 0.68396 | 114.989 | -12.6341 |
| 168 | 1 | 0.696684 | 115.475 | -11.9374 |
| 169 | 1 | 0.712751 | 115.983 | -11.2247 |
| 170 | 1 | 0.725736 | 116.51 | -10.4989 |
| 171 | 1 | 0.742143 | 117.06 | -9.7568 |
| 172 | 1 | 0.755415 | 117.631 | -9.00138 |
| 173 | 1 | 0.772193 | 118.227 | -8.22919 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 1 | 0.785774 | | 118.845 | -7.44341 |
| 175 | 1 | 0.802956 | | 119.489 | -6.64046 |
| 176 | 1 | 0.816874 | | 120.157 | -5.82358 |
| 177 | 1 | 0.834498 | | 120.853 | -4.98909 |
| 178 | 1 | 0.848786 | | 121.574 | -4.1403 |
| 179 | 1 | 0.866894 | | 122.325 | -3.27341 |
| 180 | 1 | 0.881587 | | 123.102 | -2.39182 |
| 181 | 1 | 0.900227 | | 123.913 | -1.49159 |
| 182 | 1 | 0.915365 | | 124.751 | -0.576227 |
| 183 | 1 | 0.93459 | 125.624 | 0.358363 | |
| 184 | 1 | 0.950222 | | 126.527 | 1.30858 |
| 185 | 1 | 0.970094 | | 127.468 | 2.27868 |
| 186 | 1 | 0.986272 | | 128.441 | 3.26495 |
| 187 | 1 | 1.00687 | 129.455 | 4.27182 | |
| 188 | 1 | 1.02365 | 130.502 | 5.29547 | |
| 189 | 1 | 1.04505 | 131.594 | 6.34052 | |
| 190 | 1 | 1.06252 | 132.723 | 7.40304 | |
| 191 | 1 | 1.08482 | 133.9 | 8.48786 | |
| 192 | 1 | 1.10306 | 135.117 | 9.59092 | |
| 193 | 1 | 1.12639 | 136.386 | 10.7173 | |
| 194 | 1 | 1.1455 | 137.698 | 11.8628 | |
| 195 | 1 | 1.17 | 139.067 | 13.0328 | |
| 196 | 1 | 1.19012 | 140.483 | 14.2229 | |
| 197 | 1.2 | 1.21596 | 141.962 | 15.6821 | |
| 198 | 1.6 | 1.23724 | 143.493 | 17.6617 | |
| 199 | 2 | 1.26464 | 145.092 | 20.1909 | |
| 200 | 2 | 1.28727 | 146.749 | 22.7655 | |
| 201 | 2.1 | 1.31652 | 148.482 | 25.5302 | |
| 202 | 2.18 | 1.34075 | 150.28 | 28.453 | |
| 203 | 2.3 | 1.3722 | 152.163 | 31.6091 | |
| 204 | 2.4 | 1.39838 | 154.118 | 34.9652 | |
| 205 | 2.64 | 1.4325 | 156.17 | 38.747 | |
| 206 | 2.69 | 1.46106 | 158.305 | 42.6773 | |
| 207 | 2.7 | 1.49852 | 160.551 | 46.7233 | |
| 208 | 3.2 | 1.53007 | 162.892 | 51.6195 | |
| 209 | 4 | 1.57179 | 165.362 | 57.9066 | |
| 210 | 4.4 | 1.60725 | 167.945 | 64.9785 | |
| 211 | 5.34 | 1.65463 | 170.683 | 73.8142 | |
| 212 | 6 | 1.6954 | 173.558 | 83.9866 | |
| 213 | 8 | 1.75069 | 176.622 | 97.9921 | |
| 214 | 30.4 | 1.79912 | 179.859 | 152.685 | |
| 215 | 31 | 1.86629 | 183.342 | 210.54 | |
| 216 | 32.2 | 1.92684 | 187.055 | 272.584 | |
| 217 | 34 | 2.01409 | 191.112 | 341.064 | |
| 218 | 49 | 2.09693 | 195.509 | 443.813 | |
| 219 | 59 | 2.22621 | 200.465 | 575.159 | |
| 220 | 88 | 2.36561 | 206.061 | 783.334 | |
| 221 | 99 | 2.65209 | 213.094 | 1045.89 | |

Data Set Standard Deviation = 10.8864
Numerator = 1.09389e+006
Denominator = 5.55601e+006
W Statistic = 0.196884 = 1.09389e+006 / 5.55601e+006

5% Critical value of 0.976 exceeds 0.196884
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.196884
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: Tetrachloroethene

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | -2.59027 | -2.65209 | 7.03356 | 6.86961 |
| 2 | -2.59027 | -2.36561 | 12.6297 | 12.9972 |
| 3 | -2.59027 | -2.22621 | 17.5857 | 18.7637 |
| 4 | -2.59027 | -2.09693 | 21.9828 | 24.1953 |
| 5 | -2.59027 | -2.01409 | 26.0394 | 29.4123 |
| 6 | -2.59027 | -1.92684 | 29.7521 | 34.4033 |
| 7 | -2.59027 | -1.86629 | 33.2351 | 39.2375 |
| 8 | -2.59027 | -1.79912 | 36.472 | 43.8977 |
| 9 | -2.59027 | -1.75069 | 39.5369 | 48.4325 |
| 10 | -2.59027 | -1.6954 | 42.4112 | 52.824 |
| 11 | -2.59027 | -1.65463 | 45.149 | 57.1099 |
| 12 | -2.59027 | -1.60725 | 47.7323 | 61.2731 |
| 13 | -2.59027 | -1.57179 | 50.2028 | 65.3445 |
| 14 | -2.59027 | -1.53007 | 52.5439 | 69.3078 |
| 15 | -2.59027 | -1.49852 | 54.7894 | 73.1893 |
| 16 | -2.59027 | -1.46106 | 56.9241 | 76.9738 |
| 17 | -2.59027 | -1.4325 | 58.9762 | 80.6844 |
| 18 | -2.59027 | -1.39838 | 60.9316 | 84.3066 |
| 19 | -2.59027 | -1.3722 | 62.8146 | 87.861 |
| 20 | -2.59027 | -1.34075 | 64.6122 | 91.3339 |
| 21 | -2.59027 | -1.31652 | 66.3454 | 94.744 |
| 22 | -2.59027 | -1.28727 | 68.0025 | 98.0784 |
| 23 | -2.59027 | -1.26464 | 69.6018 | 101.354 |
| 24 | -2.59027 | -1.23724 | 71.1326 | 104.559 |
| 25 | -1.83258 | -1.21596 | 72.6111 | 106.787 |
| 26 | -1.56065 | -1.19012 | 74.0275 | 108.645 |
| 27 | -1.42712 | -1.17 | 75.3964 | 110.314 |
| 28 | -1.27297 | -1.1455 | 76.7086 | 111.773 |
| 29 | -1.23787 | -1.12639 | 77.9774 | 113.167 |
| 30 | -1.23787 | -1.10306 | 79.1941 | 114.532 |
| 31 | -1.20397 | -1.08482 | 80.371 | 115.838 |
| 32 | -1.20397 | -1.06252 | 81.4999 | 117.118 |
| 33 | -1.17118 | -1.04505 | 82.592 | 118.342 |
| 34 | -1.13943 | -1.02365 | 83.6399 | 119.508 |
| 35 | -1.13943 | -1.00687 | 84.6537 | 120.655 |
| 36 | -1.04982 | -0.986272 | 85.6264 | 121.691 |
| 37 | -1.02165 | -0.970094 | 86.5675 | 122.682 |
| 38 | -0.967584 | -0.950222 | 87.4704 | 123.601 |
| 39 | -0.941609 | -0.93459 | 88.3439 | 124.481 |
| 40 | -0.916291 | -0.915365 | 89.1818 | 125.32 |
| 41 | -0.891598 | -0.900227 | 89.9922 | 126.123 |
| 42 | -0.891598 | -0.881587 | 90.7694 | 126.909 |
| 43 | -0.867501 | -0.866894 | 91.5209 | 127.661 |
| 44 | -0.84397 | -0.848786 | 92.2413 | 128.377 |
| 45 | -0.776529 | -0.834498 | 92.9377 | 129.025 |
| 46 | -0.71335 | -0.816874 | 93.605 | 129.608 |
| 47 | -0.673345 | -0.802956 | 94.2497 | 130.148 |
| 48 | -0.634878 | -0.785774 | 94.8672 | 130.647 |
| 49 | -0.616186 | -0.772193 | 95.4634 | 131.123 |

| | | | | |
|---|---|---|---|---|
| 50 | -0.597837 | -0.755415 | 96.0341 | 131.575 |
| 51 | -0.544727 | -0.742143 | 96.5849 | 131.979 |
| 52 | -0.430783 | -0.725736 | 97.1116 | 132.292 |
| 53 | -0.400478 | -0.712751 | 97.6196 | 132.577 |
| 54 | -0.385662 | -0.696684 | 98.1049 | 132.846 |
| 55 | -0.34249 | -0.683969 | 8.5727 | 133.08 |
| 56 | -0.34249 | -0.668209 | 99.0192 | 133.309 |
| 57 | -0.287682 | -0.655726 | 99.4492 | 133.497 |
| 58 | -0.223144 | -0.640266 | 99.8592 | 133.64 |
| 59 | -0.223144 | -0.628006 | 100.254 | 133.78 |
| 60 | -0.223144 | -0.612813 | 100.629 | 133.917 |
| 61 | -0.174353 | -0.60076 | 100.99 | 134.022 |
| 62 | -0.150823 | -0.585815 | 101.333 | 134.11 |
| 63 | -0.105361 | -0.573953 | 101.663 | 134.171 |
| 64 | -0.105361 | -0.559237 | 101.975 | 134.23 |
| 65 | -0.040822 | -0.547551 | 102.275 | 134.252 |
| 66 | 0 | -0.533048 | 102.559 | 134.252 |
| 67 | 0 | -0.521527 | 102.831 | 134.252 |
| 68 | 0 | -0.507221 | 103.089 | 134.252 |
| 69 | 0 | -0.49585 | 103.334 | 134.252 |
| 70 | 0 | -0.481728 | 103.566 | 134.252 |
| 71 | 0 | -0.470498 | 103.788 | 134.252 |
| 72 | 0 | -0.456542 | 103.996 | 134.252 |
| 73 | 0 | -0.445443 | 104.195 | 134.252 |
| 74 | 0 | -0.431644 | 104.381 | 134.252 |
| 75 | 0 | -0.420664 | 104.558 | 134.252 |
| 76 | 0 | -0.40701 | 104.724 | 134.252 |
| 77 | 0 | -0.396142 | 104.881 | 134.252 |
| 78 | 0 | -0.382622 | 105.027 | 134.252 |
| 79 | 0 | -0.371856 | 105.165 | 134.252 |
| 80 | 0 | -0.358459 | 105.294 | 134.252 |
| 81 | 0 | -0.347787 | 105.415 | 134.252 |
| 82 | 0 | -0.334503 | 105.527 | 134.252 |
| 83 | 0 | -0.323919 | 105.632 | 134.252 |
| 84 | 0 | -0.310738 | 105.728 | 134.252 |
| 85 | 0 | -0.300232 | 105.818 | 134.252 |
| 86 | 0 | -0.287147 | 105.901 | 134.252 |
| 87 | 0 | -0.276714 | 105.977 | 134.252 |
| 88 | 0 | -0.263715 | 106.047 | 134.252 |
| 89 | 0 | -0.253347 | 106.111 | 134.252 |
| 90 | 0 | -0.240426 | 106.169 | 134.252 |
| 91 | 0 | -0.230118 | 106.222 | 134.252 |
| 92 | 0 | -0.217267 | 106.269 | 134.252 |
| 93 | 0 | -0.207012 | 106.312 | 134.252 |
| 94 | 0 | -0.194225 | 106.35 | 134.252 |
| 95 | 0 | -0.184017 | 106.383 | 134.252 |
| 96 | 0 | -0.171285 | 106.413 | 134.252 |
| 97 | 0 | -0.161119 | 106.439 | 134.252 |
| 98 | 0 | -0.148434 | 106.461 | 134.252 |
| 99 | 0 | -0.138305 | 106.48 | 134.252 |
| 100 | 0 | -0.125661 | 106.496 | 134.252 |
| 101 | 0 | -0.115562 | 106.509 | 134.252 |
| 102 | 0 | -0.102953 | 106.52 | 134.252 |
| 103 | 0 | -0.0928787 | 106.528 | 134.252 |
| 104 | 0 | -0.0802981 | 106.535 | 134.252 |
| 105 | 0 | -0.0702426 | 106.54 | 134.252 |
| 106 | 0 | -0.0576847 | 106.543 | 134.252 |
| 107 | 0 | -0.0476439 | 106.545 | 134.252 |
| 108 | 0 | -0.0350997 | 106.546 | 134.252 |
| 109 | 0 | -0.0250691 | 106.547 | 134.252 |
| 110 | 0 | -0.0125328 | 106.547 | 134.252 |
| 111 | 0 | 0 | 106.547 | 134.252 |

| | | | | |
|---|---|---|---|---|
| 112 | 0 | 0.0125328 | 106.547 | 134.252 |
| 113 | 0 | 0.0250691 | 106.548 | 134.252 |
| 114 | 0 | 0.0350997 | 106.549 | 134.252 |
| 115 | 0 | 0.0476439 | 106.551 | 134.252 |
| 116 | 0 | 0.0576847 | 106.555 | 134.252 |
| 117 | 0 | 0.0702426 | 106.56 | 134.252 |
| 118 | 0 | 0.0802981 | 106.566 | 134.252 |
| 119 | 0 | 0.0928787 | 106.575 | 134.252 |
| 120 | 0 | 0.102953 | 106.585 | 134.252 |
| 121 | 0 | 0.115562 | 106.599 | 134.252 |
| 122 | 0 | 0.125661 | 106.615 | 134.252 |
| 123 | 0 | 0.138305 | 106.634 | 134.252 |
| 124 | 0 | 0.148434 | 106.656 | 134.252 |
| 125 | 0 | 0.161119 | 106.682 | 134.252 |
| 126 | 0 | 0.171285 | 106.711 | 134.252 |
| 127 | 0 | 0.184017 | 106.745 | 134.252 |
| 128 | 0 | 0.194225 | 106.783 | 134.252 |
| 129 | 0 | 0.207012 | 106.825 | 134.252 |
| 130 | 0 | 0.217267 | 106.873 | 134.252 |
| 131 | 0 | 0.230118 | 106.926 | 134.252 |
| 132 | 0 | 0.240426 | 106.983 | 134.252 |
| 133 | 0 | 0.253347 | 107.048 | 134.252 |
| 134 | 0 | 0.263715 | 107.117 | 134.252 |
| 135 | 0 | 0.276714 | 107.194 | 134.252 |
| 136 | 0 | 0.287147 | 107.276 | 134.252 |
| 137 | 0 | 0.300232 | 107.366 | 134.252 |
| 138 | 0 | 0.310738 | 107.463 | 134.252 |
| 139 | 0 | 0.323919 | 107.568 | 134.252 |
| 140 | 0 | 0.334503 | 107.68 | 134.252 |
| 141 | 0 | 0.347787 | 107.801 | 134.252 |
| 142 | 0 | 0.358459 | 107.929 | 134.252 |
| 143 | 0 | 0.371856 | 108.067 | 134.252 |
| 144 | 0 | 0.382622 | 108.214 | 134.252 |
| 145 | 0 | 0.396142 | 108.371 | 134.252 |
| 146 | 0 | 0.40701 | 108.536 | 134.252 |
| 147 | 0 | 0.420664 | 108.713 | 134.252 |
| 148 | 0 | 0.431644 | 108.9 | 134.252 |
| 149 | 0 | 0.445443 | 109.098 | 134.252 |
| 150 | 0 | 0.456542 | 109.307 | 134.252 |
| 151 | 0 | 0.470498 | 109.528 | 134.252 |
| 152 | 0 | 0.481728 | 109.76 | 134.252 |
| 153 | 0 | 0.49585 | 110.006 | 134.252 |
| 154 | 0 | 0.507221 | 110.263 | 134.252 |
| 155 | 0 | 0.521527 | 110.535 | 134.252 |
| 156 | 0 | 0.533048 | 110.819 | 134.252 |
| 157 | 0 | 0.547551 | 111.119 | 134.252 |
| 158 | 0 | 0.559237 | 111.432 | 134.252 |
| 159 | 0 | 0.573953 | 111.761 | 134.252 |
| 160 | 0 | 0.585815 | 112.104 | 134.252 |
| 161 | 0 | 0.60076 | 112.465 | 134.252 |
| 162 | 0 | 0.612813 | 112.841 | 134.252 |
| 163 | 0 | 0.628006 | 113.235 | 134.252 |
| 164 | 0 | 0.640266 | 113.645 | 134.252 |
| 165 | 0 | 0.655726 | 114.075 | 134.252 |
| 166 | 0 | 0.668209 | 114.522 | 134.252 |
| 167 | 0 | 0.68396 | 114.989 | 134.252 |
| 168 | 0 | 0.696684 | 115.475 | 134.252 |
| 169 | 0 | 0.712751 | 115.983 | 134.252 |
| 170 | 0 | 0.725736 | 116.51 | 134.252 |
| 171 | 0 | 0.742143 | 117.06 | 134.252 |
| 172 | 0 | 0.755415 | 117.631 | 134.252 |
| 173 | 0 | 0.772193 | 118.227 | 134.252 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 0 | 0.785774 | | 118.845 | 134.252 |
| 175 | 0 | 0.802956 | | 119.489 | 134.252 |
| 176 | 0 | 0.816874 | | 120.157 | 134.252 |
| 177 | 0 | 0.834498 | | 120.853 | 134.252 |
| 178 | 0 | 0.848786 | | 121.574 | 134.252 |
| 179 | 0 | 0.866894 | | 122.325 | 134.252 |
| 180 | 0 | 0.881587 | | 123.102 | 134.252 |
| 181 | 0 | 0.900227 | | 123.913 | 134.252 |
| 182 | 0 | 0.915365 | | 124.751 | 134.252 |
| 183 | 0 | 0.93459 | 125.624 | 134.252 | |
| 184 | 0 | 0.950222 | | 126.527 | 134.252 |
| 185 | 0 | 0.970094 | | 127.468 | 134.252 |
| 186 | 0 | 0.986272 | | 128.441 | 134.252 |
| 187 | 0 | 1.00687 | 129.455 | 134.252 | |
| 188 | 0 | 1.02365 | 130.502 | 134.252 | |
| 189 | 0 | 1.04505 | 131.594 | 134.252 | |
| 190 | 0 | 1.06252 | 132.723 | 134.252 | |
| 191 | 0 | 1.08482 | 133.9 | 134.252 | |
| 192 | 0 | 1.10306 | 135.117 | 134.252 | |
| 193 | 0 | 1.12639 | 136.386 | 134.252 | |
| 194 | 0 | 1.1455 | 137.698 | 134.252 | |
| 195 | 0 | 1.17 | 139.067 | 134.252 | |
| 196 | 0 | 1.19012 | 140.483 | 134.252 | |
| 197 | 0.182322 | | 1.21596 | 141.962 | 134.474 |
| 198 | 0.470004 | | 1.23724 | 143.493 | 135.055 |
| 199 | 0.693147 | | 1.26464 | 145.092 | 135.932 |
| 200 | 0.693147 | | 1.28727 | 146.749 | 136.824 |
| 201 | 0.741937 | | 1.31652 | 148.482 | 137.801 |
| 202 | 0.779325 | | 1.34075 | 150.28 | 138.846 |
| 203 | 0.832909 | | 1.3722 | 152.163 | 139.989 |
| 204 | 0.875469 | | 1.39838 | 154.118 | 141.213 |
| 205 | 0.970779 | | 1.4325 | 156.17 | 142.604 |
| 206 | 0.989541 | | 1.46106 | 158.305 | 144.049 |
| 207 | 0.993252 | | 1.49852 | 160.551 | 145.538 |
| 208 | 1.16315 | 1.53007 | 162.892 | 147.317 | |
| 209 | 1.38629 | 1.57179 | 165.362 | 149.496 | |
| 210 | 1.4816 | 1.60725 | 167.945 | 151.878 | |
| 211 | 1.67523 | 1.65463 | 170.683 | 154.65 | |
| 212 | 1.79176 | 1.6954 | 173.558 | 157.687 | |
| 213 | 2.07944 | 1.75069 | 176.622 | 161.328 | |
| 214 | 3.41444 | 1.79912 | 179.859 | 167.471 | |
| 215 | 3.43399 | 1.86629 | 183.342 | 173.88 | |
| 216 | 3.47197 | 1.92684 | 187.055 | 180.569 | |
| 217 | 3.52636 | 2.01409 | 191.112 | 187.672 | |
| 218 | 3.89182 | 2.09693 | 195.509 | 195.833 | |
| 219 | 4.07754 | 2.22621 | 200.465 | 204.91 | |
| 220 | 4.47734 | 2.36561 | 206.061 | 215.502 | |
| 221 | 4.59512 | 2.65209 | 213.094 | 227.689 | |

Data Set Standard Deviation = 1.21891
Numerator = 51842.1
Denominator = 69653.1
W Statistic = 0.744289 = 51842.1 / 69653.1

5% Critical value of 0.976 exceeds 0.744289
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.744289
Evidence of non-normality at 99% level of significance

# Kruskal-Wallis Non-Parametric Test

## Parameter: Tetrachloroethene

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

# Kruskal Wallis Ranks

## Background Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-13 | 3/16/1999 | ND<0 | 78 |
| | 9/23/1999 | ND<0 | 78 |
| | 3/15/2000 | ND<0 | 78 |
| | 9/24/2003 | ND<0 | 78 |
| | 3/11/2004 | ND<0 | 78 |
| | 10/12/2004 | ND<0 | 78 |
| | 4/1/2005 | ND<0 | 78 |
| | 10/25/2005 | ND<0 | 78 |
| | 4/29/2006 | ND<0 | 78 |
| | 11/18/2006 | ND<0 | 78 |
| | 5/23/2007 | ND<0 | 78 |
| | 11/28/2007 | ND<0 | 78 |
| | 6/5/2008 | ND<0 | 78 |
| | 11/20/2008 | ND<0 | 78 |
| | 6/11/2009 | ND<-2.59027 | 78 |
| | 11/16/2009 | ND<-2.59027 | 78 |
| | 6/30/2010 | ND<-2.59027 | 78 |
| | 11/12/2010 | ND<-2.59027 U | 78 |

Rank Sum = 1404
Rank Mean = 78

Background Rank Sum = 1404
Background Rank Mean = 78

## Compliance Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-8 | 7/20/1995 | 1.16315 | 208 |
| | 8/24/1995 | 4.59512 | 221 |
| | 9/28/1995 | 4.47734 | 220 |
| | 10/26/1995 | 2.07944 | 213 |
| | 11/19/1996 | ND<0 | 78 |
| | 12/19/1996 | 4.07754 | 219 |
| | 3/24/1997 | 3.89182 | 218 |
| | 9/24/1997 | 3.52636 | 217 |
| | 4/7/1998 | ND<0 | 78 |
| | 9/23/1998 | 3.43399 | 215 |
| | 3/16/1999 | 3.41444 | 214 |
| | 9/23/1999 | 3.47197 | 216 |
| | 3/15/2000 | ND<0 | 78 |
| | 9/24/2003 | ND<0 | 78 |
| | 3/11/2004 | 1.79176 | 212 |
| | 10/12/2004 | ND<0 | 78 |
| | 4/1/2005 | 1.67523 | 211 |
| | 10/25/2005 | 0.779325 | 202 |
| | 4/29/2006 | 0.875469 | 204 |
| | 11/18/2006 | 0.989541 | 206 |

| | | | | |
|---|---|---|---|---|
| | 5/23/2007 | ND<0 | 78 | |
| | 11/28/2007 | -0.616186 | J | 180 |
| | 6/5/2008 | -0.174353 | J | 192 |
| | 11/20/2008 | -0.430783 | J | 183 |
| | 6/11/2009 | -0.223144 | J | 189 |
| | 6/30/2010 | -1.42712 | J | 158 |
| | 11/12/2010 | ND<-2.59027 | U | 78 |

Rank Sum = 4644
Rank Mean = 172

| | | | | |
|---|---|---|---|---|
| MW-9 | 7/20/1995 | -0.84397 | J | 175 |
| | 8/24/1995 | -0.673345 | J | 178 |
| | 9/28/1995 | -0.223144 | J | 190 |
| | 10/26/1995 | -0.105361 | J | 194 |
| | 11/19/1996 | ND<0 | 78 | |
| | 12/19/1996 | ND<0 | 78 | |
| | 3/24/1997 | ND<0 | 78 | |
| | 9/24/1997 | ND<0 | 78 | |
| | 4/7/1998 | ND<0 | 78 | |
| | 9/23/1998 | ND<0 | 78 | |
| | 3/16/1999 | ND<0 | 78 | |
| | 9/23/1999 | ND<0 | 78 | |
| | 3/15/2000 | ND<0 | 78 | |
| | 9/24/2003 | ND<0 | 78 | |
| | 3/11/2004 | ND<0 | 78 | |
| | 10/12/2004 | ND<0 | 78 | |
| | 4/1/2005 | -1.13943 | J | 165 |
| | 10/25/2005 | ND<0 | 78 | |
| | 4/29/2006 | -1.23787 | J | 160 |
| | 11/18/2006 | -1.56065 | J | 157 |
| | 5/23/2007 | ND<0 | 78 | |
| | 11/28/2007 | -1.27297 | J | 159 |
| | 6/5/2008 | -0.891598 | J | 172 |
| | 11/20/2008 | -0.891598 | J | 173 |
| | 6/11/2009 | -0.941609 | J | 170 |
| | 11/16/2009 | -0.544727 | J | 182 |
| | 6/30/2010 | -0.385662 | J | 185 |
| | 11/12/2010 | -0.634878 | J | 179 |

Rank Sum = 3531
Rank Mean = 126.107

| | | | | |
|---|---|---|---|---|
| MW-7 | 7/20/1995 | -0.150823 | J | 193 |
| | 8/24/1995 | -0.400478 | J | 184 |
| | 9/28/1995 | -0.223144 | J | 191 |
| | 10/26/1995 | -0.105361 | J | 195 |
| | 11/19/1996 | ND<0 | 78 | |
| | 12/19/1996 | ND<0 | 78 | |
| | 3/24/1997 | ND<0 | 78 | |
| | 9/24/1997 | ND<0 | 78 | |
| | 4/7/1998 | ND<0 | 78 | |
| | 9/23/1998 | ND<0 | 78 | |
| | 3/16/1999 | ND<0 | 78 | |
| | 9/23/1999 | ND<0 | 78 | |
| | 3/15/2000 | ND<0 | 78 | |
| | 9/24/2003 | ND<0 | 78 | |
| | 3/11/2004 | ND<0 | 78 | |
| | 10/12/2004 | ND<0 | 78 | |
| | 4/1/2005 | ND<0 | 78 | |
| | 10/25/2005 | ND<0 | 78 | |
| | 4/29/2006 | ND<0 | 78 | |
| | 11/18/2006 | ND<0 | 78 | |
| | 5/23/2007 | ND<0 | 78 | |

| | | | | |
|---|---|---|---|---|
| | 11/28/2007 | ND<0 | | 78 |
| | 6/5/2008 | ND<0 | | 78 |
| | 11/20/2008 | ND<0 | | 78 |
| | 6/11/2009 | ND<-2.59027 | | 78 |
| | 11/16/2009 | ND<-2.59027 | | 78 |
| | 6/30/2010 | ND<-2.59027 | | 78 |
| | 11/12/2010 | ND<-2.59027 | U | 78 |

Rank Sum = 2635
Rank Mean = 94.1071

| | | | | |
|---|---|---|---|---|
| MW-10 | 7/20/1995 | -0.34249 | J | 186 |
| | 8/24/1995 | 0.470004 | | 198 |
| | 9/28/1995 | ND<0 | | 78 |
| | 10/26/1995 | 0.693147 | | 199 |
| | 11/19/1996 | ND<0 | | 78 |
| | 12/19/1996 | ND<0 | | 78 |
| | 3/24/1997 | ND<0 | | 78 |
| | 9/24/1997 | ND<0 | | 78 |
| | 4/7/1998 | ND<0 | | 78 |
| | 9/23/1998 | ND<0 | | 78 |
| | 3/16/1999 | ND<0 | | 78 |
| | 9/23/1999 | ND<0 | | 78 |
| | 3/15/2000 | ND<0 | | 78 |
| | 9/24/2003 | ND<0 | | 78 |
| | 3/11/2004 | ND<0 | | 78 |
| | 10/12/2004 | ND<0 | | 78 |
| | 4/1/2005 | -0.287682 | J | 188 |
| | 10/25/2005 | -0.34249 | J | 187 |
| | 4/29/2006 | -0.040822 | J | 196 |
| | 11/18/2006 | -0.597837 | J | 181 |
| | 5/23/2007 | ND<0 | | 78 |
| | 11/28/2007 | -1.17118 | J | 164 |
| | 6/5/2008 | -1.02165 | J | 168 |
| | 11/20/2008 | ND<0 | | 78 |
| | 6/11/2009 | ND<-2.59027 | | 78 |
| | 11/16/2009 | -1.23787 | J | 161 |
| | 6/30/2010 | ND<-2.59027 | | 78 |
| | 11/12/2010 | ND<-2.59027 | U | 78 |

Rank Sum = 3232
Rank Mean = 115.429

| | | | | |
|---|---|---|---|---|
| MW-11R | 7/20/1995 | 0.741937 | | 201 |
| | 8/24/1995 | 1.4816 | | 210 |
| | 9/28/1995 | 0.693147 | | 200 |
| | 10/26/1995 | 1.38629 | | 209 |
| | 11/19/1996 | ND<0 | | 78 |
| | 12/19/1996 | ND<0 | | 78 |
| | 3/24/1997 | ND<0 | | 78 |
| | 9/24/1997 | ND<0 | | 78 |
| | 4/7/1998 | ND<0 | | 78 |
| | 9/23/1998 | ND<0 | | 78 |
| | 3/16/1999 | 0.993252 | | 207 |
| | 9/23/1999 | ND<0 | | 78 |
| | 3/15/2000 | ND<0 | | 78 |
| | 9/24/2003 | ND<0 | | 78 |
| | 3/11/2004 | ND<0 | | 78 |
| | 10/12/2004 | ND<0 | | 78 |
| | 4/1/2005 | 0.970779 | | 205 |
| | 10/25/2005 | -0.776529 | J | 176 |
| | 4/29/2006 | ND<0 | | 78 |
| | 11/18/2006 | -0.71335 | J | 177 |
| | 5/23/2007 | ND<0 | | 78 |

| | | | |
|---|---|---|---|
| | 11/28/2007 | -0.967584 J | 169 |
| | 6/5/2008 | ND<0 | 78 |
| | 11/20/2008 | -0.916291 J | 171 |
| | 6/11/2009 | 0.832909 | 203 |
| | 11/16/2009 | -1.20397 J | 162 |
| | 6/30/2010 | 0.182322 | 197 |
| | 11/12/2010 | ND<-2.59027 U | 78 |

Rank Sum = 3657
Rank Mean = 130.607

| | | | |
|---|---|---|---|
| MW-12AR | 3/16/1999 | ND<0 | 78 |
| | 9/23/1999 | ND<0 | 78 |
| | 3/15/2000 | ND<0 | 78 |
| | 9/24/2003 | ND<0 | 78 |
| | 3/11/2004 | ND<0 | 78 |
| | 10/12/2004 | ND<0 | 78 |
| | 4/1/2005 | ND<0 | 78 |
| | 10/25/2005 | -1.13943 J | 166 |
| | 4/29/2006 | -1.04982 J | 167 |
| | 11/18/2006 | ND<0 | 78 |
| | 5/23/2007 | ND<0 | 78 |
| | 11/28/2007 | ND<0 | 78 |
| | 6/5/2008 | -1.20397 J | 163 |
| | 11/20/2008 | ND<0 | 78 |
| | 6/11/2009 | ND<-2.59027 | 78 |
| | 11/16/2009 | ND<-2.59027 | 78 |
| | 6/30/2010 | ND<-2.59027 | 78 |
| | 11/12/2010 | -1.83258 J | 156 |

Rank Sum = 1744
Rank Mean = 96.8889

| | | | |
|---|---|---|---|
| MW-12BR | 3/16/1999 | ND<0 | 78 |
| | 9/23/1999 | ND<0 | 78 |
| | 3/15/2000 | ND<0 | 78 |
| | 9/24/2003 | ND<0 | 78 |
| | 3/11/2004 | ND<0 | 78 |
| | 10/12/2004 | ND<0 | 78 |
| | 4/1/2005 | -0.867501 J | 174 |
| | 10/25/2005 | ND<0 | 78 |
| | 4/29/2006 | ND<0 | 78 |
| | 11/18/2006 | ND<0 | 78 |
| | 5/23/2007 | ND<0 | 78 |
| | 11/28/2007 | ND<0 | 78 |
| | 6/5/2008 | ND<0 | 78 |
| | 11/20/2008 | ND<0 | 78 |
| | 6/11/2009 | ND<-2.59027 | 78 |
| | 11/16/2009 | ND<-2.59027 | 78 |
| | 6/30/2010 | ND<-2.59027 | 78 |
| | 11/12/2010 | ND<-2.59027 U | 78 |

Rank Sum = 1500
Rank Mean = 83.3333

| | | | |
|---|---|---|---|
| MW-6 | 7/20/1995 | ND<0 | 78 |
| | 8/24/1995 | ND<0 | 78 |
| | 9/28/1995 | ND<0 | 78 |
| | 10/26/1995 | ND<0 | 78 |
| | 11/19/1996 | ND<0 | 78 |
| | 12/19/1996 | ND<0 | 78 |
| | 3/24/1997 | ND<0 | 78 |
| | 9/24/1997 | ND<0 | 78 |
| | 4/7/1998 | ND<0 | 78 |
| | 9/23/1998 | ND<0 | 78 |

| | | | |
|---|---|---|---|
| 3/16/1999 | ND<0 | 78 | |
| 9/23/1999 | ND<0 | 78 | |
| 3/15/2000 | ND<0 | 78 | |
| 9/24/2003 | ND<0 | 78 | |
| 3/11/2004 | ND<0 | 78 | |
| 10/12/2004 | ND<0 | 78 | |
| 4/1/2005 | ND<0 | 78 | |
| 10/25/2005 | ND<0 | 78 | |
| 4/29/2006 | ND<0 | 78 | |
| 11/18/2006 | ND<0 | 78 | |
| 5/23/2007 | ND<0 | 78 | |
| 11/28/2007 | ND<0 | 78 | |
| 6/5/2008 | ND<0 | 78 | |
| 11/20/2008 | ND<0 | 78 | |
| 6/11/2009 | ND<-2.59027 | 78 | |
| 11/16/2009 | ND<-2.59027 | 78 | |
| 6/30/2010 | ND<-2.59027 | 78 | |
| 11/12/2010 | ND<-2.59027 U | 78 | |

Rank Sum = 2184
Rank Mean = 78

## Calculation Results:

Kruskal-Wallis H Statistic = 47.3566
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 72.2992
95% Confidence comparison value is 15.5073 at 8 degrees of freedom
47.3566 > 15.5073 indicating a significant group difference at 5% significance level
72.2992 > 15.5073 indicating a significant group difference at 5% significance level when adjusted for ties

## Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 78

| Well | Mean Rank | | Dif from Bkg | Critical Value |
|---|---|---|---|---|
| MW-8 | 172 | 94 | 45.263 | |
| MW-9 | 126.107 | 48.1071 | 44.9386 | |
| MW-7 | 94.1071 | 16.1071 | 44.9386 | |
| MW-10 | 115.429 | 37.4286 | 44.9386 | |
| MW-11R | 130.607 | 52.6071 | 44.9386 | |
| MW-12AR | | 96.8889 | 18.8889 | 49.5832 |
| MW-12BR | | 83.3333 | 5.33333 | 49.5832 |
| MW-6 | 78 | 0 | 44.9386 | |

## Individual Well Comparisons at Groupwise 5% Significance Level (0.625% Significance Level per comparison)

0.625% Z score is 2.51213
Mean background rank is 78

| Well | Mean Rank | | Dif from Bkg | Critical Value |
|---|---|---|---|---|
| MW-8 | 172 | 94 | 48.8779 | |
| MW-9 | 126.107 | 48.1071 | 48.5275 | |
| MW-7 | 94.1071 | 16.1071 | 48.5275 | |
| MW-10 | 115.429 | 37.4286 | 48.5275 | |
| MW-11R | 130.607 | 52.6071 | 48.5275 | |
| MW-12AR | | 96.8889 | 18.8889 | 53.5431 |
| MW-12BR | | 83.3333 | 5.33333 | 53.5431 |
| MW-6 | 78 | 0 | 48.5275 | |

# Mann-Kendall Trend Analysis

## Parameter: Tetrachloroethene

## Location: MW-8

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | Positives | Negatives |
|---|---|---|---|---|
| 4.59512 | 1.16315 | 3.43197 | 1 | 0 |
| 4.47734 | 1.16315 | 3.31419 | 2 | 0 |
| 2.07944 | 1.16315 | 0.916291 | 3 | 0 |
| ND<0 | 1.16315 | -1.163153 | 1 | |
| 4.07754 | 1.16315 | 2.91439 | 4 | 1 |
| 3.89182 | 1.16315 | 2.72867 | 5 | 1 |
| 3.52636 | 1.16315 | 2.36321 | 6 | 1 |
| ND<0 | 1.16315 | -1.163156 | 2 | |
| 3.43399 | 1.16315 | 2.27084 | 7 | 2 |
| 3.41444 | 1.16315 | 2.25129 | 8 | 2 |
| 3.47197 | 1.16315 | 2.30882 | 9 | 2 |
| ND<0 | 1.16315 | -1.163159 | 3 | |
| ND<0 | 1.16315 | -1.163159 | 4 | |
| 1.79176 | 1.16315 | 0.628609 | 10 | 4 |
| ND<0 | 1.16315 | -1.1631510 | 5 | |
| 1.67523 | 1.16315 | 0.512075 | 11 | 5 |
| 0.779325 | 1.16315 | -0.383826 | 11 | 6 |
| 0.875469 | 1.16315 | -0.287682 | 11 | 7 |
| 0.989541 | 1.16315 | -0.173611 | 11 | 8 |
| ND<0 | 1.16315 | -1.163151 | 11 | 9 |
| -0.616186 J | 1.16315 | -1.779341 | 11 | 10 |
| -0.174353 J | 1.16315 | -1.3375 | 11 | 11 |
| -0.430783 J | 1.16315 | -1.593931 | 11 | 12 |
| -0.223144 J | 1.16315 | -1.386291 | 11 | 13 |
| -1.42712 J | 1.16315 | -2.590271 | 11 | 14 |
| ND<-2.59027 U | 1.16315 | -3.753421 | 11 | 15 |
| | | | | |
| 4.47734 | 4.59512 | -0.117783 | 11 | 16 |
| 2.07944 | 4.59512 | -2.515681 | 11 | 17 |
| ND<0 | 4.59512 | -4.595121 | 11 | 18 |
| 4.07754 | 4.59512 | -0.517582 | 11 | 19 |
| 3.89182 | 4.59512 | -0.7033 | 11 | 20 |
| 3.52636 | 4.59512 | -1.068761 | 11 | 21 |
| ND<0 | 4.59512 | -4.595121 | 11 | 22 |
| 3.43399 | 4.59512 | -1.161131 | 11 | 23 |
| 3.41444 | 4.59512 | -1.180681 | 11 | 24 |
| 3.47197 | 4.59512 | -1.123151 | 11 | 25 |
| ND<0 | 4.59512 | -4.595121 | 11 | 26 |
| ND<0 | 4.59512 | -4.595121 | 11 | 27 |
| 1.79176 | 4.59512 | -2.803361 | 11 | 28 |
| ND<0 | 4.59512 | -4.595121 | 11 | 29 |
| 1.67523 | 4.59512 | -2.919891 | 11 | 30 |
| 0.779325 | 4.59512 | -3.815791 | 11 | 31 |
| 0.875469 | 4.59512 | -3.719651 | 11 | 32 |
| 0.989541 | 4.59512 | -3.605581 | 11 | 33 |
| ND<0 | 4.59512 | -4.595121 | 11 | 34 |
| -0.616186 J | 4.59512 | -5.211311 | 11 | 35 |
| -0.174353 J | 4.59512 | -4.769471 | 11 | 36 |

| | | | | | |
|---|---|---|---|---|---|
| -0.430783 J | 4.59512 | -5.0259 | 11 | 37 | |
| -0.223144 J | 4.59512 | -4.81826 | 11 | 38 | |
| -1.42712 J | 4.59512 | -6.02224 | 11 | 39 | |
| ND<-2.59027 U | 4.59512 | -7.18539 | 11 | 40 | |
| | | | | | |
| 2.07944 | 4.47734 | -2.3979 | 11 | 41 | |
| ND<0 | 4.47734 | -4.47734 | 11 | 42 | |
| 4.07754 | 4.47734 | -0.399799 | 11 | 43 | |
| 3.89182 | 4.47734 | -0.585517 | 11 | 44 | |
| 3.52636 | 4.47734 | -0.950976 | 11 | 45 | |
| ND<0 | 4.47734 | -4.47734 | 11 | 46 | |
| 3.43399 | 4.47734 | -1.04335 | 11 | 47 | |
| 3.41444 | 4.47734 | -1.06289 | 11 | 48 | |
| 3.47197 | 4.47734 | -1.00537 | 11 | 49 | |
| ND<0 | 4.47734 | -4.47734 | 11 | 50 | |
| ND<0 | 4.47734 | -4.47734 | 11 | 51 | |
| 1.79176 | 4.47734 | -2.68558 | 11 | 52 | |
| ND<0 | 4.47734 | -4.47734 | 11 | 53 | |
| 1.67523 | 4.47734 | -2.80211 | 11 | 54 | |
| 0.779325 | 4.47734 | -3.69801 | 11 | 55 | |
| 0.875469 | 4.47734 | -3.60187 | 11 | 56 | |
| 0.989541 | 4.47734 | -3.4878 | 11 | 57 | |
| ND<0 | 4.47734 | -4.47734 | 11 | 58 | |
| -0.616186 J | 4.47734 | -5.09352 | 11 | 59 | |
| -0.174353 J | 4.47734 | -4.65169 | 11 | 60 | |
| -0.430783 J | 4.47734 | -4.90812 | 11 | 61 | |
| -0.223144 J | 4.47734 | -4.70048 | 11 | 62 | |
| -1.42712 J | 4.47734 | -5.90445 | 11 | 63 | |
| ND<-2.59027 U | 4.47734 | -7.0676 | 11 | 64 | |
| | | | | | |
| ND<0 | 2.07944 | -2.07944 | 11 | 65 | |
| 4.07754 | 2.07944 | 1.9981 | 12 | 65 | |
| 3.89182 | 2.07944 | 1.81238 | 13 | 65 | |
| 3.52636 | 2.07944 | 1.44692 | 14 | 65 | |
| ND<0 | 2.07944 | -2.07944 | 14 | 66 | |
| 3.43399 | 2.07944 | 1.35455 | 15 | 66 | |
| 3.41444 | 2.07944 | 1.335 | 16 | 66 | |
| 3.47197 | 2.07944 | 1.39252 | 17 | 66 | |
| ND<0 | 2.07944 | -2.07944 | 17 | 67 | |
| ND<0 | 2.07944 | -2.07944 | 17 | 68 | |
| 1.79176 | 2.07944 | -0.287682 | 17 | 69 | |
| ND<0 | 2.07944 | -2.07944 | 17 | 70 | |
| 1.67523 | 2.07944 | -0.404216 | 17 | 71 | |
| 0.779325 | 2.07944 | -1.30012 | 17 | 72 | |
| 0.875469 | 2.07944 | -1.20397 | 17 | 73 | |
| 0.989541 | 2.07944 | -1.0899 | 17 | 74 | |
| ND<0 | 2.07944 | -2.07944 | 17 | 75 | |
| -0.616186 J | 2.07944 | -2.69563 | 17 | 76 | |
| -0.174353 J | 2.07944 | -2.25379 | 17 | 77 | |
| -0.430783 J | 2.07944 | -2.51022 | 17 | 78 | |
| -0.223144 J | 2.07944 | -2.30259 | 17 | 79 | |
| -1.42712 J | 2.07944 | -3.50656 | 17 | 80 | |
| ND<-2.59027 U | 2.07944 | -4.66971 | 17 | 81 | |
| | | | | | |
| 4.07754 | ND<0 | 4.07754 | 18 | 81 | |
| 3.89182 | ND<0 | 3.89182 | 19 | 81 | |
| 3.52636 | ND<0 | 3.52636 | 20 | 81 | |
| ND<0 | ND<0 | 0 | 20 | 81 | |
| 3.43399 | ND<0 | 3.43399 | 21 | 81 | |
| 3.41444 | ND<0 | 3.41444 | 22 | 81 | |
| 3.47197 | ND<0 | 3.47197 | 23 | 81 | |
| ND<0 | ND<0 | 0 | 23 | 81 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 23 | 81 | | |
| 1.79176 | | ND<0 | 1.79176 | 24 | 81 | |
| ND<0 | ND<0 | 0 | 24 | 81 | | |
| 1.67523 | | ND<0 | 1.67523 | 25 | 81 | |
| 0.779325 | | ND<0 | 0.779325 | 26 | 81 | |
| 0.875469 | | ND<0 | 0.875469 | 27 | 81 | |
| 0.989541 | | ND<0 | 0.989541 | 28 | 81 | |
| ND<0 | ND<0 | 0 | 28 | 81 | | |
| -0.616186 J | | ND<0 | -0.616186 | 28 | 82 | |
| -0.174353 J | | ND<0 | -0.174353 | 28 | 83 | |
| -0.430783 J | | ND<0 | -0.430783 | 28 | 84 | |
| -0.223144 J | | ND<0 | -0.223144 | 28 | 85 | |
| -1.42712 J | | ND<0 | -1.4271 | 28 | 86 | |
| ND<-2.59027 U | | ND<0 | -2.5902 | 28 | 87 | |
| | | | | | | |
| 3.89182 | | 4.07754 | -0.185717 | 28 | 88 | |
| 3.52636 | | 4.07754 | -0.551177 | 28 | 89 | |
| ND<0 | 4.07754 | | -4.0775 | 28 | 90 | |
| 3.43399 | | 4.07754 | -0.6435 | 28 | 91 | |
| 3.41444 | | 4.07754 | -0.663095 | 28 | 92 | |
| 3.47197 | | 4.07754 | -0.605571 | 28 | 93 | |
| ND<0 | 4.07754 | | -4.0775 | 28 | 94 | |
| ND<0 | 4.07754 | | -4.0775 | 28 | 95 | |
| 1.79176 | | 4.07754 | -2.2857 | 28 | 96 | |
| ND<0 | 4.07754 | | -4.0775 | 28 | 97 | |
| 1.67523 | | 4.07754 | -2.4023 | 28 | 98 | |
| 0.779325 | | 4.07754 | -3.2982 | 28 | 99 | |
| 0.875469 | | 4.07754 | -3.2020 | 28 | 100 | |
| 0.989541 | | 4.07754 | -3.088 | 28 | 101 | |
| ND<0 | 4.07754 | | -4.0775 | 28 | 102 | |
| -0.616186 J | | 4.07754 | -4.6937 | 28 | 103 | |
| -0.174353 J | | 4.07754 | -4.2518 | 28 | 104 | |
| -0.430783 J | | 4.07754 | -4.5083 | 28 | 105 | |
| -0.223144 J | | 4.07754 | -4.3006 | 28 | 106 | |
| -1.42712 J | | 4.07754 | -5.5046 | 28 | 107 | |
| ND<-2.59027 U | | 4.07754 | -6.6678 | 28 | 108 | |
| | | | | | | |
| 3.52636 | | 3.89182 | -0.3654 | 28 | 109 | |
| ND<0 | 3.89182 | | -3.8918 | 28 | 110 | |
| 3.43399 | | 3.89182 | -0.457833 | 28 | 111 | |
| 3.41444 | | 3.89182 | -0.477378 | 28 | 112 | |
| 3.47197 | | 3.89182 | -0.419854 | 28 | 113 | |
| ND<0 | 3.89182 | | -3.8918 | 28 | 114 | |
| ND<0 | 3.89182 | | -3.8918 | 28 | 115 | |
| 1.79176 | | 3.89182 | -2.1000 | 28 | 116 | |
| ND<0 | 3.89182 | | -3.8918 | 28 | 117 | |
| 1.67523 | | 3.89182 | -2.2165 | 28 | 118 | |
| 0.779325 | | 3.89182 | -3.1125 | 28 | 119 | |
| 0.875469 | | 3.89182 | -3.0163 | 28 | 120 | |
| 0.989541 | | 3.89182 | -2.9022 | 28 | 121 | |
| ND<0 | 3.89182 | | -3.8918 | 28 | 122 | |
| -0.616186 J | | 3.89182 | -4.5080 | 28 | 123 | |
| -0.174353 J | | 3.89182 | -4.0661 | 28 | 124 | |
| -0.430783 J | | 3.89182 | -4.3226 | 28 | 125 | |
| -0.223144 J | | 3.89182 | -4.1149 | 28 | 126 | |
| -1.42712 J | | 3.89182 | -5.3189 | 28 | 127 | |
| ND<-2.59027 U | | 3.89182 | -6.4820 | 28 | 128 | |
| | | | | | | |
| ND<0 | 3.52636 | | -3.5263 | 28 | 129 | |
| 3.43399 | | 3.52636 | -0.092373 | 3 | 28 | 130 |
| 3.41444 | | 3.52636 | -0.111918 | | 28 | 131 |
| 3.47197 | | 3.52636 | -0.054394 | 1 | 28 | 132 |

| | | | | | |
|---|---|---|---|---|---|
| ND<0 | 3.52636 | -3.5263 | 628 | 133 | |
| ND<0 | 3.52636 | -3.5263 | 628 | 134 | |
| 1.79176 | 3.52636 | -1.7346 | 28 | 135 | |
| ND<0 | 3.52636 | -3.5263 | 628 | 136 | |
| 1.67523 | 3.52636 | -1.8511 | 328 | 137 | |
| 0.779325 | 3.52636 | -2.7470 | 428 | 138 | |
| 0.875469 | 3.52636 | -2.6508 | 928 | 139 | |
| 0.989541 | 3.52636 | -2.5368 | 228 | 140 | |
| ND<0 | 3.52636 | -3.5263 | 628 | 141 | |
| -0.616186 J | 3.52636 | -4.1425 | 528 | 142 | |
| -0.174353 J | 3.52636 | -3.7007 | 128 | 143 | |
| -0.430783 J | 3.52636 | -3.9571 | 428 | 144 | |
| -0.223144 J | 3.52636 | -3.7495 | 28 | 145 | |
| -1.42712 J | 3.52636 | -4.9534 | 828 | 146 | |
| ND<-2.59027 U | 3.52636 | -6.1166 | 328 | 147 | |

| | | | | | |
|---|---|---|---|---|---|
| 3.43399 | ND<0 | 3.43399 | 29 | 147 | |
| 3.41444 | ND<0 | 3.41444 | 30 | 147 | |
| 3.47197 | ND<0 | 3.47197 | 31 | 147 | |
| ND<0 | ND<0 | 0 | 31 | 147 | |
| ND<0 | ND<0 | 0 | 31 | 147 | |
| 1.79176 | ND<0 | 1.79176 | 32 | 147 | |
| ND<0 | ND<0 | 0 | 32 | 147 | |
| 1.67523 | ND<0 | 1.67523 | 33 | 147 | |
| 0.779325 | ND<0 | 0.779325 | 34 | 147 | |
| 0.875469 | ND<0 | 0.875469 | 35 | 147 | |
| 0.989541 | ND<0 | 0.989541 | 36 | 147 | |
| ND<0 | ND<0 | 0 | 36 | 147 | |
| -0.616186 J | ND<0 | -0.616186 | 36 | 148 | |
| -0.174353 J | ND<0 | -0.174353 | 36 | 149 | |
| -0.430783 J | ND<0 | -0.430783 | 36 | 150 | |
| -0.223144 J | ND<0 | -0.223144 | 36 | 151 | |
| -1.42712 J | ND<0 | -1.4271 | 236 | 152 | |
| ND<-2.59027 U | ND<0 | -2.5902 | 736 | 153 | |

| | | | | | |
|---|---|---|---|---|---|
| 3.41444 | 3.43399 | -0.0195 | 446 | 36 | 154 |
| 3.47197 | 3.43399 | 0.0379 | 792 | 37 | 154 |
| ND<0 | 3.43399 | -3.4339 | 937 | 155 | |
| ND<0 | 3.43399 | -3.4339 | 937 | 156 | |
| 1.79176 | 3.43399 | -1.6422 | 337 | 157 | |
| ND<0 | 3.43399 | -3.4339 | 937 | 158 | |
| 1.67523 | 3.43399 | -1.7587 | 637 | 159 | |
| 0.779325 | 3.43399 | -2.6546 | 637 | 160 | |
| 0.875469 | 3.43399 | -2.5585 | 237 | 161 | |
| 0.989541 | 3.43399 | -2.4444 | 537 | 162 | |
| ND<0 | 3.43399 | -3.4339 | 937 | 163 | |
| -0.616186 J | 3.43399 | -4.0501 | 737 | 164 | |
| -0.174353 J | 3.43399 | -3.6083 | 437 | 165 | |
| -0.430783 J | 3.43399 | -3.8647 | 737 | 166 | |
| -0.223144 J | 3.43399 | -3.6571 | 337 | 167 | |
| -1.42712 J | 3.43399 | -4.8611 | 37 | 168 | |
| ND<-2.59027 U | 3.43399 | -6.0242 | 537 | 169 | |

| | | | | | |
|---|---|---|---|---|---|
| 3.47197 | 3.41444 | 0.0575 | 238 | 38 | 169 |
| ND<0 | 3.41444 | -3.4144 | 438 | 170 | |
| ND<0 | 3.41444 | -3.4144 | 438 | 171 | |
| 1.79176 | 3.41444 | -1.6226 | 838 | 172 | |
| ND<0 | 3.41444 | -3.4144 | 438 | 173 | |
| 1.67523 | 3.41444 | -1.7392 | 238 | 174 | |
| 0.779325 | 3.41444 | -2.6351 | 238 | 175 | |
| 0.875469 | 3.41444 | -2.5389 | 738 | 176 | |
| 0.989541 | 3.41444 | -2.4249 | 38 | 177 | |

| | | | | | |
|---|---|---|---|---|---|
| ND<0 | 3.41444 | -3.4144 | 38 | 178 | |
| -0.616186 J | 3.41444 | -4.0306 | 38 | 179 | |
| -0.174353 J | 3.41444 | -3.5888 | 38 | 180 | |
| -0.430783 J | 3.41444 | -3.8452 | 38 | 181 | |
| -0.223144 J | 3.41444 | -3.6375 | 38 | 182 | |
| -1.42712 J | 3.41444 | -4.8415 | 38 | 183 | |
| ND<-2.59027 U | 3.41444 | -6.0047 | 138 | 184 | |
| | | | | | |
| ND<0 | 3.47197 | -3.4719 | 738 | 185 | |
| ND<0 | 3.47197 | -3.4719 | 738 | 186 | |
| 1.79176 | 3.47197 | -1.6802 | 138 | 187 | |
| ND<0 | 3.47197 | -3.4719 | 738 | 188 | |
| 1.67523 | 3.47197 | -1.7967 | 438 | 189 | |
| 0.779325 | 3.47197 | -2.6926 | 438 | 190 | |
| 0.875469 | 3.47197 | -2.5965 | 38 | 191 | |
| 0.989541 | 3.47197 | -2.4824 | 338 | 192 | |
| ND<0 | 3.47197 | -3.4719 | 738 | 193 | |
| -0.616186 J | 3.47197 | -4.0881 | 538 | 194 | |
| -0.174353 J | 3.47197 | -3.6463 | 238 | 195 | |
| -0.430783 J | 3.47197 | -3.9027 | 538 | 196 | |
| -0.223144 J | 3.47197 | -3.6951 | 138 | 197 | |
| -1.42712 J | 3.47197 | -4.8990 | 838 | 198 | |
| ND<-2.59027 U | 3.47197 | -6.0622 | 338 | 199 | |
| | | | | | |
| ND<0 | ND<0 | 0 | 38 | 199 | |
| 1.79176 | ND<0 | 1.79176 | 39 | 199 | |
| ND<0 | ND<0 | 0 | 39 | 199 | |
| 1.67523 | ND<0 | 1.67523 | 40 | 199 | |
| 0.779325 | ND<0 | 0.779325 | 41 | 199 | |
| 0.875469 | ND<0 | 0.875469 | 42 | 199 | |
| 0.989541 | ND<0 | 0.989541 | 43 | 199 | |
| ND<0 | ND<0 | 0 | 43 | 199 | |
| -0.616186 J | ND<0 | -0.616186 | 43 | 200 | |
| -0.174353 J | ND<0 | -0.174353 | 43 | 201 | |
| -0.430783 J | ND<0 | -0.430783 | 43 | 202 | |
| -0.223144 J | ND<0 | -0.223144 | 43 | 203 | |
| -1.42712 J | ND<0 | -1.4271 | 243 | 204 | |
| ND<-2.59027 U | ND<0 | -2.5902 | 743 | 205 | |
| | | | | | |
| 1.79176 | ND<0 | 1.79176 | 44 | 205 | |
| ND<0 | ND<0 | 0 | 44 | 205 | |
| 1.67523 | ND<0 | 1.67523 | 45 | 205 | |
| 0.779325 | ND<0 | 0.779325 | 46 | 205 | |
| 0.875469 | ND<0 | 0.875469 | 47 | 205 | |
| 0.989541 | ND<0 | 0.989541 | 48 | 205 | |
| ND<0 | ND<0 | 0 | 48 | 205 | |
| -0.616186 J | ND<0 | -0.616186 | 48 | 206 | |
| -0.174353 J | ND<0 | -0.174353 | 48 | 207 | |
| -0.430783 J | ND<0 | -0.430783 | 48 | 208 | |
| -0.223144 J | ND<0 | -0.223144 | 48 | 209 | |
| -1.42712 J | ND<0 | -1.4271 | 248 | 210 | |
| ND<-2.59027 U | ND<0 | -2.5902 | 748 | 211 | |
| | | | | | |
| ND<0 | 1.79176 | -1.7917 | 648 | 212 | |
| 1.67523 | 1.79176 | -0.116 | 534 | 48 | 213 |
| 0.779325 | 1.79176 | -1.0124 | 348 | 214 | |
| 0.875469 | 1.79176 | -0.916 | 291 | 48 | 215 |
| 0.989541 | 1.79176 | -0.802 | 218 | 48 | 216 |
| ND<0 | 1.79176 | -1.7917 | 648 | 217 | |
| -0.616186 J | 1.79176 | -2.4079 | 548 | 218 | |
| -0.174353 J | 1.79176 | -1.9661 | 148 | 219 | |
| -0.430783 J | 1.79176 | -2.2225 | 448 | 220 | |

| | | | | |
|---|---|---|---|---|
| -0.223144 J | 1.79176 | -2.0149 | 48 | 221 |
| -1.42712 J | 1.79176 | -3.2188 | 48 | 222 |
| ND<-2.59027 U | 1.79176 | -4.3820 | 348 | 223 |

| | | | | |
|---|---|---|---|---|
| 1.67523 | ND<0 | 1.67523 | 49 | 223 |
| 0.779325 | ND<0 | 0.779325 | 50 | 223 |
| 0.875469 | ND<0 | 0.875469 | 51 | 223 |
| 0.989541 | ND<0 | 0.989541 | 52 | 223 |
| ND<0 | ND<0 | 0 | 52 | 223 |
| -0.616186 J | ND<0 | -0.616186 | 52 | 224 |
| -0.174353 J | ND<0 | -0.174353 | 52 | 225 |
| -0.430783 J | ND<0 | -0.430783 | 52 | 226 |
| -0.223144 J | ND<0 | -0.223144 | 52 | 227 |
| -1.42712 J | ND<0 | -1.4271 | 252 | 228 |
| ND<-2.59027 U | ND<0 | -2.5902 | 752 | 229 |

| | | | | |
|---|---|---|---|---|
| 0.779325 | 1.67523 | -0.895901 | 52 | 230 |
| 0.875469 | 1.67523 | -0.799757 | 52 | 231 |
| 0.989541 | 1.67523 | -0.685684 | 52 | 232 |
| ND<0 | 1.67523 | -1.6752 | 352 | 233 |
| -0.616186 J | 1.67523 | -2.2914 | 152 | 234 |
| -0.174353 J | 1.67523 | -1.8495 | 852 | 235 |
| -0.430783 J | 1.67523 | -2.1060 | 152 | 236 |
| -0.223144 J | 1.67523 | -1.8983 | 752 | 237 |
| -1.42712 J | 1.67523 | -3.1023 | 452 | 238 |
| ND<-2.59027 U | 1.67523 | -4.2654 | 952 | 239 |

| | | | | |
|---|---|---|---|---|
| 0.875469 | 0.779325 | 0.0961439 | 53 | 239 |
| 0.989541 | 0.779325 | 0.210216 | 54 | 239 |
| ND<0 | 0.779325 | -0.779325 | 54 | 240 |
| -0.616186 J | 0.779325 | -1.3955 | 154 | 241 |
| -0.174353 J | 0.779325 | -0.953678 | 54 | 242 |
| -0.430783 J | 0.779325 | -1.2101 | 154 | 243 |
| -0.223144 J | 0.779325 | -1.0024 | 754 | 244 |
| -1.42712 J | 0.779325 | -2.2064 | 454 | 245 |
| ND<-2.59027 U | 0.779325 | -3.3695 | 954 | 246 |

| | | | | |
|---|---|---|---|---|
| 0.989541 | 0.875469 | 0.114072 | 55 | 246 |
| ND<0 | 0.875469 | -0.875469 | 55 | 247 |
| -0.616186 J | 0.875469 | -1.4916 | 555 | 248 |
| -0.174353 J | 0.875469 | -1.0498 | 255 | 249 |
| -0.430783 J | 0.875469 | -1.3062 | 555 | 250 |
| -0.223144 J | 0.875469 | -1.0986 | 155 | 251 |
| -1.42712 J | 0.875469 | -2.3025 | 955 | 252 |
| ND<-2.59027 U | 0.875469 | -3.4657 | 455 | 253 |

| | | | | |
|---|---|---|---|---|
| ND<0 | 0.989541 | -0.989541 | 55 | 254 |
| -0.616186 J | 0.989541 | -1.6057 | 355 | 255 |
| -0.174353 J | 0.989541 | -1.1638 | 955 | 256 |
| -0.430783 J | 0.989541 | -1.4203 | 255 | 257 |
| -0.223144 J | 0.989541 | -1.2126 | 855 | 258 |
| -1.42712 J | 0.989541 | -2.4166 | 655 | 259 |
| ND<-2.59027 U | 0.989541 | -3.5798 | 155 | 260 |

| | | | | |
|---|---|---|---|---|
| -0.616186 J | ND<0 | -0.616186 | 55 | 261 |
| -0.174353 J | ND<0 | -0.174353 | 55 | 262 |
| -0.430783 J | ND<0 | -0.430783 | 55 | 263 |
| -0.223144 J | ND<0 | -0.223144 | 55 | 264 |
| -1.42712 J | ND<0 | -1.4271 | 255 | 265 |
| ND<-2.59027 U | ND<0 | -2.5902 | 755 | 266 |

| | | | | |
|---|---|---|---|---|
| -0.174353 J | -0.616186 J | 0.441833 | 56 | 266 |
| -0.430783 J | -0.616186 J | 0.185403 | 57 | 266 |
| -0.223144 J | -0.616186 J | 0.393043 | 58 | 266 |
| -1.42712 J | -0.616186 J | -0.8109358 | 267 | |
| ND<-2.59027 U | -0.616186 J | -1.9740858 | 268 | |
| | | | | |
| -0.430783 J | -0.174353 J | -0.2564358 | 269 | |
| -0.223144 J | -0.174353 J | -0.0487902 | 58 | 270 |
| -1.42712 J | -0.174353 J | -1.2527658 | 271 | |
| ND<-2.59027 U | -0.174353 J | -2.4159158 | 272 | |
| | | | | |
| -0.223144 J | -0.430783 J | 0.207639 | 59 | 272 |
| -1.42712 J | -0.430783 J | -0.996333 | 59 | 273 |
| ND<-2.59027 U | -0.430783 J | -2.1594859 | 274 | |
| | | | | |
| -1.42712 J | -0.223144 J | -1.2039759 | 275 | |
| ND<-2.59027 U | -0.223144 J | -2.3671259 | 276 | |
| | | | | |
| ND<-2.59027 U | -1.42712 J | -1.1631559 | 277 | |

S Statistic = 59 - 277 = -218

| Tied Group | Value | Members |
|---|---|---|
| 1 | 0 | 6 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |
| 11/19/1996 | 1 |
| 12/19/1996 | 1 |
| 3/24/1997 | 1 |
| 9/24/1997 | 1 |
| 4/7/1998 | 1 |
| 9/23/1998 | 1 |
| 3/16/1999 | 1 |
| 9/23/1999 | 1 |
| 3/15/2000 | 1 |
| 9/24/2003 | 1 |
| 3/11/2004 | 1 |
| 10/12/2004 | 1 |
| 4/1/2005 | 1 |
| 10/25/2005 | 1 |
| 4/29/2006 | 1 |
| 11/18/2006 | 1 |
| 5/23/2007 | 1 |
| 11/28/2007 | 1 |
| 6/5/2008 | 1 |
| 11/20/2008 | 1 |
| 6/11/2009 | 1 |
| 6/30/2010 | 1 |
| 11/12/2010 | 1 |

There are 0 time periods with multiple data

A = 510
B = 0
C = 120
D = 0

E = 30
F = 0
a = 41418
b = 157950
c = 1404
Group Variance = 2272.67
Z-Score = -4.55189
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-4.55189| > 1.97737 indicating a trend

# Mann-Kendall Trend Analysis

## Parameter: Tetrachloroethene

## Location: MW-9

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | Positives | Negatives |
|---|---|---|---|---|
| -0.673345 J | -0.84397 J | 0.170626 | 1 | 0 |
| -0.223144 J | -0.84397 J | 0.620827 | 2 | 0 |
| -0.105361 J | -0.84397 J | 0.73861 | 3 | 0 |
| ND<0 | -0.84397 J | 0.84397 | 4 | 0 |
| ND<0 | -0.84397 J | 0.84397 | 5 | 0 |
| ND<0 | -0.84397 J | 0.84397 | 6 | 0 |
| ND<0 | -0.84397 J | 0.84397 | 7 | 0 |
| ND<0 | -0.84397 J | 0.84397 | 8 | 0 |
| ND<0 | -0.84397 J | 0.84397 | 9 | 0 |
| ND<0 | -0.84397 J | 0.84397 | 10 | 0 |
| ND<0 | -0.84397 J | 0.84397 | 11 | 0 |
| ND<0 | -0.84397 J | 0.84397 | 12 | 0 |
| ND<0 | -0.84397 J | 0.84397 | 13 | 0 |
| ND<0 | -0.84397 J | 0.84397 | 14 | 0 |
| ND<0 | -0.84397 J | 0.84397 | 15 | 0 |
| -1.13943 J | -0.84397 J | -0.295464 | 15 | 1 |
| ND<0 | -0.84397 J | 0.84397 | 16 | 1 |
| -1.23787 J | -0.84397 J | -0.393904 | 16 | 2 |
| -1.56065 J | -0.84397 J | -0.716678 | 16 | 3 |
| ND<0 | -0.84397 J | 0.84397 | 17 | 3 |
| -1.27297 J | -0.84397 J | -0.428996 | 17 | 4 |
| -0.891598 J | -0.84397 J | -0.047628 | 17 | 5 |
| -0.891598 J | -0.84397 J | -0.047628 | 17 | 6 |
| -0.941609 J | -0.84397 J | -0.0976385 | 17 | 7 |
| -0.544727 J | -0.84397 J | 0.299243 | 18 | 7 |
| -0.385662 J | -0.84397 J | 0.458308 | 19 | 7 |
| -0.634878 J | -0.84397 J | 0.209092 | 20 | 7 |
| | | | | |
| -0.223144 J | -0.673345 J | 0.450201 | 21 | 7 |
| -0.105361 J | -0.673345 J | 0.567984 | 22 | 7 |
| ND<0 | -0.673345 J | 0.673345 | 23 | 7 |
| ND<0 | -0.673345 J | 0.673345 | 24 | 7 |
| ND<0 | -0.673345 J | 0.673345 | 25 | 7 |
| ND<0 | -0.673345 J | 0.673345 | 26 | 7 |
| ND<0 | -0.673345 J | 0.673345 | 27 | 7 |
| ND<0 | -0.673345 J | 0.673345 | 28 | 7 |
| ND<0 | -0.673345 J | 0.673345 | 29 | 7 |
| ND<0 | -0.673345 J | 0.673345 | 30 | 7 |
| ND<0 | -0.673345 J | 0.673345 | 31 | 7 |
| ND<0 | -0.673345 J | 0.673345 | 32 | 7 |
| ND<0 | -0.673345 J | 0.673345 | 33 | 7 |
| ND<0 | -0.673345 J | 0.673345 | 34 | 7 |
| -1.13943 J | -0.673345 J | -0.466093 | 34 | 8 |
| ND<0 | -0.673345 J | 0.673345 | 35 | 8 |
| -1.23787 J | -0.673345 J | -0.564533 | 35 | 9 |
| -1.56065 J | -0.673345 J | -0.887303 | 35 | 10 |
| ND<0 | -0.673345 J | 0.673345 | 36 | 10 |
| -1.27297 J | -0.673345 J | -0.599621 | 36 | 11 |

| | | | | |
|---|---|---|---|---|
| -0.891598 J | -0.673345 J | -0.218254 | 36 | 12 |
| -0.891598 J | -0.673345 J | -0.218254 | 36 | 13 |
| -0.941609 J | -0.673345 J | -0.268264 | 36 | 14 |
| -0.544727 J | -0.673345 J | 0.128617 | 37 | 14 |
| -0.385662 J | -0.673345 J | 0.287682 | 38 | 14 |
| -0.634878 J | -0.673345 J | 0.0384663 | 39 | 14 |
| | | | | |
| -0.105361 J | -0.223144 J | 0.117783 | 40 | 14 |
| ND<0 | -0.223144 J | 0.223144 | 41 | 14 |
| ND<0 | -0.223144 J | 0.223144 | 42 | 14 |
| ND<0 | -0.223144 J | 0.223144 | 43 | 14 |
| ND<0 | -0.223144 J | 0.223144 | 44 | 14 |
| ND<0 | -0.223144 J | 0.223144 | 45 | 14 |
| ND<0 | -0.223144 J | 0.223144 | 46 | 14 |
| ND<0 | -0.223144 J | 0.223144 | 47 | 14 |
| ND<0 | -0.223144 J | 0.223144 | 48 | 14 |
| ND<0 | -0.223144 J | 0.223144 | 49 | 14 |
| ND<0 | -0.223144 J | 0.223144 | 50 | 14 |
| ND<0 | -0.223144 J | 0.223144 | 51 | 14 |
| ND<0 | -0.223144 J | 0.223144 | 52 | 14 |
| -1.13943 J | -0.223144 J | -0.916291 | 52 | 15 |
| ND<0 | -0.223144 J | 0.223144 | 53 | 15 |
| -1.23787 J | -0.223144 J | -1.0147353 | 16 | |
| -1.56065 J | -0.223144 J | -1.3375 53 | 17 | |
| ND<0 | -0.223144 J | 0.223144 | 54 | 17 |
| -1.27297 J | -0.223144 J | -1.0498254 | 18 | |
| -0.891598 J | -0.223144 J | -0.668455 | 54 | 19 |
| -0.891598 J | -0.223144 J | -0.668455 | 54 | 20 |
| -0.941609 J | -0.223144 J | -0.718465 | 54 | 21 |
| -0.544727 J | -0.223144 J | -0.321584 | 54 | 22 |
| -0.385662 J | -0.223144 J | -0.162519 | 54 | 23 |
| -0.634878 J | -0.223144 J | -0.411735 | 54 | 24 |
| | | | | |
| ND<0 | -0.105361 J | 0.105361 | 55 | 24 |
| ND<0 | -0.105361 J | 0.105361 | 56 | 24 |
| ND<0 | -0.105361 J | 0.105361 | 57 | 24 |
| ND<0 | -0.105361 J | 0.105361 | 58 | 24 |
| ND<0 | -0.105361 J | 0.105361 | 59 | 24 |
| ND<0 | -0.105361 J | 0.105361 | 60 | 24 |
| ND<0 | -0.105361 J | 0.105361 | 61 | 24 |
| ND<0 | -0.105361 J | 0.105361 | 62 | 24 |
| ND<0 | -0.105361 J | 0.105361 | 63 | 24 |
| ND<0 | -0.105361 J | 0.105361 | 64 | 24 |
| ND<0 | -0.105361 J | 0.105361 | 65 | 24 |
| ND<0 | -0.105361 J | 0.105361 | 66 | 24 |
| -1.13943 J | -0.105361 J | -1.0340766 | 25 | |
| ND<0 | -0.105361 J | 0.105361 | 67 | 25 |
| -1.23787 J | -0.105361 J | -1.1325167 | 26 | |
| -1.56065 J | -0.105361 J | -1.4552967 | 27 | |
| ND<0 | -0.105361 J | 0.105361 | 68 | 27 |
| -1.27297 J | -0.105361 J | -1.1676168 | 28 | |
| -0.891598 J | -0.105361 J | -0.786238 | 68 | 29 |
| -0.891598 J | -0.105361 J | -0.786238 | 68 | 30 |
| -0.941609 J | -0.105361 J | -0.836248 | 68 | 31 |
| -0.544727 J | -0.105361 J | -0.439367 | 68 | 32 |
| -0.385662 J | -0.105361 J | -0.280302 | 68 | 33 |
| -0.634878 J | -0.105361 J | -0.529518 | 68 | 34 |
| | | | | |
| ND<0 | ND<0 | 0 | 68 | 34 |
| ND<0 | ND<0 | 0 | 68 | 34 |
| ND<0 | ND<0 | 0 | 68 | 34 |
| ND<0 | ND<0 | 0 | 68 | 34 |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 68 | 34 | | |
| ND<0 | ND<0 | 0 | 68 | 34 | | |
| ND<0 | ND<0 | 0 | 68 | 34 | | |
| ND<0 | ND<0 | 0 | 68 | 34 | | |
| ND<0 | ND<0 | 0 | 68 | 34 | | |
| ND<0 | ND<0 | 0 | 68 | 34 | | |
| ND<0 | ND<0 | 0 | 68 | 34 | | |
| -1.13943 | J | ND<0 | -1.139 | 4368 | 35 | |
| ND<0 | ND<0 | 0 | 68 | 35 | | |
| -1.23787 | J | ND<0 | -1.237 | 8768 | 36 | |
| -1.56065 | J | ND<0 | -1.560 | 6568 | 37 | |
| ND<0 | ND<0 | 0 | 68 | 37 | | |
| -1.27297 | J | ND<0 | -1.272 | 9768 | 38 | |
| -0.891598 | J | ND<0 | -0.891598 | | 68 | 39 |
| -0.891598 | J | ND<0 | -0.891598 | | 68 | 40 |
| -0.941609 | J | ND<0 | -0.941609 | | 68 | 41 |
| -0.544727 | J | ND<0 | -0.544727 | | 68 | 42 |
| -0.385662 | J | ND<0 | -0.385662 | | 68 | 43 |
| -0.634878 | J | ND<0 | -0.634878 | | 68 | 44 |
| | | | | | | |
| ND<0 | ND<0 | 0 | 68 | 44 | | |
| ND<0 | ND<0 | 0 | 68 | 44 | | |
| ND<0 | ND<0 | 0 | 68 | 44 | | |
| ND<0 | ND<0 | 0 | 68 | 44 | | |
| ND<0 | ND<0 | 0 | 68 | 44 | | |
| ND<0 | ND<0 | 0 | 68 | 44 | | |
| ND<0 | ND<0 | 0 | 68 | 44 | | |
| ND<0 | ND<0 | 0 | 68 | 44 | | |
| ND<0 | ND<0 | 0 | 68 | 44 | | |
| ND<0 | ND<0 | 0 | 68 | 44 | | |
| -1.13943 | J | ND<0 | -1.139 | 4368 | 45 | |
| ND<0 | ND<0 | 0 | 68 | 45 | | |
| -1.23787 | J | ND<0 | -1.237 | 8768 | 46 | |
| -1.56065 | J | ND<0 | -1.560 | 6568 | 47 | |
| ND<0 | ND<0 | 0 | 68 | 47 | | |
| -1.27297 | J | ND<0 | -1.272 | 9768 | 48 | |
| -0.891598 | J | ND<0 | -0.891598 | | 68 | 49 |
| -0.891598 | J | ND<0 | -0.891598 | | 68 | 50 |
| -0.941609 | J | ND<0 | -0.941609 | | 68 | 51 |
| -0.544727 | J | ND<0 | -0.544727 | | 68 | 52 |
| -0.385662 | J | ND<0 | -0.385662 | | 68 | 53 |
| -0.634878 | J | ND<0 | -0.634878 | | 68 | 54 |
| | | | | | | |
| ND<0 | ND<0 | 0 | 68 | 54 | | |
| ND<0 | ND<0 | 0 | 68 | 54 | | |
| ND<0 | ND<0 | 0 | 68 | 54 | | |
| ND<0 | ND<0 | 0 | 68 | 54 | | |
| ND<0 | ND<0 | 0 | 68 | 54 | | |
| ND<0 | ND<0 | 0 | 68 | 54 | | |
| ND<0 | ND<0 | 0 | 68 | 54 | | |
| ND<0 | ND<0 | 0 | 68 | 54 | | |
| ND<0 | ND<0 | 0 | 68 | 54 | | |
| -1.13943 | J | ND<0 | -1.139 | 4368 | 55 | |
| ND<0 | ND<0 | 0 | 68 | 55 | | |
| -1.23787 | J | ND<0 | -1.237 | 8768 | 56 | |
| -1.56065 | J | ND<0 | -1.560 | 6568 | 57 | |
| ND<0 | ND<0 | 0 | 68 | 57 | | |
| -1.27297 | J | ND<0 | -1.272 | 9768 | 58 | |
| -0.891598 | J | ND<0 | -0.891598 | | 68 | 59 |
| -0.891598 | J | ND<0 | -0.891598 | | 68 | 60 |
| -0.941609 | J | ND<0 | -0.941609 | | 68 | 61 |
| -0.544727 | J | ND<0 | -0.544727 | | 68 | 62 |

| | | | | | |
|---|---|---|---|---|---|
| -0.385662 J | | ND<0 | -0.385662 | 68 | 63 |
| -0.634878 J | | ND<0 | -0.634878 | 68 | 64 |
| | | | | | |
| ND<0 | ND<0 | 0 | 68 | 64 | |
| ND<0 | ND<0 | 0 | 68 | 64 | |
| ND<0 | ND<0 | 0 | 68 | 64 | |
| ND<0 | ND<0 | 0 | 68 | 64 | |
| ND<0 | ND<0 | 0 | 68 | 64 | |
| ND<0 | ND<0 | 0 | 68 | 64 | |
| ND<0 | ND<0 | 0 | 68 | 64 | |
| ND<0 | ND<0 | 0 | 68 | 64 | |
| -1.13943 J | | ND<0 | -1.139436 | 8 | 65 |
| ND<0 | ND<0 | 0 | 68 | 65 | |
| -1.23787 J | | ND<0 | -1.237876 | 8 | 66 |
| -1.56065 J | | ND<0 | -1.560656 | 8 | 67 |
| ND<0 | ND<0 | 0 | 68 | 67 | |
| -1.27297 J | | ND<0 | -1.272976 | 8 | 68 |
| -0.891598 J | | ND<0 | -0.891598 | 68 | 69 |
| -0.891598 J | | ND<0 | -0.891598 | 68 | 70 |
| -0.941609 J | | ND<0 | -0.941609 | 68 | 71 |
| -0.544727 J | | ND<0 | -0.544727 | 68 | 72 |
| -0.385662 J | | ND<0 | -0.385662 | 68 | 73 |
| -0.634878 J | | ND<0 | -0.634878 | 68 | 74 |
| | | | | | |
| ND<0 | ND<0 | 0 | 68 | 74 | |
| ND<0 | ND<0 | 0 | 68 | 74 | |
| ND<0 | ND<0 | 0 | 68 | 74 | |
| ND<0 | ND<0 | 0 | 68 | 74 | |
| ND<0 | ND<0 | 0 | 68 | 74 | |
| ND<0 | ND<0 | 0 | 68 | 74 | |
| ND<0 | ND<0 | 0 | 68 | 74 | |
| -1.13943 J | | ND<0 | -1.139436 | 8 | 75 |
| ND<0 | ND<0 | 0 | 68 | 75 | |
| -1.23787 J | | ND<0 | -1.237876 | 8 | 76 |
| -1.56065 J | | ND<0 | -1.560656 | 8 | 77 |
| ND<0 | ND<0 | 0 | 68 | 77 | |
| -1.27297 J | | ND<0 | -1.272976 | 8 | 78 |
| -0.891598 J | | ND<0 | -0.891598 | 68 | 79 |
| -0.891598 J | | ND<0 | -0.891598 | 68 | 80 |
| -0.941609 J | | ND<0 | -0.941609 | 68 | 81 |
| -0.544727 J | | ND<0 | -0.544727 | 68 | 82 |
| -0.385662 J | | ND<0 | -0.385662 | 68 | 83 |
| -0.634878 J | | ND<0 | -0.634878 | 68 | 84 |
| | | | | | |
| ND<0 | ND<0 | 0 | 68 | 84 | |
| ND<0 | ND<0 | 0 | 68 | 84 | |
| ND<0 | ND<0 | 0 | 68 | 84 | |
| ND<0 | ND<0 | 0 | 68 | 84 | |
| ND<0 | ND<0 | 0 | 68 | 84 | |
| ND<0 | ND<0 | 0 | 68 | 84 | |
| -1.13943 J | | ND<0 | -1.139436 | 8 | 85 |
| ND<0 | ND<0 | 0 | 68 | 85 | |
| -1.23787 J | | ND<0 | -1.237876 | 8 | 86 |
| -1.56065 J | | ND<0 | -1.560656 | 8 | 87 |
| ND<0 | ND<0 | 0 | 68 | 87 | |
| -1.27297 J | | ND<0 | -1.272976 | 8 | 88 |
| -0.891598 J | | ND<0 | -0.891598 | 68 | 89 |
| -0.891598 J | | ND<0 | -0.891598 | 68 | 90 |
| -0.941609 J | | ND<0 | -0.941609 | 68 | 91 |
| -0.544727 J | | ND<0 | -0.544727 | 68 | 92 |
| -0.385662 J | | ND<0 | -0.385662 | 68 | 93 |
| -0.634878 J | | ND<0 | -0.634878 | 68 | 94 |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 68 | 94 | | |
| ND<0 | ND<0 | 0 | 68 | 94 | | |
| ND<0 | ND<0 | 0 | 68 | 94 | | |
| ND<0 | ND<0 | 0 | 68 | 94 | | |
| ND<0 | ND<0 | 0 | 68 | 94 | | |
| -1.13943 | J | ND<0 | -1.1394 | 68 | 95 | |
| ND<0 | ND<0 | 0 | 68 | 95 | | |
| -1.23787 | J | ND<0 | -1.2378 | 68 | 96 | |
| -1.56065 | J | ND<0 | -1.5606 | 68 | 97 | |
| ND<0 | ND<0 | 0 | 68 | 97 | | |
| -1.27297 | J | ND<0 | -1.2729 | 68 | 98 | |
| -0.891598 | J | ND<0 | -0.891598 | 68 | 99 | |
| -0.891598 | J | ND<0 | -0.891598 | 68 | 100 | |
| -0.941609 | J | ND<0 | -0.941609 | 68 | 101 | |
| -0.544727 | J | ND<0 | -0.544727 | 68 | 102 | |
| -0.385662 | J | ND<0 | -0.385662 | 68 | 103 | |
| -0.634878 | J | ND<0 | -0.634878 | 68 | 104 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 68 | 104 | | |
| ND<0 | ND<0 | 0 | 68 | 104 | | |
| ND<0 | ND<0 | 0 | 68 | 104 | | |
| ND<0 | ND<0 | 0 | 68 | 104 | | |
| -1.13943 | J | ND<0 | -1.1394 | 68 | 105 | |
| ND<0 | ND<0 | 0 | 68 | 105 | | |
| -1.23787 | J | ND<0 | -1.2378 | 68 | 106 | |
| -1.56065 | J | ND<0 | -1.5606 | 68 | 107 | |
| ND<0 | ND<0 | 0 | 68 | 107 | | |
| -1.27297 | J | ND<0 | -1.2729 | 68 | 108 | |
| -0.891598 | J | ND<0 | -0.891598 | 68 | 109 | |
| -0.891598 | J | ND<0 | -0.891598 | 68 | 110 | |
| -0.941609 | J | ND<0 | -0.941609 | 68 | 111 | |
| -0.544727 | J | ND<0 | -0.544727 | 68 | 112 | |
| -0.385662 | J | ND<0 | -0.385662 | 68 | 113 | |
| -0.634878 | J | ND<0 | -0.634878 | 68 | 114 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 68 | 114 | | |
| ND<0 | ND<0 | 0 | 68 | 114 | | |
| ND<0 | ND<0 | 0 | 68 | 114 | | |
| -1.13943 | J | ND<0 | -1.1394 | 68 | 115 | |
| ND<0 | ND<0 | 0 | 68 | 115 | | |
| -1.23787 | J | ND<0 | -1.2378 | 68 | 116 | |
| -1.56065 | J | ND<0 | -1.5606 | 68 | 117 | |
| ND<0 | ND<0 | 0 | 68 | 117 | | |
| -1.27297 | J | ND<0 | -1.2729 | 68 | 118 | |
| -0.891598 | J | ND<0 | -0.891598 | 68 | 119 | |
| -0.891598 | J | ND<0 | -0.891598 | 68 | 120 | |
| -0.941609 | J | ND<0 | -0.941609 | 68 | 121 | |
| -0.544727 | J | ND<0 | -0.544727 | 68 | 122 | |
| -0.385662 | J | ND<0 | -0.385662 | 68 | 123 | |
| -0.634878 | J | ND<0 | -0.634878 | 68 | 124 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 68 | 124 | | |
| ND<0 | ND<0 | 0 | 68 | 124 | | |
| -1.13943 | J | ND<0 | -1.1394 | 68 | 125 | |
| ND<0 | ND<0 | 0 | 68 | 125 | | |
| -1.23787 | J | ND<0 | -1.2378 | 68 | 126 | |
| -1.56065 | J | ND<0 | -1.5606 | 68 | 127 | |
| ND<0 | ND<0 | 0 | 68 | 127 | | |
| -1.27297 | J | ND<0 | -1.2729 | 68 | 128 | |
| -0.891598 | J | ND<0 | -0.891598 | 68 | 129 | |
| -0.891598 | J | ND<0 | -0.891598 | 68 | 130 | |

| | | | | |
|---|---|---|---|---|
| -0.941609 J | ND<0 | -0.941609 | 68 | 131 |
| -0.544727 J | ND<0 | -0.544727 | 68 | 132 |
| -0.385662 J | ND<0 | -0.385662 | 68 | 133 |
| -0.634878 J | ND<0 | -0.634878 | 68 | 134 |

| | | | | |
|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 68 | 134 |
| -1.13943 J | ND<0 | -1.1394368 | 135 | |
| ND<0 | ND<0 | 0 | 68 | 135 |
| -1.23787 J | ND<0 | -1.2378768 | 136 | |
| -1.56065 J | ND<0 | -1.5606568 | 137 | |
| ND<0 | ND<0 | 0 | 68 | 137 |
| -1.27297 J | ND<0 | -1.2729768 | 138 | |
| -0.891598 J | ND<0 | -0.891598 | 68 | 139 |
| -0.891598 J | ND<0 | -0.891598 | 68 | 140 |
| -0.941609 J | ND<0 | -0.941609 | 68 | 141 |
| -0.544727 J | ND<0 | -0.544727 | 68 | 142 |
| -0.385662 J | ND<0 | -0.385662 | 68 | 143 |
| -0.634878 J | ND<0 | -0.634878 | 68 | 144 |

| | | | | |
|---|---|---|---|---|
| -1.13943 J | ND<0 | -1.1394368 | 145 | |
| ND<0 | ND<0 | 0 | 68 | 145 |
| -1.23787 J | ND<0 | -1.2378768 | 146 | |
| -1.56065 J | ND<0 | -1.5606568 | 147 | |
| ND<0 | ND<0 | 0 | 68 | 147 |
| -1.27297 J | ND<0 | -1.2729768 | 148 | |
| -0.891598 J | ND<0 | -0.891598 | 68 | 149 |
| -0.891598 J | ND<0 | -0.891598 | 68 | 150 |
| -0.941609 J | ND<0 | -0.941609 | 68 | 151 |
| -0.544727 J | ND<0 | -0.544727 | 68 | 152 |
| -0.385662 J | ND<0 | -0.385662 | 68 | 153 |
| -0.634878 J | ND<0 | -0.634878 | 68 | 154 |

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|---|---|---|---|---|---|
| ND<0 | -1.13943 J | 1.13943 | 69 | 154 | |
| -1.23787 J | -1.13943 J | -0.0984401 | 69 | 155 | |
| -1.56065 J | -1.13943 J | -0.421213 | 69 | 156 | |
| ND<0 | -1.13943 J | 1.13943 | 70 | 156 | |
| -1.27297 J | -1.13943 J | -0.133531 | 70 | 157 | |
| -0.891598 J | -1.13943 J | 0.247836 | 71 | 157 | |
| -0.891598 J | -1.13943 J | 0.247836 | 72 | 157 | |
| -0.941609 J | -1.13943 J | 0.197826 | 73 | 157 | |
| -0.544727 J | -1.13943 J | 0.594707 | 74 | 157 | |
| -0.385662 J | -1.13943 J | 0.753772 | 75 | 157 | |
| -0.634878 J | -1.13943 J | 0.504556 | 76 | 157 | |

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|---|---|---|---|---|
| -1.23787 J | ND<0 | -1.2378776 | 158 | |
| -1.56065 J | ND<0 | -1.5606576 | 159 | |
| ND<0 | ND<0 | 0 | 76 | 159 |
| -1.27297 J | ND<0 | -1.2729776 | 160 | |
| -0.891598 J | ND<0 | -0.891598 | 76 | 161 |
| -0.891598 J | ND<0 | -0.891598 | 76 | 162 |
| -0.941609 J | ND<0 | -0.941609 | 76 | 163 |
| -0.544727 J | ND<0 | -0.544727 | 76 | 164 |
| -0.385662 J | ND<0 | -0.385662 | 76 | 165 |
| -0.634878 J | ND<0 | -0.634878 | 76 | 166 |

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|---|---|---|---|---|
| -1.56065 J | -1.23787 J | -0.322773 | 76 | 167 |
| ND<0 | -1.23787 J | 1.23787 | 77 | 167 |
| -1.27297 J | -1.23787 J | -0.0350913 | 77 | 168 |
| -0.891598 J | -1.23787 J | 0.346276 | 78 | 168 |
| -0.891598 J | -1.23787 J | 0.346276 | 79 | 168 |
| -0.941609 J | -1.23787 J | 0.296266 | 80 | 168 |
| -0.544727 J | -1.23787 J | 0.693147 | 81 | 168 |

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|---|---|---|---|---|
| -0.385662 J | -1.23787 J | 0.852212 | 82 | 168 |
| -0.634878 J | -1.23787 J | 0.602996 | 83 | 168 |

| | | | | |
|---|---|---|---|---|
| ND<0 | -1.56065 J | 1.56065 | 84 | 168 |
| -1.27297 J | -1.56065 J | 0.287682 | 85 | 168 |
| -0.891598 J | -1.56065 J | 0.66905 | 86 | 168 |
| -0.891598 J | -1.56065 J | 0.66905 | 87 | 168 |
| -0.941609 J | -1.56065 J | 0.619039 | 88 | 168 |
| -0.544727 J | -1.56065 J | 1.01592 | 89 | 168 |
| -0.385662 J | -1.56065 J | 1.17499 | 90 | 168 |
| -0.634878 J | -1.56065 J | 0.925769 | 91 | 168 |

| | | | | |
|---|---|---|---|---|
| -1.27297 J | ND<0 | -1.2729791 | 169 | |
| -0.891598 J | ND<0 | -0.891598 | 91 | 170 |
| -0.891598 J | ND<0 | -0.891598 | 91 | 171 |
| -0.941609 J | ND<0 | -0.941609 | 91 | 172 |
| -0.544727 J | ND<0 | -0.544727 | 91 | 173 |
| -0.385662 J | ND<0 | -0.385662 | 91 | 174 |
| -0.634878 J | ND<0 | -0.634878 | 91 | 175 |

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|---|---|---|---|---|
| -0.891598 J | -1.27297 J | 0.381368 | 92 | 175 |
| -0.891598 J | -1.27297 J | 0.381368 | 93 | 175 |
| -0.941609 J | -1.27297 J | 0.331357 | 94 | 175 |
| -0.544727 J | -1.27297 J | 0.728239 | 95 | 175 |
| -0.385662 J | -1.27297 J | 0.887303 | 96 | 175 |
| -0.634878 J | -1.27297 J | 0.638087 | 97 | 175 |

| | | | | |
|---|---|---|---|---|
| -0.891598 J | -0.891598 J | 0 | 97 | 175 |
| -0.941609 J | -0.891598 J | -0.0500104 | 97 | 176 |
| -0.544727 J | -0.891598 J | 0.346871 | 98 | 176 |
| -0.385662 J | -0.891598 J | 0.505936 | 99 | 176 |
| -0.634878 J | -0.891598 J | 0.25672 | 100 | 176 |

| | | | | |
|---|---|---|---|---|
| -0.941609 J | -0.891598 J | -0.0500104 | 100 | 177 |
| -0.544727 J | -0.891598 J | 0.346871 | 101 | 177 |
| -0.385662 J | -0.891598 J | 0.505936 | 102 | 177 |
| -0.634878 J | -0.891598 J | 0.25672 | 103 | 177 |

| | | | | |
|---|---|---|---|---|
| -0.544727 J | -0.941609 J | 0.396881 | 104 | 177 |
| -0.385662 J | -0.941609 J | 0.555946 | 105 | 177 |
| -0.634878 J | -0.941609 J | 0.30673 | 106 | 177 |

| | | | | |
|---|---|---|---|---|
| -0.385662 J | -0.544727 J | 0.159065 | 107 | 177 |
| -0.634878 J | -0.544727 J | -0.0901511 | 107 | 178 |

| | | | | |
|---|---|---|---|---|
| -0.634878 J | -0.385662 J | -0.249216 | 107 | 179 |

S Statistic = 107 - 179 = -72

| Tied Group | Value | Members |
|---|---|---|
| 1 | 0 | 14 |
| 2 | -0.891598 | 2 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |
| 11/19/1996 | 1 |

| | | |
|---|---|---|
| 12/19/1996 | | 1 |
| 3/24/1997 | | 1 |
| 9/24/1997 | | 1 |
| 4/7/1998 | 1 | |
| 9/23/1998 | | 1 |
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 11/16/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 1 |

There are 0 time periods with multiple data

A = 6024
B = 0
C = 2184
D = 0
E = 184
F = 0
a = 46116
b = 176904
c = 1512
Group Variance = 2227.33
Z-Score = -1.50441
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.50441| <= 1.97737 indicating no evidence of a trend

# Mann-Kendall Trend Analysis

## Parameter: Tetrachloroethene

## Location: MW-11R

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | Positives | Negatives | |
|---|---|---|---|---|---|
| 1.4816 | 0.741937 | 0.739667 | 1 | 0 | |
| 0.693147 | 0.741937 | -0.0487902 | 1 | 1 | |
| 1.38629 | 0.741937 | 0.644357 | 2 | 1 | |
| ND<0 | 0.741937 | -0.741937 | 2 | 2 | |
| ND<0 | 0.741937 | -0.741937 | 2 | 3 | |
| ND<0 | 0.741937 | -0.741937 | 2 | 4 | |
| ND<0 | 0.741937 | -0.741937 | 2 | 5 | |
| ND<0 | 0.741937 | -0.741937 | 2 | 6 | |
| ND<0 | 0.741937 | -0.741937 | 2 | 7 | |
| 0.993252 | 0.741937 | 0.251314 | 3 | 7 | |
| ND<0 | 0.741937 | -0.741937 | 3 | 8 | |
| ND<0 | 0.741937 | -0.741937 | 3 | 9 | |
| ND<0 | 0.741937 | -0.741937 | 3 | 10 | |
| ND<0 | 0.741937 | -0.741937 | 3 | 11 | |
| ND<0 | 0.741937 | -0.741937 | 3 | 12 | |
| 0.970779 | 0.741937 | 0.228842 | 4 | 12 | |
| -0.776529 J | 0.741937 | -1.518474 | 13 | | |
| ND<0 | 0.741937 | -0.741937 | 4 | 14 | |
| -0.71335 J | 0.741937 | -1.455294 | 15 | | |
| ND<0 | 0.741937 | -0.741937 | 4 | 16 | |
| -0.967584 J | 0.741937 | -1.709524 | 17 | | |
| ND<0 | 0.741937 | -0.741937 | 4 | 18 | |
| -0.916291 J | 0.741937 | -1.658234 | 19 | | |
| 0.832909 | 0.741937 | 0.0909718 | 5 | 19 | |
| -1.20397 J | 0.741937 | -1.945915 | 20 | | |
| 0.182322 | 0.741937 | -0.559616 | 5 | 21 | |
| ND<-2.59027 U | 0.741937 | -3.3322 | 5 | 22 | |
| | | | | | |
| 0.693147 | 1.4816 | -0.788457 | 5 | 23 | |
| 1.38629 | 1.4816 | -0.0953102 | 5 | 24 | |
| ND<0 | 1.4816 | -1.4816 | 5 | 25 | |
| ND<0 | 1.4816 | -1.4816 | 5 | 26 | |
| ND<0 | 1.4816 | -1.4816 | 5 | 27 | |
| ND<0 | 1.4816 | -1.4816 | 5 | 28 | |
| ND<0 | 1.4816 | -1.4816 | 5 | 29 | |
| ND<0 | 1.4816 | -1.4816 | 5 | 30 | |
| 0.993252 | 1.4816 | -0.488353 | 5 | 31 | |
| ND<0 | 1.4816 | -1.4816 | 5 | 32 | |
| ND<0 | 1.4816 | -1.4816 | 5 | 33 | |
| ND<0 | 1.4816 | -1.4816 | 5 | 34 | |
| ND<0 | 1.4816 | -1.4816 | 5 | 35 | |
| ND<0 | 1.4816 | -1.4816 | 5 | 36 | |
| 0.970779 | 1.4816 | -0.510826 | 5 | 37 | |
| -0.776529 J | 1.4816 | -2.258135 | 38 | | |
| ND<0 | 1.4816 | -1.4816 | 5 | 39 | |
| -0.71335 J | 1.4816 | -2.194955 | 40 | | |
| ND<0 | 1.4816 | -1.4816 | 5 | 41 | |
| -0.967584 J | 1.4816 | -2.449195 | 42 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | 1.4816 | -1.4816 | 5 | 43 | | |
| -0.916291 J | | 1.4816 | -2.3979 | 5 | 44 | |
| 0.832909 | | 1.4816 | -0.648695 | 5 | 45 | |
| -1.20397 J | | 1.4816 | -2.685585 | 46 | | |
| 0.182322 | | 1.4816 | -1.299285 | 47 | | |
| ND<-2.59027 U | | 1.4816 | -4.071875 | 48 | | |

| | | | | |
|---|---|---|---|---|
| 1.38629 | 0.693147 | 0.693147 | 6 | 48 |
| ND<0 | 0.693147 | -0.693147 | 6 | 49 |
| ND<0 | 0.693147 | -0.693147 | 6 | 50 |
| ND<0 | 0.693147 | -0.693147 | 6 | 51 |
| ND<0 | 0.693147 | -0.693147 | 6 | 52 |
| ND<0 | 0.693147 | -0.693147 | 6 | 53 |
| ND<0 | 0.693147 | -0.693147 | 6 | 54 |
| 0.993252 | 0.693147 | 0.300105 | 7 | 54 |
| ND<0 | 0.693147 | -0.693147 | 7 | 55 |
| ND<0 | 0.693147 | -0.693147 | 7 | 56 |
| ND<0 | 0.693147 | -0.693147 | 7 | 57 |
| ND<0 | 0.693147 | -0.693147 | 7 | 58 |
| ND<0 | 0.693147 | -0.693147 | 7 | 59 |
| 0.970779 | 0.693147 | 0.277632 | 8 | 59 |
| -0.776529 J | 0.693147 | -1.469688 | 60 | |
| ND<0 | 0.693147 | -0.693147 | 8 | 61 |
| -0.71335 J | 0.693147 | -1.4065 | 8 | 62 |
| ND<0 | 0.693147 | -0.693147 | 8 | 63 |
| -0.967584 J | 0.693147 | -1.660738 | 64 | |
| ND<0 | 0.693147 | -0.693147 | 8 | 65 |
| -0.916291 J | 0.693147 | -1.609448 | 66 | |
| 0.832909 | 0.693147 | 0.139762 | 9 | 66 |
| -1.20397 J | 0.693147 | -1.897129 | 67 | |
| 0.182322 | 0.693147 | -0.510826 | 9 | 68 |
| ND<-2.59027 U | 0.693147 | -3.283419 | 69 | |

| | | | |
|---|---|---|---|
| ND<0 | 1.38629 | -1.386299 | 70 |
| ND<0 | 1.38629 | -1.386299 | 71 |
| ND<0 | 1.38629 | -1.386299 | 72 |
| ND<0 | 1.38629 | -1.386299 | 73 |
| ND<0 | 1.38629 | -1.386299 | 74 |
| ND<0 | 1.38629 | -1.386299 | 75 |
| 0.993252 | 1.38629 | -0.393043 | 9 | 76 |
| ND<0 | 1.38629 | -1.386299 | 77 |
| ND<0 | 1.38629 | -1.386299 | 78 |
| ND<0 | 1.38629 | -1.386299 | 79 |
| ND<0 | 1.38629 | -1.386299 | 80 |
| ND<0 | 1.38629 | -1.386299 | 81 |
| 0.970779 | 1.38629 | -0.415515 | 9 | 82 |
| -0.776529 J | 1.38629 | -2.162829 | 83 |
| ND<0 | 1.38629 | -1.386299 | 84 |
| -0.71335 J | 1.38629 | -2.099649 | 85 |
| ND<0 | 1.38629 | -1.386299 | 86 |
| -0.967584 J | 1.38629 | -2.353889 | 87 |
| ND<0 | 1.38629 | -1.386299 | 88 |
| -0.916291 J | 1.38629 | -2.302599 | 89 |
| 0.832909 | 1.38629 | -0.553385 | 9 | 90 |
| -1.20397 J | 1.38629 | -2.590279 | 91 |
| 0.182322 | 1.38629 | -1.203979 | 92 |
| ND<-2.59027 U | 1.38629 | -3.976569 | 93 |

| | | | | |
|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 9 | 93 |
| ND<0 | ND<0 | 0 | 9 | 93 |
| ND<0 | ND<0 | 0 | 9 | 93 |
| ND<0 | ND<0 | 0 | 9 | 93 |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 9 | 93 | | |
| 0.993252 | | ND<0 | 0.993252 | | 10 | 93 |
| ND<0 | ND<0 | 0 | 10 | 93 | | |
| ND<0 | ND<0 | 0 | 10 | 93 | | |
| ND<0 | ND<0 | 0 | 10 | 93 | | |
| ND<0 | ND<0 | 0 | 10 | 93 | | |
| ND<0 | ND<0 | 0 | 10 | 93 | | |
| 0.970779 | | ND<0 | 0.970779 | | 11 | 93 |
| -0.776529 J | | ND<0 | -0.776529 | | 11 | 94 |
| ND<0 | ND<0 | 0 | 11 | 94 | | |
| -0.71335 J | | ND<0 | -0.713351 | | 11 | 95 |
| ND<0 | ND<0 | 0 | 11 | 95 | | |
| -0.967584 J | | ND<0 | -0.967584 | | 11 | 96 |
| ND<0 | ND<0 | 0 | 11 | 96 | | |
| -0.916291 J | | ND<0 | -0.916291 | | 11 | 97 |
| 0.832909 | | ND<0 | 0.832909 | | 12 | 97 |
| -1.20397 J | | ND<0 | -1.203971 | 2 | 98 | |
| 0.182322 | | ND<0 | 0.182322 | | 13 | 98 |
| ND<-2.59027 U | | ND<0 | -2.590271 | 3 | 99 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 13 | 99 | | |
| ND<0 | ND<0 | 0 | 13 | 99 | | |
| ND<0 | ND<0 | 0 | 13 | 99 | | |
| ND<0 | ND<0 | 0 | 13 | 99 | | |
| 0.993252 | | ND<0 | 0.993252 | | 14 | 99 |
| ND<0 | ND<0 | 0 | 14 | 99 | | |
| ND<0 | ND<0 | 0 | 14 | 99 | | |
| ND<0 | ND<0 | 0 | 14 | 99 | | |
| ND<0 | ND<0 | 0 | 14 | 99 | | |
| ND<0 | ND<0 | 0 | 14 | 99 | | |
| 0.970779 | | ND<0 | 0.970779 | | 15 | 99 |
| -0.776529 J | | ND<0 | -0.776529 | | 15 | 100 |
| ND<0 | ND<0 | 0 | 15 | 100 | | |
| -0.71335 J | | ND<0 | -0.713351 | 5 | 101 | |
| ND<0 | ND<0 | 0 | 15 | 101 | | |
| -0.967584 J | | ND<0 | -0.967584 | | 15 | 102 |
| ND<0 | ND<0 | 0 | 15 | 102 | | |
| -0.916291 J | | ND<0 | -0.916291 | | 15 | 103 |
| 0.832909 | | ND<0 | 0.832909 | | 16 | 103 |
| -1.20397 J | | ND<0 | -1.203971 | 6 | 104 | |
| 0.182322 | | ND<0 | 0.182322 | | 17 | 104 |
| ND<-2.59027 U | | ND<0 | -2.590271 | 7 | 105 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 17 | 105 | | |
| ND<0 | ND<0 | 0 | 17 | 105 | | |
| ND<0 | ND<0 | 0 | 17 | 105 | | |
| 0.993252 | | ND<0 | 0.993252 | | 18 | 105 |
| ND<0 | ND<0 | 0 | 18 | 105 | | |
| ND<0 | ND<0 | 0 | 18 | 105 | | |
| ND<0 | ND<0 | 0 | 18 | 105 | | |
| ND<0 | ND<0 | 0 | 18 | 105 | | |
| ND<0 | ND<0 | 0 | 18 | 105 | | |
| 0.970779 | | ND<0 | 0.970779 | | 19 | 105 |
| -0.776529 J | | ND<0 | -0.776529 | | 19 | 106 |
| ND<0 | ND<0 | 0 | 19 | 106 | | |
| -0.71335 J | | ND<0 | -0.713351 | 9 | 107 | |
| ND<0 | ND<0 | 0 | 19 | 107 | | |
| -0.967584 J | | ND<0 | -0.967584 | | 19 | 108 |
| ND<0 | ND<0 | 0 | 19 | 108 | | |
| -0.916291 J | | ND<0 | -0.916291 | | 19 | 109 |
| 0.832909 | | ND<0 | 0.832909 | | 20 | 109 |
| -1.20397 J | | ND<0 | -1.203972 | 0 | 110 | |

| | | | | |
|---|---|---|---|---|
| 0.182322 | ND<0 | 0.182322 | 21 | 110 |
| ND<-2.59027 U | ND<0 | -2.5902721 | 111 | |
| | | | | |
| ND<0 | ND<0 | 0 | 21 | 111 |
| ND<0 | ND<0 | 0 | 21 | 111 |
| 0.993252 | ND<0 | 0.993252 | 22 | 111 |
| ND<0 | ND<0 | 0 | 22 | 111 |
| ND<0 | ND<0 | 0 | 22 | 111 |
| ND<0 | ND<0 | 0 | 22 | 111 |
| ND<0 | ND<0 | 0 | 22 | 111 |
| ND<0 | ND<0 | 0 | 22 | 111 |
| 0.970779 | ND<0 | 0.970779 | 23 | 111 |
| -0.776529 J | ND<0 | -0.776529 | 23 | 112 |
| ND<0 | ND<0 | 0 | 23 | 112 |
| -0.71335 J | ND<0 | -0.7133523 | 113 | |
| ND<0 | ND<0 | 0 | 23 | 113 |
| -0.967584 J | ND<0 | -0.967584 | 23 | 114 |
| ND<0 | ND<0 | 0 | 23 | 114 |
| -0.916291 J | ND<0 | -0.916291 | 23 | 115 |
| 0.832909 | ND<0 | 0.832909 | 24 | 115 |
| -1.20397 J | ND<0 | -1.2039724 | 116 | |
| 0.182322 | ND<0 | 0.182322 | 25 | 116 |
| ND<-2.59027 U | ND<0 | -2.5902725 | 117 | |
| | | | | |
| ND<0 | ND<0 | 0 | 25 | 117 |
| 0.993252 | ND<0 | 0.993252 | 26 | 117 |
| ND<0 | ND<0 | 0 | 26 | 117 |
| ND<0 | ND<0 | 0 | 26 | 117 |
| ND<0 | ND<0 | 0 | 26 | 117 |
| ND<0 | ND<0 | 0 | 26 | 117 |
| ND<0 | ND<0 | 0 | 26 | 117 |
| 0.970779 | ND<0 | 0.970779 | 27 | 117 |
| -0.776529 J | ND<0 | -0.776529 | 27 | 118 |
| ND<0 | ND<0 | 0 | 27 | 118 |
| -0.71335 J | ND<0 | -0.7133527 | 119 | |
| ND<0 | ND<0 | 0 | 27 | 119 |
| -0.967584 J | ND<0 | -0.967584 | 27 | 120 |
| ND<0 | ND<0 | 0 | 27 | 120 |
| -0.916291 J | ND<0 | -0.916291 | 27 | 121 |
| 0.832909 | ND<0 | 0.832909 | 28 | 121 |
| -1.20397 J | ND<0 | -1.2039728 | 122 | |
| 0.182322 | ND<0 | 0.182322 | 29 | 122 |
| ND<-2.59027 U | ND<0 | -2.5902729 | 123 | |
| | | | | |
| 0.993252 | ND<0 | 0.993252 | 30 | 123 |
| ND<0 | ND<0 | 0 | 30 | 123 |
| ND<0 | ND<0 | 0 | 30 | 123 |
| ND<0 | ND<0 | 0 | 30 | 123 |
| ND<0 | ND<0 | 0 | 30 | 123 |
| ND<0 | ND<0 | 0 | 30 | 123 |
| 0.970779 | ND<0 | 0.970779 | 31 | 123 |
| -0.776529 J | ND<0 | -0.776529 | 31 | 124 |
| ND<0 | ND<0 | 0 | 31 | 124 |
| -0.71335 J | ND<0 | -0.7133531 | 125 | |
| ND<0 | ND<0 | 0 | 31 | 125 |
| -0.967584 J | ND<0 | -0.967584 | 31 | 126 |
| ND<0 | ND<0 | 0 | 31 | 126 |
| -0.916291 J | ND<0 | -0.916291 | 31 | 127 |
| 0.832909 | ND<0 | 0.832909 | 32 | 127 |
| -1.20397 J | ND<0 | -1.2039732 | 128 | |
| 0.182322 | ND<0 | 0.182322 | 33 | 128 |
| ND<-2.59027 U | ND<0 | -2.5902733 | 129 | |

| | | | | | |
|---|---|---|---|---|---|
| ND<0 | 0.993252 | -0.993252 | 33 | 130 | |
| ND<0 | 0.993252 | -0.993252 | 33 | 131 | |
| ND<0 | 0.993252 | -0.993252 | 33 | 132 | |
| ND<0 | 0.993252 | -0.993252 | 33 | 133 | |
| ND<0 | 0.993252 | -0.993252 | 33 | 134 | |
| 0.970779 | 0.993252 | -0.0224729 | 33 | 135 | |
| -0.776529 J | 0.993252 | -1.7697833 | 136 | | |
| ND<0 | 0.993252 | -0.993252 | 33 | 137 | |
| -0.71335 J | 0.993252 | -1.7066 | 33 | 138 | |
| ND<0 | 0.993252 | -0.993252 | 33 | 139 | |
| -0.967584 J | 0.993252 | -1.9608433 | 140 | | |
| ND<0 | 0.993252 | -0.993252 | 33 | 141 | |
| -0.916291 J | 0.993252 | -1.9095433 | 142 | | |
| 0.832909 | 0.993252 | -0.160343 | 33 | 143 | |
| -1.20397 J | 0.993252 | -2.1972233 | 144 | | |
| 0.182322 | 0.993252 | -0.8109333 | 145 | | |
| ND<-2.59027 U | 0.993252 | -3.5835233 | 146 | | |

| | | | | |
|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 33 | 146 |
| ND<0 | ND<0 | 0 | 33 | 146 |
| ND<0 | ND<0 | 0 | 33 | 146 |
| ND<0 | ND<0 | 0 | 33 | 146 |

| | | | | |
|---|---|---|---|---|
| 0.970779 | ND<0 | 0.970779 | 34 | 146 |
| -0.776529 J | ND<0 | -0.776529 | 34 | 147 |
| ND<0 | ND<0 | 0 | 34 | 147 |
| -0.71335 J | ND<0 | -0.7133534 | 148 | |
| ND<0 | ND<0 | 0 | 34 | 148 |
| -0.967584 J | ND<0 | -0.967584 | 34 | 149 |
| ND<0 | ND<0 | 0 | 34 | 149 |
| -0.916291 J | ND<0 | -0.916291 | 34 | 150 |
| 0.832909 | ND<0 | 0.832909 | 35 | 150 |
| -1.20397 J | ND<0 | -1.2039735 | 151 | |
| 0.182322 | ND<0 | 0.182322 | 36 | 151 |
| ND<-2.59027 U | ND<0 | -2.5902736 | 152 | |

| | | | | |
|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 36 | 152 |
| ND<0 | ND<0 | 0 | 36 | 152 |
| ND<0 | ND<0 | 0 | 36 | 152 |

| | | | | |
|---|---|---|---|---|
| 0.970779 | ND<0 | 0.970779 | 37 | 152 |
| -0.776529 J | ND<0 | -0.776529 | 37 | 153 |
| ND<0 | ND<0 | 0 | 37 | 153 |
| -0.71335 J | ND<0 | -0.7133537 | 154 | |
| ND<0 | ND<0 | 0 | 37 | 154 |
| -0.967584 J | ND<0 | -0.967584 | 37 | 155 |
| ND<0 | ND<0 | 0 | 37 | 155 |
| -0.916291 J | ND<0 | -0.916291 | 37 | 156 |
| 0.832909 | ND<0 | 0.832909 | 38 | 156 |
| -1.20397 J | ND<0 | -1.2039738 | 157 | |
| 0.182322 | ND<0 | 0.182322 | 39 | 157 |
| ND<-2.59027 U | ND<0 | -2.5902739 | 158 | |

| | | | | |
|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 39 | 158 |
| ND<0 | ND<0 | 0 | 39 | 158 |

| | | | | |
|---|---|---|---|---|
| 0.970779 | ND<0 | 0.970779 | 40 | 158 |
| -0.776529 J | ND<0 | -0.776529 | 40 | 159 |
| ND<0 | ND<0 | 0 | 40 | 159 |
| -0.71335 J | ND<0 | -0.7133540 | 160 | |
| ND<0 | ND<0 | 0 | 40 | 160 |
| -0.967584 J | ND<0 | -0.967584 | 40 | 161 |
| ND<0 | ND<0 | 0 | 40 | 161 |
| -0.916291 J | ND<0 | -0.916291 | 40 | 162 |

| | | | | | |
|---|---|---|---|---|---|
| 0.832909 | ND<0 | 0.832909 | 41 | 162 | |
| -1.20397 J | ND<0 | -1.2039741 | 163 | | |
| 0.182322 | ND<0 | 0.182322 | 42 | 163 | |
| ND<-2.59027 U | ND<0 | -2.5902742 | 164 | | |
| | | | | | |
| ND<0 | ND<0 | 0 | 42 | 164 | |
| 0.970779 | ND<0 | 0.970779 | 43 | 164 | |
| -0.776529 J | ND<0 | -0.776529 | 43 | 165 | |
| ND<0 | ND<0 | 0 | 43 | 165 | |
| -0.71335 J | ND<0 | -0.7133543 | 166 | | |
| ND<0 | ND<0 | 0 | 43 | 166 | |
| -0.967584 J | ND<0 | -0.967584 | 43 | 167 | |
| ND<0 | ND<0 | 0 | 43 | 167 | |
| -0.916291 J | ND<0 | -0.916291 | 43 | 168 | |
| 0.832909 | ND<0 | 0.832909 | 44 | 168 | |
| -1.20397 J | ND<0 | -1.2039744 | 169 | | |
| 0.182322 | ND<0 | 0.182322 | 45 | 169 | |
| ND<-2.59027 U | ND<0 | -2.5902745 | 170 | | |
| | | | | | |
| 0.970779 | ND<0 | 0.970779 | 46 | 170 | |
| -0.776529 J | ND<0 | -0.776529 | 46 | 171 | |
| ND<0 | ND<0 | 0 | 46 | 171 | |
| -0.71335 J | ND<0 | -0.7133546 | 172 | | |
| ND<0 | ND<0 | 0 | 46 | 172 | |
| -0.967584 J | ND<0 | -0.967584 | 46 | 173 | |
| ND<0 | ND<0 | 0 | 46 | 173 | |
| -0.916291 J | ND<0 | -0.916291 | 46 | 174 | |
| 0.832909 | ND<0 | 0.832909 | 47 | 174 | |
| -1.20397 J | ND<0 | -1.2039747 | 175 | | |
| 0.182322 | ND<0 | 0.182322 | 48 | 175 | |
| ND<-2.59027 U | ND<0 | -2.5902748 | 176 | | |
| | | | | | |
| -0.776529 J | 0.970779 | -1.7473148 | 177 | | |
| ND<0 | 0.970779 | -0.970779 | 48 | 178 | |
| -0.71335 J | 0.970779 | -1.6841348 | 179 | | |
| ND<0 | 0.970779 | -0.970779 | 48 | 180 | |
| -0.967584 J | 0.970779 | -1.9383648 | 181 | | |
| ND<0 | 0.970779 | -0.970779 | 48 | 182 | |
| -0.916291 J | 0.970779 | -1.8870748 | 183 | | |
| 0.832909 | 0.970779 | -0.1378748 | 184 | | |
| -1.20397 J | 0.970779 | -2.1747548 | 185 | | |
| 0.182322 | 0.970779 | -0.788457 | 48 | 186 | |
| ND<-2.59027 U | 0.970779 | -3.5610548 | 187 | | |
| | | | | | |
| ND<0 | -0.776529 J | 0.776529 | 49 | 187 | |
| -0.71335 J | -0.776529 J | 0.0631789 | 50 | 187 | |
| ND<0 | -0.776529 J | 0.776529 | 51 | 187 | |
| -0.967584 J | -0.776529 J | -0.191055 | 51 | 188 | |
| ND<0 | -0.776529 J | 0.776529 | 52 | 188 | |
| -0.916291 J | -0.776529 J | -0.139762 | 52 | 189 | |
| 0.832909 | -0.776529 J | 1.60944 53 | 189 | | |
| -1.20397 J | -0.776529 J | -0.427444 | 53 | 190 | |
| 0.182322 | -0.776529 J | 0.95885 54 | 190 | | |
| ND<-2.59027 U | -0.776529 J | -1.8137454 | 191 | | |
| | | | | | |
| -0.71335 J | ND<0 | -0.7133554 | 192 | | |
| ND<0 | ND<0 | 0 | 54 | 192 | |
| -0.967584 J | ND<0 | -0.967584 | 54 | 193 | |
| ND<0 | ND<0 | 0 | 54 | 193 | |
| -0.916291 J | ND<0 | -0.916291 | 54 | 194 | |
| 0.832909 | ND<0 | 0.832909 | 55 | 194 | |
| -1.20397 J | ND<0 | -1.2039755 | 195 | | |

| | | | | | |
|---|---|---|---|---|---|
| 0.182322 | ND<0 | 0.182322 | 56 | 195 | |
| ND<-2.59027 U | ND<0 | -2.5902756 | 196 | | |
| | | | | | |
| ND<0 | -0.71335 J | 0.71335 | 57 | 196 | |
| -0.967584 J | -0.71335 J | -0.254234 | 57 | 197 | |
| ND<0 | -0.71335 J | 0.71335 | 58 | 197 | |
| -0.916291 J | -0.71335 J | -0.202941 | 58 | 198 | |
| 0.832909 | -0.71335 J | 1.54626 | 59 | 198 | |
| -1.20397 J | -0.71335 J | -0.490623 | 59 | 199 | |
| 0.182322 | -0.71335 J | 0.895671 | 60 | 199 | |
| ND<-2.59027 U | -0.71335 J | -1.8769260 | 200 | | |
| | | | | | |
| -0.967584 J | ND<0 | -0.967584 | 60 | 201 | |
| ND<0 | ND<0 | 0 | 60 | 201 | |
| -0.916291 J | ND<0 | -0.916291 | 60 | 202 | |
| 0.832909 | ND<0 | 0.832909 | 61 | 202 | |
| -1.20397 J | ND<0 | -1.2039761 | 203 | | |
| 0.182322 | ND<0 | 0.182322 | 62 | 203 | |
| ND<-2.59027 U | ND<0 | -2.5902762 | 204 | | |
| | | | | | |
| ND<0 | -0.967584 J | 0.967584 | 63 | 204 | |
| -0.916291 J | -0.967584 J | 0.0512933 | 64 | 204 | |
| 0.832909 | -0.967584 J | 1.80049 | 65 | 204 | |
| -1.20397 J | -0.967584 J | -0.236389 | 65 | 205 | |
| 0.182322 | -0.967584 J | 1.14991 | 66 | 205 | |
| ND<-2.59027 U | -0.967584 J | -1.6226866 | 206 | | |
| | | | | | |
| -0.916291 J | ND<0 | -0.916291 | 66 | 207 | |
| 0.832909 | ND<0 | 0.832909 | 67 | 207 | |
| -1.20397 J | ND<0 | -1.2039767 | 208 | | |
| 0.182322 | ND<0 | 0.182322 | 68 | 208 | |
| ND<-2.59027 U | ND<0 | -2.5902768 | 209 | | |
| | | | | | |
| 0.832909 | -0.916291 J | 1.7492 | 69 | 209 | |
| -1.20397 J | -0.916291 J | -0.287682 | 69 | 210 | |
| 0.182322 | -0.916291 J | 1.09861 | 70 | 210 | |
| ND<-2.59027 U | -0.916291 J | -1.6739870 | 211 | | |
| | | | | | |
| -1.20397 J | 0.832909 | -2.0368870 | 212 | | |
| 0.182322 | 0.832909 | -0.650588 | 70 | 213 | |
| ND<-2.59027 U | 0.832909 | -3.4231870 | 214 | | |
| | | | | | |
| 0.182322 | -1.20397 J | 1.38629 | 71 | 214 | |
| ND<-2.59027 U | -1.20397 J | -1.3862971 | 215 | | |
| | | | | | |
| ND<-2.59027 U | 0.182322 | -2.7725971 | 216 | | |

S Statistic = 71 - 216 = -145

| Tied Group | Value | Members |
|---|---|---|
| 1 | 0 | 14 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |
| 11/19/1996 | 1 |
| 12/19/1996 | 1 |

| | | |
|---|---|---|
| 3/24/1997 | | 1 |
| 9/24/1997 | | 1 |
| 4/7/1998 | 1 | |
| 9/23/1998 | | 1 |
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 11/16/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 1 |

There are 0 time periods with multiple data

A = 6006
B = 0
C = 2184
D = 0
E = 182
F = 0
a = 46116
b = 176904
c = 1512
Group Variance = 2228.33
Z-Score = -3.05051
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-3.05051| > 1.97737 indicating a trend

# Concentrations (ppb)

## Parameter: Thallium

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 218
Percent Non-Detects: 98.6425%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 18 (100%) | 3/16/1999 | ND<1 | ND<1 |
| | | | 9/23/1999 | ND<1 | ND<1 |
| | | | 3/15/2000 | ND<1 | ND<1 |
| | | | 9/24/2003 | ND<1 | ND<1 |
| | | | 3/11/2004 | ND<1 | ND<1 |
| | | | 10/12/2004 | ND<1 | ND<1 |
| | | | 4/1/2005 | ND<1 | ND<1 |
| | | | 10/25/2005 | ND<1 | ND<1 |
| | | | 4/29/2006 | ND<1 | ND<1 |
| | | | 11/18/2006 | ND<1 | ND<1 |
| | | | 5/23/2007 | ND<1 | ND<1 |
| | | | 11/28/2007 | ND<1 | ND<1 |
| | | | 6/5/2008 | ND<1 | ND<1 |
| | | | 11/20/2008 | ND<1 | ND<1 |
| | | | 6/11/2009 | ND<0.1 | ND<0.1 |
| | | | 11/16/2009 | ND<0.1 | ND<0.1 |
| | | | 6/30/2010 | ND<0.1 | ND<0.1 |
| | | | 11/12/2010 | ND<0.1 U | ND<0.1 U |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-9 | 28 | 28 (100%) | 7/20/1995 | ND<1 | ND<1 |
| | | | 8/24/1995 | ND<1 | ND<1 |
| | | | 9/28/1995 | ND<1 | ND<1 |
| | | | 10/26/1995 | ND<1 | ND<1 |
| | | | 11/19/1996 | ND<1 | ND<1 |
| | | | 12/19/1996 | ND<1 | ND<1 |
| | | | 3/24/1997 | ND<1 | ND<1 |
| | | | 9/24/1997 | ND<1 | ND<1 |
| | | | 4/7/1998 | ND<1 | ND<1 |
| | | | 9/23/1998 | ND<1 | ND<1 |
| | | | 3/16/1999 | ND<1 | ND<1 |
| | | | 9/23/1999 | ND<1 | ND<1 |
| | | | 3/15/2000 | ND<1 | ND<1 |
| | | | 9/24/2003 | ND<1 | ND<1 |
| | | | 3/11/2004 | ND<1 | ND<1 |
| | | | 10/12/2004 | ND<1 | ND<1 |
| | | | 4/1/2005 | ND<1 | ND<1 |
| | | | 10/25/2005 | ND<1 | ND<1 |
| | | | 4/29/2006 | ND<1 | ND<1 |
| | | | 11/18/2006 | ND<1 | ND<1 |
| | | | 5/23/2007 | ND<1 | ND<1 |
| | | | 11/28/2007 | ND<1 | ND<1 |
| | | | 6/5/2008 | ND<1 | ND<1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/20/2008 | ND<1 | ND<1 | |
| | | | 6/11/2009 | ND<0.1 | ND<0.1 | |
| | | | 11/16/2009 | ND<0.1 | ND<0.1 | |
| | | | 6/30/2010 | ND<0.1 | ND<0.1 | |
| | | | 11/12/2010 | ND<0.1 U | | ND<0.1 U |
| MW-10 | 28 | 28 (100%) | 7/20/1995 | ND<1 | ND<1 | |
| | | | 8/24/1995 | ND<1 | ND<1 | |
| | | | 9/28/1995 | ND<1 | ND<1 | |
| | | | 10/26/1995 | ND<1 | ND<1 | |
| | | | 11/19/1996 | ND<1 | ND<1 | |
| | | | 12/19/1996 | ND<1 | ND<1 | |
| | | | 3/24/1997 | ND<1 | ND<1 | |
| | | | 9/24/1997 | ND<1 | ND<1 | |
| | | | 4/7/1998 | ND<1 | ND<1 | |
| | | | 9/23/1998 | ND<1 | ND<1 | |
| | | | 3/16/1999 | ND<1 | ND<1 | |
| | | | 9/23/1999 | ND<1 | ND<1 | |
| | | | 3/15/2000 | ND<1 | ND<1 | |
| | | | 9/24/2003 | ND<1 | ND<1 | |
| | | | 3/11/2004 | ND<1 | ND<1 | |
| | | | 10/12/2004 | ND<1 | ND<1 | |
| | | | 4/1/2005 | ND<1 | ND<1 | |
| | | | 10/25/2005 | ND<1 | ND<1 | |
| | | | 4/29/2006 | ND<1 | ND<1 | |
| | | | 11/18/2006 | ND<1 | ND<1 | |
| | | | 5/23/2007 | ND<1 | ND<1 | |
| | | | 11/28/2007 | ND<1 | ND<1 | |
| | | | 6/5/2008 | ND<1 | ND<1 | |
| | | | 11/20/2008 | ND<1 | ND<1 | |
| | | | 6/11/2009 | ND<0.1 | ND<0.1 | |
| | | | 11/16/2009 | ND<0.1 | ND<0.1 | |
| | | | 6/30/2010 | ND<0.1 | ND<0.1 | |
| | | | 11/12/2010 | ND<0.1 U | | ND<0.1 U |
| MW-11R | 28 | 28 (100%) | 7/20/1995 | ND<1 | ND<1 | |
| | | | 8/24/1995 | ND<1 | ND<1 | |
| | | | 9/28/1995 | ND<1 | ND<1 | |
| | | | 10/26/1995 | ND<1 | ND<1 | |
| | | | 11/19/1996 | ND<1 | ND<1 | |
| | | | 12/19/1996 | ND<1 | ND<1 | |
| | | | 3/24/1997 | ND<1 | ND<1 | |
| | | | 9/24/1997 | ND<1 | ND<1 | |
| | | | 4/7/1998 | ND<1 | ND<1 | |
| | | | 9/23/1998 | ND<1 | ND<1 | |
| | | | 3/16/1999 | ND<1 | ND<1 | |
| | | | 9/23/1999 | ND<1 | ND<1 | |
| | | | 3/15/2000 | ND<1 | ND<1 | |
| | | | 9/24/2003 | ND<1 | ND<1 | |
| | | | 3/11/2004 | ND<1 | ND<1 | |
| | | | 10/12/2004 | ND<1 | ND<1 | |
| | | | 4/1/2005 | ND<1 | ND<1 | |
| | | | 10/25/2005 | ND<1 | ND<1 | |
| | | | 4/29/2006 | ND<1 | ND<1 | |
| | | | 11/18/2006 | ND<1 | ND<1 | |
| | | | 5/23/2007 | ND<1 | ND<1 | |
| | | | 11/28/2007 | ND<1 | ND<1 | |
| | | | 6/5/2008 | ND<1 | ND<1 | |
| | | | 11/20/2008 | ND<1 | ND<1 | |
| | | | 6/11/2009 | ND<0.1 | ND<0.1 | |
| | | | 11/16/2009 | ND<0.1 | ND<0.1 | |
| | | | 6/30/2010 | ND<0.1 | ND<0.1 | |

| | | | | | |
|---|---|---|---|---|---|
| | | 11/12/2010 | ND<0.1 U | ND<0.1 U | |
| MW-12AR | 18 | 18 (100%) | 3/16/1999 | ND<1 | ND<1 |
| | | 9/23/1999 | ND<1 | ND<1 | |
| | | 3/15/2000 | ND<1 | ND<1 | |
| | | 9/24/2003 | ND<1 | ND<1 | |
| | | 3/11/2004 | ND<1 | ND<1 | |
| | | 10/12/2004 | ND<1 | ND<1 | |
| | | 4/1/2005 | ND<1 | ND<1 | |
| | | 10/25/2005 | ND<1 | ND<1 | |
| | | 4/29/2006 | ND<1 | ND<1 | |
| | | 11/18/2006 | ND<1 | ND<1 | |
| | | 5/23/2007 | ND<1 | ND<1 | |
| | | 11/28/2007 | ND<1 | ND<1 | |
| | | 6/5/2008 | ND<1 | ND<1 | |
| | | 11/20/2008 | ND<1 | ND<1 | |
| | | 6/11/2009 | ND<0.1 | ND<0.1 | |
| | | 11/16/2009 | ND<0.1 | ND<0.1 | |
| | | 6/30/2010 | ND<0.1 | ND<0.1 | |
| | | 11/12/2010 | ND<0.1 U | ND<0.1 U | |
| MW-12BR | 18 | 17 (94.4444%) | 3/16/1999 | ND<1 | ND<1 |
| | | 9/23/1999 | ND<1 | ND<1 | |
| | | 3/15/2000 | ND<1 | ND<1 | |
| | | 9/24/2003 | ND<1 | ND<1 | |
| | | 3/11/2004 | ND<1 | ND<1 | |
| | | 10/12/2004 | ND<1 | ND<1 | |
| | | 4/1/2005 | ND<1 | ND<1 | |
| | | 10/25/2005 | ND<1 | ND<1 | |
| | | 4/29/2006 | ND<1 | ND<1 | |
| | | 11/18/2006 | ND<1 | ND<1 | |
| | | 5/23/2007 | ND<1 | ND<1 | |
| | | 11/28/2007 | ND<1 | ND<1 | |
| | | 6/5/2008 | ND<1 | ND<1 | |
| | | 11/20/2008 | ND<1 | ND<1 | |
| | | 6/11/2009 | ND<0.1 | ND<0.1 | |
| | | 11/16/2009 | 0.1 J | 0.1 J | |
| | | 6/30/2010 | ND<0.1 | ND<0.1 | |
| | | 11/12/2010 | ND<0.1 U | ND<0.1 U | |
| MW-6 | 28 | 27 (96.4286%) | 7/20/1995 | ND<1 | ND<1 |
| | | 8/24/1995 | ND<1 | ND<1 | |
| | | 9/28/1995 | ND<1 | ND<1 | |
| | | 10/26/1995 | ND<1 | ND<1 | |
| | | 11/19/1996 | ND<1 | ND<1 | |
| | | 12/19/1996 | ND<1 | ND<1 | |
| | | 3/24/1997 | ND<1 | ND<1 | |
| | | 9/24/1997 | ND<1 | ND<1 | |
| | | 4/7/1998 | ND<1 | ND<1 | |
| | | 9/23/1998 | ND<1 | ND<1 | |
| | | 3/16/1999 | ND<1 | ND<1 | |
| | | 9/23/1999 | ND<1 | ND<1 | |
| | | 3/15/2000 | ND<1 | ND<1 | |
| | | 9/24/2003 | ND<1 | ND<1 | |
| | | 3/11/2004 | ND<1 | ND<1 | |
| | | 10/12/2004 | ND<1 | ND<1 | |
| | | 4/1/2005 | ND<1 | ND<1 | |
| | | 10/25/2005 | ND<1 | ND<1 | |
| | | 4/29/2006 | ND<1 | ND<1 | |
| | | 11/18/2006 | ND<1 | ND<1 | |
| | | 5/23/2007 | ND<1 | ND<1 | |
| | | 11/28/2007 | ND<1 | ND<1 | |

| | | | | | |
|---|---|---|---|---|---|
| | | | 6/5/2008 | ND<1 | ND<1 |
| | | | 11/20/2008 | ND<1 | ND<1 |
| | | | 6/11/2009 | ND<0.1 | ND<0.1 |
| | | | 11/16/2009 | ND<0.1 | ND<0.1 |
| | | | 6/30/2010 | ND<0.1 | ND<0.1 |
| | | | 11/12/2010 | 0.15 J | 0.15 J |
| MW-7 | 28 | 27 (96.4286%) | 7/20/1995 | ND<1 | ND<1 |
| | | | 8/24/1995 | ND<1 | ND<1 |
| | | | 9/28/1995 | ND<1 | ND<1 |
| | | | 10/26/1995 | ND<1 | ND<1 |
| | | | 11/19/1996 | ND<1 | ND<1 |
| | | | 12/19/1996 | ND<1 | ND<1 |
| | | | 3/24/1997 | ND<1 | ND<1 |
| | | | 9/24/1997 | ND<1 | ND<1 |
| | | | 4/7/1998 | ND<1 | ND<1 |
| | | | 9/23/1998 | ND<1 | ND<1 |
| | | | 3/16/1999 | ND<1 | ND<1 |
| | | | 9/23/1999 | ND<1 | ND<1 |
| | | | 3/15/2000 | ND<1 | ND<1 |
| | | | 9/24/2003 | ND<1 | ND<1 |
| | | | 3/11/2004 | 10 | 10 |
| | | | 10/12/2004 | ND<1 | ND<1 |
| | | | 4/1/2005 | ND<1 | ND<1 |
| | | | 10/25/2005 | ND<1 | ND<1 |
| | | | 4/29/2006 | ND<1 | ND<1 |
| | | | 11/18/2006 | ND<1 | ND<1 |
| | | | 5/23/2007 | ND<1 | ND<1 |
| | | | 11/28/2007 | ND<1 | ND<1 |
| | | | 6/5/2008 | ND<1 | ND<1 |
| | | | 11/20/2008 | ND<1 | ND<1 |
| | | | 6/11/2009 | ND<0.1 | ND<0.1 |
| | | | 11/16/2009 | ND<0.1 | ND<0.1 |
| | | | 6/30/2010 | ND<0.1 | ND<0.1 |
| | | | 11/12/2010 | ND<0.1 U | ND<0.1 U |
| MW-8 | 27 | 27 (100%) | 7/20/1995 | ND<1 | ND<1 |
| | | | 8/24/1995 | ND<1 | ND<1 |
| | | | 9/28/1995 | ND<1 | ND<1 |
| | | | 10/26/1995 | ND<1 | ND<1 |
| | | | 11/19/1996 | ND<1 | ND<1 |
| | | | 12/19/1996 | ND<1 | ND<1 |
| | | | 3/24/1997 | ND<1 | ND<1 |
| | | | 9/24/1997 | ND<1 | ND<1 |
| | | | 4/7/1998 | ND<1 | ND<1 |
| | | | 9/23/1998 | ND<1 | ND<1 |
| | | | 3/16/1999 | ND<1 | ND<1 |
| | | | 9/23/1999 | ND<1 | ND<1 |
| | | | 3/15/2000 | ND<1 | ND<1 |
| | | | 9/24/2003 | ND<1 | ND<1 |
| | | | 3/11/2004 | ND<1 | ND<1 |
| | | | 10/12/2004 | ND<1 | ND<1 |
| | | | 4/1/2005 | ND<1 | ND<1 |
| | | | 10/25/2005 | ND<1 | ND<1 |
| | | | 4/29/2006 | ND<1 | ND<1 |
| | | | 11/18/2006 | ND<1 | ND<1 |
| | | | 5/23/2007 | ND<1 | ND<1 |
| | | | 11/28/2007 | ND<1 | ND<1 |
| | | | 6/5/2008 | ND<1 | ND<1 |
| | | | 11/20/2008 | ND<1 | ND<1 |
| | | | 6/11/2009 | ND<0.1 | ND<0.1 |
| | | | 6/30/2010 | ND<0.1 | ND<0.1 |

| | | | |
|---|---|---|---|
| | 11/12/2010 | ND<0.1 U | ND<0.1 U |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. | Original |
|---|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: Thallium

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.05 | -2.65209 | 7.03356 | -0.132604 |
| 2 | 0.05 | -2.36561 | 12.6297 | -0.250885 |
| 3 | 0.05 | -2.22621 | 17.5857 | -0.362195 |
| 4 | 0.05 | -2.09693 | 21.9828 | -0.467042 |
| 5 | 0.05 | -2.01409 | 26.0394 | -0.567747 |
| 6 | 0.05 | -1.92684 | 29.7521 | -0.664088 |
| 7 | 0.05 | -1.86629 | 33.2351 | -0.757403 |
| 8 | 0.05 | -1.79912 | 36.472 | -0.847359 |
| 9 | 0.05 | -1.75069 | 39.5369 | -0.934893 |
| 10 | 0.05 | -1.6954 | 42.4112 | -1.01966 |
| 11 | 0.05 | -1.65463 | 45.149 | -1.10239 |
| 12 | 0.05 | -1.60725 | 47.7323 | -1.18276 |
| 13 | 0.05 | -1.57179 | 50.2028 | -1.26135 |
| 14 | 0.05 | -1.53007 | 52.5439 | -1.33785 |
| 15 | 0.05 | -1.49852 | 54.7894 | -1.41278 |
| 16 | 0.05 | -1.46106 | 56.9241 | -1.48583 |
| 17 | 0.05 | -1.4325 | 58.9762 | -1.55745 |
| 18 | 0.05 | -1.39838 | 60.9316 | -1.62737 |
| 19 | 0.05 | -1.3722 | 62.8146 | -1.69598 |
| 20 | 0.05 | -1.34075 | 64.6122 | -1.76302 |
| 21 | 0.05 | -1.31652 | 66.3454 | -1.82885 |
| 22 | 0.05 | -1.28727 | 68.0025 | -1.89321 |
| 23 | 0.05 | -1.26464 | 69.6018 | -1.95644 |
| 24 | 0.05 | -1.23724 | 71.1326 | -2.0183 |
| 25 | 0.05 | -1.21596 | 72.6111 | -2.0791 |
| 26 | 0.05 | -1.19012 | 74.0275 | -2.13861 |
| 27 | 0.05 | -1.17 | 75.3964 | -2.19711 |
| 28 | 0.05 | -1.1455 | 76.7086 | -2.25438 |
| 29 | 0.05 | -1.12639 | 77.9774 | -2.3107 |
| 30 | 0.05 | -1.10306 | 79.1941 | -2.36586 |
| 31 | 0.05 | -1.08482 | 80.371 | -2.4201 |
| 32 | 0.05 | -1.06252 | 81.4999 | -2.47322 |
| 33 | 0.05 | -1.04505 | 82.592 | -2.52548 |
| 34 | 0.1 | -1.02365 | 83.6399 | -2.62784 |
| 35 | 0.15 | -1.00687 | 84.6537 | -2.77887 |
| 36 | 0.5 | -0.986272 | 85.6264 | -3.27201 |
| 37 | 0.5 | -0.970094 | 86.5675 | -3.75705 |
| 38 | 0.5 | -0.950222 | 87.4704 | -4.23216 |
| 39 | 0.5 | -0.934598 | 88.3439 | -4.69946 |
| 40 | 0.5 | -0.915365 | 89.1818 | -5.15714 |
| 41 | 0.5 | -0.900227 | 89.9922 | -5.60726 |
| 42 | 0.5 | -0.881587 | 90.7694 | -6.04805 |
| 43 | 0.5 | -0.866894 | 91.5209 | -6.4815 |
| 44 | 0.5 | -0.848786 | 92.2413 | -6.90589 |
| 45 | 0.5 | -0.834498 | 92.9377 | -7.32314 |
| 46 | 0.5 | -0.816874 | 93.605 | -7.73157 |
| 47 | 0.5 | -0.802956 | 94.2497 | -8.13305 |
| 48 | 0.5 | -0.785774 | 94.8672 | -8.52594 |
| 49 | 0.5 | -0.772193 | 95.4634 | -8.91204 |

| | | | | |
|---|---|---|---|---|
| 50 | 0.5 | -0.755415 | 96.0341 | -9.28974 |
| 51 | 0.5 | -0.742143 | 96.5849 | -9.66082 |
| 52 | 0.5 | -0.725736 | 97.1116 | -10.0237 |
| 53 | 0.5 | -0.712751 | 97.6196 | -10.3801 |
| 54 | 0.5 | -0.696684 | 98.1049 | -10.7284 |
| 55 | 0.5 | -0.683969 | 8.5727 | -11.0704 |
| 56 | 0.5 | -0.668209 | 99.0192 | -11.4045 |
| 57 | 0.5 | -0.655726 | 99.4492 | -11.7323 |
| 58 | 0.5 | -0.640266 | 99.8592 | -12.0525 |
| 59 | 0.5 | -0.628006 | 100.254 | -12.3665 |
| 60 | 0.5 | -0.612813 | 100.629 | -12.6729 |
| 61 | 0.5 | -0.60076 | 100.99 | -12.9733 |
| 62 | 0.5 | -0.585815 | 101.333 | -13.2662 |
| 63 | 0.5 | -0.573953 | 101.663 | -13.5532 |
| 64 | 0.5 | -0.559237 | 101.975 | -13.8328 |
| 65 | 0.5 | -0.547551 | 102.275 | -14.1065 |
| 66 | 0.5 | -0.533048 | 102.559 | -14.3731 |
| 67 | 0.5 | -0.521527 | 102.831 | -14.6338 |
| 68 | 0.5 | -0.507221 | 103.089 | -14.8874 |
| 69 | 0.5 | -0.49585 | 103.334 | -15.1354 |
| 70 | 0.5 | -0.481728 | 103.566 | -15.3762 |
| 71 | 0.5 | -0.470498 | 103.788 | -15.6115 |
| 72 | 0.5 | -0.456542 | 103.996 | -15.8398 |
| 73 | 0.5 | -0.445443 | 104.195 | -16.0625 |
| 74 | 0.5 | -0.431644 | 104.381 | -16.2783 |
| 75 | 0.5 | -0.420664 | 104.558 | -16.4886 |
| 76 | 0.5 | -0.40701 | 104.724 | -16.6921 |
| 77 | 0.5 | -0.396142 | 104.881 | -16.8902 |
| 78 | 0.5 | -0.382622 | 105.027 | -17.0815 |
| 79 | 0.5 | -0.371856 | 105.165 | -17.2674 |
| 80 | 0.5 | -0.358459 | 105.294 | -17.4467 |
| 81 | 0.5 | -0.347787 | 105.415 | -17.6206 |
| 82 | 0.5 | -0.334503 | 105.527 | -17.7878 |
| 83 | 0.5 | -0.323919 | 105.632 | -17.9498 |
| 84 | 0.5 | -0.310738 | 105.728 | -18.1051 |
| 85 | 0.5 | -0.300232 | 105.818 | -18.2553 |
| 86 | 0.5 | -0.287147 | 105.901 | -18.3988 |
| 87 | 0.5 | -0.276714 | 105.977 | -18.5372 |
| 88 | 0.5 | -0.263715 | 106.047 | -18.6691 |
| 89 | 0.5 | -0.253347 | 106.111 | -18.7957 |
| 90 | 0.5 | -0.240426 | 106.169 | -18.9159 |
| 91 | 0.5 | -0.230118 | 106.222 | -19.031 |
| 92 | 0.5 | -0.217267 | 106.269 | -19.1396 |
| 93 | 0.5 | -0.207012 | 106.312 | -19.2431 |
| 94 | 0.5 | -0.194225 | 106.35 | -19.3403 |
| 95 | 0.5 | -0.184017 | 106.383 | -19.4323 |
| 96 | 0.5 | -0.171285 | 106.413 | -19.5179 |
| 97 | 0.5 | -0.161119 | 106.439 | -19.5985 |
| 98 | 0.5 | -0.148434 | 106.461 | -19.6727 |
| 99 | 0.5 | -0.138305 | 106.48 | -19.7418 |
| 100 | 0.5 | -0.125661 | 106.496 | -19.8047 |
| 101 | 0.5 | -0.115562 | 106.509 | -19.8624 |
| 102 | 0.5 | -0.102953 | 106.52 | -19.9139 |
| 103 | 0.5 | -0.0928787 | 106.528 | -19.9604 |
| 104 | 0.5 | -0.0802981 | 106.535 | -20.0005 |
| 105 | 0.5 | -0.0702426 | 106.54 | -20.0356 |
| 106 | 0.5 | -0.0576847 | 106.543 | -20.0645 |
| 107 | 0.5 | -0.0476439 | 106.545 | -20.0883 |
| 108 | 0.5 | -0.0350997 | 106.546 | -20.1058 |
| 109 | 0.5 | -0.0250691 | 106.547 | -20.1184 |
| 110 | 0.5 | -0.0125328 | 106.547 | -20.1246 |
| 111 | 0.5 | 0 | 106.547 | -20.1246 |

| | | | | |
|---|---|---|---|---|
| 112 | 0.5 | 0.0125328 | 106.547 | -20.1184 |
| 113 | 0.5 | 0.0250691 | 106.548 | -20.1058 |
| 114 | 0.5 | 0.0350997 | 106.549 | -20.0883 |
| 115 | 0.5 | 0.0476439 | 106.551 | -20.0645 |
| 116 | 0.5 | 0.0576847 | 106.555 | -20.0356 |
| 117 | 0.5 | 0.0702426 | 106.56 | -20.0005 |
| 118 | 0.5 | 0.0802981 | 106.566 | -19.9604 |
| 119 | 0.5 | 0.0928787 | 106.575 | -19.9139 |
| 120 | 0.5 | 0.102953 | 106.585 | -19.8624 |
| 121 | 0.5 | 0.115562 | 106.599 | -19.8047 |
| 122 | 0.5 | 0.125661 | 106.615 | -19.7418 |
| 123 | 0.5 | 0.138305 | 106.634 | -19.6727 |
| 124 | 0.5 | 0.148434 | 106.656 | -19.5985 |
| 125 | 0.5 | 0.161119 | 106.682 | -19.5179 |
| 126 | 0.5 | 0.171285 | 106.711 | -19.4323 |
| 127 | 0.5 | 0.184017 | 106.745 | -19.3403 |
| 128 | 0.5 | 0.194225 | 106.783 | -19.2431 |
| 129 | 0.5 | 0.207012 | 106.825 | -19.1396 |
| 130 | 0.5 | 0.217267 | 106.873 | -19.031 |
| 131 | 0.5 | 0.230118 | 106.926 | -18.9159 |
| 132 | 0.5 | 0.240426 | 106.983 | -18.7957 |
| 133 | 0.5 | 0.253347 | 107.048 | -18.6691 |
| 134 | 0.5 | 0.263715 | 107.117 | -18.5372 |
| 135 | 0.5 | 0.276714 | 107.194 | -18.3988 |
| 136 | 0.5 | 0.287147 | 107.276 | -18.2553 |
| 137 | 0.5 | 0.300232 | 107.366 | -18.1051 |
| 138 | 0.5 | 0.310738 | 107.463 | -17.9498 |
| 139 | 0.5 | 0.323919 | 107.568 | -17.7878 |
| 140 | 0.5 | 0.334503 | 107.68 | -17.6206 |
| 141 | 0.5 | 0.347787 | 107.801 | -17.4467 |
| 142 | 0.5 | 0.358459 | 107.929 | -17.2674 |
| 143 | 0.5 | 0.371856 | 108.067 | -17.0815 |
| 144 | 0.5 | 0.382622 | 108.214 | -16.8902 |
| 145 | 0.5 | 0.396142 | 108.371 | -16.6921 |
| 146 | 0.5 | 0.40701 | 108.536 | -16.4886 |
| 147 | 0.5 | 0.420664 | 108.713 | -16.2783 |
| 148 | 0.5 | 0.431644 | 108.9 | -16.0625 |
| 149 | 0.5 | 0.445443 | 109.098 | -15.8398 |
| 150 | 0.5 | 0.456542 | 109.307 | -15.6115 |
| 151 | 0.5 | 0.470498 | 109.528 | -15.3762 |
| 152 | 0.5 | 0.481728 | 109.76 | -15.1354 |
| 153 | 0.5 | 0.49585 | 110.006 | -14.8874 |
| 154 | 0.5 | 0.507221 | 110.263 | -14.6338 |
| 155 | 0.5 | 0.521527 | 110.535 | -14.3731 |
| 156 | 0.5 | 0.533048 | 110.819 | -14.1065 |
| 157 | 0.5 | 0.547551 | 111.119 | -13.8328 |
| 158 | 0.5 | 0.559237 | 111.432 | -13.5532 |
| 159 | 0.5 | 0.573953 | 111.761 | -13.2662 |
| 160 | 0.5 | 0.585815 | 112.104 | -12.9733 |
| 161 | 0.5 | 0.60076 | 112.465 | -12.6729 |
| 162 | 0.5 | 0.612813 | 112.841 | -12.3665 |
| 163 | 0.5 | 0.628006 | 113.235 | -12.0525 |
| 164 | 0.5 | 0.640266 | 113.645 | -11.7323 |
| 165 | 0.5 | 0.655726 | 114.075 | -11.4045 |
| 166 | 0.5 | 0.668209 | 114.522 | -11.0704 |
| 167 | 0.5 | 0.68396 | 114.989 | -10.7284 |
| 168 | 0.5 | 0.696684 | 115.475 | -10.3801 |
| 169 | 0.5 | 0.712751 | 115.983 | -10.0237 |
| 170 | 0.5 | 0.725736 | 116.51 | -9.66082 |
| 171 | 0.5 | 0.742143 | 117.06 | -9.28974 |
| 172 | 0.5 | 0.755415 | 117.631 | -8.91204 |
| 173 | 0.5 | 0.772193 | 118.227 | -8.52594 |

| | | | | |
|---|---|---|---|---|
| 174 | 0.5 | 0.785774 | 118.845 | -8.13305 |
| 175 | 0.5 | 0.802956 | 119.489 | -7.73157 |
| 176 | 0.5 | 0.816874 | 120.157 | -7.32314 |
| 177 | 0.5 | 0.834498 | 120.853 | -6.90589 |
| 178 | 0.5 | 0.848786 | 121.574 | -6.4815 |
| 179 | 0.5 | 0.866894 | 122.325 | -6.04805 |
| 180 | 0.5 | 0.881587 | 123.102 | -5.60726 |
| 181 | 0.5 | 0.900227 | 123.913 | -5.15714 |
| 182 | 0.5 | 0.915365 | 124.751 | -4.69946 |
| 183 | 0.5 | 0.93459 | 125.624 | -4.23216 |
| 184 | 0.5 | 0.950222 | 126.527 | -3.75705 |
| 185 | 0.5 | 0.970094 | 127.468 | -3.27201 |
| 186 | 0.5 | 0.986272 | 128.441 | -2.77887 |
| 187 | 0.5 | 1.00687 | 129.455 | -2.27544 |
| 188 | 0.5 | 1.02365 | 130.502 | -1.76361 |
| 189 | 0.5 | 1.04505 | 131.594 | -1.24109 |
| 190 | 0.5 | 1.06252 | 132.723 | -0.709827 |
| 191 | 0.5 | 1.08482 | 133.9 | -0.167415 |
| 192 | 0.5 | 1.10306 | 135.117 | 0.384116 |
| 193 | 0.5 | 1.12639 | 136.386 | 0.947311 |
| 194 | 0.5 | 1.1455 | 137.698 | 1.52006 |
| 195 | 0.5 | 1.17 | 139.067 | 2.10506 |
| 196 | 0.5 | 1.19012 | 140.483 | 2.70012 |
| 197 | 0.5 | 1.21596 | 141.962 | 3.3081 |
| 198 | 0.5 | 1.23724 | 143.493 | 3.92672 |
| 199 | 0.5 | 1.26464 | 145.092 | 4.55904 |
| 200 | 0.5 | 1.28727 | 146.749 | 5.20268 |
| 201 | 0.5 | 1.31652 | 148.482 | 5.86094 |
| 202 | 0.5 | 1.34075 | 150.28 | 6.53132 |
| 203 | 0.5 | 1.3722 | 152.163 | 7.21742 |
| 204 | 0.5 | 1.39838 | 154.118 | 7.91661 |
| 205 | 0.5 | 1.4325 | 156.17 | 8.63286 |
| 206 | 0.5 | 1.46106 | 158.305 | 9.36339 |
| 207 | 0.5 | 1.49852 | 160.551 | 10.1126 |
| 208 | 0.5 | 1.53007 | 162.892 | 10.8777 |
| 209 | 0.5 | 1.57179 | 165.362 | 11.6636 |
| 210 | 0.5 | 1.60725 | 167.945 | 12.4672 |
| 211 | 0.5 | 1.65463 | 170.683 | 13.2945 |
| 212 | 0.5 | 1.6954 | 173.558 | 14.1422 |
| 213 | 0.5 | 1.75069 | 176.622 | 15.0176 |
| 214 | 0.5 | 1.79912 | 179.859 | 15.9171 |
| 215 | 0.5 | 1.86629 | 183.342 | 16.8503 |
| 216 | 0.5 | 1.92684 | 187.055 | 17.8137 |
| 217 | 0.5 | 2.01409 | 191.112 | 18.8207 |
| 218 | 0.5 | 2.09693 | 195.509 | 19.8692 |
| 219 | 0.5 | 2.22621 | 200.465 | 20.9823 |
| 220 | 0.5 | 2.36561 | 206.061 | 22.1651 |
| 221 | 10 | 2.65209 | 213.094 | 48.686 |

Data Set Standard Deviation = 0.664169
Numerator = 2370.32
Denominator = 20680.1
W Statistic = 0.114619 = 2370.32 / 20680.1

5% Critical value of 0.976 exceeds 0.114619
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.114619
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: Thallium

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | -2.99573 | -2.65209 | 7.03356 | 7.94494 |
| 2 | -2.99573 | -2.36561 | 12.6297 | 15.0317 |
| 3 | -2.99573 | -2.22621 | 17.5857 | 21.7008 |
| 4 | -2.99573 | -2.09693 | 21.9828 | 27.9826 |
| 5 | -2.99573 | -2.01409 | 26.0394 | 34.0163 |
| 6 | -2.99573 | -1.92684 | 29.7521 | 39.7886 |
| 7 | -2.99573 | -1.86629 | 33.2351 | 45.3795 |
| 8 | -2.99573 | -1.79912 | 36.472 | 50.7692 |
| 9 | -2.99573 | -1.75069 | 39.5369 | 56.0138 |
| 10 | -2.99573 | -1.6954 | 42.4112 | 61.0928 |
| 11 | -2.99573 | -1.65463 | 45.149 | 66.0496 |
| 12 | -2.99573 | -1.60725 | 47.7323 | 70.8645 |
| 13 | -2.99573 | -1.57179 | 50.2028 | 75.5731 |
| 14 | -2.99573 | -1.53007 | 52.5439 | 80.1568 |
| 15 | -2.99573 | -1.49852 | 54.7894 | 84.6459 |
| 16 | -2.99573 | -1.46106 | 56.9241 | 89.0229 |
| 17 | -2.99573 | -1.4325 | 58.9762 | 93.3143 |
| 18 | -2.99573 | -1.39838 | 60.9316 | 97.5034 |
| 19 | -2.99573 | -1.3722 | 62.8146 | 101.614 |
| 20 | -2.99573 | -1.34075 | 64.6122 | 105.631 |
| 21 | -2.99573 | -1.31652 | 66.3454 | 109.575 |
| 22 | -2.99573 | -1.28727 | 68.0025 | 113.431 |
| 23 | -2.99573 | -1.26464 | 69.6018 | 117.22 |
| 24 | -2.99573 | -1.23724 | 71.1326 | 120.926 |
| 25 | -2.99573 | -1.21596 | 72.6111 | 124.569 |
| 26 | -2.99573 | -1.19012 | 74.0275 | 128.134 |
| 27 | -2.99573 | -1.17 | 75.3964 | 131.639 |
| 28 | -2.99573 | -1.1455 | 76.7086 | 135.071 |
| 29 | -2.99573 | -1.12639 | 77.9774 | 138.445 |
| 30 | -2.99573 | -1.10306 | 79.1941 | 141.749 |
| 31 | -2.99573 | -1.08482 | 80.371 | 144.999 |
| 32 | -2.99573 | -1.06252 | 81.4999 | 148.182 |
| 33 | -2.99573 | -1.04505 | 82.592 | 151.313 |
| 34 | -2.30259 | -1.02365 | 83.6399 | 153.67 |
| 35 | -1.89712 | -1.00687 | 84.6537 | 155.58 |
| 36 | -0.693147 | -0.986272 | 85.6264 | 156.264 |
| 37 | -0.693147 | -0.970094 | 86.5675 | 156.936 |
| 38 | -0.693147 | -0.950222 | 87.4704 | 157.595 |
| 39 | -0.693147 | -0.93459 | 88.3439 | 158.243 |
| 40 | -0.693147 | -0.915365 | 89.1818 | 158.877 |
| 41 | -0.693147 | -0.900227 | 89.9922 | 159.501 |
| 42 | -0.693147 | -0.881587 | 90.7694 | 160.112 |
| 43 | -0.693147 | -0.866894 | 91.5209 | 160.713 |
| 44 | -0.693147 | -0.848786 | 92.2413 | 161.301 |
| 45 | -0.693147 | -0.834498 | 92.9377 | 161.88 |
| 46 | -0.693147 | -0.816874 | 93.605 | 162.446 |
| 47 | -0.693147 | -0.802956 | 94.2497 | 163.003 |
| 48 | -0.693147 | -0.785774 | 94.8672 | 163.547 |
| 49 | -0.693147 | -0.772193 | 95.4634 | 164.083 |

| | | | | |
|---|---|---|---|---|
| 50 | -0.693147 | -0.755415 | 96.0341 | 164.606 |
| 51 | -0.693147 | -0.742143 | 96.5849 | 165.121 |
| 52 | -0.693147 | -0.725736 | 97.1116 | 165.624 |
| 53 | -0.693147 | -0.712751 | 97.6196 | 166.118 |
| 54 | -0.693147 | -0.696684 | 98.1049 | 166.601 |
| 55 | -0.693147 | -0.683969 | 8.5727 | 167.075 |
| 56 | -0.693147 | -0.668209 | 99.0192 | 167.538 |
| 57 | -0.693147 | -0.655726 | 99.4492 | 167.992 |
| 58 | -0.693147 | -0.640266 | 99.8592 | 168.436 |
| 59 | -0.693147 | -0.628006 | 100.254 | 168.871 |
| 60 | -0.693147 | -0.612813 | 100.629 | 169.296 |
| 61 | -0.693147 | -0.60076 | 100.99 | 169.713 |
| 62 | -0.693147 | -0.585815 | 101.333 | 170.119 |
| 63 | -0.693147 | -0.573953 | 101.663 | 170.516 |
| 64 | -0.693147 | -0.559237 | 101.975 | 170.904 |
| 65 | -0.693147 | -0.547551 | 102.275 | 171.284 |
| 66 | -0.693147 | -0.533048 | 102.559 | 171.653 |
| 67 | -0.693147 | -0.521527 | 102.831 | 172.015 |
| 68 | -0.693147 | -0.507221 | 103.089 | 172.366 |
| 69 | -0.693147 | -0.49585 | 103.334 | 172.71 |
| 70 | -0.693147 | -0.481728 | 103.566 | 173.044 |
| 71 | -0.693147 | -0.470498 | 103.788 | 173.37 |
| 72 | -0.693147 | -0.456542 | 103.996 | 173.686 |
| 73 | -0.693147 | -0.445443 | 104.195 | 173.995 |
| 74 | -0.693147 | -0.431644 | 104.381 | 174.294 |
| 75 | -0.693147 | -0.420664 | 104.558 | 174.586 |
| 76 | -0.693147 | -0.40701 | 104.724 | 174.868 |
| 77 | -0.693147 | -0.396142 | 104.881 | 175.143 |
| 78 | -0.693147 | -0.382622 | 105.027 | 175.408 |
| 79 | -0.693147 | -0.371856 | 105.165 | 175.666 |
| 80 | -0.693147 | -0.358459 | 105.294 | 175.914 |
| 81 | -0.693147 | -0.347787 | 105.415 | 176.155 |
| 82 | -0.693147 | -0.334503 | 105.527 | 176.387 |
| 83 | -0.693147 | -0.323919 | 105.632 | 176.611 |
| 84 | -0.693147 | -0.310738 | 105.728 | 176.827 |
| 85 | -0.693147 | -0.300232 | 105.818 | 177.035 |
| 86 | -0.693147 | -0.287147 | 105.901 | 177.234 |
| 87 | -0.693147 | -0.276714 | 105.977 | 177.426 |
| 88 | -0.693147 | -0.263715 | 106.047 | 177.609 |
| 89 | -0.693147 | -0.253347 | 106.111 | 177.784 |
| 90 | -0.693147 | -0.240426 | 106.169 | 177.951 |
| 91 | -0.693147 | -0.230118 | 106.222 | 178.11 |
| 92 | -0.693147 | -0.217267 | 106.269 | 178.261 |
| 93 | -0.693147 | -0.207012 | 106.312 | 178.404 |
| 94 | -0.693147 | -0.194225 | 106.35 | 178.539 |
| 95 | -0.693147 | -0.184017 | 106.383 | 178.667 |
| 96 | -0.693147 | -0.171285 | 106.413 | 178.785 |
| 97 | -0.693147 | -0.161119 | 106.439 | 178.897 |
| 98 | -0.693147 | -0.148434 | 106.461 | 179 |
| 99 | -0.693147 | -0.138305 | 106.48 | 179.096 |
| 100 | -0.693147 | -0.125661 | 106.496 | 179.183 |
| 101 | -0.693147 | -0.115562 | 106.509 | 179.263 |
| 102 | -0.693147 | -0.102953 | 106.52 | 179.334 |
| 103 | -0.693147 | -0.0928787 | 106.528 | 179.399 |
| 104 | -0.693147 | -0.0802981 | 106.535 | 179.454 |
| 105 | -0.693147 | -0.0702426 | 106.54 | 179.503 |
| 106 | -0.693147 | -0.0576847 | 106.543 | 179.543 |
| 107 | -0.693147 | -0.0476439 | 106.545 | 179.576 |
| 108 | -0.693147 | -0.0350997 | 106.546 | 179.6 |
| 109 | -0.693147 | -0.0250691 | 106.547 | 179.618 |
| 110 | -0.693147 | -0.0125328 | 106.547 | 179.626 |
| 111 | -0.693147 | 0 | 106.547 | 179.626 |

| | | | | |
|---|---|---|---|---|
| 112 | -0.693147 | 0.0125328 | 106.547 | 179.618 |
| 113 | -0.693147 | 0.0250691 | 106.548 | 179.6 |
| 114 | -0.693147 | 0.0350997 | 106.549 | 179.576 |
| 115 | -0.693147 | 0.0476439 | 106.551 | 179.543 |
| 116 | -0.693147 | 0.0576847 | 106.555 | 179.503 |
| 117 | -0.693147 | 0.0702426 | 106.56 | 179.454 |
| 118 | -0.693147 | 0.0802981 | 106.566 | 179.399 |
| 119 | -0.693147 | 0.0928787 | 106.575 | 179.334 |
| 120 | -0.693147 | 0.102953 | 106.585 | 179.263 |
| 121 | -0.693147 | 0.115562 | 106.599 | 179.183 |
| 122 | -0.693147 | 0.125661 | 106.615 | 179.096 |
| 123 | -0.693147 | 0.138305 | 106.634 | 179 |
| 124 | -0.693147 | 0.148434 | 106.656 | 178.897 |
| 125 | -0.693147 | 0.161119 | 106.682 | 178.785 |
| 126 | -0.693147 | 0.171285 | 106.711 | 178.667 |
| 127 | -0.693147 | 0.184017 | 106.745 | 178.539 |
| 128 | -0.693147 | 0.194225 | 106.783 | 178.404 |
| 129 | -0.693147 | 0.207012 | 106.825 | 178.261 |
| 130 | -0.693147 | 0.217267 | 106.873 | 178.11 |
| 131 | -0.693147 | 0.230118 | 106.926 | 177.951 |
| 132 | -0.693147 | 0.240426 | 106.983 | 177.784 |
| 133 | -0.693147 | 0.253347 | 107.048 | 177.609 |
| 134 | -0.693147 | 0.263715 | 107.117 | 177.426 |
| 135 | -0.693147 | 0.276714 | 107.194 | 177.234 |
| 136 | -0.693147 | 0.287147 | 107.276 | 177.035 |
| 137 | -0.693147 | 0.300232 | 107.366 | 176.827 |
| 138 | -0.693147 | 0.310738 | 107.463 | 176.611 |
| 139 | -0.693147 | 0.323919 | 107.568 | 176.387 |
| 140 | -0.693147 | 0.334503 | 107.68 | 176.155 |
| 141 | -0.693147 | 0.347787 | 107.801 | 175.914 |
| 142 | -0.693147 | 0.358459 | 107.929 | 175.666 |
| 143 | -0.693147 | 0.371856 | 108.067 | 175.408 |
| 144 | -0.693147 | 0.382622 | 108.214 | 175.143 |
| 145 | -0.693147 | 0.396142 | 108.371 | 174.868 |
| 146 | -0.693147 | 0.40701 | 108.536 | 174.586 |
| 147 | -0.693147 | 0.420664 | 108.713 | 174.294 |
| 148 | -0.693147 | 0.431644 | 108.9 | 173.995 |
| 149 | -0.693147 | 0.445443 | 109.098 | 173.686 |
| 150 | -0.693147 | 0.456542 | 109.307 | 173.37 |
| 151 | -0.693147 | 0.470498 | 109.528 | 173.044 |
| 152 | -0.693147 | 0.481728 | 109.76 | 172.71 |
| 153 | -0.693147 | 0.49585 | 110.006 | 172.366 |
| 154 | -0.693147 | 0.507221 | 110.263 | 172.015 |
| 155 | -0.693147 | 0.521527 | 110.535 | 171.653 |
| 156 | -0.693147 | 0.533048 | 110.819 | 171.284 |
| 157 | -0.693147 | 0.547551 | 111.119 | 170.904 |
| 158 | -0.693147 | 0.559237 | 111.432 | 170.516 |
| 159 | -0.693147 | 0.573953 | 111.761 | 170.119 |
| 160 | -0.693147 | 0.585815 | 112.104 | 169.713 |
| 161 | -0.693147 | 0.60076 | 112.465 | 169.296 |
| 162 | -0.693147 | 0.612813 | 112.841 | 168.871 |
| 163 | -0.693147 | 0.628006 | 113.235 | 168.436 |
| 164 | -0.693147 | 0.640266 | 113.645 | 167.992 |
| 165 | -0.693147 | 0.655726 | 114.075 | 167.538 |
| 166 | -0.693147 | 0.668209 | 114.522 | 167.075 |
| 167 | -0.693147 | 0.68396 | 114.989 | 166.601 |
| 168 | -0.693147 | 0.696684 | 115.475 | 166.118 |
| 169 | -0.693147 | 0.712751 | 115.983 | 165.624 |
| 170 | -0.693147 | 0.725736 | 116.51 | 165.121 |
| 171 | -0.693147 | 0.742143 | 117.06 | 164.606 |
| 172 | -0.693147 | 0.755415 | 117.631 | 164.083 |
| 173 | -0.693147 | 0.772193 | 118.227 | 163.547 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | -0.693147 | | 0.785774 | 118.845 | 163.003 |
| 175 | -0.693147 | | 0.802956 | 119.489 | 162.446 |
| 176 | -0.693147 | | 0.816874 | 120.157 | 161.88 |
| 177 | -0.693147 | | 0.834498 | 120.853 | 161.301 |
| 178 | -0.693147 | | 0.848786 | 121.574 | 160.713 |
| 179 | -0.693147 | | 0.866894 | 122.325 | 160.112 |
| 180 | -0.693147 | | 0.881587 | 123.102 | 159.501 |
| 181 | -0.693147 | | 0.900227 | 123.913 | 158.877 |
| 182 | -0.693147 | | 0.915365 | 124.751 | 158.243 |
| 183 | -0.693147 | | 0.93459 | 125.624 | 157.595 |
| 184 | -0.693147 | | 0.950222 | 126.527 | 156.936 |
| 185 | -0.693147 | | 0.970094 | 127.468 | 156.264 |
| 186 | -0.693147 | | 0.986272 | 128.441 | 155.58 |
| 187 | -0.693147 | | 1.00687 | 129.455 | 154.882 |
| 188 | -0.693147 | | 1.02365 | 130.502 | 154.173 |
| 189 | -0.693147 | | 1.04505 | 131.594 | 153.448 |
| 190 | -0.693147 | | 1.06252 | 132.723 | 152.712 |
| 191 | -0.693147 | | 1.08482 | 133.9 | 151.96 |
| 192 | -0.693147 | | 1.10306 | 135.117 | 151.195 |
| 193 | -0.693147 | | 1.12639 | 136.386 | 150.415 |
| 194 | -0.693147 | | 1.1455 | 137.698 | 149.621 |
| 195 | -0.693147 | | 1.17 | 139.067 | 148.81 |
| 196 | -0.693147 | | 1.19012 | 140.483 | 147.985 |
| 197 | -0.693147 | | 1.21596 | 141.962 | 147.142 |
| 198 | -0.693147 | | 1.23724 | 143.493 | 146.284 |
| 199 | -0.693147 | | 1.26464 | 145.092 | 145.408 |
| 200 | -0.693147 | | 1.28727 | 146.749 | 144.515 |
| 201 | -0.693147 | | 1.31652 | 148.482 | 143.603 |
| 202 | -0.693147 | | 1.34075 | 150.28 | 142.673 |
| 203 | -0.693147 | | 1.3722 | 152.163 | 141.722 |
| 204 | -0.693147 | | 1.39838 | 154.118 | 140.753 |
| 205 | -0.693147 | | 1.4325 | 156.17 | 139.76 |
| 206 | -0.693147 | | 1.46106 | 158.305 | 138.747 |
| 207 | -0.693147 | | 1.49852 | 160.551 | 137.709 |
| 208 | -0.693147 | | 1.53007 | 162.892 | 136.648 |
| 209 | -0.693147 | | 1.57179 | 165.362 | 135.559 |
| 210 | -0.693147 | | 1.60725 | 167.945 | 134.445 |
| 211 | -0.693147 | | 1.65463 | 170.683 | 133.298 |
| 212 | -0.693147 | | 1.6954 | 173.558 | 132.123 |
| 213 | -0.693147 | | 1.75069 | 176.622 | 130.909 |
| 214 | -0.693147 | | 1.79912 | 179.859 | 129.662 |
| 215 | -0.693147 | | 1.86629 | 183.342 | 128.368 |
| 216 | -0.693147 | | 1.92684 | 187.055 | 127.033 |
| 217 | -0.693147 | | 2.01409 | 191.112 | 125.637 |
| 218 | -0.693147 | | 2.09693 | 195.509 | 124.183 |
| 219 | -0.693147 | | 2.22621 | 200.465 | 122.64 |
| 220 | -0.693147 | | 2.36561 | 206.061 | 121 |
| 221 | 2.30259 | 2.65209 | 213.094 | 127.107 | |

Data Set Standard Deviation = 0.858054
Numerator = 16156.2
Denominator = 34516.3
W Statistic = 0.468075 = 16156.2 / 34516.3

5% Critical value of 0.976 exceeds 0.468075
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.468075
Evidence of non-normality at 99% level of significance

# Non-Parametric Prediction Interval

## Inter-Well Comparison

## Parameter: Thallium

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 98.6425%
Number of comparisons = 8
Future Samples (k) = 8
Recent Dates = 1
Background Samples (n) = 18
Maximum Background Concentration = 0
Confidence Level = 69.2%
False Positive Rate = 30.8%

| Location | Date | Samples | Mean | Significant |
|---|---|---|---|---|
| MW-9 | 11/12/2010 | 1 | -2.99573 | FALSE |
| MW-10 | 11/12/2010 | 1 | -2.99573 | FALSE |
| MW-11R | 11/12/2010 | 1 | -2.99573 | FALSE |
| MW-12AR | 11/12/2010 | 1 | -2.99573 | FALSE |
| MW-12BR | 11/12/2010 | 1 | -2.99573 | FALSE |
| MW-6 | 11/12/2010 | 1 | -1.89712 | FALSE |
| MW-7 | 11/12/2010 | 1 | -2.99573 | FALSE |
| MW-8 | 11/12/2010 | 1 | -2.99573 | FALSE |

# Concentrations (ppb)

## Parameter: Tin

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 214
Percent Non-Detects: 96.8326%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 17 (94.4444%) | 3/16/1999 | ND<20 | ND<20 |
| | | | 9/23/1999 | ND<20 | ND<20 |
| | | | 3/15/2000 | ND<20 | ND<20 |
| | | | 9/24/2003 | ND<20 | ND<20 |
| | | | 3/11/2004 | ND<20 | ND<20 |
| | | | 10/12/2004 | ND<20 | ND<20 |
| | | | 4/1/2005 | ND<20 | ND<20 |
| | | | 10/25/2005 | ND<20 | ND<20 |
| | | | 4/29/2006 | ND<20 | ND<20 |
| | | | 11/18/2006 | ND<20 | ND<20 |
| | | | 5/23/2007 | ND<20 | ND<20 |
| | | | 11/28/2007 | 5.1 J | 5.1 J |
| | | | 6/5/2008 | ND<20 | ND<20 |
| | | | 11/20/2008 | ND<20 | ND<20 |
| | | | 6/11/2009 | ND<0.4 | ND<0.4 |
| | | | 11/16/2009 | ND<0.4 | ND<0.4 |
| | | | 6/30/2010 | ND<0.4 | ND<0.4 |
| | | | 11/12/2010 | ND<0.4 U | ND<0.4 U |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-12BR | 18 | 18 (100%) | 3/16/1999 | ND<20 | ND<20 |
| | | | 9/23/1999 | ND<20 | ND<20 |
| | | | 3/15/2000 | ND<20 | ND<20 |
| | | | 9/24/2003 | ND<20 | ND<20 |
| | | | 3/11/2004 | ND<20 | ND<20 |
| | | | 10/12/2004 | ND<20 | ND<20 |
| | | | 4/1/2005 | ND<20 | ND<20 |
| | | | 10/25/2005 | ND<20 | ND<20 |
| | | | 4/29/2006 | ND<20 | ND<20 |
| | | | 11/18/2006 | ND<20 | ND<20 |
| | | | 5/23/2007 | ND<20 | ND<20 |
| | | | 11/28/2007 | ND<20 | ND<20 |
| | | | 6/5/2008 | ND<20 | ND<20 |
| | | | 11/20/2008 | ND<20 | ND<20 |
| | | | 6/11/2009 | ND<0.4 | ND<0.4 |
| | | | 11/16/2009 | ND<0.4 | ND<0.4 |
| | | | 6/30/2010 | ND<0.4 | ND<0.4 |
| | | | 11/12/2010 | ND<0.4 U | ND<0.4 U |
| MW-10 | 28 | 27 (96.4286%) | 7/20/1995 | ND<20 | ND<20 |
| | | | 8/24/1995 | ND<20 | ND<20 |
| | | | 9/28/1995 | ND<20 | ND<20 |
| | | | 10/26/1995 | ND<20 | ND<20 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/19/1996 | ND<20 | ND<20 | |
| | | | 12/19/1996 | ND<20 | ND<20 | |
| | | | 3/24/1997 | ND<20 | ND<20 | |
| | | | 9/24/1997 | ND<20 | ND<20 | |
| | | | 4/7/1998 | ND<20 | ND<20 | |
| | | | 9/23/1998 | ND<20 | ND<20 | |
| | | | 3/16/1999 | ND<20 | ND<20 | |
| | | | 9/23/1999 | ND<20 | ND<20 | |
| | | | 3/15/2000 | ND<20 | ND<20 | |
| | | | 9/24/2003 | ND<20 | ND<20 | |
| | | | 3/11/2004 | ND<20 | ND<20 | |
| | | | 10/12/2004 | ND<20 | ND<20 | |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | ND<20 | ND<20 | |
| | | | 4/29/2006 | ND<20 | ND<20 | |
| | | | 11/18/2006 | ND<20 | ND<20 | |
| | | | 5/23/2007 | ND<20 | ND<20 | |
| | | | 11/28/2007 | ND<20 | ND<20 | |
| | | | 6/5/2008 | ND<20 | ND<20 | |
| | | | 11/20/2008 | ND<20 | ND<20 | |
| | | | 6/11/2009 | ND<0.4 | ND<0.4 | |
| | | | 11/16/2009 | ND<0.4 | ND<0.4 | |
| | | | 6/30/2010 | ND<0.4 | ND<0.4 | |
| | | | 11/12/2010 | 0.73 J | 0.73 J | |
| MW-12AR | 18 | 18 (100%) | 3/16/1999 | ND<20 | ND<20 | |
| | | | 9/23/1999 | ND<20 | ND<20 | |
| | | | 3/15/2000 | ND<20 | ND<20 | |
| | | | 9/24/2003 | ND<20 | ND<20 | |
| | | | 3/11/2004 | ND<20 | ND<20 | |
| | | | 10/12/2004 | ND<20 | ND<20 | |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | ND<20 | ND<20 | |
| | | | 4/29/2006 | ND<20 | ND<20 | |
| | | | 11/18/2006 | ND<20 | ND<20 | |
| | | | 5/23/2007 | ND<20 | ND<20 | |
| | | | 11/28/2007 | ND<20 | ND<20 | |
| | | | 6/5/2008 | ND<20 | ND<20 | |
| | | | 11/20/2008 | ND<20 | ND<20 | |
| | | | 6/11/2009 | ND<0.4 | ND<0.4 | |
| | | | 11/16/2009 | ND<0.4 | ND<0.4 | |
| | | | 6/30/2010 | ND<0.4 | ND<0.4 | |
| | | | 11/12/2010 | ND<0.4 U | ND<0.4 U | |
| MW-6 | 28 | 28 (100%) | 7/20/1995 | ND<20 | ND<20 | |
| | | | 8/24/1995 | ND<20 | ND<20 | |
| | | | 9/28/1995 | ND<20 | ND<20 | |
| | | | 10/26/1995 | ND<20 | ND<20 | |
| | | | 11/19/1996 | ND<20 | ND<20 | |
| | | | 12/19/1996 | ND<20 | ND<20 | |
| | | | 3/24/1997 | ND<20 | ND<20 | |
| | | | 9/24/1997 | ND<20 | ND<20 | |
| | | | 4/7/1998 | ND<20 | ND<20 | |
| | | | 9/23/1998 | ND<20 | ND<20 | |
| | | | 3/16/1999 | ND<20 | ND<20 | |
| | | | 9/23/1999 | ND<20 | ND<20 | |
| | | | 3/15/2000 | ND<20 | ND<20 | |
| | | | 9/24/2003 | ND<20 | ND<20 | |
| | | | 3/11/2004 | ND<20 | ND<20 | |
| | | | 10/12/2004 | ND<20 | ND<20 | |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | ND<20 | ND<20 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 4/29/2006 | ND<20 | ND<20 | |
| | | | 11/18/2006 | ND<20 | ND<20 | |
| | | | 5/23/2007 | ND<20 | ND<20 | |
| | | | 11/28/2007 | ND<20 | ND<20 | |
| | | | 6/5/2008 | ND<20 | ND<20 | |
| | | | 11/20/2008 | ND<20 | ND<20 | |
| | | | 6/11/2009 | ND<0.4 | ND<0.4 | |
| | | | 11/16/2009 | ND<0.4 | ND<0.4 | |
| | | | 6/30/2010 | ND<0.4 | ND<0.4 | |
| | | | 11/12/2010 | ND<0.4 U | | ND<0.4 U |
| MW-7 | 28 | 27 (96.4286%) | 7/20/1995 | ND<20 | ND<20 | |
| | | | 8/24/1995 | ND<20 | ND<20 | |
| | | | 9/28/1995 | ND<20 | ND<20 | |
| | | | 10/26/1995 | ND<20 | ND<20 | |
| | | | 11/19/1996 | ND<20 | ND<20 | |
| | | | 12/19/1996 | ND<20 | ND<20 | |
| | | | 3/24/1997 | ND<20 | ND<20 | |
| | | | 9/24/1997 | ND<20 | ND<20 | |
| | | | 4/7/1998 | ND<20 | ND<20 | |
| | | | 9/23/1998 | ND<20 | ND<20 | |
| | | | 3/16/1999 | ND<20 | ND<20 | |
| | | | 9/23/1999 | ND<20 | ND<20 | |
| | | | 3/15/2000 | ND<20 | ND<20 | |
| | | | 9/24/2003 | ND<20 | ND<20 | |
| | | | 3/11/2004 | ND<20 | ND<20 | |
| | | | 10/12/2004 | ND<20 | ND<20 | |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | ND<20 | ND<20 | |
| | | | 4/29/2006 | ND<20 | ND<20 | |
| | | | 11/18/2006 | ND<20 | ND<20 | |
| | | | 5/23/2007 | ND<20 | ND<20 | |
| | | | 11/28/2007 | ND<20 | ND<20 | |
| | | | 6/5/2008 | ND<20 | ND<20 | |
| | | | 11/20/2008 | 35 | 35 | |
| | | | 6/11/2009 | ND<0.4 | ND<0.4 | |
| | | | 11/16/2009 | ND<0.4 | ND<0.4 | |
| | | | 6/30/2010 | ND<0.4 | ND<0.4 | |
| | | | 11/12/2010 | ND<0.4 U | | ND<0.4 U |
| MW-8 | 27 | 27 (100%) | 7/20/1995 | ND<20 | ND<20 | |
| | | | 8/24/1995 | ND<20 | ND<20 | |
| | | | 9/28/1995 | ND<20 | ND<20 | |
| | | | 10/26/1995 | ND<20 | ND<20 | |
| | | | 11/19/1996 | ND<20 | ND<20 | |
| | | | 12/19/1996 | ND<20 | ND<20 | |
| | | | 3/24/1997 | ND<20 | ND<20 | |
| | | | 9/24/1997 | ND<20 | ND<20 | |
| | | | 4/7/1998 | ND<20 | ND<20 | |
| | | | 9/23/1998 | ND<20 | ND<20 | |
| | | | 3/16/1999 | ND<20 | ND<20 | |
| | | | 9/23/1999 | ND<20 | ND<20 | |
| | | | 3/15/2000 | ND<20 | ND<20 | |
| | | | 9/24/2003 | ND<20 | ND<20 | |
| | | | 3/11/2004 | ND<20 | ND<20 | |
| | | | 10/12/2004 | ND<20 | ND<20 | |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | ND<20 | ND<20 | |
| | | | 4/29/2006 | ND<20 | ND<20 | |
| | | | 11/18/2006 | ND<20 | ND<20 | |
| | | | 5/23/2007 | ND<20 | ND<20 | |
| | | | 11/28/2007 | ND<20 | ND<20 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 6/5/2008 | ND<20 | ND<20 | |
| | | | 11/20/2008 | | ND<20 | ND<20 |
| | | | 6/11/2009 | | ND<0.4 | ND<0.4 |
| | | | 6/30/2010 | | ND<0.4 | ND<0.4 |
| | | | 11/12/2010 | | ND<0.4 U | ND<0.4 U |
| MW-9 | 28 | 24 (85.7143%) | 7/20/1995 | | ND<20 | ND<20 |
| | | | 8/24/1995 | | ND<20 | ND<20 |
| | | | 9/28/1995 | | ND<20 | ND<20 |
| | | | 10/26/1995 | | ND<20 | ND<20 |
| | | | 11/19/1996 | | ND<20 | ND<20 |
| | | | 12/19/1996 | | ND<20 | ND<20 |
| | | | 3/24/1997 | | ND<20 | ND<20 |
| | | | 9/24/1997 | | ND<20 | ND<20 |
| | | | 4/7/1998 | ND<20 | ND<20 | |
| | | | 9/23/1998 | | ND<20 | ND<20 |
| | | | 3/16/1999 | | ND<20 | ND<20 |
| | | | 9/23/1999 | | ND<20 | ND<20 |
| | | | 3/15/2000 | | ND<20 | ND<20 |
| | | | 9/24/2003 | | ND<20 | ND<20 |
| | | | 3/11/2004 | | ND<20 | ND<20 |
| | | | 10/12/2004 | | ND<20 | ND<20 |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | | ND<20 | ND<20 |
| | | | 4/29/2006 | | ND<20 | ND<20 |
| | | | 11/18/2006 | | ND<20 | ND<20 |
| | | | 5/23/2007 | | ND<20 | ND<20 |
| | | | 11/28/2007 | | ND<20 | ND<20 |
| | | | 6/5/2008 | ND<20 | ND<20 | |
| | | | 11/20/2008 | | 14 J | 14 J |
| | | | 6/11/2009 | | 0.45 J | 0.45 J |
| | | | 11/16/2009 | | ND<0.4 | ND<0.4 |
| | | | 6/30/2010 | | 0.57 J H | 0.57 J H |
| | | | 11/12/2010 | | 0.58 J | 0.58 J |
| MW-11R | 28 | 28 (100%) | 7/20/1995 | | ND<20 | ND<20 |
| | | | 8/24/1995 | | ND<20 | ND<20 |
| | | | 9/28/1995 | | ND<20 | ND<20 |
| | | | 10/26/1995 | | ND<20 | ND<20 |
| | | | 11/19/1996 | | ND<20 | ND<20 |
| | | | 12/19/1996 | | ND<20 | ND<20 |
| | | | 3/24/1997 | | ND<20 | ND<20 |
| | | | 9/24/1997 | | ND<20 | ND<20 |
| | | | 4/7/1998 | ND<20 | ND<20 | |
| | | | 9/23/1998 | | ND<20 | ND<20 |
| | | | 3/16/1999 | | ND<20 | ND<20 |
| | | | 9/23/1999 | | ND<20 | ND<20 |
| | | | 3/15/2000 | | ND<20 | ND<20 |
| | | | 9/24/2003 | | ND<20 | ND<20 |
| | | | 3/11/2004 | | ND<20 | ND<20 |
| | | | 10/12/2004 | | ND<20 | ND<20 |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | | ND<20 | ND<20 |
| | | | 4/29/2006 | | ND<20 | ND<20 |
| | | | 11/18/2006 | | ND<20 | ND<20 |
| | | | 5/23/2007 | | ND<20 | ND<20 |
| | | | 11/28/2007 | | ND<20 | ND<20 |
| | | | 6/5/2008 | ND<20 | ND<20 | |
| | | | 11/20/2008 | | ND<20 | ND<20 |
| | | | 6/11/2009 | | ND<0.4 | ND<0.4 |
| | | | 11/16/2009 | | ND<0.4 | ND<0.4 |
| | | | 6/30/2010 | | ND<0.4 | ND<0.4 |

| | | | |
|---|---|---|---|
| | 11/12/2010 | ND<0.4 U | ND<0.4 U |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. | Original |
|---|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: Tin

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.2 | -2.65209 | 7.03356 | -0.530417 |
| 2 | 0.2 | -2.36561 | 12.6297 | -1.00354 |
| 3 | 0.2 | -2.22621 | 17.5857 | -1.44878 |
| 4 | 0.2 | -2.09693 | 21.9828 | -1.86817 |
| 5 | 0.2 | -2.01409 | 26.0394 | -2.27099 |
| 6 | 0.2 | -1.92684 | 29.7521 | -2.65635 |
| 7 | 0.2 | -1.86629 | 33.2351 | -3.02961 |
| 8 | 0.2 | -1.79912 | 36.472 | -3.38944 |
| 9 | 0.2 | -1.75069 | 39.5369 | -3.73957 |
| 10 | 0.2 | -1.6954 | 42.4112 | -4.07865 |
| 11 | 0.2 | -1.65463 | 45.149 | -4.40958 |
| 12 | 0.2 | -1.60725 | 47.7323 | -4.73103 |
| 13 | 0.2 | -1.57179 | 50.2028 | -5.04539 |
| 14 | 0.2 | -1.53007 | 52.5439 | -5.3514 |
| 15 | 0.2 | -1.49852 | 54.7894 | -5.6511 |
| 16 | 0.2 | -1.46106 | 56.9241 | -5.94331 |
| 17 | 0.2 | -1.4325 | 58.9762 | -6.22981 |
| 18 | 0.2 | -1.39838 | 60.9316 | -6.50949 |
| 19 | 0.2 | -1.3722 | 62.8146 | -6.78393 |
| 20 | 0.2 | -1.34075 | 64.6122 | -7.05208 |
| 21 | 0.2 | -1.31652 | 66.3454 | -7.31539 |
| 22 | 0.2 | -1.28727 | 68.0025 | -7.57284 |
| 23 | 0.2 | -1.26464 | 69.6018 | -7.82577 |
| 24 | 0.2 | -1.23724 | 71.1326 | -8.07321 |
| 25 | 0.2 | -1.21596 | 72.6111 | -8.31641 |
| 26 | 0.2 | -1.19012 | 74.0275 | -8.55443 |
| 27 | 0.2 | -1.17 | 75.3964 | -8.78843 |
| 28 | 0.2 | -1.1455 | 76.7086 | -9.01753 |
| 29 | 0.2 | -1.12639 | 77.9774 | -9.24281 |
| 30 | 0.2 | -1.10306 | 79.1941 | -9.46342 |
| 31 | 0.2 | -1.08482 | 80.371 | -9.68039 |
| 32 | 0.45 | -1.06252 | 81.4999 | -10.1585 |
| 33 | 0.57 | -1.04505 | 82.592 | -10.7542 |
| 34 | 0.58 | -1.02365 | 83.6399 | -11.3479 |
| 35 | 0.73 | -1.00687 | 84.6537 | -12.0829 |
| 36 | 5.1 | -0.986272 | 85.6264 | -17.1129 |
| 37 | 10 | -0.970094 | 86.5675 | -26.8139 |
| 38 | 10 | -0.950222 | 87.4704 | -36.3161 |
| 39 | 10 | -0.93459 | 88.3439 | -45.662 |
| 40 | 10 | -0.915365 | 89.1818 | -54.8156 |
| 41 | 10 | -0.900227 | 89.9922 | -63.8179 |
| 42 | 10 | -0.881587 | 90.7694 | -72.6338 |
| 43 | 10 | -0.866894 | 91.5209 | -81.3027 |
| 44 | 10 | -0.848786 | 92.2413 | -89.7906 |
| 45 | 10 | -0.834498 | 92.9377 | -98.1355 |
| 46 | 10 | -0.816874 | 93.605 | -106.304 |
| 47 | 10 | -0.802956 | 94.2497 | -114.334 |
| 48 | 10 | -0.785774 | 94.8672 | -122.192 |
| 49 | 10 | -0.772193 | 95.4634 | -129.914 |

| | | | | |
|---|---|---|---|---|
| 50 | 10 | -0.755415 | 96.0341 | -137.468 |
| 51 | 10 | -0.742143 | 96.5849 | -144.889 |
| 52 | 10 | -0.725736 | 97.1116 | -152.146 |
| 53 | 10 | -0.712751 | 97.6196 | -159.274 |
| 54 | 10 | -0.696684 | 98.1049 | -166.241 |
| 55 | 10 | -0.683969 | 8.5727 | -173.08 |
| 56 | 10 | -0.668209 | 99.0192 | -179.763 |
| 57 | 10 | -0.655726 | 99.4492 | -186.32 |
| 58 | 10 | -0.640266 | 99.8592 | -192.722 |
| 59 | 10 | -0.628006 | 100.254 | -199.002 |
| 60 | 10 | -0.612813 | 100.629 | -205.131 |
| 61 | 10 | -0.60076 | 100.99 | -211.138 |
| 62 | 10 | -0.585815 | 101.333 | -216.996 |
| 63 | 10 | -0.573953 | 101.663 | -222.736 |
| 64 | 10 | -0.559237 | 101.975 | -228.328 |
| 65 | 10 | -0.547551 | 102.275 | -233.804 |
| 66 | 10 | -0.533048 | 102.559 | -239.134 |
| 67 | 10 | -0.521527 | 102.831 | -244.35 |
| 68 | 10 | -0.507221 | 103.089 | -249.422 |
| 69 | 10 | -0.49585 | 103.334 | -254.38 |
| 70 | 10 | -0.481728 | 103.566 | -259.197 |
| 71 | 10 | -0.470498 | 103.788 | -263.902 |
| 72 | 10 | -0.456542 | 103.996 | -268.468 |
| 73 | 10 | -0.445443 | 104.195 | -272.922 |
| 74 | 10 | -0.431644 | 104.381 | -277.239 |
| 75 | 10 | -0.420664 | 104.558 | -281.445 |
| 76 | 10 | -0.40701 | 104.724 | -285.516 |
| 77 | 10 | -0.396142 | 104.881 | -289.477 |
| 78 | 10 | -0.382622 | 105.027 | -293.303 |
| 79 | 10 | -0.371856 | 105.165 | -297.022 |
| 80 | 10 | -0.358459 | 105.294 | -300.606 |
| 81 | 10 | -0.347787 | 105.415 | -304.084 |
| 82 | 10 | -0.334503 | 105.527 | -307.429 |
| 83 | 10 | -0.323919 | 105.632 | -310.668 |
| 84 | 10 | -0.310738 | 105.728 | -313.776 |
| 85 | 10 | -0.300232 | 105.818 | -316.778 |
| 86 | 10 | -0.287147 | 105.901 | -319.65 |
| 87 | 10 | -0.276714 | 105.977 | -322.417 |
| 88 | 10 | -0.263715 | 106.047 | -325.054 |
| 89 | 10 | -0.253347 | 106.111 | -327.587 |
| 90 | 10 | -0.240426 | 106.169 | -329.992 |
| 91 | 10 | -0.230118 | 106.222 | -332.293 |
| 92 | 10 | -0.217267 | 106.269 | -334.465 |
| 93 | 10 | -0.207012 | 106.312 | -336.536 |
| 94 | 10 | -0.194225 | 106.35 | -338.478 |
| 95 | 10 | -0.184017 | 106.383 | -340.318 |
| 96 | 10 | -0.171285 | 106.413 | -342.031 |
| 97 | 10 | -0.161119 | 106.439 | -343.642 |
| 98 | 10 | -0.148434 | 106.461 | -345.126 |
| 99 | 10 | -0.138305 | 106.48 | -346.509 |
| 100 | 10 | -0.125661 | 106.496 | -347.766 |
| 101 | 10 | -0.115562 | 106.509 | -348.922 |
| 102 | 10 | -0.102953 | 106.52 | -349.951 |
| 103 | 10 | -0.0928787 | 106.528 | -350.88 |
| 104 | 10 | -0.0802981 | 106.535 | -351.683 |
| 105 | 10 | -0.0702426 | 106.54 | -352.385 |
| 106 | 10 | -0.0576847 | 106.543 | -352.962 |
| 107 | 10 | -0.0476439 | 106.545 | -353.439 |
| 108 | 10 | -0.0350997 | 106.546 | -353.79 |
| 109 | 10 | -0.0250691 | 106.547 | -354.04 |
| 110 | 10 | -0.0125328 | 106.547 | -354.166 |
| 111 | 10 | 0 | 106.547 | -354.166 |

| | | | | |
|---|---|---|---|---|
| 112 | 10 | 0.0125328 | 106.547 | -354.04 |
| 113 | 10 | 0.0250691 | 106.548 | -353.79 |
| 114 | 10 | 0.0350997 | 106.549 | -353.439 |
| 115 | 10 | 0.0476439 | 106.551 | -352.962 |
| 116 | 10 | 0.0576847 | 106.555 | -352.385 |
| 117 | 10 | 0.0702426 | 106.56 | -351.683 |
| 118 | 10 | 0.0802981 | 106.566 | -350.88 |
| 119 | 10 | 0.0928787 | 106.575 | -349.951 |
| 120 | 10 | 0.102953 | 106.585 | -348.922 |
| 121 | 10 | 0.115562 | 106.599 | -347.766 |
| 122 | 10 | 0.125661 | 106.615 | -346.509 |
| 123 | 10 | 0.138305 | 106.634 | -345.126 |
| 124 | 10 | 0.148434 | 106.656 | -343.642 |
| 125 | 10 | 0.161119 | 106.682 | -342.031 |
| 126 | 10 | 0.171285 | 106.711 | -340.318 |
| 127 | 10 | 0.184017 | 106.745 | -338.478 |
| 128 | 10 | 0.194225 | 106.783 | -336.536 |
| 129 | 10 | 0.207012 | 106.825 | -334.465 |
| 130 | 10 | 0.217267 | 106.873 | -332.293 |
| 131 | 10 | 0.230118 | 106.926 | -329.992 |
| 132 | 10 | 0.240426 | 106.983 | -327.587 |
| 133 | 10 | 0.253347 | 107.048 | -325.054 |
| 134 | 10 | 0.263715 | 107.117 | -322.417 |
| 135 | 10 | 0.276714 | 107.194 | -319.65 |
| 136 | 10 | 0.287147 | 107.276 | -316.778 |
| 137 | 10 | 0.300232 | 107.366 | -313.776 |
| 138 | 10 | 0.310738 | 107.463 | -310.668 |
| 139 | 10 | 0.323919 | 107.568 | -307.429 |
| 140 | 10 | 0.334503 | 107.68 | -304.084 |
| 141 | 10 | 0.347787 | 107.801 | -300.606 |
| 142 | 10 | 0.358459 | 107.929 | -297.022 |
| 143 | 10 | 0.371856 | 108.067 | -293.303 |
| 144 | 10 | 0.382622 | 108.214 | -289.477 |
| 145 | 10 | 0.396142 | 108.371 | -285.516 |
| 146 | 10 | 0.40701 | 108.536 | -281.445 |
| 147 | 10 | 0.420664 | 108.713 | -277.239 |
| 148 | 10 | 0.431644 | 108.9 | -272.922 |
| 149 | 10 | 0.445443 | 109.098 | -268.468 |
| 150 | 10 | 0.456542 | 109.307 | -263.902 |
| 151 | 10 | 0.470498 | 109.528 | -259.197 |
| 152 | 10 | 0.481728 | 109.76 | -254.38 |
| 153 | 10 | 0.49585 | 110.006 | -249.422 |
| 154 | 10 | 0.507221 | 110.263 | -244.35 |
| 155 | 10 | 0.521527 | 110.535 | -239.134 |
| 156 | 10 | 0.533048 | 110.819 | -233.804 |
| 157 | 10 | 0.547551 | 111.119 | -228.328 |
| 158 | 10 | 0.559237 | 111.432 | -222.736 |
| 159 | 10 | 0.573953 | 111.761 | -216.996 |
| 160 | 10 | 0.585815 | 112.104 | -211.138 |
| 161 | 10 | 0.60076 | 112.465 | -205.131 |
| 162 | 10 | 0.612813 | 112.841 | -199.002 |
| 163 | 10 | 0.628006 | 113.235 | -192.722 |
| 164 | 10 | 0.640266 | 113.645 | -186.32 |
| 165 | 10 | 0.655726 | 114.075 | -179.763 |
| 166 | 10 | 0.668209 | 114.522 | -173.08 |
| 167 | 10 | 0.68396 | 114.989 | -166.241 |
| 168 | 10 | 0.696684 | 115.475 | -159.274 |
| 169 | 10 | 0.712751 | 115.983 | -152.146 |
| 170 | 10 | 0.725736 | 116.51 | -144.889 |
| 171 | 10 | 0.742143 | 117.06 | -137.468 |
| 172 | 10 | 0.755415 | 117.631 | -129.914 |
| 173 | 10 | 0.772193 | 118.227 | -122.192 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 10 | 0.785774 | | 118.845 | -114.334 |
| 175 | 10 | 0.802956 | | 119.489 | -106.304 |
| 176 | 10 | 0.816874 | | 120.157 | -98.1355 |
| 177 | 10 | 0.834498 | | 120.853 | -89.7906 |
| 178 | 10 | 0.848786 | | 121.574 | -81.3027 |
| 179 | 10 | 0.866894 | | 122.325 | -72.6338 |
| 180 | 10 | 0.881587 | | 123.102 | -63.8179 |
| 181 | 10 | 0.900227 | | 123.913 | -54.8156 |
| 182 | 10 | 0.915365 | | 124.751 | -45.662 |
| 183 | 10 | 0.93459 | 125.624 | -36.3161 | |
| 184 | 10 | 0.950222 | | 126.527 | -26.8139 |
| 185 | 10 | 0.970094 | | 127.468 | -17.1129 |
| 186 | 10 | 0.986272 | | 128.441 | -7.2502 |
| 187 | 10 | 1.00687 | 129.455 | 2.81846 | |
| 188 | 10 | 1.02365 | 130.502 | 13.055 | |
| 189 | 10 | 1.04505 | 131.594 | 23.5055 | |
| 190 | 10 | 1.06252 | 132.723 | 34.1307 | |
| 191 | 10 | 1.08482 | 133.9 | 44.9789 | |
| 192 | 10 | 1.10306 | 135.117 | 56.0095 | |
| 193 | 10 | 1.12639 | 136.386 | 67.2734 | |
| 194 | 10 | 1.1455 | 137.698 | 78.7285 | |
| 195 | 10 | 1.17 | 139.067 | 90.4285 | |
| 196 | 10 | 1.19012 | 140.483 | 102.33 | |
| 197 | 10 | 1.21596 | 141.962 | 114.489 | |
| 198 | 10 | 1.23724 | 143.493 | 126.862 | |
| 199 | 10 | 1.26464 | 145.092 | 139.508 | |
| 200 | 10 | 1.28727 | 146.749 | 152.381 | |
| 201 | 10 | 1.31652 | 148.482 | 165.546 | |
| 202 | 10 | 1.34075 | 150.28 | 178.954 | |
| 203 | 10 | 1.3722 | 152.163 | 192.676 | |
| 204 | 10 | 1.39838 | 154.118 | 206.659 | |
| 205 | 10 | 1.4325 | 156.17 | 220.984 | |
| 206 | 10 | 1.46106 | 158.305 | 235.595 | |
| 207 | 10 | 1.49852 | 160.551 | 250.58 | |
| 208 | 10 | 1.53007 | 162.892 | 265.881 | |
| 209 | 10 | 1.57179 | 165.362 | 281.599 | |
| 210 | 10 | 1.60725 | 167.945 | 297.671 | |
| 211 | 10 | 1.65463 | 170.683 | 314.217 | |
| 212 | 10 | 1.6954 | 173.558 | 331.171 | |
| 213 | 10 | 1.75069 | 176.622 | 348.678 | |
| 214 | 10 | 1.79912 | 179.859 | 366.669 | |
| 215 | 10 | 1.86629 | 183.342 | 385.332 | |
| 216 | 10 | 1.92684 | 187.055 | 404.601 | |
| 217 | 10 | 2.01409 | 191.112 | 424.742 | |
| 218 | 10 | 2.09693 | 195.509 | 445.711 | |
| 219 | 10 | 2.22621 | 200.465 | 467.973 | |
| 220 | 14 | 2.36561 | 206.061 | 501.092 | |
| 221 | 35 | 2.65209 | 213.094 | 593.915 | |

Data Set Standard Deviation = 4.01207
Numerator = 352735
Denominator = 754628
W Statistic = 0.467429 = 352735 / 754628

5% Critical value of 0.976 exceeds 0.467429
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.467429
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: Tin

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | -1.60944 | -2.65209 | 7.03356 | 4.26837 |
| 2 | -1.60944 | -2.36561 | 12.6297 | 8.07568 |
| 3 | -1.60944 | -2.22621 | 17.5857 | 11.6586 |
| 4 | -1.60944 | -2.09693 | 21.9828 | 15.0335 |
| 5 | -1.60944 | -2.01409 | 26.0394 | 18.2751 |
| 6 | -1.60944 | -1.92684 | 29.7521 | 21.3762 |
| 7 | -1.60944 | -1.86629 | 33.2351 | 24.3799 |
| 8 | -1.60944 | -1.79912 | 36.472 | 27.2754 |
| 9 | -1.60944 | -1.75069 | 39.5369 | 30.0931 |
| 10 | -1.60944 | -1.6954 | 42.4112 | 32.8217 |
| 11 | -1.60944 | -1.65463 | 45.149 | 35.4847 |
| 12 | -1.60944 | -1.60725 | 47.7323 | 38.0715 |
| 13 | -1.60944 | -1.57179 | 50.2028 | 40.6012 |
| 14 | -1.60944 | -1.53007 | 52.5439 | 43.0637 |
| 15 | -1.60944 | -1.49852 | 54.7894 | 45.4755 |
| 16 | -1.60944 | -1.46106 | 56.9241 | 47.827 |
| 17 | -1.60944 | -1.4325 | 58.9762 | 50.1325 |
| 18 | -1.60944 | -1.39838 | 60.9316 | 52.3831 |
| 19 | -1.60944 | -1.3722 | 62.8146 | 54.5916 |
| 20 | -1.60944 | -1.34075 | 64.6122 | 56.7494 |
| 21 | -1.60944 | -1.31652 | 66.3454 | 58.8683 |
| 22 | -1.60944 | -1.28727 | 68.0025 | 60.9401 |
| 23 | -1.60944 | -1.26464 | 69.6018 | 62.9754 |
| 24 | -1.60944 | -1.23724 | 71.1326 | 64.9667 |
| 25 | -1.60944 | -1.21596 | 72.6111 | 66.9237 |
| 26 | -1.60944 | -1.19012 | 74.0275 | 68.8391 |
| 27 | -1.60944 | -1.17 | 75.3964 | 70.7222 |
| 28 | -1.60944 | -1.1455 | 76.7086 | 72.5658 |
| 29 | -1.60944 | -1.12639 | 77.9774 | 74.3786 |
| 30 | -1.60944 | -1.10306 | 79.1941 | 76.154 |
| 31 | -1.60944 | -1.08482 | 80.371 | 77.8999 |
| 32 | -0.798508 | -1.06252 | 81.4999 | 78.7483 |
| 33 | -0.562119 | -1.04505 | 82.592 | 79.3358 |
| 34 | -0.544727 | -1.02365 | 83.6399 | 79.8934 |
| 35 | -0.314711 | -1.00687 | 84.6537 | 80.2103 |
| 36 | 1.62924 | -0.986272 | 85.6264 | 78.6034 |
| 37 | 2.30259 | -0.970094 | 86.5675 | 76.3697 |
| 38 | 2.30259 | -0.950222 | 87.4704 | 74.1817 |
| 39 | 2.30259 | -0.934598 | 88.3439 | 72.0297 |
| 40 | 2.30259 | -0.915365 | 89.1818 | 69.922 |
| 41 | 2.30259 | -0.900227 | 89.9922 | 67.8492 |
| 42 | 2.30259 | -0.881587 | 90.7694 | 65.8192 |
| 43 | 2.30259 | -0.866894 | 91.5209 | 63.8231 |
| 44 | 2.30259 | -0.848786 | 92.2413 | 61.8687 |
| 45 | 2.30259 | -0.834498 | 92.9377 | 59.9472 |
| 46 | 2.30259 | -0.816874 | 93.605 | 58.0663 |
| 47 | 2.30259 | -0.802956 | 94.2497 | 56.2174 |
| 48 | 2.30259 | -0.785774 | 94.8672 | 54.4081 |
| 49 | 2.30259 | -0.772193 | 95.4634 | 52.6301 |

| | | | | |
|---|---|---|---|---|
| 50 | 2.30259 | -0.755415 | 96.0341 | 50.8907 |
| 51 | 2.30259 | -0.742143 | 96.5849 | 49.1818 |
| 52 | 2.30259 | -0.725736 | 97.1116 | 47.5108 |
| 53 | 2.30259 | -0.712751 | 97.6196 | 45.8696 |
| 54 | 2.30259 | -0.696684 | 98.1049 | 44.2654 |
| 55 | 2.30259 | -0.683969 | 8.5727 | 42.6905 |
| 56 | 2.30259 | -0.668209 | 99.0192 | 41.1519 |
| 57 | 2.30259 | -0.655726 | 99.4492 | 39.6421 |
| 58 | 2.30259 | -0.640266 | 99.8592 | 38.1678 |
| 59 | 2.30259 | -0.628006 | 100.254 | 36.7218 |
| 60 | 2.30259 | -0.612813 | 100.629 | 35.3107 |
| 61 | 2.30259 | -0.60076 | 100.99 | 33.9274 |
| 62 | 2.30259 | -0.585815 | 101.333 | 32.5785 |
| 63 | 2.30259 | -0.573953 | 101.663 | 31.257 |
| 64 | 2.30259 | -0.559237 | 101.975 | 29.9693 |
| 65 | 2.30259 | -0.547551 | 102.275 | 28.7085 |
| 66 | 2.30259 | -0.533048 | 102.559 | 27.4811 |
| 67 | 2.30259 | -0.521527 | 102.831 | 26.2802 |
| 68 | 2.30259 | -0.507221 | 103.089 | 25.1123 |
| 69 | 2.30259 | -0.49585 | 103.334 | 23.9706 |
| 70 | 2.30259 | -0.481728 | 103.566 | 22.8614 |
| 71 | 2.30259 | -0.470498 | 103.788 | 21.778 |
| 72 | 2.30259 | -0.456542 | 103.996 | 20.7268 |
| 73 | 2.30259 | -0.445443 | 104.195 | 19.7011 |
| 74 | 2.30259 | -0.431644 | 104.381 | 18.7072 |
| 75 | 2.30259 | -0.420664 | 104.558 | 17.7386 |
| 76 | 2.30259 | -0.40701 | 104.724 | 16.8014 |
| 77 | 2.30259 | -0.396142 | 104.881 | 15.8893 |
| 78 | 2.30259 | -0.382622 | 105.027 | 15.0082 |
| 79 | 2.30259 | -0.371856 | 105.165 | 14.152 |
| 80 | 2.30259 | -0.358459 | 105.294 | 13.3266 |
| 81 | 2.30259 | -0.347787 | 105.415 | 12.5258 |
| 82 | 2.30259 | -0.334503 | 105.527 | 11.7556 |
| 83 | 2.30259 | -0.323919 | 105.632 | 11.0097 |
| 84 | 2.30259 | -0.310738 | 105.728 | 10.2942 |
| 85 | 2.30259 | -0.300232 | 105.818 | 9.60293 |
| 86 | 2.30259 | -0.287147 | 105.901 | 8.94175 |
| 87 | 2.30259 | -0.276714 | 105.977 | 8.30459 |
| 88 | 2.30259 | -0.263715 | 106.047 | 7.69737 |
| 89 | 2.30259 | -0.253347 | 106.111 | 7.11402 |
| 90 | 2.30259 | -0.240426 | 106.169 | 6.56042 |
| 91 | 2.30259 | -0.230118 | 106.222 | 6.03055 |
| 92 | 2.30259 | -0.217267 | 106.269 | 5.53027 |
| 93 | 2.30259 | -0.207012 | 106.312 | 5.05361 |
| 94 | 2.30259 | -0.194225 | 106.35 | 4.60639 |
| 95 | 2.30259 | -0.184017 | 106.383 | 4.18268 |
| 96 | 2.30259 | -0.171285 | 106.413 | 3.78828 |
| 97 | 2.30259 | -0.161119 | 106.439 | 3.41729 |
| 98 | 2.30259 | -0.148434 | 106.461 | 3.0755 |
| 99 | 2.30259 | -0.138305 | 106.48 | 2.75705 |
| 100 | 2.30259 | -0.125661 | 106.496 | 2.4677 |
| 101 | 2.30259 | -0.115562 | 106.509 | 2.20161 |
| 102 | 2.30259 | -0.102953 | 106.52 | 1.96455 |
| 103 | 2.30259 | -0.0928787 | 106.528 | 1.75069 |
| 104 | 2.30259 | -0.0802981 | 106.535 | 1.5658 |
| 105 | 2.30259 | -0.0702426 | 106.54 | 1.40406 |
| 106 | 2.30259 | -0.0576847 | 106.543 | 1.27124 |
| 107 | 2.30259 | -0.0476439 | 106.545 | 1.16153 |
| 108 | 2.30259 | -0.0350997 | 106.546 | 1.08071 |
| 109 | 2.30259 | -0.0250691 | 106.547 | 1.02299 |
| 110 | 2.30259 | -0.0125328 | 106.547 | 0.994129 |
| 111 | 2.30259 | 0 | 106.547 | 0.994129 |

| | | | | |
|---|---|---|---|---|
| 112 | 2.30259 | 0.0125328 | 106.547 | 1.02299 |
| 113 | 2.30259 | 0.0250691 | 106.548 | 1.08071 |
| 114 | 2.30259 | 0.0350997 | 106.549 | 1.16153 |
| 115 | 2.30259 | 0.0476439 | 106.551 | 1.27124 |
| 116 | 2.30259 | 0.0576847 | 106.555 | 1.40406 |
| 117 | 2.30259 | 0.0702426 | 106.56 | 1.5658 |
| 118 | 2.30259 | 0.0802981 | 106.566 | 1.75069 |
| 119 | 2.30259 | 0.0928787 | 106.575 | 1.96455 |
| 120 | 2.30259 | 0.102953 | 106.585 | 2.20161 |
| 121 | 2.30259 | 0.115562 | 106.599 | 2.4677 |
| 122 | 2.30259 | 0.125661 | 106.615 | 2.75705 |
| 123 | 2.30259 | 0.138305 | 106.634 | 3.0755 |
| 124 | 2.30259 | 0.148434 | 106.656 | 3.41729 |
| 125 | 2.30259 | 0.161119 | 106.682 | 3.78828 |
| 126 | 2.30259 | 0.171285 | 106.711 | 4.18268 |
| 127 | 2.30259 | 0.184017 | 106.745 | 4.60639 |
| 128 | 2.30259 | 0.194225 | 106.783 | 5.05361 |
| 129 | 2.30259 | 0.207012 | 106.825 | 5.53027 |
| 130 | 2.30259 | 0.217267 | 106.873 | 6.03055 |
| 131 | 2.30259 | 0.230118 | 106.926 | 6.56042 |
| 132 | 2.30259 | 0.240426 | 106.983 | 7.11402 |
| 133 | 2.30259 | 0.253347 | 107.048 | 7.69737 |
| 134 | 2.30259 | 0.263715 | 107.117 | 8.30459 |
| 135 | 2.30259 | 0.276714 | 107.194 | 8.94175 |
| 136 | 2.30259 | 0.287147 | 107.276 | 9.60293 |
| 137 | 2.30259 | 0.300232 | 107.366 | 10.2942 |
| 138 | 2.30259 | 0.310738 | 107.463 | 11.0097 |
| 139 | 2.30259 | 0.323919 | 107.568 | 11.7556 |
| 140 | 2.30259 | 0.334503 | 107.68 | 12.5258 |
| 141 | 2.30259 | 0.347787 | 107.801 | 13.3266 |
| 142 | 2.30259 | 0.358459 | 107.929 | 14.152 |
| 143 | 2.30259 | 0.371856 | 108.067 | 15.0082 |
| 144 | 2.30259 | 0.382622 | 108.214 | 15.8893 |
| 145 | 2.30259 | 0.396142 | 108.371 | 16.8014 |
| 146 | 2.30259 | 0.40701 | 108.536 | 17.7386 |
| 147 | 2.30259 | 0.420664 | 108.713 | 18.7072 |
| 148 | 2.30259 | 0.431644 | 108.9 | 19.7011 |
| 149 | 2.30259 | 0.445443 | 109.098 | 20.7268 |
| 150 | 2.30259 | 0.456542 | 109.307 | 21.778 |
| 151 | 2.30259 | 0.470498 | 109.528 | 22.8614 |
| 152 | 2.30259 | 0.481728 | 109.76 | 23.9706 |
| 153 | 2.30259 | 0.49585 | 110.006 | 25.1123 |
| 154 | 2.30259 | 0.507221 | 110.263 | 26.2802 |
| 155 | 2.30259 | 0.521527 | 110.535 | 27.4811 |
| 156 | 2.30259 | 0.533048 | 110.819 | 28.7085 |
| 157 | 2.30259 | 0.547551 | 111.119 | 29.9693 |
| 158 | 2.30259 | 0.559237 | 111.432 | 31.257 |
| 159 | 2.30259 | 0.573953 | 111.761 | 32.5785 |
| 160 | 2.30259 | 0.585815 | 112.104 | 33.9274 |
| 161 | 2.30259 | 0.60076 | 112.465 | 35.3107 |
| 162 | 2.30259 | 0.612813 | 112.841 | 36.7218 |
| 163 | 2.30259 | 0.628006 | 113.235 | 38.1678 |
| 164 | 2.30259 | 0.640266 | 113.645 | 39.6421 |
| 165 | 2.30259 | 0.655726 | 114.075 | 41.1519 |
| 166 | 2.30259 | 0.668209 | 114.522 | 42.6905 |
| 167 | 2.30259 | 0.68396 | 114.989 | 44.2654 |
| 168 | 2.30259 | 0.696684 | 115.475 | 45.8696 |
| 169 | 2.30259 | 0.712751 | 115.983 | 47.5108 |
| 170 | 2.30259 | 0.725736 | 116.51 | 49.1818 |
| 171 | 2.30259 | 0.742143 | 117.06 | 50.8907 |
| 172 | 2.30259 | 0.755415 | 117.631 | 52.6301 |
| 173 | 2.30259 | 0.772193 | 118.227 | 54.4081 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 2.30259 | 0.785774 | | 118.845 | 56.2174 |
| 175 | 2.30259 | 0.802956 | | 119.489 | 58.0663 |
| 176 | 2.30259 | 0.816874 | | 120.157 | 59.9472 |
| 177 | 2.30259 | 0.834498 | | 120.853 | 61.8687 |
| 178 | 2.30259 | 0.848786 | | 121.574 | 63.8231 |
| 179 | 2.30259 | 0.866894 | | 122.325 | 65.8192 |
| 180 | 2.30259 | 0.881587 | | 123.102 | 67.8492 |
| 181 | 2.30259 | 0.900227 | | 123.913 | 69.922 |
| 182 | 2.30259 | 0.915365 | | 124.751 | 72.0297 |
| 183 | 2.30259 | 0.93459 | 125.624 | 74.1817 | |
| 184 | 2.30259 | 0.950222 | | 126.527 | 76.3697 |
| 185 | 2.30259 | 0.970094 | | 127.468 | 78.6034 |
| 186 | 2.30259 | 0.986272 | | 128.441 | 80.8744 |
| 187 | 2.30259 | 1.00687 | 129.455 | 83.1928 | |
| 188 | 2.30259 | 1.02365 | 130.502 | 85.5498 | |
| 189 | 2.30259 | 1.04505 | 131.594 | 87.9561 | |
| 190 | 2.30259 | 1.06252 | 132.723 | 90.4027 | |
| 191 | 2.30259 | 1.08482 | 133.9 | 92.9006 | |
| 192 | 2.30259 | 1.10306 | 135.117 | 95.4405 | |
| 193 | 2.30259 | 1.12639 | 136.386 | 98.0341 | |
| 194 | 2.30259 | 1.1455 | 137.698 | 100.672 | |
| 195 | 2.30259 | 1.17 | 139.067 | 103.366 | |
| 196 | 2.30259 | 1.19012 | 140.483 | 106.106 | |
| 197 | 2.30259 | 1.21596 | 141.962 | 108.906 | |
| 198 | 2.30259 | 1.23724 | 143.493 | 111.755 | |
| 199 | 2.30259 | 1.26464 | 145.092 | 114.667 | |
| 200 | 2.30259 | 1.28727 | 146.749 | 117.631 | |
| 201 | 2.30259 | 1.31652 | 148.482 | 120.662 | |
| 202 | 2.30259 | 1.34075 | 150.28 | 123.749 | |
| 203 | 2.30259 | 1.3722 | 152.163 | 126.909 | |
| 204 | 2.30259 | 1.39838 | 154.118 | 130.129 | |
| 205 | 2.30259 | 1.4325 | 156.17 | 133.427 | |
| 206 | 2.30259 | 1.46106 | 158.305 | 136.792 | |
| 207 | 2.30259 | 1.49852 | 160.551 | 140.242 | |
| 208 | 2.30259 | 1.53007 | 162.892 | 143.765 | |
| 209 | 2.30259 | 1.57179 | 165.362 | 147.384 | |
| 210 | 2.30259 | 1.60725 | 167.945 | 151.085 | |
| 211 | 2.30259 | 1.65463 | 170.683 | 154.895 | |
| 212 | 2.30259 | 1.6954 | 173.558 | 158.799 | |
| 213 | 2.30259 | 1.75069 | 176.622 | 162.83 | |
| 214 | 2.30259 | 1.79912 | 179.859 | 166.973 | |
| 215 | 2.30259 | 1.86629 | 183.342 | 171.27 | |
| 216 | 2.30259 | 1.92684 | 187.055 | 175.707 | |
| 217 | 2.30259 | 2.01409 | 191.112 | 180.344 | |
| 218 | 2.30259 | 2.09693 | 195.509 | 185.173 | |
| 219 | 2.30259 | 2.22621 | 200.465 | 190.299 | |
| 220 | 2.63906 | 2.36561 | 206.061 | 196.542 | |
| 221 | 3.55535 | 2.65209 | 213.094 | 205.971 | |

Data Set Standard Deviation = 1.39927
Numerator = 42423.9
Denominator = 91790.6
W Statistic = 0.462181 = 42423.9 / 91790.6

5% Critical value of 0.976 exceeds 0.462181
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.462181
Evidence of non-normality at 99% level of significance

# Non-Parametric Prediction Interval

## Inter-Well Comparison

## Parameter: Tin

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 96.8326%
Number of comparisons = 8
Future Samples (k) = 8
Recent Dates = 1
Background Samples (n) = 18
Maximum Background Concentration = 2.30259
Confidence Level = 69.2%
False Positive Rate = 30.8%

| Location | Date | Samples | Mean | Significant |
|---|---|---|---|---|
| MW-12BR | 11/12/2010 | 1 | -1.60944 | FALSE |
| MW-10 | 11/12/2010 | 1 | -0.314711 | FALSE |
| MW-12AR | 11/12/2010 | 1 | -1.60944 | FALSE |
| MW-6 | 11/12/2010 | 1 | -1.60944 | FALSE |
| MW-7 | 11/12/2010 | 1 | -1.60944 | FALSE |
| MW-8 | 11/12/2010 | 1 | -1.60944 | FALSE |
| MW-9 | 11/12/2010 | 1 | -0.544727 | FALSE |
| MW-11R | 11/12/2010 | 1 | -1.60944 | FALSE |

# Concentrations (ppb)

## Parameter: Toluene

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 193
Percent Non-Detects: 87.3303%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 17 (94.4444%) | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | 1.15 J | 1.15 J |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.33 | ND<0.33 |
| | | | 11/16/2009 | ND<0.33 | ND<0.33 |
| | | | 6/30/2010 | ND<0.33 | ND<0.33 |
| | | | 11/12/2010 | ND<0.33 U | ND<0.33 U |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-7 | 28 | 23 (82.1429%) | 7/20/1995 | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 |
| | | | 9/28/1995 | ND<2 | ND<2 |
| | | | 10/26/1995 | ND<2 | ND<2 |
| | | | 11/19/1996 | ND<2 | ND<2 |
| | | | 12/19/1996 | ND<2 | ND<2 |
| | | | 3/24/1997 | ND<2 | ND<2 |
| | | | 9/24/1997 | ND<2 | ND<2 |
| | | | 4/7/1998 | ND<2 | ND<2 |
| | | | 9/23/1998 | ND<2 | ND<2 |
| | | | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | 0.26 J | 0.26 J |
| | | | 4/29/2006 | 0.39 J | 0.39 J |
| | | | 11/18/2006 | 0.51 J | 0.51 J |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | 0.27 J | 0.27 J |
| | | | 6/5/2008 | ND<2 | ND<2 |

| | | | | | |
|---|---|---|---|---|---|
| | | 11/20/2008 | 0.29 J | 0.29 J | |
| | | 6/11/2009 | ND<0.33 | | ND<0.33 |
| | | 11/16/2009 | ND<0.33 | | ND<0.33 |
| | | 6/30/2010 | ND<0.33 | | ND<0.33 |
| | | 11/12/2010 | ND<0.33 U | | ND<0.33 U |
| MW-11R | 28 | 26 (92.8571%) | 7/20/1995 | ND<2 | ND<2 |
| | | 8/24/1995 | ND<2 | ND<2 | |
| | | 9/28/1995 | ND<2 | ND<2 | |
| | | 10/26/1995 | ND<2 | ND<2 | |
| | | 11/19/1996 | ND<2 | ND<2 | |
| | | 12/19/1996 | ND<2 | ND<2 | |
| | | 3/24/1997 | ND<2 | ND<2 | |
| | | 9/24/1997 | ND<2 | ND<2 | |
| | | 4/7/1998 | ND<2 | ND<2 | |
| | | 9/23/1998 | ND<2 | ND<2 | |
| | | 3/16/1999 | ND<2 | ND<2 | |
| | | 9/23/1999 | ND<2 | ND<2 | |
| | | 3/15/2000 | ND<2 | ND<2 | |
| | | 9/24/2003 | ND<2 | ND<2 | |
| | | 3/11/2004 | ND<2 | ND<2 | |
| | | 10/12/2004 | ND<2 | ND<2 | |
| | | 4/1/2005 | ND<2 | ND<2 | |
| | | 10/25/2005 | ND<2 | ND<2 | |
| | | 4/29/2006 | 3.16 | 3.16 | |
| | | 11/18/2006 | ND<2 | ND<2 | |
| | | 5/23/2007 | ND<2 | ND<2 | |
| | | 11/28/2007 | 0.55 J | 0.55 J | |
| | | 6/5/2008 | ND<2 | ND<2 | |
| | | 11/20/2008 | ND<2 | ND<2 | |
| | | 6/11/2009 | ND<0.33 | | ND<0.33 |
| | | 11/16/2009 | ND<0.33 | | ND<0.33 |
| | | 6/30/2010 | ND<0.33 | | ND<0.33 |
| | | 11/12/2010 | ND<0.33 U | | ND<0.33 U |
| MW-12AR | 18 | 17 (94.4444%) | 3/16/1999 | ND<2 | ND<2 |
| | | 9/23/1999 | ND<2 | ND<2 | |
| | | 3/15/2000 | ND<2 | ND<2 | |
| | | 9/24/2003 | ND<2 | ND<2 | |
| | | 3/11/2004 | ND<2 | ND<2 | |
| | | 10/12/2004 | ND<2 | ND<2 | |
| | | 4/1/2005 | ND<2 | ND<2 | |
| | | 10/25/2005 | ND<2 | ND<2 | |
| | | 4/29/2006 | 0.37 J | 0.37 J | |
| | | 11/18/2006 | ND<2 | ND<2 | |
| | | 5/23/2007 | ND<2 | ND<2 | |
| | | 11/28/2007 | ND<2 | ND<2 | |
| | | 6/5/2008 | ND<2 | ND<2 | |
| | | 11/20/2008 | ND<2 | ND<2 | |
| | | 6/11/2009 | ND<0.33 | | ND<0.33 |
| | | 11/16/2009 | ND<0.33 | | ND<0.33 |
| | | 6/30/2010 | ND<0.33 | | ND<0.33 |
| | | 11/12/2010 | ND<0.33 U | | ND<0.33 U |
| MW-12BR | 18 | 17 (94.4444%) | 3/16/1999 | ND<2 | ND<2 |
| | | 9/23/1999 | ND<2 | ND<2 | |
| | | 3/15/2000 | ND<2 | ND<2 | |
| | | 9/24/2003 | ND<2 | ND<2 | |
| | | 3/11/2004 | ND<2 | ND<2 | |
| | | 10/12/2004 | ND<2 | ND<2 | |
| | | 4/1/2005 | ND<2 | ND<2 | |
| | | 10/25/2005 | ND<2 | ND<2 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 4/29/2006 | 0.24 J | 0.24 J | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.33 | | ND<0.33 |
| | | | 11/16/2009 | ND<0.33 | | ND<0.33 |
| | | | 6/30/2010 | ND<0.33 | | ND<0.33 |
| | | | 11/12/2010 | ND<0.33 U | | ND<0.33 U |
| MW-10 | 28 | 27 (96.4286%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | 0.35 J | 0.35 J | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.33 | | ND<0.33 |
| | | | 11/16/2009 | ND<0.33 | | ND<0.33 |
| | | | 6/30/2010 | ND<0.33 | | ND<0.33 |
| | | | 11/12/2010 | ND<0.33 U | | ND<0.33 U |
| MW-6 | 28 | 27 (96.4286%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | 0.43 J | 0.43 J | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.33 | | ND<0.33 |
| | | | 11/16/2009 | ND<0.33 | | ND<0.33 |
| | | | 6/30/2010 | ND<0.33 | | ND<0.33 |
| | | | 11/12/2010 | ND<0.33 U | | ND<0.33 U |
| MW-8 | 27 | 16 (59.2593%) | 7/20/1995 | | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | 5 | 5 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 0.22 J | 0.22 J | |
| | | | 10/25/2005 | 0.55 J | 0.55 J | |
| | | | 4/29/2006 | 0.58 J | 0.58 J | |
| | | | 11/18/2006 | 0.49 J | 0.49 J | |
| | | | 5/23/2007 | 1.2 J | 1.2 J | |
| | | | 11/28/2007 | 0.85 J | 0.85 J | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | 1.34 J | 1.34 J | |
| | | | 6/11/2009 | 1 | 1 | |
| | | | 6/30/2010 | 0.39 J | 0.39 J | |
| | | | 11/12/2010 | 0.44 J | 0.44 J | |
| MW-9 | 28 | 23 (82.1429%) | 7/20/1995 | | 0.26 J | 0.26 J |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | 0.46 J | 0.46 J | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | 0.2 J | 0.2 J | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | 0.33 J | 0.33 J | |
| | | | 6/11/2009 | 0.35 J | 0.35 J | |
| | | | 11/16/2009 | ND<0.33 | | ND<0.33 |
| | | | 6/30/2010 | ND<0.33 | | ND<0.33 |

| | | | |
|---|---|---|---|
| | 11/12/2010 | ND<0.33 U | ND<0.33 U |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. | Original |
|---|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: Toluene

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.165 | -2.65209 | 7.03356 | -0.437594 |
| 2 | 0.165 | -2.36561 | 12.6297 | -0.827921 |
| 3 | 0.165 | -2.22621 | 17.5857 | -1.19524 |
| 4 | 0.165 | -2.09693 | 21.9828 | -1.54124 |
| 5 | 0.165 | -2.01409 | 26.0394 | -1.87356 |
| 6 | 0.165 | -1.92684 | 29.7521 | -2.19149 |
| 7 | 0.165 | -1.86629 | 33.2351 | -2.49943 |
| 8 | 0.165 | -1.79912 | 36.472 | -2.79628 |
| 9 | 0.165 | -1.75069 | 39.5369 | -3.08515 |
| 10 | 0.165 | -1.6954 | 42.4112 | -3.36489 |
| 11 | 0.165 | -1.65463 | 45.149 | -3.6379 |
| 12 | 0.165 | -1.60725 | 47.7323 | -3.9031 |
| 13 | 0.165 | -1.57179 | 50.2028 | -4.16244 |
| 14 | 0.165 | -1.53007 | 52.5439 | -4.4149 |
| 15 | 0.165 | -1.49852 | 54.7894 | -4.66216 |
| 16 | 0.165 | -1.46106 | 56.9241 | -4.90323 |
| 17 | 0.165 | -1.4325 | 58.9762 | -5.1396 |
| 18 | 0.165 | -1.39838 | 60.9316 | -5.37033 |
| 19 | 0.165 | -1.3722 | 62.8146 | -5.59674 |
| 20 | 0.165 | -1.34075 | 64.6122 | -5.81797 |
| 21 | 0.165 | -1.31652 | 66.3454 | -6.03519 |
| 22 | 0.165 | -1.28727 | 68.0025 | -6.24759 |
| 23 | 0.165 | -1.26464 | 69.6018 | -6.45626 |
| 24 | 0.165 | -1.23724 | 71.1326 | -6.6604 |
| 25 | 0.165 | -1.21596 | 72.6111 | -6.86104 |
| 26 | 0.165 | -1.19012 | 74.0275 | -7.05741 |
| 27 | 0.165 | -1.17 | 75.3964 | -7.25046 |
| 28 | 0.165 | -1.1455 | 76.7086 | -7.43946 |
| 29 | 0.165 | -1.12639 | 77.9774 | -7.62532 |
| 30 | 0.165 | -1.10306 | 79.1941 | -7.80732 |
| 31 | 0.165 | -1.08482 | 80.371 | -7.98632 |
| 32 | 0.2 | -1.06252 | 81.4999 | -8.19882 |
| 33 | 0.22 | -1.04505 | 82.592 | -8.42873 |
| 34 | 0.24 | -1.02365 | 83.6399 | -8.67441 |
| 35 | 0.26 | -1.00687 | 84.6537 | -8.9362 |
| 36 | 0.26 | -0.986272 | 85.6264 | -9.19263 |
| 37 | 0.27 | -0.970094 | 86.5675 | -9.45455 |
| 38 | 0.29 | -0.950222 | 87.4704 | -9.73012 |
| 39 | 0.33 | -0.93459 | 88.3439 | -10.0385 |
| 40 | 0.35 | -0.915365 | 89.1818 | -10.3589 |
| 41 | 0.35 | -0.900227 | 89.9922 | -10.674 |
| 42 | 0.37 | -0.881587 | 90.7694 | -11.0002 |
| 43 | 0.39 | -0.866894 | 91.5209 | -11.3383 |
| 44 | 0.39 | -0.848786 | 92.2413 | -11.6693 |
| 45 | 0.43 | -0.834498 | 92.9377 | -12.0281 |
| 46 | 0.44 | -0.816874 | 93.605 | -12.3875 |
| 47 | 0.46 | -0.802956 | 94.2497 | -12.7569 |
| 48 | 0.49 | -0.785774 | 94.8672 | -13.1419 |
| 49 | 0.51 | -0.772193 | 95.4634 | -13.5358 |

| | | | | |
|---|---|---|---|---|
| 50 | 0.55 | -0.755415 | 96.0341 | -13.9512 |
| 51 | 0.55 | -0.742143 | 96.5849 | -14.3594 |
| 52 | 0.58 | -0.725736 | 97.1116 | -14.7803 |
| 53 | 0.85 | -0.712751 | 97.6196 | -15.3862 |
| 54 | 1 | -0.696684 | 98.1049 | -16.0829 |
| 55 | 1 | -0.683969 | 8.5727 | -16.7668 |
| 56 | 1 | -0.668209 | 99.0192 | -17.435 |
| 57 | 1 | -0.655726 | 99.4492 | -18.0908 |
| 58 | 1 | -0.640266 | 99.8592 | -18.731 |
| 59 | 1 | -0.628006 | 100.254 | -19.359 |
| 60 | 1 | -0.612813 | 100.629 | -19.9718 |
| 61 | 1 | -0.60076 | 100.99 | -20.5726 |
| 62 | 1 | -0.585815 | 101.333 | -21.1584 |
| 63 | 1 | -0.573953 | 101.663 | -21.7324 |
| 64 | 1 | -0.559237 | 101.975 | -22.2916 |
| 65 | 1 | -0.547551 | 102.275 | -22.8392 |
| 66 | 1 | -0.533048 | 102.559 | -23.3722 |
| 67 | 1 | -0.521527 | 102.831 | -23.8937 |
| 68 | 1 | -0.507221 | 103.089 | -24.401 |
| 69 | 1 | -0.49585 | 103.334 | -24.8968 |
| 70 | 1 | -0.481728 | 103.566 | -25.3785 |
| 71 | 1 | -0.470498 | 103.788 | -25.849 |
| 72 | 1 | -0.456542 | 103.996 | -26.3056 |
| 73 | 1 | -0.445443 | 104.195 | -26.751 |
| 74 | 1 | -0.431644 | 104.381 | -27.1827 |
| 75 | 1 | -0.420664 | 104.558 | -27.6033 |
| 76 | 1 | -0.40701 | 104.724 | -28.0103 |
| 77 | 1 | -0.396142 | 104.881 | -28.4065 |
| 78 | 1 | -0.382622 | 105.027 | -28.7891 |
| 79 | 1 | -0.371856 | 105.165 | -29.161 |
| 80 | 1 | -0.358459 | 105.294 | -29.5194 |
| 81 | 1 | -0.347787 | 105.415 | -29.8672 |
| 82 | 1 | -0.334503 | 105.527 | -30.2017 |
| 83 | 1 | -0.323919 | 105.632 | -30.5256 |
| 84 | 1 | -0.310738 | 105.728 | -30.8364 |
| 85 | 1 | -0.300232 | 105.818 | -31.1366 |
| 86 | 1 | -0.287147 | 105.901 | -31.4237 |
| 87 | 1 | -0.276714 | 105.977 | -31.7005 |
| 88 | 1 | -0.263715 | 106.047 | -31.9642 |
| 89 | 1 | -0.253347 | 106.111 | -32.2175 |
| 90 | 1 | -0.240426 | 106.169 | -32.4579 |
| 91 | 1 | -0.230118 | 106.222 | -32.6881 |
| 92 | 1 | -0.217267 | 106.269 | -32.9053 |
| 93 | 1 | -0.207012 | 106.312 | -33.1123 |
| 94 | 1 | -0.194225 | 106.35 | -33.3066 |
| 95 | 1 | -0.184017 | 106.383 | -33.4906 |
| 96 | 1 | -0.171285 | 106.413 | -33.6619 |
| 97 | 1 | -0.161119 | 106.439 | -33.823 |
| 98 | 1 | -0.148434 | 106.461 | -33.9714 |
| 99 | 1 | -0.138305 | 106.48 | -34.1097 |
| 100 | 1 | -0.125661 | 106.496 | -34.2354 |
| 101 | 1 | -0.115562 | 106.509 | -34.3509 |
| 102 | 1 | -0.102953 | 106.52 | -34.4539 |
| 103 | 1 | -0.0928787 | 106.528 | -34.5468 |
| 104 | 1 | -0.0802981 | 106.535 | -34.6271 |
| 105 | 1 | -0.0702426 | 106.54 | -34.6973 |
| 106 | 1 | -0.0576847 | 106.543 | -34.755 |
| 107 | 1 | -0.0476439 | 106.545 | -34.8026 |
| 108 | 1 | -0.0350997 | 106.546 | -34.8377 |
| 109 | 1 | -0.0250691 | 106.547 | -34.8628 |
| 110 | 1 | -0.0125328 | 106.547 | -34.8753 |
| 111 | 1 | 0 | 106.547 | -34.8753 |

| | | | | |
|---|---|---|---|---|
| 112 | 1 | 0.0125328 | 106.547 | -34.8628 |
| 113 | 1 | 0.0250691 | 106.548 | -34.8377 |
| 114 | 1 | 0.0350997 | 106.549 | -34.8026 |
| 115 | 1 | 0.0476439 | 106.551 | -34.755 |
| 116 | 1 | 0.0576847 | 106.555 | -34.6973 |
| 117 | 1 | 0.0702426 | 106.56 | -34.6271 |
| 118 | 1 | 0.0802981 | 106.566 | -34.5468 |
| 119 | 1 | 0.0928787 | 106.575 | -34.4539 |
| 120 | 1 | 0.102953 | 106.585 | -34.3509 |
| 121 | 1 | 0.115562 | 106.599 | -34.2354 |
| 122 | 1 | 0.125661 | 106.615 | -34.1097 |
| 123 | 1 | 0.138305 | 106.634 | -33.9714 |
| 124 | 1 | 0.148434 | 106.656 | -33.823 |
| 125 | 1 | 0.161119 | 106.682 | -33.6619 |
| 126 | 1 | 0.171285 | 106.711 | -33.4906 |
| 127 | 1 | 0.184017 | 106.745 | -33.3066 |
| 128 | 1 | 0.194225 | 106.783 | -33.1123 |
| 129 | 1 | 0.207012 | 106.825 | -32.9053 |
| 130 | 1 | 0.217267 | 106.873 | -32.6881 |
| 131 | 1 | 0.230118 | 106.926 | -32.4579 |
| 132 | 1 | 0.240426 | 106.983 | -32.2175 |
| 133 | 1 | 0.253347 | 107.048 | -31.9642 |
| 134 | 1 | 0.263715 | 107.117 | -31.7005 |
| 135 | 1 | 0.276714 | 107.194 | -31.4237 |
| 136 | 1 | 0.287147 | 107.276 | -31.1366 |
| 137 | 1 | 0.300232 | 107.366 | -30.8364 |
| 138 | 1 | 0.310738 | 107.463 | -30.5256 |
| 139 | 1 | 0.323919 | 107.568 | -30.2017 |
| 140 | 1 | 0.334503 | 107.68 | -29.8672 |
| 141 | 1 | 0.347787 | 107.801 | -29.5194 |
| 142 | 1 | 0.358459 | 107.929 | -29.161 |
| 143 | 1 | 0.371856 | 108.067 | -28.7891 |
| 144 | 1 | 0.382622 | 108.214 | -28.4065 |
| 145 | 1 | 0.396142 | 108.371 | -28.0103 |
| 146 | 1 | 0.40701 | 108.536 | -27.6033 |
| 147 | 1 | 0.420664 | 108.713 | -27.1827 |
| 148 | 1 | 0.431644 | 108.9 | -26.751 |
| 149 | 1 | 0.445443 | 109.098 | -26.3056 |
| 150 | 1 | 0.456542 | 109.307 | -25.849 |
| 151 | 1 | 0.470498 | 109.528 | -25.3785 |
| 152 | 1 | 0.481728 | 109.76 | -24.8968 |
| 153 | 1 | 0.49585 | 110.006 | -24.401 |
| 154 | 1 | 0.507221 | 110.263 | -23.8937 |
| 155 | 1 | 0.521527 | 110.535 | -23.3722 |
| 156 | 1 | 0.533048 | 110.819 | -22.8392 |
| 157 | 1 | 0.547551 | 111.119 | -22.2916 |
| 158 | 1 | 0.559237 | 111.432 | -21.7324 |
| 159 | 1 | 0.573953 | 111.761 | -21.1584 |
| 160 | 1 | 0.585815 | 112.104 | -20.5726 |
| 161 | 1 | 0.60076 | 112.465 | -19.9718 |
| 162 | 1 | 0.612813 | 112.841 | -19.359 |
| 163 | 1 | 0.628006 | 113.235 | -18.731 |
| 164 | 1 | 0.640266 | 113.645 | -18.0908 |
| 165 | 1 | 0.655726 | 114.075 | -17.435 |
| 166 | 1 | 0.668209 | 114.522 | -16.7668 |
| 167 | 1 | 0.68396 | 114.989 | -16.0829 |
| 168 | 1 | 0.696684 | 115.475 | -15.3862 |
| 169 | 1 | 0.712751 | 115.983 | -14.6734 |
| 170 | 1 | 0.725736 | 116.51 | -13.9477 |
| 171 | 1 | 0.742143 | 117.06 | -13.2055 |
| 172 | 1 | 0.755415 | 117.631 | -12.4501 |
| 173 | 1 | 0.772193 | 118.227 | -11.6779 |

| | | | | |
|---|---|---|---|---|
| 174 | 1 | 0.785774 | 118.845 | -10.8922 |
| 175 | 1 | 0.802956 | 119.489 | -10.0892 |
| 176 | 1 | 0.816874 | 120.157 | -9.27234 |
| 177 | 1 | 0.834498 | 120.853 | -8.43784 |
| 178 | 1 | 0.848786 | 121.574 | -7.58905 |
| 179 | 1 | 0.866894 | 122.325 | -6.72216 |
| 180 | 1 | 0.881587 | 123.102 | -5.84057 |
| 181 | 1 | 0.900227 | 123.913 | -4.94035 |
| 182 | 1 | 0.915365 | 124.751 | -4.02498 |
| 183 | 1 | 0.93459 | 125.624 | -3.09039 |
| 184 | 1 | 0.950222 | 126.527 | -2.14017 |
| 185 | 1 | 0.970094 | 127.468 | -1.17007 |
| 186 | 1 | 0.986272 | 128.441 | -0.183802 |
| 187 | 1 | 1.00687 | 129.455 | 0.823064 |
| 188 | 1 | 1.02365 | 130.502 | 1.84672 |
| 189 | 1 | 1.04505 | 131.594 | 2.89177 |
| 190 | 1 | 1.06252 | 132.723 | 3.95429 |
| 191 | 1 | 1.08482 | 133.9 | 5.03911 |
| 192 | 1 | 1.10306 | 135.117 | 6.14217 |
| 193 | 1 | 1.12639 | 136.386 | 7.26856 |
| 194 | 1 | 1.1455 | 137.698 | 8.41407 |
| 195 | 1 | 1.17 | 139.067 | 9.58407 |
| 196 | 1 | 1.19012 | 140.483 | 10.7742 |
| 197 | 1 | 1.21596 | 141.962 | 11.9901 |
| 198 | 1 | 1.23724 | 143.493 | 13.2274 |
| 199 | 1 | 1.26464 | 145.092 | 14.492 |
| 200 | 1 | 1.28727 | 146.749 | 15.7793 |
| 201 | 1 | 1.31652 | 148.482 | 17.0958 |
| 202 | 1 | 1.34075 | 150.28 | 18.4366 |
| 203 | 1 | 1.3722 | 152.163 | 19.8088 |
| 204 | 1 | 1.39838 | 154.118 | 21.2071 |
| 205 | 1 | 1.4325 | 156.17 | 22.6397 |
| 206 | 1 | 1.46106 | 158.305 | 24.1007 |
| 207 | 1 | 1.49852 | 160.551 | 25.5992 |
| 208 | 1 | 1.53007 | 162.892 | 27.1293 |
| 209 | 1 | 1.57179 | 165.362 | 28.7011 |
| 210 | 1 | 1.60725 | 167.945 | 30.3083 |
| 211 | 1 | 1.65463 | 170.683 | 31.963 |
| 212 | 1 | 1.6954 | 173.558 | 33.6584 |
| 213 | 1 | 1.75069 | 176.622 | 35.409 |
| 214 | 1 | 1.79912 | 179.859 | 37.2082 |
| 215 | 1 | 1.86629 | 183.342 | 39.0745 |
| 216 | 1 | 1.92684 | 187.055 | 41.0013 |
| 217 | 1.15 | 2.01409 | 191.112 | 43.3175 |
| 218 | 1.2 | 2.09693 | 195.509 | 45.8338 |
| 219 | 1.34 | 2.22621 | 200.465 | 48.8169 |
| 220 | 3.16 | 2.36561 | 206.061 | 56.2923 |
| 221 | 5 | 2.65209 | 213.094 | 69.5527 |

Data Set Standard Deviation = 0.458146
Numerator = 4837.58
Denominator = 9840.16
W Statistic = 0.491616 = 4837.58 / 9840.16

5% Critical value of 0.976 exceeds 0.491616
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.491616
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: Toluene

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | -1.80181 | -2.65209 | 7.03356 | 4.77856 |
| 2 | -1.80181 | -2.36561 | 12.6297 | 9.04094 |
| 3 | -1.80181 | -2.22621 | 17.5857 | 13.0521 |
| 4 | -1.80181 | -2.09693 | 21.9828 | 16.8304 |
| 5 | -1.80181 | -2.01409 | 26.0394 | 20.4594 |
| 6 | -1.80181 | -1.92684 | 29.7521 | 23.9312 |
| 7 | -1.80181 | -1.86629 | 33.2351 | 27.2939 |
| 8 | -1.80181 | -1.79912 | 36.472 | 30.5356 |
| 9 | -1.80181 | -1.75069 | 39.5369 | 33.69 |
| 10 | -1.80181 | -1.6954 | 42.4112 | 36.7448 |
| 11 | -1.80181 | -1.65463 | 45.149 | 39.7261 |
| 12 | -1.80181 | -1.60725 | 47.7323 | 42.6221 |
| 13 | -1.80181 | -1.57179 | 50.2028 | 45.4541 |
| 14 | -1.80181 | -1.53007 | 52.5439 | 48.211 |
| 15 | -1.80181 | -1.49852 | 54.7894 | 50.9111 |
| 16 | -1.80181 | -1.46106 | 56.9241 | 53.5436 |
| 17 | -1.80181 | -1.4325 | 58.9762 | 56.1247 |
| 18 | -1.80181 | -1.39838 | 60.9316 | 58.6443 |
| 19 | -1.80181 | -1.3722 | 62.8146 | 61.1168 |
| 20 | -1.80181 | -1.34075 | 64.6122 | 63.5325 |
| 21 | -1.80181 | -1.31652 | 66.3454 | 65.9047 |
| 22 | -1.80181 | -1.28727 | 68.0025 | 68.2241 |
| 23 | -1.80181 | -1.26464 | 69.6018 | 70.5027 |
| 24 | -1.80181 | -1.23724 | 71.1326 | 72.732 |
| 25 | -1.80181 | -1.21596 | 72.6111 | 74.9229 |
| 26 | -1.80181 | -1.19012 | 74.0275 | 77.0673 |
| 27 | -1.80181 | -1.17 | 75.3964 | 79.1754 |
| 28 | -1.80181 | -1.1455 | 76.7086 | 81.2394 |
| 29 | -1.80181 | -1.12639 | 77.9774 | 83.2689 |
| 30 | -1.80181 | -1.10306 | 79.1941 | 85.2564 |
| 31 | -1.80181 | -1.08482 | 80.371 | 87.2111 |
| 32 | -1.60944 | -1.06252 | 81.4999 | 88.9211 |
| 33 | -1.51413 | -1.04505 | 82.592 | 90.5035 |
| 34 | -1.42712 | -1.02365 | 83.6399 | 91.9644 |
| 35 | -1.34707 | -1.00687 | 84.6537 | 93.3207 |
| 36 | -1.34707 | -0.986272 | 85.6264 | 94.6493 |
| 37 | -1.30933 | -0.970094 | 86.5675 | 95.9194 |
| 38 | -1.23787 | -0.950222 | 87.4704 | 97.0957 |
| 39 | -1.10866 | -0.934598 | 88.3439 | 98.1318 |
| 40 | -1.04982 | -0.915365 | 89.1818 | 99.0928 |
| 41 | -1.04982 | -0.900227 | 89.9922 | 100.038 |
| 42 | -0.994252 | -0.881587 | 90.7694 | 100.914 |
| 43 | -0.941609 | -0.866894 | 91.5209 | 101.731 |
| 44 | -0.941609 | -0.848786 | 92.2413 | 102.53 |
| 45 | -0.84397 | -0.834498 | 92.9377 | 103.234 |
| 46 | -0.820981 | -0.816874 | 93.605 | 103.905 |
| 47 | -0.776529 | -0.802956 | 94.2497 | 104.528 |
| 48 | -0.71335 | -0.785774 | 94.8672 | 105.089 |
| 49 | -0.673345 | -0.772193 | 95.4634 | 105.609 |

| | | | | |
|---|---|---|---|---|
| 50 | -0.597837 | -0.755415 | 96.0341 | 106.06 |
| 51 | -0.597837 | -0.742143 | 96.5849 | 106.504 |
| 52 | -0.544727 | -0.725736 | 97.1116 | 106.899 |
| 53 | -0.162519 | -0.712751 | 97.6196 | 107.015 |
| 54 | 0 | -0.696684 | 98.1049 | 107.015 |
| 55 | 0 | -0.683969 | 8.5727 | 107.015 |
| 56 | 0 | -0.668209 | 99.0192 | 107.015 |
| 57 | 0 | -0.655726 | 99.4492 | 107.015 |
| 58 | 0 | -0.640266 | 99.8592 | 107.015 |
| 59 | 0 | -0.628006 | 100.254 | 107.015 |
| 60 | 0 | -0.612813 | 100.629 | 107.015 |
| 61 | 0 | -0.60076 | 100.99 | 107.015 |
| 62 | 0 | -0.585815 | 101.333 | 107.015 |
| 63 | 0 | -0.573953 | 101.663 | 107.015 |
| 64 | 0 | -0.559237 | 101.975 | 107.015 |
| 65 | 0 | -0.547551 | 102.275 | 107.015 |
| 66 | 0 | -0.533048 | 102.559 | 107.015 |
| 67 | 0 | -0.521527 | 102.831 | 107.015 |
| 68 | 0 | -0.507221 | 103.089 | 107.015 |
| 69 | 0 | -0.49585 | 103.334 | 107.015 |
| 70 | 0 | -0.481728 | 103.566 | 107.015 |
| 71 | 0 | -0.470498 | 103.788 | 107.015 |
| 72 | 0 | -0.456542 | 103.996 | 107.015 |
| 73 | 0 | -0.445443 | 104.195 | 107.015 |
| 74 | 0 | -0.431644 | 104.381 | 107.015 |
| 75 | 0 | -0.420664 | 104.558 | 107.015 |
| 76 | 0 | -0.40701 | 104.724 | 107.015 |
| 77 | 0 | -0.396142 | 104.881 | 107.015 |
| 78 | 0 | -0.382622 | 105.027 | 107.015 |
| 79 | 0 | -0.371856 | 105.165 | 107.015 |
| 80 | 0 | -0.358459 | 105.294 | 107.015 |
| 81 | 0 | -0.347787 | 105.415 | 107.015 |
| 82 | 0 | -0.334503 | 105.527 | 107.015 |
| 83 | 0 | -0.323919 | 105.632 | 107.015 |
| 84 | 0 | -0.310738 | 105.728 | 107.015 |
| 85 | 0 | -0.300232 | 105.818 | 107.015 |
| 86 | 0 | -0.287147 | 105.901 | 107.015 |
| 87 | 0 | -0.276714 | 105.977 | 107.015 |
| 88 | 0 | -0.263715 | 106.047 | 107.015 |
| 89 | 0 | -0.253347 | 106.111 | 107.015 |
| 90 | 0 | -0.240426 | 106.169 | 107.015 |
| 91 | 0 | -0.230118 | 106.222 | 107.015 |
| 92 | 0 | -0.217267 | 106.269 | 107.015 |
| 93 | 0 | -0.207012 | 106.312 | 107.015 |
| 94 | 0 | -0.194225 | 106.35 | 107.015 |
| 95 | 0 | -0.184017 | 106.383 | 107.015 |
| 96 | 0 | -0.171285 | 106.413 | 107.015 |
| 97 | 0 | -0.161119 | 106.439 | 107.015 |
| 98 | 0 | -0.148434 | 106.461 | 107.015 |
| 99 | 0 | -0.138305 | 106.48 | 107.015 |
| 100 | 0 | -0.125661 | 106.496 | 107.015 |
| 101 | 0 | -0.115562 | 106.509 | 107.015 |
| 102 | 0 | -0.102953 | 106.52 | 107.015 |
| 103 | 0 | -0.0928787 | 106.528 | 107.015 |
| 104 | 0 | -0.0802981 | 106.535 | 107.015 |
| 105 | 0 | -0.0702426 | 106.54 | 107.015 |
| 106 | 0 | -0.0576847 | 106.543 | 107.015 |
| 107 | 0 | -0.0476439 | 106.545 | 107.015 |
| 108 | 0 | -0.0350997 | 106.546 | 107.015 |
| 109 | 0 | -0.0250691 | 106.547 | 107.015 |
| 110 | 0 | -0.0125328 | 106.547 | 107.015 |
| 111 | 0 | 0 | 106.547 | 107.015 |

| | | | | |
|---|---|---|---|---|
| 112 | 0 | 0.0125328 | 106.547 | 107.015 |
| 113 | 0 | 0.0250691 | 106.548 | 107.015 |
| 114 | 0 | 0.0350997 | 106.549 | 107.015 |
| 115 | 0 | 0.0476439 | 106.551 | 107.015 |
| 116 | 0 | 0.0576847 | 106.555 | 107.015 |
| 117 | 0 | 0.0702426 | 106.56 | 107.015 |
| 118 | 0 | 0.0802981 | 106.566 | 107.015 |
| 119 | 0 | 0.0928787 | 106.575 | 107.015 |
| 120 | 0 | 0.102953 | 106.585 | 107.015 |
| 121 | 0 | 0.115562 | 106.599 | 107.015 |
| 122 | 0 | 0.125661 | 106.615 | 107.015 |
| 123 | 0 | 0.138305 | 106.634 | 107.015 |
| 124 | 0 | 0.148434 | 106.656 | 107.015 |
| 125 | 0 | 0.161119 | 106.682 | 107.015 |
| 126 | 0 | 0.171285 | 106.711 | 107.015 |
| 127 | 0 | 0.184017 | 106.745 | 107.015 |
| 128 | 0 | 0.194225 | 106.783 | 107.015 |
| 129 | 0 | 0.207012 | 106.825 | 107.015 |
| 130 | 0 | 0.217267 | 106.873 | 107.015 |
| 131 | 0 | 0.230118 | 106.926 | 107.015 |
| 132 | 0 | 0.240426 | 106.983 | 107.015 |
| 133 | 0 | 0.253347 | 107.048 | 107.015 |
| 134 | 0 | 0.263715 | 107.117 | 107.015 |
| 135 | 0 | 0.276714 | 107.194 | 107.015 |
| 136 | 0 | 0.287147 | 107.276 | 107.015 |
| 137 | 0 | 0.300232 | 107.366 | 107.015 |
| 138 | 0 | 0.310738 | 107.463 | 107.015 |
| 139 | 0 | 0.323919 | 107.568 | 107.015 |
| 140 | 0 | 0.334503 | 107.68 | 107.015 |
| 141 | 0 | 0.347787 | 107.801 | 107.015 |
| 142 | 0 | 0.358459 | 107.929 | 107.015 |
| 143 | 0 | 0.371856 | 108.067 | 107.015 |
| 144 | 0 | 0.382622 | 108.214 | 107.015 |
| 145 | 0 | 0.396142 | 108.371 | 107.015 |
| 146 | 0 | 0.40701 | 108.536 | 107.015 |
| 147 | 0 | 0.420664 | 108.713 | 107.015 |
| 148 | 0 | 0.431644 | 108.9 | 107.015 |
| 149 | 0 | 0.445443 | 109.098 | 107.015 |
| 150 | 0 | 0.456542 | 109.307 | 107.015 |
| 151 | 0 | 0.470498 | 109.528 | 107.015 |
| 152 | 0 | 0.481728 | 109.76 | 107.015 |
| 153 | 0 | 0.49585 | 110.006 | 107.015 |
| 154 | 0 | 0.507221 | 110.263 | 107.015 |
| 155 | 0 | 0.521527 | 110.535 | 107.015 |
| 156 | 0 | 0.533048 | 110.819 | 107.015 |
| 157 | 0 | 0.547551 | 111.119 | 107.015 |
| 158 | 0 | 0.559237 | 111.432 | 107.015 |
| 159 | 0 | 0.573953 | 111.761 | 107.015 |
| 160 | 0 | 0.585815 | 112.104 | 107.015 |
| 161 | 0 | 0.60076 | 112.465 | 107.015 |
| 162 | 0 | 0.612813 | 112.841 | 107.015 |
| 163 | 0 | 0.628006 | 113.235 | 107.015 |
| 164 | 0 | 0.640266 | 113.645 | 107.015 |
| 165 | 0 | 0.655726 | 114.075 | 107.015 |
| 166 | 0 | 0.668209 | 114.522 | 107.015 |
| 167 | 0 | 0.68396 | 114.989 | 107.015 |
| 168 | 0 | 0.696684 | 115.475 | 107.015 |
| 169 | 0 | 0.712751 | 115.983 | 107.015 |
| 170 | 0 | 0.725736 | 116.51 | 107.015 |
| 171 | 0 | 0.742143 | 117.06 | 107.015 |
| 172 | 0 | 0.755415 | 117.631 | 107.015 |
| 173 | 0 | 0.772193 | 118.227 | 107.015 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 0 | 0.785774 | | 118.845 | 107.015 |
| 175 | 0 | 0.802956 | | 119.489 | 107.015 |
| 176 | 0 | 0.816874 | | 120.157 | 107.015 |
| 177 | 0 | 0.834498 | | 120.853 | 107.015 |
| 178 | 0 | 0.848786 | | 121.574 | 107.015 |
| 179 | 0 | 0.866894 | | 122.325 | 107.015 |
| 180 | 0 | 0.881587 | | 123.102 | 107.015 |
| 181 | 0 | 0.900227 | | 123.913 | 107.015 |
| 182 | 0 | 0.915365 | | 124.751 | 107.015 |
| 183 | 0 | 0.93459 | 125.624 | 107.015 | |
| 184 | 0 | 0.950222 | | 126.527 | 107.015 |
| 185 | 0 | 0.970094 | | 127.468 | 107.015 |
| 186 | 0 | 0.986272 | | 128.441 | 107.015 |
| 187 | 0 | 1.00687 | 129.455 | 107.015 | |
| 188 | 0 | 1.02365 | 130.502 | 107.015 | |
| 189 | 0 | 1.04505 | 131.594 | 107.015 | |
| 190 | 0 | 1.06252 | 132.723 | 107.015 | |
| 191 | 0 | 1.08482 | 133.9 | 107.015 | |
| 192 | 0 | 1.10306 | 135.117 | 107.015 | |
| 193 | 0 | 1.12639 | 136.386 | 107.015 | |
| 194 | 0 | 1.1455 | 137.698 | 107.015 | |
| 195 | 0 | 1.17 | 139.067 | 107.015 | |
| 196 | 0 | 1.19012 | 140.483 | 107.015 | |
| 197 | 0 | 1.21596 | 141.962 | 107.015 | |
| 198 | 0 | 1.23724 | 143.493 | 107.015 | |
| 199 | 0 | 1.26464 | 145.092 | 107.015 | |
| 200 | 0 | 1.28727 | 146.749 | 107.015 | |
| 201 | 0 | 1.31652 | 148.482 | 107.015 | |
| 202 | 0 | 1.34075 | 150.28 | 107.015 | |
| 203 | 0 | 1.3722 | 152.163 | 107.015 | |
| 204 | 0 | 1.39838 | 154.118 | 107.015 | |
| 205 | 0 | 1.4325 | 156.17 | 107.015 | |
| 206 | 0 | 1.46106 | 158.305 | 107.015 | |
| 207 | 0 | 1.49852 | 160.551 | 107.015 | |
| 208 | 0 | 1.53007 | 162.892 | 107.015 | |
| 209 | 0 | 1.57179 | 165.362 | 107.015 | |
| 210 | 0 | 1.60725 | 167.945 | 107.015 | |
| 211 | 0 | 1.65463 | 170.683 | 107.015 | |
| 212 | 0 | 1.6954 | 173.558 | 107.015 | |
| 213 | 0 | 1.75069 | 176.622 | 107.015 | |
| 214 | 0 | 1.79912 | 179.859 | 107.015 | |
| 215 | 0 | 1.86629 | 183.342 | 107.015 | |
| 216 | 0 | 1.92684 | 187.055 | 107.015 | |
| 217 | 0.139762 | | 2.01409 | 191.112 | 107.297 |
| 218 | 0.182322 | | 2.09693 | 195.509 | 107.679 |
| 219 | 0.29267 | 2.22621 | 200.465 | 108.331 | |
| 220 | 1.15057 | 2.36561 | 206.061 | 111.052 | |
| 221 | 1.60944 | 2.65209 | 213.094 | 115.321 | |

Data Set Standard Deviation = 0.687009
Numerator = 13298.9
Denominator = 22126.9
W Statistic = 0.601029 = 13298.9 / 22126.9

5% Critical value of 0.976 exceeds 0.601029
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.601029
Evidence of non-normality at 99% level of significance

# Kruskal-Wallis Non-Parametric Test

## Parameter: Toluene

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

# Kruskal Wallis Ranks

## Background Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-13 | 3/16/1999 | ND<0 | 97 |
| | 9/23/1999 | ND<0 | 97 |
| | 3/15/2000 | ND<0 | 97 |
| | 9/24/2003 | ND<0 | 97 |
| | 3/11/2004 | ND<0 | 97 |
| | 10/12/2004 | ND<0 | 97 |
| | 4/1/2005 | ND<0 | 97 |
| | 10/25/2005 | ND<0 | 97 |
| | 4/29/2006 | 0.139762 J | 217 |
| | 11/18/2006 | ND<0 | 97 |
| | 5/23/2007 | ND<0 | 97 |
| | 11/28/2007 | ND<0 | 97 |
| | 6/5/2008 | ND<0 | 97 |
| | 11/20/2008 | ND<0 | 97 |
| | 6/11/2009 | ND<-1.80181 | 97 |
| | 11/16/2009 | ND<-1.80181 | 97 |
| | 6/30/2010 | ND<-1.80181 | 97 |
| | 11/12/2010 | ND<-1.80181 U | 97 |

Rank Sum = 1866
Rank Mean = 103.667

Background Rank Sum = 1866
Background Rank Mean = 103.667

## Compliance Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-7 | 7/20/1995 | ND<0 | 97 |
| | 8/24/1995 | ND<0 | 97 |
| | 9/28/1995 | ND<0 | 97 |
| | 10/26/1995 | ND<0 | 97 |
| | 11/19/1996 | ND<0 | 97 |
| | 12/19/1996 | ND<0 | 97 |
| | 3/24/1997 | ND<0 | 97 |
| | 9/24/1997 | ND<0 | 97 |
| | 4/7/1998 | ND<0 | 97 |
| | 9/23/1998 | ND<0 | 97 |
| | 3/16/1999 | ND<0 | 97 |
| | 9/23/1999 | ND<0 | 97 |
| | 3/15/2000 | ND<0 | 97 |
| | 9/24/2003 | ND<0 | 97 |
| | 3/11/2004 | ND<0 | 97 |
| | 10/12/2004 | ND<0 | 97 |
| | 4/1/2005 | ND<0 | 97 |
| | 10/25/2005 | -1.34707 J | 197 |
| | 4/29/2006 | -0.941609 J | 205 |
| | 11/18/2006 | -0.673345 J | 211 |

| | | | | |
|---|---|---|---|---|
| | 5/23/2007 | ND<0 | 97 | |
| | 11/28/2007 | -1.30933 | J | 199 |
| | 6/5/2008 | ND<0 | 97 | |
| | 11/20/2008 | -1.23787 | J | 200 |
| | 6/11/2009 | ND<-1.80181 | | 97 |
| | 11/16/2009 | ND<-1.80181 | | 97 |
| | 6/30/2010 | ND<-1.80181 | | 97 |
| | 11/12/2010 | ND<-1.80181 | U | 97 |

Rank Sum = 3243
Rank Mean = 115.821

| | | | | |
|---|---|---|---|---|
| MW-11R | 7/20/1995 | ND<0 | 97 | |
| | 8/24/1995 | ND<0 | 97 | |
| | 9/28/1995 | ND<0 | 97 | |
| | 10/26/1995 | ND<0 | 97 | |
| | 11/19/1996 | ND<0 | 97 | |
| | 12/19/1996 | ND<0 | 97 | |
| | 3/24/1997 | ND<0 | 97 | |
| | 9/24/1997 | ND<0 | 97 | |
| | 4/7/1998 | ND<0 | 97 | |
| | 9/23/1998 | ND<0 | 97 | |
| | 3/16/1999 | ND<0 | 97 | |
| | 9/23/1999 | ND<0 | 97 | |
| | 3/15/2000 | ND<0 | 97 | |
| | 9/24/2003 | ND<0 | 97 | |
| | 3/11/2004 | ND<0 | 97 | |
| | 10/12/2004 | ND<0 | 97 | |
| | 4/1/2005 | ND<0 | 97 | |
| | 10/25/2005 | ND<0 | 97 | |
| | 4/29/2006 | 1.15057 | | 220 |
| | 11/18/2006 | ND<0 | 97 | |
| | 5/23/2007 | ND<0 | 97 | |
| | 11/28/2007 | -0.597837 | J | 212 |
| | 6/5/2008 | ND<0 | 97 | |
| | 11/20/2008 | ND<0 | 97 | |
| | 6/11/2009 | ND<-1.80181 | | 97 |
| | 11/16/2009 | ND<-1.80181 | | 97 |
| | 6/30/2010 | ND<-1.80181 | | 97 |
| | 11/12/2010 | ND<-1.80181 | U | 97 |

Rank Sum = 2954
Rank Mean = 105.5

| | | | | |
|---|---|---|---|---|
| MW-12AR | 3/16/1999 | ND<0 | 97 | |
| | 9/23/1999 | ND<0 | 97 | |
| | 3/15/2000 | ND<0 | 97 | |
| | 9/24/2003 | ND<0 | 97 | |
| | 3/11/2004 | ND<0 | 97 | |
| | 10/12/2004 | ND<0 | 97 | |
| | 4/1/2005 | ND<0 | 97 | |
| | 10/25/2005 | ND<0 | 97 | |
| | 4/29/2006 | -0.994252 | J | 204 |
| | 11/18/2006 | ND<0 | 97 | |
| | 5/23/2007 | ND<0 | 97 | |
| | 11/28/2007 | ND<0 | 97 | |
| | 6/5/2008 | ND<0 | 97 | |
| | 11/20/2008 | ND<0 | 97 | |
| | 6/11/2009 | ND<-1.80181 | | 97 |
| | 11/16/2009 | ND<-1.80181 | | 97 |
| | 6/30/2010 | ND<-1.80181 | | 97 |
| | 11/12/2010 | ND<-1.80181 | U | 97 |

Rank Sum = 1853
Rank Mean = 102.944

| | | | | |
|---|---|---|---|---|
| MW-12BR | 3/16/1999 | ND<0 | | 97 |
| | 9/23/1999 | ND<0 | | 97 |
| | 3/15/2000 | ND<0 | | 97 |
| | 9/24/2003 | ND<0 | | 97 |
| | 3/11/2004 | ND<0 | | 97 |
| | 10/12/2004 | ND<0 | | 97 |
| | 4/1/2005 | ND<0 | | 97 |
| | 10/25/2005 | ND<0 | | 97 |
| | 4/29/2006 | -1.42712 | J | 196 |
| | 11/18/2006 | ND<0 | | 97 |
| | 5/23/2007 | ND<0 | | 97 |
| | 11/28/2007 | ND<0 | | 97 |
| | 6/5/2008 | ND<0 | | 97 |
| | 11/20/2008 | ND<0 | | 97 |
| | 6/11/2009 | ND<-1.80181 | | 97 |
| | 11/16/2009 | ND<-1.80181 | | 97 |
| | 6/30/2010 | ND<-1.80181 | | 97 |
| | 11/12/2010 | ND<-1.80181 | U | 97 |

Rank Sum = 1845
Rank Mean = 102.5

| | | | | |
|---|---|---|---|---|
| MW-10 | 7/20/1995 | ND<0 | | 97 |
| | 8/24/1995 | ND<0 | | 97 |
| | 9/28/1995 | ND<0 | | 97 |
| | 10/26/1995 | ND<0 | | 97 |
| | 11/19/1996 | ND<0 | | 97 |
| | 12/19/1996 | ND<0 | | 97 |
| | 3/24/1997 | ND<0 | | 97 |
| | 9/24/1997 | ND<0 | | 97 |
| | 4/7/1998 | ND<0 | | 97 |
| | 9/23/1998 | ND<0 | | 97 |
| | 3/16/1999 | ND<0 | | 97 |
| | 9/23/1999 | ND<0 | | 97 |
| | 3/15/2000 | ND<0 | | 97 |
| | 9/24/2003 | ND<0 | | 97 |
| | 3/11/2004 | ND<0 | | 97 |
| | 10/12/2004 | ND<0 | | 97 |
| | 4/1/2005 | ND<0 | | 97 |
| | 10/25/2005 | ND<0 | | 97 |
| | 4/29/2006 | -1.04982 | J | 202 |
| | 11/18/2006 | ND<0 | | 97 |
| | 5/23/2007 | ND<0 | | 97 |
| | 11/28/2007 | ND<0 | | 97 |
| | 6/5/2008 | ND<0 | | 97 |
| | 11/20/2008 | ND<0 | | 97 |
| | 6/11/2009 | ND<-1.80181 | | 97 |
| | 11/16/2009 | ND<-1.80181 | | 97 |
| | 6/30/2010 | ND<-1.80181 | | 97 |
| | 11/12/2010 | ND<-1.80181 | U | 97 |

Rank Sum = 2821
Rank Mean = 100.75

| | | | | |
|---|---|---|---|---|
| MW-6 | 7/20/1995 | ND<0 | | 97 |
| | 8/24/1995 | ND<0 | | 97 |
| | 9/28/1995 | ND<0 | | 97 |
| | 10/26/1995 | ND<0 | | 97 |
| | 11/19/1996 | ND<0 | | 97 |
| | 12/19/1996 | ND<0 | | 97 |
| | 3/24/1997 | ND<0 | | 97 |
| | 9/24/1997 | ND<0 | | 97 |
| | 4/7/1998 | ND<0 | | 97 |

| | | | | |
|---|---|---|---|---|
| | 9/23/1998 | ND<0 | 97 | |
| | 3/16/1999 | ND<0 | 97 | |
| | 9/23/1999 | ND<0 | 97 | |
| | 3/15/2000 | ND<0 | 97 | |
| | 9/24/2003 | ND<0 | 97 | |
| | 3/11/2004 | ND<0 | 97 | |
| | 10/12/2004 | ND<0 | 97 | |
| | 4/1/2005 | ND<0 | 97 | |
| | 10/25/2005 | ND<0 | 97 | |
| | 4/29/2006 | -0.84397 | J | 207 |
| | 11/18/2006 | ND<0 | 97 | |
| | 5/23/2007 | ND<0 | 97 | |
| | 11/28/2007 | ND<0 | 97 | |
| | 6/5/2008 | ND<0 | 97 | |
| | 11/20/2008 | ND<0 | 97 | |
| | 6/11/2009 | ND<-1.80181 | | 97 |
| | 11/16/2009 | ND<-1.80181 | | 97 |
| | 6/30/2010 | ND<-1.80181 | | 97 |
| | 11/12/2010 | ND<-1.80181 | U | 97 |

Rank Sum = 2826
Rank Mean = 100.929

| | | | | |
|---|---|---|---|---|
| MW-8 | 7/20/1995 | ND<0 | 97 | |
| | 8/24/1995 | ND<0 | 97 | |
| | 9/28/1995 | 1.60944 | | 221 |
| | 10/26/1995 | ND<0 | 97 | |
| | 11/19/1996 | ND<0 | 97 | |
| | 12/19/1996 | ND<0 | 97 | |
| | 3/24/1997 | ND<0 | 97 | |
| | 9/24/1997 | ND<0 | 97 | |
| | 4/7/1998 | ND<0 | 97 | |
| | 9/23/1998 | ND<0 | 97 | |
| | 3/16/1999 | ND<0 | 97 | |
| | 9/23/1999 | ND<0 | 97 | |
| | 3/15/2000 | ND<0 | 97 | |
| | 9/24/2003 | ND<0 | 97 | |
| | 3/11/2004 | ND<0 | 97 | |
| | 10/12/2004 | ND<0 | 97 | |
| | 4/1/2005 | -1.51413 | J | 195 |
| | 10/25/2005 | -0.597837 | J | 213 |
| | 4/29/2006 | -0.544727 | J | 214 |
| | 11/18/2006 | -0.71335 | J | 210 |
| | 5/23/2007 | 0.182322 | J | 218 |
| | 11/28/2007 | -0.162519 | J | 215 |
| | 6/5/2008 | ND<0 | 97 | |
| | 11/20/2008 | 0.29267 | J | 219 |
| | 6/11/2009 | 0 | 216 | |
| | 6/30/2010 | -0.941609 | J | 206 |
| | 11/12/2010 | -0.820981 | J | 208 |

Rank Sum = 3887
Rank Mean = 143.963

| | | | | |
|---|---|---|---|---|
| MW-9 | 7/20/1995 | -1.34707 | J | 198 |
| | 8/24/1995 | ND<0 | 97 | |
| | 9/28/1995 | ND<0 | 97 | |
| | 10/26/1995 | ND<0 | 97 | |
| | 11/19/1996 | ND<0 | 97 | |
| | 12/19/1996 | ND<0 | 97 | |
| | 3/24/1997 | ND<0 | 97 | |
| | 9/24/1997 | ND<0 | 97 | |
| | 4/7/1998 | ND<0 | 97 | |
| | 9/23/1998 | ND<0 | 97 | |

| | | | |
|---|---|---|---|
| 3/16/1999 | ND<0 | 97 | |
| 9/23/1999 | ND<0 | 97 | |
| 3/15/2000 | ND<0 | 97 | |
| 9/24/2003 | ND<0 | 97 | |
| 3/11/2004 | ND<0 | 97 | |
| 10/12/2004 | ND<0 | 97 | |
| 4/1/2005 | ND<0 | 97 | |
| 10/25/2005 | ND<0 | 97 | |
| 4/29/2006 | -0.776529 J | | 209 |
| 11/18/2006 | ND<0 | 97 | |
| 5/23/2007 | ND<0 | 97 | |
| 11/28/2007 | -1.60944 J | | 194 |
| 6/5/2008 | ND<0 | 97 | |
| 11/20/2008 | -1.10866 J | | 201 |
| 6/11/2009 | -1.04982 J | | 203 |
| 11/16/2009 | ND<-1.80181 | | 97 |
| 6/30/2010 | ND<-1.80181 | | 97 |
| 11/12/2010 | ND<-1.80181 U | | 97 |

Rank Sum = 3236
Rank Mean = 115.571

## Calculation Results:

Kruskal-Wallis H Statistic = 9.93971
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 29.7621
95% Confidence comparison value is 15.5073 at 8 degrees of freedom
9.93971 < 15.5073 indicating no significant group difference at 5% significance level
29.7621 > 15.5073 indicating a significant group difference at 5% significance level when adjusted for ties

## Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 103.667

| Well | Mean Rank | Dif from Bkg | Critical Value |
|---|---|---|---|
| MW-7 | 115.821 | 12.1548 | 44.9386 |
| MW-11R | 105.5 | 1.83333 | 44.9386 |
| MW-12AR | 102.944 | -0.722222 | 49.5832 |
| MW-12BR | 102.5 | -1.16667 | 49.5832 |
| MW-10 | 100.75 | -2.91667 | 44.9386 |
| MW-6 | 100.929 | -2.7381 | 44.9386 |
| MW-8 | 143.963 | 40.2963 | 45.263 |
| MW-9 | 115.571 | 11.9048 | 44.9386 |

## Individual Well Comparisons at Groupwise 5% Significance Level (0.625% Significance Level per comparison)

0.625% Z score is 2.51213
Mean background rank is 103.667

| Well | Mean Rank | Dif from Bkg | Critical Value |
|---|---|---|---|
| MW-7 | 115.821 | 12.1548 | 48.5275 |
| MW-11R | 105.5 | 1.83333 | 48.5275 |
| MW-12AR | 102.944 | -0.722222 | 53.5431 |
| MW-12BR | 102.5 | -1.16667 | 53.5431 |
| MW-10 | 100.75 | -2.91667 | 48.5275 |
| MW-6 | 100.929 | -2.7381 | 48.5275 |
| MW-8 | 143.963 | 40.2963 | 48.8779 |
| MW-9 | 115.571 | 11.9048 | 48.5275 |

# Non-Parametric Prediction Interval

## Inter-Well Comparison

## Parameter: Toluene

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 87.3303%
Number of comparisons = 8
Future Samples (k) = 8
Recent Dates = 1
Background Samples (n) = 18
Maximum Background Concentration = 0.139762
Confidence Level = 69.2%
False Positive Rate = 30.8%

| Location | Date | Samples | Mean | Significant |
|---|---|---|---|---|
| MW-7 | 11/12/2010 | 1 | -1.80181 | FALSE |
| MW-11R | 11/12/2010 | 1 | -1.80181 | FALSE |
| MW-12AR | 11/12/2010 | 1 | -1.80181 | FALSE |
| MW-12BR | 11/12/2010 | 1 | -1.80181 | FALSE |
| MW-10 | 11/12/2010 | 1 | -1.80181 | FALSE |
| MW-6 | 11/12/2010 | 1 | -1.80181 | FALSE |
| MW-8 | 11/12/2010 | 1 | -0.820981 | FALSE |
| MW-9 | 11/12/2010 | 1 | -1.80181 | FALSE |

# Concentrations (ppb)

## Parameter: trans-1,2-Dichloroethene

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 197
Percent Non-Detects: 89.1403%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 18 (100%) | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.2 | ND<0.2 |
| | | | 11/16/2009 | ND<0.2 | ND<0.2 |
| | | | 6/30/2010 | ND<0.2 | ND<0.2 |
| | | | 11/12/2010 | ND<0.2 U | ND<0.2 U |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-6 | 28 | 28 (100%) | 7/20/1995 | ND<2 | ND<2 |
| | | | 8/24/1995 | ND<2 | ND<2 |
| | | | 9/28/1995 | ND<2 | ND<2 |
| | | | 10/26/1995 | ND<2 | ND<2 |
| | | | 11/19/1996 | ND<2 | ND<2 |
| | | | 12/19/1996 | ND<2 | ND<2 |
| | | | 3/24/1997 | ND<2 | ND<2 |
| | | | 9/24/1997 | ND<2 | ND<2 |
| | | | 4/7/1998 | ND<2 | ND<2 |
| | | | 9/23/1998 | ND<2 | ND<2 |
| | | | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.2 | ND<0.2 | |
| | | | 11/16/2009 | ND<0.2 | ND<0.2 | |
| | | | 6/30/2010 | ND<0.2 | ND<0.2 | |
| | | | 11/12/2010 | ND<0.2 U | ND<0.2 U | |
| MW-11R | 28 | 27 (96.4286%) | 7/20/1995 | ND<2 | ND<2 | |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | 0.4 J | 0.4 J | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.2 | ND<0.2 | |
| | | | 11/16/2009 | ND<0.2 | ND<0.2 | |
| | | | 6/30/2010 | ND<0.2 | ND<0.2 | |
| | | | 11/12/2010 | ND<0.2 U | ND<0.2 U | |
| MW-12AR | 18 | 18 (100%) | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.2 | ND<0.2 | |
| | | | 11/16/2009 | ND<0.2 | ND<0.2 | |
| | | | 6/30/2010 | ND<0.2 | ND<0.2 | |
| | | | 11/12/2010 | ND<0.2 U | ND<0.2 U | |
| MW-9 | 28 | 28 (100%) | 7/20/1995 | ND<2 | ND<2 | |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.2 | ND<0.2 | |
| | | | 11/16/2009 | ND<0.2 | ND<0.2 | |
| | | | 6/30/2010 | ND<0.2 | ND<0.2 | |
| | | | 11/12/2010 | ND<0.2 U | ND<0.2 U | |
| MW-7 | 28 | 28 (100%) | 7/20/1995 | ND<2 | ND<2 | |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.2 | ND<0.2 | |
| | | | 11/16/2009 | ND<0.2 | ND<0.2 | |
| | | | 6/30/2010 | ND<0.2 | ND<0.2 | |
| | | | 11/12/2010 | ND<0.2 U | ND<0.2 U | |
| MW-8 | 27 | 15 (55.5556%) | 7/20/1995 | ND<2 | ND<2 | |
| | | | 8/24/1995 | 4.8 | 4.8 | |
| | | | 9/28/1995 | 4 | 4 | |
| | | | 10/26/1995 | 0.4 J | 0.4 J | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | 5 | 5 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 0.28 J | 0.28 J | |
| | | | 10/25/2005 | 0.52 J | 0.52 J | |
| | | | 4/29/2006 | 0.28 J | 0.28 J | |
| | | | 11/18/2006 | 3.65 | 3.65 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | 0.55 J | 0.55 J | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | 0.25 J | 0.25 J | |
| | | | 6/11/2009 | ND<0.2 | ND<0.2 | |
| | | | 6/30/2010 | 0.24 J | 0.24 J | |
| | | | 11/12/2010 | 0.23 J | 0.23 J | |
| MW-12BR | 18 | 17 (94.4444%) | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 0.22 J | 0.22 J | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.2 | ND<0.2 | |
| | | | 11/16/2009 | ND<0.2 | ND<0.2 | |
| | | | 6/30/2010 | ND<0.2 | ND<0.2 | |
| | | | 11/12/2010 | ND<0.2 U | ND<0.2 U | |
| MW-10 | 28 | 18 (64.2857%) | 7/20/1995 | ND<2 | ND<2 | |
| | | | 8/24/1995 | 0.34 J | 0.34 J | |
| | | | 9/28/1995 | 0.7 J | 0.7 J | |
| | | | 10/26/1995 | 0.6 J | 0.6 J | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 0.24 J | 0.24 J | |
| | | | 10/25/2005 | 0.24 J | 0.24 J | |
| | | | 4/29/2006 | 0.29 J | 0.29 J | |
| | | | 11/18/2006 | 0.59 J | 0.59 J | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | 0.28 J | 0.28 J | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | 0.21 J | 0.21 J | |
| | | | 6/11/2009 | ND<0.2 | ND<0.2 | |
| | | | 11/16/2009 | 0.27 J | 0.27 J | |
| | | | 6/30/2010 | ND<0.2 | ND<0.2 | |

| | | | |
|---|---|---|---|
| | 11/12/2010 | ND<0.2 U | ND<0.2 U |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. | Original |
|---|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: trans-1,2-Dichloroethene

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.1 | -2.65209 | 7.03356 | -0.265209 |
| 2 | 0.1 | -2.36561 | 12.6297 | -0.50177 |
| 3 | 0.1 | -2.22621 | 17.5857 | -0.724391 |
| 4 | 0.1 | -2.09693 | 21.9828 | -0.934084 |
| 5 | 0.1 | -2.01409 | 26.0394 | -1.13549 |
| 6 | 0.1 | -1.92684 | 29.7521 | -1.32818 |
| 7 | 0.1 | -1.86629 | 33.2351 | -1.51481 |
| 8 | 0.1 | -1.79912 | 36.472 | -1.69472 |
| 9 | 0.1 | -1.75069 | 39.5369 | -1.86979 |
| 10 | 0.1 | -1.6954 | 42.4112 | -2.03933 |
| 11 | 0.1 | -1.65463 | 45.149 | -2.20479 |
| 12 | 0.1 | -1.60725 | 47.7323 | -2.36551 |
| 13 | 0.1 | -1.57179 | 50.2028 | -2.52269 |
| 14 | 0.1 | -1.53007 | 52.5439 | -2.6757 |
| 15 | 0.1 | -1.49852 | 54.7894 | -2.82555 |
| 16 | 0.1 | -1.46106 | 56.9241 | -2.97166 |
| 17 | 0.1 | -1.4325 | 58.9762 | -3.11491 |
| 18 | 0.1 | -1.39838 | 60.9316 | -3.25474 |
| 19 | 0.1 | -1.3722 | 62.8146 | -3.39197 |
| 20 | 0.1 | -1.34075 | 64.6122 | -3.52604 |
| 21 | 0.1 | -1.31652 | 66.3454 | -3.65769 |
| 22 | 0.1 | -1.28727 | 68.0025 | -3.78642 |
| 23 | 0.1 | -1.26464 | 69.6018 | -3.91288 |
| 24 | 0.1 | -1.23724 | 71.1326 | -4.03661 |
| 25 | 0.1 | -1.21596 | 72.6111 | -4.1582 |
| 26 | 0.1 | -1.19012 | 74.0275 | -4.27722 |
| 27 | 0.1 | -1.17 | 75.3964 | -4.39422 |
| 28 | 0.1 | -1.1455 | 76.7086 | -4.50877 |
| 29 | 0.1 | -1.12639 | 77.9774 | -4.6214 |
| 30 | 0.1 | -1.10306 | 79.1941 | -4.73171 |
| 31 | 0.1 | -1.08482 | 80.371 | -4.84019 |
| 32 | 0.1 | -1.06252 | 81.4999 | -4.94645 |
| 33 | 0.21 | -1.04505 | 82.592 | -5.16591 |
| 34 | 0.22 | -1.02365 | 83.6399 | -5.39111 |
| 35 | 0.23 | -1.00687 | 84.6537 | -5.62269 |
| 36 | 0.24 | -0.986272 | 85.6264 | -5.85939 |
| 37 | 0.24 | -0.970094 | 86.5675 | -6.09222 |
| 38 | 0.24 | -0.950222 | 87.4704 | -6.32027 |
| 39 | 0.25 | -0.93459 | 88.3439 | -6.55392 |
| 40 | 0.27 | -0.915365 | 89.1818 | -6.80107 |
| 41 | 0.28 | -0.900227 | 89.9922 | -7.05313 |
| 42 | 0.28 | -0.881587 | 90.7694 | -7.29997 |
| 43 | 0.28 | -0.866894 | 91.5209 | -7.5427 |
| 44 | 0.29 | -0.848786 | 92.2413 | -7.78885 |
| 45 | 0.34 | -0.834498 | 92.9377 | -8.07258 |
| 46 | 0.4 | -0.816874 | 93.605 | -8.39933 |
| 47 | 0.4 | -0.802956 | 94.2497 | -8.72051 |
| 48 | 0.52 | -0.785774 | 94.8672 | -9.12912 |
| 49 | 0.55 | -0.772193 | 95.4634 | -9.55382 |

| | | | | |
|---|---|---|---|---|
| 50 | 0.59 | -0.755415 | 96.0341 | -9.99952 |
| 51 | 0.6 | -0.742143 | 96.5849 | -10.4448 |
| 52 | 0.7 | -0.725736 | 97.1116 | -10.9528 |
| 53 | 1 | -0.712751 | 97.6196 | -11.6656 |
| 54 | 1 | -0.696684 | 98.1049 | -12.3623 |
| 55 | 1 | -0.683969 | 8.5727 | -13.0462 |
| 56 | 1 | -0.668209 | 99.0192 | -13.7144 |
| 57 | 1 | -0.655726 | 99.4492 | -14.3701 |
| 58 | 1 | -0.640266 | 99.8592 | -15.0104 |
| 59 | 1 | -0.628006 | 100.254 | -15.6384 |
| 60 | 1 | -0.612813 | 100.629 | -16.2512 |
| 61 | 1 | -0.60076 | 100.99 | -16.852 |
| 62 | 1 | -0.585815 | 101.333 | -17.4378 |
| 63 | 1 | -0.573953 | 101.663 | -18.0118 |
| 64 | 1 | -0.559237 | 101.975 | -18.571 |
| 65 | 1 | -0.547551 | 102.275 | -19.1185 |
| 66 | 1 | -0.533048 | 102.559 | -19.6516 |
| 67 | 1 | -0.521527 | 102.831 | -20.1731 |
| 68 | 1 | -0.507221 | 103.089 | -20.6803 |
| 69 | 1 | -0.49585 | 103.334 | -21.1762 |
| 70 | 1 | -0.481728 | 103.566 | -21.6579 |
| 71 | 1 | -0.470498 | 103.788 | -22.1284 |
| 72 | 1 | -0.456542 | 103.996 | -22.585 |
| 73 | 1 | -0.445443 | 104.195 | -23.0304 |
| 74 | 1 | -0.431644 | 104.381 | -23.462 |
| 75 | 1 | -0.420664 | 104.558 | -23.8827 |
| 76 | 1 | -0.40701 | 104.724 | -24.2897 |
| 77 | 1 | -0.396142 | 104.881 | -24.6859 |
| 78 | 1 | -0.382622 | 105.027 | -25.0685 |
| 79 | 1 | -0.371856 | 105.165 | -25.4403 |
| 80 | 1 | -0.358459 | 105.294 | -25.7988 |
| 81 | 1 | -0.347787 | 105.415 | -26.1466 |
| 82 | 1 | -0.334503 | 105.527 | -26.4811 |
| 83 | 1 | -0.323919 | 105.632 | -26.805 |
| 84 | 1 | -0.310738 | 105.728 | -27.1157 |
| 85 | 1 | -0.300232 | 105.818 | -27.416 |
| 86 | 1 | -0.287147 | 105.901 | -27.7031 |
| 87 | 1 | -0.276714 | 105.977 | -27.9798 |
| 88 | 1 | -0.263715 | 106.047 | -28.2436 |
| 89 | 1 | -0.253347 | 106.111 | -28.4969 |
| 90 | 1 | -0.240426 | 106.169 | -28.7373 |
| 91 | 1 | -0.230118 | 106.222 | -28.9674 |
| 92 | 1 | -0.217267 | 106.269 | -29.1847 |
| 93 | 1 | -0.207012 | 106.312 | -29.3917 |
| 94 | 1 | -0.194225 | 106.35 | -29.586 |
| 95 | 1 | -0.184017 | 106.383 | -29.77 |
| 96 | 1 | -0.171285 | 106.413 | -29.9413 |
| 97 | 1 | -0.161119 | 106.439 | -30.1024 |
| 98 | 1 | -0.148434 | 106.461 | -30.2508 |
| 99 | 1 | -0.138305 | 106.48 | -30.3891 |
| 100 | 1 | -0.125661 | 106.496 | -30.5148 |
| 101 | 1 | -0.115562 | 106.509 | -30.6303 |
| 102 | 1 | -0.102953 | 106.52 | -30.7333 |
| 103 | 1 | -0.0928787 | 106.528 | -30.8262 |
| 104 | 1 | -0.0802981 | 106.535 | -30.9065 |
| 105 | 1 | -0.0702426 | 106.54 | -30.9767 |
| 106 | 1 | -0.0576847 | 106.543 | -31.0344 |
| 107 | 1 | -0.0476439 | 106.545 | -31.082 |
| 108 | 1 | -0.0350997 | 106.546 | -31.1171 |
| 109 | 1 | -0.0250691 | 106.547 | -31.1422 |
| 110 | 1 | -0.0125328 | 106.547 | -31.1547 |
| 111 | 1 | 0 | 106.547 | -31.1547 |

| | | | | |
|---|---|---|---|---|
| 112 | 1 | 0.0125328 | 106.547 | -31.1422 |
| 113 | 1 | 0.0250691 | 106.548 | -31.1171 |
| 114 | 1 | 0.0350997 | 106.549 | -31.082 |
| 115 | 1 | 0.0476439 | 106.551 | -31.0344 |
| 116 | 1 | 0.0576847 | 106.555 | -30.9767 |
| 117 | 1 | 0.0702426 | 106.56 | -30.9065 |
| 118 | 1 | 0.0802981 | 106.566 | -30.8262 |
| 119 | 1 | 0.0928787 | 106.575 | -30.7333 |
| 120 | 1 | 0.102953 | 106.585 | -30.6303 |
| 121 | 1 | 0.115562 | 106.599 | -30.5148 |
| 122 | 1 | 0.125661 | 106.615 | -30.3891 |
| 123 | 1 | 0.138305 | 106.634 | -30.2508 |
| 124 | 1 | 0.148434 | 106.656 | -30.1024 |
| 125 | 1 | 0.161119 | 106.682 | -29.9413 |
| 126 | 1 | 0.171285 | 106.711 | -29.77 |
| 127 | 1 | 0.184017 | 106.745 | -29.586 |
| 128 | 1 | 0.194225 | 106.783 | -29.3917 |
| 129 | 1 | 0.207012 | 106.825 | -29.1847 |
| 130 | 1 | 0.217267 | 106.873 | -28.9674 |
| 131 | 1 | 0.230118 | 106.926 | -28.7373 |
| 132 | 1 | 0.240426 | 106.983 | -28.4969 |
| 133 | 1 | 0.253347 | 107.048 | -28.2436 |
| 134 | 1 | 0.263715 | 107.117 | -27.9798 |
| 135 | 1 | 0.276714 | 107.194 | -27.7031 |
| 136 | 1 | 0.287147 | 107.276 | -27.416 |
| 137 | 1 | 0.300232 | 107.366 | -27.1157 |
| 138 | 1 | 0.310738 | 107.463 | -26.805 |
| 139 | 1 | 0.323919 | 107.568 | -26.4811 |
| 140 | 1 | 0.334503 | 107.68 | -26.1466 |
| 141 | 1 | 0.347787 | 107.801 | -25.7988 |
| 142 | 1 | 0.358459 | 107.929 | -25.4403 |
| 143 | 1 | 0.371856 | 108.067 | -25.0685 |
| 144 | 1 | 0.382622 | 108.214 | -24.6859 |
| 145 | 1 | 0.396142 | 108.371 | -24.2897 |
| 146 | 1 | 0.40701 | 108.536 | -23.8827 |
| 147 | 1 | 0.420664 | 108.713 | -23.462 |
| 148 | 1 | 0.431644 | 108.9 | -23.0304 |
| 149 | 1 | 0.445443 | 109.098 | -22.585 |
| 150 | 1 | 0.456542 | 109.307 | -22.1284 |
| 151 | 1 | 0.470498 | 109.528 | -21.6579 |
| 152 | 1 | 0.481728 | 109.76 | -21.1762 |
| 153 | 1 | 0.49585 | 110.006 | -20.6803 |
| 154 | 1 | 0.507221 | 110.263 | -20.1731 |
| 155 | 1 | 0.521527 | 110.535 | -19.6516 |
| 156 | 1 | 0.533048 | 110.819 | -19.1185 |
| 157 | 1 | 0.547551 | 111.119 | -18.571 |
| 158 | 1 | 0.559237 | 111.432 | -18.0118 |
| 159 | 1 | 0.573953 | 111.761 | -17.4378 |
| 160 | 1 | 0.585815 | 112.104 | -16.852 |
| 161 | 1 | 0.60076 | 112.465 | -16.2512 |
| 162 | 1 | 0.612813 | 112.841 | -15.6384 |
| 163 | 1 | 0.628006 | 113.235 | -15.0104 |
| 164 | 1 | 0.640266 | 113.645 | -14.3701 |
| 165 | 1 | 0.655726 | 114.075 | -13.7144 |
| 166 | 1 | 0.668209 | 114.522 | -13.0462 |
| 167 | 1 | 0.68396 | 114.989 | -12.3623 |
| 168 | 1 | 0.696684 | 115.475 | -11.6656 |
| 169 | 1 | 0.712751 | 115.983 | -10.9528 |
| 170 | 1 | 0.725736 | 116.51 | -10.2271 |
| 171 | 1 | 0.742143 | 117.06 | -9.48494 |
| 172 | 1 | 0.755415 | 117.631 | -8.72952 |
| 173 | 1 | 0.772193 | 118.227 | -7.95733 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 1 | 0.785774 | | 118.845 | -7.17156 |
| 175 | 1 | 0.802956 | | 119.489 | -6.3686 |
| 176 | 1 | 0.816874 | | 120.157 | -5.55173 |
| 177 | 1 | 0.834498 | | 120.853 | -4.71723 |
| 178 | 1 | 0.848786 | | 121.574 | -3.86844 |
| 179 | 1 | 0.866894 | | 122.325 | -3.00155 |
| 180 | 1 | 0.881587 | | 123.102 | -2.11996 |
| 181 | 1 | 0.900227 | | 123.913 | -1.21973 |
| 182 | 1 | 0.915365 | | 124.751 | -0.304369 |
| 183 | 1 | 0.93459 | 125.624 | 0.63022 | |
| 184 | 1 | 0.950222 | | 126.527 | 1.58044 |
| 185 | 1 | 0.970094 | | 127.468 | 2.55054 |
| 186 | 1 | 0.986272 | | 128.441 | 3.53681 |
| 187 | 1 | 1.00687 | 129.455 | 4.54367 | |
| 188 | 1 | 1.02365 | 130.502 | 5.56733 | |
| 189 | 1 | 1.04505 | 131.594 | 6.61238 | |
| 190 | 1 | 1.06252 | 132.723 | 7.6749 | |
| 191 | 1 | 1.08482 | 133.9 | 8.75972 | |
| 192 | 1 | 1.10306 | 135.117 | 9.86278 | |
| 193 | 1 | 1.12639 | 136.386 | 10.9892 | |
| 194 | 1 | 1.1455 | 137.698 | 12.1347 | |
| 195 | 1 | 1.17 | 139.067 | 13.3047 | |
| 196 | 1 | 1.19012 | 140.483 | 14.4948 | |
| 197 | 1 | 1.21596 | 141.962 | 15.7108 | |
| 198 | 1 | 1.23724 | 143.493 | 16.948 | |
| 199 | 1 | 1.26464 | 145.092 | 18.2126 | |
| 200 | 1 | 1.28727 | 146.749 | 19.4999 | |
| 201 | 1 | 1.31652 | 148.482 | 20.8164 | |
| 202 | 1 | 1.34075 | 150.28 | 22.1572 | |
| 203 | 1 | 1.3722 | 152.163 | 23.5294 | |
| 204 | 1 | 1.39838 | 154.118 | 24.9278 | |
| 205 | 1 | 1.4325 | 156.17 | 26.3603 | |
| 206 | 1 | 1.46106 | 158.305 | 27.8213 | |
| 207 | 1 | 1.49852 | 160.551 | 29.3198 | |
| 208 | 1 | 1.53007 | 162.892 | 30.8499 | |
| 209 | 1 | 1.57179 | 165.362 | 32.4217 | |
| 210 | 1 | 1.60725 | 167.945 | 34.0289 | |
| 211 | 1 | 1.65463 | 170.683 | 35.6836 | |
| 212 | 1 | 1.6954 | 173.558 | 37.379 | |
| 213 | 1 | 1.75069 | 176.622 | 39.1297 | |
| 214 | 1 | 1.79912 | 179.859 | 40.9288 | |
| 215 | 1 | 1.86629 | 183.342 | 42.7951 | |
| 216 | 1 | 1.92684 | 187.055 | 44.7219 | |
| 217 | 1 | 2.01409 | 191.112 | 46.736 | |
| 218 | 3.65 | 2.09693 | 195.509 | 54.3898 | |
| 219 | 4 | 2.22621 | 200.465 | 63.2946 | |
| 220 | 4.8 | 2.36561 | 206.061 | 74.6496 | |
| 221 | 5 | 2.65209 | 213.094 | 87.91 | |

Data Set Standard Deviation = 0.59352
Numerator = 7728.17
Denominator = 16514.5
W Statistic = 0.467963 = 7728.17 / 16514.5

5% Critical value of 0.976 exceeds 0.467963
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.467963
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: trans-1,2-Dichloroethene

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | -2.30259 | -2.65209 | 7.03356 | 6.10665 |
| 2 | -2.30259 | -2.36561 | 12.6297 | 11.5537 |
| 3 | -2.30259 | -2.22621 | 17.5857 | 16.6797 |
| 4 | -2.30259 | -2.09693 | 21.9828 | 21.5081 |
| 5 | -2.30259 | -2.01409 | 26.0394 | 26.1457 |
| 6 | -2.30259 | -1.92684 | 29.7521 | 30.5824 |
| 7 | -2.30259 | -1.86629 | 33.2351 | 34.8797 |
| 8 | -2.30259 | -1.79912 | 36.472 | 39.0223 |
| 9 | -2.30259 | -1.75069 | 39.5369 | 43.0534 |
| 10 | -2.30259 | -1.6954 | 42.4112 | 46.9572 |
| 11 | -2.30259 | -1.65463 | 45.149 | 50.7671 |
| 12 | -2.30259 | -1.60725 | 47.7323 | 54.468 |
| 13 | -2.30259 | -1.57179 | 50.2028 | 58.0871 |
| 14 | -2.30259 | -1.53007 | 52.5439 | 61.6103 |
| 15 | -2.30259 | -1.49852 | 54.7894 | 65.0607 |
| 16 | -2.30259 | -1.46106 | 56.9241 | 68.4249 |
| 17 | -2.30259 | -1.4325 | 58.9762 | 71.7234 |
| 18 | -2.30259 | -1.39838 | 60.9316 | 74.9433 |
| 19 | -2.30259 | -1.3722 | 62.8146 | 78.1029 |
| 20 | -2.30259 | -1.34075 | 64.6122 | 81.1901 |
| 21 | -2.30259 | -1.31652 | 66.3454 | 84.2215 |
| 22 | -2.30259 | -1.28727 | 68.0025 | 87.1855 |
| 23 | -2.30259 | -1.26464 | 69.6018 | 90.0975 |
| 24 | -2.30259 | -1.23724 | 71.1326 | 92.9463 |
| 25 | -2.30259 | -1.21596 | 72.6111 | 95.7462 |
| 26 | -2.30259 | -1.19012 | 74.0275 | 98.4865 |
| 27 | -2.30259 | -1.17 | 75.3964 | 101.181 |
| 28 | -2.30259 | -1.1455 | 76.7086 | 103.818 |
| 29 | -2.30259 | -1.12639 | 77.9774 | 106.412 |
| 30 | -2.30259 | -1.10306 | 79.1941 | 108.952 |
| 31 | -2.30259 | -1.08482 | 80.371 | 111.45 |
| 32 | -2.30259 | -1.06252 | 81.4999 | 113.896 |
| 33 | -1.56065 | -1.04505 | 82.592 | 115.527 |
| 34 | -1.51413 | -1.02365 | 83.6399 | 117.077 |
| 35 | -1.46968 | -1.00687 | 84.6537 | 118.557 |
| 36 | -1.42712 | -0.986272 | 85.6264 | 119.964 |
| 37 | -1.42712 | -0.970094 | 86.5675 | 121.349 |
| 38 | -1.42712 | -0.950222 | 87.4704 | 122.705 |
| 39 | -1.38629 | -0.934598 | 88.3439 | 124 |
| 40 | -1.30933 | -0.915365 | 89.1818 | 125.199 |
| 41 | -1.27297 | -0.900227 | 89.9922 | 126.345 |
| 42 | -1.27297 | -0.881587 | 90.7694 | 127.467 |
| 43 | -1.27297 | -0.866894 | 91.5209 | 128.571 |
| 44 | -1.23787 | -0.848786 | 92.2413 | 129.621 |
| 45 | -1.07881 | -0.834498 | 92.9377 | 130.522 |
| 46 | -0.916291 | -0.816874 | 93.605 | 131.27 |
| 47 | -0.916291 | -0.802956 | 94.2497 | 132.006 |
| 48 | -0.653926 | -0.785774 | 94.8672 | 132.52 |
| 49 | -0.597837 | -0.772193 | 95.4634 | 132.981 |

| | | | | |
|---|---|---|---|---|
| 50 | -0.527633 | -0.755415 | 96.0341 | 133.38 |
| 51 | -0.510826 | -0.742143 | 96.5849 | 133.759 |
| 52 | -0.356675 | -0.725736 | 97.1116 | 134.018 |
| 53 | 0 | -0.712751 | 97.6196 | 134.018 |
| 54 | 0 | -0.696684 | 98.1049 | 134.018 |
| 55 | 0 | -0.683969 | 8.5727 | 134.018 |
| 56 | 0 | -0.668209 | 99.0192 | 134.018 |
| 57 | 0 | -0.655726 | 99.4492 | 134.018 |
| 58 | 0 | -0.640266 | 99.8592 | 134.018 |
| 59 | 0 | -0.628006 | 100.254 | 134.018 |
| 60 | 0 | -0.612813 | 100.629 | 134.018 |
| 61 | 0 | -0.60076 | 100.99 | 134.018 |
| 62 | 0 | -0.585815 | 101.333 | 134.018 |
| 63 | 0 | -0.573953 | 101.663 | 134.018 |
| 64 | 0 | -0.559237 | 101.975 | 134.018 |
| 65 | 0 | -0.547551 | 102.275 | 134.018 |
| 66 | 0 | -0.533048 | 102.559 | 134.018 |
| 67 | 0 | -0.521527 | 102.831 | 134.018 |
| 68 | 0 | -0.507221 | 103.089 | 134.018 |
| 69 | 0 | -0.49585 | 103.334 | 134.018 |
| 70 | 0 | -0.481728 | 103.566 | 134.018 |
| 71 | 0 | -0.470498 | 103.788 | 134.018 |
| 72 | 0 | -0.456542 | 103.996 | 134.018 |
| 73 | 0 | -0.445443 | 104.195 | 134.018 |
| 74 | 0 | -0.431644 | 104.381 | 134.018 |
| 75 | 0 | -0.420664 | 104.558 | 134.018 |
| 76 | 0 | -0.40701 | 104.724 | 134.018 |
| 77 | 0 | -0.396142 | 104.881 | 134.018 |
| 78 | 0 | -0.382622 | 105.027 | 134.018 |
| 79 | 0 | -0.371856 | 105.165 | 134.018 |
| 80 | 0 | -0.358459 | 105.294 | 134.018 |
| 81 | 0 | -0.347787 | 105.415 | 134.018 |
| 82 | 0 | -0.334503 | 105.527 | 134.018 |
| 83 | 0 | -0.323919 | 105.632 | 134.018 |
| 84 | 0 | -0.310738 | 105.728 | 134.018 |
| 85 | 0 | -0.300232 | 105.818 | 134.018 |
| 86 | 0 | -0.287147 | 105.901 | 134.018 |
| 87 | 0 | -0.276714 | 105.977 | 134.018 |
| 88 | 0 | -0.263715 | 106.047 | 134.018 |
| 89 | 0 | -0.253347 | 106.111 | 134.018 |
| 90 | 0 | -0.240426 | 106.169 | 134.018 |
| 91 | 0 | -0.230118 | 106.222 | 134.018 |
| 92 | 0 | -0.217267 | 106.269 | 134.018 |
| 93 | 0 | -0.207012 | 106.312 | 134.018 |
| 94 | 0 | -0.194225 | 106.35 | 134.018 |
| 95 | 0 | -0.184017 | 106.383 | 134.018 |
| 96 | 0 | -0.171285 | 106.413 | 134.018 |
| 97 | 0 | -0.161119 | 106.439 | 134.018 |
| 98 | 0 | -0.148434 | 106.461 | 134.018 |
| 99 | 0 | -0.138305 | 106.48 | 134.018 |
| 100 | 0 | -0.125661 | 106.496 | 134.018 |
| 101 | 0 | -0.115562 | 106.509 | 134.018 |
| 102 | 0 | -0.102953 | 106.52 | 134.018 |
| 103 | 0 | -0.0928787 | 106.528 | 134.018 |
| 104 | 0 | -0.0802981 | 106.535 | 134.018 |
| 105 | 0 | -0.0702426 | 106.54 | 134.018 |
| 106 | 0 | -0.0576847 | 106.543 | 134.018 |
| 107 | 0 | -0.0476439 | 106.545 | 134.018 |
| 108 | 0 | -0.0350997 | 106.546 | 134.018 |
| 109 | 0 | -0.0250691 | 106.547 | 134.018 |
| 110 | 0 | -0.0125328 | 106.547 | 134.018 |
| 111 | 0 | 0 | 106.547 | 134.018 |

| | | | | |
|---|---|---|---|---|
| 112 | 0 | 0.0125328 | 106.547 | 134.018 |
| 113 | 0 | 0.0250691 | 106.548 | 134.018 |
| 114 | 0 | 0.0350997 | 106.549 | 134.018 |
| 115 | 0 | 0.0476439 | 106.551 | 134.018 |
| 116 | 0 | 0.0576847 | 106.555 | 134.018 |
| 117 | 0 | 0.0702426 | 106.56 | 134.018 |
| 118 | 0 | 0.0802981 | 106.566 | 134.018 |
| 119 | 0 | 0.0928787 | 106.575 | 134.018 |
| 120 | 0 | 0.102953 | 106.585 | 134.018 |
| 121 | 0 | 0.115562 | 106.599 | 134.018 |
| 122 | 0 | 0.125661 | 106.615 | 134.018 |
| 123 | 0 | 0.138305 | 106.634 | 134.018 |
| 124 | 0 | 0.148434 | 106.656 | 134.018 |
| 125 | 0 | 0.161119 | 106.682 | 134.018 |
| 126 | 0 | 0.171285 | 106.711 | 134.018 |
| 127 | 0 | 0.184017 | 106.745 | 134.018 |
| 128 | 0 | 0.194225 | 106.783 | 134.018 |
| 129 | 0 | 0.207012 | 106.825 | 134.018 |
| 130 | 0 | 0.217267 | 106.873 | 134.018 |
| 131 | 0 | 0.230118 | 106.926 | 134.018 |
| 132 | 0 | 0.240426 | 106.983 | 134.018 |
| 133 | 0 | 0.253347 | 107.048 | 134.018 |
| 134 | 0 | 0.263715 | 107.117 | 134.018 |
| 135 | 0 | 0.276714 | 107.194 | 134.018 |
| 136 | 0 | 0.287147 | 107.276 | 134.018 |
| 137 | 0 | 0.300232 | 107.366 | 134.018 |
| 138 | 0 | 0.310738 | 107.463 | 134.018 |
| 139 | 0 | 0.323919 | 107.568 | 134.018 |
| 140 | 0 | 0.334503 | 107.68 | 134.018 |
| 141 | 0 | 0.347787 | 107.801 | 134.018 |
| 142 | 0 | 0.358459 | 107.929 | 134.018 |
| 143 | 0 | 0.371856 | 108.067 | 134.018 |
| 144 | 0 | 0.382622 | 108.214 | 134.018 |
| 145 | 0 | 0.396142 | 108.371 | 134.018 |
| 146 | 0 | 0.40701 | 108.536 | 134.018 |
| 147 | 0 | 0.420664 | 108.713 | 134.018 |
| 148 | 0 | 0.431644 | 108.9 | 134.018 |
| 149 | 0 | 0.445443 | 109.098 | 134.018 |
| 150 | 0 | 0.456542 | 109.307 | 134.018 |
| 151 | 0 | 0.470498 | 109.528 | 134.018 |
| 152 | 0 | 0.481728 | 109.76 | 134.018 |
| 153 | 0 | 0.49585 | 110.006 | 134.018 |
| 154 | 0 | 0.507221 | 110.263 | 134.018 |
| 155 | 0 | 0.521527 | 110.535 | 134.018 |
| 156 | 0 | 0.533048 | 110.819 | 134.018 |
| 157 | 0 | 0.547551 | 111.119 | 134.018 |
| 158 | 0 | 0.559237 | 111.432 | 134.018 |
| 159 | 0 | 0.573953 | 111.761 | 134.018 |
| 160 | 0 | 0.585815 | 112.104 | 134.018 |
| 161 | 0 | 0.60076 | 112.465 | 134.018 |
| 162 | 0 | 0.612813 | 112.841 | 134.018 |
| 163 | 0 | 0.628006 | 113.235 | 134.018 |
| 164 | 0 | 0.640266 | 113.645 | 134.018 |
| 165 | 0 | 0.655726 | 114.075 | 134.018 |
| 166 | 0 | 0.668209 | 114.522 | 134.018 |
| 167 | 0 | 0.68396 | 114.989 | 134.018 |
| 168 | 0 | 0.696684 | 115.475 | 134.018 |
| 169 | 0 | 0.712751 | 115.983 | 134.018 |
| 170 | 0 | 0.725736 | 116.51 | 134.018 |
| 171 | 0 | 0.742143 | 117.06 | 134.018 |
| 172 | 0 | 0.755415 | 117.631 | 134.018 |
| 173 | 0 | 0.772193 | 118.227 | 134.018 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 0 | 0.785774 | | 118.845 | 134.018 |
| 175 | 0 | 0.802956 | | 119.489 | 134.018 |
| 176 | 0 | 0.816874 | | 120.157 | 134.018 |
| 177 | 0 | 0.834498 | | 120.853 | 134.018 |
| 178 | 0 | 0.848786 | | 121.574 | 134.018 |
| 179 | 0 | 0.866894 | | 122.325 | 134.018 |
| 180 | 0 | 0.881587 | | 123.102 | 134.018 |
| 181 | 0 | 0.900227 | | 123.913 | 134.018 |
| 182 | 0 | 0.915365 | | 124.751 | 134.018 |
| 183 | 0 | 0.93459 | 125.624 | 134.018 | |
| 184 | 0 | 0.950222 | | 126.527 | 134.018 |
| 185 | 0 | 0.970094 | | 127.468 | 134.018 |
| 186 | 0 | 0.986272 | | 128.441 | 134.018 |
| 187 | 0 | 1.00687 | 129.455 | 134.018 | |
| 188 | 0 | 1.02365 | 130.502 | 134.018 | |
| 189 | 0 | 1.04505 | 131.594 | 134.018 | |
| 190 | 0 | 1.06252 | 132.723 | 134.018 | |
| 191 | 0 | 1.08482 | 133.9 | 134.018 | |
| 192 | 0 | 1.10306 | 135.117 | 134.018 | |
| 193 | 0 | 1.12639 | 136.386 | 134.018 | |
| 194 | 0 | 1.1455 | 137.698 | 134.018 | |
| 195 | 0 | 1.17 | 139.067 | 134.018 | |
| 196 | 0 | 1.19012 | 140.483 | 134.018 | |
| 197 | 0 | 1.21596 | 141.962 | 134.018 | |
| 198 | 0 | 1.23724 | 143.493 | 134.018 | |
| 199 | 0 | 1.26464 | 145.092 | 134.018 | |
| 200 | 0 | 1.28727 | 146.749 | 134.018 | |
| 201 | 0 | 1.31652 | 148.482 | 134.018 | |
| 202 | 0 | 1.34075 | 150.28 | 134.018 | |
| 203 | 0 | 1.3722 | 152.163 | 134.018 | |
| 204 | 0 | 1.39838 | 154.118 | 134.018 | |
| 205 | 0 | 1.4325 | 156.17 | 134.018 | |
| 206 | 0 | 1.46106 | 158.305 | 134.018 | |
| 207 | 0 | 1.49852 | 160.551 | 134.018 | |
| 208 | 0 | 1.53007 | 162.892 | 134.018 | |
| 209 | 0 | 1.57179 | 165.362 | 134.018 | |
| 210 | 0 | 1.60725 | 167.945 | 134.018 | |
| 211 | 0 | 1.65463 | 170.683 | 134.018 | |
| 212 | 0 | 1.6954 | 173.558 | 134.018 | |
| 213 | 0 | 1.75069 | 176.622 | 134.018 | |
| 214 | 0 | 1.79912 | 179.859 | 134.018 | |
| 215 | 0 | 1.86629 | 183.342 | 134.018 | |
| 216 | 0 | 1.92684 | 187.055 | 134.018 | |
| 217 | 0 | 2.01409 | 191.112 | 134.018 | |
| 218 | 1.29473 | 2.09693 | 195.509 | 136.733 | |
| 219 | 1.38629 | 2.22621 | 200.465 | 139.819 | |
| 220 | 1.56862 | 2.36561 | 206.061 | 143.53 | |
| 221 | 1.60944 | 2.65209 | 213.094 | 147.798 | |

Data Set Standard Deviation = 0.876494
Numerator = 21844.3
Denominator = 36015.8
W Statistic = 0.60652 = 21844.3 / 36015.8

5% Critical value of 0.976 exceeds 0.60652
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.60652
Evidence of non-normality at 99% level of significance

# Kruskal-Wallis Non-Parametric Test

## Parameter: trans-1,2-Dichloroethene

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

# Kruskal Wallis Ranks

## Background Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-13 | 3/16/1999 | ND<0 | 99 |
| | 9/23/1999 | ND<0 | 99 |
| | 3/15/2000 | ND<0 | 99 |
| | 9/24/2003 | ND<0 | 99 |
| | 3/11/2004 | ND<0 | 99 |
| | 10/12/2004 | ND<0 | 99 |
| | 4/1/2005 | ND<0 | 99 |
| | 10/25/2005 | ND<0 | 99 |
| | 4/29/2006 | ND<0 | 99 |
| | 11/18/2006 | ND<0 | 99 |
| | 5/23/2007 | ND<0 | 99 |
| | 11/28/2007 | ND<0 | 99 |
| | 6/5/2008 | ND<0 | 99 |
| | 11/20/2008 | ND<0 | 99 |
| | 6/11/2009 | ND<-2.30259 | 99 |
| | 11/16/2009 | ND<-2.30259 | 99 |
| | 6/30/2010 | ND<-2.30259 | 99 |
| | 11/12/2010 | ND<-2.30259 U | 99 |

Rank Sum = 1782
Rank Mean = 99

Background Rank Sum = 1782
Background Rank Mean = 99

## Compliance Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-6 | 7/20/1995 | ND<0 | 99 |
| | 8/24/1995 | ND<0 | 99 |
| | 9/28/1995 | ND<0 | 99 |
| | 10/26/1995 | ND<0 | 99 |
| | 11/19/1996 | ND<0 | 99 |
| | 12/19/1996 | ND<0 | 99 |
| | 3/24/1997 | ND<0 | 99 |
| | 9/24/1997 | ND<0 | 99 |
| | 4/7/1998 | ND<0 | 99 |
| | 9/23/1998 | ND<0 | 99 |
| | 3/16/1999 | ND<0 | 99 |
| | 9/23/1999 | ND<0 | 99 |
| | 3/15/2000 | ND<0 | 99 |
| | 9/24/2003 | ND<0 | 99 |
| | 3/11/2004 | ND<0 | 99 |
| | 10/12/2004 | ND<0 | 99 |
| | 4/1/2005 | ND<0 | 99 |
| | 10/25/2005 | ND<0 | 99 |
| | 4/29/2006 | ND<0 | 99 |
| | 11/18/2006 | ND<0 | 99 |

| | | | | |
|---|---|---|---|---|
| | 5/23/2007 | ND<0 | 99 | |
| | 11/28/2007 | ND<0 | 99 | |
| | 6/5/2008 | ND<0 | 99 | |
| | 11/20/2008 | ND<0 | 99 | |
| | 6/11/2009 | ND<-2.30259 | | 99 |
| | 11/16/2009 | ND<-2.30259 | | 99 |
| | 6/30/2010 | ND<-2.30259 | | 99 |
| | 11/12/2010 | ND<-2.30259 U | | 99 |

Rank Sum = 2772
Rank Mean = 99

| | | | | |
|---|---|---|---|---|
| MW-11R | 7/20/1995 | ND<0 | 99 | |
| | 8/24/1995 | ND<0 | 99 | |
| | 9/28/1995 | ND<0 | 99 | |
| | 10/26/1995 | -0.916291 J | | 211 |
| | 11/19/1996 | ND<0 | 99 | |
| | 12/19/1996 | ND<0 | 99 | |
| | 3/24/1997 | ND<0 | 99 | |
| | 9/24/1997 | ND<0 | 99 | |
| | 4/7/1998 | ND<0 | 99 | |
| | 9/23/1998 | ND<0 | 99 | |
| | 3/16/1999 | ND<0 | 99 | |
| | 9/23/1999 | ND<0 | 99 | |
| | 3/15/2000 | ND<0 | 99 | |
| | 9/24/2003 | ND<0 | 99 | |
| | 3/11/2004 | ND<0 | 99 | |
| | 10/12/2004 | ND<0 | 99 | |
| | 4/1/2005 | ND<0 | 99 | |
| | 10/25/2005 | ND<0 | 99 | |
| | 4/29/2006 | ND<0 | 99 | |
| | 11/18/2006 | ND<0 | 99 | |
| | 5/23/2007 | ND<0 | 99 | |
| | 11/28/2007 | ND<0 | 99 | |
| | 6/5/2008 | ND<0 | 99 | |
| | 11/20/2008 | ND<0 | 99 | |
| | 6/11/2009 | ND<-2.30259 | | 99 |
| | 11/16/2009 | ND<-2.30259 | | 99 |
| | 6/30/2010 | ND<-2.30259 | | 99 |
| | 11/12/2010 | ND<-2.30259 U | | 99 |

Rank Sum = 2884
Rank Mean = 103

| | | | | |
|---|---|---|---|---|
| MW-12AR | 3/16/1999 | ND<0 | 99 | |
| | 9/23/1999 | ND<0 | 99 | |
| | 3/15/2000 | ND<0 | 99 | |
| | 9/24/2003 | ND<0 | 99 | |
| | 3/11/2004 | ND<0 | 99 | |
| | 10/12/2004 | ND<0 | 99 | |
| | 4/1/2005 | ND<0 | 99 | |
| | 10/25/2005 | ND<0 | 99 | |
| | 4/29/2006 | ND<0 | 99 | |
| | 11/18/2006 | ND<0 | 99 | |
| | 5/23/2007 | ND<0 | 99 | |
| | 11/28/2007 | ND<0 | 99 | |
| | 6/5/2008 | ND<0 | 99 | |
| | 11/20/2008 | ND<0 | 99 | |
| | 6/11/2009 | ND<-2.30259 | | 99 |
| | 11/16/2009 | ND<-2.30259 | | 99 |
| | 6/30/2010 | ND<-2.30259 | | 99 |
| | 11/12/2010 | ND<-2.30259 U | | 99 |

Rank Sum = 1782
Rank Mean = 99

| | | | |
|---|---|---|---|
| MW-9 | 7/20/1995 | ND<0 | 99 |
| | 8/24/1995 | ND<0 | 99 |
| | 9/28/1995 | ND<0 | 99 |
| | 10/26/1995 | ND<0 | 99 |
| | 11/19/1996 | ND<0 | 99 |
| | 12/19/1996 | ND<0 | 99 |
| | 3/24/1997 | ND<0 | 99 |
| | 9/24/1997 | ND<0 | 99 |
| | 4/7/1998 | ND<0 | 99 |
| | 9/23/1998 | ND<0 | 99 |
| | 3/16/1999 | ND<0 | 99 |
| | 9/23/1999 | ND<0 | 99 |
| | 3/15/2000 | ND<0 | 99 |
| | 9/24/2003 | ND<0 | 99 |
| | 3/11/2004 | ND<0 | 99 |
| | 10/12/2004 | ND<0 | 99 |
| | 4/1/2005 | ND<0 | 99 |
| | 10/25/2005 | ND<0 | 99 |
| | 4/29/2006 | ND<0 | 99 |
| | 11/18/2006 | ND<0 | 99 |
| | 5/23/2007 | ND<0 | 99 |
| | 11/28/2007 | ND<0 | 99 |
| | 6/5/2008 | ND<0 | 99 |
| | 11/20/2008 | ND<0 | 99 |
| | 6/11/2009 | ND<-2.30259 | 99 |
| | 11/16/2009 | ND<-2.30259 | 99 |
| | 6/30/2010 | ND<-2.30259 | 99 |
| | 11/12/2010 | ND<-2.30259 U | 99 |

Rank Sum = 2772
Rank Mean = 99

| | | | |
|---|---|---|---|
| MW-7 | 7/20/1995 | ND<0 | 99 |
| | 8/24/1995 | ND<0 | 99 |
| | 9/28/1995 | ND<0 | 99 |
| | 10/26/1995 | ND<0 | 99 |
| | 11/19/1996 | ND<0 | 99 |
| | 12/19/1996 | ND<0 | 99 |
| | 3/24/1997 | ND<0 | 99 |
| | 9/24/1997 | ND<0 | 99 |
| | 4/7/1998 | ND<0 | 99 |
| | 9/23/1998 | ND<0 | 99 |
| | 3/16/1999 | ND<0 | 99 |
| | 9/23/1999 | ND<0 | 99 |
| | 3/15/2000 | ND<0 | 99 |
| | 9/24/2003 | ND<0 | 99 |
| | 3/11/2004 | ND<0 | 99 |
| | 10/12/2004 | ND<0 | 99 |
| | 4/1/2005 | ND<0 | 99 |
| | 10/25/2005 | ND<0 | 99 |
| | 4/29/2006 | ND<0 | 99 |
| | 11/18/2006 | ND<0 | 99 |
| | 5/23/2007 | ND<0 | 99 |
| | 11/28/2007 | ND<0 | 99 |
| | 6/5/2008 | ND<0 | 99 |
| | 11/20/2008 | ND<0 | 99 |
| | 6/11/2009 | ND<-2.30259 | 99 |
| | 11/16/2009 | ND<-2.30259 | 99 |
| | 6/30/2010 | ND<-2.30259 | 99 |
| | 11/12/2010 | ND<-2.30259 U | 99 |

Rank Sum = 2772
Rank Mean = 99

| | | | | |
|---|---|---|---|---|
| MW-8 | 7/20/1995 | ND<0 | 99 | |
| | 8/24/1995 | 1.56862 | | 220 |
| | 9/28/1995 | 1.38629 | | 219 |
| | 10/26/1995 | -0.916291 | J | 212 |
| | 11/19/1996 | ND<0 | 99 | |
| | 12/19/1996 | ND<0 | 99 | |
| | 3/24/1997 | 1.60944 | | 221 |
| | 9/24/1997 | ND<0 | 99 | |
| | 4/7/1998 | ND<0 | 99 | |
| | 9/23/1998 | ND<0 | 99 | |
| | 3/16/1999 | ND<0 | 99 | |
| | 9/23/1999 | ND<0 | 99 | |
| | 3/15/2000 | ND<0 | 99 | |
| | 9/24/2003 | ND<0 | 99 | |
| | 3/11/2004 | ND<0 | 99 | |
| | 10/12/2004 | ND<0 | 99 | |
| | 4/1/2005 | -1.27297 | J | 206 |
| | 10/25/2005 | -0.653926 | J | 213 |
| | 4/29/2006 | -1.27297 | J | 207 |
| | 11/18/2006 | 1.29473 | | 218 |
| | 5/23/2007 | ND<0 | 99 | |
| | 11/28/2007 | -0.597837 | J | 214 |
| | 6/5/2008 | ND<0 | 99 | |
| | 11/20/2008 | -1.38629 | J | 204 |
| | 6/11/2009 | ND<-2.30259 | | 99 |
| | 6/30/2010 | -1.42712 | J | 201 |
| | 11/12/2010 | -1.46968 | J | 200 |

Rank Sum = 4020
Rank Mean = 148.889

| | | | | |
|---|---|---|---|---|
| MW-12BR | 3/16/1999 | ND<0 | 99 | |
| | 9/23/1999 | ND<0 | 99 | |
| | 3/15/2000 | ND<0 | 99 | |
| | 9/24/2003 | ND<0 | 99 | |
| | 3/11/2004 | ND<0 | 99 | |
| | 10/12/2004 | ND<0 | 99 | |
| | 4/1/2005 | -1.51413 | J | 199 |
| | 10/25/2005 | ND<0 | 99 | |
| | 4/29/2006 | ND<0 | 99 | |
| | 11/18/2006 | ND<0 | 99 | |
| | 5/23/2007 | ND<0 | 99 | |
| | 11/28/2007 | ND<0 | 99 | |
| | 6/5/2008 | ND<0 | 99 | |
| | 11/20/2008 | ND<0 | 99 | |
| | 6/11/2009 | ND<-2.30259 | | 99 |
| | 11/16/2009 | ND<-2.30259 | | 99 |
| | 6/30/2010 | ND<-2.30259 | | 99 |
| | 11/12/2010 | ND<-2.30259 | U | 99 |

Rank Sum = 1882
Rank Mean = 104.556

| | | | | |
|---|---|---|---|---|
| MW-10 | 7/20/1995 | ND<0 | 99 | |
| | 8/24/1995 | -1.07881 | J | 210 |
| | 9/28/1995 | -0.356675 | J | 217 |
| | 10/26/1995 | -0.510826 | J | 216 |
| | 11/19/1996 | ND<0 | 99 | |
| | 12/19/1996 | ND<0 | 99 | |
| | 3/24/1997 | ND<0 | 99 | |
| | 9/24/1997 | ND<0 | 99 | |
| | 4/7/1998 | ND<0 | 99 | |
| | 9/23/1998 | ND<0 | 99 | |

| | | | |
|---|---|---|---|
| 3/16/1999 | ND<0 | 99 | |
| 9/23/1999 | ND<0 | 99 | |
| 3/15/2000 | ND<0 | 99 | |
| 9/24/2003 | ND<0 | 99 | |
| 3/11/2004 | ND<0 | 99 | |
| 10/12/2004 | ND<0 | 99 | |
| 4/1/2005 | -1.42712 J | 202 | |
| 10/25/2005 | -1.42712 J | 203 | |
| 4/29/2006 | -1.23787 J | 209 | |
| 11/18/2006 | -0.527633 J | 215 | |
| 5/23/2007 | ND<0 | 99 | |
| 11/28/2007 | -1.27297 J | 208 | |
| 6/5/2008 | ND<0 | 99 | |
| 11/20/2008 | -1.56065 J | 198 | |
| 6/11/2009 | ND<-2.30259 | 99 | |
| 11/16/2009 | -1.30933 J | 205 | |
| 6/30/2010 | ND<-2.30259 | 99 | |
| 11/12/2010 | ND<-2.30259 U | 99 | |

Rank Sum = 3865
Rank Mean = 138.036

## Calculation Results:

Kruskal-Wallis H Statistic = 19.3337
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 66.2803
95% Confidence comparison value is 15.5073 at 8 degrees of freedom
19.3337 > 15.5073 indicating a significant group difference at 5% significance level
66.2803 > 15.5073 indicating a significant group difference at 5% significance level when adjusted for ties

## Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 99

| Well | Mean Rank | Dif from Bkg | Critical Value |
|---|---|---|---|
| MW-6 | 99 | 0 | 44.9386 |
| MW-11R | 103 | 4 | 44.9386 |
| MW-12A | R | 99 | 0 | 49.5832 |
| MW-9 | 99 | 0 | 44.9386 |
| MW-7 | 99 | 0 | 44.9386 |
| MW-8 | 148.889 | 49.8889 | 45.263 |
| MW-12B | R | 104.556 | 5.55556 | 49.5832 |
| MW-10 | 138.036 | 39.0357 | 44.9386 |

## Individual Well Comparisons at Groupwise 5% Significance Level (0.625% Significance Level per comparison)

0.625% Z score is 2.51213
Mean background rank is 99

| Well | Mean Rank | Dif from Bkg | Critical Value |
|---|---|---|---|
| MW-6 | 99 | 0 | 48.5275 |
| MW-11R | 103 | 4 | 48.5275 |
| MW-12A | R | 99 | 0 | 53.5431 |
| MW-9 | 99 | 0 | 48.5275 |
| MW-7 | 99 | 0 | 48.5275 |
| MW-8 | 148.889 | 49.8889 | 48.8779 |
| MW-12B | R | 104.556 | 5.55556 | 53.5431 |
| MW-10 | 138.036 | 39.0357 | 48.5275 |

# Mann-Kendall Trend Analysis

## Parameter: trans-1,2-Dichloroethene

## Location: MW-8

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | | Positives | Negatives | |
|---|---|---|---|---|---|---|
| 1.56862 | | ND<0 | 1.56862 | 1 | 0 | |
| 1.38629 | | ND<0 | 1.38629 | 2 | 0 | |
| -0.916291 J | | ND<0 | -0.916291 | 2 | 1 | |
| ND<0 | ND<0 | 0 | 2 | 1 | | |
| ND<0 | ND<0 | 0 | 2 | 1 | | |
| 1.60944 | | ND<0 | 1.60944 | 3 | 1 | |
| ND<0 | ND<0 | 0 | 3 | 1 | | |
| ND<0 | ND<0 | 0 | 3 | 1 | | |
| ND<0 | ND<0 | 0 | 3 | 1 | | |
| ND<0 | ND<0 | 0 | 3 | 1 | | |
| ND<0 | ND<0 | 0 | 3 | 1 | | |
| ND<0 | ND<0 | 0 | 3 | 1 | | |
| ND<0 | ND<0 | 0 | 3 | 1 | | |
| ND<0 | ND<0 | 0 | 3 | 1 | | |
| -1.27297 J | | ND<0 | -1.272973 | 2 | | |
| -0.653926 J | | ND<0 | -0.653926 | 3 | 3 | |
| -1.27297 J | | ND<0 | -1.272973 | 4 | | |
| 1.29473 | | ND<0 | 1.29473 | 4 | 4 | |
| ND<0 | ND<0 | 0 | 4 | 4 | | |
| -0.597837 J | | ND<0 | -0.597837 | 4 | 5 | |
| ND<0 | ND<0 | 0 | 4 | 5 | | |
| -1.38629 J | | ND<0 | -1.386294 | 6 | | |
| ND<-2.30259 | | ND<0 | -2.302594 | 7 | | |
| -1.42712 J | | ND<0 | -1.427124 | 8 | | |
| -1.46968 J | | ND<0 | -1.469684 | 9 | | |
| | | | | | | |
| 1.38629 | | 1.56862 | -0.182322 | 4 | 10 | |
| -0.916291 J | | 1.56862 | -2.484914 | 11 | | |
| ND<0 | 1.56862 | -1.568624 | 12 | | | |
| ND<0 | 1.56862 | -1.568624 | 13 | | | |
| 1.60944 | | 1.56862 | 0.040822 | 5 | 13 | |
| ND<0 | 1.56862 | -1.568625 | 14 | | | |
| ND<0 | 1.56862 | -1.568625 | 15 | | | |
| ND<0 | 1.56862 | -1.568625 | 16 | | | |
| ND<0 | 1.56862 | -1.568625 | 17 | | | |
| ND<0 | 1.56862 | -1.568625 | 18 | | | |
| ND<0 | 1.56862 | -1.568625 | 19 | | | |
| ND<0 | 1.56862 | -1.568625 | 20 | | | |
| ND<0 | 1.56862 | -1.568625 | 21 | | | |
| ND<0 | 1.56862 | -1.568625 | 22 | | | |
| -1.27297 J | | 1.56862 | -2.841585 | 23 | | |
| -0.653926 J | | 1.56862 | -2.222545 | 24 | | |
| -1.27297 J | | 1.56862 | -2.841585 | 25 | | |
| 1.29473 | | 1.56862 | -0.273889 | 5 | 26 | |
| ND<0 | 1.56862 | -1.568625 | 27 | | | |
| -0.597837 J | | 1.56862 | -2.166455 | 28 | | |
| ND<0 | 1.56862 | -1.568625 | 29 | | | |

| | | | | | |
|---|---|---|---|---|---|
| -1.38629 J | 1.56862 | -2.954915 | 30 | | |
| ND<-2.30259 | 1.56862 | -3.8712 5 | 31 | | |
| -1.42712 J | 1.56862 | -2.995735 | 32 | | |
| -1.46968 J | 1.56862 | -3.038295 | 33 | | |
| | | | | | |
| -0.916291 J | 1.38629 | -2.302595 | 34 | | |
| ND<0 | 1.38629 | -1.386295 | 35 | | |
| ND<0 | 1.38629 | -1.386295 | 36 | | |
| 1.60944 | 1.38629 | 0.223144 | 6 | 36 | |
| ND<0 | 1.38629 | -1.386296 | 37 | | |
| ND<0 | 1.38629 | -1.386296 | 38 | | |
| ND<0 | 1.38629 | -1.386296 | 39 | | |
| ND<0 | 1.38629 | -1.386296 | 40 | | |
| ND<0 | 1.38629 | -1.386296 | 41 | | |
| ND<0 | 1.38629 | -1.386296 | 42 | | |
| ND<0 | 1.38629 | -1.386296 | 43 | | |
| ND<0 | 1.38629 | -1.386296 | 44 | | |
| ND<0 | 1.38629 | -1.386296 | 45 | | |
| -1.27297 J | 1.38629 | -2.659266 | 46 | | |
| -0.653926 J | 1.38629 | -2.040226 | 47 | | |
| -1.27297 J | 1.38629 | -2.659266 | 48 | | |
| 1.29473 | 1.38629 | -0.0915672 | 6 | 49 | |
| ND<0 | 1.38629 | -1.386296 | 50 | | |
| -0.597837 J | 1.38629 | -1.984136 | 51 | | |
| ND<0 | 1.38629 | -1.386296 | 52 | | |
| -1.38629 J | 1.38629 | -2.772596 | 53 | | |
| ND<-2.30259 | 1.38629 | -3.688886 | 54 | | |
| -1.42712 J | 1.38629 | -2.813416 | 55 | | |
| -1.46968 J | 1.38629 | -2.855976 | 56 | | |
| | | | | | |
| ND<0 | -0.916291 J | 0.916291 | 7 | 56 | |
| ND<0 | -0.916291 J | 0.916291 | 8 | 56 | |
| 1.60944 | -0.916291 J | 2.52573 9 | 56 | | |
| ND<0 | -0.916291 J | 0.916291 | 10 | 56 | |
| ND<0 | -0.916291 J | 0.916291 | 11 | 56 | |
| ND<0 | -0.916291 J | 0.916291 | 12 | 56 | |
| ND<0 | -0.916291 J | 0.916291 | 13 | 56 | |
| ND<0 | -0.916291 J | 0.916291 | 14 | 56 | |
| ND<0 | -0.916291 J | 0.916291 | 15 | 56 | |
| ND<0 | -0.916291 J | 0.916291 | 16 | 56 | |
| ND<0 | -0.916291 J | 0.916291 | 17 | 56 | |
| ND<0 | -0.916291 J | 0.916291 | 18 | 56 | |
| -1.27297 J | -0.916291 J | -0.356675 | 18 | 57 | |
| -0.653926 J | -0.916291 J | 0.262364 | 19 | 57 | |
| -1.27297 J | -0.916291 J | -0.356675 | 19 | 58 | |
| 1.29473 | -0.916291 J | 2.21102 20 | 58 | | |
| ND<0 | -0.916291 J | 0.916291 | 21 | 58 | |
| -0.597837 J | -0.916291 J | 0.318454 | 22 | 58 | |
| ND<0 | -0.916291 J | 0.916291 | 23 | 58 | |
| -1.38629 J | -0.916291 J | -0.470004 | 23 | 59 | |
| ND<-2.30259 | -0.916291 J | -1.3862923 | 60 | | |
| -1.42712 J | -0.916291 J | -0.510826 | 23 | 61 | |
| -1.46968 J | -0.916291 J | -0.553385 | 23 | 62 | |
| | | | | | |
| ND<0 | ND<0 | 0 | 23 | 62 | |
| 1.60944 | ND<0 | 1.60944 24 | 62 | | |
| ND<0 | ND<0 | 0 | 24 | 62 | |
| ND<0 | ND<0 | 0 | 24 | 62 | |
| ND<0 | ND<0 | 0 | 24 | 62 | |
| ND<0 | ND<0 | 0 | 24 | 62 | |
| ND<0 | ND<0 | 0 | 24 | 62 | |
| ND<0 | ND<0 | 0 | 24 | 62 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 24 | 62 | | | |
| ND<0 | ND<0 | 0 | 24 | 62 | | | |
| ND<0 | ND<0 | 0 | 24 | 62 | | | |
| -1.27297 J | | ND<0 | -1.2729 | 24 | 63 | | |
| -0.653926 J | | ND<0 | -0.653926 | | 24 | 64 | |
| -1.27297 J | | ND<0 | -1.2729 | 24 | 65 | | |
| 1.29473 | | ND<0 | 1.29473 | 25 | 65 | | |
| ND<0 | ND<0 | 0 | 25 | 65 | | | |
| -0.597837 J | | ND<0 | -0.597837 | | 25 | 66 | |
| ND<0 | ND<0 | 0 | 25 | 66 | | | |
| -1.38629 J | | ND<0 | -1.3862 | 25 | 67 | | |
| ND<-2.30259 | | ND<0 | -2.3025 | 25 | 68 | | |
| -1.42712 J | | ND<0 | -1.4271 | 25 | 69 | | |
| -1.46968 J | | ND<0 | -1.4696 | 25 | 70 | | |
| | | | | | | | |
| 1.60944 | | ND<0 | 1.60944 | 26 | 70 | | |
| ND<0 | ND<0 | 0 | 26 | 70 | | | |
| ND<0 | ND<0 | 0 | 26 | 70 | | | |
| ND<0 | ND<0 | 0 | 26 | 70 | | | |
| ND<0 | ND<0 | 0 | 26 | 70 | | | |
| ND<0 | ND<0 | 0 | 26 | 70 | | | |
| ND<0 | ND<0 | 0 | 26 | 70 | | | |
| ND<0 | ND<0 | 0 | 26 | 70 | | | |
| ND<0 | ND<0 | 0 | 26 | 70 | | | |
| ND<0 | ND<0 | 0 | 26 | 70 | | | |
| -1.27297 J | | ND<0 | -1.2729 | 26 | 71 | | |
| -0.653926 J | | ND<0 | -0.653926 | | 26 | 72 | |
| -1.27297 J | | ND<0 | -1.2729 | 26 | 73 | | |
| 1.29473 | | ND<0 | 1.29473 | 27 | 73 | | |
| ND<0 | ND<0 | 0 | 27 | 73 | | | |
| -0.597837 J | | ND<0 | -0.597837 | | 27 | 74 | |
| ND<0 | ND<0 | 0 | 27 | 74 | | | |
| -1.38629 J | | ND<0 | -1.3862 | 27 | 75 | | |
| ND<-2.30259 | | ND<0 | -2.3025 | 27 | 76 | | |
| -1.42712 J | | ND<0 | -1.4271 | 27 | 77 | | |
| -1.46968 J | | ND<0 | -1.4696 | 27 | 78 | | |
| | | | | | | | |
| ND<0 | 1.60944 | | -1.6094 | 27 | 79 | | |
| ND<0 | 1.60944 | | -1.6094 | 27 | 80 | | |
| ND<0 | 1.60944 | | -1.6094 | 27 | 81 | | |
| ND<0 | 1.60944 | | -1.6094 | 27 | 82 | | |
| ND<0 | 1.60944 | | -1.6094 | 27 | 83 | | |
| ND<0 | 1.60944 | | -1.6094 | 27 | 84 | | |
| ND<0 | 1.60944 | | -1.6094 | 27 | 85 | | |
| ND<0 | 1.60944 | | -1.6094 | 27 | 86 | | |
| ND<0 | 1.60944 | | -1.6094 | 27 | 87 | | |
| -1.27297 J | | 1.60944 | -2.8824 | 27 | 88 | | |
| -0.653926 J | | 1.60944 | -2.2633 | 27 | 89 | | |
| -1.27297 J | | 1.60944 | -2.8824 | 27 | 90 | | |
| 1.29473 | | 1.60944 | -0.3147 | 11 | 27 | 91 | |
| ND<0 | 1.60944 | | -1.6094 | 27 | 92 | | |
| -0.597837 J | | 1.60944 | -2.2072 | 27 | 93 | | |
| ND<0 | 1.60944 | | -1.6094 | 27 | 94 | | |
| -1.38629 J | | 1.60944 | -2.9957 | 32 | 7 | 95 | |
| ND<-2.30259 | | 1.60944 | -3.9120 | 22 | 7 | 96 | |
| -1.42712 J | | 1.60944 | -3.0365 | 52 | 7 | 97 | |
| -1.46968 J | | 1.60944 | -3.0791 | 12 | 7 | 98 | |
| | | | | | | | |
| ND<0 | ND<0 | 0 | 27 | 98 | | | |
| ND<0 | ND<0 | 0 | 27 | 98 | | | |
| ND<0 | ND<0 | 0 | 27 | 98 | | | |
| ND<0 | ND<0 | 0 | 27 | 98 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 27 | 98 | | |
| ND<0 | ND<0 | 0 | 27 | 98 | | |
| ND<0 | ND<0 | 0 | 27 | 98 | | |
| ND<0 | ND<0 | 0 | 27 | 98 | | |
| -1.27297 J | | ND<0 | -1.27297 | 27 | 99 | |
| -0.653926 J | | ND<0 | -0.653926 | | 27 | 100 |
| -1.27297 J | | ND<0 | -1.27297 | 27 | 101 | |
| 1.29473 | | ND<0 | 1.29473 | 28 | 101 | |
| ND<0 | ND<0 | 0 | 28 | 101 | | |
| -0.597837 J | | ND<0 | -0.597837 | | 28 | 102 |
| ND<0 | ND<0 | 0 | 28 | 102 | | |
| -1.38629 J | | ND<0 | -1.38629 | 28 | 103 | |
| ND<-2.30259 | | ND<0 | -2.30259 | 28 | 104 | |
| -1.42712 J | | ND<0 | -1.42712 | 28 | 105 | |
| -1.46968 J | | ND<0 | -1.46968 | 28 | 106 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 28 | 106 | | |
| ND<0 | ND<0 | 0 | 28 | 106 | | |
| ND<0 | ND<0 | 0 | 28 | 106 | | |
| ND<0 | ND<0 | 0 | 28 | 106 | | |
| ND<0 | ND<0 | 0 | 28 | 106 | | |
| ND<0 | ND<0 | 0 | 28 | 106 | | |
| ND<0 | ND<0 | 0 | 28 | 106 | | |
| -1.27297 J | | ND<0 | -1.27297 | 28 | 107 | |
| -0.653926 J | | ND<0 | -0.653926 | | 28 | 108 |
| -1.27297 J | | ND<0 | -1.27297 | 28 | 109 | |
| 1.29473 | | ND<0 | 1.29473 | 29 | 109 | |
| ND<0 | ND<0 | 0 | 29 | 109 | | |
| -0.597837 J | | ND<0 | -0.597837 | | 29 | 110 |
| ND<0 | ND<0 | 0 | 29 | 110 | | |
| -1.38629 J | | ND<0 | -1.38629 | 29 | 111 | |
| ND<-2.30259 | | ND<0 | -2.30259 | 29 | 112 | |
| -1.42712 J | | ND<0 | -1.42712 | 29 | 113 | |
| -1.46968 J | | ND<0 | -1.46968 | 29 | 114 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 29 | 114 | | |
| ND<0 | ND<0 | 0 | 29 | 114 | | |
| ND<0 | ND<0 | 0 | 29 | 114 | | |
| ND<0 | ND<0 | 0 | 29 | 114 | | |
| ND<0 | ND<0 | 0 | 29 | 114 | | |
| ND<0 | ND<0 | 0 | 29 | 114 | | |
| -1.27297 J | | ND<0 | -1.27297 | 29 | 115 | |
| -0.653926 J | | ND<0 | -0.653926 | | 29 | 116 |
| -1.27297 J | | ND<0 | -1.27297 | 29 | 117 | |
| 1.29473 | | ND<0 | 1.29473 | 30 | 117 | |
| ND<0 | ND<0 | 0 | 30 | 117 | | |
| -0.597837 J | | ND<0 | -0.597837 | | 30 | 118 |
| ND<0 | ND<0 | 0 | 30 | 118 | | |
| -1.38629 J | | ND<0 | -1.38629 | 30 | 119 | |
| ND<-2.30259 | | ND<0 | -2.30259 | 30 | 120 | |
| -1.42712 J | | ND<0 | -1.42712 | 30 | 121 | |
| -1.46968 J | | ND<0 | -1.46968 | 30 | 122 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 30 | 122 | | |
| ND<0 | ND<0 | 0 | 30 | 122 | | |
| ND<0 | ND<0 | 0 | 30 | 122 | | |
| ND<0 | ND<0 | 0 | 30 | 122 | | |
| ND<0 | ND<0 | 0 | 30 | 122 | | |
| -1.27297 J | | ND<0 | -1.27297 | 30 | 123 | |
| -0.653926 J | | ND<0 | -0.653926 | | 30 | 124 |
| -1.27297 J | | ND<0 | -1.27297 | 30 | 125 | |
| 1.29473 | | ND<0 | 1.29473 | 31 | 125 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 31 | 125 | | |
| -0.597837 J | | ND<0 | -0.597837 | | 31 | 126 |
| ND<0 | ND<0 | 0 | 31 | 126 | | |
| -1.38629 J | | ND<0 | -1.3862931 | | 127 | |
| ND<-2.30259 | | ND<0 | -2.3025931 | | 128 | |
| -1.42712 J | | ND<0 | -1.4271231 | | 129 | |
| -1.46968 J | | ND<0 | -1.4696831 | | 130 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 31 | 130 | | |
| ND<0 | ND<0 | 0 | 31 | 130 | | |
| ND<0 | ND<0 | 0 | 31 | 130 | | |
| ND<0 | ND<0 | 0 | 31 | 130 | | |
| -1.27297 J | | ND<0 | -1.2729731 | | 131 | |
| -0.653926 J | | ND<0 | -0.653926 | | 31 | 132 |
| -1.27297 J | | ND<0 | -1.2729731 | | 133 | |
| 1.29473 | | ND<0 | 1.29473 | 32 | 133 | |
| ND<0 | ND<0 | 0 | 32 | 133 | | |
| -0.597837 J | | ND<0 | -0.597837 | | 32 | 134 |
| ND<0 | ND<0 | 0 | 32 | 134 | | |
| -1.38629 J | | ND<0 | -1.3862932 | | 135 | |
| ND<-2.30259 | | ND<0 | -2.3025932 | | 136 | |
| -1.42712 J | | ND<0 | -1.4271232 | | 137 | |
| -1.46968 J | | ND<0 | -1.4696832 | | 138 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 32 | 138 | | |
| ND<0 | ND<0 | 0 | 32 | 138 | | |
| ND<0 | ND<0 | 0 | 32 | 138 | | |
| -1.27297 J | | ND<0 | -1.2729732 | | 139 | |
| -0.653926 J | | ND<0 | -0.653926 | | 32 | 140 |
| -1.27297 J | | ND<0 | -1.2729732 | | 141 | |
| 1.29473 | | ND<0 | 1.29473 | 33 | 141 | |
| ND<0 | ND<0 | 0 | 33 | 141 | | |
| -0.597837 J | | ND<0 | -0.597837 | | 33 | 142 |
| ND<0 | ND<0 | 0 | 33 | 142 | | |
| -1.38629 J | | ND<0 | -1.3862933 | | 143 | |
| ND<-2.30259 | | ND<0 | -2.3025933 | | 144 | |
| -1.42712 J | | ND<0 | -1.4271233 | | 145 | |
| -1.46968 J | | ND<0 | -1.4696833 | | 146 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 33 | 146 | | |
| ND<0 | ND<0 | 0 | 33 | 146 | | |
| -1.27297 J | | ND<0 | -1.2729733 | | 147 | |
| -0.653926 J | | ND<0 | -0.653926 | | 33 | 148 |
| -1.27297 J | | ND<0 | -1.2729733 | | 149 | |
| 1.29473 | | ND<0 | 1.29473 | 34 | 149 | |
| ND<0 | ND<0 | 0 | 34 | 149 | | |
| -0.597837 J | | ND<0 | -0.597837 | | 34 | 150 |
| ND<0 | ND<0 | 0 | 34 | 150 | | |
| -1.38629 J | | ND<0 | -1.3862934 | | 151 | |
| ND<-2.30259 | | ND<0 | -2.3025934 | | 152 | |
| -1.42712 J | | ND<0 | -1.4271234 | | 153 | |
| -1.46968 J | | ND<0 | -1.4696834 | | 154 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 34 | 154 | | |
| -1.27297 J | | ND<0 | -1.2729734 | | 155 | |
| -0.653926 J | | ND<0 | -0.653926 | | 34 | 156 |
| -1.27297 J | | ND<0 | -1.2729734 | | 157 | |
| 1.29473 | | ND<0 | 1.29473 | 35 | 157 | |
| ND<0 | ND<0 | 0 | 35 | 157 | | |
| -0.597837 J | | ND<0 | -0.597837 | | 35 | 158 |
| ND<0 | ND<0 | 0 | 35 | 158 | | |
| -1.38629 J | | ND<0 | -1.3862935 | | 159 | |

| | | | | | |
|---|---|---|---|---|---|
| ND<-2.30259 | ND<0 | -2.3025935 | 160 | | |
| -1.42712 J | ND<0 | -1.4271235 | 161 | | |
| -1.46968 J | ND<0 | -1.4696835 | 162 | | |
| | | | | | |
| -1.27297 J | ND<0 | -1.2729735 | 163 | | |
| -0.653926 J | ND<0 | -0.653926 | 35 | 164 | |
| -1.27297 J | ND<0 | -1.2729735 | 165 | | |
| 1.29473 | ND<0 | 1.29473 36 | 165 | | |
| ND<0 ND<0 | 0 | 36 | 165 | | |
| -0.597837 J | ND<0 | -0.597837 | 36 | 166 | |
| ND<0 ND<0 | 0 | 36 | 166 | | |
| -1.38629 J | ND<0 | -1.3862936 | 167 | | |
| ND<-2.30259 | ND<0 | -2.3025936 | 168 | | |
| -1.42712 J | ND<0 | -1.4271236 | 169 | | |
| -1.46968 J | ND<0 | -1.4696836 | 170 | | |
| | | | | | |
| -0.653926 J | -1.27297 J | 0.619039 | 37 | 170 | |
| -1.27297 J | -1.27297 J | 0 | 37 | 170 | |
| 1.29473 | -1.27297 J | 2.56769 38 | 170 | | |
| ND<0 -1.27297 J | 1.27297 39 | 170 | | | |
| -0.597837 J | -1.27297 J | 0.675129 | 40 | 170 | |
| ND<0 -1.27297 J | 1.27297 41 | 170 | | | |
| -1.38629 J | -1.27297 J | -0.113329 | 41 | 171 | |
| ND<-2.30259 | -1.27297 J | -1.0296241 | 172 | | |
| -1.42712 J | -1.27297 J | -0.154151 | 41 | 173 | |
| -1.46968 J | -1.27297 J | -0.1967141 | 174 | | |
| | | | | | |
| -1.27297 J | -0.653926 J | -0.619039 | 41 | 175 | |
| 1.29473 | -0.653926 J | 1.94865 42 | 175 | | |
| ND<0 -0.653926 J | 0.653926 | 43 | 175 | | |
| -0.597837 J | -0.653926 J | 0.0560895 | 44 | 175 | |
| ND<0 -0.653926 J | 0.653926 | 45 | 175 | | |
| -1.38629 J | -0.653926 J | -0.732368 | 45 | 176 | |
| ND<-2.30259 | -0.653926 J | -1.6486645 | 177 | | |
| -1.42712 J | -0.653926 J | -0.7731945 | 178 | | |
| -1.46968 J | -0.653926 J | -0.8157545 | 179 | | |
| | | | | | |
| 1.29473 | -1.27297 J | 2.56769 46 | 179 | | |
| ND<0 -1.27297 J | 1.27297 47 | 179 | | | |
| -0.597837 J | -1.27297 J | 0.675129 | 48 | 179 | |
| ND<0 -1.27297 J | 1.27297 49 | 179 | | | |
| -1.38629 J | -1.27297 J | -0.113329 | 49 | 180 | |
| ND<-2.30259 | -1.27297 J | -1.0296249 | 181 | | |
| -1.42712 J | -1.27297 J | -0.154151 | 49 | 182 | |
| -1.46968 J | -1.27297 J | -0.1967149 | 183 | | |
| | | | | | |
| ND<0 1.29473 | -1.2947349 | 184 | | | |
| -0.597837 J | 1.29473 | -1.8925649 | 185 | | |
| ND<0 1.29473 | -1.2947349 | 186 | | | |
| -1.38629 J | 1.29473 | -2.6810249 | 187 | | |
| ND<-2.30259 | 1.29473 | -3.5973149 | 188 | | |
| -1.42712 J | 1.29473 | -2.7218449 | 189 | | |
| -1.46968 J | 1.29473 | -2.7644 49 | 190 | | |
| | | | | | |
| -0.597837 J | ND<0 | -0.597837 | 49 | 191 | |
| ND<0 ND<0 | 0 | 49 | 191 | | |
| -1.38629 J | ND<0 | -1.3862949 | 192 | | |
| ND<-2.30259 | ND<0 | -2.3025949 | 193 | | |
| -1.42712 J | ND<0 | -1.4271249 | 194 | | |
| -1.46968 J | ND<0 | -1.4696849 | 195 | | |

| | | | | | |
|---|---|---|---|---|---|
| ND<0 | -0.597837 J | 0.597837 | 50 | 195 | |
| -1.38629 J | -0.597837 J | -0.788457 | 50 | 196 | |
| ND<-2.30259 | -0.597837 J | -1.7047550 | 197 | | |
| -1.42712 J | -0.597837 J | -0.829279 | 50 | 198 | |
| -1.46968 J | -0.597837 J | -0.871839 | 50 | 199 | |
| | | | | | |
| -1.38629 J | ND<0 | -1.3862950 | 200 | | |
| ND<-2.30259 | ND<0 | -2.3025950 | 201 | | |
| -1.42712 J | ND<0 | -1.4271250 | 202 | | |
| -1.46968 J | ND<0 | -1.4696850 | 203 | | |
| | | | | | |
| ND<-2.30259 | -1.38629 J | -0.916291 | 50 | 204 | |
| -1.42712 J | -1.38629 J | -0.040822 | 50 | 205 | |
| -1.46968 J | -1.38629 J | -0.0833816 | 50 | 206 | |
| | | | | | |
| -1.42712 J | ND<-2.30259 | 0.875469 | 51 | 206 | |
| -1.46968 J | ND<-2.30259 | 0.832909 | 52 | 206 | |
| | | | | | |
| -1.46968 J | -1.42712 J | -0.0425596 | 52 | 207 | |

S Statistic = 52 - 207 = -155

| Tied Group | Value | Members |
|---|---|---|
| 1 | 0 | 14 |
| 2 | -1.272972 | |

| Time Period | | Observations |
|---|---|---|
| 7/20/1995 | | 1 |
| 8/24/1995 | | 1 |
| 9/28/1995 | | 1 |
| 10/26/1995 | | 1 |
| 11/19/1996 | | 1 |
| 12/19/1996 | | 1 |
| 3/24/1997 | | 1 |
| 9/24/1997 | | 1 |
| 4/7/1998 | 1 | |
| 9/23/1998 | | 1 |
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 1 |

There are 0 time periods with multiple data

A = 6024
B = 0
C = 2184

D = 0
E = 184
F = 0
a = 41418
b = 157950
c = 1404
Group Variance = 1966.33
Z-Score = -3.4729
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-3.4729| > 1.97737 indicating a trend

# Concentrations (ppb)

## Parameter: Trichloroethene

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 135
Percent Non-Detects: 61.086%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 18 (100%) | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.13 | ND<0.13 |
| | | | 11/16/2009 | ND<0.13 | ND<0.13 |
| | | | 6/30/2010 | ND<0.13 | ND<0.13 |
| | | | 11/12/2010 | ND<0.13 U | ND<0.13 U |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-8 | 27 | 4 (14.8148%) | 7/20/1995 | 19 | 19 |
| | | | 8/24/1995 | 300 | 300 |
| | | | 9/28/1995 | 190 | 190 |
| | | | 10/26/1995 | 15 | 15 |
| | | | 11/19/1996 | ND<2 | ND<2 |
| | | | 12/19/1996 | 280 | 280 |
| | | | 3/24/1997 | 260 | 260 |
| | | | 9/24/1997 | 150 | 150 |
| | | | 4/7/1998 | 120 | 120 |
| | | | 9/23/1998 | 150 | 150 |
| | | | 3/16/1999 | 120 | 120 |
| | | | 9/23/1999 | 77.4 | 77.4 |
| | | | 3/15/2000 | 160 | 160 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | 8.9 | 8.9 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | 2.29 | 2.29 |
| | | | 10/25/2005 | 6.66 | 6.66 |
| | | | 4/29/2006 | 2.22 | 2.22 |
| | | | 11/18/2006 | 3.54 | 3.54 |
| | | | 5/23/2007 | 1.6 | 1.6 |
| | | | 11/28/2007 | 4.18 | 4.18 |
| | | | 6/5/2008 | ND<2 J | ND<2 J |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/20/2008 | 1.3 J | 1.3 J | |
| | | | 6/11/2009 | 1.3 | 1.3 | |
| | | | 6/30/2010 | 0.87 J | 0.87 J | |
| | | | 11/12/2010 | 1.9 | 1.9 | |
| MW-10 | 28 | 13 (46.4286%) | 7/20/1995 | 0.58 J | 0.58 J | |
| | | | 8/24/1995 | 2.2 | 2.2 | |
| | | | 9/28/1995 | 3 | 3 | |
| | | | 10/26/1995 | 3 | 3 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | 3.2 | 3.2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 0.88 J | 0.88 J | |
| | | | 10/25/2005 | 1.15 J | 1.15 J | |
| | | | 4/29/2006 | 1.27 J | 1.27 J | |
| | | | 11/18/2006 | 0.89 J | 0.89 J | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | 1 J | 1 J | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | 0.91 J | 0.91 J | |
| | | | 6/11/2009 | 0.59 J | 0.59 J | |
| | | | 11/16/2009 | 0.94 J | 0.94 J | |
| | | | 6/30/2010 | 0.52 J | 0.52 J | |
| | | | 11/12/2010 | 0.86 J | 0.86 J | |
| MW-11R | 28 | 10 (35.7143%) | 7/20/1995 | 3.5 | 3.5 | |
| | | | 8/24/1995 | 8.8 | 8.8 | |
| | | | 9/28/1995 | 6 | 6 | |
| | | | 10/26/1995 | 8 | 8 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | 9 | 9 | |
| | | | 3/24/1997 | 7 | 7 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | 5.1 | 5.1 | |
| | | | 9/23/1999 | 2.3 | 2.3 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 3.01 | 3.01 | |
| | | | 10/25/2005 | 1.28 J | 1.28 J | |
| | | | 4/29/2006 | 0.59 J | 0.59 J | |
| | | | 11/18/2006 | 0.96 J | 0.96 J | |
| | | | 5/23/2007 | 2 | 2 | |
| | | | 11/28/2007 | 1.01 J | 1.01 J | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | 0.29 J | 0.29 J | |
| | | | 6/11/2009 | 1.5 | 1.5 | |
| | | | 11/16/2009 | 0.22 J | 0.22 J | |
| | | | 6/30/2010 | 1.4 | 1.4 | |
| | | | 11/12/2010 | ND<0.13 U | ND<0.13 U | |

| | | | | | | |
|---|---|---|---|---|---|---|
| MW-12AR | 18 | 10 (55.5556%) | 3/16/1999 | | ND<2 | ND<2 |
| | | 9/23/1999 | ND<2 | ND<2 | | |
| | | 3/15/2000 | ND<2 | ND<2 | | |
| | | 9/24/2003 | 5.2 | 5.2 | | |
| | | 3/11/2004 | ND<2 | ND<2 | | |
| | | 10/12/2004 | ND<2 | ND<2 | | |
| | | 4/1/2005 | ND<2 | ND<2 | | |
| | | 10/25/2005 | 0.64 J | 0.64 J | | |
| | | 4/29/2006 | 0.55 J | 0.55 J | | |
| | | 11/18/2006 | 0.35 J | 0.35 J | | |
| | | 5/23/2007 | ND<2 | ND<2 | | |
| | | 11/28/2007 | 0.45 J | 0.45 J | | |
| | | 6/5/2008 | ND<2 | ND<2 | | |
| | | 11/20/2008 | 0.23 J | 0.23 J | | |
| | | 6/11/2009 | ND<0.13 | | ND<0.13 | |
| | | 11/16/2009 | 0.13 J | 0.13 J | | |
| | | 6/30/2010 | ND<0.13 | | ND<0.13 | |
| | | 11/12/2010 | 0.27 J | 0.27 J | | |
| MW-12BR | 18 | 15 (83.3333%) | 3/16/1999 | | 6.1 | 6.1 |
| | | 9/23/1999 | 4.5 | 4.5 | | |
| | | 3/15/2000 | ND<2 | ND<2 | | |
| | | 9/24/2003 | ND<2 | ND<2 | | |
| | | 3/11/2004 | ND<2 | ND<2 | | |
| | | 10/12/2004 | ND<2 | ND<2 | | |
| | | 4/1/2005 | 2.14 | 2.14 | | |
| | | 10/25/2005 | ND<2 | ND<2 | | |
| | | 4/29/2006 | ND<2 | ND<2 | | |
| | | 11/18/2006 | ND<2 | ND<2 | | |
| | | 5/23/2007 | ND<2 | ND<2 | | |
| | | 11/28/2007 | ND<2 | ND<2 | | |
| | | 6/5/2008 | ND<2 | ND<2 | | |
| | | 11/20/2008 | ND<2 | ND<2 | | |
| | | 6/11/2009 | ND<0.13 | | ND<0.13 | |
| | | 11/16/2009 | ND<0.13 | | ND<0.13 | |
| | | 6/30/2010 | ND<0.13 | | ND<0.13 | |
| | | 11/12/2010 | ND<0.13 U | | ND<0.13 U | |
| MW-6 | 28 | 28 (100%) | 7/20/1995 | | ND<2 | ND<2 |
| | | 8/24/1995 | ND<2 | ND<2 | | |
| | | 9/28/1995 | ND<2 | ND<2 | | |
| | | 10/26/1995 | ND<2 | ND<2 | | |
| | | 11/19/1996 | ND<2 | ND<2 | | |
| | | 12/19/1996 | ND<2 | ND<2 | | |
| | | 3/24/1997 | ND<2 | ND<2 | | |
| | | 9/24/1997 | ND<2 | ND<2 | | |
| | | 4/7/1998 | ND<2 | ND<2 | | |
| | | 9/23/1998 | ND<2 | ND<2 | | |
| | | 3/16/1999 | ND<2 | ND<2 | | |
| | | 9/23/1999 | ND<2 | ND<2 | | |
| | | 3/15/2000 | ND<2 | ND<2 | | |
| | | 9/24/2003 | ND<2 | ND<2 | | |
| | | 3/11/2004 | ND<2 | ND<2 | | |
| | | 10/12/2004 | ND<2 | ND<2 | | |
| | | 4/1/2005 | ND<2 | ND<2 | | |
| | | 10/25/2005 | ND<2 | ND<2 | | |
| | | 4/29/2006 | ND<2 | ND<2 | | |
| | | 11/18/2006 | ND<2 | ND<2 | | |
| | | 5/23/2007 | ND<2 | ND<2 | | |
| | | 11/28/2007 | ND<2 | ND<2 | | |
| | | 6/5/2008 | ND<2 | ND<2 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.13 | | ND<0.13 |
| | | | 11/16/2009 | ND<0.13 | | ND<0.13 |
| | | | 6/30/2010 | ND<0.13 | | ND<0.13 |
| | | | 11/12/2010 | ND<0.13 U | | ND<0.13 U |
| MW-7 | 28 | 24 (85.7143%) | 7/20/1995 | | 1.1 | 1.1 |
| | | | 8/24/1995 | 0.8 J | 0.8 J | |
| | | | 9/28/1995 | 0.9 J | 0.9 J | |
| | | | 10/26/1995 | 1 J | 1 J | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.13 | | ND<0.13 |
| | | | 11/16/2009 | ND<0.13 | | ND<0.13 |
| | | | 6/30/2010 | ND<0.13 | | ND<0.13 |
| | | | 11/12/2010 | ND<0.13 U | | ND<0.13 U |
| MW-9 | 28 | 13 (46.4286%) | 7/20/1995 | | 0.33 J | 0.33 J |
| | | | 8/24/1995 | 0.5 J | 0.5 J | |
| | | | 9/28/1995 | 0.8 J | 0.8 J | |
| | | | 10/26/1995 | 1 J | 1 J | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 0.7 J | 0.7 J | |
| | | | 10/25/2005 | 0.53 J | 0.53 J | |
| | | | 4/29/2006 | 0.45 J | 0.45 J | |
| | | | 11/18/2006 | 0.43 J | 0.43 J | |
| | | | 5/23/2007 | 0.6 J | 0.6 J | |
| | | | 11/28/2007 | 0.74 J | 0.74 J | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | 0.6 J | 0.6 J | |
| | | | 6/11/2009 | 0.67 J | 0.67 J | |
| | | | 11/16/2009 | 0.73 J | 0.73 J | |
| | | | 6/30/2010 | 0.68 J | 0.68 J | |

| | | | | | |
|---|---|---|---|---|---|
| | | 11/12/2010 | 0.71 J | 0.71 J | |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. | Original |
|---|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: Trichloroethene

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.065 | -2.65209 | 7.03356 | -0.172386 |
| 2 | 0.065 | -2.36561 | 12.6297 | -0.326151 |
| 3 | 0.065 | -2.22621 | 17.5857 | -0.470854 |
| 4 | 0.065 | -2.09693 | 21.9828 | -0.607154 |
| 5 | 0.065 | -2.01409 | 26.0394 | -0.738071 |
| 6 | 0.065 | -1.92684 | 29.7521 | -0.863315 |
| 7 | 0.065 | -1.86629 | 33.2351 | -0.984624 |
| 8 | 0.065 | -1.79912 | 36.472 | -1.10157 |
| 9 | 0.065 | -1.75069 | 39.5369 | -1.21536 |
| 10 | 0.065 | -1.6954 | 42.4112 | -1.32556 |
| 11 | 0.065 | -1.65463 | 45.149 | -1.43311 |
| 12 | 0.065 | -1.60725 | 47.7323 | -1.53758 |
| 13 | 0.065 | -1.57179 | 50.2028 | -1.63975 |
| 14 | 0.065 | -1.53007 | 52.5439 | -1.7392 |
| 15 | 0.065 | -1.49852 | 54.7894 | -1.83661 |
| 16 | 0.065 | -1.46106 | 56.9241 | -1.93158 |
| 17 | 0.065 | -1.4325 | 58.9762 | -2.02469 |
| 18 | 0.065 | -1.39838 | 60.9316 | -2.11558 |
| 19 | 0.065 | -1.3722 | 62.8146 | -2.20478 |
| 20 | 0.13 | -1.34075 | 64.6122 | -2.37908 |
| 21 | 0.22 | -1.31652 | 66.3454 | -2.66871 |
| 22 | 0.23 | -1.28727 | 68.0025 | -2.96478 |
| 23 | 0.27 | -1.26464 | 69.6018 | -3.30624 |
| 24 | 0.29 | -1.23724 | 71.1326 | -3.66503 |
| 25 | 0.33 | -1.21596 | 72.6111 | -4.0663 |
| 26 | 0.35 | -1.19012 | 74.0275 | -4.48284 |
| 27 | 0.43 | -1.17 | 75.3964 | -4.98594 |
| 28 | 0.45 | -1.1455 | 76.7086 | -5.50142 |
| 29 | 0.45 | -1.12639 | 77.9774 | -6.0083 |
| 30 | 0.5 | -1.10306 | 79.1941 | -6.55983 |
| 31 | 0.52 | -1.08482 | 80.371 | -7.12393 |
| 32 | 0.53 | -1.06252 | 81.4999 | -7.68707 |
| 33 | 0.55 | -1.04505 | 82.592 | -8.26185 |
| 34 | 0.58 | -1.02365 | 83.6399 | -8.85557 |
| 35 | 0.59 | -1.00687 | 84.6537 | -9.44962 |
| 36 | 0.59 | -0.986272 | 85.6264 | -10.0315 |
| 37 | 0.6 | -0.970094 | 86.5675 | -10.6136 |
| 38 | 0.6 | -0.950222 | 87.4704 | -11.1837 |
| 39 | 0.64 | -0.934598 | 88.3439 | -11.7818 |
| 40 | 0.67 | -0.915365 | 89.1818 | -12.3951 |
| 41 | 0.68 | -0.900227 | 89.9922 | -13.0073 |
| 42 | 0.7 | -0.881587 | 90.7694 | -13.6244 |
| 43 | 0.71 | -0.866894 | 91.5209 | -14.2399 |
| 44 | 0.73 | -0.848786 | 92.2413 | -14.8595 |
| 45 | 0.74 | -0.834498 | 92.9377 | -15.477 |
| 46 | 0.8 | -0.816874 | 93.605 | -16.1305 |
| 47 | 0.8 | -0.802956 | 94.2497 | -16.7729 |
| 48 | 0.86 | -0.785774 | 94.8672 | -17.4487 |
| 49 | 0.87 | -0.772193 | 95.4634 | -18.1205 |

| | | | | |
|---|---|---|---|---|
| 50 | 0.88 | -0.755415 | 96.0341 | -18.7852 |
| 51 | 0.89 | -0.742143 | 96.5849 | -19.4458 |
| 52 | 0.9 | -0.725736 | 97.1116 | -20.0989 |
| 53 | 0.91 | -0.712751 | 97.6196 | -20.7475 |
| 54 | 0.94 | -0.696684 | 98.1049 | -21.4024 |
| 55 | 0.96 | -0.683969 | 8.5727 | -22.059 |
| 56 | 1 | -0.668209 | 99.0192 | -22.7272 |
| 57 | 1 | -0.655726 | 99.4492 | -23.3829 |
| 58 | 1 | -0.640266 | 99.8592 | -24.0232 |
| 59 | 1 | -0.628006 | 100.254 | -24.6512 |
| 60 | 1 | -0.612813 | 100.629 | -25.264 |
| 61 | 1 | -0.60076 | 100.99 | -25.8648 |
| 62 | 1 | -0.585815 | 101.333 | -26.4506 |
| 63 | 1 | -0.573953 | 101.663 | -27.0245 |
| 64 | 1 | -0.559237 | 101.975 | -27.5838 |
| 65 | 1 | -0.547551 | 102.275 | -28.1313 |
| 66 | 1 | -0.533048 | 102.559 | -28.6644 |
| 67 | 1 | -0.521527 | 102.831 | -29.1859 |
| 68 | 1 | -0.507221 | 103.089 | -29.6931 |
| 69 | 1 | -0.49585 | 103.334 | -30.189 |
| 70 | 1 | -0.481728 | 103.566 | -30.6707 |
| 71 | 1 | -0.470498 | 103.788 | -31.1412 |
| 72 | 1 | -0.456542 | 103.996 | -31.5978 |
| 73 | 1 | -0.445443 | 104.195 | -32.0432 |
| 74 | 1 | -0.431644 | 104.381 | -32.4748 |
| 75 | 1 | -0.420664 | 104.558 | -32.8955 |
| 76 | 1 | -0.40701 | 104.724 | -33.3025 |
| 77 | 1 | -0.396142 | 104.881 | -33.6987 |
| 78 | 1 | -0.382622 | 105.027 | -34.0813 |
| 79 | 1 | -0.371856 | 105.165 | -34.4531 |
| 80 | 1 | -0.358459 | 105.294 | -34.8116 |
| 81 | 1 | -0.347787 | 105.415 | -35.1594 |
| 82 | 1 | -0.334503 | 105.527 | -35.4939 |
| 83 | 1 | -0.323919 | 105.632 | -35.8178 |
| 84 | 1 | -0.310738 | 105.728 | -36.1285 |
| 85 | 1 | -0.300232 | 105.818 | -36.4288 |
| 86 | 1 | -0.287147 | 105.901 | -36.7159 |
| 87 | 1 | -0.276714 | 105.977 | -36.9926 |
| 88 | 1 | -0.263715 | 106.047 | -37.2563 |
| 89 | 1 | -0.253347 | 106.111 | -37.5097 |
| 90 | 1 | -0.240426 | 106.169 | -37.7501 |
| 91 | 1 | -0.230118 | 106.222 | -37.9802 |
| 92 | 1 | -0.217267 | 106.269 | -38.1975 |
| 93 | 1 | -0.207012 | 106.312 | -38.4045 |
| 94 | 1 | -0.194225 | 106.35 | -38.5987 |
| 95 | 1 | -0.184017 | 106.383 | -38.7828 |
| 96 | 1 | -0.171285 | 106.413 | -38.954 |
| 97 | 1 | -0.161119 | 106.439 | -39.1152 |
| 98 | 1 | -0.148434 | 106.461 | -39.2636 |
| 99 | 1 | -0.138305 | 106.48 | -39.4019 |
| 100 | 1 | -0.125661 | 106.496 | -39.5276 |
| 101 | 1 | -0.115562 | 106.509 | -39.6431 |
| 102 | 1 | -0.102953 | 106.52 | -39.7461 |
| 103 | 1 | -0.0928787 | 106.528 | -39.839 |
| 104 | 1 | -0.0802981 | 106.535 | -39.9193 |
| 105 | 1 | -0.0702426 | 106.54 | -39.9895 |
| 106 | 1 | -0.0576847 | 106.543 | -40.0472 |
| 107 | 1 | -0.0476439 | 106.545 | -40.0948 |
| 108 | 1 | -0.0350997 | 106.546 | -40.1299 |
| 109 | 1 | -0.0250691 | 106.547 | -40.155 |
| 110 | 1 | -0.0125328 | 106.547 | -40.1675 |
| 111 | 1 | 0 | 106.547 | -40.1675 |

| | | | | |
|---|---|---|---|---|
| 112 | 1 | 0.0125328 | 106.547 | -40.155 |
| 113 | 1 | 0.0250691 | 106.548 | -40.1299 |
| 114 | 1 | 0.0350997 | 106.549 | -40.0948 |
| 115 | 1 | 0.0476439 | 106.551 | -40.0472 |
| 116 | 1 | 0.0576847 | 106.555 | -39.9895 |
| 117 | 1 | 0.0702426 | 106.56 | -39.9193 |
| 118 | 1 | 0.0802981 | 106.566 | -39.839 |
| 119 | 1 | 0.0928787 | 106.575 | -39.7461 |
| 120 | 1 | 0.102953 | 106.585 | -39.6431 |
| 121 | 1 | 0.115562 | 106.599 | -39.5276 |
| 122 | 1 | 0.125661 | 106.615 | -39.4019 |
| 123 | 1 | 0.138305 | 106.634 | -39.2636 |
| 124 | 1 | 0.148434 | 106.656 | -39.1152 |
| 125 | 1 | 0.161119 | 106.682 | -38.954 |
| 126 | 1 | 0.171285 | 106.711 | -38.7828 |
| 127 | 1 | 0.184017 | 106.745 | -38.5987 |
| 128 | 1 | 0.194225 | 106.783 | -38.4045 |
| 129 | 1 | 0.207012 | 106.825 | -38.1975 |
| 130 | 1 | 0.217267 | 106.873 | -37.9802 |
| 131 | 1 | 0.230118 | 106.926 | -37.7501 |
| 132 | 1 | 0.240426 | 106.983 | -37.5097 |
| 133 | 1 | 0.253347 | 107.048 | -37.2563 |
| 134 | 1 | 0.263715 | 107.117 | -36.9926 |
| 135 | 1 | 0.276714 | 107.194 | -36.7159 |
| 136 | 1 | 0.287147 | 107.276 | -36.4288 |
| 137 | 1 | 0.300232 | 107.366 | -36.1285 |
| 138 | 1 | 0.310738 | 107.463 | -35.8178 |
| 139 | 1 | 0.323919 | 107.568 | -35.4939 |
| 140 | 1 | 0.334503 | 107.68 | -35.1594 |
| 141 | 1 | 0.347787 | 107.801 | -34.8116 |
| 142 | 1 | 0.358459 | 107.929 | -34.4531 |
| 143 | 1 | 0.371856 | 108.067 | -34.0813 |
| 144 | 1 | 0.382622 | 108.214 | -33.6987 |
| 145 | 1 | 0.396142 | 108.371 | -33.3025 |
| 146 | 1 | 0.40701 | 108.536 | -32.8955 |
| 147 | 1 | 0.420664 | 108.713 | -32.4748 |
| 148 | 1 | 0.431644 | 108.9 | -32.0432 |
| 149 | 1 | 0.445443 | 109.098 | -31.5978 |
| 150 | 1 | 0.456542 | 109.307 | -31.1412 |
| 151 | 1 | 0.470498 | 109.528 | -30.6707 |
| 152 | 1 | 0.481728 | 109.76 | -30.189 |
| 153 | 1 | 0.49585 | 110.006 | -29.6931 |
| 154 | 1 | 0.507221 | 110.263 | -29.1859 |
| 155 | 1 | 0.521527 | 110.535 | -28.6644 |
| 156 | 1 | 0.533048 | 110.819 | -28.1313 |
| 157 | 1 | 0.547551 | 111.119 | -27.5838 |
| 158 | 1 | 0.559237 | 111.432 | -27.0245 |
| 159 | 1 | 0.573953 | 111.761 | -26.4506 |
| 160 | 1 | 0.585815 | 112.104 | -25.8648 |
| 161 | 1 | 0.60076 | 112.465 | -25.264 |
| 162 | 1 | 0.612813 | 112.841 | -24.6512 |
| 163 | 1 | 0.628006 | 113.235 | -24.0232 |
| 164 | 1 | 0.640266 | 113.645 | -23.3829 |
| 165 | 1 | 0.655726 | 114.075 | -22.7272 |
| 166 | 1 | 0.668209 | 114.522 | -22.059 |
| 167 | 1 | 0.68396 | 114.989 | -21.375 |
| 168 | 1 | 0.696684 | 115.475 | -20.6784 |
| 169 | 1 | 0.712751 | 115.983 | -19.9656 |
| 170 | 1 | 0.725736 | 116.51 | -19.2399 |
| 171 | 1 | 0.742143 | 117.06 | -18.4977 |
| 172 | 1 | 0.755415 | 117.631 | -17.7423 |
| 173 | 1 | 0.772193 | 118.227 | -16.9701 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 1 | 0.785774 | | 118.845 | -16.1843 |
| 175 | 1.01 | 0.802956 | | 119.489 | -15.3734 |
| 176 | 1.1 | 0.816874 | | 120.157 | -14.4748 |
| 177 | 1.15 | 0.834498 | | 120.853 | -13.5151 |
| 178 | 1.27 | 0.848786 | | 121.574 | -12.4372 |
| 179 | 1.28 | 0.866894 | | 122.325 | -11.3275 |
| 180 | 1.3 | 0.881587 | | 123.102 | -10.1815 |
| 181 | 1.3 | 0.900227 | | 123.913 | -9.01119 |
| 182 | 1.4 | 0.915365 | | 124.751 | -7.72967 |
| 183 | 1.5 | 0.93459 | 125.624 | -6.32779 | |
| 184 | 1.6 | 0.950222 | | 126.527 | -4.80743 |
| 185 | 1.9 | 0.970094 | | 127.468 | -2.96425 |
| 186 | 2 | 0.986272 | | 128.441 | -0.991711 |
| 187 | 2.14 | 1.00687 | 129.455 | 1.16298 | |
| 188 | 2.2 | 1.02365 | 130.502 | 3.41502 | |
| 189 | 2.22 | 1.04505 | 131.594 | 5.73503 | |
| 190 | 2.29 | 1.06252 | 132.723 | 8.1682 | |
| 191 | 2.3 | 1.08482 | 133.9 | 10.6633 | |
| 192 | 3 | 1.10306 | 135.117 | 13.9725 | |
| 193 | 3 | 1.12639 | 136.386 | 17.3516 | |
| 194 | 3.01 | 1.1455 | 137.698 | 20.7996 | |
| 195 | 3.2 | 1.17 | 139.067 | 24.5436 | |
| 196 | 3.5 | 1.19012 | 140.483 | 28.709 | |
| 197 | 3.54 | 1.21596 | 141.962 | 33.0135 | |
| 198 | 4.18 | 1.23724 | 143.493 | 38.1852 | |
| 199 | 4.5 | 1.26464 | 145.092 | 43.8761 | |
| 200 | 5.1 | 1.28727 | 146.749 | 50.4412 | |
| 201 | 5.2 | 1.31652 | 148.482 | 57.2871 | |
| 202 | 6 | 1.34075 | 150.28 | 65.3316 | |
| 203 | 6.1 | 1.3722 | 152.163 | 73.702 | |
| 204 | 6.66 | 1.39838 | 154.118 | 83.0152 | |
| 205 | 7 | 1.4325 | 156.17 | 93.0427 | |
| 206 | 8 | 1.46106 | 158.305 | 104.731 | |
| 207 | 8.8 | 1.49852 | 160.551 | 117.918 | |
| 208 | 8.9 | 1.53007 | 162.892 | 131.536 | |
| 209 | 9 | 1.57179 | 165.362 | 145.682 | |
| 210 | 15 | 1.60725 | 167.945 | 169.791 | |
| 211 | 19 | 1.65463 | 170.683 | 201.228 | |
| 212 | 77.4 | 1.6954 | 173.558 | 332.452 | |
| 213 | 120 | 1.75069 | 176.622 | 542.535 | |
| 214 | 120 | 1.79912 | 179.859 | 758.429 | |
| 215 | 150 | 1.86629 | 183.342 | 1038.37 | |
| 216 | 150 | 1.92684 | 187.055 | 1327.4 | |
| 217 | 160 | 2.01409 | 191.112 | 1649.65 | |
| 218 | 190 | 2.09693 | 195.509 | 2048.07 | |
| 219 | 260 | 2.22621 | 200.465 | 2626.88 | |
| 220 | 280 | 2.36561 | 206.061 | 3289.26 | |
| 221 | 300 | 2.65209 | 213.094 | 4084.88 | |

Data Set Standard Deviation = 40.3807
Numerator = 1.66863e+007
Denominator = 7.6444e+007
W Statistic = 0.218281 = 1.66863e+007 / 7.6444e+007

5% Critical value of 0.976 exceeds 0.218281
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.218281
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: Trichloroethene

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) | |
|---|---|---|---|---|---|
| 1 | -2.73337 | -2.65209 | 7.03356 | 7.24913 | |
| 2 | -2.73337 | -2.36561 | 12.6297 | 13.7152 | |
| 3 | -2.73337 | -2.22621 | 17.5857 | 19.8003 | |
| 4 | -2.73337 | -2.09693 | 21.9828 | 25.5319 | |
| 5 | -2.73337 | -2.01409 | 26.0394 | 31.0372 | |
| 6 | -2.73337 | -1.92684 | 29.7521 | 36.304 | |
| 7 | -2.73337 | -1.86629 | 33.2351 | 41.4052 | |
| 8 | -2.73337 | -1.79912 | 36.472 | 46.3229 | |
| 9 | -2.73337 | -1.75069 | 39.5369 | 51.1081 | |
| 10 | -2.73337 | -1.6954 | 42.4112 | 55.7423 | |
| 11 | -2.73337 | -1.65463 | 45.149 | 60.265 | |
| 12 | -2.73337 | -1.60725 | 47.7323 | 64.6582 | |
| 13 | -2.73337 | -1.57179 | 50.2028 | 68.9545 | |
| 14 | -2.73337 | -1.53007 | 52.5439 | 73.1367 | |
| 15 | -2.73337 | -1.49852 | 54.7894 | 77.2327 | |
| 16 | -2.73337 | -1.46106 | 56.9241 | 81.2263 | |
| 17 | -2.73337 | -1.4325 | 58.9762 | 85.1419 | |
| 18 | -2.73337 | -1.39838 | 60.9316 | 88.9641 | |
| 19 | -2.73337 | -1.3722 | 62.8146 | 92.7149 | |
| 20 | -2.04022 | -1.34075 | 64.6122 | 95.4503 | |
| 21 | -1.51413 | -1.31652 | 66.3454 | 97.4437 | |
| 22 | -1.46968 | -1.28727 | 68.0025 | 99.3356 | |
| 23 | -1.30933 | -1.26464 | 69.6018 | 100.991 | |
| 24 | -1.23787 | -1.23724 | 71.1326 | 102.523 | |
| 25 | -1.10866 | -1.21596 | 72.6111 | 103.871 | |
| 26 | -1.04982 | -1.19012 | 74.0275 | 105.12 | |
| 27 | -0.84397 | -1.17 | 75.3964 | 106.108 | |
| 28 | -0.798508 | -1.1455 | 76.7086 | 107.023 | |
| 29 | -0.798508 | -1.12639 | 77.9774 | 107.922 | |
| 30 | -0.693147 | -1.10306 | 79.1941 | 108.687 | |
| 31 | -0.653926 | -1.08482 | 80.371 | 109.396 | |
| 32 | -0.634878 | -1.06252 | 81.4999 | 110.071 | |
| 33 | -0.597837 | -1.04505 | 82.592 | 110.695 | |
| 34 | -0.544727 | -1.02365 | 83.6399 | 111.253 | |
| 35 | -0.527633 | -1.00687 | 84.6537 | 111.784 | |
| 36 | -0.527633 | -0.986272 | 85.6264 | 112.305 | |
| 37 | -0.510826 | -0.970094 | 86.5675 | 112.8 | |
| 38 | -0.510826 | -0.950222 | 87.4704 | 113.286 | |
| 39 | -0.446287 | -0.93459 | 88.3439 | 113.703 | |
| 40 | -0.400478 | -0.915365 | 89.1818 | 114.069 | |
| 41 | -0.385662 | -0.900227 | 89.9922 | 114.416 | |
| 42 | -0.356675 | -0.881587 | 90.7694 | 114.731 | |
| 43 | -0.34249 | -0.866894 | 91.5209 | 115.028 | |
| 44 | -0.314711 | -0.848786 | 92.2413 | 115.295 | |
| 45 | -0.301105 | -0.834498 | 92.9377 | 115.546 | |
| 46 | -0.223144 | -0.816874 | 93.605 | 115.728 | |
| 47 | -0.223144 | -0.802956 | 94.2497 | 115.908 | |
| 48 | -0.150823 | -0.785774 | 94.8672 | 116.026 | |
| 49 | -0.139262 | -0.772193 | 95.4634 | 116.134 | |

| | | | | |
|---|---|---|---|---|
| 50 | -0.127833 | -0.755415 | 96.0341 | 116.23 |
| 51 | -0.116534 | -0.742143 | 96.5849 | 116.317 |
| 52 | -0.105361 | -0.725736 | 97.1116 | 116.393 |
| 53 | -0.0943107 | -0.712751 | 97.6196 | 116.46 |
| 54 | -0.0618754 | -0.696684 | 98.1049 | 116.503 |
| 55 | -0.040822 | -0.68396 | 98.5727 | 116.531 |
| 56 | 0 | -0.668209 | 99.0192 | 116.531 |
| 57 | 0 | -0.655726 | 99.4492 | 116.531 |
| 58 | 0 | -0.640266 | 99.8592 | 116.531 |
| 59 | 0 | -0.628006 | 100.254 | 116.531 |
| 60 | 0 | -0.612813 | 100.629 | 116.531 |
| 61 | 0 | -0.60076 | 100.99 | 116.531 |
| 62 | 0 | -0.585815 | 101.333 | 116.531 |
| 63 | 0 | -0.573953 | 101.663 | 116.531 |
| 64 | 0 | -0.559237 | 101.975 | 116.531 |
| 65 | 0 | -0.547551 | 102.275 | 116.531 |
| 66 | 0 | -0.533048 | 102.559 | 116.531 |
| 67 | 0 | -0.521527 | 102.831 | 116.531 |
| 68 | 0 | -0.507221 | 103.089 | 116.531 |
| 69 | 0 | -0.49585 | 103.334 | 116.531 |
| 70 | 0 | -0.481728 | 103.566 | 116.531 |
| 71 | 0 | -0.470498 | 103.788 | 116.531 |
| 72 | 0 | -0.456542 | 103.996 | 116.531 |
| 73 | 0 | -0.445443 | 104.195 | 116.531 |
| 74 | 0 | -0.431644 | 104.381 | 116.531 |
| 75 | 0 | -0.420664 | 104.558 | 116.531 |
| 76 | 0 | -0.40701 | 104.724 | 116.531 |
| 77 | 0 | -0.396142 | 104.881 | 116.531 |
| 78 | 0 | -0.382622 | 105.027 | 116.531 |
| 79 | 0 | -0.371856 | 105.165 | 116.531 |
| 80 | 0 | -0.358459 | 105.294 | 116.531 |
| 81 | 0 | -0.347787 | 105.415 | 116.531 |
| 82 | 0 | -0.334503 | 105.527 | 116.531 |
| 83 | 0 | -0.323919 | 105.632 | 116.531 |
| 84 | 0 | -0.310738 | 105.728 | 116.531 |
| 85 | 0 | -0.300232 | 105.818 | 116.531 |
| 86 | 0 | -0.287147 | 105.901 | 116.531 |
| 87 | 0 | -0.276714 | 105.977 | 116.531 |
| 88 | 0 | -0.263715 | 106.047 | 116.531 |
| 89 | 0 | -0.253347 | 106.111 | 116.531 |
| 90 | 0 | -0.240426 | 106.169 | 116.531 |
| 91 | 0 | -0.230118 | 106.222 | 116.531 |
| 92 | 0 | -0.217267 | 106.269 | 116.531 |
| 93 | 0 | -0.207012 | 106.312 | 116.531 |
| 94 | 0 | -0.194225 | 106.35 | 116.531 |
| 95 | 0 | -0.184017 | 106.383 | 116.531 |
| 96 | 0 | -0.171285 | 106.413 | 116.531 |
| 97 | 0 | -0.161119 | 106.439 | 116.531 |
| 98 | 0 | -0.148434 | 106.461 | 116.531 |
| 99 | 0 | -0.138305 | 106.48 | 116.531 |
| 100 | 0 | -0.125661 | 106.496 | 116.531 |
| 101 | 0 | -0.115562 | 106.509 | 116.531 |
| 102 | 0 | -0.102953 | 106.52 | 116.531 |
| 103 | 0 | -0.0928787 | 106.528 | 116.531 |
| 104 | 0 | -0.0802981 | 106.535 | 116.531 |
| 105 | 0 | -0.0702426 | 106.54 | 116.531 |
| 106 | 0 | -0.0576847 | 106.543 | 116.531 |
| 107 | 0 | -0.0476439 | 106.545 | 116.531 |
| 108 | 0 | -0.0350997 | 106.546 | 116.531 |
| 109 | 0 | -0.0250691 | 106.547 | 116.531 |
| 110 | 0 | -0.0125328 | 106.547 | 116.531 |
| 111 | 0 | 0 | 106.547 | 116.531 |

| | | | | |
|---|---|---|---|---|
| 112 | 0 | 0.0125328 | 106.547 | 116.531 |
| 113 | 0 | 0.0250691 | 106.548 | 116.531 |
| 114 | 0 | 0.0350997 | 106.549 | 116.531 |
| 115 | 0 | 0.0476439 | 106.551 | 116.531 |
| 116 | 0 | 0.0576847 | 106.555 | 116.531 |
| 117 | 0 | 0.0702426 | 106.56 | 116.531 |
| 118 | 0 | 0.0802981 | 106.566 | 116.531 |
| 119 | 0 | 0.0928787 | 106.575 | 116.531 |
| 120 | 0 | 0.102953 | 106.585 | 116.531 |
| 121 | 0 | 0.115562 | 106.599 | 116.531 |
| 122 | 0 | 0.125661 | 106.615 | 116.531 |
| 123 | 0 | 0.138305 | 106.634 | 116.531 |
| 124 | 0 | 0.148434 | 106.656 | 116.531 |
| 125 | 0 | 0.161119 | 106.682 | 116.531 |
| 126 | 0 | 0.171285 | 106.711 | 116.531 |
| 127 | 0 | 0.184017 | 106.745 | 116.531 |
| 128 | 0 | 0.194225 | 106.783 | 116.531 |
| 129 | 0 | 0.207012 | 106.825 | 116.531 |
| 130 | 0 | 0.217267 | 106.873 | 116.531 |
| 131 | 0 | 0.230118 | 106.926 | 116.531 |
| 132 | 0 | 0.240426 | 106.983 | 116.531 |
| 133 | 0 | 0.253347 | 107.048 | 116.531 |
| 134 | 0 | 0.263715 | 107.117 | 116.531 |
| 135 | 0 | 0.276714 | 107.194 | 116.531 |
| 136 | 0 | 0.287147 | 107.276 | 116.531 |
| 137 | 0 | 0.300232 | 107.366 | 116.531 |
| 138 | 0 | 0.310738 | 107.463 | 116.531 |
| 139 | 0 | 0.323919 | 107.568 | 116.531 |
| 140 | 0 | 0.334503 | 107.68 | 116.531 |
| 141 | 0 | 0.347787 | 107.801 | 116.531 |
| 142 | 0 | 0.358459 | 107.929 | 116.531 |
| 143 | 0 | 0.371856 | 108.067 | 116.531 |
| 144 | 0 | 0.382622 | 108.214 | 116.531 |
| 145 | 0 | 0.396142 | 108.371 | 116.531 |
| 146 | 0 | 0.40701 | 108.536 | 116.531 |
| 147 | 0 | 0.420664 | 108.713 | 116.531 |
| 148 | 0 | 0.431644 | 108.9 | 116.531 |
| 149 | 0 | 0.445443 | 109.098 | 116.531 |
| 150 | 0 | 0.456542 | 109.307 | 116.531 |
| 151 | 0 | 0.470498 | 109.528 | 116.531 |
| 152 | 0 | 0.481728 | 109.76 | 116.531 |
| 153 | 0 | 0.49585 | 110.006 | 116.531 |
| 154 | 0 | 0.507221 | 110.263 | 116.531 |
| 155 | 0 | 0.521527 | 110.535 | 116.531 |
| 156 | 0 | 0.533048 | 110.819 | 116.531 |
| 157 | 0 | 0.547551 | 111.119 | 116.531 |
| 158 | 0 | 0.559237 | 111.432 | 116.531 |
| 159 | 0 | 0.573953 | 111.761 | 116.531 |
| 160 | 0 | 0.585815 | 112.104 | 116.531 |
| 161 | 0 | 0.60076 | 112.465 | 116.531 |
| 162 | 0 | 0.612813 | 112.841 | 116.531 |
| 163 | 0 | 0.628006 | 113.235 | 116.531 |
| 164 | 0 | 0.640266 | 113.645 | 116.531 |
| 165 | 0 | 0.655726 | 114.075 | 116.531 |
| 166 | 0 | 0.668209 | 114.522 | 116.531 |
| 167 | 0 | 0.68396 | 114.989 | 116.531 |
| 168 | 0 | 0.696684 | 115.475 | 116.531 |
| 169 | 0 | 0.712751 | 115.983 | 116.531 |
| 170 | 0 | 0.725736 | 116.51 | 116.531 |
| 171 | 0 | 0.742143 | 117.06 | 116.531 |
| 172 | 0 | 0.755415 | 117.631 | 116.531 |
| 173 | 0 | 0.772193 | 118.227 | 116.531 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 0 | 0.785774 | | 118.845 | 116.531 |
| 175 | 0.00995033 | | 0.802956 | | 119.489 | 116.539 |
| 176 | 0.0953102 | | 0.816874 | | 120.157 | 116.617 |
| 177 | 0.139762 | | 0.834498 | | 120.853 | 116.734 |
| 178 | 0.239017 | | 0.848786 | | 121.574 | 116.937 |
| 179 | 0.24686 | 0.866894 | | 122.325 | 117.151 |
| 180 | 0.262364 | | 0.881587 | | 123.102 | 117.382 |
| 181 | 0.262364 | | 0.900227 | | 123.913 | 117.618 |
| 182 | 0.336472 | | 0.915365 | | 124.751 | 117.926 |
| 183 | 0.405465 | | 0.93459 | 125.624 | 118.305 |
| 184 | 0.470004 | | 0.950222 | | 126.527 | 118.752 |
| 185 | 0.641854 | | 0.970094 | | 127.468 | 119.374 |
| 186 | 0.693147 | | 0.986272 | | 128.441 | 120.058 |
| 187 | 0.760806 | | 1.00687 | 129.455 | 120.824 |
| 188 | 0.788457 | | 1.02365 | 130.502 | 121.631 |
| 189 | 0.797507 | | 1.04505 | 131.594 | 122.465 |
| 190 | 0.828552 | | 1.06252 | 132.723 | 123.345 |
| 191 | 0.832909 | | 1.08482 | 133.9 | 124.249 |
| 192 | 1.09861 | 1.10306 | 135.117 | 125.46 | |
| 193 | 1.09861 | 1.12639 | 136.386 | 126.698 | |
| 194 | 1.10194 | 1.1455 | 137.698 | 127.96 | |
| 195 | 1.16315 | 1.17 | 139.067 | 129.321 | |
| 196 | 1.25276 | 1.19012 | 140.483 | 130.812 | |
| 197 | 1.26413 | 1.21596 | 141.962 | 132.349 | |
| 198 | 1.43031 | 1.23724 | 143.493 | 134.119 | |
| 199 | 1.50408 | 1.26464 | 145.092 | 136.021 | |
| 200 | 1.62924 | 1.28727 | 146.749 | 138.118 | |
| 201 | 1.64866 | 1.31652 | 148.482 | 140.289 | |
| 202 | 1.79176 | 1.34075 | 150.28 | 142.691 | |
| 203 | 1.80829 | 1.3722 | 152.163 | 145.172 | |
| 204 | 1.89612 | 1.39838 | 154.118 | 147.824 | |
| 205 | 1.94591 | 1.4325 | 156.17 | 150.611 | |
| 206 | 2.07944 | 1.46106 | 158.305 | 153.649 | |
| 207 | 2.17475 | 1.49852 | 160.551 | 156.908 | |
| 208 | 2.18605 | 1.53007 | 162.892 | 160.253 | |
| 209 | 2.19722 | 1.57179 | 165.362 | 163.707 | |
| 210 | 2.70805 | 1.60725 | 167.945 | 168.059 | |
| 211 | 2.94444 | 1.65463 | 170.683 | 172.931 | |
| 212 | 4.34899 | 1.6954 | 173.558 | 180.304 | |
| 213 | 4.78749 | 1.75069 | 176.622 | 188.686 | |
| 214 | 4.78749 | 1.79912 | 179.859 | 197.299 | |
| 215 | 5.01064 | 1.86629 | 183.342 | 206.65 | |
| 216 | 5.01064 | 1.92684 | 187.055 | 216.305 | |
| 217 | 5.07517 | 2.01409 | 191.112 | 226.527 | |
| 218 | 5.24702 | 2.09693 | 195.509 | 237.53 | |
| 219 | 5.56068 | 2.22621 | 200.465 | 249.909 | |
| 220 | 5.63479 | 2.36561 | 206.061 | 263.239 | |
| 221 | 5.70378 | 2.65209 | 213.094 | 278.366 | |

Data Set Standard Deviation = 1.50011
Numerator = 77487.4
Denominator = 105498
W Statistic = 0.734493 = 77487.4 / 105498

5% Critical value of 0.976 exceeds 0.734493
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.734493
Evidence of non-normality at 99% level of significance

# Kruskal-Wallis Non-Parametric Test

## Parameter: Trichloroethene

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

# Kruskal Wallis Ranks

## Background Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-13 | 3/16/1999 | ND<0 | 68 |
| | 9/23/1999 | ND<0 | 68 |
| | 3/15/2000 | ND<0 | 68 |
| | 9/24/2003 | ND<0 | 68 |
| | 3/11/2004 | ND<0 | 68 |
| | 10/12/2004 | ND<0 | 68 |
| | 4/1/2005 | ND<0 | 68 |
| | 10/25/2005 | ND<0 | 68 |
| | 4/29/2006 | ND<0 | 68 |
| | 11/18/2006 | ND<0 | 68 |
| | 5/23/2007 | ND<0 | 68 |
| | 11/28/2007 | ND<0 | 68 |
| | 6/5/2008 | ND<0 | 68 |
| | 11/20/2008 | ND<0 | 68 |
| | 6/11/2009 | ND<-2.73337 | 68 |
| | 11/16/2009 | ND<-2.73337 | 68 |
| | 6/30/2010 | ND<-2.73337 | 68 |
| | 11/12/2010 | ND<-2.73337 U | 68 |

Rank Sum = 1224
Rank Mean = 68

Background Rank Sum = 1224
Background Rank Mean = 68

## Compliance Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-8 | 7/20/1995 | 2.94444 | 211 |
| | 8/24/1995 | 5.70378 | 221 |
| | 9/28/1995 | 5.24702 | 218 |
| | 10/26/1995 | 2.70805 | 210 |
| | 11/19/1996 | ND<0 | 68 |
| | 12/19/1996 | 5.63479 | 220 |
| | 3/24/1997 | 5.56068 | 219 |
| | 9/24/1997 | 5.01064 | 215 |
| | 4/7/1998 | 4.78749 | 213 |
| | 9/23/1998 | 5.01064 | 216 |
| | 3/16/1999 | 4.78749 | 214 |
| | 9/23/1999 | 4.34899 | 212 |
| | 3/15/2000 | 5.07517 | 217 |
| | 9/24/2003 | ND<0 | 68 |
| | 3/11/2004 | 2.18605 | 208 |
| | 10/12/2004 | ND<0 | 68 |
| | 4/1/2005 | 0.828552 | 190 |
| | 10/25/2005 | 1.89612 | 204 |
| | 4/29/2006 | 0.797507 | 189 |
| | 11/18/2006 | 1.26413 | 197 |

| | | | |
|---|---|---|---|
| | 5/23/2007 | 0.470004 | 184 |
| | 11/28/2007 | 1.43031 | 198 |
| | 6/5/2008 | ND<0 J | 68 |
| | 11/20/2008 | 0.262364 J | 180 |
| | 6/11/2009 | 0.262364 | 181 |
| | 6/30/2010 | -0.139262 J | 165 |
| | 11/12/2010 | 0.641854 | 185 |

Rank Sum = 4939
Rank Mean = 182.926

| | | | |
|---|---|---|---|
| MW-10 | 7/20/1995 | -0.544727 J | 150 |
| | 8/24/1995 | 0.788457 | 188 |
| | 9/28/1995 | 1.09861 | 192 |
| | 10/26/1995 | 1.09861 | 193 |
| | 11/19/1996 | ND<0 | 68 |
| | 12/19/1996 | ND<0 | 68 |
| | 3/24/1997 | ND<0 | 68 |
| | 9/24/1997 | ND<0 | 68 |
| | 4/7/1998 | ND<0 | 68 |
| | 9/23/1998 | ND<0 | 68 |
| | 3/16/1999 | 1.16315 | 195 |
| | 9/23/1999 | ND<0 | 68 |
| | 3/15/2000 | ND<0 | 68 |
| | 9/24/2003 | ND<0 | 68 |
| | 3/11/2004 | ND<0 | 68 |
| | 10/12/2004 | ND<0 | 68 |
| | 4/1/2005 | -0.127833 J | 166 |
| | 10/25/2005 | 0.139762 J | 177 |
| | 4/29/2006 | 0.239017 J | 178 |
| | 11/18/2006 | -0.116534 J | 167 |
| | 5/23/2007 | ND<0 | 68 |
| | 11/28/2007 | 0 J | 172 |
| | 6/5/2008 | ND<0 | 68 |
| | 11/20/2008 | -0.0943107 J | 169 |
| | 6/11/2009 | -0.527633 J | 151 |
| | 11/16/2009 | -0.0618754 J | 170 |
| | 6/30/2010 | -0.653926 J | 147 |
| | 11/12/2010 | -0.150823 J | 164 |

Rank Sum = 3463
Rank Mean = 123.679

| | | | |
|---|---|---|---|
| MW-11R | 7/20/1995 | 1.25276 | 196 |
| | 8/24/1995 | 2.17475 | 207 |
| | 9/28/1995 | 1.79176 | 202 |
| | 10/26/1995 | 2.07944 | 206 |
| | 11/19/1996 | ND<0 | 68 |
| | 12/19/1996 | 2.19722 | 209 |
| | 3/24/1997 | 1.94591 | 205 |
| | 9/24/1997 | ND<0 | 68 |
| | 4/7/1998 | ND<0 | 68 |
| | 9/23/1998 | ND<0 | 68 |
| | 3/16/1999 | 1.62924 | 200 |
| | 9/23/1999 | 0.832909 | 191 |
| | 3/15/2000 | ND<0 | 68 |
| | 9/24/2003 | ND<0 | 68 |
| | 3/11/2004 | ND<0 | 68 |
| | 10/12/2004 | ND<0 | 68 |
| | 4/1/2005 | 1.10194 | 194 |
| | 10/25/2005 | 0.24686 J | 179 |
| | 4/29/2006 | -0.527633 J | 152 |
| | 11/18/2006 | -0.040822 J | 171 |
| | 5/23/2007 | 0.693147 | 186 |

| | | | |
|---|---|---|---|
| | 11/28/2007 | 0.00995033 J | 175 |
| | 6/5/2008 | ND<0 | 68 |
| | 11/20/2008 | -1.23787 J | 140 |
| | 6/11/2009 | 0.405465 | 183 |
| | 11/16/2009 | -1.51413 J | 137 |
| | 6/30/2010 | 0.336472 | 182 |
| | 11/12/2010 | ND<-2.73337 U | 68 |

Rank Sum = 3995
Rank Mean = 142.679

| | | | |
|---|---|---|---|
| MW-12AR | 3/16/1999 | ND<0 | 68 |
| | 9/23/1999 | ND<0 | 68 |
| | 3/15/2000 | ND<0 | 68 |
| | 9/24/2003 | 1.64866 | 201 |
| | 3/11/2004 | ND<0 | 68 |
| | 10/12/2004 | ND<0 | 68 |
| | 4/1/2005 | ND<0 | 68 |
| | 10/25/2005 | -0.446287 J | 155 |
| | 4/29/2006 | -0.597837 J | 149 |
| | 11/18/2006 | -1.04982 J | 142 |
| | 5/23/2007 | ND<0 | 68 |
| | 11/28/2007 | -0.798508 J | 144 |
| | 6/5/2008 | ND<0 | 68 |
| | 11/20/2008 | -1.46968 J | 138 |
| | 6/11/2009 | ND<-2.73337 | 68 |
| | 11/16/2009 | -2.04022 J | 136 |
| | 6/30/2010 | ND<-2.73337 | 68 |
| | 11/12/2010 | -1.30933 J | 139 |

Rank Sum = 1884
Rank Mean = 104.667

| | | | |
|---|---|---|---|
| MW-12BR | 3/16/1999 | 1.80829 | 203 |
| | 9/23/1999 | 1.50408 | 199 |
| | 3/15/2000 | ND<0 | 68 |
| | 9/24/2003 | ND<0 | 68 |
| | 3/11/2004 | ND<0 | 68 |
| | 10/12/2004 | ND<0 | 68 |
| | 4/1/2005 | 0.760806 | 187 |
| | 10/25/2005 | ND<0 | 68 |
| | 4/29/2006 | ND<0 | 68 |
| | 11/18/2006 | ND<0 | 68 |
| | 5/23/2007 | ND<0 | 68 |
| | 11/28/2007 | ND<0 | 68 |
| | 6/5/2008 | ND<0 | 68 |
| | 11/20/2008 | ND<0 | 68 |
| | 6/11/2009 | ND<-2.73337 | 68 |
| | 11/16/2009 | ND<-2.73337 | 68 |
| | 6/30/2010 | ND<-2.73337 | 68 |
| | 11/12/2010 | ND<-2.73337 U | 68 |

Rank Sum = 1609
Rank Mean = 89.3889

| | | | |
|---|---|---|---|
| MW-6 | 7/20/1995 | ND<0 | 68 |
| | 8/24/1995 | ND<0 | 68 |
| | 9/28/1995 | ND<0 | 68 |
| | 10/26/1995 | ND<0 | 68 |
| | 11/19/1996 | ND<0 | 68 |
| | 12/19/1996 | ND<0 | 68 |
| | 3/24/1997 | ND<0 | 68 |
| | 9/24/1997 | ND<0 | 68 |
| | 4/7/1998 | ND<0 | 68 |
| | 9/23/1998 | ND<0 | 68 |

| | | | |
|---|---|---|---|
| | 3/16/1999 | ND<0 | 68 |
| | 9/23/1999 | ND<0 | 68 |
| | 3/15/2000 | ND<0 | 68 |
| | 9/24/2003 | ND<0 | 68 |
| | 3/11/2004 | ND<0 | 68 |
| | 10/12/2004 | ND<0 | 68 |
| | 4/1/2005 | ND<0 | 68 |
| | 10/25/2005 | ND<0 | 68 |
| | 4/29/2006 | ND<0 | 68 |
| | 11/18/2006 | ND<0 | 68 |
| | 5/23/2007 | ND<0 | 68 |
| | 11/28/2007 | ND<0 | 68 |
| | 6/5/2008 | ND<0 | 68 |
| | 11/20/2008 | ND<0 | 68 |
| | 6/11/2009 | ND<-2.73337 | 68 |
| | 11/16/2009 | ND<-2.73337 | 68 |
| | 6/30/2010 | ND<-2.73337 | 68 |
| | 11/12/2010 | ND<-2.73337 U | 68 |

Rank Sum = 1904
Rank Mean = 68

| | | | |
|---|---|---|---|
| MW-7 | 7/20/1995 | 0.0953102 | 176 |
| | 8/24/1995 | -0.223144 J | 162 |
| | 9/28/1995 | -0.105361 J | 168 |
| | 10/26/1995 | 0 J | 173 |
| | 11/19/1996 | ND<0 | 68 |
| | 12/19/1996 | ND<0 | 68 |
| | 3/24/1997 | ND<0 | 68 |
| | 9/24/1997 | ND<0 | 68 |
| | 4/7/1998 | ND<0 | 68 |
| | 9/23/1998 | ND<0 | 68 |
| | 3/16/1999 | ND<0 | 68 |
| | 9/23/1999 | ND<0 | 68 |
| | 3/15/2000 | ND<0 | 68 |
| | 9/24/2003 | ND<0 | 68 |
| | 3/11/2004 | ND<0 | 68 |
| | 10/12/2004 | ND<0 | 68 |
| | 4/1/2005 | ND<0 | 68 |
| | 10/25/2005 | ND<0 | 68 |
| | 4/29/2006 | ND<0 | 68 |
| | 11/18/2006 | ND<0 | 68 |
| | 5/23/2007 | ND<0 | 68 |
| | 11/28/2007 | ND<0 | 68 |
| | 6/5/2008 | ND<0 | 68 |
| | 11/20/2008 | ND<0 | 68 |
| | 6/11/2009 | ND<-2.73337 | 68 |
| | 11/16/2009 | ND<-2.73337 | 68 |
| | 6/30/2010 | ND<-2.73337 | 68 |
| | 11/12/2010 | ND<-2.73337 U | 68 |

Rank Sum = 2311
Rank Mean = 82.5357

| | | | |
|---|---|---|---|
| MW-9 | 7/20/1995 | -1.10866 J | 141 |
| | 8/24/1995 | -0.693147 J | 146 |
| | 9/28/1995 | -0.223144 J | 163 |
| | 10/26/1995 | 0 J | 174 |
| | 11/19/1996 | ND<0 | 68 |
| | 12/19/1996 | ND<0 | 68 |
| | 3/24/1997 | ND<0 | 68 |
| | 9/24/1997 | ND<0 | 68 |
| | 4/7/1998 | ND<0 | 68 |
| | 9/23/1998 | ND<0 | 68 |

| | | | |
|---|---|---|---|
| 3/16/1999 | ND<0 | 68 | |
| 9/23/1999 | ND<0 | 68 | |
| 3/15/2000 | ND<0 | 68 | |
| 9/24/2003 | ND<0 | 68 | |
| 3/11/2004 | ND<0 | 68 | |
| 10/12/2004 | ND<0 | 68 | |
| 4/1/2005 | -0.356675 J | 158 | |
| 10/25/2005 | -0.634878 J | | 148 |
| 4/29/2006 | -0.798508 J | | 145 |
| 11/18/2006 | -0.84397 J | | 143 |
| 5/23/2007 | -0.510826 J | | 153 |
| 11/28/2007 | -0.301105 J | | 161 |
| 6/5/2008 | ND<0 | 68 | |
| 11/20/2008 | -0.510826 J | | 154 |
| 6/11/2009 | -0.400478 J | | 156 |
| 11/16/2009 | -0.314711 J | | 160 |
| 6/30/2010 | -0.385662 J | | 157 |
| 11/12/2010 | -0.34249 J | | 159 |

Rank Sum = 3202
Rank Mean = 114.357

## Calculation Results:

Kruskal-Wallis H Statistic = 70.7996
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 91.7015
95% Confidence comparison value is 15.5073 at 8 degrees of freedom
70.7996 > 15.5073 indicating a significant group difference at 5% significance level
91.7015 > 15.5073 indicating a significant group difference at 5% significance level when adjusted for ties

## Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 68

| Well | Mean Rank | Dif from Bkg | Critical Value |
|---|---|---|---|
| MW-8 | 182.926 | 114.926 | 45.263 |
| MW-10 | 123.679 | 55.6786 | 44.9386 |
| MW-11R | 142.679 | 74.6786 | 44.9386 |
| MW-12AR | 104.667 | 36.6667 | 49.5832 |
| MW-12BR | 89.3889 | 21.3889 | 49.5832 |
| MW-6 | 68 | 0 | 44.9386 |
| MW-7 | 82.5357 | 14.5357 | 44.9386 |
| MW-9 | 114.357 | 46.3571 | 44.9386 |

## Individual Well Comparisons at Groupwise 5% Significance Level (0.625% Significance Level per comparison)

0.625% Z score is 2.51213
Mean background rank is 68

| Well | Mean Rank | Dif from Bkg | Critical Value |
|---|---|---|---|
| MW-8 | 182.926 | 114.926 | 48.8779 |
| MW-10 | 123.679 | 55.6786 | 48.5275 |
| MW-11R | 142.679 | 74.6786 | 48.5275 |
| MW-12AR | 104.667 | 36.6667 | 53.5431 |
| MW-12BR | 89.3889 | 21.3889 | 53.5431 |
| MW-6 | 68 | 0 | 48.5275 |
| MW-7 | 82.5357 | 14.5357 | 48.5275 |
| MW-9 | 114.357 | 46.3571 | 48.5275 |

# Mann-Kendall Trend Analysis

## Parameter: Trichloroethene

## Location: MW-8

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | Positives | Negatives | |
|---|---|---|---|---|---|
| 5.70378 | 2.94444 | 2.75934 | 1 | 0 | |
| 5.24702 | 2.94444 | 2.30259 | 2 | 0 | |
| 2.70805 | 2.94444 | -0.236389 | 2 | 1 | |
| ND<0 | 2.94444 | -2.944442 | 2 | | |
| 5.63479 | 2.94444 | 2.69035 | 3 | 2 | |
| 5.56068 | 2.94444 | 2.61624 | 4 | 2 | |
| 5.01064 | 2.94444 | 2.0662 | 5 | 2 | |
| 4.78749 | 2.94444 | 1.84305 | 6 | 2 | |
| 5.01064 | 2.94444 | 2.0662 | 7 | 2 | |
| 4.78749 | 2.94444 | 1.84305 | 8 | 2 | |
| 4.34899 | 2.94444 | 1.40455 | 9 | 2 | |
| 5.07517 | 2.94444 | 2.13073 | 10 | 2 | |
| ND<0 | 2.94444 | -2.94444 | 10 | 3 | |
| 2.18605 | 2.94444 | -0.758388 | | 10 | 4 |
| ND<0 | 2.94444 | -2.94444 | 10 | 5 | |
| 0.828552 | 2.94444 | -2.11589 | 10 | 6 | |
| 1.89612 | 2.94444 | -1.04832 | 10 | 7 | |
| 0.797507 | 2.94444 | -2.14693 | 10 | 8 | |
| 1.26413 | 2.94444 | -1.68031 | 10 | 9 | |
| 0.470004 | 2.94444 | -2.47444 | 10 | 10 | |
| 1.43031 | 2.94444 | -1.51413 | 10 | 11 | |
| ND<0 J | 2.94444 | -2.94444 | 10 | 12 | |
| 0.262364 J | 2.94444 | -2.68207 | 10 | 13 | |
| 0.262364 | 2.94444 | -2.68207 | 10 | 14 | |
| -0.139262 J | 2.94444 | -3.0837 | 10 | 15 | |
| 0.641854 | 2.94444 | -2.30259 | 10 | 16 | |
| | | | | | |
| 5.24702 | 5.70378 | -0.456758 | | 10 | 17 |
| 2.70805 | 5.70378 | -2.99573 | 10 | 18 | |
| ND<0 | 5.70378 | -5.70378 | 10 | 19 | |
| 5.63479 | 5.70378 | -0.068992 | 9 | 10 | 20 |
| 5.56068 | 5.70378 | -0.143101 | | 10 | 21 |
| 5.01064 | 5.70378 | -0.693147 | | 10 | 22 |
| 4.78749 | 5.70378 | -0.916291 | | 10 | 23 |
| 5.01064 | 5.70378 | -0.693147 | | 10 | 24 |
| 4.78749 | 5.70378 | -0.916291 | | 10 | 25 |
| 4.34899 | 5.70378 | -1.3548 | 10 | 26 | |
| 5.07517 | 5.70378 | -0.628609 | | 10 | 27 |
| ND<0 | 5.70378 | -5.70378 | 10 | 28 | |
| 2.18605 | 5.70378 | -3.51773 | 10 | 29 | |
| ND<0 | 5.70378 | -5.70378 | 10 | 30 | |
| 0.828552 | 5.70378 | -4.87523 | 10 | 31 | |
| 1.89612 | 5.70378 | -3.80766 | 10 | 32 | |
| 0.797507 | 5.70378 | -4.90628 | 10 | 33 | |
| 1.26413 | 5.70378 | -4.43966 | 10 | 34 | |
| 0.470004 | 5.70378 | -5.23378 | 10 | 35 | |
| 1.43031 | 5.70378 | -4.27347 | 10 | 36 | |
| ND<0 J | 5.70378 | -5.70378 | 10 | 37 | |

| | | | | | |
|---|---|---|---|---|---|
| 0.262364 J | 5.70378 | -5.441421 | 0 | 38 | |
| 0.262364 | 5.70378 | -5.441421 | 0 | 39 | |
| -0.139262 J | 5.70378 | -5.843041 | 0 | 40 | |
| 0.641854 | 5.70378 | -5.061931 | 0 | 41 | |
| | | | | | |
| 2.70805 | 5.24702 | -2.538971 | 0 | 42 | |
| ND<0 | 5.24702 | -5.247021 | 0 | 43 | |
| 5.63479 | 5.24702 | 0.387766 | 11 | 43 | |
| 5.56068 | 5.24702 | 0.313658 | 12 | 43 | |
| 5.01064 | 5.24702 | -0.236389 | 12 | 44 | |
| 4.78749 | 5.24702 | -0.459532 | 12 | 45 | |
| 5.01064 | 5.24702 | -0.236389 | 12 | 46 | |
| 4.78749 | 5.24702 | -0.459532 | 12 | 47 | |
| 4.34899 | 5.24702 | -0.898037 | 12 | 48 | |
| 5.07517 | 5.24702 | -0.171851 | 2 | 49 | |
| ND<0 | 5.24702 | -5.247021 | 2 | 50 | |
| 2.18605 | 5.24702 | -3.060971 | 2 | 51 | |
| ND<0 | 5.24702 | -5.247021 | 2 | 52 | |
| 0.828552 | 5.24702 | -4.418471 | 2 | 53 | |
| 1.89612 | 5.24702 | -3.3509 | 12 | 54 | |
| 0.797507 | 5.24702 | -4.449521 | 2 | 55 | |
| 1.26413 | 5.24702 | -3.9829 | 12 | 56 | |
| 0.470004 | 5.24702 | -4.777021 | 2 | 57 | |
| 1.43031 | 5.24702 | -3.816711 | 2 | 58 | |
| ND<0 J | 5.24702 | -5.247021 | 2 | 59 | |
| 0.262364 J | 5.24702 | -4.984661 | 2 | 60 | |
| 0.262364 | 5.24702 | -4.984661 | 2 | 61 | |
| -0.139262 J | 5.24702 | -5.386291 | 2 | 62 | |
| 0.641854 | 5.24702 | -4.605171 | 2 | 63 | |
| | | | | | |
| ND<0 | 2.70805 | -2.708051 | 2 | 64 | |
| 5.63479 | 2.70805 | 2.92674 | 13 | 64 | |
| 5.56068 | 2.70805 | 2.85263 | 14 | 64 | |
| 5.01064 | 2.70805 | 2.30259 | 15 | 64 | |
| 4.78749 | 2.70805 | 2.07944 | 16 | 64 | |
| 5.01064 | 2.70805 | 2.30259 | 17 | 64 | |
| 4.78749 | 2.70805 | 2.07944 | 18 | 64 | |
| 4.34899 | 2.70805 | 1.64094 | 19 | 64 | |
| 5.07517 | 2.70805 | 2.36712 | 20 | 64 | |
| ND<0 | 2.70805 | -2.708052 | 0 | 65 | |
| 2.18605 | 2.70805 | -0.521999 | 20 | 66 | |
| ND<0 | 2.70805 | -2.708052 | 0 | 67 | |
| 0.828552 | 2.70805 | -1.8795 | 20 | 68 | |
| 1.89612 | 2.70805 | -0.811931 | 20 | 69 | |
| 0.797507 | 2.70805 | -1.910542 | 0 | 70 | |
| 1.26413 | 2.70805 | -1.443922 | 0 | 71 | |
| 0.470004 | 2.70805 | -2.238052 | 0 | 72 | |
| 1.43031 | 2.70805 | -1.277742 | 0 | 73 | |
| ND<0 J | 2.70805 | -2.708052 | 0 | 74 | |
| 0.262364 J | 2.70805 | -2.445692 | 0 | 75 | |
| 0.262364 | 2.70805 | -2.445692 | 0 | 76 | |
| -0.139262 J | 2.70805 | -2.847312 | 0 | 77 | |
| 0.641854 | 2.70805 | -2.0662 | 20 | 78 | |
| | | | | | |
| 5.63479 | ND<0 | 5.63479 | 21 | 78 | |
| 5.56068 | ND<0 | 5.56068 | 22 | 78 | |
| 5.01064 | ND<0 | 5.01064 | 23 | 78 | |
| 4.78749 | ND<0 | 4.78749 | 24 | 78 | |
| 5.01064 | ND<0 | 5.01064 | 25 | 78 | |
| 4.78749 | ND<0 | 4.78749 | 26 | 78 | |
| 4.34899 | ND<0 | 4.34899 | 27 | 78 | |
| 5.07517 | ND<0 | 5.07517 | 28 | 78 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 28 | 78 | | |
| 2.18605 | | ND<0 | 2.18605 | 29 | 78 | |
| ND<0 | ND<0 | 0 | 29 | 78 | | |
| 0.828552 | | ND<0 | 0.828552 | 30 | 78 | |
| 1.89612 | | ND<0 | 1.89612 | 31 | 78 | |
| 0.797507 | | ND<0 | 0.797507 | 32 | 78 | |
| 1.26413 | | ND<0 | 1.26413 | 33 | 78 | |
| 0.470004 | | ND<0 | 0.470004 | 34 | 78 | |
| 1.43031 | | ND<0 | 1.43031 | 35 | 78 | |
| ND<0 J | ND<0 | 0 | 35 | 78 | | |
| 0.262364 J | | ND<0 | 0.262364 | 36 | 78 | |
| 0.262364 | | ND<0 | 0.262364 | 37 | 78 | |
| -0.139262 J | | ND<0 | -0.139262 | 37 | 79 | |
| 0.641854 | | ND<0 | 0.641854 | 38 | 79 | |

| | | | | | |
|---|---|---|---|---|---|
| 5.56068 | 5.63479 | -0.074108 | 38 | 80 | |
| 5.01064 | 5.63479 | -0.624154 | 38 | 81 | |
| 4.78749 | 5.63479 | -0.847298 | 38 | 82 | |
| 5.01064 | 5.63479 | -0.624154 | 38 | 83 | |
| 4.78749 | 5.63479 | -0.847298 | 38 | 84 | |
| 4.34899 | 5.63479 | -1.2858 | 38 | 85 | |
| 5.07517 | 5.63479 | -0.559616 | 38 | 86 | |
| ND<0 | 5.63479 | -5.63479 | 38 | 87 | |
| 2.18605 | 5.63479 | -3.44874 | 38 | 88 | |
| ND<0 | 5.63479 | -5.63479 | 38 | 89 | |
| 0.828552 | 5.63479 | -4.80624 | 38 | 90 | |
| 1.89612 | 5.63479 | -3.73867 | 38 | 91 | |
| 0.797507 | 5.63479 | -4.83728 | 38 | 92 | |
| 1.26413 | 5.63479 | -4.37066 | 38 | 93 | |
| 0.470004 | 5.63479 | -5.16479 | 38 | 94 | |
| 1.43031 | 5.63479 | -4.20448 | 38 | 95 | |
| ND<0 J | 5.63479 | -5.63479 | 38 | 96 | |
| 0.262364 J | 5.63479 | -5.37243 | 38 | 97 | |
| 0.262364 | 5.63479 | -5.37243 | 38 | 98 | |
| -0.139262 J | 5.63479 | -5.77405 | 38 | 99 | |
| 0.641854 | 5.63479 | -4.99294 | 38 | 100 | |

| | | | | | |
|---|---|---|---|---|---|
| 5.01064 | 5.56068 | -0.550046 | 38 | 101 | |
| 4.78749 | 5.56068 | -0.773193 | 8 | 102 | |
| 5.01064 | 5.56068 | -0.550046 | 38 | 103 | |
| 4.78749 | 5.56068 | -0.773193 | 8 | 104 | |
| 4.34899 | 5.56068 | -1.211693 | 8 | 105 | |
| 5.07517 | 5.56068 | -0.485508 | 38 | 106 | |
| ND<0 | 5.56068 | -5.56068 | 38 | 107 | |
| 2.18605 | 5.56068 | -3.37463 | 38 | 108 | |
| ND<0 | 5.56068 | -5.56068 | 38 | 109 | |
| 0.828552 | 5.56068 | -4.73213 | 38 | 110 | |
| 1.89612 | 5.56068 | -3.66456 | 38 | 111 | |
| 0.797507 | 5.56068 | -4.76317 | 38 | 112 | |
| 1.26413 | 5.56068 | -4.29655 | 38 | 113 | |
| 0.470004 | 5.56068 | -5.09068 | 38 | 114 | |
| 1.43031 | 5.56068 | -4.13037 | 38 | 115 | |
| ND<0 J | 5.56068 | -5.56068 | 38 | 116 | |
| 0.262364 J | 5.56068 | -5.29832 | 38 | 117 | |
| 0.262364 | 5.56068 | -5.29832 | 38 | 118 | |
| -0.139262 J | 5.56068 | -5.69994 | 38 | 119 | |
| 0.641854 | 5.56068 | -4.91883 | 38 | 120 | |

| | | | | | |
|---|---|---|---|---|---|
| 4.78749 | 5.01064 | -0.223144 | 38 | 121 | |
| 5.01064 | 5.01064 | 0 | 38 | 121 | |
| 4.78749 | 5.01064 | -0.223144 | 38 | 122 | |
| 4.34899 | 5.01064 | -0.661649 | 38 | 123 | |

5.07517 5.01064 0.0645385 39 123
ND<0 5.01064 -5.0106439 124
2.18605 5.01064 -2.8245839 125
ND<0 5.01064 -5.0106439 126
0.828552 5.01064 -4.1820839 127
1.89612 5.01064 -3.1145239 128
0.797507 5.01064 -4.2131339 129
1.26413 5.01064 -3.7465139 130
0.470004 5.01064 -4.5406339 131
1.43031 5.01064 -3.5803239 132
ND<0 J 5.01064 -5.0106439 133
0.262364 J 5.01064 -4.7482739 134
0.262364 5.01064 -4.7482739 135
-0.139262 J 5.01064 -5.1499 39 136
0.641854 5.01064 -4.3687839 137

5.01064 4.78749 0.223144 40 137
4.78749 4.78749 0 40 137
4.34899 4.78749 -0.438505 40 138
5.07517 4.78749 0.287682 41 138
ND<0 4.78749 -4.7874941 139
2.18605 4.78749 -2.6014441 140
ND<0 4.78749 -4.7874941 141
0.828552 4.78749 -3.9589441 142
1.89612 4.78749 -2.8913741 143
0.797507 4.78749 -3.9899841 144
1.26413 4.78749 -3.5233741 145
0.470004 4.78749 -4.3174941 146
1.43031 4.78749 -3.3571841 147
ND<0 J 4.78749 -4.7874941 148
0.262364 J 4.78749 -4.5251341 149
0.262364 4.78749 -4.5251341 150
-0.139262 J 4.78749 -4.9267541 151
0.641854 4.78749 -4.1456441 152

4.78749 5.01064 -0.223144 41 153
4.34899 5.01064 -0.661649 41 154
5.07517 5.01064 0.0645385 42 154
ND<0 5.01064 -5.0106442 155
2.18605 5.01064 -2.8245842 156
ND<0 5.01064 -5.0106442 157
0.828552 5.01064 -4.1820842 158
1.89612 5.01064 -3.1145242 159
0.797507 5.01064 -4.2131342 160
1.26413 5.01064 -3.7465142 161
0.470004 5.01064 -4.5406342 162
1.43031 5.01064 -3.5803242 163
ND<0 J 5.01064 -5.0106442 164
0.262364 J 5.01064 -4.7482742 165
0.262364 5.01064 -4.7482742 166
-0.139262 J 5.01064 -5.1499 42 167
0.641854 5.01064 -4.3687842 168

4.34899 4.78749 -0.438505 42 169
5.07517 4.78749 0.287682 43 169
ND<0 4.78749 -4.7874943 170
2.18605 4.78749 -2.6014443 171
ND<0 4.78749 -4.7874943 172
0.828552 4.78749 -3.9589443 173
1.89612 4.78749 -2.8913743 174
0.797507 4.78749 -3.9899843 175
1.26413 4.78749 -3.5233743 176

| | | | | |
|---|---|---|---|---|
| 0.470004 | 4.78749 | -4.3174943 | 177 | |
| 1.43031 | 4.78749 | -3.3571843 | 178 | |
| ND<0 J | 4.78749 | -4.7874943 | 179 | |
| 0.262364 J | 4.78749 | -4.5251343 | 180 | |
| 0.262364 | 4.78749 | -4.5251343 | 181 | |
| -0.139262 J | 4.78749 | -4.9267543 | 182 | |
| 0.641854 | 4.78749 | -4.1456443 | 183 | |
| | | | | |
| 5.07517 | 4.34899 | 0.726187 | 44 | 183 |
| ND<0 | 4.34899 | -4.3489944 | 184 | |
| 2.18605 | 4.34899 | -2.1629444 | 185 | |
| ND<0 | 4.34899 | -4.3489944 | 186 | |
| 0.828552 | 4.34899 | -3.5204344 | 187 | |
| 1.89612 | 4.34899 | -2.4528744 | 188 | |
| 0.797507 | 4.34899 | -3.5514844 | 189 | |
| 1.26413 | 4.34899 | -3.0848644 | 190 | |
| 0.470004 | 4.34899 | -3.8789844 | 191 | |
| 1.43031 | 4.34899 | -2.9186844 | 192 | |
| ND<0 J | 4.34899 | -4.3489944 | 193 | |
| 0.262364 J | 4.34899 | -4.0866244 | 194 | |
| 0.262364 | 4.34899 | -4.0866244 | 195 | |
| -0.139262 J | 4.34899 | -4.4882544 | 196 | |
| 0.641854 | 4.34899 | -3.7071344 | 197 | |
| | | | | |
| ND<0 | 5.07517 | -5.0751744 | 198 | |
| 2.18605 | 5.07517 | -2.8891244 | 199 | |
| ND<0 | 5.07517 | -5.0751744 | 200 | |
| 0.828552 | 5.07517 | -4.2466244 | 201 | |
| 1.89612 | 5.07517 | -3.1790544 | 202 | |
| 0.797507 | 5.07517 | -4.2776744 | 203 | |
| 1.26413 | 5.07517 | -3.8110544 | 204 | |
| 0.470004 | 5.07517 | -4.6051744 | 205 | |
| 1.43031 | 5.07517 | -3.6448644 | 206 | |
| ND<0 J | 5.07517 | -5.0751744 | 207 | |
| 0.262364 J | 5.07517 | -4.8128144 | 208 | |
| 0.262364 | 5.07517 | -4.8128144 | 209 | |
| -0.139262 J | 5.07517 | -5.2144444 | 210 | |
| 0.641854 | 5.07517 | -4.4333244 | 211 | |
| | | | | |
| 2.18605 | ND<0 | 2.18605 45 | 211 | |
| ND<0 | ND<0 | 0 45 | 211 | |
| 0.828552 | ND<0 | 0.828552 | 46 | 211 |
| 1.89612 | ND<0 | 1.89612 47 | 211 | |
| 0.797507 | ND<0 | 0.797507 | 48 | 211 |
| 1.26413 | ND<0 | 1.26413 49 | 211 | |
| 0.470004 | ND<0 | 0.470004 | 50 | 211 |
| 1.43031 | ND<0 | 1.43031 51 | 211 | |
| ND<0 J | ND<0 | 0 51 | 211 | |
| 0.262364 J | ND<0 | 0.262364 | 52 | 211 |
| 0.262364 | ND<0 | 0.262364 | 53 | 211 |
| -0.139262 J | ND<0 | -0.139262 | 53 | 212 |
| 0.641854 | ND<0 | 0.641854 | 54 | 212 |
| | | | | |
| ND<0 | 2.18605 | -2.1860554 | 213 | |
| 0.828552 | 2.18605 | -1.3575 54 | 214 | |
| 1.89612 | 2.18605 | -0.289932 | 54 | 215 |
| 0.797507 | 2.18605 | -1.3885454 | 216 | |
| 1.26413 | 2.18605 | -0.921925 | 54 | 217 |
| 0.470004 | 2.18605 | -1.7160554 | 218 | |
| 1.43031 | 2.18605 | -0.7557454 | 219 | |
| ND<0 J | 2.18605 | -2.1860554 | 220 | |
| 0.262364 J | 2.18605 | -1.9236954 | 221 | |

| | | | | | |
|---|---|---|---|---|---|
| 0.262364 | 2.18605 | -1.9236954 | 222 | | |
| -0.139262 J | 2.18605 | -2.3253154 | 223 | | |
| 0.641854 | 2.18605 | -1.5442 54 | 224 | | |
| | | | | | |
| 0.828552 | ND<0 | 0.828552 | 55 | 224 | |
| 1.89612 | ND<0 | 1.89612 56 | 224 | | |
| 0.797507 | ND<0 | 0.797507 | 57 | 224 | |
| 1.26413 | ND<0 | 1.26413 58 | 224 | | |
| 0.470004 | ND<0 | 0.470004 | 59 | 224 | |
| 1.43031 | ND<0 | 1.43031 60 | 224 | | |
| ND<0 J ND<0 | 0 | 60 | 224 | | |
| 0.262364 J | ND<0 | 0.262364 | 61 | 224 | |
| 0.262364 | ND<0 | 0.262364 | 62 | 224 | |
| -0.139262 J | ND<0 | -0.139262 | 62 | 225 | |
| 0.641854 | ND<0 | 0.641854 | 63 | 225 | |
| | | | | | |
| 1.89612 | 0.828552 | 1.06757 64 | 225 | | |
| 0.797507 | 0.828552 | -0.0310446 | 64 | 226 | |
| 1.26413 | 0.828552 | 0.435575 | 65 | 226 | |
| 0.470004 | 0.828552 | -0.358548 | 65 | 227 | |
| 1.43031 | 0.828552 | 0.601759 | 66 | 227 | |
| ND<0 J 0.828552 | -0.828552 | 66 | 228 | | |
| 0.262364 J | 0.828552 | -0.566188 | 66 | 229 | |
| 0.262364 | 0.828552 | -0.566188 | 66 | 230 | |
| -0.139262 J | 0.828552 | -0.967814 | 66 | 231 | |
| 0.641854 | 0.828552 | -0.186698 | 66 | 232 | |
| | | | | | |
| 0.797507 | 1.89612 | -1.0986166 | 233 | | |
| 1.26413 | 1.89612 | -0.631993 | 66 | 234 | |
| 0.470004 | 1.89612 | -1.4261266 | 235 | | |
| 1.43031 | 1.89612 | -0.465808 | 66 | 236 | |
| ND<0 J 1.89612 | -1.8961266 | 237 | | | |
| 0.262364 J | 1.89612 | -1.6337666 | 238 | | |
| 0.262364 | 1.89612 | -1.6337666 | 239 | | |
| -0.139262 J | 1.89612 | -2.0353866 | 240 | | |
| 0.641854 | 1.89612 | -1.2542766 | 241 | | |
| | | | | | |
| 1.26413 | 0.797507 | 0.46662 67 | 241 | | |
| 0.470004 | 0.797507 | -0.327504 | 67 | 242 | |
| 1.43031 | 0.797507 | 0.632804 | 68 | 242 | |
| ND<0 J 0.797507 | -0.797507 | 68 | 243 | | |
| 0.262364 J | 0.797507 | -0.535143 | 68 | 244 | |
| 0.262364 | 0.797507 | -0.535143 | 68 | 245 | |
| -0.139262 J | 0.797507 | -0.936769 | 68 | 246 | |
| 0.641854 | 0.797507 | -0.155653 | 68 | 247 | |
| | | | | | |
| 0.470004 | 1.26413 | -0.794123 | 68 | 248 | |
| 1.43031 | 1.26413 | 0.166185 | 69 | 248 | |
| ND<0 J 1.26413 | -1.2641369 | 249 | | | |
| 0.262364 J | 1.26413 | -1.0017669 | 250 | | |
| 0.262364 | 1.26413 | -1.0017669 | 251 | | |
| -0.139262 J | 1.26413 | -1.4033969 | 252 | | |
| 0.641854 | 1.26413 | -0.622273 | 69 | 253 | |
| | | | | | |
| 1.43031 | 0.470004 | 0.960308 | 70 | 253 | |
| ND<0 J 0.470004 | -0.470004 | 70 | 254 | | |
| 0.262364 J | 0.470004 | -0.207639 | 70 | 255 | |
| 0.262364 | 0.470004 | -0.207639 | 70 | 256 | |
| -0.139262 J | 0.470004 | -0.609266 | 70 | 257 | |
| 0.641854 | 0.470004 | 0.17185 71 | 257 | | |

| | | | | | |
|---|---|---|---|---|---|
| ND<0 J | 1.43031 | -1.4303171 | 258 | | |
| 0.262364 J | 1.43031 | -1.1679571 | 259 | | |
| 0.262364 | 1.43031 | -1.1679571 | 260 | | |
| -0.139262 J | 1.43031 | -1.5695771 | 261 | | |
| 0.641854 | 1.43031 | -0.788457 | 71 | 262 | |
| | | | | | |
| 0.262364 J | ND<0 J | 0.262364 | 72 | 262 | |
| 0.262364 | ND<0 J | 0.262364 | 73 | 262 | |
| -0.139262 J | ND<0 J | -0.139262 | 73 | 263 | |
| 0.641854 | ND<0 J | 0.641854 | 74 | 263 | |
| | | | | | |
| 0.262364 | 0.262364 J | 0 | 74 | 263 | |
| -0.139262 J | 0.262364 J | -0.401626 | 74 | 264 | |
| 0.641854 | 0.262364 J | 0.37949 | 75 | 264 | |
| | | | | | |
| -0.139262 J | 0.262364 | -0.401626 | 75 | 265 | |
| 0.641854 | 0.262364 | 0.37949 | 76 | 265 | |
| | | | | | |
| 0.641854 | -0.139262 J | 0.781116 | 77 | 265 | |

S Statistic = 77 - 265 = -188

| Tied Group | Value | Members |
|---|---|---|
| 1 | 0 | 4 |
| 2 | 5.01064 | 2 |
| 3 | 4.78749 | 2 |
| 4 | 0.262364 | 2 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |
| 11/19/1996 | 1 |
| 12/19/1996 | 1 |
| 3/24/1997 | 1 |
| 9/24/1997 | 1 |
| 4/7/1998 | 1 |
| 9/23/1998 | 1 |
| 3/16/1999 | 1 |
| 9/23/1999 | 1 |
| 3/15/2000 | 1 |
| 9/24/2003 | 1 |
| 3/11/2004 | 1 |
| 10/12/2004 | 1 |
| 4/1/2005 | 1 |
| 10/25/2005 | 1 |
| 4/29/2006 | 1 |
| 11/18/2006 | 1 |
| 5/23/2007 | 1 |
| 11/28/2007 | 1 |
| 6/5/2008 | 1 |
| 11/20/2008 | 1 |
| 6/11/2009 | 1 |
| 6/30/2010 | 1 |
| 11/12/2010 | 1 |

There are 0 time periods with multiple data

A = 210

B = 0
C = 24
D = 0
E = 18
F = 0
a = 41418
b = 157950
c = 1404
Group Variance = 2289.33
Z-Score = -3.90829
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-3.90829| > 1.97737 indicating a trend

# Mann-Kendall Trend Analysis

## Parameter: Trichloroethene

## Location: MW-10

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | Positives | Negatives |
|---|---|---|---|---|
| 0.788457 | | -0.544727 J | 1.33318 1 | 0 |
| 1.09861 | | -0.544727 J | 1.64334 2 | 0 |
| 1.09861 | | -0.544727 J | 1.64334 3 | 0 |
| ND<0 | -0.544727 J | 0.544727 | 4 | 0 |
| ND<0 | -0.544727 J | 0.544727 | 5 | 0 |
| ND<0 | -0.544727 J | 0.544727 | 6 | 0 |
| ND<0 | -0.544727 J | 0.544727 | 7 | 0 |
| ND<0 | -0.544727 J | 0.544727 | 8 | 0 |
| ND<0 | -0.544727 J | 0.544727 | 9 | 0 |
| 1.16315 | | -0.544727 J | 1.70788 10 | 0 |
| ND<0 | -0.544727 J | 0.544727 | 11 | 0 |
| ND<0 | -0.544727 J | 0.544727 | 12 | 0 |
| ND<0 | -0.544727 J | 0.544727 | 13 | 0 |
| ND<0 | -0.544727 J | 0.544727 | 14 | 0 |
| ND<0 | -0.544727 J | 0.544727 | 15 | 0 |
| -0.127833 J | | -0.544727 J | 0.416894 | 16 0 |
| 0.139762 J | | -0.544727 J | 0.684489 | 17 0 |
| 0.239017 J | | -0.544727 J | 0.783744 | 18 0 |
| -0.116534 J | | -0.544727 J | 0.428193 | 19 0 |
| ND<0 | -0.544727 J | 0.544727 | 20 | 0 |
| 0 J | -0.544727 J | 0.544727 | 21 | 0 |
| ND<0 | -0.544727 J | 0.544727 | 22 | 0 |
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| 1.09861 | | 0.788457 | 0.310155 | 28 1 |
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| ND<0 | 0.788457 | -0.788457 | 28 | 3 |
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| ND<0 | 0.788457 | -0.788457 | 29 | 9 |
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| 0.239017 J | | 0.788457 | -0.5494429 | 15 |
| -0.116534 J | | 0.788457 | -0.904991 | 29 16 |
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| 0 J | 0.788457 | -0.788457 | 29 | 18 |

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| -0.0618754 J | 0.788457 | -0.850333 | 29 | 22 | |
| -0.653926 J | 0.788457 | -1.4423829 | 23 | | |
| -0.150823 J | 0.788457 | -0.9392829 | 24 | | |
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| 1.09861 | 1.09861 | 0 | 29 | 24 | |
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| ND<0 | 1.09861 | -1.0986129 | 26 | | |
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| ND<0 | 1.09861 | -1.0986129 | 29 | | |
| ND<0 | 1.09861 | -1.0986129 | 30 | | |
| 1.16315 | 1.09861 | 0.0645385 | 30 | 30 | |
| ND<0 | 1.09861 | -1.0986130 | 31 | | |
| ND<0 | 1.09861 | -1.0986130 | 32 | | |
| ND<0 | 1.09861 | -1.0986130 | 33 | | |
| ND<0 | 1.09861 | -1.0986130 | 34 | | |
| ND<0 | 1.09861 | -1.0986130 | 35 | | |
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| 0.139762 J | 1.09861 | -0.9588530 | 37 | | |
| 0.239017 J | 1.09861 | -0.859595 | 30 | 38 | |
| -0.116534 J | 1.09861 | -1.2151530 | 39 | | |
| ND<0 | 1.09861 | -1.0986130 | 40 | | |
| 0 J | 1.09861 | -1.0986130 | 41 | | |
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| -0.527633 J | 1.09861 | -1.6262530 | 44 | | |
| -0.0618754 J | 1.09861 | -1.1604930 | 45 | | |
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| ND<0 | 1.09861 | -1.0986130 | 50 | | |
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| 1.16315 | 1.09861 | 0.0645385 | 31 | 53 | |
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| ND<0 | 1.09861 | -1.0986131 | 58 | | |
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| -0.653926 J | 1.09861 | -1.7525431 | 69 | | |
| -0.150823 J | 1.09861 | -1.2494431 | 70 | | |
| | | | | | |
| ND<0 | ND<0 | 0 | 31 | 70 | |
| ND<0 | ND<0 | 0 | 31 | 70 | |
| ND<0 | ND<0 | 0 | 31 | 70 | |
| ND<0 | ND<0 | 0 | 31 | 70 | |

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|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 31 | 70 | | |
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| ND<0 | ND<0 | 0 | 32 | 70 | | |
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| 0.139762 J | | ND<0 | 0.139762 | | 33 | 71 |
| 0.239017 J | | ND<0 | 0.239017 | | 34 | 71 |
| -0.116534 J | | ND<0 | -0.116534 | | 34 | 72 |
| ND<0 | ND<0 | 0 | 34 | 72 | | |
| 0 J | ND<0 | 0 | 34 | 72 | | |
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| -0.0943107 J | | ND<0 | -0.0943107 | | 34 | 73 |
| -0.527633 J | | ND<0 | -0.527633 | | 34 | 74 |
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| | | | | | | |
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| ND<0 | ND<0 | 0 | 34 | 77 | | |
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| ND<0 | ND<0 | 0 | 35 | 77 | | |
| ND<0 | ND<0 | 0 | 35 | 77 | | |
| ND<0 | ND<0 | 0 | 35 | 77 | | |
| ND<0 | ND<0 | 0 | 35 | 77 | | |
| ND<0 | ND<0 | 0 | 35 | 77 | | |
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| 0.139762 J | | ND<0 | 0.139762 | | 36 | 78 |
| 0.239017 J | | ND<0 | 0.239017 | | 37 | 78 |
| -0.116534 J | | ND<0 | -0.116534 | | 37 | 79 |
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| 0 J | ND<0 | 0 | 37 | 79 | | |
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| -0.0943107 J | | ND<0 | -0.0943107 | | 37 | 80 |
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| -0.150823 J | | ND<0 | -0.150823 | | 37 | 84 |
| | | | | | | |
| ND<0 | ND<0 | 0 | 37 | 84 | | |
| ND<0 | ND<0 | 0 | 37 | 84 | | |
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| 1.16315 | | ND<0 | 1.16315 | 38 | 84 | |
| ND<0 | ND<0 | 0 | 38 | 84 | | |
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| 0.139762 J | | ND<0 | 0.139762 | | 39 | 85 |
| 0.239017 J | | ND<0 | 0.239017 | | 40 | 85 |
| -0.116534 J | | ND<0 | -0.116534 | | 40 | 86 |
| ND<0 | ND<0 | 0 | 40 | 86 | | |
| 0 J | ND<0 | 0 | 40 | 86 | | |
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| | | | | | |
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| 1.16315 | | ND<0 | 1.16315 | 41 | 91 |
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| 0 J | ND<0 | 0 | 43 | 93 | |
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| -0.150823 J | | ND<0 | -0.150823 | 43 | 98 |
| | | | | | |
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| 1.16315 | | ND<0 | 1.16315 | 44 | 98 |
| ND<0 | ND<0 | 0 | 44 | 98 | |
| ND<0 | ND<0 | 0 | 44 | 98 | |
| ND<0 | ND<0 | 0 | 44 | 98 | |
| ND<0 | ND<0 | 0 | 44 | 98 | |
| ND<0 | ND<0 | 0 | 44 | 98 | |
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| 0.139762 J | | ND<0 | 0.139762 | 45 | 99 |
| 0.239017 J | | ND<0 | 0.239017 | 46 | 99 |
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| | | | | | |
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| 0.139762 J | | ND<0 | 0.139762 | 48 | 106 |
| 0.239017 J | | ND<0 | 0.239017 | 49 | 106 |
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| -0.653926 J | 1.16315 | -1.8170849 | 128 | | |
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| ND<0 | ND<0 | 0 | 49 | 129 | |
| ND<0 | ND<0 | 0 | 49 | 129 | |
| ND<0 | ND<0 | 0 | 49 | 129 | |
| -0.127833 J | ND<0 | -0.127833 | 49 | 130 | |
| 0.139762 J | ND<0 | 0.139762 | 50 | 130 | |
| 0.239017 J | ND<0 | 0.239017 | 51 | 130 | |
| -0.116534 J | ND<0 | -0.116534 | 51 | 131 | |
| ND<0 | ND<0 | 0 | 51 | 131 | |
| 0 J | ND<0 | 0 | 51 | 131 | |
| ND<0 | ND<0 | 0 | 51 | 131 | |
| -0.0943107 J | ND<0 | -0.0943107 | 51 | 132 | |
| -0.527633 J | ND<0 | -0.527633 | 51 | 133 | |
| -0.0618754 J | ND<0 | -0.0618754 | 51 | 134 | |
| -0.653926 J | ND<0 | -0.653926 | 51 | 135 | |
| -0.150823 J | ND<0 | -0.150823 | 51 | 136 | |

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|---|---|---|---|---|---|
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| ND<0 | ND<0 | 0 | 51 | 136 | |
| ND<0 | ND<0 | 0 | 51 | 136 | |
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| 0.239017 J | ND<0 | 0.239017 | 53 | 137 | |
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| ND<0 | ND<0 | 0 | 53 | 138 | |
| 0 J | ND<0 | 0 | 53 | 138 | |
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| -0.527633 J | ND<0 | -0.527633 | 53 | 140 | |
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| -0.653926 J | ND<0 | -0.653926 | 53 | 142 | |
| -0.150823 J | ND<0 | -0.150823 | 53 | 143 | |

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| ND<0 | ND<0 | 0 | 53 | 143 | |
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| 0.139762 J | ND<0 | 0.139762 | 54 | 144 | |
| 0.239017 J | ND<0 | 0.239017 | 55 | 144 | |
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| ND<0 | ND<0 | 0 | 55 | 145 | |
| 0 J | ND<0 | 0 | 55 | 145 | |
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| -0.150823 J | ND<0 | -0.150823 | 55 | 150 |

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| 0.139762 J | ND<0 | 0.139762 | 56 | 151 |
| 0.239017 J | ND<0 | 0.239017 | 57 | 151 |
| -0.116534 J | ND<0 | -0.116534 | 57 | 152 |
| ND<0 | ND<0 | 0 | 57 | 152 |
| 0 J | ND<0 | 0 | 57 | 152 |
| ND<0 | ND<0 | 0 | 57 | 152 |
| -0.0943107 J | ND<0 | -0.0943107 | 57 | 153 |
| -0.527633 J | ND<0 | -0.527633 | 57 | 154 |
| -0.0618754 J | ND<0 | -0.0618754 | 57 | 155 |
| -0.653926 J | ND<0 | -0.653926 | 57 | 156 |
| -0.150823 J | ND<0 | -0.150823 | 57 | 157 |

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|---|---|---|---|---|
| -0.127833 J | ND<0 | -0.127833 | 57 | 158 |
| 0.139762 J | ND<0 | 0.139762 | 58 | 158 |
| 0.239017 J | ND<0 | 0.239017 | 59 | 158 |
| -0.116534 J | ND<0 | -0.116534 | 59 | 159 |
| ND<0 | ND<0 | 0 | 59 | 159 |
| 0 J | ND<0 | 0 | 59 | 159 |
| ND<0 | ND<0 | 0 | 59 | 159 |
| -0.0943107 J | ND<0 | -0.0943107 | 59 | 160 |
| -0.527633 J | ND<0 | -0.527633 | 59 | 161 |
| -0.0618754 J | ND<0 | -0.0618754 | 59 | 162 |
| -0.653926 J | ND<0 | -0.653926 | 59 | 163 |
| -0.150823 J | ND<0 | -0.150823 | 59 | 164 |

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| 0.139762 J | -0.127833 J | 0.267595 | 60 | 164 |
| 0.239017 J | -0.127833 J | 0.36685 | 61 | 164 |
| -0.116534 J | -0.127833 J | 0.0112996 | 62 | 164 |
| ND<0 | -0.127833 J | 0.127833 | 63 | 164 |
| 0 J | -0.127833 J | 0.127833 | 64 | 164 |
| ND<0 | -0.127833 J | 0.127833 | 65 | 164 |
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| -0.0618754 J | -0.127833 J | 0.065958 | 67 | 165 |
| -0.653926 J | -0.127833 J | -0.526093 | 67 | 166 |
| -0.150823 J | -0.127833 J | -0.0229895 | 67 | 167 |

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|---|---|---|---|---|
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| -0.116534 J | 0.139762 J | -0.256296 | 68 | 168 |
| ND<0 | 0.139762 J | -0.139762 | 68 | 169 |
| 0 J | 0.139762 J | -0.139762 | 68 | 170 |
| ND<0 | 0.139762 J | -0.139762 | 68 | 171 |
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| -0.0618754 J | 0.139762 J | -0.201637 | 68 | 174 |
| -0.653926 J | 0.139762 J | -0.793688 | 68 | 175 |
| -0.150823 J | 0.139762 J | -0.290585 | 68 | 176 |

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| 0 J | 0.239017 J | -0.239017 | 68 | 179 |
| ND<0 | 0.239017 J | -0.239017 | 68 | 180 |
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| ND<0 | -0.116534 J | 0.116534 | 69 | 185 |
| 0 J | -0.116534 J | 0.116534 | 70 | 185 |
| ND<0 | -0.116534 J | 0.116534 | 71 | 185 |
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| -0.527633 J | -0.116534 J | -0.411099 | 72 | 186 |
| -0.0618754 J | -0.116534 J | 0.0546584 | 73 | 186 |
| -0.653926 J | -0.116534 J | -0.537393 | 73 | 187 |
| -0.150823 J | -0.116534 J | -0.0342891 | 73 | 188 |

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|---|---|---|---|---|
| 0 J | ND<0 | 0 | 73 | 188 |
| ND<0 | ND<0 | 0 | 73 | 188 |
| -0.0943107 J | ND<0 | -0.0943107 | 73 | 189 |
| -0.527633 J | ND<0 | -0.527633 | 73 | 190 |
| -0.0618754 J | ND<0 | -0.0618754 | 73 | 191 |
| -0.653926 J | ND<0 | -0.653926 | 73 | 192 |
| -0.150823 J | ND<0 | -0.150823 | 73 | 193 |

| | | | | |
|---|---|---|---|---|
| ND<0 | 0 J | 0 | 73 | 193 |
| -0.0943107 J | 0 J | -0.0943107 | 73 | 194 |
| -0.527633 J | 0 J | -0.527633 | 73 | 195 |
| -0.0618754 J | 0 J | -0.0618754 | 73 | 196 |
| -0.653926 J | 0 J | -0.653926 | 73 | 197 |
| -0.150823 J | 0 J | -0.150823 | 73 | 198 |

| | | | | |
|---|---|---|---|---|
| -0.0943107 J | ND<0 | -0.0943107 | 73 | 199 |
| -0.527633 J | ND<0 | -0.527633 | 73 | 200 |
| -0.0618754 J | ND<0 | -0.0618754 | 73 | 201 |
| -0.653926 J | ND<0 | -0.653926 | 73 | 202 |
| -0.150823 J | ND<0 | -0.150823 | 73 | 203 |

| | | | | |
|---|---|---|---|---|
| -0.527633 J | -0.0943107 J | -0.433322 | 73 | 204 |
| -0.0618754 J | -0.0943107 J | 0.0324353 | 74 | 204 |
| -0.653926 J | -0.0943107 J | -0.559616 | 74 | 205 |
| -0.150823 J | -0.0943107 J | -0.0565122 | 74 | 206 |

| | | | | |
|---|---|---|---|---|
| -0.0618754 J | -0.527633 J | 0.465757 | 75 | 206 |
| -0.653926 J | -0.527633 J | -0.126294 | 75 | 207 |
| -0.150823 J | -0.527633 J | 0.37681 | 76 | 207 |

| | | | | |
|---|---|---|---|---|
| -0.653926 J | -0.0618754 J | -0.592051 | 76 | 208 |
| -0.150823 J | -0.0618754 J | -0.0889475 | 76 | 209 |

| | | | | |
|---|---|---|---|---|
| -0.150823 J | -0.653926 J | 0.503104 | 77 | 209 |

S Statistic = 77 - 209 = -132

| Tied Group | Value | Members |
|---|---|---|
| 1 | 1.09861 | 2 |
| 2 | 0 | 14 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |
| 11/19/1996 | 1 |

| | | |
|---|---|---|
| 12/19/1996 | | 1 |
| 3/24/1997 | | 1 |
| 9/24/1997 | | 1 |
| 4/7/1998 | 1 | |
| 9/23/1998 | | 1 |
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 11/16/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 1 |

There are 0 time periods with multiple data

A = 6024
B = 0
C = 2184
D = 0
E = 184
F = 0
a = 46116
b = 176904
c = 1512
Group Variance = 2227.33
Z-Score = -2.77574
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-2.77574| > 1.97737 indicating a trend

# Mann-Kendall Trend Analysis

## Parameter: Trichloroethene

## Location: MW-11R

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | Positives | Negatives |
|---|---|---|---|---|
| 2.17475 | 1.25276 | 0.921989 | 1 | 0 |
| 1.79176 | 1.25276 | 0.538997 | 2 | 0 |
| 2.07944 | 1.25276 | 0.826679 | 3 | 0 |
| ND<0 | 1.25276 | -1.252763 | 1 | |
| 2.19722 | 1.25276 | 0.944462 | 4 | 1 |
| 1.94591 | 1.25276 | 0.693147 | 5 | 1 |
| ND<0 | 1.25276 | -1.252765 | 2 | |
| ND<0 | 1.25276 | -1.252765 | 3 | |
| ND<0 | 1.25276 | -1.252765 | 4 | |
| 1.62924 | 1.25276 | 0.376478 | 6 | 4 |
| 0.832909 | 1.25276 | -0.419854 | 6 | 5 |
| ND<0 | 1.25276 | -1.252766 | 6 | |
| ND<0 | 1.25276 | -1.252766 | 7 | |
| ND<0 | 1.25276 | -1.252766 | 8 | |
| ND<0 | 1.25276 | -1.252766 | 9 | |
| 1.10194 | 1.25276 | -0.150823 | 6 | 10 |
| 0.24686 J | 1.25276 | -1.0059 | 6 | 11 |
| -0.527633 J | 1.25276 | -1.7804 | 6 | 12 |
| -0.040822 J | 1.25276 | -1.293586 | 13 | |
| 0.693147 | 1.25276 | -0.559616 | 6 | 14 |
| 0.00995033 J | 1.25276 | -1.242816 | 15 | |
| ND<0 | 1.25276 | -1.252766 | 16 | |
| -1.23787 J | 1.25276 | -2.490646 | 17 | |
| 0.405465 | 1.25276 | -0.847298 | 6 | 18 |
| -1.51413 J | 1.25276 | -2.766896 | 19 | |
| 0.336472 | 1.25276 | -0.916291 | 6 | 20 |
| ND<-2.73337 U | 1.25276 | -3.986136 | 21 | |
| | | | | |
| 1.79176 | 2.17475 | -0.382992 | 6 | 22 |
| 2.07944 | 2.17475 | -0.0953102 | 6 | 23 |
| ND<0 | 2.17475 | -2.174756 | 24 | |
| 2.19722 | 2.17475 | 0.0224729 | 7 | 24 |
| 1.94591 | 2.17475 | -0.228842 | 7 | 25 |
| ND<0 | 2.17475 | -2.174757 | 26 | |
| ND<0 | 2.17475 | -2.174757 | 27 | |
| ND<0 | 2.17475 | -2.174757 | 28 | |
| 1.62924 | 2.17475 | -0.545511 | 7 | 29 |
| 0.832909 | 2.17475 | -1.341847 | 30 | |
| ND<0 | 2.17475 | -2.174757 | 31 | |
| ND<0 | 2.17475 | -2.174757 | 32 | |
| ND<0 | 2.17475 | -2.174757 | 33 | |
| ND<0 | 2.17475 | -2.174757 | 34 | |
| 1.10194 | 2.17475 | -1.072817 | 35 | |
| 0.24686 J | 2.17475 | -1.927897 | 36 | |
| -0.527633 J | 2.17475 | -2.702387 | 37 | |
| -0.040822 J | 2.17475 | -2.215577 | 38 | |
| 0.693147 | 2.17475 | -1.4816 | 7 | 39 |
| 0.00995033 J | 2.17475 | -2.1648 | 7 | 40 |

| | | | | | |
|---|---|---|---|---|---|
| ND<0 | 2.17475 | -2.174757 | 41 | | |
| -1.23787 J | 2.17475 | -3.412637 | 42 | | |
| 0.405465 | 2.17475 | -1.769297 | 43 | | |
| -1.51413 J | 2.17475 | -3.688887 | 44 | | |
| 0.336472 | 2.17475 | -1.838287 | 45 | | |
| ND<-2.73337 U | 2.17475 | -4.908127 | 46 | | |
| | | | | | |
| 2.07944 | 1.79176 | 0.287682 | 8 | 46 | |
| ND<0 | 1.79176 | -1.791768 | 47 | | |
| 2.19722 | 1.79176 | 0.405465 | 9 | 47 | |
| 1.94591 | 1.79176 | 0.154151 | 10 | 47 | |
| ND<0 | 1.79176 | -1.7917610 | 48 | | |
| ND<0 | 1.79176 | -1.7917610 | 49 | | |
| ND<0 | 1.79176 | -1.7917610 | 50 | | |
| 1.62924 | 1.79176 | -0.162519 | 10 | 51 | |
| 0.832909 | 1.79176 | -0.9588510 | 52 | | |
| ND<0 | 1.79176 | -1.7917610 | 53 | | |
| ND<0 | 1.79176 | -1.7917610 | 54 | | |
| ND<0 | 1.79176 | -1.7917610 | 55 | | |
| ND<0 | 1.79176 | -1.7917610 | 56 | | |
| 1.10194 | 1.79176 | -0.689819 | 10 | 57 | |
| 0.24686 J | 1.79176 | -1.5449 10 | 58 | | |
| -0.527633 J | 1.79176 | -2.3193910 | 59 | | |
| -0.040822 J | 1.79176 | -1.8325810 | 60 | | |
| 0.693147 | 1.79176 | -1.0986110 | 61 | | |
| 0.00995033 J | 1.79176 | -1.7818110 | 62 | | |
| ND<0 | 1.79176 | -1.7917610 | 63 | | |
| -1.23787 J | 1.79176 | -3.0296310 | 64 | | |
| 0.405465 | 1.79176 | -1.3862910 | 65 | | |
| -1.51413 J | 1.79176 | -3.3058910 | 66 | | |
| 0.336472 | 1.79176 | -1.4552910 | 67 | | |
| ND<-2.73337 U | 1.79176 | -4.5251310 | 68 | | |
| | | | | | |
| ND<0 | 2.07944 | -2.0794410 | 69 | | |
| 2.19722 | 2.07944 | 0.117783 | 11 | 69 | |
| 1.94591 | 2.07944 | -0.133531 | 11 | 70 | |
| ND<0 | 2.07944 | -2.0794411 | 71 | | |
| ND<0 | 2.07944 | -2.0794411 | 72 | | |
| ND<0 | 2.07944 | -2.0794411 | 73 | | |
| 1.62924 | 2.07944 | -0.450201 | 11 | 74 | |
| 0.832909 | 2.07944 | -1.2465311 | 75 | | |
| ND<0 | 2.07944 | -2.0794411 | 76 | | |
| ND<0 | 2.07944 | -2.0794411 | 77 | | |
| ND<0 | 2.07944 | -2.0794411 | 78 | | |
| ND<0 | 2.07944 | -2.0794411 | 79 | | |
| 1.10194 | 2.07944 | -0.977501 | 11 | 80 | |
| 0.24686 J | 2.07944 | -1.8325811 | 81 | | |
| -0.527633 J | 2.07944 | -2.6070711 | 82 | | |
| -0.040822 J | 2.07944 | -2.1202611 | 83 | | |
| 0.693147 | 2.07944 | -1.3862911 | 84 | | |
| 0.00995033 J | 2.07944 | -2.0694911 | 85 | | |
| ND<0 | 2.07944 | -2.0794411 | 86 | | |
| -1.23787 J | 2.07944 | -3.3173211 | 87 | | |
| 0.405465 | 2.07944 | -1.6739811 | 88 | | |
| -1.51413 J | 2.07944 | -3.5935711 | 89 | | |
| 0.336472 | 2.07944 | -1.7429711 | 90 | | |
| ND<-2.73337 U | 2.07944 | -4.8128111 | 91 | | |
| | | | | | |
| 2.19722 | ND<0 | 2.19722 12 | 91 | | |
| 1.94591 | ND<0 | 1.94591 13 | 91 | | |
| ND<0 | ND<0 | 0 | 13 | 91 | |
| ND<0 | ND<0 | 0 | 13 | 91 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 13 | 91 | | | |
| 1.62924 | | ND<0 | 1.62924 | 14 | 91 | | |
| 0.832909 | | ND<0 | 0.832909 | | 15 | 91 | |
| ND<0 | ND<0 | 0 | 15 | 91 | | | |
| ND<0 | ND<0 | 0 | 15 | 91 | | | |
| ND<0 | ND<0 | 0 | 15 | 91 | | | |
| ND<0 | ND<0 | 0 | 15 | 91 | | | |
| 1.10194 | | ND<0 | 1.10194 | 16 | 91 | | |
| 0.24686 J | | ND<0 | 0.24686 | 17 | 91 | | |
| -0.527633 J | | ND<0 | -0.527633 | | 17 | 92 | |
| -0.040822 J | | ND<0 | -0.040822 | | 17 | 93 | |
| 0.693147 | | ND<0 | 0.693147 | | 18 | 93 | |
| 0.00995033 J | | ND<0 | 0.00995033 | | 19 | 93 | |
| ND<0 | ND<0 | 0 | 19 | 93 | | | |
| -1.23787 J | | ND<0 | -1.2378719 | | 94 | | |
| 0.405465 | | ND<0 | 0.405465 | | 20 | 94 | |
| -1.51413 J | | ND<0 | -1.5141320 | | 95 | | |
| 0.336472 | | ND<0 | 0.336472 | | 21 | 95 | |
| ND<-2.73337 U | | ND<0 | -2.7333721 | | 96 | | |
| | | | | | | | |
| 1.94591 | | 2.19722 | | -0.251314 | | 21 | 97 |
| ND<0 | 2.19722 | | -2.1972221 | | 98 | | |
| ND<0 | 2.19722 | | -2.1972221 | | 99 | | |
| ND<0 | 2.19722 | | -2.1972221 | | 100 | | |
| 1.62924 | | 2.19722 | | -0.567984 | | 21 | 101 |
| 0.832909 | | 2.19722 | | -1.3643221 | | 102 | |
| ND<0 | 2.19722 | | -2.1972221 | | 103 | | |
| ND<0 | 2.19722 | | -2.1972221 | | 104 | | |
| ND<0 | 2.19722 | | -2.1972221 | | 105 | | |
| ND<0 | 2.19722 | | -2.1972221 | | 106 | | |
| 1.10194 | | 2.19722 | | -1.0952821 | | 107 | |
| 0.24686 J | | 2.19722 | | -1.9503621 | | 108 | |
| -0.527633 J | | 2.19722 | | -2.7248621 | | 109 | |
| -0.040822 J | | 2.19722 | | -2.2380521 | | 110 | |
| 0.693147 | | 2.19722 | | -1.5040821 | | 111 | |
| 0.00995033 J | | 2.19722 | | -2.1872721 | | 112 | |
| ND<0 | 2.19722 | | -2.1972221 | | 113 | | |
| -1.23787 J | | 2.19722 | | -3.4351 | 21 | 114 | |
| 0.405465 | | 2.19722 | | -1.7917621 | | 115 | |
| -1.51413 J | | 2.19722 | | -3.7113521 | | 116 | |
| 0.336472 | | 2.19722 | | -1.8607521 | | 117 | |
| ND<-2.73337 U | | 2.19722 | | -4.9305921 | | 118 | |
| | | | | | | | |
| ND<0 | 1.94591 | | -1.9459121 | | 119 | | |
| ND<0 | 1.94591 | | -1.9459121 | | 120 | | |
| ND<0 | 1.94591 | | -1.9459121 | | 121 | | |
| 1.62924 | | 1.94591 | | -0.316672 | 1 | 122 | |
| 0.832909 | | 1.94591 | | -1.113 | 21 | 123 | |
| ND<0 | 1.94591 | | -1.9459121 | | 124 | | |
| ND<0 | 1.94591 | | -1.9459121 | | 125 | | |
| ND<0 | 1.94591 | | -1.9459121 | | 126 | | |
| ND<0 | 1.94591 | | -1.9459121 | | 127 | | |
| 1.10194 | | 1.94591 | | -0.843972 | 1 | 128 | |
| 0.24686 J | | 1.94591 | | -1.699052 | 1 | 129 | |
| -0.527633 J | | 1.94591 | | -2.473542 | 1 | 130 | |
| -0.040822 J | | 1.94591 | | -1.986732 | 1 | 131 | |
| 0.693147 | | 1.94591 | | -1.252762 | 1 | 132 | |
| 0.00995033 J | | 1.94591 | | -1.935962 | 1 | 133 | |
| ND<0 | 1.94591 | | -1.9459121 | | 134 | | |
| -1.23787 J | | 1.94591 | | -3.183782 | 1 | 135 | |
| 0.405465 | | 1.94591 | | -1.540452 | 1 | 136 | |
| -1.51413 J | | 1.94591 | | -3.460042 | 1 | 137 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 0.336472 | | 1.94591 | | -1.6094421 | | 138 |
| ND<-2.73337 U | | 1.94591 | | -4.6792821 | | 139 |
| | | | | | | |
| ND<0 | ND<0 | 0 | 21 | 139 | | |
| ND<0 | ND<0 | 0 | 21 | 139 | | |
| 1.62924 | | ND<0 | 1.62924 | 22 | 139 | |
| 0.832909 | | ND<0 | 0.832909 | | 23 | 139 |
| ND<0 | ND<0 | 0 | 23 | 139 | | |
| ND<0 | ND<0 | 0 | 23 | 139 | | |
| ND<0 | ND<0 | 0 | 23 | 139 | | |
| ND<0 | ND<0 | 0 | 23 | 139 | | |
| 1.10194 | | ND<0 | 1.10194 | 24 | 139 | |
| 0.24686 J | | ND<0 | 0.24686 | 25 | 139 | |
| -0.527633 J | | ND<0 | -0.527633 | | 25 | 140 |
| -0.040822 J | | ND<0 | -0.040822 | | 25 | 141 |
| 0.693147 | | ND<0 | 0.693147 | | 26 | 141 |
| 0.00995033 J | | ND<0 | 0.00995033 | | 27 | 141 |
| ND<0 | ND<0 | 0 | 27 | 141 | | |
| -1.23787 J | | ND<0 | -1.2378727 | | 142 | |
| 0.405465 | | ND<0 | 0.405465 | | 28 | 142 |
| -1.51413 J | | ND<0 | -1.5141328 | | 143 | |
| 0.336472 | | ND<0 | 0.336472 | | 29 | 143 |
| ND<-2.73337 U | | ND<0 | -2.7333729 | | 144 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 29 | 144 | | |
| 1.62924 | | ND<0 | 1.62924 | 30 | 144 | |
| 0.832909 | | ND<0 | 0.832909 | | 31 | 144 |
| ND<0 | ND<0 | 0 | 31 | 144 | | |
| ND<0 | ND<0 | 0 | 31 | 144 | | |
| ND<0 | ND<0 | 0 | 31 | 144 | | |
| ND<0 | ND<0 | 0 | 31 | 144 | | |
| 1.10194 | | ND<0 | 1.10194 | 32 | 144 | |
| 0.24686 J | | ND<0 | 0.24686 | 33 | 144 | |
| -0.527633 J | | ND<0 | -0.527633 | | 33 | 145 |
| -0.040822 J | | ND<0 | -0.040822 | | 33 | 146 |
| 0.693147 | | ND<0 | 0.693147 | | 34 | 146 |
| 0.00995033 J | | ND<0 | 0.00995033 | | 35 | 146 |
| ND<0 | ND<0 | 0 | 35 | 146 | | |
| -1.23787 J | | ND<0 | -1.2378735 | | 147 | |
| 0.405465 | | ND<0 | 0.405465 | | 36 | 147 |
| -1.51413 J | | ND<0 | -1.5141336 | | 148 | |
| 0.336472 | | ND<0 | 0.336472 | | 37 | 148 |
| ND<-2.73337 U | | ND<0 | -2.7333737 | | 149 | |
| | | | | | | |
| 1.62924 | | ND<0 | 1.62924 | 38 | 149 | |
| 0.832909 | | ND<0 | 0.832909 | | 39 | 149 |
| ND<0 | ND<0 | 0 | 39 | 149 | | |
| ND<0 | ND<0 | 0 | 39 | 149 | | |
| ND<0 | ND<0 | 0 | 39 | 149 | | |
| ND<0 | ND<0 | 0 | 39 | 149 | | |
| 1.10194 | | ND<0 | 1.10194 | 40 | 149 | |
| 0.24686 J | | ND<0 | 0.24686 | 41 | 149 | |
| -0.527633 J | | ND<0 | -0.527633 | | 41 | 150 |
| -0.040822 J | | ND<0 | -0.040822 | | 41 | 151 |
| 0.693147 | | ND<0 | 0.693147 | | 42 | 151 |
| 0.00995033 J | | ND<0 | 0.00995033 | | 43 | 151 |
| ND<0 | ND<0 | 0 | 43 | 151 | | |
| -1.23787 J | | ND<0 | -1.2378743 | | 152 | |
| 0.405465 | | ND<0 | 0.405465 | | 44 | 152 |
| -1.51413 J | | ND<0 | -1.5141344 | | 153 | |
| 0.336472 | | ND<0 | 0.336472 | | 45 | 153 |
| ND<-2.73337 U | | ND<0 | -2.7333745 | | 154 | |

| | | | | |
|---|---|---|---|---|
| 0.832909 | 1.62924 | -0.796331 | 45 | 155 |
| ND<0 | 1.62924 | -1.6292445 | 156 | |
| ND<0 | 1.62924 | -1.6292445 | 157 | |
| ND<0 | 1.62924 | -1.6292445 | 158 | |
| ND<0 | 1.62924 | -1.6292445 | 159 | |
| 1.10194 | 1.62924 | -0.5273 45 | 160 | |
| 0.24686 J | 1.62924 | -1.3823845 | 161 | |
| -0.527633 J | 1.62924 | -2.1568745 | 162 | |
| -0.040822 J | 1.62924 | -1.6700645 | 163 | |
| 0.693147 | 1.62924 | -0.936093 | 45 | 164 |
| 0.00995033 J | 1.62924 | -1.6192945 | 165 | |
| ND<0 | 1.62924 | -1.6292445 | 166 | |
| -1.23787 J | 1.62924 | -2.8671145 | 167 | |
| 0.405465 | 1.62924 | -1.2237845 | 168 | |
| -1.51413 J | 1.62924 | -3.1433745 | 169 | |
| 0.336472 | 1.62924 | -1.2927745 | 170 | |
| ND<-2.73337 U | 1.62924 | -4.3626145 | 171 | |

| | | | | |
|---|---|---|---|---|
| ND<0 | 0.832909 | -0.832909 | 45 | 172 |
| ND<0 | 0.832909 | -0.832909 | 45 | 173 |
| ND<0 | 0.832909 | -0.832909 | 45 | 174 |
| ND<0 | 0.832909 | -0.832909 | 45 | 175 |
| 1.10194 | 0.832909 | 0.269031 | 46 | 175 |
| 0.24686 J | 0.832909 | -0.586049 | 46 | 176 |
| -0.527633 J | 0.832909 | -1.3605446 | 177 | |
| -0.040822 J | 0.832909 | -0.873731 | 46 | 178 |
| 0.693147 | 0.832909 | -0.139762 | 46 | 179 |
| 0.00995033 J | 0.832909 | -0.822959 | 46 | 180 |
| ND<0 | 0.832909 | -0.832909 | 46 | 181 |
| -1.23787 J | 0.832909 | -2.0707846 | 182 | |
| 0.405465 | 0.832909 | -0.427444 | 46 | 183 |
| -1.51413 J | 0.832909 | -2.3470446 | 184 | |
| 0.336472 | 0.832909 | -0.496437 | 46 | 185 |
| ND<-2.73337 U | 0.832909 | -3.5662846 | 186 | |

| | | | | |
|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 46 | 186 |
| ND<0 | ND<0 | 0 | 46 | 186 |
| ND<0 | ND<0 | 0 | 46 | 186 |
| 1.10194 | ND<0 | 1.10194 47 | 186 | |
| 0.24686 J | ND<0 | 0.24686 48 | 186 | |
| -0.527633 J | ND<0 | -0.527633 | 48 | 187 |
| -0.040822 J | ND<0 | -0.040822 | 48 | 188 |
| 0.693147 | ND<0 | 0.693147 | 49 | 188 |
| 0.00995033 J | ND<0 | 0.00995033 | 50 | 188 |
| ND<0 | ND<0 | 0 | 50 | 188 |
| -1.23787 J | ND<0 | -1.2378750 | 189 | |
| 0.405465 | ND<0 | 0.405465 | 51 | 189 |
| -1.51413 J | ND<0 | -1.5141351 | 190 | |
| 0.336472 | ND<0 | 0.336472 | 52 | 190 |
| ND<-2.73337 U | ND<0 | -2.7333752 | 191 | |

| | | | | |
|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 52 | 191 |
| ND<0 | ND<0 | 0 | 52 | 191 |
| 1.10194 | ND<0 | 1.10194 53 | 191 | |
| 0.24686 J | ND<0 | 0.24686 54 | 191 | |
| -0.527633 J | ND<0 | -0.527633 | 54 | 192 |
| -0.040822 J | ND<0 | -0.040822 | 54 | 193 |
| 0.693147 | ND<0 | 0.693147 | 55 | 193 |
| 0.00995033 J | ND<0 | 0.00995033 | 56 | 193 |
| ND<0 | ND<0 | 0 | 56 | 193 |
| -1.23787 J | ND<0 | -1.2378756 | 194 | |

| | | | | |
|---|---|---|---|---|
| 0.405465 | ND<0 | 0.405465 | 57 | 194 |
| -1.51413 J | ND<0 | -1.5141357 | 195 | |
| 0.336472 | ND<0 | 0.336472 | 58 | 195 |
| ND<-2.73337 U | ND<0 | -2.7333758 | 196 | |

| | | | | |
|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 58 | 196 |
| 1.10194 | ND<0 | 1.10194 | 59 | 196 |
| 0.24686 J | ND<0 | 0.24686 | 60 | 196 |
| -0.527633 J | ND<0 | -0.527633 | 60 | 197 |
| -0.040822 J | ND<0 | -0.040822 | 60 | 198 |
| 0.693147 | ND<0 | 0.693147 | 61 | 198 |
| 0.00995033 J | ND<0 | 0.00995033 | 62 | 198 |
| ND<0 | ND<0 | 0 | 62 | 198 |
| -1.23787 J | ND<0 | -1.2378762 | 199 | |
| 0.405465 | ND<0 | 0.405465 | 63 | 199 |
| -1.51413 J | ND<0 | -1.5141363 | 200 | |
| 0.336472 | ND<0 | 0.336472 | 64 | 200 |
| ND<-2.73337 U | ND<0 | -2.7333764 | 201 | |

| | | | | |
|---|---|---|---|---|
| 1.10194 | ND<0 | 1.10194 | 65 | 201 |
| 0.24686 J | ND<0 | 0.24686 | 66 | 201 |
| -0.527633 J | ND<0 | -0.527633 | 66 | 202 |
| -0.040822 J | ND<0 | -0.040822 | 66 | 203 |
| 0.693147 | ND<0 | 0.693147 | 67 | 203 |
| 0.00995033 J | ND<0 | 0.00995033 | 68 | 203 |
| ND<0 | ND<0 | 0 | 68 | 203 |
| -1.23787 J | ND<0 | -1.2378768 | 204 | |
| 0.405465 | ND<0 | 0.405465 | 69 | 204 |
| -1.51413 J | ND<0 | -1.5141369 | 205 | |
| 0.336472 | ND<0 | 0.336472 | 70 | 205 |
| ND<-2.73337 U | ND<0 | -2.7333770 | 206 | |

| | | | | |
|---|---|---|---|---|
| 0.24686 J | 1.10194 | -0.8550870 | 207 | |
| -0.527633 J | 1.10194 | -1.6295770 | 208 | |
| -0.040822 J | 1.10194 | -1.1427670 | 209 | |
| 0.693147 | 1.10194 | -0.408793 | 70 | 210 |
| 0.00995033 J | 1.10194 | -1.0919970 | 211 | |
| ND<0 | 1.10194 | -1.1019470 | 212 | |
| -1.23787 J | 1.10194 | -2.3398170 | 213 | |
| 0.405465 | 1.10194 | -0.696475 | 70 | 214 |
| -1.51413 J | 1.10194 | -2.6160770 | 215 | |
| 0.336472 | 1.10194 | -0.765468 | 70 | 216 |
| ND<-2.73337 U | 1.10194 | -3.8353170 | 217 | |

| | | | | |
|---|---|---|---|---|
| -0.527633 J | 0.24686 J | -0.774493 | 70 | 218 |
| -0.040822 J | 0.24686 J | -0.287682 | 70 | 219 |
| 0.693147 | 0.24686 J | 0.446287 | 71 | 219 |
| 0.00995033 J | 0.24686 J | -0.2369171 | 220 | |
| ND<0 | 0.24686 J | -0.2468671 | 221 | |
| -1.23787 J | 0.24686 J | -1.4847371 | 222 | |
| 0.405465 | 0.24686 J | 0.158605 | 72 | 222 |
| -1.51413 J | 0.24686 J | -1.7609972 | 223 | |
| 0.336472 | 0.24686 J | 0.0896122 | 73 | 223 |
| ND<-2.73337 U | 0.24686 J | -2.9802373 | 224 | |

| | | | | |
|---|---|---|---|---|
| -0.040822 J | -0.527633 J | 0.486811 | 74 | 224 |
| 0.693147 | -0.527633 J | 1.22078 | 75 | 224 |
| 0.00995033 J | -0.527633 J | 0.537583 | 76 | 224 |
| ND<0 | -0.527633 J | 0.527633 | 77 | 224 |
| -1.23787 J | -0.527633 J | -0.710242 | 77 | 225 |
| 0.405465 | -0.527633 J | 0.933098 | 78 | 225 |
| -1.51413 J | -0.527633 J | -0.986495 | 78 | 226 |

| | | | | |
|---|---|---|---|---|
| 0.336472 | -0.527633 J | 0.864105 | 79 | 226 |
| ND<-2.73337 U | -0.527633 J | -2.2057479 | 227 | |
| | | | | |
| 0.693147 | -0.040822 J | 0.733969 | 80 | 227 |
| 0.00995033 J | -0.040822 J | 0.0507723 | 81 | 227 |
| ND<0 | -0.040822 J | 0.040822 | 82 | 227 |
| -1.23787 J | -0.040822 J | -1.1970582 | 228 | |
| 0.405465 | -0.040822 J | 0.446287 | 83 | 228 |
| -1.51413 J | -0.040822 J | -1.4733183 | 229 | |
| 0.336472 | -0.040822 J | 0.377294 | 84 | 229 |
| ND<-2.73337 U | -0.040822 J | -2.6925584 | 230 | |
| | | | | |
| 0.00995033 J | 0.693147 | -0.683197 | 84 | 231 |
| ND<0 | 0.693147 | -0.693147 | 84 | 232 |
| -1.23787 J | 0.693147 | -1.9310284 | 233 | |
| 0.405465 | 0.693147 | -0.287682 | 84 | 234 |
| -1.51413 J | 0.693147 | -2.2072784 | 235 | |
| 0.336472 | 0.693147 | -0.356675 | 84 | 236 |
| ND<-2.73337 U | 0.693147 | -3.4265284 | 237 | |
| | | | | |
| ND<0 | 0.00995033 J | -0.00995033 | 84 | 238 |
| -1.23787 J | 0.00995033 J | -1.2478284 | 239 | |
| 0.405465 | 0.00995033 J | 0.395515 | 85 | 239 |
| -1.51413 J | 0.00995033 J | -1.5240885 | 240 | |
| 0.336472 | 0.00995033 J | 0.326522 | 86 | 240 |
| ND<-2.73337 U | 0.00995033 J | -2.7433286 | 241 | |
| | | | | |
| -1.23787 J | ND<0 | -1.2378786 | 242 | |
| 0.405465 | ND<0 | 0.405465 | 87 | 242 |
| -1.51413 J | ND<0 | -1.5141387 | 243 | |
| 0.336472 | ND<0 | 0.336472 | 88 | 243 |
| ND<-2.73337 U | ND<0 | -2.7333788 | 244 | |
| | | | | |
| 0.405465 | -1.23787 J | 1.64334 | 89 | 244 |
| -1.51413 J | -1.23787 J | -0.276253 | 89 | 245 |
| 0.336472 | -1.23787 J | 1.57435 | 90 | 245 |
| ND<-2.73337 U | -1.23787 J | -1.4954990 | 246 | |
| | | | | |
| -1.51413 J | 0.405465 | -1.9195990 | 247 | |
| 0.336472 | 0.405465 | -0.0689929 | 90 | 248 |
| ND<-2.73337 U | 0.405465 | -3.1388390 | 249 | |
| | | | | |
| 0.336472 | -1.51413 J | 1.8506 | 91 | 249 |
| ND<-2.73337 U | -1.51413 J | -1.2192491 | 250 | |
| | | | | |
| ND<-2.73337 U | 0.336472 | -3.0698491 | 251 | |

S Statistic = 91 - 251 = -160

| Tied Group | Value | Members |
|---|---|---|
| 1 | 0 | 9 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |
| 11/19/1996 | 1 |
| 12/19/1996 | 1 |

| | | |
|---|---|---|
| 3/24/1997 | | 1 |
| 9/24/1997 | | 1 |
| 4/7/1998 | 1 | |
| 9/23/1998 | | 1 |
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 11/16/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 1 |

There are 0 time periods with multiple data

A = 1656
B = 0
C = 504
D = 0
E = 72
F = 0
a = 46116
b = 176904
c = 1512
Group Variance = 2470
Z-Score = -3.19925
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-3.19925| > 1.97737 indicating a trend

# Mann-Kendall Trend Analysis

## Parameter: Trichloroethene

## Location: MW-9

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | Positives | Negatives |
|---|---|---|---|---|
| -0.693147 J | -1.10866 J | 0.415515 | 1 | 0 |
| -0.223144 J | -1.10866 J | 0.885519 | 2 | 0 |
| 0 J | -1.10866 J | 1.10866 | 3 | 0 |
| ND<0 | -1.10866 J | 1.10866 | 4 | 0 |
| ND<0 | -1.10866 J | 1.10866 | 5 | 0 |
| ND<0 | -1.10866 J | 1.10866 | 6 | 0 |
| ND<0 | -1.10866 J | 1.10866 | 7 | 0 |
| ND<0 | -1.10866 J | 1.10866 | 8 | 0 |
| ND<0 | -1.10866 J | 1.10866 | 9 | 0 |
| ND<0 | -1.10866 J | 1.10866 | 10 | 0 |
| ND<0 | -1.10866 J | 1.10866 | 11 | 0 |
| ND<0 | -1.10866 J | 1.10866 | 12 | 0 |
| ND<0 | -1.10866 J | 1.10866 | 13 | 0 |
| ND<0 | -1.10866 J | 1.10866 | 14 | 0 |
| ND<0 | -1.10866 J | 1.10866 | 15 | 0 |
| -0.356675 J | -1.10866 J | 0.751988 | 16 | 0 |
| -0.634878 J | -1.10866 J | 0.473784 | 17 | 0 |
| -0.798508 J | -1.10866 J | 0.310155 | 18 | 0 |
| -0.84397 J | -1.10866 J | 0.264693 | 19 | 0 |
| -0.510826 J | -1.10866 J | 0.597837 | 20 | 0 |
| -0.301105 J | -1.10866 J | 0.807558 | 21 | 0 |
| ND<0 | -1.10866 J | 1.10866 | 22 | 0 |
| -0.510826 J | -1.10866 J | 0.597837 | 23 | 0 |
| -0.400478 J | -1.10866 J | 0.708185 | 24 | 0 |
| -0.314711 J | -1.10866 J | 0.793952 | 25 | 0 |
| -0.385662 J | -1.10866 J | 0.723 | 26 | 0 |
| -0.34249 J | -1.10866 J | 0.766172 | 27 | 0 |
| | | | | |
| -0.223144 J | -0.693147 J | 0.470004 | 28 | 0 |
| 0 J | -0.693147 J | 0.693147 | 29 | 0 |
| ND<0 | -0.693147 J | 0.693147 | 30 | 0 |
| ND<0 | -0.693147 J | 0.693147 | 31 | 0 |
| ND<0 | -0.693147 J | 0.693147 | 32 | 0 |
| ND<0 | -0.693147 J | 0.693147 | 33 | 0 |
| ND<0 | -0.693147 J | 0.693147 | 34 | 0 |
| ND<0 | -0.693147 J | 0.693147 | 35 | 0 |
| ND<0 | -0.693147 J | 0.693147 | 36 | 0 |
| ND<0 | -0.693147 J | 0.693147 | 37 | 0 |
| ND<0 | -0.693147 J | 0.693147 | 38 | 0 |
| ND<0 | -0.693147 J | 0.693147 | 39 | 0 |
| ND<0 | -0.693147 J | 0.693147 | 40 | 0 |
| ND<0 | -0.693147 J | 0.693147 | 41 | 0 |
| -0.356675 J | -0.693147 J | 0.336472 | 42 | 0 |
| -0.634878 J | -0.693147 J | 0.0582689 | 43 | 0 |
| -0.798508 J | -0.693147 J | -0.105361 | 43 | 1 |
| -0.84397 J | -0.693147 J | -0.150823 | 43 | 2 |
| -0.510826 J | -0.693147 J | 0.182322 | 44 | 2 |
| -0.301105 J | -0.693147 J | 0.392042 | 45 | 2 |

| | | | | |
|---|---|---|---|---|
| ND<0 | -0.693147 J | 0.693147 | 46 | 2 |
| -0.510826 J | -0.693147 J | 0.182322 | 47 | 2 |
| -0.400478 J | -0.693147 J | 0.29267 | 48 | 2 |
| -0.314711 J | -0.693147 J | 0.378436 | 49 | 2 |
| -0.385662 J | -0.693147 J | 0.307485 | 50 | 2 |
| -0.34249 J | -0.693147 J | 0.350657 | 51 | 2 |

| | | | | |
|---|---|---|---|---|
| 0 J | -0.223144 J | 0.223144 | 52 | 2 |
| ND<0 | -0.223144 J | 0.223144 | 53 | 2 |
| ND<0 | -0.223144 J | 0.223144 | 54 | 2 |
| ND<0 | -0.223144 J | 0.223144 | 55 | 2 |
| ND<0 | -0.223144 J | 0.223144 | 56 | 2 |
| ND<0 | -0.223144 J | 0.223144 | 57 | 2 |
| ND<0 | -0.223144 J | 0.223144 | 58 | 2 |
| ND<0 | -0.223144 J | 0.223144 | 59 | 2 |
| ND<0 | -0.223144 J | 0.223144 | 60 | 2 |
| ND<0 | -0.223144 J | 0.223144 | 61 | 2 |
| ND<0 | -0.223144 J | 0.223144 | 62 | 2 |
| ND<0 | -0.223144 J | 0.223144 | 63 | 2 |
| ND<0 | -0.223144 J | 0.223144 | 64 | 2 |
| -0.356675 J | -0.223144 J | -0.133531 | 64 | 3 |
| -0.634878 J | -0.223144 J | -0.411735 | 64 | 4 |
| -0.798508 J | -0.223144 J | -0.575364 | 64 | 5 |
| -0.84397 J | -0.223144 J | -0.620827 | 64 | 6 |
| -0.510826 J | -0.223144 J | -0.287682 | 64 | 7 |
| -0.301105 J | -0.223144 J | -0.0779615 | 64 | 8 |
| ND<0 | -0.223144 J | 0.223144 | 65 | 8 |
| -0.510826 J | -0.223144 J | -0.287682 | 65 | 9 |
| -0.400478 J | -0.223144 J | -0.177334 | 65 | 10 |
| -0.314711 J | -0.223144 J | -0.0915672 | 65 | 11 |
| -0.385662 J | -0.223144 J | -0.162519 | 65 | 12 |
| -0.34249 J | -0.223144 J | -0.119347 | 65 | 13 |

| | | | | |
|---|---|---|---|---|
| ND<0 | 0 J | 0 | 65 | 13 |
| ND<0 | 0 J | 0 | 65 | 13 |
| ND<0 | 0 J | 0 | 65 | 13 |
| ND<0 | 0 J | 0 | 65 | 13 |
| ND<0 | 0 J | 0 | 65 | 13 |
| ND<0 | 0 J | 0 | 65 | 13 |
| ND<0 | 0 J | 0 | 65 | 13 |
| ND<0 | 0 J | 0 | 65 | 13 |
| ND<0 | 0 J | 0 | 65 | 13 |
| ND<0 | 0 J | 0 | 65 | 13 |
| ND<0 | 0 J | 0 | 65 | 13 |
| ND<0 | 0 J | 0 | 65 | 13 |
| -0.356675 J | 0 J | -0.356675 | 65 | 14 |
| -0.634878 J | 0 J | -0.634878 | 65 | 15 |
| -0.798508 J | 0 J | -0.798508 | 65 | 16 |
| -0.84397 J | 0 J | -0.8439765 | 17 | |
| -0.510826 J | 0 J | -0.510826 | 65 | 18 |
| -0.301105 J | 0 J | -0.301105 | 65 | 19 |
| ND<0 | 0 J | 0 | 65 | 19 |
| -0.510826 J | 0 J | -0.510826 | 65 | 20 |
| -0.400478 J | 0 J | -0.400478 | 65 | 21 |
| -0.314711 J | 0 J | -0.314711 | 65 | 22 |
| -0.385662 J | 0 J | -0.385662 | 65 | 23 |
| -0.34249 J | 0 J | -0.3424965 | 24 | |

| | | | | |
|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 65 | 24 |
| ND<0 | ND<0 | 0 | 65 | 24 |
| ND<0 | ND<0 | 0 | 65 | 24 |
| ND<0 | ND<0 | 0 | 65 | 24 |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 65 | 24 | | |
| ND<0 | ND<0 | 0 | 65 | 24 | | |
| ND<0 | ND<0 | 0 | 65 | 24 | | |
| ND<0 | ND<0 | 0 | 65 | 24 | | |
| ND<0 | ND<0 | 0 | 65 | 24 | | |
| ND<0 | ND<0 | 0 | 65 | 24 | | |
| ND<0 | ND<0 | 0 | 65 | 24 | | |
| -0.356675 J | | ND<0 | -0.356675 | | 65 | 25 |
| -0.634878 J | | ND<0 | -0.634878 | | 65 | 26 |
| -0.798508 J | | ND<0 | -0.798508 | | 65 | 27 |
| -0.84397 J | | ND<0 | -0.8439765 | | 28 | |
| -0.510826 J | | ND<0 | -0.510826 | | 65 | 29 |
| -0.301105 J | | ND<0 | -0.301105 | | 65 | 30 |
| ND<0 | ND<0 | 0 | 65 | 30 | | |
| -0.510826 J | | ND<0 | -0.510826 | | 65 | 31 |
| -0.400478 J | | ND<0 | -0.400478 | | 65 | 32 |
| -0.314711 J | | ND<0 | -0.314711 | | 65 | 33 |
| -0.385662 J | | ND<0 | -0.385662 | | 65 | 34 |
| -0.34249 J | | ND<0 | -0.3424965 | | 35 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 65 | 35 | | |
| ND<0 | ND<0 | 0 | 65 | 35 | | |
| ND<0 | ND<0 | 0 | 65 | 35 | | |
| ND<0 | ND<0 | 0 | 65 | 35 | | |
| ND<0 | ND<0 | 0 | 65 | 35 | | |
| ND<0 | ND<0 | 0 | 65 | 35 | | |
| ND<0 | ND<0 | 0 | 65 | 35 | | |
| ND<0 | ND<0 | 0 | 65 | 35 | | |
| ND<0 | ND<0 | 0 | 65 | 35 | | |
| ND<0 | ND<0 | 0 | 65 | 35 | | |
| -0.356675 J | | ND<0 | -0.356675 | | 65 | 36 |
| -0.634878 J | | ND<0 | -0.634878 | | 65 | 37 |
| -0.798508 J | | ND<0 | -0.798508 | | 65 | 38 |
| -0.84397 J | | ND<0 | -0.8439765 | | 39 | |
| -0.510826 J | | ND<0 | -0.510826 | | 65 | 40 |
| -0.301105 J | | ND<0 | -0.301105 | | 65 | 41 |
| ND<0 | ND<0 | 0 | 65 | 41 | | |
| -0.510826 J | | ND<0 | -0.510826 | | 65 | 42 |
| -0.400478 J | | ND<0 | -0.400478 | | 65 | 43 |
| -0.314711 J | | ND<0 | -0.314711 | | 65 | 44 |
| -0.385662 J | | ND<0 | -0.385662 | | 65 | 45 |
| -0.34249 J | | ND<0 | -0.3424965 | | 46 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 65 | 46 | | |
| ND<0 | ND<0 | 0 | 65 | 46 | | |
| ND<0 | ND<0 | 0 | 65 | 46 | | |
| ND<0 | ND<0 | 0 | 65 | 46 | | |
| ND<0 | ND<0 | 0 | 65 | 46 | | |
| ND<0 | ND<0 | 0 | 65 | 46 | | |
| ND<0 | ND<0 | 0 | 65 | 46 | | |
| ND<0 | ND<0 | 0 | 65 | 46 | | |
| ND<0 | ND<0 | 0 | 65 | 46 | | |
| -0.356675 J | | ND<0 | -0.356675 | | 65 | 47 |
| -0.634878 J | | ND<0 | -0.634878 | | 65 | 48 |
| -0.798508 J | | ND<0 | -0.798508 | | 65 | 49 |
| -0.84397 J | | ND<0 | -0.8439765 | | 50 | |
| -0.510826 J | | ND<0 | -0.510826 | | 65 | 51 |
| -0.301105 J | | ND<0 | -0.301105 | | 65 | 52 |
| ND<0 | ND<0 | 0 | 65 | 52 | | |
| -0.510826 J | | ND<0 | -0.510826 | | 65 | 53 |
| -0.400478 J | | ND<0 | -0.400478 | | 65 | 54 |
| -0.314711 J | | ND<0 | -0.314711 | | 65 | 55 |

| | | | | | | |
|---|---|---|---|---|---|---|
| -0.385662 J | | ND<0 | -0.385662 | | 65 | 56 |
| -0.34249 J | | ND<0 | -0.3424965 | | 57 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 65 | 57 | | |
| ND<0 | ND<0 | 0 | 65 | 57 | | |
| ND<0 | ND<0 | 0 | 65 | 57 | | |
| ND<0 | ND<0 | 0 | 65 | 57 | | |
| ND<0 | ND<0 | 0 | 65 | 57 | | |
| ND<0 | ND<0 | 0 | 65 | 57 | | |
| ND<0 | ND<0 | 0 | 65 | 57 | | |
| ND<0 | ND<0 | 0 | 65 | 57 | | |
| -0.356675 J | | ND<0 | -0.356675 | | 65 | 58 |
| -0.634878 J | | ND<0 | -0.634878 | | 65 | 59 |
| -0.798508 J | | ND<0 | -0.798508 | | 65 | 60 |
| -0.84397 J | | ND<0 | -0.8439765 | | 61 | |
| -0.510826 J | | ND<0 | -0.510826 | | 65 | 62 |
| -0.301105 J | | ND<0 | -0.301105 | | 65 | 63 |
| ND<0 | ND<0 | 0 | 65 | 63 | | |
| -0.510826 J | | ND<0 | -0.510826 | | 65 | 64 |
| -0.400478 J | | ND<0 | -0.400478 | | 65 | 65 |
| -0.314711 J | | ND<0 | -0.314711 | | 65 | 66 |
| -0.385662 J | | ND<0 | -0.385662 | | 65 | 67 |
| -0.34249 J | | ND<0 | -0.3424965 | | 68 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 65 | 68 | | |
| ND<0 | ND<0 | 0 | 65 | 68 | | |
| ND<0 | ND<0 | 0 | 65 | 68 | | |
| ND<0 | ND<0 | 0 | 65 | 68 | | |
| ND<0 | ND<0 | 0 | 65 | 68 | | |
| ND<0 | ND<0 | 0 | 65 | 68 | | |
| ND<0 | ND<0 | 0 | 65 | 68 | | |
| -0.356675 J | | ND<0 | -0.356675 | | 65 | 69 |
| -0.634878 J | | ND<0 | -0.634878 | | 65 | 70 |
| -0.798508 J | | ND<0 | -0.798508 | | 65 | 71 |
| -0.84397 J | | ND<0 | -0.8439765 | | 72 | |
| -0.510826 J | | ND<0 | -0.510826 | | 65 | 73 |
| -0.301105 J | | ND<0 | -0.301105 | | 65 | 74 |
| ND<0 | ND<0 | 0 | 65 | 74 | | |
| -0.510826 J | | ND<0 | -0.510826 | | 65 | 75 |
| -0.400478 J | | ND<0 | -0.400478 | | 65 | 76 |
| -0.314711 J | | ND<0 | -0.314711 | | 65 | 77 |
| -0.385662 J | | ND<0 | -0.385662 | | 65 | 78 |
| -0.34249 J | | ND<0 | -0.3424965 | | 79 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 65 | 79 | | |
| ND<0 | ND<0 | 0 | 65 | 79 | | |
| ND<0 | ND<0 | 0 | 65 | 79 | | |
| ND<0 | ND<0 | 0 | 65 | 79 | | |
| ND<0 | ND<0 | 0 | 65 | 79 | | |
| ND<0 | ND<0 | 0 | 65 | 79 | | |
| -0.356675 J | | ND<0 | -0.356675 | | 65 | 80 |
| -0.634878 J | | ND<0 | -0.634878 | | 65 | 81 |
| -0.798508 J | | ND<0 | -0.798508 | | 65 | 82 |
| -0.84397 J | | ND<0 | -0.8439765 | | 83 | |
| -0.510826 J | | ND<0 | -0.510826 | | 65 | 84 |
| -0.301105 J | | ND<0 | -0.301105 | | 65 | 85 |
| ND<0 | ND<0 | 0 | 65 | 85 | | |
| -0.510826 J | | ND<0 | -0.510826 | | 65 | 86 |
| -0.400478 J | | ND<0 | -0.400478 | | 65 | 87 |
| -0.314711 J | | ND<0 | -0.314711 | | 65 | 88 |
| -0.385662 J | | ND<0 | -0.385662 | | 65 | 89 |
| -0.34249 J | | ND<0 | -0.3424965 | | 90 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 65 | 90 | | |
| ND<0 | ND<0 | 0 | 65 | 90 | | |
| ND<0 | ND<0 | 0 | 65 | 90 | | |
| ND<0 | ND<0 | 0 | 65 | 90 | | |
| ND<0 | ND<0 | 0 | 65 | 90 | | |
| -0.356675 J | | ND<0 | -0.356675 | | 65 | 91 |
| -0.634878 J | | ND<0 | -0.634878 | | 65 | 92 |
| -0.798508 J | | ND<0 | -0.798508 | | 65 | 93 |
| -0.84397 J | | ND<0 | -0.8439765 | | 94 | |
| -0.510826 J | | ND<0 | -0.510826 | | 65 | 95 |
| -0.301105 J | | ND<0 | -0.301105 | | 65 | 96 |
| ND<0 | ND<0 | 0 | 65 | 96 | | |
| -0.510826 J | | ND<0 | -0.510826 | | 65 | 97 |
| -0.400478 J | | ND<0 | -0.400478 | | 65 | 98 |
| -0.314711 J | | ND<0 | -0.314711 | | 65 | 99 |
| -0.385662 J | | ND<0 | -0.385662 | | 65 | 100 |
| -0.34249 J | | ND<0 | -0.3424965 | | 101 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 65 | 101 | | |
| ND<0 | ND<0 | 0 | 65 | 101 | | |
| ND<0 | ND<0 | 0 | 65 | 101 | | |
| ND<0 | ND<0 | 0 | 65 | 101 | | |
| -0.356675 J | | ND<0 | -0.356675 | | 65 | 102 |
| -0.634878 J | | ND<0 | -0.634878 | | 65 | 103 |
| -0.798508 J | | ND<0 | -0.798508 | | 65 | 104 |
| -0.84397 J | | ND<0 | -0.8439765 | | 105 | |
| -0.510826 J | | ND<0 | -0.510826 | | 65 | 106 |
| -0.301105 J | | ND<0 | -0.301105 | | 65 | 107 |
| ND<0 | ND<0 | 0 | 65 | 107 | | |
| -0.510826 J | | ND<0 | -0.510826 | | 65 | 108 |
| -0.400478 J | | ND<0 | -0.400478 | | 65 | 109 |
| -0.314711 J | | ND<0 | -0.314711 | | 65 | 110 |
| -0.385662 J | | ND<0 | -0.385662 | | 65 | 111 |
| -0.34249 J | | ND<0 | -0.3424965 | | 112 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 65 | 112 | | |
| ND<0 | ND<0 | 0 | 65 | 112 | | |
| ND<0 | ND<0 | 0 | 65 | 112 | | |
| -0.356675 J | | ND<0 | -0.356675 | | 65 | 113 |
| -0.634878 J | | ND<0 | -0.634878 | | 65 | 114 |
| -0.798508 J | | ND<0 | -0.798508 | | 65 | 115 |
| -0.84397 J | | ND<0 | -0.8439765 | | 116 | |
| -0.510826 J | | ND<0 | -0.510826 | | 65 | 117 |
| -0.301105 J | | ND<0 | -0.301105 | | 65 | 118 |
| ND<0 | ND<0 | 0 | 65 | 118 | | |
| -0.510826 J | | ND<0 | -0.510826 | | 65 | 119 |
| -0.400478 J | | ND<0 | -0.400478 | | 65 | 120 |
| -0.314711 J | | ND<0 | -0.314711 | | 65 | 121 |
| -0.385662 J | | ND<0 | -0.385662 | | 65 | 122 |
| -0.34249 J | | ND<0 | -0.3424965 | | 123 | |
| | | | | | | |
| ND<0 | ND<0 | 0 | 65 | 123 | | |
| ND<0 | ND<0 | 0 | 65 | 123 | | |
| -0.356675 J | | ND<0 | -0.356675 | | 65 | 124 |
| -0.634878 J | | ND<0 | -0.634878 | | 65 | 125 |
| -0.798508 J | | ND<0 | -0.798508 | | 65 | 126 |
| -0.84397 J | | ND<0 | -0.8439765 | | 127 | |
| -0.510826 J | | ND<0 | -0.510826 | | 65 | 128 |
| -0.301105 J | | ND<0 | -0.301105 | | 65 | 129 |
| ND<0 | ND<0 | 0 | 65 | 129 | | |
| -0.510826 J | | ND<0 | -0.510826 | | 65 | 130 |

| | | | | |
|---|---|---|---|---|
| -0.400478 J | ND<0 | -0.400478 | 65 | 131 |
| -0.314711 J | ND<0 | -0.314711 | 65 | 132 |
| -0.385662 J | ND<0 | -0.385662 | 65 | 133 |
| -0.34249 J | ND<0 | -0.3424965 | 134 | |

| | | | | |
|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 65 | 134 |
| -0.356675 J | ND<0 | -0.356675 | 65 | 135 |
| -0.634878 J | ND<0 | -0.634878 | 65 | 136 |
| -0.798508 J | ND<0 | -0.798508 | 65 | 137 |
| -0.84397 J | ND<0 | -0.8439765 | 138 | |
| -0.510826 J | ND<0 | -0.510826 | 65 | 139 |
| -0.301105 J | ND<0 | -0.301105 | 65 | 140 |
| ND<0 | ND<0 | 0 | 65 | 140 |
| -0.510826 J | ND<0 | -0.510826 | 65 | 141 |
| -0.400478 J | ND<0 | -0.400478 | 65 | 142 |
| -0.314711 J | ND<0 | -0.314711 | 65 | 143 |
| -0.385662 J | ND<0 | -0.385662 | 65 | 144 |
| -0.34249 J | ND<0 | -0.3424965 | 145 | |

| | | | | |
|---|---|---|---|---|
| -0.356675 J | ND<0 | -0.356675 | 65 | 146 |
| -0.634878 J | ND<0 | -0.634878 | 65 | 147 |
| -0.798508 J | ND<0 | -0.798508 | 65 | 148 |
| -0.84397 J | ND<0 | -0.8439765 | 149 | |
| -0.510826 J | ND<0 | -0.510826 | 65 | 150 |
| -0.301105 J | ND<0 | -0.301105 | 65 | 151 |
| ND<0 | ND<0 | 0 | 65 | 151 |
| -0.510826 J | ND<0 | -0.510826 | 65 | 152 |
| -0.400478 J | ND<0 | -0.400478 | 65 | 153 |
| -0.314711 J | ND<0 | -0.314711 | 65 | 154 |
| -0.385662 J | ND<0 | -0.385662 | 65 | 155 |
| -0.34249 J | ND<0 | -0.3424965 | 156 | |

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|---|---|---|---|---|
| -0.634878 J | -0.356675 J | -0.278203 | 65 | 157 |
| -0.798508 J | -0.356675 J | -0.441833 | 65 | 158 |
| -0.84397 J | -0.356675 J | -0.487295 | 65 | 159 |
| -0.510826 J | -0.356675 J | -0.154151 | 65 | 160 |
| -0.301105 J | -0.356675 J | 0.0555699 | 66 | 160 |
| ND<0 | -0.356675 J | 0.356675 | 67 | 160 |
| -0.510826 J | -0.356675 J | -0.154151 | 67 | 161 |
| -0.400478 J | -0.356675 J | -0.0438026 | 67 | 162 |
| -0.314711 J | -0.356675 J | 0.0419642 | 68 | 162 |
| -0.385662 J | -0.356675 J | -0.0289875 | 68 | 163 |
| -0.34249 J | -0.356675 J | 0.0141846 | 69 | 163 |

| | | | | |
|---|---|---|---|---|
| -0.798508 J | -0.634878 J | -0.163629 | 69 | 164 |
| -0.84397 J | -0.634878 J | -0.209092 | 69 | 165 |
| -0.510826 J | -0.634878 J | 0.124053 | 70 | 165 |
| -0.301105 J | -0.634878 J | 0.333773 | 71 | 165 |
| ND<0 | -0.634878 J | 0.634878 | 72 | 165 |
| -0.510826 J | -0.634878 J | 0.124053 | 73 | 165 |
| -0.400478 J | -0.634878 J | 0.234401 | 74 | 165 |
| -0.314711 J | -0.634878 J | 0.320168 | 75 | 165 |
| -0.385662 J | -0.634878 J | 0.249216 | 76 | 165 |
| -0.34249 J | -0.634878 J | 0.292388 | 77 | 165 |

| | | | | |
|---|---|---|---|---|
| -0.84397 J | -0.798508 J | -0.0454624 | 77 | 166 |
| -0.510826 J | -0.798508 J | 0.287682 | 78 | 166 |
| -0.301105 J | -0.798508 J | 0.497403 | 79 | 166 |
| ND<0 | -0.798508 J | 0.798508 | 80 | 166 |
| -0.510826 J | -0.798508 J | 0.287682 | 81 | 166 |
| -0.400478 J | -0.798508 J | 0.39803 | 82 | 166 |
| -0.314711 J | -0.798508 J | 0.483797 | 83 | 166 |

| | | | | |
|---|---|---|---|---|
| -0.385662 J | -0.798508 J | 0.412845 | 84 | 166 |
| -0.34249 J | -0.798508 J | 0.456017 | 85 | 166 |
| | | | | |
| -0.510826 J | -0.84397 J | 0.333144 | 86 | 166 |
| -0.301105 J | -0.84397 J | 0.542865 | 87 | 166 |
| ND<0 | -0.84397 J | 0.84397 | 88 | 166 |
| -0.510826 J | -0.84397 J | 0.333144 | 89 | 166 |
| -0.400478 J | -0.84397 J | 0.443493 | 90 | 166 |
| -0.314711 J | -0.84397 J | 0.529259 | 91 | 166 |
| -0.385662 J | -0.84397 J | 0.458308 | 92 | 166 |
| -0.34249 J | -0.84397 J | 0.50148 | 93 | 166 |
| | | | | |
| -0.301105 J | -0.510826 J | 0.209721 | 94 | 166 |
| ND<0 | -0.510826 J | 0.510826 | 95 | 166 |
| -0.510826 J | -0.510826 J | 0 | 95 | 166 |
| -0.400478 J | -0.510826 J | 0.110348 | 96 | 166 |
| -0.314711 J | -0.510826 J | 0.196115 | 97 | 166 |
| -0.385662 J | -0.510826 J | 0.125163 | 98 | 166 |
| -0.34249 J | -0.510826 J | 0.168335 | 99 | 166 |
| | | | | |
| ND<0 | -0.301105 J | 0.301105 | 100 | 166 |
| -0.510826 J | -0.301105 J | -0.209721 | 100 | 167 |
| -0.400478 J | -0.301105 J | -0.0993725 | 100 | 168 |
| -0.314711 J | -0.301105 J | -0.0136057 | 100 | 169 |
| -0.385662 J | -0.301105 J | -0.0845574 | 100 | 170 |
| -0.34249 J | -0.301105 J | -0.0413852 | 100 | 171 |
| | | | | |
| -0.510826 J | ND<0 | -0.510826 | 100 | 172 |
| -0.400478 J | ND<0 | -0.400478 | 100 | 173 |
| -0.314711 J | ND<0 | -0.314711 | 100 | 174 |
| -0.385662 J | ND<0 | -0.385662 | 100 | 175 |
| -0.34249 J | ND<0 | -0.34249 | 100 | 176 |
| | | | | |
| -0.400478 J | -0.510826 J | 0.110348 | 101 | 176 |
| -0.314711 J | -0.510826 J | 0.196115 | 102 | 176 |
| -0.385662 J | -0.510826 J | 0.125163 | 103 | 176 |
| -0.34249 J | -0.510826 J | 0.168335 | 104 | 176 |
| | | | | |
| -0.314711 J | -0.400478 J | 0.0857668 | 105 | 176 |
| -0.385662 J | -0.400478 J | 0.0148151 | 106 | 176 |
| -0.34249 J | -0.400478 J | 0.0579873 | 107 | 176 |
| | | | | |
| -0.385662 J | -0.314711 J | -0.0709517 | 107 | 177 |
| -0.34249 J | -0.314711 J | -0.0277796 | 107 | 178 |
| | | | | |
| -0.34249 J | -0.385662 J | 0.0431722 | 108 | 178 |

S Statistic = 108 - 178 = -70

| Tied Group | Value | Members |
|---|---|---|
| 1 | 0 | 14 |
| 2 | -0.510826 | 2 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |
| 11/19/1996 | 1 |

| | | |
|---|---|---|
| 12/19/1996 | | 1 |
| 3/24/1997 | | 1 |
| 9/24/1997 | | 1 |
| 4/7/1998 | 1 | |
| 9/23/1998 | | 1 |
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 11/16/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 1 |

There are 0 time periods with multiple data

A = 6024
B = 0
C = 2184
D = 0
E = 184
F = 0
a = 46116
b = 176904
c = 1512
Group Variance = 2227.33
Z-Score = -1.46203
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.46203| <= 1.97737 indicating no evidence of a trend

# Concentrations (ppb)

## Parameter: Vanadium

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 166
Percent Non-Detects: 75.1131%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 16 (88.8889%) | 3/16/1999 | ND<20 | ND<20 |
| | | | 9/23/1999 | 11 J | 11 J |
| | | | 3/15/2000 | 22 | 22 |
| | | | 9/24/2003 | ND<20 | ND<20 |
| | | | 3/11/2004 | ND<20 | ND<20 |
| | | | 10/12/2004 | ND<20 | ND<20 |
| | | | 4/1/2005 | ND<20 | ND<20 |
| | | | 10/25/2005 | ND<20 | ND<20 |
| | | | 4/29/2006 | ND<20 | ND<20 |
| | | | 11/18/2006 | ND<20 | ND<20 |
| | | | 5/23/2007 | ND<20 | ND<20 |
| | | | 11/28/2007 | ND<20 | ND<20 |
| | | | 6/5/2008 | ND<20 | ND<20 |
| | | | 11/20/2008 | ND<20 | ND<20 |
| | | | 6/11/2009 | ND<1.4 | ND<1.4 |
| | | | 11/16/2009 | ND<1.4 | ND<1.4 |
| | | | 6/30/2010 | ND<1.4 | ND<1.4 |
| | | | 11/12/2010 | ND<1.4 U | ND<1.4 U |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-9 | 28 | 23 (82.1429%) | 7/20/1995 | ND<20 | ND<20 |
| | | | 8/24/1995 | ND<20 | ND<20 |
| | | | 9/28/1995 | ND<20 | ND<20 |
| | | | 10/26/1995 | ND<20 | ND<20 |
| | | | 11/19/1996 | ND<20 | ND<20 |
| | | | 12/19/1996 | ND<20 | ND<20 |
| | | | 3/24/1997 | 52 | 52 |
| | | | 9/24/1997 | ND<20 | ND<20 |
| | | | 4/7/1998 | ND<20 | ND<20 |
| | | | 9/23/1998 | ND<20 | ND<20 |
| | | | 3/16/1999 | ND<20 | ND<20 |
| | | | 9/23/1999 | ND<20 | ND<20 |
| | | | 3/15/2000 | 42 | 42 |
| | | | 9/24/2003 | ND<20 | ND<20 |
| | | | 3/11/2004 | ND<20 | ND<20 |
| | | | 10/12/2004 | ND<20 | ND<20 |
| | | | 4/1/2005 | ND<20 | ND<20 |
| | | | 10/25/2005 | ND<20 | ND<20 |
| | | | 4/29/2006 | ND<20 | ND<20 |
| | | | 11/18/2006 | ND<20 | ND<20 |
| | | | 5/23/2007 | 3.07 J | 3.07 J |
| | | | 11/28/2007 | 7 J | 7 J |
| | | | 6/5/2008 | ND<20 | ND<20 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/20/2008 | 25 | 25 | |
| | | | 6/11/2009 | ND<1.4 | ND<1.4 | |
| | | | 11/16/2009 | ND<1.4 | ND<1.4 | |
| | | | 6/30/2010 | ND<1.4 | ND<1.4 | |
| | | | 11/12/2010 | ND<1.4 U | | ND<1.4 U |
| MW-10 | 28 | 16 (57.1429%) | 7/20/1995 | | ND<20 | ND<20 |
| | | | 8/24/1995 | ND<20 | ND<20 | |
| | | | 9/28/1995 | ND<20 | ND<20 | |
| | | | 10/26/1995 | ND<20 | ND<20 | |
| | | | 11/19/1996 | ND<20 | ND<20 | |
| | | | 12/19/1996 | 52 | 52 | |
| | | | 3/24/1997 | ND<20 | ND<20 | |
| | | | 9/24/1997 | 50 | 50 | |
| | | | 4/7/1998 | 73 | 73 | |
| | | | 9/23/1998 | ND<20 | ND<20 | |
| | | | 3/16/1999 | ND<20 | ND<20 | |
| | | | 9/23/1999 | 6 J | 6 J | |
| | | | 3/15/2000 | 41 | 41 | |
| | | | 9/24/2003 | ND<20 | ND<20 | |
| | | | 3/11/2004 | ND<20 | ND<20 | |
| | | | 10/12/2004 | ND<20 | ND<20 | |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | ND<20 | ND<20 | |
| | | | 4/29/2006 | ND<20 | ND<20 | |
| | | | 11/18/2006 | ND<20 | ND<20 | |
| | | | 5/23/2007 | 3.77 J | 3.77 J | |
| | | | 11/28/2007 | 9 J | 9 J | |
| | | | 6/5/2008 | ND<20 | ND<20 | |
| | | | 11/20/2008 | 39 | 39 | |
| | | | 6/11/2009 | 1.9 J | 1.9 J | |
| | | | 11/16/2009 | 1.5 J | 1.5 J | |
| | | | 6/30/2010 | 1.5 J H | 1.5 J H | |
| | | | 11/12/2010 | 1.6 J | 1.6 J | |
| MW-11R | 28 | 26 (92.8571%) | 7/20/1995 | | ND<20 | ND<20 |
| | | | 8/24/1995 | ND<20 | ND<20 | |
| | | | 9/28/1995 | ND<20 | ND<20 | |
| | | | 10/26/1995 | ND<20 | ND<20 | |
| | | | 11/19/1996 | ND<20 | ND<20 | |
| | | | 12/19/1996 | ND<20 | ND<20 | |
| | | | 3/24/1997 | ND<20 | ND<20 | |
| | | | 9/24/1997 | ND<20 | ND<20 | |
| | | | 4/7/1998 | ND<20 | ND<20 | |
| | | | 9/23/1998 | ND<20 | ND<20 | |
| | | | 3/16/1999 | ND<20 | ND<20 | |
| | | | 9/23/1999 | 9 J | 9 J | |
| | | | 3/15/2000 | ND<20 | ND<20 | |
| | | | 9/24/2003 | ND<20 | ND<20 | |
| | | | 3/11/2004 | ND<20 | ND<20 | |
| | | | 10/12/2004 | ND<20 | ND<20 | |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | ND<20 | ND<20 | |
| | | | 4/29/2006 | ND<20 | ND<20 | |
| | | | 11/18/2006 | ND<20 | ND<20 | |
| | | | 5/23/2007 | 5.32 | 5.32 | |
| | | | 11/28/2007 | ND<20 | ND<20 | |
| | | | 6/5/2008 | ND<20 | ND<20 | |
| | | | 11/20/2008 | ND<20 | ND<20 | |
| | | | 6/11/2009 | ND<1.4 | ND<1.4 | |
| | | | 11/16/2009 | ND<1.4 | ND<1.4 | |
| | | | 6/30/2010 | ND<1.4 | ND<1.4 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/12/2010 | ND<1.4 U | | ND<1.4 U |
| MW-7 | 28 | 13 (46.4286%) | 7/20/1995 | 4 J | | 4 J |
| | | | 8/24/1995 | ND<20 | ND<20 | |
| | | | 9/28/1995 | 274 | 274 | |
| | | | 10/26/1995 | 122 | 122 | |
| | | | 11/19/1996 | ND<20 | ND<20 | |
| | | | 12/19/1996 | 178 | 178 | |
| | | | 3/24/1997 | 120 | 120 | |
| | | | 9/24/1997 | 76 | 76 | |
| | | | 4/7/1998 | 160 | 160 | |
| | | | 9/23/1998 | ND<20 | ND<20 | |
| | | | 3/16/1999 | ND<20 | ND<20 | |
| | | | 9/23/1999 | 27 | 27 | |
| | | | 3/15/2000 | 62 | 62 | |
| | | | 9/24/2003 | ND<20 | ND<20 | |
| | | | 3/11/2004 | ND<20 | ND<20 | |
| | | | 10/12/2004 | ND<20 | ND<20 | |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | ND<20 | ND<20 | |
| | | | 4/29/2006 | ND<20 | ND<20 | |
| | | | 11/18/2006 | ND<20 | ND<20 | |
| | | | 5/23/2007 | 8.33 | 8.33 | |
| | | | 11/28/2007 | ND<20 | ND<20 | |
| | | | 6/5/2008 | 2.5 J | 2.5 J | |
| | | | 11/20/2008 | 16 J | 16 J | |
| | | | 6/11/2009 | 4.3 J | 4.3 J | |
| | | | 11/16/2009 | ND<1.4 | ND<1.4 | |
| | | | 6/30/2010 | 4.7 J H | 4.7 J H | |
| | | | 11/12/2010 | 1.9 J | 1.9 J | |
| MW-6 | 28 | 27 (96.4286%) | 7/20/1995 | ND<20 | | ND<20 |
| | | | 8/24/1995 | ND<20 | ND<20 | |
| | | | 9/28/1995 | ND<20 | ND<20 | |
| | | | 10/26/1995 | ND<20 | ND<20 | |
| | | | 11/19/1996 | ND<20 | ND<20 | |
| | | | 12/19/1996 | ND<20 | ND<20 | |
| | | | 3/24/1997 | ND<20 | ND<20 | |
| | | | 9/24/1997 | ND<20 | ND<20 | |
| | | | 4/7/1998 | ND<20 | ND<20 | |
| | | | 9/23/1998 | ND<20 | ND<20 | |
| | | | 3/16/1999 | ND<20 | ND<20 | |
| | | | 9/23/1999 | ND<20 | ND<20 | |
| | | | 3/15/2000 | 64 | 64 | |
| | | | 9/24/2003 | ND<20 | ND<20 | |
| | | | 3/11/2004 | ND<20 | ND<20 | |
| | | | 10/12/2004 | ND<20 | ND<20 | |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | ND<20 | ND<20 | |
| | | | 4/29/2006 | ND<20 | ND<20 | |
| | | | 11/18/2006 | ND<20 | ND<20 | |
| | | | 5/23/2007 | ND<20 | ND<20 | |
| | | | 11/28/2007 | ND<20 | ND<20 | |
| | | | 6/5/2008 | ND<20 | ND<20 | |
| | | | 11/20/2008 | ND<20 | ND<20 | |
| | | | 6/11/2009 | ND<1.4 | ND<1.4 | |
| | | | 11/16/2009 | ND<1.4 | ND<1.4 | |
| | | | 6/30/2010 | ND<1.4 | ND<1.4 | |
| | | | 11/12/2010 | ND<1.4 U | | ND<1.4 U |
| MW-12BR | 18 | 17 (94.4444%) | 3/16/1999 | ND<20 | | ND<20 |
| | | | 9/23/1999 | 22 | 22 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 3/15/2000 | ND<20 | ND<20 | |
| | | | 9/24/2003 | ND<20 | ND<20 | |
| | | | 3/11/2004 | ND<20 | ND<20 | |
| | | | 10/12/2004 | ND<20 | ND<20 | |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | ND<20 | ND<20 | |
| | | | 4/29/2006 | ND<20 | ND<20 | |
| | | | 11/18/2006 | ND<20 | ND<20 | |
| | | | 5/23/2007 | ND<20 | ND<20 | |
| | | | 11/28/2007 | ND<20 | ND<20 | |
| | | | 6/5/2008 | ND<20 | ND<20 | |
| | | | 11/20/2008 | ND<20 | ND<20 | |
| | | | 6/11/2009 | ND<1.4 | ND<1.4 | |
| | | | 11/16/2009 | ND<1.4 | ND<1.4 | |
| | | | 6/30/2010 | ND<1.4 | ND<1.4 | |
| | | | 11/12/2010 | ND<1.4 U | ND<1.4 U | |
| MW-12AR | 18 | 14 (77.7778%) | 3/16/1999 | ND<20 | ND<20 | |
| | | | 9/23/1999 | ND<20 | ND<20 | |
| | | | 3/15/2000 | 270 | 270 | |
| | | | 9/24/2003 | 43 | 43 | |
| | | | 3/11/2004 | 96 | 96 | |
| | | | 10/12/2004 | ND<20 | ND<20 | |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | ND<20 | ND<20 | |
| | | | 4/29/2006 | ND<20 | ND<20 | |
| | | | 11/18/2006 | ND<20 | ND<20 | |
| | | | 5/23/2007 | ND<20 | ND<20 | |
| | | | 11/28/2007 | ND<20 | ND<20 | |
| | | | 6/5/2008 | ND<20 | ND<20 | |
| | | | 11/20/2008 | ND<20 | ND<20 | |
| | | | 6/11/2009 | ND<1.4 | ND<1.4 | |
| | | | 11/16/2009 | ND<1.4 | ND<1.4 | |
| | | | 6/30/2010 | ND<1.4 | ND<1.4 | |
| | | | 11/12/2010 | 1.8 J | 1.8 J | |
| MW-8 | 27 | 14 (51.8519%) | 7/20/1995 | ND<20 | ND<20 | |
| | | | 8/24/1995 | ND<20 | ND<20 | |
| | | | 9/28/1995 | 245 | 245 | |
| | | | 10/26/1995 | ND<20 | ND<20 | |
| | | | 11/19/1996 | ND<20 | ND<20 | |
| | | | 12/19/1996 | 164 | 164 | |
| | | | 3/24/1997 | 44 | 44 | |
| | | | 9/24/1997 | ND<20 | ND<20 | |
| | | | 4/7/1998 | 44 | 44 | |
| | | | 9/23/1998 | 110 | 110 | |
| | | | 3/16/1999 | ND<20 | ND<20 | |
| | | | 9/23/1999 | 6 J | 6 J | |
| | | | 3/15/2000 | ND<20 | ND<20 | |
| | | | 9/24/2003 | ND<20 | ND<20 | |
| | | | 3/11/2004 | ND<20 | ND<20 | |
| | | | 10/12/2004 | ND<20 | ND<20 | |
| | | | 4/1/2005 | ND<20 | ND<20 | |
| | | | 10/25/2005 | ND<20 | ND<20 | |
| | | | 4/29/2006 | ND<20 | ND<20 | |
| | | | 11/18/2006 | 4.47 J | 4.47 J | |
| | | | 5/23/2007 | 12 | 12 | |
| | | | 11/28/2007 | 21.2 | 21.2 | |
| | | | 6/5/2008 | 2.94 J | 2.94 J | |
| | | | 11/20/2008 | 9 J | 9 J | |
| | | | 6/11/2009 | 1.4 J | 1.4 J | |
| | | | 6/30/2010 | ND<1.4 | ND<1.4 | |

| | | | |
|---|---|---|---|
| 11/12/2010 | 1.9 J | 1.9 J | |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. Original |
|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: Vanadium

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.7 | -2.65209 | 7.03356 | -1.85646 |
| 2 | 0.7 | -2.36561 | 12.6297 | -3.51239 |
| 3 | 0.7 | -2.22621 | 17.5857 | -5.07073 |
| 4 | 0.7 | -2.09693 | 21.9828 | -6.53859 |
| 5 | 0.7 | -2.01409 | 26.0394 | -7.94845 |
| 6 | 0.7 | -1.92684 | 29.7521 | -9.29724 |
| 7 | 0.7 | -1.86629 | 33.2351 | -10.6036 |
| 8 | 0.7 | -1.79912 | 36.472 | -11.863 |
| 9 | 0.7 | -1.75069 | 39.5369 | -13.0885 |
| 10 | 0.7 | -1.6954 | 42.4112 | -14.2753 |
| 11 | 0.7 | -1.65463 | 45.149 | -15.4335 |
| 12 | 0.7 | -1.60725 | 47.7323 | -16.5586 |
| 13 | 0.7 | -1.57179 | 50.2028 | -17.6588 |
| 14 | 0.7 | -1.53007 | 52.5439 | -18.7299 |
| 15 | 0.7 | -1.49852 | 54.7894 | -19.7789 |
| 16 | 0.7 | -1.46106 | 56.9241 | -20.8016 |
| 17 | 0.7 | -1.4325 | 58.9762 | -21.8043 |
| 18 | 0.7 | -1.39838 | 60.9316 | -22.7832 |
| 19 | 0.7 | -1.3722 | 62.8146 | -23.7438 |
| 20 | 0.7 | -1.34075 | 64.6122 | -24.6823 |
| 21 | 0.7 | -1.31652 | 66.3454 | -25.6038 |
| 22 | 0.7 | -1.28727 | 68.0025 | -26.5049 |
| 23 | 0.7 | -1.26464 | 69.6018 | -27.3902 |
| 24 | 0.7 | -1.23724 | 71.1326 | -28.2563 |
| 25 | 0.7 | -1.21596 | 72.6111 | -29.1074 |
| 26 | 1.4 | -1.19012 | 74.0275 | -30.7736 |
| 27 | 1.5 | -1.17 | 75.3964 | -32.5286 |
| 28 | 1.5 | -1.1455 | 76.7086 | -34.2468 |
| 29 | 1.6 | -1.12639 | 77.9774 | -36.0491 |
| 30 | 1.8 | -1.10306 | 79.1941 | -38.0346 |
| 31 | 1.9 | -1.08482 | 80.371 | -40.0957 |
| 32 | 1.9 | -1.06252 | 81.4999 | -42.1145 |
| 33 | 1.9 | -1.04505 | 82.592 | -44.1001 |
| 34 | 2.5 | -1.02365 | 83.6399 | -46.6593 |
| 35 | 2.94 | -1.00687 | 84.6537 | -49.6194 |
| 36 | 3.07 | -0.986272 | 85.6264 | -52.6473 |
| 37 | 3.77 | -0.970094 | 86.5675 | -56.3046 |
| 38 | 4 | -0.950222 | 87.4704 | -60.1054 |
| 39 | 4.3 | -0.93459 | 88.3439 | -64.1242 |
| 40 | 4.47 | -0.915365 | 89.1818 | -68.2159 |
| 41 | 4.7 | -0.900227 | 89.9922 | -72.4469 |
| 42 | 5.32 | -0.881587 | 90.7694 | -77.137 |
| 43 | 6 | -0.866894 | 91.5209 | -82.3383 |
| 44 | 6 | -0.848786 | 92.2413 | -87.4311 |
| 45 | 7 | -0.834498 | 92.9377 | -93.2725 |
| 46 | 8.33 | -0.816874 | 93.605 | -100.077 |
| 47 | 9 | -0.802956 | 94.2497 | -107.304 |
| 48 | 9 | -0.785774 | 94.8672 | -114.376 |
| 49 | 9 | -0.772193 | 95.4634 | -121.325 |

| | | | | |
|---|---|---|---|---|
| 50 | 10 | -0.755415 | 96.0341 | -128.88 |
| 51 | 10 | -0.742143 | 96.5849 | -136.301 |
| 52 | 10 | -0.725736 | 97.1116 | -143.558 |
| 53 | 10 | -0.712751 | 97.6196 | -150.686 |
| 54 | 10 | -0.696684 | 98.1049 | -157.653 |
| 55 | 10 | -0.683969 | 8.5727 | -164.492 |
| 56 | 10 | -0.668209 | 99.0192 | -171.174 |
| 57 | 10 | -0.655726 | 99.4492 | -177.732 |
| 58 | 10 | -0.640266 | 99.8592 | -184.134 |
| 59 | 10 | -0.628006 | 100.254 | -190.414 |
| 60 | 10 | -0.612813 | 100.629 | -196.543 |
| 61 | 10 | -0.60076 | 100.99 | -202.55 |
| 62 | 10 | -0.585815 | 101.333 | -208.408 |
| 63 | 10 | -0.573953 | 101.663 | -214.148 |
| 64 | 10 | -0.559237 | 101.975 | -219.74 |
| 65 | 10 | -0.547551 | 102.275 | -225.216 |
| 66 | 10 | -0.533048 | 102.559 | -230.546 |
| 67 | 10 | -0.521527 | 102.831 | -235.761 |
| 68 | 10 | -0.507221 | 103.089 | -240.834 |
| 69 | 10 | -0.49585 | 103.334 | -245.792 |
| 70 | 10 | -0.481728 | 103.566 | -250.609 |
| 71 | 10 | -0.470498 | 103.788 | -255.314 |
| 72 | 10 | -0.456542 | 103.996 | -259.88 |
| 73 | 10 | -0.445443 | 104.195 | -264.334 |
| 74 | 10 | -0.431644 | 104.381 | -268.651 |
| 75 | 10 | -0.420664 | 104.558 | -272.857 |
| 76 | 10 | -0.40701 | 104.724 | -276.927 |
| 77 | 10 | -0.396142 | 104.881 | -280.889 |
| 78 | 10 | -0.382622 | 105.027 | -284.715 |
| 79 | 10 | -0.371856 | 105.165 | -288.434 |
| 80 | 10 | -0.358459 | 105.294 | -292.018 |
| 81 | 10 | -0.347787 | 105.415 | -295.496 |
| 82 | 10 | -0.334503 | 105.527 | -298.841 |
| 83 | 10 | -0.323919 | 105.632 | -302.08 |
| 84 | 10 | -0.310738 | 105.728 | -305.188 |
| 85 | 10 | -0.300232 | 105.818 | -308.19 |
| 86 | 10 | -0.287147 | 105.901 | -311.061 |
| 87 | 10 | -0.276714 | 105.977 | -313.829 |
| 88 | 10 | -0.263715 | 106.047 | -316.466 |
| 89 | 10 | -0.253347 | 106.111 | -318.999 |
| 90 | 10 | -0.240426 | 106.169 | -321.403 |
| 91 | 10 | -0.230118 | 106.222 | -323.705 |
| 92 | 10 | -0.217267 | 106.269 | -325.877 |
| 93 | 10 | -0.207012 | 106.312 | -327.947 |
| 94 | 10 | -0.194225 | 106.35 | -329.89 |
| 95 | 10 | -0.184017 | 106.383 | -331.73 |
| 96 | 10 | -0.171285 | 106.413 | -333.443 |
| 97 | 10 | -0.161119 | 106.439 | -335.054 |
| 98 | 10 | -0.148434 | 106.461 | -336.538 |
| 99 | 10 | -0.138305 | 106.48 | -337.921 |
| 100 | 10 | -0.125661 | 106.496 | -339.178 |
| 101 | 10 | -0.115562 | 106.509 | -340.334 |
| 102 | 10 | -0.102953 | 106.52 | -341.363 |
| 103 | 10 | -0.0928787 | 106.528 | -342.292 |
| 104 | 10 | -0.0802981 | 106.535 | -343.095 |
| 105 | 10 | -0.0702426 | 106.54 | -343.797 |
| 106 | 10 | -0.0576847 | 106.543 | -344.374 |
| 107 | 10 | -0.0476439 | 106.545 | -344.851 |
| 108 | 10 | -0.0350997 | 106.546 | -345.202 |
| 109 | 10 | -0.0250691 | 106.547 | -345.452 |
| 110 | 10 | -0.0125328 | 106.547 | -345.578 |
| 111 | 10 | 0 | 106.547 | -345.578 |

| | | | | |
|---|---|---|---|---|
| 112 | 10 | 0.0125328 | 106.547 | -345.452 |
| 113 | 10 | 0.0250691 | 106.548 | -345.202 |
| 114 | 10 | 0.0350997 | 106.549 | -344.851 |
| 115 | 10 | 0.0476439 | 106.551 | -344.374 |
| 116 | 10 | 0.0576847 | 106.555 | -343.797 |
| 117 | 10 | 0.0702426 | 106.56 | -343.095 |
| 118 | 10 | 0.0802981 | 106.566 | -342.292 |
| 119 | 10 | 0.0928787 | 106.575 | -341.363 |
| 120 | 10 | 0.102953 | 106.585 | -340.334 |
| 121 | 10 | 0.115562 | 106.599 | -339.178 |
| 122 | 10 | 0.125661 | 106.615 | -337.921 |
| 123 | 10 | 0.138305 | 106.634 | -336.538 |
| 124 | 10 | 0.148434 | 106.656 | -335.054 |
| 125 | 10 | 0.161119 | 106.682 | -333.443 |
| 126 | 10 | 0.171285 | 106.711 | -331.73 |
| 127 | 10 | 0.184017 | 106.745 | -329.89 |
| 128 | 10 | 0.194225 | 106.783 | -327.947 |
| 129 | 10 | 0.207012 | 106.825 | -325.877 |
| 130 | 10 | 0.217267 | 106.873 | -323.705 |
| 131 | 10 | 0.230118 | 106.926 | -321.403 |
| 132 | 10 | 0.240426 | 106.983 | -318.999 |
| 133 | 10 | 0.253347 | 107.048 | -316.466 |
| 134 | 10 | 0.263715 | 107.117 | -313.829 |
| 135 | 10 | 0.276714 | 107.194 | -311.061 |
| 136 | 10 | 0.287147 | 107.276 | -308.19 |
| 137 | 10 | 0.300232 | 107.366 | -305.188 |
| 138 | 10 | 0.310738 | 107.463 | -302.08 |
| 139 | 10 | 0.323919 | 107.568 | -298.841 |
| 140 | 10 | 0.334503 | 107.68 | -295.496 |
| 141 | 10 | 0.347787 | 107.801 | -292.018 |
| 142 | 10 | 0.358459 | 107.929 | -288.434 |
| 143 | 10 | 0.371856 | 108.067 | -284.715 |
| 144 | 10 | 0.382622 | 108.214 | -280.889 |
| 145 | 10 | 0.396142 | 108.371 | -276.927 |
| 146 | 10 | 0.40701 | 108.536 | -272.857 |
| 147 | 10 | 0.420664 | 108.713 | -268.651 |
| 148 | 10 | 0.431644 | 108.9 | -264.334 |
| 149 | 10 | 0.445443 | 109.098 | -259.88 |
| 150 | 10 | 0.456542 | 109.307 | -255.314 |
| 151 | 10 | 0.470498 | 109.528 | -250.609 |
| 152 | 10 | 0.481728 | 109.76 | -245.792 |
| 153 | 10 | 0.49585 | 110.006 | -240.834 |
| 154 | 10 | 0.507221 | 110.263 | -235.761 |
| 155 | 10 | 0.521527 | 110.535 | -230.546 |
| 156 | 10 | 0.533048 | 110.819 | -225.216 |
| 157 | 10 | 0.547551 | 111.119 | -219.74 |
| 158 | 10 | 0.559237 | 111.432 | -214.148 |
| 159 | 10 | 0.573953 | 111.761 | -208.408 |
| 160 | 10 | 0.585815 | 112.104 | -202.55 |
| 161 | 10 | 0.60076 | 112.465 | -196.543 |
| 162 | 10 | 0.612813 | 112.841 | -190.414 |
| 163 | 10 | 0.628006 | 113.235 | -184.134 |
| 164 | 10 | 0.640266 | 113.645 | -177.732 |
| 165 | 10 | 0.655726 | 114.075 | -171.174 |
| 166 | 10 | 0.668209 | 114.522 | -164.492 |
| 167 | 10 | 0.68396 | 114.989 | -157.653 |
| 168 | 10 | 0.696684 | 115.475 | -150.686 |
| 169 | 10 | 0.712751 | 115.983 | -143.558 |
| 170 | 10 | 0.725736 | 116.51 | -136.301 |
| 171 | 10 | 0.742143 | 117.06 | -128.88 |
| 172 | 10 | 0.755415 | 117.631 | -121.325 |
| 173 | 10 | 0.772193 | 118.227 | -113.603 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 10 | 0.785774 | | 118.845 | -105.746 |
| 175 | 10 | 0.802956 | | 119.489 | -97.7162 |
| 176 | 10 | 0.816874 | | 120.157 | -89.5474 |
| 177 | 10 | 0.834498 | | 120.853 | -81.2025 |
| 178 | 10 | 0.848786 | | 121.574 | -72.7146 |
| 179 | 10 | 0.866894 | | 122.325 | -64.0457 |
| 180 | 10 | 0.881587 | | 123.102 | -55.2298 |
| 181 | 10 | 0.900227 | | 123.913 | -46.2275 |
| 182 | 10 | 0.915365 | | 124.751 | -37.0739 |
| 183 | 10 | 0.93459 | 125.624 | -27.728 | |
| 184 | 10 | 0.950222 | | 126.527 | -18.2257 |
| 185 | 10 | 0.970094 | | 127.468 | -8.5248 |
| 186 | 10 | 0.986272 | | 128.441 | 1.33792 |
| 187 | 10 | 1.00687 | 129.455 | 11.4066 | |
| 188 | 10 | 1.02365 | 130.502 | 21.6431 | |
| 189 | 10 | 1.04505 | 131.594 | 32.0936 | |
| 190 | 10 | 1.06252 | 132.723 | 42.7188 | |
| 191 | 11 | 1.08482 | 133.9 | 54.6518 | |
| 192 | 12 | 1.10306 | 135.117 | 67.8886 | |
| 193 | 16 | 1.12639 | 136.386 | 85.9108 | |
| 194 | 21.2 | 1.1455 | 137.698 | 110.196 | |
| 195 | 22 | 1.17 | 139.067 | 135.936 | |
| 196 | 22 | 1.19012 | 140.483 | 162.118 | |
| 197 | 25 | 1.21596 | 141.962 | 192.517 | |
| 198 | 27 | 1.23724 | 143.493 | 225.923 | |
| 199 | 39 | 1.26464 | 145.092 | 275.244 | |
| 200 | 41 | 1.28727 | 146.749 | 328.022 | |
| 201 | 42 | 1.31652 | 148.482 | 383.316 | |
| 202 | 43 | 1.34075 | 150.28 | 440.968 | |
| 203 | 44 | 1.3722 | 152.163 | 501.345 | |
| 204 | 44 | 1.39838 | 154.118 | 562.874 | |
| 205 | 50 | 1.4325 | 156.17 | 634.499 | |
| 206 | 52 | 1.46106 | 158.305 | 710.474 | |
| 207 | 52 | 1.49852 | 160.551 | 788.397 | |
| 208 | 62 | 1.53007 | 162.892 | 883.261 | |
| 209 | 64 | 1.57179 | 165.362 | 983.855 | |
| 210 | 73 | 1.60725 | 167.945 | 1101.18 | |
| 211 | 76 | 1.65463 | 170.683 | 1226.94 | |
| 212 | 96 | 1.6954 | 173.558 | 1389.69 | |
| 213 | 110 | 1.75069 | 176.622 | 1582.27 | |
| 214 | 120 | 1.79912 | 179.859 | 1798.16 | |
| 215 | 122 | 1.86629 | 183.342 | 2025.85 | |
| 216 | 160 | 1.92684 | 187.055 | 2334.15 | |
| 217 | 164 | 2.01409 | 191.112 | 2664.46 | |
| 218 | 178 | 2.09693 | 195.509 | 3037.71 | |
| 219 | 245 | 2.22621 | 200.465 | 3583.13 | |
| 220 | 270 | 2.36561 | 206.061 | 4221.85 | |
| 221 | 274 | 2.65209 | 213.094 | 4948.52 | |

Data Set Standard Deviation = 38.2623
Numerator = 2.44878e+007
Denominator = 6.86334e+007
W Statistic = 0.356792 = 2.44878e+007 / 6.86334e+007

5% Critical value of 0.976 exceeds 0.356792
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.356792
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: Vanadium

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | -0.356675 | -2.65209 | 7.03356 | 0.945933 |
| 2 | -0.356675 | -2.36561 | 12.6297 | 1.78969 |
| 3 | -0.356675 | -2.22621 | 17.5857 | 2.58372 |
| 4 | -0.356675 | -2.09693 | 21.9828 | 3.33164 |
| 5 | -0.356675 | -2.01409 | 26.0394 | 4.05002 |
| 6 | -0.356675 | -1.92684 | 29.7521 | 4.73727 |
| 7 | -0.356675 | -1.86629 | 33.2351 | 5.40293 |
| 8 | -0.356675 | -1.79912 | 36.472 | 6.04463 |
| 9 | -0.356675 | -1.75069 | 39.5369 | 6.66906 |
| 10 | -0.356675 | -1.6954 | 42.4112 | 7.27377 |
| 11 | -0.356675 | -1.65463 | 45.149 | 7.86393 |
| 12 | -0.356675 | -1.60725 | 47.7323 | 8.4372 |
| 13 | -0.356675 | -1.57179 | 50.2028 | 8.99781 |
| 14 | -0.356675 | -1.53007 | 52.5439 | 9.54355 |
| 15 | -0.356675 | -1.49852 | 54.7894 | 10.078 |
| 16 | -0.356675 | -1.46106 | 56.9241 | 10.5992 |
| 17 | -0.356675 | -1.4325 | 58.9762 | 11.1101 |
| 18 | -0.356675 | -1.39838 | 60.9316 | 11.6089 |
| 19 | -0.356675 | -1.3722 | 62.8146 | 12.0983 |
| 20 | -0.356675 | -1.34075 | 64.6122 | 12.5765 |
| 21 | -0.356675 | -1.31652 | 66.3454 | 13.0461 |
| 22 | -0.356675 | -1.28727 | 68.0025 | 13.5052 |
| 23 | -0.356675 | -1.26464 | 69.6018 | 13.9563 |
| 24 | -0.356675 | -1.23724 | 71.1326 | 14.3976 |
| 25 | -0.356675 | -1.21596 | 72.6111 | 14.8313 |
| 26 | 0.336472 | -1.19012 | 74.0275 | 14.4308 |
| 27 | 0.405465 | -1.17 | 75.3964 | 13.9564 |
| 28 | 0.405465 | -1.1455 | 76.7086 | 13.492 |
| 29 | 0.470004 | -1.12639 | 77.9774 | 12.9626 |
| 30 | 0.587787 | -1.10306 | 79.1941 | 12.3142 |
| 31 | 0.641854 | -1.08482 | 80.371 | 11.6179 |
| 32 | 0.641854 | -1.06252 | 81.4999 | 10.9359 |
| 33 | 0.641854 | -1.04505 | 82.592 | 10.2651 |
| 34 | 0.916291 | -1.02365 | 83.6399 | 9.32719 |
| 35 | 1.07841 | -1.00687 | 84.6537 | 8.24137 |
| 36 | 1.12168 | -0.986272 | 85.6264 | 7.13509 |
| 37 | 1.32708 | -0.970094 | 86.5675 | 5.84771 |
| 38 | 1.38629 | -0.950222 | 87.4704 | 4.53042 |
| 39 | 1.45862 | -0.934598 | 88.3439 | 3.16721 |
| 40 | 1.49739 | -0.915365 | 89.1818 | 1.79655 |
| 41 | 1.54756 | -0.900227 | 89.9922 | 0.403396 |
| 42 | 1.67147 | -0.881587 | 90.7694 | -1.07015 |
| 43 | 1.79176 | -0.866894 | 91.5209 | -2.62342 |
| 44 | 1.79176 | -0.848786 | 92.2413 | -4.14424 |
| 45 | 1.94591 | -0.834498 | 92.9377 | -5.7681 |
| 46 | 2.11986 | -0.816874 | 93.605 | -7.49976 |
| 47 | 2.19722 | -0.802956 | 94.2497 | -9.26403 |
| 48 | 2.19722 | -0.785774 | 94.8672 | -10.9906 |
| 49 | 2.19722 | -0.772193 | 95.4634 | -12.6872 |

| | | | | |
|---|---|---|---|---|
| 50 | 2.30259 | -0.755415 | 96.0341 | -14.4266 |
| 51 | 2.30259 | -0.742143 | 96.5849 | -16.1355 |
| 52 | 2.30259 | -0.725736 | 97.1116 | -17.8066 |
| 53 | 2.30259 | -0.712751 | 97.6196 | -19.4477 |
| 54 | 2.30259 | -0.696684 | 98.1049 | -21.0519 |
| 55 | 2.30259 | -0.683969 | 8.5727 | -22.6268 |
| 56 | 2.30259 | -0.668209 | 99.0192 | -24.1654 |
| 57 | 2.30259 | -0.655726 | 99.4492 | -25.6753 |
| 58 | 2.30259 | -0.640266 | 99.8592 | -27.1495 |
| 59 | 2.30259 | -0.628006 | 100.254 | -28.5956 |
| 60 | 2.30259 | -0.612813 | 100.629 | -30.0066 |
| 61 | 2.30259 | -0.60076 | 100.99 | -31.3899 |
| 62 | 2.30259 | -0.585815 | 101.333 | -32.7388 |
| 63 | 2.30259 | -0.573953 | 101.663 | -34.0604 |
| 64 | 2.30259 | -0.559237 | 101.975 | -35.3481 |
| 65 | 2.30259 | -0.547551 | 102.275 | -36.6089 |
| 66 | 2.30259 | -0.533048 | 102.559 | -37.8362 |
| 67 | 2.30259 | -0.521527 | 102.831 | -39.0371 |
| 68 | 2.30259 | -0.507221 | 103.089 | -40.205 |
| 69 | 2.30259 | -0.49585 | 103.334 | -41.3468 |
| 70 | 2.30259 | -0.481728 | 103.566 | -42.456 |
| 71 | 2.30259 | -0.470498 | 103.788 | -43.5393 |
| 72 | 2.30259 | -0.456542 | 103.996 | -44.5906 |
| 73 | 2.30259 | -0.445443 | 104.195 | -45.6162 |
| 74 | 2.30259 | -0.431644 | 104.381 | -46.6101 |
| 75 | 2.30259 | -0.420664 | 104.558 | -47.5787 |
| 76 | 2.30259 | -0.40701 | 104.724 | -48.5159 |
| 77 | 2.30259 | -0.396142 | 104.881 | -49.4281 |
| 78 | 2.30259 | -0.382622 | 105.027 | -50.3091 |
| 79 | 2.30259 | -0.371856 | 105.165 | -51.1653 |
| 80 | 2.30259 | -0.358459 | 105.294 | -51.9907 |
| 81 | 2.30259 | -0.347787 | 105.415 | -52.7915 |
| 82 | 2.30259 | -0.334503 | 105.527 | -53.5617 |
| 83 | 2.30259 | -0.323919 | 105.632 | -54.3076 |
| 84 | 2.30259 | -0.310738 | 105.728 | -55.0231 |
| 85 | 2.30259 | -0.300232 | 105.818 | -55.7144 |
| 86 | 2.30259 | -0.287147 | 105.901 | -56.3756 |
| 87 | 2.30259 | -0.276714 | 105.977 | -57.0127 |
| 88 | 2.30259 | -0.263715 | 106.047 | -57.62 |
| 89 | 2.30259 | -0.253347 | 106.111 | -58.2033 |
| 90 | 2.30259 | -0.240426 | 106.169 | -58.7569 |
| 91 | 2.30259 | -0.230118 | 106.222 | -59.2868 |
| 92 | 2.30259 | -0.217267 | 106.269 | -59.7871 |
| 93 | 2.30259 | -0.207012 | 106.312 | -60.2637 |
| 94 | 2.30259 | -0.194225 | 106.35 | -60.7109 |
| 95 | 2.30259 | -0.184017 | 106.383 | -61.1347 |
| 96 | 2.30259 | -0.171285 | 106.413 | -61.529 |
| 97 | 2.30259 | -0.161119 | 106.439 | -61.9 |
| 98 | 2.30259 | -0.148434 | 106.461 | -62.2418 |
| 99 | 2.30259 | -0.138305 | 106.48 | -62.5603 |
| 100 | 2.30259 | -0.125661 | 106.496 | -62.8496 |
| 101 | 2.30259 | -0.115562 | 106.509 | -63.1157 |
| 102 | 2.30259 | -0.102953 | 106.52 | -63.3528 |
| 103 | 2.30259 | -0.0928787 | 106.528 | -63.5666 |
| 104 | 2.30259 | -0.0802981 | 106.535 | -63.7515 |
| 105 | 2.30259 | -0.0702426 | 106.54 | -63.9133 |
| 106 | 2.30259 | -0.0576847 | 106.543 | -64.0461 |
| 107 | 2.30259 | -0.0476439 | 106.545 | -64.1558 |
| 108 | 2.30259 | -0.0350997 | 106.546 | -64.2366 |
| 109 | 2.30259 | -0.0250691 | 106.547 | -64.2943 |
| 110 | 2.30259 | -0.0125328 | 106.547 | -64.3232 |
| 111 | 2.30259 | 0 | 106.547 | -64.3232 |

| | | | | |
|---|---|---|---|---|
| 112 | 2.30259 | 0.0125328 | 106.547 | -64.2943 |
| 113 | 2.30259 | 0.0250691 | 106.548 | -64.2366 |
| 114 | 2.30259 | 0.0350997 | 106.549 | -64.1558 |
| 115 | 2.30259 | 0.0476439 | 106.551 | -64.0461 |
| 116 | 2.30259 | 0.0576847 | 106.555 | -63.9133 |
| 117 | 2.30259 | 0.0702426 | 106.56 | -63.7515 |
| 118 | 2.30259 | 0.0802981 | 106.566 | -63.5666 |
| 119 | 2.30259 | 0.0928787 | 106.575 | -63.3528 |
| 120 | 2.30259 | 0.102953 | 106.585 | -63.1157 |
| 121 | 2.30259 | 0.115562 | 106.599 | -62.8496 |
| 122 | 2.30259 | 0.125661 | 106.615 | -62.5603 |
| 123 | 2.30259 | 0.138305 | 106.634 | -62.2418 |
| 124 | 2.30259 | 0.148434 | 106.656 | -61.9 |
| 125 | 2.30259 | 0.161119 | 106.682 | -61.529 |
| 126 | 2.30259 | 0.171285 | 106.711 | -61.1347 |
| 127 | 2.30259 | 0.184017 | 106.745 | -60.7109 |
| 128 | 2.30259 | 0.194225 | 106.783 | -60.2637 |
| 129 | 2.30259 | 0.207012 | 106.825 | -59.7871 |
| 130 | 2.30259 | 0.217267 | 106.873 | -59.2868 |
| 131 | 2.30259 | 0.230118 | 106.926 | -58.7569 |
| 132 | 2.30259 | 0.240426 | 106.983 | -58.2033 |
| 133 | 2.30259 | 0.253347 | 107.048 | -57.62 |
| 134 | 2.30259 | 0.263715 | 107.117 | -57.0127 |
| 135 | 2.30259 | 0.276714 | 107.194 | -56.3756 |
| 136 | 2.30259 | 0.287147 | 107.276 | -55.7144 |
| 137 | 2.30259 | 0.300232 | 107.366 | -55.0231 |
| 138 | 2.30259 | 0.310738 | 107.463 | -54.3076 |
| 139 | 2.30259 | 0.323919 | 107.568 | -53.5617 |
| 140 | 2.30259 | 0.334503 | 107.68 | -52.7915 |
| 141 | 2.30259 | 0.347787 | 107.801 | -51.9907 |
| 142 | 2.30259 | 0.358459 | 107.929 | -51.1653 |
| 143 | 2.30259 | 0.371856 | 108.067 | -50.3091 |
| 144 | 2.30259 | 0.382622 | 108.214 | -49.4281 |
| 145 | 2.30259 | 0.396142 | 108.371 | -48.5159 |
| 146 | 2.30259 | 0.40701 | 108.536 | -47.5787 |
| 147 | 2.30259 | 0.420664 | 108.713 | -46.6101 |
| 148 | 2.30259 | 0.431644 | 108.9 | -45.6162 |
| 149 | 2.30259 | 0.445443 | 109.098 | -44.5906 |
| 150 | 2.30259 | 0.456542 | 109.307 | -43.5393 |
| 151 | 2.30259 | 0.470498 | 109.528 | -42.456 |
| 152 | 2.30259 | 0.481728 | 109.76 | -41.3468 |
| 153 | 2.30259 | 0.49585 | 110.006 | -40.205 |
| 154 | 2.30259 | 0.507221 | 110.263 | -39.0371 |
| 155 | 2.30259 | 0.521527 | 110.535 | -37.8362 |
| 156 | 2.30259 | 0.533048 | 110.819 | -36.6089 |
| 157 | 2.30259 | 0.547551 | 111.119 | -35.3481 |
| 158 | 2.30259 | 0.559237 | 111.432 | -34.0604 |
| 159 | 2.30259 | 0.573953 | 111.761 | -32.7388 |
| 160 | 2.30259 | 0.585815 | 112.104 | -31.3899 |
| 161 | 2.30259 | 0.60076 | 112.465 | -30.0066 |
| 162 | 2.30259 | 0.612813 | 112.841 | -28.5956 |
| 163 | 2.30259 | 0.628006 | 113.235 | -27.1495 |
| 164 | 2.30259 | 0.640266 | 113.645 | -25.6753 |
| 165 | 2.30259 | 0.655726 | 114.075 | -24.1654 |
| 166 | 2.30259 | 0.668209 | 114.522 | -22.6268 |
| 167 | 2.30259 | 0.68396 | 114.989 | -21.0519 |
| 168 | 2.30259 | 0.696684 | 115.475 | -19.4477 |
| 169 | 2.30259 | 0.712751 | 115.983 | -17.8066 |
| 170 | 2.30259 | 0.725736 | 116.51 | -16.1355 |
| 171 | 2.30259 | 0.742143 | 117.06 | -14.4266 |
| 172 | 2.30259 | 0.755415 | 117.631 | -12.6872 |
| 173 | 2.30259 | 0.772193 | 118.227 | -10.9092 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 2.30259 | 0.785774 | | 118.845 | -9.09989 |
| 175 | 2.30259 | 0.802956 | | 119.489 | -7.25101 |
| 176 | 2.30259 | 0.816874 | | 120.157 | -5.37009 |
| 177 | 2.30259 | 0.834498 | | 120.853 | -3.44859 |
| 178 | 2.30259 | 0.848786 | | 121.574 | -1.49418 |
| 179 | 2.30259 | 0.866894 | | 122.325 | 0.501913 |
| 180 | 2.30259 | 0.881587 | | 123.102 | 2.53184 |
| 181 | 2.30259 | 0.900227 | | 123.913 | 4.60469 |
| 182 | 2.30259 | 0.915365 | | 124.751 | 6.7124 |
| 183 | 2.30259 | 0.93459 | 125.624 | 8.86437 | |
| 184 | 2.30259 | 0.950222 | | 126.527 | 11.0523 |
| 185 | 2.30259 | 0.970094 | | 127.468 | 13.2861 |
| 186 | 2.30259 | 0.986272 | | 128.441 | 15.557 |
| 187 | 2.30259 | 1.00687 | 129.455 | 17.8754 | |
| 188 | 2.30259 | 1.02365 | 130.502 | 20.2325 | |
| 189 | 2.30259 | 1.04505 | 131.594 | 22.6388 | |
| 190 | 2.30259 | 1.06252 | 132.723 | 25.0853 | |
| 191 | 2.3979 | 1.08482 | 133.9 | 27.6866 | |
| 192 | 2.48491 | 1.10306 | 135.117 | 30.4276 | |
| 193 | 2.77259 | 1.12639 | 136.386 | 33.5507 | |
| 194 | 3.054 | 1.1455 | 137.698 | 37.049 | |
| 195 | 3.09104 | 1.17 | 139.067 | 40.6655 | |
| 196 | 3.09104 | 1.19012 | 140.483 | 44.3443 | |
| 197 | 3.21888 | 1.21596 | 141.962 | 48.2583 | |
| 198 | 3.29584 | 1.23724 | 143.493 | 52.336 | |
| 199 | 3.66356 | 1.26464 | 145.092 | 56.9691 | |
| 200 | 3.71357 | 1.28727 | 146.749 | 61.7495 | |
| 201 | 3.73767 | 1.31652 | 148.482 | 66.6702 | |
| 202 | 3.7612 | 1.34075 | 150.28 | 71.713 | |
| 203 | 3.78419 | 1.3722 | 152.163 | 76.9057 | |
| 204 | 3.78419 | 1.39838 | 154.118 | 82.1974 | |
| 205 | 3.91202 | 1.4325 | 156.17 | 87.8014 | |
| 206 | 3.95124 | 1.46106 | 158.305 | 93.5744 | |
| 207 | 3.95124 | 1.49852 | 160.551 | 99.4954 | |
| 208 | 4.12713 | 1.53007 | 162.892 | 105.81 | |
| 209 | 4.15888 | 1.57179 | 165.362 | 112.347 | |
| 210 | 4.29046 | 1.60725 | 167.945 | 119.243 | |
| 211 | 4.33073 | 1.65463 | 170.683 | 126.409 | |
| 212 | 4.56435 | 1.6954 | 173.558 | 134.147 | |
| 213 | 4.70048 | 1.75069 | 176.622 | 142.376 | |
| 214 | 4.78749 | 1.79912 | 179.859 | 150.989 | |
| 215 | 4.80402 | 1.86629 | 183.342 | 159.955 | |
| 216 | 5.07517 | 1.92684 | 187.055 | 169.734 | |
| 217 | 5.09987 | 2.01409 | 191.112 | 180.006 | |
| 218 | 5.18178 | 2.09693 | 195.509 | 190.872 | |
| 219 | 5.50126 | 2.22621 | 200.465 | 203.119 | |
| 220 | 5.59842 | 2.36561 | 206.061 | 216.362 | |
| 221 | 5.61313 | 2.65209 | 213.094 | 231.249 | |

Data Set Standard Deviation = 1.21382
Numerator = 53476
Denominator = 69072
W Statistic = 0.774206 = 53476 / 69072

5% Critical value of 0.976 exceeds 0.774206
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.774206
Evidence of non-normality at 99% level of significance

# Kruskal-Wallis Non-Parametric Test

## Parameter: Vanadium

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

# Kruskal Wallis Ranks

## Background Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-13 | 3/16/1999 | ND<2.30259 | 83.5 |
| | 9/23/1999 | 2.3979 J | 191 |
| | 3/15/2000 | 3.09104 | 195 |
| | 9/24/2003 | ND<2.30259 | 83.5 |
| | 3/11/2004 | ND<2.30259 | 83.5 |
| | 10/12/2004 | ND<2.30259 | 83.5 |
| | 4/1/2005 | ND<2.30259 | 83.5 |
| | 10/25/2005 | ND<2.30259 | 83.5 |
| | 4/29/2006 | ND<2.30259 | 83.5 |
| | 11/18/2006 | ND<2.30259 | 83.5 |
| | 5/23/2007 | ND<2.30259 | 83.5 |
| | 11/28/2007 | ND<2.30259 | 83.5 |
| | 6/5/2008 | ND<2.30259 | 83.5 |
| | 11/20/2008 | ND<2.30259 | 83.5 |
| | 6/11/2009 | ND<-0.356675 | 83.5 |
| | 11/16/2009 | ND<-0.356675 | 83.5 |
| | 6/30/2010 | ND<-0.356675 | 83.5 |
| | 11/12/2010 | ND<-0.356675 U | 83.5 |

Rank Sum = 1722
Rank Mean = 95.6667

Background Rank Sum = 1722
Background Rank Mean = 95.6667

## Compliance Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-9 | 7/20/1995 | ND<2.30259 | 83.5 |
| | 8/24/1995 | ND<2.30259 | 83.5 |
| | 9/28/1995 | ND<2.30259 | 83.5 |
| | 10/26/1995 | ND<2.30259 | 83.5 |
| | 11/19/1996 | ND<2.30259 | 83.5 |
| | 12/19/1996 | ND<2.30259 | 83.5 |
| | 3/24/1997 | 3.95124 | 206 |
| | 9/24/1997 | ND<2.30259 | 83.5 |
| | 4/7/1998 | ND<2.30259 | 83.5 |
| | 9/23/1998 | ND<2.30259 | 83.5 |
| | 3/16/1999 | ND<2.30259 | 83.5 |
| | 9/23/1999 | ND<2.30259 | 83.5 |
| | 3/15/2000 | 3.73767 | 201 |
| | 9/24/2003 | ND<2.30259 | 83.5 |
| | 3/11/2004 | ND<2.30259 | 83.5 |
| | 10/12/2004 | ND<2.30259 | 83.5 |
| | 4/1/2005 | ND<2.30259 | 83.5 |
| | 10/25/2005 | ND<2.30259 | 83.5 |
| | 4/29/2006 | ND<2.30259 | 83.5 |
| | 11/18/2006 | ND<2.30259 | 83.5 |

| | | | |
|---|---|---|---|
| | 5/23/2007 | 1.12168 J | 177 |
| | 11/28/2007 | 1.94591 J | 186 |
| | 6/5/2008 | ND<2.30259 | 83.5 |
| | 11/20/2008 | 3.21888 | 197 |
| | 6/11/2009 | ND<-0.356675 | 83.5 |
| | 11/16/2009 | ND<-0.356675 | 83.5 |
| | 6/30/2010 | ND<-0.356675 | 83.5 |
| | 11/12/2010 | ND<-0.356675 U | 83.5 |

Rank Sum = 2887.5
Rank Mean = 103.125

| | | | |
|---|---|---|---|
| MW-10 | 7/20/1995 | ND<2.30259 | 83.5 |
| | 8/24/1995 | ND<2.30259 | 83.5 |
| | 9/28/1995 | ND<2.30259 | 83.5 |
| | 10/26/1995 | ND<2.30259 | 83.5 |
| | 11/19/1996 | ND<2.30259 | 83.5 |
| | 12/19/1996 | 3.95124 | 207 |
| | 3/24/1997 | ND<2.30259 | 83.5 |
| | 9/24/1997 | 3.91202 | 205 |
| | 4/7/1998 | 4.29046 | 210 |
| | 9/23/1998 | ND<2.30259 | 83.5 |
| | 3/16/1999 | ND<2.30259 | 83.5 |
| | 9/23/1999 | 1.79176 J | 184 |
| | 3/15/2000 | 3.71357 | 200 |
| | 9/24/2003 | ND<2.30259 | 83.5 |
| | 3/11/2004 | ND<2.30259 | 83.5 |
| | 10/12/2004 | ND<2.30259 | 83.5 |
| | 4/1/2005 | ND<2.30259 | 83.5 |
| | 10/25/2005 | ND<2.30259 | 83.5 |
| | 4/29/2006 | ND<2.30259 | 83.5 |
| | 11/18/2006 | ND<2.30259 | 83.5 |
| | 5/23/2007 | 1.32708 J | 178 |
| | 11/28/2007 | 2.19722 J | 188 |
| | 6/5/2008 | ND<2.30259 | 83.5 |
| | 11/20/2008 | 3.66356 | 199 |
| | 6/11/2009 | 0.641854 J | 172 |
| | 11/16/2009 | 0.405465 J | 168 |
| | 6/30/2010 | 0.405465 J H | 169 |
| | 11/12/2010 | 0.470004 J | 170 |

Rank Sum = 3586
Rank Mean = 128.071

| | | | |
|---|---|---|---|
| MW-11R | 7/20/1995 | ND<2.30259 | 83.5 |
| | 8/24/1995 | ND<2.30259 | 83.5 |
| | 9/28/1995 | ND<2.30259 | 83.5 |
| | 10/26/1995 | ND<2.30259 | 83.5 |
| | 11/19/1996 | ND<2.30259 | 83.5 |
| | 12/19/1996 | ND<2.30259 | 83.5 |
| | 3/24/1997 | ND<2.30259 | 83.5 |
| | 9/24/1997 | ND<2.30259 | 83.5 |
| | 4/7/1998 | ND<2.30259 | 83.5 |
| | 9/23/1998 | ND<2.30259 | 83.5 |
| | 3/16/1999 | ND<2.30259 | 83.5 |
| | 9/23/1999 | 2.19722 J | 189 |
| | 3/15/2000 | ND<2.30259 | 83.5 |
| | 9/24/2003 | ND<2.30259 | 83.5 |
| | 3/11/2004 | ND<2.30259 | 83.5 |
| | 10/12/2004 | ND<2.30259 | 83.5 |
| | 4/1/2005 | ND<2.30259 | 83.5 |
| | 10/25/2005 | ND<2.30259 | 83.5 |
| | 4/29/2006 | ND<2.30259 | 83.5 |
| | 11/18/2006 | ND<2.30259 | 83.5 |

| | | | |
|---|---|---|---|
| | 5/23/2007 | 1.67147 | 183 |
| | 11/28/2007 | ND<2.30259 | 83.5 |
| | 6/5/2008 | ND<2.30259 | 83.5 |
| | 11/20/2008 | ND<2.30259 | 83.5 |
| | 6/11/2009 | ND<-0.356675 | 83.5 |
| | 11/16/2009 | ND<-0.356675 | 83.5 |
| | 6/30/2010 | ND<-0.356675 | 83.5 |
| | 11/12/2010 | ND<-0.356675 U | 83.5 |

Rank Sum = 2543
Rank Mean = 90.8214

| | | | |
|---|---|---|---|
| MW-7 | 7/20/1995 | 1.38629 J | 179 |
| | 8/24/1995 | ND<2.30259 | 83.5 |
| | 9/28/1995 | 5.61313 | 221 |
| | 10/26/1995 | 4.80402 | 215 |
| | 11/19/1996 | ND<2.30259 | 83.5 |
| | 12/19/1996 | 5.18178 | 218 |
| | 3/24/1997 | 4.78749 | 214 |
| | 9/24/1997 | 4.33073 | 211 |
| | 4/7/1998 | 5.07517 | 216 |
| | 9/23/1998 | ND<2.30259 | 83.5 |
| | 3/16/1999 | ND<2.30259 | 83.5 |
| | 9/23/1999 | 3.29584 | 198 |
| | 3/15/2000 | 4.12713 | 208 |
| | 9/24/2003 | ND<2.30259 | 83.5 |
| | 3/11/2004 | ND<2.30259 | 83.5 |
| | 10/12/2004 | ND<2.30259 | 83.5 |
| | 4/1/2005 | ND<2.30259 | 83.5 |
| | 10/25/2005 | ND<2.30259 | 83.5 |
| | 4/29/2006 | ND<2.30259 | 83.5 |
| | 11/18/2006 | ND<2.30259 | 83.5 |
| | 5/23/2007 | 2.11986 | 187 |
| | 11/28/2007 | ND<2.30259 | 83.5 |
| | 6/5/2008 | 0.916291 J | 175 |
| | 11/20/2008 | 2.77259 J | 193 |
| | 6/11/2009 | 1.45862 J | 180 |
| | 11/16/2009 | ND<-0.356675 | 83.5 |
| | 6/30/2010 | 1.54756 J H | 182 |
| | 11/12/2010 | 0.641854 J | 173 |

Rank Sum = 4055.5
Rank Mean = 144.839

| | | | |
|---|---|---|---|
| MW-6 | 7/20/1995 | ND<2.30259 | 83.5 |
| | 8/24/1995 | ND<2.30259 | 83.5 |
| | 9/28/1995 | ND<2.30259 | 83.5 |
| | 10/26/1995 | ND<2.30259 | 83.5 |
| | 11/19/1996 | ND<2.30259 | 83.5 |
| | 12/19/1996 | ND<2.30259 | 83.5 |
| | 3/24/1997 | ND<2.30259 | 83.5 |
| | 9/24/1997 | ND<2.30259 | 83.5 |
| | 4/7/1998 | ND<2.30259 | 83.5 |
| | 9/23/1998 | ND<2.30259 | 83.5 |
| | 3/16/1999 | ND<2.30259 | 83.5 |
| | 9/23/1999 | ND<2.30259 | 83.5 |
| | 3/15/2000 | 4.15888 | 209 |
| | 9/24/2003 | ND<2.30259 | 83.5 |
| | 3/11/2004 | ND<2.30259 | 83.5 |
| | 10/12/2004 | ND<2.30259 | 83.5 |
| | 4/1/2005 | ND<2.30259 | 83.5 |
| | 10/25/2005 | ND<2.30259 | 83.5 |
| | 4/29/2006 | ND<2.30259 | 83.5 |
| | 11/18/2006 | ND<2.30259 | 83.5 |

| | | | |
|---|---|---|---|
| | 5/23/2007 | ND<2.30259 | 83.5 |
| | 11/28/2007 | ND<2.30259 | 83.5 |
| | 6/5/2008 | ND<2.30259 | 83.5 |
| | 11/20/2008 | ND<2.30259 | 83.5 |
| | 6/11/2009 | ND<-0.356675 | 83.5 |
| | 11/16/2009 | ND<-0.356675 | 83.5 |
| | 6/30/2010 | ND<-0.356675 | 83.5 |
| | 11/12/2010 | ND<-0.356675 U | 83.5 |

Rank Sum = 2463.5
Rank Mean = 87.9821

| | | | |
|---|---|---|---|
| MW-12BR | 3/16/1999 | ND<2.30259 | 83.5 |
| | 9/23/1999 | 3.09104 | 196 |
| | 3/15/2000 | ND<2.30259 | 83.5 |
| | 9/24/2003 | ND<2.30259 | 83.5 |
| | 3/11/2004 | ND<2.30259 | 83.5 |
| | 10/12/2004 | ND<2.30259 | 83.5 |
| | 4/1/2005 | ND<2.30259 | 83.5 |
| | 10/25/2005 | ND<2.30259 | 83.5 |
| | 4/29/2006 | ND<2.30259 | 83.5 |
| | 11/18/2006 | ND<2.30259 | 83.5 |
| | 5/23/2007 | ND<2.30259 | 83.5 |
| | 11/28/2007 | ND<2.30259 | 83.5 |
| | 6/5/2008 | ND<2.30259 | 83.5 |
| | 11/20/2008 | ND<2.30259 | 83.5 |
| | 6/11/2009 | ND<-0.356675 | 83.5 |
| | 11/16/2009 | ND<-0.356675 | 83.5 |
| | 6/30/2010 | ND<-0.356675 | 83.5 |
| | 11/12/2010 | ND<-0.356675 U | 83.5 |

Rank Sum = 1615.5
Rank Mean = 89.75

| | | | |
|---|---|---|---|
| MW-12AR | 3/16/1999 | ND<2.30259 | 83.5 |
| | 9/23/1999 | ND<2.30259 | 83.5 |
| | 3/15/2000 | 5.59842 | 220 |
| | 9/24/2003 | 3.7612 | 202 |
| | 3/11/2004 | 4.56435 | 212 |
| | 10/12/2004 | ND<2.30259 | 83.5 |
| | 4/1/2005 | ND<2.30259 | 83.5 |
| | 10/25/2005 | ND<2.30259 | 83.5 |
| | 4/29/2006 | ND<2.30259 | 83.5 |
| | 11/18/2006 | ND<2.30259 | 83.5 |
| | 5/23/2007 | ND<2.30259 | 83.5 |
| | 11/28/2007 | ND<2.30259 | 83.5 |
| | 6/5/2008 | ND<2.30259 | 83.5 |
| | 11/20/2008 | ND<2.30259 | 83.5 |
| | 6/11/2009 | ND<-0.356675 | 83.5 |
| | 11/16/2009 | ND<-0.356675 | 83.5 |
| | 6/30/2010 | ND<-0.356675 | 83.5 |
| | 11/12/2010 | 0.587787 J | 171 |

Rank Sum = 1974
Rank Mean = 109.667

| | | | |
|---|---|---|---|
| MW-8 | 7/20/1995 | ND<2.30259 | 83.5 |
| | 8/24/1995 | ND<2.30259 | 83.5 |
| | 9/28/1995 | 5.50126 | 219 |
| | 10/26/1995 | ND<2.30259 | 83.5 |
| | 11/19/1996 | ND<2.30259 | 83.5 |
| | 12/19/1996 | 5.09987 | 217 |
| | 3/24/1997 | 3.78419 | 203 |
| | 9/24/1997 | ND<2.30259 | 83.5 |
| | 4/7/1998 | 3.78419 | 204 |

| | | |
|---|---|---|
| 9/23/1998 | 4.70048 | 213 |
| 3/16/1999 | ND<2.30259 | 83.5 |
| 9/23/1999 | 1.79176 J | 185 |
| 3/15/2000 | ND<2.30259 | 83.5 |
| 9/24/2003 | ND<2.30259 | 83.5 |
| 3/11/2004 | ND<2.30259 | 83.5 |
| 10/12/2004 | ND<2.30259 | 83.5 |
| 4/1/2005 | ND<2.30259 | 83.5 |
| 10/25/2005 | ND<2.30259 | 83.5 |
| 4/29/2006 | ND<2.30259 | 83.5 |
| 11/18/2006 | 1.49739 J | 181 |
| 5/23/2007 | 2.48491 | 192 |
| 11/28/2007 | 3.054 | 194 |
| 6/5/2008 | 1.07841 J | 176 |
| 11/20/2008 | 2.19722 J | 190 |
| 6/11/2009 | 0.336472 J | 167 |
| 6/30/2010 | ND<-0.356675 | 83.5 |
| 11/12/2010 | 0.641854 J | 174 |

Rank Sum = 3684
Rank Mean = 136.444

## Calculation Results:

Kruskal-Wallis H Statistic = 23.9862
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 41.6269
95% Confidence comparison value is 15.5073 at 8 degrees of freedom
23.9862 > 15.5073 indicating a significant group difference at 5% significance level
41.6269 > 15.5073 indicating a significant group difference at 5% significance level when adjusted for ties

## Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 95.6667

| Well | Mean Rank | Dif from Bkg | Critical Value |
|---|---|---|---|
| MW-9 | 103.125 | 7.45833 | 44.9386 |
| MW-10 | 128.071 | 32.4048 | 44.9386 |
| MW-11R | 90.8214 | -4.84524 | 44.9386 |
| MW-7 | 144.839 | 49.1726 | 44.9386 |
| MW-6 | 87.9821 | -7.68452 | 44.9386 |
| MW-12BR | 89.75 | -5.91667 | 49.5832 |
| MW-12AR | 109.667 | 14 | 49.5832 |
| MW-8 | 136.444 | 40.7778 | 45.263 |

## Individual Well Comparisons at Groupwise 5% Significance Level (0.625% Significance Level per comparison)

0.625% Z score is 2.51213
Mean background rank is 95.6667

| Well | Mean Rank | Dif from Bkg | Critical Value |
|---|---|---|---|
| MW-9 | 103.125 | 7.45833 | 48.5275 |
| MW-10 | 128.071 | 32.4048 | 48.5275 |
| MW-11R | 90.8214 | -4.84524 | 48.5275 |
| MW-7 | 144.839 | 49.1726 | 48.5275 |
| MW-6 | 87.9821 | -7.68452 | 48.5275 |
| MW-12BR | 89.75 | -5.91667 | 53.5431 |
| MW-12AR | 109.667 | 14 | 53.5431 |
| MW-8 | 136.444 | 40.7778 | 48.8779 |

# Mann-Kendall Trend Analysis

## Parameter: Vanadium

## Location: MW-7

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | Positives | | Negatives | |
|---|---|---|---|---|---|---|
| ND<2.30259 | | 1.38629 J | 0.916291 | | 1 | 0 |
| 5.61313 | | 1.38629 J | 4.22683 | 2 | 0 | |
| 4.80402 | | 1.38629 J | 3.41773 | 3 | 0 | |
| ND<2.30259 | | 1.38629 J | 0.916291 | | 4 | 0 |
| 5.18178 | | 1.38629 J | 3.79549 | 5 | 0 | |
| 4.78749 | | 1.38629 J | 3.4012 | 6 | 0 | |
| 4.33073 | | 1.38629 J | 2.94444 | 7 | 0 | |
| 5.07517 | | 1.38629 J | 3.68888 | 8 | 0 | |
| ND<2.30259 | | 1.38629 J | 0.916291 | | 9 | 0 |
| ND<2.30259 | | 1.38629 J | 0.916291 | | 10 | 0 |
| 3.29584 | | 1.38629 J | 1.90954 | 11 | 0 | |
| 4.12713 | | 1.38629 J | 2.74084 | 12 | 0 | |
| ND<2.30259 | | 1.38629 J | 0.916291 | | 13 | 0 |
| ND<2.30259 | | 1.38629 J | 0.916291 | | 14 | 0 |
| ND<2.30259 | | 1.38629 J | 0.916291 | | 15 | 0 |
| ND<2.30259 | | 1.38629 J | 0.916291 | | 16 | 0 |
| ND<2.30259 | | 1.38629 J | 0.916291 | | 17 | 0 |
| ND<2.30259 | | 1.38629 J | 0.916291 | | 18 | 0 |
| ND<2.30259 | | 1.38629 J | 0.916291 | | 19 | 0 |
| 2.11986 | | 1.38629 J | 0.733569 | | 20 | 0 |
| ND<2.30259 | | 1.38629 J | 0.916291 | | 21 | 0 |
| 0.916291 J | | 1.38629 J | -0.470004 | | 21 | 1 |
| 2.77259 J | | 1.38629 J | 1.38629 | 22 | 1 | |
| 1.45862 J | | 1.38629 J | 0.0723207 | | 23 | 1 |
| ND<-0.356675 | | 1.38629 J | -1.742972 | 3 | 2 | |
| 1.54756 J H | | 1.38629 J | 0.161268 | | 24 | 2 |
| 0.641854 J | | 1.38629 J | -0.744442 | 4 | 3 | |
| | | | | | | |
| 5.61313 | | ND<2.30259 | 3.31054 | 25 | 3 | |
| 4.80402 | | ND<2.30259 | 2.50144 | 26 | 3 | |
| ND<2.30259 | | ND<2.30259 | 0 | 26 | 3 | |
| 5.18178 | | ND<2.30259 | 2.8792 | 27 | 3 | |
| 4.78749 | | ND<2.30259 | 2.48491 | 28 | 3 | |
| 4.33073 | | ND<2.30259 | 2.02815 | 29 | 3 | |
| 5.07517 | | ND<2.30259 | 2.77259 | 30 | 3 | |
| ND<2.30259 | | ND<2.30259 | 0 | 30 | 3 | |
| ND<2.30259 | | ND<2.30259 | 0 | 30 | 3 | |
| 3.29584 | | ND<2.30259 | 0.993252 | | 31 | 3 |
| 4.12713 | | ND<2.30259 | 1.82455 | 32 | 3 | |
| ND<2.30259 | | ND<2.30259 | 0 | 32 | 3 | |
| ND<2.30259 | | ND<2.30259 | 0 | 32 | 3 | |
| ND<2.30259 | | ND<2.30259 | 0 | 32 | 3 | |
| ND<2.30259 | | ND<2.30259 | 0 | 32 | 3 | |
| ND<2.30259 | | ND<2.30259 | 0 | 32 | 3 | |
| ND<2.30259 | | ND<2.30259 | 0 | 32 | 3 | |
| ND<2.30259 | | ND<2.30259 | 0 | 32 | 3 | |
| 2.11986 | | ND<2.30259 | -0.182722 | | 32 | 4 |
| ND<2.30259 | | ND<2.30259 | 0 | 32 | 4 | |

| | | | | |
|---|---|---|---|---|
| 0.916291 J | ND<2.30259 | -1.3862932 | 5 | |
| 2.77259 J | ND<2.30259 | 0.470004 | 33 | 5 |
| 1.45862 J | ND<2.30259 | -0.8439733 | 6 | |
| ND<-0.356675 | ND<2.30259 | -2.6592633 | 7 | |
| 1.54756 J H | ND<2.30259 | -0.755023 | 33 | 8 |
| 0.641854 J | ND<2.30259 | -1.6607333 | 9 | |
| | | | | |
| 4.80402 | 5.61313 | -0.809107 | 33 | 10 |
| ND<2.30259 | 5.61313 | -3.3105433 | 11 | |
| 5.18178 | 5.61313 | -0.431345 | 33 | 12 |
| 4.78749 | 5.61313 | -0.825636 | 33 | 13 |
| 4.33073 | 5.61313 | -1.2823933 | 14 | |
| 5.07517 | 5.61313 | -0.537954 | 33 | 15 |
| ND<2.30259 | 5.61313 | -3.3105433 | 16 | |
| ND<2.30259 | 5.61313 | -3.3105433 | 17 | |
| 3.29584 | 5.61313 | -2.3172933 | 18 | |
| 4.12713 | 5.61313 | -1.4859933 | 19 | |
| ND<2.30259 | 5.61313 | -3.3105433 | 20 | |
| ND<2.30259 | 5.61313 | -3.3105433 | 21 | |
| ND<2.30259 | 5.61313 | -3.3105433 | 22 | |
| ND<2.30259 | 5.61313 | -3.3105433 | 23 | |
| ND<2.30259 | 5.61313 | -3.3105433 | 24 | |
| ND<2.30259 | 5.61313 | -3.3105433 | 25 | |
| ND<2.30259 | 5.61313 | -3.3105433 | 26 | |
| 2.11986 | 5.61313 | -3.4932633 | 27 | |
| ND<2.30259 | 5.61313 | -3.3105433 | 28 | |
| 0.916291 J | 5.61313 | -4.6968433 | 29 | |
| 2.77259 J | 5.61313 | -2.8405433 | 30 | |
| 1.45862 J | 5.61313 | -4.1545133 | 31 | |
| ND<-0.356675 | 5.61313 | -5.9698 33 | 32 | |
| 1.54756 J H | 5.61313 | -4.0655733 | 33 | |
| 0.641854 J | 5.61313 | -4.9712733 | 34 | |
| | | | | |
| ND<2.30259 | 4.80402 | -2.5014433 | 35 | |
| 5.18178 | 4.80402 | 0.377763 | 34 | 35 |
| 4.78749 | 4.80402 | -0.0165293 | 34 | 36 |
| 4.33073 | 4.80402 | -0.473288 | 34 | 37 |
| 5.07517 | 4.80402 | 0.271153 | 35 | 37 |
| ND<2.30259 | 4.80402 | -2.5014435 | 38 | |
| ND<2.30259 | 4.80402 | -2.5014435 | 39 | |
| 3.29584 | 4.80402 | -1.5081835 | 40 | |
| 4.12713 | 4.80402 | -0.676887 | 35 | 41 |
| ND<2.30259 | 4.80402 | -2.5014435 | 42 | |
| ND<2.30259 | 4.80402 | -2.5014435 | 43 | |
| ND<2.30259 | 4.80402 | -2.5014435 | 44 | |
| ND<2.30259 | 4.80402 | -2.5014435 | 45 | |
| ND<2.30259 | 4.80402 | -2.5014435 | 46 | |
| ND<2.30259 | 4.80402 | -2.5014435 | 47 | |
| ND<2.30259 | 4.80402 | -2.5014435 | 48 | |
| 2.11986 | 4.80402 | -2.6841635 | 49 | |
| ND<2.30259 | 4.80402 | -2.5014435 | 50 | |
| 0.916291 J | 4.80402 | -3.8877335 | 51 | |
| 2.77259 J | 4.80402 | -2.0314335 | 52 | |
| 1.45862 J | 4.80402 | -3.3454135 | 53 | |
| ND<-0.356675 | 4.80402 | -5.1607 35 | 54 | |
| 1.54756 J H | 4.80402 | -3.2564635 | 55 | |
| 0.641854 J | 4.80402 | -4.1621735 | 56 | |
| | | | | |
| 5.18178 | ND<2.30259 | 2.8792 36 | 56 | |
| 4.78749 | ND<2.30259 | 2.48491 37 | 56 | |
| 4.33073 | ND<2.30259 | 2.02815 38 | 56 | |
| 5.07517 | ND<2.30259 | 2.77259 39 | 56 | |

| | | | | | |
|---|---|---|---|---|---|
| ND<2.30259 | ND<2.30259 | 0 | 39 | 56 | |
| ND<2.30259 | ND<2.30259 | 0 | 39 | 56 | |
| 3.29584 | ND<2.30259 | 0.993252 | | 40 | 56 |
| 4.12713 | ND<2.30259 | 1.82455 | 41 | 56 | |
| ND<2.30259 | ND<2.30259 | 0 | 41 | 56 | |
| ND<2.30259 | ND<2.30259 | 0 | 41 | 56 | |
| ND<2.30259 | ND<2.30259 | 0 | 41 | 56 | |
| ND<2.30259 | ND<2.30259 | 0 | 41 | 56 | |
| ND<2.30259 | ND<2.30259 | 0 | 41 | 56 | |
| ND<2.30259 | ND<2.30259 | 0 | 41 | 56 | |
| ND<2.30259 | ND<2.30259 | 0 | 41 | 56 | |
| 2.11986 | ND<2.30259 | -0.182722 | | 41 | 57 |
| ND<2.30259 | ND<2.30259 | 0 | 41 | 57 | |
| 0.916291 J | ND<2.30259 | -1.386294 | 1 | 58 | |
| 2.77259 J | ND<2.30259 | 0.470004 | | 42 | 58 |
| 1.45862 J | ND<2.30259 | -0.843974 | 2 | 59 | |
| ND<-0.356675 | ND<2.30259 | -2.659264 | 2 | 60 | |
| 1.54756 J H | ND<2.30259 | -0.755023 | | 42 | 61 |
| 0.641854 J | ND<2.30259 | -1.660734 | 2 | 62 | |
| | | | | | |
| 4.78749 | 5.18178 | -0.394292 | | 42 | 63 |
| 4.33073 | 5.18178 | -0.851054 | 2 | 64 | |
| 5.07517 | 5.18178 | -0.106614 | 2 | 65 | |
| ND<2.30259 | 5.18178 | -2.8792 | 42 | 66 | |
| ND<2.30259 | 5.18178 | -2.8792 | 42 | 67 | |
| 3.29584 | 5.18178 | -1.885954 | 2 | 68 | |
| 4.12713 | 5.18178 | -1.054654 | 2 | 69 | |
| ND<2.30259 | 5.18178 | -2.8792 | 42 | 70 | |
| ND<2.30259 | 5.18178 | -2.8792 | 42 | 71 | |
| ND<2.30259 | 5.18178 | -2.8792 | 42 | 72 | |
| ND<2.30259 | 5.18178 | -2.8792 | 42 | 73 | |
| ND<2.30259 | 5.18178 | -2.8792 | 42 | 74 | |
| ND<2.30259 | 5.18178 | -2.8792 | 42 | 75 | |
| ND<2.30259 | 5.18178 | -2.8792 | 42 | 76 | |
| 2.11986 | 5.18178 | -3.061924 | 2 | 77 | |
| ND<2.30259 | 5.18178 | -2.8792 | 42 | 78 | |
| 0.916291 J | 5.18178 | -4.265494 | 2 | 79 | |
| 2.77259 J | 5.18178 | -2.409194 | 2 | 80 | |
| 1.45862 J | 5.18178 | -3.723174 | 2 | 81 | |
| ND<-0.356675 | 5.18178 | -5.538464 | 2 | 82 | |
| 1.54756 J H | 5.18178 | -3.634224 | 2 | 83 | |
| 0.641854 J | 5.18178 | -4.539934 | 2 | 84 | |
| | | | | | |
| 4.33073 | 4.78749 | -0.456758 | | 42 | 85 |
| 5.07517 | 4.78749 | 0.287682 | | 43 | 85 |
| ND<2.30259 | 4.78749 | -2.484914 | 3 | 86 | |
| ND<2.30259 | 4.78749 | -2.484914 | 3 | 87 | |
| 3.29584 | 4.78749 | -1.491654 | 3 | 88 | |
| 4.12713 | 4.78749 | -0.660357 | | 43 | 89 |
| ND<2.30259 | 4.78749 | -2.484914 | 3 | 90 | |
| ND<2.30259 | 4.78749 | -2.484914 | 3 | 91 | |
| ND<2.30259 | 4.78749 | -2.484914 | 3 | 92 | |
| ND<2.30259 | 4.78749 | -2.484914 | 3 | 93 | |
| ND<2.30259 | 4.78749 | -2.484914 | 3 | 94 | |
| ND<2.30259 | 4.78749 | -2.484914 | 3 | 95 | |
| ND<2.30259 | 4.78749 | -2.484914 | 3 | 96 | |
| 2.11986 | 4.78749 | -2.667634 | 3 | 97 | |
| ND<2.30259 | 4.78749 | -2.484914 | 3 | 98 | |
| 0.916291 J | 4.78749 | -3.8712 | 43 | 99 | |
| 2.77259 J | 4.78749 | -2.0149 | 43 | 100 | |
| 1.45862 J | 4.78749 | -3.328884 | 3 | 101 | |
| ND<-0.356675 | 4.78749 | -5.144174 | 3 | 102 | |

| | | | | |
|---|---|---|---|---|
| 1.54756 J H | 4.78749 | -3.2399343 | 103 | |
| 0.641854 J | 4.78749 | -4.1456443 | 104 | |
| | | | | |
| 5.07517 | 4.33073 | 0.74444 44 | 104 | |
| ND<2.30259 | 4.33073 | -2.0281544 | 105 | |
| ND<2.30259 | 4.33073 | -2.0281544 | 106 | |
| 3.29584 | 4.33073 | -1.0349 44 | 107 | |
| 4.12713 | 4.33073 | -0.203599 | 44 | 108 |
| ND<2.30259 | 4.33073 | -2.0281544 | 109 | |
| ND<2.30259 | 4.33073 | -2.0281544 | 110 | |
| ND<2.30259 | 4.33073 | -2.0281544 | 111 | |
| ND<2.30259 | 4.33073 | -2.0281544 | 112 | |
| ND<2.30259 | 4.33073 | -2.0281544 | 113 | |
| ND<2.30259 | 4.33073 | -2.0281544 | 114 | |
| ND<2.30259 | 4.33073 | -2.0281544 | 115 | |
| 2.11986 | 4.33073 | -2.2108744 | 116 | |
| ND<2.30259 | 4.33073 | -2.0281544 | 117 | |
| 0.916291 J | 4.33073 | -3.4144444 | 118 | |
| 2.77259 J | 4.33073 | -1.5581444 | 119 | |
| 1.45862 J | 4.33073 | -2.8721244 | 120 | |
| ND<-0.356675 | 4.33073 | -4.6874144 | 121 | |
| 1.54756 J H | 4.33073 | -2.7831744 | 122 | |
| 0.641854 J | 4.33073 | -3.6888844 | 123 | |
| | | | | |
| ND<2.30259 | 5.07517 | -2.7725944 | 124 | |
| ND<2.30259 | 5.07517 | -2.7725944 | 125 | |
| 3.29584 | 5.07517 | -1.7793444 | 126 | |
| 4.12713 | 5.07517 | -0.948039 | 44 | 127 |
| ND<2.30259 | 5.07517 | -2.7725944 | 128 | |
| ND<2.30259 | 5.07517 | -2.7725944 | 129 | |
| ND<2.30259 | 5.07517 | -2.7725944 | 130 | |
| ND<2.30259 | 5.07517 | -2.7725944 | 131 | |
| ND<2.30259 | 5.07517 | -2.7725944 | 132 | |
| ND<2.30259 | 5.07517 | -2.7725944 | 133 | |
| ND<2.30259 | 5.07517 | -2.7725944 | 134 | |
| 2.11986 | 5.07517 | -2.9553144 | 135 | |
| ND<2.30259 | 5.07517 | -2.7725944 | 136 | |
| 0.916291 J | 5.07517 | -4.1588844 | 137 | |
| 2.77259 J | 5.07517 | -2.3025944 | 138 | |
| 1.45862 J | 5.07517 | -3.6165644 | 139 | |
| ND<-0.356675 | 5.07517 | -5.4318544 | 140 | |
| 1.54756 J H | 5.07517 | -3.5276144 | 141 | |
| 0.641854 J | 5.07517 | -4.4333244 | 142 | |
| | | | | |
| ND<2.30259 | ND<2.30259 | 0 44 | 142 | |
| 3.29584 | ND<2.30259 | 0.993252 | 45 | 142 |
| 4.12713 | ND<2.30259 | 1.82455 46 | 142 | |
| ND<2.30259 | ND<2.30259 | 0 46 | 142 | |
| ND<2.30259 | ND<2.30259 | 0 46 | 142 | |
| ND<2.30259 | ND<2.30259 | 0 46 | 142 | |
| ND<2.30259 | ND<2.30259 | 0 46 | 142 | |
| ND<2.30259 | ND<2.30259 | 0 46 | 142 | |
| ND<2.30259 | ND<2.30259 | 0 46 | 142 | |
| ND<2.30259 | ND<2.30259 | 0 46 | 142 | |
| 2.11986 | ND<2.30259 | -0.182722 | 46 | 143 |
| ND<2.30259 | ND<2.30259 | 0 46 | 143 | |
| 0.916291 J | ND<2.30259 | -1.3862946 | 144 | |
| 2.77259 J | ND<2.30259 | 0.470004 | 47 | 144 |
| 1.45862 J | ND<2.30259 | -0.8439747 | 145 | |
| ND<-0.356675 | ND<2.30259 | -2.6592647 | 146 | |
| 1.54756 J H | ND<2.30259 | -0.755023 | 47 | 147 |
| 0.641854 J | ND<2.30259 | -1.6607347 | 148 | |

| | | | | |
|---|---|---|---|---|
| 3.29584 | ND<2.30259 | 0.993252 | 48 | 148 |
| 4.12713 | ND<2.30259 | 1.82455 | 49 | 148 |
| ND<2.30259 | ND<2.30259 | 0 | 49 | 148 |
| ND<2.30259 | ND<2.30259 | 0 | 49 | 148 |
| ND<2.30259 | ND<2.30259 | 0 | 49 | 148 |
| ND<2.30259 | ND<2.30259 | 0 | 49 | 148 |
| ND<2.30259 | ND<2.30259 | 0 | 49 | 148 |
| ND<2.30259 | ND<2.30259 | 0 | 49 | 148 |
| ND<2.30259 | ND<2.30259 | 0 | 49 | 148 |
| 2.11986 | ND<2.30259 | -0.182722 | 49 | 149 |
| ND<2.30259 | ND<2.30259 | 0 | 49 | 149 |
| 0.916291 J | ND<2.30259 | -1.3862949 | 150 | |
| 2.77259 J | ND<2.30259 | 0.470004 | 50 | 150 |
| 1.45862 J | ND<2.30259 | -0.8439750 | 151 | |
| ND<-0.356675 | ND<2.30259 | -2.6592650 | 152 | |
| 1.54756 J H | ND<2.30259 | -0.755023 | 50 | 153 |
| 0.641854 J | ND<2.30259 | -1.6607350 | 154 | |
| | | | | |
| 4.12713 | 3.29584 | 0.831298 | 51 | 154 |
| ND<2.30259 | 3.29584 | -0.993252 | 51 | 155 |
| ND<2.30259 | 3.29584 | -0.993252 | 51 | 156 |
| ND<2.30259 | 3.29584 | -0.993252 | 51 | 157 |
| ND<2.30259 | 3.29584 | -0.993252 | 51 | 158 |
| ND<2.30259 | 3.29584 | -0.993252 | 51 | 159 |
| ND<2.30259 | 3.29584 | -0.993252 | 51 | 160 |
| ND<2.30259 | 3.29584 | -0.993252 | 51 | 161 |
| 2.11986 | 3.29584 | -1.1759751 | 162 | |
| ND<2.30259 | 3.29584 | -0.993252 | 51 | 163 |
| 0.916291 J | 3.29584 | -2.3795551 | 164 | |
| 2.77259 J | 3.29584 | -0.523248 | 51 | 165 |
| 1.45862 J | 3.29584 | -1.8372251 | 166 | |
| ND<-0.356675 | 3.29584 | -3.6525151 | 167 | |
| 1.54756 J H | 3.29584 | -1.7482751 | 168 | |
| 0.641854 J | 3.29584 | -2.6539851 | 169 | |
| | | | | |
| ND<2.30259 | 4.12713 | -1.8245551 | 170 | |
| ND<2.30259 | 4.12713 | -1.8245551 | 171 | |
| ND<2.30259 | 4.12713 | -1.8245551 | 172 | |
| ND<2.30259 | 4.12713 | -1.8245551 | 173 | |
| ND<2.30259 | 4.12713 | -1.8245551 | 174 | |
| ND<2.30259 | 4.12713 | -1.8245551 | 175 | |
| ND<2.30259 | 4.12713 | -1.8245551 | 176 | |
| 2.11986 | 4.12713 | -2.0072751 | 177 | |
| ND<2.30259 | 4.12713 | -1.8245551 | 178 | |
| 0.916291 J | 4.12713 | -3.2108451 | 179 | |
| 2.77259 J | 4.12713 | -1.3545551 | 180 | |
| 1.45862 J | 4.12713 | -2.6685251 | 181 | |
| ND<-0.356675 | 4.12713 | -4.4838151 | 182 | |
| 1.54756 J H | 4.12713 | -2.5795751 | 183 | |
| 0.641854 J | 4.12713 | -3.4852851 | 184 | |
| | | | | |
| ND<2.30259 | ND<2.30259 | 0 | 51 | 184 |
| ND<2.30259 | ND<2.30259 | 0 | 51 | 184 |
| ND<2.30259 | ND<2.30259 | 0 | 51 | 184 |
| ND<2.30259 | ND<2.30259 | 0 | 51 | 184 |
| ND<2.30259 | ND<2.30259 | 0 | 51 | 184 |
| ND<2.30259 | ND<2.30259 | 0 | 51 | 184 |
| 2.11986 | ND<2.30259 | -0.182722 | 51 | 185 |
| ND<2.30259 | ND<2.30259 | 0 | 51 | 185 |
| 0.916291 J | ND<2.30259 | -1.3862951 | 186 | |
| 2.77259 J | ND<2.30259 | 0.470004 | 52 | 186 |

| | | | | |
|---|---|---|---|---|
| 1.45862 J | ND<2.30259 | -0.8439752 | 187 | |
| ND<-0.356675 | ND<2.30259 | -2.6592652 | 188 | |
| 1.54756 J H | ND<2.30259 | -0.755023 | 52 | 189 |
| 0.641854 J | ND<2.30259 | -1.6607352 | 190 | |
| | | | | |
| ND<2.30259 | ND<2.30259 | 0 52 | 190 | |
| ND<2.30259 | ND<2.30259 | 0 52 | 190 | |
| ND<2.30259 | ND<2.30259 | 0 52 | 190 | |
| ND<2.30259 | ND<2.30259 | 0 52 | 190 | |
| ND<2.30259 | ND<2.30259 | 0 52 | 190 | |
| 2.11986 | ND<2.30259 | -0.182722 | 52 | 191 |
| ND<2.30259 | ND<2.30259 | 0 52 | 191 | |
| 0.916291 J | ND<2.30259 | -1.3862952 | 192 | |
| 2.77259 J | ND<2.30259 | 0.470004 | 53 | 192 |
| 1.45862 J | ND<2.30259 | -0.8439753 | 193 | |
| ND<-0.356675 | ND<2.30259 | -2.6592653 | 194 | |
| 1.54756 J H | ND<2.30259 | -0.755023 | 53 | 195 |
| 0.641854 J | ND<2.30259 | -1.6607353 | 196 | |
| | | | | |
| ND<2.30259 | ND<2.30259 | 0 53 | 196 | |
| ND<2.30259 | ND<2.30259 | 0 53 | 196 | |
| ND<2.30259 | ND<2.30259 | 0 53 | 196 | |
| ND<2.30259 | ND<2.30259 | 0 53 | 196 | |
| 2.11986 | ND<2.30259 | -0.182722 | 53 | 197 |
| ND<2.30259 | ND<2.30259 | 0 53 | 197 | |
| 0.916291 J | ND<2.30259 | -1.3862953 | 198 | |
| 2.77259 J | ND<2.30259 | 0.470004 | 54 | 198 |
| 1.45862 J | ND<2.30259 | -0.8439754 | 199 | |
| ND<-0.356675 | ND<2.30259 | -2.6592654 | 200 | |
| 1.54756 J H | ND<2.30259 | -0.755023 | 54 | 201 |
| 0.641854 J | ND<2.30259 | -1.6607354 | 202 | |
| | | | | |
| ND<2.30259 | ND<2.30259 | 0 54 | 202 | |
| ND<2.30259 | ND<2.30259 | 0 54 | 202 | |
| ND<2.30259 | ND<2.30259 | 0 54 | 202 | |
| 2.11986 | ND<2.30259 | -0.182722 | 54 | 203 |
| ND<2.30259 | ND<2.30259 | 0 54 | 203 | |
| 0.916291 J | ND<2.30259 | -1.3862954 | 204 | |
| 2.77259 J | ND<2.30259 | 0.470004 | 55 | 204 |
| 1.45862 J | ND<2.30259 | -0.8439755 | 205 | |
| ND<-0.356675 | ND<2.30259 | -2.6592655 | 206 | |
| 1.54756 J H | ND<2.30259 | -0.755023 | 55 | 207 |
| 0.641854 J | ND<2.30259 | -1.6607355 | 208 | |
| | | | | |
| ND<2.30259 | ND<2.30259 | 0 55 | 208 | |
| ND<2.30259 | ND<2.30259 | 0 55 | 208 | |
| 2.11986 | ND<2.30259 | -0.182722 | 55 | 209 |
| ND<2.30259 | ND<2.30259 | 0 55 | 209 | |
| 0.916291 J | ND<2.30259 | -1.3862955 | 210 | |
| 2.77259 J | ND<2.30259 | 0.470004 | 56 | 210 |
| 1.45862 J | ND<2.30259 | -0.8439756 | 211 | |
| ND<-0.356675 | ND<2.30259 | -2.6592656 | 212 | |
| 1.54756 J H | ND<2.30259 | -0.755023 | 56 | 213 |
| 0.641854 J | ND<2.30259 | -1.6607356 | 214 | |
| | | | | |
| ND<2.30259 | ND<2.30259 | 0 56 | 214 | |
| 2.11986 | ND<2.30259 | -0.182722 | 56 | 215 |
| ND<2.30259 | ND<2.30259 | 0 56 | 215 | |
| 0.916291 J | ND<2.30259 | -1.3862956 | 216 | |
| 2.77259 J | ND<2.30259 | 0.470004 | 57 | 216 |
| 1.45862 J | ND<2.30259 | -0.8439757 | 217 | |
| ND<-0.356675 | ND<2.30259 | -2.6592657 | 218 | |

| | | | | |
|---|---|---|---|---|
| 1.54756 J H | ND<2.30259 | -0.755023 | 57 | 219 |
| 0.641854 J | ND<2.30259 | -1.6607357 | 220 | |
| | | | | |
| 2.11986 | ND<2.30259 | -0.182722 | 57 | 221 |
| ND<2.30259 | ND<2.30259 | 0 57 | 221 | |
| 0.916291 J | ND<2.30259 | -1.3862957 | 222 | |
| 2.77259 J | ND<2.30259 | 0.470004 | 58 | 222 |
| 1.45862 J | ND<2.30259 | -0.8439758 | 223 | |
| ND<-0.356675 | ND<2.30259 | -2.6592658 | 224 | |
| 1.54756 J H | ND<2.30259 | -0.755023 | 58 | 225 |
| 0.641854 J | ND<2.30259 | -1.6607358 | 226 | |
| | | | | |
| ND<2.30259 | 2.11986 | 0.182722 | 59 | 226 |
| 0.916291 J | 2.11986 | -1.2035759 | 227 | |
| 2.77259 J | 2.11986 | 0.652725 | 60 | 227 |
| 1.45862 J | 2.11986 | -0.661248 | 60 | 228 |
| ND<-0.356675 | 2.11986 | -2.4765460 | 229 | |
| 1.54756 J H | 2.11986 | -0.572301 | 60 | 230 |
| 0.641854 J | 2.11986 | -1.4780160 | 231 | |
| | | | | |
| 0.916291 J | ND<2.30259 | -1.3862960 | 232 | |
| 2.77259 J | ND<2.30259 | 0.470004 | 61 | 232 |
| 1.45862 J | ND<2.30259 | -0.8439761 | 233 | |
| ND<-0.356675 | ND<2.30259 | -2.6592661 | 234 | |
| 1.54756 J H | ND<2.30259 | -0.755023 | 61 | 235 |
| 0.641854 J | ND<2.30259 | -1.6607361 | 236 | |
| | | | | |
| 2.77259 J | 0.916291 J | 1.8563 62 | 236 | |
| 1.45862 J | 0.916291 J | 0.542324 | 63 | 236 |
| ND<-0.356675 | 0.916291 J | -1.2729763 | 237 | |
| 1.54756 J H | 0.916291 J | 0.631272 | 64 | 237 |
| 0.641854 J | 0.916291 J | -0.274437 | 64 | 238 |
| | | | | |
| 1.45862 J | 2.77259 J | -1.3139764 | 239 | |
| ND<-0.356675 | 2.77259 J | -3.1292664 | 240 | |
| 1.54756 J H | 2.77259 J | -1.2250364 | 241 | |
| 0.641854 J | 2.77259 J | -2.1307364 | 242 | |
| | | | | |
| ND<-0.356675 | 1.45862 J | -1.8152964 | 243 | |
| 1.54756 J H | 1.45862 J | 0.0889475 | 65 | 243 |
| 0.641854 J | 1.45862 J | -0.816761 | 65 | 244 |
| | | | | |
| 1.54756 J H | ND<-0.356675 | 1.90424 66 | 244 | |
| 0.641854 J | ND<-0.356675 | 0.998529 | 67 | 244 |
| | | | | |
| 0.641854 J | 1.54756 J H | -0.905709 | 67 | 245 |

S Statistic = 67 - 245 = -178

| Tied Group | Value | Members |
|---|---|---|
| 1 | 2.30259 | 12 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |
| 11/19/1996 | 1 |
| 12/19/1996 | 1 |

| | | |
|---|---|---|
| 3/24/1997 | | 1 |
| 9/24/1997 | | 1 |
| 4/7/1998 | 1 | |
| 9/23/1998 | | 1 |
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 11/16/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 1 |

There are 0 time periods with multiple data

A = 3828
B = 0
C = 1320
D = 0
E = 132
F = 0
a = 46116
b = 176904
c = 1512
Group Variance = 2349.33
Z-Score = -3.65175
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-3.65175| > 1.97737 indicating a trend

# Concentrations (ppb)

## Parameter: Vinyl Chloride

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 221
Total Non-Detect: 141
Percent Non-Detects: 63.8009%
Total Background Measurements: 18
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 18 | 18 (100%) | 3/16/1999 | ND<2 | ND<2 |
| | | | 9/23/1999 | ND<2 | ND<2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | ND<2 | ND<2 |
| | | | 3/11/2004 | ND<2 | ND<2 |
| | | | 10/12/2004 | ND<2 | ND<2 |
| | | | 4/1/2005 | ND<2 | ND<2 |
| | | | 10/25/2005 | ND<2 | ND<2 |
| | | | 4/29/2006 | ND<2 | ND<2 |
| | | | 11/18/2006 | ND<2 | ND<2 |
| | | | 5/23/2007 | ND<2 | ND<2 |
| | | | 11/28/2007 | ND<2 | ND<2 |
| | | | 6/5/2008 | ND<2 | ND<2 |
| | | | 11/20/2008 | ND<2 | ND<2 |
| | | | 6/11/2009 | ND<0.18 | ND<0.18 |
| | | | 11/16/2009 | ND<0.18 | ND<0.18 |
| | | | 6/30/2010 | ND<0.18 | ND<0.18 |
| | | | 11/12/2010 | ND<0.18 U | ND<0.18 U |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-8 | 27 | 2 (7.40741%) | 7/20/1995 | 2.4 | 2.4 |
| | | | 8/24/1995 | 46 | 46 |
| | | | 9/28/1995 | 36 | 36 |
| | | | 10/26/1995 | 4 | 4 |
| | | | 11/19/1996 | ND<2 | ND<2 |
| | | | 12/19/1996 | 46 | 46 |
| | | | 3/24/1997 | 48 | 48 |
| | | | 9/24/1997 | 25 | 25 |
| | | | 4/7/1998 | 39 | 39 |
| | | | 9/23/1998 | 16 | 16 |
| | | | 3/16/1999 | 13.7 | 13.7 |
| | | | 9/23/1999 | 15.2 | 15.2 |
| | | | 3/15/2000 | ND<2 | ND<2 |
| | | | 9/24/2003 | 230 | 230 |
| | | | 3/11/2004 | 78 | 78 |
| | | | 10/12/2004 | 130 | 130 |
| | | | 4/1/2005 | 59 | 59 |
| | | | 10/25/2005 | 54.2 | 54.2 |
| | | | 4/29/2006 | 24.6 | 24.6 |
| | | | 11/18/2006 | 36.6 | 36.6 |
| | | | 5/23/2007 | 19 | 19 |
| | | | 11/28/2007 | 33.2 | 33.2 |
| | | | 6/5/2008 | 21.8 | 21.8 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11/20/2008 | 10.1 | 10.1 | |
| | | | 6/11/2009 | 12 | 12 | |
| | | | 6/30/2010 | 10 | 10 | |
| | | | 11/12/2010 | 10 | 10 | |
| MW-10 | 28 | 14 (50%) | 7/20/1995 | ND<2 | ND<2 | |
| | | | 8/24/1995 | 3 | 3 | |
| | | | 9/28/1995 | 4 | 4 | |
| | | | 10/26/1995 | 5 | 5 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | 3.6 | 3.6 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 1.91 J | 1.91 J | |
| | | | 10/25/2005 | 2.48 | 2.48 | |
| | | | 4/29/2006 | 2.8 | 2.8 | |
| | | | 11/18/2006 | 1.7 J | 1.7 J | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | 2.59 | 2.59 | |
| | | | 6/5/2008 | 1.65 J | 1.65 J | |
| | | | 11/20/2008 | 1.58 J | 1.58 J | |
| | | | 6/11/2009 | 1.3 | 1.3 | |
| | | | 11/16/2009 | 1.5 | 1.5 | |
| | | | 6/30/2010 | ND<0.18 | ND<0.18 | |
| | | | 11/12/2010 | 1.6 | 1.6 | |
| MW-9 | 28 | 13 (46.4286%) | 7/20/1995 | ND<2 | ND<2 | |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | 0.8 J | 0.8 J | |
| | | | 10/26/1995 | 0.9 J | 0.9 J | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | 2.7 | 2.7 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | 37 | 37 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 2.81 | 2.81 | |
| | | | 10/25/2005 | 1.45 J | 1.45 J | |
| | | | 4/29/2006 | 0.69 J | 0.69 J | |
| | | | 11/18/2006 | 0.73 J | 0.73 J | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | 1.71 J | 1.71 J | |
| | | | 6/5/2008 | 1.6 J | 1.6 J | |
| | | | 11/20/2008 | 1.41 J | 1.41 J | |
| | | | 6/11/2009 | 2 | 2 | |
| | | | 11/16/2009 | 1.2 | 1.2 | |
| | | | 6/30/2010 | 2.1 | 2.1 | |
| | | | 11/12/2010 | 1.9 | 1.9 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| MW-7 | 28 | 20 (71.4286%) | 7/20/1995 | ND<2 | ND<2 | |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | 0.7 J | 0.7 J | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | 0.52 J | 0.52 J | |
| | | | 10/25/2005 | 0.36 J | 0.36 J | |
| | | | 4/29/2006 | 0.64 J | 0.64 J | |
| | | | 11/18/2006 | 0.35 J | 0.35 J | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | 0.47 J | 0.47 J | |
| | | | 11/20/2008 | 0.58 J | 0.58 J | |
| | | | 6/11/2009 | ND<0.18 | ND<0.18 | |
| | | | 11/16/2009 | ND<0.18 | ND<0.18 | |
| | | | 6/30/2010 | ND<0.18 | ND<0.18 | |
| | | | 11/12/2010 | 0.29 J | 0.29 J | |
| MW-6 | 28 | 28 (100%) | 7/20/1995 | ND<2 | ND<2 | |
| | | | 8/24/1995 | ND<2 | ND<2 | |
| | | | 9/28/1995 | ND<2 | ND<2 | |
| | | | 10/26/1995 | ND<2 | ND<2 | |
| | | | 11/19/1996 | ND<2 | ND<2 | |
| | | | 12/19/1996 | ND<2 | ND<2 | |
| | | | 3/24/1997 | ND<2 | ND<2 | |
| | | | 9/24/1997 | ND<2 | ND<2 | |
| | | | 4/7/1998 | ND<2 | ND<2 | |
| | | | 9/23/1998 | ND<2 | ND<2 | |
| | | | 3/16/1999 | ND<2 | ND<2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |
| | | | 9/24/2003 | ND<2 | ND<2 | |
| | | | 3/11/2004 | ND<2 | ND<2 | |
| | | | 10/12/2004 | ND<2 | ND<2 | |
| | | | 4/1/2005 | ND<2 | ND<2 | |
| | | | 10/25/2005 | ND<2 | ND<2 | |
| | | | 4/29/2006 | ND<2 | ND<2 | |
| | | | 11/18/2006 | ND<2 | ND<2 | |
| | | | 5/23/2007 | ND<2 | ND<2 | |
| | | | 11/28/2007 | ND<2 | ND<2 | |
| | | | 6/5/2008 | ND<2 | ND<2 | |
| | | | 11/20/2008 | ND<2 | ND<2 | |
| | | | 6/11/2009 | ND<0.18 | ND<0.18 | |
| | | | 11/16/2009 | ND<0.18 | ND<0.18 | |
| | | | 6/30/2010 | ND<0.18 | ND<0.18 | |
| | | | 11/12/2010 | ND<0.18 U | ND<0.18 U | |
| MW-12BR | 18 | 16 (88.8889%) | 3/16/1999 | 7.2 | 7.2 | |
| | | | 9/23/1999 | ND<2 | ND<2 | |
| | | | 3/15/2000 | ND<2 | ND<2 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | 9/24/2003 | ND<2 | ND<2 | | |
| | | 3/11/2004 | ND<2 | ND<2 | | |
| | | 10/12/2004 | ND<2 | ND<2 | | |
| | | 4/1/2005 | 5.41 | 5.41 | | |
| | | 10/25/2005 | ND<2 | ND<2 | | |
| | | 4/29/2006 | ND<2 | ND<2 | | |
| | | 11/18/2006 | ND<2 | ND<2 | | |
| | | 5/23/2007 | ND<2 | ND<2 | | |
| | | 11/28/2007 | ND<2 | ND<2 | | |
| | | 6/5/2008 | ND<2 | ND<2 | | |
| | | 11/20/2008 | ND<2 | ND<2 | | |
| | | 6/11/2009 | ND<0.18 | | ND<0.18 | |
| | | 11/16/2009 | ND<0.18 | | ND<0.18 | |
| | | 6/30/2010 | ND<0.18 | | ND<0.18 | |
| | | 11/12/2010 | ND<0.18 U | | ND<0.18 U | |
| MW-12AR | 18 | 11 (61.1111%) | 3/16/1999 | | ND<2 | ND<2 |
| | | 9/23/1999 | ND<2 | ND<2 | | |
| | | 3/15/2000 | ND<2 | ND<2 | | |
| | | 9/24/2003 | ND<2 | ND<2 | | |
| | | 3/11/2004 | ND<2 | ND<2 | | |
| | | 10/12/2004 | ND<2 | ND<2 | | |
| | | 4/1/2005 | ND<2 | ND<2 | | |
| | | 10/25/2005 | 2.08 | 2.08 | | |
| | | 4/29/2006 | 2.44 | 2.44 | | |
| | | 11/18/2006 | 1.17 J | 1.17 J | | |
| | | 5/23/2007 | ND<2 | ND<2 | | |
| | | 11/28/2007 | 0.97 J | 0.97 J | | |
| | | 6/5/2008 | 0.8 J | 0.8 J | | |
| | | 11/20/2008 | 0.52 J | 0.52 J | | |
| | | 6/11/2009 | ND<0.18 | | ND<0.18 | |
| | | 11/16/2009 | ND<0.18 | | ND<0.18 | |
| | | 6/30/2010 | ND<0.18 | | ND<0.18 | |
| | | 11/12/2010 | 0.58 J | 0.58 J | | |
| MW-11R | 28 | 19 (67.8571%) | 7/20/1995 | | ND<2 | ND<2 |
| | | 8/24/1995 | 1.9 J | 1.9 J | | |
| | | 9/28/1995 | 0.8 J | 0.8 J | | |
| | | 10/26/1995 | 4 | 4 | | |
| | | 11/19/1996 | ND<2 | ND<2 | | |
| | | 12/19/1996 | ND<2 | ND<2 | | |
| | | 3/24/1997 | ND<2 | ND<2 | | |
| | | 9/24/1997 | ND<2 | ND<2 | | |
| | | 4/7/1998 | ND<2 | ND<2 | | |
| | | 9/23/1998 | ND<2 | ND<2 | | |
| | | 3/16/1999 | 2.6 | 2.6 | | |
| | | 9/23/1999 | ND<2 | ND<2 | | |
| | | 3/15/2000 | ND<2 | ND<2 | | |
| | | 9/24/2003 | ND<2 | ND<2 | | |
| | | 3/11/2004 | ND<2 | ND<2 | | |
| | | 10/12/2004 | ND<2 | ND<2 | | |
| | | 4/1/2005 | 3.57 | 3.57 | | |
| | | 10/25/2005 | 0.9 J | 0.9 J | | |
| | | 4/29/2006 | 0.78 J | 0.78 J | | |
| | | 11/18/2006 | 0.8 J | 0.8 J | | |
| | | 5/23/2007 | ND<2 | ND<2 | | |
| | | 11/28/2007 | 0.48 J | 0.48 J | | |
| | | 6/5/2008 | ND<2 | ND<2 | | |
| | | 11/20/2008 | ND<2 | ND<2 | | |
| | | 6/11/2009 | ND<0.18 | | ND<0.18 | |
| | | 11/16/2009 | ND<0.18 | | ND<0.18 | |
| | | 6/30/2010 | ND<0.18 | | ND<0.18 | |

| | | | |
|---|---|---|---|
| | 11/12/2010 | ND<0.18 U | ND<0.18 U |

There are 0 unused locations

| Loc. | Meas. ND | Date | Conc. | Original |
|---|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: Vinyl Chloride

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.09 | -2.65209 | 7.03356 | -0.238688 |
| 2 | 0.09 | -2.36561 | 12.6297 | -0.451593 |
| 3 | 0.09 | -2.22621 | 17.5857 | -0.651952 |
| 4 | 0.09 | -2.09693 | 21.9828 | -0.840675 |
| 5 | 0.09 | -2.01409 | 26.0394 | -1.02194 |
| 6 | 0.09 | -1.92684 | 29.7521 | -1.19536 |
| 7 | 0.09 | -1.86629 | 33.2351 | -1.36333 |
| 8 | 0.09 | -1.79912 | 36.472 | -1.52525 |
| 9 | 0.09 | -1.75069 | 39.5369 | -1.68281 |
| 10 | 0.09 | -1.6954 | 42.4112 | -1.83539 |
| 11 | 0.09 | -1.65463 | 45.149 | -1.98431 |
| 12 | 0.09 | -1.60725 | 47.7323 | -2.12896 |
| 13 | 0.09 | -1.57179 | 50.2028 | -2.27042 |
| 14 | 0.09 | -1.53007 | 52.5439 | -2.40813 |
| 15 | 0.09 | -1.49852 | 54.7894 | -2.543 |
| 16 | 0.09 | -1.46106 | 56.9241 | -2.67449 |
| 17 | 0.09 | -1.4325 | 58.9762 | -2.80342 |
| 18 | 0.09 | -1.39838 | 60.9316 | -2.92927 |
| 19 | 0.09 | -1.3722 | 62.8146 | -3.05277 |
| 20 | 0.09 | -1.34075 | 64.6122 | -3.17344 |
| 21 | 0.09 | -1.31652 | 66.3454 | -3.29192 |
| 22 | 0.09 | -1.28727 | 68.0025 | -3.40778 |
| 23 | 0.09 | -1.26464 | 69.6018 | -3.5216 |
| 24 | 0.29 | -1.23724 | 71.1326 | -3.88039 |
| 25 | 0.35 | -1.21596 | 72.6111 | -4.30598 |
| 26 | 0.36 | -1.19012 | 74.0275 | -4.73442 |
| 27 | 0.47 | -1.17 | 75.3964 | -5.28432 |
| 28 | 0.48 | -1.1455 | 76.7086 | -5.83417 |
| 29 | 0.52 | -1.12639 | 77.9774 | -6.41989 |
| 30 | 0.52 | -1.10306 | 79.1941 | -6.99348 |
| 31 | 0.58 | -1.08482 | 80.371 | -7.62268 |
| 32 | 0.58 | -1.06252 | 81.4999 | -8.23894 |
| 33 | 0.64 | -1.04505 | 82.592 | -8.90777 |
| 34 | 0.69 | -1.02365 | 83.6399 | -9.61409 |
| 35 | 0.7 | -1.00687 | 84.6537 | -10.3189 |
| 36 | 0.73 | -0.986272 | 85.6264 | -11.0389 |
| 37 | 0.78 | -0.970094 | 86.5675 | -11.7955 |
| 38 | 0.8 | -0.950222 | 87.4704 | -12.5557 |
| 39 | 0.8 | -0.93459 | 88.3439 | -13.3034 |
| 40 | 0.8 | -0.915365 | 89.1818 | -14.0357 |
| 41 | 0.8 | -0.900227 | 89.9922 | -14.7559 |
| 42 | 0.9 | -0.881587 | 90.7694 | -15.5493 |
| 43 | 0.9 | -0.866894 | 91.5209 | -16.3295 |
| 44 | 0.97 | -0.848786 | 92.2413 | -17.1528 |
| 45 | 1 | -0.834498 | 92.9377 | -17.9873 |
| 46 | 1 | -0.816874 | 93.605 | -18.8042 |
| 47 | 1 | -0.802956 | 94.2497 | -19.6072 |
| 48 | 1 | -0.785774 | 94.8672 | -20.3929 |
| 49 | 1 | -0.772193 | 95.4634 | -21.1651 |

| | | | | |
|---|---|---|---|---|
| 50 | 1 | -0.755415 | 96.0341 | -21.9205 |
| 51 | 1 | -0.742143 | 96.5849 | -22.6627 |
| 52 | 1 | -0.725736 | 97.1116 | -23.3884 |
| 53 | 1 | -0.712751 | 97.6196 | -24.1012 |
| 54 | 1 | -0.696684 | 98.1049 | -24.7979 |
| 55 | 1 | -0.683969 | 8.5727 | -25.4818 |
| 56 | 1 | -0.668209 | 99.0192 | -26.15 |
| 57 | 1 | -0.655726 | 99.4492 | -26.8057 |
| 58 | 1 | -0.640266 | 99.8592 | -27.446 |
| 59 | 1 | -0.628006 | 100.254 | -28.074 |
| 60 | 1 | -0.612813 | 100.629 | -28.6868 |
| 61 | 1 | -0.60076 | 100.99 | -29.2876 |
| 62 | 1 | -0.585815 | 101.333 | -29.8734 |
| 63 | 1 | -0.573953 | 101.663 | -30.4474 |
| 64 | 1 | -0.559237 | 101.975 | -31.0066 |
| 65 | 1 | -0.547551 | 102.275 | -31.5541 |
| 66 | 1 | -0.533048 | 102.559 | -32.0872 |
| 67 | 1 | -0.521527 | 102.831 | -32.6087 |
| 68 | 1 | -0.507221 | 103.089 | -33.1159 |
| 69 | 1 | -0.49585 | 103.334 | -33.6118 |
| 70 | 1 | -0.481728 | 103.566 | -34.0935 |
| 71 | 1 | -0.470498 | 103.788 | -34.564 |
| 72 | 1 | -0.456542 | 103.996 | -35.0206 |
| 73 | 1 | -0.445443 | 104.195 | -35.466 |
| 74 | 1 | -0.431644 | 104.381 | -35.8976 |
| 75 | 1 | -0.420664 | 104.558 | -36.3183 |
| 76 | 1 | -0.40701 | 104.724 | -36.7253 |
| 77 | 1 | -0.396142 | 104.881 | -37.1215 |
| 78 | 1 | -0.382622 | 105.027 | -37.5041 |
| 79 | 1 | -0.371856 | 105.165 | -37.8759 |
| 80 | 1 | -0.358459 | 105.294 | -38.2344 |
| 81 | 1 | -0.347787 | 105.415 | -38.5822 |
| 82 | 1 | -0.334503 | 105.527 | -38.9167 |
| 83 | 1 | -0.323919 | 105.632 | -39.2406 |
| 84 | 1 | -0.310738 | 105.728 | -39.5513 |
| 85 | 1 | -0.300232 | 105.818 | -39.8516 |
| 86 | 1 | -0.287147 | 105.901 | -40.1387 |
| 87 | 1 | -0.276714 | 105.977 | -40.4154 |
| 88 | 1 | -0.263715 | 106.047 | -40.6792 |
| 89 | 1 | -0.253347 | 106.111 | -40.9325 |
| 90 | 1 | -0.240426 | 106.169 | -41.1729 |
| 91 | 1 | -0.230118 | 106.222 | -41.403 |
| 92 | 1 | -0.217267 | 106.269 | -41.6203 |
| 93 | 1 | -0.207012 | 106.312 | -41.8273 |
| 94 | 1 | -0.194225 | 106.35 | -42.0216 |
| 95 | 1 | -0.184017 | 106.383 | -42.2056 |
| 96 | 1 | -0.171285 | 106.413 | -42.3769 |
| 97 | 1 | -0.161119 | 106.439 | -42.538 |
| 98 | 1 | -0.148434 | 106.461 | -42.6864 |
| 99 | 1 | -0.138305 | 106.48 | -42.8247 |
| 100 | 1 | -0.125661 | 106.496 | -42.9504 |
| 101 | 1 | -0.115562 | 106.509 | -43.0659 |
| 102 | 1 | -0.102953 | 106.52 | -43.1689 |
| 103 | 1 | -0.0928787 | 106.528 | -43.2618 |
| 104 | 1 | -0.0802981 | 106.535 | -43.3421 |
| 105 | 1 | -0.0702426 | 106.54 | -43.4123 |
| 106 | 1 | -0.0576847 | 106.543 | -43.47 |
| 107 | 1 | -0.0476439 | 106.545 | -43.5176 |
| 108 | 1 | -0.0350997 | 106.546 | -43.5527 |
| 109 | 1 | -0.0250691 | 106.547 | -43.5778 |
| 110 | 1 | -0.0125328 | 106.547 | -43.5903 |
| 111 | 1 | 0 | 106.547 | -43.5903 |

| | | | | |
|---|---|---|---|---|
| 112 | 1 | 0.0125328 | 106.547 | -43.5778 |
| 113 | 1 | 0.0250691 | 106.548 | -43.5527 |
| 114 | 1 | 0.0350997 | 106.549 | -43.5176 |
| 115 | 1 | 0.0476439 | 106.551 | -43.47 |
| 116 | 1 | 0.0576847 | 106.555 | -43.4123 |
| 117 | 1 | 0.0702426 | 106.56 | -43.3421 |
| 118 | 1 | 0.0802981 | 106.566 | -43.2618 |
| 119 | 1 | 0.0928787 | 106.575 | -43.1689 |
| 120 | 1 | 0.102953 | 106.585 | -43.0659 |
| 121 | 1 | 0.115562 | 106.599 | -42.9504 |
| 122 | 1 | 0.125661 | 106.615 | -42.8247 |
| 123 | 1 | 0.138305 | 106.634 | -42.6864 |
| 124 | 1 | 0.148434 | 106.656 | -42.538 |
| 125 | 1 | 0.161119 | 106.682 | -42.3769 |
| 126 | 1 | 0.171285 | 106.711 | -42.2056 |
| 127 | 1 | 0.184017 | 106.745 | -42.0216 |
| 128 | 1 | 0.194225 | 106.783 | -41.8273 |
| 129 | 1 | 0.207012 | 106.825 | -41.6203 |
| 130 | 1 | 0.217267 | 106.873 | -41.403 |
| 131 | 1 | 0.230118 | 106.926 | -41.1729 |
| 132 | 1 | 0.240426 | 106.983 | -40.9325 |
| 133 | 1 | 0.253347 | 107.048 | -40.6792 |
| 134 | 1 | 0.263715 | 107.117 | -40.4154 |
| 135 | 1 | 0.276714 | 107.194 | -40.1387 |
| 136 | 1 | 0.287147 | 107.276 | -39.8516 |
| 137 | 1 | 0.300232 | 107.366 | -39.5513 |
| 138 | 1 | 0.310738 | 107.463 | -39.2406 |
| 139 | 1 | 0.323919 | 107.568 | -38.9167 |
| 140 | 1 | 0.334503 | 107.68 | -38.5822 |
| 141 | 1 | 0.347787 | 107.801 | -38.2344 |
| 142 | 1 | 0.358459 | 107.929 | -37.8759 |
| 143 | 1 | 0.371856 | 108.067 | -37.5041 |
| 144 | 1 | 0.382622 | 108.214 | -37.1215 |
| 145 | 1 | 0.396142 | 108.371 | -36.7253 |
| 146 | 1 | 0.40701 | 108.536 | -36.3183 |
| 147 | 1 | 0.420664 | 108.713 | -35.8976 |
| 148 | 1 | 0.431644 | 108.9 | -35.466 |
| 149 | 1 | 0.445443 | 109.098 | -35.0206 |
| 150 | 1 | 0.456542 | 109.307 | -34.564 |
| 151 | 1 | 0.470498 | 109.528 | -34.0935 |
| 152 | 1 | 0.481728 | 109.76 | -33.6118 |
| 153 | 1 | 0.49585 | 110.006 | -33.1159 |
| 154 | 1 | 0.507221 | 110.263 | -32.6087 |
| 155 | 1 | 0.521527 | 110.535 | -32.0872 |
| 156 | 1 | 0.533048 | 110.819 | -31.5541 |
| 157 | 1 | 0.547551 | 111.119 | -31.0066 |
| 158 | 1 | 0.559237 | 111.432 | -30.4474 |
| 159 | 1 | 0.573953 | 111.761 | -29.8734 |
| 160 | 1 | 0.585815 | 112.104 | -29.2876 |
| 161 | 1 | 0.60076 | 112.465 | -28.6868 |
| 162 | 1 | 0.612813 | 112.841 | -28.074 |
| 163 | 1.17 | 0.628006 | 113.235 | -27.3393 |
| 164 | 1.2 | 0.640266 | 113.645 | -26.5709 |
| 165 | 1.3 | 0.655726 | 114.075 | -25.7185 |
| 166 | 1.41 | 0.668209 | 114.522 | -24.7763 |
| 167 | 1.45 | 0.68396 | 114.989 | -23.7846 |
| 168 | 1.5 | 0.696684 | 115.475 | -22.7395 |
| 169 | 1.58 | 0.712751 | 115.983 | -21.6134 |
| 170 | 1.6 | 0.725736 | 116.51 | -20.4522 |
| 171 | 1.6 | 0.742143 | 117.06 | -19.2648 |
| 172 | 1.65 | 0.755415 | 117.631 | -18.0184 |
| 173 | 1.7 | 0.772193 | 118.227 | -16.7056 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 1.71 | 0.785774 | | 118.845 | -15.362 |
| 175 | 1.9 | 0.802956 | | 119.489 | -13.8363 |
| 176 | 1.9 | 0.816874 | | 120.157 | -12.2843 |
| 177 | 1.91 | 0.834498 | | 120.853 | -10.6904 |
| 178 | 2 | 0.848786 | | 121.574 | -8.99282 |
| 179 | 2.08 | 0.866894 | | 122.325 | -7.18968 |
| 180 | 2.1 | 0.881587 | | 123.102 | -5.33834 |
| 181 | 2.4 | 0.900227 | | 123.913 | -3.1778 |
| 182 | 2.44 | 0.915365 | | 124.751 | -0.944308 |
| 183 | 2.48 | 0.93459 | 125.624 | 1.37347 | |
| 184 | 2.59 | 0.950222 | | 126.527 | 3.83455 |
| 185 | 2.6 | 0.970094 | | 127.468 | 6.35679 |
| 186 | 2.7 | 0.986272 | | 128.441 | 9.01973 |
| 187 | 2.8 | 1.00687 | 129.455 | 11.839 | |
| 188 | 2.81 | 1.02365 | 130.502 | 14.7154 | |
| 189 | 3 | 1.04505 | 131.594 | 17.8506 | |
| 190 | 3.57 | 1.06252 | 132.723 | 21.6438 | |
| 191 | 3.6 | 1.08482 | 133.9 | 25.5491 | |
| 192 | 4 | 1.10306 | 135.117 | 29.9614 | |
| 193 | 4 | 1.12639 | 136.386 | 34.4669 | |
| 194 | 4 | 1.1455 | 137.698 | 39.049 | |
| 195 | 5 | 1.17 | 139.067 | 44.899 | |
| 196 | 5.41 | 1.19012 | 140.483 | 51.3375 | |
| 197 | 7.2 | 1.21596 | 141.962 | 60.0924 | |
| 198 | 10 | 1.23724 | 143.493 | 72.4648 | |
| 199 | 10 | 1.26464 | 145.092 | 85.1112 | |
| 200 | 10.1 | 1.28727 | 146.749 | 98.1126 | |
| 201 | 12 | 1.31652 | 148.482 | 113.911 | |
| 202 | 13.7 | 1.34075 | 150.28 | 132.279 | |
| 203 | 15.2 | 1.3722 | 152.163 | 153.137 | |
| 204 | 16 | 1.39838 | 154.118 | 175.511 | |
| 205 | 19 | 1.4325 | 156.17 | 202.728 | |
| 206 | 21.8 | 1.46106 | 158.305 | 234.579 | |
| 207 | 24.6 | 1.49852 | 160.551 | 271.443 | |
| 208 | 25 | 1.53007 | 162.892 | 309.694 | |
| 209 | 33.2 | 1.57179 | 165.362 | 361.878 | |
| 210 | 36 | 1.60725 | 167.945 | 419.739 | |
| 211 | 36.6 | 1.65463 | 170.683 | 480.298 | |
| 212 | 37 | 1.6954 | 173.558 | 543.028 | |
| 213 | 39 | 1.75069 | 176.622 | 611.305 | |
| 214 | 46 | 1.79912 | 179.859 | 694.064 | |
| 215 | 46 | 1.86629 | 183.342 | 779.913 | |
| 216 | 48 | 1.92684 | 187.055 | 872.402 | |
| 217 | 54.2 | 2.01409 | 191.112 | 981.566 | |
| 218 | 59 | 2.09693 | 195.509 | 1105.28 | |
| 219 | 78 | 2.22621 | 200.465 | 1278.93 | |
| 220 | 130 | 2.36561 | 206.061 | 1586.46 | |
| 221 | 230 | 2.65209 | 213.094 | 2196.44 | |

Data Set Standard Deviation = 20.4189
Numerator = 4.82434e+006
Denominator = 1.95461e+007
W Statistic = 0.246818 = 4.82434e+006 / 1.95461e+007

5% Critical value of 0.976 exceeds 0.246818
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.246818
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: Vinyl Chloride

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 221

| i | x(i) | m(i) | sum(m^2) | sum(mx) | |
|---|---|---|---|---|---|
| 1 | -2.40795 | -2.65209 | 7.03356 | 6.38608 | |
| 2 | -2.40795 | -2.36561 | 12.6297 | 12.0823 | |
| 3 | -2.40795 | -2.22621 | 17.5857 | 17.4429 | |
| 4 | -2.40795 | -2.09693 | 21.9828 | 22.4922 | |
| 5 | -2.40795 | -2.01409 | 26.0394 | 27.3421 | |
| 6 | -2.40795 | -1.92684 | 29.7521 | 31.9818 | |
| 7 | -2.40795 | -1.86629 | 33.2351 | 36.4757 | |
| 8 | -2.40795 | -1.79912 | 36.472 | 40.8079 | |
| 9 | -2.40795 | -1.75069 | 39.5369 | 45.0234 | |
| 10 | -2.40795 | -1.6954 | 42.4112 | 49.1059 | |
| 11 | -2.40795 | -1.65463 | 45.149 | 53.0901 | |
| 12 | -2.40795 | -1.60725 | 47.7323 | 56.9603 | |
| 13 | -2.40795 | -1.57179 | 50.2028 | 60.7451 | |
| 14 | -2.40795 | -1.53007 | 52.5439 | 64.4294 | |
| 15 | -2.40795 | -1.49852 | 54.7894 | 68.0377 | |
| 16 | -2.40795 | -1.46106 | 56.9241 | 71.5559 | |
| 17 | -2.40795 | -1.4325 | 58.9762 | 75.0053 | |
| 18 | -2.40795 | -1.39838 | 60.9316 | 78.3725 | |
| 19 | -2.40795 | -1.3722 | 62.8146 | 81.6767 | |
| 20 | -2.40795 | -1.34075 | 64.6122 | 84.9051 | |
| 21 | -2.40795 | -1.31652 | 66.3454 | 88.0752 | |
| 22 | -2.40795 | -1.28727 | 68.0025 | 91.1749 | |
| 23 | -2.40795 | -1.26464 | 69.6018 | 94.2201 | |
| 24 | -1.23787 | -1.23724 | 71.1326 | 95.7517 | |
| 25 | -1.04982 | -1.21596 | 72.6111 | 97.0282 | |
| 26 | -1.02165 | -1.19012 | 74.0275 | 98.2441 | |
| 27 | -0.755023 | -1.17 | 75.3964 | 99.1275 | |
| 28 | -0.733969 | -1.1455 | 76.7086 | 99.9682 | |
| 29 | -0.653926 | -1.12639 | 77.9774 | 100.705 | |
| 30 | -0.653926 | -1.10306 | 79.1941 | 101.426 | |
| 31 | -0.544727 | -1.08482 | 80.371 | 102.017 | |
| 32 | -0.544727 | -1.06252 | 81.4999 | 102.596 | |
| 33 | -0.446287 | -1.04505 | 82.592 | 103.062 | |
| 34 | -0.371064 | -1.02365 | 83.6399 | 103.442 | |
| 35 | -0.356675 | -1.00687 | 84.6537 | 103.801 | |
| 36 | -0.314711 | -0.986272 | 85.6264 | 104.112 | |
| 37 | -0.248461 | -0.970094 | 86.5675 | 104.353 | |
| 38 | -0.223144 | -0.950222 | 87.4704 | 104.565 | |
| 39 | -0.223144 | -0.93459 | 88.3439 | 104.773 | |
| 40 | -0.223144 | -0.915365 | 89.1818 | 104.977 | |
| 41 | -0.223144 | -0.900227 | 89.9922 | 105.178 | |
| 42 | -0.105361 | -0.881587 | 90.7694 | 105.271 | |
| 43 | -0.105361 | -0.866894 | 91.5209 | 105.363 | |
| 44 | -0.0304592 | -0.848786 | 92.2413 | 105.388 | |
| 45 | 0 | -0.834498 | 92.9377 | 105.388 | |
| 46 | 0 | -0.816874 | 93.605 | 105.388 | |
| 47 | 0 | -0.802956 | 94.2497 | 105.388 | |
| 48 | 0 | -0.785774 | 94.8672 | 105.388 | |
| 49 | 0 | -0.772193 | 95.4634 | 105.388 | |

| | | | | |
|---|---|---|---|---|
| 50 | 0 | -0.755415 | 96.0341 | 105.388 |
| 51 | 0 | -0.742143 | 96.5849 | 105.388 |
| 52 | 0 | -0.725736 | 97.1116 | 105.388 |
| 53 | 0 | -0.712751 | 97.6196 | 105.388 |
| 54 | 0 | -0.696684 | 98.1049 | 105.388 |
| 55 | 0 | -0.683969 | 8.5727 | 105.388 |
| 56 | 0 | -0.668209 | 99.0192 | 105.388 |
| 57 | 0 | -0.655726 | 99.4492 | 105.388 |
| 58 | 0 | -0.640266 | 99.8592 | 105.388 |
| 59 | 0 | -0.628006 | 100.254 | 105.388 |
| 60 | 0 | -0.612813 | 100.629 | 105.388 |
| 61 | 0 | -0.60076 | 100.99 | 105.388 |
| 62 | 0 | -0.585815 | 101.333 | 105.388 |
| 63 | 0 | -0.573953 | 101.663 | 105.388 |
| 64 | 0 | -0.559237 | 101.975 | 105.388 |
| 65 | 0 | -0.547551 | 102.275 | 105.388 |
| 66 | 0 | -0.533048 | 102.559 | 105.388 |
| 67 | 0 | -0.521527 | 102.831 | 105.388 |
| 68 | 0 | -0.507221 | 103.089 | 105.388 |
| 69 | 0 | -0.49585 | 103.334 | 105.388 |
| 70 | 0 | -0.481728 | 103.566 | 105.388 |
| 71 | 0 | -0.470498 | 103.788 | 105.388 |
| 72 | 0 | -0.456542 | 103.996 | 105.388 |
| 73 | 0 | -0.445443 | 104.195 | 105.388 |
| 74 | 0 | -0.431644 | 104.381 | 105.388 |
| 75 | 0 | -0.420664 | 104.558 | 105.388 |
| 76 | 0 | -0.40701 | 104.724 | 105.388 |
| 77 | 0 | -0.396142 | 104.881 | 105.388 |
| 78 | 0 | -0.382622 | 105.027 | 105.388 |
| 79 | 0 | -0.371856 | 105.165 | 105.388 |
| 80 | 0 | -0.358459 | 105.294 | 105.388 |
| 81 | 0 | -0.347787 | 105.415 | 105.388 |
| 82 | 0 | -0.334503 | 105.527 | 105.388 |
| 83 | 0 | -0.323919 | 105.632 | 105.388 |
| 84 | 0 | -0.310738 | 105.728 | 105.388 |
| 85 | 0 | -0.300232 | 105.818 | 105.388 |
| 86 | 0 | -0.287147 | 105.901 | 105.388 |
| 87 | 0 | -0.276714 | 105.977 | 105.388 |
| 88 | 0 | -0.263715 | 106.047 | 105.388 |
| 89 | 0 | -0.253347 | 106.111 | 105.388 |
| 90 | 0 | -0.240426 | 106.169 | 105.388 |
| 91 | 0 | -0.230118 | 106.222 | 105.388 |
| 92 | 0 | -0.217267 | 106.269 | 105.388 |
| 93 | 0 | -0.207012 | 106.312 | 105.388 |
| 94 | 0 | -0.194225 | 106.35 | 105.388 |
| 95 | 0 | -0.184017 | 106.383 | 105.388 |
| 96 | 0 | -0.171285 | 106.413 | 105.388 |
| 97 | 0 | -0.161119 | 106.439 | 105.388 |
| 98 | 0 | -0.148434 | 106.461 | 105.388 |
| 99 | 0 | -0.138305 | 106.48 | 105.388 |
| 100 | 0 | -0.125661 | 106.496 | 105.388 |
| 101 | 0 | -0.115562 | 106.509 | 105.388 |
| 102 | 0 | -0.102953 | 106.52 | 105.388 |
| 103 | 0 | -0.0928787 | 106.528 | 105.388 |
| 104 | 0 | -0.0802981 | 106.535 | 105.388 |
| 105 | 0 | -0.0702426 | 106.54 | 105.388 |
| 106 | 0 | -0.0576847 | 106.543 | 105.388 |
| 107 | 0 | -0.0476439 | 106.545 | 105.388 |
| 108 | 0 | -0.0350997 | 106.546 | 105.388 |
| 109 | 0 | -0.0250691 | 106.547 | 105.388 |
| 110 | 0 | -0.0125328 | 106.547 | 105.388 |
| 111 | 0 | 0 | 106.547 | 105.388 |

| | | | | |
|---|---|---|---|---|
| 112 | 0 | 0.0125328 | 106.547 | 105.388 |
| 113 | 0 | 0.0250691 | 106.548 | 105.388 |
| 114 | 0 | 0.0350997 | 106.549 | 105.388 |
| 115 | 0 | 0.0476439 | 106.551 | 105.388 |
| 116 | 0 | 0.0576847 | 106.555 | 105.388 |
| 117 | 0 | 0.0702426 | 106.56 | 105.388 |
| 118 | 0 | 0.0802981 | 106.566 | 105.388 |
| 119 | 0 | 0.0928787 | 106.575 | 105.388 |
| 120 | 0 | 0.102953 | 106.585 | 105.388 |
| 121 | 0 | 0.115562 | 106.599 | 105.388 |
| 122 | 0 | 0.125661 | 106.615 | 105.388 |
| 123 | 0 | 0.138305 | 106.634 | 105.388 |
| 124 | 0 | 0.148434 | 106.656 | 105.388 |
| 125 | 0 | 0.161119 | 106.682 | 105.388 |
| 126 | 0 | 0.171285 | 106.711 | 105.388 |
| 127 | 0 | 0.184017 | 106.745 | 105.388 |
| 128 | 0 | 0.194225 | 106.783 | 105.388 |
| 129 | 0 | 0.207012 | 106.825 | 105.388 |
| 130 | 0 | 0.217267 | 106.873 | 105.388 |
| 131 | 0 | 0.230118 | 106.926 | 105.388 |
| 132 | 0 | 0.240426 | 106.983 | 105.388 |
| 133 | 0 | 0.253347 | 107.048 | 105.388 |
| 134 | 0 | 0.263715 | 107.117 | 105.388 |
| 135 | 0 | 0.276714 | 107.194 | 105.388 |
| 136 | 0 | 0.287147 | 107.276 | 105.388 |
| 137 | 0 | 0.300232 | 107.366 | 105.388 |
| 138 | 0 | 0.310738 | 107.463 | 105.388 |
| 139 | 0 | 0.323919 | 107.568 | 105.388 |
| 140 | 0 | 0.334503 | 107.68 | 105.388 |
| 141 | 0 | 0.347787 | 107.801 | 105.388 |
| 142 | 0 | 0.358459 | 107.929 | 105.388 |
| 143 | 0 | 0.371856 | 108.067 | 105.388 |
| 144 | 0 | 0.382622 | 108.214 | 105.388 |
| 145 | 0 | 0.396142 | 108.371 | 105.388 |
| 146 | 0 | 0.40701 | 108.536 | 105.388 |
| 147 | 0 | 0.420664 | 108.713 | 105.388 |
| 148 | 0 | 0.431644 | 108.9 | 105.388 |
| 149 | 0 | 0.445443 | 109.098 | 105.388 |
| 150 | 0 | 0.456542 | 109.307 | 105.388 |
| 151 | 0 | 0.470498 | 109.528 | 105.388 |
| 152 | 0 | 0.481728 | 109.76 | 105.388 |
| 153 | 0 | 0.49585 | 110.006 | 105.388 |
| 154 | 0 | 0.507221 | 110.263 | 105.388 |
| 155 | 0 | 0.521527 | 110.535 | 105.388 |
| 156 | 0 | 0.533048 | 110.819 | 105.388 |
| 157 | 0 | 0.547551 | 111.119 | 105.388 |
| 158 | 0 | 0.559237 | 111.432 | 105.388 |
| 159 | 0 | 0.573953 | 111.761 | 105.388 |
| 160 | 0 | 0.585815 | 112.104 | 105.388 |
| 161 | 0 | 0.60076 | 112.465 | 105.388 |
| 162 | 0 | 0.612813 | 112.841 | 105.388 |
| 163 | 0.157004 | 0.628006 | 113.235 | 105.487 |
| 164 | 0.182322 | 0.640266 | 113.645 | 105.604 |
| 165 | 0.262364 | 0.655726 | 114.075 | 105.776 |
| 166 | 0.34359 | 0.668209 | 114.522 | 106.005 |
| 167 | 0.371564 | 0.68396 | 114.989 | 106.26 |
| 168 | 0.405465 | 0.696684 | 115.475 | 106.542 |
| 169 | 0.457425 | 0.712751 | 115.983 | 106.868 |
| 170 | 0.470004 | 0.725736 | 116.51 | 107.209 |
| 171 | 0.470004 | 0.742143 | 117.06 | 107.558 |
| 172 | 0.500775 | 0.755415 | 117.631 | 107.936 |
| 173 | 0.530628 | 0.772193 | 118.227 | 108.346 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 174 | 0.536493 | | 0.785774 | | 118.845 | 108.768 |
| 175 | 0.641854 | | 0.802956 | | 119.489 | 109.283 |
| 176 | 0.641854 | | 0.816874 | | 120.157 | 109.807 |
| 177 | 0.647103 | | 0.834498 | | 120.853 | 110.347 |
| 178 | 0.693147 | | 0.848786 | | 121.574 | 110.936 |
| 179 | 0.732368 | | 0.866894 | | 122.325 | 111.57 |
| 180 | 0.741937 | | 0.881587 | | 123.102 | 112.225 |
| 181 | 0.875469 | | 0.900227 | | 123.913 | 113.013 |
| 182 | 0.891998 | | 0.915365 | | 124.751 | 113.829 |
| 183 | 0.908259 | | 0.93459 | 125.624 | 114.678 | |
| 184 | 0.951658 | | 0.950222 | | 126.527 | 115.582 |
| 185 | 0.955511 | | 0.970094 | | 127.468 | 116.509 |
| 186 | 0.993252 | | 0.986272 | | 128.441 | 117.489 |
| 187 | 1.02962 | 1.00687 | 129.455 | 118.526 | | |
| 188 | 1.03318 | 1.02365 | 130.502 | 119.583 | | |
| 189 | 1.09861 | 1.04505 | 131.594 | 120.731 | | |
| 190 | 1.27257 | 1.06252 | 132.723 | 122.083 | | |
| 191 | 1.28093 | 1.08482 | 133.9 | 123.473 | | |
| 192 | 1.38629 | 1.10306 | 135.117 | 125.002 | | |
| 193 | 1.38629 | 1.12639 | 136.386 | 126.564 | | |
| 194 | 1.38629 | 1.1455 | 137.698 | 128.152 | | |
| 195 | 1.60944 | 1.17 | 139.067 | 130.035 | | |
| 196 | 1.68825 | 1.19012 | 140.483 | 132.044 | | |
| 197 | 1.97408 | 1.21596 | 141.962 | 134.444 | | |
| 198 | 2.30259 | 1.23724 | 143.493 | 137.293 | | |
| 199 | 2.30259 | 1.26464 | 145.092 | 140.205 | | |
| 200 | 2.31254 | 1.28727 | 146.749 | 143.182 | | |
| 201 | 2.48491 | 1.31652 | 148.482 | 146.453 | | |
| 202 | 2.6174 | 1.34075 | 150.28 | 149.963 | | |
| 203 | 2.7213 | 1.3722 | 152.163 | 153.697 | | |
| 204 | 2.77259 | 1.39838 | 154.118 | 157.574 | | |
| 205 | 2.94444 | 1.4325 | 156.17 | 161.792 | | |
| 206 | 3.08191 | 1.46106 | 158.305 | 166.295 | | |
| 207 | 3.20275 | 1.49852 | 160.551 | 171.094 | | |
| 208 | 3.21888 | 1.53007 | 162.892 | 176.019 | | |
| 209 | 3.50255 | 1.57179 | 165.362 | 181.524 | | |
| 210 | 3.58352 | 1.60725 | 167.945 | 187.284 | | |
| 211 | 3.60005 | 1.65463 | 170.683 | 193.241 | | |
| 212 | 3.61092 | 1.6954 | 173.558 | 199.363 | | |
| 213 | 3.66356 | 1.75069 | 176.622 | 205.777 | | |
| 214 | 3.82864 | 1.79912 | 179.859 | 212.665 | | |
| 215 | 3.82864 | 1.86629 | 183.342 | 219.81 | | |
| 216 | 3.8712 | 1.92684 | 187.055 | 227.269 | | |
| 217 | 3.99268 | 2.01409 | 191.112 | 235.311 | | |
| 218 | 4.07754 | 2.09693 | 195.509 | 243.861 | | |
| 219 | 4.35671 | 2.22621 | 200.465 | 253.56 | | |
| 220 | 4.86753 | 2.36561 | 206.061 | 265.075 | | |
| 221 | 5.43808 | 2.65209 | 213.094 | 279.497 | | |

Data Set Standard Deviation = 1.44441
Numerator = 78118.6
Denominator = 97807.9
W Statistic = 0.798695 = 78118.6 / 97807.9

5% Critical value of 0.976 exceeds 0.798695
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.798695
Evidence of non-normality at 99% level of significance

# Kruskal-Wallis Non-Parametric Test

## Parameter: Vinyl Chloride

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

# Kruskal Wallis Ranks

## Background Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-13 | 3/16/1999 | ND<0 | 71 |
| | 9/23/1999 | ND<0 | 71 |
| | 3/15/2000 | ND<0 | 71 |
| | 9/24/2003 | ND<0 | 71 |
| | 3/11/2004 | ND<0 | 71 |
| | 10/12/2004 | ND<0 | 71 |
| | 4/1/2005 | ND<0 | 71 |
| | 10/25/2005 | ND<0 | 71 |
| | 4/29/2006 | ND<0 | 71 |
| | 11/18/2006 | ND<0 | 71 |
| | 5/23/2007 | ND<0 | 71 |
| | 11/28/2007 | ND<0 | 71 |
| | 6/5/2008 | ND<0 | 71 |
| | 11/20/2008 | ND<0 | 71 |
| | 6/11/2009 | ND<-2.40795 | 71 |
| | 11/16/2009 | ND<-2.40795 | 71 |
| | 6/30/2010 | ND<-2.40795 | 71 |
| | 11/12/2010 | ND<-2.40795 U | 71 |

Rank Sum = 1278
Rank Mean = 71

Background Rank Sum = 1278
Background Rank Mean = 71

## Compliance Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-8 | 7/20/1995 | 0.875469 | 181 |
| | 8/24/1995 | 3.82864 | 214 |
| | 9/28/1995 | 3.58352 | 210 |
| | 10/26/1995 | 1.38629 | 192 |
| | 11/19/1996 | ND<0 | 71 |
| | 12/19/1996 | 3.82864 | 215 |
| | 3/24/1997 | 3.8712 | 216 |
| | 9/24/1997 | 3.21888 | 208 |
| | 4/7/1998 | 3.66356 | 213 |
| | 9/23/1998 | 2.77259 | 204 |
| | 3/16/1999 | 2.6174 | 202 |
| | 9/23/1999 | 2.7213 | 203 |
| | 3/15/2000 | ND<0 | 71 |
| | 9/24/2003 | 5.43808 | 221 |
| | 3/11/2004 | 4.35671 | 219 |
| | 10/12/2004 | 4.86753 | 220 |
| | 4/1/2005 | 4.07754 | 218 |
| | 10/25/2005 | 3.99268 | 217 |
| | 4/29/2006 | 3.20275 | 207 |
| | 11/18/2006 | 3.60005 | 211 |

| | | | | |
|---|---|---|---|---|
| | 5/23/2007 | 2.94444 | | 205 |
| | 11/28/2007 | 3.50255 | | 209 |
| | 6/5/2008 | 3.08191 | 206 | |
| | 11/20/2008 | 2.31254 | | 200 |
| | 6/11/2009 | 2.48491 | | 201 |
| | 6/30/2010 | 2.30259 | | 198 |
| | 11/12/2010 | 2.30259 | | 199 |

Rank Sum = 5331
Rank Mean = 197.444

| | | | | |
|---|---|---|---|---|
| MW-10 | 7/20/1995 | ND<0 | 71 | |
| | 8/24/1995 | 1.09861 | | 189 |
| | 9/28/1995 | 1.38629 | | 193 |
| | 10/26/1995 | 1.60944 | | 195 |
| | 11/19/1996 | ND<0 | 71 | |
| | 12/19/1996 | ND<0 | 71 | |
| | 3/24/1997 | ND<0 | 71 | |
| | 9/24/1997 | ND<0 | 71 | |
| | 4/7/1998 | ND<0 | 71 | |
| | 9/23/1998 | ND<0 | 71 | |
| | 3/16/1999 | 1.28093 | | 191 |
| | 9/23/1999 | ND<0 | 71 | |
| | 3/15/2000 | ND<0 | 71 | |
| | 9/24/2003 | ND<0 | 71 | |
| | 3/11/2004 | ND<0 | 71 | |
| | 10/12/2004 | ND<0 | 71 | |
| | 4/1/2005 | 0.647103 J | 177 | |
| | 10/25/2005 | 0.908259 | | 183 |
| | 4/29/2006 | 1.02962 | | 187 |
| | 11/18/2006 | 0.530628 J | | 173 |
| | 5/23/2007 | ND<0 | 71 | |
| | 11/28/2007 | 0.951658 | | 184 |
| | 6/5/2008 | 0.500775 J | 172 | |
| | 11/20/2008 | 0.457425 J | | 169 |
| | 6/11/2009 | 0.262364 | | 165 |
| | 11/16/2009 | 0.405465 | | 168 |
| | 6/30/2010 | ND<-2.40795 | | 71 |
| | 11/12/2010 | 0.470004 | | 170 |

Rank Sum = 3510
Rank Mean = 125.357

| | | | | |
|---|---|---|---|---|
| MW-9 | 7/20/1995 | ND<0 | 71 | |
| | 8/24/1995 | ND<0 | 71 | |
| | 9/28/1995 | -0.223144 J | | 156 |
| | 10/26/1995 | -0.105361 J | | 160 |
| | 11/19/1996 | ND<0 | 71 | |
| | 12/19/1996 | ND<0 | 71 | |
| | 3/24/1997 | ND<0 | 71 | |
| | 9/24/1997 | ND<0 | 71 | |
| | 4/7/1998 | ND<0 | 71 | |
| | 9/23/1998 | ND<0 | 71 | |
| | 3/16/1999 | 0.993252 | | 186 |
| | 9/23/1999 | ND<0 | 71 | |
| | 3/15/2000 | ND<0 | 71 | |
| | 9/24/2003 | ND<0 | 71 | |
| | 3/11/2004 | 3.61092 | | 212 |
| | 10/12/2004 | ND<0 | 71 | |
| | 4/1/2005 | 1.03318 | 188 | |
| | 10/25/2005 | 0.371564 J | | 167 |
| | 4/29/2006 | -0.371064 J | | 152 |
| | 11/18/2006 | -0.314711 J | | 154 |
| | 5/23/2007 | ND<0 | 71 | |

| | | | | |
|---|---|---|---|---|
| | 11/28/2007 | 0.536493 | J | 174 |
| | 6/5/2008 | 0.470004 | J | 171 |
| | 11/20/2008 | 0.34359 | J | 166 |
| | 6/11/2009 | 0.693147 | | 178 |
| | 11/16/2009 | 0.182322 | | 164 |
| | 6/30/2010 | 0.741937 | | 180 |
| | 11/12/2010 | 0.641854 | | 175 |

Rank Sum = 3506
Rank Mean = 125.214

| | | | | |
|---|---|---|---|---|
| MW-7 | 7/20/1995 | ND<0 | 71 | |
| | 8/24/1995 | ND<0 | 71 | |
| | 9/28/1995 | -0.356675 | J | 153 |
| | 10/26/1995 | ND<0 | 71 | |
| | 11/19/1996 | ND<0 | 71 | |
| | 12/19/1996 | ND<0 | 71 | |
| | 3/24/1997 | ND<0 | 71 | |
| | 9/24/1997 | ND<0 | 71 | |
| | 4/7/1998 | ND<0 | 71 | |
| | 9/23/1998 | ND<0 | 71 | |
| | 3/16/1999 | ND<0 | 71 | |
| | 9/23/1999 | ND<0 | 71 | |
| | 3/15/2000 | ND<0 | 71 | |
| | 9/24/2003 | ND<0 | 71 | |
| | 3/11/2004 | ND<0 | 71 | |
| | 10/12/2004 | ND<0 | 71 | |
| | 4/1/2005 | -0.653926 | J | 147 |
| | 10/25/2005 | -1.02165 | J | 144 |
| | 4/29/2006 | -0.446287 | J | 151 |
| | 11/18/2006 | -1.04982 | J | 143 |
| | 5/23/2007 | ND<0 | 71 | |
| | 11/28/2007 | ND<0 | 71 | |
| | 6/5/2008 | -0.755023 | J | 145 |
| | 11/20/2008 | -0.544727 | J | 149 |
| | 6/11/2009 | ND<-2.40795 | | 71 |
| | 11/16/2009 | ND<-2.40795 | | 71 |
| | 6/30/2010 | ND<-2.40795 | | 71 |
| | 11/12/2010 | -1.23787 | J | 142 |

Rank Sum = 2594
Rank Mean = 92.6429

| | | | |
|---|---|---|---|
| MW-6 | 7/20/1995 | ND<0 | 71 |
| | 8/24/1995 | ND<0 | 71 |
| | 9/28/1995 | ND<0 | 71 |
| | 10/26/1995 | ND<0 | 71 |
| | 11/19/1996 | ND<0 | 71 |
| | 12/19/1996 | ND<0 | 71 |
| | 3/24/1997 | ND<0 | 71 |
| | 9/24/1997 | ND<0 | 71 |
| | 4/7/1998 | ND<0 | 71 |
| | 9/23/1998 | ND<0 | 71 |
| | 3/16/1999 | ND<0 | 71 |
| | 9/23/1999 | ND<0 | 71 |
| | 3/15/2000 | ND<0 | 71 |
| | 9/24/2003 | ND<0 | 71 |
| | 3/11/2004 | ND<0 | 71 |
| | 10/12/2004 | ND<0 | 71 |
| | 4/1/2005 | ND<0 | 71 |
| | 10/25/2005 | ND<0 | 71 |
| | 4/29/2006 | ND<0 | 71 |
| | 11/18/2006 | ND<0 | 71 |
| | 5/23/2007 | ND<0 | 71 |

| | | | |
|---|---|---|---|
| | 11/28/2007 | ND<0 | 71 |
| | 6/5/2008 | ND<0 | 71 |
| | 11/20/2008 | ND<0 | 71 |
| | 6/11/2009 | ND<-2.40795 | 71 |
| | 11/16/2009 | ND<-2.40795 | 71 |
| | 6/30/2010 | ND<-2.40795 | 71 |
| | 11/12/2010 | ND<-2.40795 U | 71 |

Rank Sum = 1988
Rank Mean = 71

| | | | |
|---|---|---|---|
| MW-12BR | 3/16/1999 | 1.97408 | 197 |
| | 9/23/1999 | ND<0 | 71 |
| | 3/15/2000 | ND<0 | 71 |
| | 9/24/2003 | ND<0 | 71 |
| | 3/11/2004 | ND<0 | 71 |
| | 10/12/2004 | ND<0 | 71 |
| | 4/1/2005 | 1.68825 | 196 |
| | 10/25/2005 | ND<0 | 71 |
| | 4/29/2006 | ND<0 | 71 |
| | 11/18/2006 | ND<0 | 71 |
| | 5/23/2007 | ND<0 | 71 |
| | 11/28/2007 | ND<0 | 71 |
| | 6/5/2008 | ND<0 | 71 |
| | 11/20/2008 | ND<0 | 71 |
| | 6/11/2009 | ND<-2.40795 | 71 |
| | 11/16/2009 | ND<-2.40795 | 71 |
| | 6/30/2010 | ND<-2.40795 | 71 |
| | 11/12/2010 | ND<-2.40795 U | 71 |

Rank Sum = 1529
Rank Mean = 84.9444

| | | | |
|---|---|---|---|
| MW-12AR | 3/16/1999 | ND<0 | 71 |
| | 9/23/1999 | ND<0 | 71 |
| | 3/15/2000 | ND<0 | 71 |
| | 9/24/2003 | ND<0 | 71 |
| | 3/11/2004 | ND<0 | 71 |
| | 10/12/2004 | ND<0 | 71 |
| | 4/1/2005 | ND<0 | 71 |
| | 10/25/2005 | 0.732368 | 179 |
| | 4/29/2006 | 0.891998 | 182 |
| | 11/18/2006 | 0.157004 J | 163 |
| | 5/23/2007 | ND<0 | 71 |
| | 11/28/2007 | -0.0304592 J | 162 |
| | 6/5/2008 | -0.223144 J | 157 |
| | 11/20/2008 | -0.653926 J | 148 |
| | 6/11/2009 | ND<-2.40795 | 71 |
| | 11/16/2009 | ND<-2.40795 | 71 |
| | 6/30/2010 | ND<-2.40795 | 71 |
| | 11/12/2010 | -0.544727 J | 150 |

Rank Sum = 1922
Rank Mean = 106.778

| | | | |
|---|---|---|---|
| MW-11R | 7/20/1995 | ND<0 | 71 |
| | 8/24/1995 | 0.641854 J | 176 |
| | 9/28/1995 | -0.223144 J | 158 |
| | 10/26/1995 | 1.38629 | 194 |
| | 11/19/1996 | ND<0 | 71 |
| | 12/19/1996 | ND<0 | 71 |
| | 3/24/1997 | ND<0 | 71 |
| | 9/24/1997 | ND<0 | 71 |
| | 4/7/1998 | ND<0 | 71 |
| | 9/23/1998 | ND<0 | 71 |

| | | | |
|---|---|---|---|
| 3/16/1999 | 0.955511 | | 185 |
| 9/23/1999 | ND<0 | 71 | |
| 3/15/2000 | ND<0 | 71 | |
| 9/24/2003 | ND<0 | 71 | |
| 3/11/2004 | ND<0 | 71 | |
| 10/12/2004 | ND<0 | 71 | |
| 4/1/2005 | 1.27257 | 190 | |
| 10/25/2005 | -0.105361 J | | 161 |
| 4/29/2006 | -0.248461 J | | 155 |
| 11/18/2006 | -0.223144 J | | 159 |
| 5/23/2007 | ND<0 | 71 | |
| 11/28/2007 | -0.733969 J | | 146 |
| 6/5/2008 | ND<0 | 71 | |
| 11/20/2008 | ND<0 | 71 | |
| 6/11/2009 | ND<-2.40795 | | 71 |
| 11/16/2009 | ND<-2.40795 | | 71 |
| 6/30/2010 | ND<-2.40795 | | 71 |
| 11/12/2010 | ND<-2.40795 U | | 71 |

Rank Sum = 2873
Rank Mean = 102.607

## Calculation Results:

Kruskal-Wallis H Statistic = 76.0032
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 102.665
95% Confidence comparison value is 15.5073 at 8 degrees of freedom
76.0032 > 15.5073 indicating a significant group difference at 5% significance level
102.665 > 15.5073 indicating a significant group difference at 5% significance level when adjusted for ties

## Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 71

| Well | Mean Rank | Dif from Bkg | Critical Value |
|---|---|---|---|
| MW-8 | 197.444 | 126.444 | 45.263 |
| MW-10 | 125.357 | 54.3571 | 44.9386 |
| MW-9 | 125.214 | 54.2143 | 44.9386 |
| MW-7 | 92.6429 | 21.6429 | 44.9386 |
| MW-6 | 71 | 0 | 44.9386 |
| MW-12BR | 84.9444 | 13.9444 | 49.5832 |
| MW-12AR | 106.778 | 35.7778 | 49.5832 |
| MW-11R | 102.607 | 31.6071 | 44.9386 |

## Individual Well Comparisons at Groupwise 5% Significance Level (0.625% Significance Level per comparison)

0.625% Z score is 2.51213
Mean background rank is 71

| Well | Mean Rank | Dif from Bkg | Critical Value |
|---|---|---|---|
| MW-8 | 197.444 | 126.444 | 48.8779 |
| MW-10 | 125.357 | 54.3571 | 48.5275 |
| MW-9 | 125.214 | 54.2143 | 48.5275 |
| MW-7 | 92.6429 | 21.6429 | 48.5275 |
| MW-6 | 71 | 0 | 48.5275 |
| MW-12BR | 84.9444 | 13.9444 | 53.5431 |
| MW-12AR | 106.778 | 35.7778 | 53.5431 |
| MW-11R | 102.607 | 31.6071 | 48.5275 |

# Mann-Kendall Trend Analysis

## Parameter: Vinyl Chloride

## Location: MW-8

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | Positives | Negatives |
|---|---|---|---|---|
| 3.82864 | 0.875469 | 2.95317 | 1 | 0 |
| 3.58352 | 0.875469 | 2.70805 | 2 | 0 |
| 1.38629 | 0.875469 | 0.510826 | 3 | 0 |
| ND<0 | 0.875469 | -0.875469 | 3 | 1 |
| 3.82864 | 0.875469 | 2.95317 | 4 | 1 |
| 3.8712 | 0.875469 | 2.99573 | 5 | 1 |
| 3.21888 | 0.875469 | 2.34341 | 6 | 1 |
| 3.66356 | 0.875469 | 2.78809 | 7 | 1 |
| 2.77259 | 0.875469 | 1.89712 | 8 | 1 |
| 2.6174 | 0.875469 | 1.74193 | 9 | 1 |
| 2.7213 | 0.875469 | 1.84583 | 10 | 1 |
| ND<0 | 0.875469 | -0.875469 | 10 | 2 |
| 5.43808 | 0.875469 | 4.56261 | 11 | 2 |
| 4.35671 | 0.875469 | 3.48124 | 12 | 2 |
| 4.86753 | 0.875469 | 3.99207 | 13 | 2 |
| 4.07754 | 0.875469 | 3.20207 | 14 | 2 |
| 3.99268 | 0.875469 | 3.11721 | 15 | 2 |
| 3.20275 | 0.875469 | 2.32728 | 16 | 2 |
| 3.60005 | 0.875469 | 2.72458 | 17 | 2 |
| 2.94444 | 0.875469 | 2.06897 | 18 | 2 |
| 3.50255 | 0.875469 | 2.62708 | 19 | 2 |
| 3.08191 | 0.875469 | 2.20644 | 20 | 2 |
| 2.31254 | 0.875469 | 1.43707 | 21 | 2 |
| 2.48491 | 0.875469 | 1.60944 | 22 | 2 |
| 2.30259 | 0.875469 | 1.42712 | 23 | 2 |
| 2.30259 | 0.875469 | 1.42712 | 24 | 2 |
| | | | | |
| 3.58352 | 3.82864 | -0.245122 | 24 | 3 |
| 1.38629 | 3.82864 | -2.442352 | 24 | 4 |
| ND<0 | 3.82864 | -3.828642 | 24 | 5 |
| 3.82864 | 3.82864 | 0 | 24 | 5 |
| 3.8712 | 3.82864 | 0.0425596 | 25 | 5 |
| 3.21888 | 3.82864 | -0.609766 | 25 | 6 |
| 3.66356 | 3.82864 | -0.165082 | 25 | 7 |
| 2.77259 | 3.82864 | -1.056052 | 25 | 8 |
| 2.6174 | 3.82864 | -1.211252 | 25 | 9 |
| 2.7213 | 3.82864 | -1.107352 | 25 | 10 |
| ND<0 | 3.82864 | -3.828642 | 25 | 11 |
| 5.43808 | 3.82864 | 1.60944 | 26 | 11 |
| 4.35671 | 3.82864 | 0.528067 | 27 | 11 |
| 4.86753 | 3.82864 | 1.03889 | 28 | 11 |
| 4.07754 | 3.82864 | 0.248896 | 29 | 11 |
| 3.99268 | 3.82864 | 0.16404 | 30 | 11 |
| 3.20275 | 3.82864 | -0.625895 | 30 | 12 |
| 3.60005 | 3.82864 | -0.228593 | 30 | 13 |
| 2.94444 | 3.82864 | -0.884202 | 30 | 14 |
| 3.50255 | 3.82864 | -0.326092 | 30 | 15 |
| 3.08191 | 3.82864 | -0.746731 | 30 | 16 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2.31254 | | 3.82864 | | -1.5161130 | 17 | |
| 2.48491 | | 3.82864 | | -1.3437330 | 18 | |
| 2.30259 | | 3.82864 | | -1.5260630 | 19 | |
| 2.30259 | | 3.82864 | | -1.5260630 | 20 | |
| | | | | | | |
| 1.38629 | | 3.58352 | | -2.1972230 | 21 | |
| ND<0 | 3.58352 | | -3.5835230 | 22 | | |
| 3.82864 | | 3.58352 | | 0.245122 | 31 | 22 |
| 3.8712 | 3.58352 | | 0.287682 | 32 | 22 | |
| 3.21888 | | 3.58352 | | -0.364643 | 32 | 23 |
| 3.66356 | | 3.58352 | | 0.0800427 | 33 | 23 |
| 2.77259 | | 3.58352 | | -0.8109333 | 24 | |
| 2.6174 | 3.58352 | | -0.966123 | 33 | 25 | |
| 2.7213 | 3.58352 | | -0.862224 | 33 | 26 | |
| ND<0 | 3.58352 | | -3.5835233 | 27 | | |
| 5.43808 | | 3.58352 | | 1.85456 | 34 | 27 |
| 4.35671 | | 3.58352 | | 0.77319 | 35 | 27 |
| 4.86753 | | 3.58352 | | 1.28402 | 36 | 27 |
| 4.07754 | | 3.58352 | | 0.494019 | 37 | 27 |
| 3.99268 | | 3.58352 | | 0.409162 | 38 | 27 |
| 3.20275 | | 3.58352 | | -0.380772 | 38 | 28 |
| 3.60005 | | 3.58352 | | 0.0165293 | 39 | 28 |
| 2.94444 | | 3.58352 | | -0.6390839 | 29 | |
| 3.50255 | | 3.58352 | | -0.0809691 | 39 | 30 |
| 3.08191 | | 3.58352 | | -0.501609 | 39 | 31 |
| 2.31254 | | 3.58352 | | -1.2709839 | 32 | |
| 2.48491 | | 3.58352 | | -1.0986139 | 33 | |
| 2.30259 | | 3.58352 | | -1.2809339 | 34 | |
| 2.30259 | | 3.58352 | | -1.2809339 | 35 | |
| | | | | | | |
| ND<0 | 1.38629 | | -1.3862939 | 36 | | |
| 3.82864 | | 1.38629 | | 2.44235 | 40 | 36 |
| 3.8712 | 1.38629 | | 2.48491 | 41 | 36 | |
| 3.21888 | | 1.38629 | | 1.83258 | 42 | 36 |
| 3.66356 | | 1.38629 | | 2.27727 | 43 | 36 |
| 2.77259 | | 1.38629 | | 1.38629 | 44 | 36 |
| 2.6174 | 1.38629 | | 1.2311 | 45 | 36 | |
| 2.7213 | 1.38629 | | 1.335 | 46 | 36 | |
| ND<0 | 1.38629 | | -1.3862946 | 37 | | |
| 5.43808 | | 1.38629 | | 4.05178 | 47 | 37 |
| 4.35671 | | 1.38629 | | 2.97041 | 48 | 37 |
| 4.86753 | | 1.38629 | | 3.48124 | 49 | 37 |
| 4.07754 | | 1.38629 | | 2.69124 | 50 | 37 |
| 3.99268 | | 1.38629 | | 2.60639 | 51 | 37 |
| 3.20275 | | 1.38629 | | 1.81645 | 52 | 37 |
| 3.60005 | | 1.38629 | | 2.21375 | 53 | 37 |
| 2.94444 | | 1.38629 | | 1.55814 | 54 | 37 |
| 3.50255 | | 1.38629 | | 2.11626 | 55 | 37 |
| 3.08191 | | 1.38629 | | 1.69562 | 56 | 37 |
| 2.31254 | | 1.38629 | | 0.926241 | 57 | 37 |
| 2.48491 | | 1.38629 | | 1.09861 | 58 | 37 |
| 2.30259 | | 1.38629 | | 0.916291 | 59 | 37 |
| 2.30259 | | 1.38629 | | 0.916291 | 60 | 37 |
| | | | | | | |
| 3.82864 | | ND<0 | 3.82864 | 61 | 37 | |
| 3.8712 | ND<0 | 3.8712 | 62 | 37 | | |
| 3.21888 | | ND<0 | 3.21888 | 63 | 37 | |
| 3.66356 | | ND<0 | 3.66356 | 64 | 37 | |
| 2.77259 | | ND<0 | 2.77259 | 65 | 37 | |
| 2.6174 | ND<0 | 2.6174 | 66 | 37 | | |
| 2.7213 | ND<0 | 2.7213 | 67 | 37 | | |
| ND<0 | ND<0 | 0 | 67 | 37 | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 5.43808 | | ND<0 | 5.43808 | 68 | 37 | | |
| 4.35671 | | ND<0 | 4.35671 | 69 | 37 | | |
| 4.86753 | | ND<0 | 4.86753 | 70 | 37 | | |
| 4.07754 | | ND<0 | 4.07754 | 71 | 37 | | |
| 3.99268 | | ND<0 | 3.99268 | 72 | 37 | | |
| 3.20275 | | ND<0 | 3.20275 | 73 | 37 | | |
| 3.60005 | | ND<0 | 3.60005 | 74 | 37 | | |
| 2.94444 | | ND<0 | 2.94444 | 75 | 37 | | |
| 3.50255 | | ND<0 | 3.50255 | 76 | 37 | | |
| 3.08191 | | ND<0 | 3.08191 | 77 | 37 | | |
| 2.31254 | | ND<0 | 2.31254 | 78 | 37 | | |
| 2.48491 | | ND<0 | 2.48491 | 79 | 37 | | |
| 2.30259 | | ND<0 | 2.30259 | 80 | 37 | | |
| 2.30259 | | ND<0 | 2.30259 | 81 | 37 | | |
| | | | | | | | |
| 3.8712 | 3.82864 | | 0.0425596 | 82 | 37 | | |
| 3.21888 | | 3.82864 | -0.609766 | 82 | 38 | | |
| 3.66356 | | 3.82864 | -0.1650882 | 39 | | | |
| 2.77259 | | 3.82864 | -1.0560582 | 40 | | | |
| 2.6174 | 3.82864 | | -1.2112582 | 41 | | | |
| 2.7213 | 3.82864 | | -1.1073582 | 42 | | | |
| ND<0 | 3.82864 | | -3.8286482 | 43 | | | |
| 5.43808 | | 3.82864 | 1.60944 | 83 | 43 | | |
| 4.35671 | | 3.82864 | 0.528067 | 84 | 43 | | |
| 4.86753 | | 3.82864 | 1.03889 | 85 | 43 | | |
| 4.07754 | | 3.82864 | 0.248896 | 86 | 43 | | |
| 3.99268 | | 3.82864 | 0.16404 | 87 | 43 | | |
| 3.20275 | | 3.82864 | -0.625895 | 87 | 44 | | |
| 3.60005 | | 3.82864 | -0.228593 | 87 | 45 | | |
| 2.94444 | | 3.82864 | -0.884202 | 87 | 46 | | |
| 3.50255 | | 3.82864 | -0.326092 | 87 | 47 | | |
| 3.08191 | | 3.82864 | -0.746731 | 87 | 48 | | |
| 2.31254 | | 3.82864 | -1.5161187 | 49 | | | |
| 2.48491 | | 3.82864 | -1.3437387 | 50 | | | |
| 2.30259 | | 3.82864 | -1.5260687 | 51 | | | |
| 2.30259 | | 3.82864 | -1.5260687 | 52 | | | |
| | | | | | | | |
| 3.21888 | | 3.8712 | -0.652325 | 87 | 53 | | |
| 3.66356 | | 3.8712 | -0.207639 | 87 | 54 | | |
| 2.77259 | | 3.8712 | -1.0986187 | 55 | | | |
| 2.6174 | 3.8712 | -1.2538187 | 56 | | | | |
| 2.7213 | 3.8712 | -1.1499187 | 57 | | | | |
| ND<0 | 3.8712 | -3.8712 | 87 | 58 | | | |
| 5.43808 | | 3.8712 | 1.56688 | 88 | 58 | | |
| 4.35671 | | 3.8712 | 0.485508 | 89 | 58 | | |
| 4.86753 | | 3.8712 | 0.996333 | 90 | 58 | | |
| 4.07754 | | 3.8712 | 0.206336 | 91 | 58 | | |
| 3.99268 | | 3.8712 | 0.12148 | 92 | 58 | | |
| 3.20275 | | 3.8712 | -0.668455 | 92 | 59 | | |
| 3.60005 | | 3.8712 | -0.271153 | 92 | 60 | | |
| 2.94444 | | 3.8712 | -0.926762 | 92 | 61 | | |
| 3.50255 | | 3.8712 | -0.368651 | 92 | 62 | | |
| 3.08191 | | 3.8712 | -0.789291 | 92 | 63 | | |
| 2.31254 | | 3.8712 | -1.5586792 | 64 | | | |
| 2.48491 | | 3.8712 | -1.3862992 | 65 | | | |
| 2.30259 | | 3.8712 | -1.5686292 | 66 | | | |
| 2.30259 | | 3.8712 | -1.5686292 | 67 | | | |
| | | | | | | | |
| 3.66356 | | 3.21888 | 0.444686 | 93 | 67 | | |
| 2.77259 | | 3.21888 | -0.446287 | 93 | 68 | | |
| 2.6174 | 3.21888 | | -0.6014893 | 69 | | | |
| 2.7213 | 3.21888 | | -0.4975893 | 70 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | 3.21888 | | -3.2188893 | 71 | | |
| 5.43808 | | 3.21888 | 2.2192 | 94 | 71 | |
| 4.35671 | | 3.21888 | 1.13783 | 95 | 71 | |
| 4.86753 | | 3.21888 | 1.64866 | 96 | 71 | |
| 4.07754 | | 3.21888 | 0.858662 | | 97 | 71 |
| 3.99268 | | 3.21888 | 0.773805 | | 98 | 71 |
| 3.20275 | | 3.21888 | -0.0161294 | | 98 | 72 |
| 3.60005 | | 3.21888 | 0.381172 | | 99 | 72 |
| 2.94444 | | 3.21888 | -0.274437 | | 99 | 73 |
| 3.50255 | | 3.21888 | 0.283674 | | 100 | 73 |
| 3.08191 | | 3.21888 | -0.136966 | | 100 | 74 |
| 2.31254 | | 3.21888 | -0.90634 | 100 | 75 | |
| 2.48491 | | 3.21888 | -0.733969 | | 100 | 76 |
| 2.30259 | | 3.21888 | -0.916291 | | 100 | 77 |
| 2.30259 | | 3.21888 | -0.916291 | | 100 | 78 |
| | | | | | | |
| 2.77259 | | 3.66356 | -0.890973 | | 100 | 79 |
| 2.6174 | 3.66356 | | -1.04617 | 100 | 80 | |
| 2.7213 | 3.66356 | | -0.942266 | | 100 | 81 |
| ND<0 | 3.66356 | | -3.66356 | 100 | 82 | |
| 5.43808 | | 3.66356 | 1.77452 | 101 | 82 | |
| 4.35671 | | 3.66356 | 0.693147 | | 102 | 82 |
| 4.86753 | | 3.66356 | 1.20397 | 103 | 82 | |
| 4.07754 | | 3.66356 | 0.413976 | | 104 | 82 |
| 3.99268 | | 3.66356 | 0.329119 | | 105 | 82 |
| 3.20275 | | 3.66356 | -0.460815 | | 105 | 83 |
| 3.60005 | | 3.66356 | -0.0635134 | | 105 | 84 |
| 2.94444 | | 3.66356 | -0.719123 | | 105 | 85 |
| 3.50255 | | 3.66356 | -0.161012 | | 105 | 86 |
| 3.08191 | | 3.66356 | -0.581652 | | 105 | 87 |
| 2.31254 | | 3.66356 | -1.35103 | 105 | 88 | |
| 2.48491 | | 3.66356 | -1.17865 | 105 | 89 | |
| 2.30259 | | 3.66356 | -1.36098 | 105 | 90 | |
| 2.30259 | | 3.66356 | -1.36098 | 105 | 91 | |
| | | | | | | |
| 2.6174 | 2.77259 | | -0.155193 | | 105 | 92 |
| 2.7213 | 2.77259 | | -0.0512933 | | 105 | 93 |
| ND<0 | 2.77259 | | -2.77259 | 105 | 94 | |
| 5.43808 | | 2.77259 | 2.66549 | 106 | 94 | |
| 4.35671 | | 2.77259 | 1.58412 | 107 | 94 | |
| 4.86753 | | 2.77259 | 2.09495 | 108 | 94 | |
| 4.07754 | | 2.77259 | 1.30495 | 109 | 94 | |
| 3.99268 | | 2.77259 | 1.22009 | 110 | 94 | |
| 3.20275 | | 2.77259 | 0.430158 | | 111 | 94 |
| 3.60005 | | 2.77259 | 0.82746 | 112 | 94 | |
| 2.94444 | | 2.77259 | 0.17185 | 113 | 94 | |
| 3.50255 | | 2.77259 | 0.729961 | | 114 | 94 |
| 3.08191 | | 2.77259 | 0.309321 | | 115 | 94 |
| 2.31254 | | 2.77259 | -0.460053 | | 115 | 95 |
| 2.48491 | | 2.77259 | -0.287682 | | 115 | 96 |
| 2.30259 | | 2.77259 | -0.470004 | | 115 | 97 |
| 2.30259 | | 2.77259 | -0.470004 | | 115 | 98 |
| | | | | | | |
| 2.7213 | 2.6174 | 0.1039 | 116 | 98 | | |
| ND<0 | 2.6174 | -2.6174 | 116 | 99 | | |
| 5.43808 | | 2.6174 | 2.82068 | 117 | 99 | |
| 4.35671 | | 2.6174 | 1.73931 | 118 | 99 | |
| 4.86753 | | 2.6174 | 2.25014 | 119 | 99 | |
| 4.07754 | | 2.6174 | 1.46014 | 120 | 99 | |
| 3.99268 | | 2.6174 | 1.37529 | 121 | 99 | |
| 3.20275 | | 2.6174 | 0.585351 | | 122 | 99 |
| 3.60005 | | 2.6174 | 0.982652 | | 123 | 99 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2.94444 | | 2.6174 | 0.327043 | | 124 | 99 |
| 3.50255 | | 2.6174 | 0.885154 | | 125 | 99 |
| 3.08191 | | 2.6174 | 0.464514 | | 126 | 99 |
| 2.31254 | | 2.6174 | -0.30486 | 126 | 100 | |
| 2.48491 | | 2.6174 | -0.132489 | | 126 | 101 |
| 2.30259 | | 2.6174 | -0.314811 | | 126 | 102 |
| 2.30259 | | 2.6174 | -0.314811 | | 126 | 103 |
| | | | | | | |
| ND<0 | 2.7213 | -2.7213 | 126 | 104 | | |
| 5.43808 | | 2.7213 | 2.71678 | 127 | 104 | |
| 4.35671 | | 2.7213 | 1.63541 | 128 | 104 | |
| 4.86753 | | 2.7213 | 2.14624 | 129 | 104 | |
| 4.07754 | | 2.7213 | 1.35624 | 130 | 104 | |
| 3.99268 | | 2.7213 | 1.27139 | 131 | 104 | |
| 3.20275 | | 2.7213 | 0.481451 | | 132 | 104 |
| 3.60005 | | 2.7213 | 0.878753 | | 133 | 104 |
| 2.94444 | | 2.7213 | 0.223144 | | 134 | 104 |
| 3.50255 | | 2.7213 | 0.781254 | | 135 | 104 |
| 3.08191 | | 2.7213 | 0.360615 | | 136 | 104 |
| 2.31254 | | 2.7213 | -0.40876 | 136 | 105 | |
| 2.48491 | | 2.7213 | -0.236389 | | 136 | 106 |
| 2.30259 | | 2.7213 | -0.41871 | 136 | 107 | |
| 2.30259 | | 2.7213 | -0.41871 | 136 | 108 | |
| | | | | | | |
| 5.43808 | | ND<0 | 5.43808 | 137 | 108 | |
| 4.35671 | | ND<0 | 4.35671 | 138 | 108 | |
| 4.86753 | | ND<0 | 4.86753 | 139 | 108 | |
| 4.07754 | | ND<0 | 4.07754 | 140 | 108 | |
| 3.99268 | | ND<0 | 3.99268 | 141 | 108 | |
| 3.20275 | | ND<0 | 3.20275 | 142 | 108 | |
| 3.60005 | | ND<0 | 3.60005 | 143 | 108 | |
| 2.94444 | | ND<0 | 2.94444 | 144 | 108 | |
| 3.50255 | | ND<0 | 3.50255 | 145 | 108 | |
| 3.08191 | | ND<0 | 3.08191 | 146 | 108 | |
| 2.31254 | | ND<0 | 2.31254 | 147 | 108 | |
| 2.48491 | | ND<0 | 2.48491 | 148 | 108 | |
| 2.30259 | | ND<0 | 2.30259 | 149 | 108 | |
| 2.30259 | | ND<0 | 2.30259 | 150 | 108 | |
| | | | | | | |
| 4.35671 | | 5.43808 | | -1.08137 | 150 | 109 |
| 4.86753 | | 5.43808 | | -0.570545 | | 150 | 110 |
| 4.07754 | | 5.43808 | | -1.36054 | 150 | 111 |
| 3.99268 | | 5.43808 | | -1.4454 | 150 | 112 |
| 3.20275 | | 5.43808 | | -2.23533 | 150 | 113 |
| 3.60005 | | 5.43808 | | -1.83803 | 150 | 114 |
| 2.94444 | | 5.43808 | | -2.49364 | 150 | 115 |
| 3.50255 | | 5.43808 | | -1.93553 | 150 | 116 |
| 3.08191 | | 5.43808 | | -2.35617 | 150 | 117 |
| 2.31254 | | 5.43808 | | -3.12554 | 150 | 118 |
| 2.48491 | | 5.43808 | | -2.95317 | 150 | 119 |
| 2.30259 | | 5.43808 | | -3.13549 | 150 | 120 |
| 2.30259 | | 5.43808 | | -3.13549 | 150 | 121 |
| | | | | | | |
| 4.86753 | | 4.35671 | | 0.510826 | | 151 | 121 |
| 4.07754 | | 4.35671 | | -0.279171 | | 151 | 122 |
| 3.99268 | | 4.35671 | | -0.364028 | | 151 | 123 |
| 3.20275 | | 4.35671 | | -1.15396 | 151 | 124 |
| 3.60005 | | 4.35671 | | -0.756661 | | 151 | 125 |
| 2.94444 | | 4.35671 | | -1.41227 | 151 | 126 |
| 3.50255 | | 4.35671 | | -0.854159 | | 151 | 127 |
| 3.08191 | | 4.35671 | | -1.2748 | 151 | 128 |
| 2.31254 | | 4.35671 | | -2.04417 | 151 | 129 |

| | | | | |
|---|---|---|---|---|
| 2.48491 | 4.35671 | -1.8718 151 | 130 | |
| 2.30259 | 4.35671 | -2.05412151 | 131 | |
| 2.30259 | 4.35671 | -2.05412151 | 132 | |
| | | | | |
| 4.07754 | 4.86753 | -0.789997 | 151 | 133 |
| 3.99268 | 4.86753 | -0.874854 | 151 | 134 |
| 3.20275 | 4.86753 | -1.66479151 | 135 | |
| 3.60005 | 4.86753 | -1.26749151 | 136 | |
| 2.94444 | 4.86753 | -1.9231 151 | 137 | |
| 3.50255 | 4.86753 | -1.36498151 | 138 | |
| 3.08191 | 4.86753 | -1.78562151 | 139 | |
| 2.31254 | 4.86753 | -2.555 151 | 140 | |
| 2.48491 | 4.86753 | -2.38263151 | 141 | |
| 2.30259 | 4.86753 | -2.56495151 | 142 | |
| 2.30259 | 4.86753 | -2.56495151 | 143 | |
| | | | | |
| 3.99268 | 4.07754 | -0.0848565 | 151 | 144 |
| 3.20275 | 4.07754 | -0.874791 | 151 | 145 |
| 3.60005 | 4.07754 | -0.477489 | 151 | 146 |
| 2.94444 | 4.07754 | -1.1331 151 | 147 | |
| 3.50255 | 4.07754 | -0.574988 | 151 | 148 |
| 3.08191 | 4.07754 | -0.995627 | 151 | 149 |
| 2.31254 | 4.07754 | -1.765 151 | 150 | |
| 2.48491 | 4.07754 | -1.59263151 | 151 | |
| 2.30259 | 4.07754 | -1.77495151 | 152 | |
| 2.30259 | 4.07754 | -1.77495151 | 153 | |
| | | | | |
| 3.20275 | 3.99268 | -0.789934 | 151 | 154 |
| 3.60005 | 3.99268 | -0.392633 | 151 | 155 |
| 2.94444 | 3.99268 | -1.04824151 | 156 | |
| 3.50255 | 3.99268 | -0.490131 | 151 | 157 |
| 3.08191 | 3.99268 | -0.910771 | 151 | 158 |
| 2.31254 | 3.99268 | -1.68015151 | 159 | |
| 2.48491 | 3.99268 | -1.50777151 | 160 | |
| 2.30259 | 3.99268 | -1.6901 151 | 161 | |
| 2.30259 | 3.99268 | -1.6901 151 | 162 | |
| | | | | |
| 3.60005 | 3.20275 | 0.397302 | 152 | 162 |
| 2.94444 | 3.20275 | -0.258307 | 152 | 163 |
| 3.50255 | 3.20275 | 0.299803 | 153 | 163 |
| 3.08191 | 3.20275 | -0.120836 | 153 | 164 |
| 2.31254 | 3.20275 | -0.890211 | 153 | 165 |
| 2.48491 | 3.20275 | -0.71784153 | 166 | |
| 2.30259 | 3.20275 | -0.900161 | 153 | 167 |
| 2.30259 | 3.20275 | -0.900161 | 153 | 168 |
| | | | | |
| 2.94444 | 3.60005 | -0.655609 | 153 | 169 |
| 3.50255 | 3.60005 | -0.0974984 | 153 | 170 |
| 3.08191 | 3.60005 | -0.518138 | 153 | 171 |
| 2.31254 | 3.60005 | -1.28751153 | 172 | |
| 2.48491 | 3.60005 | -1.11514153 | 173 | |
| 2.30259 | 3.60005 | -1.29746153 | 174 | |
| 2.30259 | 3.60005 | -1.29746153 | 175 | |
| | | | | |
| 3.50255 | 2.94444 | 0.558111 | 154 | 175 |
| 3.08191 | 2.94444 | 0.137471 | 155 | 175 |
| 2.31254 | 2.94444 | -0.631904 | 155 | 176 |
| 2.48491 | 2.94444 | -0.459532 | 155 | 177 |
| 2.30259 | 2.94444 | -0.641854 | 155 | 178 |
| 2.30259 | 2.94444 | -0.641854 | 155 | 179 |

| | | | | |
|---|---|---|---|---|
| 3.08191 | 3.50255 | -0.42064155 | 180 | |
| 2.31254 | 3.50255 | -1.19001155 | 181 | |
| 2.48491 | 3.50255 | -1.01764155 | 182 | |
| 2.30259 | 3.50255 | -1.19996155 | 183 | |
| 2.30259 | 3.50255 | -1.19996155 | 184 | |
| | | | | |
| 2.31254 | 3.08191 | -0.769375 | 155 | 185 |
| 2.48491 | 3.08191 | -0.597003 | 155 | 186 |
| 2.30259 | 3.08191 | -0.779325 | 155 | 187 |
| 2.30259 | 3.08191 | -0.779325 | 155 | 188 |
| | | | | |
| 2.48491 | 2.31254 | 0.172371 | 156 | 188 |
| 2.30259 | 2.31254 | -0.00995033 | 156 | 189 |
| 2.30259 | 2.31254 | -0.00995033 | 156 | 190 |
| | | | | |
| 2.30259 | 2.48491 | -0.182322 | 156 | 191 |
| 2.30259 | 2.48491 | -0.182322 | 156 | 192 |
| | | | | |
| 2.30259 | 2.30259 | 0 | 156 | 192 |

S Statistic = 156 - 192 = -36

| Tied Group | Value | Members |
|---|---|---|
| 1 | 3.82864 | 2 |
| 2 | 0 | 2 |
| 3 | 2.30259 | 2 |

| Time Period | | Observations |
|---|---|---|
| 7/20/1995 | | 1 |
| 8/24/1995 | | 1 |
| 9/28/1995 | | 1 |
| 10/26/1995 | | 1 |
| 11/19/1996 | | 1 |
| 12/19/1996 | | 1 |
| 3/24/1997 | | 1 |
| 9/24/1997 | | 1 |
| 4/7/1998 | 1 | |
| 9/23/1998 | | 1 |
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 1 |

There are 0 time periods with multiple data

A = 54
B = 0

C = 0
D = 0
E = 6
F = 0
a = 41418
b = 157950
c = 1404
Group Variance = 2298
Z-Score = -0.730118
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-0.730118| <= 1.97737 indicating no evidence of a trend

# Mann-Kendall Trend Analysis

## Parameter: Vinyl Chloride

## Location: MW-10

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | | Positives | Negatives |
|---|---|---|---|---|---|
| 1.09861 | | ND<0 | 1.09861 | 1 | 0 |
| 1.38629 | | ND<0 | 1.38629 | 2 | 0 |
| 1.60944 | | ND<0 | 1.60944 | 3 | 0 |
| ND<0 | ND<0 | 0 | 3 | 0 | |
| ND<0 | ND<0 | 0 | 3 | 0 | |
| ND<0 | ND<0 | 0 | 3 | 0 | |
| ND<0 | ND<0 | 0 | 3 | 0 | |
| ND<0 | ND<0 | 0 | 3 | 0 | |
| ND<0 | ND<0 | 0 | 3 | 0 | |
| 1.28093 | | ND<0 | 1.28093 | 4 | 0 |
| ND<0 | ND<0 | 0 | 4 | 0 | |
| ND<0 | ND<0 | 0 | 4 | 0 | |
| ND<0 | ND<0 | 0 | 4 | 0 | |
| ND<0 | ND<0 | 0 | 4 | 0 | |
| ND<0 | ND<0 | 0 | 4 | 0 | |
| 0.647103 J | | ND<0 | 0.647103 | 5 | 0 |
| 0.908259 | | ND<0 | 0.908259 | 6 | 0 |
| 1.02962 | | ND<0 | 1.02962 | 7 | 0 |
| 0.530628 J | | ND<0 | 0.530628 | 8 | 0 |
| ND<0 | ND<0 | 0 | 8 | 0 | |
| 0.951658 | | ND<0 | 0.951658 | 9 | 0 |
| 0.500775 J | | ND<0 | 0.500775 | 10 | 0 |
| 0.457425 J | | ND<0 | 0.457425 | 11 | 0 |
| 0.262364 | | ND<0 | 0.262364 | 12 | 0 |
| 0.405465 | | ND<0 | 0.405465 | 13 | 0 |
| ND<-2.40795 | | ND<0 | -2.4079513 | 1 | |
| 0.470004 | | ND<0 | 0.470004 | 14 | 1 |
| | | | | | |
| 1.38629 | | 1.09861 | 0.287682 | 15 | 1 |
| 1.60944 | | 1.09861 | 0.510826 | 16 | 1 |
| ND<0 | 1.09861 | -1.0986116 | | 2 | |
| ND<0 | 1.09861 | -1.0986116 | | 3 | |
| ND<0 | 1.09861 | -1.0986116 | | 4 | |
| ND<0 | 1.09861 | -1.0986116 | | 5 | |
| ND<0 | 1.09861 | -1.0986116 | | 6 | |
| ND<0 | 1.09861 | -1.0986116 | | 7 | |
| 1.28093 | | 1.09861 | 0.182322 | 17 | 7 |
| ND<0 | 1.09861 | -1.0986117 | | 8 | |
| ND<0 | 1.09861 | -1.0986117 | | 9 | |
| ND<0 | 1.09861 | -1.0986117 | | 10 | |
| ND<0 | 1.09861 | -1.0986117 | | 11 | |
| ND<0 | 1.09861 | -1.0986117 | | 12 | |
| 0.647103 J | | 1.09861 | -0.451509 | 17 | 13 |
| 0.908259 | | 1.09861 | -0.190354 | 17 | 14 |
| 1.02962 | | 1.09861 | -0.0689929 | 17 | 15 |
| 0.530628 J | | 1.09861 | -0.567984 | 17 | 16 |
| ND<0 | 1.09861 | -1.0986117 | | 17 | |
| 0.951658 | | 1.09861 | -0.146954 | 17 | 18 |

| | | | | |
|---|---|---|---|---|
| 0.500775 J | 1.09861 | -0.597837 | 17 | 19 |
| 0.457425 J | 1.09861 | -0.641187 | 17 | 20 |
| 0.262364 | 1.09861 | -0.836248 | 17 | 21 |
| 0.405465 | 1.09861 | -0.693147 | 17 | 22 |
| ND<-2.40795 | 1.09861 | -3.5065617 | 23 | |
| 0.470004 | 1.09861 | -0.628609 | 17 | 24 |

| | | | | |
|---|---|---|---|---|
| 1.60944 | 1.38629 | 0.223144 | 18 | 24 |
| ND<0 | 1.38629 | -1.3862918 | 25 | |
| ND<0 | 1.38629 | -1.3862918 | 26 | |
| ND<0 | 1.38629 | -1.3862918 | 27 | |
| ND<0 | 1.38629 | -1.3862918 | 28 | |
| ND<0 | 1.38629 | -1.3862918 | 29 | |
| ND<0 | 1.38629 | -1.3862918 | 30 | |
| 1.28093 | 1.38629 | -0.105361 | 18 | 31 |
| ND<0 | 1.38629 | -1.3862918 | 32 | |
| ND<0 | 1.38629 | -1.3862918 | 33 | |
| ND<0 | 1.38629 | -1.3862918 | 34 | |
| ND<0 | 1.38629 | -1.3862918 | 35 | |
| ND<0 | 1.38629 | -1.3862918 | 36 | |
| 0.647103 J | 1.38629 | -0.739191 | 18 | 37 |
| 0.908259 | 1.38629 | -0.478036 | 18 | 38 |
| 1.02962 | 1.38629 | -0.356675 | 18 | 39 |
| 0.530628 J | 1.38629 | -0.855666 | 18 | 40 |
| ND<0 | 1.38629 | -1.3862918 | 41 | |
| 0.951658 | 1.38629 | -0.434636 | 18 | 42 |
| 0.500775 J | 1.38629 | -0.885519 | 18 | 43 |
| 0.457425 J | 1.38629 | -0.9288718 | 44 | |
| 0.262364 | 1.38629 | -1.1239318 | 45 | |
| 0.405465 | 1.38629 | -0.980829 | 18 | 46 |
| ND<-2.40795 | 1.38629 | -3.7942418 | 47 | |
| 0.470004 | 1.38629 | -0.916291 | 18 | 48 |

| | | | | |
|---|---|---|---|---|
| ND<0 | 1.60944 | -1.6094418 | 49 | |
| ND<0 | 1.60944 | -1.6094418 | 50 | |
| ND<0 | 1.60944 | -1.6094418 | 51 | |
| ND<0 | 1.60944 | -1.6094418 | 52 | |
| ND<0 | 1.60944 | -1.6094418 | 53 | |
| ND<0 | 1.60944 | -1.6094418 | 54 | |
| 1.28093 | 1.60944 | -0.328504 | 18 | 55 |
| ND<0 | 1.60944 | -1.6094418 | 56 | |
| ND<0 | 1.60944 | -1.6094418 | 57 | |
| ND<0 | 1.60944 | -1.6094418 | 58 | |
| ND<0 | 1.60944 | -1.6094418 | 59 | |
| ND<0 | 1.60944 | -1.6094418 | 60 | |
| 0.647103 J | 1.60944 | -0.962335 | 18 | 61 |
| 0.908259 | 1.60944 | -0.701179 | 18 | 62 |
| 1.02962 | 1.60944 | -0.579818 | 18 | 63 |
| 0.530628 J | 1.60944 | -1.0788118 | 64 | |
| ND<0 | 1.60944 | -1.6094418 | 65 | |
| 0.951658 | 1.60944 | -0.6577818 | 66 | |
| 0.500775 J | 1.60944 | -1.1086618 | 67 | |
| 0.457425 J | 1.60944 | -1.1520118 | 68 | |
| 0.262364 | 1.60944 | -1.3470718 | 69 | |
| 0.405465 | 1.60944 | -1.2039718 | 70 | |
| ND<-2.40795 | 1.60944 | -4.0173818 | 71 | |
| 0.470004 | 1.60944 | -1.1394318 | 72 | |

| | | | | |
|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 18 | 72 |
| ND<0 | ND<0 | 0 | 18 | 72 |
| ND<0 | ND<0 | 0 | 18 | 72 |
| ND<0 | ND<0 | 0 | 18 | 72 |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 18 | 72 | | |
| 1.28093 | | ND<0 | 1.28093 | 19 | 72 | |
| ND<0 | ND<0 | 0 | 19 | 72 | | |
| ND<0 | ND<0 | 0 | 19 | 72 | | |
| ND<0 | ND<0 | 0 | 19 | 72 | | |
| ND<0 | ND<0 | 0 | 19 | 72 | | |
| ND<0 | ND<0 | 0 | 19 | 72 | | |
| 0.647103 J | | ND<0 | 0.647103 | | 20 | 72 |
| 0.908259 | | ND<0 | 0.908259 | | 21 | 72 |
| 1.02962 | | ND<0 | 1.02962 | 22 | 72 | |
| 0.530628 J | | ND<0 | 0.530628 | | 23 | 72 |
| ND<0 | ND<0 | 0 | 23 | 72 | | |
| 0.951658 | | ND<0 | 0.951658 | | 24 | 72 |
| 0.500775 J | | ND<0 | 0.500775 | | 25 | 72 |
| 0.457425 J | | ND<0 | 0.457425 | | 26 | 72 |
| 0.262364 | | ND<0 | 0.262364 | | 27 | 72 |
| 0.405465 | | ND<0 | 0.405465 | | 28 | 72 |
| ND<-2.40795 | | ND<0 | -2.4079528 | | 73 | |
| 0.470004 | | ND<0 | 0.470004 | | 29 | 73 |
| | | | | | | |
| ND<0 | ND<0 | 0 | 29 | 73 | | |
| ND<0 | ND<0 | 0 | 29 | 73 | | |
| ND<0 | ND<0 | 0 | 29 | 73 | | |
| ND<0 | ND<0 | 0 | 29 | 73 | | |
| 1.28093 | | ND<0 | 1.28093 | 30 | 73 | |
| ND<0 | ND<0 | 0 | 30 | 73 | | |
| ND<0 | ND<0 | 0 | 30 | 73 | | |
| ND<0 | ND<0 | 0 | 30 | 73 | | |
| ND<0 | ND<0 | 0 | 30 | 73 | | |
| ND<0 | ND<0 | 0 | 30 | 73 | | |
| 0.647103 J | | ND<0 | 0.647103 | | 31 | 73 |
| 0.908259 | | ND<0 | 0.908259 | | 32 | 73 |
| 1.02962 | | ND<0 | 1.02962 | 33 | 73 | |
| 0.530628 J | | ND<0 | 0.530628 | | 34 | 73 |
| ND<0 | ND<0 | 0 | 34 | 73 | | |
| 0.951658 | | ND<0 | 0.951658 | | 35 | 73 |
| 0.500775 J | | ND<0 | 0.500775 | | 36 | 73 |
| 0.457425 J | | ND<0 | 0.457425 | | 37 | 73 |
| 0.262364 | | ND<0 | 0.262364 | | 38 | 73 |
| 0.405465 | | ND<0 | 0.405465 | | 39 | 73 |
| ND<-2.40795 | | ND<0 | -2.4079539 | | 74 | |
| 0.470004 | | ND<0 | 0.470004 | | 40 | 74 |
| | | | | | | |
| ND<0 | ND<0 | 0 | 40 | 74 | | |
| ND<0 | ND<0 | 0 | 40 | 74 | | |
| ND<0 | ND<0 | 0 | 40 | 74 | | |
| 1.28093 | | ND<0 | 1.28093 | 41 | 74 | |
| ND<0 | ND<0 | 0 | 41 | 74 | | |
| ND<0 | ND<0 | 0 | 41 | 74 | | |
| ND<0 | ND<0 | 0 | 41 | 74 | | |
| ND<0 | ND<0 | 0 | 41 | 74 | | |
| ND<0 | ND<0 | 0 | 41 | 74 | | |
| 0.647103 J | | ND<0 | 0.647103 | | 42 | 74 |
| 0.908259 | | ND<0 | 0.908259 | | 43 | 74 |
| 1.02962 | | ND<0 | 1.02962 | 44 | 74 | |
| 0.530628 J | | ND<0 | 0.530628 | | 45 | 74 |
| ND<0 | ND<0 | 0 | 45 | 74 | | |
| 0.951658 | | ND<0 | 0.951658 | | 46 | 74 |
| 0.500775 J | | ND<0 | 0.500775 | | 47 | 74 |
| 0.457425 J | | ND<0 | 0.457425 | | 48 | 74 |
| 0.262364 | | ND<0 | 0.262364 | | 49 | 74 |
| 0.405465 | | ND<0 | 0.405465 | | 50 | 74 |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<-2.40795 | | ND<0 | -2.4079 | 50 | 75 | |
| 0.470004 | | ND<0 | 0.470004 | | 51 | 75 |
| | | | | | | |
| ND<0 | ND<0 | 0 | 51 | 75 | | |
| ND<0 | ND<0 | 0 | 51 | 75 | | |
| 1.28093 | | ND<0 | 1.28093 | 52 | 75 | |
| ND<0 | ND<0 | 0 | 52 | 75 | | |
| ND<0 | ND<0 | 0 | 52 | 75 | | |
| ND<0 | ND<0 | 0 | 52 | 75 | | |
| ND<0 | ND<0 | 0 | 52 | 75 | | |
| ND<0 | ND<0 | 0 | 52 | 75 | | |
| 0.647103 J | | ND<0 | 0.647103 | | 53 | 75 |
| 0.908259 | | ND<0 | 0.908259 | | 54 | 75 |
| 1.02962 | | ND<0 | 1.02962 | 55 | 75 | |
| 0.530628 J | | ND<0 | 0.530628 | | 56 | 75 |
| ND<0 | ND<0 | 0 | 56 | 75 | | |
| 0.951658 | | ND<0 | 0.951658 | | 57 | 75 |
| 0.500775 J | | ND<0 | 0.500775 | | 58 | 75 |
| 0.457425 J | | ND<0 | 0.457425 | | 59 | 75 |
| 0.262364 | | ND<0 | 0.262364 | | 60 | 75 |
| 0.405465 | | ND<0 | 0.405465 | | 61 | 75 |
| ND<-2.40795 | | ND<0 | -2.4079 | 61 | 76 | |
| 0.470004 | | ND<0 | 0.470004 | | 62 | 76 |
| | | | | | | |
| ND<0 | ND<0 | 0 | 62 | 76 | | |
| 1.28093 | | ND<0 | 1.28093 | 63 | 76 | |
| ND<0 | ND<0 | 0 | 63 | 76 | | |
| ND<0 | ND<0 | 0 | 63 | 76 | | |
| ND<0 | ND<0 | 0 | 63 | 76 | | |
| ND<0 | ND<0 | 0 | 63 | 76 | | |
| ND<0 | ND<0 | 0 | 63 | 76 | | |
| 0.647103 J | | ND<0 | 0.647103 | | 64 | 76 |
| 0.908259 | | ND<0 | 0.908259 | | 65 | 76 |
| 1.02962 | | ND<0 | 1.02962 | 66 | 76 | |
| 0.530628 J | | ND<0 | 0.530628 | | 67 | 76 |
| ND<0 | ND<0 | 0 | 67 | 76 | | |
| 0.951658 | | ND<0 | 0.951658 | | 68 | 76 |
| 0.500775 J | | ND<0 | 0.500775 | | 69 | 76 |
| 0.457425 J | | ND<0 | 0.457425 | | 70 | 76 |
| 0.262364 | | ND<0 | 0.262364 | | 71 | 76 |
| 0.405465 | | ND<0 | 0.405465 | | 72 | 76 |
| ND<-2.40795 | | ND<0 | -2.4079 | 72 | 77 | |
| 0.470004 | | ND<0 | 0.470004 | | 73 | 77 |
| | | | | | | |
| 1.28093 | | ND<0 | 1.28093 | 74 | 77 | |
| ND<0 | ND<0 | 0 | 74 | 77 | | |
| ND<0 | ND<0 | 0 | 74 | 77 | | |
| ND<0 | ND<0 | 0 | 74 | 77 | | |
| ND<0 | ND<0 | 0 | 74 | 77 | | |
| ND<0 | ND<0 | 0 | 74 | 77 | | |
| 0.647103 J | | ND<0 | 0.647103 | | 75 | 77 |
| 0.908259 | | ND<0 | 0.908259 | | 76 | 77 |
| 1.02962 | | ND<0 | 1.02962 | 77 | 77 | |
| 0.530628 J | | ND<0 | 0.530628 | | 78 | 77 |
| ND<0 | ND<0 | 0 | 78 | 77 | | |
| 0.951658 | | ND<0 | 0.951658 | | 79 | 77 |
| 0.500775 J | | ND<0 | 0.500775 | | 80 | 77 |
| 0.457425 J | | ND<0 | 0.457425 | | 81 | 77 |
| 0.262364 | | ND<0 | 0.262364 | | 82 | 77 |
| 0.405465 | | ND<0 | 0.405465 | | 83 | 77 |
| ND<-2.40795 | | ND<0 | -2.4079 | 83 | 78 | |
| 0.470004 | | ND<0 | 0.470004 | | 84 | 78 |

| | | | | | |
|---|---|---|---|---|---|
| ND<0 | 1.28093 | -1.2809384 | 79 | | |
| ND<0 | 1.28093 | -1.2809384 | 80 | | |
| ND<0 | 1.28093 | -1.2809384 | 81 | | |
| ND<0 | 1.28093 | -1.2809384 | 82 | | |
| ND<0 | 1.28093 | -1.2809384 | 83 | | |
| 0.647103 J | 1.28093 | -0.633831 | 84 | 84 | |
| 0.908259 | 1.28093 | -0.372675 | 84 | 85 | |
| 1.02962 | 1.28093 | -0.251314 | 84 | 86 | |
| 0.530628 J | 1.28093 | -0.750306 | 84 | 87 | |
| ND<0 | 1.28093 | -1.2809384 | 88 | | |
| 0.951658 | 1.28093 | -0.329276 | 84 | 89 | |
| 0.500775 J | 1.28093 | -0.780159 | 84 | 90 | |
| 0.457425 J | 1.28093 | -0.823509 | 84 | 91 | |
| 0.262364 | 1.28093 | -1.0185784 | 92 | | |
| 0.405465 | 1.28093 | -0.875469 | 84 | 93 | |
| ND<-2.40795 | 1.28093 | -3.6888884 | 94 | | |
| 0.470004 | 1.28093 | -0.8109384 | 95 | | |

| | | | | | |
|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 84 | 95 | |
| ND<0 | ND<0 | 0 | 84 | 95 | |
| ND<0 | ND<0 | 0 | 84 | 95 | |
| ND<0 | ND<0 | 0 | 84 | 95 | |
| 0.647103 J | ND<0 | 0.647103 | 85 | 95 | |
| 0.908259 | ND<0 | 0.908259 | 86 | 95 | |
| 1.02962 | ND<0 | 1.02962 87 | 95 | | |
| 0.530628 J | ND<0 | 0.530628 | 88 | 95 | |
| ND<0 | ND<0 | 0 | 88 | 95 | |
| 0.951658 | ND<0 | 0.951658 | 89 | 95 | |
| 0.500775 J | ND<0 | 0.500775 | 90 | 95 | |
| 0.457425 J | ND<0 | 0.457425 | 91 | 95 | |
| 0.262364 | ND<0 | 0.262364 | 92 | 95 | |
| 0.405465 | ND<0 | 0.405465 | 93 | 95 | |
| ND<-2.40795 | ND<0 | -2.4079593 | 96 | | |
| 0.470004 | ND<0 | 0.470004 | 94 | 96 | |

| | | | | | |
|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 94 | 96 | |
| ND<0 | ND<0 | 0 | 94 | 96 | |
| ND<0 | ND<0 | 0 | 94 | 96 | |
| 0.647103 J | ND<0 | 0.647103 | 95 | 96 | |
| 0.908259 | ND<0 | 0.908259 | 96 | 96 | |
| 1.02962 | ND<0 | 1.02962 97 | 96 | | |
| 0.530628 J | ND<0 | 0.530628 | 98 | 96 | |
| ND<0 | ND<0 | 0 | 98 | 96 | |
| 0.951658 | ND<0 | 0.951658 | 99 | 96 | |
| 0.500775 J | ND<0 | 0.500775 | 100 | 96 | |
| 0.457425 J | ND<0 | 0.457425 | 101 | 96 | |
| 0.262364 | ND<0 | 0.262364 | 102 | 96 | |
| 0.405465 | ND<0 | 0.405465 | 103 | 96 | |
| ND<-2.40795 | ND<0 | -2.40795103 | 97 | | |
| 0.470004 | ND<0 | 0.470004 | 104 | 97 | |

| | | | | | |
|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 104 | 97 | |
| ND<0 | ND<0 | 0 | 104 | 97 | |
| 0.647103 J | ND<0 | 0.647103 | 105 | 97 | |
| 0.908259 | ND<0 | 0.908259 | 106 | 97 | |
| 1.02962 | ND<0 | 1.02962 107 | 97 | | |
| 0.530628 J | ND<0 | 0.530628 | 108 | 97 | |
| ND<0 | ND<0 | 0 | 108 | 97 | |
| 0.951658 | ND<0 | 0.951658 | 109 | 97 | |
| 0.500775 J | ND<0 | 0.500775 | 110 | 97 | |
| 0.457425 J | ND<0 | 0.457425 | 111 | 97 | |

| | | | | |
|---|---|---|---|---|
| 0.262364 | ND<0 | 0.262364 | 112 | 97 |
| 0.405465 | ND<0 | 0.405465 | 113 | 97 |
| ND<-2.40795 | ND<0 | -2.40795113 | 98 | |
| 0.470004 | ND<0 | 0.470004 | 114 | 98 |
| | | | | |
| ND<0 | ND<0 | 0 | 114 | 98 |
| 0.647103 J | ND<0 | 0.647103 | 115 | 98 |
| 0.908259 | ND<0 | 0.908259 | 116 | 98 |
| 1.02962 | ND<0 | 1.02962 117 | 98 | |
| 0.530628 J | ND<0 | 0.530628 | 118 | 98 |
| ND<0 | ND<0 | 0 | 118 | 98 |
| 0.951658 | ND<0 | 0.951658 | 119 | 98 |
| 0.500775 J | ND<0 | 0.500775 | 120 | 98 |
| 0.457425 J | ND<0 | 0.457425 | 121 | 98 |
| 0.262364 | ND<0 | 0.262364 | 122 | 98 |
| 0.405465 | ND<0 | 0.405465 | 123 | 98 |
| ND<-2.40795 | ND<0 | -2.40795123 | 99 | |
| 0.470004 | ND<0 | 0.470004 | 124 | 99 |
| | | | | |
| 0.647103 J | ND<0 | 0.647103 | 125 | 99 |
| 0.908259 | ND<0 | 0.908259 | 126 | 99 |
| 1.02962 | ND<0 | 1.02962 127 | 99 | |
| 0.530628 J | ND<0 | 0.530628 | 128 | 99 |
| ND<0 | ND<0 | 0 | 128 | 99 |
| 0.951658 | ND<0 | 0.951658 | 129 | 99 |
| 0.500775 J | ND<0 | 0.500775 | 130 | 99 |
| 0.457425 J | ND<0 | 0.457425 | 131 | 99 |
| 0.262364 | ND<0 | 0.262364 | 132 | 99 |
| 0.405465 | ND<0 | 0.405465 | 133 | 99 |
| ND<-2.40795 | ND<0 | -2.40795133 | 100 | |
| 0.470004 | ND<0 | 0.470004 | 134 | 100 |
| | | | | |
| 0.908259 | 0.647103 J | 0.261155 | 135 | 100 |
| 1.02962 | 0.647103 J | 0.382516 | 136 | 100 |
| 0.530628 J | 0.647103 J | -0.116475 | 136 | 101 |
| ND<0 | 0.647103 J | -0.647103 | 136 | 102 |
| 0.951658 | 0.647103 J | 0.304555 | 137 | 102 |
| 0.500775 J | 0.647103 J | -0.146328 | 137 | 103 |
| 0.457425 J | 0.647103 J | -0.189678 | 137 | 104 |
| 0.262364 | 0.647103 J | -0.384739 | 137 | 105 |
| 0.405465 | 0.647103 J | -0.241638 | 137 | 106 |
| ND<-2.40795 | 0.647103 J | -3.05505137 | 107 | |
| 0.470004 | 0.647103 J | -0.1771 137 | 108 | |
| | | | | |
| 1.02962 | 0.908259 | 0.121361 | 138 | 108 |
| 0.530628 J | 0.908259 | -0.37763138 | 109 | |
| ND<0 | 0.908259 | -0.908259 | 138 | 110 |
| 0.951658 | 0.908259 | 0.0433993 | 139 | 110 |
| 0.500775 J | 0.908259 | -0.407483 | 139 | 111 |
| 0.457425 J | 0.908259 | -0.450834 | 139 | 112 |
| 0.262364 | 0.908259 | -0.645894 | 139 | 113 |
| 0.405465 | 0.908259 | -0.502793 | 139 | 114 |
| ND<-2.40795 | 0.908259 | -3.3162 139 | 115 | |
| 0.470004 | 0.908259 | -0.438255 | 139 | 116 |
| | | | | |
| 0.530628 J | 1.02962 | -0.498991 | 139 | 117 |
| ND<0 | 1.02962 | -1.02962139 | 118 | |
| 0.951658 | 1.02962 | -0.0779615 | 139 | 119 |
| 0.500775 J | 1.02962 | -0.528844 | 139 | 120 |
| 0.457425 J | 1.02962 | -0.572195 | 139 | 121 |
| 0.262364 | 1.02962 | -0.767255 | 139 | 122 |
| 0.405465 | 1.02962 | -0.624154 | 139 | 123 |

| | | | | |
|---|---|---|---|---|
| ND<-2.40795 | 1.02962 | -3.43757139 | 124 | |
| 0.470004 | 1.02962 | -0.559616 | 139 | 125 |
| | | | | |
| ND<0 | 0.530628 J | -0.530628 | 139 | 126 |
| 0.951658 | 0.530628 J | 0.42103 | 140 | 126 |
| 0.500775 J | 0.530628 J | -0.029853 | 140 | 127 |
| 0.457425 J | 0.530628 J | -0.0732034 | 140 | 128 |
| 0.262364 | 0.530628 J | -0.268264 | 140 | 129 |
| 0.405465 | 0.530628 J | -0.125163 | 140 | 130 |
| ND<-2.40795 | 0.530628 J | -2.93857140 | 131 | |
| 0.470004 | 0.530628 J | -0.0606246 | 140 | 132 |
| | | | | |
| 0.951658 | ND<0 | 0.951658 | 141 | 132 |
| 0.500775 J | ND<0 | 0.500775 | 142 | 132 |
| 0.457425 J | ND<0 | 0.457425 | 143 | 132 |
| 0.262364 | ND<0 | 0.262364 | 144 | 132 |
| 0.405465 | ND<0 | 0.405465 | 145 | 132 |
| ND<-2.40795 | ND<0 | -2.40795145 | 133 | |
| 0.470004 | ND<0 | 0.470004 | 146 | 133 |
| | | | | |
| 0.500775 J | 0.951658 | -0.450883 | 146 | 134 |
| 0.457425 J | 0.951658 | -0.494233 | 146 | 135 |
| 0.262364 | 0.951658 | -0.689294 | 146 | 136 |
| 0.405465 | 0.951658 | -0.546193 | 146 | 137 |
| ND<-2.40795 | 0.951658 | -3.3596 | 146 | 138 |
| 0.470004 | 0.951658 | -0.481654 | 146 | 139 |
| | | | | |
| 0.457425 J | 0.500775 J | -0.0433504 | 146 | 140 |
| 0.262364 | 0.500775 J | -0.238411 | 146 | 141 |
| 0.405465 | 0.500775 J | -0.0953102 | 146 | 142 |
| ND<-2.40795 | 0.500775 J | -2.90872146 | 143 | |
| 0.470004 | 0.500775 J | -0.0307717 | 146 | 144 |
| | | | | |
| 0.262364 | 0.457425 J | -0.195061 | 146 | 145 |
| 0.405465 | 0.457425 J | -0.0519597 | 146 | 146 |
| ND<-2.40795 | 0.457425 J | -2.86537146 | 147 | |
| 0.470004 | 0.457425 J | 0.0125788 | 147 | 147 |
| | | | | |
| 0.405465 | 0.262364 | 0.143101 | 148 | 147 |
| ND<-2.40795 | 0.262364 | -2.67031148 | 148 | |
| 0.470004 | 0.262364 | 0.207639 | 149 | 148 |
| | | | | |
| ND<-2.40795 | 0.405465 | -2.81341149 | 149 | |
| 0.470004 | 0.405465 | 0.0645385 | 150 | 149 |
| | | | | |
| 0.470004 | ND<-2.40795 | 2.87795 | 151 | 149 |

S Statistic = 151 - 149 = 2

| Tied Group | Value | Members |
|---|---|---|
| 1 | 0 | 13 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |
| 11/19/1996 | 1 |
| 12/19/1996 | 1 |

| | | |
|---|---|---|
| 3/24/1997 | | 1 |
| 9/24/1997 | | 1 |
| 4/7/1998 | 1 | |
| 9/23/1998 | | 1 |
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 11/16/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 1 |

There are 0 time periods with multiple data

A = 4836
B = 0
C = 1716
D = 0
E = 156
F = 0
a = 46116
b = 176904
c = 1512
Group Variance = 2293.33
Z-Score = 0.0208817
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|0.0208817| <= 1.97737 indicating no evidence of a trend

# Mann-Kendall Trend Analysis

## Parameter: Vinyl Chloride

## Location: MW-9

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

| Xj | Xk | Xj - Xk | Positives | Negatives |
|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 0 | 0 |
| -0.223144 J | ND<0 | -0.223144 | 0 | 1 |
| -0.105361 J | ND<0 | -0.105361 | 0 | 2 |
| ND<0 | ND<0 | 0 | 0 | 2 |
| ND<0 | ND<0 | 0 | 0 | 2 |
| ND<0 | ND<0 | 0 | 0 | 2 |
| ND<0 | ND<0 | 0 | 0 | 2 |
| ND<0 | ND<0 | 0 | 0 | 2 |
| ND<0 | ND<0 | 0 | 0 | 2 |
| 0.993252 | ND<0 | 0.993252 | 1 | 2 |
| ND<0 | ND<0 | 0 | 1 | 2 |
| ND<0 | ND<0 | 0 | 1 | 2 |
| ND<0 | ND<0 | 0 | 1 | 2 |
| 3.61092 | ND<0 | 3.61092 | 2 | 2 |
| ND<0 | ND<0 | 0 | 2 | 2 |
| 1.03318 | ND<0 | 1.03318 | 3 | 2 |
| 0.371564 J | ND<0 | 0.371564 | 4 | 2 |
| -0.371064 J | ND<0 | -0.371064 | 4 | 3 |
| -0.314711 J | ND<0 | -0.314711 | 4 | 4 |
| ND<0 | ND<0 | 0 | 4 | 4 |
| 0.536493 J | ND<0 | 0.536493 | 5 | 4 |
| 0.470004 J | ND<0 | 0.470004 | 6 | 4 |
| 0.34359 J | ND<0 | 0.34359 | 7 | 4 |
| 0.693147 | ND<0 | 0.693147 | 8 | 4 |
| 0.182322 | ND<0 | 0.182322 | 9 | 4 |
| 0.741937 | ND<0 | 0.741937 | 10 | 4 |
| 0.641854 | ND<0 | 0.641854 | 11 | 4 |
| | | | | |
| -0.223144 J | ND<0 | -0.223144 | 11 | 5 |
| -0.105361 J | ND<0 | -0.105361 | 11 | 6 |
| ND<0 | ND<0 | 0 | 11 | 6 |
| ND<0 | ND<0 | 0 | 11 | 6 |
| ND<0 | ND<0 | 0 | 11 | 6 |
| ND<0 | ND<0 | 0 | 11 | 6 |
| ND<0 | ND<0 | 0 | 11 | 6 |
| ND<0 | ND<0 | 0 | 11 | 6 |
| 0.993252 | ND<0 | 0.993252 | 12 | 6 |
| ND<0 | ND<0 | 0 | 12 | 6 |
| ND<0 | ND<0 | 0 | 12 | 6 |
| ND<0 | ND<0 | 0 | 12 | 6 |
| 3.61092 | ND<0 | 3.61092 | 13 | 6 |
| ND<0 | ND<0 | 0 | 13 | 6 |
| 1.03318 | ND<0 | 1.03318 | 14 | 6 |
| 0.371564 J | ND<0 | 0.371564 | 15 | 6 |
| -0.371064 J | ND<0 | -0.371064 | 15 | 7 |
| -0.314711 J | ND<0 | -0.314711 | 15 | 8 |
| ND<0 | ND<0 | 0 | 15 | 8 |
| 0.536493 J | ND<0 | 0.536493 | 16 | 8 |

| | | | | |
|---|---|---|---|---|
| 0.470004 J | ND<0 | 0.470004 | 17 | 8 |
| 0.34359 J | ND<0 | 0.34359 | 18 | 8 |
| 0.693147 | ND<0 | 0.693147 | 19 | 8 |
| 0.182322 | ND<0 | 0.182322 | 20 | 8 |
| 0.741937 | ND<0 | 0.741937 | 21 | 8 |
| 0.641854 | ND<0 | 0.641854 | 22 | 8 |

| | | | | |
|---|---|---|---|---|
| -0.105361 J | -0.223144 J | 0.117783 | 23 | 8 |
| ND<0 | -0.223144 J | 0.223144 | 24 | 8 |
| ND<0 | -0.223144 J | 0.223144 | 25 | 8 |
| ND<0 | -0.223144 J | 0.223144 | 26 | 8 |
| ND<0 | -0.223144 J | 0.223144 | 27 | 8 |
| ND<0 | -0.223144 J | 0.223144 | 28 | 8 |
| ND<0 | -0.223144 J | 0.223144 | 29 | 8 |
| 0.993252 | -0.223144 J | 1.2164 | 30 | 8 |
| ND<0 | -0.223144 J | 0.223144 | 31 | 8 |
| ND<0 | -0.223144 J | 0.223144 | 32 | 8 |
| ND<0 | -0.223144 J | 0.223144 | 33 | 8 |
| 3.61092 | -0.223144 J | 3.83406 | 34 | 8 |
| ND<0 | -0.223144 J | 0.223144 | 35 | 8 |
| 1.03318 | -0.223144 J | 1.25633 | 36 | 8 |
| 0.371564 J | -0.223144 J | 0.594707 | 37 | 8 |
| -0.371064 J | -0.223144 J | -0.1479237 | 9 | |
| -0.314711 J | -0.223144 J | -0.0915672 | 37 | 10 |
| ND<0 | -0.223144 J | 0.223144 | 38 | 10 |
| 0.536493 J | -0.223144 J | 0.759637 | 39 | 10 |
| 0.470004 J | -0.223144 J | 0.693147 | 40 | 10 |
| 0.34359 J | -0.223144 J | 0.566733 | 41 | 10 |
| 0.693147 | -0.223144 J | 0.916291 | 42 | 10 |
| 0.182322 | -0.223144 J | 0.405465 | 43 | 10 |
| 0.741937 | -0.223144 J | 0.965081 | 44 | 10 |
| 0.641854 | -0.223144 J | 0.864997 | 45 | 10 |

| | | | | |
|---|---|---|---|---|
| ND<0 | -0.105361 J | 0.105361 | 46 | 10 |
| ND<0 | -0.105361 J | 0.105361 | 47 | 10 |
| ND<0 | -0.105361 J | 0.105361 | 48 | 10 |
| ND<0 | -0.105361 J | 0.105361 | 49 | 10 |
| ND<0 | -0.105361 J | 0.105361 | 50 | 10 |
| ND<0 | -0.105361 J | 0.105361 | 51 | 10 |
| 0.993252 | -0.105361 J | 1.09861 | 52 | 10 |
| ND<0 | -0.105361 J | 0.105361 | 53 | 10 |
| ND<0 | -0.105361 J | 0.105361 | 54 | 10 |
| ND<0 | -0.105361 J | 0.105361 | 55 | 10 |
| 3.61092 | -0.105361 J | 3.71628 | 56 | 10 |
| ND<0 | -0.105361 J | 0.105361 | 57 | 10 |
| 1.03318 | -0.105361 J | 1.13854 | 58 | 10 |
| 0.371564 J | -0.105361 J | 0.476924 | 59 | 10 |
| -0.371064 J | -0.105361 J | -0.265703 | 59 | 11 |
| -0.314711 J | -0.105361 J | -0.2093559 | 12 | |
| ND<0 | -0.105361 J | 0.105361 | 60 | 12 |
| 0.536493 J | -0.105361 J | 0.641854 | 61 | 12 |
| 0.470004 J | -0.105361 J | 0.575364 | 62 | 12 |
| 0.34359 J | -0.105361 J | 0.44895 | 63 | 12 |
| 0.693147 | -0.105361 J | 0.798508 | 64 | 12 |
| 0.182322 | -0.105361 J | 0.287682 | 65 | 12 |
| 0.741937 | -0.105361 J | 0.847298 | 66 | 12 |
| 0.641854 | -0.105361 J | 0.747214 | 67 | 12 |

| | | | | |
|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 67 | 12 |
| ND<0 | ND<0 | 0 | 67 | 12 |
| ND<0 | ND<0 | 0 | 67 | 12 |
| ND<0 | ND<0 | 0 | 67 | 12 |

| | | | | | | |
|---|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 67 | 12 | | |
| 0.993252 | | ND<0 | 0.993252 | | 68 | 12 |
| ND<0 | ND<0 | 0 | 68 | 12 | | |
| ND<0 | ND<0 | 0 | 68 | 12 | | |
| ND<0 | ND<0 | 0 | 68 | 12 | | |
| 3.61092 | | ND<0 | 3.61092 | 69 | 12 | |
| ND<0 | ND<0 | 0 | 69 | 12 | | |
| 1.03318 | | ND<0 | 1.03318 | 70 | 12 | |
| 0.371564 J | | ND<0 | 0.371564 | | 71 | 12 |
| -0.371064 J | | ND<0 | -0.371064 | | 71 | 13 |
| -0.314711 J | | ND<0 | -0.314711 | | 71 | 14 |
| ND<0 | ND<0 | 0 | 71 | 14 | | |
| 0.536493 J | | ND<0 | 0.536493 | | 72 | 14 |
| 0.470004 J | | ND<0 | 0.470004 | | 73 | 14 |
| 0.34359 J | | ND<0 | 0.34359 | 74 | 14 | |
| 0.693147 | | ND<0 | 0.693147 | | 75 | 14 |
| 0.182322 | | ND<0 | 0.182322 | | 76 | 14 |
| 0.741937 | | ND<0 | 0.741937 | | 77 | 14 |
| 0.641854 | | ND<0 | 0.641854 | | 78 | 14 |
| | | | | | | |
| ND<0 | ND<0 | 0 | 78 | 14 | | |
| ND<0 | ND<0 | 0 | 78 | 14 | | |
| ND<0 | ND<0 | 0 | 78 | 14 | | |
| ND<0 | ND<0 | 0 | 78 | 14 | | |
| 0.993252 | | ND<0 | 0.993252 | | 79 | 14 |
| ND<0 | ND<0 | 0 | 79 | 14 | | |
| ND<0 | ND<0 | 0 | 79 | 14 | | |
| ND<0 | ND<0 | 0 | 79 | 14 | | |
| 3.61092 | | ND<0 | 3.61092 | 80 | 14 | |
| ND<0 | ND<0 | 0 | 80 | 14 | | |
| 1.03318 | | ND<0 | 1.03318 | 81 | 14 | |
| 0.371564 J | | ND<0 | 0.371564 | | 82 | 14 |
| -0.371064 J | | ND<0 | -0.371064 | | 82 | 15 |
| -0.314711 J | | ND<0 | -0.314711 | | 82 | 16 |
| ND<0 | ND<0 | 0 | 82 | 16 | | |
| 0.536493 J | | ND<0 | 0.536493 | | 83 | 16 |
| 0.470004 J | | ND<0 | 0.470004 | | 84 | 16 |
| 0.34359 J | | ND<0 | 0.34359 | 85 | 16 | |
| 0.693147 | | ND<0 | 0.693147 | | 86 | 16 |
| 0.182322 | | ND<0 | 0.182322 | | 87 | 16 |
| 0.741937 | | ND<0 | 0.741937 | | 88 | 16 |
| 0.641854 | | ND<0 | 0.641854 | | 89 | 16 |
| | | | | | | |
| ND<0 | ND<0 | 0 | 89 | 16 | | |
| ND<0 | ND<0 | 0 | 89 | 16 | | |
| ND<0 | ND<0 | 0 | 89 | 16 | | |
| 0.993252 | | ND<0 | 0.993252 | | 90 | 16 |
| ND<0 | ND<0 | 0 | 90 | 16 | | |
| ND<0 | ND<0 | 0 | 90 | 16 | | |
| ND<0 | ND<0 | 0 | 90 | 16 | | |
| 3.61092 | | ND<0 | 3.61092 | 91 | 16 | |
| ND<0 | ND<0 | 0 | 91 | 16 | | |
| 1.03318 | | ND<0 | 1.03318 | 92 | 16 | |
| 0.371564 J | | ND<0 | 0.371564 | | 93 | 16 |
| -0.371064 J | | ND<0 | -0.371064 | | 93 | 17 |
| -0.314711 J | | ND<0 | -0.314711 | | 93 | 18 |
| ND<0 | ND<0 | 0 | 93 | 18 | | |
| 0.536493 J | | ND<0 | 0.536493 | | 94 | 18 |
| 0.470004 J | | ND<0 | 0.470004 | | 95 | 18 |
| 0.34359 J | | ND<0 | 0.34359 | 96 | 18 | |
| 0.693147 | | ND<0 | 0.693147 | | 97 | 18 |
| 0.182322 | | ND<0 | 0.182322 | | 98 | 18 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 0.741937 | | ND<0 | 0.741937 | | 99 | 18 |
| 0.641854 | | ND<0 | 0.641854 | | 100 | 18 |
| ND<0 | ND<0 | 0 | 100 | 18 | | |
| ND<0 | ND<0 | 0 | 100 | 18 | | |
| 0.993252 | | ND<0 | 0.993252 | | 101 | 18 |
| ND<0 | ND<0 | 0 | 101 | 18 | | |
| ND<0 | ND<0 | 0 | 101 | 18 | | |
| ND<0 | ND<0 | 0 | 101 | 18 | | |
| 3.61092 | | ND<0 | 3.61092 | 102 | 18 | |
| ND<0 | ND<0 | 0 | 102 | 18 | | |
| 1.03318 | | ND<0 | 1.03318 | 103 | 18 | |
| 0.371564 J | | ND<0 | 0.371564 | | 104 | 18 |
| -0.371064 J | | ND<0 | -0.371064 | | 104 | 19 |
| -0.314711 J | | ND<0 | -0.314711 | | 104 | 20 |
| ND<0 | ND<0 | 0 | 104 | 20 | | |
| 0.536493 J | | ND<0 | 0.536493 | | 105 | 20 |
| 0.470004 J | | ND<0 | 0.470004 | | 106 | 20 |
| 0.34359 J | | ND<0 | 0.34359 | 107 | 20 | |
| 0.693147 | | ND<0 | 0.693147 | | 108 | 20 |
| 0.182322 | | ND<0 | 0.182322 | | 109 | 20 |
| 0.741937 | | ND<0 | 0.741937 | | 110 | 20 |
| 0.641854 | | ND<0 | 0.641854 | | 111 | 20 |
| ND<0 | ND<0 | 0 | 111 | 20 | | |
| 0.993252 | | ND<0 | 0.993252 | | 112 | 20 |
| ND<0 | ND<0 | 0 | 112 | 20 | | |
| ND<0 | ND<0 | 0 | 112 | 20 | | |
| ND<0 | ND<0 | 0 | 112 | 20 | | |
| 3.61092 | | ND<0 | 3.61092 | 113 | 20 | |
| ND<0 | ND<0 | 0 | 113 | 20 | | |
| 1.03318 | | ND<0 | 1.03318 | 114 | 20 | |
| 0.371564 J | | ND<0 | 0.371564 | | 115 | 20 |
| -0.371064 J | | ND<0 | -0.371064 | | 115 | 21 |
| -0.314711 J | | ND<0 | -0.314711 | | 115 | 22 |
| ND<0 | ND<0 | 0 | 115 | 22 | | |
| 0.536493 J | | ND<0 | 0.536493 | | 116 | 22 |
| 0.470004 J | | ND<0 | 0.470004 | | 117 | 22 |
| 0.34359 J | | ND<0 | 0.34359 | 118 | 22 | |
| 0.693147 | | ND<0 | 0.693147 | | 119 | 22 |
| 0.182322 | | ND<0 | 0.182322 | | 120 | 22 |
| 0.741937 | | ND<0 | 0.741937 | | 121 | 22 |
| 0.641854 | | ND<0 | 0.641854 | | 122 | 22 |
| 0.993252 | | ND<0 | 0.993252 | | 123 | 22 |
| ND<0 | ND<0 | 0 | 123 | 22 | | |
| ND<0 | ND<0 | 0 | 123 | 22 | | |
| ND<0 | ND<0 | 0 | 123 | 22 | | |
| 3.61092 | | ND<0 | 3.61092 | 124 | 22 | |
| ND<0 | ND<0 | 0 | 124 | 22 | | |
| 1.03318 | | ND<0 | 1.03318 | 125 | 22 | |
| 0.371564 J | | ND<0 | 0.371564 | | 126 | 22 |
| -0.371064 J | | ND<0 | -0.371064 | | 126 | 23 |
| -0.314711 J | | ND<0 | -0.314711 | | 126 | 24 |
| ND<0 | ND<0 | 0 | 126 | 24 | | |
| 0.536493 J | | ND<0 | 0.536493 | | 127 | 24 |
| 0.470004 J | | ND<0 | 0.470004 | | 128 | 24 |
| 0.34359 J | | ND<0 | 0.34359 | 129 | 24 | |
| 0.693147 | | ND<0 | 0.693147 | | 130 | 24 |
| 0.182322 | | ND<0 | 0.182322 | | 131 | 24 |
| 0.741937 | | ND<0 | 0.741937 | | 132 | 24 |
| 0.641854 | | ND<0 | 0.641854 | | 133 | 24 |

| | | | | |
|---|---|---|---|---|
| ND<0 | 0.993252 | -0.993252 | 133 | 25 |
| ND<0 | 0.993252 | -0.993252 | 133 | 26 |
| ND<0 | 0.993252 | -0.993252 | 133 | 27 |
| 3.61092 | 0.993252 | 2.61767 | 134 | 27 |
| ND<0 | 0.993252 | -0.993252 | 134 | 28 |
| 1.03318 | 0.993252 | 0.0399327 | 135 | 28 |
| 0.371564 J | 0.993252 | -0.621688 | 135 | 29 |
| -0.371064 J | 0.993252 | -1.36432 | 135 | 30 |
| -0.314711 J | 0.993252 | -1.30796 | 135 | 31 |
| ND<0 | 0.993252 | -0.993252 | 135 | 32 |
| 0.536493 J | 0.993252 | -0.456758 | 135 | 33 |
| 0.470004 J | 0.993252 | -0.523248 | 135 | 34 |
| 0.34359 J | 0.993252 | -0.649662 | 135 | 35 |
| 0.693147 | 0.993252 | -0.300105 | 135 | 36 |
| 0.182322 | 0.993252 | -0.81093 | 135 | 37 |
| 0.741937 | 0.993252 | -0.251314 | 135 | 38 |
| 0.641854 | 0.993252 | -0.351398 | 135 | 39 |

| | | | | | |
|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 135 | 39 | |
| ND<0 | ND<0 | 0 | 135 | 39 | |
| 3.61092 | ND<0 | 3.61092 | 136 | 39 | |
| ND<0 | ND<0 | 0 | 136 | 39 | |
| 1.03318 | ND<0 | 1.03318 | 137 | 39 | |
| 0.371564 J | ND<0 | 0.371564 | 138 | 39 | |
| -0.371064 J | ND<0 | -0.371064 | 138 | 40 | |
| -0.314711 J | ND<0 | -0.314711 | 138 | 41 | |
| ND<0 | ND<0 | 0 | 138 | 41 | |
| 0.536493 J | ND<0 | 0.536493 | 139 | 41 | |
| 0.470004 J | ND<0 | 0.470004 | 140 | 41 | |
| 0.34359 J | ND<0 | 0.34359 | 141 | 41 | |
| 0.693147 | ND<0 | 0.693147 | 142 | 41 | |
| 0.182322 | ND<0 | 0.182322 | 143 | 41 | |
| 0.741937 | ND<0 | 0.741937 | 144 | 41 | |
| 0.641854 | ND<0 | 0.641854 | 145 | 41 | |

| | | | | | |
|---|---|---|---|---|---|
| ND<0 | ND<0 | 0 | 145 | 41 | |
| 3.61092 | ND<0 | 3.61092 | 146 | 41 | |
| ND<0 | ND<0 | 0 | 146 | 41 | |
| 1.03318 | ND<0 | 1.03318 | 147 | 41 | |
| 0.371564 J | ND<0 | 0.371564 | 148 | 41 | |
| -0.371064 J | ND<0 | -0.371064 | 148 | 42 | |
| -0.314711 J | ND<0 | -0.314711 | 148 | 43 | |
| ND<0 | ND<0 | 0 | 148 | 43 | |
| 0.536493 J | ND<0 | 0.536493 | 149 | 43 | |
| 0.470004 J | ND<0 | 0.470004 | 150 | 43 | |
| 0.34359 J | ND<0 | 0.34359 | 151 | 43 | |
| 0.693147 | ND<0 | 0.693147 | 152 | 43 | |
| 0.182322 | ND<0 | 0.182322 | 153 | 43 | |
| 0.741937 | ND<0 | 0.741937 | 154 | 43 | |
| 0.641854 | ND<0 | 0.641854 | 155 | 43 | |

| | | | | | |
|---|---|---|---|---|---|
| 3.61092 | ND<0 | 3.61092 | 156 | 43 | |
| ND<0 | ND<0 | 0 | 156 | 43 | |
| 1.03318 | ND<0 | 1.03318 | 157 | 43 | |
| 0.371564 J | ND<0 | 0.371564 | 158 | 43 | |
| -0.371064 J | ND<0 | -0.371064 | 158 | 44 | |
| -0.314711 J | ND<0 | -0.314711 | 158 | 45 | |
| ND<0 | ND<0 | 0 | 158 | 45 | |
| 0.536493 J | ND<0 | 0.536493 | 159 | 45 | |
| 0.470004 J | ND<0 | 0.470004 | 160 | 45 | |
| 0.34359 J | ND<0 | 0.34359 | 161 | 45 | |

| | | | | |
|---|---|---|---|---|
| 0.693147 | ND<0 | 0.693147 | 162 | 45 |
| 0.182322 | ND<0 | 0.182322 | 163 | 45 |
| 0.741937 | ND<0 | 0.741937 | 164 | 45 |
| 0.641854 | ND<0 | 0.641854 | 165 | 45 |

| | | | | |
|---|---|---|---|---|
| ND<0 | 3.61092 | -3.61092 | 165 | 46 |
| 1.03318 | 3.61092 | -2.57773 | 165 | 47 |
| 0.371564 J | 3.61092 | -3.23935 | 165 | 48 |
| -0.371064 J | 3.61092 | -3.98198 | 165 | 49 |
| -0.314711 J | 3.61092 | -3.92563 | 165 | 50 |
| ND<0 | 3.61092 | -3.61092 | 165 | 51 |
| 0.536493 J | 3.61092 | -3.07442 | 165 | 52 |
| 0.470004 J | 3.61092 | -3.14091 | 165 | 53 |
| 0.34359 J | 3.61092 | -3.26733 | 165 | 54 |
| 0.693147 | 3.61092 | -2.91777 | 165 | 55 |
| 0.182322 | 3.61092 | -3.4286 | 165 | 56 |
| 0.741937 | 3.61092 | -2.86898 | 165 | 57 |
| 0.641854 | 3.61092 | -2.96906 | 165 | 58 |

| | | | | |
|---|---|---|---|---|
| 1.03318 | ND<0 | 1.03318 | 166 | 58 |
| 0.371564 J | ND<0 | 0.371564 | 167 | 58 |
| -0.371064 J | ND<0 | -0.371064 | 167 | 59 |
| -0.314711 J | ND<0 | -0.314711 | 167 | 60 |
| ND<0 | ND<0 | 0 | 167 | 60 |
| 0.536493 J | ND<0 | 0.536493 | 168 | 60 |
| 0.470004 J | ND<0 | 0.470004 | 169 | 60 |
| 0.34359 J | ND<0 | 0.34359 | 170 | 60 |
| 0.693147 | ND<0 | 0.693147 | 171 | 60 |
| 0.182322 | ND<0 | 0.182322 | 172 | 60 |
| 0.741937 | ND<0 | 0.741937 | 173 | 60 |
| 0.641854 | ND<0 | 0.641854 | 174 | 60 |

| | | | | |
|---|---|---|---|---|
| 0.371564 J | 1.03318 | -0.661621 | 174 | 61 |
| -0.371064 J | 1.03318 | -1.40425 | 174 | 62 |
| -0.314711 J | 1.03318 | -1.3479 | 174 | 63 |
| ND<0 | 1.03318 | -1.03318 | 174 | 64 |
| 0.536493 J | 1.03318 | -0.496691 | 174 | 65 |
| 0.470004 J | 1.03318 | -0.563181 | 174 | 66 |
| 0.34359 J | 1.03318 | -0.689595 | 174 | 67 |
| 0.693147 | 1.03318 | -0.340037 | 174 | 68 |
| 0.182322 | 1.03318 | -0.850863 | 174 | 69 |
| 0.741937 | 1.03318 | -0.291247 | 174 | 70 |
| 0.641854 | 1.03318 | -0.391331 | 174 | 71 |

| | | | | |
|---|---|---|---|---|
| -0.371064 J | 0.371564 J | -0.742627 | 174 | 72 |
| -0.314711 J | 0.371564 J | -0.686274 | 174 | 73 |
| ND<0 | 0.371564 J | -0.371564 | 174 | 74 |
| 0.536493 J | 0.371564 J | 0.16493 | 175 | 74 |
| 0.470004 J | 0.371564 J | 0.0984401 | 176 | 74 |
| 0.34359 J | 0.371564 J | -0.0279739 | 176 | 75 |
| 0.693147 | 0.371564 J | 0.321584 | 177 | 75 |
| 0.182322 | 0.371564 J | -0.189242 | 177 | 76 |
| 0.741937 | 0.371564 J | 0.370374 | 178 | 76 |
| 0.641854 | 0.371564 J | 0.27029 | 179 | 76 |

| | | | | |
|---|---|---|---|---|
| -0.314711 J | -0.371064 J | 0.0563529 | 180 | 76 |
| ND<0 | -0.371064 J | 0.371064 | 181 | 76 |
| 0.536493 J | -0.371064 J | 0.907557 | 182 | 76 |
| 0.470004 J | -0.371064 J | 0.841067 | 183 | 76 |
| 0.34359 J | -0.371064 J | 0.714653 | 184 | 76 |
| 0.693147 | -0.371064 J | 1.06421 | 185 | 76 |
| 0.182322 | -0.371064 J | 0.553385 | 186 | 76 |

| | | | | |
|---|---|---|---|---|
| 0.741937 | -0.371064 J | 1.113 | 187 | 76 |
| 0.641854 | -0.371064 J | 1.01292 | 188 | 76 |
| | | | | |
| ND<0 | -0.314711 J | 0.314711 | 189 | 76 |
| 0.536493 J | -0.314711 J | 0.851204 | 190 | 76 |
| 0.470004 J | -0.314711 J | 0.784714 | 191 | 76 |
| 0.34359 J | -0.314711 J | 0.6583 | 192 | 76 |
| 0.693147 | -0.314711 J | 1.00786 | 193 | 76 |
| 0.182322 | -0.314711 J | 0.497032 | 194 | 76 |
| 0.741937 | -0.314711 J | 1.05665 | 195 | 76 |
| 0.641854 | -0.314711 J | 0.956565 | 196 | 76 |
| | | | | |
| 0.536493 J | ND<0 | 0.536493 | 197 | 76 |
| 0.470004 J | ND<0 | 0.470004 | 198 | 76 |
| 0.34359 J | ND<0 | 0.34359 | 199 | 76 |
| 0.693147 | ND<0 | 0.693147 | 200 | 76 |
| 0.182322 | ND<0 | 0.182322 | 201 | 76 |
| 0.741937 | ND<0 | 0.741937 | 202 | 76 |
| 0.641854 | ND<0 | 0.641854 | 203 | 76 |
| | | | | |
| 0.470004 J | 0.536493 J | -0.0664897 | 203 | 77 |
| 0.34359 J | 0.536493 J | -0.192904 | 203 | 78 |
| 0.693147 | 0.536493 J | 0.156654 | 204 | 78 |
| 0.182322 | 0.536493 J | -0.354172 | 204 | 79 |
| 0.741937 | 0.536493 J | 0.205444 | 205 | 79 |
| 0.641854 | 0.536493 J | 0.105361 | 206 | 79 |
| | | | | |
| 0.34359 J | 0.470004 J | -0.126414 | 206 | 80 |
| 0.693147 | 0.470004 J | 0.223144 | 207 | 80 |
| 0.182322 | 0.470004 J | -0.287682 | 207 | 81 |
| 0.741937 | 0.470004 J | 0.271934 | 208 | 81 |
| 0.641854 | 0.470004 J | 0.17185 | 209 | 81 |
| | | | | |
| 0.693147 | 0.34359 J | 0.349557 | 210 | 81 |
| 0.182322 | 0.34359 J | -0.161268 | 210 | 82 |
| 0.741937 | 0.34359 J | 0.398348 | 211 | 82 |
| 0.641854 | 0.34359 J | 0.298264 | 212 | 82 |
| | | | | |
| 0.182322 | 0.693147 | -0.510826 | 212 | 83 |
| 0.741937 | 0.693147 | 0.0487902 | 213 | 83 |
| 0.641854 | 0.693147 | -0.0512933 | 213 | 84 |
| | | | | |
| 0.741937 | 0.182322 | 0.559616 | 214 | 84 |
| 0.641854 | 0.182322 | 0.459532 | 215 | 84 |
| | | | | |
| 0.641854 | 0.741937 | -0.100083 | 215 | 85 |

S Statistic = 215 - 85 = 130

| Tied Group | Value | Members |
|---|---|---|
| 1 | 0 | 13 |

| Time Period | Observations |
|---|---|
| 7/20/1995 | 1 |
| 8/24/1995 | 1 |
| 9/28/1995 | 1 |
| 10/26/1995 | 1 |
| 11/19/1996 | 1 |
| 12/19/1996 | 1 |

| | | |
|---|---|---|
| 3/24/1997 | | 1 |
| 9/24/1997 | | 1 |
| 4/7/1998 | 1 | |
| 9/23/1998 | | 1 |
| 3/16/1999 | | 1 |
| 9/23/1999 | | 1 |
| 3/15/2000 | | 1 |
| 9/24/2003 | | 1 |
| 3/11/2004 | | 1 |
| 10/12/2004 | | 1 |
| 4/1/2005 | 1 | |
| 10/25/2005 | | 1 |
| 4/29/2006 | | 1 |
| 11/18/2006 | | 1 |
| 5/23/2007 | | 1 |
| 11/28/2007 | | 1 |
| 6/5/2008 | 1 | |
| 11/20/2008 | | 1 |
| 6/11/2009 | | 1 |
| 11/16/2009 | | 1 |
| 6/30/2010 | | 1 |
| 11/12/2010 | | 1 |

There are 0 time periods with multiple data

A = 4836
B = 0
C = 1716
D = 0
E = 156
F = 0
a = 46116
b = 176904
c = 1512
Group Variance = 2293.33
Z-Score = 2.69374
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|2.69374| > 1.97737 indicating a trend

# Concentrations (ppb)

## Parameter: Zinc

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
Total Measurements: 213
Total Non-Detect: 128
Percent Non-Detects: 60.0939%
Total Background Measurements: 17
There is 1 background location

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-13 | 17 | 9 (52.9412%) | 3/16/1999 | ND<60 | ND<60 |
| | | | 9/23/1999 | 26 J | 26 J |
| | | | 3/15/2000 | 96 | 96 |
| | | | 9/24/2003 | 610 | 610 |
| | | | 3/11/2004 | ND<60 | ND<60 |
| | | | 10/12/2004 | ND<60 | ND<60 |
| | | | 4/1/2005 | ND<60 | ND<60 |
| | | | 10/25/2005 | ND<60 | ND<60 |
| | | | 4/29/2006 | ND<60 | ND<60 |
| | | | 11/18/2006 | 10.3 J | 10.3 J |
| | | | 5/23/2007 | ND<60 | ND<60 |
| | | | 11/28/2007 | ND<60 | ND<60 |
| | | | 6/5/2008 | 11.2 J | 11.2 J |
| | | | 11/20/2008 | ND<60 | ND<60 |
| | | | 6/11/2009 | 14 | 14 |
| | | | 6/30/2010 | 4.6 J H | 4.6 J H |
| | | | 11/12/2010 | 5.7 J | 5.7 J |

There are 8 compliance locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|
| MW-10 | 27 | 19 (70.3704%) | 7/20/1995 | ND<60 | ND<60 |
| | | | 8/24/1995 | ND<60 | ND<60 |
| | | | 9/28/1995 | ND<60 | ND<60 |
| | | | 10/26/1995 | ND<60 | ND<60 |
| | | | 11/19/1996 | ND<60 | ND<60 |
| | | | 12/19/1996 | ND<60 | ND<60 |
| | | | 3/24/1997 | 110 | 110 |
| | | | 9/24/1997 | ND<60 | ND<60 |
| | | | 4/7/1998 | 150 | 150 |
| | | | 9/23/1998 | ND<60 | ND<60 |
| | | | 3/16/1999 | ND<60 | ND<60 |
| | | | 9/23/1999 | ND<60 | ND<60 |
| | | | 3/15/2000 | ND<60 | ND<60 |
| | | | 9/24/2003 | ND<60 | ND<60 |
| | | | 3/11/2004 | ND<60 | ND<60 |
| | | | 10/12/2004 | ND<60 | ND<60 |
| | | | 4/1/2005 | ND<60 | ND<60 |
| | | | 10/25/2005 | ND<60 | ND<60 |
| | | | 4/29/2006 | ND<60 | ND<60 |
| | | | 11/18/2006 | ND<60 | ND<60 |
| | | | 5/23/2007 | 62.4 | 62.4 |
| | | | 11/28/2007 | 410 | 410 |
| | | | 6/5/2008 | 10.8 J | 10.8 J |
| | | | 11/20/2008 | ND<60 | ND<60 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 6/11/2009 | 28 | 28 | |
| | | | 6/30/2010 | 220 H | 220 H | |
| | | | 11/12/2010 | 7.2 J | 7.2 J | |
| MW-9 | 27 | 16 (59.2593%) | 7/20/1995 | ND<60 | ND<60 | |
| | | | 8/24/1995 | 33.1 J | 33.1 J | |
| | | | 9/28/1995 | ND<60 | ND<60 | |
| | | | 10/26/1995 | ND<60 | ND<60 | |
| | | | 11/19/1996 | ND<60 | ND<60 | |
| | | | 12/19/1996 | ND<60 | ND<60 | |
| | | | 3/24/1997 | 110 | 110 | |
| | | | 9/24/1997 | ND<60 | ND<60 | |
| | | | 4/7/1998 | ND<60 | ND<60 | |
| | | | 9/23/1998 | 88 | 88 | |
| | | | 3/16/1999 | ND<60 | ND<60 | |
| | | | 9/23/1999 | 5 J | 5 J | |
| | | | 3/15/2000 | ND<60 | ND<60 | |
| | | | 9/24/2003 | 120 | 120 | |
| | | | 3/11/2004 | ND<60 | ND<60 | |
| | | | 10/12/2004 | ND<60 | ND<60 | |
| | | | 4/1/2005 | ND<60 | ND<60 | |
| | | | 10/25/2005 | ND<60 | ND<60 | |
| | | | 4/29/2006 | ND<60 | ND<60 | |
| | | | 11/18/2006 | 5.56 J | 5.56 J | |
| | | | 5/23/2007 | 56.6 | 56.6 | |
| | | | 11/28/2007 | 26 J | 26 J | |
| | | | 6/5/2008 | ND<60 | ND<60 | |
| | | | 11/20/2008 | ND<60 | ND<60 | |
| | | | 6/11/2009 | 22 | 22 | |
| | | | 6/30/2010 | 3.6 J H | 3.6 J H | |
| | | | 11/12/2010 | 2.8 J | 2.8 J | |
| MW-8 | 27 | 15 (55.5556%) | 7/20/1995 | ND<60 | ND<60 | |
| | | | 8/24/1995 | 21 J | 21 J | |
| | | | 9/28/1995 | 33.6 J | 33.6 J | |
| | | | 10/26/1995 | ND<60 | ND<60 | |
| | | | 11/19/1996 | ND<60 | ND<60 | |
| | | | 12/19/1996 | ND<60 | ND<60 | |
| | | | 3/24/1997 | ND<60 | ND<60 | |
| | | | 9/24/1997 | 62 | 62 | |
| | | | 4/7/1998 | 150 | 150 | |
| | | | 9/23/1998 | 120 | 120 | |
| | | | 3/16/1999 | ND<60 | ND<60 | |
| | | | 9/23/1999 | ND<60 | ND<60 | |
| | | | 3/15/2000 | ND<60 | ND<60 | |
| | | | 9/24/2003 | ND<60 | ND<60 | |
| | | | 3/11/2004 | ND<60 | ND<60 | |
| | | | 10/12/2004 | ND<60 | ND<60 | |
| | | | 4/1/2005 | ND<60 | ND<60 | |
| | | | 10/25/2005 | ND<60 | ND<60 | |
| | | | 4/29/2006 | ND<60 | ND<60 | |
| | | | 11/18/2006 | 6.59 J | 6.59 J | |
| | | | 5/23/2007 | 51.6 | 51.6 | |
| | | | 11/28/2007 | 27 J | 27 J | |
| | | | 6/5/2008 | 8.7 J | 8.7 J | |
| | | | 11/20/2008 | 28 J | 28 J | |
| | | | 6/11/2009 | ND<2.6 | ND<2.6 | |
| | | | 6/30/2010 | 6.1 J H | 6.1 J H | |
| | | | 11/12/2010 | 3.2 J | 3.2 J | |
| MW-7 | 27 | 13 (48.1481%) | 7/20/1995 | ND<60 | ND<60 | |
| | | | 8/24/1995 | 40 J | 40 J | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 9/28/1995 | 35 J | 35 J | |
| | | | 10/26/1995 | ND<60 | ND<60 | |
| | | | 11/19/1996 | ND<60 | ND<60 | |
| | | | 12/19/1996 | ND<60 | ND<60 | |
| | | | 3/24/1997 | ND<60 | ND<60 | |
| | | | 9/24/1997 | 79 | 79 | |
| | | | 4/7/1998 ND<60 | ND<60 | | |
| | | | 9/23/1998 | 95 | 95 | |
| | | | 3/16/1999 | ND<60 | ND<60 | |
| | | | 9/23/1999 | 5 J | 5 J | |
| | | | 3/15/2000 | 11 J | 11 J | |
| | | | 9/24/2003 | 180 | 180 | |
| | | | 3/11/2004 | ND<60 | ND<60 | |
| | | | 10/12/2004 | ND<60 | ND<60 | |
| | | | 4/1/2005 ND<60 | ND<60 | | |
| | | | 10/25/2005 | ND<60 | ND<60 | |
| | | | 4/29/2006 | ND<60 | ND<60 | |
| | | | 11/18/2006 | 5 J | 5 J | |
| | | | 5/23/2007 | 73.8 | 73.8 | |
| | | | 11/28/2007 | ND<60 | ND<60 | |
| | | | 6/5/2008 11.6 J | 11.6 J | | |
| | | | 11/20/2008 | 76 | 76 | |
| | | | 6/11/2009 | 3.9 J | 3.9 J | |
| | | | 6/30/2010 | 3.7 J H | 3.7 J H | |
| | | | 11/12/2010 | 5 J | 5 J | |
| MW-6 | 27 | 17 (62.963%) | 7/20/1995 | ND<60 | ND<60 | |
| | | | 8/24/1995 | 346 | 346 | |
| | | | 9/28/1995 | 9.5 J | 9.5 J | |
| | | | 10/26/1995 | ND<60 | ND<60 | |
| | | | 11/19/1996 | ND<60 | ND<60 | |
| | | | 12/19/1996 | ND<60 | ND<60 | |
| | | | 3/24/1997 | ND<60 | ND<60 | |
| | | | 9/24/1997 | 72 | 72 | |
| | | | 4/7/1998 75 | 75 | | |
| | | | 9/23/1998 | 200 | 200 | |
| | | | 3/16/1999 | ND<60 | ND<60 | |
| | | | 9/23/1999 | ND<60 | ND<60 | |
| | | | 3/15/2000 | ND<60 | ND<60 | |
| | | | 9/24/2003 | 320 | 320 | |
| | | | 3/11/2004 | ND<60 | ND<60 | |
| | | | 10/12/2004 | ND<60 | ND<60 | |
| | | | 4/1/2005 ND<60 | ND<60 | | |
| | | | 10/25/2005 | ND<60 | ND<60 | |
| | | | 4/29/2006 | ND<60 | ND<60 | |
| | | | 11/18/2006 | ND<60 | ND<60 | |
| | | | 5/23/2007 | ND<60 | ND<60 | |
| | | | 11/28/2007 | ND<60 | ND<60 | |
| | | | 6/5/2008 7.99 J | 7.99 J | | |
| | | | 11/20/2008 | ND<60 | ND<60 | |
| | | | 6/11/2009 | 18 | 18 | |
| | | | 6/30/2010 | 2.7 J H | 2.7 J H | |
| | | | 11/12/2010 | 6.4 J | 6.4 J | |
| MW-12BR | 17 | 12 (70.5882%) | 3/16/1999 | ND<60 | ND<60 | |
| | | | 9/23/1999 | ND<60 | ND<60 | |
| | | | 3/15/2000 | ND<60 | ND<60 | |
| | | | 9/24/2003 | ND<60 | ND<60 | |
| | | | 3/11/2004 | ND<60 | ND<60 | |
| | | | 10/12/2004 | ND<60 | ND<60 | |
| | | | 4/1/2005 ND<60 | ND<60 | | |
| | | | 10/25/2005 | ND<60 | ND<60 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | 4/29/2006 | ND<60 | ND<60 | | |
| | | 11/18/2006 | 6.33 J | 6.33 J | | |
| | | 5/23/2007 | ND<60 | ND<60 | | |
| | | 11/28/2007 | ND<60 | ND<60 | | |
| | | 6/5/2008 | 13.1 J | 13.1 J | | |
| | | 11/20/2008 | ND<60 | ND<60 | | |
| | | 6/11/2009 | 8.3 J | 8.3 J | | |
| | | 6/30/2010 | 34 | 34 | | |
| | | 11/12/2010 | 9.6 J | 9.6 J | | |
| MW-12AR | 17 | 12 (70.5882%) | 3/16/1999 | | ND<60 | ND<60 |
| | | 9/23/1999 | ND<60 | ND<60 | | |
| | | 3/15/2000 | ND<60 | ND<60 | | |
| | | 9/24/2003 | 250 | 250 | | |
| | | 3/11/2004 | ND<60 | ND<60 | | |
| | | 10/12/2004 | ND<60 | ND<60 | | |
| | | 4/1/2005 | ND<60 | ND<60 | | |
| | | 10/25/2005 | ND<60 | ND<60 | | |
| | | 4/29/2006 | ND<60 | ND<60 | | |
| | | 11/18/2006 | ND<60 | ND<60 | | |
| | | 5/23/2007 | 12.6 J | 12.6 J | | |
| | | 11/28/2007 | ND<60 | ND<60 | | |
| | | 6/5/2008 | ND<60 | ND<60 | | |
| | | 11/20/2008 | ND<60 | ND<60 | | |
| | | 6/11/2009 | 4.5 J | 4.5 J | | |
| | | 6/30/2010 | 8.8 J | 8.8 J | | |
| | | 11/12/2010 | 3.1 J | 3.1 J | | |
| MW-11R | 27 | 15 (55.5556%) | 7/20/1995 | | ND<60 | ND<60 |
| | | 8/24/1995 | 34.1 J | 34.1 J | | |
| | | 9/28/1995 | 30.5 | 30.5 | | |
| | | 10/26/1995 | ND<60 | ND<60 | | |
| | | 11/19/1996 | ND<60 | ND<60 | | |
| | | 12/19/1996 | ND<60 | ND<60 | | |
| | | 3/24/1997 | ND<60 | ND<60 | | |
| | | 9/24/1997 | 92 | 92 | | |
| | | 4/7/1998 | 330 | 330 | | |
| | | 9/23/1998 | 110 | 110 | | |
| | | 3/16/1999 | ND<60 | ND<60 | | |
| | | 9/23/1999 | 27 J | 27 J | | |
| | | 3/15/2000 | ND<60 | ND<60 | | |
| | | 9/24/2003 | 60 | 60 | | |
| | | 3/11/2004 | ND<60 | ND<60 | | |
| | | 10/12/2004 | ND<60 | ND<60 | | |
| | | 4/1/2005 | ND<60 | ND<60 | | |
| | | 10/25/2005 | ND<60 | ND<60 | | |
| | | 4/29/2006 | 20 J | 20 J | | |
| | | 11/18/2006 | ND<60 | ND<60 | | |
| | | 5/23/2007 | 39.7 | 39.7 | | |
| | | 11/28/2007 | ND<60 | ND<60 | | |
| | | 6/5/2008 | ND<60 | ND<60 | | |
| | | 11/20/2008 | ND<60 | ND<60 | | |
| | | 6/11/2009 | 46 | 46 | | |
| | | 6/30/2010 | 6.9 J H | 6.9 J H | | |
| | | 11/12/2010 | 3.6 J | 3.6 J | | |

There are 0 unused locations

| Loc. | Meas. | ND | Date | Conc. | Original |
|---|---|---|---|---|---|

# Shapiro-Francia Test of Normality

## Parameter: Zinc

## All Locations

## Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 213

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 1.3 | -2.65209 | 7.03356 | -3.44771 |
| 2 | 2.7 | -2.36561 | 12.6297 | -9.83487 |
| 3 | 2.8 | -2.19728 | 17.4578 | -15.9873 |
| 4 | 3.1 | -2.09693 | 21.8549 | -22.4878 |
| 5 | 3.2 | -1.99539 | 25.8365 | -28.873 |
| 6 | 3.6 | -1.91103 | 29.4885 | -35.7527 |
| 7 | 3.6 | -1.85218 | 32.9191 | -42.4206 |
| 8 | 3.7 | -1.78661 | 36.111 | -49.031 |
| 9 | 3.9 | -1.72793 | 39.0968 | -55.77 |
| 10 | 4.5 | -1.68494 | 41.9358 | -63.3522 |
| 11 | 4.6 | -1.63524 | 44.6098 | -70.8743 |
| 12 | 5 | -1.58927 | 47.1356 | -78.8206 |
| 13 | 5 | -1.55477 | 49.5529 | -86.5945 |
| 14 | 5 | -1.5141 | 51.8454 | -94.165 |
| 15 | 5 | -1.47579 | 54.0234 | -101.544 |
| 16 | 5.56 | -1.44663 | 56.1161 | -109.587 |
| 17 | 5.7 | -1.41183 | 58.1094 | -117.635 |
| 18 | 6.1 | -1.37866 | 60.0101 | -126.044 |
| 19 | 6.33 | -1.35317 | 61.8412 | -134.61 |
| 20 | 6.4 | -1.32251 | 63.5902 | -143.074 |
| 21 | 6.59 | -1.29303 | 65.2621 | -151.595 |
| 22 | 6.9 | -1.27024 | 66.8756 | -160.36 |
| 23 | 7.2 | -1.24264 | 68.4198 | -169.307 |
| 24 | 7.99 | -1.21596 | 69.8983 | -179.022 |
| 25 | 8.3 | -1.19522 | 71.3269 | -188.943 |
| 26 | 8.7 | -1.17 | 72.6958 | -199.122 |
| 27 | 8.8 | -1.1455 | 74.008 | -209.202 |
| 28 | 9.5 | -1.12639 | 75.2767 | -219.903 |
| 29 | 9.6 | -1.10306 | 76.4935 | -230.492 |
| 30 | 10.3 | -1.08032 | 77.6606 | -241.62 |
| 31 | 10.8 | -1.06252 | 78.7895 | -253.095 |
| 32 | 11 | -1.04073 | 79.8726 | -264.543 |
| 33 | 11.2 | -1.01943 | 80.9119 | -275.96 |
| 34 | 11.6 | -1.00271 | 81.9173 | -287.592 |
| 35 | 12.6 | -0.98220 | 82.882 | -299.968 |
| 36 | 13.1 | -0.9621 | 83.8077 | -312.571 |
| 37 | 14 | -0.94629 | 84.7031 | -325.819 |
| 38 | 18 | -0.92685 | 85.5622 | -342.503 |
| 39 | 20 | -0.90776 | 86.3862 | -360.658 |
| 40 | 21 | -0.89273 | 87.1832 | -379.405 |
| 41 | 22 | -0.87421 | 87.9475 | -398.638 |
| 42 | 26 | -0.85599 | 88.6802 | -420.894 |
| 43 | 26 | -0.84162 | 89.3885 | -442.776 |
| 44 | 27 | -0.82389 | 90.0673 | -465.021 |
| 45 | 27 | -0.80642 | 90.7176 | -486.795 |
| 46 | 28 | -0.79261 | 91.3459 | -508.988 |
| 47 | 28 | -0.77557 | 91.9474 | -530.704 |
| 48 | 30 | -0.75875 | 92.5231 | -553.467 |
| 49 | 30 | -0.74544 | 93.0788 | -575.83 |

| | | | | |
|---|---|---|---|---|
| 50 | 30 | -0.729003 | 93.6102 | -597.7 |
| 51 | 30 | -0.712751 | 94.1183 | -619.083 |
| 52 | 30 | -0.699883 | 94.6081 | -640.079 |
| 53 | 30 | -0.683969 | 95.0759 | -660.598 |
| 54 | 30 | -0.668209 | 95.5224 | -680.644 |
| 55 | 30 | -0.652622 | 95.9483 | -700.223 |
| 56 | 30 | -0.640266 | 96.3583 | -719.431 |
| 57 | 30 | -0.624956 | 96.7488 | -738.18 |
| 58 | 30 | -0.609791 | 97.1207 | -756.473 |
| 59 | 30 | -0.597761 | 97.478 | -774.406 |
| 60 | 30 | -0.582841 | 97.8177 | -791.891 |
| 61 | 30 | -0.568052 | 98.1404 | -808.933 |
| 62 | 30 | -0.556308 | 98.4499 | -825.622 |
| 63 | 30 | -0.541736 | 98.7433 | -841.874 |
| 64 | 30 | -0.527289 | 99.0214 | -857.693 |
| 65 | 30 | -0.515791 | 99.2874 | -873.167 |
| 66 | 30 | -0.501527 | 99.5389 | -888.212 |
| 67 | 30 | -0.487364 | 99.7764 | -902.833 |
| 68 | 30 | -0.476105 | 100.003 | -917.116 |
| 69 | 30 | -0.462114 | 100.217 | -930.98 |
| 70 | 30 | -0.448213 | 100.418 | -944.426 |
| 71 | 30 | -0.437153 | 100.609 | -957.541 |
| 72 | 30 | -0.423405 | 100.788 | -970.243 |
| 73 | 30 | -0.409735 | 100.956 | -982.535 |
| 74 | 30 | -0.398855 | 101.115 | -994.501 |
| 75 | 30 | -0.385321 | 101.263 | -1006.06 |
| 76 | 30 | -0.371856 | 101.402 | -1017.22 |
| 77 | 30 | -0.361133 | 101.532 | -1028.05 |
| 78 | 30 | -0.347787 | 101.653 | -1038.48 |
| 79 | 30 | -0.334503 | 101.765 | -1048.52 |
| 80 | 30 | -0.323919 | 101.87 | -1058.24 |
| 81 | 30 | -0.310738 | 101.966 | -1067.56 |
| 82 | 30 | -0.297612 | 102.055 | -1076.49 |
| 83 | 30 | -0.287147 | 102.137 | -1085.1 |
| 84 | 30 | -0.27411 | 102.213 | -1093.32 |
| 85 | 30 | -0.26112 | 102.281 | -1101.16 |
| 86 | 30 | -0.250759 | 102.344 | -1108.68 |
| 87 | 30 | -0.237847 | 102.4 | -1115.82 |
| 88 | 30 | -0.224974 | 102.451 | -1122.57 |
| 89 | 30 | -0.214702 | 102.497 | -1129.01 |
| 90 | 30 | -0.201894 | 102.538 | -1135.06 |
| 91 | 30 | -0.189118 | 102.573 | -1140.74 |
| 92 | 30 | -0.17892 | 102.605 | -1146.1 |
| 93 | 30 | -0.166199 | 102.633 | -1151.09 |
| 94 | 30 | -0.153505 | 102.657 | -1155.7 |
| 95 | 30 | -0.143367 | 102.677 | -1160 |
| 96 | 30 | -0.130716 | 102.694 | -1163.92 |
| 97 | 30 | -0.118085 | 102.708 | -1167.46 |
| 98 | 30 | -0.107995 | 102.72 | -1170.7 |
| 99 | 30 | -0.0953969 | 102.729 | -1173.56 |
| 100 | 30 | -0.0828129 | 102.736 | -1176.05 |
| 101 | 30 | -0.0727562 | 102.741 | -1178.23 |
| 102 | 30 | -0.0601949 | 102.745 | -1180.04 |
| 103 | 30 | -0.0476439 | 102.747 | -1181.46 |
| 104 | 30 | -0.0376076 | 102.748 | -1182.59 |
| 105 | 30 | -0.0250691 | 102.749 | -1183.34 |
| 106 | 30 | -0.0125328 | 102.749 | -1183.72 |
| 107 | 30 | 0 | 102.749 | -1183.72 |
| 108 | 30 | 0.0125328 | 102.749 | -1183.34 |
| 109 | 30 | 0.0250691 | 102.75 | -1182.59 |
| 110 | 30 | 0.0376076 | 102.751 | -1181.46 |
| 111 | 30 | 0.0476439 | 102.754 | -1180.04 |

| | | | | |
|---|---|---|---|---|
| 112 | 30 | 0.0601949 | 102.757 | -1178.23 |
| 113 | 30 | 0.0727562 | 102.763 | -1176.05 |
| 114 | 30 | 0.0828129 | 102.769 | -1173.56 |
| 115 | 30 | 0.0953969 | 102.779 | -1170.7 |
| 116 | 30 | 0.107995 | 102.79 | -1167.46 |
| 117 | 30 | 0.118085 | 102.804 | -1163.92 |
| 118 | 30 | 0.130716 | 102.821 | -1160 |
| 119 | 30 | 0.143367 | 102.842 | -1155.7 |
| 120 | 30 | 0.153505 | 102.865 | -1151.09 |
| 121 | 30 | 0.166199 | 102.893 | -1146.1 |
| 122 | 30 | 0.17892 | 102.925 | -1140.74 |
| 123 | 30 | 0.189118 | 102.961 | -1135.06 |
| 124 | 30 | 0.201894 | 103.002 | -1129.01 |
| 125 | 30 | 0.214702 | 103.048 | -1122.57 |
| 126 | 30 | 0.224974 | 103.098 | -1115.82 |
| 127 | 30 | 0.237847 | 103.155 | -1108.68 |
| 128 | 30 | 0.250759 | 103.218 | -1101.16 |
| 129 | 30 | 0.26112 | 103.286 | -1093.32 |
| 130 | 30 | 0.27411 | 103.361 | -1085.1 |
| 131 | 30 | 0.287147 | 103.443 | -1076.49 |
| 132 | 30 | 0.297612 | 103.532 | -1067.56 |
| 133 | 30 | 0.310738 | 103.629 | -1058.24 |
| 134 | 30 | 0.323919 | 103.734 | -1048.52 |
| 135 | 30 | 0.334503 | 103.845 | -1038.48 |
| 136 | 30 | 0.347787 | 103.966 | -1028.05 |
| 137 | 30 | 0.361133 | 104.097 | -1017.22 |
| 138 | 30 | 0.371856 | 104.235 | -1006.06 |
| 139 | 30 | 0.385321 | 104.384 | -994.501 |
| 140 | 30 | 0.398855 | 104.543 | -982.535 |
| 141 | 30 | 0.409735 | 104.711 | -970.243 |
| 142 | 30 | 0.423405 | 104.89 | -957.541 |
| 143 | 30 | 0.437153 | 105.081 | -944.426 |
| 144 | 30 | 0.448213 | 105.282 | -930.98 |
| 145 | 30 | 0.462114 | 105.495 | -917.116 |
| 146 | 30 | 0.476105 | 105.722 | -902.833 |
| 147 | 30 | 0.487364 | 105.96 | -888.212 |
| 148 | 30 | 0.501527 | 106.211 | -873.167 |
| 149 | 30 | 0.515791 | 106.477 | -857.693 |
| 150 | 30 | 0.52728 | 106.755 | -841.874 |
| 151 | 30 | 0.541736 | 107.049 | -825.622 |
| 152 | 30 | 0.556308 | 107.358 | -808.933 |
| 153 | 30 | 0.568052 | 107.681 | -791.891 |
| 154 | 30 | 0.582841 | 108.02 | -774.406 |
| 155 | 30 | 0.597761 | 108.378 | -756.473 |
| 156 | 30 | 0.609791 | 108.75 | -738.18 |
| 157 | 30 | 0.624956 | 109.14 | -719.431 |
| 158 | 30 | 0.640266 | 109.55 | -700.223 |
| 159 | 30 | 0.652622 | 109.976 | -680.644 |
| 160 | 30 | 0.668209 | 110.423 | -660.598 |
| 161 | 30 | 0.68396 | 110.89 | -640.079 |
| 162 | 30 | 0.699883 | 111.38 | -619.083 |
| 163 | 30 | 0.712751 | 111.888 | -597.7 |
| 164 | 30 | 0.729003 | 112.42 | -575.83 |
| 165 | 30 | 0.745449 | 112.975 | -553.467 |
| 166 | 30 | 0.758753 | 113.551 | -530.704 |
| 167 | 30 | 0.775574 | 114.153 | -507.437 |
| 168 | 30 | 0.792618 | 114.781 | -483.658 |
| 169 | 30 | 0.806422 | 115.431 | -459.466 |
| 170 | 30 | 0.823893 | 116.11 | -434.749 |
| 171 | 30 | 0.841621 | 116.818 | -409.5 |
| 172 | 30 | 0.855996 | 117.551 | -383.82 |
| 173 | 30 | 0.874218 | 118.315 | -357.594 |

| | | | | |
|---|---|---|---|---|
| 174 | 30 | 0.892733 | 119.112 | -330.812 |
| 175 | 30.5 | 0.907769 | 119.936 | -303.125 |
| 176 | 33.1 | 0.926859 | 120.795 | -272.446 |
| 177 | 33.6 | 0.946291 | 121.691 | -240.651 |
| 178 | 34 | 0.9621 | 122.616 | -207.939 |
| 179 | 34.1 | 0.982202 | 123.581 | -174.446 |
| 180 | 35 | 1.00271 | 124.587 | -139.351 |
| 181 | 39.7 | 1.01943 | 125.626 | -98.8799 |
| 182 | 40 | 1.04073 | 126.709 | -57.2506 |
| 183 | 46 | 1.06252 | 127.838 | -8.37471 |
| 184 | 51.6 | 1.08032 | 129.005 | 47.3698 |
| 185 | 56.6 | 1.10306 | 130.222 | 109.803 |
| 186 | 60 | 1.12639 | 131.49 | 177.387 |
| 187 | 62 | 1.1455 | 132.803 | 248.408 |
| 188 | 62.4 | 1.17 | 134.172 | 321.416 |
| 189 | 72 | 1.19522 | 135.6 | 407.472 |
| 190 | 73.8 | 1.21596 | 137.079 | 497.21 |
| 191 | 75 | 1.24264 | 138.623 | 590.408 |
| 192 | 76 | 1.27024 | 140.236 | 686.946 |
| 193 | 79 | 1.29303 | 141.908 | 789.096 |
| 194 | 88 | 1.32251 | 143.657 | 905.476 |
| 195 | 92 | 1.35317 | 145.488 | 1029.97 |
| 196 | 95 | 1.37866 | 147.389 | 1160.94 |
| 197 | 96 | 1.41183 | 149.382 | 1296.48 |
| 198 | 110 | 1.44663 | 151.475 | 1455.61 |
| 199 | 110 | 1.47579 | 153.653 | 1617.94 |
| 200 | 110 | 1.5141 | 155.946 | 1784.49 |
| 201 | 120 | 1.55477 | 158.363 | 1971.07 |
| 202 | 120 | 1.58927 | 160.889 | 2161.78 |
| 203 | 150 | 1.63524 | 163.563 | 2407.06 |
| 204 | 150 | 1.68494 | 166.402 | 2659.81 |
| 205 | 180 | 1.72793 | 169.387 | 2970.83 |
| 206 | 200 | 1.78661 | 172.579 | 3328.16 |
| 207 | 220 | 1.85218 | 176.01 | 3735.63 |
| 208 | 250 | 1.91103 | 179.662 | 4213.39 |
| 209 | 320 | 1.99539 | 183.644 | 4851.92 |
| 210 | 330 | 2.09693 | 188.041 | 5543.91 |
| 211 | 346 | 2.19728 | 192.869 | 6304.17 |
| 212 | 410 | 2.36561 | 198.465 | 7274.07 |
| 213 | 610 | 2.65209 | 205.498 | 8891.84 |

Data Set Standard Deviation = 67.4091
Numerator = 7.90648e+007
Denominator = 1.97962e+008
W Statistic = 0.399394 = 7.90648e+007 / 1.97962e+008

5% Critical value of 0.976 exceeds 0.399394
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.399394
Evidence of non-normality at 99% level of significance

# Shapiro-Francia Test of Normality

## Parameter: Zinc

## All Locations

## Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 213

| i | x(i) | m(i) | sum(m^2) | sum(mx) |
|---|---|---|---|---|
| 1 | 0.262364 | -2.65209 | 7.03356 | -0.695813 |
| 2 | 0.993252 | -2.36561 | 12.6297 | -3.04546 |
| 3 | 1.02962 | -2.19728 | 17.4578 | -5.30783 |
| 4 | 1.1314 | -2.09693 | 21.8549 | -7.6803 |
| 5 | 1.16315 | -1.99539 | 25.8365 | -10.0012 |
| 6 | 1.28093 | -1.91103 | 29.4885 | -12.4492 |
| 7 | 1.28093 | -1.85218 | 32.9191 | -14.8217 |
| 8 | 1.30833 | -1.78661 | 36.111 | -17.1591 |
| 9 | 1.36098 | -1.72793 | 39.0968 | -19.5108 |
| 10 | 1.50408 | -1.68494 | 41.9358 | -22.0451 |
| 11 | 1.52606 | -1.63524 | 44.6098 | -24.5406 |
| 12 | 1.60944 | -1.58927 | 47.1356 | -27.0984 |
| 13 | 1.60944 | -1.55477 | 49.5529 | -29.6007 |
| 14 | 1.60944 | -1.5141 | 51.8454 | -32.0376 |
| 15 | 1.60944 | -1.47579 | 54.0234 | -34.4128 |
| 16 | 1.7156 | -1.44663 | 56.1161 | -36.8946 |
| 17 | 1.74047 | -1.41183 | 58.1094 | -39.3518 |
| 18 | 1.80829 | -1.37866 | 60.0101 | -41.8448 |
| 19 | 1.8453 | -1.35317 | 61.8412 | -44.3419 |
| 20 | 1.8563 | -1.32251 | 63.5902 | -46.7968 |
| 21 | 1.88555 | -1.29303 | 65.2621 | -49.2349 |
| 22 | 1.93152 | -1.27024 | 66.8756 | -51.6884 |
| 23 | 1.97408 | -1.24264 | 68.4198 | -54.1415 |
| 24 | 2.07819 | -1.21596 | 69.8983 | -56.6685 |
| 25 | 2.11626 | -1.19522 | 71.3269 | -59.1979 |
| 26 | 2.16332 | -1.17 | 72.6958 | -61.729 |
| 27 | 2.17475 | -1.1455 | 74.008 | -64.2201 |
| 28 | 2.25129 | -1.12639 | 75.2767 | -66.756 |
| 29 | 2.26176 | -1.10306 | 76.4935 | -69.2508 |
| 30 | 2.33214 | -1.08032 | 77.6606 | -71.7703 |
| 31 | 2.37955 | -1.06252 | 78.7895 | -74.2986 |
| 32 | 2.3979 | -1.04073 | 79.8726 | -76.7942 |
| 33 | 2.41591 | -1.01943 | 80.9119 | -79.257 |
| 34 | 2.45101 | -1.00271 | 81.9173 | -81.7147 |
| 35 | 2.5337 | -0.982202 | 82.882 | -84.2033 |
| 36 | 2.57261 | -0.9621 | 83.8077 | -86.6784 |
| 37 | 2.63906 | -0.946291 | 84.7031 | -89.1757 |
| 38 | 2.89037 | -0.926859 | 85.5622 | -91.8547 |
| 39 | 2.99573 | -0.907769 | 86.3862 | -94.5741 |
| 40 | 3.04452 | -0.892733 | 87.1832 | -97.2921 |
| 41 | 3.09104 | -0.874218 | 87.9475 | -99.9943 |
| 42 | 3.2581 | -0.855996 | 88.6802 | -102.783 |
| 43 | 3.2581 | -0.841621 | 89.3885 | -105.525 |
| 44 | 3.29584 | -0.823893 | 90.0673 | -108.241 |
| 45 | 3.29584 | -0.806422 | 90.7176 | -110.899 |
| 46 | 3.3322 | -0.792618 | 91.3459 | -113.54 |
| 47 | 3.3322 | -0.775574 | 91.9474 | -116.124 |
| 48 | 3.4012 | -0.758753 | 92.5231 | -118.705 |
| 49 | 3.4012 | -0.745449 | 93.0788 | -121.24 |

| | | | | |
|---|---|---|---|---|
| 50 | 3.4012 | -0.729003 | 93.6102 | -123.72 |
| 51 | 3.4012 | -0.712751 | 94.1183 | -126.144 |
| 52 | 3.4012 | -0.699883 | 94.6081 | -128.524 |
| 53 | 3.4012 | -0.683969 | 95.0759 | -130.851 |
| 54 | 3.4012 | -0.668209 | 95.5224 | -133.123 |
| 55 | 3.4012 | -0.652622 | 95.9483 | -135.343 |
| 56 | 3.4012 | -0.640266 | 96.3583 | -137.521 |
| 57 | 3.4012 | -0.624956 | 96.7488 | -139.646 |
| 58 | 3.4012 | -0.609791 | 97.1207 | -141.72 |
| 59 | 3.4012 | -0.597761 | 97.478 | -143.753 |
| 60 | 3.4012 | -0.582841 | 97.8177 | -145.736 |
| 61 | 3.4012 | -0.568052 | 98.1404 | -147.668 |
| 62 | 3.4012 | -0.556308 | 98.4499 | -149.56 |
| 63 | 3.4012 | -0.541736 | 98.7433 | -151.402 |
| 64 | 3.4012 | -0.527289 | 99.0214 | -153.196 |
| 65 | 3.4012 | -0.515791 | 99.2874 | -154.95 |
| 66 | 3.4012 | -0.501527 | 99.5389 | -156.656 |
| 67 | 3.4012 | -0.487364 | 99.7764 | -158.314 |
| 68 | 3.4012 | -0.476105 | 100.003 | -159.933 |
| 69 | 3.4012 | -0.462114 | 100.217 | -161.505 |
| 70 | 3.4012 | -0.448213 | 100.418 | -163.029 |
| 71 | 3.4012 | -0.437153 | 100.609 | -164.516 |
| 72 | 3.4012 | -0.423405 | 100.788 | -165.956 |
| 73 | 3.4012 | -0.409735 | 100.956 | -167.35 |
| 74 | 3.4012 | -0.398855 | 101.115 | -168.706 |
| 75 | 3.4012 | -0.385321 | 101.263 | -170.017 |
| 76 | 3.4012 | -0.371856 | 101.402 | -171.282 |
| 77 | 3.4012 | -0.361133 | 101.532 | -172.51 |
| 78 | 3.4012 | -0.347787 | 101.653 | -173.693 |
| 79 | 3.4012 | -0.334503 | 101.765 | -174.83 |
| 80 | 3.4012 | -0.323919 | 101.87 | -175.932 |
| 81 | 3.4012 | -0.310738 | 101.966 | -176.989 |
| 82 | 3.4012 | -0.297612 | 102.055 | -178.001 |
| 83 | 3.4012 | -0.287147 | 102.137 | -178.978 |
| 84 | 3.4012 | -0.27411 | 102.213 | -179.91 |
| 85 | 3.4012 | -0.26112 | 102.281 | -180.798 |
| 86 | 3.4012 | -0.250759 | 102.344 | -181.651 |
| 87 | 3.4012 | -0.237847 | 102.4 | -182.46 |
| 88 | 3.4012 | -0.224974 | 102.451 | -183.225 |
| 89 | 3.4012 | -0.214702 | 102.497 | -183.956 |
| 90 | 3.4012 | -0.201894 | 102.538 | -184.642 |
| 91 | 3.4012 | -0.189118 | 102.573 | -185.285 |
| 92 | 3.4012 | -0.17892 | 102.605 | -185.894 |
| 93 | 3.4012 | -0.166199 | 102.633 | -186.459 |
| 94 | 3.4012 | -0.153505 | 102.657 | -186.981 |
| 95 | 3.4012 | -0.143367 | 102.677 | -187.469 |
| 96 | 3.4012 | -0.130716 | 102.694 | -187.914 |
| 97 | 3.4012 | -0.118085 | 102.708 | -188.315 |
| 98 | 3.4012 | -0.107995 | 102.72 | -188.683 |
| 99 | 3.4012 | -0.0953969 | 102.729 | -189.007 |
| 100 | 3.4012 | -0.0828129 | 102.736 | -189.289 |
| 101 | 3.4012 | -0.0727562 | 102.741 | -189.536 |
| 102 | 3.4012 | -0.0601949 | 102.745 | -189.741 |
| 103 | 3.4012 | -0.0476439 | 102.747 | -189.903 |
| 104 | 3.4012 | -0.0376076 | 102.748 | -190.031 |
| 105 | 3.4012 | -0.0250691 | 102.749 | -190.116 |
| 106 | 3.4012 | -0.0125328 | 102.749 | -190.159 |
| 107 | 3.4012 | 0 | 102.749 | -190.159 |
| 108 | 3.4012 | 0.0125328 | 102.749 | -190.116 |
| 109 | 3.4012 | 0.0250691 | 102.75 | -190.031 |
| 110 | 3.4012 | 0.0376076 | 102.751 | -189.903 |
| 111 | 3.4012 | 0.0476439 | 102.754 | -189.741 |

| | | | | |
|---|---|---|---|---|
| 112 | 3.4012 | 0.0601949 | 102.757 | -189.536 |
| 113 | 3.4012 | 0.0727562 | 102.763 | -189.289 |
| 114 | 3.4012 | 0.0828129 | 102.769 | -189.007 |
| 115 | 3.4012 | 0.0953969 | 102.779 | -188.683 |
| 116 | 3.4012 | 0.107995 | 102.79 | -188.315 |
| 117 | 3.4012 | 0.118085 | 102.804 | -187.914 |
| 118 | 3.4012 | 0.130716 | 102.821 | -187.469 |
| 119 | 3.4012 | 0.143367 | 102.842 | -186.981 |
| 120 | 3.4012 | 0.153505 | 102.865 | -186.459 |
| 121 | 3.4012 | 0.166199 | 102.893 | -185.894 |
| 122 | 3.4012 | 0.17892 | 102.925 | -185.285 |
| 123 | 3.4012 | 0.189118 | 102.961 | -184.642 |
| 124 | 3.4012 | 0.201894 | 103.002 | -183.956 |
| 125 | 3.4012 | 0.214702 | 103.048 | -183.225 |
| 126 | 3.4012 | 0.224974 | 103.098 | -182.46 |
| 127 | 3.4012 | 0.237847 | 103.155 | -181.651 |
| 128 | 3.4012 | 0.250759 | 103.218 | -180.798 |
| 129 | 3.4012 | 0.26112 | 103.286 | -179.91 |
| 130 | 3.4012 | 0.27411 | 103.361 | -178.978 |
| 131 | 3.4012 | 0.287147 | 103.443 | -178.001 |
| 132 | 3.4012 | 0.297612 | 103.532 | -176.989 |
| 133 | 3.4012 | 0.310738 | 103.629 | -175.932 |
| 134 | 3.4012 | 0.323919 | 103.734 | -174.83 |
| 135 | 3.4012 | 0.334503 | 103.845 | -173.693 |
| 136 | 3.4012 | 0.347787 | 103.966 | -172.51 |
| 137 | 3.4012 | 0.361133 | 104.097 | -171.282 |
| 138 | 3.4012 | 0.371856 | 104.235 | -170.017 |
| 139 | 3.4012 | 0.385321 | 104.384 | -168.706 |
| 140 | 3.4012 | 0.398855 | 104.543 | -167.35 |
| 141 | 3.4012 | 0.409735 | 104.711 | -165.956 |
| 142 | 3.4012 | 0.423405 | 104.89 | -164.516 |
| 143 | 3.4012 | 0.437153 | 105.081 | -163.029 |
| 144 | 3.4012 | 0.448213 | 105.282 | -161.505 |
| 145 | 3.4012 | 0.462114 | 105.495 | -159.933 |
| 146 | 3.4012 | 0.476105 | 105.722 | -158.314 |
| 147 | 3.4012 | 0.487364 | 105.96 | -156.656 |
| 148 | 3.4012 | 0.501527 | 106.211 | -154.95 |
| 149 | 3.4012 | 0.515791 | 106.477 | -153.196 |
| 150 | 3.4012 | 0.52728 | 106.755 | -151.402 |
| 151 | 3.4012 | 0.541736 | 107.049 | -149.56 |
| 152 | 3.4012 | 0.556308 | 107.358 | -147.668 |
| 153 | 3.4012 | 0.568052 | 107.681 | -145.736 |
| 154 | 3.4012 | 0.582841 | 108.02 | -143.753 |
| 155 | 3.4012 | 0.597761 | 108.378 | -141.72 |
| 156 | 3.4012 | 0.609791 | 108.75 | -139.646 |
| 157 | 3.4012 | 0.624956 | 109.14 | -137.521 |
| 158 | 3.4012 | 0.640266 | 109.55 | -135.343 |
| 159 | 3.4012 | 0.652622 | 109.976 | -133.123 |
| 160 | 3.4012 | 0.668209 | 110.423 | -130.851 |
| 161 | 3.4012 | 0.68396 | 110.89 | -128.524 |
| 162 | 3.4012 | 0.699883 | 111.38 | -126.144 |
| 163 | 3.4012 | 0.712751 | 111.888 | -123.72 |
| 164 | 3.4012 | 0.729003 | 112.42 | -121.24 |
| 165 | 3.4012 | 0.745449 | 112.975 | -118.705 |
| 166 | 3.4012 | 0.758753 | 113.551 | -116.124 |
| 167 | 3.4012 | 0.775574 | 114.153 | -113.486 |
| 168 | 3.4012 | 0.792618 | 114.781 | -110.79 |
| 169 | 3.4012 | 0.806422 | 115.431 | -108.048 |
| 170 | 3.4012 | 0.823893 | 116.11 | -105.245 |
| 171 | 3.4012 | 0.841621 | 116.818 | -102.383 |
| 172 | 3.4012 | 0.855996 | 117.551 | -99.4714 |
| 173 | 3.4012 | 0.874218 | 118.315 | -96.498 |

| | | | | | |
|---|---|---|---|---|---|
| 174 | 3.4012 | 0.892733 | | 119.112 | -93.4617 |
| 175 | 3.41773 | 0.907769 | | 119.936 | -90.3592 |
| 176 | 3.49953 | 0.926859 | | 120.795 | -87.1156 |
| 177 | 3.51453 | 0.946291 | | 121.691 | -83.7898 |
| 178 | 3.52636 | 0.9621 | 122.616 | -80.3971 | |
| 179 | 3.5293 | 0.982202 | | 123.581 | -76.9306 |
| 180 | 3.55535 | 1.00271 | 124.587 | -73.3656 | |
| 181 | 3.68135 | 1.01943 | 125.626 | -69.6128 | |
| 182 | 3.68888 | 1.04073 | 126.709 | -65.7736 | |
| 183 | 3.82864 | 1.06252 | 127.838 | -61.7056 | |
| 184 | 3.94352 | 1.08032 | 129.005 | -57.4454 | |
| 185 | 4.03601 | 1.10306 | 130.222 | -52.9934 | |
| 186 | 4.09434 | 1.12639 | 131.49 | -48.3816 | |
| 187 | 4.12713 | 1.1455 | 132.803 | -43.6539 | |
| 188 | 4.13357 | 1.17 | 134.172 | -38.8176 | |
| 189 | 4.27667 | 1.19522 | 135.6 | -33.7061 | |
| 190 | 4.30136 | 1.21596 | 137.079 | -28.4758 | |
| 191 | 4.31749 | 1.24264 | 138.623 | -23.1107 | |
| 192 | 4.33073 | 1.27024 | 140.236 | -17.6096 | |
| 193 | 4.36945 | 1.29303 | 141.908 | -11.9598 | |
| 194 | 4.47734 | 1.32251 | 143.657 | -6.03849 | |
| 195 | 4.52179 | 1.35317 | 145.488 | 0.0802759 | |
| 196 | 4.55388 | 1.37866 | 147.389 | 6.35851 | |
| 197 | 4.56435 | 1.41183 | 149.382 | 12.8026 | |
| 198 | 4.70048 | 1.44663 | 151.475 | 19.6025 | |
| 199 | 4.70048 | 1.47579 | 153.653 | 26.5394 | |
| 200 | 4.70048 | 1.5141 | 155.946 | 33.6564 | |
| 201 | 4.78749 | 1.55477 | 158.363 | 41.0999 | |
| 202 | 4.78749 | 1.58927 | 160.889 | 48.7085 | |
| 203 | 5.01064 | 1.63524 | 163.563 | 56.9021 | |
| 204 | 5.01064 | 1.68494 | 166.402 | 65.3447 | |
| 205 | 5.19296 | 1.72793 | 169.387 | 74.3177 | |
| 206 | 5.29832 | 1.78661 | 172.579 | 83.7838 | |
| 207 | 5.39363 | 1.85218 | 176.01 | 93.7737 | |
| 208 | 5.52146 | 1.91103 | 179.662 | 104.325 | |
| 209 | 5.76832 | 1.99539 | 183.644 | 115.835 | |
| 210 | 5.79909 | 2.09693 | 188.041 | 127.996 | |
| 211 | 5.84644 | 2.19728 | 192.869 | 140.842 | |
| 212 | 6.01616 | 2.36561 | 198.465 | 155.074 | |
| 213 | 6.41346 | 2.65209 | 205.498 | 172.083 | |

Data Set Standard Deviation = 0.917623
Numerator = 29612.6
Denominator = 36683.7
W Statistic = 0.807241 = 29612.6 / 36683.7

5% Critical value of 0.976 exceeds 0.807241
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.807241
Evidence of non-normality at 99% level of significance

# Kruskal-Wallis Non-Parametric Test

## Parameter: Zinc

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

# Kruskal Wallis Ranks

## Background Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-13 | 3/16/1999 | ND<3.4012 | 64.5 |
| | 9/23/1999 | 3.2581 J | 169 |
| | 3/15/2000 | 4.56435 | 197 |
| | 9/24/2003 | 6.41346 | 213 |
| | 3/11/2004 | ND<3.4012 | 64.5 |
| | 10/12/2004 | ND<3.4012 | 64.5 |
| | 4/1/2005 | ND<3.4012 | 64.5 |
| | 10/25/2005 | ND<3.4012 | 64.5 |
| | 4/29/2006 | ND<3.4012 | 64.5 |
| | 11/18/2006 | 2.33214 J | 157 |
| | 5/23/2007 | ND<3.4012 | 64.5 |
| | 11/28/2007 | ND<3.4012 | 64.5 |
| | 6/5/2008 | 2.41591 J | 160 |
| | 11/20/2008 | ND<3.4012 | 64.5 |
| | 6/11/2009 | 2.63906 | 164 |
| | 6/30/2010 | 1.52606 J H | 138 |
| | 11/12/2010 | 1.74047 J | 144 |

Rank Sum = 1922.5
Rank Mean = 113.088

Background Rank Sum = 1922.5
Background Rank Mean = 113.088

## Compliance Wells

| Well ID | Date | Result | Rank |
|---|---|---|---|
| MW-10 | 7/20/1995 | ND<3.4012 | 64.5 |
| | 8/24/1995 | ND<3.4012 | 64.5 |
| | 9/28/1995 | ND<3.4012 | 64.5 |
| | 10/26/1995 | ND<3.4012 | 64.5 |
| | 11/19/1996 | ND<3.4012 | 64.5 |
| | 12/19/1996 | ND<3.4012 | 64.5 |
| | 3/24/1997 | 4.70048 | 198 |
| | 9/24/1997 | ND<3.4012 | 64.5 |
| | 4/7/1998 | 5.01064 | 203 |
| | 9/23/1998 | ND<3.4012 | 64.5 |
| | 3/16/1999 | ND<3.4012 | 64.5 |
| | 9/23/1999 | ND<3.4012 | 64.5 |
| | 3/15/2000 | ND<3.4012 | 64.5 |
| | 9/24/2003 | ND<3.4012 | 64.5 |
| | 3/11/2004 | ND<3.4012 | 64.5 |
| | 10/12/2004 | ND<3.4012 | 64.5 |
| | 4/1/2005 | ND<3.4012 | 64.5 |
| | 10/25/2005 | ND<3.4012 | 64.5 |
| | 4/29/2006 | ND<3.4012 | 64.5 |
| | 11/18/2006 | ND<3.4012 | 64.5 |
| | 5/23/2007 | 4.13357 | 188 |

| | | | | |
|---|---|---|---|---|
| | 11/28/2007 | 6.01616 | | 212 |
| | 6/5/2008 | 2.37955 | J | 158 |
| | 11/20/2008 | ND<3.4012 | | 64.5 |
| | 6/11/2009 | 3.3322 | | 173 |
| | 6/30/2010 | 5.39363 | H | 207 |
| | 11/12/2010 | 1.97408 | J | 150 |

Rank Sum = 2714.5
Rank Mean = 100.537

| | | | | |
|---|---|---|---|---|
| MW-9 | 7/20/1995 | ND<3.4012 | | 64.5 |
| | 8/24/1995 | 3.49953 | J | 176 |
| | 9/28/1995 | ND<3.4012 | | 64.5 |
| | 10/26/1995 | ND<3.4012 | | 64.5 |
| | 11/19/1996 | ND<3.4012 | | 64.5 |
| | 12/19/1996 | ND<3.4012 | | 64.5 |
| | 3/24/1997 | 4.70048 | | 199 |
| | 9/24/1997 | ND<3.4012 | | 64.5 |
| | 4/7/1998 | ND<3.4012 | | 64.5 |
| | 9/23/1998 | 4.47734 | | 194 |
| | 3/16/1999 | ND<3.4012 | | 64.5 |
| | 9/23/1999 | 1.60944 | J | 139 |
| | 3/15/2000 | ND<3.4012 | | 64.5 |
| | 9/24/2003 | 4.78749 | | 201 |
| | 3/11/2004 | ND<3.4012 | | 64.5 |
| | 10/12/2004 | ND<3.4012 | | 64.5 |
| | 4/1/2005 | ND<3.4012 | | 64.5 |
| | 10/25/2005 | ND<3.4012 | | 64.5 |
| | 4/29/2006 | ND<3.4012 | | 64.5 |
| | 11/18/2006 | 1.7156 | J | 143 |
| | 5/23/2007 | 4.03601 | | 185 |
| | 11/28/2007 | 3.2581 | J | 170 |
| | 6/5/2008 | ND<3.4012 | | 64.5 |
| | 11/20/2008 | ND<3.4012 | | 64.5 |
| | 6/11/2009 | 3.09104 | | 168 |
| | 6/30/2010 | 1.28093 | J H | 133 |
| | 11/12/2010 | 1.02962 | J | 130 |

Rank Sum = 2870
Rank Mean = 106.296

| | | | | |
|---|---|---|---|---|
| MW-8 | 7/20/1995 | ND<3.4012 | | 64.5 |
| | 8/24/1995 | 3.04452 | J | 167 |
| | 9/28/1995 | 3.51453 | J | 177 |
| | 10/26/1995 | ND<3.4012 | | 64.5 |
| | 11/19/1996 | ND<3.4012 | | 64.5 |
| | 12/19/1996 | ND<3.4012 | | 64.5 |
| | 3/24/1997 | ND<3.4012 | | 64.5 |
| | 9/24/1997 | 4.12713 | | 187 |
| | 4/7/1998 | 5.01064 | | 204 |
| | 9/23/1998 | 4.78749 | | 202 |
| | 3/16/1999 | ND<3.4012 | | 64.5 |
| | 9/23/1999 | ND<3.4012 | | 64.5 |
| | 3/15/2000 | ND<3.4012 | | 64.5 |
| | 9/24/2003 | ND<3.4012 | | 64.5 |
| | 3/11/2004 | ND<3.4012 | | 64.5 |
| | 10/12/2004 | ND<3.4012 | | 64.5 |
| | 4/1/2005 | ND<3.4012 | | 64.5 |
| | 10/25/2005 | ND<3.4012 | | 64.5 |
| | 4/29/2006 | ND<3.4012 | | 64.5 |
| | 11/18/2006 | 1.88555 | J | 148 |
| | 5/23/2007 | 3.94352 | | 184 |
| | 11/28/2007 | 3.29584 | J | 171 |
| | 6/5/2008 | 2.16332 | J | 153 |

| | | | |
|---|---|---|---|
| | 11/20/2008 | 3.3322 J | 174 |
| | 6/11/2009 | ND<0.262364 | 64.5 |
| | 6/30/2010 | 1.80829 J H | 145 |
| | 11/12/2010 | 1.16315 J | 132 |

Rank Sum = 3011.5
Rank Mean = 111.537

| | | | |
|---|---|---|---|
| MW-7 | 7/20/1995 | ND<3.4012 | 64.5 |
| | 8/24/1995 | 3.68888 J | 182 |
| | 9/28/1995 | 3.55535 J | 180 |
| | 10/26/1995 | ND<3.4012 | 64.5 |
| | 11/19/1996 | ND<3.4012 | 64.5 |
| | 12/19/1996 | ND<3.4012 | 64.5 |
| | 3/24/1997 | ND<3.4012 | 64.5 |
| | 9/24/1997 | 4.36945 | 193 |
| | 4/7/1998 | ND<3.4012 | 64.5 |
| | 9/23/1998 | 4.55388 | 196 |
| | 3/16/1999 | ND<3.4012 | 64.5 |
| | 9/23/1999 | 1.60944 J | 140 |
| | 3/15/2000 | 2.3979 J | 159 |
| | 9/24/2003 | 5.19296 | 205 |
| | 3/11/2004 | ND<3.4012 | 64.5 |
| | 10/12/2004 | ND<3.4012 | 64.5 |
| | 4/1/2005 | ND<3.4012 | 64.5 |
| | 10/25/2005 | ND<3.4012 | 64.5 |
| | 4/29/2006 | ND<3.4012 | 64.5 |
| | 11/18/2006 | 1.60944 J | 141 |
| | 5/23/2007 | 4.30136 | 190 |
| | 11/28/2007 | ND<3.4012 | 64.5 |
| | 6/5/2008 | 2.45101 J | 161 |
| | 11/20/2008 | 4.33073 | 192 |
| | 6/11/2009 | 1.36098 J | 136 |
| | 6/30/2010 | 1.30833 J H | 135 |
| | 11/12/2010 | 1.60944 J | 142 |

Rank Sum = 3190.5
Rank Mean = 118.167

| | | | |
|---|---|---|---|
| MW-6 | 7/20/1995 | ND<3.4012 | 64.5 |
| | 8/24/1995 | 5.84644 | 211 |
| | 9/28/1995 | 2.25129 J | 155 |
| | 10/26/1995 | ND<3.4012 | 64.5 |
| | 11/19/1996 | ND<3.4012 | 64.5 |
| | 12/19/1996 | ND<3.4012 | 64.5 |
| | 3/24/1997 | ND<3.4012 | 64.5 |
| | 9/24/1997 | 4.27667 | 189 |
| | 4/7/1998 | 4.31749 | 191 |
| | 9/23/1998 | 5.29832 | 206 |
| | 3/16/1999 | ND<3.4012 | 64.5 |
| | 9/23/1999 | ND<3.4012 | 64.5 |
| | 3/15/2000 | ND<3.4012 | 64.5 |
| | 9/24/2003 | 5.76832 | 209 |
| | 3/11/2004 | ND<3.4012 | 64.5 |
| | 10/12/2004 | ND<3.4012 | 64.5 |
| | 4/1/2005 | ND<3.4012 | 64.5 |
| | 10/25/2005 | ND<3.4012 | 64.5 |
| | 4/29/2006 | ND<3.4012 | 64.5 |
| | 11/18/2006 | ND<3.4012 | 64.5 |
| | 5/23/2007 | ND<3.4012 | 64.5 |
| | 11/28/2007 | ND<3.4012 | 64.5 |
| | 6/5/2008 | 2.07819 J | 151 |
| | 11/20/2008 | ND<3.4012 | 64.5 |
| | 6/11/2009 | 2.89037 | 165 |

| | | | |
|---|---|---|---|
| | 6/30/2010 | 0.993252 J H | 129 |
| | 11/12/2010 | 1.8563 J | 147 |

Rank Sum = 2849.5
Rank Mean = 105.537

| | | | |
|---|---|---|---|
| MW-12BR | 3/16/1999 | ND<3.4012 | 64.5 |
| | 9/23/1999 | ND<3.4012 | 64.5 |
| | 3/15/2000 | ND<3.4012 | 64.5 |
| | 9/24/2003 | ND<3.4012 | 64.5 |
| | 3/11/2004 | ND<3.4012 | 64.5 |
| | 10/12/2004 | ND<3.4012 | 64.5 |
| | 4/1/2005 | ND<3.4012 | 64.5 |
| | 10/25/2005 | ND<3.4012 | 64.5 |
| | 4/29/2006 | ND<3.4012 | 64.5 |
| | 11/18/2006 | 1.8453 J | 146 |
| | 5/23/2007 | ND<3.4012 | 64.5 |
| | 11/28/2007 | ND<3.4012 | 64.5 |
| | 6/5/2008 | 2.57261 J | 163 |
| | 11/20/2008 | ND<3.4012 | 64.5 |
| | 6/11/2009 | 2.11626 J | 152 |
| | 6/30/2010 | 3.52636 | 178 |
| | 11/12/2010 | 2.26176 J | 156 |

Rank Sum = 1569
Rank Mean = 92.2941

| | | | |
|---|---|---|---|
| MW-12AR | 3/16/1999 | ND<3.4012 | 64.5 |
| | 9/23/1999 | ND<3.4012 | 64.5 |
| | 3/15/2000 | ND<3.4012 | 64.5 |
| | 9/24/2003 | 5.52146 | 208 |
| | 3/11/2004 | ND<3.4012 | 64.5 |
| | 10/12/2004 | ND<3.4012 | 64.5 |
| | 4/1/2005 | ND<3.4012 | 64.5 |
| | 10/25/2005 | ND<3.4012 | 64.5 |
| | 4/29/2006 | ND<3.4012 | 64.5 |
| | 11/18/2006 | ND<3.4012 | 64.5 |
| | 5/23/2007 | 2.5337 J | 162 |
| | 11/28/2007 | ND<3.4012 | 64.5 |
| | 6/5/2008 | ND<3.4012 | 64.5 |
| | 11/20/2008 | ND<3.4012 | 64.5 |
| | 6/11/2009 | 1.50408 J | 137 |
| | 6/30/2010 | 2.17475 J | 154 |
| | 11/12/2010 | 1.1314 J | 131 |

Rank Sum = 1566
Rank Mean = 92.1176

| | | | |
|---|---|---|---|
| MW-11R | 7/20/1995 | ND<3.4012 | 64.5 |
| | 8/24/1995 | 3.5293 J | 179 |
| | 9/28/1995 | 3.41773 | 175 |
| | 10/26/1995 | ND<3.4012 | 64.5 |
| | 11/19/1996 | ND<3.4012 | 64.5 |
| | 12/19/1996 | ND<3.4012 | 64.5 |
| | 3/24/1997 | ND<3.4012 | 64.5 |
| | 9/24/1997 | 4.52179 | 195 |
| | 4/7/1998 | 5.79909 | 210 |
| | 9/23/1998 | 4.70048 | 200 |
| | 3/16/1999 | ND<3.4012 | 64.5 |
| | 9/23/1999 | 3.29584 J | 172 |
| | 3/15/2000 | ND<3.4012 | 64.5 |
| | 9/24/2003 | 4.09434 | 186 |
| | 3/11/2004 | ND<3.4012 | 64.5 |
| | 10/12/2004 | ND<3.4012 | 64.5 |
| | 4/1/2005 | ND<3.4012 | 64.5 |

| | | |
|---|---|---|
| 10/25/2005 | ND<3.4012 | 64.5 |
| 4/29/2006 | 2.99573 J | 166 |
| 11/18/2006 | ND<3.4012 | 64.5 |
| 5/23/2007 | 3.68135 | 181 |
| 11/28/2007 | ND<3.4012 | 64.5 |
| 6/5/2008 | ND<3.4012 | 64.5 |
| 11/20/2008 | ND<3.4012 | 64.5 |
| 6/11/2009 | 3.82864 | 183 |
| 6/30/2010 | 1.93152 J H | 149 |
| 11/12/2010 | 1.28093 J | 134 |

Rank Sum = 3097.5
Rank Mean = 114.722

## Calculation Results:

Kruskal-Wallis H Statistic = 3.89717
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 4.97728
95% Confidence comparison value is 15.5073 at 8 degrees of freedom
3.89717 < 15.5073 indicating no significant group difference at 5% significance level
4.97728 < 15.5073 indicating no significant group difference at 5% significance level when adjusted for ties