



Appendix G: Statistical Testing Results

Appendix G1 - ANOVA: Distance from Fire vs Ash Abundance



Nonparametric Oneway ANOVA (Kruskal-Wallis Test)
Date/Time of Computation ProUCL 5.114/02/2017 12:05:29 PM
From File M12253_011_RPT_All_Data_ProUCL_Input.xls
Full Precision OFF

Distance_M

| Group | Obs | Median | Ave Ran | Z |
|----------------|-----|--------|---------|--------|
| minor ash | 23 | 450 | 22.83 | -1.197 |
| moderate ash | 6 | 412.6 | 15.17 | -1.851 |
| no visible ash | 12 | 1777 | 37.17 | 3.18 |
| trace ash | 9 | 585.6 | 23.67 | -0.417 |
| Overall | 50 | 605.7 | 25.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 11.62 | 3 | 0.00882 |
| 11.62 | 3 | 0.00882 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

**Appendix G2: Two sample comparison testing -
Distance of Properties from Fire - Moderate Ash vs No Visible Ash**



Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without

User Selected Options

Date/Time of Computation ProUCL 5.114/02/2017 12:44:43 PM
From File M12253_011_RPT_All_Data_ProUCL_Input.xls
Full Precision OFF
Confidence Coefficient 95%
Substantial Difference 0
Selected Null Hypothesis Sample 1 Mean/Median \geq Sample 2 Mean/Median (Form 2)
Alternative Hypothesis Sample 1 Mean/Median $<$ Sample 2 Mean/Median

Sample 1 Data: Distance_M(moderate ash)

Sample 2 Data: Distance_M(no visible ash)

Raw Statistics

| | Sample 1 | Sample 2 |
|---------------------------------|----------|----------|
| Number of Valid Observations | 6 | 12 |
| Number of Distinct Observations | 6 | 12 |
| Minimum | 97.77 | 229.9 |
| Maximum | 1230 | 2981 |
| Mean | 449.6 | 1749 |
| Median | 412.6 | 1777 |
| SD | 414.8 | 772.9 |
| SE of Mean | 169.4 | 223.1 |

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 \geq Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat 26
WMW U-Stat 5
Mean (U) 36
SD(U) - Adj ties 10.68
WMW U-Stat Critical Value (0.05) 18
Standardized WMW U-Stat -2.95
Approximate P-Value 0.00159

Conclusion with Alpha = 0.05

Reject H0, Conclude Sample 1 $<$ Sample 2

**Appendix G3: Two sample comparison testing -
Distance of Properties from Fire - Minor Ash vs No Visible Ash**



Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without

User Selected Options

Date/Time of Computation ProUCL 5.114/02/2017 12:46:47 PM
From File M12253_011_RPT_All_Data_ProUCL_Input.xls
Full Precision OFF
Confidence Coefficient 95%
Substantial Difference 0
Selected Null Hypothesis Sample 1 Mean/Median \geq Sample 2 Mean/Median (Form 2)
Alternative Hypothesis Sample 1 Mean/Median $<$ Sample 2 Mean/Median

Sample 1 Data: Distance_M(minor ash)

Sample 2 Data: Distance_M(no visible ash)

Raw Statistics

| | Sample 1 | Sample 2 |
|---------------------------------|----------|----------|
| Number of Valid Observations | 23 | 12 |
| Number of Distinct Observations | 23 | 12 |
| Minimum | 66.48 | 229.9 |
| Maximum | 3451 | 2981 |
| Mean | 943.8 | 1749 |
| Median | 450 | 1777 |
| SD | 1015 | 772.9 |
| SE of Mean | 211.7 | 223.1 |

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 \geq Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat 345
Standardized WMW U-Stat -2.415
Mean (U) 138
SD(U) - Adj ties 28.77
Approximate U-Stat Critical Value (0.05) -1.645
P-Value (Adjusted for Ties) 0.00786

Conclusion with Alpha = 0.05

Reject H0, Conclude Sample 1 $<$ Sample 2
P-Value $<$ alpha (0.05)

**Appendix G4: Two sample comparison testing -
Distance of Properties from Fire - Trace Ash vs No Visible Ash**



Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without

User Selected Options

Date/Time of Computation ProUCL 5.114/02/2017 12:47:20 PM
 From File M12253_011_RPT_All_Data_ProUCL_Input.xls
 Full Precision OFF
 Confidence Coefficient 95%
 Substantial Difference 0
 Selected Null Hypothesis Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
 Alternative Hypothesis Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: Distance_M(trace ash)
 Sample 2 Data: Distance_M(no visible ash)

Raw Statistics

| | Sample 1 | Sample 2 |
|---------------------------------|----------|----------|
| Number of Valid Observations | 9 | 12 |
| Number of Distinct Observations | 9 | 12 |
| Minimum | 230.2 | 229.9 |
| Maximum | 1619 | 2981 |
| Mean | 735.8 | 1749 |
| Median | 585.6 | 1777 |
| SD | 464.1 | 772.9 |
| SE of Mean | 154.7 | 223.1 |

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

| | |
|----------------------------------|--------|
| Sample 1 Rank Sum W-Stat | 59 |
| WMW U-Stat | 14 |
| Mean (U) | 54 |
| SD(U) - Adj ties | 14.07 |
| WMW U-Stat Critical Value (0.05) | 31 |
| Standardized WMW U-Stat | -2.878 |
| Approximate P-Value | 0.002 |

Conclusion with Alpha = 0.05

Reject H0, Conclude Sample 1 < Sample 2

**Appendix G5: Two sample comparison testing -
Distance of Properties from Fire - Moderate Ash vs Trace Ash**



Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without

User Selected Options

Date/Time of Computation ProUCL 5.114/02/2017 12:48:11 PM
 From File M12253_011_RPT_All_Data_ProUCL_Input.xls
 Full Precision OFF
 Confidence Coefficient 95%
 Substantial Difference 0
 Selected Null Hypothesis Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
 Alternative Hypothesis Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: Distance_M(moderate ash)

Sample 2 Data: Distance_M(trace ash)

Raw Statistics

| | Sample 1 | Sample 2 |
|---------------------------------|----------|----------|
| Number of Valid Observations | 6 | 9 |
| Number of Distinct Observations | 6 | 9 |
| Minimum | 97.77 | 230.2 |
| Maximum | 1230 | 1619 |
| Mean | 449.6 | 735.8 |
| Median | 412.6 | 585.6 |
| SD | 414.8 | 464.1 |
| SE of Mean | 169.4 | 154.7 |

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

| | |
|----------------------------------|--------|
| Sample 1 Rank Sum W-Stat | 36 |
| WMW U-Stat | 15 |
| Mean (U) | 27 |
| SD(U) - Adj ties | 8.485 |
| WMW U-Stat Critical Value (0.05) | 13 |
| Standardized WMW U-Stat | -1.473 |
| Approximate P-Value | 0.0704 |

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 >= Sample 2

**Appendix G6: Two sample comparison testing -
Distance of Properties from Fire - Moderate Ash vs Minor Ash**



Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without

User Selected Options

Date/Time of Computation ProUCL 5.114/02/2017 12:49:10 PM
 From File M12253_011_RPT_All_Data_ProUCL_Input.xls
 Full Precision OFF
 Confidence Coefficient 95%
 Substantial Difference 0
 Selected Null Hypothesis Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
 Alternative Hypothesis Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: Distance_M(moderate ash)

Sample 2 Data: Distance_M(minor ash)

Raw Statistics

| | Sample 1 | Sample 2 |
|---------------------------------|----------|----------|
| Number of Valid Observations | 6 | 23 |
| Number of Distinct Observations | 6 | 23 |
| Minimum | 97.77 | 66.48 |
| Maximum | 1230 | 3451 |
| Mean | 449.6 | 943.8 |
| Median | 412.6 | 450 |
| SD | 414.8 | 1015 |
| SE of Mean | 169.4 | 211.7 |

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

| | |
|--|--------|
| Sample 1 Rank Sum W-Stat | 71 |
| Standardized WMW U-Stat | -1.05 |
| Mean (U) | 69 |
| SD(U) - Adj ties | 18.57 |
| Approximate U-Stat Critical Value (0.05) | -1.645 |
| P-Value (Adjusted for Ties) | 0.147 |

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 >= Sample 2

P-Value >= alpha (0.05)

**Appendix G7: Two sample comparison testing -
Distance of Properties from Fire - Minor Ash vs Trace Ash**



Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without

User Selected Options

Date/Time of Computation ProUCL 5.114/02/2017 12:51:07 PM
From File M12253_011_RPT_All_Data_ProUCL_Input.xls
Full Precision OFF
Confidence Coefficient 95%
Substantial Difference 0
Selected Null Hypothesis Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: Distance_M(minor ash)

Sample 2 Data: Distance_M(trace ash)

Raw Statistics

| | Sample 1 | Sample 2 |
|---------------------------------|----------|----------|
| Number of Valid Observations | 23 | 9 |
| Number of Distinct Observations | 23 | 9 |
| Minimum | 66.48 | 230.2 |
| Maximum | 3451 | 1619 |
| Mean | 943.8 | 735.8 |
| Median | 450 | 585.6 |
| SD | 1015 | 464.1 |
| SE of Mean | 211.7 | 154.7 |

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat 368
Standardized WMW U-Stat -0.503
Mean (U) 103.5
SD(U) - Adj ties 23.86
Approximate U-Stat Critical Value (0.05) -1.645
P-Value (Adjusted for Ties) 0.307

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 >= Sample 2
P-Value >= alpha (0.05)

Nonparametric Oneway ANOVA (Kruskal-Wallis Test)
 Date/Time of Computation ProUCL 5.116/02/2017 3:27:55 PM
 From File M12253_011_RPT_All_Data_ProUCL_Input.xls
 Full Precision OFF

Coal Dust in Roof Cavity (%)

| Group | Obs | Median | Ave Ran | Z |
|-----------|-----|--------|---------|--------|
| brick | 11 | 0.6 | 15.18 | -0.151 |
| non-brick | 19 | 0.6 | 15.68 | 0.151 |
| Overall | 30 | 0.6 | 15.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 0.0227 | 1 | 0.88 |
| 0.0231 | 1 | 0.879 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Appendix G9 - ANOVA: Coal Dust Concentration vs Roof Type



Nonparametric Oneway ANOVA (Kruskal-Wallis Test)
 Date/Time of Computation ProUCL 5.116/02/2017 3:28:19 PM
 From File M12253_011_RPT_All_Data_ProUCL_Input.xls
 Full Precision OFF

Coal Dust in Roof Cavity (%)

| Group | Obs | Median | Ave Ran | Z |
|---------|-----|--------|---------|-------|
| metal | 13 | 0.6 | 14.65 | -0.46 |
| tiles | 17 | 0.6 | 16.15 | 0.46 |
| Overall | 30 | 0.6 | 15.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 0.212 | 1 | 0.645 |
| 0.216 | 1 | 0.642 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Appendix G10 - ANOVA: Coal Dust Concentration vs Ash Abundance



Nonparametric Oneway ANOVA (Kruskal-Wallis Test)
Date/Time of Computation ProUCL 5.116/02/2017 3:29:03 PM
From File M12253_011_RPT_All_Data_ProUCL_Input.xls
Full Precision OFF

Coal Dust in Roof Cavity (%)

| Group | Obs | Median | Ave Ran | Z |
|------------------|-----|--------|---------|--------|
| 1 no visible ash | 6 | 0.3 | 9.917 | -1.737 |
| 2 trace ash | 5 | 0.6 | 15 | -0.139 |
| 3 minor ash | 13 | 0.8 | 17.62 | 1.151 |
| 4 moderate ash | 6 | 0.8 | 16.92 | 0.441 |
| Overall | 30 | 0.6 | 15.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 3.336 | 3 | 0.343 |
| 3.394 | 3 | 0.335 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Appendix G11 - ANOVA: Coal Dust Concentration vs Sarking Presence



Nonparametric Oneway ANOVA (Kruskal-Wallis Test)
 Date/Time of Computation ProUCL 5.116/02/2017 3:29:37 PM
 From File M12253_011_RPT_All_Data_ProUCL_Input.xls
 Full Precision OFF

Coal Dust in Roof Cavity (%)

| Group | Obs | Median | Ave Ran | Z |
|-------------|-----|--------|---------|--------|
| Sarking no | 21 | 0.6 | 17.07 | 1.493 |
| Sarking yes | 9 | 0.4 | 11.83 | -1.493 |
| Overall | 30 | 0.6 | 15.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 2.23 | 1 | 0.135 |
| 2.269 | 1 | 0.132 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

**Appendix G12: Two sample comparison testing -
Antimony Concentrations in Morwell vs Rosedale (two-tailed)**



Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Data Sets with Non-Detects

User Selected Options

Date/Time of Computation ProUCL 5.116/02/2017 4:08:32 PM
From File M12253_011_RPT_All_Data_ProUCL_Input.xls
Full Precision OFF
Confidence Coefficient 95%
Selected Null Hypothesis Sample 1 Mean/Median = Sample 2 Mean/Median (2 Sided Alternative
Alternative Hypothesis Sample 1 Mean/Median <> Sample 2 Mean/Median

Sample 1 Data: Antimony_M

Sample 2 Data: Antimony_R

Raw Statistics

| | Sample 1 | Sample 2 |
|-----------------------|----------|----------|
| Number of Valid Data | 50 | 10 |
| Number of Non-Detects | 36 | 3 |
| Number of Detect Data | 14 | 7 |
| Minimum Non-Detect | 5 | 5 |
| Maximum Non-Detect | 5 | 5 |
| Percent Non-detects | 72.00% | 30.00% |
| Minimum Detect | 6 | 8 |
| Maximum Detect | 196 | 39 |
| Mean of Detects | 31.64 | 16 |
| Median of Detects | 13.5 | 10 |
| SD of Detects | 50.49 | 11.5 |

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 = Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat 1424
WMW U-Stat 148.5
Standardized WMW U-Stat -2.364
Mean (U) 250
SD(U) - Adj ties 50.41
Lower Approximate U-Stat Critical Value -1.96
Upper Approximate U-Stat Critical Value 1.96
P-Value (Adjusted for Ties) 0.0181

Conclusion with Alpha = 0.05

Reject H0, Conclude Sample 1 <> Sample 2

P-Value < alpha (0.05)

**Appendix G13: Two sample comparison testing -
Lead Concentrations in Morwell vs Rosedale (two-tailed)**



Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Data Sets with Non-Detects

User Selected Options

Date/Time of Computation ProUCL 5.116/02/2017 4:12:32 PM
 From File M12253_011_RPT_All_Data_ProUCL_Input.xls
 Full Precision OFF
 Confidence Coefficient 95%
 Selected Null Hypothesis Sample 1 Mean/Median = Sample 2 Mean/Median (2 Sided Alternative
 Alternative Hypothesis Sample 1 Mean/Median <> Sample 2 Mean/Median

Sample 1 Data: Lead_M

Sample 2 Data: Lead_R

Raw Statistics

| | Sample 1 | Sample 2 |
|-----------------------|----------|----------|
| Number of Valid Data | 50 | 10 |
| Number of Non-Detects | 0 | 0 |
| Number of Detect Data | 50 | 10 |
| Minimum Non-Detect | N/A | N/A |
| Maximum Non-Detect | N/A | N/A |
| Percent Non-detects | 0.00% | 0.00% |
| Minimum Detect | 18 | 38 |
| Maximum Detect | 1110 | 1020 |
| Mean of Detects | 243.9 | 377 |
| Median of Detects | 193.5 | 328.5 |
| SD of Detects | 209.8 | 346.4 |

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 = Mean/Median of Sample 2

| | |
|---|--------|
| Sample 1 Rank Sum W-Stat | 1489 |
| WMW U-Stat | 214 |
| Standardized WMW U-Stat | -0.714 |
| Mean (U) | 250 |
| SD(U) - Adj ties | 50.41 |
| Lower Approximate U-Stat Critical Value | -1.96 |
| Upper Approximate U-Stat Critical Value | 1.96 |
| P-Value (Adjusted for Ties) | 0.475 |

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 = Sample 2

P-Value >= alpha (0.05)

**Appendix G14: Two sample comparison testing -
Zinc Concentrations in Morwell vs Rosedale (two-tailed)**



Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Data Sets with Non-Detects

User Selected Options

Date/Time of Computation ProUCL 5.116/02/2017 4:14:05 PM
 From File M12253_011_RPT_All_Data_ProUCL_Input.xls
 Full Precision OFF
 Confidence Coefficient 95%
 Selected Null Hypothesis Sample 1 Mean/Median = Sample 2 Mean/Median (2 Sided Alternative
 Alternative Hypothesis Sample 1 Mean/Median <> Sample 2 Mean/Median

Sample 1 Data: Zinc_M

Sample 2 Data: Zinc_R

Raw Statistics

| | Sample 1 | Sample 2 |
|-----------------------|----------|----------|
| Number of Valid Data | 50 | 10 |
| Number of Non-Detects | 0 | 0 |
| Number of Detect Data | 50 | 10 |
| Minimum Non-Detect | N/A | N/A |
| Maximum Non-Detect | N/A | N/A |
| Percent Non-detects | 0.00% | 0.00% |
| Minimum Detect | 153 | 117 |
| Maximum Detect | 46600 | 65100 |
| Mean of Detects | 3009 | 10887 |
| Median of Detects | 630.5 | 2010 |
| SD of Detects | 7221 | 21037 |

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 = Mean/Median of Sample 2

| | |
|---|--------|
| Sample 1 Rank Sum W-Stat | 1469 |
| WMW U-Stat | 194 |
| Standardized WMW U-Stat | -1.111 |
| Mean (U) | 250 |
| SD(U) - Adj ties | 50.41 |
| Lower Approximate U-Stat Critical Value | -1.96 |
| Upper Approximate U-Stat Critical Value | 1.96 |
| P-Value (Adjusted for Ties) | 0.267 |

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 = Sample 2

P-Value >= alpha (0.05)

**Appendix G15: Two sample comparison testing -
Total PAH Concentrations in Morwell vs Rosedale (two-tailed)**



Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Data Sets with Non-Detects

User Selected Options

Date/Time of Computation ProUCL 5.116/02/2017 4:14:40 PM
 From File M12253_011_RPT_All_Data_ProUCL_Input.xls
 Full Precision OFF
 Confidence Coefficient 95%
 Selected Null Hypothesis Sample 1 Mean/Median = Sample 2 Mean/Median (2 Sided Alternative
 Alternative Hypothesis Sample 1 Mean/Median <> Sample 2 Mean/Median

Sample 1 Data: PAHs_total_M

Sample 2 Data: PAHs_total_R

Raw Statistics

| | Sample 1 | Sample 2 |
|--------------------------------|----------|----------|
| Number of Valid Data | 48 | 8 |
| Number of Missing Observations | 2 | 2 |
| Number of Non-Detects | 26 | 4 |
| Number of Detect Data | 22 | 4 |
| Minimum Non-Detect | 0.5 | 0.5 |
| Maximum Non-Detect | 2.4 | 1.5 |
| Percent Non-detects | 54.17% | 50.00% |
| Minimum Detect | 0.6 | 2.7 |
| Maximum Detect | 18.8 | 75.6 |
| Mean of Detects | 3.264 | 21.7 |
| Median of Detects | 2.15 | 4.25 |
| SD of Detects | 3.87 | 35.94 |

WMW test is meant for a Single Detection Limit Case

Use of Gehan or T-W test is suggested when multiple detection limits are present

All observations <= 2.4 (Max DL) are ranked the same

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 = Mean/Median of Sample 2

| | |
|---|--------|
| Sample 1 Rank Sum W-Stat | 1306 |
| WMW U-Stat | 130 |
| Standardized WMW U-Stat | -1.962 |
| Mean (U) | 192 |
| SD(U) - Adj ties | 42.71 |
| Lower Approximate U-Stat Critical Value | -1.96 |
| Upper Approximate U-Stat Critical Value | 1.96 |
| P-Value (Adjusted for Ties) | 0.0497 |

Conclusion with Alpha = 0.05

Reject H0, Conclude Sample 1 <> Sample 2

P-Value < alpha (0.05)

**Appendix G16: Two sample comparison testing -
Antimony Concentrations in Morwell vs Rosedale (one-tailed)**



Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Data Sets with Non-Detects

User Selected Options

Date/Time of Computation ProUCL 5.116/02/2017 4:21:38 PM
From File M12253_011_RPT_All_Data_ProUCL_Input.xls
Full Precision OFF
Confidence Coefficient 95%
Selected Null Hypothesis Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
Alternative Hypothesis Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: Antimony_M

Sample 2 Data: Antimony_R

Raw Statistics

| | Sample 1 | Sample 2 |
|-----------------------|----------|----------|
| Number of Valid Data | 50 | 10 |
| Number of Non-Detects | 36 | 3 |
| Number of Detect Data | 14 | 7 |
| Minimum Non-Detect | 5 | 5 |
| Maximum Non-Detect | 5 | 5 |
| Percent Non-detects | 72.00% | 30.00% |
| Minimum Detect | 6 | 8 |
| Maximum Detect | 196 | 39 |
| Mean of Detects | 31.64 | 16 |
| Median of Detects | 13.5 | 10 |
| SD of Detects | 50.49 | 11.5 |

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat 1424
Standardized WMW U-Stat -2.376
Mean (U) 250
SD(U) - Adj ties 50.41
Approximate U-Stat Critical Value (0.05) -1.645
P-Value (Adjusted for Ties) 0.00875

Conclusion with Alpha = 0.05

Reject H0, Conclude Sample 1 < Sample 2

P-Value < alpha (0.05)

**Appendix G17: Two sample comparison testing -
Total PAH Concentrations in Morwell vs Rosedale (one-tailed)**



Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Data Sets with Non-Detects

User Selected Options

Date/Time of Computation ProUCL 5.116/02/2017 4:28:34 PM
 From File M12253_011_RPT_All_Data_ProUCL_Input.xls
 Full Precision OFF
 Confidence Coefficient 95%
 Selected Null Hypothesis Sample 1 Mean/Median >= Sample 2 Mean/Median (Form 2)
 Alternative Hypothesis Sample 1 Mean/Median < Sample 2 Mean/Median

Sample 1 Data: PAHs_total_M

Sample 2 Data: PAHs_total_R

Raw Statistics

| | Sample 1 | Sample 2 |
|--------------------------------|----------|----------|
| Number of Valid Data | 48 | 8 |
| Number of Missing Observations | 2 | 2 |
| Number of Non-Detects | 26 | 4 |
| Number of Detect Data | 22 | 4 |
| Minimum Non-Detect | 0.5 | 0.5 |
| Maximum Non-Detect | 2.4 | 1.5 |
| Percent Non-detects | 54.17% | 50.00% |
| Minimum Detect | 0.6 | 2.7 |
| Maximum Detect | 18.8 | 75.6 |
| Mean of Detects | 3.264 | 21.7 |
| Median of Detects | 2.15 | 4.25 |
| SD of Detects | 3.87 | 35.94 |

WMW test is meant for a Single Detection Limit Case

Use of Gehan or T-W test is suggested when multiple detection limits are present

All observations <= 2.4 (Max DL) are ranked the same

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 >= Mean/Median of Sample 2

| | |
|--|--------|
| Sample 1 Rank Sum W-Stat | 1306 |
| Standardized WMW U-Stat | -1.978 |
| Mean (U) | 192 |
| SD(U) - Adj ties | 42.71 |
| Approximate U-Stat Critical Value (0.05) | -1.645 |
| P-Value (Adjusted for Ties) | 0.024 |

Conclusion with Alpha = 0.05

Reject H0, Conclude Sample 1 < Sample 2

P-Value < alpha (0.05)

Nonparametric Oneway ANOVA (Kruskal-Wallis Test)
 Date/Time of Computation ProUCL 5.116/02/2017 5:03:28 PM
 From File M12253_011_RPT_All_Data_ProUCL_Input.xls
 Full Precision OFF

Antimony_M

| Group | Obs | Median | Ave Ran | Z |
|------------|-----|--------|---------|--------|
| 0-25 yrs | 12 | 6 | 31.13 | 1.533 |
| 25-50 yrs | 9 | 5 | 21.78 | -0.846 |
| 50-75 yrs | 25 | 5 | 24.34 | -0.563 |
| 75-100 yrs | 4 | 5 | 24.25 | -0.179 |
| Overall | 50 | 5 | 25.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 2.561 | 3 | 0.464 |
| 4.086 | 3 | 0.252 (Adjusted for Ties) |

Note: A p-value <= 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are

Lead_M

| Group | Obs | Median | Ave Ran | Z |
|------------|-----|--------|---------|---------|
| 0-25 yrs | 12 | 38 | 9.75 | -4.293 |
| 25-50 yrs | 9 | 163 | 25.11 | -0.0884 |
| 50-75 yrs | 25 | 277 | 32.64 | 3.463 |
| 75-100 yrs | 4 | 254.5 | 29 | 0.501 |
| Overall | 50 | 193.5 | 25.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|------------------------------|
| 20.24 | 3 | 1.51E-04 |
| 20.24 | 3 | 1.51E-04 (Adjusted for Ties) |

Note: A p-value <= 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are

Zinc_M

| Group | Obs | Median | Ave Ran | Z |
|------------|-----|--------|---------|--------|
| 0-25 yrs | 12 | 619.5 | 23.67 | -0.5 |
| 25-50 yrs | 9 | 665 | 24 | -0.341 |
| 50-75 yrs | 25 | 579 | 26.56 | 0.514 |
| 75-100 yrs | 4 | 1748 | 27.75 | 0.322 |
| Overall | 50 | 630.5 | 25.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 0.513 | 3 | 0.916 |
| 0.513 | 3 | 0.916 (Adjusted for Ties) |

Note: A p-value <= 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are

PAHs_total_M

| Group | Obs | Median | Ave Ran | Z |
|------------|-----|--------|---------|--------|
| 0-25 yrs | 10 | 0.7 | 23.35 | -0.292 |
| 25-50 yrs | 9 | 0.5 | 15.72 | -2.087 |
| 50-75 yrs | 25 | 1.3 | 25.86 | 0.702 |
| 75-100 yrs | 4 | 3.9 | 38.63 | 2.108 |
| Overall | 48 | 0.9 | 24.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 7.913 | 3 | 0.0478 |
| 8.637 | 3 | 0.0345 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are

**Appendix G19 - ANOVA: Chemical Concentrations
in Morwell vs Property Distance from Mine Fire**



Nonparametric Oneway ANOVA (Kruskal-Wallis Test)
 Date/Time of Computation ProUCL 5.116/02/2017 5:05:56 PM
 From File M12253_011_RPT_All_Data_ProUCL_Input.xls
 Full Precision OFF

Antimony_M

| Group | Obs | Median | Ave Ran | Z |
|-------------|-----|--------|---------|--------|
| 0-300 m | 10 | 5 | 23.3 | -0.534 |
| 1200-2000 m | 11 | 5 | 27.59 | 0.539 |
| 2000-3500 m | 8 | 5 | 25.63 | 0.0265 |
| 300-450 m | 11 | 5 | 25 | -0.129 |
| 450-1200 m | 10 | 5 | 25.85 | 0.0849 |
| Overall | 50 | 5 | 25.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 0.473 | 4 | 0.976 |
| 0.755 | 4 | 0.944 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Lead_M

| Group | Obs | Median | Ave Ran | Z |
|-------------|-----|--------|---------|--------|
| 0-300 m | 10 | 198.5 | 26.1 | 0.146 |
| 1200-2000 m | 11 | 277 | 30.55 | 1.3 |
| 2000-3500 m | 8 | 165.5 | 22.63 | -0.609 |
| 300-450 m | 11 | 152 | 23.14 | -0.609 |
| 450-1200 m | 10 | 187 | 24.25 | -0.303 |
| Overall | 50 | 193.5 | 25.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 2.009 | 4 | 0.734 |
| 2.009 | 4 | 0.734 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Zinc_M

| Group | Obs | Median | Ave Ran | Z |
|-------------|-----|--------|---------|--------|
| 0-300 m | 10 | 573 | 22 | -0.849 |
| 1200-2000 m | 11 | 1080 | 28.36 | 0.738 |
| 2000-3500 m | 8 | 808.5 | 27.63 | 0.45 |
| 300-450 m | 11 | 618 | 22.14 | -0.867 |
| 450-1200 m | 10 | 618.5 | 27.85 | 0.57 |
| Overall | 50 | 630.5 | 25.5 | |

**Appendix G19 - ANOVA: Chemical Concentrations
in Morwell vs Property Distance from Mine Fire**



| | | |
|--------------|-----|-----------------------------|
| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
| 2.017 | 4 | 0.733 |
| 2.017 | 4 | 0.733 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

PAHs_total_M

| Group | Obs | Median | Ave Ran | Z |
|-------------|-----|--------|---------|--------|
| 0-300 m | 10 | 0.9 | 22.4 | -0.533 |
| 1200-2000 m | 11 | 1.7 | 27.73 | 0.871 |
| 2000-3500 m | 8 | 1.15 | 25.94 | 0.318 |
| 300-450 m | 11 | 0.5 | 20 | -1.214 |
| 450-1200 m | 8 | 1.3 | 27.44 | 0.65 |
| Overall | 48 | 0.9 | 24.5 | |

| | | |
|--------------|-----|-----------------------------|
| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
| 2.383 | 4 | 0.666 |
| 2.601 | 4 | 0.627 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Nonparametric Oneway ANOVA (Kruskal-Wallis Test)
 Date/Time of Computation ProUCL 5.116/02/2017 5:07:04 PM
 From File M12253_011_RPT_All_Data_ProUCL_Input.xls
 Full Precision OFF

Antimony_M

| Group | Obs | Median | Ave Ran | Z |
|---------|-----|--------|---------|--------|
| metal | 21 | 5 | 28.76 | 1.346 |
| tiles | 29 | 5 | 23.14 | -1.346 |
| Overall | 50 | 5 | 25.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 1.813 | 1 | 0.178 |
| 2.892 | 1 | 0.089 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Lead_M

| Group | Obs | Median | Ave Ran | Z |
|---------|-----|--------|---------|--------|
| metal | 21 | 200 | 25.81 | 0.128 |
| tiles | 29 | 186 | 25.28 | -0.128 |
| Overall | 50 | 193.5 | 25.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 0.0163 | 1 | 0.898 |
| 0.0163 | 1 | 0.898 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Zinc_M

| Group | Obs | Median | Ave Ran | Z |
|---------|-----|--------|---------|-------|
| metal | 21 | 1080 | 31.05 | 2.29 |
| tiles | 29 | 616 | 21.48 | -2.29 |
| Overall | 50 | 630.5 | 25.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 5.244 | 1 | 0.022 |
| 5.244 | 1 | 0.022 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

PAHs_total_M

| Group | Obs | Median | Ave Ran | Z |
|---------|-----|--------|---------|--------|
| metal | 19 | 1.6 | 29.66 | 2.066 |
| tiles | 29 | 0.5 | 21.12 | -2.066 |
| Overall | 48 | 0.9 | 24.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 4.269 | 1 | 0.0388 |
| 4.659 | 1 | 0.0309 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Nonparametric Oneway ANOVA (Kruskal-Wallis Test)
 Date/Time of Computation ProUCL 5.116/02/2017 5:08:33 PM
 From File M12253_011_RPT_All_Data_ProUCL_Input.xls
 Full Precision OFF

Antimony_M

| Group | Obs | Median | Ave Ran | Z |
|-----------|-----|--------|---------|---------|
| brick | 20 | 5 | 25.35 | -0.0594 |
| non-brick | 30 | 5 | 25.6 | 0.0594 |
| Overall | 50 | 5 | 25.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 0.00353 | 1 | 0.953 |
| 0.00563 | 1 | 0.94 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Lead_M

| Group | Obs | Median | Ave Ran | Z |
|-----------|-----|--------|---------|--------|
| brick | 20 | 133.5 | 16.2 | -3.683 |
| non-brick | 30 | 288 | 31.7 | 3.683 |
| Overall | 50 | 193.5 | 25.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|------------------------------|
| 13.57 | 1 | 2.30E-04 |
| 13.57 | 1 | 2.30E-04 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Zinc_M

| Group | Obs | Median | Ave Ran | Z |
|-----------|-----|--------|---------|--------|
| brick | 20 | 630.5 | 23.4 | -0.832 |
| non-brick | 30 | 626.5 | 26.9 | 0.832 |
| Overall | 50 | 630.5 | 25.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 0.692 | 1 | 0.406 |
| 0.692 | 1 | 0.406 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Appendix G21 - ANOVA: Chemical Concentrations in Morwell vs House Type



PAHs_total_M

| Group | Obs | Median | Ave Ran | Z |
|-----------|-----|--------|---------|--------|
| brick | 18 | 0.5 | 17.11 | -2.832 |
| non-brick | 30 | 1.55 | 28.93 | 2.832 |
| Overall | 48 | 0.9 | 24.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 8.022 | 1 | 0.00462 |
| 8.757 | 1 | 0.00308 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance

A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Nonparametric Oneway ANOVA (Kruskal-Wallis Test)
 Date/Time of Computation ProUCL 5.116/02/2017 5:09:34 PM
 From File M12253_011_RPT_All_Data_ProUCL_Input.xls
 Full Precision OFF

Antimony_M

| Group | Obs | Median | Ave Ran | Z |
|------------------|-----|--------|---------|--------|
| 1 no visible ash | 12 | 5 | 29.21 | 1.011 |
| 2 trace ash | 9 | 5 | 21.06 | -1.01 |
| 3 minor ash | 23 | 5 | 25.02 | -0.214 |
| 4 moderate ash | 6 | 5 | 26.58 | 0.194 |
| Overall | 50 | 5 | 25.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 1.671 | 3 | 0.643 |
| 2.666 | 3 | 0.446 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are

Lead_M

| Group | Obs | Median | Ave Ran | Z |
|------------------|-----|--------|---------|--------|
| 1 no visible ash | 12 | 259 | 26.63 | 0.307 |
| 2 trace ash | 9 | 235 | 30.89 | 1.225 |
| 3 minor ash | 23 | 200 | 26.96 | 0.652 |
| 4 moderate ash | 6 | 101 | 9.583 | -2.851 |
| Overall | 50 | 193.5 | 25.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 8.684 | 3 | 0.0338 |
| 8.685 | 3 | 0.0338 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are

Zinc_M

| Group | Obs | Median | Ave Ran | Z |
|------------------|-----|--------|---------|--------|
| 1 no visible ash | 12 | 658.5 | 25.04 | -0.125 |
| 2 trace ash | 9 | 621 | 26.89 | 0.316 |
| 3 minor ash | 23 | 674 | 28.24 | 1.226 |
| 4 moderate ash | 6 | 411.5 | 13.83 | -2.09 |
| Overall | 50 | 630.5 | 25.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 4.749 | 3 | 0.191 |
| 4.749 | 3 | 0.191 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are

PAHs_total_M

| Group | Obs | Median | Ave Ran | Z |
|------------------|-----|--------|---------|--------|
| 1 no visible ash | 11 | 1.4 | 25.95 | 0.392 |
| 2 trace ash | 9 | 1.3 | 27.56 | 0.726 |
| 3 minor ash | 22 | 0.65 | 23.52 | -0.445 |
| 4 moderate ash | 6 | 0.6 | 20.83 | -0.686 |
| Overall | 48 | 0.9 | 24.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 1.066 | 3 | 0.785 |
| 1.164 | 3 | 0.762 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are

Nonparametric Oneway ANOVA (Kruskal-Wallis Test)
 Date/Time of Computation ProUCL 5.116/02/2017 5:10:34 PM
 From File M12253_011_RPT_All_Data_ProUCL_Input.xls
 Full Precision OFF

Antimony_M

| Group | Obs | Median | Ave Ran | Z |
|------------|-----|--------|---------|--------|
| no sarking | 36 | 5 | 23.72 | -1.383 |
| sarking | 14 | 5 | 30.07 | 1.383 |
| Overall | 50 | 5 | 25.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 1.912 | 1 | 0.167 |
| 3.051 | 1 | 0.0807 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Lead_M

| Group | Obs | Median | Ave Ran | Z |
|------------|-----|--------|---------|--------|
| no sarking | 36 | 196 | 26.99 | 1.156 |
| sarking | 14 | 153 | 21.68 | -1.156 |
| Overall | 50 | 193.5 | 25.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 1.336 | 1 | 0.248 |
| 1.336 | 1 | 0.248 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Zinc_M

| Group | Obs | Median | Ave Ran | Z |
|------------|-----|--------|---------|---|
| no sarking | 36 | 652.5 | 25.5 | 0 |
| sarking | 14 | 600.5 | 25.5 | 0 |
| Overall | 50 | 630.5 | 25.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 0 | 1 | 1 |
| 0 | 1 | 1 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

PAHs_total_M

| Group | Obs | Median | Ave Ran | Z |
|------------|-----|--------|---------|--------|
| no sarking | 35 | 0.5 | 22.77 | -1.404 |
| sarking | 13 | 1.6 | 29.15 | 1.404 |
| Overall | 48 | 0.9 | 24.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 1.97 | 1 | 0.16 |
| 2.15 | 1 | 0.143 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Nonparametric Oneway ANOVA (Kruskal-Wallis Test)
 Date/Time of Computation ProUCL 5.116/02/2017 5:11:38 PM
 From File M12253_011_RPT_All_Data_ProUCL_Input.xls
 Full Precision OFF

Antimony_R

| Group | Obs | Median | Ave Ran | Z |
|------------|-----|--------|---------|--------|
| 0-50 yrs | 5 | 10 | 5.7 | 0.209 |
| 75-150 yrs | 5 | 9 | 5.3 | -0.209 |
| Overall | 10 | 9.5 | 5.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 0.0436 | 1 | 0.835 |
| 0.045 | 1 | 0.832 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Lead_R

| Group | Obs | Median | Ave Ran | Z |
|------------|-----|--------|---------|--------|
| 0-50 yrs | 5 | 54 | 3.2 | -2.402 |
| 75-150 yrs | 5 | 645 | 7.8 | 2.402 |
| Overall | 10 | 328.5 | 5.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 5.771 | 1 | 0.0163 |
| 5.806 | 1 | 0.016 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Zinc_R

| Group | Obs | Median | Ave Ran | Z |
|------------|-----|--------|---------|--------|
| 0-50 yrs | 5 | 1150 | 4 | -1.567 |
| 75-150 yrs | 5 | 4150 | 7 | 1.567 |
| Overall | 10 | 2010 | 5.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 2.455 | 1 | 0.117 |
| 2.455 | 1 | 0.117 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Appendix G24 - ANOVA: Chemical Concentrations in Rosedale vs Age



PAHs_total_R

| Group | Obs | Median | Ave Ran | Z |
|------------|-----|--------|---------|--------|
| 0-50 yrs | 3 | 0.5 | 2 | -2.236 |
| 75-150 yrs | 5 | 4.1 | 6 | 2.236 |
| Overall | 8 | 2.1 | 4.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 5 | 1 | 0.0253 |
| 5.25 | 1 | 0.0219 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance

A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Appendix G25 - ANOVA: Chemical Concentrations in Rosedale vs Roof Type



Nonparametric Oneway ANOVA (Kruskal-Wallis Test)
 Date/Time of Computation ProUCL 5.116/02/2017 5:14:48 PM
 From File M12253_011_RPT_All_Data_ProUCL_Input.xls
 Full Precision OFF

Antimony_R

| Group | Obs | Median | Ave Ran | Z |
|---------|-----|--------|---------|-------|
| metal | 7 | 9 | 5.143 | -0.57 |
| tile | 3 | 12 | 6.333 | 0.57 |
| Overall | 10 | 9.5 | 5.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 0.325 | 1 | 0.569 |
| 0.335 | 1 | 0.563 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Lead_R

| Group | Obs | Median | Ave Ran | Z |
|---------|-----|--------|---------|--------|
| metal | 7 | 489 | 5.786 | 0.456 |
| tile | 3 | 102 | 4.833 | -0.456 |
| Overall | 10 | 328.5 | 5.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 0.208 | 1 | 0.649 |
| 0.209 | 1 | 0.648 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Zinc_R

| Group | Obs | Median | Ave Ran | Z |
|---------|-----|--------|---------|--------|
| metal | 7 | 3870 | 6.714 | 1.937 |
| tile | 3 | 250 | 2.667 | -1.937 |
| Overall | 10 | 2010 | 5.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 3.753 | 1 | 0.0527 |
| 3.753 | 1 | 0.0527 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

PAHs_total_R

| Group | Obs | Median | Ave Ran | Z |
|---------|-----|--------|---------|--------|
| metal | 6 | 2.1 | 4.667 | 0.333 |
| tile | 2 | 2.3 | 4 | -0.333 |
| Overall | 8 | 2.1 | 4.5 | |

Some groups have < 3 observations ANOVA Results based on such data sets may not be reliable.
 You may want to perform ANOVA without groups with too few observations.

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Nonparametric Oneway ANOVA (Kruskal-Wallis Test)
 Date/Time of Computation ProUCL 5.116/02/2017 5:16:01 PM
 From File M12253_011_RPT_All_Data_ProUCL_Input.xls
 Full Precision OFF

Antimony_R

| Group | Obs | Median | Ave Ran | Z |
|-----------|-----|--------|---------|--------|
| brick | 4 | 10.5 | 6 | 0.426 |
| non-brick | 6 | 9 | 5.167 | -0.426 |
| Overall | 10 | 9.5 | 5.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 0.182 | 1 | 0.67 |
| 0.188 | 1 | 0.665 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Lead_R

| Group | Obs | Median | Ave Ran | Z |
|-----------|-----|--------|---------|--------|
| brick | 4 | 303 | 5.375 | -0.107 |
| non-brick | 6 | 328.5 | 5.583 | 0.107 |
| Overall | 10 | 328.5 | 5.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 0.0114 | 1 | 0.915 |
| 0.0114 | 1 | 0.915 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Zinc_R

| Group | Obs | Median | Ave Ran | Z |
|-----------|-----|--------|---------|--------|
| brick | 4 | 880 | 4 | -1.279 |
| non-brick | 6 | 3190 | 6.5 | 1.279 |
| Overall | 10 | 2010 | 5.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 1.636 | 1 | 0.201 |
| 1.636 | 1 | 0.201 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

PAHs_total_R

| Group | Obs | Median | Ave Ran | Z |
|-----------|-----|--------|---------|--------|
| brick | 3 | 1.5 | 4 | -0.447 |
| non-brick | 5 | 2.7 | 4.8 | 0.447 |
| Overall | 8 | 2.1 | 4.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 0.2 | 1 | 0.655 |
| 0.21 | 1 | 0.647 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Nonparametric Oneway ANOVA (Kruskal-Wallis Test)
 Date/Time of Computation ProUCL 5.116/02/2017 5:16:57 PM
 From File M12253_011_RPT_All_Data_ProUCL_Input.xls
 Full Precision OFF

Antimony_R

| Group | Obs | Median | Ave Ran | Z |
|------------|-----|--------|---------|--------|
| no sarking | 5 | 10 | 6.1 | 0.627 |
| sarking | 5 | 8 | 4.9 | -0.627 |
| Overall | 10 | 9.5 | 5.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 0.393 | 1 | 0.531 |
| 0.405 | 1 | 0.525 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Lead_R

| Group | Obs | Median | Ave Ran | Z |
|---------|-----|--------|---------|-------|
| no | 5 | 102 | 4.6 | -0.94 |
| yes | 5 | 489 | 6.4 | 0.94 |
| Overall | 10 | 328.5 | 5.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 0.884 | 1 | 0.347 |
| 0.889 | 1 | 0.346 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Zinc_R

| Group | Obs | Median | Ave Ran | Z |
|---------|-----|--------|---------|--------|
| no | 5 | 1150 | 4 | -1.567 |
| yes | 5 | 3870 | 7 | 1.567 |
| Overall | 10 | 2010 | 5.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 2.455 | 1 | 0.117 |
| 2.455 | 1 | 0.117 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance
 A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c

Appendix G27 - ANOVA: Chemical Concentrations in Rosedale vs Sarking



PAHs_total_R

| Group | Obs | Median | Ave Ran | Z |
|---------|-----|--------|---------|--------|
| no | 4 | 1 | 3.5 | -1.155 |
| yes | 4 | 3.55 | 5.5 | 1.155 |
| Overall | 8 | 2.1 | 4.5 | |

| K-W (H-Stat) | DOF | P-Value (Approx. Chisquare) |
|--------------|-----|-----------------------------|
| 1.333 | 1 | 0.248 |
| 1.4 | 1 | 0.237 (Adjusted for Ties) |

Note: A p-value ≤ 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance

A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are c



tel: + 61 3 9606 0070

fax: + 61 3 9606 0074

enquiries@senversa.com.au

www.senversa.com.au

Level 6, 15 William Street, Melbourne VIC 3000

Senversa Pty Ltd ABN 89 132 231 380

