

The National Marine Biological
Analytical Quality Control Scheme
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Particle Size Results - PS46

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Table 1. Summary of the replicate benchmark analysis and particle size information received from participating laboratories for the forty-sixth PSA NMBAQC Scheme

## Benchmark Data

|           |        | %      |        |        | Median |        | Sediment Description |
|-----------|--------|--------|--------|--------|--------|--------|----------------------|
| Sample    | Method | Gravel | % Sand | % Silt | ф      | Mean φ | (Post analysis)      |
| PS46 1960 | NMBAQC | 98.76  | 1.23   | 0.01   | -2.839 | -2.988 | Gravel               |
| PS46 1961 | NMBAQC | 98.75  | 1.24   | 0.01   | -2.844 | -2.995 | Gravel               |
| PS46 1962 | NMBAQC | 98.24  | 1.72   | 0.04   | -2.829 | -2.981 | Gravel               |
| PS46 1963 | NMBAQC | 98.98  | 1.01   | 0.00   | -2.871 | -3.015 | Gravel               |
| PS46 1964 | NMBAQC | 99.08  | 0.91   | 0.02   | -2.844 | -2.986 | Gravel               |
| PS46 1965 | NMBAQC | 98.97  | 1.01   | 0.01   | -2.834 | -2.987 | Gravel               |
| PS46 1966 | NMBAQC | 98.57  | 1.39   | 0.03   | -2.838 | -2.983 | Gravel               |
| PS46 1967 | NMBAQC | 98.72  | 1.27   | 0.00   | -2.876 | -3.002 | Gravel               |
| PS46 1968 | NMBAQC | 98.96  | 1.00   | 0.03   | -2.825 | -2.962 | Gravel               |
| PS46 1969 | NMBAQC | 98.32  | 1.65   | 0.03   | -2.833 | -2.979 | Gravel               |
| TUM       |        |        |        |        |        |        |                      |
| AVERAGE   | NMBAQC | 98.74  | 1.24   | 0.02   | -2.843 | -2.988 |                      |

# Participant Data

|         |        | %      |        |        |                                      |
|---------|--------|--------|--------|--------|--------------------------------------|
| Lab     | Method | Gravel | % Sand | % Silt | Sediment Description (Post analysis) |
| LB_1901 | NMBAQC | 98.49  | 1.49   | 0.01   | Gravel                               |
| LB_1903 | NMBAQC | 98.77  | 1.21   | 0.02   | Gravel                               |
| LB_1904 | NMBAQC | 99.15  | 0.85   | 0.00   | Gravel                               |
| LB_1905 | NMBAQC | 98.83  | 1.07   | 0.10   | Gravel                               |
| LB_1908 | OTHER  | 99.32  | 0.67   | 0.01   | Gravel                               |
| LB_1909 | NMBAQC | 99.05  | 0.95   | 0.00   | Gravel                               |
| LB_1910 | NMBAQC | 98.21  | 1.75   | 0.05   | Gravel                               |
| LB_1917 | NMBAQC | 99.22  | 0.78   | 0.00   | Gravel                               |
| LB_1921 | NMBAQC | 91.71  | 8.20   | 0.09   | Gravel                               |
| LB_1955 | NMBAQC | 99.47  | 0.52   | 0.01   | Gravel                               |
| LB_1958 | NMBAQC | 99.21  | 0.79   | 0.00   | Gravel                               |

# Key to

methods

NMBAQC - States following NMBAQC PSA SOP for supporting biological data

OTHER - Following a different SOP.

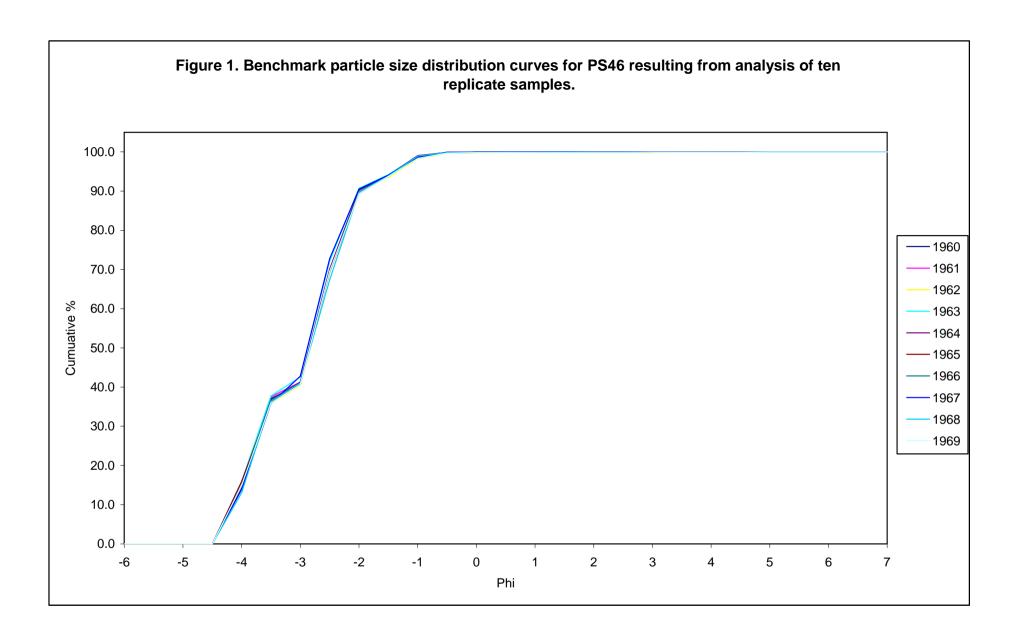


Figure 2. Particle size distribution curves from all participating laboratories for sediment samples from PS46.

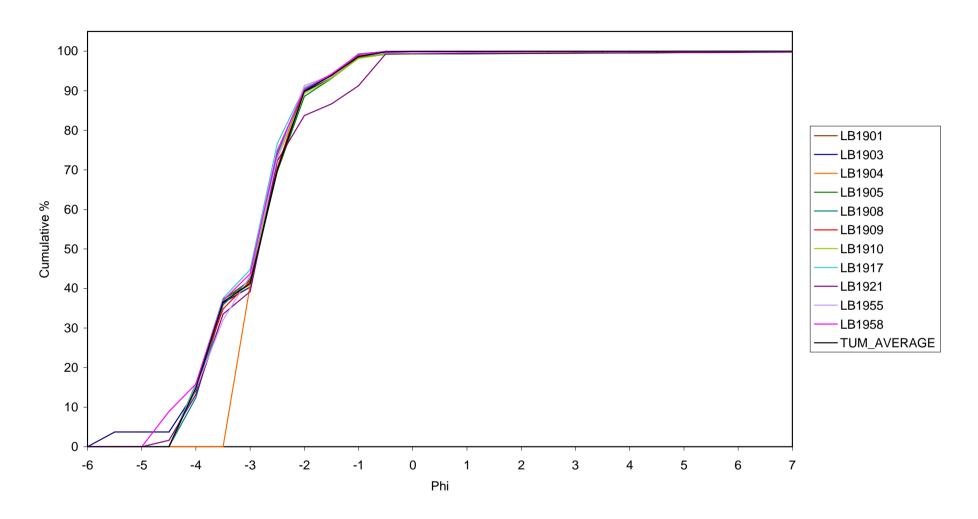
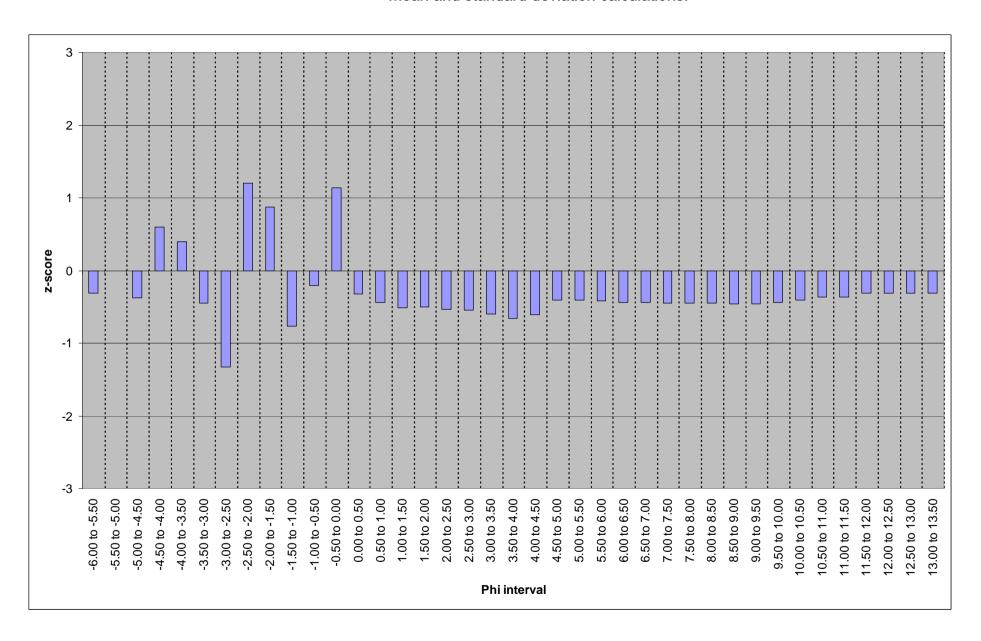


Table 2. Summary of z-scores for each half-phi interval for PS46; data from all participating laboratories included in mean and standard deviation calculations.

|  | 8  | 20   | 5.00  | 50   | 8   | 20   | 8  | 20   | 8  | 50   | 8   | 20  | 8   | 50  | 8   | 50   | 8  | 20  | 8  | 20   |
|--|--|--|---|--|---|--|--|--|--|--|---|---|---|---|---|--|--|---|--|--|
|  | -6.00  | ψ,   | 6   | 4  | -4.00   | ကု   | -3.00  | Ñ  | Ŗ  | 7  | -1.00   | · •   | 000   | 0.5   | 2   | -  | CN   | 2.5   | 30   | 33   |
|  | 50 to  | 욛  | 윤   | 윤  | 욛   | 욛  | 윤  | 2  | 욛  | 윤  | 2   | 00<br>to  | \$  | 윤   | 욛   | 욛  | 50 to  | 윤   | 2  | 윤  |
|  | 920  | 6.00   | 5.50  | 500  | 450   | 4.00 to  | 350  | 300  | 200  | -2.00 to   | 20  | ă   | -020-   | 000   | 020   | ė  | 20   | 2.00  | 2.50   | 300  |
| TUM AVERAGE  | 1  | -0.315   | 0.000   | -0.373   | 0.593893  | 0.392314   | -0.450228  | -1.331689  | 1.198029   | 0.871975   | -0.769393   | -0.201382   | 1.135524  |   | -0.439492   | -0.508044  | -0.507679  |   | -0.545724  |  |
| LB1901   |  | -0.314918  | 0.000   |  | 0.799915  |  | -0.436998  | 0.054926   | 0.188728   |  |   |   | 2.612324  |   |   | -0.504915  | -0.57171   | -0.535717   | -0.815591  | -0.097365  |
| LB1903   | 0.000  |  |   |  | -0.387095   |  |  |  |  |  |   | -0.233429   | 0.192709  | 1.266875  | 2.288801  | 2 183059   | 1.209647   | 1.374654  | 1.075355   | 1.721417   |
| LB1904   |  | -0.314918  |   | -0.372841  | -2.548928   | -3 03089   | 3.07502  | 1.148197   |  |  |   |   |   |   | -0.832812   | -0.809588  |  |   | -0.761839  |  |
| LB1905   |  | -0.314918  |   |  | 0.508833  | 0.570018   | -0.529358  | -1.57973   | 0.86663  |  | 0.386347  |   | 0.043232  |   | 0.333511  |  | -0.053193  |   | 0.317032   |  |
| LB1908   |  | -0.314918  |   | -0.372841  |   |  | -0.256538  |  |  |  |   | -0.439912   |   | -0.556156   |   | -0.617149  | -0.354243  | -0.431645   | -0.466597  | -0.662168  |
| LB1909   |  | -0.314918  |   | -0.372641  | 0.803462  | -0.039152  | -0 222388  | -1.329057  | 1.284983   | -0.820474  |   | -0.278914   |   | -0.805094   | -0.832812   | -0.809588  | -0.706663  | -0.788599   | -0.761839  |  |
| LB1910   |  | -0.314918  |   | -0.372641  | 0.568453  | 0.440322   | -0.49878   | 0.677453   | -0.173078  |  |   | -0.221532   | 0.60572   |   | 0.75153   | 1.560687   | 2.608485   | 2.383499  | 2.554821   | 1.059299   |
| LB1917   |  | -0.314918  |   |  |   |  | -0.201178  |  |  |  |   |   |   |   |   |  | -0.706663  | -0.786599   | -0.761839  |  |
| LB1921   |  | -0.314918  | 0.000   |  |   |  | -0.348716  | 1.289732   |  | -0.963557  |   |   |   | -0.775341   |   |  |  |   | 0.023815   | 0.7146   |
| LB1955   |  | -0.314918  | 0.000   |  |   |  | 0.181684   |  |  |  |   |   |   |   | 1.259075  |  |  |   | 0.158721   | 0.335385   |
| LB1958   | 0.000  | -0.314918  | 0.000   |  |   |  | -0.244965  |  |  |  |   |   |   |   | -0.832812   | -0.809588  | -0.706663  | -0.786599   | -0.761839  | -0.930601  |
|  |  |  |   |  |   |  |  |  |  |  |   |   |   |   |   |  |  |   |  |  |
| Mean   | 0.000  | 0.342732   | 0.000   | 0.96227  | 12.08068  | 19.20386   | 9.283497   | 30.93658   | 16.80542   | 3.476638   | 5.05593   | 1.491105  | 0.066697  | 0.019852  | 0.022723  | 0.024867   | 0.030087   | 0.026702  | 0.028745   | 0.02128  |
| St Dev   | 0.000  | 1.088319   | 0.000   | 2.582296   | 4.739518  | 6.336466   | 10.25129   | 1.620241   | 2.60916  | 0.510274   | 0.264063  | 2.088788  | 0.032621  | 0.024658  | 0.027285  | 0.030716   | 0.042576   | 0.033946  | 0.037731   | 0.022867   |
|  |  |  |   |  |   |  |  |  |  |  |   |   |   |   |   |  |  |   |  |  |
|  |  |  |   |  |   |  |  |  |  |  |   |   |   |   |   |  |  |   |  |  |
|  | 0  | 0  | 0   | 0  | -   | 0  | 0  | 0  | 0  | 0  | -   | -   | 0   | 50  | 8   | 20   | 90   | 50  | 00   | 50   |
|  | 4.00   | 4.50   | 5.00  | 5.50   | 3.00  | 3.50   | 7.00   | 7.50   | 900  | 3.50   | 900   | 9.50  | 00.0  | 10.50   | 11.00   | 11.50  | 12.00  | 12.50   | 13.00  | 13.50  |
|  | to 4.00  | 8  | to 5.00   | 40   | to 6.00   | to 6.50  | to 7.00  | to 7.50  | to 8.00  | to 8.50  | to 9.00   |   | 0 10 00   | b d   | =   | Ξ  | 5  | to 12.  | to 13  | 5 5  |
|  | 50 to 4.00   | 8  | 2   | 40   | 50 to 6.00  | 00 to 6.50   | 50 to 7.00   | to 7   | 2  | 00 to 8 50   | 50 to 9.00  |   | 2   | b d   | =   | Ξ  | 50 to 12   | to 12.  | 50 to 13.  | b 13   |
|  | 350 to 4.00  | 4  |   | 5,00 to 5,50   | 5,50 to 6,00  | 6,00 to 6,50   | 6.50 to 7.00   | P-   | 7,50 to 8,00   | 8,00 to 8,50   | 8 50 to 9 00  | 9,00 to 9,50  | 9.50 to 10.00   | 무   | _   | 11,00 to 11,50   | 11.50 to 12.00   | 12  | to 13  | 5  |
| TUM AVERAGE  | 3.50 to  | 4.00 to 4  | 2   | 5.00 to 5  | 5.50  |  | 50 to  | 7.00 to 7  | 7.50 to  |  | -0.455803   | 9.00 to 9   | 9.50 to   | 10.00 to 10   | 10,50 to 11   | 11,000 to  | 50 to 12   | 12.00 to 12.  | 12,50 to 13.   | 13,00 to 13  |
| LB1901   | 3.50 to  | 4.00 to 4  | 4.50 to   | 5.00 to 5  | 5.50  | -0.434128  | 6.50 to  | 7.00 to 7  | 7.50 to  | -0.454816<br>-0.467255   | -0.455803<br>-0.45695   | -0.45778<br>-0.43789  | 9.50 to   | 10.00 to 10   | 10,50 to 11   | 11,000 to  | 11,50 to 12  | 12.00 to 12.  | 12,50 to 13.   | 13,00 to 13  |
| LB1901<br>LB1903   | -0.65624<br>-0.709639<br>0.88286   | -0.613233<br>-0.672006<br>0.450801   | -0.410296<br>-0.478428<br>0.227478  | -0.410121<br>-0.484597<br>-0.012684  | -0.42125<br>-0.464018<br>-0.1105  | -0.434128<br>-0.471383<br>-0.175471  | -0.443865<br>-0.476459<br>-0.231689  | -0.449925<br>-0.475957<br>-0.276464  | -0.452197<br>-0.471728<br>-0.296902  | -0.454816<br>-0.467255<br>-0.29808   | -0.455803<br>-0.45695<br>-0.301838  | -0.45778<br>-0.43769<br>-0.29981  | -0.438003<br>-0.438003<br>-0.259711   | -0.404905<br>-0.404905<br>-0.186852   | -0.365653<br>-0.365653<br>-0.127067   | -0.382117<br>-0.382117<br>-0.382117  | -0.314918<br>-0.314918<br>-0.314918  | 12.00 to 12.  | 12,50 to 13.   | 13,00 to 13  |
| LB1901<br>LB1903<br>LB1904   | -0.65624<br>-0.709639<br>0.88286<br>-0.884216  | -0.613233<br>-0.672006   | -0.410296<br>-0.478428<br>0.227478  | -0.410121<br>-0.484597<br>-0.012684  | -0.42125<br>-0.464018   | -0.434128<br>-0.471383<br>-0.175471  | -0.443865<br>-0.476459<br>-0.231689  | 0.449925<br>-0.475957<br>-0.276484<br>-0.52579   | -0.452197<br>-0.471728<br>-0.296902<br>-0.517959   | -0.454816<br>-0.467255<br>-0.29808<br>-0.510554  | -0.455803<br>-0.45695<br>-0.301838<br>-0.494685   | -0.45776<br>-0.43769<br>-0.29981<br>-0.466027   | -0.438003<br>-0.438003<br>-0.259711<br>-0.438003  | -0.404905<br>-0.404905<br>-0.186852<br>-0.404905  | -0.365653<br>-0.365653<br>-0.127067<br>-0.365653  | -0.382117<br>-0.382117<br>-0.382117<br>-0.382117<br>-0.382117  | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918  | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918   | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918  | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918  |
| LB1901<br>LB1903<br>LB1904<br>LB1905   | -0.65624<br>-0.709639<br>0.88286<br>-0.884216<br>1.374347  | -0.613233<br>-0.672006<br>0.450801<br>-0.827258<br>1.998253  | -0.410296<br>-0.478428<br>0.227478<br>-0.607381<br>2.63738  | -0.410121<br>-0.484597<br>-0.012684  | -0.42125<br>-0.464018<br>-0.1105  | -0.434128<br>-0.471383<br>-0.175471  | -0.443865<br>-0.476459<br>-0.231689<br>-0.532101<br>2.20114  | -0.449925<br>-0.475967<br>-0.276464<br>-0.52579<br>1.956379  | -0.452197<br>-0.471728<br>-0.296902<br>-0.517969<br>1.759109   | -0.454816<br>-0.467255<br>-0.29808<br>-0.510554<br>1.592372  | -0.455803<br>-0.45695<br>-0.301838<br>-0.494685<br>1.318874   | -0.45776<br>-0.43769<br>-0.29981<br>-0.466027<br>0.91283  | -0.438003<br>-0.438003<br>-0.259711<br>-0.438003<br>0.541902  | -0.404905<br>-0.404905<br>-0.186852<br>-0.404905<br>0.138546  | -0.365653<br>-0.365653<br>-0.365653<br>-0.127067<br>-0.365653<br>-0.303214  | -0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117   | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918   | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918  | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918   | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918   |
| LB1901<br>LB1903<br>LB1904<br>LB1905<br>LB1908   | -0.85624<br>-0.709639<br>0.88286<br>-0.884216<br>1.374347<br>-0.639419   | -0.613233<br>-0.672006<br>0.450801   | -0.410296<br>-0.478428<br>0.227478<br>-0.607381<br>2.63738  | -0.410121<br>-0.484597<br>-0.012684  | -0.42125<br>-0.464018<br>-0.1105  | -0.434128<br>-0.471383<br>-0.175471  | -0.443865<br>-0.476459<br>-0.231689<br>-0.532101<br>2.20114<br>-0.512319   | -0.449925<br>-0.475957<br>-0.276464<br>-0.52579<br>-0.503131   | 0.452197<br>-0.471728<br>-0.296902<br>-0.517959<br>1.759109<br>-0.496854   | -0.454816<br>-0.467255<br>-0.29808<br>-0.510554<br>1.592372<br>-0.493453   | -0.455803<br>-0.45695<br>-0.301838<br>-0.494685<br>1.318874<br>-0.481968  | -0.45776<br>-0.43769<br>-0.29981<br>-0.466027<br>-0.91283<br>-0.455834  | -0.438003<br>-0.438003<br>-0.259711<br>-0.438003<br>0.541902<br>-0.426437   | -0.404905<br>-0.404905<br>-0.186852<br>-0.404905<br>0.138546<br>-0.393583   | -0.365653<br>-0.365653<br>-0.365653<br>-0.127067<br>-0.365653<br>-0.303214<br>-0.362939   | -0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117   | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918   | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918   | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918   | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918   |
| LB1901<br>LB1903<br>LB1904<br>LB1905<br>LB1908<br>LB1909   | -0.65624<br>-0.709639<br>0.88286<br>-0.884216<br>1.374347<br>-0.639419<br>-0.884216  | -0.613233<br>-0.672006<br>0.450801<br>-0.827258<br>1.998253<br>-0.653956<br>-0.827258  | 9<br>-0.410296<br>-0.478428<br>0.227478<br>-0.607361<br>2.63738<br>-0.453647<br>-0.607361   | -0.410121<br>-0.464597<br>-0.012664<br>-0.562535<br><b>2.668167</b><br>-0.477311<br>-0.562535  | -0.42125<br>-0.484018<br>-0.1105<br>-0.541298<br>2.578771<br>-0.506126<br>-0.541298   | -0.434128<br>-0.471383<br>-0.175471<br>-0.535054<br>2.3981<br>-0.517102<br>-0.535054   | -0.443665<br>-0.476459<br>-0.231689<br>-0.532101<br>-0.512319<br>-0.532101   | 0.449925<br>-0.475957<br>-0.276464<br>-0.52579<br>-0.503131<br>-0.52579  | 0.452197<br>-0.471728<br>-0.296902<br>-0.517959<br>1.759109<br>-0.496854<br>-0.517959  | -0.454816<br>-0.467255<br>-0.29808<br>-0.510554<br>1.592372<br>-0.493453<br>-0.510554  | -0.455803<br>-0.45695<br>-0.301838<br>-0.494685<br>1.318874<br>-0.481966<br>-0.494685   | 0.45778<br>-0.43769<br>-0.29981<br>-0.466027<br>-0.91283<br>-0.455834<br>-0.466027  | 0.438003<br>0.438003<br>0.259711<br>0.438003<br>0.541902<br>0.426437<br>0.438003  | -0.404905<br>-0.404905<br>-0.186852<br>-0.404905<br>0.138546<br>-0.393583<br>-0.404905  | -0.365653<br>-0.365653<br>-0.365653<br>-0.365653<br>-0.303214<br>-0.362939<br>-0.365653   | -0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117  | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918  | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918   | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918  | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918  |
| LB1901<br>LB1903<br>LB1904<br>LB1905<br>LB1908<br>LB1909<br>LB1910   | -0.65624<br>-0.709639<br>0.88286<br>-0.884216<br>1.374347<br>-0.639419<br>-0.884216<br>1.837818  | -0.613233<br>-0.672006<br>0.450801<br>-0.827258<br>1.998253<br>-0.653956<br>-0.827258<br>1.326582  | -0.410296<br>-0.478428<br>0.227478<br>0.227478<br>-0.607361<br>2.63738<br>-0.453647<br>-0.607361<br>-0.607361                             | -0.410121<br>-0.464597<br>-0.012664<br>-0.562535<br><b>2.668167</b><br>-0.477311<br>-0.562535<br>-0.562535   | -0.42125<br>-0.484018<br>-0.1105<br>-0.541298<br>2.578771<br>-0.506126<br>-0.541298<br>-0.541298  | -0.434128<br>-0.471383<br>-0.175471<br>-0.535054<br>2.3981<br>-0.517102<br>-0.535054<br>-0.535054  | -0.443665<br>-0.476459<br>-0.231689<br>-0.532101<br>-0.512319<br>-0.532101<br>-0.532101<br>-0.532101   | 0.449925<br>-0.475957<br>-0.276464<br>-0.52579<br>-0.503131<br>-0.52579<br>-0.52579  | -0.452197<br>-0.471728<br>-0.296902<br>-0.517959<br>-0.496854<br>-0.517959<br>-0.517959<br>-0.517959   | -0.454816<br>-0.467255<br>-0.29808<br>-0.510554<br>1.592372<br>-0.493453<br>-0.510554<br>-0.510554                                       | 0.455803<br>-0.45695<br>-0.301838<br>-0.494685<br>1.318874<br>-0.481906<br>-0.494685<br>-0.494685   | 0.45778<br>0.43769<br>0.29981<br>0.486027<br>0.91283<br>0.455834<br>0.466027<br>0.468027  | 9<br>0.438003<br>0.438003<br>0.259711<br>0.438003<br>0.541902<br>0.426437<br>0.438003<br>0.438003   | -0.404905<br>-0.404905<br>-0.186852<br>-0.404905<br>0.138548<br>-0.393583<br>-0.404905<br>-0.404905   | -0.365653<br>-0.3656653<br>-0.3656653<br>-0.365653<br>-0.303214<br>-0.362939<br>-0.365653<br>-0.365653                                      | -0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117   | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918   | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918   | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918              | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918   |
| LB1901<br>LB1903<br>LB1904<br>LB1905<br>LB1908<br>LB1909<br>LB1910<br>LB1910<br>LB1917                     | -0.65624<br>-0.709639<br>0.88286<br>-0.884216<br>1.374347<br>-0.639419<br>-0.884216<br>1.837818<br>-0.884216                                     | -0.613233<br>-0.672006<br>0.450801<br>-0.827258<br>1.998253<br>-0.653956<br>1.326582<br>-0.827258<br>1.326582<br>-0.827258                           | -0.410296<br>-0.478428<br>0.227478<br>0.227478<br>-0.607361<br>-0.607361<br>-0.607361<br>-0.607361<br>-0.607361                           | -0.410121<br>-0.464597<br>-0.012864<br>-0.562535<br>-0.477311<br>-0.562535<br>-0.562535<br>-0.562535   | -0.42125<br>-0.484018<br>-0.1105<br>-0.541298<br>-0.506126<br>-0.541298<br>-0.541298<br>-0.541298<br>-0.541298                          | -0.434128<br>-0.471383<br>-0.175471<br>-0.535054<br>2.3981<br>-0.517102<br>-0.535054<br>-0.535054<br>-0.535054   | -0.443665<br>-0.476459<br>-0.231689<br>-0.532101<br>-0.532101<br>-0.532101<br>-0.532101<br>-0.532101<br>-0.532101  | 0.449925<br>-0.475957<br>-0.276464<br>-0.52579<br>-0.503131<br>-0.52579<br>-0.52579  | -0.452197<br>-0.471728<br>-0.296902<br>-0.517959<br>-0.496854<br>-0.517959<br>-0.517959<br>-0.517959   | -0.454816<br>-0.467255<br>-0.29808<br>-0.510554<br>1.592372<br>-0.493453<br>-0.510554<br>-0.510554                                       | 0.455803<br>-0.45695<br>-0.301838<br>-0.494685<br>1.318874<br>-0.481906<br>-0.494685<br>-0.494685   | 0.45778<br>0.43769<br>0.29981<br>0.486027<br>0.91283<br>0.455834<br>0.466027<br>0.468027  | 9<br>0.438003<br>0.438003<br>0.259711<br>0.438003<br>0.541902<br>0.426437<br>0.438003<br>0.438003   | -0.404905<br>-0.404905<br>-0.186852<br>-0.404905<br>0.138548<br>-0.393583<br>-0.404905<br>-0.404905   | -0.365653<br>-0.3656653<br>-0.3656653<br>-0.365653<br>-0.303214<br>-0.362939<br>-0.365653<br>-0.365653                                      | -0.382117<br>-0.382117<br>-0.382117<br>-0.382117<br>-0.382117<br>-0.382117<br>-0.382117<br>-0.382117<br>-0.382117  | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918                                    | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918   | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918              | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918  |
| LB1901<br>LB1903<br>LB1904<br>LB1905<br>LB1908<br>LB1909<br>LB1910<br>LB1917<br>LB1921                     | -0.85624<br>-0.709639<br>0.88286<br>-0.884216<br>1.374347<br>-0.639419<br>-0.884216<br>1.837818<br>-0.884216<br>0.717035                         | -0.613233<br>-0.672006<br>0.450801<br>-0.827258<br>1.998263<br>-0.653956<br>-0.827258<br>1.326582<br>-0.827258<br>1.026885                           | -0.410296<br>-0.478428<br>0.227478<br>-0.607361<br>2.63738<br>-0.453647<br>-0.607361<br>-0.607361<br>1.241072                             | -0.410121<br>-0.484597<br>-0.012864<br>-0.562535<br>-0.682535<br>-0.562535<br>-0.562535<br>-0.562535<br>1.290029   | -0.42125<br>-0.484018<br>-0.1105<br>-0.541298<br>2.578771<br>-0.506126<br>-0.541298<br>-0.541298<br>-0.541298<br>1.472658               | -0.434128<br>-0.471383<br>-0.175471<br>-0.535054<br>-2.3981<br>-0.517102<br>-0.535054<br>-0.535054<br>-0.535054<br>1.741869                              | -0.443665<br>-0.476459<br>-0.231689<br>-0.532101<br>-0.512319<br>-0.532101<br>-0.532101<br>-0.532101<br>-0.532101<br>1.981145                            | -0.449925<br>-0.475967<br>-0.276464<br>-0.52579<br>1.956379<br>-0.503131<br>-0.52579<br>-0.52579<br>-0.52579<br>-0.52579               | 9<br>0.452197<br>0.471728<br>0.296902<br>0.517959<br>1.759109<br>0.496854<br>0.517959<br>0.517959<br>2.393862  | 0.454816<br>-0.467255<br>-0.29808<br>-0.510554<br>1.592372<br>-0.493453<br>-0.510554<br>-0.510554<br>-0.510554<br>-0.510554<br>-0.510554 | 0.455803<br>0.45695<br>0.301838<br>0.494885<br>1.318874<br>0.481968<br>0.494685<br>0.494685<br>0.494685<br>2.688561                         | 0.45776<br>-0.43779<br>-0.29981<br>-0.466027<br>-0.91283<br>-0.455834<br>-0.466027<br>-0.466027<br>-0.468027<br>-0.468027<br>-0.488027  | 9 0.438003<br>-0.438003<br>-0.259711<br>-0.438003<br>-0.541902<br>-0.426437<br>-0.438003<br>-0.438003<br>-0.438003<br>-0.438003<br>-0.438003<br>-0.438003 | -0.404905<br>-0.404905<br>-0.186852<br>-0.404905<br>0.138546<br>-0.393583<br>-0.404905<br>-0.404905<br>-0.404905<br>3.099205                | -0.365653<br>-0.365653<br>-0.127067<br>-0.365653<br>-0.303214<br>-0.365653<br>-0.365653<br>-0.365653<br>-0.365653<br>3.132764               | -0.382117<br>-0.382117<br>-0.382117<br>-0.382117<br>-0.382117<br>-0.382117<br>-0.382117<br>-0.382117<br>-0.382117<br>-0.382117                           | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918                       | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918                                    | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918              | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918  |
| LB1901<br>LB1903<br>LB1904<br>LB1905<br>LB1908<br>LB1909<br>LB1910<br>LB1917<br>LB1921<br>LB1955           | -0.65624<br>-0.709639<br>0.88286<br>-0.884216<br>1.374347<br>-0.639419<br>-0.884216<br>1.837818<br>-0.884216<br>0.717035<br>0.07386              | -0.613233<br>-0.672006<br>0.450801<br>-0.827258<br>-0.653956<br>-0.827258<br>1.326582<br>-0.827258<br>1.326582<br>-0.827258<br>-0.827258             | -0.410296<br>-0.478428<br>0.227478<br>-0.807361<br>2.63738<br>-0.453647<br>-0.607361<br>-0.607361<br>-0.607361<br>1.241072<br>-0.137052   | -0.410121<br>-0.464597<br>-0.012664<br>-0.562535<br><b>2.668167</b><br>-0.477311<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.290029<br>-0.190953 | -0.42125<br>-0.464018<br>-0.1105<br>-0.541298<br>-0.541298<br>-0.541298<br>-0.541298<br>-0.541298<br>-0.54293<br>-0.54293               | -0.434128<br>-0.471383<br>-0.175471<br>-0.535054<br>-0.517102<br>-0.535054<br>-0.535054<br>-0.535054<br>-0.535054<br>-0.300742                           | -0.443865<br>-0.478459<br>-0.231689<br>-0.532101<br>-0.532101<br>-0.532101<br>-0.532101<br>-0.532101<br>-0.532101<br>-0.301312                           | 0.449925<br>-0.475967<br>-0.276464<br>-0.52579<br>-0.503131<br>-0.52579<br>-0.52579<br>-0.52579<br>-0.52579<br>-0.258831               | 8<br>-0.452197<br>-0.471728<br>-0.296902<br>-0.517959<br>1.759109<br>-0.496854<br>-0.517959<br>-0.517959<br>-0.517959<br>-0.517959<br>-0.517959<br>-0.517959 | 0.454816<br>-0.467255<br>-0.29808<br>-0.510554<br>1.592372<br>-0.493453<br>-0.510554<br>-0.510554<br>-0.510554<br>-0.510554<br>-0.297234 | 0.455803<br>0.45695<br>0.301838<br>0.494885<br>1.318874<br>0.481968<br>0.494685<br>0.494685<br>0.494685<br>0.293259                         | 0.45776<br>-0.43769<br>-0.29981<br>-0.468027<br>-0.455834<br>-0.468027<br>-0.468027<br>-0.468027<br>-0.466027<br>-0.466027              | 9 0,438003<br>-0.438003<br>-0.259711<br>-0.438003<br>-0.541902<br>-0.426437<br>-0.438003<br>-0.438003<br>-0.438003<br>-0.438003<br>-0.239811              | -0.404905<br>-0.404905<br>-0.188852<br>-0.404905<br>-0.138546<br>-0.393583<br>-0.404905<br>-0.404905<br>-0.404905<br>-0.227883              | -0.365653<br>-0.365653<br>-0.127067<br>-0.365653<br>-0.303214<br>-0.362939<br>-0.365653<br>-0.365653<br>-0.365653<br>-0.365653<br>-0.365653 | -0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117 | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>3.149183                        | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>3.14918                         | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>3.149183  | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>3.14918                |
| LB1901<br>LB1903<br>LB1904<br>LB1905<br>LB1908<br>LB1909<br>LB1910<br>LB1917<br>LB1921                     | -0.65624<br>-0.709639<br>0.88286<br>-0.884216<br>1.374347<br>-0.639419<br>-0.884216<br>1.837818<br>-0.884216<br>0.717035<br>0.07386              | -0.613233<br>-0.672006<br>0.450801<br>-0.827258<br>-0.653956<br>-0.827258<br>1.326582<br>-0.827258<br>1.326582<br>-0.827258<br>-0.827258             | -0.410296<br>-0.478428<br>0.227478<br>-0.807361<br>2.63738<br>-0.453647<br>-0.607361<br>-0.607361<br>-0.607361<br>1.241072<br>-0.137052   | -0.410121<br>-0.464597<br>-0.012664<br>-0.562535<br><b>2.668167</b><br>-0.477311<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.290029<br>-0.190953 | -0.42125<br>-0.464018<br>-0.1105<br>-0.541298<br>-0.541298<br>-0.541298<br>-0.541298<br>-0.541298<br>-0.54293<br>-0.54293               | -0.434128<br>-0.471383<br>-0.175471<br>-0.535054<br>-0.517102<br>-0.535054<br>-0.535054<br>-0.535054<br>-0.535054<br>-0.300742                           | -0.443665<br>-0.476459<br>-0.231689<br>-0.532101<br>-0.512319<br>-0.532101<br>-0.532101<br>-0.532101<br>-0.532101<br>1.981145                            | 0.449925<br>-0.475967<br>-0.276464<br>-0.52579<br>-0.503131<br>-0.52579<br>-0.52579<br>-0.52579<br>-0.52579<br>-0.258831               | 8<br>-0.452197<br>-0.471728<br>-0.296902<br>-0.517959<br>1.759109<br>-0.496854<br>-0.517959<br>-0.517959<br>-0.517959<br>-0.517959<br>-0.517959<br>-0.517959 | 0.454816<br>-0.467255<br>-0.29808<br>-0.510554<br>1.592372<br>-0.493453<br>-0.510554<br>-0.510554<br>-0.510554<br>-0.510554<br>-0.297234 | 0.455803<br>0.45695<br>0.301838<br>0.494885<br>1.318874<br>0.481968<br>0.494685<br>0.494685<br>0.494685<br>0.293259                         | 0.45776<br>-0.43779<br>-0.29981<br>-0.466027<br>-0.91283<br>-0.455834<br>-0.466027<br>-0.466027<br>-0.468027<br>-0.468027<br>-0.488027  | 9 0,438003<br>-0.438003<br>-0.259711<br>-0.438003<br>-0.541902<br>-0.426437<br>-0.438003<br>-0.438003<br>-0.438003<br>-0.438003<br>-0.239811              | -0.404905<br>-0.404905<br>-0.188852<br>-0.404905<br>-0.138546<br>-0.393583<br>-0.404905<br>-0.404905<br>-0.404905<br>-0.227883              | -0.365653<br>-0.365653<br>-0.127067<br>-0.365653<br>-0.303214<br>-0.362939<br>-0.365653<br>-0.365653<br>-0.365653<br>-0.365653<br>-0.365653 | -0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117 | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>3.149183                        | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>3.14918                         | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>3.149183  | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>3.14918                |
| LB1901<br>LB1903<br>LB1904<br>LB1905<br>LB1908<br>LB1909<br>LB1910<br>LB1917<br>LB1921<br>LB1955<br>LB1958 | -0.85624<br>-0.709639<br>0.88286<br>-0.834216<br>1.374347<br>-0.639419<br>-0.884216<br>1.837818<br>-0.884216<br>0.717035<br>0.07386<br>-0.884216 | -0.613233<br>-0.672006<br>0.450801<br>-0.827258<br>1.998253<br>-0.653956<br>-0.827258<br>1.326582<br>-0.827258<br>1.026885<br>-0.167527<br>-0.827258 | -0.410296<br>-0.478428<br>0.227478<br>-0.607361<br>-0.453847<br>-0.607361<br>-0.607361<br>-0.607361<br>1.241072<br>-0.137052<br>-0.607361 | -0.410121<br>-0.484597<br>-0.012684<br>-0.562535<br>2.668167<br>-0.477311<br>-0.562535<br>-0.562535<br>-0.562535<br>1.290029<br>-0.190953<br>-0.562535         | -0.42125<br>-0.484018<br>-0.1105<br>-0.541298<br>2.578771<br>-0.506126<br>-0.541298<br>-0.541298<br>-0.541298<br>-0.264293<br>-0.541298 | -0.434128<br>-0.471383<br>-0.175471<br>-0.535054<br>-0.517102<br>-0.535054<br>-0.535054<br>-0.535054<br>-0.535054<br>-0.535054<br>-0.535054<br>-0.535054 | -0.443885<br>-0.478459<br>-0.231689<br>-0.532101<br>-0.532101<br>-0.532101<br>-0.532101<br>-0.532101<br>-0.301312<br>-0.532101                           | -0.449925<br>-0.449925<br>-0.475967<br>-0.276484<br>-0.52579<br>-0.503131<br>-0.52579<br>-0.52579<br>-0.52579<br>-0.298831<br>-0.52579 | 0.452197<br>-0.471728<br>-0.296902<br>-0.517969<br>1.759109<br>-0.496854<br>-0.517969<br>-0.517969<br>-0.29768<br>-0.517969                                  | 0.454818<br>0.467255<br>-0.29808<br>0.510554<br>1.592372<br>0.493453<br>0.510554<br>0.510554<br>0.510554<br>0.297234<br>0.510554         | 0.455803<br>0.45695<br>0.301838<br>0.494685<br>1.318874<br>0.481908<br>0.494685<br>0.494685<br>0.494685<br>0.293259<br>0.494685             | -0.45776<br>-0.43769<br>-0.29981<br>-0.466027<br>-0.91283<br>-0.455834<br>-0.466027<br>-0.466027<br>-0.466027<br>-0.27452<br>-0.466027  | 9 9 0.438003<br>-0.438003<br>-0.259711<br>-0.438003<br>-0.426437<br>-0.438003<br>-0.438003<br>-0.438003<br>-0.239811<br>-0.438003                         | -0.404905<br>-0.404905<br>-0.186852<br>-0.404905<br>0.138546<br>-0.393583<br>-0.404905<br>-0.404905<br>-0.404905<br>-0.227883<br>-0.404905  | -0.385853<br>-0.385853<br>-0.385853<br>-0.127087<br>-0.385853<br>-0.385853<br>-0.385853<br>-0.385853<br>-0.145628<br>-0.385853              | -0.382117<br>-0.382117<br>-0.382117<br>-0.382117<br>-0.382117<br>-0.382117<br>-0.382117<br>-0.382117<br>-0.382117<br>-0.382117<br>-0.382117              | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918                       | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918                       | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918 | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918              |
| LB1901<br>LB1903<br>LB1904<br>LB1905<br>LB1908<br>LB1909<br>LB1910<br>LB1917<br>LB1921<br>LB1955<br>LB1958 | -0.85624<br>-0.709639<br>0.88286<br>-0.884216<br>1.3774347<br>-0.639419<br>-0.884216<br>0.717035<br>0.77386<br>-0.884216                         | -0.613233<br>-0.672006<br>0.450801<br>-0.827258<br>1.998253<br>-0.653956<br>-0.827258<br>1.326582<br>-0.827258<br>1.026885<br>-0.167527<br>-0.827258 | -0.410296<br>-0.478428<br>0.227478<br>-0.807381<br>2.63738<br>-0.453847<br>-0.807381<br>-0.807381<br>1.241072<br>-0.137052<br>-0.807381   | 9 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9  | -0.42125<br>-0.464018<br>-0.1105<br>-0.541298<br>2.578771<br>-0.506126<br>-0.541298<br>-0.541298<br>-0.541298<br>-0.541298<br>-0.541298 | -0.434128<br>-0.471383<br>-0.175471<br>-0.535054<br>2.3981<br>-0.51705054<br>-0.535054<br>-0.535054<br>1.741869<br>-0.300742<br>-0.535054<br>0.008209    | -0.443865<br>-0.478459<br>-0.231689<br>-0.532101<br>-0.532101<br>-0.532101<br>-0.532101<br>-0.532101<br>-0.532101<br>-0.532101<br>-0.532101<br>-0.532101 | -0.449925<br>-0.479967<br>-0.278484<br>-0.52579<br>1.958379<br>-0.52579<br>-0.52579<br>-0.52579<br>-0.52579<br>-0.298831<br>-0.52579   | -0.452197<br>-0.471728<br>-0.296902<br>-0.517969<br>-0.496854<br>-0.517969<br>-0.517969<br>-0.517969<br>-0.517969<br>-0.517969<br>-0.517969<br>-0.517969     | 0.454816<br>-0.467255<br>-0.29808<br>-0.510554<br>1.592372<br>-0.493453<br>-0.510554<br>-0.510554<br>-0.510554<br>-0.510554<br>-0.510554 | 0.455803<br>0.45695<br>0.301838<br>0.494885<br>1.318874<br>0.481990<br>0.494885<br>0.494685<br>2.588561<br>0.293259<br>0.494685<br>0.004939 | -0.45776<br>-0.43769<br>-0.29981<br>-0.466027<br>-0.91283<br>-0.455834<br>-0.466027<br>-0.466027<br>-0.466027<br>-0.466027<br>-0.466027 | 9 0.438003<br>-0.438003<br>-0.438003<br>-0.438003<br>-0.438003<br>-0.438003<br>-0.438003<br>-0.438003<br>-0.438003<br>-0.239811<br>-0.438003<br>-0.002498 | -0.404905<br>-0.404905<br>-0.188852<br>-0.404905<br>-0.138540<br>-0.393583<br>-0.404905<br>-0.404905<br>-0.227883<br>-0.404905<br>-0.001969 | -0.365653<br>-0.365653<br>-0.127067<br>-0.365653<br>-0.365653<br>-0.365653<br>-0.365653<br>-0.365653<br>-0.365653<br>-0.365653              | -0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117 | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>3.14918<br>3.9E-05 | 27<br>8<br>9<br>02<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918 | 223E-05  | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918 |
| LB1901<br>LB1903<br>LB1904<br>LB1905<br>LB1908<br>LB1909<br>LB1910<br>LB1917<br>LB1921<br>LB1955<br>LB1958 | -0.85624<br>-0.709639<br>0.88286<br>-0.884216<br>1.3774347<br>-0.639419<br>-0.884216<br>0.717035<br>0.77386<br>-0.884216                         | -0.613233<br>-0.672006<br>0.450801<br>-0.827258<br>1.998253<br>-0.653956<br>-0.827258<br>1.326582<br>-0.827258<br>1.026885<br>-0.167527<br>-0.827258 | -0.410296<br>-0.478428<br>0.227478<br>-0.807381<br>2.63738<br>-0.453847<br>-0.807381<br>-0.807381<br>1.241072<br>-0.137052<br>-0.807381   | 9 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9  | -0.42125<br>-0.464018<br>-0.1105<br>-0.541298<br>2.578771<br>-0.506126<br>-0.541298<br>-0.541298<br>-0.541298<br>-0.541298<br>-0.541298 | -0.434128<br>-0.471383<br>-0.175471<br>-0.535054<br>2.3981<br>-0.51705054<br>-0.535054<br>-0.535054<br>1.741869<br>-0.300742<br>-0.535054<br>0.008209    | -0.443885<br>-0.478459<br>-0.231689<br>-0.532101<br>-0.532101<br>-0.532101<br>-0.532101<br>-0.532101<br>-0.301312<br>-0.532101                           | -0.449925<br>-0.479967<br>-0.278484<br>-0.52579<br>1.958379<br>-0.52579<br>-0.52579<br>-0.52579<br>-0.52579<br>-0.298831<br>-0.52579   | 0.452197<br>-0.471728<br>-0.296902<br>-0.517969<br>1.759109<br>-0.496854<br>-0.517969<br>-0.517969<br>-0.29768<br>-0.517969                                  | 0.454816<br>-0.467255<br>-0.29808<br>-0.510554<br>1.592372<br>-0.493453<br>-0.510554<br>-0.510554<br>-0.510554<br>-0.510554<br>-0.510554 | 0.455803<br>0.45695<br>0.301838<br>0.494885<br>1.318874<br>0.481990<br>0.494885<br>0.494685<br>2.588561<br>0.293259<br>0.494685<br>0.004939 | -0.45776<br>-0.43769<br>-0.29981<br>-0.466027<br>-0.91283<br>-0.455834<br>-0.466027<br>-0.466027<br>-0.466027<br>-0.466027<br>-0.466027 | 9 9 0.438003<br>-0.438003<br>-0.259711<br>-0.438003<br>-0.426437<br>-0.438003<br>-0.438003<br>-0.438003<br>-0.239811<br>-0.438003                         | -0.404905<br>-0.404905<br>-0.188852<br>-0.404905<br>-0.138540<br>-0.393583<br>-0.404905<br>-0.404905<br>-0.227883<br>-0.404905<br>-0.001969 | -0.385853<br>-0.385853<br>-0.385853<br>-0.127087<br>-0.385853<br>-0.385853<br>-0.385853<br>-0.385853<br>-0.145828<br>-0.385853              | -0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117<br>-0.362117 | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>3.14918<br>3.9E-05 | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918                       | 223E-05  | -0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918<br>-0.314918 |

z-score >1.96 or <-1.98 Al values equal zero

Figure 3. Summary of z-scores for the benchmark data (TUM Average); when data from all participating laboratories are included in mean and standard deviation calculations.



## Results of SIMPROF testing on PSA Ring test PS46 data

Data was entered into PRIMER v. 6.1.13 in half-phi intervals; any missing data was entered as zero. The data did not need to be transformed as all data was on a similar percentage scale. A Euclidean distance matrix was created from the data; The Euclidean distance between two samples (labs) j and k, is defined algebraically as  $d_{jk} = \sqrt{\sum_{i=1}^{p} (y_{ij} - y_{ik})^2}$ . From this distance matrix cluster analysis was carried out including a SIMPROF test at a 5% significance level. The red

From this distance matrix cluster analysis was carried out including a SIMPROF test at a 5% significance level. The red SIMPROF lines on the dendrogram indicate labs that cannot be distinguished from each other at the 5% significance level; the black lines indicate labs that can be distinguished from each other. The results are presented as a cluster dendrogram (Figure 4) and non-metric Multi-Dimensional Scaling (MDS) diagrams (Figures 5) below. It is important to note that, although the MDS plot is bounded by a box, the box does not represent either axes or scale. Two samples with a high similarity index will appear close together while those less similar will appear further apart. The 'correct' configuration of sample points will be multidimensional and the plot represents the best 2-dimensional solution to the problem. The technique should be viewed as complementary to cluster analysis, offering a different perspective of the same information.

Figure 4. Cluster dendrogram of PS46 including all laboratories, with the benchmark replicates (TUM average).

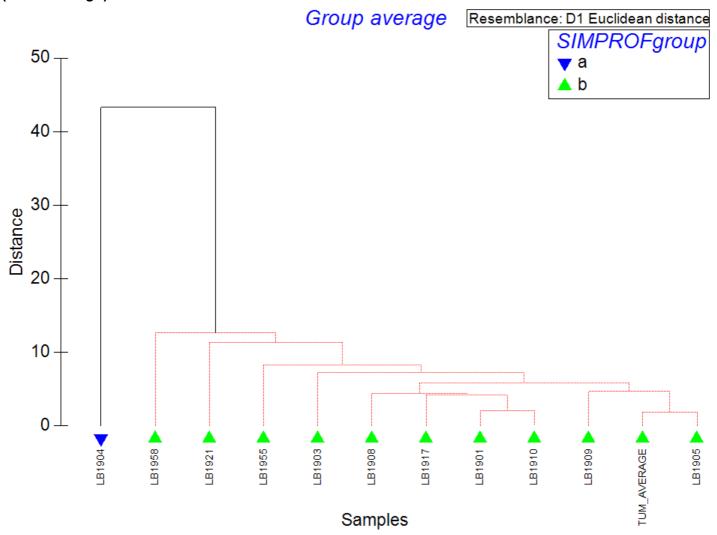
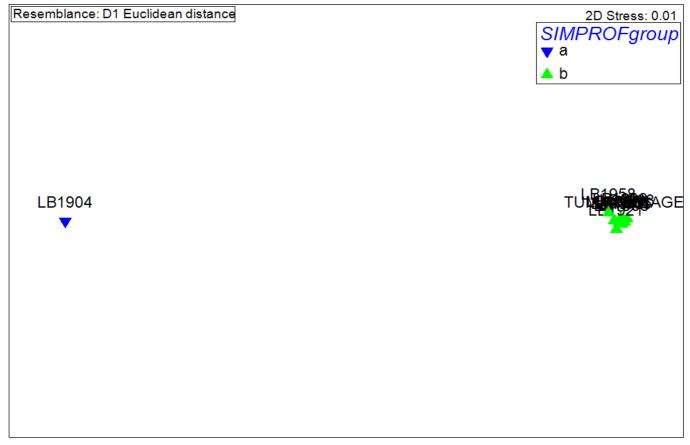
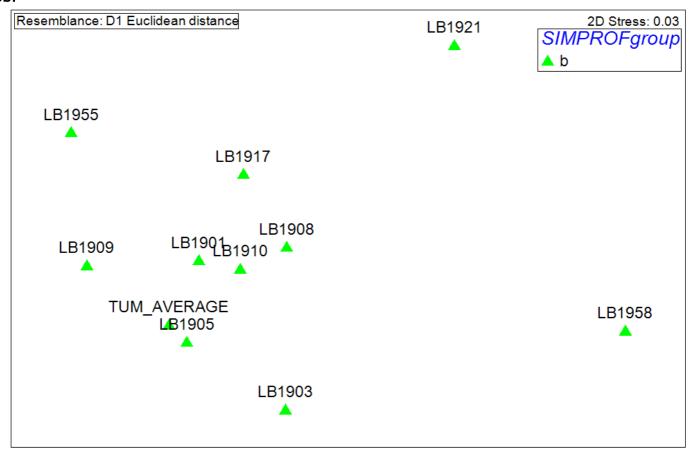


Figure 5. MDS plots of PS46 with the benchmark replicates (TUM AVERAGE) averaged; (a) including all laboratories and (b) a subset of cluster group b.

5a.



5b.

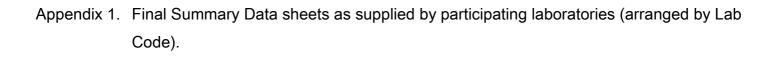


The cluster analysis separates the laboratories into 2 SIMPROF cluster groups; one of these groups comprises of a single lab.

Cluster group A is formed of the single laboratory (LB1904), figure 2 shows that their cumulative percentage is displaced by one phi and rises sharply between -3.5 and -3 phi. This could be due to a data entry error.

Cluster group B consists of all other laboratories including the TUM average (LB1901, LB1903, LB1905, LB1908, LB1909, LB1910, LB1917, LB1921, LB1955, and LB1958). These laboratories cumulative frequency curves (figure 2) are all fairly similar, with small variations below -4.5 phi for labs LB1903 and LB1958.

# **Appendices**



| Exercise Code:   | PS46   |
|--|--|
| LabCode:   | LB1901   |
| Sample Code:   |  |
| •  | Endecotts Test Sieves, Malvern Mastersizer 2000 Laser Diffractor (Model: |
| Equipment used (eight most invate and range)             | MAL1002178)  |
|  |  |
| Method used:   | NMBAQC PSA SOP for supporting biological data*                           |
| Macaille and another                                     | The state of the supporting bronger and                                  |
| Peroxide pre-treatment used:                             | NO*  |
| Chemical dispersant used:                                |  |
| Phi interval (explicit)                                  |  |
| + sieve mesh (theoretical sieves shown in brackets)      |  |
| -6.50 to -6.00; 63 mm                                    | 0.0000   |
| -6.00 to -5.50; 45 mm                                    | 0.0000   |
| -5.50 to -5.00; 31.5 mm                                  | 0.0000   |
| -5.00 to -4.50; 22.4 mm<br>-4.50 to -4.00; 16 mm         | 0.0000   |
| -4.30 to -4.00; 16 mm<br>-4.00 to -3.50; 11.2 mm         | 15.8719<br>21.3599   |
| -4.00 to -3.50; 11.2 mm<br>-3.50 to -3.00; 8 mm          | 4.8037   |
| -3.00 to -2.50; 5.6 mm                                   | 31.0256  |
| -2.50 to -2.00; 4 mm                                     | 17.2978  |
| -2.00 to -1.50; 2.8 mm                                   | 3.5517   |
| -1.50 to -1.00; 2 mm                                     | 4.5838   |
| -1.00 to -0.50; 1.4 mm                                   | 1.2682   |
| -0.50 to 0.00; 1 mm                                      | 0.1487   |
| 0.00 to 0.50; (707 μm)                                   | 0.0238   |
| 0.50 to 1.00; (500 μm)                                   | 0.0167   |
| 1.00 to 1.50; (353.6 μm)                                 | 0.0094   |
| 1.50 to 2.00; (250 μm)                                   | 0.0057   |
| 2.00 to 2.50; (176.8 μm)                                 | 0.0052   |
| 2.50 to 3.00; (125 μm)                                   | 0.0055   |
| 3.00 to 3.50; (88.39 µm)                                 | 0.0053   |
| 3.50 to 4.00; (62.5 μm)<br>4.00 to 4.50; (44.19 μm)      | 0.0044<br>0.0033   |
| 4.00 to 4.30; (44.19 μm)<br>4.50 to 5.00; (31.25 μm)     | 0.0055   |
| 5.00 to 5.50; (22.097 μm)                                | 0.0024   |
| 5.50 to 6.00; (15.625 μm)                                | 0.0017   |
| 6.00 to 6.50; (11.049 μm)                                | 0.0010   |
| 6.50 to 7.00; (7.813 μm)                                 | 0.0008   |
| 7.00 to 7.50; $(5.524 \mu m)$                            | 0.0007   |
| 7.50 to 8.00; (3.906 µm)                                 | 0.0006   |
| 8.00 to 8.50; (2.762 μm)                                 | 0.0005   |
| 8.50 to 9.00; (1.953 μm)                                 | 0.0004   |
| 9.00 to 9.50; (1.381 μm)                                 | 0.0002   |
| 9.50 to 10.00; (0.977 μm)                                | 0.0000   |
| 10.00 to 10.50; (0.691 µm)                               | 0.0000   |
| 10.50 to 11.00; (0.488 μm)                               | 0.0000   |
| 11.00 to 11.50; (0.345 μm)                               | 0.0000   |
| 11.50 to 12.00; (0.244 µm)                               | 0.0000   |
| 12.00 to 12.50; (0.173 μm)                               | 0.0000<br>0.0000   |
| 12.50 to 13.00; (0.122 μm)<br>13.00 to 13.50; (0.086 μm) | 0.0000   |
| 13.00 to 13.30; (0.080 μm)                               | V.UUUV   |

| Exercise Code:   | PS46   |
|--|--|
| LabCode:   | LB1903   |
| Sample Code:   | 1.11   |
| Equipment used (e.g. laser model and range):             |  |
|  | NMBAQC PSA SOP for supporting biological data* |
| Wethou used:   | NMDAQC FSA SOF for supporting biological data  |
| Peroxide pre-treatment used:                             | NO*  |
| Chemical dispersant used:                                |  |
| Phi interval (explicit)                                  |  |
| + sieve mesh (theoretical sieves shown in brackets)      | (mark as "0" for not analysed or no material)  |
| -6.50 to -6.00; 63 mm                                    | 0.0000   |
| -6.00 to -5.50; 45 mm                                    | 16.5300  |
| -5.50 to -5.00; 31.5 mm                                  | 0.0000   |
| -5.00 to -4.50; 22.4 mm                                  | 0.0000   |
| -4.50 to -4.00; 16 mm                                    | 45.3400  |
| -4.00 to -3.50; 11.2 mm                                  | 97.6300  |
| -3.50 to -3.00; 8 mm                                     | 17.4300  |
| -3.00 to -2.50; 5.6 mm                                   | 130.2600                                       |
| -2.50 to -2.00; 4 mm                                     | 86.3900  |
| -2.00 to -1.50; 2.8 mm                                   | 15.1800  |
| -1.50 to -1.00; 2 mm                                     | 22.1700  |
| -1.00 to -0.50; 1.4 mm                                   | 4.4000   |
| -0.50 to 0.00; 1 mm                                      | 0.3200   |
| 0.00 to 0.50; (707 μm)                                   | 0.0511   |
| 0.50 to 1.00; (500 μm)                                   | 0.0846   |
| 1.00 to 1.50; (353.6 μm)                                 | 0.0913   |
| 1.50 to 2.00; (250 μm)                                   | 0.0816   |
| 2.00 to 2.50; (176.8 μm)                                 | 0.0734   |
| 2.50 to 3.00; (125 μm)                                   | 0.0693   |
| 3.00 to 3.50; (88.39 μm)                                 | 0.0606   |
| 3.50 to 4.00; (62.5 μm)                                  | 0.0443   |
| 4.00 to 4.50; (44.19 μm)                                 | 0.0270   |
| 4.50 to 5.00; (31.25 μm)                                 | 0.0153   |
| 5.00 to 5.50; (22.097 μm)                                | 0.0096   |
| 5.50 to 6.00; (15.625 µm)                                | 0.0070   |
| 6.00 to 6.50; (11.049 µm)                                | 0.0055   |
| 6.50 to 7.00; (7.813 µm)                                 | 0.0043   |
| 7.00 to 7.50; (5.524 µm)                                 | 0.0035   |
| 7.50 to 8.00; (3.906 µm)                                 | 0.0029   |
| 8.00 to 8.50; (2.762 μm)                                 | 0.0025<br>0.0019                               |
| 8.50 to 9.00; (1.953 μm)                                 |  |
| 9.00 to 9.50; (1.381 µm)<br>9.50 to 10.00; (0.977 µm)    | 0.0013<br>0.0010                               |
| 9.50 to 10.00; (0.977 μm)<br>10.00 to 10.50; (0.691 μm)  | 0.0010   |
| 10.00 to 10.50; (0.691 μm)<br>10.50 to 11.00; (0.488 μm) | 0.0011   |
| 10.30 to 11.00; (0.448 μm)<br>11.00 to 11.50; (0.345 μm) | 0.0007   |
| 11.00 to 11.30; (0.343 μm)<br>11.50 to 12.00; (0.244 μm) | 0.0000   |
| 11.30 to 12.00; (0.244 μm)<br>12.00 to 12.50; (0.173 μm) | 0.0000   |
| 12.50 to 13.00; (0.173 μm) 12.50 to 13.00; (0.122 μm)    | 0.0000   |
| 12.30 to 13.50; (0.122 μm) 13.00 to 13.50; (0.086 μm)    | 0.0000   |
| 15.00 to 15.50; (0.080 μm)                               | 0.0000   |

| Exercise Code:                                      | PS46   |
|---|--|
| LabCode:  | LB1904   |
| Sample Code:  |  |
| •   |  |
| Equipment used (e.g. laser model and range):        | NMBAQC PSA SOP for supporting biological data* |
| Miethod used:                                       | NMBAQC PSA SOP for supporting biological data* |
| Peroxide pre-treatment used:                        | NO*  |
| Chemical dispersant used:                           | NO*  |
| Phi interval (explicit)                             | Volume/Weight                                  |
| + sieve mesh (theoretical sieves shown in brackets) | (mark as "0" for not analysed or no material)  |
| -6.50 to -6.00; 63 mm                               | 0.0000   |
| -6.00 to -5.50; 45 mm                               | 0.0000   |
| -5.50 to -5.00; 31.5 mm                             | 0.0000   |
| -5.00 to -4.50; 22.4 mm                             | 0.0000   |
| -4.50 to -4.00; 16 mm                               | 0.0000   |
| -4.00 to -3.50; 11.2 mm                             | 0.0000   |
| -3.50 to -3.00; 8 mm                                | 179.0300                                       |
| -3.00 to -2.50; 5.6 mm                              | 143.8900                                       |
| -2.50 to -2.00; 4 mm                                | 75.0400  |
| -2.00 to -1.50; 2.8 mm                              | 14.0900  |
| -1.50 to -1.00; 2 mm                                | 22.9500  |
| -1.00 to -0.50; 1.4 mm                              | 3.4200   |
| -0.50 to 0.00; 1 mm                                 | 0.3100   |
| 0.00 to 0.50; (707 μm)                              | 0.0000   |
| 0.50 to 1.00; (500 μm)                              | 0.0000   |
| 1.00 to 1.50; (353.6 μm)                            | 0.0000   |
| 1.50 to 2.00; (250 μm)                              | 0.0000   |
| 2.00 to 2.50; (176.8 μm)                            | 0.0000   |
| 2.50 to 3.00; (125 μm)                              | 0.0000   |
| 3.00 to 3.50; (88.39 μm)                            | 0.0000   |
| 3.50 to 4.00; (62.5 μm)                             | 0.0000   |
| 4.00 to 4.50; (44.19 μm)                            | 0.0000   |
| 4.50 to 5.00; (31.25 μm)                            | 0.0000   |
| 5.00 to 5.50; (22.097 μm)                           | 0.0000   |
| 5.50 to 6.00; (15.625 μm)                           | 0.0000   |
| 6.00 to 6.50; (11.049 μm)                           | 0.0000   |
| 6.50 to 7.00; (7.813 μm)                            | 0.0000   |
| 7.00 to 7.50; (5.524 μm)                            | 0.0000   |
| 7.50 to 8.00; (3.906 μm)                            | 0.0000   |
| 8.00 to 8.50; (2.762 μm)                            | 0.0000   |
| 8.50 to 9.00; (1.953 μm)                            | 0.0000   |
| 9.00 to 9.50; (1.381 μm)                            | 0.0000   |
| 9.50 to 10.00; (0.977 μm)                           | 0.0000   |
| 10.00 to 10.50; (0.691 μm)                          | 0.0000   |
| 10.50 to 11.00; (0.488 μm)                          | 0.0000   |
| 11.00 to 11.50; (0.345 μm)                          | 0.0000   |
| 11.50 to 12.00; (0.244 μm)                          | 0.0000   |
| 12.00 to 12.50; (0.173 μm)                          | 0.0000   |
| 12.50 to 13.00; (0.122 μm)                          | 0.0000   |
| 13.00 to 13.50; (0.086 μm)                          | 0.0000   |

| Exercise Code:                                      | PS46   |
|---|--|
| LabCode:  | LB1905   |
| Sample Code:  |  |
|   | Mastersizer 2000, hydro mu accessory unit, sieve stack (1mm-16mm in half phi |
| Equipment used (e.g. laser model and range).        | intervals)   |
| Method used:  | NMBAQC PSA SOP for supporting biological data*                               |
| Method ubed.  | Third I bit bot for supporting biological data                               |
| Peroxide pre-treatment used:                        | NO*  |
| Chemical dispersant used:                           |  |
| Phi interval (explicit)                             |  |
| + sieve mesh (theoretical sieves shown in brackets) | (mark as "0" for not analysed or no material)                                |
| -6.50 to -6.00; 63 mm                               | 0.0000   |
| -6.00 to -5.50; 45 mm                               | 0.0000   |
| -5.50 to -5.00; 31.5 mm                             | 0.0000   |
| -5.00 to -4.50; 22.4 mm                             | 0.0000   |
| -4.50 to -4.00; 16 mm                               | 63.9848  |
| -4.00 to -3.50; 11.2 mm                             | 100.7336   |
| -3.50 to -3.00; 8 mm                                | 17.0286  |
| -3.00 to -2.50; 5.6 mm                              | 125.2871   |
| -2.50 to -2.00; 4 mm                                | 84.1807  |
| -2.00 to -1.50; 2.8 mm                              | 19.8903  |
| -1.50 to -1.00; 2 mm                                | 22.7728  |
| -1.00 to -0.50; 1.4 mm                              | 4.0811   |
| -0.50 to 0.00; 1 mm                                 | 0.3007   |
| 0.00 to 0.50; (707 μm)                              | 0.0296   |
| 0.50 to 1.00; (500 µm)                              | 0.0318   |
| 1.00 to 1.50; (353.6 μm)                            | 0.0290   |
| 1.50 to 2.00; (250 µm)<br>2.00 to 2.50; (176.8 µm)  | 0.0278<br>0.0321   |
| 2.50 to 3.00; (176.8 μm)<br>2.50 to 3.00; (125 μm)  | 0.0407   |
| 3.00 to 3.50; (88.39 μm)                            | 0.0499   |
| 3.50 to 3.50, (66.5 μm) 3.50 to 4.00; (62.5 μm)     | 0.0566   |
| 4.00 to 4.50; (44.19 μm)                            | 0.0597   |
| 4.50 to 5.00; (31.25 μm)                            | 0.0594   |
| 5.00 to 5.50; (22.097 μm)                           | 0.0562   |
| 5.50 to 6.00; (15.625 μm)                           | 0.0509   |
| 6.00 to 6.50; (11.049 µm)                           | 0.0450   |
| 6.50 to 7.00; (7.813 μm)                            | 0.0396   |
| 7.00 to 7.50; (5.524 μm)                            | 0.0349   |
| 7.50 to 8.00; (3.906 µm)                            | 0.0303   |
| 8.00 to 8.50; (2.762 μm)                            | 0.0248   |
| 8.50 to 9.00; (1.953 μm)                            | 0.0181   |
| 9.00 to 9.50; (1.381 μm)                            | 0.0109   |
| 9.50 to 10.00; (0.977 μm)                           | 0.0056   |
| 10.00 to 10.50; (0.691 μm)                          | 0.0026   |
| 10.50 to 11.00; (0.488 μm)                          | 0.0002   |
| 11.00 to 11.50; (0.345 μm)                          | 0.0000   |
| 11.50 to 12.00; (0.244 μm)                          | 0.0000   |
| 12.00 to 12.50; (0.173 μm)                          | 0.0000   |
| 12.50 to 13.00; (0.122 μm)                          | 0.0000   |
| 13.00 to 13.50; (0.086 μm)                          | 0.0000   |

| Exercise Code:  | PS46  |
|---|---|
| LabCode:  | LB1908  |
| Sample Code:  | PS461908  |
| •   | Endecotts Test Sieves, Malvern Mastersizer 2000 Laser Diffractor (Model:  |
| Equipment used (e.g. laser moder and range).            | MAL1002178)   |
| Method used:  | Whole sample dry sieved down to <63um, and <63um (Pan) fraction subjected |
| Metrod disease  | to laser diffraction (based on BS1377: 1990 Parts 1-2 and BS13320: 2009). |
| Peroxide pre-treatment used:                            |   |
| Chemical dispersant used:                               |   |
| Phi interval (explicit)                                 |   |
| + sieve mesh (theoretical sieves shown in brackets)     |   |
| -6.50 to -6.00; 63 mm                                   | 0.0000  |
| -6.00 to -5.50; 45 mm                                   | 0.0000  |
| -5.50 to -5.00; 31.5 mm                                 | 0.0000  |
| -5.00 to -4.50; 22.4 mm                                 | 0.0000  |
| -4.50 to -4.00; 16 mm                                   | 12.3825   |
| -4.00 to -3.50; 11.2 mm                                 | 23.4723   |
| -3.50 to -3.00; 8 mm                                    | 6.6536  |
| -3.00 to -2.50; 5.6 mm                                  | 31.6821   |
| -2.50 to -2.00; 4 mm                                    | 15.9406   |
| -2.00 to -1.50; 2.8 mm                                  | 3.7673  |
| -1.50 to -1.00; 2 mm                                    | 5.4189  |
| -1.00 to -0.50; 1.4 mm                                  | 0.5722  |
| -0.50 to 0.00; 1 mm                                     | 0.0327  |
| 0.00 to 0.50; (707 μm)                                  | 0.0061  |
| 0.50 to 1.00; (500 μm)                                  | 0.0050  |
| 1.00 to 1.50; (353.6 μm)                                | 0.0059  |
| 1.50 to 2.00; (250 μm)                                  | 0.0150  |
| 2.00 to 2.50; (176.8 μm)                                | 0.0120  |
| 2.50 to 3.00; (125 μm)                                  | 0.0111  |
| 3.00 to 3.50; (88.39 μm)                                | 0.0061  |
| 3.50 to 4.00; (62.5 μm)                                 | 0.0061  |
| 4.00 to 4.50; (44.19 μm)                                | 0.0037  |
| 4.50 to 5.00; (31.25 μm)                                | 0.0028  |
| 5.00 to 5.50; (22.097 μm)                               | 0.0015  |
| 5.50 to 6.00; (15.625 µm)                               | 0.0006  |
| 6.00 to 6.50; (11.049 µm)                               | 0.0003<br>0.0003  |
| 6.50 to 7.00; (7.813 µm)                                | ******  |
| 7.00 to 7.50; (5.524 µm)                                | 0.0003  |
| 7.50 to 8.00; (3.906 µm)<br>8.00 to 8.50; (2.762 µm)    | 0.0003<br>0.0002  |
|   | 0.0002  |
| 8.50 to 9.00; (1.953 µm)<br>9.00 to 9.50; (1.381 µm)    | 0.0001  |
| 9.00 to 9.50; (1.361 μm)<br>9.50 to 10.00; (0.977 μm)   | 0.0001  |
| 9.50 to 10.00; (0.977 μm)<br>10.00 to 10.50; (0.691 μm) | 0.0001  |
| 10.50 to 11.00; (0.488 μm)                              | 0.0001  |
| 11.00 to 11.50; (0.488 μm)                              | 0.0000  |
| 11.50 to 12.00; (0.343 μm) 11.50 to 12.00; (0.244 μm)   | 0.0000  |
| 12.00 to 12.50; (0.173 μm)                              | "0"   |
| 12.50 to 13.00; (0.122 μm)                              | "0"   |
| 13.00 to 13.50; (0.086 μm)                              | "0"   |
| 13.00 to 13.50, (0.000 μm)                              | V   |

| Exercise Code:   | PS46   |
|--|--|
| LabCode:   | LB1909   |
| Sample Code:   | 1.34   |
| Equipment used (e.g. laser model and range):             |  |
|  | NMBAQC PSA SOP for supporting biological data* |
| Wethou used:   | NMDAQC FSA SOF for supporting biological data  |
| Peroxide pre-treatment used:                             | NO*  |
| Chemical dispersant used:                                |  |
| Phi interval (explicit)                                  |  |
| + sieve mesh (theoretical sieves shown in brackets)      | (mark as "0" for not analysed or no material)  |
| -6.50 to -6.00; 63 mm                                    | 0.0000   |
| -6.00 to -5.50; 45 mm                                    | 0.0000   |
| -5.50 to -5.00; 31.5 mm                                  | 0.0000   |
| -5.00 to -4.50; 22.4 mm                                  | 0.0000   |
| -4.50 to -4.00; 16 mm                                    | 69.7800  |
| -4.00 to -3.50; 11.2 mm                                  | 83.2500  |
| -3.50 to -3.00; 8 mm                                     | 30.7600  |
| -3.00 to -2.50; 5.6 mm                                   | 126.4100                                       |
| -2.50 to -2.00; 4 mm                                     | 88.3000  |
| -2.00 to -1.50; 2.8 mm                                   | 13.4300  |
| -1.50 to -1.00; 2 mm                                     | 23.0600  |
| -1.00 to -0.50; 1.4 mm                                   | 3.9900   |
| -0.50 to 0.00; 1 mm                                      | 0.2000   |
| 0.00 to 0.50; (707 μm)                                   | 0.0000   |
| 0.50 to 1.00; (500 μm)                                   | 0.0000   |
| 1.00 to 1.50; (353.6 μm)                                 | 0.0000   |
| 1.50 to 2.00; (250 μm)                                   | 0.0000   |
| 2.00 to 2.50; (176.8 μm)                                 | 0.0000   |
| 2.50 to 3.00; (125 μm)                                   | 0.0000   |
| 3.00 to 3.50; (88.39 μm)                                 | 0.0000   |
| 3.50 to 4.00; (62.5 μm)                                  | 0.0000   |
| 4.00 to 4.50; (44.19 μm)                                 | 0.0000   |
| 4.50 to 5.00; (31.25 μm)                                 | 0.0000   |
| 5.00 to 5.50; (22.097 μm)                                | 0.0000   |
| 5.50 to 6.00; (15.625 μm)                                | 0.0000   |
| 6.00 to 6.50; (11.049 µm)                                | 0.0000   |
| 6.50 to 7.00; (7.813 µm)                                 | 0.0000   |
| 7.00 to 7.50; (5.524 µm)                                 | 0.0000   |
| 7.50 to 8.00; (3.906 µm)                                 | 0.0000   |
| 8.00 to 8.50; (2.762 μm)                                 | 0.0000<br>0.0000                               |
| 8.50 to 9.00; (1.953 μm)                                 |  |
| 9.00 to 9.50; (1.381 µm)                                 | 0.0000<br>0.0000                               |
| 9.50 to 10.00; (0.977 µm)<br>10.00 to 10.50; (0.691 µm)  | 0.0000   |
| 10.00 to 10.50; (0.691 μm)<br>10.50 to 11.00; (0.488 μm) | 0.0000   |
| 10.30 to 11.00; (0.448 μm)<br>11.00 to 11.50; (0.345 μm) | 0.0000   |
| 11.00 to 11.30; (0.343 μm)<br>11.50 to 12.00; (0.244 μm) | 0.0000   |
| 11.30 to 12.00; (0.244 μm)<br>12.00 to 12.50; (0.173 μm) | 0.0000   |
| 12.50 to 13.00; (0.173 μm) 12.50 to 13.00; (0.122 μm)    | 0.0000   |
| 12.30 to 13.50; (0.122 μm) 13.00 to 13.50; (0.086 μm)    | 0.0000   |
| 15.00 to 15.50; (0.080 μm)                               | 0.0000   |

| Exercise Code:   | PS46  |
|--|---|
| LabCode:   | LB1910  |
| Sample Code:   |   |
| Equipment used (e.g. laser model and range):   |   |
| Equipment used (e.g. laser model and range):   | NMBAQC PSA SOP for supporting biological data*  |
| Method used:   | NAMBAQC PSA SOF for supporting biological data* |
| Peroxide pre-treatment used:   | NO*   |
| Chemical dispersant used:  | NO*   |
| Phi interval (explicit)  | Volume/Weight                                   |
| + sieve mesh (theoretical sieves shown in brackets)  | (mark as "0" for not analysed or no material)   |
| -6.50 to -6.00; 63 mm  | 0.0000  |
| -6.00 to -5.50; 45 mm  | 0.0000  |
| -5.50 to -5.00; 31.5 mm  | 0.0000  |
| -5.00 to -4.50; 22.4 mm  | 0.0000  |
| -4.50 to -4.00; 16 mm  | 14.7749   |
| -4.00 to -3.50; 11.2 mm  | 21.9939   |
| -3.50 to -3.00; 8 mm   | 4.1704  |
| -3.00 to -2.50; 5.6 mm   | 32.0342   |
| -2.50 to -2.00; 4 mm   | 16.3538   |
| -2.00 to -1.50; 2.8 mm   | 3.8587  |
| -1.50 to -1.00; 2 mm   | 5.0213  |
| -1.00 to -0.50; 1.4 mm   | 1.0284  |
| -0.50 to 0.00; 1 mm  | 0.0865  |
| 0.00 to 0.50; (707 μm)   | 0.0296  |
| 0.50 to 1.00; (500 μm)   | 0.0432  |
| 1.00 to 1.50; (353.6 μm)   | 0.0728  |
| 1.50 to 2.00; (250 µm)   | 0.1411  |
| 2.00 to 2.50; (176.8 µm)   | 0.1069  |
| 2.50 to 3.00; (125 µm)   | 0.1251  |
| 3.00 to 3.50; (88.39 µm)   | 0.0455<br>0.0683                                |
| 3.50 to 4.00; (62.5 µm)<br>4.00 to 4.50; (44.19 µm)  | 0.0683  |
| $4.00 \text{ to } 4.30; (44.19  \mu\text{m})$<br>$4.50 \text{ to } 5.00; (31.25  \mu\text{m})$ | 0.0433  |
| 4.30 to 5.50; (51.25 μm)<br>5.00 to 5.50; (22.097 μm)  | 0.0000  |
| 5.50 to 6.00; (15.625 μm)  | 0.0000  |
| 5.50 to 6.00; (15.025 μm)<br>6.00 to 6.50; (11.049 μm)   | 0.0000  |
| 6.50 to 7.00; (7.813 μm)   | 0.0000  |
| 7.00 to 7.50; (5.524 μm)   | 0.0000  |
| 7.50 to 8.00; (3.906 µm)   | 0.0000  |
| 8.00 to 8.50; (2.762 μm)   | 0.0000  |
| 8.50 to 9.00; (1.953 μm)   | 0.0000  |
| 9.00 to 9.50; (1.381 µm)   | 0.0000  |
| 9.50 to 10.00; (0.977 μm)  | 0.0000  |
| 9.50 to 10.00, (0.977 μm) 10.00 to 10.50; (0.691 μm)   | 0.0000  |
| 10.50 to 11.00; (0.488 μm)   | 0.0000  |
| 11.00 to 11.50; (0.345 μm)   | 0.0000  |
| 11.50 to 12.00; (0.244 μm)   | 0.0000  |
| 12.00 to 12.50; (0.173 μm)   | 0.0000  |
| 12.50 to 13.00; (0.122 μm)   | 0.0000  |
| 13.00 to 13.50; (0.086 μm)   | 0.0000  |
| 15.00 to 15.50, (0.080 μm)   | 0.0000  |

| Exercise Code:                                      | PS46   |
|---|--|
| LabCode:  | LB1917   |
| Sample Code:  |  |
| *   |  |
| Equipment used (e.g. laser model and range):        | NMBAQC PSA SOP for supporting biological data* |
| Method used:  | NMBAQC PSA SOP for supporting biological data* |
| Peroxide pre-treatment used:                        |  |
| Chemical dispersant used:                           | NO*  |
| Phi interval (explicit)                             | Volume/Weight                                  |
| + sieve mesh (theoretical sieves shown in brackets) |  |
| -6.50 to -6.00; 63 mm                               | 0.0000   |
| -6.00 to -5.50; 45 mm                               | 0.0000   |
| -5.50 to -5.00; 31.5 mm                             | 0.0000   |
| -5.00 to -4.50; 22.4 mm                             | 0.0000   |
| -4.50 to -4.00; 16 mm                               | 70.1400  |
| -4.00 to -3.50; 11.2 mm                             | 94.9400  |
| -3.50 to -3.00; 8 mm                                | 31.7500  |
| -3.00 to -2.50; 5.6 mm                              | 140.3800                                       |
| -2.50 to -2.00; 4 mm                                | 61.9100  |
| -2.00 to -1.50; 2.8 mm                              | 14.2800  |
| -1.50 to -1.00; 2 mm                                | 22.8500  |
| -1.00 to -0.50; 1.4 mm                              | 3.2800   |
| -0.50 to 0.00; 1 mm                                 | 0.1500   |
| 0.00 to 0.50; (707 μm)                              | 0.0000   |
| 0.50 to 1.00; (500 µm)                              | 0.0000   |
| 1.00 to 1.50; (353.6 µm)                            | 0.0000   |
| 1.50 to 2.00; (250 μm)                              | 0.0000   |
| 2.00 to 2.50; (176.8 µm)<br>2.50 to 3.00; (125 µm)  | 0.0000<br>0.0000                               |
| 3.00 to 3.50; (88.39 μm)                            | 0.0000   |
| $3.50 \text{ to } 4.00; (62.5 \mu m)$               | 0.0000   |
| 4.00 to 4.50; (44.19 μm)                            | 0.0000   |
| $4.50 \text{ to } 5.00; (31.25 \ \mu m)$            | 0.0000   |
| 5.00 to 5.50; (22.097 μm)                           | 0.0000   |
| 5.50 to 6.00; (15.625 μm)                           | 0.0000   |
| 6.00 to 6.50; (11.049 μm)                           | 0.0000   |
| 6.50 to 7.00; (7.813 μm)                            | 0.0000   |
| 7.00 to 7.50; $(5.524 \mu m)$                       | 0.0000   |
| 7.50 to 8.00; (3.906 µm)                            | 0.0000   |
| 8.00 to 8.50; (2.762 μm)                            | 0.0000   |
| 8.50 to 9.00; (1.953 μm)                            | 0.0000   |
| 9.00 to 9.50; (1.381 μm)                            | 0.0000   |
| 9.50 to 10.00; (0.977 μm)                           | 0.0000   |
| 10.00 to 10.50; (0.691 μm)                          | 0.0000   |
| 10.50 to 11.00; (0.488 μm)                          | 0.0000   |
| 11.00 to 11.50; (0.345 μm)                          | 0.0000   |
| 11.50 to 12.00; (0.244 μm)                          | 0.0000   |
| 12.00 to 12.50; (0.173 μm)                          | 0.0000   |
| 12.50 to 13.00; (0.122 μm)                          | 0.0000   |
| 13.00 to 13.50; (0.086 μm)                          | 0.0000   |

| Exercise Code:                                      | PS46   |
|---|--|
| LabCode:  | LB1921   |
| Sample Code:  |  |
| Equipment used (e.g. laser model and range):        |  |
| Equipment used (e.g. laser model and range):        | NMBAQC PSA SOP for supporting biological data* |
| Method used:  | NMBAQC PSA SOP for supporting biological data* |
| Peroxide pre-treatment used:                        | NO*  |
| Chemical dispersant used:                           | NO*  |
| Phi interval (explicit)                             | Volume/Weight                                  |
| + sieve mesh (theoretical sieves shown in brackets) | (mark as "0" for not analysed or no material)  |
| -6.50 to -6.00; 63 mm                               | 0.0000   |
| -6.00 to -5.50; 45 mm                               | 0.0000   |
| -5.50 to -5.00; 31.5 mm                             | 0.0000   |
| -5.00 to -4.50; 22.4 mm                             | 7.7900   |
| -4.50 to -4.00; 16 mm                               | 54.8100  |
| -4.00 to -3.50; 11.2 mm                             | 96.6100  |
| -3.50 to -3.00; 8 mm                                | 27.1000  |
| -3.00 to -2.50; 5.6 mm                              | 156.7800                                       |
| -2.50 to -2.00; 4 mm                                | 54.3300  |
| -2.00 to -1.50; 2.8 mm                              | 14.1700  |
| -1.50 to -1.00; 2 mm                                | 21.6300  |
| -1.00 to -0.50; 1.4 mm                              | 38.2000  |
| -0.50 to 0.00; 1 mm                                 | 0.3500   |
| 0.00 to 0.50; (707 μm)                              | 0.0007   |
| 0.50 to 1.00; (500 μm)                              | 0.0115   |
| 1.00 to 1.50; (353.6 μm)                            | 0.0218   |
| 1.50 to 2.00; (250 μm)                              | 0.0229   |
| 2.00 to 2.50; (176.8 μm)                            | 0.0236   |
| 2.50 to 3.00; (125 μm)                              | 0.0296   |
| 3.00 to 3.50; (88.39 μm)                            | 0.0376   |
| 3.50 to 4.00; (62.5 μm)                             | 0.0402   |
| 4.00 to 4.50; (44.19 μm)                            | 0.0392   |
| 4.50 to 5.00; (31.25 μm)                            | 0.0338   |
| 5.00 to 5.50; (22.097 μm)                           | 0.0322   |
| 5.50 to 6.00; (15.625 μm)                           | 0.0329   |
| 6.00 to 6.50; (11.049 μm)                           | 0.0349   |
| 6.50 to 7.00; (7.813 μm)                            | 0.0364   |
| 7.00 to 7.50; (5.524 μm)                            | 0.0387   |
| 7.50 to 8.00; (3.906 μm)                            | 0.0388   |
| 8.00 to 8.50; (2.762 μm)                            | 0.0358   |
| 8.50 to 9.00; (1.953 μm)                            | 0.0318   |
| 9.00 to 9.50; (1.381 μm)                            | 0.0266   |
| 9.50 to 10.00; (0.977 μm)                           | 0.0197   |
| 10.00 to 10.50; (0.691 μm)                          | 0.0170   |
| 10.50 to 11.00; (0.488 μm)                          | 0.0108   |
| 11.00 to 11.50; (0.345 μm)                          | 0.0037   |
| 11.50 to 12.00; (0.244 μm)                          | 0.0000   |
| 12.00 to 12.50; (0.173 μm)                          | 0.0000   |
| 12.50 to 13.00; (0.122 μm)                          | 0.0000   |
| 13.00 to 13.50; (0.086 μm)                          | 0.0000   |

| Exercise Code:                                      | PS46   |
|---|--|
| LabCode:  | LB1955   |
| Sample Code:  | PS461955   |
| -   | Coulter LS230 with variable speed fluid module   |
|   | NMBAQC PSA SOP for supporting biological data*   |
| Method used.  | Turbing of Street for supporting biological data |
| Peroxide pre-treatment used:                        | NO*  |
| Chemical dispersant used:                           |  |
| Phi interval (explicit)                             |  |
| + sieve mesh (theoretical sieves shown in brackets) |  |
| -6.50 to -6.00; 63 mm                               | 0.0000   |
| -6.00 to -5.50; 45 mm                               | 0.0000   |
| -5.50 to -5.00; 31.5 mm                             | 0.0000   |
| -5.00 to -4.50; 22.4 mm                             | 0.0000   |
| -4.50 to -4.00; 16 mm                               | 71.7000  |
| -4.00 to -3.50; 11.2 mm                             | 77.3000  |
| -3.50 to -3.00; 8 mm                                | 7.9000   |
| -3.00 to -2.50; 5.6 mm                              | 31.1000  |
| -2.50 to -2.00; 4 mm                                | 1.7000   |
| -2.00 to -1.50; 2.8 mm                              | 0.1000   |
| -1.50 to -1.00; 2 mm                                | 0.0000   |
| -1.00 to -0.50; 1.4 mm                              | 0.0000   |
| -0.50 to 0.00; 1 mm                                 | 0.0000   |
| 0.00 to 0.50; (707 μm)                              | 0.0097   |
| 0.50 to 1.00; (500 µm)<br>1.00 to 1.50; (353.6 µm)  | 20.4824<br>140.1686                              |
| 1.00 to 1.30; (333.6 μm)  1.50 to 2.00; (250 μm)    | 170.8780   |
| 2.00 to 2.50; (176.8 μm)                            | 61.8426  |
| 2.50 to 3.00; (125 µm)                              | 8.8291   |
| 3.00 to 3.50; (88.39 µm)                            | 2.5097   |
| 3.50 to 4.00; (62.5 µm)                             | 0.0000   |
| 4.00 to 4.50; (44.19 µm)                            | 0.0000   |
| 4.50 to 5.00; (31.25 μm)                            | 0.0000   |
| 5.00 to 5.50; (22.097 μm)                           | 0.0000   |
| 5.50 to 6.00; (15.625 μm)                           | 0.0000   |
| 6.00 to 6.50; (11.049 μm)                           | 0.0000   |
| 6.50 to 7.00; (7.813 μm)                            | 0.0000   |
| 7.00 to 7.50; (5.524 μm)                            | 0.0000   |
| 7.50 to 8.00; (3.906 μm)                            | 0.0000   |
| 8.00 to 8.50; (2.762 μm)                            | 0.0000   |
| 8.50 to 9.00; (1.953 μm)                            | 0.0000   |
| 9.00 to 9.50; (1.381 μm)                            | 0.0000   |
| 9.50 to 10.00; (0.977 μm)                           | 0.0000   |
| 10.00 to 10.50; (0.691 μm)                          | 0.0000   |
| 10.50 to 11.00; (0.488 µm)                          | 0.0000   |
| 11.00 to 11.50; (0.345 µm)                          | 0.0000   |
| 11.50 to 12.00; (0.244 µm)                          | 0.0000   |
| 12.00 to 12.50; (0.173 µm)                          | 0.0000   |
| 12.50 to 13.00; (0.122 μm)                          | 0.0000   |
| 13.00 to 13.50; (0.086 μm)                          | 0.0000   |

| Exercise Code:   | PS46   |
|--|--|
| LabCode:   | LB1958   |
| Sample Code:   | 1.75   |
|  | 15401/30   |
| Equipment used (e.g. laser model and range):             | NMBAQC PSA SOP for supporting biological data*   |
| Method used:   | NMDAQC PSA SOP for supporting biological data*   |
| Peroxide pre-treatment used:                             | NO*  |
| Chemical dispersant used:                                |  |
| Phi interval (explicit)                                  |  |
| + sieve mesh (theoretical sieves shown in brackets)      | o a constant of the constant o |
| -6.50 to -6.00; 63 mm                                    | 0.0000   |
| -6.00 to -5.50; 45 mm                                    | 0.0000   |
| -5.50 to -5.00; 31.5 mm                                  | 0.0000   |
| -5.00 to -4.50; 22.4 mm                                  | 39,2900  |
| -4.50 to -4.00; 16 mm                                    | 30.4100  |
| -4.00 to -3.50; 11.2 mm                                  | 92.6600  |
| -3.50 to -3.00; 8 mm                                     | 29.7500  |
| -3.00 to -2.50; 5.6 mm                                   | 136.8000   |
| -2.50 to -2.00; 4 mm                                     | 67.8900  |
| -2.00 to -1.50; 2.8 mm                                   | 17.2400  |
| -1.50 to -1.00; 2 mm                                     | 21.7900  |
| -1.00 to -0.50; 1.4 mm                                   | 3.2200   |
| -0.50 to 0.00; 1 mm                                      | 0.2400   |
| 0.00 to 0.50; (707 μm)                                   | 0.0000   |
| 0.50 to 1.00; (500 μm)                                   | 0.0000   |
| 1.00 to 1.50; (353.6 μm)                                 | 0.0000   |
| 1.50 to 2.00; (250 μm)                                   | 0.0000   |
| 2.00 to 2.50; (176.8 μm)                                 | 0.0000   |
| 2.50 to 3.00; (125 μm)                                   | 0.0000   |
| 3.00 to 3.50; (88.39 μm)                                 | 0.0000   |
| 3.50 to 4.00; (62.5 μm)                                  | 0.0000   |
| 4.00 to 4.50; (44.19 μm)                                 | 0.0000   |
| 4.50 to 5.00; (31.25 μm)                                 | 0.0000   |
| 5.00 to 5.50; (22.097 μm)                                | 0.0000   |
| 5.50 to 6.00; (15.625 μm)                                | 0.0000   |
| 6.00 to 6.50; (11.049 µm)                                | 0.0000   |
| 6.50 to 7.00; (7.813 μm)                                 | 0.0000   |
| 7.00 to 7.50; (5.524 µm)                                 | 0.0000   |
| 7.50 to 8.00; (3.906 µm)                                 | 0.0000   |
| 8.00 to 8.50; (2.762 μm)                                 | 0.0000   |
| 8.50 to 9.00; (1.953 µm)                                 | 0.0000   |
| 9.00 to 9.50; (1.381 µm)                                 | 0.0000   |
| 9.50 to 10.00; (0.977 μm)                                | 0.0000   |
| 10.00 to 10.50; (0.691 µm)                               | 0.0000   |
| 10.50 to 11.00; (0.488 µm)                               | 0.0000   |
| 11.00 to 11.50; (0.345 µm)                               | 0.0000   |
| 11.50 to 12.00; (0.244 µm)<br>12.00 to 12.50; (0.173 µm) | 0.0000<br>0.0000   |
|  | 0.0000   |
| 12.50 to 13.00; (0.122 μm)                               | *****  |
| 13.00 to 13.50; (0.086 μm)                               | 0.0000   |

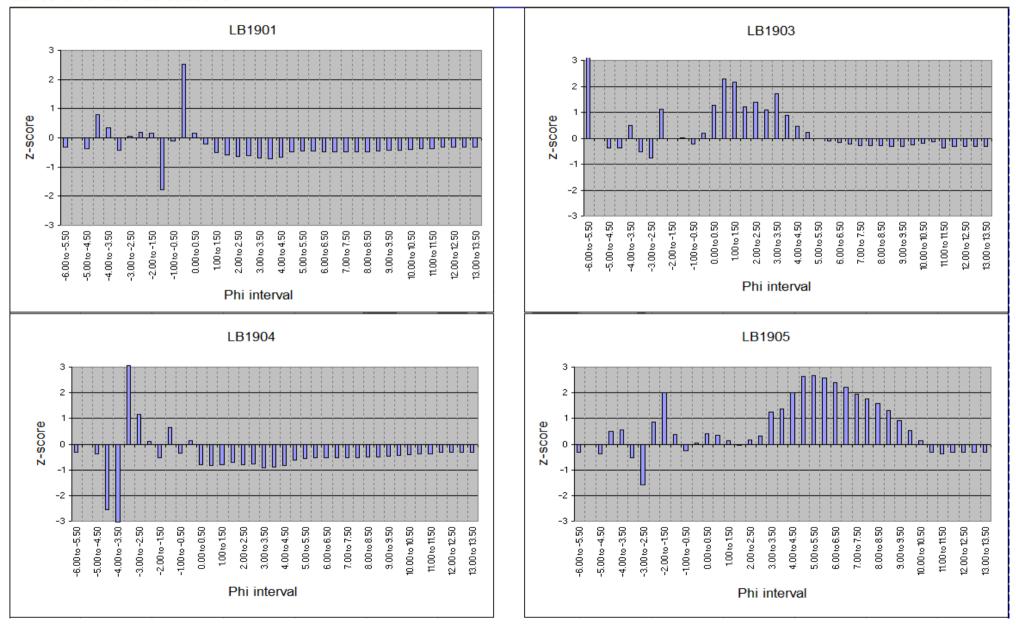
Appendix 2. Z-score calculations when data from all participating laboratories are included in mean and standard deviation calculations.

|  | 6.00 to -5.50  |   | -5.00  |   | -4.50  |   | -4.00  |  | -3.50   |  | -3.00  |   |
|--|--|---|--|---|--|---|--|--|---|--|--|---|
|  | to   | e e   | .50 to -   | e e   | ģ  | auc   | .50 to -   | a.   | .00 to -  | e e  | .50 to -   | e.  |
|  | 90.9   | -score  | 9.50   | -score  | -5.00 to   | -score  | 4.50   | -score   | 4.00  | -score   | 3.50   | -score  |
| TUM AVERAGE  | _  | -0.314918   | 0  | 0   |  | -0.372641   | 14.8945  | 0.593693   | 21.68975  | 0.392314   | 4.668104   | -0.450226   |
| LB1901   |  | -0.314918   | 0  | 0   |  | -0.372641   | 15.87189   | 0.799915   | 21.35989  | 0.340257   | 4.803704   | -0.436998   |
| LB1903<br>LB1904   |  | 3.149183<br>-0.314918   | 0  | 0   | 0  | -0.372641<br>-0.372641  | 10.34083   | -0.387095<br>-2.548928   | 22.26677  | 0.483377   | 3.975312<br>40.80642   | -0.517807   |
| LB1904<br>LB1905   | _  |   | 0  | 0   | 0  |   | 14.49231   |  | 22.81576  | 0.570018   | 3.858911   | -0.529356   |
| LB1908   |  | -0.314918   | ō  | Ō   | _  | -0.372841   | 12.38246   | 0.063674   | 23.47226  |  | 6.653647   |   |
| LB1909   | 0  | -0.314918   | 0  | 0   | 0  | -0.372641   | 15.8887  | 0.803462   | 18.95578  |  |  | -0.222366   |
| LB1910<br>LB1917   | 0  | -0.314918<br>-0.314918  | 0  | 0   | 0  |   | 15.95251   | 0.568453   | 21.99395 21.59298   |  | 4.170384   | -0.49878<br>-0.201178   |
| LB1921   | _  | -0.314918   | 0  | 0   | 1.640991   |   |  | -0.112831  |   | 0.377042   |  | -0.201176   |
| LB1955   |  | -0.314918   | 0  | 0   | 0  | -0.372641   |  | 0.555919   |   | -0.294028  | 11.14599   | 0.181684  |
| LB1958   |  | -0.314918   | 0  | 0   | 8.943978   | 3.090934  |  | -1.088328  |   | 0.298157   |  | -0.244965   |
| Mean<br>St. Dev  | 0.342732<br>1.088319   |   | 0  |   | 0.96227<br>2.582296  |   | 12.08068<br>4.739518   |  | 19.20386<br>6.336466  |  | 9.283497   |   |
| Jt bev   | 1.000010   |   |  |   | 2.002200   |   | 4.733316   |  | 0.000400  |  | 10.23123   |   |
|  | 50   |   | 90:  |   | 8.   |   | 1.50 to -1.00  |  | .50   |  | 8  |   |
|  | -5   |   | 0 -2.  |   | +  | 0   | -  |  | 0   |  | 0 0  |   |
|  | 3.00 to -2.  | score   | .50 to   | -score  | 2.00 to  | -score  | 30 t   | score  | 1.00 to -0.   | score  | 0.50 to 0.00   | -score  |
|  | _  | Ň   | -2   | N   |  | N   |  | N.   |   | N N  |  | N   |
| TUM AVERAGE<br>LB1901  | 28.77892<br>31.02557   | -1.331689<br>0.054926   | 19.93127<br>17.29784   | 1.198029<br>0.188728  | 3.921584   |   | 4.852762<br>4.583802   | -0.769393<br>-1.787937   | 1.07046   | -0.201382<br>-0.106717   | 0.103738   | 1.135524  |
| LB1901<br>LB1903   | 29.70879   |   | 19.70323   | 1.110628  | 3.462148   |   | 5.058378   | 0.001698   |   | -0.100/17  | 0.072983   | 0.192709  |
| LB1904   | 32.79694   | 1.148197  | 17.10391   | 0.114402  |  | -0.519517   |  |  |   | -0.340867  | 0.070658   | 0.121438  |
| LB1905   | 28.37704   | -1.57973  | 19.0666  | 0.86663   | 4.505075   | 2.01548   | 5.15795  | 0.386347   | 0.924353  | -0.27133   |  | 0.043232  |
| LB1908   |  | 0.460107<br>-1.329057   | 15.94061<br>20.10565   | -0.331452<br>1.264863   |  |   | 5.418948<br>5.250694   | 1.374739<br>0.737569   | 0.572222  | -0.439912<br>-0.278914   | 0.032737   | -1.041054<br>-0.648601  |
| LB1909<br>LB1910   |  | 0.877453  |  | -0.173078   | 3.057972<br>3.858667   |   |  |  |   | -0.278914  |  | 0.60572   |
| LB1917   |  |   |  | -1.044293   |  | -0.448429   | 5.196961   | 0.534083   |   | -0.356718  |  | -0.998801   |
| LB1921   | 33.02626   |   |  |   |  | -0.963557   |  |  | 8.046964  | 3.138594   |  | 0.215558  |
| LB1955   |  | -0.701859   |  |   |  | -1.578144   |  |  |   | -0.526436  |  | -0.632709   |
| LB1958<br>Mean   | 30.93658   | 0.120200  | 16.80542   | -0.517767   | 3.476638   | 0.877717  | 5.05593  | -0.302230  | 1.491105  | -0.362939  | 0.054634   | -0.309813   |
| St Dev   | 1.620241   |   | 2.60916  |   | 0.510274   |   | 0.264063   |  | 2.088788  |  | 0.032621   |   |
|  |  |   |  |   |  |   |  |  |   |  |  |   |
|  | 0  |   | 0  |   |  |   | 0  |  | 0   |  | 0  |   |
|  | 0.50   |   | 1.00   |   | 1.50   |   | 2.00   |  | 2.50  |  | 3.00   |   |
|  | 0 to 0.50  | core  | 0 to 1.00  | core  | -  | sore  | CV.  | auos   | 2   | auos   | 0 to 3.00  | auoo  |
|  | 0.00 to 0.50   | z-score   | 0.50 to 1.00   | z-score   | 1.00 to 1  | z-score   | 1.50 to 2  | z-score  | 2.00 to 2.  | z-score  | 2.50 to 3.00   | z-score   |
| TUM AVERAGE  | 9<br>8:<br>0.011821  | -0.325688   | 9<br>9<br>0.010732   | -0.439492   | 0.009262   | -0.508044   | 0.008472   | -0.507679  | 7<br>2<br>3<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8   | -0.535717  | 9<br>9:<br>2:<br>2:<br>2:<br>4:<br>4:<br>4:<br>4:<br>4:<br>4:<br>4:<br>4:<br>4:<br>4:<br>4:<br>4:<br>4:  | -0.545724   |
| LB1901   | 9<br>8<br>0.011821<br>0.023767   | -0.325688<br>0.158774   | 9<br>9<br>0.010732<br>0.016703   | -0.439492<br>-0.220649  | 0.009262<br>0.009358   | -0.508044<br>-0.504915  | 0.008472<br>0.005746   | -0.507679<br>-0.57171  | 2<br>8<br>0.008516<br>0.00522   | -0.535717<br>-0.632834   | 0.008154<br>0.008154   | -0.545724<br>-0.615591  |
|  | 0.011821<br>0.023767<br>0.05109  | -0.325688<br>0.158774   | 0.010732<br>0.016703<br>0.084626   | -0.439492<br>-0.220649<br>2.268801  | 0.009282<br>0.009358<br>0.091307   | -0.508044   | 0.008472<br>0.005746<br>0.081589   | -0.507679  | 7<br>2<br>3<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8   | -0.535717<br>-0.632834   | 9<br>9:<br>2:<br>2:<br>2:<br>4:<br>4:<br>4:<br>4:<br>4:<br>4:<br>4:<br>4:<br>4:<br>4:<br>4:<br>4:<br>4:  | -0.545724   |
| LB1901<br>LB1903   | 0.011821<br>0.023767<br>0.05109<br>0   | -0.325688<br>0.158774<br>1.266875   | 0.010732<br>0.016703<br>0.084626<br>0  | -0.439492<br>-0.220649<br>2.268801<br>-0.832812   | 0.009282<br>0.009358<br>0.091307   | -0.508044<br>-0.504915<br>2.163059<br>-0.809588   | 0.008472<br>0.005748<br>0.081589<br>0  | -0.507679<br>-0.57171<br>1.209647  | 0.008518<br>0.00522<br>0.073385   | -0.535717<br>-0.632834<br>1.374654   | 2<br>9.<br>0.008154<br>0.005518<br>0.069319<br>0   | -0.545724<br>-0.615591<br>1.075355  |
| LB1901<br>LB1903<br>LB1904<br>LB1905<br>LB1908   | 0.011821<br>0.023767<br>0.05109<br>0<br>0.02961<br>0.006138  | -0.325688<br>0.158774<br>1.266875<br>-0.805094<br>0.395744<br>-0.556156   | 0.010732<br>0.016703<br>0.084626<br>0<br>0.031823<br>0.005002  | -0.439492<br>-0.220649<br>2.288801<br>-0.832812<br>0.333511<br>-0.649501  | 0.009262<br>0.009358<br>0.091307<br>0<br>0.029025<br>0.005911  | -0.508044<br>-0.504915<br>2.163059<br>-0.809588<br>0.135379<br>-0.617149  | 0.008472<br>0.005746<br>0.081589<br>0<br>0.027822<br>0.015005  | -0.507679<br>-0.57171<br>1.209647<br>-0.706663<br>-0.053193<br>-0.354243   | 0.008516<br>0.00522<br>0.073365<br>0<br>0.032071<br>0.012049  | -0.535717<br>-0.632834<br>1.374654<br>-0.786599<br>0.158186<br>-0.431645   | 0.008154<br>0.005518<br>0.069319<br>0<br>0.040707<br>0.01114   | -0.545724<br>-0.615591<br>1.075355<br>-0.761839<br>0.317032<br>-0.466597  |
| LB1901<br>LB1903<br>LB1904<br>LB1905<br>LB1908<br>LB1909   | 0.011821<br>0.023767<br>0.05109<br>0<br>0.02961<br>0.006138<br>0   | -0.325688<br>0.158774<br>1.266875<br>-0.805094<br>0.395744<br>-0.556156<br>-0.805094  | 0.010732<br>0.016703<br>0.084626<br>0<br>0.031823<br>0.005002<br>0   | -0.439492<br>-0.220649<br>2.268801<br>-0.832812<br>0.333511<br>-0.649501<br>-0.832812   | 0.009262<br>0.009358<br>0.091307<br>0<br>0.029025<br>0.005911  | -0.508044<br>-0.504915<br>2.163059<br>-0.809588<br>0.135379<br>-0.617149<br>-0.809588   | 0.008472<br>0.005746<br>0.081589<br>0<br>0.027822<br>0.015005<br>0   | -0.507679<br>-0.57171<br>1.209647<br>-0.706663<br>-0.053193<br>-0.354243<br>-0.706663  | 0.008516<br>0.00522<br>0.073365<br>0<br>0.032071<br>0.012049<br>0   | -0.535717<br>-0.632834<br>1.374654<br>-0.786599<br>0.158186<br>-0.431645<br>-0.786599  | 0.008154<br>0.005518<br>0.069319<br>0<br>0.040707<br>0.01114   | -0.545724<br>-0.615591<br>1.075355<br>-0.761839<br>0.317032<br>-0.466597<br>-0.761839   |
| LB1901<br>LB1903<br>LB1904<br>LB1905<br>LB1908   | 0.011821<br>0.023767<br>0.05109<br>0<br>0.02961<br>0.006138<br>0<br>0.029577   | -0.325688<br>0.158774<br>1.266875<br>-0.805094<br>0.395744<br>-0.556156<br>-0.805094  | 0.010732<br>0.016703<br>0.084626<br>0<br>0.031823<br>0.005002<br>0<br>0.043228   | -0.439492<br>-0.220649<br>2.288801<br>-0.832812<br>0.333511<br>-0.649501  | 0.009262<br>0.009358<br>0.091307<br>0<br>0.029025<br>0.005911<br>0<br>0.072805   | -0.508044<br>-0.504915<br>2.163059<br>-0.809588<br>0.135379<br>-0.617149<br>-0.809588   | 0.008472<br>0.005746<br>0.081589<br>0<br>0.027822<br>0.015005<br>0<br>0.14108  | -0.507679<br>-0.57171<br>1.209647<br>-0.706663<br>-0.053193<br>-0.354243<br>-0.706663  | 0.008516<br>0.00522<br>0.073365<br>0<br>0.032071<br>0.012049<br>0<br>0.106932   | -0.535717<br>-0.632834<br>1.374654<br>-0.786599<br>0.158186<br>-0.431645<br>-0.786599  | 0.008154<br>0.005518<br>0.069319<br>0<br>0.040707<br>0.01114<br>0<br>0.125134  | -0.545724<br>-0.615591<br>1.075355<br>-0.761839<br>0.317032<br>-0.466597<br>-0.761839   |
| LB1901<br>LB1903<br>LB1904<br>LB1905<br>LB1908<br>LB1909<br>LB1910<br>LB1917<br>LB1921   | 0.011821<br>0.023767<br>0.05109<br>0<br>0.02961<br>0.006138<br>0<br>0.029577<br>0<br>0.029577  | -0.325688<br>0.158774<br>1.266875<br>-0.805094<br>0.395744<br>-0.556156<br>-0.805094<br>0.394407<br>-0.805094<br>-0.775341  | 0.010732<br>0.016703<br>0.084626<br>0.031823<br>0.005002<br>0.043228<br>0.0011495  | -0.439492<br>-0.220649<br>-0.832812<br>-0.832812<br>-0.832812<br>-0.832812<br>-0.75153<br>-0.832812<br>-0.411518  | 0.009262<br>0.009358<br>0.091307<br>0.029025<br>0.005911<br>0<br>0.072805<br>0.021765  | -0.5080 44<br>-0.5049 15<br>2.1630 59<br>-0.8095 88<br>0.1353 79<br>-0.6171 49<br>-0.8095 88<br>1.5606 87<br>-0.8095 88<br>-0.1010 04   | 0.008472<br>0.005746<br>0.081589<br>0.027822<br>0.015005<br>0<br>0.14108<br>0<br>0.022884  | -0.507679 -0.507679 -0.57171 1.209647 -0.706663 -0.053193 -0.354243 -0.706663 2.606466 -0.706663 -0.169658   | 0.008518<br>0.008518<br>0.00522<br>0.073385<br>0<br>0.032071<br>0.012049<br>0<br>0.106932<br>0<br>0.023558  | -0.535717<br>-0.632834<br>1.374654<br>-0.786599<br>-0.158186<br>-0.431645<br>-0.786599<br>-0.786599<br>-0.786599<br>-0.092811  | 0.008154<br>0.005518<br>0.069319<br>0.040707<br>0.01114<br>0<br>0.125134<br>0<br>0.029644  | 0.545724<br>-0.545724<br>-0.615591<br>1.075355<br>-0.761839<br>0.317032<br>-0.466597<br>-0.761839<br>2.554621<br>-0.761839<br>0.023815  |
| LB1901<br>LB1903<br>LB1904<br>LB1905<br>LB1908<br>LB1909<br>LB1910<br>LB1917<br>LB1921<br>LB1955   | 0.011821<br>0.023767<br>0.05109<br>0 0.02961<br>0.006138<br>0 0.029577<br>0 0.000734<br>0.077454   | -0.325688<br>0.158774<br>1.268875<br>-0.805094<br>0.395744<br>-0.556156<br>-0.805094<br>0.394407<br>-0.805094<br>-0.775341<br>2.336074  | 0.010732<br>0.016703<br>0.084628<br>0<br>0.031823<br>0.005002<br>0<br>0.043228<br>0<br>0.011495<br>0.057076  | -0.439492<br>-0.220649<br>-0.832812<br>-0.832812<br>-0.832812<br>-0.649501<br>-0.832812<br>-0.75153<br>-0.832812<br>-0.411518<br>1.259075   | 0.009262<br>0.009358<br>0.091307<br>0.029025<br>0.005911<br>0<br>0.072805<br>0<br>0.021765<br>0.043367   | -0.5080 44<br>-0.5049 15<br>2.1630 69<br>-0.8095 88<br>0.1353 79<br>-0.6171 49<br>-0.8095 88<br>1.5606 87<br>-0.8095 88<br>-0.1010 04<br>0.6022 95  | 0.008472<br>0.005748<br>0.081589<br>0.027822<br>0.015005<br>0.14108<br>0<br>0.022884<br>0.036871   | -0.507679 -0.507679 -0.57171 1.209647 -0.706663 -0.053193 -0.354243 -0.706663 2.606466 -0.706663 -0.169658 0.159343  | 0.008518<br>0.008518<br>0.00522<br>0.073385<br>0<br>0.032071<br>0.012049<br>0<br>0.106932<br>0<br>0.023558<br>0.040523  | -0.535717<br>-0.632834<br>1.374654<br>-0.786599<br>0.158186<br>-0.431645<br>-0.786599<br>2.663499<br>-0.786599<br>-0.786599<br>-0.092611<br>0.407149   | 0.008154<br>0.008518<br>0.005518<br>0.069319<br>0<br>0.040707<br>0.01114<br>0<br>0.125134<br>0<br>0.029644<br>0.034734   | -0.545724<br>-0.615591<br>1.075355<br>-0.761839<br>0.317032<br>-0.466597<br>-0.761839<br>2.554621<br>-0.761839<br>0.023815<br>0.158721  |
| LB1901<br>LB1903<br>LB1904<br>LB1905<br>LB1908<br>LB1909<br>LB1910<br>LB1917<br>LB1921<br>LB1955<br>LB1958   | 0.011821<br>0.023767<br>0.05109<br>0 0.02961<br>0.006138<br>0 0.029577<br>0 0.000734<br>0.077454   | 0.325688<br>0.158774<br>1.266875<br>-0.805094<br>0.395744<br>-0.556156<br>-0.805094<br>0.394407<br>0.394407<br>-0.775341<br>2.336074<br>-0.805094   | 0.010732<br>0.010732<br>0.016703<br>0.084628<br>0<br>0.031823<br>0.005002<br>0<br>0.043228<br>0.011495<br>0.057076   | 0.439492<br>-0.220649<br>2.268801<br>-0.832812<br>0.333511<br>-0.649501<br>-0.832812<br>0.75153<br>-0.832812<br>-0.411518<br>1.259075<br>-0.832812  | 0.009262<br>0.009358<br>0.091307<br>0<br>0.029025<br>0.005911<br>0<br>0.072805<br>0.021765<br>0.043367   | -0.5080 44<br>-0.5049 15<br>2.1630 59<br>-0.8095 88<br>0.1353 79<br>-0.6171 49<br>-0.8095 88<br>1.5606 87<br>-0.8095 88<br>-0.1010 04   | 0.008472<br>0.008472<br>0.005746<br>0.081589<br>0<br>0.027822<br>0.015005<br>0<br>0.14106<br>0.022884<br>0.036871  | -0.507679 -0.507679 -0.57171 1.209647 -0.706663 -0.053193 -0.354243 -0.706663 2.606466 -0.706663 -0.169658   | 0.008516<br>0.008516<br>0.00522<br>0.073365<br>0<br>0.032071<br>0.012049<br>0<br>0.106932<br>0<br>0.023558<br>0.040523  | -0.535717<br>-0.632834<br>-0.786599<br>0.158186<br>-0.431645<br>-0.786599<br>2.363499<br>-0.786599<br>-0.092611<br>0.407149<br>-0.786599   | 0.008154<br>0.008518<br>0.069319<br>0.040707<br>0.01114<br>0<br>0.125134<br>0.029844<br>0.034734   | -0.545724<br>-0.615591<br>1.075355<br>-0.761839<br>0.317032<br>-0.466597<br>-0.761839<br>2.554621<br>-0.761839<br>0.023815<br>0.158721<br>-0.761839   |
| LB1901<br>LB1903<br>LB1904<br>LB1905<br>LB1908<br>LB1909<br>LB1910<br>LB1917<br>LB1921<br>LB1955   | 0.011821<br>0.023767<br>0.05109<br>0 0.02961<br>0.006138<br>0 0.029577<br>0 0.000734<br>0.077454   | -0.325688<br>0.158774<br>1.266875<br>-0.805094<br>0.395744<br>-0.556156<br>-0.805094<br>0.394407<br>-0.805094<br>0.3936074<br>-0.775341<br>-0.805094  | 0.010732<br>0.016703<br>0.084628<br>0<br>0.031823<br>0.005002<br>0<br>0.043228<br>0<br>0.011495<br>0.057076  | 0.439492<br>-0.220649<br>-0.832812<br>-0.832812<br>-0.832812<br>-0.832812<br>-0.832812<br>-0.832812<br>-0.411518<br>-0.832812<br>-0.41518   | 0.009262<br>0.009358<br>0.091307<br>0.029025<br>0.005911<br>0<br>0.072805<br>0<br>0.021765<br>0.043367   | 0.5080 44<br>-0.5080 44<br>-0.5049 15<br>2.1630 69<br>-0.8095 88<br>0.1353 79<br>-0.8171 49<br>-0.8095 88<br>1.560 687<br>-0.8095 88<br>-0.1010 04<br>0.6022 95<br>-0.8095 88   | 0.008472<br>0.005748<br>0.081589<br>0.027822<br>0.015005<br>0.14108<br>0<br>0.022884<br>0.036871   | -0.507679 -0.507679 -0.57171 1.209647 -0.706663 -0.053193 -0.354243 -0.706663 2.606466 -0.706663 -0.169658 -0.159343 -0.706663   | 0.008518<br>0.008518<br>0.00522<br>0.073385<br>0<br>0.032071<br>0.012049<br>0<br>0.106932<br>0<br>0.023558<br>0.040523  | -0.535717<br>-0.632834<br>-0.786599<br>0.158186<br>-0.431645<br>-0.786599<br>2.563499<br>2.563499<br>-0.786599<br>-0.092611<br>0.407149<br>-0.788599   | 0.008154<br>0.008518<br>0.005518<br>0.069319<br>0<br>0.040707<br>0.01114<br>0<br>0.125134<br>0<br>0.029644<br>0.034734   | -0.545724<br>-0.615591<br>1.075355<br>-0.761839<br>0.317032<br>-0.466597<br>-0.761839<br>2.554621<br>-0.761839<br>0.023815<br>0.158721<br>-0.761839   |
| LB1901<br>LB1903<br>LB1904<br>LB1905<br>LB1908<br>LB1909<br>LB1910<br>LB1917<br>LB1921<br>LB1955<br>LB1958   | 0.011821<br>0.023767<br>0.05109<br>0<br>0.02961<br>0.006138<br>0<br>0.029577<br>0<br>0.000734<br>0.077454<br>0.077454<br>0.019852<br>0.024658  | -0.325688<br>0.158774<br>1.266875<br>-0.805094<br>0.395744<br>-0.556156<br>-0.805094<br>0.394407<br>-0.805094<br>0.3936074<br>-0.775341<br>-0.805094  | 0.010732<br>0.010732<br>0.016703<br>0.084628<br>0<br>0.031823<br>0.005002<br>0<br>0.043228<br>0<br>0.011495<br>0.057076<br>0<br>0.022723<br>0.027285   | 0.439492<br>-0.220649<br>-0.832812<br>-0.832812<br>-0.832812<br>-0.832812<br>-0.832812<br>-0.832812<br>-0.411518<br>-0.832812<br>-0.41518   | 0.009262<br>0.009358<br>0.091307<br>0<br>0.029025<br>0.005911<br>0<br>0.072805<br>0<br>0.021765<br>0.043367<br>0<br>0.024887<br>0.030718   | 0.5080 44<br>-0.5080 44<br>-0.5049 15<br>2.1630 69<br>-0.8095 88<br>0.1353 79<br>-0.8171 49<br>-0.8095 88<br>1.560 687<br>-0.8095 88<br>-0.1010 04<br>0.6022 95<br>-0.8095 88   | 0.008472<br>0.005748<br>0.081589<br>0<br>0.027822<br>0.015005<br>0<br>0.14108<br>0<br>0.022884<br>0.036871<br>0<br>0.030087<br>0.042578  | -0.507679 -0.507679 -0.57171 1.209647 -0.706663 -0.053193 -0.354243 -0.706663 2.606466 -0.706663 -0.169658 -0.159343 -0.706663   | 0.008516<br>0.00522<br>0.073386<br>0<br>0.032071<br>0.012049<br>0<br>0.106932<br>0<br>0.023558<br>0.040523<br>0.026702<br>0.033948  | -0.535717<br>-0.632834<br>-0.786599<br>0.158186<br>-0.431645<br>-0.786599<br>2.563499<br>2.563499<br>-0.786599<br>-0.092611<br>0.407149<br>-0.788599   | 0.008154<br>0.005518<br>0.069319<br>0<br>0.040707<br>0.01114<br>0<br>0.125134<br>0<br>0.029644<br>0.034734<br>0<br>0.028745<br>0.037731  | -0.545724<br>-0.615591<br>1.075355<br>-0.761839<br>0.317032<br>-0.466597<br>-0.761839<br>2.554621<br>-0.761839<br>0.023815<br>0.158721<br>-0.761839   |
| LB1901<br>LB1903<br>LB1904<br>LB1905<br>LB1908<br>LB1909<br>LB1910<br>LB1917<br>LB1921<br>LB1955<br>LB1958   | 0.011821<br>0.023787<br>0.05109<br>0 0.02961<br>0.006138<br>0 0.029577<br>0 0.000734<br>0.077454<br>0 0.019852<br>0.024858   | -0.325688<br>0.158774<br>1.266875<br>-0.805094<br>0.395744<br>-0.556156<br>-0.805094<br>0.394407<br>-0.805094<br>-0.775341<br>-0.805094   | 0.010732<br>0.016703<br>0.084628<br>0<br>0.031823<br>0.005002<br>0<br>0.043228<br>0<br>0.011495<br>0.057078<br>0<br>0.022723<br>0.027285   | 0.439492<br>-0.220649<br>2.268801<br>-0.832812<br>0.333511<br>-0.649501<br>-0.832812<br>0.75153<br>-0.832812<br>-0.411518<br>1.259075<br>-0.832812  | 0.009262<br>0.009358<br>0.091307<br>0<br>0.029025<br>0.005911<br>0<br>0.072805<br>0<br>0.021765<br>0.043387<br>0<br>0.024887<br>0.030718   | 0.5080 44<br>-0.5080 44<br>-0.5049 15<br>2.163069<br>-0.8095 88<br>0.1353 79<br>-0.8171 49<br>-0.8095 88<br>1.560687<br>-0.8095 88<br>-0.101004<br>0.6022 95<br>-0.8095 88  | 0.008472<br>0.008472<br>0.005746<br>0.081589<br>0<br>0.027822<br>0.015005<br>0<br>0.14108<br>0.022864<br>0.036871<br>0<br>0.030087<br>0.042578   | -0.507679 -0.507679 -0.57171 1.209647 -0.706663 -0.053193 -0.354243 -0.706663 2.606466 -0.706663 -0.169658 0.159343 -0.706663  | 0.008516<br>0.00522<br>0.073365<br>0<br>0.032071<br>0.012049<br>0<br>0.106932<br>0<br>0.023558<br>0.040523<br>0   | -0.535717<br>-0.632834<br>-0.786599<br>0.158186<br>-0.431645<br>-0.786599<br>2.563499<br>2.563499<br>-0.786599<br>-0.092811<br>0.407149<br>-0.788599   | 0.008154<br>0.005518<br>0.069319<br>0.040707<br>0.01114<br>0.125134<br>0.029644<br>0.034734<br>0.028745<br>0.037731  | -0.545724<br>-0.615591<br>1.075355<br>-0.761839<br>0.317032<br>-0.466597<br>-0.761839<br>2.554621<br>-0.761839<br>0.023815<br>0.158721<br>-0.761839   |
| LB1901<br>LB1903<br>LB1904<br>LB1905<br>LB1908<br>LB1909<br>LB1910<br>LB1917<br>LB1921<br>LB1955<br>LB1958   | 0.011821<br>0.023767<br>0.05109<br>0 0.02961<br>0.006138<br>0 0.029577<br>0 0.000734<br>0.077454<br>0 0.019852<br>0.024658   | -0.325688<br>0.158774<br>1.266875<br>-0.805094<br>0.395744<br>-0.556156<br>-0.805094<br>0.394407<br>-0.805094<br>-0.775341<br>-0.805094   | 0.010732<br>0.016703<br>0.084628<br>0<br>0.031823<br>0.005002<br>0<br>0.043228<br>0<br>0.011495<br>0.057078<br>0<br>0.022723<br>0.027285   | 0.439492<br>-0.220649<br>2.268801<br>-0.832812<br>0.333511<br>-0.649501<br>-0.832812<br>0.75153<br>-0.832812<br>-0.411518<br>1.259075<br>-0.832812  | 0.009262<br>0.009358<br>0.091307<br>0<br>0.029025<br>0.005911<br>0<br>0.072805<br>0<br>0.021765<br>0.043387<br>0<br>0.024887<br>0.030718   | 0.5080 44<br>-0.5080 44<br>-0.5049 15<br>2.163069<br>-0.8095 88<br>0.1353 79<br>-0.8171 49<br>-0.8095 88<br>1.560687<br>-0.8095 88<br>-0.101004<br>0.6022 95<br>-0.8095 88  | 0.008472<br>0.008472<br>0.005746<br>0.081589<br>0<br>0.027822<br>0.015005<br>0<br>0.14108<br>0.022864<br>0.036871<br>0<br>0.030087<br>0.042578   | -0.507679 -0.507679 -0.57171 1.209647 -0.706663 -0.053193 -0.354243 -0.706663 2.606466 -0.706663 -0.169658 0.159343 -0.706663  | 0.008516<br>0.00522<br>0.073365<br>0<br>0.032071<br>0.012049<br>0<br>0.106932<br>0<br>0.023558<br>0.040523<br>0<br>0.026702<br>0.033946   | -0.535717<br>-0.632834<br>-0.786599<br>0.158186<br>-0.431645<br>-0.786599<br>2.563499<br>2.563499<br>-0.786599<br>-0.092811<br>0.407149<br>-0.788599   | 0.008154<br>0.005518<br>0.069319<br>0.040707<br>0.01114<br>0.125134<br>0.029644<br>0.034734<br>0.028745<br>0.037731  | -0.545724<br>-0.615591<br>1.075355<br>-0.761839<br>0.317032<br>-0.466597<br>-0.761839<br>2.554621<br>-0.761839<br>0.023815<br>0.158721<br>-0.761839   |
| LB1901<br>LB1903<br>LB1904<br>LB1905<br>LB1908<br>LB1909<br>LB1910<br>LB1917<br>LB1921<br>LB1955<br>LB1958   | 0.011821<br>0.023767<br>0.05109<br>0 0.02961<br>0.006138<br>0 0.029577<br>0 0.000734<br>0.077454<br>0 0.019852<br>0.024658   | -0.325688<br>0.158774<br>1.266875<br>-0.805094<br>0.395744<br>-0.556156<br>-0.805094<br>0.394407<br>-0.805094<br>0.3936074<br>-0.775341<br>-0.805094  | 0.010732<br>0.016703<br>0.084626<br>0<br>0.031823<br>0.005002<br>0<br>0.043228<br>0<br>0.011495<br>0.057076<br>0<br>0.022723<br>0.022723<br>0.027285   | 0.439492<br>-0.220649<br>-0.832812<br>-0.832812<br>-0.832812<br>-0.832812<br>-0.832812<br>-0.832812<br>-0.411518<br>-0.832812<br>-0.41518   | 0.009262<br>0.009358<br>0.091307<br>0<br>0.029025<br>0.005911<br>0<br>0.072805<br>0<br>0.021765<br>0.043367<br>0<br>0.024887<br>0.030716   | 0.5080 44<br>-0.5080 44<br>-0.5049 15<br>2.1630 69<br>-0.8095 88<br>0.1353 79<br>-0.8171 49<br>-0.8095 88<br>1.560 687<br>-0.8095 88<br>-0.1010 04<br>0.6022 95<br>-0.8095 88   | 0.008472<br>0.005748<br>0.081589<br>0.027822<br>0.015005<br>0<br>0.14108<br>0.0228844<br>0.036871<br>0<br>0.030087<br>0.042578   | -0.507679 -0.507679 -0.57171 1.209647 -0.706663 -0.053193 -0.354243 -0.706663 2.606466 -0.706663 -0.169658 -0.159343 -0.706663   | 0.008516<br>0.00522<br>0.073365<br>0<br>0.032071<br>0.012049<br>0<br>0.106932<br>0<br>0.023558<br>0.040523<br>0<br>0.026702<br>0.033946   | -0.535717<br>-0.632834<br>-0.786599<br>0.158186<br>-0.431645<br>-0.786599<br>2.563499<br>2.563499<br>-0.786599<br>-0.092611<br>0.407149<br>-0.788599   | 0.008154<br>0.008518<br>0.069319<br>0.040707<br>0.01114<br>0<br>0.125134<br>0<br>0.029644<br>0.034734<br>0<br>0.028745<br>0.037731   | -0.545724<br>-0.615591<br>1.075355<br>-0.761839<br>0.317032<br>-0.466597<br>-0.761839<br>2.554621<br>-0.761839<br>0.023815<br>0.158721<br>-0.761839   |
| LB1901<br>LB1903<br>LB1904<br>LB1905<br>LB1908<br>LB1909<br>LB1910<br>LB1917<br>LB1921<br>LB1955<br>LB1958   | 0.011821<br>0.023767<br>0.05109<br>0 0.02961<br>0.006138<br>0 0.029577<br>0 0.000734<br>0.077454<br>0 0.019852<br>0.024658   | -0.325688<br>0.158774<br>1.266875<br>-0.805094<br>0.395744<br>-0.556156<br>-0.805094<br>0.394407<br>-0.805094<br>-0.775341<br>2.336074<br>-0.805094   | 0.010732<br>0.016703<br>0.084628<br>0<br>0.031823<br>0.005002<br>0<br>0.043228<br>0.057076<br>0<br>0.022723<br>0.027285  | 0.439492<br>-0.220649<br>2.268801<br>-0.832812<br>0.333511<br>-0.649501<br>-0.832812<br>0.75153<br>-0.832812<br>-0.411518<br>1.259075<br>-0.832812  | 0.009262<br>0.009358<br>0.091307<br>0<br>0.029025<br>0.005911<br>0<br>0.021765<br>0.043367<br>0<br>0.024867<br>0.030716  | 0.5080 44<br>-0.5049 15<br>2.163059<br>-0.8095 88<br>0.1353 79<br>-0.6171 49<br>-0.8095 88<br>1.5606 87<br>-0.8095 88<br>-0.101004<br>0.8022 95<br>-0.8095 88   | 0.008472<br>0.008472<br>0.005746<br>0.081589<br>0.027822<br>0.015005<br>0<br>0.14106<br>0<br>0.022884<br>0.036871<br>0<br>0.030087<br>0.042576   | -0.507679 -0.577671 1.209647 -0.706663 -0.053193 -0.354243 -0.706663 -0.706663 -0.169658 0.159343 -0.706663  | 0.008516<br>0.008516<br>0.00522<br>0.073385<br>0<br>0.032071<br>0.012049<br>0<br>0.106932<br>0<br>0.023558<br>0.040523<br>0<br>0.026702<br>0.033946   | -0.535717<br>-0.535717<br>-0.632834<br>1.374854<br>-0.788599<br>0.158188<br>-0.431845<br>-0.788599<br>-0.788599<br>-0.092811<br>0.407149<br>-0.788599  | 0.008154<br>0.008518<br>0.009319<br>0.040707<br>0.01114<br>0<br>0.125134<br>0.029644<br>0.034734<br>0<br>0.028745<br>0.037731  | -0.545724<br>-0.615591<br>1.075355<br>-0.761839<br>0.317032<br>-0.466597<br>-0.761839<br>-0.761839<br>0.023815<br>0.158721<br>-0.761839   |
| LB1901 LB1903 LB1904 LB1905 LB1908 LB1909 LB1910 LB1917 LB1921 LB1955 LB1958 Mean St Dev   | 0.011821<br>0.023767<br>0.05109<br>0 0.02961<br>0.006138<br>0 0.029577<br>0 0.000734<br>0.077454<br>0 0.019852<br>0.024658   | -0.325688<br>0.158774<br>1.266875<br>-0.805094<br>0.395744<br>-0.556156<br>-0.805094<br>0.394407<br>-0.805094<br>-0.775341<br>2.336074<br>-0.805094<br>-0.597589<br>-0.699844   | 0.010732<br>0.010732<br>0.016703<br>0.084628<br>0<br>0.031823<br>0.005002<br>0<br>0.043228<br>0.057078<br>0<br>0.022723<br>0.027285<br>84<br>92<br>0.005718<br>0.004377  | -0.439492<br>-0.220849<br>-0.832812<br>-0.832812<br>-0.832812<br>-0.832812<br>-0.75153<br>-0.832812<br>-0.411518<br>1.259075<br>-0.832812<br>-0.65624<br>-0.709639  | 0.009262<br>0.009358<br>0.091307<br>0<br>0.029025<br>0.005911<br>0<br>0.072805<br>0.021765<br>0.043367<br>0<br>0.024867<br>0.030716  | 0.5080 44<br>-0.5080 44<br>-0.5049 15<br>2.1630 58<br>-0.8095 88<br>0.1353 79<br>-0.8095 88<br>1.560 87<br>-0.8095 88<br>-0.1010 04<br>0.6022 95<br>-0.8095 88<br>-0.1010 04<br>0.6022 95<br>-0.8095 88   | 0.008472<br>0.008472<br>0.005746<br>0.081589<br>0<br>0.027822<br>0.015005<br>0<br>0.14108<br>0.022804<br>0.036871<br>0<br>0.030087<br>0.042578   | -0.507679 -0.507679 -0.57171 1.209647 -0.706663 -0.053193 -0.354243 -0.706663 2.606466 -0.706663 -0.169658 0.159343 -0.706663  | 0.008516<br>0.008516<br>0.00522<br>0.073365<br>0<br>0.032071<br>0.012049<br>0<br>0.106932<br>0.023558<br>0.040523<br>0<br>0.026702<br>0.033946  | -0.535717<br>-0.535717<br>-0.632834<br>1.374854<br>-0.786599<br>0.158186<br>-0.431845<br>-0.786599<br>2.583498<br>-0.786599<br>-0.786599<br>-0.786599<br>-0.788599   | 0.008154<br>0.005518<br>0.069319<br>0.040707<br>0.01114<br>0.125134<br>0.029844<br>0.034734<br>0.028745<br>0.037731  | -0.545724<br>-0.615591<br>1.075355<br>-0.761839<br>0.317032<br>-0.466597<br>-0.761839<br>0.023815<br>0.158721<br>-0.761839<br>-0.761839<br>-0.761839  |
| LB1901 LB1903 LB1904 LB1905 LB1908 LB1909 LB1910 LB1917 LB1921 LB1955 LB1958 Mean St Dev   | 0.011821<br>0.023787<br>0.05109<br>0 0.02961<br>0.006138<br>0 0.029577<br>0 0.000734<br>0.077454<br>0 0.019852<br>0.024858<br>8:<br>0 0.007815<br>0.0005277<br>0.060644  | 0.325688<br>0.158774<br>1.266875<br>-0.805094<br>0.395744<br>-0.556156<br>-0.805094<br>0.394407<br>-0.805094<br>-0.775341<br>2.336074<br>-0.805094  | 0.010732<br>0.010732<br>0.016703<br>0.084628<br>0<br>0.031823<br>0.005002<br>0<br>0.043228<br>0.057078<br>0.057078<br>0.022723<br>0.027285<br>84<br>95<br>0.005716<br>0.004377<br>0.044309   | 0.439492<br>-0.220649<br>2.268801<br>-0.832812<br>0.333511<br>-0.649501<br>-0.832812<br>0.75153<br>-0.832812<br>-0.411518<br>1.259075<br>-0.832812  | 0.009262<br>0.009358<br>0.091307<br>0<br>0.029025<br>0.005911<br>0<br>0.072805<br>0.021765<br>0.043387<br>0<br>0.024867<br>0.030716  | 0.5080 44<br>-0.5080 44<br>-0.5049 15<br>2.1630 69<br>-0.8095 88<br>0.1353 79<br>-0.8171 49<br>-0.8095 88<br>1.560 687<br>-0.8095 88<br>-0.1010 04<br>0.6022 95<br>-0.8095 88<br>-0.1010 04<br>0.6022 95<br>-0.8095 88  | 0.008472<br>0.008472<br>0.005746<br>0.081589<br>0.027822<br>0.015005<br>0.022864<br>0.0308871<br>0.030087<br>0.042578<br>0.003086<br>0.003086<br>0.002359<br>0.015275  | -0.507679 -0.507679 -0.57171 1.209647 -0.706663 -0.053193 -0.354243 -0.706663 -0.706663 -0.169658 0.159343 -0.706663   | 0.008516<br>0.00522<br>0.073365<br>0<br>0.032071<br>0.012049<br>0<br>0.106932<br>0<br>0.023558<br>0.040523<br>0<br>0.026702<br>0.033946   | 0.535717<br>-0.632834<br>-0.786599<br>0.158186<br>-0.431845<br>-0.786599<br>2.363499<br>2.363499<br>-0.786599<br>0.407149<br>-0.786599   | 0.008154<br>0.008154<br>0.005518<br>0.069319<br>0<br>0.040707<br>0.01114<br>0<br>0.125134<br>0<br>0.029644<br>0.034734<br>0<br>0.028745<br>0.037731  | -0.545724<br>-0.615591<br>1.075355<br>-0.761839<br>0.317032<br>-0.466597<br>-0.761839<br>2.554621<br>-0.761839<br>0.023815<br>0.158721<br>-0.761839<br>-0.761839<br>-0.761839   |
| LB1901 LB1903 LB1904 LB1905 LB1908 LB1909 LB1910 LB1917 LB1921 LB1955 LB1958 Mean St Dev   | 0.011821<br>0.023767<br>0.05109<br>0 0.02961<br>0.006138<br>0 0.029577<br>0 0.000734<br>0.077454<br>0 0.019852<br>0.024658   | -0.325688 0.158774 1.266875 -0.805094 0.395744 -0.556156 -0.805094 0.394407 -0.805094 -0.775341 2.336074 -0.805094 -0.597589 -0.597589 -0.699844 1.721417 -0.930601   | 0.010732<br>0.010703<br>0.084626<br>0<br>0.031823<br>0.005002<br>0<br>0.011495<br>0.057076<br>0<br>0.022723<br>0.022723<br>0.027285  | -0.439492<br>-0.220849<br>-0.832812<br>-0.832812<br>-0.832812<br>-0.832812<br>-0.75153<br>-0.832812<br>-0.411518<br>1.259075<br>-0.832812<br>-0.65624<br>-0.709639  | 0.009262<br>0.009358<br>0.091307<br>0<br>0.029025<br>0.005911<br>0<br>0.072805<br>0.021765<br>0.043367<br>0.024867<br>0.030716   | 0.5080 44<br>-0.5080 44<br>-0.5049 15<br>2.1630 59<br>-0.8095 88<br>0.1353 79<br>-0.8095 88<br>1.5606 87<br>-0.8095 88<br>-0.1010 04<br>0.6022 95<br>-0.8095 88<br>-0.1010 04<br>0.6022 95<br>-0.8095 88  | 0.008472<br>0.008472<br>0.005748<br>0.081589<br>0.027822<br>0.015005<br>0<br>0.14108<br>0<br>0.022884<br>0.036871<br>0<br>0.030087<br>0.042578   | 0.507679 -0.507679 -0.57171 1.209647 -0.706863 -0.053193 -0.354243 -0.706663 -0.706663 -0.169658 0.159343 -0.706663  | 0.008516<br>0.00522<br>0.073365<br>0<br>0.032071<br>0.012049<br>0<br>0.106932<br>0<br>0.023558<br>0.040523<br>0<br>0.026702<br>0.033946   | -0.535717<br>-0.632834<br>-0.786599<br>0.158186<br>-0.431645<br>-0.786599<br>2.563499<br>2.563499<br>-0.786599<br>-0.092811<br>0.407149<br>-0.788599   | 0.008154<br>0.008154<br>0.005518<br>0.069319<br>0<br>0.040707<br>0.01114<br>0<br>0.125134<br>0<br>0.029644<br>0.034734<br>0<br>0.028745<br>0.037731  | -0.545724<br>-0.615591<br>1.075355<br>-0.761839<br>0.317032<br>-0.466597<br>-0.761839<br>0.023815<br>0.158721<br>-0.761839<br>-0.761839<br>-0.761839  |
| LB1901 LB1903 LB1904 LB1905 LB1908 LB1909 LB1910 LB1917 LB1921 LB1955 LB1958 Mean St Dev  TUM AVERAGE LB1901 LB1903 LB1903 LB1904  | 0.011821<br>0.023767<br>0.05109<br>0 0.02961<br>0.006138<br>0 0.029577<br>0 0.000734<br>0.077454<br>0 0.019852<br>0.024658   | -0.325688 0.158774 1.266875 -0.805094 0.395744 -0.556156 -0.805094 0.394407 -0.805094 -0.775341 2.336074 -0.805094 -0.775341 1.321417 -0.930801 1.253715  | 0.010732<br>0.010732<br>0.016703<br>0.084626<br>0.031823<br>0.005002<br>0.011495<br>0.057076<br>0.022723<br>0.022723<br>0.027285   | 0.439492 -0.220649 -0.832812 0.333511 -0.649501 -0.832812 0.75153 -0.832812 -0.411518 1.259075 -0.832812 -0.709639 0.88286 -0.884216  | 0.009262<br>0.009358<br>0.091307<br>0<br>0.029025<br>0.005911<br>0<br>0.072805<br>0<br>0.021765<br>0.043367<br>0.030716<br>0<br>0<br>0.024887<br>0.030716<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0   | 0.5080 44 -0.5049 15 2.1630 59 -0.8095 88 0.1353 79 -0.6171 49 -0.8095 88 -0.1010 04 0.8022 95 -0.8095 88 -0.1010 04 0.8022 95 -0.8095 88   | 0.008472<br>0.005748<br>0.081589<br>0 0<br>0.027822<br>0.015005<br>0 0<br>0.14108<br>0 0<br>0.022884<br>0.036871<br>0 0.030087<br>0.042576<br>0 0.003606<br>0.002359<br>0.059387   | 0.507679 -0.507679 -0.57171 1.209647 -0.706663 -0.053193 -0.354243 -0.706663 -0.706663 -0.706663 -0.706663 -0.169658 0.159343 -0.706663  | 0.008516<br>0.008516<br>0.00522<br>0.073365<br>0<br>0.032071<br>0.012049<br>0<br>0.106932<br>0<br>0.023558<br>0.040523<br>0<br>0.026702<br>0.033946<br>0<br>0.0026702<br>0.002651<br>0.001703<br>0.009563<br>0<br>0.056185  | 0.535717<br>-0.535717<br>-0.632834<br>1.374654<br>-0.786599<br>0.158186<br>-0.431645<br>-0.786599<br>-0.786599<br>-0.092611<br>0.407149<br>-0.788599<br>-0.410121<br>-0.484597<br>-0.012664<br>-0.562535<br>2.668167   | 0.008154<br>0.008154<br>0.005518<br>0.089319<br>0<br>0.040707<br>0.01114<br>0<br>0.125134<br>0.029644<br>0.034734<br>0.028745<br>0.037731  | -0.545724<br>-0.615591<br>1.075355<br>-0.761839<br>0.317032<br>-0.466597<br>-0.761839<br>0.023815<br>0.158721<br>-0.761839<br>  |
| LB1901 LB1903 LB1904 LB1905 LB1908 LB1909 LB1910 LB1917 LB1921 LB1955 LB1958 Mean St Dev  TUM AVERAGE LB1901 LB1901 LB1903 LB1904 LB1905 LB1908 LB1909                             | 0.011821<br>0.023767<br>0.05109<br>0.02961<br>0.006138<br>0<br>0.029577<br>0<br>0.000734<br>0.077454<br>0<br>0.019852<br>0.024658<br>0<br>0.007615<br>0.005277<br>0.080644<br>0<br>0.049949<br>0.006138<br>0   | 0.325688<br>0.158774<br>1.266875<br>-0.805094<br>0.395744<br>-0.556156<br>-0.805094<br>0.394407<br>-0.805094<br>-0.775341<br>2.336074<br>-0.805094<br>-0.775341<br>2.336074<br>-0.805094<br>-0.597589<br>-0.699844<br>1.721417<br>-0.930601<br>1.253715<br>-0.662168<br>-0.930601   | 0.010732<br>0.016703<br>0.084628<br>0<br>0.031823<br>0.005002<br>0<br>0.043228<br>0<br>0.057076<br>0<br>0.022723<br>0.027285<br>0<br>0.005716<br>0<br>0.004377<br>0.044309<br>0<br>0.056633<br>0.006138  | -0.439492<br>-0.220849<br>-0.832812<br>-0.832812<br>-0.832812<br>-0.832812<br>-0.75153<br>-0.832812<br>-0.411518<br>1.259075<br>-0.832812<br>-0.65624<br>-0.709639<br>0.88286<br>-0.884216                                  | 0.009262<br>0.009358<br>0.091307<br>0<br>0.029025<br>0.005911<br>0<br>0.072805<br>0.021765<br>0.043367<br>0<br>0.024887<br>0.030716<br>0<br>0.004522<br>0.00328<br>0.027001<br>0<br>0.059693<br>0.003661   | 0.5080 44<br>-0.5080 44<br>-0.5049 15<br>2.1630 59<br>-0.8095 88<br>0.1353 79<br>-0.6171 49<br>-0.8095 88<br>-0.101004<br>0.8022 95<br>-0.8095 88<br>-0.101004<br>0.8022 95<br>-0.8095 88<br>-0.101004<br>0.8022 95<br>-0.8095 88<br>-0.101004<br>0.8022 95<br>-0.8095 88<br>-0.8095 88   | 0.008472<br>0.008472<br>0.005746<br>0.081589<br>0.027822<br>0.015005<br>0<br>0.14106<br>0<br>0.022864<br>0.038871<br>0<br>0.030087<br>0.042576<br>0<br>0.003606<br>0.002359<br>0.015275<br>0<br>0.059367<br>0.002812                                 | 0.507679 -0.507679 -0.57171 1.209647 -0.706663 -0.053193 -0.354243 -0.706663 -0.706663 -0.169658 0.159343 -0.706663 -0.1706663   | 0.008516<br>0.005212<br>0.073365<br>0<br>0.032071<br>0.012049<br>0<br>0.106932<br>0<br>0.023558<br>0.040523<br>0<br>0.026702<br>0.033946<br>0<br>0.002651<br>0.001703<br>0.009563<br>0.0056185<br>0.001482  | -0.535717<br>-0.535717<br>-0.632834<br>1.374854<br>-0.788599<br>0.158188<br>-0.431845<br>-0.788599<br>-0.788599<br>-0.092811<br>0.407149<br>-0.788599<br>-0.410121<br>-0.484597<br>-0.012884<br>-0.582535<br>-0.477311<br>-0.562535  | 0.008154<br>0.008518<br>0.069319<br>0.040707<br>0.01114<br>0<br>0.125134<br>0<br>0.029644<br>0.034734<br>0<br>0.028745<br>0.037731<br>0<br>0.001959<br>0.001281<br>0.007031<br>0.050928<br>0.000574  | -0.545724<br>-0.615591<br>1.075355<br>-0.761839<br>0.317032<br>-0.466597<br>-0.761839<br>0.023815<br>0.158721<br>-0.761839<br>  |
| LB1901 LB1903 LB1904 LB1905 LB1908 LB1909 LB1910 LB1917 LB1921 LB1955 LB1958 Mean St Dev  TUM AVERAGE LB1901 LB1903 LB1904 LB1905 LB1908 LB1908 LB1909 LB1910                      | 0.011821<br>0.023767<br>0.05109<br>0 0.02961<br>0.006138<br>0 0.029577<br>0 0.000734<br>0.077454<br>0 0.019852<br>0.024858<br>0 0.007615<br>0 0.005277<br>0.080844<br>0 0 0.049949<br>0 0.045503   | 0.325688<br>0.158774<br>1.266875<br>-0.805094<br>0.395744<br>-0.556156<br>-0.805094<br>0.394407<br>-0.805094<br>-0.775341<br>2.336074<br>-0.805094<br>-0.775341<br>2.336074<br>-0.805094<br>-0.775341<br>2.336074<br>-0.805094<br>-0.597589<br>-0.699844<br>1.721417<br>-0.930601<br>1.253715<br>-0.662168<br>-0.930601<br>1.059299 | 0.010732<br>0.010732<br>0.016703<br>0.084626<br>0<br>0.031823<br>0.005002<br>0<br>0.043228<br>0.057076<br>0<br>0.022723<br>0.027285<br>8<br>9<br>0.005716<br>0.004377<br>0.044309<br>0<br>0.056633<br>0.056633<br>0.068255                                     | -0.439492 -0.220849 -0.832812 -0.832812 -0.832812 -0.832812 -0.75153 -0.832812 -0.411518 1.259075 -0.832812 -0.65624 -0.709639 0.88286 -0.884216 1.374347 -0.639419 -0.884216 1.837818                                      | 0.009262<br>0.009358<br>0.091307<br>0<br>0.029025<br>0.005911<br>0<br>0.072805<br>0.043367<br>0<br>0.024867<br>0.030718<br>9<br>0.004522<br>0.00328<br>0.027001<br>0<br>0.059693<br>0.059693<br>0.0045503  | 0.5080 44<br>-0.5080 44<br>-0.5049 15<br>2.1630 59<br>-0.8095 88<br>0.1353 79<br>-0.6171 49<br>-0.8095 88<br>-0.101004<br>0.6022 95<br>-0.8095 88<br>-0.101004<br>0.6022 95<br>-0.8095 88<br>-0.101004<br>0.6022 95<br>-0.8095 88<br>-0.101004<br>0.8022 95<br>-0.8095 88<br>-0.101004<br>0.8022 95<br>-0.8095 88   | 0.008472<br>0.008478<br>0.081589<br>0.027822<br>0.015005<br>0.14106<br>0.022884<br>0.038871<br>0<br>0.030087<br>0.042576<br>0<br>0.003606<br>0.002359<br>0.015275<br>0<br>0.059387<br>0.002812<br>0  | -0.507679 -0.577679 -0.577671 1.209647 -0.706663 -0.053193 -0.354243 -0.706663 2.606465 -0.706663 -0.169658 0.159343 -0.706663 -0.169658 0.159343 -0.706663 -0.478428 0.227478 -0.607361 -0.637384 -0.607361 -0.607361                             | 0.008516<br>0.008516<br>0.00522<br>0.073365<br>0<br>0.032071<br>0.012049<br>0<br>0.106932<br>0<br>0.023558<br>0.040523<br>0<br>0.026702<br>0.033946<br>9<br>0<br>0.002651<br>0.001703<br>0.009563<br>0<br>0.056185<br>0.001482<br>0<br>0  | 0.535717<br>-0.535717<br>-0.632834<br>1.374854<br>-0.786599<br>0.158188<br>-0.431645<br>-0.786599<br>2.363498<br>-0.786599<br>-0.092611<br>0.407149<br>-0.786599<br>-0.786599<br>-0.012884<br>-0.12884<br>-0.012884<br>-0.012884<br>-0.012884<br>-0.012884<br>-0.682535<br>-0.477311<br>-0.562535<br>-0.562535   | 0.008154<br>0.0085188<br>0.069319<br>0.040707<br>0.01114<br>0<br>0.125134<br>0.029844<br>0.034734<br>0.028745<br>0.037731<br>80<br>0.001959<br>0.001281<br>0.007031<br>0<br>0.050928<br>0.0050928<br>0.000574  | -0.545724<br>-0.615591<br>1.075355<br>-0.761839<br>0.317032<br>-0.466597<br>-0.761839<br>0.023815<br>0.158721<br>-0.761839<br>-0.761839<br>-0.464018<br>-0.1105<br>-0.464018<br>-0.1105<br>-0.541298<br>-0.541298<br>-0.541298              |
| LB1901 LB1903 LB1904 LB1905 LB1908 LB1909 LB1910 LB1917 LB1955 LB1958 Mean St. Dev  TUM AVERAGE LB1901 LB1903 LB1904 LB1904 LB1905 LB1908 LB1909 LB1910 LB1910                     | 0.011821<br>0.023767<br>0.05109<br>0 0.02961<br>0.006138<br>0 0.029577<br>0 0.000734<br>0.077454<br>0 0.019852<br>0.024658<br>9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9  | 0.325688<br>0.158774<br>1.266875<br>-0.805094<br>0.395744<br>-0.556156<br>-0.805094<br>0.394407<br>-0.805094<br>-0.775341<br>2.336074<br>-0.805094<br>-0.75341<br>2.336074<br>-0.805094<br>-0.597589<br>-0.89844<br>1.721417<br>-0.930801<br>1.253715<br>-0.862168<br>-0.930801<br>1.059299<br>-0.930801                            | 0.010732<br>0.010732<br>0.016703<br>0.084628<br>0<br>0.031823<br>0.005002<br>0<br>0.043228<br>0.057076<br>0<br>0.022723<br>0.027285<br>84<br>95<br>0.005716<br>0.004377<br>0.044309<br>0<br>0.056633<br>0.0068255<br>0   | -0.439492 -0.220649 -0.832812 -0.333511 -0.649501 -0.832812 -0.75153 -0.832812 -0.411518 1.259075 -0.832812 -0.649501 -0.832812 -0.411518 1.259075 -0.832812  | 0.009262<br>0.009358<br>0.091307<br>0<br>0.029025<br>0.005911<br>0<br>0.072805<br>0.043387<br>0<br>0.024887<br>0.030718<br>9<br>0<br>0.024887<br>0.030718<br>0<br>0.059693<br>0.0045503<br>0   | -0.5080 44<br>-0.5080 44<br>-0.5049 15<br>2.1630 58<br>-0.8095 88<br>0.1353 79<br>-0.8171 49<br>-0.8095 88<br>1.5606 87<br>-0.8095 88<br>-0.1010 04<br>0.6022 95<br>-0.8095 88<br>-0.1010 04<br>0.6022 95<br>-0.8095 88<br>-0.1010 04<br>0.8022 95<br>-0.8095 88<br>-0.1010 04<br>0.8022 95<br>-0.8095 88<br>-0.1010 04<br>0.8022 95<br>-0.8095 88<br>-0.8272 58<br>1.3265 82<br>-0.8272 58 | 0.008472<br>0.008472<br>0.005746<br>0.081589<br>0.027822<br>0.015005<br>0.14108<br>0.022884<br>0.038871<br>0.030087<br>0.042578<br>0.003808<br>0.002359<br>0.015275<br>0.0059367<br>0.0059367<br>0.002812<br>0.000                                   | -0.507679 -0.507679 -0.57171 1.209647 -0.706663 -0.053193 -0.354243 -0.706663 2.606465 -0.706663 -0.169658 0.159343 -0.706663 -0.410296 -0.478428 0.227478 -0.607361 -0.607361 -0.607361 -0.607361   | 0.008516<br>0.008516<br>0.00522<br>0.073365<br>0<br>0.032071<br>0.012049<br>0<br>0.106932<br>0<br>0.023558<br>0.040523<br>0<br>0.026702<br>0.033946<br>9<br>9<br>0<br>0.002651<br>0.001703<br>0.009563<br>0<br>0.056185<br>0.001482<br>0<br>0   | -0.535717<br>-0.535717<br>-0.632834<br>1.374854<br>-0.786599<br>0.158188<br>-0.431845<br>-0.786599<br>2.383498<br>-0.786599<br>-0.786599<br>-0.786599<br>-0.786599<br>-0.786599<br>-0.410121<br>-0.484597<br>-0.012864<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.562535   | 0.008154<br>0.008518<br>0.069319<br>0.040707<br>0.01114<br>0<br>0.125134<br>0.029644<br>0.034734<br>0<br>0.028745<br>0.037731<br>8:<br>9:<br>0.001959<br>0.001261<br>0.0050926<br>0.0050926<br>0.000574<br>0<br>0  | -0.545724<br>-0.615591<br>1.075355<br>-0.761839<br>0.317032<br>-0.466597<br>-0.761839<br>-0.761839<br>0.023815<br>0.158721<br>-0.761839<br>-0.464018<br>-0.1105<br>-0.464018<br>-0.1105<br>-0.541298<br>-0.541298<br>-0.541298<br>-0.541298 |
| LB1901 LB1903 LB1904 LB1905 LB1908 LB1909 LB1910 LB1917 LB1921 LB1955 Mean St Dev  TUM AVERAGE LB1901 LB1903 LB1904 LB1905 LB1908 LB1909 LB1909 LB1910 LB1917 LB1921 LB1955        | 0.011821<br>0.023787<br>0.05109<br>0 0.02961<br>0.006138<br>0 0.029577<br>0 0.0077454<br>0 0.019852<br>0.024858<br>8:<br>0 0.007815<br>0.005277<br>0.060644<br>0 0.049949<br>0.049949<br>0.045503<br>0 0.037621  | 0.325688 0.158774 1.266875 -0.805094 0.395744 -0.556156 -0.805094 0.394407 -0.805094 -0.775341 2.336074 -0.805094 1.721417 -0.930601 1.253715 -0.662168 -0.930601 1.059299 -0.930601 0.7146   | 0.010732<br>0.010732<br>0.016703<br>0.084628<br>0<br>0.031823<br>0.005002<br>0<br>0.043228<br>0.057078<br>0.057078<br>0.022723<br>0.022723<br>0.027285<br>8<br>9<br>0.005716<br>0.004377<br>0.044309<br>0.056633<br>0.006138<br>0.0068255<br>0.0040151         | -0.439492 -0.220849 -0.832812 -0.832812 -0.832812 -0.832812 -0.75153 -0.832812 -0.411518 1.259075 -0.832812 -0.65624 -0.709639 0.88286 -0.884216 1.374347 -0.639419 -0.884216 1.837818                                      | 0.009262<br>0.009358<br>0.091307<br>0<br>0.029025<br>0.005911<br>0<br>0.072805<br>0.043387<br>0<br>0.024867<br>0.030716<br>9<br>0<br>0.024867<br>0.030716<br>0<br>0<br>0.059693<br>0.045503<br>0<br>0.045503<br>0  | 0.5080 44 -0.5080 44 -0.5049 15 2.1630 58 -0.8095 88 0.1353 79 -0.8171 49 -0.8095 88 1.5606 87 -0.8095 88 -0.1010 04 0.6022 95 -0.8095 88 -0.1010 04 0.6022 95 -0.8095 88 -0.1010 04 0.6022 95 -0.8095 88 -0.8272 58 1.9982 63 -0.8272 58 1.3265 82 -0.8272 58 1.0268 85  | 0.008472<br>0.008472<br>0.005746<br>0.081589<br>0.027822<br>0.015005<br>0.014108<br>0.022864<br>0.033087<br>0.042578<br>0.030087<br>0.042578<br>0.003808<br>0.002359<br>0.015275<br>0.059367<br>0.002812<br>0.003382                                 | -0.507679 -0.507679 -0.57171 1.209647 -0.706663 -0.053193 -0.354243 -0.706663 2.606465 -0.706663 -0.169658 0.159343 -0.706663 -0.410296 -0.478428 0.227478 -0.607361 -0.607361 -0.607361 -0.607361 1.241072  | 0.008516<br>0.00522<br>0.073365<br>0 0<br>0.032071<br>0.012049<br>0 0<br>0.106932<br>0 0<br>0.023558<br>0.040523<br>0 0<br>0.026702<br>0.033948<br>0 0<br>0.02651<br>0.001703<br>0.009563<br>0 0<br>0.056185<br>0.001482<br>0 0<br>0 0.032218   | 0.535717<br>-0.535717<br>-0.632834<br>-1.374654<br>-0.786599<br>0.158186<br>-0.431845<br>-0.786599<br>-0.786599<br>-0.786599<br>-0.786599<br>-0.786599<br>-0.786599<br>-0.410121<br>-0.464597<br>-0.012664<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.562535  | 0.008154<br>0.008154<br>0.005518<br>0.069319<br>0<br>0.040707<br>0.01114<br>0<br>0.125134<br>0<br>0.029644<br>0.034734<br>0<br>0.028745<br>0.037731<br>By Control of the co | -0.545724<br>-0.615591<br>1.075355<br>-0.761839<br>0.317032<br>-0.466597<br>-0.761839<br>0.023815<br>0.158721<br>-0.761839<br>-0.761839<br>-0.105<br>-0.541298<br>-0.541298<br>-0.541298<br>-0.541298<br>1.472658                           |
| LB1901 LB1903 LB1904 LB1905 LB1908 LB1909 LB1910 LB1917 LB1921 LB1955 LB1958 Mean St Dev  TUM AVERAGE LB1901 LB1903 LB1904 LB1905 LB1908 LB1909 LB1909 LB1910 LB1917 LB1955 LB1958 | 0.011821<br>0.023767<br>0.05109<br>0 0<br>0.02961<br>0.006138<br>0 0<br>0.029577<br>0 0<br>0.00734<br>0.077454<br>0 0<br>0.019852<br>0.024658<br>0 0<br>0.05277<br>0.060644<br>0 0<br>0.04503<br>0 0<br>0.04503<br>0 0<br>0.045503<br>0 0<br>0.037621<br>0.028949<br>0 0 | 0.325688 0.158774 1.266875 -0.805094 0.395744 0.556156 -0.805094 0.394407 -0.805094 -0.775341 2.336074 -0.805094 0.597589 -0.699844 1.721417 -0.930601 1.253715 -0.862168 -0.930601 1.059299 -0.930601 0.7146 0.335385 -0.930601  | 0.010732<br>0.010732<br>0.016703<br>0.084626<br>0.031823<br>0.005002<br>0.011495<br>0.057076<br>0.022723<br>0.022723<br>0.022723<br>0.027285   | -0.439492 -0.220649 -0.832812 -0.832812 -0.832812 -0.832812 -0.75153 -0.832812 -0.411518 1.259075 -0.832812 -0.65624 -0.709639 -0.884216 1.374347 -0.639419 -0.884216 1.87818 -0.884216 0.717035 -0.07386 -0.884216         | 0.009262<br>0.009358<br>0.091307<br>0<br>0.029025<br>0.005911<br>0<br>0.072805<br>0.021765<br>0.043367<br>0.024887<br>0.030716<br>0<br>0.024887<br>0.030716<br>0<br>0.0259693<br>0.027001<br>0<br>0.045503<br>0.045503<br>0<br>0.045503<br>0<br>0.045503<br>0<br>0.045503<br>0<br>0.039172<br>0.039172<br>0.013938 | -0.5080 44 -0.5049 15 -0.5080 58 -0.8095 88 -0.1353 79 -0.6171 49 -0.8095 88 -0.101004 -0.8095 88 -0.101004 -0.8022 95 -0.8095 88 -0.101004 -0.8072 98 -0.8095 88 -0.101004 -0.8272 58 -0.8272 58 1.3265 82 -0.8272 58 1.0268 85 -0.1675 27 -0.8272 58  | 0.008472<br>0.005748<br>0.081589<br>0.027822<br>0.015005<br>0<br>0.14108<br>0.022884<br>0.036871<br>0.030087<br>0.042578<br>0.002359<br>0.015275<br>0<br>0.059367<br>0.059367<br>0.002812<br>0<br>0<br>0.033822<br>0.008805                          | -0.507679 -0.507679 -0.507679 -0.57171 1.209647 -0.706663 -0.053193 -0.354243 -0.706663 -0.706663 -0.706663 -0.169658 0.159343 -0.706663 -0.410296 -0.478428 -0.227478 -0.607361 -0.607361 -0.607361 1.241072 -0.137052 -0.607361                  | 0.008516<br>0.008516<br>0.00522<br>0.073365<br>0<br>0.032071<br>0.012049<br>0<br>0.023558<br>0.040523<br>0<br>0.026702<br>0.033946<br>0<br>0.026702<br>0.033946<br>0<br>0<br>0.001703<br>0.009563<br>0<br>0.056185<br>0.001482<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0 | 0.535717<br>-0.535717<br>-0.632834<br>1.374654<br>-0.786599<br>0.158186<br>-0.431645<br>-0.786599<br>-0.786599<br>-0.092611<br>0.407149<br>-0.786599<br>-0.410121<br>-0.464597<br>-0.012664<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.562535 | 0.008154<br>0.008154<br>0.005518<br>0.069319<br>0<br>0.040707<br>0.01114<br>0<br>0.125134<br>0.029644<br>0.034734<br>0.028745<br>0.037731<br>0<br>0.028745<br>0.001261<br>0.001261<br>0.007031<br>0<br>0.050928<br>0.000574<br>0<br>0<br>0<br>0.032872<br>0.004521<br>0  | -0.545724<br>-0.615591<br>1.075355<br>-0.761839<br>0.317032<br>-0.466597<br>-0.761839<br>0.023815<br>0.158721<br>-0.761839<br>-0.761839<br>-0.105<br>-0.541298<br>-0.541298<br>-0.541298<br>-0.541298<br>1.472658                           |
| LB1901 LB1903 LB1904 LB1905 LB1908 LB1909 LB1910 LB1917 LB1921 LB1955 Mean St Dev  TUM AVERAGE LB1901 LB1903 LB1904 LB1905 LB1908 LB1909 LB1910 LB1917 LB1921 LB1955               | 0.011821<br>0.023767<br>0.05109<br>0 0.02961<br>0.006138<br>0 0.029577<br>0 0.000734<br>0.077454<br>0 0.019852<br>0.024658<br>0 0.04558<br>0 0.04503<br>0 0.049949<br>0 0.049949<br>0 0.045503<br>0 0.047621<br>0 0.037621<br>0 0.028949                                 | 0.325688 0.158774 1.266875 -0.805094 0.395744 -0.556156 -0.805094 0.394407 -0.805094 -0.775341 2.338074 -0.805094 1.721417 -0.930801 1.059299 -0.930801 1.059299 -0.930801 0.7148 0.335385 -0.930801  | 0.010732<br>0.010732<br>0.016703<br>0.084626<br>0<br>0.031823<br>0.005002<br>0<br>0.043228<br>0.057076<br>0<br>0.022723<br>0.022723<br>0.027285<br>0.005716<br>0.004377<br>0.044309<br>0<br>0.056633<br>0.006138<br>0<br>0.068255<br>0<br>0.040151<br>0.024024 | -0.439492 -0.220649 -0.832812 -0.832812 -0.832812 -0.832812 -0.75153 -0.832812 -0.411518 1.259075 -0.832812 -0.65624 -0.709639 0.88286 -0.884216 1.374347 -0.639419 -0.884216 1.837818 -0.884216 0.717035 0.07388 -0.884216 | 0.009262<br>0.009358<br>0.091307<br>0<br>0.029025<br>0.005911<br>0<br>0.072805<br>0.043367<br>0.044387<br>0.030716<br>0<br>0.024887<br>0.004522<br>0.00328<br>0.027001<br>0<br>0.059693<br>0.045503<br>0.045503<br>0.045503<br>0.039172<br>0.039172<br>0.013938  | 0.5080 44 -0.5080 44 -0.5049 15 2.1630 59 -0.8095 88 0.1353 79 -0.8171 49 -0.8095 88 -0.101004 0.8022 95 -0.8095 88 -0.101004 0.8022 95 -0.8095 88 -0.101004 0.8022 95 -0.8095 88 -0.101004 0.8022 95 -0.8095 88 -0.8095 88   | 0.008472<br>0.008472<br>0.005746<br>0.081589<br>0.027822<br>0.015005<br>0<br>0.14106<br>0<br>0.022864<br>0.036871<br>0<br>0.030087<br>0.042576<br>0<br>0.002359<br>0.015275<br>0<br>0.059387<br>0.002812<br>0<br>0<br>0.03382<br>0.03382<br>0.008605 | 0.0507679 -0.507679 -0.507679 -0.507679 -0.57171 1.209647 -0.706663 -0.053193 -0.354243 -0.706663 -0.706663 -0.169658 0.159343 -0.706663 -0.410296 -0.478428 0.227478 0.227478 0.227478 -0.607361 -0.607361 -0.607361 1.241072 -0.137052 -0.607361 | 0.008516<br>0.008516<br>0.00522<br>0.073365<br>0<br>0.032071<br>0.012049<br>0<br>0.023558<br>0.040523<br>0<br>0.026702<br>0.033946<br>0<br>0.026702<br>0.033946<br>0<br>0.002651<br>0.001703<br>0.009563<br>0<br>0.056185<br>0.001482<br>0<br>0<br>0<br>0.032218<br>0.006462                    | 0.535717<br>-0.535717<br>-0.632834<br>1.374654<br>-0.786599<br>0.158186<br>-0.431645<br>-0.786599<br>-0.786599<br>-0.092611<br>0.407149<br>-0.788599<br>-0.410121<br>-0.464597<br>-0.12664<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.562535<br>-0.562535   | 0.008154<br>0.008154<br>0.005518<br>0.069319<br>0<br>0.040707<br>0.01114<br>0<br>0.125134<br>0.029644<br>0.034734<br>0.037731<br>0<br>0.028745<br>0.001959<br>0.001281<br>0.007031<br>0<br>0.050928<br>0.000574<br>0<br>0<br>0<br>0.032872<br>0.004521   | -0.545724<br>-0.615591<br>1.075355<br>-0.761839<br>0.317032<br>-0.466597<br>-0.761839<br>0.023815<br>0.158721<br>-0.761839<br>  |

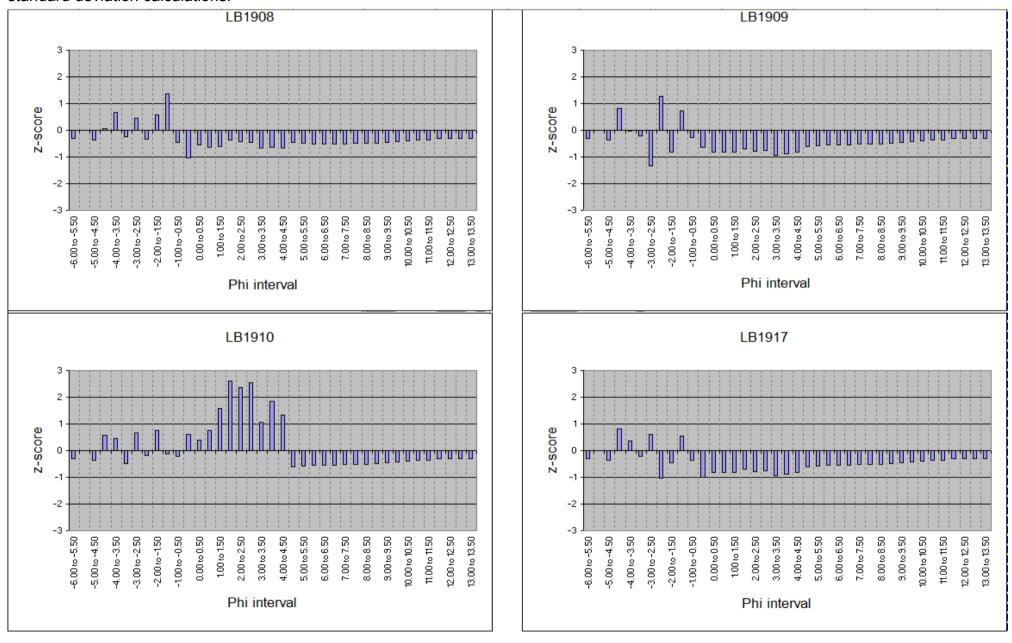
Appendix 2. Z-score calculations when data from all participating laboratories are included in mean and standard deviation calculations.

|                  | 0          |           | -         |           | -           |                        | -            |           | -           |           | -         |           |
|------------------|------------|-----------|-----------|-----------|-------------|------------------------|--------------|-----------|-------------|-----------|-----------|-----------|
|                  | 9.50       |           | 7.00      |           | 7.50        |                        | 8.00         |           | 8.50        |           | 9.00      |           |
|                  | .00 to 6.0 | 2         | \$        | 2         | 2           | 2                      | \$           | 2         | \$          | 2         | \$        | 2         |
|                  | <u>0</u>   | score     | 50 1      | score     | ē           | score.                 | 50 t         | score     | ë           | 8         | 50 t      | score     |
|                  | 0.0        | N         | 6.5       | 9         | 2.2         | 9                      | F-           |           | 9.0         | z-score   | 85        | ,<br>N    |
| TUM AVERAGE      |            | -0.434128 | 0.00128   | -0.443885 |             | -0.449925              | 0.000875     | -0.452197 |             | -0.454816 | 0.000388  | -0.455803 |
| LB1901           | 0.000977   | -0.471383 | 0.000805  | -0.476459 | 0.000701    | -0.475957              | 0.000615     | -0.471728 | 0.000511    | -0.467255 | 0.000377  | -0.45695  |
| LB1903           | 0.005517   | -0.175471 | 0.004349  | -0.231689 | 0.003505    | -0.276464              | 0.002942     | -0.296902 | 0.00251     | -0.29808  | 0.001926  | -0.301838 |
| LB1904           | 0          | -0.535054 | 0         | -0.532101 | 0           | -0.52579               | 0            | -0.517959 | 0           | -0.510554 | 0         | -0.494685 |
| LB1905           | 0.045003   | 2,3981    |           |           |             | 1.956379               |              |           |             |           | 0.018108  | 1.318874  |
| LB1908           |            | -0.517102 |           |           |             |                        |              |           |             |           |           |           |
| LB1909           |            | -0.535054 |           | -0.532101 | 0.5555.0    | -0.52579               |              | -0.517959 |             | -0.510554 |           | -0.494685 |
| LB1910           | _          | -0.535054 |           | -0.532101 | ō           | -0.52579               |              | -0.517959 |             | -0.510554 |           | -0.494685 |
| LB1917           | _          | -0.535054 |           | -0.532101 | ő           |                        |              | -0.517959 |             | -0.510554 | _         | -0.494685 |
| LB1921           | 1          | 1.741869  |           |           |             | 2.226958               | _            |           |             |           |           |           |
| LB1955           |            | -0.300742 |           |           |             | -0.298831              |              |           |             | -0.297234 |           |           |
| LB1958           |            | -0.535054 |           | -0.532101 |             | -0.52579               |              | -0.517959 |             | -0.510554 |           | -0.494685 |
| Mean             | 0.008209   |           | 0.007703  | -0.002101 | 0.007391    | -0.02010               | 0.006894     | -0.011000 | 0.006031    | -0.010004 | 0.004939  | -0.101000 |
| St. Dev          | l          |           |           |           |             |                        |              |           |             |           |           | - 1       |
| St Dev           | 0.015343   |           | 0.014476  |           | 0.014057    |                        | 0.01331      |           | 0.011812    |           | 0.009985  |           |
|                  |            |           |           |           | 99          |                        | 8            |           | 95          |           | 8         |           |
|                  | 99         |           | 8         |           | 6.5         |                        | <del>-</del> |           | 50          |           | 2.0       |           |
|                  |            |           | 50 to 10  |           | .00 to 10   |                        | 50 to 11     |           | 11.00 to 11 |           | .50 to 12 |           |
|                  | .00 to (   | _ g       | 2         | z-score   | ž           | z-score                | ž            | score     | ž           | _ g       | ž         | score     |
|                  | 8          | score     | 99        | 8         | ĕ           | 90                     | <u> 5</u>    | 8         | ë.          | z-score   |           | 8         |
|                  | 6          | N         | 6         |           | ₽           |                        | Ē            | N         |             |           | Ξ         | N.        |
| TUM AVERAGE      | 6.56 E-05  |           |           | -0.438003 |             | -0.404905              |              | -0.365653 |             | -0.362117 |           | -0.314918 |
| LB1901           | 0.000225   |           | _         | -0.438003 |             | -0.404905              |              | -0.365653 |             | -0.382117 |           | -0.314918 |
| LB1903           | 0.00132    |           | 0.001017  | -0.259711 | 0.00106     | -0.186852              | 0.000735     | -0.127067 |             | -0.382117 | 0         | -0.314918 |
| LB1904           | 0          | -0.466027 | 0         | -0.438003 | 0           | -0.404905              | 0            | -0.365653 | 0           | -0.382117 | 0         | -0.314918 |
| LB1905           | 0.010948   | 0.91283   | 0.005589  | 0.541902  | 0.002642    | 0.138546               | 0.000192     | -0.303214 | 0           | -0.362117 | 0         | -0.314918 |
| LB1908           | 8.09 E-05  | -0.455834 | 6.6E-05   | -0.426437 | 5.5E-05     | -0.393583              | 8.36E-06     | -0.362939 | 0           | -0.382117 | 0         | -0.314918 |
| LB1909           | 0          | -0.466027 | 0         | -0.438003 | 0           | -0.404905              | 0            | -0.365653 | 0           | -0.382117 | 0         | -0.314918 |
| LB1910           | 0          | -0.466027 | 0         | -0.438003 | 0           | -0.404905              | 0            | -0.365653 | 0           | -0.382117 | 0         | -0.314918 |
| LB1917           | 0          | -0.466027 | 0         | -0.438003 | 0           | -0.404905              | 0            | -0.365653 | 0           | -0.382117 | 0         | -0.314918 |
| LB1921           | 0.026608   | 2.88516   | 0.019677  | 3.012075  | 0.017036    | 3.099206               | 0.010781     | 3.132764  | 0.003674    | 3.110898  | 0         | -0.314918 |
| LB1955           | 0.001521   | -0.27452  | 0.00113   | -0.239811 | 0.000861    | -0.227883              | 0.000678     | -0.145628 | 0.00054     | 0.148157  | 0.000428  | 3.149183  |
| LB1958           |            | -0.466027 |           | -0.438003 |             | -0.404905              |              | -0.365653 |             | -0.362117 |           | -0.314918 |
| Mean             | 0.0037     |           | 0.002498  |           | 0.001969    |                        | 0.001127     |           | 0.000383    |           | 3.9E-05   |           |
| St Dev           | 0.00794    |           | 0.005703  |           | 0.004862    |                        | 0.003082     |           | 0.001058    |           | 0.000124  | - 1       |
|                  |            |           |           |           |             |                        |              |           |             |           |           |           |
|                  | .50        |           | 8.        |           | 99          |                        |              |           |             |           |           |           |
|                  | 2          |           | 5         |           | 6           |                        |              |           |             |           |           |           |
|                  | .00 to 12. | 0         | 50 to 13. |           | 3.00 to 13. | 0                      |              |           |             |           |           |           |
|                  | ē          | score     | ē         | score     | ē           | -score                 |              |           |             |           |           |           |
|                  | 5.0        | Ř         | 12.6      | Ř         | 3.0         | Ř                      |              |           |             |           |           |           |
| TUM AVERAGE      | _          | -0.314918 |           | -0.314918 |             | -0.314918              |              |           |             |           |           |           |
| LB1901           |            | -0.314918 |           | -0.314918 |             | -0.314918              |              |           |             |           |           |           |
| LB1903           | 1          | -0.314918 |           | -0.314918 |             | -0.314918              |              |           |             |           |           |           |
| LB1904           | 1          | -0.314918 |           | -0.314918 |             | -0.314918              |              |           |             |           |           |           |
| LB1905           |            | -0.314918 |           | -0.314918 |             | -0.314918              |              |           |             |           |           |           |
| LB1908           | 1          | -0.314918 |           | -0.314918 |             | -0.314918              |              |           |             |           |           |           |
| LB1909           | 1          | -0.314918 |           | -0.314918 |             | -0.314918              |              |           |             |           |           |           |
| LB1909<br>LB1910 |            | -0.314918 |           | -0.314918 |             | -0.314918<br>-0.314918 |              |           |             |           |           |           |
| 1                | 1          |           |           |           |             |                        |              |           |             |           |           |           |
| LB1917           |            | -0.314918 |           | -0.314918 |             | -0.314918              |              |           |             |           |           |           |
| LB1921           |            | -0.314918 |           | -0.314918 |             | -0.314918              |              |           |             |           |           |           |
| LB1955           |            | 3.149183  |           |           |             |                        |              |           |             |           |           |           |
| LB1958           |            | -0.314918 |           | -0.314918 |             | -0.314918              |              |           |             |           |           |           |
| Mean             | 2.97E-05   |           | 2.23E-05  |           | 1.43E-05    |                        |              |           |             |           |           |           |
| St Dev           | 9.42E-05   |           | 7.07E-05  |           | 4.55E-05    |                        |              |           |             |           |           |           |
|                  |            |           |           |           |             |                        |              |           |             |           |           |           |

Appendix 3. Summary of z-scores for each half-phi interval for PS46; when data from all participating laboratories included in the mean and standard deviation calculations.



Appendix 3. Summary of z-scores for each half-phi interval for PS46; when data from all participating laboratories included in the mean and standard deviation calculations.



Appendix 3. Summary of z-scores for each half-phi interval for PS46; when data from all participating laboratories included in the mean and standard deviation calculations.

