

GRAIN SIZE ANALYSIS -
AVERAGE GRAIN SIZE
BY MOMENT METHOD

PROFILE LINE, DATE: T-90, 7/24/91

SAMPLE ELEVATION: +8

| SCREEN | OPENING | PHI | WT RETAIN | WEIGHT | CUMM | WEIGHTED | | PHI 16 | PHI 84 |
|--------|---------|------------------|--------------|--------|--------------------|---------------|--------|--------------|--------------|
| mm | phi | MID POINT "D" | GRAMS "W" | % | WEIGHT %COARSER | MOMENT D*W | %FINER | interpolated | interpolated |
| 4.000 | -2.00 | -3.00 | 1.23 | 2.23 | 2.23 | -3.69 | 97.77 | | |
| 2.828 | -1.50 | -1.75 | 0.50 | 0.90 | 3.13 | -0.88 | 96.87 | 0.00 | 0.00 |
| 2.000 | -1.00 | -1.25 | 0.44 | 0.80 | 3.93 | -0.55 | 96.07 | 0.00 | 0.00 |
| 1.414 | -0.50 | -0.75 | 0.90 | 1.63 | 5.56 | -0.68 | 94.44 | 0.00 | 0.00 |
| 1.000 | 0.00 | -0.25 | 1.91 | 3.46 | 9.01 | -0.48 | 90.99 | 0.00 | 0.00 |
| 0.707 | 0.50 | 0.25 | 3.62 | 6.55 | 15.56 | 0.91 | 84.44 | 0.00 | 0.00 |
| 0.500 | 1.00 | 0.75 | 4.35 | 7.87 | 23.43 | 3.26 | 76.57 | 0.53 | 0.00 |
| 0.354 | 1.50 | 1.25 | 8.38 | 15.16 | 38.60 | 10.48 | 61.40 | 0.00 | 0.00 |
| 0.250 | 2.00 | 1.75 | 8.54 | 15.45 | 54.05 | 14.95 | 45.95 | 0.00 | 0.00 |
| 0.177 | 2.50 | 2.25 | 10.48 | 18.96 | 73.02 | 23.58 | 26.98 | 0.00 | 0.00 |
| 0.125 | 3.00 | 2.75 | 8.57 | 15.51 | 88.53 | 23.57 | 11.47 | 0.00 | 2.85 |
| 0.088 | 3.50 | 3.25 | 4.43 | 8.02 | 96.54 | 14.40 | 3.46 | 0.00 | 0.00 |
| 0.063 | 4.00 | 3.75 | 0.87 | 1.57 | 98.12 | 3.26 | 1.88 | 0.00 | 0.00 |
| PAN | | 5.00 | 1.04 | 1.88 | 100.00 | 5.20 | 0.00 | 0.00 | 0.00 |
| SUMS = | | | 55.26 | 100 | | 93.3275 | | 0.53 | 2.85 |
| | | | AVERAGE PH | 1.689 | | 1.69091 | | | |
| | | | AVERAGE mm | 0.310 | | 0.310 | | | |

GRAIN SIZE ANALYSIS -
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BY MOMENT METHOD

PROFILE LINE, DATE: T-90, 7/24/91

SAMPLE ELEVATION: +4

| SCREEN | OPENING | PHI | WT RETAIN | WEIGHT | CUMM | WEIGHTED | | PHI 16 | PHI 84 |
|--------|---------|------------------|--------------|---------|--------------------|---------------|--------|--------------|--------------|
| mm | phi | MID POINT "D" | GRAMS "W" | % | WEIGHT %COARSER | MOMENT D*W | %FINER | interpolated | interpolated |
| 4.000 | -2.00 | -4.00 | 0.01 | 0.02 | 0.02 | -0.04 | 99.98 | | |
| 2.828 | -1.50 | -1.75 | 0.04 | 0.06 | 0.08 | -0.07 | 99.92 | 0.00 | 0.00 |
| 2.000 | -1.00 | -1.25 | 0.09 | 0.14 | 0.22 | -0.11 | 99.78 | 0.00 | 0.00 |
| 1.414 | -0.50 | -0.75 | 0.26 | 0.40 | 0.62 | -0.20 | 99.38 | 0.00 | 0.00 |
| 1.000 | 0.00 | -0.25 | 2.36 | 3.67 | 4.29 | -0.59 | 95.71 | 0.00 | 0.00 |
| 0.707 | 0.50 | 0.25 | 11.40 | 17.72 | 22.00 | 2.85 | 78.00 | 0.33 | 0.00 |
| 0.500 | 1.00 | 0.75 | 16.69 | 25.94 | 47.94 | 12.52 | 52.06 | 0.00 | 0.00 |
| 0.354 | 1.50 | 1.25 | 20.70 | 32.17 | 80.11 | 25.88 | 19.89 | 0.00 | 0.00 |
| 0.250 | 2.00 | 1.75 | 9.13 | 14.19 | 94.30 | 15.98 | 5.70 | 0.00 | 1.64 |
| 0.177 | 2.50 | 2.25 | 3.10 | 4.82 | 99.11 | 6.98 | 0.89 | 0.00 | 0.00 |
| 0.125 | 3.00 | 2.75 | 0.43 | 0.67 | 99.78 | 1.18 | 0.22 | 0.00 | 0.00 |
| 0.088 | 3.50 | 3.25 | 0.08 | 0.12 | 99.91 | 0.26 | 0.09 | 0.00 | 0.00 |
| 0.063 | 4.00 | 3.75 | 0.02 | 0.03 | 99.94 | 0.08 | 0.06 | 0.00 | 0.00 |
| PAN | | 5.00 | 0.04 | 0.06 | 100.00 | 0.20 | 0.00 | 0.00 | 0.00 |
| SUMS = | | | 64.35 | 100.000 | | 64.905 | | 0.33 | 1.64 |
| | | | AVERAGE PH | 1.009 | | 0.984 | | | |
| | | | AVERAGE mm | 0.497 | | 0.506 | | | |

GRAIN SIZE ANALYSIS -
AVERAGE GRAIN SIZE
BY MOMENT METHOD

PROFILE LINE, DAT T-90, 7/24/91

SAMPLE ELEVATION: 0

| SCREEN | OPENING | PHI | WT RETAIN | WEIGHT | CUMM | WEIGHTED | | PHI 16 | PHI 84 |
|--------|---------|------------------|--------------|--------|--------------------|---------------|--------|--------------|--------------|
| mm | phi | MID POINT "D" | GRAMS "W" | % | WEIGHT %COARSER | MOMENT D*W | %FINER | interpolated | interpolated |
| 4.000 | -2.00 | -2.00 | 1.22 | 1.86 | 1.86 | -2.44 | 98.14 | | |
| 2.828 | -1.50 | -1.75 | 2.04 | 3.10 | 4.96 | -3.57 | 95.04 | 0.00 | 0.00 |
| 2.000 | -1.00 | -1.25 | 2.99 | 4.55 | 9.51 | -3.74 | 90.49 | 0.00 | 0.00 |
| 1.414 | -0.50 | -0.75 | 5.22 | 7.94 | 17.45 | -3.92 | 82.55 | -0.59 | 0.00 |
| 1.000 | 0.00 | -0.25 | 12.80 | 19.47 | 36.92 | -3.20 | 63.08 | 0.00 | 0.00 |
| 0.707 | 0.50 | 0.25 | 21.35 | 32.48 | 69.41 | 5.34 | 30.59 | 0.00 | 0.00 |
| 0.500 | 1.00 | 0.75 | 14.92 | 22.70 | 92.10 | 11.19 | 7.90 | 0.00 | 0.82 |
| 0.354 | 1.50 | 1.25 | 4.58 | 6.97 | 99.07 | 5.73 | 0.93 | 0.00 | 0.00 |
| 0.250 | 2.00 | 1.75 | 0.29 | 0.44 | 99.51 | 0.51 | 0.49 | 0.00 | 0.00 |
| 0.177 | 2.50 | 2.25 | 0.13 | 0.20 | 99.71 | 0.29 | 0.29 | 0.00 | 0.00 |
| 0.125 | 3.00 | 2.75 | 0.10 | 0.15 | 99.86 | 0.28 | 0.14 | 0.00 | 0.00 |
| 0.088 | 3.50 | 3.25 | 0.05 | 0.08 | 99.94 | 0.16 | 0.06 | 0.00 | 0.00 |
| 0.063 | 4.00 | 3.75 | 0.02 | 0.03 | 99.97 | 0.08 | 0.03 | 0.00 | 0.00 |
| PAN | | 12.00 | 0.02 | 0.03 | 100.00 | 0.24 | 0.00 | 0.00 | 0.00 |
| SUMS = | | | 65.73 | 100 | | 6.9425 | | -0.59 | 0.82 |
| | | | AVERAGE PH | 0.106 | | 0.115093 | | | |
| | | | AVERAGE mm | 0.929 | | 0.923 | | | |

GRAIN SIZE ANALYSIS -
AVERAGE GRAIN SIZE
BY MOMENT METHOD

PROFILE LINE, DATE: T-90, 7/24/91

SAMPLE ELEVATION: -4

| SCREEN | OPENING | PHI | WT RETAIN | WEIGHT | CUMM | WEIGHTED | | PHI 16 | PHI 84 |
|--------|---------|------------------|--------------|--------|--------------------|---------------|--------|--------------|--------------|
| mm | phi | MID POINT "D" | GRAMS "W" | % | WEIGHT %COARSER | MOMENT D*W | %FINER | interpolated | interpolated |
| 4.000 | -2.00 | -2.50 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 | | |
| 2.828 | -1.50 | -1.75 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 | | |
| 2.000 | -1.00 | -1.25 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 | | |
| 1.414 | -0.50 | -0.75 | 0.02 | 0.04 | 0.04 | -0.02 | 99.96 | 0.00 | 0.00 |
| 1.000 | 0.00 | -0.25 | 0.08 | 0.14 | 0.18 | -0.02 | 99.82 | 0.00 | 0.00 |
| 0.707 | 0.50 | 0.25 | 0.31 | 0.55 | 0.73 | 0.08 | 99.27 | 0.00 | 0.00 |
| 0.500 | 1.00 | 0.75 | 0.57 | 1.01 | 1.74 | 0.43 | 98.26 | 0.00 | 0.00 |
| 0.354 | 1.50 | 1.25 | 2.44 | 4.33 | 6.06 | 3.05 | 93.94 | 0.00 | 0.00 |
| 0.250 | 2.00 | 1.75 | 6.03 | 10.69 | 16.76 | 10.55 | 83.24 | 1.96 | 0.00 |
| 0.177 | 2.50 | 2.25 | 16.09 | 28.53 | 45.29 | 36.20 | 54.71 | 0.00 | 0.00 |
| 0.125 | 3.00 | 2.75 | 20.36 | 36.11 | 81.40 | 55.99 | 18.60 | 0.00 | 0.00 |
| 0.088 | 3.50 | 3.25 | 9.47 | 16.79 | 98.19 | 30.78 | 1.81 | 0.00 | 3.08 |
| 0.063 | 4.00 | 3.75 | 0.92 | 1.63 | 99.82 | 3.45 | 0.18 | 0.00 | 0.00 |
| PAN | | 12.00 | 0.10 | 0.18 | 100.00 | 1.20 | 0.00 | 0.00 | 0.00 |
| SUMS = | | | 56.39 | 100 | | 141.6925 | | 1.96 | 3.08 |
| | | | AVERAGE PH | 2.513 | | 2.521015 | | | |
| | | | AVERAGE mm | 0.175 | | 0.174 | | | |

GRAIN SIZE ANALYSIS -
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BY MOMENT METHOD

PROFILE LINE, DATE: T-90, 7/24/91

SAMPLE ELEVATION: -8

| SCREEN | OPENING | PHI | WT RETAIN | WEIGHT | CUMM | WEIGHTED | | PHI 16 | PHI 84 |
|--------|---------|------------------|--------------|--------|--------------------|---------------|--------|--------------|--------------|
| mm | phi | MID POINT "D" | GRAMS "W" | % | WEIGHT %COARSER | MOMENT D*W | %FINER | interpolated | interpolated |
| 4.000 | -2.00 | -2.00 | 0.06 | 0.11 | 0.11 | -0.12 | 99.89 | | |
| 2.828 | -1.50 | -1.75 | 0.02 | 0.04 | 0.14 | -0.04 | 99.86 | 0.00 | 0.00 |
| 2.000 | -1.00 | -1.25 | 0.05 | 0.09 | 0.23 | -0.06 | 99.77 | 0.00 | 0.00 |
| 1.414 | -0.50 | -0.75 | 0.08 | 0.14 | 0.38 | -0.06 | 99.62 | 0.00 | 0.00 |
| 1.000 | 0.00 | -0.25 | 0.25 | 0.45 | 0.82 | -0.06 | 99.18 | 0.00 | 0.00 |
| 0.707 | 0.50 | 0.25 | 0.62 | 1.11 | 1.93 | 0.16 | 98.07 | 0.00 | 0.00 |
| 0.500 | 1.00 | 0.75 | 0.96 | 1.72 | 3.65 | 0.72 | 96.35 | 0.00 | 0.00 |
| 0.354 | 1.50 | 1.25 | 2.25 | 4.03 | 7.68 | 2.81 | 92.32 | 0.00 | 0.00 |
| 0.250 | 2.00 | 1.75 | 3.81 | 6.82 | 14.49 | 6.67 | 85.51 | 0.00 | 0.00 |
| 0.177 | 2.50 | 2.25 | 12.23 | 21.88 | 36.38 | 27.52 | 63.62 | 2.03 | 0.00 |
| 0.125 | 3.00 | 2.75 | 19.75 | 35.34 | 71.71 | 54.31 | 28.29 | 0.00 | 0.00 |
| 0.088 | 3.50 | 3.25 | 12.64 | 22.62 | 94.33 | 41.08 | 5.67 | 0.00 | 3.27 |
| 0.063 | 4.00 | 3.75 | 2.40 | 4.29 | 98.62 | 9.00 | 1.38 | 0.00 | 0.00 |
| PAN | | 8.00 | 0.77 | 1.38 | 100.00 | 6.16 | 0.00 | 0.00 | 0.00 |
| SUMS = | | | 55.89 | 100 | | 148.085 | | 2.03 | 3.27 |
| | | | AVERAGE PH | 2.650 | | 2.653051 | | | |
| | | | AVERAGE mm | 0.159 | | 0.159 | | | |

GRAIN SIZE ANALYSIS -
AVERAGE GRAIN SIZE
BY MOMENT METHOD

PROFILE LINE, DAT T-90, 7/24/91

SAMPLE ELEVATION: -12

| SCREEN | OPENING | PHI | WT RETAIN | WEIGHT | CUMM | WEIGHTED | | PHI 16 | PHI 84 |
|--------|---------|------------------|--------------|--------|--------------------|---------------|--------|--------------|--------------|
| mm | phi | MID POINT "D" | GRAMS "W" | % | WEIGHT %COARSER | MOMENT D*W | %FINER | interpolated | interpolated |
| 4.000 | -2.00 | -2.00 | 0.25 | 0.58 | 0.58 | -0.50 | 99.42 | | |
| 2.828 | -1.50 | -1.75 | 0.96 | 2.24 | 2.82 | -1.68 | 97.18 | 0.00 | 0.00 |
| 2.000 | -1.00 | -1.25 | 2.29 | 5.34 | 8.16 | -2.86 | 91.84 | 0.00 | 0.00 |
| 1.414 | -0.50 | -0.75 | 3.92 | 9.14 | 17.30 | -2.94 | 82.70 | -0.57 | 0.00 |
| 1.000 | 0.00 | -0.25 | 9.44 | 22.00 | 39.30 | -2.36 | 60.70 | 0.00 | 0.00 |
| 0.707 | 0.50 | 0.25 | 10.81 | 25.20 | 64.50 | 2.70 | 35.50 | 0.00 | 0.00 |
| 0.500 | 1.00 | 0.75 | 6.74 | 15.71 | 80.21 | 5.06 | 19.79 | 0.00 | 0.00 |
| 0.354 | 1.50 | 1.25 | 5.37 | 12.52 | 92.73 | 6.71 | 7.27 | 0.00 | 1.15 |
| 0.250 | 2.00 | 1.75 | 1.78 | 4.15 | 96.88 | 3.12 | 3.12 | 0.00 | 0.00 |
| 0.177 | 2.50 | 2.25 | 0.57 | 1.33 | 98.21 | 1.28 | 1.79 | 0.00 | 0.00 |
| 0.125 | 3.00 | 2.75 | 0.22 | 0.51 | 98.72 | 0.61 | 1.28 | 0.00 | 0.00 |
| 0.088 | 3.50 | 3.25 | 0.16 | 0.37 | 99.09 | 0.52 | 0.91 | 0.00 | 0.00 |
| 0.063 | 4.00 | 3.75 | 0.08 | 0.19 | 99.28 | 0.30 | 0.72 | 0.00 | 0.00 |
| PAN | | 8.00 | 0.31 | 0.72 | 100.00 | 2.48 | 0.00 | 0.00 | 0.00 |
| SUMS = | | | 42.9 | 100 | | 12.43 | | -0.57 | 1.15 |
| | | | AVERAGE PH | 0.290 | | 0.290239 | | | |
| | | | AVERAGE mm | 0.818 | | 0.818 | | | |