# APPENDIX C

## Storm Water Management System Analysis


C.1 Rainfall Distribution Input
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Exhibit C - 1
Median Time Distributions of Heavy Storm Rainfall at a Point
2-year event
City of New Berlin

| Time | First quartile | Second quartile | Third quartile | 1-hr. | | 3-hr. | | 6-hr. | | 12-hr. | | 24-hr. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1.27 | | 1.73 | | 2.03 | | 2.35 | | 2.7 | |
| 0% | 0% | 0% | 0% | 0.00 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | |
| 5% | 16% | 3% | 3% | 0.20 | 0.20 | 0.28 | 0.28 | 0.32 | 0.32 | 0.07 | 0.07 | 0.08 | 0.08 |
| 10% | 33% | 8% | 6% | 0.42 | 0.22 | 0.57 | 0.29 | 0.67 | 0.35 | 0.19 | 0.12 | 0.16 | 0.08 |
| 15% | 43% | 12% | 9% | 0.55 | 0.13 | 0.74 | 0.17 | 0.87 | 0.20 | 0.28 | 0.09 | 0.24 | 0.08 |
| 20% | 52% | 16% | 12% | 0.66 | 0.11 | 0.90 | 0.16 | 1.06 | 0.18 | 0.38 | 0.09 | 0.32 | 0.08 |
| 25% | 60% | 22% | 15% | 0.76 | 0.10 | 1.04 | 0.14 | 1.22 | 0.16 | 0.52 | 0.14 | 0.41 | 0.08 |
| 30% | 66% | 29% | 19% | 0.84 | 0.08 | 1.14 | 0.10 | 1.34 | 0.12 | 0.68 | 0.16 | 0.51 | 0.11 |
| 35% | 71% | 39% | 23% | 0.90 | 0.06 | 1.23 | 0.09 | 1.44 | 0.10 | 0.92 | 0.24 | 0.62 | 0.11 |
| 40% | 75% | 51% | 27% | 0.95 | 0.05 | 1.30 | 0.07 | 1.52 | 0.08 | 1.20 | 0.28 | 0.73 | 0.11 |
| 45% | 79% | 62% | 32% | 1.00 | 0.05 | 1.37 | 0.07 | 1.60 | 0.08 | 1.46 | 0.26 | 0.86 | 0.14 |
| 50% | 82% | 70% | 38% | 1.04 | 0.04 | 1.42 | 0.05 | 1.66 | 0.06 | 1.65 | 0.19 | 1.03 | 0.16 |
| 55% | 84% | 76% | 45% | 1.07 | 0.03 | 1.45 | 0.03 | 1.71 | 0.04 | 1.79 | 0.14 | 1.22 | 0.19 |
| 60% | 86% | 81% | 57% | 1.09 | 0.03 | 1.49 | 0.03 | 1.75 | 0.04 | 1.90 | 0.12 | 1.54 | 0.32 |
| 65% | 88% | 85% | 70% | 1.12 | 0.03 | 1.52 | 0.03 | 1.79 | 0.04 | 2.00 | 0.09 | 1.89 | 0.35 |
| 70% | 90% | 88% | 79% | 1.14 | 0.03 | 1.56 | 0.03 | 1.83 | 0.04 | 2.07 | 0.07 | 2.13 | 0.24 |
| 75% | 92% | 91% | 85% | 1.17 | 0.03 | 1.59 | 0.03 | 1.87 | 0.04 | 2.14 | 0.07 | 2.30 | 0.16 |
| 80% | 94% | 93% | 89% | 1.19 | 0.03 | 1.63 | 0.03 | 1.91 | 0.04 | 2.19 | 0.05 | 2.40 | 0.11 |
| 85% | 96% | 95% | 92% | 1.22 | 0.03 | 1.66 | 0.03 | 1.95 | 0.04 | 2.23 | 0.05 | 2.48 | 0.08 |
| 90% | 97% | 97% | 95% | 1.23 | 0.01 | 1.68 | 0.02 | 1.97 | 0.02 | 2.28 | 0.05 | 2.57 | 0.08 |
| 95% | 98% | 98% | 97% | 1.24 | 0.01 | 1.70 | 0.02 | 1.99 | 0.02 | 2.30 | 0.02 | 2.62 | 0.05 |
| 100% | 100% | 100% | 100% | 1.27 | 0.03 | 1.73 | 0.03 | 2.03 | 0.04 | 2.35 | 0.05 | 2.70 | 0.08 |

Exhibit C - 1
Median Time Distributions of Heavy Storm Rainfall at a Point
10-year event
City of New Berlin

| Time | First quartile | Second quartile | Third quartile | 1-hr. | | 3-hr. | | 6-hr. | | 12-hr. | | 24-hr. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1.81 | | 2.47 | | 2.89 | | 3.36 | | 3.86 | |
| 0% | 0% | 0% | 0% | 0.00 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | |
| 5% | 16% | 3% | 3% | 0.29 | 0.29 | 0.40 | 0.40 | 0.46 | 0.46 | 0.10 | 0.10 | 0.12 | 0.12 |
| 10% | 33% | 8% | 6% | 0.60 | 0.31 | 0.82 | 0.42 | 0.95 | 0.49 | 0.27 | 0.17 | 0.23 | 0.12 |
| 15% | 43% | 12% | 9% | 0.78 | 0.18 | 1.06 | 0.25 | 1.24 | 0.29 | 0.40 | 0.13 | 0.35 | 0.12 |
| 20% | 52% | 16% | 12% | 0.94 | 0.16 | 1.28 | 0.22 | 1.50 | 0.26 | 0.54 | 0.13 | 0.46 | 0.12 |
| 25% | 60% | 22% | 15% | 1.09 | 0.14 | 1.48 | 0.20 | 1.73 | 0.23 | 0.74 | 0.20 | 0.58 | 0.12 |
| 30% | 66% | 29% | 19% | 1.19 | 0.11 | 1.63 | 0.15 | 1.91 | 0.17 | 0.97 | 0.24 | 0.73 | 0.15 |
| 35% | 71% | 39% | 23% | 1.29 | 0.09 | 1.75 | 0.12 | 2.05 | 0.14 | 1.31 | 0.34 | 0.89 | 0.15 |
| 40% | 75% | 51% | 27% | 1.36 | 0.07 | 1.85 | 0.10 | 2.17 | 0.12 | 1.71 | 0.40 | 1.04 | 0.15 |
| 45% | 79% | 62% | 32% | 1.43 | 0.07 | 1.95 | 0.10 | 2.28 | 0.12 | 2.08 | 0.37 | 1.24 | 0.19 |
| 50% | 82% | 70% | 38% | 1.48 | 0.05 | 2.03 | 0.07 | 2.37 | 0.09 | 2.35 | 0.27 | 1.47 | 0.23 |
| 55% | 84% | 76% | 45% | 1.52 | 0.04 | 2.07 | 0.05 | 2.43 | 0.06 | 2.55 | 0.20 | 1.74 | 0.27 |
| 60% | 86% | 81% | 57% | 1.56 | 0.04 | 2.12 | 0.05 | 2.49 | 0.06 | 2.72 | 0.17 | 2.20 | 0.46 |
| 65% | 88% | 85% | 70% | 1.59 | 0.04 | 2.17 | 0.05 | 2.54 | 0.06 | 2.86 | 0.13 | 2.70 | 0.50 |
| 70% | 90% | 88% | 79% | 1.63 | 0.04 | 2.22 | 0.05 | 2.60 | 0.06 | 2.96 | 0.10 | 3.05 | 0.35 |
| 75% | 92% | 91% | 85% | 1.67 | 0.04 | 2.27 | 0.05 | 2.66 | 0.06 | 3.06 | 0.10 | 3.28 | 0.23 |
| 80% | 94% | 93% | 89% | 1.70 | 0.04 | 2.32 | 0.05 | 2.72 | 0.06 | 3.12 | 0.07 | 3.44 | 0.15 |
| 85% | 96% | 95% | 92% | 1.74 | 0.04 | 2.37 | 0.05 | 2.77 | 0.06 | 3.19 | 0.07 | 3.55 | 0.12 |
| 90% | 97% | 97% | 95% | 1.76 | 0.02 | 2.40 | 0.02 | 2.80 | 0.03 | 3.26 | 0.07 | 3.67 | 0.12 |
| 95% | 98% | 98% | 97% | 1.77 | 0.02 | 2.42 | 0.02 | 2.83 | 0.03 | 3.29 | 0.03 | 3.74 | 0.08 |
| 100% | 100% | 100% | 100% | 1.81 | 0.04 | 2.47 | 0.05 | 2.89 | 0.06 | 3.36 | 0.07 | 3.86 | 0.12 |

Exhibit C - 1
Median Time Distributions of Heavy Storm Rainfall at a Point
25-year event
City of New Berlin

| Time | First quartile | Second quartile | Third quartile | 1-hr. | | 3-hr. | | 6-hr. | | 12-hr. | | 24-hr. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2.19 | | 2.98 | | 3.49 | | 4.05 | | 4.66 | |
| 0% | 0% | 0% | 0% | 0.00 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | |
| 5% | 16% | 3% | 3% | 0.35 | 0.35 | 0.48 | 0.48 | 0.56 | 0.56 | 0.12 | 0.12 | 0.14 | 0.14 |
| 10% | 33% | 8% | 6% | 0.72 | 0.37 | 0.98 | 0.51 | 1.15 | 0.59 | 0.32 | 0.20 | 0.28 | 0.14 |
| 15% | 43% | 12% | 9% | 0.94 | 0.22 | 1.28 | 0.30 | 1.50 | 0.35 | 0.49 | 0.16 | 0.42 | 0.14 |
| 20% | 52% | 16% | 12% | 1.14 | 0.20 | 1.55 | 0.27 | 1.81 | 0.31 | 0.65 | 0.16 | 0.56 | 0.14 |
| 25% | 60% | 22% | 15% | 1.31 | 0.18 | 1.79 | 0.24 | 2.09 | 0.28 | 0.89 | 0.24 | 0.70 | 0.14 |
| 30% | 66% | 29% | 19% | 1.45 | 0.13 | 1.97 | 0.18 | 2.30 | 0.21 | 1.17 | 0.28 | 0.89 | 0.19 |
| 35% | 71% | 39% | 23% | 1.55 | 0.11 | 2.12 | 0.15 | 2.48 | 0.17 | 1.58 | 0.41 | 1.07 | 0.19 |
| 40% | 75% | 51% | 27% | 1.64 | 0.09 | 2.24 | 0.12 | 2.62 | 0.14 | 2.07 | 0.49 | 1.26 | 0.19 |
| 45% | 79% | 62% | 32% | 1.73 | 0.09 | 2.35 | 0.12 | 2.76 | 0.14 | 2.51 | 0.45 | 1.49 | 0.23 |
| 50% | 82% | 70% | 38% | 1.80 | 0.07 | 2.44 | 0.09 | 2.86 | 0.10 | 2.84 | 0.32 | 1.77 | 0.28 |
| 55% | 84% | 76% | 45% | 1.84 | 0.04 | 2.50 | 0.06 | 2.93 | 0.07 | 3.08 | 0.24 | 2.10 | 0.33 |
| 60% | 86% | 81% | 57% | 1.88 | 0.04 | 2.56 | 0.06 | 3.00 | 0.07 | 3.28 | 0.20 | 2.66 | 0.56 |
| 65% | 88% | 85% | 70% | 1.93 | 0.04 | 2.62 | 0.06 | 3.07 | 0.07 | 3.44 | 0.16 | 3.26 | 0.61 |
| 70% | 90% | 88% | 79% | 1.97 | 0.04 | 2.68 | 0.06 | 3.14 | 0.07 | 3.56 | 0.12 | 3.68 | 0.42 |
| 75% | 92% | 91% | 85% | 2.01 | 0.04 | 2.74 | 0.06 | 3.21 | 0.07 | 3.69 | 0.12 | 3.96 | 0.28 |
| 80% | 94% | 93% | 89% | 2.06 | 0.04 | 2.80 | 0.06 | 3.28 | 0.07 | 3.77 | 0.08 | 4.15 | 0.19 |
| 85% | 96% | 95% | 92% | 2.10 | 0.04 | 2.86 | 0.06 | 3.35 | 0.07 | 3.85 | 0.08 | 4.29 | 0.14 |
| 90% | 97% | 97% | 95% | 2.12 | 0.02 | 2.89 | 0.03 | 3.39 | 0.03 | 3.93 | 0.08 | 4.43 | 0.14 |
| 95% | 98% | 98% | 97% | 2.15 | 0.02 | 2.92 | 0.03 | 3.42 | 0.03 | 3.97 | 0.04 | 4.52 | 0.09 |
| 100% | 100% | 100% | 100% | 2.19 | 0.04 | 2.98 | 0.06 | 3.49 | 0.07 | 4.05 | 0.08 | 4.66 | 0.14 |

Exhibit C - 1
Median Time Distributions of Heavy Storm Rainfall at a Point
100-year Event
City of New Berlin

| Time | First quartile | Second quartile | Third quartile | 1-hr. | | 3-hr. | | 6-hr. | | 12-hr. | | 24-hr. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2.93 | | 3.62 | | 4.68 | | 5.43 | | 6.24 | |
| 0% | 0% | 0% | 0% | 0.00 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | |
| 5% | 16% | 3% | 3% | 0.47 | 0.47 | 0.58 | 0.58 | 0.75 | 0.75 | 0.16 | 0.16 | 0.19 | 0.19 |
| 10% | 33% | 8% | 6% | 0.97 | 0.50 | 1.19 | 0.62 | 1.54 | 0.80 | 0.43 | 0.27 | 0.37 | 0.19 |
| 15% | 43% | 12% | 9% | 1.26 | 0.29 | 1.56 | 0.36 | 2.01 | 0.47 | 0.65 | 0.22 | 0.56 | 0.19 |
| 20% | 52% | 16% | 12% | 1.52 | 0.26 | 1.88 | 0.33 | 2.43 | 0.42 | 0.87 | 0.22 | 0.75 | 0.19 |
| 25% | 60% | 22% | 15% | 1.76 | 0.23 | 2.17 | 0.29 | 2.81 | 0.37 | 1.19 | 0.33 | 0.94 | 0.19 |
| 30% | 66% | 29% | 19% | 1.93 | 0.18 | 2.39 | 0.22 | 3.09 | 0.28 | 1.57 | 0.38 | 1.19 | 0.25 |
| 35% | 71% | 39% | 23% | 2.08 | 0.15 | 2.57 | 0.18 | 3.32 | 0.23 | 2.12 | 0.54 | 1.44 | 0.25 |
| 40% | 75% | 51% | 27% | 2.20 | 0.12 | 2.72 | 0.14 | 3.51 | 0.19 | 2.77 | 0.65 | 1.68 | 0.25 |
| 45% | 79% | 62% | 32% | 2.31 | 0.12 | 2.86 | 0.14 | 3.70 | 0.19 | 3.37 | 0.60 | 2.00 | 0.31 |
| 50% | 82% | 70% | 38% | 2.40 | 0.09 | 2.97 | 0.11 | 3.84 | 0.14 | 3.80 | 0.43 | 2.37 | 0.37 |
| 55% | 84% | 76% | 45% | 2.46 | 0.06 | 3.04 | 0.07 | 3.93 | 0.09 | 4.13 | 0.33 | 2.81 | 0.44 |
| 60% | 86% | 81% | 57% | 2.52 | 0.06 | 3.11 | 0.07 | 4.02 | 0.09 | 4.40 | 0.27 | 3.56 | 0.75 |
| 65% | 88% | 85% | 70% | 2.58 | 0.06 | 3.19 | 0.07 | 4.12 | 0.09 | 4.62 | 0.22 | 4.37 | 0.81 |
| 70% | 90% | 88% | 79% | 2.64 | 0.06 | 3.26 | 0.07 | 4.21 | 0.09 | 4.78 | 0.16 | 4.93 | 0.56 |
| 75% | 92% | 91% | 85% | 2.70 | 0.06 | 3.33 | 0.07 | 4.31 | 0.09 | 4.94 | 0.16 | 5.30 | 0.37 |
| 80% | 94% | 93% | 89% | 2.75 | 0.06 | 3.40 | 0.07 | 4.40 | 0.09 | 5.05 | 0.11 | 5.55 | 0.25 |
| 85% | 96% | 95% | 92% | 2.81 | 0.06 | 3.48 | 0.07 | 4.49 | 0.09 | 5.16 | 0.11 | 5.74 | 0.19 |
| 90% | 97% | 97% | 95% | 2.84 | 0.03 | 3.51 | 0.04 | 4.54 | 0.05 | 5.27 | 0.11 | 5.93 | 0.19 |
| 95% | 98% | 98% | 97% | 2.87 | 0.03 | 3.55 | 0.04 | 4.59 | 0.05 | 5.32 | 0.05 | 6.05 | 0.12 |
| 100% | 100% | 100% | 100% | 2.93 | 0.06 | 3.62 | 0.07 | 4.68 | 0.09 | 5.43 | 0.11 | 6.24 | 0.19 |

Exhibit C - 2
Hydrologic Parameters for Various Land Use
City of New Berlin

| | Wetland, Forest, Park | Highway Corridor | Agriculture, Open Space | Residential | | | Institutional | Commercial | Industrial | Open Water |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Low Density | Medium Density | High Density | | | | |
| IMPERVIOUS n | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.024 |
| PERVIOUS n | 0.400 | 0.300 | 0.300 | 0.300 | 0.300 | 0.300 | 0.300 | 0.300 | 0.300 | 0.060 |
| IMPERVIOUS Ia | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| PERVIOUS Ia | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.10 |
| % IMPERVIOUS | 1.0 | 50.0 | 1.0 | 30.0 | 34.0 | 57.0 | 65.0 | 87.0 | 87.0 | 100.0 |
| % DCIA | 1.0 | 25.0 | 1.0 | 16.0 | 19.0 | 38.0 | 46.0 | 79.0 | 79.0 | 100.0 |
| % NDCIA | 0.0 | 25.0 | 0.0 | 14.0 | 15.0 | 19.0 | 19.0 | 8.0 | 8.0 | 0.0 |
| % PERVIOUS | 99.0 | 50.0 | 99.0 | 70.0 | 66.0 | 43.0 | 35.0 | 13.0 | 13.0 | 0.0 |
| CHECK % | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

# Exhibit C-3

## Unit Runoff Coefficients

The primary storm water system was evaluated using the SWMM computer model. The SWMM model was used to evaluate directly; approximately 200 that were explicitly incorporated in the model. The SWMM model results were also used to estimate flows at more than 500 culverts in the minor storm water system. Unit runoff coefficients in cfs/acre were calculated for each subwatershed by averaging the SWMM model results. These coefficients were derived for both the 10-year and 100-year storm events. These calculations are shown in the attached table.

Exhibit C - 3
Derivations of Unit Runoff Coefficient
City of New Berlin

| | *NEW BERLIN - RUNOFF PER ACRE* | | | | | |
|---|---|---|---|---|---|---|
| SUBBASIN | SUBCATCHMENT | AREA (AC) | 100 YR RUNOFF (CFS) | 100 YR RATE (CFS/AC) | 10 YR RUNOFF (CFS) | 10 YR RATE (CFS/AC) |
| CALHOUN CREEK | 4A010 | 125.30 | 96.82 | 0.77 | 61.97 | 0.49 |
| | 4A020 | 180.30 | 156.82 | 0.87 | 98.11 | 0.54 |
| | 4A030 | 88.20 | 101.10 | 1.15 | 70.20 | 0.80 |
| | 4B010 | 250.50 | 418.88 | 1.67 | 246.60 | 0.98 |
| | 4B020 | 224.90 | 245.39 | 1.09 | 139.34 | 0.62 |
| | 4C010 | 756.50 | 876.47 | 1.16 | 522.22 | 0.69 |
| | 4C020 | 74.00 | 213.45 | 2.88 | 121.99 | 1.65 |
| | 4C030 | 345.90 | 650.29 | 1.88 | 372.75 | 1.08 |
| | 4C040 | 224.10 | 468.18 | 2.09 | 261.87 | 1.17 |
| | 4C050 | 84.00 | 91.37 | 1.09 | 56.48 | 0.67 |
| | 4C060 | 182.20 | 210.74 | 1.16 | 113.58 | 0.62 |
| | 4C070 | 408.90 | 392.62 | 0.96 | 220.20 | 0.54 |
| | 4C080 | 74.00 | 129.78 | 1.75 | 100.87 | 1.36 |
| | 4C085 | 47.00 | 80.11 | 1.70 | 62.10 | 1.32 |
| | 4C090 | 28.90 | 71.79 | 2.48 | 44.30 | 1.53 |
| | 4D010 | 133.80 | 208.55 | 1.56 | 141.53 | 1.06 |
| | 4E 010 | 317.40 | 654.56 | 2.06 | 367.90 | 1.16 |
| | 4E 020 | 21.30 | 56.35 | 2.65 | 36.01 | 1.69 |
| | 4E 030 | 600.60 | 927.87 | 1.54 | 548.02 | 0.91 |
| | 4E 040 | 42.70 | 90.36 | 2.12 | 62.54 | 1.46 |
| | 4E 050 | 29.90 | 105.12 | 3.52 | 64.58 | 2.16 |
| | 4E 060 | 256.20 | 809.14 | 3.16 | 473.04 | 1.85 |
| | SUMS | 4496.60 | 7055.76 | 39.31 | 4186.20 | 24.37 |
| | AVERAGES | 204.39 | 320.72 | 1.79 | 190.28 | 1.11 |
| SUBBASIN | SUBCATCHMENT | AREA (AC) | 100 YR RUNOFF (CFS) | 100 YR RATE (CFS/AC) | 10 YR RUNOFF (CFS) | 10 YR RATE (CFS/AC) |
| POPLAR CREEK | 6A010 | 610.60 | 1032.06 | 1.69 | 467.16 | 0.77 |
| | 6A011 | 405.20 | 601.60 | 1.48 | 257.10 | 0.63 |
| | 6A020 | 313.10 | 522.82 | 1.67 | 252.46 | 0.81 |
| | 6A021 | 136.60 | 323.96 | 2.37 | 162.07 | 1.19 |
| | 6A022 | 71.20 | 207.10 | 2.91 | 94.12 | 1.32 |
| | 6A023 | 333.10 | 351.55 | 1.06 | 154.10 | 0.46 |
| | 6A030 | 108.20 | 234.58 | 2.17 | 109.04 | 1.01 |
| | 6A040 | 159.90 | 173.82 | 1.09 | 77.12 | 0.48 |
| | 6A041 | 372.90 | 781.54 | 2.10 | 391.01 | 1.05 |
| | 6A042 | 78.30 | 200.30 | 2.56 | 93.10 | 1.19 |
| | 6A043 | 44.10 | 173.51 | 3.93 | 89.97 | 2.04 |
| | 6A044 | 79.70 | 295.31 | 3.71 | 150.04 | 1.88 |
| | 6A050 | 92.50 | 78.84 | 0.85 | 33.10 | 0.36 |
| | 6A060 | 567.90 | 649.24 | 1.14 | 288.36 | 0.51 |
| | 6A070 | 116.80 | 164.22 | 1.41 | 72.82 | 0.62 |
| | 6A071 | 680.80 | 925.35 | 1.36 | 403.34 | 0.59 |
| | 6A072 | 786.60 | 746.78 | 0.95 | 334.62 | 0.43 |
| | 6B010 | 311.20 | 562.32 | 1.81 | 276.66 | 0.89 |
| | 6B020 | 930.90 | 1600.68 | 1.72 | 763.97 | 0.82 |
| | 6B030 | 325.90 | 616.06 | 1.89 | 271.77 | 0.83 |
| | 6B040 | 210.20 | 165.32 | 0.79 | 67.06 | 0.32 |
| | 6B050 | 119.60 | 97.96 | 0.82 | 39.74 | 0.33 |
| | 6C010 | 762.00 | 1114.99 | 1.46 | 546.42 | 0.72 |
| | 6C020 | 317.40 | 569.89 | 1.80 | 260.79 | 0.82 |

Exhibit C - 3
Derivations of Unit Runoff Coefficient
City of New Berlin

| | | | | | | |
|---|---|---|---|---|---|---|
| | 6C021 | 171.30 | 182.21 | 1.06 | 76.82 | 0.45 |
| | 6C022 | 470.70 | 491.90 | 1.05 | 217.99 | 0.46 |
| | 6D010 | 251.90 | 414.93 | 1.65 | 180.81 | 0.72 |
| | 6D020 | 91.10 | 153.56 | 1.69 | 69.74 | 0.77 |
| | 6F010 | 38.40 | 104.25 | 2.71 | 48.81 | 1.27 |
| | SUMS | 8958.10 | 13536.65 | 50.88 | 6250.11 | 23.73 |
| | AVERAGES | 308.90 | 466.78 | 1.75 | 215.52 | 0.82 |
| SUBBASIN | SUBCATCHMENT | AREA (AC) | 100 YR RUNOFF (CFS) | 100 YR RATE (CFS/AC) | 10 YR RUNOFF (CFS) | 10 YR RATE (CFS/AC) |
| UPPER ROOT RIVER | 2A010 | 101.10 | 108.03 | 1.07 | 34.93 | 0.35 |
| | 2A015 | 64.60 | 115.69 | 1.79 | 34.45 | 0.53 |
| | 2A020 | 105.30 | 232.02 | 2.20 | 80.50 | 0.76 |
| | 2A030 | 148.00 | 272.23 | 1.84 | 83.77 | 0.57 |
| | 2A040 | 79.70 | 172.06 | 2.16 | 61.24 | 0.77 |
| | 2A050 | 189.80 | 262.51 | 1.38 | 101.08 | 0.53 |
| | 2A060 | 295.20 | 426.67 | 1.45 | 172.16 | 0.58 |
| | 2B010 | 106.20 | 183.35 | 1.73 | 63.17 | 0.59 |
| | 2B012 | 22.30 | 62.63 | 2.81 | 19.54 | 0.88 |
| | 2B013 | 25.60 | 56.90 | 2.22 | 19.23 | 0.75 |
| | 2B014 | 67.40 | 253.55 | 3.76 | 75.03 | 1.11 |
| | 2B015 | 42.70 | 108.08 | 2.53 | 32.16 | 0.75 |
| | 2B020 | 83.50 | 235.43 | 2.82 | 80.65 | 0.97 |
| | 2B030 | 75.90 | 181.16 | 2.39 | 55.37 | 0.73 |
| | 2B040 | 68.30 | 154.72 | 2.27 | 49.06 | 0.72 |
| | 2B050 | 249.10 | 604.73 | 2.43 | 244.31 | 0.98 |
| | 2B060 | 248.60 | 598.56 | 2.41 | 230.79 | 0.93 |
| | 2C010 | 200.70 | 390.96 | 1.95 | 158.84 | 0.79 |
| | 2D010 | 162.30 | 257.95 | 1.59 | 103.44 | 0.64 |
| | 2D020 | 265.20 | 372.82 | 1.41 | 150.01 | 0.57 |
| | 2D030 | 75.10 | 170.49 | 2.27 | 56.18 | 0.75 |
| | 2D031 | 33.20 | 65.54 | 1.97 | 19.59 | 0.59 |
| | 2D032 | 52.70 | 110.91 | 2.10 | 34.76 | 0.66 |
| | 2D040 | 173.60 | 329.71 | 1.90 | 131.44 | 0.76 |
| | 2E 010 | 189.30 | 290.45 | 1.53 | 104.77 | 0.55 |
| | 2E 011 | 98.20 | 149.29 | 1.52 | 60.66 | 0.62 |
| | 2E 020 | 116.70 | 226.65 | 1.94 | 77.41 | 0.66 |
| | 2E 030 | 39.90 | 90.15 | 2.26 | 27.05 | 0.68 |
| | 2E 040 | 11.40 | 28.98 | 2.54 | 7.98 | 0.70 |
| | 2E 050 | 42.70 | 104.25 | 2.44 | 30.45 | 0.71 |
| | 2E 060 | 169.40 | 328.84 | 1.94 | 111.80 | 0.66 |
| | 2E 070 | 64.10 | 263.00 | 4.10 | 98.96 | 1.54 |
| | 2E 071 | 18.50 | 50.15 | 2.71 | 14.61 | 0.79 |
| | 2E 080 | 129.00 | 241.44 | 1.87 | 91.55 | 0.71 |
| | 2E 090 | 155.10 | 244.85 | 1.58 | 88.39 | 0.57 |
| | 2F010 | 135.20 | 193.45 | 1.43 | 79.96 | 0.59 |
| | SUM | 4105.60 | 7938.20 | 76.31 | 2885.29 | 26.04 |
| | AVERAGES | 114.04 | 220.51 | 2.12 | 80.15 | 0.72 |
| SUBBASIN | SUBCATCHMENT | AREA (AC) | 100 YR RUNOFF (CFS) | 100 YR RATE (CFS/AC) | 10 YR RUNOFF (CFS) | 10 YR RATE (CFS/AC) |
| UNDERWOOD CREEK | 1A010 | 160.40 | 354.40 | 2.21 | 158.32 | 0.99 |
| | 1A020 | 71.20 | 165.81 | 2.33 | 74.32 | 1.04 |
| | 1A030 | 128.10 | 280.86 | 2.19 | 133.15 | 1.04 |
| | 1A031 | 179.60 | 304.23 | 1.69 | 147.74 | 0.82 |

Exhibit C - 3
Derivations of Unit Runoff Coefficient
City of New Berlin

| | | | | | | |
|---|---|---|---|---|---|---|
| | 1A032 | 128.10 | 311.91 | 2.43 | 142.20 | 1.11 |
| | SUM | 667.40 | 1417.21 | 10.86 | 655.73 | 5.00 |
| | AVERAGES | 133.48 | 283.44 | 2.17 | 131.15 | 1.00 |
| SUBBASIN | SUBCATCHMENT | AREA (AC) | 100 YR RUNOFF (CFS) | 100 YR RATE (CFS/AC) | 10 YR RUNOFF (CFS) | 10 YR RATE (CFS/AC) |
| DEER CREEK | 3A010 | 345.90 | 451.35 | 1.30 | 218.52 | 0.63 |
| | 3A020 | 210.80 | 404.02 | 1.92 | 195.73 | 0.93 |
| | 3A031 | 60.00 | 207.90 | 3.47 | 104.05 | 1.73 |
| | 3A032 | 169.40 | 525.06 | 3.10 | 261.27 | 1.54 |
| | 3A033 | 212.90 | 520.15 | 2.44 | 256.89 | 1.21 |
| | 3A040 | 271.40 | 419.10 | 1.54 | 201.98 | 0.74 |
| | 3A041 | 10.00 | 45.78 | 4.58 | 24.17 | 2.42 |
| | 3A042 | 121.00 | 229.00 | 1.89 | 112.34 | 0.93 |
| | 3A043 | 123.40 | 373.21 | 3.02 | 185.14 | 1.50 |
| | 3A044 | 127.20 | 349.15 | 2.74 | 173.97 | 1.37 |
| | 3A050 | 122.40 | 307.51 | 2.51 | 153.45 | 1.25 |
| | 3A060 | 216.80 | 388.24 | 1.79 | 190.59 | 0.88 |
| | 3A070 | 429.80 | 707.87 | 1.65 | 349.51 | 0.81 |
| | 3A080 | 173.60 | 329.96 | 1.90 | 163.33 | 0.94 |
| | SUM | 2594.60 | 5258.30 | 33.86 | 2590.94 | 16.89 |
| | AVERAGES | 185.33 | 375.59 | 2.42 | 185.07 | 1.21 |
| SUBBASIN | SUBCATCHMENT | AREA (AC) | 100 YR RUNOFF (CFS) | 100 YR RATE (CFS/AC) | 10 YR RUNOFF (CFS) | 10 YR RATE (CFS/AC) |
| MILL CREEK | 7A010 | 11.40 | 12.18 | 1.07 | 4.47 | 0.39 |
| | 7B010 | 247.70 | 190.87 | 0.77 | 81.93 | 0.33 |
| | 7B020 | 153.70 | 242.25 | 1.58 | 112.59 | 0.73 |
| | 7B030 | 1117.30 | 762.15 | 0.68 | 366.8 | 0.33 |
| | 7B040 | 207.80 | 200.07 | 0.96 | 93.66 | 0.45 |
| | 7C010 | 281.80 | 336.53 | 1.19 | 161.08 | 0.57 |
| | 7D010 | 372.90 | 984.52 | 2.64 | 496.08 | 1.33 |
| | SUM | 2392.60 | 2728.57 | 8.89 | 1316.61 | 4.14 |
| | AVERAGES | 598.15 | 389.80 | 1.27 | 188.09 | 0.59 |
| SUBBASIN | SUBCATCHMENT | AREA (AC) | 100 YR RUNOFF (CFS) | 100 YR RATE (CFS/AC) | 10 YR RUNOFF (CFS) | 10 YR RATE (CFS/AC) |
| TESS CORNERS CREEK | 5A010 | 234.80 | 197.03 | 0.84 | 93.36 | 0.40 |
| | 5A020 | 1337.90 | 781.09 | 0.58 | 373.43 | 0.28 |
| | 5A030 | 49.80 | 71.26 | 1.43 | 31.4 | 0.63 |
| | 5A031 | 84.50 | 151.4 | 1.79 | 71.64 | 0.85 |
| | SUM | 1707.00 | 1200.78 | 4.65 | 569.83 | 2.16 |
| | AVERAGES | 426.75 | 300.20 | 1.16 | 142.46 | 0.54 |

# Exhibit C-4.1

## Culvert Capacity Analysis Approach

Culvert capacity depends on entrance conditions, bottom slope, upstream water level (headwater), downstream water level (tailwater), barrel material, opening size and shape. In this capacity analysis, all culverts are assumed to be free of damage, distortion or debris.

Analysis of culvert capacity is extremely complex. A full treatment of the subject may be found in "Measurement of peak discharges at culverts by indirect methods" (USGS, 1968), or in "Unsteady flow Solutions" (Franz, 1998). These documents describe six types of flow that can occur in a culvert. Each flow type is calculated by a different procedure and could possibly be the controlling (that is limiting) flow condition that determines the capacity of the storm water system because the channel cross-section upstream or downstream of the culvert has less capacity than the culvert itself. This condition can be detected by the SWMM model but is not part of the minor system analysis.

Of the six types of culvert flow, two of the more common types have been considered in this analysis:

Type 4 flow - The culvert flows full and is submerges at both ends.

Type 6 flow - The culvert flows partly full and is submerges only at the upstream end. Type 6 is also known as inlet control.

The information required to compute culvert capacity can be measured in the field except the headwater and the tailwater elevations must be assumed based on how the City wishes to define capacity. In this analysis, the headwater elevation was assumed to be one half the pipe depth above the soffit of the culvert barrel. This was selected because a surcharge head of 0.3 to 0.5 pipe diameters is necessary to force the pipe to flow full.

The following outlines the computational procedure used to evaluate the culverts.

1. Assumed Culvert Flow Condition

The following headwater and tailwater elevations were assumed for each culvert. Known quantities include the upstream invert, ZU, the downstream invert, ZD, and the vertical rise or height of the culvert barrel, D. Each culvert was assumed to have 1.0 foot of headwater surcharge.

Headwater Elevation
HW = ZU + D + 1.0 ft

Tailwater Elevation
TW = ZD + D

2. Capacity Calculations

The apparent culvert capacity was calculated using both inlet control and barrel control assumptions. The culvert capacity was taken as the smaller of the two calculated flows.

a. Inlet Control

$$Q = C_d A(2gH_0)^{1/2}$$

$H_0$ = HW – 1.0 – D/2
$C_d$ = 0.6; Discharge Coefficient
A = Area of Culvert Barrel
g = 32.15 ft/s$^2$ ; gravitational acceleration

b. Barrel Control

$$Q = (C_n / n)AR^{2/3}S^{1/2}$$

$C_n$ = Units constant, 1.486 for English units
n = Manning roughness coefficient
R = Hydraulic Radius ; D/2 for circular pipes
S = (HW - TW)/L ; Friction (Energy) Slope with L as the barrel length

Exhibit C - 4
Culvert Analysis Database
City of New Berlin

*NEW BERLIN CULVERT ANALYSIS (greater than 18 inch diameter)*

| CULVERT ID | Location | Size (in) | Equiv. Diam. (in) | Height (in) | Mat'l Type | Length (ft) | U/S Invert (ft) | D/S Invert (ft) | Slope (ft/ft) | Cap. (cfs) | 100 yr (cfs) | 10 yr (cfs) | 100 Yr Rate | 10 yr Rate | Con-tributing Acres | IC Head (ft) | IC Area (ft^2) | IC Flow (cfs) | Manning 'n' | HW Elev. (ft) | TW Elev. (ft) | Entr loss K | Head (ft) | Friction Slope | R^2/3 | Velocity (ft/s) | BC Flow (ft/s) | Entr loss (ft) | Cap. (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01.03.15 | OAK & GRAHAM | 15X22 | 18 | 15 | ACMP | 46 | 808.97 | 808.62 | 0.007609 | 9.50866 | 21.6 | 7.7 | 2.16 | 0.77 | 10 | 1.25 | 1.7671 | 9.50866 | 0.024 | 810.845 | 809.87 | 0.38 | 0.595 | 0.01293 | 0.825 | 10.27228 | 5.8129 | 0.2626 | 9.5087 |
| 01.03.26 | OAK LANE | 39X60 | 48 | 39 | ACMP | 40 | 818.46 | 818.25 | 0.005250 | 109.029 | 86.4 | 30.8 | 2.16 | 0.77 | 40 | 3.25 | 12.566 | 109.029 | 0.024 | 823.335 | 821.5 | 1 | 0.835 | 0.02088 | 1.587 | 178.4504 | 14.201 | 1.5671 | 109.03 |
| 01.03.23 | OAK & FERGUSON 10' DRAINAGE EASEMENT | 39X60 | 48 | 39 | RCP | 73 | 818.46 | 812.99 | 0.074932 | 109.029 | 86.4 | 30.8 | 2.16 | 0.77 | 40 | 3.25 | 12.566 | 109.029 | 0.013 | 823.335 | 816.24 | 3 | 4.095 | 0.0561 | 1.587 | 540.0545 | 42.976 | 14.353 | 109.03 |
| 01.03.24 | OAK & FERGUSON 10' DRAINAGE EASEMENT | 39X60 | 48 | 39 | RCP | 29 | 812.99 | 812.94 | 0.001724 | 109.029 | 86.4 | 30.8 | 2.16 | 0.77 | 40 | 3.25 | 12.566 | 109.029 | 0.013 | 817.865 | 816.19 | 1 | 0.675 | 0.02328 | 1.587 | 347.8764 | 27.683 | 5.9555 | 109.03 |
| 01.03.16 | OAK LANE | 24X36 | 30 | 24 | ACMP | 33 | 819.05 | 818.25 | 0.024242 | 33.41 | 86.4 | 30.8 | 2.16 | 0.77 | 40 | 2 | 4.9087 | 33.41 | 0.024 | 822.05 | 820.25 | 0.9 | 0.9 | 0.02727 | 1.16 | 58.24363 | 11.865 | 1.0941 | 33.41 |
| 01.03.17 | OAK LANE | 24X36 | 30 | 24 | ACMP | 18 | 818.46 | 817.8 | 0.036667 | 33.2512 | 86.4 | 30.8 | 2.16 | 0.77 | 40 | 2 | 4.9087 | 33.41 | 0.024 | 821.46 | 819.8 | 1.5 | 0.16 | 0.00889 | 1.16 | 33.25125 | 6.7739 | 0.3566 | 33.251 |
| 01.03.30 | FERGUSON | 36 | 36 | 36 | CMP | 35 | 814.65 | 808.99 | 0.161714 | 58.923 | 108 | 38.5 | 2.16 | 0.77 | 50 | 3 | 7.0686 | 58.923 | 0.024 | 819.15 | 811.99 | 5 | 2.16 | 0.06171 | 1.31 | 142.4712 | 20.156 | 3.157 | 58.923 |
| 01.03.31 | FERGUSON | 36 | 36 | 36 | CMP | 35 | 814.8 | 808.91 | 0.168286 | 58.923 | 108 | 38.5 | 2.16 | 0.77 | 50 | 3 | 7.0686 | 58.923 | 0.024 | 819.3 | 811.91 | 4 | 3.39 | 0.09686 | 1.31 | 178.4843 | 25.25 | 4.9548 | 58.923 |
| 01.03.14 | OAK & GRAHAM | 28X42 | 36 | 28 | ACMP | 53 | 823.55 | 823.33 | 0.004151 | 51.9652 | 64.8 | 23.1 | 2.16 | 0.77 | 30 | 2.3333 | 7.0686 | 51.9652 | 0.024 | 827.05 | 825.66 | 0.75 | 0.637 | 0.01201 | 1.31 | 62.85681 | 8.8924 | 0.6145 | 51.965 |
| 01.03.18 | OAK & BRIARWOOD | 24X36 | 30 | 24 | ACMP | 40 | 824.5 | 823.39 | 0.027750 | 33.41 | 64.8 | 23.1 | 2.16 | 0.77 | 30 | 2 | 4.9087 | 33.41 | 0.024 | 827.5 | 825.39 | 0.025 | 2.085 | 0.05213 | 1.16 | 80.52064 | 16.404 | 2.091 | 33.41 |
| 01.03.19 | OAK & BRIARWOOD | 24X37 | 30 | 24 | ACMP | 40 | 826.99 | 824.5 | 0.062250 | 33.41 | 64.8 | 23.1 | 2.16 | 0.77 | 30 | 2 | 4.9087 | 33.41 | 0.024 | 829.99 | 826.5 | 1.75 | 1.74 | 0.0435 | 1.16 | 73.55781 | 14.985 | 1.745 | 33.41 |
| 01.03.13 | PARK CT | 28X42 | 36 | 28 | CMP | 26 | 831.37 | 828.05 | 0.127692 | 51.9652 | 64.8 | 23.1 | 2.16 | 0.77 | 30 | 2.3333 | 7.0686 | 51.9652 | 0.024 | 834.87 | 830.38 | 3 | 1.487 | 0.05718 | 1.31 | 137.1369 | 19.401 | 2.925 | 51.965 |
| 01.04.11 | PARK 20' DRAINAGE EASEMENT | 24 | 24 | 24 | CMP | 160 | 804.53 | 801.17 | 0.021000 | 21.3824 | 21.6 | 7.7 | 2.16 | 0.77 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 807.53 | 803.17 | 1.11 | 3.25 | 0.02031 | 1 | 27.72293 | 8.8245 | 0.6052 | 21.382 |
| 01.03.05 | ELM GROVE | 33X48 | 42 | 33 | ACMP | 52 | 796.42 | 795.84 | 0.011154 | 76.7864 | 86.4 | 30.8 | 2.16 | 0.77 | 40 | 2.75 | 9.6211 | 76.7864 | 0.024 | 800.545 | 798.59 | 1.05 | 0.905 | 0.0174 | 1.452 | 114.1252 | 11.862 | 1.0935 | 76.786 |
| 01.03.06 | ELM GROVE | 48 | 48 | 48 | CMP | 54 | 796.8 | 795.42 | 0.025556 | 120.957 | 64.8 | 23.1 | 2.16 | 0.77 | 30 | 4 | 12.566 | 120.957 | 0.024 | 802.8 | 799.42 | 2 | 1.38 | 0.02556 | 1.587 | 197.4453 | 15.712 | 1.9185 | 120.96 |
| 01.03.20 | FOREST & OAK | 24X36 | 30 | 24 | ACMP | 49 | 820.26 | 820.16 | 0.002041 | 33.41 | 64.8 | 23.1 | 2.16 | 0.77 | 30 | 2 | 4.9087 | 33.41 | 0.024 | 823.26 | 822.16 | 0.5 | 0.6 | 0.01224 | 1.16 | 39.02669 | 7.9505 | 0.4912 | 33.41 |
| 01.03.21 | FOREST & OAK | 24X36 | 30 | 24 | ACMP | 36 | 820 | 819.96 | 0.001111 | 33.41 | 64.8 | 23.1 | 2.16 | 0.77 | 30 | 2 | 4.9087 | 33.41 | 0.024 | 823 | 821.96 | 0.5 | 0.54 | 0.015 | 1.16 | 43.19463 | 8.7995 | 0.6017 | 33.41 |
| 01.03.07 | PARKWAY | 24 | 24 | 24 | RCP | 99.5 | 800.07 | 794.95 | 0.051457 | 21.3824 | 21.6 | 7.7 | 2.16 | 0.77 | 10 | 2 | 3.1416 | 21.3824 | 0.013 | 803.07 | 796.95 | 0.9 | 5.22 | 0.05246 | 1 | 82.25249 | 26.182 | 5.3271 | 21.382 |
| 01.03.02 | OAK CT 20' DRAINAGE EASEMENT | 24 | 24 | 24 | CMP | 174 | 808.98 | 796.8 | 0.070000 | 21.3824 | 43.2 | 15.4 | 2.16 | 0.77 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 811.98 | 798.8 | 1.25 | 11.93 | 0.06856 | 1 | 50.93344 | 16.213 | 2.0427 | 21.382 |
| 01.03.25 | HONEY | 15X27 | 22 | 15 | CMP | 34 | 834.8 | 834.39 | 0.012059 | 14.2043 | 21.6 | 7.7 | 2.16 | 0.77 | 10 | 1.25 | 2.6398 | 14.2043 | 0.024 | 836.675 | 835.64 | 0.5 | 0.535 | 0.01574 | 0.944 | 19.34752 | 7.3291 | 0.4174 | 14.204 |
| 01.02.36 | PROSPECT & BERLIN | 21 | 21 | 21 | RCP | 96 | 829.92 | 823.78 | 0.063958 | 15.3136 | 48.6 | 22.2 | 2.43 | 1.11 | 20 | 1.75 | 2.4053 | 15.3136 | 0.013 | 832.545 | 831.67 | 0.001 | 0.874 | 0.0091 | 0.915 | 23.99939 | 9.9778 | 0.7737 | 15.314 |
| 01.02.20 | BERLIN | 21 | 21 | 21 | RCP | 110 | 823.78 | 823.67 | 0.001000 | 15.3136 | 48.6 | 22.2 | 2.43 | 1.11 | 20 | 1.75 | 2.4053 | 15.3136 | 0.013 | 826.405 | 825.53 | 0.35 | 0.525 | 0.00477 | 0.915 | 17.37654 | 7.2243 | 0.4056 | 15.314 |
| 01.02.16 | MEADOW | 24X36 | 30 | 24 | ACMP | 60 | 781.3 | 780.73 | 0.009500 | 33.41 | 48.6 | 22.2 | 2.43 | 1.11 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 784.3 | 782.73 | 0.64 | 0.93 | 0.0155 | 1.16 | 43.90864 | 8.945 | 0.6218 | 33.41 |
| 01.01.10 | MEADOW | 30X40 | 36 | 30 | ACMP | 41 | 778.24 | 777.63 | 0.014878 | 53.7891 | 48.6 | 22.2 | 2.43 | 1.11 | 20 | 2.5 | 7.0686 | 53.7891 | 0.024 | 781.99 | 780.13 | 1.11 | 0.75 | 0.01829 | 1.31 | 77.56627 | 10.973 | 0.9358 | 53.789 |
| 01.01.12 | MEADOW | 39X72 | 60 | 39 | ACMP | 31 | 776.97 | 776.76 | 0.006774 | 170.358 | 48.6 | 22.2 | 2.43 | 1.11 | 20 | 3.25 | 19.635 | 170.358 | 0.024 | 781.845 | 780.01 | 1.45 | 0.385 | 0.01242 | 1.842 | 249.5631 | 12.71 | 1.2554 | 170.36 |
| 01.02.27 | PROSPECT PLACE & MILTON | 17X42 | 26 | 17 | ACMP | 35 | 813.37 | 810.33 | 0.086857 | 21.1203 | 97.2 | 44.4 | 2.43 | 1.11 | 40 | 1.4167 | 3.687 | 21.1203 | 0.024 | 815.495 | 811.75 | 1.25 | 2.498 | 0.07138 | 1.055 | 64.33504 | 17.449 | 2.3661 | 21.12 |
| 01.02.15 | PROSPECT & BERLIN | 21 | 21 | 21 | CMP | 27 | 830.53 | 830.28 | 0.009259 | 15.3136 | 48.6 | 22.2 | 2.43 | 1.11 | 20 | 1.75 | 2.4053 | 15.3136 | 0.024 | 833.155 | 832.03 | 0.54 | 0.585 | 0.02167 | 0.915 | 20.05434 | 8.3376 | 0.5402 | 15.314 |
| 01.02.11 | PROSPECT & PARKVIEW | 24X30 | 26 | 24 | ACMP | 35 | 827.58 | 827.35 | 0.006571 | 25.0946 | 48.6 | 22.2 | 2.43 | 1.11 | 20 | 2 | 3.687 | 25.0946 | 0.024 | 830.58 | 829.35 | 0.62 | 0.61 | 0.01743 | 1.055 | 31.78976 | 8.6221 | 0.5777 | 25.095 |
| 01.02.10 | ARCADIAN | 42X72 | 60 | 42 | CMPA | 32 | 797.49 | 797.06 | 0.013438 | 176.789 | 48.6 | 22.2 | 2.43 | 1.11 | 20 | 3.5 | 19.635 | 176.789 | 0.024 | 802.74 | 800.56 | 1.24 | 0.94 | 0.02938 | 1.842 | 383.8132 | 19.547 | 2.9694 | 176.79 |
| 01.03.24 | GREENFIELD & ELM GROVE | 24 | 24 | 24 | CMPA | 53 | 800.86 | 799.61 | 0.023585 | 21.3824 | 86.51 | 39.52 | 2.43 | 1.11 | 35.6 | 2 | 3.1416 | 21.3824 | 0.024 | 803.86 | 801.61 | 0.75 | 1.5 | 0.0283 | 1 | 32.72391 | 10.416 | 0.8432 | 21.382 |
| 01.02.03 | GREENFIELD | 36 | 36 | 36 | CMP | 74 | 805.29 | 801.76 | 0.047703 | 58.923 | 86.51 | 39.52 | 2.43 | 1.11 | 35.6 | 3 | 7.0686 | 58.923 | 0.024 | 809.79 | 804.76 | 1.24 | 3.79 | 0.05122 | 1.31 | 129.789 | 18.361 | 2.62 | 58.923 |
| 01.02.09 | PROSPECT & ELM GROVE | 24 | 24 | 24 | CMP | 40 | 807.62 | 807.09 | 0.013250 | 21.3824 | 88.4 | 39.6 | 2.21 | 0.99 | 40 | 2 | 3.1416 | 21.3824 | 0.024 | 810.62 | 809.09 | 0.12 | 1.41 | 0.03525 | 1 | 36.52052 | 11.625 | 1.0502 | 21.382 |
| 01.01.04 | PROSPECT & CONRAD | 24 | 24 | 24 | CMP | 43 | 770.92 | 771.75 | -0.019302 | 10.2758 | 44.2 | 19.8 | 2.21 | 0.99 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 773.92 | 773.75 | 0.05 | 0.12 | 0.00279 | 1 | 10.27576 | 3.2709 | 0.0831 | 10.276 |
| 01.02.14 | PROSPECT & 124th | 30 | 30 | 30 | CMP | 30 | 760.57 | 760.57 | 0.000000 | 37.3535 | 176.8 | 79.2 | 2.21 | 0.99 | 80 | 2.5 | 4.9087 | 37.3535 | 0.024 | 764.32 | 763.07 | 0.75 | 0.5 | 0.01667 | 1.16 | 45.53114 | 9.2755 | 0.6686 | 37.354 |
| 01.01.09 | CONRAD& MEADOW | 37 | 37 | 37 | CMP | 24 | 760.74 | 760.73 | 0.000417 | 63.1005 | 88.4 | 39.6 | 2.21 | 0.99 | 40 | 3.0833 | 7.4667 | 63.1005 | 0.024 | 765.365 | 763.81 | 1.12 | 0.432 | 0.01799 | 1.335 | 82.74354 | 11.082 | 0.9543 | 63.101 |
| 01.01.08 | ELM GROVE & WEST NEEDHAM | 50 | 50 | 50 | RCP | 41.86 | 782.69 | 779.54 | 0.075251 | 133.953 | 44.2 | 19.8 | 2.21 | 0.99 | 20 | 4.1667 | 13.635 | 133.953 | 0.013 | 788.94 | 783.71 | 0.5 | 4.733 | 0.11308 | 1.631 | 854.9343 | 62.7 | 30.551 | 133.95 |
| 01.01.12 | ELM GROVE & WEST NEEDHAM (meadow) | 39X72 | 54 | 39 | CONC | 30.61 | 776.97 | 776.76 | 0.006861 | 137.99 | 44.2 | 19.8 | 2.21 | 0.99 | 20 | 3.25 | 15.904 | 137.99 | 0.013 | 781.845 | 780.01 | 1.25 | 0.585 | 0.01911 | 1.717 | 431.544 | 27.134 | 5.7215 | 137.99 |
| 01.01.10 | ELM GROVE & WEST NEEDHAM | 30X40 | 36 | 30 | ACMP | 41.5 | 778.24 | 777.63 | 0.014699 | 53.7891 | 44.2 | 19.8 | 2.21 | 0.99 | 20 | 2.5 | 7.0686 | 53.7891 | 0.024 | 781.99 | 780.13 | 0.24 | 1.62 | 0.03904 | 1.31 | 113.3098 | 16.03 | 1.9969 | 53.789 |
| 01.01.11 | GREENFIELD & ELM GROVE | 24 | 24 | 24 | CMP | 52.85 | 765.72 | 764.41 | 0.024787 | 21.3824 | 88.4 | 39.6 | 2.21 | 0.99 | 40 | 2 | 3.1416 | 21.3824 | 0.024 | 768.72 | 766.41 | 0.5 | 1.81 | 0.03425 | 1 | 35.99766 | 11.458 | 1.0203 | 21.382 |
| 01.01.13 | GREENFIELD | 24X36 | 30 | 24 | RCP | 75 | 791.02 | 790.42 | 0.008000 | 33.41 | 66.3 | 29.7 | 2.21 | 0.99 | 30 | 2 | 4.9087 | 33.41 | 0.013 | 794.02 | 792.42 | 0.31 | 1.29 | 0.0172 | 1.16 | 85.39182 | 17.396 | 2.3517 | 33.41 |
| 01.02.03 | GREENFIELD | 36X48 | 42 | 36 | CONC | 100 | 792 | 787.67 | 0.043300 | 80.2007 | 66.3 | 29.7 | 2.21 | 0.99 | 30 | 3 | 9.6211 | 80.2007 | 0.013 | 796.5 | 790.67 | 0.5 | 5.33 | 0.0533 | 1.452 | 368.7147 | 38.323 | 11.413 | 80.201 |
| 01.02.04 | GREENFIELD & 124th | 24 | 24 | 24 | RCP | 53 | 759.76 | 758.51 | 0.023585 | 21.3824 | 176.8 | 79.2 | 2.21 | 0.99 | 80 | 2 | 3.1416 | 21.3824 | 0.013 | 762.76 | 760.51 | 0.5 | 1.75 | 0.03302 | 1 | 65.25389 | 20.771 | 3.3528 | 21.382 |
| 01.02.25 | NEEDHAM & 124th | 27 | 27 | 27 | RCP | 95 | 752.35 | 748.67 | 0.038737 | 28.7037 | 176.8 | 79.2 | 2.21 | 0.99 | 80 | 2.25 | 3.9761 | 28.7037 | 0.013 | 755.725 | 750.92 | 0.5 | 4.305 | 0.04532 | 1.082 | 104.6542 | 26.321 | 5.3838 | 28.704 |
| 01.03.12 | C&NW RR & ELM GROVE | 24X48 | 36 | 24 | STONE | 46 | 805.04 | 805.04 | 0.000000 | 48.1104 | 78.32 | 27.06 | 2.2 | 0.76 | 35.6 | 2 | 7.0686 | 48.1104 | 0.013 | 808.04 | 807.04 | 0.75 | 0.25 | 0.00543 | 1.31 | 78.05364 | 11.042 | 0.9476 | 48.11 |
| 01.04.12 | PARK & TRIB | 36 | 36 | 36 | CMP | 36 | 779.84 | 779.17 | 0.018611 | 58.923 | 44 | 15.2 | 2.2 | 0.76 | 20 | 3 | 7.0686 | 58.923 | 0.024 | 784.34 | 782.17 | 0.48 | 1.69 | 0.04694 | 1.31 | 124.2586 | 17.579 | 2.4015 | 58.923 |
| 01.04.11 | PARK & BLOM | 24 | 24 | 24 | CONC | 86 | 779.21 | 778.01 | 0.013953 | 21.3824 | 22 | 7.6 | 2.2 | 0.76 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 782.21 | 780.01 | 0.5 | 1.7 | 0.01977 | 1 | 27.34845 | 8.7053 | 0.5889 | 21.382 |
| 01.04.15 | PARK & BLOM | 21 | 21 | 21 | CMP | 44 | 775.47 | 773.72 | 0.039773 | 15.3136 | 22 | 7.6 | 2.2 | 0.76 | 10 | 1.75 | 2.4053 | 15.3136 | 0.024 | 778.095 | 775.47 | 0.5 | 2.125 | 0.0483 | 0.915 | 29.94093 | 12.448 | 1.2042 | 15.314 |
| 01.04.03 | GRAHAM & TRIB | 15X27 | 21 | 15 | ACMP | 51 | 774.45 | 774.08 | 0.007255 | 12.9423 | 66 | 22.8 | 2.2 | 0.76 | 30 | 1.25 | 2.4053 | 12.9423 | 0.024 | 776.325 | 775.33 | 0.1 | 0.895 | 0.01755 | 0.915 | 18.0484 | 7.5037 | 0.4376 | 12.942 |
| 01.04.04 | BLOM & GRAHAM | 24 | 24 | 24 | CMP | 40 | 772.03 | 771.55 | 0.012000 | 21.3824 | 66 | 22.8 | 2.2 | 0.76 | 30 | 2 | 3.1416 | 21.3824 | 0.024 | 775.03 | 773.55 | 0.1 | 1.38 | 0.0345 | 1 | 36.12992 | 11.501 | 1.0278 | 21.382 |
| 01.04.02 | GRAHAM | 21X30 | 24 | 21 | ACMP | 37 | 780.96 | 769.49 | 0.310000 | 20.0014 | 44 | 15.2 | 2.2 | 0.76 | 20 | 1.75 | 3.1416 | 20.0014 | 0.024 | 783.585 | 771.24 | 0.01 | 12.34 | 0.33338 | 1 | 112.312 | 35.75 | 9.9321 | 20.001 |
| 01.04.16 | 124th | 48x72 | 60 | 48 | ACMP | 46 | 753.96 | 753.55 | 0.008913 | 188.996 | 440 | 152 | 2.2 | 0.76 | 200 | 4 | 19.635 | 188.996 | 0.024 | 759.96 | 757.55 | 1.01 | 1.4 | 0.03043 | 1.842 | 390.6754 | 19.897 | 3.0765 | 189 |
| 02.02.02 | GREENFIELD & SHERWOOD | 24 | 24 | 24 | CMP | 56 | 834.23 | 833.69 | 0.009643 | 21.3824 | 33.8 | 16.4 | 1.69 | 0.82 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 837.23 | 835.69 | 0.52 | 1.02 | 0.01821 | 1 | 26.25207 | 8.3563 | 0.5426 | 21.382 |
| 02.01.13 | GREENFIELD & SHERWOOD | 42X60 | 54 | 42 | CMP | 47 | 833.84 | 832.94 | 0.019149 | 143.199 | 42.25 | 20.5 | 1.69 | 0.82 | 25 | 3.5 | 15.904 | 143.199 | 0.024 | 839.09 | 836.44 | 2.03 | 0.62 | 0.01319 | 1.717 | 194.2039 | 12.211 | 1.1587 | 143.2 |
| 02.01.27 | GREENFIELD & RANCH | 48 | 48 | 48 | CMP | 15 | 834.27 | 829.44 | 0.322000 | 120.957 | 135.2 | 65.6 | 1.69 | 0.82 | 80 | 4 | 12.566 | 120.957 | 0.024 | 840.27 | 833.44 | 5.75 | 1.08 | 0.072 | 1.587 | 331.4137 | 26.373 | 5.4052 | 120.96 |
| 02.04.23 | GREENFIELD & SUNNYSLOPE | 60 | 60 | 60 | CMP | 254 | 827.72 | 826.88 | 0.003307 | 211.303 | 185.9 | 90.2 | 1.69 | 0.82 | 110 | 5 | 19.635 | 211.303 | 0.024 | 835.22 | 831.88 | 0.75 | 2.59 | 0.0102 | 1.842 | 226.133 | 11.517 | 1.0308 | 211.3 |
| 02.04.24 | GREENFIELD & SUNNYSLOPE | 60 | 60 | 60 | CMP | 276 | 828 | 826.88 | 0.004058 | 211.303 | 169 | 82 | 1.69 | 0.82 | 100 | 5 | 19.635 | 211.303 | 0.024 | 835.5 | 831.88 | 0.89 | 2.73 | 0.00989 | 1.842 | 222.7192 | 11.343 | 0.9999 | 211.3 |
| 02.04.25 | GREENFIELD & SUNNYSLOPE | 60 | 60 | 60 | CMP | 118.5 | 827.72 | 825.75 | 0.016624 | 211.303 | 202.8 | 98.4 | 1.69 | 0.82 | 120 | 5 | 19.635 | 211.303 | 0.024 | 835.22 | 830.75 | 1.52 | 2.95 | 0.02489 | 1.842 | 353.3318 | 17.995 | 2.5165 | 211.3 |
| 02.01.31 | SUNNYSLOPE | 15X24 | 18 | 15 | CMP | 41 | 845.33 | 845.2 | 0.003171 | 9.50866 | 33.8 | 16.4 | 1.69 | 0.82 | 20 | 1.25 | 1.7671 | 9.50866 | 0.024 | 847.205 | 846.45 | 0.25 | 0.505 | 0.01232 | 0.825 | 10.024 | 5.6724 | 0.25 | 9.5087 |
| 02.01.33 | SUNNYSLOPE | 15X24 | 18 | 15 | CMP | 41 | 840.99 | 840.77 | 0.005366 | 9.50866 | 33.8 | 16.4 | 1.69 | 0.82 | 20 | 1.25 | 1.7671 | 9.50866 | 0.024 | 842.865 | 842.02 | 0.25 | 0.595 | 0.01451 | 0.825 | 10.88063 | 6.1572 | 0.2946 | 9.5087 |

*NEW BERLIN CULVERT ANALYSIS (greater than 18 inch diameter)*

| CULVERT ID | Location | Size (in) | Equiv. Diam. (in) | Height (in) | Mat'l Type | Length (ft) | U/S Invert (ft) | D/S Invert (ft) | Slope (ft/ft) | Cap. (cfs) | 100 yr (cfs) | 10 yr (cfs) | 100 Yr Rate | 10 yr Rate | Con-tributing Acres | IC Head (ft) | IC Area (ft^2) | IC Flow (cfs) | Manning 'n' | HW Elev. (ft) | TW Elev. (ft) | Entr loss K | Head (ft) | Friction Slope | R^2/3 | Velocity (ft/s) | BC Flow (ft/s) | Entr loss (ft) | Cap. (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 02.01.18 | GREENFIELD BROOKFIELD/NB BORDER | 24 | 24 | 24 | PVC | 50 | 832.95 | 832.61 | 0.006800 | 21.3824 | 50.7 | 24.6 | 1.69 | 0.82 | 30 | 2 | 3.1416 | 21.3824 | 0.009 | 835.95 | 834.61 | 0.5 | 0.84 | 0.0168 | 1 | 67.23274 | 21.401 | 3.5592 | 21.382 |
| 02.01.19 | GREENFIELD BROOKFIELD/NB BORDER | 24 | 24 | 24 | PVC | 50 | 832.61 | 832.13 | 0.009600 | 21.3824 | 50.7 | 24.6 | 1.69 | 0.82 | 30 | 2 | 3.1416 | 21.3824 | 0.009 | 835.61 | 834.13 | 0.54 | 0.94 | 0.0188 | 1 | 71.12219 | 22.639 | 3.9829 | 21.382 |
| 02.01.20 | GREENFIELD & RANCH | 36 | 36 | 36 | RCP | 200 | 829.06 | 829 | 0.000300 | 58.923 | 101.4 | 49.2 | 1.69 | 0.82 | 60 | 3 | 7.0686 | 58.923 | 0.013 | 833.56 | 832 | 0.34 | 1.22 | 0.0061 | 1.31 | 82.69267 | 11.699 | 1.0636 | 58.923 |
| 02.01.28 | GREENFIELD & RANCH | 42 | 42 | 42 | CMP | 43 | 832.64 | 832.61 | 0.000698 | 86.6267 | 169 | 82 | 1.69 | 0.82 | 100 | 3.5 | 9.6211 | 86.6267 | 0.024 | 837.89 | 836.11 | 1.26 | 0.52 | 0.01209 | 1.452 | 95.13196 | 9.8878 | 0.7598 | 86.627 |
| 02.01.35 | GREENFIELD | 24 | 24 | 24 | CMP | 55 | 834.23 | 833.69 | 0.009818 | 21.3824 | 16.9 | 8.2 | 1.69 | 0.82 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 837.23 | 835.69 | 0.53 | 1.01 | 0.01836 | 1 | 26.35948 | 8.3905 | 0.5471 | 21.382 |
| 02.02.01 | GREENFIELD | 24 | 24 | 24 | CMP | 55 | 840.5 | 839.39 | 0.020182 | 21.3824 | 33.8 | 16.4 | 1.69 | 0.82 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 843.5 | 841.39 | 0.64 | 1.47 | 0.02673 | 1 | 31.80056 | 10.122 | 0.7963 | 21.382 |
| 02.03.01 | MOORLAND & C&NW RR | 24 | 24 | 24 | CMP | 138 | 859.2 | 857.83 | 0.009928 | 21.3824 | 38.4 | 18.6 | 1.92 | 0.93 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 862.2 | 859.83 | 0.45 | 1.92 | 0.01391 | 1 | 22.94397 | 7.3033 | 0.4145 | 21.382 |
| 02.03.04 | ROGERS & VALLEY SPRING | 24X36 | 30 | 24 | ACMP | 41 | 853.64 | 853.16 | 0.011707 | 33.41 | 27.6 | 10.6 | 1.38 | 0.53 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 856.64 | 855.16 | 0.73 | 0.75 | 0.01829 | 1.16 | 47.70049 | 9.7175 | 0.7338 | 33.41 |
| 02.03.10 | WOODSHIRE & ROGERS | 24X36 | 30 | 24 | ACMP | 45 | 842.08 | 842.01 | 0.001556 | 33.41 | 19.2 | 9.3 | 1.38 | 0.53 | 10 | 2 | 4.9087 | 33.41 | 0.024 | 845.08 | 844.01 | 0.51 | 0.56 | 0.01244 | 1.16 | 39.3434 | 8.015 | 0.4992 | 33.41 |
| 02.04.03 | HONEY | 24X36 | 30 | 24 | ACMP | 38 | 839.05 | 838.76 | 0.007632 | 33.41 | 55.2 | 21.2 | 1.38 | 0.53 | 40 | 2 | 4.9087 | 33.41 | 0.024 | 842.05 | 840.76 | 0.65 | 0.64 | 0.01684 | 1.16 | 45.77015 | 9.3242 | 0.6756 | 33.41 |
| 02.04.01 | HONEY & ROGERS | 24X36 | 30 | 24 | ACMP | 91 | 839.86 | 839.26 | 0.006593 | 33.41 | 55.2 | 21.2 | 1.38 | 0.53 | 40 | 2 | 4.9087 | 33.41 | 0.024 | 842.86 | 841.26 | 0.35 | 1.25 | 0.01374 | 1.16 | 41.33505 | 8.4207 | 0.551 | 33.41 |
| 02.04.02 | HONEY & ROGERS | 24X36 | 30 | 24 | ACMP | 39 | 841.39 | 841.08 | 0.007949 | 33.41 | 55.2 | 21.2 | 1.38 | 0.53 | 40 | 2 | 4.9087 | 33.41 | 0.024 | 844.39 | 843.08 | 0.75 | 0.56 | 0.01436 | 1.16 | 42.2616 | 8.6095 | 0.576 | 33.41 |
| 02.03.08 | HONEY & ROGERS | 24X36 | 30 | 24 | ACMP | 39 | 841.2 | 840.85 | 0.008974 | 33.41 | 55.2 | 21.2 | 1.38 | 0.53 | 40 | 2 | 4.9087 | 33.41 | 0.024 | 844.2 | 842.85 | 0.69 | 0.66 | 0.01692 | 1.16 | 45.88005 | 9.3466 | 0.6789 | 33.41 |
| 02.04.21 | CREST VIEW | 24X36 | 30 | 24 | CMP | 42 | 847.84 | 847.82 | 0.000476 | 33.41 | 87 | 34.8 | 1.45 | 0.58 | 60 | 2 | 4.9087 | 33.41 | 0.024 | 850.84 | 849.82 | 0.5 | 0.52 | 0.01238 | 1.16 | 39.24291 | 7.9945 | 0.4967 | 33.41 |
| 02.04.12 | CREST VIEW | 24X36 | 30 | 24 | CMP | 128 | 848.28 | 847.63 | 0.005078 | 33.41 | 87 | 34.8 | 1.45 | 0.58 | 60 | 2 | 4.9087 | 33.41 | 0.024 | 851.28 | 849.63 | 0.4 | 1.25 | 0.00977 | 1.16 | 34.85252 | 7.1001 | 0.3918 | 33.41 |
| 02.04.13 | WOODLAND | 24X36 | 30 | 24 | ACMP | 46 | 847.12 | 847.02 | 0.002174 | 33.41 | 101.5 | 40.6 | 1.45 | 0.58 | 70 | 2 | 4.9087 | 33.41 | 0.024 | 850.12 | 849.02 | 0.51 | 0.59 | 0.01283 | 1.16 | 39.94213 | 8.1369 | 0.5145 | 33.41 |
| 02.04.04 | HONEY & PARKWOOD | 24 | 24 | 24 | ACMP | 43 | 835.32 | 834.71 | 0.014186 | 21.3824 | 55.2 | 21.2 | 1.38 | 0.53 | 40 | 2 | 3.1416 | 21.3824 | 0.024 | 838.32 | 836.71 | 0.67 | 0.94 | 0.02186 | 1 | 28.75988 | 9.1546 | 0.6513 | 21.382 |
| 02.04.05 | HONEY & PARKWOOD | 24 | 24 | 24 | ACMP | 43 | 835.32 | 834.9 | 0.009767 | 21.3824 | 55.2 | 21.2 | 1.38 | 0.53 | 40 | 2 | 3.1416 | 21.3824 | 0.024 | 838.32 | 836.9 | 0.58 | 0.84 | 0.01953 | 1 | 27.1871 | 8.6539 | 0.582 | 21.382 |
| 02.04.17 | HONEY & PARKWOOD 20' DRAINAGE | 60 | 60 | 60 | RCP | 47 | 830.06 | 829.91 | 0.003191 | 211.303 | 110.4 | 42.4 | 1.38 | 0.53 | 80 | 5 | 19.635 | 211.303 | 0.013 | 837.56 | 834.91 | 2.25 | 0.4 | 0.00851 | 1.842 | 381.3993 | 19.425 | 2.9322 | 211.3 |
| 02.04.08 | PARKWOOD | 24X36 | 30 | 24 | ACMP | 44 | 832.29 | 829.91 | 0.054091 | 33.41 | 55.2 | 21.2 | 1.38 | 0.53 | 40 | 2 | 4.9087 | 33.41 | 0.024 | 835.29 | 831.91 | 1.5 | 1.88 | 0.04273 | 1.16 | 72.90155 | 14.851 | 1.714 | 33.41 |
| 02.03.10 | WOODSHIRE & ROGERS | 24X36 | 30 | 24 | ACMP | 45 | 842.08 | 842.01 | 0.001556 | 33.41 | 55.2 | 21.2 | 1.38 | 0.53 | 40 | 2 | 4.9087 | 33.41 | 0.024 | 845.08 | 844.01 | 0.5 | 0.57 | 0.01267 | 1.16 | 39.69313 | 8.0862 | 0.5081 | 33.41 |
| 02.04.28 | LINCOLN & BROOKLAND | 24X32 | 28 | 24 | ACMP | 57 | 848.42 | 845.87 | 0.044737 | 29.1038 | 87 | 34.8 | 1.45 | 0.58 | 60 | 2 | 4.2761 | 29.1038 | 0.024 | 851.42 | 847.87 | 1.12 | 2.43 | 0.04263 | 1.108 | 60.58261 | 14.168 | 1.5599 | 29.104 |
| 02.04.26 | LINCOLN & MEADOWMERE | 18X30 | 24 | 18 | ACMP | 46 | 842.71 | 842.05 | 0.014348 | 18.5177 | 87 | 34.8 | 1.45 | 0.58 | 60 | 1.5 | 3.1416 | 18.5177 | 0.024 | 844.96 | 843.55 | 0.54 | 0.87 | 0.01891 | 1 | 26.75088 | 8.5151 | 0.5635 | 18.518 |
| 03.02.58 | GREENFIELD & S.171st. | 24 | 24 | 24 | CMP | 50 | 870.48 | 869.88 | 0.012000 | 21.3824 | 43.8 | 21.6 | 1.46 | 0.72 | 30 | 2 | 3.1416 | 21.3824 | 0.024 | 873.48 | 871.88 | 0.58 | 1.02 | 0.0204 | 1 | 27.78258 | 8.8435 | 0.6078 | 21.382 |
| 03.02.03 | FULLERTON BETWEEN 171ST & CALHOUN | 18X30 | 24 | 18 | CMP | 279 | 868.02 | 866.86 | 0.004158 | 15.0041 | 29.2 | 14.4 | 1.46 | 0.72 | 20 | 1.5 | 3.1416 | 18.5177 | 0.024 | 870.27 | 868.36 | 0.25 | 1.66 | 0.00595 | 1 | 15.00408 | 4.7759 | 0.1773 | 15.004 |
| 03.02.38 | ROOSEVELT & S.170th | 18x30 | 24 | 18 | ACMP | 42 | 844.72 | 844.57 | 0.003571 | 18.5177 | 13 | 6.3 | 1.3 | 0.63 | 10 | 1.5 | 3.1416 | 18.5177 | 0.024 | 846.97 | 846.07 | 0.34 | 0.56 | 0.01333 | 1 | 22.46088 | 7.1495 | 0.3972 | 18.518 |
| 03.02.39 | ROOSEVELT & S.169th | 18X30 | 24 | 18 | ACMP | 43 | 841.04 | 841.02 | 0.000465 | 18.5177 | 26 | 12.6 | 1.3 | 0.63 | 20 | 1.5 | 3.1416 | 18.5177 | 0.024 | 843.29 | 842.52 | 0.24 | 0.53 | 0.01233 | 1 | 21.59539 | 6.874 | 0.3672 | 18.518 |
| 03.02.41 | ROOSEVELT & S.168th | 24X36 | 30 | 24 | ACMP | 43 | 839.89 | 839.13 | 0.017674 | 33.41 | 65 | 31.5 | 1.3 | 0.63 | 50 | 2 | 4.9087 | 33.41 | 0.024 | 842.89 | 841.13 | 0.85 | 0.91 | 0.02116 | 1.16 | 51.30629 | 10.452 | 0.849 | 33.41 |
| 03.02.29 | ADDISON &168th | 18X27 | 24 | 18 | ACMP | 324 | 851.38 | 846.69 | 0.014475 | 18.5177 | 39 | 18.9 | 1.3 | 0.63 | 30 | 1.5 | 3.1416 | 18.5177 | 0.024 | 853.63 | 848.19 | 0.47 | 4.97 | 0.01534 | 1 | 24.09146 | 7.6686 | 0.457 | 18.518 |
| 03.02.30 | ADDISON &168th | 18X27 | 24 | 18 | ACMP | 238 | 850.33 | 846.69 | 0.015294 | 18.5177 | 52 | 25.2 | 1.3 | 0.63 | 40 | 1.5 | 3.1416 | 18.5177 | 0.024 | 852.58 | 848.19 | 0.51 | 3.88 | 0.0163 | 1 | 24.83618 | 7.9056 | 0.4857 | 18.518 |
| 03.02.42 | ROOSEVELT & S. 167th | 24X36 | 30 | 24 | ACMP | 43 | 837.8 | 837.26 | 0.012558 | 33.41 | 117 | 56.7 | 1.3 | 0.63 | 90 | 2 | 4.9087 | 33.41 | 0.024 | 840.8 | 839.26 | 0.78 | 0.76 | 0.01767 | 1.16 | 46.88746 | 9.5518 | 0.709 | 33.41 |
| 03.02.22 | ADDISON & S.166th | 24 | 24 | 24 | CMP | 42 | 841.27 | 841.17 | 0.002381 | 21.3824 | 39 | 18.9 | 1.3 | 0.63 | 30 | 2 | 3.1416 | 21.3824 | 0.024 | 844.27 | 843.17 | 0.48 | 0.62 | 0.01476 | 1 | 23.63353 | 7.5228 | 0.4398 | 21.382 |
| 03.02.23 | ADDISON & S. 166th | 18x27 | 24 | 18 | ACMP | 43 | 841.21 | 841.09 | 0.002791 | 18.5177 | 39 | 18.9 | 1.3 | 0.63 | 30 | 1.5 | 3.1416 | 18.5177 | 0.024 | 843.46 | 842.59 | 0.32 | 0.55 | 0.01279 | 1 | 21.99908 | 7.0025 | 0.3811 | 18.518 |
| 03.02.24 | S.166TH BETWEEN ROOSEVELT & ADDISON | 20X30 | 24 | 20 | ACMP | 93 | 840.86 | 840.5 | 0.003871 | 18.6327 | 39 | 18.9 | 1.3 | 0.63 | 30 | 1.6667 | 3.1416 | 19.5194 | 0.024 | 843.36 | 842.17 | 0.34 | 0.853 | 0.00918 | 1 | 18.63268 | 5.931 | 0.2734 | 18.633 |
| 03.02.21 | S.165TH BETWEEN ROOSEVELT & ADDISON | 18X30 | 24 | 18 | ACMP | 48 | 839.47 | 838.76 | 0.014792 | 18.5177 | 39 | 18.9 | 1.3 | 0.63 | 30 | 1.5 | 3.1416 | 18.5177 | 0.024 | 841.72 | 840.26 | 0.55 | 0.91 | 0.01896 | 1 | 26.78289 | 8.5253 | 0.5648 | 18.518 |
| 03.04.04 | LINCOLN & S.162nd | 24X36 | 30 | 24 | ACMP | 61 | 845.74 | 844.44 | 0.021311 | 33.41 | 48.8 | 24.2 | 2.44 | 1.21 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 848.74 | 846.44 | 0.85 | 1.45 | 0.02377 | 1.16 | 54.3755 | 11.077 | 0.9536 | 33.41 |
| 03.04.03 | S.162nd | 24X36 | 30 | 24 | ACMP | 49 | 842.75 | 842.86 | 0.002245 | 31.0583 | 48.8 | 24.2 | 2.44 | 1.21 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 845.75 | 844.86 | 0.51 | 0.38 | 0.00776 | 1.16 | 31.05832 | 6.3271 | 0.3111 | 31.058 |
| 03.04.02 | S.162nd, DRAINAGE EASEMENT | 24X36 | 30 | 24 | ACMP | 49 | 841.85 | 841.62 | 0.004694 | 33.41 | 48.8 | 24.2 | 2.44 | 1.21 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 844.85 | 843.62 | 0.65 | 0.58 | 0.01184 | 1.16 | 38.37074 | 7.8168 | 0.4748 | 33.41 |
| 03.04.01 | S.162nd & ROGERS | 24X36 | 30 | 24 | ACMP | 61 | 843.06 | 842.61 | 0.007377 | 33.41 | 48.8 | 24.2 | 2.44 | 1.21 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 846.06 | 844.61 | 0.64 | 0.81 | 0.01328 | 1.16 | 40.64075 | 8.2793 | 0.5327 | 33.41 |
| 03.04.06 | W. ROGERS DR | 60X240 | 135 | 60 | CONC | 80 | 844.6 | 844.5 | 0.001250 | 1069.72 | 869 | 661 | 2.44 | 1.21 | 600 | 5 | 99.402 | 1069.72 | 0.013 | 852.1 | 849.5 | 2.35 | 0.25 | 0.00313 | 3.163 | 2008.988 | 20.211 | 3.1743 | 1069.7 |
| 03.04.05 | W. ROGERS DR | 60X220 | 130 | 60 | CONC | 80 | 844.6 | 844.5 | 0.001250 | 991.952 | 830 | 617 | 2.44 | 1.21 | 580 | 5 | 92.175 | 991.952 | 0.013 | 852.1 | 849.5 | 2.25 | 0.35 | 0.00438 | 3.084 | 2149.481 | 23.32 | 4.226 | 991.95 |
| 03.01.12 | C&NW RR & TRIB | 84X147 | 120 | 84 | ACMP | 147 | 834.41 | 834.45 | 0.000272 | 1000.07 | 625 | 420 | 1.3 | 0.63 | 400 | 7 | 78.54 | 1000.07 | 0.024 | 844.91 | 841.45 | 1.75 | 1.71 | 0.01163 | 2.924 | 1533.618 | 19.527 | 2.9631 | 1000.1 |
| 03.01.11 | C&NW RR & TRIB | 84X147 | 120 | 84 | ACMP | 147 | 834.51 | 834.3 | 0.001429 | 1000.07 | 625 | 420 | 1.3 | 0.63 | 400 | 7 | 78.54 | 1000.07 | 0.024 | 845.01 | 841.3 | 1.5 | 2.21 | 0.01503 | 2.924 | 1743.473 | 22.199 | 3.8295 | 1000.1 |
| 03.01.13 | C&NW RR & TRIB | 66 | 66 | 66 | RCP | 44 | 839.08 | 838.7 | 0.008636 | 268.157 | 130 | 63 | 1.3 | 0.63 | 100 | 5.5 | 23.758 | 268.157 | 0.013 | 847.33 | 844.2 | 2 | 1.13 | 0.02568 | 1.963 | 854.2642 | 35.956 | 10.047 | 268.16 |
| 03.01.14 | C&NW RR & TRIB | 66 | 66 | 66 | RCP | 44 | 838.91 | 838.73 | 0.004091 | 268.157 | 130 | 63 | 1.3 | 0.63 | 100 | 5.5 | 23.758 | 268.157 | 0.013 | 847.16 | 844.23 | 2.5 | 0.43 | 0.00977 | 1.963 | 526.9716 | 22.181 | 3.8233 | 268.16 |
| 03.01.15 | C&NW RR & TRIB | 36X58 | 48 | 36 | ACMP | 42 | 836.85 | 836.77 | 0.001905 | 104.752 | 260 | 126 | 1.3 | 0.63 | 200 | 3 | 12.566 | 104.752 | 0.024 | 841.35 | 839.77 | 1.1 | 0.48 | 0.01143 | 1.587 | 132.0384 | 10.507 | 0.858 | 104.75 |
| 03.01.02 | RIVER ROAD | 24X36 | 30 | 24 | ACMP | 41 | 836.79 | 836.63 | 0.003902 | 33.41 | 26 | 12.6 | 1.3 | 0.63 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 839.79 | 838.63 | 0.57 | 0.59 | 0.01439 | 1.16 | 42.30759 | 8.6188 | 0.5773 | 33.41 |
| 03.01.10 | GREENFIELD & CARRAIGE | 24 | 42 | 24 | CMP | 47 | 845.44 | 845.08 | 0.007660 | 65.4836 | 52 | 25.2 | 1.3 | 0.63 | 40 | 2 | 9.6211 | 65.4836 | 0.024 | 848.44 | 847.08 | 0.75 | 0.61 | 0.01298 | 1.452 | 98.55416 | 10.244 | 0.8154 | 65.484 |
| 03.01.16 | GREENFIELD | 72X120 | 105 | 72 | CMP | 50 | 842.5 | 839 | 0.070000 | 708.881 | 1341 | 885 | 1.3 | 0.63 | 140 | 6 | 60.132 | 708.881 | 0.024 | 851.5 | 845 | 1.75 | 4.75 | 0.095 | 2.675 | 3069.688 | 51.049 | 20.252 | 708.88 |
| 03.01.17 | GREENFIELD | 72x120 | 96 | 72 | RCP | 100 | 830.9 | 829.88 | 0.010200 | 592.567 | 1250 | 840 | 1.3 | 0.63 | 1100 | 6 | 50.265 | 592.567 | 0.024 | 839.9 | 835.88 | 1.75 | 2.27 | 0.0227 | 2.52 | 1181.582 | 23.507 | 4.2941 | 592.57 |
| 03.03.22 | CALHOUN & LINCOLN | 24X36 | 30 | 24 | ACMP | 48 | 857.46 | 856.85 | 0.012708 | 33.41 | 48.8 | 24.2 | 2.44 | 1.21 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 860.46 | 858.85 | 0.71 | 0.9 | 0.01875 | 1.16 | 48.29307 | 9.8382 | 0.7522 | 33.41 |
| 03.03.09 | LINCOLN AVE & S. 170th | 24x36 | 30 | 24 | ACMP | 61 | 846.38 | 845.72 | 0.010820 | 33.41 | 48.8 | 24.2 | 2.44 | 1.21 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 849.38 | 847.72 | 0.71 | 0.95 | 0.01557 | 1.16 | 44.01301 | 8.9663 | 0.6248 | 33.41 |
| 03.03.10 | S. 170th | 24X36 | 30 | 24 | ACMP | 42 | 844.63 | 844.13 | 0.011905 | 33.41 | 48.8 | 24.2 | 2.44 | 1.21 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 847.63 | 846.13 | 0.75 | 0.75 | 0.01786 | 1.16 | 47.12921 | 9.6011 | 0.7164 | 33.41 |
| 03.03.11 | S. 170th | 27X42 | 36 | 27 | ACMP | 323 | 851.98 | 845.94 | 0.018700 | 51.0288 | 48.8 | 24.2 | 2.44 | 1.21 | 20 | 2.25 | 7.0686 | 51.0288 | 0.024 | 855.355 | 848.19 | 0.776 | 6.389 | 0.01978 | 1.31 | 80.65836 | 11.411 | 1.0119 | 51.029 |
| 03.03.12 | S. 170th & W.ROGERS | 24X36 | 30 | 24 | ACMP | 61 | 845.61 | 845.13 | 0.007869 | 33.41 | 48.8 | 24.2 | 2.44 | 1.21 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 848.61 | 847.13 | 0.55 | 0.93 | 0.01525 | 1.16 | 43.54725 | 8.8714 | 0.6116 | 33.41 |
| 03.03.13 | W.ROGERS | 24 | 24 | 24 | CMP | 32 | 840.75 | 840.33 | 0.013125 | 21.3824 | 48.8 | 24.2 | 2.44 | 1.21 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 843.75 | 842.33 | 0.55 | 0.87 | 0.02719 | 1 | 32.07318 | 10.209 | 0.81 | 21.382 |
| 03.03.14 | W.ROGERS | 24X36 | 30 | 24 | ACMP | 50 | 840.67 | 840.24 | 0.008600 | 33.41 | 48.8 | 24.2 | 2.44 | 1.21 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 843.67 | 842.24 | 0.55 | 0.88 | 0.0176 | 1.16 | 46.78865 | 9.5317 | 0.706 | 33.41 |
| 03.03.15 | W.ROGERS | 24 | 24 | 24 | CMP | 32 | 840.33 | 840.04 | 0.009063 | 21.3824 | 48.8 | 24.2 | 2.44 | 1.21 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 843.33 | 842.04 | 0.55 | 0.74 | 0.02313 | 1 | 29.58001 | 9.4156 | 0.6889 | 21.382 |
| 03.03.04 | LINCOLN AVE UTILITY & RR & DRAINAGE | 30X42 | 36 | 30 | ACMP | 73 | 842.92 | 842.85 | 0.000959 | 53.7891 | 73.2 | 36.3 | 2.44 | 1.21 | 30 | 2.5 | 7.0686 | 53.7891 | 0.024 | 846.67 | 845.35 | 0.56 | 0.76 | 0.01041 | 1.31 | 58.51666 | 8.2784 | 0.5326 | 53.789 |
| 03.03.05 | LINCOLN AVE UTILITY & RR & DRAINAGE | 30X42 | 36 | 30 | ACMP | 71 | 843.03 | 843.01 | 0.000282 | 53.7891 | 73.2 | 36.3 | 2.44 | 1.21 | 30 | 2.5 | 7.0686 | 53.7891 | 0.024 | 846.78 | 845.51 | 0.5 | 0.77 | 0.01085 | 1.31 | 59.72421 | 8.4492 | 0.5548 | 53.789 |

Exhibit C - 4
Culvert Analysis Database
City of New Berlin

*NEW BERLIN CULVERT ANALYSIS (greater than 18 inch diameter)*

| CULVERT ID | Location | Size (in) | Equiv. Diam. (in) | Height (in) | Mat'l Type | Length (ft) | U/S Invert (ft) | D/S Invert (ft) | Slope (ft/ft) | Cap. (cfs) | 100 yr (cfs) | 10 yr (cfs) | 100 Yr Rate | 10 yr Rate | Con-tributing Acres | IC Head (ft) | IC Area (ft^2) | IC Flow (cfs) | Manning 'n' | HW Elev. (ft) | TW Elev. (ft) | Entr loss K | Head (ft) | Friction Slope | R^2/3 | Velocity (ft/s) | BC Flow (ft/s) | Entr loss (ft) | Cap. (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 03.03.06 | LINCOLN AVE UTILITY & RR & DRAINAGE | 24X36 | 30 | 24 | ACMP | 25 | 844.12 | 843.55 | 0.022800 | 33.41 | 73.2 | 36.3 | 2.44 | 1.21 | 30 | 2 | 4.9087 | 33.41 | 0.024 | 847.12 | 845.55 | 0.85 | 0.72 | 0.0288 | 1.16 | 59.85224 | 12.193 | 1.1553 | 33.41 |
| 03.03.07 | LINCOLN AVE UTILITY & RR & DRAINAGE | 30X42 | 36 | 30 | ACMP | 71 | 844.12 | 843.92 | 0.002817 | 53.7891 | 73.2 | 36.3 | 2.44 | 1.21 | 30 | 2.5 | 7.0686 | 53.7891 | 0.024 | 847.87 | 846.42 | 0.5 | 0.95 | 0.01338 | 1.31 | 66.33868 | 9.385 | 0.6845 | 53.789 |
| 03.03.08 | LINCOLN AVE UTILITY & RR & DRAINAGE | 30X42 | 36 | 30 | ACMP | 33 | 842.94 | 842.66 | 0.008485 | 53.7891 | 122 | 60.5 | 2.44 | 1.21 | 50 | 2.5 | 7.0686 | 53.7891 | 0.024 | 846.69 | 845.16 | 0.95 | 0.58 | 0.01758 | 1.31 | 76.03109 | 10.756 | 0.8991 | 53.789 |
| 03.03.09 | LINCOLN AVE UTILITY & RR & DRAINAGE | 30X42 | 36 | 30 | ACMP | 33 | 842.87 | 842.62 | 0.007576 | 53.7891 | 122 | 60.5 | 2.44 | 1.21 | 50 | 2.5 | 7.0686 | 53.7891 | 0.024 | 846.62 | 845.12 | 0.95 | 0.55 | 0.01667 | 1.31 | 74.03866 | 10.474 | 0.8526 | 53.789 |
| 03.03.17 | ROGERS | 24X36 | 30 | 24 | ACMP | 49 | 839.29 | 839.25 | 0.000816 | 33.41 | 73.2 | 36.3 | 2.44 | 1.21 | 30 | 2 | 4.9087 | 33.41 | 0.024 | 842.29 | 841.25 | 0.48 | 0.56 | 0.01143 | 1.16 | 37.70337 | 7.6809 | 0.4585 | 33.41 |
| 03.03.23 | CALHOUN | 24X36 | 30 | 24 | ACMP | 49 | 854.38 | 854.19 | 0.003878 | 33.41 | 24.4 | 12.1 | 2.44 | 1.21 | 10 | 2 | 4.9087 | 33.41 | 0.024 | 857.38 | 856.19 | 0.5 | 0.69 | 0.01408 | 1.16 | 41.85147 | 8.5259 | 0.5649 | 33.41 |
| 04.04.02 | CALHOUN & LINCOLN | 24 | 24 | 24 | CCP | 68 | 863.85 | 863.17 | 0.010000 | 21.3824 | 27 | 12.3 | 1.8 | 0.82 | 15 | 2 | 3.1416 | 21.3824 | 0.024 | 866.85 | 865.17 | 0.35 | 1.33 | 0.01956 | 1 | 27.20375 | 8.6592 | 0.5827 | 21.382 |
| 04.04.03 | CALHOUN & LINCOLN | 24 | 24 | 24 | CCP | 64 | 863.97 | 863.02 | 0.014844 | 21.3824 | 27 | 12.3 | 1.8 | 0.82 | 15 | 2 | 3.1416 | 21.3824 | 0.024 | 866.97 | 865.02 | 0.32 | 1.63 | 0.02547 | 1 | 31.04283 | 9.8812 | 0.7588 | 21.382 |
| 04.04.06 | WESTWARD | 24 | 24 | 24 | CCP | 68 | 856.16 | 854.67 | 0.021912 | 21.3824 | 18 | 8.2 | 1.8 | 0.82 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 859.16 | 856.67 | 0.67 | 1.82 | 0.02676 | 1 | 31.82282 | 10.13 | 0.7974 | 21.382 |
| 04.03.01 | GREENFIELD | 24 | 24 | 24 | CMP | 45 | 850.34 | 849.02 | 0.029333 | 13.6007 | 18 | 8.2 | 1.8 | 0.82 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 853.34 | 851.02 | 2.1 | 0.22 | 0.00489 | 1 | 13.60074 | 4.3292 | 0.1457 | 13.601 |
| 04.04.01 | GREENFIELD | 24 | 24 | 24 | CMP | 45 | 838.79 | 832.58 | 0.138000 | 21.3824 | 126 | 57.4 | 1.8 | 0.82 | 70 | 2 | 3.1416 | 21.3824 | 0.024 | 841.79 | 834.58 | 0.4 | 6.81 | 0.15133 | 1 | 75.67018 | 24.087 | 4.5086 | 21.382 |
| 04.01.14 | 2493250E, 373250N | 36 | 48 | 48 | RCP | 42 | 826.55 | 826.08 | 0.011190 | 120.957 | 116.8 | 57.6 | 1.46 | 0.72 | 80 | 4 | 12.566 | 120.957 | 0.013 | 832.55 | 830.08 | 1.75 | 0.72 | 0.01714 | 1.587 | 298.5477 | 23.758 | 4.3863 | 120.96 |
| 04.01.15 | 2497000E, 372500N | 54 | 54 | 54 | RCP | 23 | 838.12 | 832.12 | 0.260870 | 162.373 | 146 | 72 | 1.46 | 0.72 | 100 | 4.5 | 15.904 | 162.373 | 0.013 | 844.87 | 836.62 | 6.52 | 1.73 | 0.07522 | 1.717 | 856.1265 | 53.83 | 22.518 | 162.37 |
| 04.01.16 | 2497000E, 372500N | 27 | 27 | 27 | RCP | 31 | 830.05 | 829.95 | 0.003226 | 28.7037 | 58.4 | 28.8 | 1.46 | 0.72 | 40 | 2.25 | 3.9761 | 28.7037 | 0.013 | 833.425 | 832.2 | 0.65 | 0.575 | 0.01855 | 1.082 | 66.95533 | 16.84 | 2.2037 | 28.704 |
| 04.01.17 | 2497000E, 372500N | 27 | 27 | 27 | RCP | 50 | 828.36 | 828.13 | 0.004600 | 28.7037 | 58.4 | 28.8 | 1.46 | 0.72 | 40 | 2.25 | 3.9761 | 28.7037 | 0.013 | 831.735 | 830.38 | 0.56 | 0.795 | 0.0159 | 1.082 | 61.99128 | 15.591 | 1.889 | 28.704 |
| 04.01.18 | 2497000E, 372500N | 48 | 48 | 48 | RCP | 32 | 828.58 | 828.35 | 0.007188 | 120.957 | 116.8 | 57.6 | 1.46 | 0.72 | 80 | 4 | 12.566 | 120.957 | 0.013 | 834.58 | 832.35 | 1.75 | 0.48 | 0.015 | 1.587 | 279.2658 | 22.223 | 3.838 | 120.96 |
| 04.01.19 | 2497000E, 372500N | 30 | 30 | 30 | RCP | 77 | 837.01 | 831.84 | 0.067143 | 37.3535 | 43.8 | 21.6 | 1.46 | 0.72 | 30 | 2.5 | 4.9087 | 37.3535 | 0.013 | 840.76 | 834.34 | 1.2 | 5.22 | 0.06779 | 1.16 | 169.5282 | 34.536 | 9.269 | 37.354 |
| 03.03.01 | LINCOLN 2497000E | 36 | 36 | 36 | RCP | 33 | 833.44 | 833.4 | 0.001212 | 58.923 | 58.4 | 28.8 | 1.46 | 0.72 | 40 | 3 | 7.0686 | 58.923 | 0.013 | 837.94 | 836.4 | 0.98 | 0.56 | 0.01697 | 1.31 | 137.9238 | 19.512 | 2.9587 | 58.923 |
| 03.03.02 | LINCOLN 2497000E | 24 | 24 | 24 | RCP | 40 | 836.32 | 836.05 | 0.006750 | 21.3824 | 29.2 | 14.4 | 1.46 | 0.72 | 20 | 2 | 3.1416 | 21.3824 | 0.013 | 839.32 | 838.05 | 0.54 | 0.73 | 0.01825 | 1 | 48.51285 | 15.442 | 1.8531 | 21.382 |
| 04.01.13 | C & NW RR | 18X24 | 20 | 18 | CMPA | 36 | 838.98 | 836.05 | 0.081389 | 12.8595 | 116.8 | 57.6 | 1.46 | 0.72 | 80 | 1.5 | 2.1817 | 12.8595 | 0.024 | 841.23 | 837.55 | 1.25 | 2.43 | 0.0675 | 0.886 | 31.07845 | 14.245 | 1.577 | 12.86 |
| 04.01.20 | C & NW RR | 36X48 | 42 | 36 | STONE | 24 | 838.71 | 838.63 | 0.003333 | 80.2007 | 116.8 | 57.6 | 1.46 | 0.72 | 80 | 3 | 9.6211 | 80.2007 | 0.013 | 843.21 | 841.63 | 1.5 | 0.08 | 0.00333 | 1.452 | 92.2075 | 9.5839 | 0.7138 | 80.201 |
| 04.01.11 | WEST LANE | 36 | 36 | 36 | RCP | 40 | 844.86 | 844.75 | 0.002750 | 58.923 | 58.4 | 28.8 | 1.46 | 0.72 | 40 | 3 | 7.0686 | 58.923 | 0.013 | 849.36 | 847.75 | 0.75 | 0.86 | 0.0215 | 1.31 | 155.2463 | 21.963 | 3.7486 | 58.923 |
| 04.02.02 | GREENFIELD | 36 | 36 | 36 | CMP | 46 | 837.67 | 837.36 | 0.006739 | 58.923 | 58.4 | 28.8 | 1.46 | 0.72 | 40 | 3 | 7.0686 | 58.923 | 0.024 | 842.17 | 840.36 | 0.85 | 0.96 | 0.02087 | 1.31 | 82.84969 | 11.721 | 1.0676 | 58.923 |
| 04.02.12 | CALHOUN | 24X36 | 30 | 24 | ACMP | 37 | 865.41 | 865.07 | 0.009189 | 33.41 | 87.6 | 43.2 | 1.46 | 0.72 | 60 | 2 | 4.9087 | 33.41 | 0.024 | 868.41 | 867.07 | 0.75 | 0.59 | 0.01595 | 1.16 | 44.53581 | 9.0728 | 0.6397 | 33.41 |
| 05.03.04 | BTWN LINCOLN & C&NW RR | 48 | 48 | 48 | CMP | 35 | 824.4 | 824.04 | 0.010286 | 120.957 | 116.8 | 57.6 | 1.46 | 0.72 | 80 | 4 | 12.566 | 120.957 | 0.024 | 830.4 | 828.04 | 1.5 | 0.86 | 0.02457 | 1.587 | 193.6063 | 15.407 | 1.8446 | 120.96 |
| 05.03.05 | BTWN LINCOLN & C&NW RR | 48 | 48 | 48 | RCP | 33 | 827.36 | 827.13 | 0.006970 | 120.957 | 438 | 216 | 1.46 | 0.72 | 300 | 4 | 12.566 | 120.957 | 0.013 | 833.36 | 831.13 | 1.75 | 0.48 | 0.01455 | 1.587 | 275.0019 | 21.884 | 3.7217 | 120.96 |
| 05.03.06 | BTWN LINCOLN & C&NW RR | 24 | 24 | 24 | STEEL | 31 | 829.95 | 827.92 | 0.065484 | 21.3824 | 14.6 | 7.2 | 1.46 | 0.72 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 832.95 | 829.92 | 1.75 | 1.28 | 0.04129 | 1 | 39.52588 | 12.581 | 1.2301 | 21.382 |
| 05.03.10 | BTWN LINCOLN & C&NW RR | 24 | 24 | 24 | STEEL | 45 | 833.5 | 832.6 | 0.020000 | 21.3824 | 14.6 | 7.2 | 1.46 | 0.72 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 836.5 | 834.6 | 1.25 | 0.65 | 0.01444 | 1 | 23.37803 | 7.4415 | 0.4303 | 21.382 |
| 05.03.07 | BTWN LINCOLN & C&NW RR | 48 | 48 | 48 | CONC | 34 | 827.4 | 827.13 | 0.007941 | 120.957 | 131.4 | 64.8 | 1.46 | 0.72 | 90 | 4 | 12.566 | 120.957 | 0.013 | 833.4 | 831.13 | 1.2 | 1.07 | 0.03147 | 1.587 | 404.5056 | 32.19 | 8.0523 | 120.96 |
| 05.03.08 | BTWN LINCOLN & C&NW RR | 36X65 | 50 | 36 | STONE | 29 | 827.2 | 826.46 | 0.025517 | 113.663 | 116.8 | 57.6 | 1.46 | 0.72 | 80 | 3 | 13.635 | 113.663 | 0.013 | 831.7 | 829.46 | 2 | 0.24 | 0.00828 | 1.631 | 231.2892 | 16.962 | 2.236 | 113.66 |
| 05.03.09 | BTWN LINCOLN & C&NW RR | 21 | 21 | 21 | CCP | 20 | 829.97 | 829.88 | 0.004500 | 15.3136 | 14.6 | 7.2 | 1.46 | 0.72 | 10 | 1.75 | 2.4053 | 15.3136 | 0.013 | 832.595 | 831.63 | 0.54 | 0.425 | 0.02125 | 0.915 | 36.66567 | 15.244 | 1.8058 | 15.314 |
| 05.01.09 | GREENFIELD & WESTWOOD | 24 | 24 | 24 | PVC | 54 | 885.74 | 884.5 | 0.022963 | 21.3824 | 29.2 | 14.4 | 1.46 | 0.72 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 888.74 | 886.5 | 0.75 | 1.49 | 0.02759 | 1 | 32.31125 | 10.285 | 0.822 | 21.382 |
| 05.01.03 | PINECREST & BIRCHWOOD | 21 | 21 | 21 | CMP | 37 | 881.23 | 880.07 | 0.031351 | 15.3136 | 14.6 | 7.2 | 1.46 | 0.72 | 10 | 1.75 | 2.4053 | 15.3136 | 0.024 | 883.855 | 881.82 | 0.78 | 1.255 | 0.03392 | 0.915 | 25.09188 | 10.432 | 0.8457 | 15.314 |
| 05.01.07 | NORWOOD & BIRCHWOOD | 27 | 27 | 27 | CMP | 40 | 846.19 | 845.17 | 0.025500 | 28.7037 | 29.2 | 14.4 | 1.46 | 0.72 | 20 | 2.25 | 3.9761 | 28.7037 | 0.024 | 849.565 | 847.42 | 0.94 | 1.205 | 0.03013 | 1.082 | 46.21976 | 11.624 | 1.0501 | 28.704 |
| 05.03.10 | JOHNSON & EASEMENT | 24 | 24 | 24 | RCP | 53 | 827.36 | 826.97 | 0.007358 | 21.3824 | 16.9 | 7.7 | 1.69 | 0.77 | 10 | 2 | 3.1416 | 21.3824 | 0.013 | 830.36 | 828.97 | 0.5 | 0.89 | 0.01679 | 1 | 46.53529 | 14.813 | 1.7051 | 21.382 |
| 05.02.05 | PINECREST | 24 | 24 | 24 | CMP | 18 | 847.4 | 846.8 | 0.033333 | 21.3824 | 50.7 | 23.1 | 1.69 | 0.77 | 30 | 2 | 3.1416 | 21.3824 | 0.024 | 850.4 | 848.8 | 1.12 | 0.48 | 0.02667 | 1 | 31.76448 | 10.111 | 0.7945 | 21.382 |
| 05.02.01 | GREENFIELD | 42 | 42 | 42 | CMP | 18 | 857.55 | 855.92 | 0.090556 | 86.6267 | 84.5 | 38.5 | 1.69 | 0.77 | 50 | 3.5 | 9.6211 | 86.6267 | 0.024 | 862.8 | 859.42 | 2.75 | 0.63 | 0.035 | 1.452 | 161.8427 | 16.822 | 2.199 | 86.627 |
| 05.02.02 | GREENFIELD | 24 | 24 | 24 | CMP | 44 | 865.65 | 865.01 | 0.014545 | 21.3824 | 16.9 | 7.7 | 1.69 | 0.77 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 868.65 | 867.01 | 0.67 | 0.97 | 0.02205 | 1 | 28.88132 | 9.1932 | 0.6568 | 21.382 |
| 06.01.15 | C&NW RR | 72 | 72 | 72 | CONC | 47 | 827.76 | 827.67 | 0.001915 | 333.319 | 11680 | 5760 | 1.46 | 0.72 | 8000 | 6 | 28.274 | 333.319 | 0.013 | 836.76 | 833.67 | 2.79 | 0.3 | 0.00638 | 2.08 | 537.1067 | 18.996 | 2.8043 | 333.32 |
| 06.01.16 | C&NW RR | 96 | 96 | 96 | CONC | 42 | 827.33 | 827.3 | 0.000714 | 684.237 | 11680 | 5760 | 1.46 | 0.72 | 8000 | 8 | 50.265 | 684.237 | 0.013 | 839.33 | 835.3 | 3.784 | 0.246 | 0.00586 | 2.52 | 1108.056 | 22.044 | 3.7764 | 684.24 |
| 06.01.17 | C&NW RR | 72 | 72 | 72 | CONC | 30 | 833.17 | 833.14 | 0.001000 | 333.319 | 730 | 360 | 1.46 | 0.72 | 500 | 6 | 28.274 | 333.319 | 0.013 | 842.17 | 839.14 | 2.8365 | 0.193 | 0.00645 | 2.08 | 539.8894 | 19.095 | 2.8334 | 333.32 |
| 06.01.18 | C&NW RR | 72 | 72 | 72 | RCP | 43 | 829.65 | 828.92 | 0.016977 | 333.319 | 730 | 360 | 1.46 | 0.72 | 500 | 6 | 28.274 | 333.319 | 0.013 | 838.65 | 834.92 | 3.1 | 0.63 | 0.01465 | 2.08 | 813.7385 | 28.78 | 6.4369 | 333.32 |
| 06.01.19 | C&NW RR | 48 | 48 | 48 | CONC | 34 | 827.13 | 827.01 | 0.003529 | 55.3029 | 292 | 144 | 1.46 | 0.72 | 200 | 4 | 12.566 | 120.957 | 0.013 | 833.13 | 831.01 | 2.1 | 0.02 | 0.00059 | 1.587 | 55.30286 | 4.4009 | 0.1505 | 55.303 |
| 06.01.20 | C&NW RR | 24 | 24 | 24 | RCP | 53 | 827.35 | 826.97 | 0.007170 | 21.3824 | 292 | 144 | 1.46 | 0.72 | 200 | 2 | 3.1416 | 21.3824 | 0.013 | 830.35 | 828.97 | 0.5 | 0.88 | 0.0166 | 1 | 46.27311 | 14.729 | 1.686 | 21.382 |
| 06.04.02 | LINCOLN | 24 | 24 | 24 | CMP | 41 | 834.62 | 834.57 | 0.001220 | 21.3824 | 18.1 | 8.9 | 1.81 | 0.89 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 837.62 | 836.57 | 0.45 | 0.6 | 0.01463 | 1 | 23.53104 | 7.4902 | 0.436 | 21.382 |
| 06.04.03 | LINCOLN | 24 | 24 | 24 | CMP | 41 | 864.62 | 834.57 | 0.732927 | 21.3824 | 18.1 | 8.9 | 1.81 | 0.89 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 867.62 | 836.57 | 9.12 | 21.93 | 0.53488 | 1 | 142.2607 | 45.283 | 15.935 | 21.382 |
| 06.04.04 | DANNY & LINCOLN | 24X36 | 30 | 24 | ACMP | 64 | 832.98 | 832.64 | 0.005313 | 33.41 | 36.2 | 17.8 | 1.81 | 0.89 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 835.98 | 834.64 | 0.52 | 0.82 | 0.01281 | 1.16 | 39.92097 | 8.1326 | 0.514 | 33.41 |
| 06.04.05 | LINCOLN & TRIBUTARY | 18X24 | 21 | 18 | ACMP | 49 | 833.32 | 831.95 | 0.027959 | 14.1776 | 18.1 | 8.9 | 1.81 | 0.89 | 10 | 1.5 | 2.4053 | 14.1776 | 0.024 | 835.57 | 833.45 | 0.66 | 1.46 | 0.0298 | 0.915 | 23.51747 | 9.7774 | 0.7429 | 14.178 |
| 06.04.06 | LINCOLN & TRIBUTARY | 21 | 21 | 21 | RCP | 20 | 829.91 | 829.88 | 0.001500 | 15.3136 | 18.1 | 8.9 | 1.81 | 0.89 | 10 | 1.75 | 2.4053 | 15.3136 | 0.013 | 832.535 | 831.63 | 0.5 | 0.405 | 0.02025 | 0.915 | 35.79255 | 14.881 | 1.7208 | 15.314 |
| 06.03.07 | LINCOLN | 72X113 | 90 | 72 | CMPA | 42 | 835.63 | 835.47 | 0.003810 | 249.551 | 1185 | 480 | 0.79 | 0.32 | 1500 | 6 | 44.179 | 520.811 | 0.024 | 844.63 | 841.47 | 3.1 | 0.06 | 0.00143 | 2.414 | 249.5506 | 5.6487 | 0.248 | 249.55 |
| 06.02.07 | SUNNY CREST | 20X28 | 24 | 20 | ACMP | 54 | 873.73 | 872.04 | 0.031296 | 19.5194 | 33 | 15.4 | 1.65 | 0.72 | 20 | 1.6667 | 3.1416 | 19.5194 | 0.024 | 876.23 | 873.71 | 0.71 | 1.813 | 0.03358 | 1 | 35.64506 | 11.346 | 1.0004 | 19.519 |
| 06.01.13 | GREENFIELD | 36 | 36 | 36 | CMP | 54 | 854.22 | 853.69 | 0.009815 | 58.923 | 49.5 | 23.1 | 1.65 | 0.72 | 30 | 3 | 7.0686 | 58.923 | 0.024 | 858.72 | 856.69 | 0.88 | 1.15 | 0.0213 | 1.31 | 83.69244 | 11.84 | 1.0894 | 58.923 |
| 06.02.08 | CRAFTSMAN | 18X24 | 21 | 18 | ACMP | 260 | 847.59 | 846.21 | 0.005308 | 11.3361 | 16.5 | 7.7 | 1.65 | 0.72 | 10 | 1.5 | 2.4053 | 14.1776 | 0.024 | 849.84 | 847.71 | 0.33 | 1.8 | 0.00692 | 0.915 | 11.33605 | 4.713 | 0.1726 | 11.336 |
| 06.02.01 | SPRING DALE | 18X24 | 21 | 18 | ACMP | 44 | 843.02 | 842.77 | 0.005682 | 14.1776 | 16.5 | 7.7 | 1.65 | 0.72 | 10 | 1.5 | 2.4053 | 14.1776 | 0.024 | 845.27 | 844.27 | 0.35 | 0.65 | 0.01477 | 0.915 | 16.55932 | 6.8846 | 0.3683 | 14.178 |
| 06.01.09 | DOWNIE & LILLY | 24 | 24 | 24 | CMP | 50 | 869.05 | 865.91 | 0.062800 | 21.3824 | 33.8 | 15.4 | 1.69 | 0.77 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 872.05 | 867.91 | 1.21 | 2.93 | 0.0586 | 1 | 47.08757 | 14.988 | 1.7458 | 21.382 |
| 06.01.07 | DOWNIE & LILLY | 21 | 21 | 21 | CMP | 38 | 857.26 | 854.92 | 0.061579 | 15.3136 | 16.9 | 7.7 | 1.69 | 0.77 | 10 | 1.75 | 2.4053 | 15.3136 | 0.024 | 859.885 | 856.67 | 1.03 | 2.185 | 0.0575 | 0.915 | 32.66978 | 13.583 | 1.4337 | 15.314 |
| 06.01.06 | GREENFIELD & DOWNIE | 24 | 24 | 24 | CMP | 84 | 837.46 | 836.78 | 0.008095 | 21.3824 | 50.7 | 23.1 | 1.69 | 0.77 | 30 | 2 | 3.1416 | 21.3824 | 0.024 | 840.46 | 838.78 | 0.46 | 1.22 | 0.01452 | 1 | 23.44216 | 7.4619 | 0.4327 | 21.382 |
| 06.01.05 | SUNNYCREST & VILLA TERRACE | 24 | 24 | 24 | CMP | 60 | 824.8 | 824.1 | 0.011667 | 21.3824 | 16.9 | 7.7 | 1.69 | 0.77 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 827.8 | 826.1 | 0.55 | 1.15 | 0.01917 | 1 | 26.92965 | 8.572 | 0.571 | 21.382 |
| 06.01.01 | SUNNYCREST & WESTBROOK | 24X36 | 30 | 24 | ACMP | 145 | 831.42 | 829.84 | 0.010897 | 33.41 | 33.8 | 15.4 | 1.69 | 0.77 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 834.42 | 831.84 | 0.56 | 2.02 | 0.01393 | 1.16 | 41.62707 | 8.4802 | 0.5589 | 33.41 |
| 06.01.03 | SUNNYCREST & WESTBROOK | 18X24 | 21 | 18 | ACMP | 62 | 833.37 | 829.84 | 0.056935 | 14.1776 | 16.9 | 7.7 | 1.69 | 0.77 | 10 | 1.5 | 2.4053 | 14.1776 | 0.024 | 835.62 | 831.34 | 1.12 | 3.16 | 0.05097 | 0.915 | 30.75813 | 12.788 | 1.2708 | 14.178 |

Exhibit C - 4
Culvert Analysis Database
City of New Berlin

*NEW BERLIN CULVERT ANALYSIS (greater than 18 inch diameter)*

| CULVERT ID | Location | Size (in) | Equiv. Diam. (in) | Height (in) | Mat'l Type | Length (ft) | U/S Invert (ft) | D/S Invert (ft) | Slope (ft/ft) | Cap. (cfs) | 100 yr (cfs) | 10 yr (cfs) | 100 Yr Rate | 10 yr Rate | Con-tributing Acres | IC Head (ft) | IC Area (ft^2) | IC Flow (cfs) | Manning 'n' | HW Elev. (ft) | TW Elev. (ft) | Entr loss K | Head (ft) | Friction Slope | R^2/3 | Velocity (ft/s) | BC Flow (ft/s) | Entr loss (ft) | Cap. (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 07.04.01 | CLEVELAND & DRAINAGE EASEMENT | 64X84 | 78 | 64 | ACMP | 89 | 848.95 | 847.98 | 0.010899 | 368.814 | 505.6 | 204.8 | 0.79 | 0.32 | 640 | 5.3333 | 33.183 | 368.814 | 0.024 | 856.95 | 853.31 | 2.1 | 1.537 | 0.01727 | 2.194 | 592.345 | 17.851 | 2.4763 | 368.81 |
| 07.02.01 | AMOR & CLEVELAND | 64X84 | 78 | 64 | ACMP | 79 | 848.29 | 847.8 | 0.006203 | 368.814 | 150 | 50 | 0.79 | 0.32 | 640 | 5.3333 | 33.183 | 368.814 | 0.024 | 856.29 | 853.13 | 2.1 | 1.057 | 0.01338 | 2.194 | 521.3572 | 15.712 | 1.9183 | 368.81 |
| 07.02.02 | AMOR & CLEVELAND | 30 | 30 | 30 | CMP | 81 | 855.78 | 854.64 | 0.014074 | 17.0812 | 79 | 32 | 0.79 | 0.32 | 100 | 2.5 | 4.9087 | 37.3535 | 0.024 | 859.53 | 857.14 | 2.2 | 0.19 | 0.00235 | 1.16 | 17.0812 | 3.4798 | 0.0941 | 17.081 |
| 07.02.03 | LINCOLN | 72X113 | 90 | 72 | CMPA | 42 | 835.63 | 835.47 | 0.003810 | 249.551 | 1185 | 480 | 0.79 | 0.32 | 1500 | 6 | 44.179 | 520.811 | 0.024 | 844.63 | 841.47 | 3.1 | 0.06 | 0.00143 | 2.414 | 249.5506 | 5.6487 | 0.248 | 249.55 |
| 07.01.01 | AMOR & HENKE | 24X36 | 30 | 24 | CMP | 42 | 866.29 | 866.09 | 0.004762 | 33.41 | 31.6 | 12.8 | 0.79 | 0.32 | 40 | 2 | 4.9087 | 33.41 | 0.024 | 869.29 | 868.09 | 0.59 | 0.61 | 0.01452 | 1.16 | 42.50348 | 8.6587 | 0.5826 | 33.41 |
| 08.03.09 | CLEVELAND & WEHR | 42 | 42 | 42 | CMP | 131 | 876.34 | 873.94 | 0.018321 | 86.6267 | 109.5 | 89.36 | 1.69 | 0.77 | 460 | 3.5 | 9.6211 | 86.6267 | 0.024 | 881.59 | 877.44 | 1.15 | 3 | 0.0229 | 1.452 | 130.9134 | 13.607 | 1.4388 | 86.627 |
| 08.03.10 | CLEVELAND & WEHR | 42 | 42 | 42 | CMP | 127 | 880.76 | 874.53 | 0.049055 | 86.6267 | 26.52 | 21.65 | 1.69 | 0.77 | 20 | 3.5 | 9.6211 | 86.6267 | 0.024 | 886.01 | 878.03 | 1.12 | 6.86 | 0.05402 | 1.452 | 201.057 | 20.897 | 3.3937 | 86.627 |
| 08.03.05 | CLEVELAND & COUNTRY | 30 | 30 | 30 | CMP | 89 | 873.97 | 873.16 | 0.009101 | 37.3535 | 33.8 | 15.4 | 1.69 | 0.77 | 20 | 2.5 | 4.9087 | 37.3535 | 0.024 | 877.72 | 875.66 | 0.6 | 1.46 | 0.0164 | 1.16 | 45.17161 | 9.2023 | 0.6581 | 37.354 |
| 08.03.03 | CLEVELAND | 42X66 | 54 | 42 | ACMP | 86 | 857.57 | 856.92 | 0.007558 | 143.199 | 135.2 | 61.6 | 1.69 | 0.77 | 80 | 3.5 | 15.904 | 143.199 | 0.024 | 862.82 | 860.42 | 1.15 | 1.25 | 0.01453 | 1.717 | 203.8528 | 12.817 | 1.2767 | 143.2 |
| 08.03.08 | CLEVELAND & JOHNSON | 42X66 | 54 | 42 | ACMP | 85 | 850.67 | 848.8 | 0.022000 | 143.199 | 135.2 | 61.6 | 1.69 | 0.77 | 80 | 3.5 | 15.904 | 143.199 | 0.024 | 855.92 | 852.3 | 0.5 | 3.12 | 0.03671 | 1.717 | 323.9506 | 20.369 | 3.2242 | 143.2 |
| 08.03.07 | CLEVELAND & JOHNSON | 24 | 24 | 24 | CMP | 65 | 852.05 | 850.97 | 0.016615 | 21.3824 | 135.2 | 61.6 | 1.69 | 0.77 | 80 | 2 | 3.1416 | 21.3824 | 0.024 | 855.05 | 852.97 | 0.5 | 1.58 | 0.02431 | 1 | 30.32699 | 9.6534 | 0.7242 | 21.382 |
| 08.03.06 | CLEVELAND & JOHNSON | 24 | 24 | 24 | CMP | 72 | 852.36 | 851.07 | 0.017917 | 21.3824 | 16.9 | 7.7 | 1.69 | 0.77 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 855.36 | 853.07 | 0.01 | 2.28 | 0.03167 | 1 | 34.61454 | 11.018 | 0.9434 | 21.382 |
| 09.04.03 | CLEVELAND | 24 | 24 | 24 | CMP | 50 | 864.34 | 863.94 | 0.008000 | 21.3824 | 21.7 | 10.1 | 2.17 | 1.01 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 867.34 | 865.94 | 0.52 | 0.88 | 0.0176 | 1 | 25.80559 | 8.2142 | 0.5243 | 21.382 |
| 09.04.02 | CLEVELAND & POPLAR | 54 | 54 | 54 | CMP | 143 | 846.54 | 845.89 | 0.004545 | 162.373 | 251 | 184 | 2.17 | 1.01 | 1500 | 4.5 | 15.904 | 162.373 | 0.024 | 853.29 | 850.39 | 1.05 | 1.85 | 0.01294 | 1.717 | 192.3219 | 12.092 | 1.1364 | 162.37 |
| 09.04.01 | CLEVELAND & POPLAR | 54 | 54 | 54 | CMP | 143 | 846.54 | 846.01 | 0.003706 | 162.373 | 251 | 184 | 2.17 | 1.01 | 1500 | 4.5 | 15.904 | 162.373 | 0.024 | 853.29 | 850.51 | 0.95 | 1.83 | 0.0128 | 1.717 | 191.2795 | 12.027 | 1.1241 | 162.37 |
| 09.04.04 | GRAVEL ROAD | 48X72 | 60 | 48 | ACMP | 25 | 859.45 | 859.25 | 0.008000 | 188.996 | 298.5 | 181.5 | 2.17 | 1.01 | 1000 | 4 | 19.635 | 188.996 | 0.024 | 865.45 | 863.25 | 0.52 | 1.68 | 0.0672 | 1.842 | 580.5178 | 29.566 | 6.793 | 189 |
| 09.03.01 | CLEVELAND | 30 | 30 | 30 | CMP | 130 | 891.69 | 890.51 | 0.009077 | 35.6729 | 58.2 | 26.4 | 2.91 | 1.32 | 20 | 2.5 | 4.9087 | 37.3535 | 0.024 | 895.44 | 893.01 | 1.1 | 1.33 | 0.01023 | 1.16 | 35.67289 | 7.2672 | 0.4104 | 35.673 |
| 09.03.02 | CLEVELAND &TRIBUTARY | 60 | 60 | 60 | CMP | 130 | 875.41 | 874.12 | 0.009923 | 211.303 | 126 | 72 | 2.91 | 1.32 | 460 | 5 | 19.635 | 211.303 | 0.024 | 882.91 | 879.12 | 0.58 | 3.21 | 0.02469 | 1.842 | 351.8939 | 17.922 | 2.496 | 211.3 |
| 09.02.01 | LINCOLN & S.179th | 26X36 | 30 | 26 | ACMP | 55 | 843.37 | 842.39 | 0.017818 | 34.7742 | 47.4 | 23.8 | 2.37 | 1.19 | 20 | 2.1667 | 4.9087 | 34.7742 | 0.024 | 846.62 | 844.56 | 0.75 | 1.313 | 0.02388 | 1.16 | 54.49922 | 11.102 | 0.9579 | 34.774 |
| 09.02.02 | LINCOLN & S.179th | 15X30 | 24 | 15 | ACMP | 50 | 849.1 | 847.49 | 0.032200 | 16.9043 | 23.7 | 11.9 | 2.37 | 1.19 | 10 | 1.25 | 3.1416 | 16.9043 | 0.024 | 850.975 | 848.74 | 0.89 | 1.345 | 0.0269 | 1 | 31.90315 | 10.155 | 0.8014 | 16.904 |
| 09.02.03 | LIBERTY | 21X28 | 24 | 21 | ACMP | 51 | 867.83 | 867.5 | 0.006471 | 20.0014 | 23.7 | 11.9 | 2.37 | 1.19 | 10 | 1.75 | 3.1416 | 20.0014 | 0.024 | 870.455 | 869.25 | 0.45 | 0.755 | 0.0148 | 1 | 23.66714 | 7.5335 | 0.441 | 20.001 |
| 10.01.10 | CLEVELAND | 30 | 30 | 30 | CMP | 84 | 873.98 | 870.84 | 0.037381 | 37.3535 | 37.1 | 18.8 | 3.71 | 1.88 | 10 | 2.5 | 4.9087 | 37.3535 | 0.024 | 877.73 | 873.34 | 1.12 | 3.27 | 0.03893 | 1.16 | 69.58544 | 14.176 | 1.5617 | 37.354 |
| 10.01.09 | CLEVELAND & CALHOUN | 24 | 24 | 24 | CMP | 10 | 882.11 | 881.66 | 0.045000 | 21.3824 | 37.1 | 18.8 | 3.71 | 1.88 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 885.11 | 883.66 | 1.24 | 0.21 | 0.021 | 1 | 28.18818 | 8.9726 | 0.6256 | 21.382 |
| 10.01.08 | CLEVELAND & CALHOUN | 24 | 24 | 24 | CMP | 89 | 881.66 | 880.87 | 0.008876 | 21.3824 | 37.1 | 18.8 | 3.71 | 1.88 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 884.66 | 882.87 | 0.45 | 1.34 | 0.01506 | 1 | 23.86793 | 7.5974 | 0.4486 | 21.382 |
| 10.03.09 | CALHOUN & W.RYERSON | 24X36 | 30 | 24 | ACMP | 71 | 865.24 | 865.09 | 0.002113 | 33.41 | 37.1 | 18.8 | 3.71 | 1.88 | 10 | 2 | 4.9087 | 33.41 | 0.024 | 868.24 | 867.09 | 0.42 | 0.73 | 0.01028 | 1.16 | 35.76156 | 7.2853 | 0.4125 | 33.41 |
| 10.03.08 | CALHOUN & W.RYERSON | 24X36 | 30 | 24 | ACMP | 65 | 865.3 | 865.05 | 0.003846 | 33.41 | 37.1 | 18.8 | 3.71 | 1.88 | 10 | 2 | 4.9087 | 33.41 | 0.024 | 868.3 | 867.05 | 0.48 | 0.77 | 0.01185 | 1.16 | 38.386 | 7.8199 | 0.4752 | 33.41 |
| 10.03.07 | W.RYERSON | 40X58 | 48 | 40 | ACMP | 44 | 862.23 | 862.16 | 0.001591 | 110.418 | 104 | 52 | 3.71 | 1.88 | 50 | 3.3333 | 12.566 | 110.418 | 0.024 | 867.23 | 865.49 | 1.1 | 0.637 | 0.01447 | 1.587 | 148.571 | 11.823 | 1.0863 | 110.42 |
| 10.03.06 | W.RYERSON | 40X58 | 48 | 40 | ACMP | 44 | 862.22 | 861.71 | 0.011591 | 110.418 | 104 | 52 | 3.71 | 1.88 | 50 | 3.3333 | 12.566 | 110.418 | 0.024 | 867.22 | 865.04 | 1.54 | 0.637 | 0.01447 | 1.587 | 148.571 | 11.823 | 1.0863 | 110.42 |
| 10.03.11 | DAKOTA & S.171st | 24x36 | 30 | 24 | ACMP | 50 | 872.86 | 871.85 | 0.020200 | 33.41 | 37.1 | 18.8 | 3.71 | 1.88 | 10 | 2 | 4.9087 | 33.41 | 0.024 | 875.86 | 873.85 | 0.84 | 1.17 | 0.0234 | 1.16 | 53.95008 | 10.991 | 0.9387 | 33.41 |
| 10.02.08 | S. 170th & LINCOLN | 24x36 | 30 | 24 | ACMP | 56 | 846.72 | 845.91 | 0.014464 | 33.41 | 62 | 34.6 | 3.1 | 1.73 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 849.72 | 847.91 | 0.75 | 1.06 | 0.01893 | 1.16 | 48.52249 | 9.8849 | 0.7593 | 33.41 |
| 10.02.09 | S. 170th & LINCOLN | 24x36 | 30 | 24 | ACMP | 52 | 846.64 | 845.71 | 0.017885 | 33.41 | 62 | 34.6 | 3.1 | 1.73 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 849.64 | 847.71 | 0.85 | 1.08 | 0.02077 | 1.16 | 50.82699 | 10.354 | 0.8332 | 33.41 |
| 10.02.10 | S. 170th & LINCOLN | 24 | 24 | 24 | ACMP | 54 | 846.51 | 845.71 | 0.014815 | 21.3824 | 62 | 34.6 | 3.1 | 1.73 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 849.51 | 847.71 | 0.64 | 1.16 | 0.02148 | 1 | 28.5095 | 9.0749 | 0.64 | 21.382 |
| 10.02.15 | COMMERCE & LINCOLN | 34x48 | 40 | 34 | ACMP | 52 | 842.05 | 842 | 0.000962 | 70.6949 | 155 | 86.5 | 3.1 | 1.73 | 50 | 2.8333 | 8.7266 | 70.6949 | 0.024 | 846.3 | 844.83 | 0.89 | 0.577 | 0.01109 | 1.406 | 79.98618 | 9.1657 | 0.6529 | 70.695 |
| 10.02.01 | COMMERCE & LINCOLN | 34x48 | 40 | 34 | ACMP | 48 | 842.07 | 841.92 | 0.003125 | 70.6949 | 155 | 86.5 | 3.1 | 1.73 | 50 | 2.8333 | 8.7266 | 70.6949 | 0.024 | 846.32 | 844.75 | 0.8 | 0.767 | 0.01597 | 1.406 | 95.9924 | 11 | 0.9403 | 70.695 |
| 10.02.11 | GLENDALE & S.166th | 30x42 | 36 | 30 | ACMP | 53 | 851.17 | 851.03 | 0.002642 | 53.7891 | 93 | 51.9 | 3.1 | 1.73 | 30 | 2.5 | 7.0686 | 53.7891 | 0.024 | 854.92 | 853.53 | 0.69 | 0.7 | 0.01321 | 1.31 | 65.90908 | 9.3242 | 0.6756 | 53.789 |
| 10.02.12 | GLENDALE & S.166th | 30x72 | 46 | 30 | ACMP | 51 | 851.2 | 851.03 | 0.003333 | 87.8223 | 93 | 51.9 | 3.1 | 1.73 | 30 | 2.5 | 11.541 | 87.8223 | 0.024 | 854.95 | 853.53 | 0.87 | 0.55 | 0.01078 | 1.543 | 114.5015 | 9.9213 | 0.7649 | 87.822 |
| 10.01.01 | GLENDALE & S.162nd | 70X144 | 102 | 70 | CONC | 57 | 841.88 | 841.8 | 0.001404 | 659.596 | 805 | 480 | 3.47 | 1.73 | 780 | 5.8333 | 56.745 | 659.596 | 0.013 | 850.63 | 847.63 | 2.5 | 0.497 | 0.00871 | 2.624 | 1588.636 | 27.996 | 6.0909 | 659.6 |
| 10.01.06 | GLENDALE & S.162nd | 70X144 | 102 | 70 | CONC | 48 | 841.87 | 841.8 | 0.001458 | 659.596 | 805 | 480 | 3.47 | 1.73 | 780 | 5.8333 | 56.745 | 659.596 | 0.013 | 850.62 | 847.63 | 2.25 | 0.737 | 0.01535 | 2.624 | 2108.357 | 37.155 | 10.728 | 659.6 |
| 10.01.07 | S.162nd & DRAINAGE EASEMENT | 36X48 | 42 | 36 | ACMP | 48 | 847.24 | 847.21 | 0.000625 | 80.2007 | 134 | 73 | 3.47 | 1.73 | 40 | 3 | 9.6211 | 80.2007 | 0.024 | 851.74 | 850.21 | 0.89 | 0.64 | 0.01333 | 1.452 | 99.89146 | 10.383 | 0.8377 | 80.201 |
| 10.01.04 | S.162nd & OVERLAND | 24X36 | 30 | 24 | ACMP | 61 | 847.63 | 847.17 | 0.007541 | 33.41 | 69.4 | 34.6 | 3.47 | 1.73 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 850.63 | 849.17 | 0.58 | 0.88 | 0.01443 | 1.16 | 42.36045 | 8.6296 | 0.5787 | 33.41 |
| 10.01.03 | S.162nd & DRAINAGE, UTILITY | 36X48 | 42 | 36 | ACMP | 51 | 843.27 | 843.02 | 0.004902 | 80.2007 | 347 | 173 | 3.47 | 1.73 | 100 | 3 | 9.6211 | 80.2007 | 0.024 | 847.77 | 846.02 | 0.9 | 0.85 | 0.01667 | 1.452 | 111.682 | 11.608 | 1.0471 | 80.201 |
| 10.01.02 | S.162nd & DRAINAGE, UTILITY | 36X48 | 42 | 36 | ACMP | 51 | 843.22 | 843.1 | 0.002353 | 80.2007 | 347 | 173 | 3.47 | 1.73 | 100 | 3 | 9.6211 | 80.2007 | 0.024 | 847.72 | 846.1 | 0.9 | 0.72 | 0.01412 | 1.452 | 102.7875 | 10.684 | 0.887 | 80.201 |
| 10.01.05 | S.162nd & LINCOLN | 24X36 | 30 | 24 | ACMP | 61 | 844.55 | 843.98 | 0.009344 | 33.41 | 34.7 | 17.3 | 3.47 | 1.73 | 10 | 2 | 4.9087 | 33.41 | 0.024 | 847.55 | 845.98 | 0.6 | 0.97 | 0.0159 | 1.16 | 44.47389 | 9.0601 | 0.6379 | 33.41 |
| 10.03.01 | CLEVELAND & DRAINAGE EASEMENT | 72 | 72 | 72 | CMP | 184 | 848.57 | 848.38 | 0.001033 | 333.319 | 672 | 414 | 3.47 | 1.73 | 500 | 6 | 28.274 | 333.319 | 0.024 | 857.57 | 854.38 | 1.12 | 2.07 | 0.01125 | 2.08 | 386.24 | 13.66 | 1.4502 | 333.32 |
| 10.03.03 | CLEVELAND & DRAINAGE EASEMENT | 72 | 72 | 72 | CMP | 184 | 848.82 | 848.52 | 0.001630 | 333.319 | 672 | 414 | 3.47 | 1.73 | 500 | 6 | 28.274 | 333.319 | 0.024 | 857.82 | 854.52 | 1.2 | 2.1 | 0.01141 | 2.08 | 389.0287 | 13.759 | 1.4712 | 333.32 |
| 10.03.02 | CLEVELAND & DRAINAGE EASEMENT | 72 | 72 | 72 | CMP | 184 | 848.55 | 847.88 | 0.003641 | 333.319 | 672 | 414 | 3.47 | 1.73 | 500 | 6 | 28.274 | 333.319 | 0.024 | 857.55 | 853.88 | 1.25 | 2.42 | 0.01315 | 2.08 | 417.6185 | 14.77 | 1.6954 | 333.32 |
| 10.04.10 | CLEVELAND & 163rd | 24 | 24 | 24 | CMP | 65 | 866.37 | 865.96 | 0.006308 | 21.3824 | 25 | 12.5 | 2.5 | 1.25 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 869.37 | 867.96 | 0.46 | 0.95 | 0.01462 | 1 | 23.51595 | 7.4854 | 0.4354 | 21.382 |
| 10.04.09 | 163rd & RYERSON | 24X36 | 30 | 24 | ACMP | 33 | 864.02 | 863.38 | 0.019394 | 33.41 | 50 | 25 | 2.5 | 1.25 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 867.02 | 865.38 | 0.91 | 0.73 | 0.02212 | 1.16 | 52.45521 | 10.686 | 0.8874 | 33.41 |
| 10.04.08 | 163rd & RYERSON | 24X36 | 30 | 24 | ACMP | 33 | 864.08 | 863.55 | 0.016061 | 33.41 | 50 | 25 | 2.5 | 1.25 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 867.08 | 865.55 | 0.75 | 0.78 | 0.02364 | 1.16 | 54.22187 | 11.046 | 0.9482 | 33.41 |
| 10.04.07 | 163rd & RYERSON | 24X36 | 30 | 24 | ACMP | 55 | 863.38 | 862.91 | 0.008545 | 33.41 | 50 | 25 | 2.5 | 1.25 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 866.38 | 864.91 | 0.62 | 0.85 | 0.01545 | 1.16 | 43.84421 | 8.9319 | 0.62 | 33.41 |
| 10.03.14 | 163rd & RYERSON | 24X36 | 30 | 24 | ACMP | 63 | 863.55 | 863.2 | 0.005556 | 33.41 | 50 | 25 | 2.5 | 1.25 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 866.55 | 865.2 | 0.52 | 0.83 | 0.01317 | 1.16 | 40.48116 | 8.2468 | 0.5285 | 33.41 |
| 10.03.15 | 163rd & RYERSON | 24X36 | 30 | 24 | ACMP | 58 | 863.65 | 863.16 | 0.008448 | 33.41 | 50 | 25 | 2.5 | 1.25 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 866.65 | 865.16 | 0.61 | 0.88 | 0.01517 | 1.16 | 43.44217 | 8.85 | 0.6087 | 33.41 |
| 10.04.06 | 160th 20' DRAINAGE EASEMENT | 30 | 30 | 30 | CONC | 412 | 860.02 | 852.7 | 0.017767 | 37.3535 | 50 | 25 | 2.5 | 1.25 | 20 | 2.5 | 4.9087 | 37.3535 | 0.013 | 863.77 | 855.2 | 0.62 | 7.95 | 0.0193 | 1.16 | 90.44551 | 18.425 | 2.6383 | 37.354 |
| 10.04.13 | 160th 20' DRAINAGE EASEMENT | 24X36 | 30 | 24 | ACMP | 53 | 860.97 | 860.09 | 0.016604 | 33.41 | 50 | 25 | 2.5 | 1.25 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 863.97 | 862.09 | 0.82 | 1.06 | 0.02 | 1.16 | 49.87687 | 10.161 | 0.8023 | 33.41 |
| 10.04.14 | 160th 20' DRAINAGE EASEMENT | 24X36 | 30 | 24 | ACMP | 53 | 860.96 | 860.02 | 0.017736 | 33.41 | 50 | 25 | 2.5 | 1.25 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 863.96 | 862.02 | 0.8 | 1.14 | 0.02151 | 1.16 | 51.72478 | 10.537 | 0.8629 | 33.41 |
| 10.04.05 | 160th 20' DRAINAGE EASEMENT | 24 | 24 | 24 | CMP | 9 | 860.09 | 860.02 | 0.007778 | 21.3824 | 50 | 25 | 2.5 | 1.25 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 863.09 | 862.02 | 0.9 | 0.17 | 0.01889 | 1 | 26.7338 | 8.5096 | 0.5627 | 21.382 |
| 10.04.11 | 160th & RYERSON | 30X54 | 42 | 30 | ACMP | 51 | 858.71 | 858.58 | 0.002549 | 73.2129 | 75 | 37.5 | 2.5 | 1.25 | 30 | 2.5 | 9.6211 | 73.2129 | 0.024 | 862.46 | 861.08 | 0.75 | 0.63 | 0.01235 | 1.452 | 96.14887 | 9.9935 | 0.7761 | 73.213 |
| 10.04.12 | 160th & RYERSON | 30X54 | 42 | 30 | ACMP | 57 | 858.71 | 858.63 | 0.001404 | 73.2129 | 75 | 37.5 | 2.5 | 1.25 | 30 | 2.5 | 9.6211 | 73.2129 | 0.024 | 862.46 | 861.13 | 0.75 | 0.58 | 0.01018 | 1.452 | 87.26409 | 9.07 | 0.6393 | 73.213 |
| 10.04.01 | RYERSON & 30' UTILITY EASEMENT | 42X54 | 46 | 42 | ACMP | 79 | 852.99 | 851.82 | 0.014810 | 103.913 | 250 | 125 | 2.5 | 1.25 | 100 | 3.5 | 11.541 | 103.913 | 0.024 | 858.24 | 855.32 | 1.24 | 1.68 | 0.02127 | 1.543 | 160.789 | 13.932 | 1.5084 | 103.91 |
| 10.04.03 | RYERSON & JAMES | 60X120 | 80 | 60 | CONC | 52 | 851.79 | 851.78 | 0.000192 | 375.651 | 579 | 336 | 2.5 | 1.25 | 460 | 5 | 34.907 | 375.651 | 0.013 | 859.29 | 856.78 | 2.1 | 0.41 | 0.00788 | 2.231 | 790.6041 | 22.649 | 3.9865 | 375.65 |

Exhibit C - 4
Culvert Analysis Database
City of New Berlin

*NEW BERLIN CULVERT ANALYSIS (greater than 18 inch diameter)*

| CULVERT ID | Location | Size (in) | Equiv. Diam. (in) | Height (in) | Mat'l Type | Length (ft) | U/S Invert (ft) | D/S Invert (ft) | Slope (ft/ft) | Cap. (cfs) | 100 yr (cfs) | 10 yr (cfs) | 100 Yr Rate | 10 yr Rate | Con-tributing Acres | IC Head (ft) | IC Area (ft^2) | IC Flow (cfs) | Manning 'n' | HW Elev. (ft) | TW Elev. (ft) | Entr loss K | Head (ft) | Friction Slope | R^2/3 | Velocity (ft/s) | BC Flow (ft/s) | Entr loss (ft) | Cap. (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10.04.04 | RYERSON & JAMES | 60X120 | 80 | 60 | CONC | 51 | 851.8 | 851.8 | 0.000000 | 375.651 | 579 | 336 | 2.5 | 1.25 | 460 | 5 | 34.907 | 375.651 | 0.013 | 859.3 | 856.8 | 2.1 | 0.4 | 0.00784 | 2.231 | 788.5219 | 22.589 | 3.9655 | 375.65 |
| 10.04.02 | RYERSON & JAMES | 60X120 | 80 | 60 | CONC | 51 | 851.8 | 851.79 | 0.000196 | 375.651 | 579 | 336 | 2.5 | 1.25 | 460 | 5 | 34.907 | 375.651 | 0.013 | 859.3 | 856.79 | 1.24 | 1.27 | 0.0249 | 2.231 | 1405.03 | 40.251 | 12.591 | 375.65 |
| 10.04.15 | MOORLAND & RYERSON | 96X108 | 102 | 96 | CONC | 125 | 852.35 | 852.16 | 0.001520 | 772.44 | 579 | 334 | 2.5 | 1.25 | 700 | 8 | 56.745 | 772.44 | 0.013 | 864.35 | 860.16 | 1 | 3.19 | 0.02552 | 2.624 | 2718.753 | 47.912 | 17.839 | 772.44 |
| 10.04.16 | MOORLAND & RYERSON | 96X108 | 102 | 96 | CONC | 125 | 852.35 | 852.16 | 0.001520 | 772.44 | 579 | 334 | 2.5 | 1.25 | 700 | 8 | 56.745 | 772.44 | 0.013 | 864.35 | 860.16 | 2 | 2.19 | 0.01752 | 2.624 | 2252.664 | 39.698 | 12.247 | 772.44 |
| 11.02.01 | CLEVELAND & PARKWAY | 30 | 30 | 30 | CMP | 96 | 870.76 | 870.36 | 0.004167 | 37.3535 | 138.8 | 69.2 | 3.47 | 1.73 | 40 | 2.5 | 4.9087 | 37.3535 | 0.024 | 874.51 | 872.86 | 0.49 | 1.16 | 0.01208 | 1.16 | 38.76837 | 7.8978 | 0.4847 | 37.354 |
| 11.02.04 | PARKWAY | 36 | 36 | 36 | RCP | 68 | 864.4 | 864.1 | 0.004412 | 58.923 | 173.5 | 86.5 | 3.47 | 1.73 | 50 | 3 | 7.0686 | 58.923 | 0.013 | 868.9 | 867.1 | 1.25 | 0.55 | 0.00809 | 1.31 | 95.22017 | 13.471 | 1.4102 | 58.923 |
| 11.02.05 | PARKWAY & PARKSIDE | 36X50 | 42 | 36 | ACMP | 75 | 864.1 | 863.49 | 0.008133 | 80.2007 | 138.8 | 69.2 | 3.47 | 1.73 | 40 | 3 | 9.6211 | 80.2007 | 0.024 | 868.6 | 866.49 | 1.15 | 0.96 | 0.0128 | 1.452 | 97.87324 | 10.173 | 0.8042 | 80.201 |
| 11.02.06 | PARKWAY & PARKSIDE | 36X50 | 42 | 36 | ACMP | 75 | 863.75 | 863.67 | 0.001067 | 80.2007 | 138.8 | 69.2 | 3.47 | 1.73 | 40 | 3 | 9.6211 | 80.2007 | 0.024 | 868.25 | 866.67 | 0.75 | 0.83 | 0.01107 | 1.452 | 91.00545 | 9.4589 | 0.6953 | 80.201 |
| 11.02.08 | KRAHN & BROOKSIDE | 32X48 | 42 | 32 | ACMP | 48 | 861.91 | 861.62 | 0.006042 | 75.614 | 242.9 | 121.1 | 3.47 | 1.73 | 70 | 2.6667 | 9.6211 | 75.614 | 0.024 | 865.91 | 864.29 | 0.98 | 0.643 | 0.0134 | 1.452 | 100.1513 | 10.41 | 0.8421 | 75.614 |
| 11.02.09 | KRAHN & BROOKSIDE | 32X48 | 42 | 32 | ACMP | 48 | 861.7 | 861.57 | 0.002708 | 75.614 | 242.9 | 121.1 | 3.47 | 1.73 | 70 | 2.6667 | 9.6211 | 75.614 | 0.024 | 865.7 | 864.24 | 0.78 | 0.683 | 0.01424 | 1.452 | 103.2178 | 10.728 | 0.8944 | 75.614 |
| 11.02.13 | BROOKSIDE & GRAYLOG | 32X48 | 42 | 32 | ACMP | 60 | 859.61 | 859.42 | 0.003167 | 75.614 | 242.9 | 121.1 | 3.47 | 1.73 | 70 | 2.6667 | 9.6211 | 75.614 | 0.024 | 863.61 | 862.09 | 0.97 | 0.553 | 0.00922 | 1.452 | 83.07623 | 8.6348 | 0.5794 | 75.614 |
| 11.02.20 | BROOKSIDE & GRAYLOG | 32X48 | 42 | 32 | ACMP | 60 | 859.61 | 859.42 | 0.003167 | 75.614 | 242.9 | 121.1 | 3.47 | 1.73 | 70 | 2.6667 | 9.6211 | 75.614 | 0.024 | 863.61 | 862.09 | 0.78 | 0.743 | 0.01239 | 1.452 | 96.28866 | 10.008 | 0.7784 | 75.614 |
| 11.02.16 | LINCOLN & BROOKSIDE | 24 | 24 | 24 | CMP | 60 | 863.49 | 863 | 0.008167 | 21.3824 | 104.1 | 51.9 | 3.47 | 1.73 | 30 | 2 | 3.1416 | 21.3824 | 0.024 | 866.49 | 865 | 0.5 | 0.99 | 0.0165 | 1 | 24.98615 | 7.9533 | 0.4916 | 21.382 |
| 11.01.14 | CLEVELAND | 30 | 30 | 30 | CMP | 76 | 874.32 | 872.98 | 0.017632 | 37.3535 | 29 | 11.6 | 1.45 | 0.58 | 20 | 2.5 | 4.9087 | 37.3535 | 0.024 | 878.07 | 875.48 | 0.75 | 1.84 | 0.02421 | 1.16 | 54.87649 | 11.179 | 0.9712 | 37.354 |
| 11.01.01 | CLEVELAND & BROOKLAND | 24 | 24 | 24 | CMP | 50 | 874.9 | 874.35 | 0.011000 | 21.3824 | 43.5 | 17.4 | 1.45 | 0.58 | 30 | 2 | 3.1416 | 21.3824 | 0.024 | 877.9 | 876.35 | 0.58 | 0.97 | 0.0194 | 1 | 27.09308 | 8.624 | 0.578 | 21.382 |
| 11.04.18 | CLEVELAND & MEADOWMERE | 24 | 24 | 24 | CMP | 46 | 866.67 | 866.12 | 0.011957 | 21.3824 | 43.5 | 17.4 | 1.45 | 0.58 | 30 | 2 | 3.1416 | 21.3824 | 0.024 | 869.67 | 868.12 | 0.59 | 0.96 | 0.02087 | 1 | 28.10051 | 8.9447 | 0.6218 | 21.382 |
| 11.04.07 | OVERLAND & MEADOWMERE | 24X36 | 30 | 24 | ACMP | 42 | 848.8 | 848.39 | 0.009762 | 33.41 | 29 | 11.6 | 1.45 | 0.58 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 851.8 | 850.39 | 0.64 | 0.77 | 0.01833 | 1.16 | 47.75347 | 9.7283 | 0.7355 | 33.41 |
| 11.01.04 | OVERLAND & LILAC | 24 | 24 | 24 | CMP | 41 | 838.51 | 838.14 | 0.009024 | 21.3824 | 29 | 11.6 | 1.45 | 0.58 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 841.51 | 840.14 | 0.58 | 0.79 | 0.01927 | 1 | 27.00095 | 8.5947 | 0.574 | 21.382 |
| 11.01.03 | OVERLAND & LILAC | 24 | 24 | 24 | CMP | 41 | 838.37 | 838.01 | 0.008780 | 21.3824 | 29 | 11.6 | 1.45 | 0.58 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 841.37 | 840.01 | 0.58 | 0.78 | 0.01902 | 1 | 26.82951 | 8.5401 | 0.5668 | 21.382 |
| 11.04.16 | LILAC & LOMBARDY | 24 | 24 | 24 | CMP | 54 | 835.52 | 835.12 | 0.007407 | 21.3824 | 43.5 | 17.4 | 1.45 | 0.58 | 30 | 2 | 3.1416 | 21.3824 | 0.024 | 838.52 | 837.12 | 0.5 | 0.9 | 0.01667 | 1 | 25.11203 | 7.9934 | 0.4965 | 21.382 |
| 11.04.15 | LILAC & SUNNY SLOPE | 24 | 24 | 24 | CMP | 37 | 832.88 | 832.19 | 0.018649 | 21.3824 | 43.5 | 17.4 | 1.45 | 0.58 | 30 | 2 | 3.1416 | 21.3824 | 0.024 | 835.88 | 834.19 | 0.75 | 0.94 | 0.02541 | 1 | 31.0042 | 9.8689 | 0.7569 | 21.382 |
| 11.04.19 | LILAC & SUNNY SLOPE | 27X42 | 34 | 27 | ACMP | 44 | 831.52 | 831.42 | 0.002273 | 45.5164 | 87 | 34.8 | 1.45 | 0.58 | 60 | 2.25 | 6.305 | 45.5164 | 0.024 | 834.895 | 833.67 | 0.64 | 0.585 | 0.0133 | 1.261 | 56.77924 | 9.0054 | 0.6302 | 45.516 |
| 11.04.20 | CLEVELAND & SUNNYSLOPE | 18X30 | 24 | 18 | ACMP | 62 | 839.23 | 838.4 | 0.013387 | 18.5177 | 58 | 23.2 | 1.45 | 0.58 | 40 | 1.5 | 3.1416 | 18.5177 | 0.024 | 841.48 | 839.9 | 0.51 | 1.07 | 0.01726 | 1 | 25.55368 | 8.134 | 0.5142 | 18.518 |
| 11.04.21 | CLEVELAND & SUNNYSLOPE | 18X24 | 21 | 18 | ACMP | 111 | 837.49 | 837.09 | 0.003604 | 11.5663 | 14.5 | 5.8 | 1.45 | 0.58 | 10 | 1.5 | 2.4053 | 14.1776 | 0.024 | 839.74 | 838.59 | 0.35 | 0.8 | 0.00721 | 0.915 | 11.56633 | 4.8087 | 0.1797 | 11.566 |
| 11.04.01 | CLEVELAND & FRANKLIN | 24 | 24 | 24 | CMP | 47 | 876.17 | 875.98 | 0.004043 | 21.3824 | 15.4 | 7.4 | 1.54 | 0.74 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 879.17 | 877.98 | 0.48 | 0.71 | 0.01511 | 1 | 23.90769 | 7.6101 | 0.4501 | 21.382 |
| 11.04.05 | FRANKLIN & CONNIE | 36 | 36 | 36 | CMP | 42 | 846.1 | 845.28 | 0.019524 | 58.923 | 107.8 | 51.8 | 1.54 | 0.74 | 70 | 3 | 7.0686 | 58.923 | 0.024 | 850.6 | 848.28 | 1.12 | 1.2 | 0.02857 | 1.31 | 96.93936 | 13.714 | 1.4616 | 58.923 |
| 11.04.22 | SUNNYSLOPE & SOUTH OF CLEVELAND | 60 | 60 | 60 | CMP | 39 | 820.54 | 820.17 | 0.009487 | 211.303 | 215.6 | 103.6 | 1.54 | 0.74 | 140 | 5 | 19.635 | 211.303 | 0.024 | 828.04 | 825.17 | 2.1 | 0.77 | 0.01974 | 1.842 | 314.6618 | 16.026 | 1.9958 | 211.3 |
| 11.04.10 | CONNIE & MAYLORE | 21X42 | 36 | 21 | ACMP | 44 | 857.3 | 857.01 | 0.006591 | 45.0032 | 61.6 | 29.6 | 1.54 | 0.74 | 40 | 1.75 | 7.0686 | 45.0032 | 0.024 | 859.925 | 858.76 | 0.66 | 0.505 | 0.01148 | 1.31 | 61.44033 | 8.692 | 0.5871 | 45.003 |
| 11.03.02 | CLEVELAND & 152nd | 24 | 24 | 24 | CMP | 35 | 886.36 | 885.4 | 0.027429 | 21.3824 | 45.8 | 24.2 | 4.58 | 2.42 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 889.36 | 887.4 | 0.75 | 1.21 | 0.03457 | 1 | 36.1673 | 11.512 | 1.03 | 21.382 |
| 11.03.06 | CLEVELAND & 149th | 24 | 24 | 24 | CMP | 53 | 874.83 | 874.42 | 0.007736 | 21.3824 | 45.8 | 24.2 | 4.58 | 2.42 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 877.83 | 876.42 | 0.5 | 0.91 | 0.01717 | 1 | 25.48826 | 8.1132 | 0.5115 | 21.382 |
| 12.01.07 | LAGOON & CLEVELAND | 66X96 | 78 | 66 | ACMP | 82 | 748.17 | 746.74 | 0.017439 | 374.533 | 349 | 179 | 1.07 | 0.35 | 550 | 5.5 | 33.183 | 374.533 | 0.024 | 756.42 | 752.24 | 2.4 | 1.78 | 0.02171 | 2.194 | 664.1757 | 20.015 | 3.1133 | 374.53 |
| 12.01.06 | CLEVELAND | 66X96 | 78 | 66 | ACMP | 82 | 747.83 | 746.92 | 0.011098 | 374.533 | 349 | 179 | 1.07 | 0.35 | 550 | 5.5 | 33.183 | 374.533 | 0.024 | 756.08 | 752.42 | 2.1 | 1.56 | 0.01902 | 2.194 | 621.7779 | 18.738 | 2.7285 | 374.53 |
| 12.01.08 | CLEVELAND | 96X153 | 120 | 96 | ACMP | 90 | 754.75 | 754.38 | 0.004111 | 1069.12 | 631 | 334 | 1.07 | 0.35 | 1030 | 8 | 78.54 | 1069.12 | 0.024 | 766.75 | 762.38 | 3.1 | 1.27 | 0.01411 | 2.924 | 1689.111 | 21.506 | 3.5944 | 1069.1 |
| 12.01.21 | CLEVELAND | 30 | 30 | 30 | CMP | 62 | 768.33 | 766.29 | 0.032903 | 37.3535 | 32.1 | 10.5 | 1.07 | 0.35 | 30 | 2.5 | 4.9087 | 37.3535 | 0.024 | 772.08 | 768.79 | 1.2 | 2.09 | 0.03371 | 1.16 | 64.75324 | 13.191 | 1.3523 | 37.354 |
| 12.01.22 | CLEVELAND | 30 | 30 | 30 | CMP | 64 | 765.69 | 764.14 | 0.024219 | 37.3535 | 32.1 | 10.5 | 1.07 | 0.35 | 30 | 2.5 | 4.9087 | 37.3535 | 0.024 | 769.44 | 766.64 | 0.86 | 1.94 | 0.03031 | 1.16 | 61.40377 | 12.509 | 1.216 | 37.354 |
| 12.01.04 | 124th | 58 | 58 | 58 | RCP | 50 | 748.1 | 746.02 | 0.041600 | 194.133 | 642 | 210 | 1.07 | 0.35 | 600 | 4.8333 | 18.348 | 194.133 | 0.013 | 755.35 | 750.85 | 3.2 | 1.297 | 0.02593 | 1.801 | 608.2274 | 33.15 | 8.5399 | 194.13 |
| 12.01.05 | 124th | 58 | 58 | 58 | RCP | 50 | 748.1 | 746.02 | 0.041600 | 194.133 | 642 | 210 | 1.07 | 0.35 | 600 | 4.8333 | 18.348 | 194.133 | 0.013 | 755.35 | 750.85 | 3.5 | 0.997 | 0.01993 | 1.801 | 533.245 | 29.063 | 6.5641 | 194.13 |
| 12.02.02 | LILAC | 32X48 | 42 | 32 | ACMP | 493 | 831.52 | 823.75 | 0.015761 | 75.614 | 207.6 | 70.8 | 1.73 | 0.59 | 120 | 2.6667 | 9.6211 | 75.614 | 0.024 | 835.52 | 826.42 | 0.75 | 8.353 | 0.01694 | 1.452 | 112.607 | 11.704 | 1.0646 | 75.614 |
| 12.02.16 | LINCOLN & 134th | 18X30 | 24 | 18 | ACMP | 46 | 830.6 | 829.64 | 0.020870 | 18.5177 | 34.6 | 11.8 | 1.73 | 0.59 | 20 | 1.5 | 3.1416 | 18.5177 | 0.024 | 832.85 | 831.14 | 0.64 | 1.07 | 0.02326 | 1 | 29.66678 | 9.4432 | 0.693 | 18.518 |
| 12.02.18 | LINCOLN & 133rd | 18X30 | 24 | 18 | ACMP | 45 | 822.6 | 821.79 | 0.018000 | 18.5177 | 34.6 | 11.8 | 1.73 | 0.59 | 20 | 1.5 | 3.1416 | 18.5177 | 0.024 | 824.85 | 823.29 | 0.6 | 0.96 | 0.02133 | 1 | 28.41102 | 9.0435 | 0.6356 | 18.518 |
| 12.02.20 | CLEVELAND & 134th | 24 | 24 | 24 | CMP | 54 | 802.97 | 802.03 | 0.017407 | 21.3824 | 34.6 | 11.8 | 1.73 | 0.59 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 805.97 | 804.03 | 0.65 | 1.29 | 0.02389 | 1 | 30.0646 | 9.5699 | 0.7117 | 21.382 |
| 12.02.23 | CLEVELAND | 42 | 42 | 42 | CMP | 40 | 803.64 | 800.05 | 0.089750 | 86.6267 | 103.8 | 35.4 | 1.73 | 0.59 | 60 | 3.5 | 9.6211 | 86.6267 | 0.024 | 808.89 | 803.55 | 2.56 | 2.78 | 0.0695 | 1.452 | 228.0612 | 23.704 | 4.3666 | 86.627 |
| 12.04.03 | NATIONAL & S.130th | 48 | 48 | 48 | RCP | 143 | 787.27 | 785 | 0.015874 | 120.957 | 206 | 154 | 2.53 | 0.75 | 220 | 4 | 12.566 | 120.957 | 0.013 | 793.27 | 789 | 1.2 | 3.07 | 0.02147 | 1.587 | 334.0975 | 26.587 | 5.4931 | 120.96 |
| 12.04.04 | MONTANA & S.128TH | 24X36 | 30 | 24 | ACMP | 40 | 763.17 | 763.17 | 0.000000 | 33.41 | 50.6 | 15 | 2.53 | 0.75 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 766.17 | 765.17 | 0.5 | 0.5 | 0.0125 | 1.16 | 39.43113 | 8.0328 | 0.5014 | 33.41 |
| 12.01.03 | S.128TH | 60 | 60 | 60 | CMP | 40 | 756.43 | 756.25 | 0.004500 | 211.303 | 421 | 217 | 2.53 | 0.75 | 350 | 5 | 19.635 | 211.303 | 0.024 | 763.93 | 761.25 | 2.25 | 0.43 | 0.01075 | 1.842 | 232.1855 | 11.825 | 1.0867 | 211.3 |
| 12.04.06 | S.128TH | 60 | 60 | 60 | CMP | 40 | 756.43 | 756.25 | 0.004500 | 211.303 | 421 | 217 | 2.53 | 0.75 | 350 | 5 | 19.635 | 211.303 | 0.024 | 763.93 | 761.25 | 1.75 | 0.93 | 0.02325 | 1.842 | 341.462 | 17.391 | 2.3502 | 211.3 |
| 12.04.05 | MONTANA & S.128TH | 48 | 48 | 48 | RCP | 55 | 759.45 | 758.84 | 0.011091 | 120.957 | 421 | 217 | 2.53 | 0.75 | 300 | 4 | 12.566 | 120.957 | 0.013 | 765.45 | 762.84 | 1.57 | 1.04 | 0.01891 | 1.587 | 313.5504 | 24.952 | 4.8382 | 120.96 |
| 12.04.07 | 124TH | 47X71 | 60 | 47 | CONC | 144 | 742.16 | 741.32 | 0.005833 | 187.017 | 174 | 108 | 2.53 | 0.75 | 350 | 3.9167 | 19.635 | 187.017 | 0.013 | 748.035 | 745.24 | 0.5 | 2.298 | 0.01596 | 1.842 | 522.3049 | 26.601 | 5.4989 | 187.02 |
| 12.04.01 | CLEVELAND & S.130th | 60 | 60 | 60 | RCP | 38 | 764.36 | 764.14 | 0.005789 | 211.303 | 239 | 156 | 2.53 | 0.75 | 240 | 5 | 19.635 | 211.303 | 0.013 | 771.86 | 769.14 | 2.25 | 0.47 | 0.01237 | 1.842 | 459.7862 | 23.417 | 4.2613 | 211.3 |
| 12.04.02 | CLEVELAND & S.130th | 60 | 60 | 60 | RCP | 38 | 764.05 | 763.66 | 0.010263 | 211.303 | 134 | 49 | 2.53 | 0.75 | 240 | 5 | 19.635 | 211.303 | 0.013 | 771.55 | 768.66 | 2.2 | 0.69 | 0.01816 | 1.842 | 557.098 | 28.373 | 6.2559 | 211.3 |
| 12.03.01 | MONTANA AVE. | 24 | 24 | 24 | CMP | 46 | 822.72 | 821.67 | 0.022826 | 21.3824 | 54 | 16 | 2.7 | 0.8 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 825.72 | 823.67 | 0.75 | 1.3 | 0.02826 | 1 | 32.70018 | 10.409 | 0.842 | 21.382 |
| 12.03.08 | DAKOTA & MONTANA | 15x30 | 22 | 15 | ACMP | 44 | 794.07 | 792.96 | 0.025227 | 14.2043 | 54 | 16 | 2.7 | 0.8 | 20 | 1.25 | 2.6398 | 14.2043 | 0.024 | 795.945 | 794.21 | 0.62 | 1.115 | 0.02534 | 0.944 | 24.55269 | 9.3009 | 0.6723 | 14.204 |
| 12.03.12 | DAKOTA | 48 | 48 | 48 | CMP | 47 | 780.45 | 778.61 | 0.039149 | 120.957 | 110 | 38.5 | 2.7 | 0.8 | 220 | 4 | 12.566 | 120.957 | 0.024 | 786.45 | 782.61 | 2.3 | 1.54 | 0.03277 | 1.587 | 223.5711 | 17.791 | 2.4598 | 120.96 |
| 12.03.11 | DAKOTA | 48 | 48 | 48 | CMP | 41 | 780.45 | 778.61 | 0.044878 | 120.957 | 110 | 38.5 | 2.7 | 0.8 | 220 | 4 | 12.566 | 120.957 | 0.024 | 786.45 | 782.61 | 2.75 | 1.09 | 0.02659 | 1.587 | 201.3843 | 16.026 | 1.9958 | 120.96 |
| 12.03.17 | DAKOTA & 132nd | 48 | 48 | 48 | CMP | 50 | 774.39 | 774.14 | 0.005000 | 120.957 | 155 | 105 | 2.7 | 0.8 | 310 | 4 | 12.566 | 120.957 | 0.024 | 780.39 | 778.14 | 1.24 | 1.01 | 0.0202 | 1.587 | 175.5415 | 13.969 | 1.5165 | 120.96 |
| 12.03.16 | DAKOTA & 132nd | 48 | 48 | 48 | CMP | 50 | 774.57 | 774.3 | 0.005400 | 120.957 | 155 | 105 | 2.7 | 0.8 | 310 | 4 | 12.566 | 120.957 | 0.024 | 780.57 | 778.3 | 1.24 | 1.03 | 0.0206 | 1.587 | 177.271 | 14.107 | 1.5465 | 120.96 |
| 12.03.13 | DAKOTA & 133rd | 48 | 48 | 48 | CMP | 50 | 778.64 | 777.54 | 0.022000 | 120.957 | 187 | 114 | 2.7 | 0.8 | 300 | 4 | 12.566 | 120.957 | 0.024 | 784.64 | 781.54 | 1.54 | 1.56 | 0.0312 | 1.587 | 218.1632 | 17.361 | 2.3422 | 120.96 |
| 12.03.14 | DAKOTA & 133rd | 48 | 48 | 48 | CMP | 50 | 778.64 | 777.54 | 0.022000 | 120.957 | 187 | 114 | 2.7 | 0.8 | 300 | 4 | 12.566 | 120.957 | 0.024 | 784.64 | 781.54 | 1.75 | 1.35 | 0.027 | 1.587 | 202.9486 | 16.15 | 2.0269 | 120.96 |
| 12.04.08 | SUNNY SLOPE | 60 | 60 | 60 | RCP | 30 | 826.9 | 826.5 | 0.013333 | 211.303 | 675 | 200 | 2.7 | 0.8 | 250 | 5 | 19.635 | 211.303 | 0.013 | 834.4 | 831.5 | 0.5 | 2.4 | 0.08 | 1.842 | 1169.348 | 59.554 | 27.562 | 211.3 |
| 12.04.09 | SUNNY SLOPE | 60 | 60 | 60 | RCP | 40 | 849.2 | 846.5 | 0.067500 | 211.303 | 675 | 200 | 2.7 | 0.8 | 250 | 5 | 19.635 | 211.303 | 0.013 | 856.7 | 851.5 | 0.5 | 4.7 | 0.1175 | 1.842 | 1417.156 | 72.175 | 40.482 | 211.3 |

Exhibit C - 4
Culvert Analysis Database
City of New Berlin

*NEW BERLIN CULVERT ANALYSIS (greater than 18 inch diameter)*

| CULVERT ID | Location | Size (in) | Equiv. Diam. (in) | Height (in) | Mat'l Type | Length (ft) | U/S Invert (ft) | D/S Invert (ft) | Slope (ft/ft) | Cap. (cfs) | 100 yr (cfs) | 10 yr (cfs) | 100 Yr Rate | 10 yr Rate | Con-tributing Acres | IC Head (ft) | IC Area (ft^2) | IC Flow (cfs) | Manning 'n' | HW Elev. (ft) | TW Elev. (ft) | Entr loss K | Head (ft) | Friction Slope | R^2/3 | Velocity (ft/s) | BC Flow (ft/s) | Entr loss (ft) | Cap. (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12.03.06 | FOUNTAIN SQUARE | 42 | 42 | 42 | RCP | 74 | 808.57 | 807.62 | 0.012838 | 86.6267 | 540 | 160 | 2.7 | 0.8 | 200 | 3.5 | 9.6211 | 86.6267 | 0.013 | 813.82 | 811.12 | 1.24 | 1.46 | 0.01973 | 1.452 | 224.33 | 23.316 | 4.2249 | 86.627 |
| 12.03.07 | FOUNTAIN SQUARE | 42 | 42 | 42 | RCP | 74 | 808.35 | 807.67 | 0.009189 | 86.6267 | 540 | 160 | 2.7 | 0.8 | 200 | 3.5 | 9.6211 | 86.6267 | 0.013 | 813.6 | 811.17 | 1.5 | 0.93 | 0.01257 | 1.452 | 179.041 | 18.609 | 2.6912 | 86.627 |
| 13.01.17 | NATIONAL & HIGHPOINT | 24 | 24 | 24 | RCP | 46.5 | 790.44 | 789.39 | 0.022581 | 21.3824 | 19.5 | 7.9 | 1.95 | 0.79 | 10 | 2 | 3.1416 | 21.3824 | 0.013 | 793.44 | 791.39 | 0.52 | 1.53 | 0.0329 | 1 | 65.13952 | 20.735 | 3.341 | 21.382 |
| 13.01.18 | NATIONAL & HIGHPOINT | 30 | 30 | 30 | RCP | 25 | 788.96 | 785.5 | 0.138400 | 37.3535 | 39 | 15.8 | 1.95 | 0.79 | 20 | 2.5 | 4.9087 | 37.3535 | 0.013 | 792.71 | 788 | 2.5 | 2.21 | 0.0884 | 1.16 | 193.5879 | 39.437 | 12.087 | 37.354 |
| 13.01.13 | OHIO & RUSSEL | 30X42 | 36 | 30 | ACMP | 40 | 785.04 | 784.47 | 0.014250 | 53.7891 | 97.5 | 39.5 | 1.95 | 0.79 | 50 | 2.5 | 7.0686 | 53.7891 | 0.024 | 788.79 | 786.97 | 1.1 | 0.72 | 0.018 | 1.31 | 76.94324 | 10.885 | 0.9208 | 53.789 |
| 13.01.15 | OHIO & RUSSEL | 30 | 30 | 30 | CMP | 46 | 784.76 | 784.28 | 0.010435 | 37.3535 | 78 | 31.6 | 1.95 | 0.79 | 40 | 2.5 | 4.9087 | 37.3535 | 0.024 | 788.51 | 786.78 | 0.31 | 1.42 | 0.03087 | 1.16 | 61.96542 | 12.623 | 1.2384 | 37.354 |
| 13.01.06 | HICKORY & OHIO | 30X42 | 36 | 30 | ACMP | 42 | 780.49 | 780 | 0.011667 | 53.7891 | 97.5 | 39.5 | 1.95 | 0.79 | 50 | 2.5 | 7.0686 | 53.7891 | 0.024 | 784.24 | 782.5 | 0.95 | 0.79 | 0.01881 | 1.31 | 78.65441 | 11.127 | 0.9622 | 53.789 |
| 13.01.14 | HICKORY & OHIO | 30 | 30 | 30 | ACMP | 47 | 781.27 | 781.13 | 0.002979 | 37.3535 | 58.5 | 23.7 | 1.95 | 0.79 | 30 | 2.5 | 4.9087 | 37.3535 | 0.024 | 785.02 | 783.63 | 0.64 | 0.75 | 0.01596 | 1.16 | 44.55186 | 9.076 | 0.6401 | 37.354 |
| 13.04.01 | S. 124th & OHIO | 37X52 | 44 | 37 | CMP | 50 | 777.45 | 776.38 | 0.021400 | 89.2349 | 39 | 15.8 | 1.95 | 0.79 | 20 | 3.0833 | 10.559 | 89.2349 | 0.024 | 782.075 | 779.46 | 1.2 | 1.412 | 0.02823 | 1.498 | 164.5568 | 15.584 | 1.8874 | 89.235 |
| 13.01.11 | RUSSEL & HICKORY | 24X36 | 30 | 24 | ACMP | 43 | 788.74 | 788.33 | 0.009535 | 33.41 | 78 | 31.6 | 1.95 | 0.79 | 40 | 2 | 4.9087 | 33.41 | 0.024 | 791.74 | 790.33 | 0.69 | 0.72 | 0.01674 | 1.16 | 45.63691 | 9.2971 | 0.6717 | 33.41 |
| 13.01.12 | RUSSEL & HICKORY | 30X42 | 36 | 30 | ACMP | 30 | 787.36 | 786.07 | 0.043000 | 53.7891 | 78 | 31.6 | 1.95 | 0.79 | 40 | 2.5 | 7.0686 | 53.7891 | 0.024 | 791.11 | 788.57 | 1.25 | 1.29 | 0.043 | 1.31 | 118.9237 | 16.824 | 2.1997 | 53.789 |
| 13.01.02 | VERONA & RUSSEL | 24X36 | 30 | 24 | ACMP | 43 | 796.18 | 795.09 | 0.025349 | 33.41 | 39 | 15.8 | 1.95 | 0.79 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 799.18 | 797.09 | 0.85 | 1.24 | 0.02884 | 1.16 | 59.89089 | 12.201 | 1.1568 | 33.41 |
| 13.01.10 | HICKORY DRAINAGE EASEMENT | 36 | 36 | 36 | CMP | 36 | 781.93 | 774.92 | 0.194722 | 58.923 | 97.5 | 39.5 | 1.95 | 0.79 | 50 | 3 | 7.0686 | 58.923 | 0.024 | 786.43 | 777.92 | 3.5 | 5.01 | 0.13917 | 1.31 | 213.9448 | 30.267 | 7.1191 | 58.923 |
| 13.04.19 | S.124th | 32X48 | 42 | 32 | ACMP | 42 | 772.66 | 771.15 | 0.035952 | 75.614 | 117 | 47.4 | 1.95 | 0.79 | 60 | 2.6667 | 9.6211 | 75.614 | 0.024 | 776.66 | 773.82 | 2.1 | 0.743 | 0.0177 | 1.452 | 115.087 | 11.962 | 1.112 | 75.614 |
| 13.03.18 | SUNNY SLOPE | 21X27 | 24 | 21 | ACMP | 81 | 876.4 | 876.09 | 0.003827 | 20.0014 | 15 | 6 | 1.5 | 0.6 | 10 | 1.75 | 3.1416 | 20.0014 | 0.024 | 879.025 | 877.84 | 0.31 | 0.875 | 0.0108 | 1 | 20.2171 | 6.4353 | 0.3218 | 20.001 |
| 13.03.14 | CRAWFORD & MEADOWOOD | 24X36 | 30 | 24 | ACMP | 43 | 864.52 | 863.48 | 0.024186 | 33.41 | 15 | 6 | 1.5 | 0.6 | 10 | 2 | 4.9087 | 33.41 | 0.024 | 867.52 | 865.48 | 0.98 | 1.06 | 0.02465 | 1.16 | 55.37362 | 11.281 | 0.9889 | 33.41 |
| 13.03.15 | WILLOW & CRAWFORD | 21X27 | 24 | 21 | ACMP | 61 | 852.24 | 852.01 | 0.003770 | 20.0014 | 30 | 12 | 1.5 | 0.6 | 20 | 1.75 | 3.1416 | 20.0014 | 0.024 | 854.865 | 853.76 | 0.4 | 0.705 | 0.01156 | 1 | 20.91159 | 6.6564 | 0.3443 | 20.001 |
| 13.03.21 | CORETTA & WILLOW | 24X36 | 30 | 24 | ACMP | 59 | 853.91 | 853.65 | 0.004407 | 33.41 | 15 | 6 | 1.5 | 0.6 | 10 | 2 | 4.9087 | 33.41 | 0.024 | 856.91 | 855.65 | 0.51 | 0.75 | 0.01271 | 1.16 | 39.76388 | 8.1006 | 0.5099 | 33.41 |
| 13.03.24 | THOMAS WILBUR & CORETTA | 18X27 | 22 | 18 | ACMP | 44 | 864.29 | 862.64 | 0.037500 | 15.56 | 15 | 6 | 1.5 | 0.6 | 10 | 1.5 | 2.6398 | 15.56 | 0.024 | 866.54 | 864.14 | 0.91 | 1.49 | 0.03386 | 0.944 | 28.38277 | 10.752 | 0.8984 | 15.56 |
| 13.03.04 | THOMAS WILBUR | 24X36 | 30 | 24 | ACMP | 45 | 866.6 | 865.86 | 0.016444 | 33.41 | 15 | 6 | 1.5 | 0.6 | 10 | 2 | 4.9087 | 33.41 | 0.024 | 869.6 | 867.86 | 0.89 | 0.85 | 0.01889 | 1.16 | 48.4716 | 9.8746 | 0.7577 | 33.41 |
| 13.03.03 | WILLOW GLEN & THOMAS WILBURN | 24 | 24 | 24 | CMP | 130 | 870.74 | 869.32 | 0.010923 | 21.3824 | 15 | 6 | 1.5 | 0.6 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 873.74 | 871.32 | 0.48 | 1.94 | 0.01492 | 1 | 23.7622 | 7.5637 | 0.4446 | 21.382 |
| 13.03.07 | WILLOW GLEN & THOMAS WILBURN | 24X36 | 30 | 24 | ACMP | 44 | 849.53 | 849.08 | 0.010227 | 33.41 | 30 | 12 | 1.5 | 0.6 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 852.53 | 851.08 | 0.65 | 0.8 | 0.01818 | 1.16 | 47.55573 | 9.688 | 0.7294 | 33.41 |
| 13.03.08 | THOMAS WILBUR & OAKDALE | 31X42 | 36 | 31 | ACMP | 44 | 844.23 | 843.76 | 0.010682 | 54.6782 | 45 | 18 | 1.5 | 0.6 | 30 | 2.5833 | 7.0686 | 54.6782 | 0.024 | 848.105 | 846.34 | 0.8 | 0.962 | 0.02186 | 1.31 | 84.78522 | 11.995 | 1.1181 | 54.678 |
| 13.03.13 | OAKDALE & CRAWFORD | 24X36 | 30 | 24 | ACMP | 42 | 849.87 | 849.59 | 0.006667 | 33.41 | 45 | 18 | 1.5 | 0.6 | 30 | 2 | 4.9087 | 33.41 | 0.024 | 852.87 | 851.59 | 0.63 | 0.65 | 0.01548 | 1.16 | 43.87491 | 8.9381 | 0.6208 | 33.41 |
| 13.03.12 | GREENLAWN TERRACE & CRAWFORD | 31X42 | 36 | 31 | ACMP | 42 | 847.23 | 847.1 | 0.003095 | 54.6782 | 75 | 30 | 1.5 | 0.6 | 50 | 2.5833 | 7.0686 | 54.6782 | 0.024 | 851.105 | 849.68 | 0.75 | 0.672 | 0.01599 | 1.31 | 72.52478 | 10.26 | 0.8181 | 54.678 |
| 13.03.09 | GREENLAWN TERRACE & THOMAS WILBURN | 31X42 | 36 | 31 | ACMP | 48 | 837.65 | 837.64 | 0.000208 | 54.6782 | 45 | 18 | 1.5 | 0.6 | 30 | 2.5833 | 7.0686 | 54.6782 | 0.024 | 841.525 | 840.22 | 0.75 | 0.552 | 0.01149 | 1.31 | 61.48256 | 8.698 | 0.5879 | 54.678 |
| 13.03.21 | MAPLEWOOD & SUNNYVIEW | 18X27 | 22 | 18 | ACMP | 40 | 854.66 | 853.73 | 0.023250 | 15.56 | 30 | 12 | 1.5 | 0.6 | 20 | 1.5 | 2.6398 | 15.56 | 0.024 | 856.91 | 855.23 | 0.68 | 1 | 0.025 | 0.944 | 24.38698 | 9.2382 | 0.6632 | 15.56 |
| 13.03.02 | HOWARD & SUNNYVIEW | 24 | 24 | 24 | CMP | 24 | 867.87 | 866.92 | 0.039583 | 21.3824 | 30 | 12 | 1.5 | 0.6 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 870.87 | 868.92 | 0.9 | 1.05 | 0.04375 | 1 | 40.68614 | 12.951 | 1.3034 | 21.382 |
| 13.03.10 | SANDALWOOD & CRAWFORD | 24X36 | 30 | 24 | ACMP | 45 | 846.47 | 845.83 | 0.014222 | 33.41 | 34.6 | 11.8 | 1.73 | 0.59 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 849.47 | 847.83 | 0.75 | 0.89 | 0.01978 | 1.16 | 49.599 | 10.104 | 0.7934 | 33.41 |
| 13.03.11 | SANDALWOOD & CRAWFORD | 21X27 | 24 | 21 | ACMP | 45 | 845.65 | 845.32 | 0.007333 | 20.0014 | 34.6 | 11.8 | 1.73 | 0.59 | 20 | 1.75 | 3.1416 | 20.0014 | 0.024 | 848.275 | 847.07 | 0.48 | 0.725 | 0.01611 | 1 | 24.68995 | 7.8591 | 0.48 | 20.001 |
| 13.03.20 | SANDALWOOD & CRAWFORD | 21X27 | 24 | 21 | ACMP | 44 | 845.59 | 845.36 | 0.005227 | 20.0014 | 34.6 | 11.8 | 1.73 | 0.59 | 20 | 1.75 | 3.1416 | 20.0014 | 0.024 | 848.215 | 847.11 | 0.5 | 0.605 | 0.01375 | 1 | 22.80913 | 7.2604 | 0.4096 | 20.001 |
| 13.03.13 | SANDALWOOD & CRAWFORD | 36 | 36 | 36 | CMP | 26 | 845.72 | 844.64 | 0.041538 | 58.923 | 69.2 | 23.6 | 1.73 | 0.59 | 40 | 3 | 7.0686 | 58.923 | 0.024 | 850.22 | 847.64 | 1.24 | 1.34 | 0.05154 | 1.31 | 130.1967 | 18.419 | 2.6365 | 58.923 |
| 13.03.19 | CRAWFORD & WILBUR | 24 | 24 | 24 | CMP | 71 | 818.9 | 818.21 | 0.009718 | 21.3824 | 173 | 59 | 1.73 | 0.59 | 100 | 2 | 3.1416 | 21.3824 | 0.024 | 821.9 | 820.21 | 0.5 | 1.19 | 0.01676 | 1 | 25.18267 | 8.0159 | 0.4993 | 21.382 |
| 13.02.06 | S.124th | 72X90 | 80 | 72 | CONC | 33 | 793.67 | 792.98 | 0.020909 | 411.505 | 437 | 224 | 1.73 | 0.59 | 430 | 6 | 34.907 | 411.505 | 0.013 | 802.67 | 798.98 | 2.95 | 0.74 | 0.02242 | 2.231 | 1333.299 | 38.196 | 11.338 | 411.5 |
| 13.02.07 | S.124th | 48 | 48 | 48 | CMP | 25 | 793.67 | 792.98 | 0.027600 | 120.957 | 131 | 68 | 1.73 | 0.59 | 215 | 4 | 12.566 | 120.957 | 0.024 | 799.67 | 796.98 | 2.12 | 0.57 | 0.0228 | 1.587 | 186.4969 | 14.841 | 1.7116 | 120.96 |
| 13.02.08 | S.124th | 48 | 48 | 48 | CMP | 25 | 793.76 | 793.67 | 0.003600 | 120.957 | 131 | 68 | 1.73 | 0.59 | 215 | 4 | 12.566 | 120.957 | 0.024 | 799.76 | 797.67 | 1.12 | 0.97 | 0.0388 | 1.587 | 243.2876 | 19.36 | 2.9128 | 120.96 |
| 13.01.19 | 2514000E, 365250N | 24 | 24 | 24 | RCP | 142 | 815.75 | 810.57 | 0.036479 | 21.3824 | 96.4 | 37.2 | 2.41 | 0.93 | 40 | 2 | 3.1416 | 21.3824 | 0.013 | 818.75 | 812.57 | 0.75 | 5.43 | 0.03824 | 1 | 70.22327 | 22.353 | 3.8829 | 21.382 |
| 13.01.20 | 2513500E, 365000N | 24 | 24 | 24 | RCP | 120 | 819.7 | 817.92 | 0.014833 | 21.3824 | 96.4 | 37.2 | 2.41 | 0.93 | 40 | 2 | 3.1416 | 21.3824 | 0.013 | 822.7 | 819.92 | 0.53 | 2.25 | 0.01875 | 1 | 49.17292 | 15.652 | 1.9039 | 21.382 |
| 14.01.01 | HOWARD | 24 | 24 | 24 | RCP | 38 | 876.9 | 875.86 | 0.027368 | 21.3824 | 35.8 | 17.6 | 1.79 | 0.88 | 20 | 2 | 3.1416 | 21.3824 | 0.013 | 879.9 | 877.86 | 1.02 | 1.02 | 0.02684 | 1 | 58.83471 | 18.728 | 2.7256 | 21.382 |
| 14.01.02 | HOWARD | 18X27 | 22 | 18 | RCP | 72 | 875.86 | 875.32 | 0.007500 | 15.56 | 17.9 | 8.8 | 1.79 | 0.88 | 10 | 1.5 | 2.6398 | 15.56 | 0.013 | 878.11 | 876.82 | 0.45 | 0.84 | 0.01167 | 0.944 | 30.75595 | 11.651 | 1.0549 | 15.56 |
| 14.01.03 | HOWARD | 48 | 48 | 48 | RCP | 110 | 875.25 | 874.78 | 0.004273 | 120.957 | 143.2 | 70.4 | 1.79 | 0.88 | 80 | 4 | 12.566 | 120.957 | 0.013 | 881.25 | 878.78 | 1.01 | 1.46 | 0.01327 | 1.587 | 262.6952 | 20.905 | 3.396 | 120.96 |
| 14.01.04 | GLEN PARK | 24X36 | 30 | 24 | ACMP | 59 | 877.12 | 876.49 | 0.010678 | 33.41 | 53.7 | 26.4 | 1.79 | 0.88 | 30 | 2 | 4.9087 | 33.41 | 0.024 | 880.12 | 878.49 | 0.67 | 0.96 | 0.01627 | 1.16 | 44.9877 | 9.1648 | 0.6527 | 33.41 |
| 14.04.14 | REDWOOD & COTTONWOOD | 20X30 | 24 | 20 | ACMP | 48 | 876.27 | 873.79 | 0.051667 | 19.5194 | 35.8 | 17.6 | 1.79 | 0.88 | 20 | 1.6667 | 3.1416 | 19.5194 | 0.024 | 878.77 | 875.46 | 1.42 | 1.893 | 0.03944 | 1 | 38.63228 | 12.297 | 1.1751 | 19.519 |
| 14.04.19 | COTTONWOOD & WILBUR | 24X36 | 30 | 24 | ACMP | 46 | 872.8 | 871.72 | 0.023478 | 33.41 | 53.7 | 26.4 | 1.79 | 0.88 | 30 | 2 | 4.9087 | 33.41 | 0.024 | 875.8 | 873.72 | 1.11 | 0.97 | 0.02109 | 1.16 | 51.21429 | 10.433 | 0.8459 | 33.41 |
| 14.04.07 | SPRUCE & HELMLOCK | 24 | 24 | 24 | RCP | 130 | 871.08 | 870.29 | 0.006077 | 21.3824 | 35.8 | 17.6 | 1.79 | 0.88 | 20 | 2 | 3.1416 | 21.3824 | 0.013 | 874.08 | 872.29 | 0.41 | 1.38 | 0.01062 | 1 | 36.99927 | 11.777 | 1.0779 | 21.382 |
| 14.04.18 | POPLAR RD. | 24 | 24 | 24 | RCP | 312 | 878.19 | 875.92 | 0.007276 | 17.9554 | 17.9 | 8.8 | 1.79 | 0.88 | 10 | 2 | 3.1416 | 21.3824 | 0.013 | 878.92 | 877.92 | 0.22 | 0.78 | 0.0025 | 1 | 17.95541 | 5.7154 | 0.2539 | 17.955 |
| 14.01.09 | 146th &OKLAHOMA | 18X30 | 24 | 18 | ACMP | 39 | 872.04 | 871.82 | 0.005641 | 18.5177 | 48.6 | 14.4 | 2.43 | 0.72 | 20 | 1.5 | 3.1416 | 18.5177 | 0.024 | 874.29 | 873.32 | 0.42 | 0.55 | 0.0141 | 1 | 23.09971 | 7.3529 | 0.4201 | 18.518 |
| 14.01.10 | 147th &OKLAHOMA | 18X30 | 24 | 18 | ACMP | 39 | 869.98 | 869.61 | 0.009487 | 18.5177 | 48.6 | 14.4 | 2.43 | 0.72 | 20 | 1.5 | 3.1416 | 18.5177 | 0.024 | 872.23 | 871.11 | 0.48 | 0.64 | 0.01641 | 1 | 24.91811 | 7.9317 | 0.4889 | 18.518 |
| 14.01.11 | 148th &OKLAHOMA | 18X30 | 24 | 18 | ACMP | 36 | 869 | 868.75 | 0.006944 | 18.5177 | 48.6 | 14.4 | 2.43 | 0.72 | 20 | 1.5 | 3.1416 | 18.5177 | 0.024 | 871.25 | 870.25 | 0.45 | 0.55 | 0.01528 | 1 | 24.04294 | 7.6531 | 0.4552 | 18.518 |
| 14.01.12 | 149th &OKLAHOMA | 24X36 | 30 | 24 | ORCP | 163 | 869.12 | 868.63 | 0.003006 | 33.41 | 97.2 | 28.8 | 2.43 | 0.72 | 40 | 2 | 4.9087 | 33.41 | 0.013 | 872.12 | 870.63 | 0.35 | 1.14 | 0.00699 | 1.16 | 54.45161 | 11.093 | 0.9562 | 33.41 |
| 14.01.01 | SUNNY SLOPE & TIFFANY | 42 | 42 | 42 | RCP | 52 | 871.71 | 866.37 | 0.102692 | 86.6267 | 145.8 | 43.2 | 2.43 | 0.72 | 60 | 3.5 | 9.6211 | 86.6267 | 0.013 | 876.96 | 869.87 | 2.75 | 4.34 | 0.08346 | 1.452 | 461.392 | 47.956 | 17.872 | 86.627 |
| 14.02.04 | SAN MATEO | 96 | 96 | 96 | CONCB | 60 | 860.59 | 860.18 | 0.006833 | 684.237 | 1179 | 349.2 | 2.43 | 0.72 | 485 | 8 | 50.265 | 684.237 | 0.013 | 872.59 | 868.18 | 2.25 | 2.16 | 0.036 | 2.52 | 2747.072 | 54.651 | 23.211 | 684.24 |
| 14.02.05 | SAN MATEO | 96 | 96 | 96 | CONCB | 60 | 860.59 | 860.18 | 0.006833 | 684.237 | 1179 | 349.2 | 2.43 | 0.72 | 485 | 8 | 50.265 | 684.237 | 0.013 | 872.59 | 868.18 | 2.25 | 2.16 | 0.036 | 2.52 | 2747.072 | 54.651 | 23.211 | 684.24 |
| 14.02.06 | NATIONAL | 96X120 | 108 | 96 | CONCB | 330 | 861.7 | 861.8 | -0.000303 | 865.988 | 1166 | 345.6 | 2.43 | 0.72 | 480 | 8 | 63.617 | 865.988 | 0.013 | 873.7 | 869.8 | 1.75 | 2.15 | 0.00652 | 2.726 | 1599.882 | 25.149 | 4.9149 | 865.99 |
| 14.02.07 | NATIONAL | 63X98 | 80 | 63 | ELLIPT | 330 | 861.7 | 861.8 | -0.000303 | 384.927 | 1166 | 345.6 | 2.43 | 0.72 | 480 | 5.25 | 34.907 | 384.927 | 0.013 | 869.575 | 867.05 | 0.95 | 1.575 | 0.00477 | 2.231 | 615.1091 | 17.622 | 2.4131 | 384.93 |
| 15.04.05 | ST. FRANCIS & TOP-O-HILL | 18X30 | 24 | 18 | ACMP | 43 | 904.8 | 904.38 | 0.009767 | 18.5177 | 63 | 31.5 | 2.1 | 1.05 | 30 | 1.5 | 3.1416 | 18.5177 | 0.024 | 907.05 | 905.88 | 0.65 | 0.52 | 0.01209 | 1 | 21.39069 | 6.8089 | 0.3603 | 18.518 |
| 15.04.06 | ST. FRANCIS & 159th | 18X30 | 24 | 18 | ACMP | 49 | 905.76 | 905.27 | 0.010000 | 18.5177 | 42 | 21 | 2.1 | 1.05 | 20 | 1.5 | 3.1416 | 18.5177 | 0.024 | 908.01 | 906.77 | 0.62 | 0.62 | 0.01265 | 1 | 21.8804 | 6.9647 | 0.377 | 18.518 |
| 15.01.04 | COFFEE & WEST OF ST. FRANCIS | 36 | 36 | 36 | CMP | 43 | 905.52 | 904.63 | 0.020698 | 58.923 | 63 | 31.5 | 2.1 | 1.05 | 30 | 3 | 7.0686 | 58.923 | 0.024 | 910.02 | 907.63 | 1.2 | 1.19 | 0.02767 | 1.31 | 95.40551 | 13.497 | 1.4157 | 58.923 |
| 15.01.05 | CULVERT TO ST. FRANCIS FROM COFFEE | 36 | 36 | 36 | CMP | 209 | 905.73 | 903.96 | 0.008469 | 58.923 | 63 | 31.5 | 2.1 | 1.05 | 30 | 3 | 7.0686 | 58.923 | 0.024 | 910.23 | 906.96 | 0.59 | 2.68 | 0.01282 | 1.31 | 64.94242 | 9.1875 | 0.656 | 58.923 |
| 15.04.01 | CULVERT TO ST. FRANCIS FROM COFFEE | 24X36 | 30 | 24 | ACMP | 7 | 903.96 | 903.66 | 0.042857 | 33.41 | 63 | 31.5 | 2.1 | 1.05 | 30 | 2 | 4.9087 | 33.41 | 0.024 | 906.96 | 905.66 | 1.2 | 0.1 | 0.01429 | 1.16 | 42.15365 | 8.5875 | 0.5731 | 33.41 |

Exhibit C - 4
Culvert Analysis Database
City of New Berlin

*NEW BERLIN CULVERT ANALYSIS (greater than 18 inch diameter)*

| CULVERT ID | Location | Size (in) | Equiv. Diam. (in) | Height (in) | Mat'l Type | Length (ft) | U/S Invert (ft) | D/S Invert (ft) | Slope (ft/ft) | Cap. (cfs) | 100 yr (cfs) | 10 yr (cfs) | 100 Yr Rate | 10 yr Rate | Con-tributing Acres | IC Head (ft) | IC Area (ft^2) | IC Flow (cfs) | Manning 'n' | HW Elev. (ft) | TW Elev. (ft) | Entr loss K | Head (ft) | Friction Slope | R^2/3 | Velocity (ft/s) | BC Flow (ft/s) | Entr loss (ft) | Cap. (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15.04.07 | ST. FRANCIS | 24 | 24 | 24 | CMP | 37 | 903.66 | 902.66 | 0.027027 | 21.3824 | 63 | 31.5 | 2.1 | 1.05 | 30 | 2 | 3.1416 | 21.3824 | 0.024 | 906.66 | 904.66 | 0.8 | 1.2 | 0.03243 | 1 | 35.03057 | 11.151 | 0.9662 | 21.382 |
| 15.03.01 | CALHOUN | 30 | 30 | 30 | CMP | 57 | 869.22 | 868.97 | 0.004386 | 37.3535 | 504 | 252 | 2.1 | 1.05 | 240 | 2.5 | 4.9087 | 37.3535 | 0.024 | 872.97 | 871.47 | 0.6 | 0.9 | 0.01579 | 1.16 | 44.31676 | 9.0281 | 0.6334 | 37.354 |
| 15.01.01 | COFFEE | 30X40 | 34 | 30 | CMP | 44 | 867 | 866.86 | 0.003182 | 47.9785 | 42 | 21 | 2.1 | 1.05 | 20 | 2.5 | 6.305 | 47.9785 | 0.024 | 870.75 | 869.36 | 0.8 | 0.59 | 0.01341 | 1.261 | 57.02137 | 9.0438 | 0.6356 | 47.979 |
| 15.01.02 | COFFEE | 24 | 24 | 24 | CMP | 43 | 866.35 | 865.92 | 0.010000 | 21.3824 | 42 | 21 | 2.1 | 1.05 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 869.35 | 867.92 | 0.58 | 0.85 | 0.01977 | 1 | 27.34845 | 8.7053 | 0.5889 | 21.382 |
| 15.02.12 | CALHOUN | 80 | 80 | 80 | CONC | 63 | 858.69 | 858.46 | 0.003651 | 433.764 | 1680 | 840 | 2.1 | 1.05 | 800 | 6.6667 | 34.907 | 433.764 | 0.013 | 868.69 | 865.13 | 1.8 | 1.763 | 0.02799 | 2.231 | 1489.587 | 42.674 | 14.152 | 433.76 |
| 15.02.11 | CALHOUN | 80 | 80 | 80 | CONC | 63 | 858.75 | 858.48 | 0.004286 | 433.764 | 1680 | 840 | 2.1 | 1.05 | 800 | 6.6667 | 34.907 | 433.764 | 0.013 | 868.75 | 865.15 | 1.9 | 1.703 | 0.02704 | 2.231 | 1464.025 | 41.941 | 13.67 | 433.76 |
| 15.02.13 | CALHOUN | 80 | 80 | 80 | CONC | 63 | 858.92 | 858.53 | 0.006190 | 433.764 | 1680 | 840 | 2.1 | 1.05 | 800 | 6.6667 | 34.907 | 433.764 | 0.013 | 868.92 | 865.2 | 1.6 | 2.123 | 0.0337 | 2.231 | 1634.585 | 46.827 | 17.041 | 433.76 |
| 15.02.09 | VICTOR & CALHOUN | 60 | 60 | 60 | CMP | 60 | 856.42 | 856.02 | 0.006667 | 211.303 | 1890 | 945 | 2.1 | 1.05 | 900 | 5 | 19.635 | 211.303 | 0.024 | 863.92 | 861.02 | 1.5 | 1.4 | 0.02333 | 1.842 | 342.0734 | 17.422 | 2.3587 | 211.3 |
| 15.02.08 | VICTOR & CALHOUN | 60 | 60 | 60 | CMP | 60 | 856.28 | 855.88 | 0.006667 | 211.303 | 1890 | 945 | 2.1 | 1.05 | 900 | 5 | 19.635 | 211.303 | 0.024 | 863.78 | 860.88 | 2.1 | 0.8 | 0.01333 | 1.842 | 258.5832 | 13.17 | 1.3478 | 211.3 |
| 15.02.10 | VICTOR & CALHOUN | 60 | 60 | 60 | CMP | 60 | 856.46 | 856.06 | 0.006667 | 211.303 | 1890 | 945 | 2.1 | 1.05 | 900 | 5 | 19.635 | 211.303 | 0.024 | 863.96 | 861.06 | 1.8 | 1.1 | 0.01833 | 1.842 | 303.2157 | 15.443 | 1.8532 | 211.3 |
| 15.02.19 | VICTOR & CALHOUN | 24 | 24 | 24 | CMP | 59 | 861.42 | 861.27 | 0.002542 | 21.3824 | 42 | 21 | 2.1 | 1.05 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 864.42 | 863.27 | 0.4 | 0.75 | 0.01271 | 1 | 21.93118 | 6.9809 | 0.3787 | 21.382 |
| 15.02.18 | VICTOR | 36X58 | 48 | 36 | ACMP | 49 | 859.67 | 859.05 | 0.012653 | 104.752 | 105 | 52.5 | 2.1 | 1.05 | 50 | 3 | 12.566 | 104.752 | 0.024 | 864.17 | 862.05 | 1.5 | 0.62 | 0.01265 | 1.587 | 138.9319 | 11.056 | 0.9499 | 104.75 |
| 15.02.07 | VICTOR | 36X58 | 48 | 36 | ACMP | 49 | 859.53 | 859.01 | 0.010612 | 104.752 | 105 | 52.5 | 2.1 | 1.05 | 50 | 3 | 12.566 | 104.752 | 0.024 | 864.03 | 862.01 | 1.12 | 0.9 | 0.01837 | 1.587 | 167.3892 | 13.32 | 1.3789 | 104.75 |
| 15.02.06 | VICTOR | 36X58 | 48 | 36 | ACMP | 49 | 859.67 | 859.33 | 0.006939 | 104.752 | 105 | 52.5 | 2.1 | 1.05 | 50 | 3 | 12.566 | 104.752 | 0.024 | 864.17 | 862.33 | 1.24 | 0.6 | 0.01224 | 1.587 | 136.6727 | 10.876 | 0.9192 | 104.75 |
| 15.02.05 | VICTOR & S.166th | 21X30 | 24 | 21 | ACMP | 48 | 866.82 | 866.48 | 0.007083 | 20.0014 | 42 | 21 | 2.1 | 1.05 | 20 | 1.75 | 3.1416 | 20.0014 | 0.024 | 869.445 | 868.23 | 0.46 | 0.755 | 0.01573 | 1 | 24.39553 | 7.7653 | 0.4686 | 20.001 |
| 15.02.04 | VICTOR & S.166th | 21X30 | 24 | 21 | ACMP | 48 | 866.73 | 866.52 | 0.004375 | 20.0014 | 63 | 31.5 | 2.1 | 1.05 | 20 | 1.75 | 3.1416 | 20.0014 | 0.024 | 869.355 | 868.27 | 0.4 | 0.685 | 0.01427 | 1 | 23.23711 | 7.3966 | 0.4252 | 20.001 |
| 15.02.03 | S.166th & DRAINAGE EASEMENT | 45X66 | 54 | 45 | CONC | 53 | 862.2 | 862.01 | 0.003585 | 148.225 | 63 | 31.5 | 2.1 | 1.05 | 30 | 3.75 | 15.904 | 148.225 | 0.013 | 867.825 | 865.76 | 1.5 | 0.565 | 0.01066 | 1.717 | 322.3036 | 20.265 | 3.1915 | 148.23 |
| 15.02.02 | S.166th & DRAINAGE EASEMENT | 45X66 | 54 | 45 | CONC | 53 | 861.47 | 861.2 | 0.005094 | 148.225 | 63 | 31.5 | 2.1 | 1.05 | 30 | 3.75 | 15.904 | 148.225 | 0.013 | 867.095 | 864.95 | 1.5 | 0.645 | 0.01217 | 1.717 | 344.3664 | 21.652 | 3.6433 | 148.23 |
| 15.02.01 | S.166th & DRAINAGE EASEMENT | 45X66 | 54 | 45 | CONC | 53 | 862.27 | 862.05 | 0.004151 | 148.225 | 63 | 31.5 | 2.1 | 1.05 | 30 | 3.75 | 15.904 | 148.225 | 0.013 | 867.895 | 865.8 | 1.24 | 0.855 | 0.01613 | 1.717 | 396.4824 | 24.929 | 4.8296 | 148.23 |
| 15.01.03 | RIVIERA & MONTERREY | 18X30 | 24 | 18 | ACMP | 40 | 874.83 | 874.44 | 0.009750 | 18.5177 | 42 | 21 | 2.1 | 1.05 | 20 | 1.5 | 3.1416 | 18.5177 | 0.024 | 877.08 | 875.94 | 0.49 | 0.65 | 0.01625 | 1 | 24.79614 | 7.8929 | 0.4841 | 18.518 |
| 15.01.06 | SANTA ROSA BLVD | 32X48 | 42 | 32 | ACMP | 38 | 880.59 | 880.5 | 0.002368 | 75.614 | 168 | 84 | 2.1 | 1.05 | 80 | 2.6667 | 9.6211 | 75.614 | 0.024 | 884.59 | 883.17 | 0.75 | 0.673 | 0.01772 | 1.452 | 115.1549 | 11.969 | 1.1133 | 75.614 |
| 15.01.07 | SANTA ROSA BLVD | 24 | 24 | 24 | CMP | 24 | 893.14 | 892.6 | 0.022500 | 21.3824 | 42 | 21 | 2.1 | 1.05 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 896.14 | 894.6 | 0.89 | 0.65 | 0.02708 | 1 | 32.01168 | 10.19 | 0.8069 | 21.382 |
| 15.01.10 | SANTA ROSA BLVD | 24 | 24 | 24 | CMP | 46 | 894.6 | 893.86 | 0.016087 | 21.3824 | 42 | 21 | 2.1 | 1.05 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 897.6 | 895.86 | 0.65 | 1.09 | 0.0237 | 1 | 29.94276 | 9.5311 | 0.7059 | 21.382 |
| 15.02.14 | COFFEE, 20' DRAINAGE EASEMENT | 24 | 24 | 24 | CMP | 38 | 898.89 | 898.8 | 0.002368 | 21.3824 | 42 | 21 | 2.1 | 1.05 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 901.89 | 900.8 | 0.4 | 0.69 | 0.01816 | 1 | 26.2114 | 8.3433 | 0.541 | 21.382 |
| 15.02.15 | COFFEE, 20' DRAINAGE EASEMENT | 21X27 | 24 | 21 | CMP | 8 | 899.21 | 898.8 | 0.051250 | 20.0014 | 42 | 21 | 2.1 | 1.05 | 20 | 1.75 | 3.1416 | 20.0014 | 0.024 | 901.835 | 900.55 | 1.2 | 0.085 | 0.01063 | 1 | 20.05035 | 6.3822 | 0.3165 | 20.001 |
| 15.01.11 | SANTA ROSA BLVD | 36 | 36 | 36 | CMP | 43 | 900.48 | 898.86 | 0.037674 | 58.923 | 63 | 31.5 | 2.1 | 1.05 | 30 | 3 | 7.0686 | 58.923 | 0.024 | 904.98 | 901.86 | 0.75 | 2.37 | 0.05512 | 1.31 | 134.64 | 19.048 | 2.8195 | 58.923 |
| 15.01.13 | 20' DRAINAGE EASEMENT | 36 | 36 | 36 | CMP | 264 | 904.26 | 900.48 | 0.014318 | 58.923 | 63 | 31.5 | 2.1 | 1.05 | 30 | 3 | 7.0686 | 58.923 | 0.024 | 908.76 | 903.48 | 0.81 | 4.47 | 0.01693 | 1.31 | 74.62528 | 10.557 | 0.8662 | 58.923 |
| 15.04.02 | COFFEE | 36 | 36 | 36 | CMP | 43 | 904.63 | 904.26 | 0.008605 | 58.923 | 63 | 31.5 | 2.1 | 1.05 | 30 | 3 | 7.0686 | 58.923 | 0.024 | 909.13 | 907.26 | 1.2 | 0.67 | 0.01558 | 1.31 | 71.58753 | 10.128 | 0.7971 | 58.923 |
| 16.02.04 | WILLOW | 24X36 | 30 | 24 | ACMP | 44 | 892.78 | 892.28 | 0.011364 | 33.41 | 53 | 40 | 2.91 | 1.32 | 400 | 2 | 4.9087 | 33.41 | 0.024 | 895.78 | 894.28 | 0.5 | 1 | 0.02273 | 1.16 | 53.16892 | 10.831 | 0.9117 | 33.41 |
| 16.02.05 | THORNAPPLE | 20X28 | 24 | 20 | ACMP | 45 | 895.78 | 895.76 | 0.000444 | 17.2363 | 58.2 | 26.4 | 2.91 | 1.32 | 20 | 1.6667 | 3.1416 | 19.5194 | 0.024 | 898.28 | 897.43 | 0.5 | 0.353 | 0.00785 | 1 | 17.23628 | 5.4865 | 0.2339 | 17.236 |
| 16.03.01 | COFFEE & WOELFEL | 18X24 | 21 | 18 | ACMP | 47 | 872.42 | 872.25 | 0.003617 | 14.1776 | 68.4 | 30.6 | 1.14 | 0.51 | 60 | 1.5 | 2.4053 | 14.1776 | 0.024 | 874.67 | 873.75 | 0.25 | 0.67 | 0.01426 | 0.915 | 16.26675 | 6.7629 | 0.3554 | 14.178 |
| 16.01.11 | CALHOUN S. OF COFFEE | 30 | 30 | 30 | CMP | 57 | 869.22 | 868.97 | 0.004386 | 37.3535 | 273.6 | 122.4 | 1.14 | 0.51 | 240 | 2.5 | 4.9087 | 37.3535 | 0.024 | 872.97 | 871.47 | 0.6 | 0.9 | 0.01579 | 1.16 | 44.31676 | 9.0281 | 0.6334 | 37.354 |
| 16.01.11 | COFFEE W. OF CALHOUN | 80 | 80 | 80 | CONC | 63 | 858.92 | 858.53 | 0.006190 | 433.764 | 397 | 136 | 0.95 | 0.41 | 800 | 6.6667 | 34.907 | 433.764 | 0.013 | 868.92 | 865.2 | 2.23 | 1.493 | 0.0237 | 2.231 | 1370.809 | 39.271 | 11.985 | 433.76 |
| 16.01.12 | CALHOUN | 80 | 80 | 80 | CONC | 63 | 858.69 | 858.46 | 0.003651 | 433.764 | 397 | 136 | 0.95 | 0.41 | 800 | 6.6667 | 34.907 | 433.764 | 0.013 | 868.69 | 865.13 | 3.12 | 0.443 | 0.00704 | 2.231 | 746.9022 | 21.397 | 3.558 | 433.76 |
| 16.01.13 | CALHOUN | 80 | 80 | 80 | CONC | 63 | 858.72 | 858.48 | 0.003810 | 433.764 | 397 | 136 | 0.95 | 0.41 | 800 | 6.6667 | 34.907 | 433.764 | 0.013 | 868.72 | 865.15 | 3.21 | 0.363 | 0.00577 | 2.231 | 676.1626 | 19.371 | 2.9159 | 433.76 |
| 16.01.09 | CALHOUN | 60 | 60 | 60 | CMP | 66 | 856.42 | 856.02 | 0.006061 | 211.303 | 199 | 121 | 0.95 | 0.41 | 900 | 5 | 19.635 | 211.303 | 0.024 | 863.92 | 861.02 | 1.45 | 1.45 | 0.02197 | 1.842 | 331.9273 | 16.905 | 2.2208 | 211.3 |
| 16.01.10 | CALHOUN | 60 | 60 | 60 | CMP | 66 | 856.28 | 855.88 | 0.006061 | 211.303 | 199 | 121 | 0.95 | 0.41 | 900 | 5 | 19.635 | 211.303 | 0.024 | 863.78 | 860.88 | 1.76 | 1.14 | 0.01727 | 1.842 | 294.3143 | 14.989 | 1.746 | 211.3 |
| 16.01.08 | CALHOUN | 60 | 60 | 60 | CMP | 66 | 856.46 | 856.06 | 0.006061 | 211.303 | 185.3 | 64.33 | 0.95 | 0.41 | 900 | 5 | 19.635 | 211.303 | 0.024 | 863.96 | 861.06 | 1.12 | 1.78 | 0.02697 | 1.842 | 367.7638 | 18.73 | 2.7263 | 211.3 |
| 16.01.04 | CALHOUN | 24 | 24 | 24 | CMP | 59 | 861.42 | 861.27 | 0.002542 | 21.3824 | 19 | 8.2 | 0.95 | 0.41 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 864.42 | 863.27 | 0.41 | 0.74 | 0.01254 | 1 | 21.78448 | 6.9342 | 0.3737 | 21.382 |
| 16.01.01 | COFFEE & 35' DRAINAGE EASEMENT | 66 | 66 | 66 | CMP | 40 | 862.44 | 862.16 | 0.007000 | 268.157 | 502 | 368 | 0.95 | 0.41 | 700 | 5.5 | 23.758 | 268.157 | 0.024 | 870.69 | 867.66 | 2.13 | 0.9 | 0.0225 | 1.963 | 433.1145 | 18.23 | 2.5826 | 268.16 |
| 16.01.03 | COFFEE & 35' DRAINAGE EASEMENT | 66 | 66 | 66 | CMP | 40 | 862.49 | 862.07 | 0.010500 | 268.157 | 547 | 313 | 0.95 | 0.41 | 700 | 5.5 | 23.758 | 268.157 | 0.024 | 870.74 | 867.57 | 1.79 | 1.38 | 0.0345 | 1.963 | 536.3163 | 22.574 | 3.96 | 268.16 |
| 16.01.02 | COFFEE & 35' DRAINAGE EASEMENT | 66 | 66 | 66 | CMP | 40 | 862.5 | 862.03 | 0.011750 | 268.157 | 502 | 368 | 0.95 | 0.41 | 700 | 5.5 | 23.758 | 268.157 | 0.024 | 870.75 | 867.53 | 2.15 | 1.07 | 0.02675 | 1.963 | 472.2515 | 19.877 | 3.0705 | 268.16 |
| 17.02.07 | COFFEE & JOHNSON | 39X57 | 48 | 39 | ACMP | 44 | 956.14 | 955.59 | 0.012500 | 109.029 | 88.8 | 37.8 | 1.48 | 0.63 | 60 | 3.25 | 12.566 | 109.029 | 0.024 | 961.015 | 958.84 | 1.24 | 0.935 | 0.02125 | 1.587 | 180.0461 | 14.328 | 1.5953 | 109.03 |
| 17.02.06 | JOHNSON & JEFFERS | 39X57 | 48 | 39 | ACMP | 45 | 946.41 | 945.41 | 0.022222 | 109.029 | 236.8 | 100.8 | 1.48 | 0.63 | 160 | 3.25 | 12.566 | 109.029 | 0.024 | 951.285 | 948.66 | 1.12 | 1.505 | 0.03344 | 1.587 | 225.874 | 17.974 | 2.5107 | 109.03 |
| 17.02.05 | JEFFERS | 39X57 | 48 | 39 | ACMP | 44 | 952.37 | 952.32 | 0.001136 | 109.029 | 236.8 | 100.8 | 1.48 | 0.63 | 160 | 3.25 | 12.566 | 109.029 | 0.024 | 957.245 | 955.57 | 1.11 | 0.565 | 0.01284 | 1.587 | 139.9594 | 11.138 | 0.964 | 109.03 |
| 17.02.01 | COFFEE & WEHR | 18X24 | 21 | 18 | ACMP | 49 | 955.62 | 954.92 | 0.014286 | 14.1776 | 10.6 | 4.6 | 1.06 | 0.46 | 10 | 1.5 | 2.4053 | 14.1776 | 0.024 | 957.87 | 956.42 | 0.49 | 0.96 | 0.01959 | 0.915 | 19.06996 | 7.9284 | 0.4885 | 14.178 |
| 17.02.02 | CARI-ADAM | 39X57 | 48 | 39 | ACMP | 48 | 951 | 950.58 | 0.008750 | 109.029 | 84.8 | 36.8 | 1.06 | 0.46 | 80 | 3.25 | 12.566 | 109.029 | 0.024 | 955.875 | 953.83 | 1.21 | 0.835 | 0.0174 | 1.587 | 162.9021 | 12.963 | 1.3059 | 109.03 |
| 17.02.03 | CARI-ADAM | 39X57 | 48 | 39 | ACMP | 48 | 951.51 | 951.15 | 0.007500 | 109.029 | 84.8 | 36.8 | 1.06 | 0.46 | 80 | 3.25 | 12.566 | 109.029 | 0.024 | 956.385 | 954.4 | 1.32 | 0.665 | 0.01385 | 1.587 | 145.3766 | 11.569 | 1.0401 | 109.03 |
| 17.03.02 | COFFEE & WEHR | 39X57 | 48 | 39 | ACMP | 118 | 953.89 | 953.22 | 0.005678 | 109.029 | 84.8 | 36.8 | 1.06 | 0.46 | 80 | 3.25 | 12.566 | 109.029 | 0.024 | 958.765 | 956.47 | 0.78 | 1.515 | 0.01284 | 1.587 | 139.9489 | 11.137 | 0.9638 | 109.03 |
| 17.03.11 | COFFEE & WEHR | 39X57 | 48 | 39 | ACMP | 127 | 953.9 | 953.38 | 0.004094 | 109.029 | 42.4 | 18.4 | 1.06 | 0.46 | 40 | 3.25 | 12.566 | 109.029 | 0.024 | 958.775 | 956.63 | 0.69 | 1.455 | 0.01146 | 1.587 | 132.2007 | 10.52 | 0.8601 | 109.03 |
| 17.03.08 | WEHR & BITTERWEET | 39X57 | 48 | 39 | ACMP | 48 | 954.88 | 954.47 | 0.008542 | 109.029 | 84.8 | 36.8 | 1.06 | 0.46 | 80 | 3.25 | 12.566 | 109.029 | 0.024 | 959.755 | 957.72 | 1.21 | 0.825 | 0.01719 | 1.587 | 161.9237 | 12.885 | 1.2903 | 109.03 |
| 17.03.07 | WEHR & MULBERRY | 39X57 | 48 | 39 | ACMP | 48 | 955.48 | 955.37 | 0.002292 | 109.029 | 42.4 | 18.4 | 1.06 | 0.46 | 40 | 3.25 | 12.566 | 109.029 | 0.024 | 960.355 | 958.62 | 1.01 | 0.725 | 0.0151 | 1.587 | 151.7933 | 12.079 | 1.1339 | 109.03 |
| 17.03.05 | WEHR & CHESTNUT | 39X57 | 48 | 39 | ACMP | 73 | 956.4 | 956.34 | 0.000822 | 109.029 | 63.6 | 27.6 | 1.06 | 0.46 | 60 | 3.25 | 12.566 | 109.029 | 0.024 | 961.275 | 959.59 | 0.89 | 0.795 | 0.01089 | 1.587 | 128.8921 | 10.257 | 0.8176 | 109.03 |
| 18.02.09 | OAK PARK | 24 | 24 | 24 | CMP | 44 | 899.5 | 898.61 | 0.020227 | 21.3824 | 21.7 | 10.1 | 2.17 | 1.01 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 902.5 | 900.61 | 0.72 | 1.17 | 0.02659 | 1 | 31.71933 | 10.097 | 0.7922 | 21.382 |
| 18.02.07 | OAK & ANN LOUISE | 24 | 24 | 24 | CMP | 61 | 899.05 | 897.94 | 0.018197 | 21.3824 | 21.7 | 10.1 | 2.17 | 1.01 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 902.05 | 899.94 | 0.65 | 1.46 | 0.02393 | 1 | 30.09324 | 9.579 | 0.7131 | 21.382 |
| 18.02.06 | ANN LOUISE | 24 | 24 | 24 | CMP | 50 | 857.34 | 856.8 | 0.010800 | 21.3824 | 43.4 | 20.2 | 2.17 | 1.01 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 860.34 | 858.8 | 0.75 | 0.79 | 0.0158 | 1 | 24.4504 | 7.7828 | 0.4707 | 21.382 |
| 18.02.08 | OAK PARK & HANKE | 24 | 24 | 24 | RCP | 43 | 875.28 | 874.61 | 0.015581 | 21.3824 | 43.4 | 20.2 | 2.17 | 1.01 | 20 | 2 | 3.1416 | 21.3824 | 0.013 | 878.28 | 876.61 | 1.26 | 0.41 | 0.00953 | 1 | 35.06574 | 11.162 | 0.9682 | 21.382 |
| 18.03.11 | COFFEE & WOODLAND | 48 | 48 | 48 | CMP | 48 | 929.95 | 925.29 | 0.097083 | 120.957 | 260.4 | 121.2 | 2.17 | 1.01 | 120 | 4 | 12.566 | 120.957 | 0.024 | 935.95 | 929.29 | 3.21 | 3.45 | 0.07188 | 1.587 | 331.1259 | 26.35 | 5.3958 | 120.96 |
| 18.03.10 | COFFEE & WOODLAND | 24 | 24 | 24 | CMP | 44 | 934.65 | 933.27 | 0.031364 | 21.3824 | 43.4 | 20.2 | 2.17 | 1.01 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 937.65 | 935.27 | 0.84 | 1.54 | 0.035 | 1 | 36.39079 | 11.584 | 1.0427 | 21.382 |
| 18.03.08 | WOODLAND | 36X48 | 42 | 36 | CMP | 40 | 937.67 | 937.13 | 0.013500 | 80.2007 | 217 | 101 | 2.17 | 1.01 | 100 | 3 | 9.6211 | 80.2007 | 0.024 | 942.17 | 940.13 | 1.02 | 1.02 | 0.0255 | 1.452 | 138.1431 | 14.358 | 1.6021 | 80.201 |

*NEW BERLIN CULVERT ANALYSIS (greater than 18 inch diameter)*

| CULVERT ID | Location | Size (in) | Equiv. Diam. (in) | Height (in) | Mat'l Type | Length (ft) | U/S Invert (ft) | D/S Invert (ft) | Slope (ft/ft) | Cap. (cfs) | 100 yr (cfs) | 10 yr (cfs) | 100 Yr Rate | 10 yr Rate | Con-tributing Acres | IC Head (ft) | IC Area (ft^2) | IC Flow (cfs) | Manning 'n' | HW Elev. (ft) | TW Elev. (ft) | Entr loss K | Head (ft) | Friction Slope | R^2/3 | Velocity (ft/s) | BC Flow (ft/s) | Entr loss (ft) | Cap. (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18.03.09 | WOODLAND & RACINE | 24 | 24 | 24 | CMP | 47 | 938.61 | 937.98 | 0.013404 | 21.3824 | 43.4 | 20.2 | 2.17 | 1.01 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 941.61 | 939.98 | 0.65 | 0.98 | 0.02085 | 1 | 28.08805 | 8.9407 | 0.6212 | 21.382 |
| 18.03.07 | WOODLAND & RACINE | 48 | 48 | 48 | CMP | 63 | 941.8 | 940.96 | 0.013333 | 120.957 | 173.6 | 80.8 | 2.17 | 1.01 | 80 | 4 | 12.566 | 120.957 | 0.024 | 947.8 | 944.96 | 1.45 | 1.39 | 0.02206 | 1.587 | 183.46 | 14.599 | 1.6563 | 120.96 |
| 18.03.05 | RACINE & ORCHARD | 24 | 24 | 24 | CMP | 44 | 946.19 | 945.98 | 0.004773 | 21.3824 | 65.1 | 30.3 | 2.17 | 1.01 | 30 | 2 | 3.1416 | 21.3824 | 0.024 | 949.19 | 947.98 | 0.49 | 0.72 | 0.01636 | 1 | 24.88269 | 7.9204 | 0.4875 | 21.382 |
| 18.04.01 | RACINE & SWARTZ | 24 | 24 | 24 | CMP | 62 | 974.91 | 974.66 | 0.004032 | 21.3824 | 29.6 | 12.6 | 1.48 | 0.63 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 977.91 | 976.66 | 0.42 | 0.83 | 0.01339 | 1 | 22.50612 | 7.1639 | 0.3988 | 21.382 |
| 19.03.14 | BEEHEIM & S.VALLEY | 24X36 | 30 | 24 | ACMP | 44 | 993.04 | 992.9 | 0.003182 | 33.41 | 69.3 | 29.7 | 0.77 | 0.33 | 90 | 2 | 4.9087 | 33.41 | 0.024 | 996.04 | 994.9 | 0.5 | 0.64 | 0.01455 | 1.16 | 42.53514 | 8.6652 | 0.5835 | 33.41 |
| 19.03.15 | BEEHEIM & S.VALLEY | 24X36 | 30 | 24 | ACMP | 44 | 992.96 | 992.82 | 0.003182 | 33.41 | 69.3 | 29.7 | 0.77 | 0.33 | 90 | 2 | 4.9087 | 33.41 | 0.024 | 995.96 | 994.82 | 0.5 | 0.64 | 0.01455 | 1.16 | 42.53514 | 8.6652 | 0.5835 | 33.41 |
| 19.03.16 | BEEHEIM & S.VALLEY | 24X36 | 30 | 24 | ACMP | 44 | 993.08 | 992.94 | 0.003182 | 33.41 | 69.3 | 29.7 | 0.77 | 0.33 | 90 | 2 | 4.9087 | 33.41 | 0.024 | 996.08 | 994.94 | 0.5 | 0.64 | 0.01455 | 1.16 | 42.53514 | 8.6652 | 0.5835 | 33.41 |
| 19.03.05 | BEEHEIM & RAINBOW | 18X24 | 21 | 18 | ACMP | 44 | 1001.25 | 1000.99 | 0.005909 | 14.1776 | 23.1 | 9.9 | 0.77 | 0.33 | 30 | 1.5 | 2.4053 | 14.1776 | 0.024 | 1003.5 | 1002.5 | 0.5 | 0.51 | 0.01159 | 0.915 | 14.668 | 6.0982 | 0.289 | 14.178 |
| 19.03.06 | BEEHEIM & RAINBOW | 18X24 | 21 | 18 | ACMP | 44 | 1001.15 | 1000.87 | 0.006364 | 14.1776 | 23.1 | 9.9 | 0.77 | 0.33 | 30 | 1.5 | 2.4053 | 14.1776 | 0.024 | 1003.4 | 1002.4 | 0.5 | 0.53 | 0.01205 | 0.915 | 14.95284 | 6.2167 | 0.3003 | 14.178 |
| 19.03.07 | BEEHEIM & RAINBOW | 18X24 | 21 | 18 | ACMP | 44 | 1001.31 | 1000.89 | 0.009545 | 14.1776 | 23.1 | 9.9 | 0.77 | 0.33 | 30 | 1.5 | 2.4053 | 14.1776 | 0.024 | 1003.56 | 1002.4 | 0.5 | 0.67 | 0.01523 | 0.915 | 16.81215 | 6.9897 | 0.3797 | 14.178 |
| 19.03.08 | RAINBOW CT | 21X27 | 24 | 21 | ACMP | 44 | 1009.65 | 1008.94 | 0.016136 | 20.0014 | 23.1 | 9.9 | 0.77 | 0.33 | 30 | 1.75 | 3.1416 | 20.0014 | 0.024 | 1012.28 | 1010.7 | 0.5 | 1.085 | 0.02466 | 1 | 30.54541 | 9.7229 | 0.7347 | 20.001 |
| 19.03.04 | HIDDEN | 21X27 | 24 | 21 | CMP | 44 | 985.63 | 985.35 | 0.006364 | 20.0014 | 31.6 | 14.6 | 1.58 | 0.73 | 20 | 1.75 | 3.1416 | 20.0014 | 0.024 | 988.255 | 987.1 | 0.5 | 0.655 | 0.01489 | 1 | 23.73295 | 7.5544 | 0.4435 | 20.001 |
| 19.03.02 | HILLVIEW | 24X36 | 30 | 24 | ACMP | 44 | 972.51 | 972.27 | 0.005455 | 33.41 | 31.6 | 14.6 | 1.58 | 0.73 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 975.51 | 974.27 | 0.5 | 0.74 | 0.01682 | 1.16 | 45.73763 | 9.3176 | 0.6747 | 33.41 |
| 19.03.17 | LAWNSPACE | 24 | 24 | 24 | CMP | 62 | 954.83 | 954.51 | 0.005161 | 21.3824 | 15.8 | 7.3 | 1.58 | 0.73 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 957.83 | 956.51 | 0.5 | 0.82 | 0.01323 | 1 | 22.37013 | 7.1206 | 0.394 | 21.382 |
| 19.03.18 | LAWNSPACE | 24X36 | 30 | 24 | CMP | 40 | 937.76 | 936.65 | 0.027750 | 33.41 | 47.4 | 21.9 | 1.58 | 0.73 | 30 | 2 | 4.9087 | 33.41 | 0.024 | 940.76 | 938.65 | 0.5 | 1.61 | 0.04025 | 1.16 | 70.75663 | 14.414 | 1.6147 | 33.41 |
| 20.03.02 | RACINE & OBSERVATORY | 24 | 24 | 24 | ACMP | 64 | 913 | 912.84 | 0.002500 | 21.0571 | 11.1 | 4.3 | 1.11 | 0.43 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 916 | 914.84 | 0.41 | 0.75 | 0.01172 | 1 | 21.05708 | 6.7027 | 0.3491 | 21.057 |
| 20.03.03 | RACINE | 30 | 30 | 30 | CMP | 92 | 912.71 | 907.49 | 0.056739 | 37.3535 | 33.3 | 12.9 | 1.11 | 0.43 | 30 | 2.5 | 4.9087 | 37.3535 | 0.024 | 916.46 | 909.99 | 1.2 | 5.27 | 0.05728 | 1.16 | 84.41032 | 17.196 | 2.2979 | 37.354 |
| 20.03.01 | RACINE & LAWNSDALE | 24 | 24 | 24 | CMP | 124 | 901.92 | 901.69 | 0.001855 | 17.2926 | 33.3 | 12.9 | 1.11 | 0.43 | 30 | 2 | 3.1416 | 21.3824 | 0.024 | 904.92 | 903.69 | 0.25 | 0.98 | 0.0079 | 1 | 17.29257 | 5.5044 | 0.2355 | 17.293 |
| 20.02.01 | RACINE & 30' DRAINAGE | 24 | 24 | 24 | CCP | 214 | 921.09 | 919.41 | 0.007850 | 21.3824 | 28.5 | 12.9 | 0.95 | 0.43 | 30 | 2 | 3.1416 | 21.3824 | 0.013 | 924.09 | 921.41 | 0.65 | 2.03 | 0.00949 | 1 | 34.9757 | 11.133 | 0.9632 | 21.382 |
| 20.02.02 | RACINE & 30' DRAINAGE | 24 | 24 | 24 | RCP | 319 | 919.41 | 916.37 | 0.009530 | 21.3824 | 28.5 | 12.9 | 0.95 | 0.43 | 30 | 2 | 3.1416 | 21.3824 | 0.013 | 922.41 | 918.37 | 0.69 | 3.35 | 0.0105 | 1 | 36.80039 | 11.714 | 1.0663 | 21.382 |
| 21.01.01 | OBSERVATORY & WOELFEL | 36X72 | 48 | 36 | ACMP | 42 | 885.25 | 884.91 | 0.008095 | 104.752 | 343 | 239 | 1.41 | 0.62 | 660 | 3 | 12.566 | 104.752 | 0.024 | 889.75 | 887.91 | 1.24 | 0.6 | 0.01429 | 1.587 | 147.6234 | 11.747 | 1.0725 | 104.75 |
| 21.01.02 | OBSERVATORY & WOELFEL | 21X30 | 24 | 30 | ARCP | 120 | 898.62 | 898.42 | 0.001667 | 18.708 | 308 | 166 | 1.41 | 0.62 | 660 | 2.5 | 3.1416 | 23.9063 | 0.024 | 902.37 | 900.92 | 0.34 | 1.11 | 0.00925 | 1 | 18.70804 | 5.955 | 0.2756 | 18.708 |
| 21.01.03 | OBSERVATORY & JOHNS | 72X102 | 84 | 72 | ACMP | 40 | 875.16 | 874.63 | 0.013250 | 453.684 | 556 | 193 | 1.36 | 0.59 | 1700 | 6 | 38.485 | 453.684 | 0.024 | 884.16 | 880.63 | 3.25 | 0.28 | 0.007 | 2.305 | 459.5733 | 11.942 | 1.1082 | 453.68 |
| 21.01.04 | JOHNS & ELM | 20X30 | 24 | 20 | ACMP | 45 | 871.17 | 870.1 | 0.023778 | 19.5194 | 27.2 | 11.8 | 1.36 | 0.59 | 20 | 1.6667 | 3.1416 | 19.5194 | 0.024 | 873.67 | 871.77 | 0.76 | 1.143 | 0.02541 | 1 | 31.00542 | 9.8693 | 0.7569 | 19.519 |
| 21.01.09 | CALHOUN & JILLS | 21X30 | 24 | 21 | ACMP | 139 | 877.02 | 876.17 | 0.006115 | 18.8476 | 27.2 | 11.8 | 1.36 | 0.59 | 20 | 1.75 | 3.1416 | 20.0014 | 0.024 | 879.645 | 877.92 | 0.42 | 1.305 | 0.00939 | 1 | 18.84757 | 5.9994 | 0.2797 | 18.848 |
| 22.03.01 | CALHOUN | 24 | 24 | 24 | CMP | 41 | 877.69 | 877.55 | 0.003415 | 21.3824 | 23.1 | 14.7 | 0.77 | 0.49 | 30 | 2 | 3.1416 | 21.3824 | 0.024 | 880.69 | 879.55 | 0.48 | 0.66 | 0.0161 | 1 | 24.67956 | 7.8557 | 0.4796 | 21.382 |
| 22.03.02 | CALHOUN & SALENTINE | 18X30 | 24 | 18 | ACMP | 60 | 878.55 | 878.36 | 0.003167 | 18.2818 | 23.1 | 14.7 | 0.77 | 0.49 | 30 | 1.5 | 3.1416 | 18.5177 | 0.024 | 880.8 | 879.86 | 0.41 | 0.53 | 0.00883 | 1 | 18.28183 | 5.8193 | 0.2632 | 18.282 |
| 22.03.12 | MARY ROSS & CALDWELL | 18X30 | 24 | 18 | ACMP | 45 | 873.94 | 873.29 | 0.014444 | 18.5177 | 34.8 | 20.7 | 1.16 | 0.69 | 30 | 1.5 | 3.1416 | 18.5177 | 0.024 | 876.19 | 874.79 | 0.48 | 0.92 | 0.02044 | 1 | 27.81282 | 8.8531 | 0.6091 | 18.518 |
| 22.03.17 | MARY ROSS & CALDWELL | 18X30 | 24 | 18 | ACMP | 45 | 873.5 | 873.01 | 0.010889 | 18.5177 | 34.8 | 20.7 | 1.16 | 0.69 | 30 | 1.5 | 3.1416 | 18.5177 | 0.024 | 875.75 | 874.51 | 0.25 | 0.99 | 0.022 | 1 | 28.85153 | 9.1837 | 0.6554 | 18.518 |
| 22.03.16 | MARY ROSS & CALDWELL | 24 | 24 | 24 | ACMP | 45 | 873.19 | 872.74 | 0.010000 | 21.3824 | 34.8 | 20.7 | 1.16 | 0.69 | 30 | 2 | 3.1416 | 21.3824 | 0.024 | 876.19 | 874.74 | 0.48 | 0.97 | 0.02156 | 1 | 28.55861 | 9.0905 | 0.6422 | 21.382 |
| 22.03.15 | MARY ROSS & MARIETTA | 21X27 | 24 | 21 | ACMP | 44 | 875.16 | 874.67 | 0.011136 | 20.0014 | 34.8 | 20.7 | 1.16 | 0.69 | 30 | 1.75 | 3.1416 | 20.0014 | 0.024 | 877.785 | 876.42 | 0.35 | 1.015 | 0.02307 | 1 | 29.54365 | 9.404 | 0.6873 | 20.001 |
| 22.03.03 | SALENTINE & CALDWELL | 18X30 | 24 | 18 | ACMP | 47 | 851.24 | 850.87 | 0.007872 | 18.5177 | 46.4 | 27.6 | 1.16 | 0.69 | 40 | 1.5 | 3.1416 | 18.5177 | 0.024 | 853.49 | 852.37 | 0.41 | 0.71 | 0.01511 | 1 | 23.90769 | 7.6101 | 0.4501 | 18.518 |
| 22.03.04 | SALENTINE & CALDWELL | 24X36 | 30 | 24 | ACMP | 45 | 850.77 | 850.05 | 0.016000 | 33.41 | 69.6 | 41.4 | 1.16 | 0.69 | 60 | 2 | 4.9087 | 33.41 | 0.024 | 853.77 | 852.05 | 0.75 | 0.97 | 0.02156 | 1.16 | 51.78021 | 10.549 | 0.8647 | 33.41 |
| 22.03.05 | SALENTINE & CALDWELL | 24X36 | 30 | 24 | ACMP | 45 | 850.67 | 850.29 | 0.008444 | 33.41 | 69.6 | 41.4 | 1.16 | 0.69 | 60 | 2 | 4.9087 | 33.41 | 0.024 | 853.67 | 852.29 | 0.62 | 0.76 | 0.01689 | 1.16 | 45.83368 | 9.3372 | 0.6775 | 33.41 |
| 22.02.02 | CALHOUN S. OF OBSERVATORY | 24 | 24 | 24 | CMP | 25 | 915.17 | 913.17 | 0.080000 | 21.3824 | 38 | 17.2 | 0.95 | 0.43 | 40 | 2 | 3.1416 | 21.3824 | 0.024 | 918.17 | 915.17 | 1.6 | 1.4 | 0.056 | 1 | 46.03111 | 14.652 | 1.6684 | 21.382 |
| 22.03.26 | NATIONAL | 30X40 | 34 | 30 | RCP | 424 | 921.96 | 921.45 | 0.001203 | 47.9785 | 11.4 | 5.1 | 1.14 | 0.51 | 10 | 2.5 | 6.305 | 47.9785 | 0.013 | 925.71 | 923.95 | 0.42 | 1.34 | 0.00316 | 1.261 | 51.1064 | 8.1057 | 0.5106 | 47.979 |
| 22.03.27 | NATIONAL | 30X40 | 34 | 30 | RCP | 40 | 921.45 | 921.37 | 0.002000 | 47.9785 | 11.4 | 5.1 | 1.14 | 0.51 | 10 | 2.5 | 6.305 | 47.9785 | 0.013 | 925.2 | 923.87 | 0.75 | 0.58 | 0.0145 | 1.261 | 109.4687 | 17.362 | 2.3426 | 47.979 |
| 22.03.28 | NATIONAL | 18X27 | 22 | 18 | ACMP | 41 | 916.6 | 916.3 | 0.007317 | 15.56 | 34.2 | 15.3 | 1.14 | 0.51 | 30 | 1.5 | 2.6398 | 15.56 | 0.024 | 918.85 | 917.8 | 0.42 | 0.63 | 0.01537 | 0.944 | 19.11905 | 7.2426 | 0.4076 | 15.56 |
| 22.01.06 | MAYFLOWER & KATHERINE | 18X27 | 22 | 18 | ACMP | 42 | 895.04 | 894.91 | 0.003095 | 15.56 | 16.5 | 8.1 | 1.65 | 0.81 | 10 | 1.5 | 2.6398 | 15.56 | 0.024 | 897.29 | 896.41 | 0.36 | 0.52 | 0.01238 | 0.944 | 17.16188 | 6.5012 | 0.3285 | 15.56 |
| 23.03.01 | SUNNY SLOPE (S OF HOWARD) | 36 | 36 | 36 | RCP | 55 | 880.73 | 880.14 | 0.010727 | 58.923 | 49.5 | 24.3 | 1.65 | 0.81 | 30 | 3 | 7.0686 | 58.923 | 0.013 | 885.23 | 883.14 | 1.25 | 0.84 | 0.01527 | 1.31 | 130.846 | 18.511 | 2.6628 | 58.923 |
| 23.03.02 | SUNNY SLOPE (S OF HOWARD) | 29X46 | 36 | 29 | ARCP | 77 | 878.29 | 878.1 | 0.002468 | 52.885 | 19 | 9.4 | 1.9 | 0.94 | 10 | 2.4167 | 7.0686 | 52.885 | 0.013 | 881.915 | 880.52 | 1.12 | 0.278 | 0.00361 | 1.31 | 63.656 | 9.0055 | 0.6302 | 52.885 |
| 23.01.01 | SUNNY SLOPE & ARMOUR | 24 | 24 | 24 | RCP | 54 | 906.24 | 905.87 | 0.006852 | 21.3824 | 30.6 | 11 | 1.53 | 0.55 | 20 | 2 | 3.1416 | 21.3824 | 0.013 | 909.24 | 907.87 | 0.75 | 0.62 | 0.01148 | 1 | 38.47905 | 12.248 | 1.1658 | 21.382 |
| 23.01.02 | MAPLE RIDGE & SUNNY SLOPE | 24 | 24 | 24 | RCP | 58 | 901.46 | 901.35 | 0.001897 | 21.3824 | 30.6 | 11 | 1.53 | 0.55 | 20 | 2 | 3.1416 | 21.3824 | 0.013 | 904.46 | 903.35 | 0.85 | 0.26 | 0.00448 | 1 | 24.04352 | 7.6533 | 0.4552 | 21.382 |
| 23.01.03 | VALLEY & SUNNY SLOPE | 30 | 30 | 30 | RCP | 55 | 895.92 | 895.12 | 0.014545 | 37.3535 | 45.9 | 16.5 | 1.53 | 0.55 | 30 | 2.5 | 4.9087 | 37.3535 | 0.013 | 899.67 | 897.62 | 1.75 | 0.3 | 0.00545 | 1.16 | 48.08741 | 9.7963 | 0.7458 | 37.354 |
| 23.01.04 | SUNNY SLOPE | 21X27 | 24 | 21 | ACMP | 53 | 889.17 | 889.04 | 0.002453 | 20.0014 | 19 | 9.4 | 1.9 | 0.94 | 10 | 1.75 | 3.1416 | 20.0014 | 0.024 | 891.795 | 890.79 | 0.42 | 0.585 | 0.01104 | 1 | 20.43607 | 6.505 | 0.3288 | 20.001 |
| 23.01.05 | SUNNY SLOPE | 30X34 | 31 | 30 | ARCP | 64 | 876.33 | 875.55 | 0.012188 | 39.8853 | 45.9 | 16.5 | 1.53 | 0.55 | 30 | 2.5 | 5.2414 | 39.8853 | 0.013 | 880.08 | 878.05 | 1.25 | 0.78 | 0.01219 | 1.186 | 78.44836 | 14.967 | 1.7408 | 39.885 |
| 23.01.06 | SUNNY SLOPE | 27X42 | 32 | 27 | ACMP | 13 | 876.48 | 876.33 | 0.011538 | 40.3191 | 45.9 | 16.5 | 1.53 | 0.55 | 30 | 2.25 | 5.5851 | 40.3191 | 0.024 | 879.855 | 878.58 | 0.41 | 0.865 | 0.06654 | 1.211 | 108.0597 | 19.348 | 2.9091 | 40.319 |
| 23.01.07 | SUNNY SLOPE | 27X42 | 32 | 27 | ACMP | 13 | 877.25 | 876.33 | 0.070769 | 40.3191 | 38 | 18.8 | 1.9 | 0.94 | 20 | 2.25 | 5.5851 | 40.3191 | 0.024 | 880.625 | 878.58 | 1.12 | 0.925 | 0.07115 | 1.211 | 111.7446 | 20.008 | 3.1109 | 40.319 |
| 24.04.12 | BELOIT & FREEWAY | 30 | 30 | 30 | CMP | 443 | 868.21 | 861.23 | 0.015756 | 37.3535 | 76 | 30.4 | 1.9 | 0.76 | 40 | 2.5 | 4.9087 | 37.3535 | 0.024 | 871.96 | 863.73 | 0.62 | 7.61 | 0.01718 | 1.16 | 46.22476 | 9.4168 | 0.6891 | 37.354 |
| 24.04.13 | BELOIT & FREEWAY | 24 | 24 | 24 | CMP | 106 | 869.79 | 869.34 | 0.004245 | 19.2673 | 76 | 30.4 | 1.9 | 0.76 | 40 | 2 | 3.1416 | 21.3824 | 0.024 | 872.79 | 871.34 | 0.41 | 1.04 | 0.00981 | 1 | 19.26731 | 6.133 | 0.2923 | 19.267 |
| 24.04.07 | BELOIT & ARMOUR | 24 | 24 | 24 | CMP | 57 | 864.9 | 864.25 | 0.011404 | 21.3824 | 57 | 22.8 | 1.9 | 0.76 | 30 | 2 | 3.1416 | 21.3824 | 0.024 | 867.9 | 866.25 | 0.55 | 1.1 | 0.0193 | 1 | 27.02193 | 8.6013 | 0.5749 | 21.382 |
| 24.04.06 | ARMOUR | 24 | 24 | 24 | CMP | 57 | 863.3 | 863.01 | 0.005088 | 21.3824 | 57 | 22.8 | 1.9 | 0.76 | 30 | 2 | 3.1416 | 21.3824 | 0.024 | 866.3 | 865.01 | 0.45 | 0.84 | 0.01474 | 1 | 23.61346 | 7.5164 | 0.439 | 21.382 |
| 24.04.05 | ARMOUR & NORMAN | 21 | 21 | 21 | CMP | 57 | 866.13 | 865.92 | 0.003684 | 15.3136 | 57 | 22.8 | 1.9 | 0.76 | 30 | 1.75 | 2.4053 | 15.3136 | 0.024 | 868.755 | 867.67 | 0.35 | 0.735 | 0.01289 | 0.915 | 15.471 | 6.4321 | 0.3215 | 15.314 |
| 24.04.14 | BELOIT | 27x42 | 32 | 27 | ACMP | 86 | 841.47 | 841.3 | 0.001977 | 40.3191 | 95 | 38 | 1.9 | 0.76 | 50 | 2.25 | 5.5851 | 40.3191 | 0.024 | 844.845 | 843.55 | 0.45 | 0.845 | 0.00983 | 1.211 | 41.52471 | 7.435 | 0.4296 | 40.319 |
| 24.04.15 | BELOIT | 27x42 | 32 | 27 | ACMP | 86 | 841.7 | 841.29 | 0.004767 | 40.3191 | 95 | 38 | 1.9 | 0.76 | 50 | 2.25 | 5.5851 | 40.3191 | 0.024 | 845.075 | 843.54 | 0.51 | 1.025 | 0.01192 | 1.211 | 45.7341 | 8.1887 | 0.5211 | 40.319 |
| 24.04.08 | BELOIT & S. 124th | 38x54 | 44 | 38 | ACMP | 265 | 832.07 | 828.45 | 0.013660 | 90.4327 | 207 | 171 | 1.9 | 0.76 | 30 | 3.1667 | 10.559 | 90.4327 | 0.024 | 836.82 | 831.62 | 0.98 | 4.223 | 0.01594 | 1.498 | 123.6344 | 11.709 | 1.0654 | 90.433 |
| 24.04.09 | BELOIT & S. 124th | 38x54 | 44 | 38 | ACMP | 265 | 831.82 | 827.96 | 0.014566 | 90.4327 | 207 | 171 | 1.9 | 0.76 | 30 | 3.1667 | 10.559 | 90.4327 | 0.024 | 836.57 | 831.13 | 0.95 | 4.493 | 0.01696 | 1.498 | 127.5252 | 12.077 | 1.1335 | 90.433 |
| 24.04.11 | BELOIT & S. 124th | 24 | 24 | 24 | CMP | 65 | 831.23 | 830.66 | 0.008769 | 21.3824 | 19 | 7.6 | 1.9 | 0.76 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 834.23 | 832.66 | 0.51 | 1.06 | 0.01631 | 1 | 24.84012 | 7.9069 | 0.4858 | 21.382 |
| 24.04.10 | S. 124th | 18x24 | 21 | 18 | ACMP | 46 | 836.05 | 835.67 | 0.008261 | 14.1776 | 19 | 7.6 | 1.9 | 0.76 | 10 | 1.5 | 2.4053 | 14.1776 | 0.024 | 838.3 | 837.17 | 0.42 | 0.71 | 0.01543 | 0.915 | 16.92632 | 7.0371 | 0.3848 | 14.178 |
| 24.01.12 | WEATHERSTONE | 43X64 | 54 | 43 | CMPA | 78 | 817.9 | 816.72 | 0.015128 | 144.894 | 73 | 25 | 1.9 | 0.76 | 50 | 3.5833 | 15.904 | 144.894 | 0.024 | 823.275 | 820.3 | 1.45 | 1.522 | 0.01951 | 1.717 | 236.1693 | 14.849 | 1.7136 | 144.89 |

Exhibit C - 4
Culvert Analysis Database
City of New Berlin

*NEW BERLIN CULVERT ANALYSIS (greater than 18 inch diameter)*

| CULVERT ID | Location | Size (in) | Equiv. Diam. (in) | Height (in) | Mat'l Type | Length (ft) | U/S Invert (ft) | D/S Invert (ft) | Slope (ft/ft) | Cap. (cfs) | 100 yr (cfs) | 10 yr (cfs) | 100 Yr Rate | 10 yr Rate | Con-tributing Acres | IC Head (ft) | IC Area (ft^2) | IC Flow (cfs) | Manning 'n' | HW Elev. (ft) | TW Elev. (ft) | Entr loss K | Head (ft) | Friction Slope | R^2/3 | Velocity (ft/s) | BC Flow (ft/s) | Entr loss (ft) | Cap. (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24.01.13 | WEATHERSTONE | 38X57 | 48 | 38 | CMPA | 78 | 817.9 | 816.72 | 0.015128 | 107.622 | 73 | 25 | 1.9 | 0.76 | 50 | 3.1667 | 12.566 | 107.622 | 0.024 | 822.65 | 819.89 | 1.25 | 1.513 | 0.0194 | 1.587 | 172.0379 | 13.69 | 1.4565 | 107.62 |
| 24.01.14 | SOUTH VICTORIA CIRCLE | 39X56 | 54 | 39 | ACMP | 81 | 846.15 | 846.11 | 0.000494 | 137.99 | 28 | 10 | 1.9 | 0.76 | 30 | 3.25 | 15.904 | 137.99 | 0.024 | 851.025 | 849.36 | 0.86 | 0.805 | 0.00994 | 1.717 | 168.5646 | 10.599 | 0.873 | 137.99 |
| 24.01.15 | SOUTH VICTORIA CIRCLE | 42X64 | 54 | 42 | ACMP | 81 | 846.49 | 846.29 | 0.002469 | 143.199 | 28 | 10 | 1.9 | 0.76 | 30 | 3.5 | 15.904 | 143.199 | 0.024 | 851.74 | 849.79 | 0.95 | 1 | 0.01235 | 1.717 | 187.8748 | 11.813 | 1.0844 | 143.2 |
| 24.01.16 | COLD SPRING RD & S. VICTORIA | 24 | 24 | 24 | CMP | 47 | 844.87 | 844.64 | 0.004894 | 21.3824 | 19 | 7.6 | 1.9 | 0.76 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 847.87 | 846.64 | 0.48 | 0.75 | 0.01596 | 1 | 24.57192 | 7.8215 | 0.4754 | 21.382 |
| 24.04.17 | 124TH | 69X72 | 70 | 69 | CONC | 66 | 794.57 | 793.69 | 0.013333 | 308.425 | 142 | 51 | 1.9 | 0.76 | 75 | 5.75 | 26.725 | 308.425 | 0.013 | 803.195 | 799.44 | 2.75 | 1.005 | 0.01523 | 2.041 | 769.5462 | 28.795 | 6.4433 | 308.42 |
| 24.04.18 | WEATHERSTONE | 43x64 | 54 | 43 | CMP | 80 | 838.88 | 837.96 | 0.011500 | 144.894 | 76 | 30.4 | 1.9 | 0.76 | 40 | 3.5833 | 15.904 | 144.894 | 0.024 | 844.255 | 841.54 | 1.25 | 1.462 | 0.01827 | 1.717 | 228.5547 | 14.371 | 1.6049 | 144.89 |
| 24.04.19 | WEATHERSTONE | 38x57 | 48 | 38 | CMP | 80 | 838.86 | 837.96 | 0.011250 | 107.622 | 76 | 30.4 | 1.9 | 0.76 | 40 | 3.1667 | 12.566 | 107.622 | 0.024 | 843.61 | 841.13 | 1.25 | 1.233 | 0.01542 | 1.587 | 153.3555 | 12.204 | 1.1574 | 107.62 |
| 25.04.03 | BALBOA AND GRANGE | 30X42 | 36 | 30 | ACMP | 40 | 856.51 | 855.9 | 0.015250 | 53.7891 | 174.6 | 59.4 | 1.94 | 0.66 | 90 | 2.5 | 7.0686 | 53.7891 | 0.024 | 860.26 | 858.4 | 1.25 | 0.61 | 0.01525 | 1.31 | 70.82215 | 10.019 | 0.7801 | 53.789 |
| 25.04.04 | GRANGE & DRAINAGE EASEMENT | 48X96 | 74 | 48 | CMP | 37 | 813.8 | 813.51 | 0.007838 | 287.483 | 174.6 | 59.4 | 1.94 | 0.66 | 90 | 4 | 29.867 | 287.483 | 0.024 | 819.8 | 817.51 | 1.25 | 1.04 | 0.02811 | 2.118 | 656.7922 | 21.991 | 3.7581 | 287.48 |
| 25.04.05 | GRANGE & DRAINAGE EASEMENT | 48X96 | 74 | 48 | CMP | 37 | 813.8 | 813.51 | 0.007838 | 287.483 | 174.6 | 59.4 | 1.94 | 0.66 | 90 | 4 | 29.867 | 287.483 | 0.013 | 819.8 | 817.51 | 0.5 | 1.79 | 0.04838 | 2.118 | 1590.764 | 53.262 | 22.045 | 287.48 |
| 25.04.17 | GREENTREE AND GRANGE | 36X48 | 42 | 36 | ACMP | 50 | 832.51 | 832.49 | 0.000400 | 80.2007 | 224 | 72.6 | 1.94 | 0.66 | 110 | 3 | 9.6211 | 80.2007 | 0.024 | 837.01 | 835.49 | 0.95 | 0.57 | 0.0114 | 1.452 | 92.36585 | 9.6003 | 0.7162 | 80.201 |
| 25.04.34 | GREENTREE & CORTEZ | 48X180 | 115 | 48 | ACMP | 45 | 843.6 | 843.6 | 0.000000 | 694.296 | 776 | 264 | 1.94 | 0.66 | 400 | 4 | 72.131 | 694.296 | 0.024 | 849.6 | 847.6 | 1.45 | 0.55 | 0.01222 | 2.842 | 1403.343 | 19.455 | 2.9415 | 694.3 |
| 25.04.18 | CORTEZ AND GREENTREE | 21 | 21 | 21 | CMP | 41 | 829.92 | 829.9 | 0.000488 | 15.3136 | 38.8 | 13.2 | 1.94 | 0.66 | 20 | 1.75 | 2.4053 | 15.3136 | 0.024 | 832.545 | 831.65 | 0.34 | 0.555 | 0.01354 | 0.915 | 15.85137 | 6.5902 | 0.3375 | 15.314 |
| 25.04.14 | CORTEZ AND MARQUETTE | 39X56 | 48 | 39 | ACMP | 40 | 832.54 | 831.49 | 0.026250 | 109.029 | 95 | 47 | 2.44 | 0.71 | 130 | 3.25 | 12.566 | 109.029 | 0.024 | 837.415 | 834.74 | 1.29 | 1.385 | 0.03462 | 1.587 | 229.826 | 18.289 | 2.5994 | 109.03 |
| 25.04.15 | CORTEZ AND MARQUETTE | 39X56 | 48 | 39 | ACMP | 40 | 832.28 | 831.32 | 0.024000 | 109.029 | 95 | 47 | 2.44 | 0.71 | 130 | 3.25 | 12.566 | 109.029 | 0.024 | 837.155 | 834.57 | 1.75 | 0.835 | 0.02087 | 1.587 | 178.4504 | 14.201 | 1.5671 | 109.03 |
| 25.04.16 | CORTEZ AND MARQUETTE | 39X56 | 48 | 39 | ACMP | 40 | 832.27 | 831.34 | 0.023250 | 109.029 | 95 | 47 | 2.44 | 0.71 | 130 | 3.25 | 12.566 | 109.029 | 0.024 | 837.145 | 834.59 | 1.25 | 1.305 | 0.03262 | 1.587 | 223.0897 | 17.753 | 2.4492 | 109.03 |
| 25.04.11 | MARQUETTE AND BALBOA | 24X36 | 30 | 24 | ACMP | 45 | 836.83 | 836.05 | 0.017333 | 33.41 | 97.6 | 28.4 | 2.44 | 0.71 | 40 | 2 | 4.9087 | 33.41 | 0.024 | 839.83 | 838.05 | 0.75 | 1.03 | 0.02289 | 1.16 | 53.35763 | 10.87 | 0.9182 | 33.41 |
| 25.04.10 | MARQUETTE AND BALBOA | 32X48 | 42 | 32 | ACMP | 43 | 837.33 | 836.35 | 0.022791 | 75.614 | 97.6 | 28.4 | 2.44 | 0.71 | 40 | 2.6667 | 9.6211 | 75.614 | 0.024 | 841.33 | 839.02 | 1.57 | 0.743 | 0.01729 | 1.452 | 113.7409 | 11.822 | 1.0861 | 75.614 |
| 25.04.12 | MARQUETTE AND MAGELLAN | 24 | 24 | 24 | CMP | 40 | 842.88 | 842.22 | 0.016500 | 21.3824 | 146.4 | 42.6 | 2.44 | 0.71 | 60 | 2 | 3.1416 | 21.3824 | 0.024 | 845.88 | 844.22 | 0.64 | 1.02 | 0.0255 | 1 | 31.06187 | 9.8873 | 0.7597 | 21.382 |
| 25.04.08 | BALBOA AND RIVERWAY | 36X39 | 36 | 36 | ACMP | 44 | 838.76 | 838.09 | 0.015227 | 58.923 | 118 | 62.5 | 2.44 | 0.71 | 190 | 3 | 7.0686 | 58.923 | 0.024 | 843.26 | 841.09 | 1.12 | 1.05 | 0.02386 | 1.31 | 88.59363 | 12.533 | 1.2208 | 58.923 |
| 25.04.09 | BALBOA AND RIVERWAY | 36X39 | 36 | 36 | ACMP | 44 | 838.6 | 838.26 | 0.007727 | 58.923 | 118 | 62.5 | 2.44 | 0.71 | 190 | 3 | 7.0686 | 58.923 | 0.024 | 843.1 | 841.26 | 1.21 | 0.63 | 0.01432 | 1.31 | 68.62433 | 9.7084 | 0.7325 | 58.923 |
| 25.04.29 | 124TH & JOLIET | 18X27 | 22 | 18 | ACMP | 43 | 815.02 | 814.58 | 0.010233 | 15.56 | 107.3 | 44.25 | 1.43 | 0.59 | 75 | 1.5 | 2.6398 | 15.56 | 0.024 | 817.27 | 816.08 | 0.45 | 0.74 | 0.01721 | 0.944 | 20.23343 | 7.6647 | 0.4565 | 15.56 |
| 25.04.30 | 124TH & JOLIET | 27X42 | 36 | 27 | ACMP | 39 | 813.7 | 812.63 | 0.027436 | 51.0288 | 107.3 | 44.25 | 1.43 | 0.59 | 75 | 2.25 | 7.0686 | 51.0288 | 0.024 | 817.075 | 814.88 | 1.13 | 1.065 | 0.02731 | 1.31 | 94.77127 | 13.407 | 1.3969 | 51.029 |
| 25.04.31 | 124TH & JOLIET | 27X42 | 36 | 27 | ACMP | 39 | 813.05 | 812.73 | 0.008205 | 51.0288 | 114.4 | 47.2 | 1.43 | 0.59 | 80 | 2.25 | 7.0686 | 51.0288 | 0.024 | 816.425 | 814.98 | 0.84 | 0.605 | 0.01551 | 1.31 | 71.42982 | 10.105 | 0.7936 | 51.029 |
| 25.04.24 | 124TH & MARQUETTE | 24X36 | 30 | 24 | ACMP | 41 | 815.29 | 815 | 0.007073 | 33.41 | 100.1 | 41.3 | 1.43 | 0.59 | 70 | 2 | 4.9087 | 33.41 | 0.024 | 818.29 | 817 | 0.66 | 0.63 | 0.01537 | 1.16 | 43.71822 | 8.9062 | 0.6164 | 33.41 |
| 25.04.25 | 124TH & MARQUETTE | 24X36 | 30 | 24 | ARCP | 41 | 815.26 | 815 | 0.006341 | 33.41 | 100.1 | 41.3 | 1.43 | 0.59 | 70 | 2 | 4.9087 | 33.41 | 0.013 | 818.26 | 817 | 0.85 | 0.41 | 0.01 | 1.16 | 65.11065 | 13.264 | 1.3673 | 33.41 |
| 25.01.19 | CHERRY TREE AND COURTLAND PARKWAY | 36X58 | 48 | 36 | ACMP | 49 | 841.41 | 841.16 | 0.005102 | 104.752 | 97 | 33 | 1.94 | 0.66 | 50 | 3 | 12.566 | 104.752 | 0.024 | 845.91 | 844.16 | 1.12 | 0.63 | 0.01286 | 1.587 | 140.0478 | 11.145 | 0.9652 | 104.75 |
| 25.01.20 | CHERRY TREE AND COURTLAND PARKWAY | 36X58 | 48 | 36 | ACMP | 49 | 841.62 | 841.04 | 0.011837 | 104.752 | 97 | 33 | 1.94 | 0.66 | 50 | 3 | 12.566 | 104.752 | 0.024 | 846.12 | 844.04 | 1.25 | 0.83 | 0.01694 | 1.587 | 160.7479 | 12.792 | 1.2716 | 104.75 |
| 25.01.35 | MAGELLAN AND RADISSON | 24X36 | 30 | 24 | ACMP | 44 | 849.88 | 849.59 | 0.006591 | 33.41 | 38.8 | 13.2 | 1.94 | 0.66 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 852.88 | 851.59 | 0.64 | 0.65 | 0.01477 | 1.16 | 42.86615 | 8.7326 | 0.5926 | 33.41 |
| 25.01.10 | RADISSON AND COURTLAND PARKWAY | 30X50 | 42 | 30 | ACMP | 41 | 846.67 | 846.58 | 0.002195 | 73.2129 | 77.6 | 26.4 | 1.94 | 0.66 | 40 | 2.5 | 9.6211 | 73.2129 | 0.024 | 850.42 | 849.08 | 0.85 | 0.49 | 0.01195 | 1.452 | 94.57255 | 9.8297 | 0.7509 | 73.213 |
| 25.01.11 | RADISSON AND COURTLAND PARKWAY | 24X34 | 30 | 24 | ACMP | 40 | 846.88 | 846.3 | 0.014500 | 33.41 | 77.6 | 26.4 | 1.94 | 0.66 | 40 | 2 | 4.9087 | 33.41 | 0.024 | 849.88 | 848.3 | 0.71 | 0.87 | 0.02175 | 1.16 | 52.01323 | 10.596 | 0.8725 | 33.41 |
| 25.01.12 | RADISSON AND COURTLAND PARKWAY | 36X58 | 48 | 36 | ACMP | 45 | 846.95 | 846.1 | 0.018889 | 104.752 | 122 | 72.5 | 1.94 | 0.66 | 100 | 3 | 12.566 | 104.752 | 0.024 | 851.45 | 849.1 | 1.12 | 1.23 | 0.02733 | 1.587 | 204.1975 | 16.25 | 2.052 | 104.75 |
| 25.01.13 | RADISSON AND COURTLAND PARKWAY | 36X58 | 48 | 36 | ACMP | 44 | 846.97 | 846.92 | 0.001136 | 104.752 | 122 | 72.5 | 1.94 | 0.66 | 100 | 3 | 12.566 | 104.752 | 0.024 | 851.47 | 849.92 | 0.75 | 0.8 | 0.01818 | 1.587 | 166.5416 | 13.253 | 1.3649 | 104.75 |
| 25.01.23 | COURTLAND PARKWAY | 18X24 | 21 | 18 | ACMP | 56 | 854.71 | 852.53 | 0.038929 | 14.1776 | 155.2 | 52.8 | 1.94 | 0.66 | 80 | 1.5 | 2.4053 | 14.1776 | 0.024 | 856.96 | 854.03 | 0.75 | 2.18 | 0.03893 | 0.915 | 26.88106 | 11.176 | 0.9706 | 14.178 |
| 25.01.24 | COURTLAND PARKWAY | 42X66 | 48 | 42 | RCP | 55 | 857.04 | 851.99 | 0.091818 | 113.145 | 155.2 | 52.8 | 1.94 | 0.66 | 80 | 3.5 | 12.566 | 113.145 | 0.013 | 862.29 | 855.49 | 2.25 | 4.55 | 0.08273 | 1.587 | 655.8378 | 52.19 | 21.167 | 113.15 |
| 25.01.25 | COURTLAND PARKWAY | 42X66 | 48 | 42 | RCP | 55 | 854.83 | 852.1 | 0.049636 | 113.145 | 77.6 | 26.4 | 1.94 | 0.66 | 40 | 3.5 | 12.566 | 113.145 | 0.013 | 860.08 | 855.6 | 1.45 | 3.03 | 0.05509 | 1.587 | 535.195 | 42.589 | 14.096 | 113.15 |
| 25.02.20 | I-43 ROCK FREEWAY | 30 | 30 | 30 | CMP | 443 | 868.21 | 861.23 | 0.015756 | 37.3535 | 190 | 76 | 1.9 | 0.76 | 100 | 2.5 | 4.9087 | 37.3535 | 0.024 | 871.96 | 863.73 | 0.02 | 8.21 | 0.01853 | 1.16 | 48.01245 | 9.781 | 0.7435 | 37.354 |
| 25.02.21 | I-43 ROCK FREEWAY | 24 | 24 | 24 | CMP | 222 | 857.27 | 852.98 | 0.019324 | 21.3824 | 38 | 15.2 | 1.9 | 0.76 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 860.27 | 854.98 | 0.56 | 4.73 | 0.02131 | 1 | 28.39302 | 9.0378 | 0.6348 | 21.382 |
| 25.02.22 | I-43 ROCK FREEWAY | 30 | 30 | 30 | CMP | 247 | 854.91 | 851.33 | 0.014494 | 37.3535 | 38 | 15.2 | 1.9 | 0.76 | 20 | 2.5 | 4.9087 | 37.3535 | 0.024 | 858.66 | 853.83 | 0.6 | 4.23 | 0.01713 | 1.16 | 46.15363 | 9.4023 | 0.687 | 37.354 |
| 25.02.38 | I-43 ROCK FREEWAY & 124th | 36 | 36 | 36 | CMP | 110 | 845.44 | 845.08 | 0.003273 | 58.923 | 57 | 22.8 | 1.9 | 0.76 | 30 | 3 | 7.0686 | 58.923 | 0.024 | 849.94 | 848.08 | 0.57 | 1.29 | 0.01173 | 1.31 | 62.10588 | 8.7862 | 0.5999 | 58.923 |
| 25.02.39 | I-43 ROCK FREEWAY & 124th | 42X60 | 50 | 42 | RCP | 117 | 845.01 | 844.33 | 0.005812 | 122.77 | 57 | 22.8 | 1.9 | 0.76 | 30 | 3.5 | 13.635 | 122.77 | 0.013 | 850.26 | 847.83 | 0.12 | 2.31 | 0.01974 | 1.631 | 357.2415 | 26.2 | 5.3343 | 122.77 |
| 25.03.03 | SUNNY SLOPE & GRANGE | 18X30 | 24 | 18 | ARCP | 49 | 841.41 | 841.16 | 0.005102 | 18.5177 | 17.4 | 8.4 | 0.58 | 0.28 | 30 | 1.5 | 3.1416 | 18.5177 | 0.013 | 843.66 | 842.66 | 0.65 | 0.35 | 0.00714 | 1 | 30.35018 | 9.6608 | 0.7253 | 18.518 |
| 25.03.01 | SUNNY SLOPE & GRANGE | 18X30 | 24 | 18 | ARCP | 49 | 841.62 | 841.04 | 0.011837 | 18.5177 | 11.6 | 5.6 | 0.58 | 0.28 | 20 | 1.5 | 3.1416 | 18.5177 | 0.013 | 843.87 | 842.54 | 0.75 | 0.58 | 0.01184 | 1 | 39.06981 | 12.436 | 1.2019 | 18.518 |
| 25.03.02 | SERVICE & NICOLET | 24 | 24 | 24 | CMP | 30 | 882.05 | 881.3 | 0.025000 | 21.3824 | 11.6 | 5.6 | 0.58 | 0.28 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 885.05 | 883.3 | 0.85 | 0.9 | 0.03 | 1 | 33.69132 | 10.724 | 0.8938 | 21.382 |
| 25.03.11 | ELIZABETH COURT | 18X24 | 21 | 18 | ACMP | 41 | 899.67 | 899.17 | 0.012195 | 14.1776 | 11.6 | 5.6 | 0.58 | 0.28 | 20 | 1.5 | 2.4053 | 14.1776 | 0.024 | 901.92 | 900.67 | 0.48 | 0.77 | 0.01878 | 0.915 | 18.67092 | 7.7625 | 0.4683 | 14.178 |
| 25.03.09 | MARYKNOLL & JESSICA | 21X27 | 24 | 21 | ACMP | 38 | 908.27 | 907.59 | 0.017895 | 20.0014 | 38.8 | 13.2 | 1.94 | 0.66 | 20 | 1.75 | 3.1416 | 20.0014 | 0.024 | 910.895 | 909.34 | 0.64 | 0.915 | 0.02408 | 1 | 30.18396 | 9.6079 | 0.7174 | 20.001 |
| 25.03.17 | NICOLET & MENARD | 30X48 | 38 | 30 | ACMP | 60 | 877.36 | 876.98 | 0.006333 | 59.9317 | 58.2 | 19.8 | 1.94 | 0.66 | 30 | 2.5 | 7.8758 | 59.9317 | 0.024 | 881.11 | 879.48 | 0.78 | 0.85 | 0.01417 | 1.358 | 78.84684 | 10.011 | 0.7789 | 59.932 |
| 25.03.14 | NICOLET | 36X48 | 42 | 36 | ACMP | 48 | 869.54 | 869.05 | 0.010208 | 80.2007 | 116.4 | 39.6 | 1.94 | 0.66 | 60 | 3 | 9.6211 | 80.2007 | 0.024 | 874.04 | 872.05 | 1.25 | 0.74 | 0.01542 | 1.452 | 107.4124 | 11.164 | 0.9686 | 80.201 |
| 25.03.18 | MENARD & GUERIN | 21X27 | 24 | 21 | ACMP | 51 | 876.52 | 875.88 | 0.012549 | 20.0014 | 77.6 | 26.4 | 1.94 | 0.66 | 40 | 1.75 | 3.1416 | 20.0014 | 0.024 | 879.145 | 877.63 | 0.54 | 0.975 | 0.01912 | 1 | 26.89519 | 8.561 | 0.5696 | 20.001 |
| 25.03.21 | MARQUETTE & LOFTUS | 18X30 | 24 | 18 | CMP | 42 | 928.11 | 927.04 | 0.025476 | 18.5177 | 38.8 | 13.2 | 1.94 | 0.66 | 20 | 1.5 | 3.1416 | 18.5177 | 0.024 | 930.36 | 928.54 | 0.84 | 0.98 | 0.02333 | 1 | 29.71295 | 9.4579 | 0.6952 | 18.518 |
| 25.03.24 | MARQUETTE & ANDRAE | 24 | 24 | 24 | CMP | 40 | 854.38 | 853.49 | 0.022250 | 21.3824 | 58.2 | 19.8 | 1.94 | 0.66 | 30 | 2 | 3.1416 | 21.3824 | 0.024 | 857.38 | 855.49 | 0.78 | 1.11 | 0.02775 | 1 | 32.40328 | 10.314 | 0.8267 | 21.382 |
| 25.03.15 | ANDRAE | 24X36 | 30 | 24 | ACMP | 60 | 856.37 | 855.91 | 0.007667 | 33.41 | 77.6 | 26.4 | 1.94 | 0.66 | 40 | 2 | 4.9087 | 33.41 | 0.024 | 859.37 | 857.91 | 0.58 | 0.88 | 0.01467 | 1.16 | 42.712 | 8.7012 | 0.5884 | 33.41 |
| 25.03.06 | ANDRAE & GRANGE | 27X42 | 34 | 27 | ACMP | 38 | 858.82 | 857.98 | 0.022105 | 45.5164 | 155.2 | 52.8 | 1.94 | 0.66 | 80 | 2.25 | 6.305 | 45.5164 | 0.024 | 862.195 | 860.23 | 1.25 | 0.715 | 0.01882 | 1.261 | 67.54593 | 10.713 | 0.8919 | 45.516 |
| 25.02.19 | ROCK FREEWAY | 60 | 60 | 60 | CONC | 334 | 857.49 | 857.17 | 0.000958 | 211.303 | 148 | 79 | 1.53 | 0.55 | 160 | 5 | 19.635 | 211.303 | 0.013 | 864.99 | 862.17 | 1.24 | 1.58 | 0.00473 | 1.842 | 284.3506 | 14.482 | 1.6298 | 211.3 |
| 25.01.34 | BELOIT ROAD & CTH I | 36X84 | 60 | 36 | CONC | 85 | 858.33 | 857.38 | 0.011176 | 163.675 | 125 | 77 | 1.53 | 0.55 | 90 | 3 | 19.635 | 163.675 | 0.013 | 862.83 | 860.38 | 1.75 | 0.7 | 0.00824 | 1.842 | 375.1789 | 19.108 | 2.8373 | 163.67 |
| 25.01.33 | BELOIT ROAD & CTH I | 36X85 | 60 | 36 | CONC | 86 | 858.05 | 857.33 | 0.008372 | 163.675 | 125 | 77 | 1.53 | 0.55 | 90 | 3 | 19.635 | 163.675 | 0.013 | 862.55 | 860.33 | 1.24 | 0.98 | 0.0114 | 1.842 | 441.3292 | 22.477 | 3.926 | 163.67 |
| 25.01.32 | LANGLADE & CTH I | 24X36 | 30 | 24 | ACMP | 43 | 858.33 | 858.24 | 0.002093 | 33.41 | 137.7 | 49.5 | 1.53 | 0.55 | 90 | 2 | 4.9087 | 33.41 | 0.024 | 861.33 | 860.24 | 0.52 | 0.57 | 0.01326 | 1.16 | 40.60573 | 8.2721 | 0.5318 | 33.41 |
| 25.01.31 | LANGLADE | 42X66 | 54 | 42 | RCP | 250 | 858.24 | 856.91 | 0.005320 | 143.199 | 153 | 55 | 1.53 | 0.55 | 100 | 3.5 | 15.904 | 143.199 | 0.013 | 863.49 | 860.41 | 0.5 | 2.58 | 0.01032 | 1.717 | 317.1164 | 19.939 | 3.0896 | 143.2 |
| 25.01.30 | LANGLADE | 42X66 | 54 | 42 | RCP | 250 | 858.1 | 856.57 | 0.006120 | 143.199 | 153 | 55 | 1.53 | 0.55 | 100 | 3.5 | 15.904 | 143.199 | 0.013 | 863.35 | 860.07 | 0.5 | 2.78 | 0.01112 | 1.717 | 329.1783 | 20.697 | 3.3291 | 143.2 |
| 25.01.29 | LANGLADE & MARIN | 18X24 | 21 | 18 | ACMP | 40 | 856.91 | 856.57 | 0.008500 | 14.1776 | 30.6 | 11 | 1.53 | 0.55 | 20 | 1.5 | 2.4053 | 14.1776 | 0.024 | 859.16 | 858.07 | 0.5 | 0.59 | 0.01475 | 0.915 | 16.54658 | 6.8793 | 0.3678 | 14.178 |

*NEW BERLIN CULVERT ANALYSIS (greater than 18 inch diameter)*

| CULVERT ID | Location | Size (in) | Equiv. Diam. (in) | Height (in) | Mat'l Type | Length (ft) | U/S Invert (ft) | D/S Invert (ft) | Slope (ft/ft) | Cap. (cfs) | 100 yr (cfs) | 10 yr (cfs) | 100 Yr Rate | 10 yr Rate | Con-tributing Acres | IC Head (ft) | IC Area (ft^2) | IC Flow (cfs) | Manning 'n' | HW Elev. (ft) | TW Elev. (ft) | Entr loss K | Head (ft) | Friction Slope | R^2/3 | Velocity (ft/s) | BC Flow (ft/s) | Entr loss (ft) | Cap. (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25.01.27 | LANGLADE & MARIN | 24 | 24 | 24 | CMP | 41 | 858.41 | 857.82 | 0.014390 | 21.3824 | 30.6 | 11 | 1.53 | 0.55 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 861.41 | 859.82 | 0.64 | 0.95 | 0.02317 | 1 | 29.60924 | 9.4249 | 0.6903 | 21.382 |
| 25.01.37 | LANGLADE & MARIN | 42X66 | 54 | 42 | RCP | 200 | 856.91 | 852.1 | 0.024050 | 143.199 | 97.5 | 60 | 1.53 | 0.55 | 110 | 3.5 | 15.904 | 143.199 | 0.013 | 862.16 | 855.6 | 0.5 | 6.06 | 0.0303 | 1.717 | 543.3756 | 34.165 | 9.0711 | 143.2 |
| 25.01.38 | LANGLADE & MARIN | 42X66 | 54 | 42 | RCP | 200 | 856.57 | 851.99 | 0.022900 | 143.199 | 97.5 | 60 | 1.53 | 0.55 | 110 | 3.5 | 15.904 | 143.199 | 0.013 | 861.82 | 855.49 | 0.5 | 5.83 | 0.02915 | 1.717 | 532.9643 | 33.511 | 8.7268 | 143.2 |
| 25.02.13 | LANGLADE & RADISSON | 30X42 | 36 | 30 | ACMP | 40 | 862.3 | 861.39 | 0.022750 | 53.7891 | 180.8 | 54.4 | 2.26 | 0.68 | 80 | 2.5 | 7.0686 | 53.7891 | 0.024 | 866.05 | 863.89 | 1.12 | 1.04 | 0.026 | 1.31 | 92.47426 | 13.082 | 1.33 | 53.789 |
| 25.02.12 | MARIN & RADISSON | 30X42 | 36 | 30 | ACMP | 40 | 869.8 | 868.54 | 0.031500 | 53.7891 | 135.8 | 46.2 | 1.94 | 0.66 | 70 | 2.5 | 7.0686 | 53.7891 | 0.024 | 873.55 | 871.04 | 1.25 | 1.26 | 0.0315 | 1.31 | 101.7863 | 14.4 | 1.6114 | 53.789 |
| 25.02.01 | RADISSON & MENARD | 24X36 | 30 | 24 | ACMP | 40 | 881.64 | 880.16 | 0.037000 | 33.41 | 45.2 | 13.6 | 2.26 | 0.68 | 20 | 2 | 4.9087 | 33.41 | 0.024 | 884.64 | 882.16 | 1.12 | 1.36 | 0.034 | 1.16 | 65.03148 | 13.248 | 1.3639 | 33.41 |
| 25.02.02 | RADISSON & MENARD | 18X27 | 21 | 18 | ACMP | 45 | 882.8 | 880.96 | 0.040889 | 14.1776 | 116.4 | 39.6 | 1.94 | 0.66 | 60 | 1.5 | 2.4053 | 14.1776 | 0.024 | 885.05 | 882.46 | 0.78 | 1.81 | 0.04022 | 0.915 | 27.32406 | 11.36 | 1.0029 | 14.178 |
| 25.02.03 | RADISSON & GUERIN | 30X42 | 36 | 30 | ACMP | 51 | 896.57 | 895.17 | 0.027451 | 53.7891 | 97 | 33 | 1.94 | 0.66 | 50 | 2.5 | 7.0686 | 53.7891 | 0.024 | 900.32 | 897.67 | 1.14 | 1.51 | 0.02961 | 1.31 | 98.68192 | 13.961 | 1.5146 | 53.789 |
| 25.02.04 | GUERIN & LOTUS | 24X36 | 30 | 24 | ACMP | 45 | 899.67 | 899.49 | 0.004000 | 33.41 | 97 | 33 | 1.94 | 0.66 | 50 | 2 | 4.9087 | 33.41 | 0.024 | 902.67 | 901.49 | 0.57 | 0.61 | 0.01356 | 1.16 | 41.06226 | 8.3651 | 0.5438 | 33.41 |
| 25.02.05 | LOTUS | 30X42 | 36 | 30 | ACMP | 63 | 904.02 | 903.15 | 0.013810 | 53.7891 | 77.6 | 26.4 | 1.94 | 0.66 | 40 | 2.5 | 7.0686 | 53.7891 | 0.024 | 907.77 | 905.65 | 0.89 | 1.23 | 0.01952 | 1.31 | 80.13394 | 11.337 | 0.9988 | 53.789 |
| 26.03.05 | GRANGE | 48 | 48 | 48 | CMP | 46 | 860.62 | 860.29 | 0.007174 | 120.957 | 183 | 129 | 0.84 | 0.4 | 240 | 4 | 12.566 | 120.957 | 0.024 | 866.62 | 864.29 | 1.25 | 1.08 | 0.02348 | 1.587 | 189.2506 | 15.06 | 1.7626 | 120.96 |
| 26.03.06 | SMALL, 352250N, 2508750E | 24 | 24 | 24 | CMP | 60 | 921.05 | 920.3 | 0.012500 | 21.3824 | 8.4 | 4 | 0.84 | 0.4 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 924.05 | 922.3 | 0.56 | 1.19 | 0.01983 | 1 | 27.39399 | 8.7198 | 0.5909 | 21.382 |
| 26.03.01 | SUNNY SLOPE | 20X30 | 24 | 20 | ARCP | 60 | 914.17 | 913.19 | 0.016333 | 19.5194 | 15.2 | 6.2 | 1.52 | 0.62 | 10 | 1.6667 | 3.1416 | 19.5194 | 0.013 | 916.67 | 914.86 | 0.95 | 0.863 | 0.01439 | 1 | 43.07636 | 13.712 | 1.4611 | 19.519 |
| 26.03.02 | SUNNY SLOPE & BELOIT | 24 | 24 | 24 | CMP | 62 | 905.76 | 905.51 | 0.004032 | 21.3824 | 30.4 | 12.4 | 1.52 | 0.62 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 908.76 | 907.51 | 0.42 | 0.83 | 0.01339 | 1 | 22.50612 | 7.1639 | 0.3988 | 21.382 |
| 26.03.04 | BELOIT & SMALL | 24X36 | 30 | 24 | ACMP | 55 | 894.65 | 893.78 | 0.015818 | 33.41 | 18.8 | 10.8 | 1.88 | 1.08 | 10 | 2 | 4.9087 | 33.41 | 0.024 | 897.65 | 895.78 | 0.75 | 1.12 | 0.02036 | 1.16 | 50.32825 | 10.253 | 0.8169 | 33.41 |
| 26.04.03 | GRANGE | 27X42 | 36 | 27 | ACMP | 42 | 879.25 | 876.25 | 0.071429 | 51.0288 | 23.2 | 11.2 | 0.58 | 0.28 | 40 | 2.25 | 7.0686 | 51.0288 | 0.024 | 882.625 | 878.5 | 3.54 | 0.585 | 0.01393 | 1.31 | 67.68423 | 9.5754 | 0.7125 | 51.029 |
| 26.04.01 | GRANGE & SUNNY SLOPE | 18X30 | 24 | 18 | ARCP | 56 | 875.55 | 875.03 | 0.009286 | 18.5177 | 34.8 | 16.8 | 0.58 | 0.28 | 60 | 1.5 | 3.1416 | 18.5177 | 0.013 | 877.8 | 876.53 | 0.52 | 0.75 | 0.01339 | 1 | 41.5587 | 13.229 | 1.3599 | 18.518 |
| 26.04.02 | GRANGE & SUNNY SLOPE | 18X30 | 24 | 18 | ARCP | 83 | 899.71 | 898.11 | 0.019277 | 12.4648 | 34.8 | 16.8 | 0.58 | 0.28 | 60 | 1.5 | 3.1416 | 18.5177 | 0.013 | 901.96 | 899.61 | 2.25 | 0.1 | 0.0012 | 1 | 12.46483 | 3.9677 | 0.1223 | 12.465 |
| 26.02.12 | MOORLAND | 48 | 48 | 48 | RCP | 94 | 862.5 | 862.01 | 0.005213 | 120.957 | 56.4 | 32.4 | 1.88 | 1.08 | 30 | 4 | 12.566 | 120.957 | 0.013 | 868.5 | 866.01 | 1.25 | 1.24 | 0.01319 | 1.587 | 261.8901 | 20.841 | 3.3753 | 120.96 |
| 26.02.13 | MOORLAND | 48 | 48 | 48 | RCP | 94 | 862.49 | 862.02 | 0.005000 | 120.957 | 37.6 | 21.6 | 1.88 | 1.08 | 20 | 4 | 12.566 | 120.957 | 0.013 | 868.49 | 866.02 | 1.51 | 0.96 | 0.01021 | 1.587 | 230.4325 | 18.337 | 2.6131 | 120.96 |
| 26.02.11 | MOORLAND | 48 | 48 | 48 | RCP | 182 | 861.17 | 860.75 | 0.002308 | 120.957 | 37.6 | 21.6 | 1.88 | 1.08 | 20 | 4 | 12.566 | 120.957 | 0.013 | 867.17 | 864.75 | 1.45 | 0.97 | 0.00533 | 1.587 | 166.4647 | 13.247 | 1.3637 | 120.96 |
| 26.02.14 | MOORLAND | 48 | 48 | 48 | RCP | 182 | 861.1 | 860.77 | 0.001813 | 120.957 | 56.4 | 32.4 | 1.88 | 1.08 | 30 | 4 | 12.566 | 120.957 | 0.013 | 867.1 | 864.77 | 1.35 | 0.98 | 0.00538 | 1.587 | 167.3206 | 13.315 | 1.3777 | 120.96 |
| 26.02.08 | MOORLAND & I-43 | 24 | 24 | 24 | RCP | 184 | 862.49 | 861.63 | 0.004674 | 21.3824 | 56.4 | 32.4 | 1.88 | 1.08 | 30 | 2 | 3.1416 | 21.3824 | 0.013 | 865.49 | 863.63 | 0.53 | 1.33 | 0.00723 | 1 | 30.53109 | 9.7183 | 0.734 | 21.382 |
| 26.02.09 | MOORLAND | 48 | 48 | 48 | RCP | 429 | 865.3 | 862.08 | 0.007506 | 120.957 | 122 | 58.5 | 2.88 | 1.65 | 30 | 4 | 12.566 | 120.957 | 0.013 | 871.3 | 866.08 | 1.46 | 3.76 | 0.00876 | 1.587 | 213.4703 | 16.987 | 2.2426 | 120.96 |
| 26.02.10 | MOORLAND | 48 | 48 | 48 | RCP | 428 | 865.39 | 862.23 | 0.007383 | 120.957 | 122 | 58.5 | 2.88 | 1.65 | 30 | 4 | 12.566 | 120.957 | 0.013 | 871.39 | 866.23 | 1.46 | 3.7 | 0.00864 | 1.587 | 212.0074 | 16.871 | 2.2119 | 120.96 |
| 26.02.07 | BELOIT & I-43 | 52 | 52 | 52 | CMP | 84 | 881.66 | 881.64 | 0.000238 | 137.231 | 115.2 | 66 | 2.88 | 1.65 | 40 | 4.3333 | 14.748 | 147.753 | 0.024 | 888.16 | 885.97 | 1.51 | 0.677 | 0.00806 | 1.674 | 137.2306 | 9.305 | 0.6729 | 137.23 |
| 26.01.07 | BELOIT & I-43 | 30 | 30 | 30 | CMP | 132 | 875.65 | 875.07 | 0.004394 | 36.0609 | 52 | 29 | 2.88 | 1.65 | 40 | 2.5 | 4.9087 | 37.3535 | 0.024 | 879.4 | 877.57 | 0.45 | 1.38 | 0.01045 | 1.16 | 36.06092 | 7.3463 | 0.4194 | 36.061 |
| 26.02.15 | I-43 | 24 | 24 | 24 | RCP | 143 | 885.73 | 882.08 | 0.025524 | 21.3824 | 25 | 7 | 1.16 | 0.69 | 60 | 2 | 3.1416 | 21.3824 | 0.013 | 888.73 | 884.08 | 1.35 | 3.3 | 0.02308 | 1 | 54.55245 | 17.365 | 2.3432 | 21.382 |
| 26.02.16 | I-43 | 42 | 42 | 42 | RCP | 269 | 881.25 | 880.75 | 0.001859 | 86.6267 | 103 | 28 | 1.16 | 0.69 | 70 | 3.5 | 9.6211 | 86.6267 | 0.013 | 886.5 | 884.25 | 0.85 | 1.4 | 0.0052 | 1.452 | 115.2165 | 11.975 | 1.1145 | 86.627 |
| 26.02.17 | MOORLAND | 36X58 | 48 | 36 | CONC | 55 | 867.96 | 867.7 | 0.004727 | 104.752 | 69.6 | 41.4 | 1.16 | 0.69 | 60 | 3 | 12.566 | 104.752 | 0.013 | 872.46 | 870.7 | 1.23 | 0.53 | 0.00964 | 1.587 | 223.8354 | 17.812 | 2.4656 | 104.75 |
| 26.02.18 | MOORLAND | 36X58 | 48 | 36 | CONC | 55 | 867.96 | 867.7 | 0.004727 | 104.752 | 69.6 | 41.4 | 1.16 | 0.69 | 60 | 3 | 12.566 | 104.752 | 0.013 | 872.46 | 870.7 | 0.05 | 1.71 | 0.03109 | 1.587 | 402.0581 | 31.995 | 7.9551 | 104.75 |
| 27.01.01 | CALHOUN | 48X60 | 52 | 48 | ACMP | 47 | 827.45 | 827.36 | 0.001915 | 141.957 | 207 | 155 | 2.09 | 1.17 | 500 | 4 | 14.748 | 141.957 | 0.024 | 833.45 | 831.36 | 1.25 | 0.84 | 0.01787 | 1.674 | 204.4061 | 13.86 | 1.4928 | 141.96 |
| 27.01.02 | CALHOUN | 48X60 | 52 | 48 | ACMP | 47 | 827.44 | 827.12 | 0.006809 | 141.957 | 207 | 155 | 2.09 | 1.17 | 500 | 4 | 14.748 | 141.957 | 0.024 | 833.44 | 831.12 | 1.75 | 0.57 | 0.01213 | 1.674 | 168.3804 | 11.417 | 1.013 | 141.96 |
| 27.01.03 | ROCK I-43 | 30 | 30 | 30 | RCP | 188 | 897.55 | 895.42 | 0.011330 | 37.3535 | 41.8 | 23.4 | 2.09 | 1.17 | 20 | 2.5 | 4.9087 | 37.3535 | 0.013 | 901.3 | 897.92 | 0.95 | 2.43 | 0.01293 | 1.16 | 74.02464 | 15.08 | 1.7673 | 37.354 |
| 27.02.02 | BELOIT | 20X30 | 24 | 20 | ACMP | 42 | 853.28 | 852.75 | 0.012619 | 19.5194 | 41.8 | 23.4 | 2.09 | 1.17 | 20 | 1.6667 | 3.1416 | 19.5194 | 0.024 | 855.78 | 854.42 | 0.55 | 0.813 | 0.01937 | 1 | 27.06868 | 8.6162 | 0.5769 | 19.519 |
| 27.02.01 | BELOIT | 20X30 | 24 | 20 | ACMP | 38 | 864.96 | 863.65 | 0.034474 | 19.5194 | 41.8 | 23.4 | 2.09 | 1.17 | 20 | 1.6667 | 3.1416 | 19.5194 | 0.024 | 867.46 | 865.32 | 0.75 | 1.393 | 0.03667 | 1 | 37.24716 | 11.856 | 1.0924 | 19.519 |
| 27.01.04 | BELOIT & CALHOUN | 56X132 | 48 | 56 | RCP | 31 | 837.98 | 837.78 | 0.006452 | 130.649 | 840 | 400 | 0.84 | 0.4 | 1000 | 4.6667 | 12.566 | 130.649 | 0.024 | 844.98 | 842.45 | 0.56 | 1.973 | 0.06366 | 1.587 | 311.6187 | 24.798 | 4.7788 | 130.65 |
| 27.02.04 | BELOIT | 48 | 48 | 48 | RCP | 70 | 845.8 | 844 | 0.025714 | 120.957 | 41.8 | 23.4 | 2.09 | 1.17 | 20 | 4 | 12.566 | 120.957 | 0.024 | 851.8 | 848 | 0.55 | 3.25 | 0.04643 | 1.587 | 266.1319 | 21.178 | 3.4855 | 120.96 |
| 27.04.05 | ROCK I-43 | 24 | 24 | 24 | RCP | 84 | 893.48 | 893.1 | 0.004524 | 21.3824 | 56.4 | 32.4 | 1.88 | 1.08 | 30 | 2 | 3.1416 | 21.3824 | 0.013 | 896.48 | 895.1 | 0.65 | 0.73 | 0.00869 | 1 | 33.47705 | 10.656 | 0.8824 | 21.382 |
| 27.04.06 | I-43 & MOORLAND | 48 | 48 | 48 | RCP | 112 | 860.82 | 860.52 | 0.002679 | 120.957 | 252 | 127 | 1.88 | 1.08 | 130 | 4 | 12.566 | 120.957 | 0.013 | 866.82 | 864.52 | 1.5 | 0.8 | 0.00714 | 1.587 | 192.7117 | 15.336 | 1.8276 | 120.96 |
| 27.04.07 | I-43 & MOORLAND | 48 | 48 | 48 | RCP | 112 | 860.71 | 860.65 | 0.000536 | 120.957 | 252 | 127 | 1.88 | 1.08 | 130 | 4 | 12.566 | 120.957 | 0.013 | 866.71 | 864.65 | 1.25 | 0.81 | 0.00723 | 1.587 | 193.9124 | 15.431 | 1.8505 | 120.96 |
| 27.04.08 | I-43 & MOORLAND | 24 | 24 | 24 | RCP | 60 | 873.33 | 872.75 | 0.009667 | 21.3824 | 94 | 54 | 1.88 | 1.08 | 50 | 2 | 3.1416 | 21.3824 | 0.013 | 876.33 | 874.75 | 0.85 | 0.73 | 0.01217 | 1 | 39.61057 | 12.608 | 1.2354 | 21.382 |
| 27.04.09 | I-43 & MOORLAND | 24 | 24 | 24 | RCP | 24 | 869.33 | 869.05 | 0.011667 | 21.3824 | 75.2 | 43.2 | 1.88 | 1.08 | 40 | 2 | 3.1416 | 21.3824 | 0.013 | 872.33 | 871.05 | 0.95 | 0.33 | 0.01375 | 1 | 42.10917 | 13.404 | 1.3962 | 21.382 |
| 27.04.10 | I-43 & MOORLAND | 30 | 30 | 30 | RCP | 19 | 866.16 | 865.46 | 0.036842 | 37.3535 | 75.2 | 43.2 | 1.88 | 1.08 | 40 | 2.5 | 4.9087 | 37.3535 | 0.013 | 869.91 | 867.96 | 1.75 | 0.2 | 0.01053 | 1.16 | 66.80212 | 13.609 | 1.4392 | 37.354 |
| 27.04.11 | I-43 & MOORLAND | 30 | 30 | 30 | RCP | 17 | 865.77 | 865.75 | 0.001176 | 37.3535 | 75.2 | 43.2 | 1.88 | 1.08 | 40 | 2.5 | 4.9087 | 37.3535 | 0.013 | 869.52 | 868.25 | 0.85 | 0.42 | 0.02471 | 1.16 | 102.3416 | 20.849 | 3.378 | 37.354 |
| 27.03.08 | BELOIT | 18X24 | 21 | 18 | ACMP | 49 | 872.8 | 872.5 | 0.006122 | 14.1776 | 57.6 | 33 | 2.88 | 1.65 | 20 | 1.5 | 2.4053 | 14.1776 | 0.024 | 875.05 | 874 | 0.35 | 0.7 | 0.01429 | 0.915 | 16.28408 | 6.7701 | 0.3562 | 14.178 |
| 27.03.09 | BELOIT | 48 | 48 | 48 | RCP | 175 | 866.7 | 864 | 0.015429 | 120.957 | 691.2 | 396 | 2.88 | 1.65 | 240 | 4 | 12.566 | 120.957 | 0.024 | 872.7 | 868 | 1.35 | 3.35 | 0.01914 | 1.587 | 170.8864 | 13.599 | 1.4371 | 120.96 |
| 27.03.10 | BELOIT | 72 | 72 | 72 | CMP | 130 | 859.05 | 858.65 | 0.003077 | 333.319 | 691.2 | 396 | 2.88 | 1.65 | 240 | 6 | 28.274 | 333.319 | 0.024 | 868.05 | 864.65 | 1.35 | 2.05 | 0.01577 | 2.08 | 457.2842 | 16.173 | 2.0327 | 333.32 |
| 27.03.11 | BELOIT | 72 | 72 | 72 | CMP | 130 | 858.9 | 858.7 | 0.001538 | 333.319 | 691.2 | 396 | 2.88 | 1.65 | 240 | 6 | 28.274 | 333.319 | 0.024 | 867.9 | 864.7 | 1.35 | 1.85 | 0.01423 | 2.08 | 434.4053 | 15.364 | 1.8344 | 333.32 |
| 28.03.13 | NATIONAL | 24 | 24 | 24 | CMP | 47 | 915.19 | 915.02 | 0.003617 | 21.3824 | 22 | 7.6 | 2.2 | 0.76 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 918.19 | 917.02 | 0.45 | 0.72 | 0.01532 | 1 | 24.07547 | 7.6635 | 0.4564 | 21.382 |
| 28.02.12 | BELOIT | 18X30 | 24 | 18 | ACMP | 35 | 910.97 | 910.34 | 0.018000 | 18.5177 | 22 | 7.6 | 2.2 | 0.76 | 10 | 1.5 | 3.1416 | 18.5177 | 0.024 | 913.22 | 911.84 | 0.62 | 0.76 | 0.02171 | 1 | 28.66357 | 9.1239 | 0.6469 | 18.518 |
| 28.02.10 | NATIONAL | 24 | 24 | 24 | CMP | 75 | 911.71 | 910.91 | 0.010667 | 21.3824 | 8.7 | 5.4 | 0.87 | 0.54 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 914.71 | 912.91 | 0.51 | 1.29 | 0.0172 | 1 | 25.51066 | 8.1203 | 0.5124 | 21.382 |
| 28.02.06 | TRILLIUM & HILLSIDE | 18X30 | 21 | 18 | ACMP | 46 | 907.7 | 907.59 | 0.002391 | 14.1776 | 9.5 | 4.3 | 0.95 | 0.43 | 10 | 1.5 | 2.4053 | 14.1776 | 0.024 | 909.95 | 909.09 | 0.35 | 0.51 | 0.01109 | 0.915 | 14.34559 | 5.9642 | 0.2764 | 14.178 |
| 28.02.07 | TRILLIUM & HILLCREST | 24X36 | 30 | 24 | ACMP | 50 | 901.33 | 900.09 | 0.024800 | 33.41 | 28.5 | 12.9 | 0.95 | 0.43 | 30 | 2 | 4.9087 | 33.41 | 0.024 | 904.33 | 902.09 | 0.95 | 1.29 | 0.0258 | 1.16 | 56.64923 | 11.54 | 1.035 | 33.41 |
| 28.02.03 | FAIRVIEW | 18X24 | 21 | 18 | ACMP | 45 | 965.1 | 964.15 | 0.021111 | 14.1776 | 9.5 | 4.3 | 0.95 | 0.43 | 10 | 1.5 | 2.4053 | 14.1776 | 0.024 | 967.35 | 965.65 | 0.58 | 1.12 | 0.02489 | 0.915 | 21.49389 | 8.9361 | 0.6206 | 14.178 |
| 28.02.05 | LAWNSDALE & TRILLIUM | 24 | 24 | 24 | ACMP | 40 | 892.49 | 892.14 | 0.008750 | 21.3824 | 38 | 17.2 | 0.95 | 0.43 | 40 | 2 | 3.1416 | 21.3824 | 0.024 | 895.49 | 894.14 | 0.59 | 0.76 | 0.019 | 1 | 26.81231 | 8.5346 | 0.5661 | 21.382 |
| 28.03.20 | CTH I | 24 | 24 | 24 | CMP | 24 | 888.85 | 887.76 | 0.045417 | 21.3824 | 28.5 | 12.9 | 0.95 | 0.43 | 30 | 2 | 3.1416 | 21.3824 | 0.024 | 891.85 | 889.76 | 1.15 | 0.94 | 0.03917 | 1 | 38.49601 | 12.254 | 1.1669 | 21.382 |
| 28.03.21 | CTH I | 24 | 24 | 24 | CMP | 24 | 888.86 | 887.89 | 0.040417 | 21.3824 | 28.5 | 12.9 | 0.95 | 0.43 | 30 | 2 | 3.1416 | 21.3824 | 0.024 | 891.86 | 889.89 | 1.11 | 0.86 | 0.03583 | 1 | 36.82146 | 11.721 | 1.0676 | 21.382 |
| 28.02.11 | NATIONAL & MARTIN | 48X72 | 66 | 48 | ACMP | 66 | 908.15 | 907.61 | 0.008182 | 228.685 | 50.1 | 29.4 | 1.67 | 0.98 | 30 | 4 | 23.758 | 228.685 | 0.024 | 914.15 | 911.61 | 1.5 | 1.04 | 0.01576 | 1.963 | 362.4567 | 15.256 | 1.8087 | 228.68 |
| 28.03.10 | MARTIN & EGOFSKE | 24 | 24 | 24 | CMP | 62 | 852.33 | 847.78 | 0.073387 | 21.3824 | 83.5 | 49 | 1.67 | 0.98 | 50 | 2 | 3.1416 | 21.3824 | 0.024 | 855.33 | 849.78 | 1.7 | 3.85 | 0.0621 | 1 | 48.47211 | 15.429 | 1.85 | 21.382 |

*NEW BERLIN CULVERT ANALYSIS (greater than 18 inch diameter)*

| CULVERT ID | Location | Size (in) | Equiv. Diam. (in) | Height (in) | Mat'l Type | Length (ft) | U/S Invert (ft) | D/S Invert (ft) | Slope (ft/ft) | Cap. (cfs) | 100 yr (cfs) | 10 yr (cfs) | 100 Yr Rate | 10 yr Rate | Con-tributing Acres | IC Head (ft) | IC Area (ft^2) | IC Flow (cfs) | Manning 'n' | HW Elev. (ft) | TW Elev. (ft) | Entr loss K | Head (ft) | Friction Slope | R^2/3 | Velocity (ft/s) | BC Flow (ft/s) | Entr loss (ft) | Cap. (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 28.03.09 | EGOFSKE & BERES | 24X36 | 30 | 24 | ACMP | 86 | 837.84 | 836.46 | 0.016047 | 33.41 | 65.4 | 37.2 | 1.09 | 0.62 | 60 | 2 | 4.9087 | 33.41 | 0.024 | 840.84 | 838.46 | 0.75 | 1.63 | 0.01895 | 1.16 | 48.55442 | 9.8914 | 0.7603 | 33.41 |
| 28.03.08 | BERES & MARTIN | 20X30 | 24 | 20 | ACMP | 20 | 837.5 | 837.07 | 0.021500 | 19.5194 | 43.6 | 24.8 | 1.09 | 0.62 | 40 | 1.6667 | 3.1416 | 19.5194 | 0.024 | 840 | 838.74 | 0.85 | 0.413 | 0.02067 | 1 | 27.96357 | 8.9011 | 0.6157 | 19.519 |
| 28.04.05 | SATURN | 21X27 | 24 | 21 | ACMP | 41 | 863.42 | 862.83 | 0.014390 | 20.0014 | 34.5 | 24 | 1.15 | 0.8 | 30 | 1.75 | 3.1416 | 20.0014 | 0.024 | 866.045 | 864.58 | 0.6 | 0.865 | 0.0211 | 1 | 28.25359 | 8.9934 | 0.6285 | 20.001 |
| 28.04.10 | STEVEN | 20X30 | 24 | 20 | ACMP | 40 | 843.92 | 843.84 | 0.002000 | 19.5194 | 32.7 | 18.6 | 1.09 | 0.62 | 30 | 1.6667 | 3.1416 | 19.5194 | 0.024 | 846.42 | 845.51 | 0.01 | 0.513 | 0.01283 | 1 | 22.03572 | 7.0142 | 0.3823 | 19.519 |
| 28.04.15 | BERES | 27X42 | 32 | 27 | ACMP | 33 | 835.5 | 835.12 | 0.011515 | 40.3191 | 87.2 | 49.6 | 1.09 | 0.62 | 80 | 2.25 | 5.5851 | 40.3191 | 0.024 | 838.875 | 837.37 | 0.85 | 0.655 | 0.01985 | 1.211 | 59.0189 | 10.567 | 0.8678 | 40.319 |
| 28.04.14 | BERES | 60 | 60 | 60 | CMP | 33 | 825.95 | 825.85 | 0.003030 | 211.303 | 225 | 200 | 1.09 | 0.62 | 1800 | 5 | 19.635 | 211.303 | 0.024 | 833.45 | 830.85 | 1.95 | 0.65 | 0.0197 | 1.842 | 314.2901 | 16.007 | 1.9911 | 211.3 |
| 28.04.13 | BERES | 60 | 60 | 60 | CMP | 33 | 826.01 | 825.91 | 0.003030 | 211.303 | 225 | 200 | 1.09 | 0.62 | 1800 | 5 | 19.635 | 211.303 | 0.024 | 833.51 | 830.91 | 1.95 | 0.65 | 0.0197 | 1.842 | 314.2901 | 16.007 | 1.9911 | 211.3 |
| 28.02.09 | NATIONAL & LAWNSDALE | 24 | 24 | 24 | CMP | 33 | 893.82 | 891.82 | 0.060606 | 21.3824 | 8.7 | 5.4 | 0.87 | 0.54 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 896.82 | 893.82 | 1.45 | 1.55 | 0.04697 | 1 | 42.15667 | 13.419 | 1.3993 | 21.382 |
| 28.02.13 | BELOIT & TRIBUTARY | 30X42 | 34 | 30 | ACMP | 40 | 843.05 | 842.71 | 0.008500 | 47.9785 | 226.2 | 140.4 | 0.87 | 0.54 | 260 | 2.5 | 6.305 | 47.9785 | 0.024 | 846.8 | 845.21 | 0.85 | 0.74 | 0.0185 | 1.261 | 66.97671 | 10.623 | 0.8769 | 47.979 |
| 29.04.04 | NATIONAL & EGOFSKE | 42X60 | 52 | 42 | ACMP | 64 | 918.6 | 918.4 | 0.003125 | 132.788 | 61.6 | 39.2 | 0.77 | 0.49 | 80 | 3.5 | 14.748 | 132.788 | 0.024 | 923.85 | 921.9 | 1.12 | 0.83 | 0.01297 | 1.674 | 174.1214 | 11.806 | 1.0832 | 132.79 |
| 29.01.06 | EGOFSKE & OVERLOOK | 27 | 27 | 27 | RCP | 40 | 898.87 | 897 | 0.046750 | 28.7037 | 77 | 49 | 0.77 | 0.49 | 100 | 2.25 | 3.9761 | 28.7037 | 0.013 | 902.245 | 899.25 | 2.45 | 0.545 | 0.01363 | 1.082 | 57.38526 | 14.433 | 1.6187 | 28.704 |
| 29.02.01 | LAWNSDALE | 30 | 30 | 30 | CMP | 41 | 888.09 | 885.83 | 0.055122 | 37.3535 | 133 | 60.2 | 0.95 | 0.43 | 140 | 2.5 | 4.9087 | 37.3535 | 0.024 | 891.84 | 888.33 | 1.75 | 1.76 | 0.04293 | 1.16 | 73.07159 | 14.886 | 1.7221 | 37.354 |
| 29.02.02 | LAWNSDALE | 24 | 24 | 24 | CCP | 41 | 888.58 | 888.55 | 0.000732 | 20.9844 | 133 | 60.2 | 0.95 | 0.43 | 140 | 2 | 3.1416 | 21.3824 | 0.013 | 891.58 | 890.55 | 0.89 | 0.14 | 0.00341 | 1 | 20.98444 | 6.6796 | 0.3467 | 20.984 |
| 29.01.03 | PINEWOOD | 24 | 24 | 24 | CMP | 40 | 931.03 | 930.3 | 0.018250 | 21.3824 | 19 | 8.6 | 0.95 | 0.43 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 934.03 | 932.3 | 0.67 | 1.06 | 0.0265 | 1 | 31.66506 | 10.079 | 0.7895 | 21.382 |
| 29.01.07 | CREST | 24X36 | 30 | 24 | CMP | 43 | 936.79 | 936.17 | 0.014419 | 33.41 | 28.5 | 12.9 | 0.95 | 0.43 | 30 | 2 | 4.9087 | 33.41 | 0.024 | 939.79 | 938.17 | 0.85 | 0.77 | 0.01791 | 1.16 | 47.19493 | 9.6145 | 0.7184 | 33.41 |
| 29.01.08 | CREST | 24 | 24 | 24 | CMP | 41 | 938.3 | 937.99 | 0.007561 | 21.3824 | 9.5 | 4.3 | 0.95 | 0.43 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 941.3 | 939.99 | 0.54 | 0.77 | 0.01878 | 1 | 26.65698 | 8.4852 | 0.5595 | 21.382 |
| 29.01.01 | LAWNSDALE | 24 | 24 | 24 | CMP | 78 | 911.79 | 909.27 | 0.032308 | 21.3824 | 7.6 | 3.8 | 0.76 | 0.38 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 914.79 | 911.27 | 0.75 | 2.77 | 0.03551 | 1 | 36.65642 | 11.668 | 1.058 | 21.382 |
| 29.01.02 | LAWNSDALE | 24 | 24 | 24 | CMP | 61 | 908.95 | 907.77 | 0.019344 | 21.3824 | 30.4 | 15.2 | 0.76 | 0.38 | 40 | 2 | 3.1416 | 21.3824 | 0.024 | 911.95 | 909.77 | 0.85 | 1.33 | 0.0218 | 1 | 28.72224 | 9.1426 | 0.6496 | 21.382 |
| 30.01.01 | EDINBOURGH | 32X52 | 42 | 32 | ACMP | 46 | 888.8 | 888.11 | 0.015000 | 75.614 | 153.6 | 72 | 0.96 | 0.45 | 160 | 2.6667 | 9.6211 | 75.614 | 0.024 | 892.8 | 890.78 | 1.15 | 0.873 | 0.01899 | 1.452 | 119.1983 | 12.389 | 1.1928 | 75.614 |
| 30.01.02 | LAWNSDALE | 60 | 60 | 60 | CMP | 50 | 927.19 | 925.88 | 0.026200 | 211.303 | 153.6 | 72 | 0.96 | 0.45 | 160 | 5 | 19.635 | 211.303 | 0.024 | 934.69 | 930.88 | 2.51 | 1.3 | 0.026 | 1.842 | 361.0918 | 18.39 | 2.6282 | 211.3 |
| 31.04.03 | GLENGARRY & OXFORD | 21 | 21 | 21 | CMP | 40 | 980.21 | 979.9 | 0.007750 | 14.8467 | 19.2 | 9 | 0.96 | 0.45 | 20 | 1.75 | 2.4053 | 15.3136 | 0.024 | 982.835 | 981.65 | 0.71 | 0.475 | 0.01188 | 0.915 | 14.84667 | 6.1725 | 0.2961 | 14.847 |
| 31.02.05 | OXFORD & EDINBOURGH | 21 | 21 | 21 | CMP | 41 | 968.67 | 967.97 | 0.017073 | 15.3136 | 9.6 | 4.5 | 0.96 | 0.45 | 10 | 1.75 | 2.4053 | 15.3136 | 0.024 | 971.295 | 969.72 | 0.58 | 0.995 | 0.02427 | 0.915 | 21.22423 | 8.824 | 0.6051 | 15.314 |
| 31.02.06 | OXFORD & EDINBOURGH | 24 | 24 | 24 | CMP | 40 | 968.26 | 967.66 | 0.015000 | 21.3824 | 9.6 | 4.5 | 0.96 | 0.45 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 971.26 | 969.66 | 0.67 | 0.93 | 0.02325 | 1 | 29.65985 | 9.441 | 0.6927 | 21.382 |
| 31.02.07 | EDINBOURGH & ANDREWS | 21X27 | 24 | 21 | ACMP | 46 | 948.85 | 948.57 | 0.006087 | 20.0014 | 19.2 | 9 | 0.96 | 0.45 | 20 | 1.75 | 3.1416 | 20.0014 | 0.024 | 951.475 | 950.32 | 0.45 | 0.705 | 0.01533 | 1 | 24.08092 | 7.6652 | 0.4566 | 20.001 |
| 31.02.08 | EDINBOURGH & LOCHLEVEN | 30X42 | 34 | 30 | ACMP | 38 | 942.26 | 942.05 | 0.005526 | 46.5785 | 28.8 | 13.5 | 0.96 | 0.45 | 30 | 2.5 | 6.305 | 47.9785 | 0.024 | 946.01 | 944.55 | 1.12 | 0.34 | 0.00895 | 1.261 | 46.57851 | 7.3875 | 0.4241 | 46.579 |
| 31.02.09 | EDINBOURGH & LOCHLEVEN | 30X42 | 34 | 30 | ACMP | 38 | 942.01 | 941.58 | 0.011316 | 47.9785 | 28.8 | 13.5 | 0.96 | 0.45 | 30 | 2.5 | 6.305 | 47.9785 | 0.024 | 945.76 | 944.08 | 0.85 | 0.83 | 0.02184 | 1.261 | 72.7755 | 11.543 | 1.0354 | 47.979 |
| 31.02.10 | LOCHLEVEN & MACGREGOR | 18X24 | 21 | 18 | ACMP | 49 | 953.17 | 951.59 | 0.032245 | 14.1776 | 9.6 | 4.5 | 0.96 | 0.45 | 10 | 1.5 | 2.4053 | 14.1776 | 0.024 | 955.42 | 953.09 | 0.76 | 1.57 | 0.03204 | 0.915 | 24.38732 | 10.139 | 0.7989 | 14.178 |
| 31.02.20 | EDINBOURGH & ABERDEEN | 32X52 | 38 | 32 | ACMP | 48 | 918.55 | 917.44 | 0.023125 | 61.8972 | 57.6 | 27 | 0.96 | 0.45 | 60 | 2.6667 | 7.8758 | 61.8972 | 0.024 | 922.55 | 920.11 | 1.12 | 1.323 | 0.02757 | 1.358 | 109.9929 | 13.966 | 1.5158 | 61.897 |
| 31.02.19 | EDINBOURGH & LOCHINVAR | 36X50 | 42 | 36 | ACMP | 46 | 910.54 | 909.92 | 0.013478 | 80.2007 | 67.2 | 31.5 | 0.96 | 0.45 | 70 | 3 | 9.6211 | 80.2007 | 0.024 | 915.04 | 912.92 | 1.15 | 0.97 | 0.02109 | 1.452 | 125.6221 | 13.057 | 1.3249 | 80.201 |
| 31.02.15 | EDINBOURGH & LOCHINVAR | 27X42 | 34 | 27 | ACMP | 47 | 911.53 | 910.57 | 0.020426 | 45.5164 | 38.4 | 18 | 0.96 | 0.45 | 40 | 2.25 | 6.305 | 45.5164 | 0.024 | 914.905 | 912.82 | 1.12 | 0.965 | 0.02053 | 1.261 | 70.55904 | 11.191 | 0.9732 | 45.516 |
| 31.02.16 | EDINBOURGH & YARTAN | 36X50 | 40 | 36 | ACMP | 48 | 905.86 | 905.6 | 0.005417 | 72.7444 | 76.8 | 36 | 0.96 | 0.45 | 80 | 3 | 8.7266 | 72.7444 | 0.024 | 910.36 | 908.6 | 0.99 | 0.77 | 0.01604 | 1.406 | 96.20085 | 11.024 | 0.9444 | 72.744 |
| 31.02.17 | EDINBOURGH | 45X53 | 48 | 45 | ACMP | 40 | 903.93 | 903.11 | 0.020500 | 117.116 | 96 | 45 | 0.96 | 0.45 | 100 | 3.75 | 12.566 | 117.116 | 0.024 | 909.555 | 906.86 | 0.99 | 1.705 | 0.04262 | 1.587 | 254.9978 | 20.292 | 3.1999 | 117.12 |
| 31.03.08 | NATIONAL | 24 | 24 | 24 | ACMP | 50 | 977.3 | 976.85 | 0.009000 | 21.3824 | 23.8 | 11.4 | 1.19 | 0.57 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 980.3 | 978.85 | 0.53 | 0.92 | 0.0184 | 1 | 26.38556 | 8.3988 | 0.5482 | 21.382 |
| 31.03.01 | ABERDEEN | 39X58 | 46 | 39 | ACMP | 64 | 964.47 | 964.05 | 0.006563 | 100.133 | 47.6 | 22.8 | 1.19 | 0.57 | 40 | 3.25 | 11.541 | 100.133 | 0.024 | 969.345 | 967.3 | 0.95 | 1.095 | 0.01711 | 1.543 | 144.2222 | 12.497 | 1.2136 | 100.13 |
| 31.03.02 | ABERDEEN | 36X48 | 42 | 36 | ACMP | 65 | 964.72 | 964.53 | 0.002923 | 80.2007 | 47.6 | 22.8 | 1.19 | 0.57 | 40 | 3 | 9.6211 | 80.2007 | 0.024 | 969.22 | 967.53 | 0.75 | 0.94 | 0.01446 | 1.452 | 104.0318 | 10.813 | 0.9086 | 80.201 |
| 31.03.25 | GLENGARRY | 24 | 24 | 24 | CMP | 50 | 977.3 | 976.85 | 0.009000 | 21.3824 | 35.7 | 17.1 | 1.19 | 0.57 | 30 | 2 | 3.1416 | 21.3824 | 0.024 | 980.3 | 978.85 | 0.54 | 0.91 | 0.0182 | 1 | 26.24177 | 8.353 | 0.5422 | 21.382 |
| 31.02.25 | GLENGARY | 27X42 | 36 | 27 | ACMP | 40 | 975.37 | 974.28 | 0.027250 | 51.0288 | 19.2 | 9 | 0.96 | 0.45 | 20 | 2.25 | 7.0686 | 51.0288 | 0.024 | 978.745 | 976.53 | 1.15 | 1.065 | 0.02663 | 1.31 | 93.57913 | 13.239 | 1.362 | 51.029 |
| 31.01.01 | NATIONAL AVE | 24 | 24 | 24 | CMP | 57 | 1001.9 | 1000.04 | 0.032632 | 21.3824 | 19.2 | 9 | 0.96 | 0.45 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 1004.9 | 1002 | 0.75 | 2.11 | 0.03702 | 1 | 37.42495 | 11.913 | 1.1028 | 21.382 |
| 32.04.06 | COLLEGE | 60 | 60 | 60 | RCP | 100 | 827.11 | 827.09 | 0.000200 | 211.303 | 308 | 184 | 3.52 | 2.16 | 330 | 5 | 19.635 | 211.303 | 0.013 | 834.61 | 832.09 | 2.11 | 0.41 | 0.0041 | 1.842 | 264.7224 | 13.482 | 1.4126 | 211.3 |
| 32.04.07 | COLLEGE | 60 | 60 | 60 | RCP | 100 | 827.17 | 826.96 | 0.002100 | 211.303 | 308 | 184 | 3.52 | 2.16 | 330 | 5 | 19.635 | 211.303 | 0.013 | 834.67 | 831.96 | 2.25 | 0.46 | 0.0046 | 1.842 | 280.3998 | 14.281 | 1.5848 | 211.3 |
| 32.04.09 | COLLEGE | 24 | 24 | 24 | RCP | 103 | 830.5 | 829.38 | 0.010874 | 21.3824 | 21.2 | 14.6 | 2.12 | 1.46 | 10 | 2 | 3.1416 | 21.3824 | 0.013 | 833.5 | 831.38 | 1.15 | 0.97 | 0.00942 | 1 | 34.84918 | 11.093 | 0.9563 | 21.382 |
| 32.04.11 | HILLENDALE | 24 | 24 | 24 | CMP | 156 | 831.65 | 826.46 | 0.033269 | 21.3824 | 24.8 | 15.3 | 2.48 | 1.53 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 834.65 | 828.46 | 0.5 | 5.69 | 0.03647 | 1 | 37.14935 | 11.825 | 1.0867 | 21.382 |
| 32.04.12 | HILLENDALE | 24 | 24 | 24 | CMP | 109 | 834.02 | 831.65 | 0.021743 | 21.3824 | 24.8 | 15.3 | 2.48 | 1.53 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 837.02 | 833.65 | 0.54 | 2.83 | 0.02596 | 1 | 31.34277 | 9.9767 | 0.7735 | 21.382 |
| 32.04.15 | RACINE | 24 | 24 | 24 | CONC | 35 | 818.58 | 818.21 | 0.010571 | 21.3824 | 24.8 | 15.3 | 2.48 | 1.53 | 10 | 2 | 3.1416 | 21.3824 | 0.013 | 821.58 | 820.21 | 0.75 | 0.62 | 0.01771 | 1 | 47.79552 | 15.214 | 1.7987 | 21.382 |
| 32.04.16 | RACINE | 24 | 24 | 24 | CONC | 40 | 828.62 | 828.52 | 0.002500 | 21.3824 | 24.8 | 15.3 | 2.48 | 1.53 | 10 | 2 | 3.1416 | 21.3824 | 0.013 | 831.62 | 830.52 | 0.01 | 1.09 | 0.02725 | 1 | 59.28005 | 18.869 | 2.767 | 21.382 |
| 32.04.17 | RACINE PLACE | 60X96 | 78 | 60 | CONC | 40 | 824.62 | 824.25 | 0.009250 | 357.103 | 294 | 175 | 2.48 | 1.53 | 10 | 5 | 33.183 | 357.103 | 0.013 | 832.12 | 829.25 | 1.01 | 1.86 | 0.0465 | 2.194 | 1794.627 | 54.083 | 22.73 | 357.1 |
| 32.04.01 | FREEWAY | 42 | 42 | 42 | RCP | 275 | 821.58 | 819.4 | 0.007927 | 86.6267 | 82.4 | 46.4 | 2.06 | 1.16 | 40 | 3.5 | 9.6211 | 86.6267 | 0.013 | 826.83 | 822.9 | 1.24 | 2.69 | 0.00978 | 1.452 | 157.9562 | 16.418 | 2.0946 | 86.627 |
| 32.04.02 | FREEWAY | 42 | 42 | 42 | RCP | 275 | 821.42 | 819.45 | 0.007164 | 86.6267 | 82.4 | 46.4 | 2.06 | 1.16 | 40 | 3.5 | 9.6211 | 86.6267 | 0.013 | 826.67 | 822.95 | 1.24 | 2.48 | 0.00902 | 1.452 | 151.6653 | 15.764 | 1.9311 | 86.627 |
| 32.04.05 | GLENWOOD & TIMBERLANE | 21X27 | 24 | 21 | ACMP | 40 | 837.39 | 836.94 | 0.011250 | 20.0014 | 68 | 52.8 | 1.7 | 1.32 | 40 | 1.75 | 3.1416 | 20.0014 | 0.024 | 840.015 | 838.69 | 0.54 | 0.785 | 0.01962 | 1 | 27.24973 | 8.6739 | 0.5847 | 20.001 |
| 32.04.18 | .. | 96X120 | 110 | 96 | CONC | 200 | 821.2 | 821.19 | 0.000050 | 898.358 | 50.1 | 29.4 | 1.67 | 0.98 | 30 | 8 | 65.995 | 898.358 | 0.024 | 833.2 | 829.19 | 1.25 | 2.76 | 0.0138 | 2.759 | 1324.487 | 20.069 | 3.1301 | 898.36 |
| 32.01.03 | VISTA COURT | 24 | 24 | 24 | CMP | 41 | 888.3 | 886.04 | 0.055122 | 21.3824 | 31.2 | 21.2 | 1.56 | 1.06 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 891.3 | 888.04 | 1.25 | 2.01 | 0.04902 | 1 | 43.06888 | 13.709 | 1.4605 | 21.382 |
| 32.01.04 | TIMBERLANE & VISTA | 18X24 | 21 | 18 | ACMP | 45 | 864.32 | 864.03 | 0.006444 | 14.1776 | 31.2 | 21.2 | 1.56 | 1.06 | 20 | 1.5 | 2.4053 | 14.1776 | 0.024 | 866.57 | 865.53 | 0.41 | 0.63 | 0.014 | 0.915 | 16.12042 | 6.7021 | 0.3491 | 14.178 |
| 32.01.08 | TERRACE & TIMBERLANE | 21X27 | 24 | 21 | ACMP | 40 | 848.64 | 847.3 | 0.033500 | 20.0014 | 68 | 52.8 | 1.7 | 1.32 | 40 | 1.75 | 3.1416 | 20.0014 | 0.024 | 851.265 | 849.05 | 0.95 | 1.265 | 0.03163 | 1 | 34.59176 | 11.011 | 0.9422 | 20.001 |
| 32.02.03 | INEZ | 24 | 24 | 24 | CMP | 27 | 909.23 | 908.63 | 0.022222 | 21.3824 | 16.7 | 9.8 | 1.67 | 0.98 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 912.23 | 910.63 | 0.92 | 0.68 | 0.02519 | 1 | 30.86953 | 9.8261 | 0.7503 | 21.382 |
| 32.02.04 | INEZ | 24 | 24 | 24 | CMP | 60 | 919.05 | 909.23 | 0.163667 | 21.3824 | 33.4 | 10 | 1.67 | 0.98 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 922.05 | 911.23 | 2.25 | 8.57 | 0.14283 | 1 | 73.51437 | 23.4 | 4.2553 | 21.382 |
| 32.02.05 | INEZ | 18X30 | 24 | 18 | ACMP | 75 | 919.05 | 909.61 | 0.125867 | 18.5177 | 33.4 | 19.6 | 1.67 | 0.98 | 20 | 1.5 | 3.1416 | 18.5177 | 0.024 | 921.3 | 911.11 | 1.75 | 8.44 | 0.11253 | 1 | 65.25263 | 20.771 | 3.3526 | 18.518 |
| 32.02.06 | INEZ & OVERLOCK | 24X36 | 30 | 24 | ACMP | 42 | 882.09 | 879.7 | 0.056905 | 33.41 | 50.1 | 29.4 | 1.67 | 0.98 | 30 | 2 | 4.9087 | 33.41 | 0.024 | 885.09 | 881.7 | 1.56 | 1.83 | 0.04357 | 1.16 | 73.61818 | 14.997 | 1.7479 | 33.41 |
| 32.02.07 | OVERLOCK & MARTIN | 30 | 30 | 30 | RCP | 66 | 847.82 | 847.36 | 0.006970 | 37.3535 | 50.1 | 29.4 | 1.67 | 0.98 | 30 | 2.5 | 4.9087 | 37.3535 | 0.024 | 851.57 | 849.86 | 0.64 | 1.07 | 0.01621 | 1.16 | 44.90597 | 9.1482 | 0.6504 | 37.354 |
| 32.02.08 | OVERLOCK & MARTIN | 24X36 | 30 | 24 | RCP | 62 | 849.6 | 847.53 | 0.033387 | 33.41 | 50.1 | 29.4 | 1.67 | 0.98 | 30 | 2 | 4.9087 | 33.41 | 0.024 | 852.6 | 849.53 | 0.99 | 2.08 | 0.03355 | 1.16 | 64.59814 | 13.16 | 1.3458 | 33.41 |
| 32.01.09 | RACINE | 24 | 24 | 24 | CMP | 54 | 875.15 | 873.36 | 0.033148 | 21.3824 | 41.2 | 23.2 | 2.06 | 1.16 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 878.15 | 875.36 | 0.75 | 2.04 | 0.03778 | 1 | 37.8073 | 12.034 | 1.1255 | 21.382 |

Exhibit C - 4
Culvert Analysis Database
City of New Berlin

*NEW BERLIN CULVERT ANALYSIS (greater than 18 inch diameter)*

| CULVERT ID | Location | Size (in) | Equiv. Diam. (in) | Height (in) | Mat'l Type | Length (ft) | U/S Invert (ft) | D/S Invert (ft) | Slope (ft/ft) | Cap. (cfs) | 100 yr (cfs) | 10 yr (cfs) | 100 Yr Rate | 10 yr Rate | Con-tributing Acres | IC Head (ft) | IC Area (ft^2) | IC Flow (cfs) | Manning 'n' | HW Elev. (ft) | TW Elev. (ft) | Entr loss K | Head (ft) | Friction Slope | R^2/3 | Velocity (ft/s) | BC Flow (ft/s) | Entr loss (ft) | Cap. (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32.01.10 | RACINE | 24 | 24 | 24 | RCP | 244 | 864.67 | 862.2 | 0.010123 | 21.3824 | 41.2 | 23.2 | 2.06 | 1.16 | 20 | 2 | 3.1416 | 21.3824 | 0.013 | 867.67 | 864.2 | 0.89 | 2.58 | 0.01057 | 1 | 36.92668 | 11.754 | 1.0737 | 21.382 |
| 32.01.11 | RACINE & JULIUS | 24 | 24 | 24 | RCP | 66 | 863.25 | 862.43 | 0.012424 | 21.3824 | 61.8 | 34.8 | 2.06 | 1.16 | 30 | 2 | 3.1416 | 21.3824 | 0.013 | 866.25 | 864.43 | 1.25 | 0.57 | 0.00864 | 1 | 33.37266 | 10.623 | 0.8769 | 21.382 |
| 32.01.12 | RACINE & JULIUS | 24 | 24 | 24 | RCP | 70 | 862 | 861.49 | 0.007286 | 21.3824 | 103 | 58 | 2.06 | 1.16 | 50 | 2 | 3.1416 | 21.3824 | 0.013 | 865 | 863.49 | 0.87 | 0.64 | 0.00914 | 1 | 34.33731 | 10.93 | 0.9284 | 21.382 |
| 32.01.13 | RACINE & JULIUS | 24 | 24 | 24 | RCP | 151 | 861.91 | 860.02 | 0.012517 | 21.3824 | 20.6 | 11.6 | 2.06 | 1.16 | 10 | 2 | 3.1416 | 21.3824 | 0.013 | 864.91 | 862.02 | 1.12 | 1.77 | 0.01172 | 1 | 38.87975 | 12.376 | 1.1902 | 21.382 |
| 32.03.03 | I-43 & RACINE | 30 | 30 | 30 | RCP | 137 | 846.77 | 846.32 | 0.003285 | 37.3535 | 61.2 | 23.2 | 3.06 | 1.16 | 20 | 2.5 | 4.9087 | 37.3535 | 0.013 | 850.52 | 848.82 | 0.85 | 0.85 | 0.0062 | 1.16 | 51.28629 | 10.448 | 0.8483 | 37.354 |
| 32.03.02 | I-43 | 54 | 54 | 54 | RCP | 417 | 890.08 | 880.53 | 0.022902 | 162.373 | 206 | 116 | 2.06 | 1.16 | 100 | 4.5 | 15.904 | 162.373 | 0.013 | 896.83 | 885.03 | 3.21 | 8.59 | 0.0206 | 1.717 | 448.0303 | 28.17 | 6.167 | 162.37 |
| 32.03.01 | I-43 | 30 | 30 | 30 | RCP | 165 | 842.34 | 841.41 | 0.005636 | 37.3535 | 41.2 | 23.2 | 2.06 | 1.16 | 20 | 2.5 | 4.9087 | 37.3535 | 0.013 | 846.09 | 843.91 | 0.75 | 1.43 | 0.00867 | 1.16 | 60.61472 | 12.348 | 1.185 | 37.354 |
| 32.03.04 | I-43 | 60X84 | 72 | 60 | CONC | 200 | 842.2 | 841.4 | 0.004000 | 304.277 | 412 | 232 | 2.06 | 1.16 | 200 | 5 | 28.274 | 304.277 | 0.013 | 849.7 | 846.4 | 2.25 | 1.05 | 0.00525 | 2.08 | 487.1116 | 17.228 | 2.3065 | 304.28 |
| 32.03.05 | I-43 | 60X180 | 120 | 60 | CONC | 512 | 838.13 | 829.03 | 0.017773 | 845.214 | 412 | 232 | 2.06 | 1.16 | 200 | 5 | 78.54 | 845.214 | 0.013 | 845.63 | 834.03 | 2.25 | 9.35 | 0.01826 | 2.924 | 3547.451 | 45.168 | 15.854 | 845.21 |
| 32.03.06 | I-43 | 60X180 | 120 | 60 | CONC | 346 | 847.13 | 841.1 | 0.017428 | 845.214 | 412 | 232 | 2.06 | 1.16 | 200 | 5 | 78.54 | 845.214 | 0.013 | 854.63 | 846.1 | 2.25 | 6.28 | 0.01815 | 2.924 | 3536.611 | 45.03 | 15.757 | 845.21 |
| 32.01.14 | RACINE | 24 | 24 | 24 | CMP | 54 | 875.15 | 873.36 | 0.033148 | 21.3824 | 20.6 | 11.6 | 2.06 | 1.16 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 878.15 | 875.36 | 0.97 | 1.82 | 0.0337 | 1 | 35.71053 | 11.367 | 1.0041 | 21.382 |
| 33.02.06 | SUMMIT & DALE DRIVE | 21X28 | 24 | 21 | ACMP | 40 | 828.9 | 827.87 | 0.025750 | 20.0014 | 21.8 | 12.4 | 1.09 | 0.62 | 20 | 1.75 | 3.1416 | 20.0014 | 0.024 | 831.525 | 829.62 | 0.75 | 1.155 | 0.02887 | 1 | 33.05357 | 10.521 | 0.8603 | 20.001 |
| 33.02.05 | MARTIN | 36 | 36 | 36 | CMP | 33 | 822.69 | 822.67 | 0.000606 | 58.923 | 80.37 | 48.41 | 1.16 | 0.62 | 80 | 3 | 7.0686 | 58.923 | 0.024 | 827.19 | 825.67 | 0.75 | 0.77 | 0.02333 | 1.31 | 87.60373 | 12.393 | 1.1936 | 58.923 |
| 33.03.05 | MARTIN | 36 | 36 | 36 | CMP | 33 | 822.74 | 822.69 | 0.001515 | 58.923 | 90.63 | 54.59 | 1.16 | 0.62 | 80 | 3 | 7.0686 | 58.923 | 0.024 | 827.24 | 825.69 | 0.75 | 0.8 | 0.02424 | 1.31 | 89.29399 | 12.633 | 1.2401 | 58.923 |
| 33.03.08 | ROCK I-43 FREEWAY | 72X120 | 96 | 72 | CONC | 250 | 824.1 | 823.5 | 0.002400 | 592.567 | 444 | 235 | 1.16 | 0.62 | 80 | 6 | 50.265 | 592.567 | 0.013 | 833.1 | 829.5 | 1.75 | 1.85 | 0.0074 | 2.52 | 1245.474 | 24.778 | 4.7711 | 592.57 |
| 33.03.07 | ROCK I-43 FREEWAY | 96X216 | 154 | 96 | CONC | 313 | 820.75 | 818.75 | 0.006390 | 1760.78 | 855 | 339 | 1.16 | 0.62 | 500 | 8 | 129.35 | 1760.78 | 0.013 | 832.75 | 826.75 | 2.75 | 3.25 | 0.01038 | 3.453 | 5202.599 | 40.221 | 12.572 | 1760.8 |
| 33.03.04 | COLLEGE & SMALL | 21X27 | 24 | 21 | ACMP | 49 | 835.51 | 834.48 | 0.021020 | 20.0014 | 19.2 | 10.8 | 0.96 | 0.54 | 20 | 1.75 | 3.1416 | 20.0014 | 0.024 | 838.135 | 836.23 | 0.72 | 1.185 | 0.02418 | 1 | 30.24953 | 9.6287 | 0.7205 | 20.001 |
| 33.03.03 | COLLEGE | 24 | 24 | 24 | CCP | 46 | 838.9 | 838.41 | 0.010652 | 21.3824 | 19.2 | 10.8 | 0.96 | 0.54 | 20 | 2 | 3.1416 | 21.3824 | 0.013 | 841.9 | 840.41 | 0.83 | 0.66 | 0.01435 | 1 | 43.01485 | 13.692 | 1.4569 | 21.382 |
| 33.01.02 | CALHOUN & FREEWAY | 24 | 24 | 24 | CMP | 56 | 844.43 | 843.96 | 0.008393 | 21.3824 | 34.8 | 18.6 | 1.16 | 0.62 | 30 | 2 | 3.1416 | 21.3824 | 0.024 | 847.43 | 845.96 | 0.51 | 0.96 | 0.01714 | 1 | 25.46825 | 8.1068 | 0.5107 | 21.382 |
| 33.01.01 | CALHOUN & FREEWAY | 24 | 24 | 24 | CMP | 54 | 844.7 | 843.61 | 0.020185 | 21.3824 | 34.8 | 18.6 | 1.16 | 0.62 | 30 | 2 | 3.1416 | 21.3824 | 0.024 | 847.7 | 845.61 | 0.64 | 1.45 | 0.02685 | 1 | 31.87459 | 10.146 | 0.8 | 21.382 |
| 33.01.04 | COLLEGE, NB/MUSKEGO BORDER | 24 | 24 | 24 | ACMP | 24 | 819.78 | 819.32 | 0.019167 | 21.3824 | 23.2 | 12.4 | 1.16 | 0.62 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 822.78 | 821.32 | 0.84 | 0.62 | 0.02583 | 1 | 31.26422 | 9.9517 | 0.7696 | 21.382 |
| 33.01.05 | COLLEGE, NB/MUSKEGO BORDER | 24 | 24 | 24 | CMP | 45 | 820.8 | 819.78 | 0.022667 | 21.3824 | 23.2 | 12.4 | 1.16 | 0.62 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 823.8 | 821.78 | 0.75 | 1.27 | 0.02822 | 1 | 32.67782 | 10.402 | 0.8408 | 21.382 |
| 33.01.06 | ROCK I-43 FREEWAY | 96X144 | 122 | 96 | CONC | 50 | 822.74 | 822.69 | 0.001000 | 1105.05 | 2900 | 1550 | 1.16 | 0.62 | 2500 | 8 | 81.18 | 1105.05 | 0.013 | 834.74 | 830.69 | 1.75 | 2.3 | 0.046 | 2.956 | 5883.928 | 72.48 | 40.825 | 1105.1 |
| 34.03.03 | COLLEGE AVE, 2501500E, 344500N | 18X24 | 21 | 18 | ACMP | 36 | 878.01 | 877.03 | 0.027222 | 14.1776 | 44 | 15.2 | 2.2 | 0.76 | 20 | 1.5 | 2.4053 | 14.1776 | 0.024 | 880.26 | 878.53 | 0.68 | 1.05 | 0.02917 | 0.915 | 23.26782 | 9.6736 | 0.7272 | 14.178 |
| 34.03.02 | COLLEGE AVE, 2503500E, 344500N | 20X28 | 24 | 20 | ACMP | 38 | 848.69 | 848.41 | 0.007368 | 19.5194 | 44 | 15.2 | 2.2 | 0.76 | 20 | 1.6667 | 3.1416 | 19.5194 | 0.024 | 851.19 | 850.08 | 0.46 | 0.653 | 0.01719 | 1 | 25.50545 | 8.1186 | 0.5122 | 19.519 |
| 34.02.06 | SMALL | 24X32 | 28 | 24 | ACMP | 40 | 886.51 | 886.33 | 0.004500 | 29.1038 | 23.2 | 12.4 | 1.16 | 0.62 | 20 | 2 | 4.2761 | 29.1038 | 0.024 | 889.51 | 888.33 | 0.53 | 0.65 | 0.01625 | 1.108 | 37.40321 | 8.7471 | 0.5946 | 29.104 |
| 34.02.09 | I-43 | 42 | 42 | 42 | RCP | 188 | 897.56 | 895.42 | 0.011383 | 86.6267 | 49 | 15 | 1.16 | 0.62 | 20 | 3.5 | 9.6211 | 86.6267 | 0.013 | 902.81 | 898.92 | 1.24 | 2.65 | 0.0141 | 1.452 | 189.6142 | 19.708 | 3.0184 | 86.627 |
| 34.02.10 | I-43 | 42 | 42 | 42 | RCP | 152 | 881.55 | 855.07 | 0.174211 | 86.6267 | 49 | 15 | 1.16 | 0.62 | 40 | 3.5 | 9.6211 | 86.6267 | 0.013 | 886.8 | 858.57 | 5.25 | 22.98 | 0.15118 | 1.452 | 620.9835 | 64.544 | 32.374 | 86.627 |
| 34.02.11 | I-43 | 30 | 30 | 30 | RCP | 160 | 869.22 | 855.07 | 0.088437 | 37.3535 | 46.4 | 24.8 | 1.16 | 0.62 | 40 | 2.5 | 4.9087 | 37.3535 | 0.013 | 872.97 | 857.57 | 8.98 | 6.42 | 0.04012 | 1.16 | 130.4246 | 26.57 | 5.4862 | 37.354 |
| 34.01.01 | SMALL & PUEBLO | 30 | 30 | 30 | RCP | 105 | 886.51 | 886.33 | 0.001714 | 32.6521 | 34.8 | 18.6 | 1.16 | 0.62 | 30 | 2.5 | 4.9087 | 37.3535 | 0.024 | 890.26 | 888.83 | 0.53 | 0.9 | 0.00857 | 1.16 | 32.65207 | 6.6518 | 0.3439 | 32.652 |
| 34.01.02 | SMALL | 36 | 36 | 36 | RCP | 12 | 865.27 | 864.94 | 0.027500 | 58.923 | 34.8 | 18.6 | 1.16 | 0.62 | 30 | 3 | 7.0686 | 58.923 | 0.024 | 869.77 | 867.94 | 1.53 | 0.3 | 0.025 | 1.31 | 90.67847 | 12.828 | 1.2789 | 58.923 |
| 35.02.01 | COLLEGE AVE | 18X30 | 24 | 18 | ACMP | 35 | 836.4 | 833.88 | 0.072000 | 18.5177 | 29 | 14 | 0.58 | 0.28 | 50 | 1.5 | 3.1416 | 18.5177 | 0.024 | 838.65 | 835.38 | 1.25 | 2.02 | 0.05771 | 1 | 46.73036 | 14.875 | 1.7194 | 18.518 |
| 35.04.02 | SUNNY SLOPE & TRIBUTARY | 24X36 | 30 | 24 | ACMP | 37 | 822.7 | 822.62 | 0.002162 | 33.41 | 46.4 | 22.4 | 0.58 | 0.28 | 80 | 2 | 4.9087 | 33.41 | 0.024 | 825.7 | 824.62 | 0.48 | 0.6 | 0.01622 | 1.16 | 44.91164 | 9.1493 | 0.6505 | 33.41 |
| 35.04.03 | GRANGE | 27X42 | 36 | 27 | ACMP | 40 | 899.71 | 898.11 | 0.040000 | 51.0288 | 23.2 | 11.2 | 0.58 | 0.28 | 40 | 2.25 | 7.0686 | 51.0288 | 0.024 | 903.085 | 900.36 | 1.25 | 1.475 | 0.03688 | 1.31 | 110.1286 | 15.58 | 1.8864 | 51.029 |
| 36.01.10 | FRANCES | 24 | 24 | 24 | CMP | 43 | 812.83 | 811.75 | 0.025116 | 21.3824 | 41 | 15.4 | 4.1 | 1.54 | 10 | 2 | 3.1416 | 21.3824 | 0.024 | 815.83 | 813.75 | 0.85 | 1.23 | 0.0286 | 1 | 32.89848 | 10.472 | 0.8522 | 21.382 |
| 36.01.07 | FRANCES & ST. MARY'S | 36X132 | 74 | 36 | CONC | 41 | 805.13 | 805.03 | 0.002439 | 248.968 | 1476 | 554.4 | 4.1 | 1.54 | 360 | 3 | 29.867 | 248.968 | 0.013 | 809.63 | 808.03 | 1.12 | 0.48 | 0.01171 | 2.118 | 782.544 | 26.201 | 5.3349 | 248.97 |
| 36.01.06 | FRANCES & ST. MARY'S | 36X132 | 74 | 36 | CONC | 41 | 805.2 | 805.03 | 0.004146 | 248.968 | 1476 | 554.4 | 4.1 | 1.54 | 360 | 3 | 29.867 | 248.968 | 0.013 | 809.7 | 808.03 | 1.13 | 0.54 | 0.01317 | 2.118 | 830.0133 | 27.79 | 6.0017 | 248.97 |
| 36.01.05 | FRANCES | 24X36 | 31 | 24 | ACMP | 32 | 808.8 | 805.52 | 0.102500 | 35.6745 | 34 | 25 | 4.1 | 1.54 | 100 | 2 | 5.2414 | 35.6745 | 0.024 | 811.8 | 807.52 | 2.1 | 2.18 | 0.06812 | 1.186 | 100.4643 | 19.167 | 2.855 | 35.674 |
| 36.02.01 | SUNNY SLOPE & GRANGE | 18X30 | 24 | 18 | ARCP | 50 | 875.55 | 875.03 | 0.010400 | 18.5177 | 31.6 | 11.4 | 1.58 | 0.57 | 20 | 1.5 | 3.1416 | 18.5177 | 0.013 | 877.8 | 876.53 | 0.5 | 0.77 | 0.0154 | 1 | 44.56416 | 14.185 | 1.5637 | 18.518 |
| 36.02.02 | SUNNY SLOPE & GRANGE | 19X45 | 30 | 19 | ARCP | 55 | 875.41 | 874.49 | 0.016727 | 29.7268 | 47.4 | 17.1 | 1.58 | 0.57 | 30 | 1.5833 | 4.9087 | 29.7268 | 0.013 | 877.785 | 876.07 | 0.5 | 1.212 | 0.02203 | 1.16 | 96.6412 | 19.688 | 3.0121 | 29.727 |
| 36.04.01 | JANESVILLE | 24 | 24 | 24 | CMP | 82 | 809.78 | 809.27 | 0.006220 | 21.3824 | 74.8 | 28.4 | 1.87 | 0.71 | 40 | 2 | 3.1416 | 21.3824 | 0.024 | 812.78 | 811.27 | 0.41 | 1.1 | 0.01341 | 1 | 22.52926 | 7.1713 | 0.3997 | 21.382 |
| 36.04.02 | JANESVILLE& LOWELL | 30 | 30 | 30 | CMP | 82 | 818.97 | 817.08 | 0.023049 | 37.3535 | 37.4 | 14.2 | 1.87 | 0.71 | 20 | 2.5 | 4.9087 | 37.3535 | 0.024 | 822.72 | 819.58 | 1.25 | 1.89 | 0.02305 | 1.16 | 53.54367 | 10.908 | 0.9246 | 37.354 |
| 36.04.03 | JANESVILLE& LOWELL | 36 | 36 | 36 | CMP | 46 | 820.7 | 820.05 | 0.014130 | 58.923 | 37.4 | 14.2 | 1.87 | 0.71 | 20 | 3 | 7.0686 | 58.923 | 0.024 | 825.2 | 823.05 | 0.95 | 1.2 | 0.02609 | 1.31 | 92.62877 | 13.104 | 1.3345 | 58.923 |
| 36.04.04 | JANESVILLE | 30 | 30 | 30 | CMP | 40 | 819.17 | 819.14 | 0.000750 | 37.3535 | 18.7 | 7.1 | 1.87 | 0.71 | 10 | 2.5 | 4.9087 | 37.3535 | 0.024 | 822.92 | 821.64 | 0.64 | 0.64 | 0.016 | 1.16 | 44.61123 | 9.0881 | 0.6419 | 37.354 |
| 36.04.07 | JANESVILLE | 30 | 30 | 30 | CMP | 83 | 818.3 | 818.17 | 0.001566 | 37.3325 | 18.7 | 7.1 | 1.87 | 0.71 | 10 | 2.5 | 4.9087 | 37.3535 | 0.024 | 822.05 | 820.67 | 0.45 | 0.93 | 0.0112 | 1.16 | 37.33246 | 7.6053 | 0.4495 | 37.332 |
| 105.02.01 | TANS | 72 | 72 | 72 | RCP | 37 | 837.49 | 837.29 | 0.005405 | 333.319 | 924 | 546 | 1.54 | 0.91 | 600 | 6 | 28.274 | 333.319 | 0.013 | 846.49 | 843.29 | 1.25 | 1.95 | 0.0527 | 2.08 | 1543.353 | 54.585 | 23.154 | 333.32 |
| 105.02.02 | TANS & CTH Y | 24 | 24 | 24 | CMP | 69 | 869.76 | 866.7 | 0.044348 | 21.3824 | 30.8 | 18.2 | 1.54 | 0.91 | 20 | 2 | 3.1416 | 21.3824 | 0.024 | 872.76 | 868.7 | 0.75 | 3.31 | 0.04797 | 1 | 42.60366 | 13.561 | 1.4292 | 21.382 |
| 105.02.03 | RACINE | 36 | 36 | 36 | CMP | 225 | 843.54 | 839.42 | 0.018311 | 58.923 | 30.8 | 18.2 | 1.54 | 0.91 | 20 | 3 | 7.0686 | 58.923 | 0.024 | 848.04 | 842.42 | 0.85 | 4.77 | 0.0212 | 1.31 | 83.50301 | 11.813 | 1.0845 | 58.923 |
| 105.02.04 | RACINE DRIVE (AVENUE) | 72 | 72 | 72 | CMP | 131 | 829.14 | 829.03 | 0.000840 | 333.319 | 1078 | 637 | 1.54 | 0.91 | 700 | 6 | 28.274 | 333.319 | 0.024 | 838.14 | 835.03 | 1.12 | 1.99 | 0.01519 | 2.08 | 448.8196 | 15.874 | 1.9582 | 333.32 |
| 106.03.10 | NATIONAL & CROWBAR | 24 | 24 | 24 | CMP | 70 | 956.59 | 955.61 | 0.014000 | 21.3824 | 123.6 | 67.2 | 2.06 | 1.12 | 60 | 2 | 3.1416 | 21.3824 | 0.024 | 959.59 | 957.61 | 0.62 | 1.36 | 0.01943 | 1 | 27.11302 | 8.6303 | 0.5788 | 21.382 |
| 106.03.11 | I-43 | 36 | 36 | 36 | RCP | 83 | 954.9 | 953.66 | 0.014940 | 58.923 | 41.2 | 22.4 | 2.06 | 1.12 | 20 | 3 | 7.0686 | 58.923 | 0.013 | 959.4 | 956.66 | 1.12 | 1.62 | 0.01952 | 1.31 | 147.9178 | 20.926 | 3.403 | 58.923 |
| 106.03.12 | I-43 | 36 | 36 | 36 | RCP | 70 | 951.58 | 950.62 | 0.013714 | 58.923 | 41.2 | 22.4 | 2.06 | 1.12 | 20 | 3 | 7.0686 | 58.923 | 0.013 | 956.08 | 953.62 | 1.12 | 1.34 | 0.01914 | 1.31 | 146.4891 | 20.724 | 3.3376 | 58.923 |
| 106.03.13 | I-43 & CROWBAR | 42 | 42 | 42 | RCP | 127 | 938.25 | 937.65 | 0.004724 | 86.6267 | 61.8 | 33.6 | 2.06 | 1.12 | 30 | 3.5 | 9.6211 | 86.6267 | 0.013 | 943.5 | 941.15 | 1.51 | 0.84 | 0.00661 | 1.452 | 129.8867 | 13.5 | 1.4163 | 86.627 |
| 106.03.14 | I-43 & CROWBAR | 42 | 42 | 42 | RCP | 134 | 938.67 | 938.29 | 0.002836 | 86.6267 | 61.8 | 33.6 | 2.06 | 1.12 | 30 | 3.5 | 9.6211 | 86.6267 | 0.013 | 943.92 | 941.79 | 1.52 | 0.61 | 0.00455 | 1.452 | 107.7555 | 11.2 | 0.9748 | 86.627 |
| 106.03.15 | I-43 & CROWBAR | 60 | 60 | 60 | CMP | 194 | 937.09 | 935.27 | 0.009381 | 211.303 | 185.4 | 100.8 | 2.06 | 1.12 | 90 | 5 | 19.635 | 211.303 | 0.024 | 944.59 | 940.27 | 1.42 | 2.9 | 0.01495 | 1.842 | 273.7972 | 13.944 | 1.5111 | 211.3 |
| 106.03.16 | 2488500E, 344000N, I-43 | 42 | 42 | 42 | RCP | 134 | 926.7 | 922 | 0.035075 | 86.6267 | 123.6 | 67.2 | 2.06 | 1.12 | 60 | 3.5 | 9.6211 | 86.6267 | 0.013 | 931.95 | 925.5 | 2.95 | 3.5 | 0.02612 | 1.452 | 258.1122 | 26.828 | 5.5931 | 86.627 |
| 106.03.17 | 2488500E, 344000N, I-43 | 42 | 42 | 42 | RCP | 137 | 922 | 919.42 | 0.018832 | 86.6267 | 41.2 | 22.4 | 2.06 | 1.12 | 20 | 3.5 | 9.6211 | 86.6267 | 0.013 | 927.25 | 922.92 | 2.85 | 1.48 | 0.0108 | 1.452 | 165.9959 | 17.253 | 2.3133 | 86.627 |

City of New Berlin
Root River
2 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation | Future Depth | Future Elevation Increase | Future Flow Increase |
| **Tributary A** | | | | | | | | | | | |
| City Limit | 234 | 224 | RA0000 | 0 | 753.80 | 756.75 | 2.95 | 756.93 | 3.13 | 0.18 | (10) |
| 124th Street (5.92'x3.92' Arch) | 261 | 251 | RA0040 | 40 | 753.90 | 757.93 | 4.03 | 758.25 | 4.35 | 0.32 | (10) |
| RA1800L | 318 | 297 | RA1800 | 1,800 | 766.50 | 773.75 | 7.25 | 773.96 | 7.46 | 0.21 | (21) |
| RA3530L | 135 | 147 | RA3530 | 3,530 | 779.00 | 785.27 | 6.27 | 785.46 | 6.46 | 0.19 | 12 |
| RA5535L | 153 | 165 | RA5535 | 5,535 | 797.30 | 803.97 | 6.67 | 804.09 | 6.79 | 0.12 | 12 |
| **Tributary B** | | | | | | | | | | | |
| City Limit | 166 | 228 | RB0000 | 0 | 742.30 | 745.08 | 2.78 | 745.54 | 3.24 | 0.46 | 62 |
| 124th Street (3 9'x5' Box) | 171 | 228 | RB0030 | 30 | 742.45 | 745.09 | 2.64 | 745.56 | 3.11 | 0.47 | 57 |
| RB0840L | 169 | 228 | RB0840 | 840 | 746.74 | 750.36 | 3.62 | 750.57 | 3.83 | 0.21 | 59 |
| Lagoon Road (2 7.92'x5.58' Arch) | 166 | 228 | RB0922 | 922 | 747.83 | 750.41 | 2.58 | 750.66 | 2.83 | 0.25 | 62 |
| RB1932L | 151 | 216 | RB1932 | 1932 | 754.38 | 756.53 | 2.15 | 756.96 | 2.58 | 0.43 | 65 |
| Cleveland Avenue (12.67'x8.08' Arc | 152 | 216 | RB2022 | 2022 | 754.75 | 757.14 | 2.39 | 757.64 | 2.89 | 0.50 | 64 |
| RB2177L | 147 | 212 | RB2177 | 2177 | 756.25 | 758.45 | 2.20 | 758.81 | 2.56 | 0.36 | 65 |
| **Tributary BA** | | | | | | | | | | | |
| 128th Street (5' RCP) | 86 | 130 | RBA0040 | 40 | 756.43 | 759.42 | 2.99 | 760.16 | 3.73 | 0.74 | 44 |
| RBA0790L | 81 | 124 | RBA0790 | 790 | 763.90 | 765.46 | 1.56 | 765.85 | 1.95 | 0.39 | 43 |
| 130th Street (2 5' RCP) | 80 | 124 | RBA0828 | 828 | 764.10 | 766.11 | 2.01 | 766.59 | 2.49 | 0.48 | 44 |
| RBA1773L | 86 | 129 | RBA1773 | 1773 | 774.14 | 775.16 | 1.02 | 775.26 | 1.12 | 0.10 | 43 |
| 132nd Street (2 4' RCP) | 86 | 130 | RBA1823 | 1823 | 774.39 | 777.11 | 2.72 | 777.87 | 3.48 | 0.76 | 44 |
| RBA2268L | 91 | 130 | RBA2268 | 2268 | 777.54 | 779.20 | 1.66 | 779.52 | 1.98 | 0.32 | 39 |
| 133rd Street (2 4' RCP) | 92 | 130 | RBA2318 | 2318 | 778.61 | 780.54 | 1.93 | 780.98 | 2.37 | 0.44 | 38 |
| RBA2423L | 34 | 42 | RBA2423 | 2423 | 779.67 | 780.59 | 0.92 | 780.99 | 1.32 | 0.40 | 8 |
| Dakota Street (2 4' RCP) | 34 | 42 | RBA2470 | 2470 | 780.45 | 781.73 | 1.28 | 781.75 | 1.30 | 0.02 | 8 |
| RBA5230L | 20 | 25 | RBA5230 | 5230 | 820.17 | 820.79 | 0.62 | 820.89 | 0.72 | 0.10 | 5 |
| Sunny Slope Road (5' RCP) | 22 | 27 | RBA5269 | 5269 | 820.54 | 822.27 | 1.73 | 822.46 | 1.92 | 0.19 | 5 |
| RBA6779L | 19 | 20 | RBA6779 | 6779 | 845.28 | 845.77 | 0.49 | 845.79 | 0.51 | 0.02 | 1 |
| Dakota Street (2 3' RCP) | 22 | 24 | RBA6821 | 6821 | 846.10 | 847.39 | 1.29 | 847.42 | 1.32 | 0.03 | 2 |
| **Tributary BB** | | | | | | | | | | | |
| RBB0280L | 62 | 83 | RBB0280 | 280 | 758.84 | 760.50 | 1.66 | 760.70 | 1.86 | 0.20 | 21 |
| 128th Street South (4' RCP) | 62 | 83 | RBB0335 | 335 | 759.45 | 762.38 | 2.93 | 763.04 | 3.59 | 0.66 | 21 |
| RBB2565L | 54 | 90 | RBB2565 | 2565 | 782.06 | 784.05 | 1.99 | 784.58 | 2.52 | 0.53 | 36 |
| 130th Street (4' RCP) | 59 | 93 | RBB2600 | 2600 | 782.41 | 785.19 | 2.78 | 786.04 | 3.63 | 0.85 | 34 |
| RBB2855L | 72 | 116 | RBB2855 | 2855 | 785.00 | 785.79 | 0.79 | 786.09 | 1.09 | 0.30 | 45 |
| National Avenue (4' RCP) | 73 | 118 | RBB2998 | 2998 | 787.27 | 793.67 | 6.40 | 797.39 | 10.12 | 3.72 | 45 |
| **Tributary C** | | | | | | | | | | | |
| City Limit | 63 | 87 | RC0000 | 0 | 793.67 | 794.67 | 1.00 | 794.80 | 1.13 | 0.13 | 25 |

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation | Future Depth | Future Elevation Increase | Future Flow Increase |
| 124th Street (4' RCP) | 63 | 87 | RC0040 | 40 | 793.80 | 797.15 | 3.35 | 798.06 | 4.26 | 0.91 | 24 |
| RC1315L | 44 | 68 | RC1315 | 1315 | 806.00 | 806.87 | 0.87 | 807.13 | 1.13 | 0.26 | 24 |
| **Tributary D** | | | | | | | | | | | |
| City Limit | 22 | 28 | RD0000 | 0 | 793.69 | 794.30 | 0.61 | 794.37 | 0.68 | 0.07 | 6 |
| 124th Street (6'x5.75' Box) | 22 | 28 | RD0068 | 68 | 794.57 | 795.08 | 0.51 | 795.16 | 0.59 | 0.08 | 6 |
| RD1053L | 11 | 15 | RD1053 | 1053 | 809.00 | 809.29 | 0.29 | 809.33 | 0.33 | 0.04 | 4 |
| Scarborough Drive (4.5' RCP) | 13 | 15 | RD1123 | 1123 | 811.00 | 812.30 | 1.30 | 812.34 | 1.34 | 0.04 | 2 |
| RD1303L | 13 | 15 | RD1303 | 1303 | 816.72 | 816.98 | 0.26 | 816.99 | 0.27 | 0.01 | 2 |
| Weatherstone Boulevard (4.75'x3.17' Arch/5.33'x3.58 Arch) | 14 | 15 | RD1373 | 1373 | 819.39 | 819.94 | 0.55 | 819.96 | 0.57 | 0.02 | 1 |
| RD2073L | 1 | 5 | RD2073 | 2073 | 846.11 | 846.18 | 0.07 | 846.26 | 0.15 | 0.08 | 4 |
| Victoria Circle (4.75'x3.17' Arch/5.33'x3.58 Arch) | 2 | 6 | RD2154 | 2154 | 846.15 | 846.53 | 0.38 | 846.80 | 0.65 | 0.27 | 4 |
| RD2639L | 4 | 11 | RD2639 | 2639 | 852.83 | 852.99 | 0.16 | 853.11 | 0.28 | 0.12 | 7 |
| Coldspring Road (6.08'x4.58' Arch) | 3 | 9 | RD2674 | 2674 | 853.44 | 853.96 | 0.52 | 854.27 | 0.83 | 0.31 | 6 |
| **Tributary E** | | | | | | | | | | | |
| City Limit | 82 | 112 | RE0000 | 0 | 805.00 | 806.67 | 1.67 | 806.79 | 1.79 | 0.12 | 30 |
| RE0235L | 84 | 113 | RE0235 | 235 | 805.20 | 807.18 | 1.98 | 807.36 | 2.16 | 0.18 | 29 |
| RE0425L | 85 | 106 | RE0425 | 425 | 805.30 | 807.40 | 2.10 | 807.57 | 2.27 | 0.17 | 21 |
| St. Mary's Drive (2 11'x3' Box) | 86 | 106 | RE0466 | 466 | 805.40 | 807.41 | 2.01 | 807.57 | 2.17 | 0.16 | 20 |
| RE1576L | 90 | 107 | RE1576 | 1576 | 813.94 | 814.95 | 1.01 | 815.02 | 1.08 | 0.07 | 17 |
| Grange Avenue (4' RCP) | 90 | 106 | RE1616 | 1616 | 814.26 | 817.98 | 3.72 | 818.67 | 4.41 | 0.69 | 16 |
| RE3766L | 70 | 86 | RE3766 | 3766 | 831.32 | 832.50 | 1.18 | 832.66 | 1.34 | 0.16 | 16 |
| Marquette Drive (3 4.75'x3.17' Arch) | 72 | 87 | RE3806 | 3806 | 832.27 | 833.18 | 0.91 | 833.30 | 1.03 | 0.12 | 15 |
| RE4476L | 65 | 82 | RE4476 | 4476 | 838.09 | 840.04 | 1.95 | 840.34 | 2.25 | 0.30 | 17 |
| Balboa Drive (2 4.75'x3.17' Arch) | 66 | 82 | RE4520 | 4520 | 838.60 | 840.20 | 1.60 | 840.54 | 1.94 | 0.34 | 16 |
| RE4950L | 65 | 83 | RE4950 | 4950 | 841.04 | 842.11 | 1.07 | 842.24 | 1.20 | 0.13 | 18 |
| Cherrytree Road (2 4.75'x3.17' Arch) | 64 | 84 | RE4999 | 4999 | 841.41 | 843.02 | 1.61 | 843.32 | 1.91 | 0.30 | 20 |
| RE5869L | 67 | 93 | RE5869 | 5869 | 845.96 | 847.05 | 1.09 | 847.21 | 1.25 | 0.16 | 26 |
| Radisson Court (2 4.75'x3.17' Arch) | 70 | 94 | RE5914 | 5914 | 846.10 | 847.87 | 1.77 | 848.23 | 2.13 | 0.36 | 24 |
| RE6914L | 46 | 73 | RE6914 | 6914 | 851.99 | 852.84 | 0.85 | 853.11 | 1.12 | 0.27 | 27 |
| Marin Way (2 5.67'x3.58' Elliptical) | 48 | 76 | RE7389 | 7389 | 856.52 | 858.10 | 1.58 | 858.44 | 1.92 | 0.34 | 28 |
| Beloit Road (2 7'x3' Box) | 24 | 48 | RE7474 | 7474 | 857.33 | 858.10 | 0.77 | 858.43 | 1.10 | 0.33 | 24 |
| RE7594L | 25 | 49 | RE7594 | 7594 | 857.49 | 858.14 | 0.65 | 858.46 | 0.97 | 0.32 | 24 |
| INTR43 (5'x5' Box) | 25 | 51 | RE7928 | 7928 | 857.59 | 859.18 | 1.59 | 859.96 | 2.37 | 0.78 | 26 |
| **Tributary F** | | | | | | | | | | | |
| Frances Street (2.92'x2' Arch) | 9 | 15 | RF0167 | 167 | 805.40 | 807.20 | 1.80 | 807.49 | 2.09 | 0.29 | 6 |

City of New Berlin
Root River
10 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation | Future Depth | Future Elevation Increase | Future Flow Increase |
| **Tributary A** | | | | | | | | | | | |
| City Limit | 283 | 318 | RA0000 | 0 | 753.80 | 757.53 | 3.73 | 757.79 | 3.99 | 0.26 | 35 |
| 124th Street (5.92'x3.92' Arch) | 275 | 279 | RA0040 | 40 | 753.90 | 759.68 | 5.78 | 760.80 | 6.90 | 1.12 | 4 |
| 124th Street Overflow | 9 | 39 | | | | | | | | | |
| RA1800L | 337 | 293 | RA1800 | 1,800 | 766.50 | 774.57 | 8.07 | 774.73 | 8.23 | 0.16 | (44) |
| RA3530L | 201 | 219 | RA3530 | 3,530 | 779.00 | 786.25 | 7.25 | 786.45 | 7.45 | 0.20 | 18 |
| RA5535L | 237 | 254 | RA5535 | 5,535 | 797.30 | 804.76 | 7.46 | 804.85 | 7.55 | 0.09 | 17 |
| **Tributary B** | | | | | | | | | | | |
| City Limit | 272 | 361 | RB0000 | 0 | 742.30 | 745.83 | 3.53 | 746.30 | 4.00 | 0.47 | 89 |
| 124th Street (3 9'x5' Box) | 273 | 417 | RB0030 | 30 | 742.45 | 745.85 | 3.40 | 746.32 | 3.87 | 0.47 | 144 |
| RB0840L | 272 | 498 | RB0840 | 840 | 746.74 | 750.69 | 3.95 | 750.91 | 4.17 | 0.22 | 226 |
| Lagoon Road (2 7.92'x5.58' Arch) | 272 | 360 | RB0922 | 922 | 747.83 | 750.83 | 3.00 | 751.12 | 3.29 | 0.29 | 88 |
| RB1932L | 248 | 336 | RB1932 | 1932 | 754.38 | 757.15 | 2.77 | 757.55 | 3.17 | 0.40 | 88 |
| Cleveland Avenue (12.67'x8.08' Arc | 248 | 336 | RB2022 | 2022 | 754.75 | 757.86 | 3.11 | 758.35 | 3.60 | 0.49 | 88 |
| RB2177L | 239 | 327 | RB2177 | 2177 | 756.25 | 758.92 | 2.67 | 759.24 | 2.99 | 0.32 | 88 |
| **Tributary BA** | | | | | | | | | | | |
| 128th Street (5' RCP) | 154 | 220 | RBA0040 | 40 | 756.43 | 760.61 | 4.18 | 761.83 | 5.40 | 1.22 | 66 |
| RBA0790L | 139 | 206 | RBA0790 | 790 | 763.90 | 765.97 | 2.07 | 766.39 | 2.49 | 0.42 | 67 |
| 130th Street (2 5' RCP) | 140 | 206 | RBA0828 | 828 | 764.10 | 766.74 | 2.64 | 767.29 | 3.19 | 0.55 | 66 |
| RBA1773L | 141 | 210 | RBA1773 | 1773 | 774.14 | 775.31 | 1.17 | 775.49 | 1.35 | 0.18 | 69 |
| 132nd Street (2 4' RCP) | 142 | 210 | RBA1823 | 1823 | 774.39 | 778.17 | 3.78 | 780.48 | 6.09 | 2.31 | 68 |
| RBA2268L | 143 | 214 | RBA2268 | 2268 | 777.54 | 779.69 | 2.15 | 780.53 | 2.99 | 0.84 | 71 |
| 133rd Street (2 4' RCP) | 144 | 214 | RBA2318 | 2318 | 778.61 | 781.24 | 2.63 | 781.97 | 3.36 | 0.73 | 70 |
| RBA2423L | 71 | 91 | RBA2423 | 2423 | 779.67 | 781.27 | 1.60 | 781.99 | 2.32 | 0.72 | 20 |
| Dakota Street (2 4' RCP) | 72 | 90 | RBA2470 | 2470 | 780.45 | 782.19 | 1.74 | 782.29 | 1.84 | 0.10 | 18 |
| RBA5230L | 42 | 48 | RBA5230 | 5230 | 820.17 | 821.07 | 0.90 | 821.13 | 0.96 | 0.06 | 6 |
| Sunny Slope Road (5' RCP) | 42 | 48 | RBA5269 | 5269 | 820.54 | 822.77 | 2.23 | 822.98 | 2.44 | 0.21 | 6 |
| RBA6779L | 30 | 32 | RBA6779 | 6779 | 845.28 | 845.93 | 0.65 | 845.95 | 0.67 | 0.02 | 2 |
| Dakota Street (2 3' RCP) | 32 | 34 | RBA6821 | 6821 | 846.10 | 847.65 | 1.55 | 847.69 | 1.59 | 0.04 | 2 |
| **Tributary BB** | | | | | | | | | | | |
| RBB0280L | 86 | 110 | RBB0280 | 280 | 758.84 | 760.71 | 1.87 | 760.87 | 2.03 | 0.16 | 24 |
| 128th Street South (4' RCP) | 86 | 110 | RBB0335 | 335 | 759.45 | 763.09 | 3.64 | 764.00 | 4.55 | 0.91 | 24 |
| RBB2565L | 81 | 127 | RBB2565 | 2565 | 782.06 | 784.48 | 2.42 | 785.03 | 2.97 | 0.55 | 46 |
| 130th Street (4' RCP) | 87 | 132 | RBB2600 | 2600 | 782.41 | 785.97 | 3.56 | 787.31 | 4.90 | 1.34 | 45 |
| RBB2855L | 106 | 157 | RBB2855 | 2855 | 785.00 | 786.02 | 1.02 | 787.33 | 2.33 | 1.31 | 51 |
| National Avenue (4' RCP) | 109 | 165 | RBB2998 | 2998 | 787.27 | 797.31 | 10.04 | 797.68 | 10.41 | 0.37 | 56 |
| National Avenue Overflow | 0 | 22 | RBB2998 | 2998 | 797.00 | 797.31 | 0.31 | 797.68 | 0.68 | 0.37 | 22 |

City of New Berlin
Root River
10 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation | Future Depth | Future Elevation Increase | Future Flow Increase |
| **Tributary C** | | | | | | | | | | | |
| City Limit | 94 | 121 | RC0000 | 0 | 793.67 | 794.83 | 1.16 | 794.99 | 1.32 | 0.16 | 27 |
| 124th Street (4' RCP) | 94 | 121 | RC0040 | 40 | 793.80 | 798.35 | 4.55 | 799.89 | 6.09 | 1.54 | 27 |
| RC1315L | 69 | 109 | RC1315 | 1315 | 806.00 | 807.13 | 1.13 | 807.49 | 1.49 | 0.36 | 40 |
| **Tributary D** | | | | | | | | | | | |
| City Limit | 40 | 50 | RD0000 | 0 | 793.69 | 794.49 | 0.80 | 794.59 | 0.90 | 0.10 | 10 |
| 124th Street (6'x5.75' Box) | 40 | 50 | RD0068 | 68 | 794.57 | 795.30 | 0.73 | 795.43 | 0.86 | 0.13 | 10 |
| RD1053L | 19 | 24 | RD1053 | 1053 | 809.00 | 809.39 | 0.39 | 809.45 | 0.45 | 0.06 | 5 |
| Scarborough Drive (4.5' RCP) | 22 | 25 | RD1123 | 1123 | 811.00 | 812.68 | 1.68 | 812.76 | 1.76 | 0.08 | 3 |
| RD1303L | 23 | 25 | RD1303 | 1303 | 816.72 | 817.07 | 0.35 | 817.08 | 0.36 | 0.01 | 2 |
| Weatherstone Boulevard (4.75'x3.17' Arch/5.33'x3.58 Arch) | 23 | 25 | RD1373 | 1373 | 819.39 | 820.09 | 0.70 | 820.12 | 0.73 | 0.03 | 2 |
| RD2073L | 6 | 9 | RD2073 | 2073 | 846.11 | 846.27 | 0.16 | 846.32 | 0.21 | 0.05 | 3 |
| Victoria Circle (4.75'x3.17' Arch/5.33'x3.58 Arch) | 6 | 10 | RD2154 | 2154 | 846.15 | 846.81 | 0.66 | 846.98 | 0.83 | 0.17 | 4 |
| RD2639L | 6 | 15 | RD2639 | 2639 | 852.83 | 853.03 | 0.20 | 853.18 | 0.35 | 0.15 | 9 |
| Coldspring Road (6.08'x4.58' Arch) | 6 | 13 | RD2674 | 2674 | 853.44 | 854.13 | 0.69 | 854.43 | 0.99 | 0.30 | 7 |
| **Tributary E** | | | | | | | | | | | |
| City Limit | 165 | 197 | RE0000 | 0 | 805.00 | 807.03 | 2.03 | 807.24 | 2.24 | 0.21 | 32 |
| RE0235L | 165 | 198 | RE0235 | 235 | 805.20 | 807.69 | 2.49 | 807.96 | 2.76 | 0.27 | 33 |
| RE0425L | 154 | 179 | RE0425 | 425 | 805.30 | 807.90 | 2.60 | 808.21 | 2.91 | 0.31 | 25 |
| St. Mary's Drive (2 11'x3' Box) | 154 | 180 | RE0466 | 466 | 805.40 | 807.91 | 2.51 | 808.22 | 2.82 | 0.31 | 26 |
| RE1576L | 149 | 174 | RE1576 | 1576 | 813.94 | 815.20 | 1.26 | 815.39 | 1.45 | 0.19 | 25 |
| Grange Avenue (4' RCP) | 150 | 174 | RE1616 | 1616 | 814.26 | 820.74 | 6.48 | 821.50 | 7.24 | 0.76 | 24 |
| RE3766L | 108 | 131 | RE3766 | 3766 | 831.32 | 832.82 | 1.50 | 833.00 | 1.68 | 0.18 | 23 |
| Marquette Drive (3 4.75'x3.17' Arch) | 108 | 132 | RE3806 | 3806 | 832.27 | 833.43 | 1.16 | 833.59 | 1.32 | 0.16 | 24 |
| RE4476L | 93 | 117 | RE4476 | 4476 | 838.09 | 840.43 | 2.34 | 840.73 | 2.64 | 0.30 | 24 |
| Balboa Drive (2 4.75'x3.17' Arch) | 92 | 118 | RE4520 | 4520 | 838.60 | 840.67 | 2.07 | 841.04 | 2.44 | 0.37 | 26 |
| RE4950L | 92 | 118 | RE4950 | 4950 | 841.04 | 842.28 | 1.24 | 842.41 | 1.37 | 0.13 | 26 |
| Cherrytree Road (2 4.75'x3.17' Arch) | 92 | 118 | RE4999 | 4999 | 841.41 | 843.43 | 2.02 | 843.78 | 2.37 | 0.35 | 26 |
| RE5869L | 101 | 136 | RE5869 | 5869 | 845.96 | 847.26 | 1.30 | 847.43 | 1.47 | 0.17 | 35 |
| Radisson Court (2 4.75'x3.17' Arch) | 102 | 138 | RE5914 | 5914 | 846.10 | 848.36 | 2.26 | 848.85 | 2.75 | 0.49 | 36 |
| RE6914L | 70 | 112 | RE6914 | 6914 | 851.99 | 853.08 | 1.09 | 853.45 | 1.46 | 0.37 | 42 |
| Marin Way (2 5.67'x3.58' Elliptical) | 72 | 118 | RE7389 | 7389 | 856.52 | 858.41 | 1.89 | 858.87 | 2.35 | 0.46 | 46 |
| Beloit Road (2 7'x3' Box) | 36 | 72 | RE7474 | 7474 | 857.33 | 858.41 | 1.08 | 858.86 | 1.53 | 0.45 | 36 |
| RE7594L | 36 | 73 | RE7594 | 7594 | 857.49 | 858.43 | 0.94 | 858.88 | 1.39 | 0.45 | 37 |
| INTR43 (5'x5' Box) | 37 | 79 | RE7928 | 7928 | 857.59 | 859.52 | 1.93 | 860.60 | 3.01 | 1.08 | 42 |

City of New Berlin
Root River
10 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation | Future Depth | Future Elevation Increase | Future Flow Increase |
| **Tributary F** | | | | | | | | | | | |
| Frances Street (2.92'x2' Arch) | 21 | 27 | RF0167 | 167 | 805.40 | 808.16 | 2.76 | 808.70 | 3.30 | 0.54 | 6 |

City of New Berlin
Root River
25 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation | Future Depth | Future Elevation Increase | Future Flow Increase |
| **Tributary A** | | | | | | | | | | | |
| City Limit | 398 | 434 | RA0000 | 0 | 753.80 | 758.07 | 4.27 | 758.28 | 4.48 | 0.21 | 36 |
| 124th Street (5.92'x3.92' Arch) | 396 | 405 | RA0040 | 40 | 753.90 | 763.11 | 9.21 | 763.30 | 9.40 | 0.19 | 9 |
| 124th Street Overflow | 2 | 28 | RA0040 | 40 | 762.00 | 763.11 | 1.11 | 763.31 | 1.31 | 0.20 | 26 |
| RA1800L | 386 | 415 | RA1800 | 1,800 | 766.50 | 774.24 | 7.74 | 774.51 | 8.01 | 0.27 | 29 |
| RA3530L | 250 | 270 | RA3530 | 3,530 | 779.00 | 786.85 | 7.85 | 787.04 | 8.04 | 0.19 | 20 |
| RA5535L | 316 | 358 | RA5535 | 5,535 | 797.30 | 804.84 | 7.54 | 804.91 | 7.61 | 0.07 | 42 |
| **Tributary B** | | | | | | | | | | | |
| City Limit | 377 | 452 | RB0000 | 0 | 742.30 | 746.40 | 4.10 | 746.72 | 4.42 | 0.32 | 75 |
| 124th Street (3 9'x5' Box) | 378 | 453 | RB0030 | 30 | 742.45 | 746.54 | 4.09 | 746.86 | 4.41 | 0.32 | 75 |
| RB0840L | 378 | 453 | RB0840 | 840 | 746.74 | 750.92 | 4.18 | 751.08 | 4.34 | 0.16 | 75 |
| Lagoon Road (2 7.92'x5.58' Arch) | 378 | 452 | RB0922 | 922 | 747.83 | 751.60 | 3.77 | 751.92 | 4.09 | 0.32 | 74 |
| RB1932L | 344 | 418 | RB1932 | 1932 | 754.38 | 757.61 | 3.23 | 757.89 | 3.51 | 0.28 | 74 |
| Cleveland Avenue (12.67'x8.08' Arc | 344 | 418 | RB2022 | 2022 | 754.75 | 759.27 | 4.52 | 759.71 | 4.96 | 0.44 | 74 |
| RB2177L | 333 | 408 | RB2177 | 2177 | 756.25 | 759.54 | 3.29 | 759.90 | 3.65 | 0.36 | 75 |
| **Tributary BA** | | | | | | | | | | | |
| 128th Street (2 @ 5' RCP) | 228 | 280 | RBA0040 | 40 | 756.43 | 760.57 | 4.14 | 761.11 | 4.68 | 0.54 | 52 |
| RBA0790L | 208 | 261 | RBA0790 | 790 | 763.90 | 766.40 | 2.50 | 766.73 | 2.83 | 0.33 | 53 |
| 130th Street (2 5' RCP) | 208 | 262 | RBA0828 | 828 | 764.10 | 767.41 | 3.31 | 767.86 | 3.76 | 0.45 | 54 |
| RBA1773L | 210 | 263 | RBA1773 | 1773 | 774.14 | 775.50 | 1.36 | 775.64 | 1.50 | 0.14 | 53 |
| 132nd Street (2 4' RCP) | 2,100 | 262 | RBA1823 | 1823 | 774.39 | 778.99 | 4.60 | 780.49 | 6.10 | 1.50 | (1,838) |
| RBA2268L | 211 | 266 | RBA2268 | 2268 | 777.54 | 780.01 | 2.47 | 780.61 | 3.07 | 0.60 | 55 |
| 133rd Street (2 4' RCP) | 211 | 266 | RBA2318 | 2318 | 778.61 | 782.53 | 3.92 | 783.98 | 5.37 | 1.45 | 55 |
| RBA2423L | 115 | 142 | RBA2423 | 2423 | 779.67 | 782.55 | 2.88 | 783.98 | 4.31 | 1.43 | 27 |
| Dakota Street (2 4' RCP) | 115 | 141 | RBA2470 | 2470 | 780.45 | 783.21 | 2.76 | 784.56 | 4.11 | 1.35 | 26 |
| RBA5230L | 69 | 75 | RBA5230 | 5230 | 820.17 | 821.30 | 1.13 | 821.50 | 1.33 | 0.20 | 6 |
| Sunny Slope Road (5' RCP) | 69 | 76 | RBA5269 | 5269 | 820.54 | 823.55 | 3.01 | 823.70 | 3.16 | 0.15 | 7 |
| RBA6779L | 39 | 41 | RBA6779 | 6779 | 845.28 | 846.04 | 0.76 | 846.07 | 0.79 | 0.03 | 2 |
| Dakota Street (2 3' RCP) | 42 | 45 | RBA6821 | 6821 | 846.10 | 847.73 | 1.63 | 847.74 | 1.64 | 0.01 | 3 |
| **Tributary BB** | | | | | | | | | | | |
| RBB0280L | 107 | 127 | RBB0280 | 280 | 758.84 | 760.85 | 2.01 | 761.01 | 2.17 | 0.16 | 20 |
| 128th Street South (4' RCP) | 107 | 127 | RBB0335 | 335 | 759.45 | 763.90 | 4.45 | 764.76 | 5.31 | 0.86 | 20 |
| RBB2565L | 110 | 183 | RBB2565 | 2565 | 782.06 | 784.69 | 2.63 | 785.20 | 3.14 | 0.51 | 73 |
| 130th Street (4' RCP) | 120 | 195 | RBB2600 | 2600 | 782.41 | 786.45 | 4.04 | 788.28 | 5.87 | 1.83 | 75 |
| RBB2855L | 130 | 217 | RBB2855 | 2855 | 785.00 | 786.48 | 1.48 | 788.30 | 3.30 | 1.82 | 87 |
| National Avenue (4' RCP) | 116 | 191 | RBB2998 | 2998 | 787.27 | 797.48 | 10.21 | 797.81 | 10.54 | 0.33 | 75 |
| National Avenue Overflow | 28 | 77 | RBB2998 | 2998 | 797.00 | 797.48 | 0.48 | 797.81 | 0.81 | 0.33 | 49 |

City of New Berlin
Root River
25 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation | Future Depth | Future Elevation Increase | Future Flow Increase |
| INTR43 (5'x5' Box) | 46 | 101 | RE7928 | 7928 | 857.59 | 860.01 | 2.42 | 861.41 | 3.82 | 1.40 | 55 |
| **Tributary F** | | | | | | | | | | | |
| Frances Street (2.92'x2' Arch) | 30 | 31 | RF0167 | 167 | 805.40 | 809.35 | 3.95 | 809.63 | 4.23 | 0.28 | 1 |
| Frances Street Overflow | 1 | 13 | RF0167 | 167 | 809.18 | 809.32 | 0.14 | 809.63 | 0.45 | 0.31 | 12 |

City of New Berlin
Root River
100 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation | Future Depth | Future Elevation Increase | Future Flow Increase |
| **Tributary A** | | | | | | | | | | | |
| City Limit | 648 | 695 | RA0000 | 0 | 753.80 | 759.27 | 759.55 | 759.49 | 5.69 | (753.86) | 47 |
| 124th Street (5.92'x3.92' Arch) | 413 | 414 | RA0040 | 40 | 753.90 | 764.13 | 764.35 | 763.82 | 9.92 | (754.43) | 1 |
| 124th Street Overflow | 237 | 286 | RA0040 | 40 | 762.00 | 764.13 | 764.35 | 763.82 | 1.82 | (762.53) | 49 |
| RA1800L | 547 | 593 | RA1800 | 1,800 | 766.50 | 775.16 | 775.35 | 775.27 | 8.77 | (766.58) | 46 |
| RA3530L | 349 | 382 | RA3530 | 3,530 | 779.00 | 787.77 | 788.42 | 788.08 | 9.08 | (779.34) | 33 |
| RA5535L | 503 | 546 | RA5535 | 5,535 | 797.30 | 805.09 | 805.95 | 805.48 | 8.18 | (797.77) | 43 |
| **Tributary B** | | | | | | | | | | | |
| City Limit | 583 | 692 | RB0000 | 0 | 742.30 | 747.24 | 4.94 | 747.66 | 5.36 | 0.42 | 109 |
| 124th Street (3 9'x5' Box) | 582 | 693 | RB0030 | 30 | 742.45 | 747.53 | 5.08 | 748.04 | 5.59 | 0.51 | 111 |
| RB0840L | 585 | 697 | RB0840 | 840 | 746.74 | 751.34 | 4.60 | 751.58 | 4.84 | 0.24 | 112 |
| Lagoon Road (2 7.92'x5.58' Arch) | 584 | 698 | RB0922 | 922 | 747.83 | 752.54 | 4.71 | 753.15 | 5.32 | 0.61 | 114 |
| RB1932L | 526 | 631 | RB1932 | 1932 | 754.38 | 758.23 | 3.85 | 758.55 | 4.17 | 0.32 | 105 |
| Cleveland Avenue (12.67'x8.08' Arc | 527 | 631 | RB2022 | 2022 | 754.75 | 760.27 | 5.52 | 760.86 | 6.11 | 0.59 | 104 |
| RB2177L | 510 | 612 | RB2177 | 2177 | 756.25 | 760.40 | 4.15 | 760.94 | 4.69 | 0.54 | 102 |
| **Tributary BA** | | | | | | | | | | | |
| 128th Street (5' RCP) | 354 | 434 | RBA0040 | 40 | 756.43 | 762.02 | 5.59 | 763.45 | 7.02 | 1.43 | 80 |
| RBA0790L | 330 | 405 | RBA0790 | 790 | 763.90 | 767.04 | 3.14 | 767.30 | 3.40 | 0.26 | 75 |
| 130th Street (2 5' RCP) | 330 | 408 | RBA0828 | 828 | 764.10 | 768.39 | 4.29 | 768.95 | 4.85 | 0.56 | 78 |
| RBA1773L | 334 | 413 | RBA1773 | 1773 | 774.14 | 775.82 | 1.68 | 775.97 | 1.83 | 0.15 | 0 |
| 132nd Street (2 4' RCP) | 316 | 334 | RBA1823 | 1823 | 774.39 | 781.94 | 7.55 | 782.45 | 8.06 | 0.51 | (316) |
| 132nd Street Overflow | 17 | 78 | RBA1823 | 1823 | 781.50 | 782.11 | 0.61 | 782.45 | 0.95 | 0.34 | 397 |
| RBA2268L | 337 | 414 | RBA2268 | 2268 | 777.54 | 781.99 | 4.45 | 782.49 | 4.95 | 0.50 | #REF! |
| 133rd Street (2 4' RCP) | 290 | 302 | RBA2318 | 2318 | 778.61 | 784.90 | 6.29 | 785.33 | 6.72 | 0.43 | 12 |
| 133rd Street Overflow | 71 | 150 | RBA2318 | 2318 | 784.00 | 784.90 | 0.90 | 785.33 | 1.33 | 0.43 | 79 |
| RBA2423L | 182 | 204 | RBA2423 | 2423 | 779.67 | 784.91 | 5.24 | 785.34 | 5.67 | 0.43 | 22 |
| Dakota Street (2 4' RCP) | 181 | 204 | RBA2470 | 2470 | 780.45 | 786.14 | 5.69 | 786.82 | 6.37 | 0.68 | 23 |
| RBA5230L | 123 | 132 | RBA5230 | 5230 | 820.17 | 821.69 | 1.52 | 821.75 | 1.58 | 0.06 | 9 |
| Sunny Slope Road (5' RCP) | 124 | 132 | RBA5269 | 5269 | 820.54 | 824.70 | 4.16 | 824.86 | 4.32 | 0.16 | 8 |
| RBA6779L | 62 | 64 | RBA6779 | 6779 | 845.28 | 846.29 | 1.01 | 846.31 | 1.03 | 0.02 | 2 |
| Dakota Street (2 3' RCP) | 64 | 68 | RBA6821 | 6821 | 846.10 | 848.23 | 2.13 | 848.31 | 2.21 | 0.08 | 4 |
| **Tributary BB** | | | | | | | | | | | |
| RBB0280L | 142 | 164 | RBB0280 | 280 | 758.84 | 761.12 | 2.28 | 761.28 | 2.44 | 0.16 | 22 |
| 128th Street South (4' RCP) | 142 | 162 | RBB0335 | 335 | 759.45 | 765.35 | 5.90 | 766.14 | 6.69 | 0.79 | 20 |
| 128th Street South Overflow | 0 | 1 | RBB0335 | 335 | 766.00 | 765.35 | -0.65 | 766.14 | 0.14 | 0.79 | 1 |
| RBB2565L | 167 | 266 | RBB2565 | 2565 | 782.06 | 785.14 | 3.08 | 785.56 | 3.50 | 0.42 | 99 |
| 130th Street (4' RCP) | 168 | 239 | RBB2600 | 2600 | 782.41 | 787.64 | 5.23 | 789.41 | 7.00 | 1.77 | 71 |

City of New Berlin
Root River
25 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation | Future Depth | Future Elevation Increase | Future Flow Increase |
| **Tributary C** | | | | | | | | | | | |
| City Limit | 108 | 160 | RC0000 | 0 | 793.67 | 794.99 | 1.32 | 795.28 | 1.61 | 0.29 | 52 |
| 124th Street (4' RCP) | 108 | 135 | RC0040 | 40 | 793.80 | 799.86 | 6.06 | 801.09 | 7.29 | 1.23 | 27 |
| 124th Street Overflow | 0 | 24 | RC0040 | 40 | 800.82 | 799.86 | -0.96 | 801.09 | 0.27 | 1.23 | 24 |
| RC1315L | 86 | 140 | RC1315 | 1315 | 806.00 | 807.30 | 1.30 | 807.72 | 1.72 | 0.42 | 54 |
| **Tributary D** | | | | | | | | | | | |
| City Limit | 68 | 78 | RD0000 | 0 | 793.69 | 794.72 | 1.03 | 794.80 | 1.11 | 0.08 | 10 |
| 124th Street (6'x5.75' Box) | 68 | 78 | RD0068 | 68 | 794.57 | 795.60 | 1.03 | 795.80 | 1.23 | 0.20 | 10 |
| RD1053L | 34 | 39 | RD1053 | 1053 | 809.00 | 809.55 | 0.55 | 809.60 | 0.60 | 0.05 | 5 |
| Scarborough Drive (4.5' RCP) | 34 | 39 | RD1123 | 1123 | 811.00 | 813.05 | 2.05 | 813.21 | 2.21 | 0.16 | 5 |
| RD1303L | 34 | 39 | RD1303 | 1303 | 816.72 | 817.16 | 0.44 | 817.20 | 0.48 | 0.04 | 5 |
| Weatherstone Boulevard (4.75'x3.17' Arch/5.33'x3.58 Arch) | 34 | 40 | RD1373 | 1373 | 819.39 | 820.25 | 0.86 | 820.31 | 0.92 | 0.06 | 5 |
| RD2073L | 11 | 15 | RD2073 | 2073 | 846.11 | 846.34 | 0.23 | 846.39 | 0.28 | 0.05 | 5 |
| Victoria Circle (4.75'x3.17' Arch/5.33'x3.58 Arch) | 11 | 15 | RD2154 | 2154 | 846.15 | 847.01 | 0.86 | 847.15 | 1.00 | 0.14 | 4 |
| RD2639L | 11 | 19 | RD2639 | 2639 | 852.83 | 853.10 | 0.27 | 853.22 | 0.39 | 0.12 | 8 |
| Coldspring Road (6.08'x4.58' Arch) | 11 | 17 | RD2674 | 2674 | 853.44 | 854.35 | 0.91 | 854.56 | 1.12 | 0.21 | 6 |
| **Tributary E** | | | | | | | | | | | |
| City Limit | 233 | 272 | RE0000 | 0 | 805.00 | 807.60 | 2.60 | 807.74 | 2.74 | 0.14 | 39 |
| RE0235L | 233 | 272 | RE0235 | 235 | 805.20 | 808.27 | 3.07 | 808.41 | 3.21 | 0.14 | 39 |
| RE0425L | 216 | 236 | RE0425 | 425 | 805.30 | 808.55 | 3.25 | 808.68 | 3.38 | 0.13 | 20 |
| St. Mary's Drive (2 11'x3' Box) | 216 | 236 | RE0466 | 466 | 805.40 | 808.71 | 3.31 | 808.87 | 3.47 | 0.16 | 20 |
| RE1576L | 208 | 229 | RE1576 | 1576 | 813.94 | 815.59 | 1.65 | 815.67 | 1.73 | 0.08 | 21 |
| Grange Avenue (4' RCP) | 208 | 230 | RE1616 | 1616 | 814.26 | 817.28 | 3.02 | 817.43 | 3.17 | 0.15 | 22 |
| RE3766L | 144 | 170 | RE3766 | 3766 | 831.32 | 833.03 | 1.71 | 833.20 | 1.88 | 0.17 | 26 |
| Marquette Drive (3 4.75'x3.17' Arch) | 144 | 170 | RE3806 | 3806 | 832.27 | 833.99 | 1.72 | 834.21 | 1.94 | 0.22 | 26 |
| RE4476L | 128 | 154 | RE4476 | 4476 | 838.09 | 840.51 | 2.42 | 840.74 | 2.65 | 0.23 | 26 |
| Balboa Drive (2 4.75'x3.17' Arch) | 128 | 154 | RE4520 | 4520 | 838.60 | 841.27 | 2.67 | 841.71 | 3.11 | 0.44 | 26 |
| RE4950L | 126 | 156 | RE4950 | 4950 | 841.04 | 842.41 | 1.37 | 842.55 | 1.51 | 0.14 | 30 |
| Cherrytree Road (2 4.75'x3.17' Arch) | 126 | 156 | RE4999 | 4999 | 841.41 | 844.07 | 2.66 | 844.51 | 3.10 | 0.44 | 30 |
| RE5869L | 126 | 169 | RE5869 | 5869 | 845.96 | 847.35 | 1.39 | 847.55 | 1.59 | 0.20 | 43 |
| Radisson Court (2 4.75'x3.17' Arch) | 126 | 170 | RE5914 | 5914 | 846.10 | 848.91 | 2.81 | 849.54 | 3.44 | 0.63 | 44 |
| RE6914L | 88 | 147 | RE6914 | 6914 | 851.99 | 853.24 | 1.25 | 853.61 | 1.62 | 0.37 | 59 |
| Marin Way (2 5.67'x3.58' Elliptical) | 90 | 144 | RE7389 | 7389 | 856.52 | 858.26 | 1.74 | 858.83 | 2.31 | 0.57 | 54 |
| Beloit Road (2 7'x3' Box) | 44 | 90 | RE7474 | 7474 | 857.33 | 858.25 | 0.92 | 858.80 | 1.47 | 0.55 | 46 |
| RE7594L | 44 | 93 | RE7594 | 7594 | 857.49 | 858.31 | 0.82 | 858.83 | 1.34 | 0.52 | 49 |

City of New Berlin
Root River
100 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation | Future Depth | Future Elevation Increase | Future Flow Increase |
| 130th Street Overflow | 0 | 84 | RBB2600 | 2600 | 788.50 | 787.64 | -0.86 | 789.41 | 0.91 | 1.77 | 84 |
| RBB2855L | 185 | 338 | RBB2855 | 2855 | 785.00 | 787.66 | 2.66 | 789.43 | 4.43 | 1.77 | 153 |
| National Avenue (4' RCP) | 168 | 206 | RBB2998 | 2998 | 787.27 | 797.70 | 10.43 | 798.22 | 10.95 | 0.52 | 38 |
| National Avenue Overflow | 59 | 160 | RBB2998 | 2998 | 797.00 | 797.70 | 0.70 | 798.22 | 1.22 | 0.52 | 101 |
| **Tributary C** | | | | | | | | | | | |
| City Limit | 213 | 287 | RC0000 | 0 | 793.67 | 795.54 | 1.87 | 795.85 | 2.18 | 0.31 | 74 |
| 124th Street (4' RCP) | 152 | 174 | RC0040 | 40 | 793.80 | 801.28 | 7.48 | 801.49 | 7.69 | 0.21 | 22 |
| 124th Street Overflow | 61 | 113 | RC0040 | 40 | 800.82 | 801.28 | 0.46 | 801.49 | 0.67 | 0.21 | 52 |
| RC1315L | 124 | 202 | RC1315 | 1315 | 806.00 | 807.60 | 1.60 | 808.15 | 2.15 | 0.55 | 78 |
| **Tributary D** | | | | | | | | | | | |
| City Limit | 127 | 142 | RD0000 | 0 | 793.69 | 795.11 | 1.42 | 795.19 | 1.50 | 0.08 | 15 |
| 124th Street (6'x5.75' Box) | 127 | 142 | RD0068 | 68 | 794.57 | 796.62 | 2.05 | 796.84 | 2.27 | 0.22 | 15 |
| RD1053L | 66 | 73 | RD1053 | 1053 | 809.00 | 809.82 | 0.82 | 809.87 | 0.87 | 0.05 | 7 |
| Scarborough Drive (4.5' RCP) | 66 | 73 | RD1123 | 1123 | 811.00 | 813.96 | 2.96 | 814.15 | 3.15 | 0.19 | 7 |
| RD1303L | 66 | 73 | RD1303 | 1303 | 816.72 | 817.37 | 0.65 | 817.41 | 0.69 | 0.04 | 7 |
| Weatherstone Boulevard (4.75'x3.17' Arch/5.33'x3.58 Arch) | 66 | 73 | RD1373 | 1373 | 819.39 | 820.62 | 1.23 | 820.69 | 1.30 | 0.07 | 7 |
| RD2073L | 23 | 28 | RD2073 | 2073 | 846.11 | 846.47 | 0.36 | 846.52 | 0.41 | 0.05 | 6 |
| Victoria Circle (4.75'x3.17' Arch/5.33'x3.58 Arch) | 23 | 28 | RD2154 | 2154 | 846.15 | 847.35 | 1.20 | 847.49 | 1.34 | 0.14 | 6 |
| RD2639L | 23 | 29 | RD2639 | 2639 | 852.83 | 853.25 | 0.42 | 853.31 | 0.48 | 0.06 | 6 |
| Coldspring Road (6.08'x4.58' Arch) | 23 | 29 | RD2674 | 2674 | 853.44 | 854.74 | 1.30 | 854.88 | 1.44 | 0.14 | 6 |
| **Tributary E** | | | | | | | | | | | |
| City Limit | 384 | 448 | RE0000 | 0 | 805.00 | 808.06 | 3.06 | 808.22 | 3.22 | 0.16 | 64 |
| RE0235L | 384 | 448 | RE0235 | 235 | 805.20 | 808.80 | 3.60 | 808.99 | 3.79 | 0.19 | 64 |
| RE0425L | 319 | 320 | RE0425 | 425 | 805.30 | 809.10 | 3.80 | 809.30 | 4.00 | 0.20 | 1 |
| St. Mary's Drive (2 11'x3' Box) | 316 | 338 | RE0466 | 466 | 805.40 | 809.43 | 4.03 | 809.69 | 4.29 | 0.26 | 22 |
| St. Mary's Drive Overflow | 6 | 33 | RE0466 | 466 | 809.27 | 809.43 | 0.16 | 809.69 | 0.42 | 0.26 | 27 |
| RE1576L | 312 | 363 | RE1576 | 1576 | 813.94 | 815.93 | 1.99 | 816.06 | 2.12 | 0.13 | 51 |
| Grange Avenue (4' X 6.33' RCP) | 312 | 362 | RE1616 | 1616 | 814.26 | 818.12 | 3.86 | 818.57 | 4.31 | 0.45 | 50 |
| RE3766L | 229 | 274 | RE3766 | 3766 | 831.32 | 833.53 | 2.21 | 833.74 | 2.42 | 0.21 | 45 |
| Marquette Drive (3 4.75'x3.17' Arch) | 229 | 274 | RE3806 | 3806 | 832.27 | 834.75 | 2.48 | 835.19 | 2.92 | 0.44 | 45 |
| RE4476L | 211 | 251 | RE4476 | 4476 | 838.09 | 841.12 | 3.03 | 841.23 | 3.14 | 0.11 | 40 |
| Balboa Drive (2 4.75'x3.17' Arch) | 197 | 208 | RE4520 | 4520 | 838.60 | 842.89 | 4.29 | 843.19 | 4.59 | 0.30 | 11 |
| Balboa Drive Overflow | 14 | 27 | RE4520 | 4520 | 842.50 | 842.59 | 0.09 | 843.19 | 0.69 | 0.60 | 13 |
| RE4950L | 221 | 277 | RE4950 | 4950 | 841.04 | 842.90 | 1.86 | 843.19 | 2.15 | 0.29 | 56 |
| Cherrytree Road (2 4.75'x3.17' Arch) | 191 | 195 | RE4999 | 4999 | 841.41 | 845.09 | 3.68 | 845.43 | 4.02 | 0.34 | 4 |
| Cherrytree Road Overflow | 31 | 77 | RE4999 | 4999 | 844.50 | 845.09 | 0.59 | 845.43 | 0.93 | 0.34 | 46 |
| RE5869L | 216 | 275 | RE5869 | 5869 | 845.96 | 847.67 | 1.71 | 847.76 | 1.80 | 0.09 | 59 |
| Radisson Court | 200 | 216 | RE5914 | 5914 | 846.10 | 850.41 | 4.31 | 850.80 | 4.70 | 0.39 | 16 |

City of New Berlin
Root River
100 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation | Future Depth | Future Elevation Increase | Future Flow Increase |
| (2 4.75'x3.17' Arch) | | | | | | | | | | | |
| Radisson Court Overflow | 16 | 59 | RE5914 | 5914 | 850.00 | 850.41 | 0.41 | 850.80 | 0.80 | 0.39 | 43 |
| RE6914L | 136 | 198 | RE6914 | 6914 | 851.99 | 853.58 | 1.59 | 853.93 | 1.94 | 0.35 | 62 |
| Marin Way | 137 | 202 | RE7389 | 7389 | 856.52 | 858.73 | 2.21 | 859.48 | 2.96 | 0.75 | 65 |
| (2 5.67'x3.58' Elliptical) | | | | | | | | | | | |
| Beloit Road | 87 | 123 | RE7474 | 7474 | 857.33 | 859.00 | 1.67 | 859.48 | 2.15 | 0.48 | 36 |
| (2 7'x3' Box) | | | | | | | | | | | |
| RE7594L | 87 | 129 | RE7594 | 7594 | 857.49 | 858.74 | 1.25 | 860.00 | 2.51 | 1.26 | 42 |
| I-43 (5'x5' Box) | 87 | 148 | RE7928 | 7928 | 857.59 | 861.09 | 3.50 | 862.39 | 4.80 | 1.30 | 61 |
| **Tributary F** | | | | | | | | | | | |
| Frances Street (2.92'x2' Arch) | 31 | 31 | RF0167 | 167 | 805.40 | 809.89 | 4.49 | 809.97 | 4.57 | 0.08 | 0 |
| Frances Street Overflow | 42 | 56 | RF0167 | 167 | 809.18 | 809.89 | 0.71 | 809.97 | 0.79 | 0.08 | 14 |

City of New Berlin
Calhoun Creek
2 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation | Future Depth | Future Elevation Increase | Future Flow Increase |
| **Mainstem** | | | | | | | | | | | |
| Muskego Lake Inflow | 109 | 181 | C00000 | 0 | 804.00 | 806.58 | 2.58 | 807.25 | 3.25 | 0.67 | 72 |
| College (2 - 5' RCP) | 115 | 181 | C00100 | 100 | 811.70 | 808.06 | -3.64 | 808.91 | -2.79 | 0.85 | 66 |
| C00276L | 142 | 262 | C00276 | 276 | 805.00 | 808.06 | 3.06 | 808.94 | 3.94 | 0.88 | 120 |
| C01161L | 1 | 1 | C01161 | 1,161 | 817.00 | 817.04 | 0.04 | 817.05 | 0.05 | 0.01 | 0 |
| Rock Freeway (I-43) (18" RCP) | 1 | 2 | C01436 | 1,436 | 818.30 | 818.97 | 0.67 | 819.14 | 0.84 | 0.17 | 1 |
| **Tributary A** | | | | | | | | | | | |
| CA0825L | 143 | 161 | CA0825 | 825 | 816.30 | 817.35 | 1.05 | 817.41 | 1.11 | 0.06 | 18 |
| Racine Place (5' x 8' Box) | 143 | 161 | CA0853 | 853 | 816.35 | 819.81 | 3.46 | 820.06 | 3.71 | | |
| CA0984L | 145 | 161 | CA0984 | 984 | 819.50 | 820.25 | 0.75 | 820.29 | 0.79 | 0.04 | 16 |
| CA2499L | 62 | 103 | CA2499 | 2,499 | 827.10 | 829.28 | 2.18 | 829.76 | 2.66 | 0.48 | 41 |
| College Avenue (2 7.92'x5.58' Arch) | 62 | 103 | CA2599 | 2,599 | 827.20 | 829.44 | 2.24 | 829.99 | 2.79 | 0.55 | 41 |
| CA3059L | 61 | 100 | CA3059 | 3059 | 828.80 | 830.46 | 1.66 | 830.95 | 2.15 | 0.49 | 39 |
| CA3309L | 61 | 100 | CA3309 | 3309 | 829.10 | 831.09 | 1.99 | 831.61 | 2.51 | 0.52 | 39 |
| Racine Drive (6' RCP) | 61 | 100 | CA3399 | 3399 | 829.20 | 832.48 | 3.28 | 833.35 | 4.15 | 0.87 | 39 |
| CA6009L | 54 | 104 | CA6009 | 6009 | 837.29 | 838.25 | 0.96 | 838.63 | 1.34 | 0.38 | 50 |
| Tans Drive (4' RCP) | 65 | 116 | CA6047 | 6047 | 837.49 | 841.07 | 3.58 | 843.49 | 6.00 | 2.42 | 51 |
| **Tributary C** | | | | | | | | | | | |
| CC0675L | 127 | 131 | CC0675 | 675 | 828.00 | 830.02 | 2.02 | 830.05 | 2.05 | 0.03 | 4 |
| CC1413L | 127 | 131 | CC1413 | 1413 | 842.00 | 843.12 | 1.12 | 843.13 | 1.13 | 0.01 | 4 |
| Rock Freeway (I-43) (10'x7' Box) | 127 | 131 | CC1759 | 1759 | 848.90 | 850.27 | 1.37 | 850.29 | 1.39 | 0.02 | 4 |
| **Tributary B** | | | | | | | | | | | |
| CB1130L | 95 | 145 | CB1130 | 1130 | 815.40 | 816.83 | 1.43 | 817.02 | 1.62 | 0.19 | 50 |
| CB2388L | 95 | 145 | CB2388 | 2388 | 816.90 | 817.65 | 0.75 | 817.90 | 1.00 | 0.25 | 50 |
| CB02533L | 62 | 145 | CB2533 | 2533 | 817.10 | 818.27 | 1.17 | 818.82 | 1.72 | 0.55 | 83 |
| CB06368L | 59 | 141 | CB6368 | 6368 | 821.70 | 822.59 | 0.89 | 823.04 | 1.34 | 0.45 | 82 |
| Rock Freeway (I-43) (18'x8' Box) | 62 | 150 | CB6623 | 6623 | 822.00 | 823.52 | 1.52 | 824.42 | 2.42 | 0.90 | 88 |
| CB9798L | 62 | 148 | CB9798 | 9798 | 825.85 | 827.35 | 1.50 | 828.23 | 2.38 | 0.88 | 86 |
| Beres Road (4' RCP) | 62 | 104 | CB9833 | 9833 | 825.95 | 829.49 | 3.54 | 831.31 | 5.36 | 1.82 | 42 |
| Beres Road Overflow | 0 | 45 | CB9833 | 9833 | 830.60 | 829.49 | -1.11 | 831.31 | 0.71 | | |
| CB10673L | 63 | 151 | CB10673 | 10673 | 826.60 | 829.51 | 2.91 | 831.33 | 4.73 | 1.82 | 88 |
| CB11448L | 67 | 177 | CB11448 | 11448 | 827.12 | 829.87 | 2.75 | 831.49 | 4.37 | 1.62 | 110 |
| Calhoun Road (2 4' RCP) | 67 | 184 | CB11493 | 11493 | 827.44 | 830.03 | 2.59 | 832.41 | 4.97 | 2.38 | 117 |
| CB11673 | 65 | 160 | CB11673 | 11673 | 828.10 | 830.05 | 1.95 | 832.42 | 4.32 | 2.37 | 95 |
| CB12046L | 67 | 166 | CB12046 | 12046 | 829.40 | 830.07 | 0.67 | 832.42 | 3.02 | 2.35 | 99 |
| CB14488L | 69 | 208 | CB14488 | 14488 | 837.90 | 839.28 | 1.38 | 839.64 | 1.74 | 0.36 | 139 |
| CB19675L | 26 | 142 | CB19675 | 19675 | 856.10 | 856.73 | 0.63 | 857.54 | 1.44 | 0.81 | 116 |
| CB20972L | 43 | 167 | CB20972 | 20972 | 860.50 | 861.60 | 1.10 | 862.32 | 1.82 | 0.72 | 124 |
| Rock Freeway (I-43) (2 5' RCP) | 70 | 153 | CB21112 | 21112 | 860.70 | 863.43 | 2.73 | 864.67 | 3.97 | 1.24 | 83 |
| **Tributary D** | | | | | | | | | | | |

City of New Berlin
Calhoun Creek
2 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation | Future Depth | Future Elevation Increase | Future Flow Increase |
| CD0095L | 10 | 15 | CD0095 | 95 | 815.50 | 816.95 | 1.45 | 817.02 | 1.52 | 0.07 | 5 |
| Rock Freeway (I-43) (8'x12' Box) | 10 | 15 | CD0290 | 290 | 815.80 | 816.72 | 0.92 | 817.02 | 1.22 | 0.30 | 5 |
| **Tributary E** | | | | | | | | | | | |
| CE0070L | 30 | 61 | CE0070 | 70 | 817.30 | 818.27 | 0.97 | 818.82 | 1.52 | 0.55 | 31 |
| Rock Freeway (I-43) (6'x10' Box) | 30 | 61 | CE0380 | 380 | 818.40 | 819.92 | 1.52 | 820.79 | 2.39 | 0.87 | 31 |
| CE1688L | 21 | 54 | CE1688 | 1688 | 822.67 | 823.48 | 0.81 | 823.92 | 1.25 | 0.44 | 33 |
| Martin Road (2 3' RCP) | 22 | 59 | CE1728 | 1728 | 822.69 | 824.41 | 1.72 | 825.46 | 2.77 | 1.05 | 37 |
| **Tributary F** | | | | | | | | | | | |
| CF0510L | 17 | 21 | CF0510 | 510 | 831.10 | 831.47 | 0.37 | 831.52 | 0.42 | 0.05 | 4 |
| CF2058L | 20 | 24 | CF2058 | 2058 | 844.70 | 843.34 | -1.36 | 843.40 | -1.30 | 0.06 | 4 |
| Beloit Road (4' RCP) | 22 | 26 | CF2088 | 2088 | 843.05 | 845.05 | 2.00 | 845.20 | 2.15 | 0.15 | 4 |
| CF3620L | 17 | 17 | CF3620 | 3620 | 865.00 | 865.76 | 0.76 | 865.83 | 0.83 | 0.07 | 0 |

City of New Berlin
Calhoun Creek
10 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation | Future Depth | Future Elevation Increase | Future Flow Increase |
| **Mainstem** | | | | | | | | | | | |
| Muskego Lake Inflow | 290 | 357 | C00000 | 0 | 804.00 | 808.19 | 4.19 | 808.51 | 4.51 | 0.32 | 67 |
| College (2 - 5' RCP) | 290 | 357 | C00100 | 100 | 804.80 | 810.67 | 5.87 | 812.24 | 7.44 | 1.57 | 67 |
| C00276L | 290 | 357 | C00276 | 276 | 805.00 | 810.71 | 5.71 | 812.24 | 7.24 | 1.53 | 67 |
| C01161L | 5 | 5 | C01161 | 1,161 | 817.00 | 817.12 | 0.12 | 817.12 | 0.12 | 0.00 | 0 |
| Rock Freeway (I-43) (18" RCP) | 5 | 6 | C01436 | 1,436 | 818.30 | 820.67 | 2.37 | 820.78 | 2.48 | 0.11 | 1 |
| **Tributary A** | | | | | | | | | | | |
| CA0825L | 225 | 274 | CA0825 | 825 | 816.30 | 817.56 | 1.26 | 817.66 | 1.36 | 0.10 | 49 |
| Racine Place (5' x 8' Box) | 220 | 258 | CA0853 | 853 | 816.35 | 820.79 | | 821.22 | | | |
| CA0984L | 229 | 259 | CA0984 | 984 | 819.50 | 820.80 | 1.30 | 821.23 | 1.73 | 0.43 | 30 |
| CA2499L | 129 | 175 | CA2499 | 2,499 | 827.10 | 830.07 | 2.97 | 830.50 | 3.40 | 0.43 | 46 |
| College Avenue (2 7.92'x5.58' Arch) | 131 | 178 | CA2599 | 2,599 | 827.20 | 830.34 | 3.14 | 830.82 | 3.62 | 0.48 | 47 |
| CA3059L | 125 | 174 | CA3059 | 3059 | 828.80 | 831.21 | 2.41 | 831.67 | 2.87 | 0.46 | 49 |
| CA3309L | 125 | 174 | CA3309 | 3309 | 829.10 | 831.92 | 2.82 | 832.44 | 3.34 | 0.52 | 49 |
| Racine Drive (6' RCP) | 125 | 175 | CA3399 | 3399 | 829.20 | 833.85 | 4.65 | 834.77 | 5.57 | 0.92 | 50 |
| CA6009L | 97 | 187 | CA6009 | 6009 | 837.29 | 838.58 | 1.29 | 839.06 | 1.77 | 0.48 | 90 |
| Tans Drive (4' RCP) | 100 | 141 | CA6047 | 6047 | 837.49 | 842.57 | 5.08 | 845.13 | 7.64 | 2.56 | 41 |
| Tans Drive Overflow | 0 | 103 | CA6047 | 6047 | 844.10 | 842.57 | -1.53 | 845.13 | 1.03 | 2.56 | 103 |
| **Tributary C** | | | | | | | | | | | |
| CC0675L | 219 | 224 | CC0675 | 675 | 828.00 | 830.60 | 2.60 | 830.63 | 2.63 | 0.03 | 5 |
| CC1413L | 207 | 211 | CC1413 | 1413 | 842.00 | 843.47 | 1.47 | 843.48 | 1.48 | 0.01 | 4 |
| Rock Freeway (I-43) (10'x7' Box) | 207 | 211 | CC1759 | 1759 | 848.90 | 850.79 | 1.89 | 850.82 | 1.92 | 0.03 | 4 |
| **Tributary B** | | | | | | | | | | | |
| CB1130L | 201 | 320 | CC1759 | 1130 | 815.40 | 817.28 | 1.88 | 817.57 | 2.17 | 0.29 | 119 |
| CB2388L | 201 | 324 | CB1130 | 2388 | 816.90 | 818.06 | 1.16 | 818.29 | 1.39 | 0.23 | 123 |
| CB02533L | 201 | 314 | CB2533 | 2533 | 817.10 | 819.11 | 2.01 | 819.56 | 2.46 | 0.45 | 113 |
| CB06368L | 187 | 287 | CB6368 | 6368 | 821.70 | 823.22 | 1.52 | 823.54 | 1.84 | 0.32 | 100 |
| Rock Freeway (I-43) (18'x8' Box) | 191 | 293 | CB6623 | 6623 | 822.00 | 824.79 | 2.79 | 825.50 | 3.50 | 0.71 | 102 |
| CB9798L | 192 | 297 | CB9798 | 9798 | 825.85 | 828.59 | 2.74 | 829.09 | 3.24 | 0.50 | 105 |
| Beres Road (4' RCP) | 109 | 117 | CB9833 | 9833 | 825.95 | 831.59 | 5.64 | 832.07 | 6.12 | 0.48 | 8 |
| Beres Road Overflow | 87 | 183 | CB9833 | 9833 | 830.60 | 831.59 | 0.99 | 832.07 | 1.47 | 0.48 | 96 |
| CB10673L | 195 | 296 | CB10673 | 10673 | 826.60 | 831.62 | 5.02 | 832.11 | 5.51 | 0.49 | 101 |
| CB11448L | 165 | 273 | CB11448 | 11448 | 827.12 | 831.75 | 4.63 | 832.25 | 5.13 | 0.50 | 108 |
| Calhoun Road (2 4' RCP) | 170 | 274 | CB11493 | 11493 | 827.44 | 832.70 | 5.26 | 834.81 | 7.37 | 2.11 | 104 |
| Calhoun Road Overflow | 0 | 4 | CB11493 | 11494 | 834.60 | 832.70 | -1.90 | 834.81 | 0.21 | 2.11 | 4 |
| CB11673 | 157 | 250 | CB11673 | 11673 | 828.10 | 832.71 | 4.61 | 834.81 | 6.71 | 2.10 | 93 |
| CB12046L | 161 | 251 | CB12046 | 12046 | 829.40 | 832.71 | 3.31 | 834.81 | 5.41 | 2.10 | 90 |
| CB14488L | 217 | 352 | CB14488 | 14488 | 837.90 | 839.68 | 1.78 | 840.13 | 2.23 | 0.45 | 135 |
| CB19675L | 64 | 232 | CB19675 | 19675 | 856.10 | 857.06 | 0.96 | 857.88 | 1.78 | 0.82 | 168 |
| CB20972L | 70 | 263 | CB20972 | 20972 | 860.50 | 861.84 | 1.34 | 862.70 | 2.20 | 0.86 | 193 |
| Rock Freeway (I-43) | 105 | 254 | CB21112 | 21112 | 860.70 | 863.99 | 3.29 | 866.01 | 5.31 | 2.02 | 149 |

City of New Berlin
Calhoun Creek
10 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation | Future Depth | Future Elevation Increase | Future Flow Increase |
| (2 5' RCP) | | | | | | | | | | | |
| **Tributary D** | | | | | | | | | | | |
| CD0095L | 35 | 40 | CD0095 | 95 | 815.50 | 817.28 | 1.78 | 817.57 | 2.07 | 0.29 | 5 |
| Rock Freeway (I-43) (8'x12' Box) | 34 | 35 | CD0290 | 290 | 815.80 | 817.48 | 1.68 | 817.57 | 1.77 | 0.09 | 1 |
| **Tributary E** | | | | | | | | | | | |
| CE0070L | 63 | 93 | CD0290 | 70 | 817.30 | 819.11 | 1.81 | 819.56 | 2.26 | 0.45 | 30 |
| Rock Freeway (I-43) (6'x10' Box) | 63 | 94 | CE0070 | 380 | 818.40 | 820.82 | 2.42 | 821.52 | 3.12 | 0.70 | 31 |
| CE1688L | 43 | 88 | CE0380 | 1688 | 822.67 | 823.79 | 1.12 | 824.21 | 1.54 | 0.42 | 45 |
| Martin Road (2 3' RCP) | 44 | 90 | CE0380 | 1728 | 822.69 | 825.03 | 2.34 | 826.59 | 3.90 | 1.56 | 46 |
| **Tributary F** | | | | | | | | | | | |
| CF0510L | 37 | 37 | CE1728 | 510 | 831.10 | 831.68 | 0.58 | 832.11 | 1.01 | 0.43 | 0 |
| CF2058L | 38 | 41 | CE1728 | 2058 | 842.80 | 843.48 | 0.68 | 843.54 | 0.74 | 0.06 | 3 |
| Beloit Road (4' RCP) | 38 | 36 | CF0510 | 2088 | 843.05 | 845.66 | 2.61 | 845.66 | 2.61 | 0.00 | (2) |
| CF3620L | 20 | 26 | CF2088 | 3620 | 865.00 | 865.88 | 0.88 | 865.98 | 0.98 | 0.10 | 6 |

City of New Berlin
Calhoun Creek
25 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation | Future Depth | Future Elevation Increase | Future Flow Increase |
| **Mainstem** | | | | | | | | | | | |
| Muskego Lake Inflow | 493 | 553 | C00000 | 0 | 804.00 | 807.27 | 3.27 | 807.44 | 3.44 | 0.17 | 60 |
| College (2 - 5' RCP) | 530 | 596 | C00100 | 100 | 811.70 | 815.39 | 3.69 | 817.12 | 5.42 | 1.73 | 66 |
| C00276L | 530 | 596 | C00276 | 276 | 805.00 | 815.39 | 10.39 | 817.12 | 12.12 | 1.73 | 66 |
| C01161L | 6 | 6 | C01161 | 1,161 | 817.00 | 817.16 | 0.16 | 817.17 | 0.17 | 0.01 | 0 |
| Rock Freeway (I-43) (18" RCP) | 7 | 7 | C01436 | 1,436 | 818.30 | 822.13 | 3.83 | 822.22 | 3.92 | 0.09 | 0 |
| **Tributary A** | | | | | | | | | | | |
| CA0825L | 310 | 344 | CA0825 | 825 | 816.30 | 818.86 | 2.56 | 818.95 | 2.65 | 0.09 | 34 |
| Racine Place (5' x 8' Box) | 310 | 344 | CA0853 | 853 | 816.35 | 821.69 | 5.34 | 822.40 | 6.05 | 0.71 | 34 |
| CA0984L | 311 | 344 | CA0984 | 984 | 819.50 | 821.70 | 2.20 | 822.40 | 2.90 | 0.70 | 33 |
| CA2499L | 181 | 292 | CA2499 | 2,499 | 827.10 | 830.55 | 3.45 | 832.24 | 5.14 | 1.69 | 111 |
| College Avenue (2 7.92'x5.58' Arch) | 182 | 242 | CA2599 | 2,599 | 827.20 | 830.87 | 3.67 | 832.42 | 5.22 | 1.55 | 60 |
| CA3059L | 190 | 236 | CA3059 | 3059 | 828.80 | 831.80 | 3.00 | 832.46 | 3.66 | 0.66 | 46 |
| CA3309L | 190 | 237 | CA3309 | 3309 | 829.10 | 832.47 | 3.37 | 832.63 | 3.53 | 0.16 | 47 |
| Racine Drive (6' RCP) | 190 | 236 | CA3399 | 3399 | 829.20 | 835.04 | 5.84 | 835.92 | 6.72 | 0.88 | 46 |
| CA6009L | 183 | 269 | CA6009 | 6009 | 837.29 | 839.05 | 1.76 | 839.37 | 2.08 | 0.32 | 86 |
| Tans Drive (4' RCP) | 138 | 148 | CA6047 | 6047 | 837.49 | 844.90 | 7.41 | 845.56 | 8.07 | 0.66 | 10 |
| Tans Drive Overflow | 64 | 195 | CA6047 | 6047 | 844.10 | 844.90 | 0.80 | 845.56 | 1.46 | 0.66 | 131 |
| **Tributary C** | | | | | | | | | | | |
| CC0675L | 281 | 287 | CC0675 | 675 | 828.00 | 830.98 | 2.98 | 831.02 | 3.02 | 0.04 | 6 |
| CC1413L | 265 | 270 | CC1413 | 1413 | 842.00 | 843.68 | 1.68 | 843.70 | 1.70 | 0.02 | 5 |
| Rock Freeway (I-43) (10'x7' Box) | 266 | 271 | CC1759 | 1759 | 848.90 | 851.14 | 2.24 | 851.17 | 2.27 | 0.03 | 5 |
| **Tributary B** | | | | | | | | | | | |
| CB1130L | 366 | 511 | CB1130 | 1130 | 815.40 | 817.70 | 2.30 | 817.95 | 2.55 | 0.25 | 145 |
| CB2388L | 366 | 511 | CB2388 | 2388 | 816.90 | 818.39 | 1.49 | 818.59 | 1.69 | 0.20 | 145 |
| CB02533L | 366 | 493 | CB2533 | 2533 | 817.10 | 819.74 | 2.64 | 820.13 | 3.03 | 0.39 | 127 |
| CB06368L | 316 | 431 | CB6368 | 6368 | 821.70 | 823.62 | 1.92 | 823.88 | 2.18 | 0.26 | 115 |
| Rock Freeway (I-43) (18'x8' Box) | 322 | 440 | CB6623 | 6623 | 822.00 | 825.68 | 3.68 | 826.37 | 4.37 | 0.69 | 118 |
| CB9798L | 324 | 461 | CB9798 | 9798 | 825.85 | 829.21 | 3.36 | 829.72 | 3.87 | 0.51 | 137 |
| Beres Road (4' RCP) | 118 | 122 | CB9833 | 9833 | 825.95 | 832.19 | 6.24 | 832.71 | 6.76 | 0.52 | 4 |
| Beres Road Overflow | 211 | 351 | CB9833 | 9833 | 830.60 | 832.19 | 1.59 | 832.71 | 2.11 | 0.52 | 140 |
| CB10673L | 323 | 462 | CB10673 | 10673 | 826.60 | 832.23 | 5.63 | 832.76 | 6.16 | 0.53 | 139 |
| CB11448L | 263 | 426 | CB11448 | 11448 | 827.12 | 834.37 | 7.25 | 832.92 | 5.80 | (1.45) | 163 |
| Calhoun Road (2 4' RCP) | 264 | 302 | CB11493 | 11493 | 827.44 | 834.72 | 7.28 | 835.86 | 8.42 | 1.14 | 38 |
| Calhoun Road Overflow | 2 | 140 | CB11493 | 11493 | 834.60 | 834.72 | 0.12 | 835.86 | 1.26 | 1.14 | 138 |
| CB11673 | 242 | 384 | CB11673 | 11673 | 828.10 | 834.72 | 6.62 | 835.86 | 7.76 | 1.14 | 142 |
| CB12046L | 248 | 386 | CB12046 | 12046 | 829.40 | 834.72 | 5.32 | 835.86 | 6.46 | 1.14 | 138 |
| CB14488L | 318 | 469 | CB14488 | 14488 | 837.90 | 840.03 | 2.13 | 840.46 | 2.56 | 0.43 | 151 |
| CB19675L | 108 | 293 | CB19675 | 19675 | 856.10 | 857.34 | 1.24 | 858.10 | 2.00 | 0.76 | 185 |
| CB20972L | 101 | 336 | CB20972 | 20972 | 860.50 | 862.01 | 1.51 | 862.93 | 2.43 | 0.92 | 235 |
| Rock Freeway (I-43) | 131 | 336 | CB21112 | 21112 | 860.70 | 864.36 | 3.66 | 869.13 | 8.43 | 4.77 | 205 |

City of New Berlin
Calhoun Creek
25 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation | Future Depth | Future Elevation Increase | Future Flow Increase |
| (2 5' RCP) | | | | | | | | | | | |
| **Tributary D** | | | | | | | | | | | |
| CD0095L | 68 | 62 | CD0095 | 95 | 815.50 | 817.70 | 2.20 | 817.95 | 2.45 | 0.25 | (6) |
| Rock Freeway (I-43) (8'x12' Box) | 68 | 62 | CD0290 | 290 | 815.80 | 818.27 | 2.47 | 818.15 | 2.35 | (0.12) | (6) |
| **Tributary E** | | | | | | | | | | | |
| CE0070L | 103 | 124 | CE0070 | 70 | 817.30 | 819.75 | 2.45 | 820.14 | 2.84 | 0.39 | 21 |
| Rock Freeway (I-43) (6'x10' Box) | 103 | 125 | CE0380 | 380 | 818.40 | 821.71 | 3.31 | 822.13 | 3.73 | 0.42 | 22 |
| CE1688L | 75 | 120 | CE1688 | 1688 | 822.67 | 824.10 | 1.43 | 824.43 | 1.76 | 0.33 | 45 |
| Martin Road (2 3' RCP) | 76 | 111 | CE1728 | 1728 | 822.69 | 825.92 | 3.23 | 827.57 | 4.88 | 1.65 | 35 |
| Martin Road Overflow | 0 | 22 | CE1728 | 1728 | 827.10 | 825.92 | --- | 827.57 | 0.47 | #VALUE! | 22 |
| **Tributary F** | | | | | | | | | | | |
| CF0510L | 75 | 58 | CF0510 | 510 | 831.10 | 832.32 | 1.22 | 832.77 | 1.67 | 0.45 | (17) |
| CF2058L | 81 | 69 | CF2058 | 2058 | 842.90 | 843.63 | 0.73 | 843.61 | 0.71 | (0.02) | (12) |
| Beloit Road (4' RCP) | 77 | 65 | CF2088 | 2088 | 843.05 | 846.93 | 3.88 | 846.53 | 3.48 | (0.40) | (12) |
| CF3620L | 39 | 31 | CF3620 | 3620 | 865.00 | 866.18 | 1.18 | 866.07 | 1.07 | (0.11) | (8) |

City of New Berlin
Calhoun Creek
100 Year/3 Hour Precipitation Event

| | Existing Flow (CFS) | Future Flow (CFS) | Upstream Junction | | | Existing Conditions | | Future Conditions | | Future Elevation Increase | Future Flow Increase |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation | Future Depth | | |
| Muskego Lake Inflow | 617 | 634 | C00000 | 0 | 804.00 | 807.61 | 3.61 | 807.65 | 3.65 | 0.04 | 17 |
| College (2 - 5' RCP) | 666 | 684 | C00100 | 100 | 812.58 | 819.15 | 6.57 | 819.69 | 7.11 | 0.54 | 18 |
| C00276L | 666 | 684 | C00276 | 276 | 805.00 | 819.15 | 14.15 | 819.69 | 14.69 | 0.54 | 18 |
| C01161L | 8 | 8 | C01161 | 1,161 | 817.00 | 819.15 | 2.15 | 819.69 | 2.69 | 0.54 | 0 |
| Rock Freeway (I-43) (18" RCP) | 8 | 8 | C01436 | 1,436 | 818.30 | 825.03 | 6.73 | 825.09 | 6.79 | 0.06 | 0 |
| **Tributary A** | | | | | | | | | | | |
| CA0825L | 438 | 457 | CA0825 | 825 | 816.30 | 819.16 | 2.86 | 819.70 | 3.40 | 0.54 | 19 |
| Racine Place (5' x 8' Box) | 438 | 457 | CA0853 | 853 | 816.35 | 824.14 | 7.79 | 824.60 | 8.25 | 0.46 | 19 |
| CA0984L | 775 | 679 | CA0984 | 984 | 820.52 | 824.14 | 3.62 | 824.60 | 4.08 | 0.46 | (96) |
| CA2499L | 296 | 323 | CA2499 | 2,499 | 827.10 | 831.66 | 4.56 | 831.81 | 4.71 | 0.15 | 27 |
| College Avenue (2 7.92'x5.58' Arch) | 296 | 324 | CA2599 | 2,599 | 827.20 | 831.87 | 4.67 | 831.99 | 4.79 | 0.12 | 28 |
| CA3059L | 286 | 311 | CA3059 | 3059 | 828.80 | 832.14 | 3.34 | 832.22 | 3.42 | 0.08 | 25 |
| CA3309L | 287 | 311 | CA3309 | 3309 | 829.10 | 832.62 | 3.52 | 832.72 | 3.62 | 0.10 | 24 |
| Racine Drive (6' RCP) | 287 | 311 | CA3399 | 3399 | 829.20 | 837.78 | 8.58 | 838.63 | 9.43 | 0.85 | 24 |
| CA6009L | 403 | 467 | CA6009 | 6009 | 837.29 | 839.74 | 2.45 | 839.88 | 2.59 | 0.14 | 64 |
| Tans Drive (4' RCP) | 152 | 158 | CA6047 | 6047 | 837.49 | 845.86 | 8.37 | 846.29 | 8.80 | 0.43 | 6 |
| Tans Drive Overflow | 272 | 399 | CA6047 | 6047 | 844.10 | 845.86 | 1.76 | 846.29 | 2.19 | 0.43 | 127 |
| **Tributary C** | | | | | | | | | | | |
| CC0675L | 421 | 427 | CC0675 | 675 | 828.00 | 831.67 | 3.67 | 831.70 | 3.70 | 0.03 | 6 |
| CC1413L | 395 | 403 | CC1413 | 1413 | 842.00 | 844.09 | 2.09 | 844.12 | 2.12 | 0.03 | 8 |
| Rock Freeway (I-43) (10'x7' Box) | 396 | 404 | CC1759 | 1759 | 848.90 | 851.86 | 2.96 | 851.90 | 3.00 | 0.04 | 8 |
| **Tributary B** | | | | | | | | | | | |
| CB1130L | 733 | 875 | CB1130 | 1130 | 815.40 | 819.17 | 3.77 | 819.70 | 4.30 | 0.53 | 142 |
| CB2388L | 733 | 875 | CB2388 | 2388 | 816.90 | 819.27 | 2.37 | 819.76 | 2.86 | 0.49 | 142 |
| CB02533L | 733 | 864 | CB2533 | 2533 | 817.10 | 820.76 | 3.66 | 821.05 | 3.95 | 0.29 | 131 |
| CB06368L | 625 | 752 | CB6368 | 6368 | 821.70 | 824.26 | 2.56 | 824.46 | 2.76 | 0.20 | 127 |
| Rock Freeway (I-43) (18'x8' Box) | 635 | 766 | CB6623 | 6623 | 822.00 | 827.36 | 5.36 | 827.96 | 5.96 | 0.60 | 131 |
| CB9798L | 667 | 825 | CB9798 | 9798 | 825.85 | 830.26 | 4.41 | 830.52 | 4.67 | 0.26 | 158 |
| Beres Road (4' RCP) | 126 | 128 | CB9833 | 9833 | 825.95 | 833.37 | 7.42 | 833.77 | 7.82 | 0.40 | 2 |
| Beres Road Overflow | 566 | 715 | CB9833 | 9833 | 830.60 | 833.37 | 2.77 | 833.77 | 3.17 | 0.40 | 149 |
| CB10673L | 675 | 820 | CB10673 | 10673 | 826.60 | 833.44 | 6.84 | 833.84 | 7.24 | 0.40 | 145 |
| CB11448L | 592 | 729 | CB11448 | 11448 | 827.12 | 833.58 | 6.46 | 833.98 | 6.86 | 0.40 | 137 |
| Calhoun Road (2 4' RCP) | 302 | 320 | CB11493 | 11493 | 827.44 | 836.54 | 9.10 | 837.00 | 9.56 | 0.46 | 18 |
| Calhoun Road Overflow | 307 | 447 | CB11493 | 11493 | 834.60 | 836.54 | 1.94 | 837.00 | 2.40 | 0.46 | 140 |
| CB11673 | 535 | 656 | CB11673 | 11673 | 828.10 | 836.54 | 8.44 | 837.00 | 8.90 | 0.46 | 121 |
| CB12046L | 535 | 655 | CB12046 | 12046 | 829.40 | 836.54 | 7.14 | 837.00 | 7.60 | 0.46 | 120 |
| CB14488L | 585 | 733 | CB14488 | 14488 | 837.90 | 840.72 | 2.82 | 841.04 | 3.14 | 0.32 | 148 |
| CB19675L | 207 | 440 | CB19675 | 19675 | 856.10 | 857.79 | 1.69 | 858.45 | 2.35 | 0.66 | 233 |
| CB20972L | 193 | 488 | CB20972 | 20972 | 860.50 | 862.36 | 1.86 | 863.35 | 2.85 | 0.99 | 295 |
| Rock Freeway (I-43) | 193 | 488 | CB21112 | 21112 | 860.70 | 865.21 | 4.51 | 873.07 | 12.37 | 7.86 | 295 |

City of New Berlin
Calhoun Creek
100 Year/3 Hour Precipitation Event

| | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation | Future Depth | Future Elevation Increase | Future Flow Increase |
| (2 5' RCP) | | | | | | | | | | | |
| Rock Freeway Overflow | 0 | 6 | CB21112 | 21112 | 872.78 | 865.21 | -7.57 | 873.07 | 0.29 | 7.86 | 6 |
| **Tributary D** | | | | | | | | | | | |
| CD0095L | 131 | 116 | CD0095 | 95 | 815.50 | 819.17 | 3.67 | 819.70 | 4.20 | 0.53 | (15) |
| Rock Freeway (I-43) (8'x12' Box) | 137 | 122 | CD0290 | 290 | 815.80 | 819.51 | 3.71 | 819.70 | 3.90 | 0.19 | (15) |
| **Tributary E** | | | | | | | | | | | |
| CE0070L | 169 | 185 | CE0070 | 70 | 817.30 | 820.76 | 3.46 | 821.05 | 3.75 | 0.29 | 16 |
| Rock Freeway (I-43) (6'x10' Box) | 172 | 188 | CE0380 | 380 | 818.40 | 822.95 | 4.55 | 823.24 | 4.84 | 0.29 | 16 |
| CE1688L | 151 | 197 | CE1688 | 1688 | 822.67 | 824.62 | 1.95 | 824.91 | 2.24 | 0.29 | 46 |
| Martin Road | 115 | 122 | CE1728 | 1728 | 822.69 | 827.80 | 5.11 | 828.20 | 5.51 | 0.40 | 7 |
| (2 3' RCP) | | | | | | | | | | | |
| Martin Road Overflow | 48 | 114 | CE1728 | 1728 | 827.10 | 827.80 | 0.70 | 828.20 | 1.10 | 0.40 | 66 |
| **Tributary F** | | | | | | | | | | | |
| CF0510L | 209 | 149 | CF0510 | 510 | 831.10 | 833.44 | 2.34 | 833.85 | 2.75 | 0.41 | (60) |
| CF2058L | 212 | 168 | CF2058 | 2058 | 844.70 | 845.96 | 1.26 | 845.83 | 1.13 | (0.13) | (44) |
| Beloit Road (4' RCP) | 46 | 41 | CF2088 | 2088 | 843.05 | 847.87 | 4.82 | 847.68 | 4.63 | (0.19) | (5) |
| Beloit Road Overflow | 164 | 122 | CF2088 | 2088 | 846.90 | 847.87 | 0.97 | 847.68 | 0.78 | (0.19) | (42) |
| CF3620L | 90 | 66 | CF3620 | 3620 | 865.00 | 866.58 | 1.58 | 866.43 | 1.43 | (0.15) | (24) |

City of New Berlin
Deer Creek
2 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation (ft) | Future Depth (ft) | Future Elevation Increase | Future Flow Increase |
| **Mainstem** | | | | | | | | | | | |
| City Limit | 461 | 587 | D00000 | 0 | 832.40 | 834.12 | 1.72 | 834.39 | 1.99 | 0.27 | 126 |
| Green Field Avenue | 460 | 587 | D00070 | 70 | 832.50 | 835.74 | 3.24 | 836.17 | 3.67 | 0.43 | 127 |
| (3 5' RCP and 1 7'x13' Box) | | | | | | | | | | | |
| D02905L | 443 | 552 | D02905 | 2905 | 834.30 | 837.12 | 2.82 | 837.53 | 3.23 | 0.41 | 109 |
| C & NW Railroad | 452 | 562 | D03050 | 3050 | 834.41 | 839.85 | 5.44 | 840.55 | 6.14 | 0.70 | 110 |
| (2 7' CMP) | | | | | | | | | | | |
| D03800L | 393 | 485 | D03800 | 3800 | 835.60 | 840.28 | 4.68 | 840.88 | 5.28 | 0.60 | 92 |
| Rogers Drive (5.2'x20' Box) | 392 | 484 | D03838 | 3838 | 835.70 | 840.31 | 4.61 | 840.96 | 5.26 | 0.65 | 92 |
| D05639L | 330 | 395 | D05639 | 5639 | 838.20 | 842.13 | 3.93 | 842.41 | 4.21 | 0.28 | 65 |
| Lincoln Avenue (5.2'x10' Box) | 334 | 397 | D05675 | 5675 | 838.30 | 842.39 | 4.09 | 842.73 | 4.43 | 0.34 | 63 |
| D06012L | 241 | 306 | D06012 | 6012 | 838.70 | 842.75 | 4.05 | 843.09 | 4.39 | 0.34 | 65 |
| D07643L | 215 | 282 | D07643 | 7643 | 841.87 | 845.32 | 3.45 | 845.71 | 3.84 | 0.39 | 67 |
| Glendale Drive (5.8'x12' Box) | 219 | 293 | D07701 | 7701 | 841.90 | 845.34 | 3.44 | 845.76 | 3.86 | 0.42 | 74 |
| D08878L | 185 | 250 | D08878 | 8878 | 847.88 | 851.33 | 3.45 | 851.83 | 3.95 | 0.50 | 65 |
| Cleveland Avenue (3 6' CMP) | 185 | 250 | D09061 | 9061 | 848.38 | 851.68 | 3.30 | 852.24 | 3.86 | 0.56 | 65 |
| D10721L | 154 | 211 | D10721 | 10721 | 851.30 | 854.37 | 3.07 | 854.79 | 3.49 | 0.42 | 57 |
| D10983L | 142 | 199 | D10983 | 10983 | 851.70 | 854.77 | 3.07 | 855.19 | 3.49 | 0.42 | 57 |
| James Drive | 142 | 200 | D11033 | 11033 | 851.78 | 854.78 | 3.00 | 855.21 | 3.43 | 0.43 | 57 |
| (5'x10' Concrete Box) | | | | | | | | | | | |
| D11419L | 140 | 197 | D11419 | 11419 | 852.16 | 855.34 | 3.18 | 855.78 | 3.62 | 0.44 | 57 |
| Moorland Road (8'x9' Concrete Box) | 140 | 197 | D11539 | 11539 | 852.35 | 855.66 | 3.31 | 856.23 | 3.88 | 0.57 | 57 |
| D13194L | 130 | 189 | D13194 | 13194 | 855.40 | 859.09 | 3.69 | 859.33 | 3.93 | 0.24 | 59 |
| D14549L | 146 | 191 | D14549 | 14549 | 857.90 | 861.41 | 3.51 | 861.77 | 3.87 | 0.36 | 45 |
| D15639L | 139 | 185 | D15639 | 15639 | 859.90 | 862.01 | 2.11 | 862.43 | 2.53 | 0.42 | 46 |
| West San Mateo Drive ( 8'x16' Box) | 139 | 185 | D15709 | 15709 | 860.00 | 862.16 | 2.16 | 862.59 | 2.59 | 0.43 | 46 |
| D15864L | 139 | 185 | D15864 | 15864 | 861.50 | 863.03 | 1.53 | 863.29 | 1.79 | 0.26 | 46 |
| National Avenue | 139 | 185 | D16196 | 16196 | 861.60 | 864.19 | 2.59 | 864.58 | 2.98 | 0.39 | 47 |
| (10'x10' Box and 5.25'x8.17' Elliptical) | | | | | | | | | | | |
| D17660L | 127 | 154 | D17660 | 17660 | 862.00 | 865.89 | 3.89 | 866.19 | 4.19 | 0.30 | 27 |
| D19266L | 87 | 117 | D19266 | 19266 | 860.00 | 866.26 | 6.26 | 866.65 | 6.65 | 0.39 | 30 |
| D22416L | 30 | 35 | D22416 | 22416 | 863.20 | 866.42 | 3.22 | 866.78 | 3.58 | 0.36 | 5 |
| **Tributary A** | | | | | | | | | | | |
| DA0440L | 43 | 45 | DA0440 | 440 | 843.02 | 844.10 | 1.08 | 844.12 | 1.10 | 0.02 | 2 |
| 162nd Street (5' RCP) | 44 | 45 | DA0490 | 490 | 843.22 | 845.53 | 2.31 | 845.57 | 2.35 | 0.04 | 2 |

City of New Berlin
Deer Creek
10 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation (ft) | Future Depth (ft) | Future Elevation Increase | Future Flow Increase |
| **Mainstem** | | | | | | | | | | | |
| OUTFALL | 731 | 886 | D00000 | 0 | 832.40 | 834.68 | 2.28 | 834.97 | 2.57 | 0.29 | 155 |
| Green Field Avenue | 731 | 885 | D00070 | 70 | 832.50 | 836.62 | 4.12 | 837.09 | 4.59 | 0.47 | 154 |
| (3 5' RCP and 1 7'x13' Box) | | | | | | | | | | | |
| D02905L | 690 | 834 | D02905 | 2905 | 834.30 | 837.98 | 3.68 | 838.38 | 4.08 | 0.40 | 144 |
| C & NW Railroad | 696 | 840 | D03050 | 3050 | 834.41 | 841.74 | 7.33 | 842.89 | 8.48 | 1.15 | 144 |
| (2 7' CMP) | | | | | | | | | | | |
| D03800L | 613 | 741 | D03800 | 3800 | 835.60 | 841.94 | 6.34 | 843.02 | 7.42 | 1.08 | 128 |
| Rogers Drive (5.2'x20' Box) | 609 | 661 | D03838 | 3838 | 835.70 | 842.07 | 6.37 | 843.16 | 7.46 | 1.09 | 52 |
| Rogers Drive Overflow | 0 | 92 | D03838 | 3838 | 835.70 | 842.07 | 6.37 | 843.16 | 7.46 | 1.09 | 92 |
| D05639L | 512 | 620 | D05639 | 5639 | 838.20 | 843.04 | 4.84 | 843.84 | 5.64 | 0.80 | 108 |
| Lincoln Avenue (5.2'x10' Box) | 530 | 617 | D05675 | 5675 | 838.30 | 843.55 | 5.25 | 844.48 | 6.18 | 0.93 | 87 |
| D06012L | 430 | 519 | D06012 | 6012 | 838.70 | 843.85 | 5.15 | 844.69 | 5.99 | 0.84 | 89 |
| D07643L | 396 | 479 | D07643 | 7643 | 841.87 | 846.28 | 4.41 | 846.64 | 4.77 | 0.36 | 83 |
| Glendale Drive (5.8'x12' Box) | 397 | 480 | D07701 | 7701 | 841.90 | 846.32 | 4.42 | 846.69 | 4.79 | 0.37 | 83 |
| D08878L | 360 | 414 | D08878 | 8878 | 847.88 | 852.47 | 4.59 | 852.71 | 4.83 | 0.24 | 54 |
| Cleveland Avenue (3 6' CMP) | 360 | 414 | D09061 | 9061 | 848.38 | 853.05 | 4.67 | 853.38 | 5.00 | 0.33 | 54 |
| D10721L | 313 | 366 | D10721 | 10721 | 851.30 | 855.40 | 4.10 | 855.69 | 4.39 | 0.29 | 53 |
| D10983L | 284 | 337 | D10983 | 10983 | 851.70 | 855.78 | 4.08 | 856.08 | 4.38 | 0.30 | 53 |
| James Drive | 284 | 336 | D11033 | 11033 | 851.78 | 855.81 | 4.03 | 856.10 | 4.32 | 0.29 | 52 |
| (5'x10' Concrete Box) | | | | | | | | | | | |
| D11419L | 280 | 334 | D11419 | 11419 | 852.16 | 856.36 | 4.20 | 856.66 | 4.50 | 0.30 | 54 |
| Moorland Road (8'x9' Concrete Box) | 280 | 334 | D11539 | 11539 | 852.35 | 856.97 | 4.62 | 857.38 | 5.03 | 0.41 | 54 |
| D13194L | 258 | 308 | D13194 | 13194 | 855.40 | 859.56 | 4.16 | 859.78 | 4.38 | 0.22 | 50 |
| D14549L | 258 | 318 | D14549 | 14549 | 857.90 | 862.16 | 4.26 | 862.52 | 4.62 | 0.36 | 60 |
| D15639L | 255 | 314 | D15639 | 15639 | 859.90 | 862.93 | 3.03 | 863.33 | 3.43 | 0.40 | 59 |
| West San Mateo Drive ( 8'x16' Box) | 255 | 314 | D15709 | 15709 | 860.00 | 863.11 | 3.11 | 863.52 | 3.52 | 0.41 | 59 |
| D15864L | 254 | 314 | D15864 | 15864 | 861.50 | 863.65 | 2.15 | 864.00 | 2.50 | 0.35 | 60 |
| National Avenue | 254 | 313 | D16196 | 16196 | 861.60 | 865.10 | 3.50 | 865.50 | 3.90 | 0.40 | 59 |
| (10'x10' Box and 5.25'x8.17' Elliptical) | | | | | | | | | | | |
| D17660L | 230 | 265 | D17660 | 17660 | 862.00 | 866.88 | 4.88 | 867.17 | 5.17 | 0.29 | 35 |
| D19266L | 162 | 205 | D19266 | 19266 | 860.00 | 867.28 | 7.28 | 867.59 | 7.59 | 0.31 | 43 |
| D22416L | 56 | 65 | D22416 | 22416 | 863.20 | 867.45 | 4.25 | 867.75 | 4.55 | 0.30 | 9 |
| **Tributary A** | | | | | | | | | | | |
| DA0440L | 70 | 73 | DA0440 | 440 | 843.02 | 844.43 | 1.41 | 844.69 | 1.67 | 0.26 | 3 |
| 162nd Street (5' RCP) | 71 | 73 | DA0490 | 490 | 843.22 | 846.14 | 2.92 | 846.19 | 2.97 | 0.05 | 3 |

City of New Berlin
Deer Creek
25 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation (ft) | Future Depth (ft) | Future Elevation Increase | Future Flow Increase |
| **Mainstem** | | | | | | | | | | | |
| City Limit | 911 | 1,060 | D00000 | 0 | 832.40 | 835.01 | 2.61 | 835.27 | 2.87 | 0.26 | 149 |
| Green Field Avenue | 911 | 1,060 | D00070 | 70 | 832.50 | 837.16 | 4.66 | 837.64 | 5.14 | 0.48 | 149 |
| (3 5' RCP and 1 7'x13' Box) | | | | | | | | | | | |
| D02905L | 858 | 995 | D02905 | 2905 | 834.30 | 838.44 | 4.14 | 838.79 | 4.49 | 0.35 | 137 |
| C & NW Railroad | 864 | 1,006 | D03050 | 3050 | 834.41 | 843.10 | 8.69 | 844.21 | 9.80 | 1.11 | 142 |
| (2 7' CMP) | | | | | | | | | | | |
| D03800L | 772 | 884 | D03800 | 3800 | 835.60 | 843.22 | 7.62 | 844.29 | 8.69 | 1.07 | 112 |
| Rogers Drive (5.2'x20' Box) | 673 | 679 | D03838 | 3838 | 835.70 | 843.36 | 7.66 | 844.40 | 8.70 | 1.04 | 6 |
| Rogers Drive Overflow | 122 | 298 | D03838 | 3838 | 842.10 | 843.36 | 1.26 | 844.40 | 2.30 | 1.04 | 176 |
| D05639L | 660 | 744 | D05639 | 5639 | 838.20 | 844.03 | 5.83 | 844.87 | 6.67 | 0.84 | 84 |
| Lincoln Avenue (5.2'x10' Box) | 662 | 718 | D05675 | 5675 | 838.30 | 844.76 | 6.46 | 845.72 | 7.42 | 0.96 | 56 |
| Lincoln Avenue Overflow | 0 | 40 | D05675 | 5675 | 845.10 | 844.76 | -0.34 | 845.72 | 0.62 | 0.96 | 40 |
| D06012L | 553 | 628 | D06012 | 6012 | 838.70 | 844.95 | 6.25 | 845.84 | 7.14 | 0.89 | 75 |
| D07643L | 503 | 588 | D07643 | 7643 | 841.87 | 846.73 | 4.86 | 847.04 | 5.17 | 0.31 | 85 |
| Glendale Drive (5.8'x12' Box) | 505 | 589 | D07701 | 7701 | 841.90 | 846.79 | 4.89 | 847.11 | 5.21 | 0.32 | 84 |
| D08878L | 459 | 509 | D08878 | 8878 | 847.88 | 852.90 | 5.02 | 853.10 | 5.22 | 0.20 | 50 |
| Cleveland Avenue (3 6' CMP) | 459 | 510 | D09061 | 9061 | 848.38 | 853.68 | 5.30 | 854.02 | 5.64 | 0.34 | 51 |
| D10721L | 410 | 460 | D10721 | 10721 | 851.30 | 855.90 | 4.60 | 856.13 | 4.83 | 0.23 | 50 |
| D10983L | 375 | 424 | D10983 | 10983 | 851.70 | 856.29 | 4.59 | 856.52 | 4.82 | 0.23 | 49 |
| James Drive | 375 | 423 | D11033 | 11033 | 851.78 | 856.32 | 4.54 | 856.57 | 4.79 | 0.25 | 48 |
| (5'x10' Concrete Box) | | | | | | | | | | | |
| D11419L | 372 | 421 | D11419 | 11419 | 852.16 | 856.88 | 4.72 | 857.13 | 4.97 | 0.25 | 49 |
| Moorland Road (8'x9' Concrete Box) | 372 | 421 | D11539 | 11539 | 852.35 | 857.67 | 5.32 | 858.02 | 5.67 | 0.35 | 49 |
| D13194L | 329 | 389 | D13194 | 13194 | 855.40 | 859.86 | 4.46 | 859.99 | 4.59 | 0.13 | 60 |
| D14549L | 334 | 397 | D14549 | 14549 | 857.90 | 862.55 | 4.65 | 862.85 | 4.95 | 0.30 | 63 |
| D15639L | 335 | 397 | D15639 | 15639 | 859.90 | 863.43 | 3.53 | 863.79 | 3.89 | 0.36 | 62 |
| West San Mateo Drive ( 8'x16' Box) | 335 | 397 | D15709 | 15709 | 860.00 | 863.63 | 3.63 | 864.00 | 4.00 | 0.37 | 62 |
| D15864L | 335 | 398 | D15864 | 15864 | 861.50 | 864.11 | 2.61 | 864.45 | 2.95 | 0.34 | 63 |
| National Avenue | 335 | 398 | D16196 | 16196 | 861.60 | 865.65 | 4.05 | 866.06 | 4.46 | 0.41 | 63 |
| (10'x10' Box and 5.25'x8.17' Elliptical) | | | | | | | | | | | |
| D17660L | 295 | 337 | D17660 | 17660 | 862.00 | 867.38 | 5.38 | 867.67 | 5.67 | 0.29 | 42 |
| D19266L | 216 | 276 | D19266 | 19266 | 860.00 | 867.77 | 7.77 | 867.99 | 7.99 | 0.22 | 60 |
| D22416L | 79 | 89 | D22416 | 22416 | 863.20 | 867.96 | 4.76 | 868.18 | 4.98 | 0.22 | 11 |
| **Tributary A** | | | | | | | | | | | |
| DA0440L | 91 | 95 | DA0440 | 440 | 843.02 | 844.95 | 1.93 | 845.84 | 2.82 | 0.89 | 4 |
| 162nd Street (5' RCP) | 91 | 95 | DA0490 | 490 | 843.22 | 846.54 | 3.32 | 846.60 | 3.38 | 0.06 | 4 |

City of New Berlin
Deer Creek
100 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation (ft) | Future Depth (ft) | Future Elevation Increase | Future Flow Increase |
| **Mainstem** | | | | | | | | | | | |
| City Limit | 1,210 | 1,340 | D00000 | 0 | 832.40 | 835.51 | 3.11 | 835.73 | 3.33 | 0.22 | 130 |
| Green Field Avenue | 1,207 | 1,341 | D00070 | 70 | 832.50 | 838.06 | 5.56 | 838.43 | 5.93 | 0.37 | 134 |
| (3 5' RCP and 1 7'x13' Box) | | | | | | | | | | | |
| D02905L | 1,110 | 1,230 | D02905 | 2905 | 834.30 | 839.08 | 4.78 | 839.35 | 5.05 | 0.27 | 120 |
| C & NW Railroad | 1,124 | 1,250 | D03050 | 3050 | 834.41 | 845.13 | 10.72 | 846.10 | 11.69 | 0.97 | 126 |
| (2 7' CMP) | | | | | | | | | | | |
| D03800L | 1,020 | 1,120 | D03800 | 3800 | 835.60 | 845.18 | 9.58 | 846.13 | 10.53 | 0.95 | 100 |
| Rogers Drive (5.2'x20' Box) | 767 | 869 | D03838 | 3838 | 835.70 | 845.32 | 9.62 | 846.26 | 10.56 | 0.94 | 102 |
| Rogers Drive Overflow | 583 | 653 | D03838 | 3838 | 842.10 | 845.32 | 3.22 | 846.26 | 4.16 | 0.94 | 70 |
| D05639L | 1,090 | 1,100 | D05639 | 5639 | 838.20 | 845.72 | 7.52 | 846.66 | 8.46 | 0.94 | 10 |
| Lincoln Avenue (5.2'x10' Box) | 801 | 830 | D05675 | 5675 | 838.30 | 846.52 | 8.22 | 847.21 | 8.91 | 0.69 | 29 |
| Lincoln Avenue Overflow | 188 | 379 | D05675 | 5675 | 845.10 | 846.52 | 1.42 | 847.21 | 2.11 | 0.69 | 191 |
| D06012L | 749 | 807 | D06012 | 6012 | 838.70 | 846.64 | 7.94 | 847.30 | 8.60 | 0.66 | 58 |
| D07643L | 691 | 803 | D07643 | 7643 | 841.87 | 847.67 | 5.80 | 848.13 | 6.26 | 0.46 | 112 |
| Glendale Drive (5.8'x12' Box) | 689 | 805 | D07701 | 7701 | 841.90 | 847.79 | 5.89 | 848.26 | 6.36 | 0.47 | 116 |
| D08878L | 628 | 671 | D08878 | 8878 | 847.88 | 853.48 | 5.60 | 853.62 | 5.74 | 0.14 | 43 |
| Cleveland Avenue (3 6' CMP) | 627 | 672 | D09061 | 9061 | 848.38 | 854.92 | 6.54 | 855.25 | 6.87 | 0.33 | 45 |
| D10721L | 576 | 620 | D10721 | 10721 | 851.30 | 856.63 | 5.33 | 856.85 | 5.55 | 0.22 | 44 |
| D10983L | 536 | 580 | D10983 | 10983 | 851.70 | 857.01 | 5.31 | 857.23 | 5.53 | 0.22 | 44 |
| James Drive | 537 | 579 | D11033 | 11033 | 851.78 | 857.09 | 5.31 | 857.32 | 5.54 | 0.23 | 42 |
| (5'x10' Concrete Box) | | | | | | | | | | | |
| D11419L | 535 | 579 | D11419 | 11419 | 852.16 | 857.65 | 5.49 | 857.86 | 5.70 | 0.21 | 44 |
| Moorland Road (8'x9' Concrete Box) | 534 | 579 | D11539 | 11539 | 852.35 | 858.78 | 6.43 | 859.06 | 6.71 | 0.28 | 45 |
| D13194L | 483 | 532 | D13194 | 13194 | 855.40 | 860.25 | 4.85 | 860.41 | 5.01 | 0.16 | 49 |
| D14549L | 490 | 548 | D14549 | 14549 | 857.90 | 863.23 | 5.33 | 863.46 | 5.56 | 0.23 | 58 |
| D15639L | 489 | 547 | D15639 | 15639 | 859.90 | 864.25 | 4.35 | 864.52 | 4.62 | 0.27 | 58 |
| West San Mateo Drive ( 8'x16' Box) | 489 | 548 | D15709 | 15709 | 860.00 | 864.49 | 4.49 | 864.77 | 4.77 | 0.28 | 59 |
| D15864L | 489 | 548 | D15864 | 15864 | 861.50 | 864.90 | 3.40 | 865.17 | 3.67 | 0.27 | 59 |
| National Avenue | 489 | 547 | D16196 | 16196 | 861.60 | 866.66 | 5.06 | 867.08 | 5.48 | 0.42 | 58 |
| (10'x10' Box and 5.25'x8.17' Elliptical) | | | | | | | | | | | |
| D17660L | 425 | 468 | D17660 | 17660 | 862.00 | 868.23 | 6.23 | 868.51 | 6.51 | 0.28 | 43 |
| D19266L | 323 | 381 | D19266 | 19266 | 860.00 | 868.46 | 8.46 | 868.71 | 8.71 | 0.25 | 58 |
| D22416L | 130 | 144 | D22416 | 22416 | 863.20 | 868.69 | 5.49 | 868.92 | 5.72 | 0.23 | 14 |
| **Tributary A** | | | | | | | | | | | |
| DA0440L | 137 | 141 | DA0440 | 440 | 843.02 | 846.64 | 3.62 | 847.30 | 4.28 | 0.66 | 4 |
| 162nd Street (5' RCP) | 132 | 134 | DA0490 | 490 | 843.22 | 847.39 | 4.17 | 847.42 | 4.20 | 0.03 | 2 |

City of New Berlin
Poplar Creek
2 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation (ft) | Future Depth (ft) | Future Elevation Increase | Future Flow Increase |
| **Mainstem** | | | | | | | | | | | |
| OUTFALL | 64 | 105 | P00000 | 0 | 822.30 | 824.00 | 1.70 | 824.26 | 1.96 | 0.26 | 41 |
| P01913L | 62 | 102 | P01913 | 1,913 | 822.50 | 825.88 | 3.38 | 826.19 | 3.69 | 0.31 | 40 |
| P03490L | 59 | 97 | P03490 | 3,490 | 823.40 | 826.32 | 2.92 | 826.82 | 3.42 | 0.50 | 38 |
| P03598L | 59 | 99 | P03588 | 3,588 | 823.45 | 826.35 | 2.90 | 826.87 | 3.42 | 0.52 | 40 |
| P03680L | 59 | 99 | P03680 | 3,680 | 823.50 | 826.37 | 2.87 | 826.89 | 3.39 | 0.52 | 40 |
| P07057L | 41 | 63 | P07057 | 7,057 | 837.00 | 838.16 | 1.16 | 838.45 | 1.45 | 0.29 | 21 |
| P09651L | 212 | 328 | P09651 | 9,651 | 847.50 | 848.31 | 0.81 | 848.46 | 0.96 | 0.15 | 116 |
| **Tributary A** | | | | | | | | | | | |
| PA0435L | 26 | 54 | PA0435 | 435 | 824.10 | 826.37 | 2.27 | 826.90 | 2.80 | 0.53 | 28 |
| PA1655L | 25 | 53 | PA1655 | 1,655 | 825.00 | 827.42 | 2.42 | 827.80 | 2.80 | 0.38 | 28 |
| PA3360L | 26 | 54 | SOUTHRR | 3,360 | 825.30 | 827.56 | 2.26 | 828.04 | 2.74 | 0.48 | 27 |
| PA10375L | 150 | 232 | PA10375 | 10,375 | 827.00 | 830.91 | 3.91 | 831.69 | 4.69 | 0.78 | 82 |
| PA10850L | 22 | 33 | PA10850 | 10,850 | 834.50 | 835.23 | 0.73 | 835.38 | 0.88 | 0.15 | 12 |
| PA12880L | 158 | 234 | PA12880 | 12,880 | 836.00 | 838.37 | 2.37 | 838.86 | 2.86 | 0.49 | 76 |
| PA13450L | 159 | 235 | PA13450 | 13,450 | 841.00 | 843.27 | 2.27 | 843.76 | 2.76 | 0.49 | 76 |
| PA16995L | 158 | 222 | PA16995 | 16995 | 845.89 | 849.72 | 3.83 | 850.16 | 4.27 | 0.44 | 64 |
| Cleveland Avenue (2 4.5' RCP) | 161 | 230 | PA17138 | 17138 | 846.54 | 850.35 | 3.81 | 851.45 | 4.91 | 1.10 | 69 |
| PA20253L | 159 | 229 | PA20253 | 20253 | 854.00 | 856.24 | 2.24 | 856.74 | 2.74 | 0.50 | 70 |
| PA20968L | 150 | 221 | PA20968 | 20968 | 855.88 | 860.76 | 4.88 | 861.45 | 5.57 | 0.69 | 71 |
| Calhoun Road (3 5' RCP) | 150 | 221 | PA21034 | 21034 | 856.28 | 860.83 | 4.55 | 861.63 | 5.35 | 0.80 | 72 |
| PA21314L | 108 | 152 | PA21314 | 21314 | 857.00 | 860.95 | 3.95 | 861.71 | 4.71 | 0.76 | 44 |
| PA21889L | 58 | 81 | PA21889 | 21889 | 858.46 | 861.09 | 2.63 | 861.84 | 3.38 | 0.75 | 23 |
| Calhoun Road ( 2 5' RCP) | 60 | 81 | PA21952 | 21952 | 858.69 | 861.10 | 2.41 | 861.85 | 3.16 | 0.75 | 21 |
| PA23632L | 55 | 77 | PA23632 | 23632 | 862.03 | 865.47 | 3.44 | 865.87 | 3.84 | 0.40 | 22 |
| Coffee Road (3 5.5' RCP) | 55 | 78 | PA23672 | 23672 | 862.44 | 865.47 | 3.03 | 865.88 | 3.44 | 0.41 | 23 |
| PA28197L | 86 | 108 | PA28197 | 28197 | 874.63 | 876.48 | 1.85 | 876.76 | 2.13 | 0.28 | 22 |
| Observatory Road (8.58'x5.92 Arch) | 96 | 123 | PA28237 | 28237 | 875.10 | 876.99 | 1.89 | 877.18 | 2.08 | 0.19 | 27 |
| PA30147L | 88 | 118 | PA30147 | 30147 | 879.90 | 882.78 | 2.88 | 882.97 | 3.07 | 0.19 | 30 |
| PA32172L | 86 | 115 | PA32172 | 32172 | 884.91 | 887.36 | 2.45 | 887.44 | 2.53 | 0.08 | 29 |
| Observatory Road (5.42'x3.33' Arch) | 125 | 157 | PA32214 | 32214 | 885.25 | 888.37 | 3.12 | 889.07 | 3.82 | 0.70 | 32 |
| **Tributary AB** | | | | | | | | | | | |
| PAB4480L | 24 | 89 | PAB4480 | 4480 | 873.94 | 874.61 | 0.67 | 875.36 | 1.42 | 0.75 | 65 |
| Cleveland Avenue (3.5' RCP) | 39 | 94 | PAB4611 | 4611 | 876.34 | 879.51 | 3.17 | 887.27 | 10.93 | 7.76 | 54 |
| Cleveland Road Overflow | 0 | 25 | PAB4611 | 4611 | 886.60 | 879.51 | -7.09 | 887.27 | 0.67 | 7.76 | 25 |
| **Tributary AC** | | | | | | | | | | | |
| PAC2000L | 41 | 58 | PAC2000 | 2000 | 874.12 | 874.56 | 0.44 | 874.66 | 0.54 | 0.10 | 18 |
| Cleveland Avenue (5' RCP) | 32 | 46 | PAC2130 | 2130 | 875.41 | 877.75 | 2.34 | 878.22 | 2.81 | 0.47 | 14 |
| PAC4150L | 36 | 56 | PAC4150 | 4150 | 892.28 | 892.82 | 0.54 | 892.98 | 0.70 | 0.16 | 21 |
| Willow Road (2.92'x2' Arch) | 28 | 33 | PAC4194 | 4194 | 892.78 | 897.07 | 4.29 | 897.25 | 4.47 | 0.18 | 5 |
| Willow Road Overflow | 22 | 40 | PAC4194 | 4194 | 896.60 | 897.07 | 0.47 | 897.25 | 0.65 | 0.18 | 18 |

City of New Berlin
Poplar Creek
2 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation (ft) | Future Depth (ft) | Future Elevation Increase | Future Flow Increase |
| **Tributary AD** | | | | | | | | | | | |
| PAD0345L | 67 | 81 | PAD0345 | 345 | 857.70 | 860.96 | 3.26 | 861.72 | 4.02 | 0.76 | 15 |
| PAD2060L | 25 | 30 | PAD2060 | 2060 | 861.40 | 862.08 | 0.68 | 862.16 | 0.76 | 0.08 | 5 |
| 166th Street (3 5.5'x3.75' Box)) | 33 | 39 | PAD2113 | 2113 | 861.47 | 862.49 | 1.02 | 862.55 | 1.08 | 0.06 | 6 |
| **Tributary AE** | | | | | | | | | | | |
| PAE0335 | 85 | 98 | PAE0335 | 335 | 859.01 | 861.03 | 2.02 | 861.76 | 2.75 | 0.73 | 14 |
| Victor Road (3 4.88'x3' Arch) | 83 | 99 | PAE0384 | 384 | 859.53 | 861.09 | 1.56 | 861.80 | 2.27 | 0.71 | 16 |
| PAE1379 | 50 | 65 | PAE1379 | 1379 | 861.71 | 863.44 | 1.73 | 863.62 | 1.91 | 0.18 | 15 |
| Ryerson Avenue (2 4.75'x3.17 Arch) | 51 | 63 | PAE1423 | 1423 | 862.22 | 863.56 | 1.34 | 863.77 | 1.55 | 0.21 | 12 |
| **Tributary B** | | | | | | | | | | | |
| PB0390L | 21 | 18 | PB0390 | 390 | 827.04 | 827.56 | 0.52 | 828.04 | 1.00 | 0.48 | (3) |
| C & NW Railroad (4' RCP) | 21 | 22 | NORTHRR | 440 | 827.20 | 828.25 | 1.05 | 828.18 | 0.98 | (0.07) | 1 |
| **Tributary C** | | | | | | | | | | | |
| PC1595L | 3 | 5 | PC1595 | 1595 | 829.41 | 829.47 | 0.06 | 829.49 | 0.08 | 0.02 | 2 |
| PCGRVL2 (1.75' RCP) | 3 | 6 | PC1615 | 1615 | 829.88 | 830.72 | 0.84 | 830.99 | 1.11 | 0.27 | 2 |
| PC2205L | 5 | 6 | PC2205 | 2205 | 831.95 | 832.02 | 0.07 | 832.03 | 0.08 | 0.01 | 1 |
| Lincoln Avenue (2'x1.5' Arch) | 5 | 6 | PC2254 | 2254 | 833.32 | 834.46 | 1.14 | 835.22 | 1.90 | 0.76 | 1 |
| PC5034L | 7 | 13 | PC5034 | 5034 | 840.80 | 841.30 | 0.50 | 841.46 | 0.66 | 0.16 | 6 |
| PC7729L | 9 | 15 | PC7729 | 7729 | 847.98 | 848.34 | 0.36 | 848.44 | 0.46 | 0.10 | 6 |
| Cleveland Avenue (7.25'x5.25' Arch) | 9 | 15 | PC7818 | 7818 | 848.95 | 849.62 | 0.67 | 849.84 | 0.89 | 0.22 | 7 |
| PC10533L | 31 | 73 | PC10533 | 10533 | 884.20 | 884.53 | 0.33 | 884.67 | 0.47 | 0.14 | 42 |
| PC12423L | 11 | 15 | PC12423 | 12423 | 910.00 | 910.37 | 0.37 | 910.39 | 0.39 | 0.02 | 4 |

City of New Berlin
Poplar Creek
10 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation (ft) | Future Depth (ft) | Future Elevation Increase | Future Flow Increase |
| **Mainstem** | | | | | | | | | | | |
| OUTFALL | 169 | 253 | P00000 | 0 | 822.30 | 824.66 | 2.36 | 825.05 | 2.75 | 0.39 | 84 |
| P01913L | 169 | 253 | P01913 | 1,913 | 822.50 | 826.56 | 4.06 | 826.89 | 4.39 | 0.33 | 84 |
| P03490L | 169 | 254 | P03490 | 3,490 | 823.40 | 827.43 | 4.03 | 827.81 | 4.41 | 0.38 | 85 |
| P03598L | 169 | 254 | P03588 | 3,588 | 823.45 | 827.53 | 4.08 | 827.98 | 4.53 | 0.45 | 85 |
| P03680L | 169 | 254 | P03680 | 3,680 | 823.50 | 827.55 | 4.05 | 828.01 | 4.51 | 0.46 | 85 |
| P07057L | 94 | 132 | P07057 | 7,057 | 837.00 | 838.79 | 1.79 | 839.13 | 2.13 | 0.34 | 38 |
| P09651L | 347 | 517 | P09651 | 9,651 | 847.50 | 848.48 | 0.98 | 848.65 | 1.15 | 0.17 | 170 |
| **Tributary A** | | | | | | | | | | | |
| PA0435L | 145 | 210 | PA0435 | 435 | 824.10 | 827.65 | 3.55 | 828.14 | 4.04 | 0.49 | 65 |
| PA1655L | 143 | 207 | PA1655 | 1,655 | 825.00 | 828.40 | 3.40 | 828.62 | 3.62 | 0.22 | 64 |
| PA3360L | 145 | 208 | SOUTHRR | SOUTHRR | 825.30 | 828.79 | 3.49 | 829.05 | 3.75 | 0.26 | 63 |
| PA10375L | 336 | 494 | PA10375 | 10,375 | 827.00 | 832.24 | 5.24 | 832.52 | 5.52 | 0.28 | 158 |
| PA10850L | 44 | 62 | PA10850 | 10,850 | 834.50 | 835.50 | 1.00 | 835.65 | 1.15 | 0.15 | 17 |
| PA12880L | 305 | 379 | PA12880 | 12,880 | 836.00 | 839.25 | 3.25 | 839.61 | 3.61 | 0.36 | 74 |
| PA13450L | 305 | 380 | PA13450 | 13,450 | 841.00 | 844.15 | 3.15 | 844.49 | 3.49 | 0.34 | 75 |
| PA16995L | 298 | 356 | PA16995 | 16995 | 845.89 | 850.51 | 4.62 | 850.71 | 4.82 | 0.20 | 58 |
| Cleveland Avenue (2 4.5' RCP) | 307 | 368 | PA17138 | 17138 | 846.54 | 853.24 | 6.70 | 854.72 | 8.18 | 1.48 | 61 |
| PA20253L | 301 | 395 | PA20253 | 20253 | 854.00 | 857.18 | 3.18 | 857.69 | 3.69 | 0.51 | 94 |
| PA20968L | 269 | 364 | PA20968 | 20968 | 855.88 | 861.58 | 5.70 | 861.92 | 6.04 | 0.34 | 95 |
| Calhoun Road (3 5' RCP) | 269 | 363 | PA21034 | 21034 | 856.28 | 861.84 | 5.56 | 862.40 | 6.12 | 0.56 | 94 |
| PA21314L | 179 | 227 | PA21314 | 21314 | 857.00 | 861.94 | 4.94 | 862.48 | 5.48 | 0.54 | 48 |
| PA21889L | 112 | 136 | PA21889 | 21889 | 858.46 | 862.07 | 3.61 | 862.58 | 4.12 | 0.51 | 24 |
| Calhoun Road ( 2 5' RCP) | 112 | 136 | PA21952 | 21952 | 858.69 | 862.08 | 3.39 | 862.59 | 3.90 | 0.51 | 24 |
| PA23632L | 104 | 132 | PA23632 | 23632 | 862.03 | 866.58 | 4.55 | 866.87 | 4.84 | 0.29 | 28 |
| Coffee Road (3 5.5' RCP) | 105 | 132 | PA23672 | 23672 | 862.44 | 866.59 | 4.15 | 866.89 | 4.45 | 0.30 | 27 |
| PA28197L | 150 | 186 | PA28197 | 28197 | 874.63 | 876.98 | 2.35 | 877.12 | 2.49 | 0.14 | 36 |
| Observatory Road (8.58'x5.92 Arch) | 153 | 193 | PA28237 | 28237 | 875.10 | 877.33 | 2.23 | 877.64 | 2.54 | 0.31 | 40 |
| PA30147L | 140 | 176 | PA30147 | 30147 | 879.90 | 883.16 | 3.26 | 883.40 | 3.50 | 0.24 | 36 |
| PA32172L | 162 | 184 | PA32172 | 32172 | 884.91 | 887.50 | 2.59 | 887.56 | 2.65 | 0.06 | 22 |
| Observatory Road (5.42'x3.33' Arch) | 188 | 239 | PA32214 | 32214 | 885.25 | 889.68 | 4.43 | 890.97 | 5.72 | 1.29 | 51 |
| **Tributary AB** | | | | | | | | | | | |
| PAB4480L | 40 | 138 | PAB4480 | 4480 | 873.94 | 874.84 | 0.90 | 875.72 | 1.78 | 0.88 | 98 |
| Cleveland Avenue (3.5' RCP) | 57 | 111 | PAB4611 | 4611 | 876.34 | 884.57 | 8.23 | 887.65 | 11.31 | 3.08 | 54 |
| Cleveland Road Overflow | 0 | 61 | PAB4611 | 4611 | 886.60 | 884.57 | -2.03 | 887.65 | 1.05 | 3.08 | 61 |
| **Tributary AC** | | | | | | | | | | | |
| PAC2000L | 67 | 94 | PAC2000 | 2000 | 874.12 | 874.71 | 0.59 | 874.79 | 0.67 | 0.08 | 27 |
| Cleveland Avenue (5' RCP) | 53 | 72 | PAC2130 | 2130 | 875.41 | 878.47 | 3.06 | 879.09 | 3.68 | 0.62 | 19 |

City of New Berlin
Poplar Creek
10 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation (ft) | Future Depth (ft) | Future Elevation Increase | Future Flow Increase |
| PAC4150L | 59 | 93 | PAC4150 | 4150 | 892.28 | 893.01 | 0.73 | 893.23 | 0.95 | 0.22 | 34 |
| Willow Road (2.92'x2' Arch) | 33 | 40 | PAC4194 | 4194 | 892.78 | 897.25 | 4.47 | 897.47 | 4.69 | 0.22 | 7 |
| Willow Road Overflow | 40 | 71 | PAC4194 | 4194 | 896.60 | 897.25 | 0.65 | 897.47 | 0.87 | 0.22 | 31 |
| **Tributary AD** | | | | | | | | | | | |
| PAD0345L | 111 | 142 | PAD0345 | 345 | 857.70 | 861.95 | 4.25 | 862.49 | 4.79 | 0.54 | 31 |
| PAD2060L | 40 | 49 | PAD2060 | 2060 | 861.40 | 862.29 | 0.89 | 862.51 | 1.11 | 0.22 | 9 |
| 166th Street (3 5.5'x3.75' Box)) | 50 | 61 | PAD2113 | 2113 | 861.47 | 862.65 | 1.18 | 862.74 | 1.27 | 0.09 | 11 |
| **Tributary AE** | | | | | | | | | | | |
| PAE0335 | 138 | 161 | PAE0335 | 335 | 859.01 | 862.00 | 2.99 | 862.53 | 3.52 | 0.53 | 23 |
| Victor Road (3 4.88'x3' Arch) | 136 | 163 | PAE0384 | 384 | 859.53 | 862.06 | 2.53 | 862.70 | 3.17 | 0.64 | 27 |
| PAE1379 | 83 | 104 | PAE1379 | 1379 | 861.71 | 863.85 | 2.14 | 864.06 | 2.35 | 0.21 | 22 |
| Ryerson Drive (2 4.75'x3.17 Arch) | 87 | 104 | PAE1423 | 1423 | 862.22 | 864.05 | 1.83 | 864.32 | 2.10 | 0.27 | 17 |
| **Tributary B** | | | | | | | | | | | |
| PB0390L | 47 | 58 | PB0390 | 390 | 827.04 | 828.79 | 1.75 | 829.05 | 2.01 | 0.26 | 11 |
| C & NW Railroad (4' RCP) | 64 | 62 | NORTHRR | NORTHRR | 827.20 | 828.79 | 1.59 | 829.05 | 1.85 | 0.26 | (2) |
| **Tributary C** | | | | | | | | | | | |
| PC1595L | 8 | 8 | PC1595 | 1595 | 829.41 | 829.51 | 0.10 | 829.51 | 0.10 | 0.00 | 0 |
| PCGRVL2 (1.75' RCP) | 8 | 8 | PC1615 | 1615 | 829.88 | 831.28 | 1.40 | 831.33 | 1.45 | 0.05 | 0 |
| PC2205L | 9 | 9 | PC2205 | 2205 | 831.95 | 832.04 | 0.09 | 832.05 | 0.10 | 0.01 | 0 |
| Lincoln Avenue (2'x1.5' Arch) | 9 | 9 | PC2254 | 2254 | 833.32 | 837.61 | 4.29 | 838.11 | 4.79 | 0.50 | 0 |
| PC5034L | 38 | 48 | PC5034 | 5034 | 840.80 | 841.89 | 1.09 | 842.00 | 1.20 | 0.11 | 10 |
| PC7729L | 40 | 49 | PC7729 | 7729 | 847.98 | 848.68 | 0.70 | 848.74 | 0.76 | 0.06 | 9 |
| Cleveland Avenue (7.25'x5.25' Arch) | 41 | 50 | PC7818 | 7818 | 848.95 | 850.44 | 1.49 | 850.63 | 1.68 | 0.19 | 9 |
| PC10533L | 90 | 159 | PC10533 | 10533 | 884.20 | 884.67 | 0.47 | 884.80 | 0.60 | 0.13 | 69 |

City of New Berlin
Poplar Creek
25 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation (ft) | Future Depth (ft) | Future Elevation Increase | Future Flow Increase |
| **Mainstem** | | | | | | | | | | | |
| OUTFALL | 348 | 438 | P00000 | 0 | 822.30 | 825.40 | 3.10 | 825.67 | 3.37 | 0.27 | 90 |
| P01913L | 348 | 438 | P01913 | 1,913 | 822.50 | 827.29 | 4.79 | 827.55 | 5.05 | 0.26 | 90 |
| P03490L | 355 | 442 | P03490 | 3,490 | 823.40 | 828.15 | 4.75 | 828.35 | 4.95 | 0.20 | 87 |
| P03598L | 355 | 443 | P03588 | 3,588 | 823.45 | 828.41 | 4.96 | 828.71 | 5.26 | 0.30 | 88 |
| P03680L | 355 | 445 | P03680 | 3,680 | 823.50 | 828.45 | 4.95 | 828.76 | 5.26 | 0.31 | 90 |
| P07057L | 150 | 196 | P07057 | 7,057 | 837.00 | 839.27 | 2.27 | 839.59 | 2.59 | 0.32 | 46 |
| P09651L | 450 | 701 | P09651 | 9,651 | 847.50 | 848.59 | 1.09 | 848.76 | 1.26 | 0.17 | 251 |
| **Tributary A** | | | | | | | | | | | |
| PA0435L | 300 | 369 | PA0435 | 435 | 824.10 | 828.62 | 4.52 | 828.94 | 4.84 | 0.32 | 69 |
| PA1655L | 297 | 364 | PA1655 | 1,655 | 825.00 | 828.91 | 3.91 | 829.17 | 4.17 | 0.26 | 67 |
| PA3360L | 301 | 365 | SOUTHRR | 3,360 | 825.30 | 829.34 | 4.04 | 829.54 | 4.24 | 0.20 | 64 |
| PA10375L | 541 | 665 | PA10375 | 10,375 | 827.00 | 832.59 | 5.59 | 832.78 | 5.78 | 0.19 | 124 |
| PA10850L | 70 | 90 | PA10850 | 10,850 | 834.50 | 835.72 | 1.22 | 835.87 | 1.37 | 0.15 | 20 |
| PA12880L | 398 | 447 | PA12880 | 12,880 | 836.00 | 839.70 | 3.70 | 839.92 | 3.92 | 0.22 | 49 |
| PA13450L | 399 | 448 | PA13450 | 13,450 | 841.00 | 844.58 | 3.58 | 844.73 | 3.73 | 0.15 | 49 |
| PA16995L | 383 | 421 | PA16995 | 16995 | 845.89 | 850.82 | 4.93 | 850.98 | 5.09 | 0.16 | 38 |
| Cleveland Avenue (2 4.5' RCP) | 384 | 422 | PA17138 | 17138 | 846.54 | 855.47 | 8.93 | 856.60 | 10.06 | 1.13 | 38 |
| PA20253L | 410 | 507 | PA20253 | 20253 | 854.00 | 857.76 | 3.76 | 858.22 | 4.22 | 0.46 | 97 |
| PA20968L | 357 | 455 | PA20968 | 20968 | 855.88 | 861.87 | 5.99 | 862.09 | 6.21 | 0.22 | 98 |
| Calhoun Road (3 5' RCP) | 357 | 456 | PA21034 | 21034 | 856.28 | 862.34 | 6.06 | 862.86 | 6.58 | 0.52 | 99 |
| PA21314L | 229 | 280 | PA21314 | 21314 | 857.00 | 862.43 | 5.43 | 862.92 | 5.92 | 0.49 | 51 |
| PA21889L | 179 | 214 | PA21889 | 21889 | 858.46 | 862.56 | 4.10 | 863.02 | 4.56 | 0.46 | 35 |
| Calhoun Road ( 2 5' RCP) | 179 | 214 | PA21952 | 21952 | 858.69 | 862.57 | 3.88 | 863.03 | 4.34 | 0.46 | 35 |
| PA23632L | 175 | 210 | PA23632 | 23632 | 862.03 | 867.20 | 5.17 | 867.46 | 5.43 | 0.26 | 35 |
| Coffee Road (3 5.5' RCP) | 176 | 210 | PA23672 | 23672 | 862.44 | 867.23 | 4.79 | 867.51 | 5.07 | 0.28 | 34 |
| PA28197L | 230 | 300 | PA28197 | 28197 | 874.63 | 877.37 | 2.74 | 877.56 | 2.93 | 0.19 | 70 |
| Observatory Road (8.58'x5.92 Arch) | 254 | 318 | PA28237 | 28237 | 875.10 | 878.14 | 3.04 | 878.65 | 3.55 | 0.51 | 64 |
| PA30147L | 235 | 293 | PA30147 | 30147 | 879.90 | 883.71 | 3.81 | 883.85 | 3.95 | 0.14 | 58 |
| PA32172L | 188 | 212 | PA32172 | 32172 | 884.91 | 887.57 | 2.66 | 887.64 | 2.73 | 0.07 | 24 |
| Observatory Road (5.42'x3.33' Arch) | 236 | 302 | PA32214 | 32214 | 885.25 | 890.87 | 5.62 | 892.85 | 7.60 | 1.98 | 66 |
| **Tributary AB** | | | | | | | | | | | |
| PAB4480L | 65 | 162 | PAB4480 | 4480 | 873.94 | 875.13 | 1.19 | 875.87 | 1.93 | 0.74 | 97 |
| Cleveland Avenue (3.5' RCP) | 73 | 119 | PAB4611 | 4611 | 876.34 | 886.82 | 10.48 | 887.91 | 11.57 | 1.09 | 46 |
| Cleveland Road Overflow | 2 | 96 | PAB4611 | 4611 | 886.60 | 886.82 | 0.22 | 887.91 | 1.31 | 1.09 | 93 |
| **Tributary AC** | | | | | | | | | | | |
| PAC2000L | 93 | 119 | PAC2000 | 2000 | 874.12 | 874.78 | 0.66 | 874.86 | 0.74 | 0.08 | 26 |

City of New Berlin
Poplar Creek
25 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation (ft) | Future Depth (ft) | Future Elevation Increase | Future Flow Increase |
| Cleveland Avenue (5' RCP) | 76 | 95 | PAC2130 | 2130 | 875.41 | 879.27 | 3.86 | 880.06 | 4.65 | 0.79 | 19 |
| PAC4150L | 76 | 120 | PAC4150 | 4150 | 892.28 | 893.12 | 0.84 | 893.37 | 1.09 | 0.25 | 45 |
| Willow Road (2.92'x2' Arch) | 37 | 45 | PAC4194 | 4194 | 892.78 | 897.35 | 4.57 | 897.61 | 4.83 | 0.26 | 8 |
| Willow Road Overflow | 53 | 94 | PAC4194 | 4194 | 896.60 | 897.35 | 0.75 | 897.61 | 1.01 | 0.26 | 41 |
| **Tributary AD** | | | | | | | | | | | |
| PAD0345L | 151 | 185 | PAD0345 | 345 | 857.70 | 862.44 | 4.74 | 862.93 | 5.23 | 0.49 | 34 |
| PAD2060L | 52 | 63 | PAD2060 | 2060 | 861.40 | 862.48 | 1.08 | 862.96 | 1.56 | 0.48 | 11 |
| 166th Street | 64 | 78 | PAD2113 | 2113 | 861.47 | 862.77 | 1.30 | 862.98 | 1.51 | 0.21 | 14 |
| (3 5.5'x3.75' Box)) | | | | | | | | | | | |
| **Tributary AE** | | | | | | | | | | | |
| PAE0335 | 177 | 205 | PAE0335 | 335 | 859.01 | 862.48 | 3.47 | 862.97 | 3.96 | 0.49 | 28 |
| Victor Road | 176 | 207 | PAE0384 | 384 | 859.53 | 862.60 | 3.07 | 863.23 | 3.70 | 0.63 | 31 |
| (3 4.88'x3' Arch) | | | | | | | | | | | |
| PAE1379 | 109 | 133 | PAE1379 | 1379 | 861.71 | 864.12 | 2.41 | 864.34 | 2.63 | 0.22 | 24 |
| Ryerson Drive | 115 | 136 | PAE1423 | 1423 | 862.22 | 864.39 | 2.17 | 864.70 | 2.48 | 0.31 | 20 |
| (2 4.75'x3.17 Arch) | | | | | | | | | | | |
| **Tributary B** | | | | | | | | | | | |
| PB0390L | 66 | 85 | PB0390 | 390 | 827.04 | 829.34 | 2.30 | 829.54 | 2.50 | 0.20 | 20 |
| C & NW Railroad | 95 | 84 | NORTHRR | 440 | 827.20 | 829.34 | 2.14 | 829.54 | 2.34 | 0.20 | (11) |
| (4' RCP) | | | | | | | | | | | |
| **Tributary C** | | | | | | | | | | | |
| PC1595L | 13 | 39 | PC1595 | 1595 | 829.41 | 829.54 | 0.13 | 829.55 | 0.14 | 0.01 | 26 |
| PCGRVL2 (1.75' RCP) | 13 | 14 | PC1615 | 1615 | 829.88 | 832.89 | 3.01 | 833.40 | 3.52 | 0.51 | 1 |
| PC2205L | 33 | 43 | PC2205 | 2205 | 831.95 | 832.89 | 0.94 | 833.40 | 1.45 | 0.51 | 10 |
| Lincoln Avenue (2'x1.5' Arch) | 22 | 25 | PC2254 | 2254 | 833.32 | 838.60 | 5.28 | 838.69 | 5.37 | 0.09 | 4 |
| Lincoln Avenue Overflow | 22 | 32 | PC2254 | 2254 | 838.10 | 838.60 | 0.50 | 838.69 | 0.59 | 0.09 | 10 |
| PC5034L | 71 | 82 | PC5034 | 5034 | 840.80 | 842.20 | 1.40 | 842.29 | 1.49 | 0.09 | 11 |
| PC7729L | 69 | 80 | PC7729 | 7729 | 847.98 | 848.85 | 0.87 | 848.91 | 0.93 | 0.06 | 11 |
| Cleveland Avenue (7.25'x5.25' Arch | 71 | 82 | PC7818 | 7818 | 848.95 | 851.02 | 2.07 | 851.21 | 2.26 | 0.19 | 11 |
| PC10533L | 137 | 223 | PC10533 | 10533 | 884.20 | 884.75 | 0.55 | 884.88 | 0.68 | 0.13 | 86 |
| PC12423L | 25 | 33 | PC12423 | 12423 | 910.00 | 910.54 | 0.54 | 910.57 | 0.57 | 0.03 | 8 |

City of New Berlin
Poplar Creek
100 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation (ft) | Future Depth (ft) | Future Elevation Increase | Future Flow Increase |
| **Mainstem** | | | | | | | | | | | |
| OUTFALL | 662 | 736 | P00000 | 0 | 822.30 | 826.28 | 3.98 | 826.45 | 4.15 | 0.17 | 74 |
| P01913L | 663 | 737 | P01913 | 1,913 | 822.50 | 828.01 | 5.51 | 828.12 | 5.62 | 0.11 | 74 |
| P03490L | 665 | 737 | P03490 | 3,490 | 823.40 | 828.77 | 5.37 | 828.88 | 5.48 | 0.11 | 72 |
| P03598L | 666 | 737 | P03588 | 3,588 | 823.45 | 829.39 | 5.94 | 829.59 | 6.14 | 0.20 | 71 |
| P03680L | 666 | 737 | P03680 | 3,680 | 823.50 | 829.45 | 5.95 | 829.66 | 6.16 | 0.21 | 71 |
| P07057L | 280 | 340 | P07057 | 7,057 | 837.00 | 840.09 | 3.09 | 840.38 | 3.38 | 0.29 | 60 |
| P09651L | 737 | 1,050 | P09651 | 9,651 | 847.50 | 848.77 | 1.27 | 848.97 | 1.47 | 0.20 | 313 |
| **Tributary A** | | | | | | | | | | | |
| PA0435L | 564 | 622 | PA0435 | 435 | 824.10 | 829.68 | 5.58 | 829.89 | 5.79 | 0.21 | 58 |
| PA1655L | 556 | 615 | PA1655 | 1,655 | 825.00 | 829.81 | 4.81 | 830.00 | 5.00 | 0.19 | 59 |
| PA3360L | 547 | 602 | SOUTHRR | 3,360 | 825.30 | 830.07 | 4.77 | 830.23 | 4.93 | 0.16 | 55 |
| PA10375L | 832 | 940 | PA10375 | 10,375 | 827.00 | 832.94 | 5.94 | 833.05 | 6.05 | 0.11 | 108 |
| PA10850L | 115 | 125 | PA10850 | 10,850 | 834.50 | 836.03 | 1.53 | 836.10 | 1.60 | 0.07 | 10 |
| PA12880L | 504 | 532 | PA12880 | 12,880 | 836.00 | 840.16 | 4.16 | 840.25 | 4.25 | 0.09 | 28 |
| PA13450L | 505 | 533 | PA13450 | 13,450 | 841.00 | 844.86 | 3.86 | 844.94 | 3.94 | 0.08 | 28 |
| PA16995L | 478 | 501 | PA16995 | 16995 | 845.89 | 851.19 | 5.30 | 851.27 | 5.38 | 0.08 | 23 |
| Cleveland Avenue (2 4.5' RCP) | 480 | 502 | PA17138 | 17138 | 846.54 | 858.42 | 11.88 | 859.18 | 12.64 | 0.76 | 22 |
| PA20253L | 610 | 687 | PA20253 | 20253 | 854.00 | 858.65 | 4.65 | 859.23 | 5.23 | 0.58 | 77 |
| PA20968L | 518 | 596 | PA20968 | 20968 | 855.88 | 862.18 | 6.30 | 862.30 | 6.42 | 0.12 | 78 |
| Calhoun Road (3 5' RCP) | 519 | 597 | PA21034 | 21034 | 856.28 | 863.17 | 6.89 | 863.61 | 7.33 | 0.44 | 78 |
| PA21314L | 343 | 396 | PA21314 | 21314 | 857.00 | 863.21 | 6.21 | 863.63 | 6.63 | 0.42 | 53 |
| PA21889L | 344 | 396 | PA21889 | 21889 | 858.46 | 863.35 | 4.89 | 863.67 | 5.21 | 0.32 | 52 |
| Calhoun Road ( 2 5' RCP) | 344 | 397 | PA21952 | 21952 | 858.69 | 863.49 | 4.80 | 863.81 | 5.12 | 0.32 | 54 |
| PA23632L | 339 | 391 | PA23632 | 23632 | 862.03 | 868.22 | 6.19 | 868.36 | 6.33 | 0.14 | 52 |
| Coffee Road (3 5.5' RCP) | 339 | 393 | PA23672 | 23672 | 862.44 | 868.38 | 5.94 | 868.56 | 6.12 | 0.18 | 54 |
| PA28197L | 474 | 526 | PA28197 | 28197 | 874.63 | 877.94 | 3.31 | 878.03 | 3.40 | 0.09 | 52 |
| Observatory Road (8.58'x5.92 Arch) | 505 | 556 | PA28237 | 28237 | 875.10 | 880.16 | 5.06 | 880.59 | 5.49 | 0.43 | 51 |
| PA30147L | 484 | 535 | PA30147 | 30147 | 879.90 | 884.31 | 4.41 | 884.42 | 4.52 | 0.11 | 51 |
| PA32172L | 322 | 357 | PA32172 | 32172 | 884.91 | 887.98 | 3.07 | 888.02 | 3.11 | 0.04 | 35 |
| Observatory Road (5.42'x3.33' Arch) | 332 | 343 | PA32214 | 32214 | 885.25 | 893.56 | 8.31 | 894.10 | 8.85 | 0.54 | 11 |
| Observatory Road Overflow | 21 | 95 | PA32214 | 32214 | 893.25 | 893.56 | 0.31 | 894.10 | 0.85 | 0.54 | 74 |
| **Tributary AB** | | | | | | | | | | | |
| PAB4480L | 147 | 213 | PAB4480 | 4480 | 873.94 | 875.77 | 1.83 | 876.25 | 2.31 | 0.48 | 66 |
| Cleveland Avenue (3.5' RCP) | 114 | 136 | PAB4611 | 4611 | 876.34 | 887.52 | 11.18 | 888.37 | 12.03 | 0.85 | 22 |
| Cleveland Avenue Overflow | 47 | 175 | PAB4611 | 4611 | 886.60 | 887.52 | 0.92 | 888.37 | 1.77 | 0.85 | 128 |
| **Tributary AC** | | | | | | | | | | | |
| PAC2000L | 131 | 141 | PAC2000 | 2000 | 874.12 | 874.89 | 0.77 | 874.92 | 0.80 | 0.03 | 10 |
| Cleveland Avenue (5' RCP) | 115 | 126 | PAC2130 | 2130 | 875.41 | 882.61 | 7.20 | 883.92 | 8.51 | 1.31 | 11 |
| PAC4150L | 112 | 177 | PAC4150 | 4150 | 892.28 | 893.33 | 1.05 | 893.64 | 1.36 | 0.31 | 65 |
| Willow Road (2.92'x2' Arch) | 43 | 53 | PAC4194 | 4194 | 892.78 | 897.55 | 4.77 | 897.87 | 5.09 | 0.32 | 10 |

City of New Berlin
Poplar Creek
100 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation (ft) | Future Depth (ft) | Future Elevation Increase | Future Flow Increase |
| Willow Road Overflow | 83 | 144 | PAC4194 | 4194 | 896.60 | 897.55 | 0.95 | 897.87 | 1.27 | 0.32 | 61 |
| **Tributary AD** | | | | | | | | | | | |
| PAD0345L | 222 | 261 | PAD0345 | 345 | 857.70 | 863.22 | 5.52 | 863.64 | 5.94 | 0.42 | 39 |
| PAD2060L | 77 | 94 | PAD2060 | 2060 | 861.40 | 863.25 | 1.85 | 863.66 | 2.26 | 0.41 | 17 |
| 166th Street (3 5.5'x3.75' Box)) | 94 | 113 | PAD2113 | 2113 | 861.47 | 863.27 | 1.80 | 863.67 | 2.20 | 0.40 | 20 |
| **Tributary AE** | | | | | | | | | | | |
| PAE0335 | 247 | 279 | PAE0335 | 335 | 859.01 | 863.25 | 4.24 | 863.66 | 4.65 | 0.41 | 32 |
| Victor Road (3 4.88'x3' Arch) | 250 | 287 | PAE0384 | 384 | 859.53 | 863.49 | 3.96 | 864.20 | 4.67 | 0.71 | 37 |
| Victor Road Overflow | 0 | 1 | PAE0384 | 384 | 864.10 | 863.49 | -0.61 | 864.20 | 0.10 | 0.71 | 1 |
| PAE1379 | 164 | 199 | PAE1379 | 1379 | 861.71 | 864.61 | 2.90 | 864.88 | 3.17 | 0.27 | 35 |
| Ryerson Drive (2 4.75'x3.17 Arch) | 174 | 208 | PAE1423 | 1423 | 862.22 | 865.15 | 2.93 | 865.80 | 3.58 | 0.65 | 34 |
| **Tributary B** | | | | | | | | | | | |
| PB0390L | 87 | 99 | PB0390 | 390 | 827.04 | 830.07 | 3.03 | 830.23 | 3.19 | 0.16 | 11 |
| C & NW Railroad (4' RCP) | 139 | 115 | NORTHRR | 440 | 827.20 | 830.07 | 2.87 | 830.23 | 3.03 | 0.16 | (24) |
| **Tributary C** | | | | | | | | | | | |
| PC1595L | 140 | 167 | PC1595 | 1595 | 829.41 | 830.07 | 0.66 | 830.23 | 0.82 | 0.16 | 27 |
| PCGRVL2 (1.75' RCP) | 23 | 27 | PC1615 | 1615 | 829.88 | 834.17 | 4.29 | 834.20 | 4.32 | 0.03 | 5 |
| PCGRVL2R | 29 | 34 | PC1615 | 1615 | 833.90 | 834.17 | 0.27 | 834.20 | 0.30 | 0.03 | 5 |
| PC2205L | 106 | 117 | PC2205 | 2205 | 831.95 | 834.17 | 2.22 | 834.20 | 2.25 | 0.03 | 11 |
| Lincoln Avenue (2'x1.5' Arch) | 28 | 29 | PC2254 | 2254 | 833.32 | 839.13 | 5.81 | 839.20 | 5.88 | 0.07 | 0 |
| Lincoln Avenue Overflow | 93 | 105 | PC2254 | 2254 | 838.10 | 839.13 | 1.03 | 839.20 | 1.10 | 0.07 | 12 |
| PC5034L | 141 | 154 | PC5034 | 5034 | 840.80 | 842.69 | 1.89 | 842.76 | 1.96 | 0.07 | 13 |
| PC7729L | 135 | 148 | PC7729 | 7729 | 847.98 | 849.12 | 1.14 | 849.17 | 1.19 | 0.05 | 13 |
| Cleveland Avenue (7.25'x5.25' Arch) | 137 | 150 | PC7818 | 7818 | 848.95 | 852.06 | 3.11 | 852.25 | 3.30 | 0.19 | 13 |
| PC10533L | 227 | 353 | PC10533 | 10533 | 884.20 | 884.87 | 0.67 | 885.01 | 0.81 | 0.14 | 126 |
| PC12423L | 40 | 50 | PC12423 | 12423 | 910.00 | 910.67 | 0.67 | 910.70 | 0.70 | 0.03 | 9 |

City of New Berlin
Underwood Creek
2 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation | Future Depth | Future Elevation Increase | Future Flow Increase |
| Meadow Lane (4'x14' Box) | 112 | 112 | U00000 | 0 | 751.95 | 752.71 | 0.76 | 752.71 | 0.76 | 0.00 | 0 |
| Meadow Lane (4'x9' Box) | 89 | 97 | U01385 | 1,385 | 756.88 | 759.42 | 2.54 | 759.58 | 2.70 | 0.16 | 8 |
| CHAN3 | 57 | 69 | U03025 | 3,025 | 777.24 | 779.08 | 1.84 | 779.21 | 1.97 | 0.13 | 12 |
| Elm Grove Road (3.92'x5.92' Arch) | 60 | 74 | U03065 | 3,065 | 778.24 | 779.17 | 0.93 | 779.28 | 1.04 | 0.11 | 13 |
| CHAN2 | 42 | 49 | U03815 | 3,815 | 787.06 | 788.69 | 1.63 | 788.79 | 1.73 | 0.10 | 8 |
| Arcadian Drive (3.92'x5.92' Arch) | 46 | 54 | U03847 | 3,847 | 787.49 | 788.83 | 1.34 | 788.96 | 1.47 | 0.13 | 8 |
| CHAN1B | 23 | 28 | U04847 | 4,847 | 802.40 | 803.87 | 1.47 | 803.98 | 1.58 | 0.11 | 5 |
| CHAN1A | 23 | 28 | U06047 | 6,047 | 821.40 | 822.15 | 0.75 | 822.22 | 0.82 | 0.07 | 5 |
| Greenfield Avenue (5' RCP) | 30 | 49 | U06781 | 6,781 | 828.21 | 830.59 | 2.38 | 831.42 | 3.21 | 0.83 | 20 |
| Greenfield Avenue (5' RCP) | 23 | 28 | U06701 | 6,701 | 828.00 | 830.09 | 2.09 | 830.33 | 2.33 | 0.24 | 5 |

City of New Berlin
Underwood Creek
10 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation | Future Depth | Future Elevation Increase | Future Flow Increase |
| Meadow Lane (4'x14' Box) | 140 | 148 | U00000 | 0 | 751.95 | 752.71 | 0.76 | 752.72 | 0.77 | 0.01 | 8 |
| Meadow Lane (4'x9' Box) | 140 | 148 | U01385 | 1,385 | 756.88 | 760.35 | 3.47 | 760.77 | 3.89 | 0.42 | 8 |
| CHAN3 | 102 | 113 | U03025 | 3,025 | 777.24 | 779.54 | 2.30 | 779.64 | 2.40 | 0.10 | 11 |
| Elm Grove Road (3.92'x5.92' Arch) | 103 | 117 | U03065 | 3,065 | 778.24 | 779.49 | 1.25 | 779.59 | 1.35 | 0.10 | 14 |
| CHAN2 | 85 | 94 | U03815 | 3,815 | 787.06 | 789.12 | 2.06 | 789.17 | 2.11 | 0.05 | 10 |
| Arcadian Drive (3.92'x5.92' Arch) | 85 | 94 | U03847 | 3,847 | 787.49 | 789.46 | 1.97 | 789.66 | 2.17 | 0.20 | 10 |
| CHAN1B | 57 | 64 | U04847 | 4,847 | 802.40 | 804.21 | 1.81 | 804.25 | 1.85 | 0.04 | 7 |
| CHAN1A | 57 | 65 | U06047 | 6,047 | 821.40 | 822.67 | 1.27 | 822.77 | 1.37 | 0.10 | 7 |
| Greenfield Avenue (5' RCP) | 47 | 81 | U06781 | 6,781 | 828.21 | 831.44 | 3.23 | 832.61 | 4.40 | 1.17 | 34 |
| Greenfield Avenue (5' RCP) | 57 | 65 | U06701 | 6,701 | 828.00 | 831.44 | 3.44 | 831.70 | 3.70 | 0.26 | 7 |

City of New Berlin
Underwood Creek
25 Year/3 Hour Precipitation Event

| Conduit | | | Upstream Junction | | | Existing Conditions | | Future Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Existing Flow (CFS) | Future Flow (CFS) | Junction ID | Station (ft) | Invert Elevation | Calculated Water Surface Elevation (ft) | Existing Depth (ft) | Calculated Water Surface Elevation | Future Depth | Future Elevation Increase | Future Flow Increase |
| Meadow Lane (4'x14' Box) | 171 | 173 | U00000 | 0 | 751.95 | 752.79 | 0.84 | 752.80 | 0.85 | 0.01 | 2 |
| Meadow Lane Overflow | 13 | 30 | U01385 | 1,385 | 763.00 | 763.41 | 0.41 | 763.66 | 0.66 | 0.25 | 18 |
| Meadow Lane (4'x9' Box) | 171 | 173 | U01385 | 1,385 | 756.88 | 763.41 | 6.53 | 763.66 | 6.78 | 0.25 | 2 |
| CHAN3 | 149 | 161 | U03025 | 3,025 | 777.24 | 779.78 | 2.54 | 779.82 | 2.58 | 0.04 | 12 |
| Elm Grove Road (3.92'x5.92' Arch) | 150 | 161 | U03065 | 3,065 | 778.24 | 779.81 | 1.57 | 779.88 | 1.64 | 0.07 | 11 |
| CHAN2 | 124 | 134 | U03815 | 3,815 | 787.06 | 789.30 | 2.24 | 789.34 | 2.28 | 0.04 | 10 |
| Arcadian Drive (3.92'x5.92' Arch) | 124 | 134 | U03847 | 3,847 | 787.49 | 790.42 | 2.93 | 790.65 | 3.16 | 0.23 | 10 |
| CHAN1B | 83 | 90 | U04847 | 4,847 | 802.40 | 804.46 | 2.06 | 804.53 | 2.13 | 0.07 | 7 |
| CHAN1A | 83 | 90 | U06047 | 6,047 | 821.40 | 823.01 | 1.61 | 823.10 | 1.70 | 0.09 | 7 |
| Greenfield Avenue (5' RCP) | 61 | 104 | U06781 | 6,781 | 828.21 | 832.41 | 4.20 | 833.95 | 5.74 | 1.54 | 43 |
| Greenfield Avenue (5' RCP) | 83 | 90 | U06701 | 6,701 | 828.00 | 832.40 | 4.40 | 832.70 | 4.70 | 0.30 | 7 |

# SUMMARY REPORT ON AN EVALUATION OF THE WETLANDS OF THE CITY OF NEW BERLIN, WAUKESHA COUNTY, WISCONSIN, FOR THEIR POTENTIAL FOR STORM WATER DETENTION AND SURFACE WATER QUALITY IMPROVEMENT

**December 1997**

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## Introduction

Two well-documented functional values of wetlands are their capacity to detain surges of storm water runoff, and their ability to remove sediment and nutrients from surface water. The large storage capacity and controlled outflow of many wetlands detains storm water and releases it slowly following a storm event, thereby dampening both extreme peak flows, and the low flows associated with prolonged dry periods. The long detention time of water in wetlands, the complex flow patterns developed by the structure of the wetland vegetation, and nutrient uptake by wetland plants, combine to make many wetlands very effective for removal and storage of sediment and for the removal and transformation of some dissolved nutrients from surface waters. The wetlands of the City of New Berlin were evaluated both for their existing capacity to contribute to storm water management, and for their potential to provide additional benefits with modification or restoration.

When New Berlin was surveyed in the 1830's (before extensive settlement), most of the upland area of the city was covered with an almost unbroken forest dominated by sugar maple, basswood, red oak, white oak, and black oak. The City of New Berlin is just north and east of the boundary of some of Wisconsin's "fire maintained" plant communities such as oak forest, oak openings, and prairie. The large wetlands in the northwestern and west central parts of New Berlin were depicted as open wetlands of marsh, sedge meadow, and wet prairie on the map of the "Original Vegetation Cover of Wisconsin" (Finley 1976). These wetlands were probably maintained in an open, treeless, condition by fires which swept into the wetlands from the oak openings in adjacent Waukesha. Smaller, more isolated, wetlands and wetlands further east in New Berlin were probably

forested, supporting cedar-tamarack conifer swamp, hardwood swamp, or floodplain forest, although these areas were not large enough to be mapped (Finley 1976). All of the wetlands of New Berlin have been disturbed since settlement, most of them severely disturbed. I found only one conifer swamp (white cedar and tamarack) remaining in the city, and only very small and isolated areas having even moderate quality sedge meadows. Unlike the wildlife habitat functions of wetlands, the ability of wetlands to improve quality and flow characteristics of surface water is not negatively affected by the replacement of native vegetation with the plant communities which typically colonize after severe disturbance. Most of New Berlin's wetlands have been ditched, and many have been tiled, however, which does seriously reduce their ability to provide water quality functional values.

Methods

There are two conceptual measures, "Effectiveness" and "Opportunity", which are useful for evaluating the potential water quality and water detention values of wetlands. These concepts, and a methodology for evaluating wetland functions are developed in: Adamus, P.R., Clairain, E.J., Jr., Smith, R.D., and Young, R.E. 1987. "Wetland Evaluation Technique (WET); Volume II: Methodology, " Operational Draft Technical Report Y-87-__, US Army Engineer Waterways Experiment Station, Vicksburg, Miss. Effectiveness assesses the capability of a wetland to perform a function based on the features of the wetland itself. For the storm water detention and water quality functions of interest to this project these features are primarily the physical characteristics of the wetland such as size, slope, and the physical traits of the inlet and outlet. Effectiveness does not evaluate the current opportunity for the wetland to perform the function, which with respect to flow and quality functions is based on the delivery of runoff, sediment, and nutrient loading to the wetland. Opportunity assesses the opportunity that a wetland has to perform a function. For example, a wetland may posses the physical attributes required to perform flood flow alteration, but if the wetland is positioned in the watershed where it will not receive much runoff, it will not have the opportunity to perform a storm water detention function.

With respect to development of a storm water management plan for New Berlin both effectiveness and opportunity are important measures of value of a wetland area, however both of these functional features can change over time with changes in land use or with intentional changes to the wetland characteristics. For planning purposes the effectiveness of the wetland based on physical traits may be more important than the opportunity based on watershed characteristics. The loading of runoff, sediment, and nutrients to a specific wetland will change as the land use surrounding the wetland changes. For planning storm water management it may, therefore, be more important to evaluate the potential effectiveness of the wetland to perform desirable water quality functions, than it is to assess the current opportunity for that function. If a wetland area has a tremendous capacity, ie. effectiveness, to perform a function, in many cases the opportunity can be provided through the planning and design process.

I attempted to locate and roughly map the boundaries of all wetlands over two acres in area in the City of New Berlin using the following materials: 1) 1" = 100' scale, 2' contour interval, topographic maps. These maps had sub-basin or hydrologic unit boundaries delineated. 2) 1995 SEWRPC aerial photographs covering the entire area. 3) DNR, 1986, Final Wetland Inventory Maps for New Berlin. 4) NRCS Draft Wetland Inventory Maps showing an estimate of the boundaries of wetland, farmed wetland, and prior-converted wetland areas. Nearly every area determined to be wetland using these materials was field inspected (at least from the nearest roadway), and in the process I drove every rural roadway in the City of New Berlin. Over half of all of the identified

To obtain a standardized scoring or ranking for describing the relative water quality and flood alteration values of wetlands in the project area, wetlands were rated from none = 0, low = 1, to very high = 6, for 1) existing capacity or effectiveness, 2) existing opportunity, and 3) potential to add capacity or effectiveness with modification or restoration. These scores or rankings can be multiplied by the area of each wetland to obtain an index of total relative value or potential of the wetland. Any wetland area having a high or very high additional potential is an excellent candidate for more thorough study as a restoration site if it is located in an area where storm water could be delivered, or where additional capacity would be desirable.

Although the primary focus of this study was storm water management potential, wetlands having exceptionally high value for wildlife, native vegetation, or recreational opportunities were noted. These wetlands were field inspected to a limited extent to confirm their suspected high natural area value.

Summary of Results

The basic results of the study are presented in tabular format showing the summary evaluation of each identified wetland area. A key to the codes and abbreviations used in the table is as follows:

HU = Hydrologic Unit (or sub-basin) identification number;
Wet. No. = An identifying number assigned to each wetland;
Wetl. Area = Area (acres) of the individual wetlands in the hydrologic unit;
Sec = Section(s);
1/4 = Quarter section(s);
E/PC = Majority of the identified area is an Existing wetland, or is Prior Converted wetland no longer identified as wetland on the wetland inventory maps:
0 = prior converted,
1 = existing wetland;
Veg = General vegetation types:
FRM = farmed,
PND = constructed pond,
E1K = Emergent/wet meadow, perennial vegetation on wet soil,
E2K = Emergent/wet meadow, perennial narrow-leaved (eg. cattail) on wet soil,
E2H = Emergent/wet meadow, perennial narrow-leaved (eg. cattail) in standing water,
S3K = Shrub vegetation on wet soil,
S3H = Shrub vegetation in standing water,
T2K = Needle-leaved deciduous (ie. tamarack) swamp forest,
T3K = Broad-leaved deciduous swamp forest;
Src = Source of sediment and nutrient loading:
N = none,
F = farm,
R = residential,
H = highway,
I = industrial or commercial;

Cst = Surface water outlet constriction:
- O = none,
- D = depressional wetland, no outlet,
- N = natural constriction,
- C = culvert or bridge;

Dth = Wetland substantially impacted by presence of a ditch or outlet alteration:
- 0 = no,
- 1 = yes;

Slp = Average slope of the wetland surface (feet/0.25 miles):
- 1 = 30'/0.25 miles,
- 2 = 25',
- 3 = 20',
- 4 = 15',
- 5 = 10',
- 6 = 7.5',
- 7 = 5',
- 8 = 2.5'/0.25 miles,
- 9 = flat;

Val = Current value (ie. effectiveness, or capacity):
- 0 = none,
- 1 = low,
- 2 = low to moderate,
- 3 = moderate,
- 4 = moderate to high,
- 5 = high,
- 6 = very high;

Add Pot = Potential for additional effectiveness (same scale as current value);

Imp = Possible methods for improvement of effectiveness:
- C = control outflow,
- D = ditch modification (filling or rerouting),
- S = slope changes;

Opp = Current opportunity (same scale as current value);

Val Acres = Acreage with a current value (effectiveness) of moderately-high or higher;

Pot Acres = Acreage with a potential for additional effectiveness that is moderately-high or higher.

This study identified 82 wetland areas, totaling 2,800 acres, in the City of New Berlin, including existing wetlands and prior converted wetlands with potential for restoration of surface water improvement functional values. The area of New Berlin is approximately 36.75 $mi^2$ (23,500 acres) so the existing or restorable wetland is at least 12% of the land area of the City. The quality of existing wetlands for surface water improvement is variable; approximately 1,145 acres (41% of studied wetland area) have at least moderately high value for surface water quality and flow improvement. 1,980 acres (71% of the total acreage) have at least moderately high additional potential for surface water improvement. Most of this area with high potential is prior converted wetland and most of it has been ditched. Prior converted wetlands comprise 30 (37%) of the 82 wetland areas. Prior converted wetlands tend to be some of the larger wetland acreages, so these 30 prior converted wetland areas occupy 1,590 acres, or 57% of the summarized wetland area. Ditching has had a substantial impact on the hydrology of 61 (74%) of the 82 wetlands of New Berlin.

The existing wetlands are not distributed uniformly across the City of New Berlin. The most intensively developed areas of the City have the lowest remaining acreage of wetland because of historical drainage and filling of wetlands in the developed areas. There is a strong negative correlation between the current estimated value, or effectiveness, for surface water improvement and the estimated potential for added value with restoration or modification. Most wetlands that already have high functional value possess little additional potential, and conversely, most wetlands with little current value have high additional potential. The part of New Berlin with the highest potential for the use of wetlands for storm water management is the northwest part of the City. Of the 2,800 total wetland acres inventoried in New Berlin, 1982 acres (71% of the total) are in the Poplar River watershed. Most of this land is in extensive prior converted wetlands along the drainage ditches which form the current waterways. In general there is a tremendous capacity to utilize wetlands for storm water management in the City of New Berlin.

All of the wetlands I inspected in the City of New Berlin were disturbed, most of them severely. I found only one conifer swamp despite the fact that this was probably one of the most common wetland vegetation types in the city before settlement and extensive disturbance of wetlands. Only very small areas of natural sedge meadow were found remaining in the city.

| WATERSHED | HU | Wet. No. | Wetl. Area | Sec | 1/4 | E/ PC | Veg | Src | Cst | Dth | Slp | Val | Add Pot | Imp | Opp | Val Acres | Pot Acres |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Underwood | 1A010 | | | | | | | | | | | | | | | 0 | 0 |
| Underwood | 1A020 | | | | | | | | | | | | | | | 0 | 0 |
| Underwood | 1A030 | | | | | | | | | | | | | | | 0 | 0 |
| Underwood | 1A031 | | | | | | | | | | | | | | | 0 | 0 |
| Underwood | 1A032 | | | | | | | | | | | | | | | 0 | 0 |
| Total acres | | | 0 | | | | | | | | | | | | | | |
| Upper Root | 2A010 | | | | | | | | | | | | | | | 0 | 0 |
| Upper Root | 2A020 | | | | | | | | | | | | | | | 0 | 0 |
| Upper Root | 2A030 | | | | | | | | | | | | | | | 0 | 0 |
| Upper Root | 2A040 | | | | | | | | | | | | | | | 0 | 0 |
| Upper Root | 2A050 | | | | | | | | | | | | | | | 0 | 0 |
| Upper Root | 2A060 | | | | | | | | | | | | | | | 0 | 0 |
| Upper Root | 2B010 | | | | | | | | | | | | | | | 0 | 0 |
| Upper Root | 2B015 | | | | | | | | | | | | | | | 0 | 0 |
| Upper Root | 2B020 | | | | | | | | | | | | | | | 0 | 0 |
| Upper Root | 2B030 | | | | | | | | | | | | | | | 0 | 0 |
| Upper Root | 2B040 | 11-1 | 4.5 | 11 | SE | 1 | E2H | R | N | 0 | 9 | 6 | 1 | | 6 | 4.5 | 0 |
| Upper Root | 2B050 | 14-1 | 1.8 | 14 | NE | 1 | E2K | R | N | 0 | 8 | 5 | 2 | | 5 | 1.8 | 0 |
| Upper Root | 2B060 | | | | | | | | | | | | | | | 0 | 0 |
| Upper Root | 2C010 | | | | | | | | | | | | | | | 0 | 0 |
| Upper Root | 2D010 | | | | | | | | | | | | | | | 0 | 0 |
| Upper Root | 2D020 | | | | | | | | | | | | | | | 0 | 0 |
| Upper Root | 2D030 | | | | | | | | | | | | | | | 0 | 0 |
| Upper Root | 2D040 | | | | | | | | | | | | | | | 0 | 0 |
| Upper Root | 2E010 | | | | | | | | | | | | | | | 0 | 0 |
| Upper Root | 2E011 | | | | | | | | | | | | | | | 0 | 0 |
| Upper Root | 2E020 | | | | | | | | | | | | | | | 0 | 0 |
| Upper Root | 2E030 | | | | | | | | | | | | | | | 0 | 0 |
| Upper Root | 2E040 | | | | | | | | | | | | | | | 0 | 0 |
| Upper Root | 2E050 | | | | | | | | | | | | | | | 0 | 0 |
| Upper Root | 2E060 | | | | | | | | | | | | | | | 0 | 0 |
| Upper Root | 2E070 | 36-1 | 3.6 | 36 | NE | 1 | E1K | R | C | 0 | 9 | 6 | 1 | | 6 | 3.6 | 0 |
| | | 36-2 | 6.9 | 36 | NE | 1 | E1K | R | C | 0 | 9 | 6 | 1 | | 6 | 6.9 | 0 |
| Upper Root | 2E071 | | | | | | | | | | | | | | | 0 | 0 |
| Upper Root | 2E080 | | | | | | | | | | | | | | | 0 | 0 |
| Upper Root | 2E090 | 36-3 | 12 | 36 | NE | 1 | E1K/T3K/S3K | R | C | 0 | 9 | 6 | 1 | | 6 | 12 | 0 |
| | | 36-4 | 8.8 | 36 | NW | 1 | E2H | R | N | 0 | 9 | 5 | 2 | | 5 | 8.8 | 0 |
| Upper Root | 2F010 | | | | | | | | | | | | | | | 0 | 0 |
| Total acres | | | 37.6 | | | | | | | | | | | | | | |
| Deer Creek | 3A010 | 2-1 | 3.6 | 2 | NW | 1 | E2K/S3K/T3K | R | N | 0 | 8 | 5 | 1 | | 4 | 3.6 | 0 |
| | | 2-2 | 2.7 | 2 | NW | 1 | E2K | RHI | C | 0 | 2 | 4 | 3 | CS | 5 | 2.7 | 0 |
| | | 3-1 | 25.2 | 3 | NE | 1 | E2K/S3K/T3K | R | O | 0 | 7 | 5 | 1 | | 6 | 25.2 | 0 |
| | | 3-2 | 7.1 | 3 | NW | 1 | E2K/S3K/T3K | R | O | 0 | 7 | 4 | 2 | | 6 | 7.1 | 0 |
| Deer Creek | 3A011 | | | | | | | | | | | | | | | 0 | 0 |
| Deer Creek | 3A020 | | | | | | | | | | | | | | | 0 | 0 |
| Deer Creek | 3A030 | | | | | | | | | | | | | | | 0 | 0 |
| Deer Creek | 3A031 | | | | | | | | | | | | | | | 0 | 0 |
| Deer Creek | 3A032 | | | | | | | | | | | | | | | 0 | 0 |
| Deer Creek | 3A033 | 3-3 | 11.7 | 3 | SE,SW | 1 | E2K/S3K | RI | C | 1 | 7 | 4 | 3 | C | 6 | 11.7 | 0 |
| Deer Creek | 3A040 | 11-2 | 13 | 11 | SW | 1 | S3K/T3K | R | C | 1 | 6 | 5 | 3 | D | 5 | 13 | 0 |
| Deer Creek | 3A041 | | | | | | | | | | | | | | | 0 | 0 |
| Deer Creek | 3A042 | | | | | | | | | | | | | | | 0 | 0 |
| Deer Creek | 3A043 | | | | | | | | | | | | | | | 0 | 0 |
| Deer Creek | 3A044 | | | | | | | | | | | | | | | 0 | 0 |
| Deer Creek | 3A050 | 14-3 | 16.5 | 14 | SW | 1 | E1K/T3K | RI | O | 1 | 6 | 3 | 5 | DC | 5 | 0 | 16.5 |
| Deer Creek | 3A060 | 14-2 | 52.9 | 14 | SE,SW | 0 | FRM | RIF | O | 1 | 5 | 1 | 6 | DC | 5 | 0 | 52.9 |
| Deer Creek | 3A070 | 23-2 | 39.3 | 23 | NE,NW | 0 | FRM | RIF | O | 1 | 5 | 1 | 6 | DC | 5 | 0 | 39.3 |
| Deer Creek | 3A080 | | | | | | | | | | | | | | | 0 | 0 |
| Total area | | | 172 | | | | | | | | | | | | | | |

| WATERSHED | HU | Wet. No. | Wetl. Area | Sec | 1/4 | E/ PC | Veg | Src | Cst | Dth | Slp | Val | Add Pot | Imp | Opp | Val Acres | Pot Acres |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Calhoun | 4A010 | 21-4 | 8.2 | 21 | SE | 0 | FRM | FR | C | 1 | 9 | 1 | 6 | DC | 5 | 0 | 8.2 |
| Calhoun | 4A020 | | | | | | | | | | | | | | | 0 | 0 |
| Calhoun | 4A030 | | | | | | | | | | | | | | | 0 | 0 |
| Calhoun | 4B010 | | | | | | | | | | | | | | | 0 | 0 |
| Calhoun | 4B020 | | | | | | | | | | | | | | | 0 | 0 |
| Calhoun | 4C010 | 23-1 | 3.7 | 23 | SW | 1 | T3K/S3K | R | N | 0 | 7 | 5 | 0 | | 5 | 3.7 | 0 |
| | | 27-1 | 43.7 | 27 | NE,NW | 1 | S3K/E2K | FR | N | 1 | 5 | 5 | 3 | D | 4 | 43.7 | 0 |
| | | 27-2 | 9.7 | 27 | NW | 0 | FRM | FR | O | 1 | 6 | 1 | 4 | DS | 4 | 0 | 9.7 |
| | | 27-4 | 11.6 | 27 | NE | 0 | FRM | HFR | C | 1 | 8 | 0 | 6 | DCS | 6 | 0 | 11.6 |
| Calhoun | 4C020 | 26-1 | 12.2 | 26 | NW,SW | 0 | E2K/E2H/FRM | HI | C | 1 | 8 | 3 | 6 | DC | 6 | 0 | 12.2 |
| Calhoun | 4C030 | 26-2 | 5.6 | 26 | SW | 1 | E1K | HI | C | 0 | 8 | 3 | 5 | C | 5 | 0 | 5.6 |
| Calhoun | 4C040 | 27-3 | 24.1 | 27 | SE | 0 | FRM | HRF | N | 1 | 9 | 0 | 6 | CDS | 6 | 0 | 24.1 |
| Calhoun | 4C050 | 28-1 | 10.8 | 28 | SE | 0 | FRM | RF | C | 1 | 5 | 0 | 4 | CDS | 6 | 0 | 10.8 |
| Calhoun | 4C060 | 33-1 | 25.4 | 33 | NE | 0 | FRM | HFR | O | 1 | 8 | 0 | 6 | DCS | 6 | 0 | 25.4 |
| Calhoun | 4C070 | 33-2 | 50 | 33 | NE,SW | 1 | E1K/T3K/FRM | HRF | N | 1 | 8 | 5 | 3 | D | 6 | 50 | 0 |
| Calhoun | 4C080 | 32-1 | 29.8 | 32/33 | SE/SW | 1 | E2H/E2K | HR | NC | 0 | 8 | 6 | 1 | | 6 | 29.8 | 0 |
| Calhoun | 4C085 | | | | | | | | | | | | | | | 0 | 0 |
| Calhoun | 4C090 | 32-2 | 7.6 | 32 | SE | 1 | E2K | R | NC | 0 | 9 | 6 | 1 | | 5 | 7.6 | 0 |
| Calhoun | 4D010 | | | | | | | | | | | | | | | 0 | 0 |
| Calhoun | 4E010 | | | | | | | | | | | | | | | 0 | 0 |
| Calhoun | 4E020 | | | | | | | | | | | | | | | 0 | 0 |
| Calhoun | 4E030 | | | | | | | | | | | | | | | 0 | 0 |
| Calhoun | 4E040 | | | | | | | | | | | | | | | 0 | 0 |
| Calhoun | 4E050 | | | | | | | | | | | | | | | 0 | 0 |
| Calhoun | 4E060 | | | | | | | | | | | | | | | 0 | 0 |
| Calhoun | 4F010 | | | | | | | | | | | | | | | 0 | 0 |
| Total area | | | 242.4 | | | | | | | | | | | | | | |
| Tess Crnrs | 5A010 | 26-3 | 3.8 | 26 | SW | 1 | S3K/T3K | R | C | 1 | 6 | 4 | 3 | DC | 4 | 3.8 | 0 |
| | | 26-4 | 14.8 | 26 | SE | 1 | S3K/T3K/E1K | R | N | 1 | 6 | 4 | 4 | DC | 4 | 14.8 | 14.8 |
| Tess Crnrs | 5A020 | 34-1 | 18.1 | 34 | NE,SE | 1 | E1K/T3K | FR | O | 1 | 7 | 4 | 4 | DC | 3 | 18.1 | 18.1 |
| | | 34-2 | 30.4 | 34/35 | SE/SW | 0 | FRM | FR | O | 1 | 7 | 3 | 5 | DCS | 3 | 0 | 30.4 |
| | | 35-1 | 10.4 | 35 | NW | 0 | FRM | FR | O | 1 | 7 | 0 | 6 | DC | 4 | 0 | 10.4 |
| | | 35-2 | 22.6 | 35 | SE | 0 | FRM | FR | N | 1 | 9 | 0 | 6 | DC | 4 | 0 | 22.6 |
| | | 36-5 | 6.3 | 36 | NW | 1 | E2H | F | N | 0 | 7 | 5 | 2 | C | 3 | 6.3 | 0 |
| | | 36-6 | 10.5 | 36 | NW | 1 | S3K | F | N | 0 | 7 | 5 | 2 | C | 3 | 10.5 | 0 |
| Tess Crnrs | 5A030 | | | | | | | | | | | | | | | 0 | 0 |
| Total area | | | 116.9 | | | | | | | | | | | | | | |
| Poplar | 6A010 | 8-1 | 137.8 | 8/9 | NE,SE/NW,SW | 0 | FRM/S3K/T3K | F | O | 1 | 6 | 2 | 5 | DC | 3 | 0 | 137.8 |
| | | 8-2 | 52 | 8 | NE,NW | 1 | S3K/E2K/T3K | F | O | 1 | 6 | 4 | 3 | D | 3 | 52 | 0 |
| | | 8-3 | 11.8 | 8 | SW | 1 | E2K/FRM | F | C | 0 | 4 | 3 | 5 | CS | 3 | 0 | 11.8 |
| Poplar | 6A011 | 8-4 | 3.3 | 8 | SE | 1 | T3K/S3K | R | NC | 0 | 4 | 4 | 2 | | 4 | 3.3 | 0 |
| Poplar | 6A020 | 9-1 | 62 | 8/9 | NE/NE,NW,SE,SW | 1 | S3K/T3K | RFI | O | 0 | 7 | 5 | 1 | | 4 | 62 | 0 |
| Poplar | 6A021 | 9-2 | 6.6 | 9 | NW | 1 | E2K | FI | O | 1 | 4 | 4 | 4 | DC | 3 | 6.6 | 6.6 |
| Poplar | 6A022 | 9-3 | 9.3 | 9 | SW | 0 | E2K/FRM | RI | C | 1 | 7 | 3 | 5 | DC | 5 | 0 | 9.3 |
| Poplar | 6A023 | 17-2 | 50.7 | 8/17/16 | SE/NE/NW | 1 | E2K/S3K | FR | O | 1 | 7 | 4 | 3 | D | 4 | 50.7 | 0 |
| Poplar | 6A030 | | | | | | | | | | | | | | | 0 | 0 |
| Poplar | 6A040 | | | | | | | | | | | | | | | 0 | 0 |
| Poplar | 6A041 | 15-2 | 95.4 | 15 | NW | 0 | FRM/E1K | IR | O | 1 | 8 | 4 | 5 | DC | 5 | 95.4 | 95.4 |
| | | 15-4 | 22.1 | 15 | SW | 0 | FRM | FR | O | 1 | 7 | 3 | 5 | DCS | 4 | 0 | 22.1 |
| Poplar | 6A042 | 15-1 | 8.8 | 15 | NE/NW | 1 | T3K/E1K | RI | O | 1 | 5 | 3 | 5 | DC | 6 | 0 | 8.8 |
| Poplar | 6A043 | | | | | | | | | | | | | | | 0 | 0 |
| Poplar | 6A044 | | | | | | | | | | | | | | | 0 | 0 |
| Poplar | 6A050 | | | | | | | | | | | | | | | 0 | 0 |
| Poplar | 6A060 | 15-3 | 95.3 | 15/16 | SW/SE | 0 | FRM | FR | O | 1 | 8 | 2 | 5 | D | 4 | 0 | 95.3 |
| | | 16-1 | 17.4 | 16 | SE | 1 | T3K | FR | O | 1 | 8 | 4 | 4 | D | 4 | 17.4 | 17.4 |
| Poplar | 6A070 | 21-2 | 5.8 | 21 | NW | 1 | E1K/S3K | FR | O | 1 | 7 | 4 | 4 | DC | 4 | 5.8 | 5.8 |
| Poplar | 6A071 | 16-2 | 140.9 | 16/17/21/20 | SW/SE/NW/NE | 0 | FRM | F | O | 1 | 7 | 1 | 5 | D | 4 | 0 | 140.9 |
| | | 17-1 | 25.5 | 17 | SE | 1 | E1K/S3K | F | O | 1 | 7 | 3 | 5 | D | 4 | 0 | 25.5 |
| | | 20-1 | 20.3 | 20 | NE,NW | 1 | E2K/S3K | F | N | 1 | 8 | 4 | 3 | D | 3 | 20.3 | 0 |
| | | 20-2 | 4.5 | 20 | NW | 1 | E1K | FR | N | 1 | 9 | 5 | 3 | D | 4 | 4.5 | 0 |

| WATERSHED | HU | Wet. No. | Wetl. Area | Sec | 1/4 | E/ PC | Veg | Src | Cst | Dth | Slp | Val | Add Pot | Imp | Opp | Val Acres | Pot Acres |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 21-1 | 5 | 21 | NW | 1 | E1K | FR | N | 1 | 7 | 3 | 4 | DC | 4 | 0 | 5 |
| Poplar | 6A072 | 20-3 | 166.5 | 20/21 | SE/SW,SE,NW | 1 | T3K/S3K/E2K | F | N | 1 | 8 | 4 | 5 | D | 3 | 166.5 | 166.5 |
| | | 21-3 | 70.3 | 21 | SW | 0 | FRM | F | N | 1 | 8 | 2 | 5 | D | 3 | 0 | 70.3 |
| Poplar | 6B010 | 6-5 | 87.2 | 6 | SE,SW | 1 | E1K/T3K | F | O | 1 | 4 | 5 | 2 | D | 3 | 87.2 | 0 |
| | | 6-6 | 11.9 | 6 | SW | 0 | FRM | F | O | 1 | 7 | 2 | 5 | D | 3 | 0 | 11.9 |
| | | 7-2 | 86 | 7 | NE,NW | 0 | FRM/E1K/S3K | F | O | 1 | 5 | 3 | 5 | D | 3 | 0 | 86 |
| Poplar | 6B020 | | | | | | | | | | | | | | | 0 | 0 |
| Poplar | 6B030 | | | | | | | | | | | | | | | 0 | 0 |
| Poplar | 6B040 | 7-4 | 41.3 | 7 | SE,SW | 1 | E2K/S3K/T3K | FR | O | 1 | 5 | 4 | 3 | DC | 3 | 41.3 | 0 |
| Poplar | 6B050 | 7-3 | 55.2 | 7 | NE,SE | 1 | E2K/S3K/E1K | F | O | 1 | 9 | 6 | 2 | D | 3 | 55.2 | 0 |
| Poplar | 6C010 | 5-2 | 44.3 | 5 | NE,NW | 0 | FRM/PND | RF | O | 1 | 8 | 2 | 5 | DC | 4 | 0 | 44.3 |
| | | 5-3 | 196.9 | 5 | SE,SW | 0 | FRM/E1K/S3K | FI | O | 1 | 8 | 1 | 5 | D | 3 | 0 | 196.9 |
| | | 6-4 | 65.7 | 6 | SE,SW | 1 | E1K/S3K/T3K | F | O | 1 | 6 | 3 | 4 | D | 3 | 0 | 65.7 |
| | | 6-7 | 5.3 | 6 | SE | 1 | E1K | FI | C | 1 | 9 | 2 | 5 | DC | 3 | 0 | 5.3 |
| | | 6-8 | 5.5 | 6 | SE | 1 | E1K | FI | C | 1 | 9 | 2 | 5 | DC | 3 | 0 | 5.5 |
| | | 7-1 | 5.3 | 7 | NE | 0 | FRM | F | C | 1 | 8 | 0 | 6 | DC | 3 | 0 | 5.3 |
| Poplar | 6C020 | 4-1 | 83.8 | 4 | NE,NW | 0 | FRM | FR | O | 1 | 8 | 0 | 6 | D | 2 | 0 | 83.8 |
| | | 4-3 | 135 | 4/5 | SW/SE | 0 | FRM | F | O | 1 | 8 | 0 | 6 | D | 2 | 0 | 135 |
| | | 5-1 | 35.8 | 5 | NE | 0 | FRM/T2K/S3K | RF | O | 1 | 8 | 3 | 5 | DC | 5 | 0 | 35.8 |
| Poplar | 6C021 | 4-2 | 8.2 | 4 | NE | 1 | T3K | R | O | 1 | 5 | 3 | 5 | DC | 5 | 0 | 8.2 |
| | | 4-4 | 4.1 | 4 | NE | 1 | T3K/S3K | R | N | 0 | 3 | 2 | 4 | CS | 5 | 0 | 4.1 |
| | | 4-5 | 35.7 | 4 | NW | 0 | FRM | F | O | 1 | 8 | 0 | 6 | D | 3 | 0 | 35.7 |
| Poplar | 6D010 | 6-2 | 24.1 | 6 | NE,NW | 1 | E2K/S3K | R | O | 1 | 8 | 4 | 3 | D | 4 | 24.1 | 0 |
| | | 6-3 | 5.3 | 6 | NW | 1 | E2K | R | N | 1 | 9 | 5 | 3 | D | 4 | 5.3 | 0 |
| Poplar | 6D020 | 6-1 | 34.5 | 6 | NE,NW | 1 | E2K/S3K | R | O | 1 | 8 | 4 | 3 | D | 4 | 34.5 | 0 |
| Poplar | 6E010 | | | | | | | | | | | | | | | 0 | 0 |
| Poplar | 6F010 | | | | | | | | | | | | | | | 0 | 0 |
| Total area | | | 1982 | | | | | | | | | | | | | | |
| Mill Creek | 7A010 | | | | | | | | | | | | | | | 0 | 0 |
| Mill Creek | 7B010 | 19-1 | 12.3 | 19 | NW | 1 | T3K/S3K | F | D | 0 | 9 | 5 | 0 | | 3 | 12.3 | 0 |
| Mill Creek | 7B020 | | | | | | | | | | | | | | | 0 | 0 |
| Mill Creek | 7B030 | 29-1 | 53.3 | 29 | NW | 0 | FRM/S3K/E1K | FR | O | 1 | 8 | 3 | 5 | DC | 4 | 0 | 53.3 |
| | | 30-1 | 72.2 | 30 | NE | 0 | FRM | FR | O | 1 | 8 | 0 | 6 | DC | 4 | 0 | 72.2 |
| | | 30-2 | 70.3 | 30 | NW,SE,SW | 1 | E1K/S3K/T3K | F | N | 1 | 8 | 5 | 3 | D | 3 | 70.3 | 0 |
| | | 30-3 | 41.2 | 30 | NW,SW | 1 | E1K/S3K | F | C | 1 | 8 | 6 | 1 | | 3 | 41.2 | 0 |
| Mill Creek | 7B040 | | | | | | | | | | | | | | | 0 | 0 |
| Mill Creek | 7C010 | | | | | | | | | | | | | | | 0 | 0 |
| Mill Creek | 7D010 | | | | | | | | | | | | | | | 0 | 0 |
| Total area | | | 249.3 | | | | | | | | | | | | | | |
| Total area all watersheds | | | 2800 | | | | | | | | | | | | | | |