

Appendix B.

Additional Ohio EPA and USGS Data

Table B-1. Ohio EPA instantaneous discharge measurements

| Station I.D. | Station name | Date | Flow (cfs) |
|--------------|---|------------|------------|
| G02W23 | Big Ck @ Fay Rd | 8/20/2003 | 2.56 |
| | | 6/9/2004 | 5.10 |
| | | 8/5/2004 | 9.16 |
| | | 8/11/2004 | 4.78 |
| | | 7/27/2005 | 255.65 |
| | | 8/29/2005 | 3.94 |
| | | 10/13/2005 | 6.98 |
| | | 2/1/2006 | 30.67 |
| | | 2/2/2006 | 28.60 |
| | | 3/14/2006 | 182.00 |
| | | 3/15/2006 | 79.30 |
| G02G14 | Grand R @ Blair Rd | 7/14/2004 | 117.50 |
| G02W14 | Grand R @ Madison Ave - Vrooman Rd Bridge | 2/2/2006 | 1,109 |
| G02W18 | Grand R @ Sexton Rd | 7/9/2004 | 49.90 |
| | | 8/30/2005 | 12.18 |
| | | 10/14/2005 | 57.21 |
| | | 2/2/2006 | 6,14 |
| | | 3/13/2006 | 2,412 |
| | | 3/14/2006 | 2,666 |
| | | 3/15/2006 | 2,144 |
| 502530 | Grand R @ Sr 84 At Painesville | 8/30/2005 | 19.89 |
| | | 10/14/2005 | 88.70 |
| G02G12 | Griggs Ck @ Poplar St | 9/1/2003 | 64.02 |
| | | 6/9/2004 | 0.21 |
| | | 7/9/2004 | 0.23 |
| G02G10 | Mill Ck @ Doty Rd | 7/9/2004 | 2.60 |
| | | 7/26/2005 | 0.85 |
| | | 8/29/2005 | 0.28 |
| | | 10/13/2005 | 1.62 |
| | | 2/1/2006 | 16.99 |
| | | 3/14/2006 | 67.30 |
| | | 3/15/2006 | 41.20 |
| G02G13 | Mill Creek @ Clay Rd. | 7/14/2004 | 1.50 |
| G02G11 | Mill Creek @ Forman Rd. | 7/14/2004 | 26.47 |
| G02S04 | Mill Creek @ Netcher Rd. | 9/1/2003 | 59.28 |
| | | 7/9/2004 | 0.16 |

| Station I.D. | Station name | Date | Flow (cfs) |
|--------------|---------------------------------------|------------|------------|
| G02P01 | Paine Ck @ Seeley Rd E Of Painesville | 8/20/2003 | 0.37 |
| | | 9/1/2003 | 63.52 |
| | | 7/9/2004 | 1.94 |
| | | 8/5/2004 | 4.41 |
| | | 8/11/2004 | 1.56 |
| | | 8/29/2005 | 0.96 |
| | | 10/14/2005 | 3.03 |
| | | 2/1/2006 | 22.60 |
| | | 3/14/2006 | 138 |
| | | 3/15/2006 | 65.90 |

Table B-2. Summary of USGS water quality data at gage 04211500 (Mill Creek near Jefferson, Ohio)

| Parameter | Begin date | End date | No. of samples | Min | Max | Avg |
|------------------------------|------------|------------|----------------|------|-------|-------|
| Chloride (T) (mg/L) | 9/27/1965 | 4/10/1974 | 26 | 6.00 | 94.00 | 31.23 |
| Flow (cfs) | 9/27/1965 | 9/15/1971 | 20 | 0.10 | 189 | 37.33 |
| Hardness (mg/L) | 9/27/1965 | 4/10/1974 | 17 | 60 | 140 | 93 |
| Nitrate (D) (mg/L) | 10/14/1969 | 7/11/1973 | 10 | 0.20 | 5.20 | 1.34 |
| Nitrate (T) (mg/L) | 9/12/1973 | 4/10/1974 | 4 | 0.26 | 8.50 | 2.40 |
| Nitrite (T) (mg/L) | 9/12/1973 | 4/10/1974 | 4 | 0.01 | 0.01 | 0.01 |
| pH | 9/27/1965 | 4/10/1974 | 19 | 6.40 | 8.00 | 7.16 |
| Phosphorus (T) (mg/L) | 10/17/1972 | 9/12/1973 | 2 | 0.47 | 3.30 | 1.89 |
| Specific Conductance (uS/cm) | 9/27/1965 | 11/7/1973 | 32 | 155 | 664 | 297 |
| Sulfate (T) (mg/L) | 8/29/1967 | 4/10/1974 | 17 | 27 | 68 | 42 |
| TDS (mg/L) | 9/27/1965 | 10/17/1972 | 8 | 105 | 234 | 173 |
| Temperature, water Deg C | 8/25/1966 | 4/10/1974 | 24 | 0.00 | 23.00 | 11.35 |

Table B-3. Summary of USGS water quality data at site 04212085 (Big Creek at Painesville, Ohio) from 8/19/1981

| Parameter | Results |
|------------------------------|---------|
| Ammonia (T) (mg/L) | 0.02 |
| Chloride (T) (mg/L) | 76 |
| Hardness (mg/L) | 210 |
| Nitrate (T) (mg/L) | 0.07 |
| Nitrite (T) (mg/L) | 0.01 |
| Nitrogen (T) (mg/L) | 0.50 |
| pH | 7.40 |
| Phosphorus (T) (mg/L) | 0.06 |
| SAR | 1.50 |
| Specific Conductance (uS/cm) | 530 |
| Sulfate (T) (mg/L) | 86 |
| TDS (mg/L) | 436 |
| Temperature, water Deg C | 22.00 |
| TKN (mg/L) | 0.43 |

Table B-4. Summary of USGS water quality data at gage 04211820 (Grand River at Harpersfield, Ohio)

| Parameter | Begin date | End date | No. of samples | Min | Max | Avg |
|-----------------------------------|------------|-----------|----------------|-------|-------|-------|
| Chloride (T) (mg/L) | 3/26/1996 | 2/23/1998 | 32 | 7.94 | 56.00 | 24.18 |
| Dissolved Oxygen (mg/L) | 3/26/1996 | 8/15/2007 | 34 | 7.20 | 13.40 | 10.40 |
| Escherichia coli (#/100mL) | 3/26/1996 | 2/23/1998 | 26 | 14 | 5,100 | 503 |
| Hardness (mg/L) | 3/26/1996 | 2/23/1998 | 61 | 44.8 | 171.0 | 89.4 |
| Nitrate (D) (mg/L) | 5/9/1996 | 2/23/1998 | 28 | 0.06 | 0.77 | 0.32 |
| Nitrite (D) (mg/L) | 3/26/1996 | 2/23/1998 | 22 | 0.01 | 0.03 | 0.01 |
| Nitrite + Nitrate as N (D) (mg/L) | 3/26/1996 | 2/23/1998 | 33 | 0.05 | 1.36 | 0.38 |
| Nitrogen (T) (mg/L) | 3/26/1996 | 2/23/1998 | 33 | 0.38 | 3.40 | 1.08 |
| pH | 3/26/1996 | 8/15/2007 | 36 | 6.80 | 8.60 | 7.73 |
| Phosphorus (SRP) (mg/L) | 3/26/1996 | 2/23/1998 | 33 | 0.03 | 0.15 | 0.05 |
| Phosphorus (T) (mg/L) | 3/26/1996 | 2/23/1998 | 31 | 0.03 | 0.74 | 0.09 |
| Phosphorus (TD) (mg/L) | 3/26/1996 | 2/23/1998 | 16 | 0.01 | 0.06 | 0.03 |
| SAR | 3/26/1996 | 2/23/1998 | 54 | 0.30 | 1.20 | 0.69 |
| Specific Conductance (uS/cm) | 3/26/1996 | 8/15/2007 | 38 | 128 | 488 | 288 |
| SSC (mg/L) | 4/11/1996 | 8/15/2007 | 30 | 6 | 1,040 | 67 |
| Sulfate (T) (mg/L) | 3/26/1996 | 8/19/2004 | 32 | 10.90 | 65.10 | 26.38 |
| TDS (mg/L) | 3/26/1996 | 2/23/1998 | 33 | 100 | 292 | 166 |
| Temperature, water Deg C | 3/26/1996 | 8/15/2007 | 35 | 0.00 | 24.00 | 11.97 |
| TKN (mg/L) | 3/26/1996 | 2/23/1998 | 31 | 0.40 | 2.80 | 0.70 |

Table B-5. Summary of USGS water quality data at gage 04212000 (Grand River near Madison, Ohio)

| Parameter | Begin date | End date | No. of samples | Min | Max | Avg |
|-----------------------------------|------------|-----------|----------------|------|-------|--------|
| Ammonia (T) (mg/L) | 8/13/1974 | 8/13/1974 | 1 | 0.18 | | -- |
| Chloride (T) (mg/L) | 9/27/1965 | 8/13/1974 | 27 | 13 | 32 | 21 |
| Dissolved Oxygen (mg/L) | 8/13/1974 | 8/13/1974 | 1 | 8.10 | 8.10 | 8.10 |
| Flow (cfs) | 9/27/1965 | 9/14/1971 | 33 | 2.70 | 1,680 | 382.21 |
| Hardness (mg/L) | 9/27/1965 | 8/13/1974 | 18 | 62 | 180 | 110 |
| Nitrate (D) (mg/L) | 10/13/1969 | 7/10/1973 | 16 | 0.11 | 7.40 | 0.92 |
| Nitrate (T) (mg/L) | 9/11/1973 | 8/13/1974 | 5 | 0.22 | 0.88 | 0.46 |
| Nitrite (T) (mg/L) | 9/11/1973 | 8/13/1974 | 5 | 0.01 | 0.01 | 0.01 |
| Nitrite + Nitrate as N (T) (mg/L) | 9/11/1973 | 8/13/1974 | 3 | 0.23 | 0.59 | 0.36 |
| pH | 9/27/1965 | 4/10/1974 | 19 | 6.70 | 8.40 | 7.59 |
| Phosphorus (T) (mg/L) | 9/11/1972 | 8/13/1974 | 2 | 0.02 | 0.06 | 0.04 |
| SAR | 8/13/1974 | 8/13/1974 | 1 | 0.60 | | -- |
| Specific Conductance (uS/cm) | 9/27/1965 | 8/13/1974 | 35 | 181 | 399 | 286 |
| SSC (mg/L) | 10/13/1969 | 9/26/1974 | 46 | 2 | 324 | 52 |
| Sulfate (T) (mg/L) | 8/28/1967 | 8/13/1974 | 16 | 27 | 65 | 46 |
| TDS (mg/L) | 9/27/1965 | 9/11/1972 | 8 | 158 | 236 | 193 |
| Temperature, water Deg C | 8/24/1966 | 9/26/1974 | 49 | 0.00 | 29.50 | 11.95 |

Table B-6. Summary of USGS water quality data at gage 04212100 (Grand River near Painesville, Ohio)

| Parameter | Begin date | End date | No. of samples | Min | Max | Avg |
|-----------------------------------|------------|------------|----------------|-------|---------|--------|
| Ammonia (T) (mg/L) | 11/17/1977 | 9/5/1991 | 11 | 0.01 | 0.31 | 0.08 |
| Chloride (T) (mg/L) | 11/17/1977 | 9/1/1995 | 1,220 | 10 | 128 | 32 |
| Dissolved Oxygen (mg/L) | 11/17/1977 | 8/15/2007 | 17 | 6.80 | 13.50 | 10.59 |
| Flow (cfs) | 11/17/1977 | 12/15/1989 | 68 | 260 | 13,000 | 1,654 |
| Hardness (mg/L) | 6/1/1994 | 9/1/1995 | 11 | 82.60 | 164 | 124.21 |
| Nitrate (D) (mg/L) | 3/17/1995 | 3/17/1995 | 1 | 0.32 | 0.32 | 0.32 |
| Nitrate (T) (mg/L) | 9/5/1991 | 9/5/1991 | 1 | 0.29 | 0.29 | 0.29 |
| Nitrite (D) (mg/L) | 9/19/1994 | 9/1/1995 | 5 | 0.01 | 0.01 | 0.01 |
| Nitrite + Nitrate as N (D) (mg/L) | 2/16/1988 | 6/23/1995 | 1,185 | 0.10 | 97.1 | 0.51 |
| Nitrite + Nitrate as N (T) (mg/L) | 11/17/1977 | 9/5/1991 | 11 | 0.26 | 1.20 | 0.51 |
| Nitrogen (T) (mg/L) | 2/16/1988 | 9/1/1995 | 1,217 | 0.34 | 98.0 | 1.44 |
| pH | 11/17/1977 | 8/15/2007 | 17 | 7.00 | 8.10 | 7.56 |
| Phosphorus (SRP) (mg/L) | 11/17/1977 | 9/1/1995 | 16 | 0.00 | 0.18 | 0.06 |
| Phosphorus (T) (mg/L) | 11/17/1977 | 9/1/1995 | 1,219 | 0.01 | 3.78 | 0.15 |
| Phosphorus (TD) (mg/L) | 9/19/1994 | 12/16/1994 | 2 | 0.04 | 0.05 | 0.05 |
| SAR | 6/1/1994 | 9/1/1995 | 11 | 0.67 | 1.12 | 0.87 |
| Specific Conductance (uS/cm) | 11/17/1977 | 8/15/2007 | 18 | 200 | 540 | 310 |
| SSC (mg/L) | 3/21/1980 | 8/15/2007 | 7 | 8.00 | 2490.00 | 646.00 |
| Sulfate (T) (mg/L) | 6/1/1994 | 9/1/1995 | 6 | 30.00 | 51.00 | 40.50 |
| TDS (mg/L) | 11/17/1977 | 9/1/1995 | 16 | 125 | 281 | 173 |
| Temperature, water Deg C | 11/17/1977 | 8/15/2007 | 18 | 1.00 | 25.50 | 11.72 |
| TKN (mg/L) | 2/16/1988 | 9/1/1995 | 1,216 | 0.20 | 16.00 | 0.92 |
| TSS (mg/L) | 11/17/1977 | 5/17/1978 | 10 | 44 | 1,210 | 215 |
| Turbidity (NTU) | 6/1/1994 | 9/1/1995 | 6 | 1.20 | 20.00 | 8.73 |

Table B-7. Summary of USGS water quality data at gage 04212200 (Grand River at Painesville, Ohio)

| Parameter | Begin date | End date | No. of samples | Min | Max | Avg |
|-----------------------------------|------------|------------|----------------|------|--------|--------|
| Ammonia (T) (mg/L) | 8/13/1974 | 12/8/1992 | 144 | 0.00 | 3.60 | 0.18 |
| BOD5 | 8/19/1975 | 6/28/1977 | 5 | 1.80 | 3.90 | 2.78 |
| Chloride (T) (mg/L) | 10/12/1962 | 3/15/1994 | 314 | 18 | 13,000 | 1,523 |
| COD | 8/9/1978 | 3/2/1982 | 99 | 7.00 | 154.00 | 53.35 |
| Dissolved Oxygen (mg/L) | 10/22/1966 | 3/15/1994 | 227 | 2.50 | 14.10 | 8.99 |
| Flow (cfs) | 10/12/1962 | 9/14/1971 | 146 | 0.78 | 9,480 | 981.53 |
| Hardness (mg/L) | 10/12/1962 | 3/15/1994 | 326 | 52 | 10,000 | 1,302 |
| Nitrate (D) (mg/L) | 10/12/1962 | 3/15/1994 | 182 | 0.05 | 9.80 | 1.24 |
| Nitrate (T) (mg/L) | 4/30/1973 | 3/4/1992 | 34 | 0.07 | 4.00 | 1.59 |
| Nitrite (D) (mg/L) | 11/20/1985 | 3/15/1994 | 31 | 0.01 | 0.05 | 0.01 |
| Nitrite (T) (mg/L) | 4/30/1973 | 9/17/1991 | 32 | 0.01 | 0.08 | 0.02 |
| Nitrite + Nitrate as N (D) (mg/L) | 9/12/1979 | 3/15/1994 | 60 | 0.10 | 2.50 | 0.60 |
| Nitrite + Nitrate as N (T) (mg/L) | 8/13/1974 | 12/8/1992 | 132 | 0.07 | 2.40 | 0.64 |
| Nitrogen (T) (mg/L) | 2/23/1978 | 3/15/1994 | 159 | 0.71 | 4.00 | 1.58 |
| pH | 10/12/1962 | 3/15/1994 | 384 | 5.80 | 9.90 | 7.57 |
| Phosphorus (SRP) (mg/L) | 10/11/1979 | 3/15/1994 | 51 | 0.03 | 0.49 | 0.06 |
| Phosphorus (T) (mg/L) | 8/13/1974 | 3/15/1994 | 166 | 0.02 | 0.52 | 0.12 |
| Phosphorus (TD) (mg/L) | 12/21/1977 | 3/15/1994 | 74 | 0.00 | 0.29 | 0.03 |
| SAR | 10/12/1962 | 3/15/1994 | 137 | 0.27 | 8.00 | 2.46 |
| Specific Conductance (uS/cm) | 10/12/1962 | 3/15/1994 | 502 | 0.00 | 27,700 | 3,309 |
| SSC (mg/L) | 12/21/1977 | 12/21/1993 | 75 | 5 | 2,150 | 89 |
| Sulfate (T) (mg/L) | 10/12/1962 | 3/15/1994 | 322 | 15 | 360 | 69 |
| TDS (mg/L) | 10/12/1962 | 3/15/1994 | 334 | 104 | 14,500 | 2,517 |
| Temperature, water Deg C | 8/16/1965 | 3/15/1994 | 380 | 0.00 | 32.00 | 15.42 |
| TKN (mg/L) | 2/23/1978 | 3/15/1994 | 125 | 0.10 | 3.70 | 0.94 |
| TSS (mg/L) | 10/11/1979 | 6/12/1980 | 75 | 1. | 853 | 165 |
| Turbidity (NTU) | 6/14/1978 | 3/15/1994 | 84 | 0.70 | 130.00 | 19.11 |