Table A-1:
Physiochemical Data

| Year | Study Reach | Stream Order | Elevation (ft.) | Gradient | Wet stream width (ft.) | Q (cfs) | Habitat Assessment Score | Watershed Area (ac) | OS | URB | AG | HERB | Stream temp. (°F) | pH | Dissolved Oxygen (mg/l) | Conductivity (µS) | Specific conductance (µS at 25°C) | % riparan canopy coverage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2000 | C1 | 4 | 15 | 0.008 | 12.4 | 0.21 | 100 | 9598 | 80 | 3 | 17 | 0 | 65.3 | 7.6 | 11.8 | 1240 | 1416 | ND |
| 2000 | C2 | 4 | 50 | 0.008 | 17.5 | 0.18 | 112 | 9336 | 83 | 2 | 15 | 0 | 68.5 | 6.6 | 11.9 | 1083 | 1190 | ND |
| 2000 | C3 | 3 | 420 | 0.033 | 20.9 | 4.34 | 173 | 4517 | 100 | 0 | 0 | 0 | 60.8 | 8.6 | 7.9 | 539 | 651 | ND |
| 2000 | F1 | 3 | 10 | 0.007 | 8.3 | 0.18 | 26 | 5905 | 57 | 15 | 29 | 0 | 73.0 | 8 | 9.7 | 1204 | 1257 | ND |
| 2000 | SM1 | 2 | 10 | 0.014 | 8.3 | 0.35 | 26 | 5945 | 56 | 15 | 28 | 0 | 73.8 | 8.2 | 8.5 | 578 | 599 | ND |
| 2000 | M1 | 3 | 40 | 0.008 | 13.8 | 0.14 | 80 | 6799 | 49 | 49 | 2 | 0 | 80.4 | 8 | 14.9 | 1220 | 1177 | ND |
| 2000 | M3 | 3 | 400 | 0.071 | 13.2 | 0.74 | 157 | 4142 | 79 | 18 | 2 | 0 | 66.6 | 8 | 9.1 | 820 | 922 | ND |
| 2000 | M4 | 2 | 1000 | 0.083 | 14.3 | 0.32 | 178 | 1376 | 100 | 0 | 0 | 0 | 70.2 | 8 | 8.8 | 810 | 873 | ND |
| 2000 | M5 | 2 | 2600 | 0.167 | 12.1 | 0.14 | 156 | 440 | 100 | 0 | 0 | 0 | 59.9 | 8 | 8.9 | 587 | 717 | ND |
| 2000 | M6 | 2 | 1550 | 0.125 | 16.5 | 0.00 | 150 | 1042 | 100 | 0 | 0 | 0 | 72.0 | 8 | 7.3 | 817 | 863 | ND |
| 2000 | AB2 | 3 | 75 | 0.010 | 8.8 | 0.25 | 83 | 4789 | 60 | 30 | 9 | 1 | 72.3 | 8 | 11.8 | 1580 | 1663 | ND |
| 2000 | AB3 | 2 | 300 | 0.025 | 11.6 | 0.39 | 163 | 2356 | 90 | 3 | 6 | 0 | 63.5 | 8 | 9.2 | 1026 | 1198 | ND |
| 2000 | SA1 | 3 | 260 | 0.028 | 14.9 | 0.32 | 143 | 2867 | 88 | 3 | 3 | 6 | 65.5 | 8 | 9.4 | 992 | 1130 | ND |
| 2000 | SA2 | 3 | 500 | 0.05 | 15.4 | 0.18 | 137 | 2556 | 94 | 0 | 2 | 4 | 68.4 | 8 | 8.7 | 1190 | 1310 | ND |
| 2000 | MY1 | 3 | 130 | 0.017 | 11.0 | 0.39 | 110 | 3779 | 81 | 6 | 10 | 4 | 77.2 | 8 | 8.9 | 1260 | 1258 | ND |
| 2000 | MY2 | 3 | 290 | 0.033 | 12.1 | 0.81 | 168 | 2213 | 96 | 0 | 4 | 0 | 72.3 | 7.8 | 7.4 | 645 | 679 | ND |
| 2000 | MY3 | 3 | 1200 | 0.125 | 14.3 | 0.21 | 172 | 1316 | 100 | 0 | 0 | 0 | 59.7 | 7.2 | 9.3 | 493 | 604 | ND |
| 2000 | SJ1 | 4 | 30 | 0.005 | 27.0 | 1.09 | 110 | 5169 | 64 | 14 | 20 | 1 | 65.1 | 8 | 8.8 | 1283 | 1468 | ND |
| 2000 | SJ2 | 3 | 120 | 0.014 | 12.1 | 0.56 | 104 | 3836 | 81 | 1 | 16 | 1 | 68.9 | 8 | 10 | 1395 | 1526 | ND |
| 2000 | SJ3 | 2 | 1000 | 0.107 | 18.7 | 0.21 | 182 | 3245 | 95 | 1 | 4 | 1 | 61.2 | 8 | 8.8 | 735 | 883 | ND |
| 2000 | SJ4 | 1 | 1840 | 0.055 | 6.1 | 0.07 | 160 | 950 | 96 | 3 | 0 | 2 | 62.1 | 7 | 7.9 | 351 | 417 | ND |
| 2000 | T1 | 3 | 30 | 0.01 | 15.8 | 0.49 | 80 | 3616 | 75 | 4 | 19 | 2 | 64.9 | 7.5 | 9.7 | 1705 | 1955 | ND |
| 2000 | T2 | 3 | 110 | 0.017 | 7.7 | 0.35 | 111 | 3221 | 81 | 0 | 18 | 1 | 77.4 | 8 | 9.8 | 1673 | 1667 | ND |
| 2000 | DP1 | 4 | 40 | 0.01 | 16.0 | 0.67 | 111 | 4574 | 88 | 0 | 11 | 1 | 71.2 | 7.5 | 9.2 | 1340 | 1427 | ND |
| 2000 | R1 | 3 | 180 | 0.02 | 11.0 | 0.14 | 107 | 3391 | 79 | 12 | 4 | 4 | 70.5 | 7.8 | 8.3 | 1122 | 1205 | ND |
| 2000 | R2 | 3 | 360 | 0.036 | 13.2 | 0.28 | 152 | 2840 | 85 | 15 | 0 | 0 | 68.4 | 8 | 9.3 | 785 | 864 | ND |
| 2000 | AH1 | 2 | 150 | 0.040 | 13.8 | 0.49 | 168 | 2583 | 100 | 0 | 0 | 0 | 60.8 | 7.5 | 9.8 | 887 | 1071 | ND |
| 2000 | AH2 | 2 | 240 | 0.16 | 18.7 | 0.67 | 182 | 2324 | 100 | 0 | 0 | 0 | 61.5 | 7.7 | 9.2 | 833 | 997 | ND |
| 2000 | SO1 | 2 | 20 | 0.025 | 11.6 | 0.64 | 161 | 1316 | 96 | 0 | 0 | 4 | 63.3 | 7.8 | 7.6 | 839 | 981 | ND |
| 2000 | SO2 | 2 | 500 | 0.133 | 16.5 | 0.56 | 189 | 1025 | 96 | 0 | 0 | 4 | 63.7 | 7.7 | 7.3 | 730 | 850 | ND |
| 2001 | C1 | 4 | 15 | 0.008 | 20.4 | 0.35 | 111 | 9598 | 80 | 3 | 17 | 0 | 64.4 | 8.4 | ND | 1102 | 1272 | ND |
| 2001 | C2 | 4 | 50 | 0.008 | 19.8 | 0.11 | 122 | 9336 | 83 | 2 | 15 | 0 | 61.0 | 7.5 | ND | 667 | 804 | ND |
| 2001 | C3 | 3 | 420 | 0.033 | 17.6 | 1.76 | 175 | 4517 | 100 | 0 | 0 | 0 | 59.2 | 7.8 | ND | 345 | 425 | ND |
| 2001 | AB2 | 3 | 75 | 0.010 | 14.9 | 0.78 | 70 | 4789 | 60 | 30 | 9 | 1 | 64.4 | 8.4 | ND | 838 | 967 | ND |
| 2001 | AB3 | 2 | 300 | 0.025 | 13.2 | 0.78 | 171 | 2356 | 90 | 3 | 6 | 0 | 61.3 | 7.8 | ND | 828 | 993 | ND |
| 2001 | AT1 | 4 | 15 | 0.002 | 31.4 | 1.38 | 60 | 12443 | 48 | 39 | 7 | 6 | 64.9 | 8 | ND | 1692 | 1940 | ND |
| 2001 | AT2 | 3 | 50 | 0.007 | 20.9 | 0.81 | 92 | 2393 | 12 | 73 | 7 | 8 | 66.7 | 8.4 | ND | 1413 | 1586 | ND |
| 2001 | SJ1 | 4 | 30 | 0.005 | 16.0 | 1.80 | 109 | 5169 | 64 | 14 | 20 | 1 | 63.7 | 7.8 | ND | 1055 | 1229 | ND |
| 2001 | SJ2 | 3 | 120 | 0.014 | 11.0 | 1.34 | 97 | 3836 | 81 | 1 | 16 | 1 | 62.1 | 8.4 | ND | 992 | 1179 | ND |
| 2001 | SJ3 | 2 | 1000 | 0.107 | 18.7 | 0.28 | 179 | 3245 | 95 | 1 | 4 | 1 | 59.5 | 7.8 | ND | 656 | 805 | ND |
| 2001 | AH1 | 2 | 150 | 0.040 | 12.3 | 0.74 | 170 | 2583 | 100 | 0 | 0 | 0 | 65.1 | 7.8 | ND | 638 | 730 | ND |
| 2001 | SO2 | 2 | 500 | 0.133 | 18.2 | 0.46 | 188 | 1025 | 96 | 0 | 0 | 4 | 60.3 | 8.1 | ND | 567 | 689 | ND |
| 2002 | RIN1 | 3 | 220 | 0.022 | 14.3 | 0.30 | 128 | 8131 | 83 | 0 | 16 | 1 | 58.8 | 7.65 | 8.64 | 894 | 1108 | ND |
| 2002 | C1 | 4 | 15 | 0.008 | 14.5 | 0.16 | 102 | 9598 | 80 | 3 | 17 | 0 | 56.8 | 7.84 | 6.65 | 1206 | 1521 | ND |

Table A-1:
Physiochemical Data

| Year | Study Reach | Stream Order | Elevation (ft.) | Gradient | Wet stream width (ft.) | Q (cfs) | Habitat Assessment Score | Watershed Area (ac) | OS | URB | AG | HERB | Stream temp. (°F) | pH | Dissolved Oxygen (mg/l) | Conductivity (µS) | Specific conductance (µS at 25°C) | % riparan canopy coverage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2002 | C3 | 3 | 420 | 0.033 | 19.8 | 1.11 | 170 | 4517 | 100 | 0 | 0 | 0 | 54.9 | 8.45 | 10.26 | 529 | 693 | ND |
| 2002 | SY1 | 3 | 30 | 0.010 | 9.4 | 0.30 | 84 | 2482 | 45 | 54 | 2 | 0 | 59.2 | 8.35 | 8.85 | 2545 | 3140 | ND |
| 2002 | M1 | 3 | 40 | 0.008 | 17.6 | 0.23 | 81 | 6799 | 49 | 49 | 2 | 0 | 72.7 | 8.01 | 15.86 | 1252 | 1313 | ND |
| 2002 | M2 | 1 | 50 | 0.020 | 8.3 | 0.17 | 64 | 643 | 24 | 76 | 0 | 0 | 63.5 | 7.66 | 4.05 | 1172 | 1367 | ND |
| 2002 | M3 | 3 | 400 | 0.071 | 12.7 | 0.08 | 157 | 4142 | 79 | 18 | 2 | 0 | 60.6 | 8.01 | 8.14 | 895 | 1083 | ND |
| 2002 | AB1 | 3 | 25 | 0.008 | 15.4 | 1.58 | 71 | 5646 | 51 | 38 | 7 | 4 | 61.9 | 7.93 | 6.86 | 1350 | 1608 | ND |
| 2002 | AB2 | 3 | 75 | 0.010 | 16.5 | 1.92 | 101 | 4789 | 60 | 30 | 9 | 1 | 56.5 | 7.97 | 8.12 | 976 | 1248 | ND |
| 2002 | AB3 | 2 | 300 | 0.025 | 11.0 | 0.30 | 168 | 2356 | 90 | 3 | 6 | 0 | 56.1 | 8.17 | 8.51 | 1097 | 1409 | ND |
| 2002 | AT1 | 4 | 15 | 0.002 | 18.7 | 0.46 | 75 | 12443 | 48 | 39 | 7 | 6 | 57.4 | 7.74 | 3.85 | 2023 | 2559 | ND |
| 2002 | AT2 | 3 | 50 | 0.007 | 6.6 | 0.30 | 74 | 2393 | 12 | 73 | 7 | 8 | 62.4 | 7.85 | 7.65 | 1840 | 2178 | ND |
| 2002 | SJ1 | 4 | 30 | 0.005 | 7.8 | 0.23 | 72 | 5169 | 64 | 14 | 20 | 1 | 51.8 | 8.00 | 7.50 | 1069 | 1459 | ND |
| 2002 | SJ2 | 3 | 120 | 0.014 | 10.5 | 0.26 | 107 | 3836 | 81 | 1 | 16 | 1 | 63.3 | 7.87 | 9.99 | 1387 | 1623 | ND |
| 2002 | SJ3 | 2 | 1000 | 0.107 | 22.4 | 0.36 | 177 | 3245 | 95 | 1 | 4 | 1 | 53.6 | 8.35 | 9.83 | 724 | 965 | ND |
| 2002 | EC1 | 3 | 10 | 0.020 | 11.6 | 0.12 | 134 | 3915 | 93 | 2 | 0 | 5 | 56.7 | 7.75 | 7.00 | 938 | 1198 | ND |
| 2002 | AH1 | 2 | 150 | 0.040 | 11.6 | 0.31 | 169 | 2583 | 100 | 0 | 0 | 0 | 52.9 | 8.35 | 9.56 | 773 | 1039 | ND |
| 2002 | SO2 | 2 | 500 | 0.133 | 8.0 | 0.21 | 179 | 1025 | 96 | 0 | 0 | 4 | 56.8 | 8.18 | 9.27 | 793 | 1008 | ND |
| 2002 | GAV1 | 3 | 25 | 0.008 | 13.2 | 1.10 | 140 | 12791 | 59 | 0 | 0 | 41 | 66.4 | 8.18 | 11.71 | 1434 | 1617 | ND |
| 2002 | GAV2 | 3 | 260 | 0.020 | 13.2 | 0.95 | 126 | 10828 | 54 | 0 | 0 | 46 | 76.6 | 8.16 | 9.57 | 1542 | 1548 | ND |
| 2003 | C1 | 4 | 15 | 0.008 | 20.8 | 1.29 | 113 | 9598 | 80 | 3 | 17 | 0 | 58.5 | 8.20 | 9.68 | 662 | 824 | 66 |
| 2003 | C3 | 3 | 420 | 0.033 | 23.0 | 4.62 | 174 | 4517 | 100 | 0 | 0 | 0 | 57.7 | 8.45 | 9.31 | 497 | 624 | 81 |
| 2003 | MONT1 | 3 | 350 | 0.050 | 9.8 | 2.79 | 133 | 3465 | 82 | 17 | 1 | 0 | 65.1 | 7.90 | 8.35 | 845 | 968 | 93 |
| 2003 | SY1 | 3 | 30 | 0.010 | 13.7 | 0.90 | 95 | 2482 | 45 | 54 | 2 | 0 | 60.8 | 8.51 | 11.64 | 1786 | 2158 | 80 |
| 2003 | SY2 | 3 | 200 | 0.033 | 15.3 | 0.88 | 109 | 1956 | 52 | 46 | 2 | 0 | 57.7 | 8.28 | 9.68 | 1291 | 1624 | 72 |
| 2003 | M1 | 3 | 40 | 0.008 | 13.1 | 1.69 | 88 | 6799 | 49 | 49 | 2 | 0 | 66.7 | 8.20 | 12.26 | 1210 | 1358 | 27 |
| 2003 | M2 | 1 | 50 | 0.020 | 8.8 | 0.72 | 79 | 643 | 24 | 76 | 0 | 0 | 71.2 | 8.37 | 8.11 | 1280 | 1364 | 68 |
| 2003 | M3 | 3 | 400 | 0.071 | 15.3 | 2.91 | 157 | 4142 | 79 | 18 | 2 | 0 | 60.3 | 8.86 | 9.49 | 802 | 975 | 93 |
| 2003 | AB1 | 3 | 25 | 0.008 | 14.2 | 3.05 | 104 | 5646 | 51 | 38 | 7 | 4 | 63.3 | 8.57 | 10.61 | 1696 | 1985 | 40 |
| 2003 | AB2 | 3 | 75 | 0.010 | 14.8 | 2.15 | 84 | 4789 | 60 | 30 | 9 | 1 | 60.8 | 8.43 | 6.84 | 1356 | 1637 | 87 |
| 2003 | AB3 | 2 | 300 | 0.025 | 9.1 | 3.24 | 158 | 2356 | 90 | 3 | 6 | 0 | 60.3 | 8.74 | 9.73 | 789 | 960 | 92 |
| 2003 | AT1 | 4 | 15 | 0.002 | 18.0 | 1.15 | 83 | 12443 | 48 | 39 | 7 | 6 | 69.3 | 8.39 | 9.36 | 2516 | 2744 | 18 |
| 2003 | AT2 | 3 | 50 | 0.007 | 10.9 | 0.74 | 58 | 2393 | 12 | 73 | 7 | 8 | 70.5 | 8.47 | 11.57 | 1917 | 2060 | 37 |
| 2003 | SA2 | 3 | 500 | 0.05 | 7.1 | 1.63 | 152 | 2556 | 94 | 0 | 2 | 4 | 65.8 | 8.89 | 8.94 | 898 | 1019 | 68 |
| 2003 | SJ1 | 4 | 30 | 0.005 | 13.7 | 4.17 | 90 | 5169 | 64 | 14 | 20 | 1 | 54.7 | 8.26 | 10.46 | 724 | 948 | 39 |
| 2003 | SJ2 | 3 | 120 | 0.014 | 12.6 | 2.48 | 106 | 3836 | 81 | 1 | 16 | 1 | 60.1 | 8.13 | 10.23 | 634 | 772 | 70 |
| 2003 | SJ3 | 2 | 1000 | 0.107 | 20.3 | 0.44 | 178 | 3245 | 95 | 1 | 4 | 1 | 58.6 | 8.86 | 9.19 | 696 | 864 | 86 |
| 2003 | AH1 | 2 | 150 | 0.040 | 13.8 | 2.87 | 174 | 2583 | 100 | 0 | 0 | 0 | 59.9 | 8.81 | 9.22 | 710 | 868 | 100 |
| 2003 | SO2 | 2 | 500 | 0.133 | 12.0 | 1.15 | 181 | 1025 | 96 | 0 | 0 | 4 | 60.1 | 9.02 | 9.16 | 819 | 1000 | 93 |
| 2003 | GAV1 | 3 | 25 | 0.008 | 13.1 | 3.84 | 157 | 12791 | 59 | 0 | 0 | 41 | 65.3 | 8.63 | 9.65 | 1397 | 1593 | 15 |

Note: ND = Not determined.

Table A-2
Plant Species Observed at the Study Reaches

**Plant Species Checklist**

| Family | Common Name | Scientific Name | RIN1 | C1 | C2 | C3 | MONT1 | SY1 | SY2 | M1 | M2 | M3 | M4 | M5 | M6 | AB1 | AB2 | AB3 | AT1 | AT2 | SA1 | SA2 | MY1 | MY2 | MY3 | SJ1 | SJ2 | SJ3 | SJ4 | T1 | T2 | DP1 | EC1 | R1 | R2 | AH1 | AH2 | SO1 | SO2 | GAV1 | GAV2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 4 | 2 | 4 | 1 | 2 | 1 | 3 | 2 | 3 | 1 | 1 | 1 | 2 | 4 | 4 | 3 | 3 | 1 | 2 | 1 | 1 | 1 | 4 | 4 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 1 | 4 | 2 | 1 |
| **Native Trees** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Aceraceae | Big-leaf maple | *Acer macrophyllum* | | | | 1 | 1 | | | | | | 1 | 1 | | | | | | | | | | 1 | | | | 1 | 1 | | | | | | | | 1 | | | | |
| Aceraceae | Box elder | *Acer negundo* | | 1 | | | | | | | 1 | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | 1 | 1 |
| Betulaceae | White alder | *Alnus rhombifolia* | 1 | 1 | 1 | 1 | 1 | | | 1 | | 1 | 1 | | | | 1 | 1 | | | 1 | 1 | | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Fagaceae | Coast live oak | *Quercus agrifolia* | | | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Juglandaceae | Southern black walnut | *Juglans californica* | 1 | 1 | 1 | 1 | | 1 | 1 | | | | | | | 1 | 1 | 1 | 1 | 1 | | | | | | 1 | 1 | | | | | 1 | 1 | | | | | | | | |
| Lauraceae | California bay | *Umbellularia californica* | | 1 | | | 1 | | | | | 1 | 1 | 1 | 1 | | | | | | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | | 1 |
| Platanaceae | Sycamore | *Platanus racemosa* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Salicaceae | Black cottonwood | *Populus balsamifera trichocarpa* | 1 | 1 | 1 | 1 | 1 | | | | 1 | 1 | | | | 1 | | 1 | 1 | 1 | | 1 | 1 | 1 | | 1 | 1 | | | | | | 1 | | | | | | | 1 | 1 | 1 |
| Salicaceae | Fremont cottonwood | *Populus fremontii fremontii* | | | | | | | | | | | | | 1 | | | | | | | | | | | 1 | | | | | | | | | | | | | | | |
| Salicaceae | Arroyo willow | *Salix lasiolepis* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Salicaceae | Red willow | *Salix laevigata* | | 1 | 1 | 1 | | | | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 | | 1 | 1 | | | | | 1 | 1 | |
| **Native Shrubs, Vines, and Herbs** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Anacardiaceae | Laurel sumac | *Malosma laurina* | | | | 1 | | | | | | | 1 | 1 | 1 | | | 1 | 1 | | | 1 | | 1 | | | | | | | | | | | | | 1 | | 1 | | 1 |
| Anacardiaceae | Lemonade berry | *Rhus integrifolia* | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | 1 | | 1 | | 1 | |
| Anacardiaceae | Poison oak | *Toxicodendron diversilobum* | 1 | 1 | 1 | 1 | | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Asteraceae | California sagebrush | *Artemesia californica* | | 1 | | 1 | | | 1 | | 1 | | | | | 1 | 1 | 1 | 1 | | 1 | 1 | | | | | | | | | | | 1 | | | 1 | | 1 | 1 | 1 | 1 | 1 |
| Asteraceae | Mugwort | *Artemesia douglasiana* | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Asteraceae | Coyote brush | *Baccharis pilularis* | | 1 | | | | | 1 | | 1 | 1 | | | | 1 | | 1 | 1 | | 1 | 1 | | | | 1 | 1 | 1 | | | | | 1 | 1 | | 1 | | 1 | 1 | 1 | 1 |
| Asteraceae | Plummer's baccharis | *Baccharis plummerae plummerae* | | | | 1 | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | 1 | | | | |
| Asteraceae | Mulefat | *Baccharis salicifolia* | | 1 | 1 | 1 | | | | | | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Asteraceae | California bush sunflower | *Encelia californica* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | |
| Asteraceae | Prickly ox tongue | *Picris echioides* | 1 | 1 | | 1 | | 1 | | 1 | | 1 | | | | 1 | 1 | 1 | 1 | 1 | 1 | | | | | 1 | 1 | 1 | | | | | 1 | | | | | | | 1 | 1 |
| Asteraceae | Goldenrod | *Solidager californica* | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | 1 | | | |
| Asteraceae | Canyon sunflower | *Venegasia carpesioides* | | 1 | | 1 | 1 | | 1 | | | 1 | 1 | | 1 | 1 | 1 | 1 | | | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| Asteraceae | Cocklebur | *Xanthium spinosum* | | 1 | | | | | | 1 | 1 | 1 | | 1 | | 1 | 1 | | 1 | 1 | 1 | | | | | 1 | 1 | | | 1 | 1 | | 1 | | | 1 | | | | 1 | 1 |
| Brassicaceae | Watercress | *Rorippa nasturtium-aquaticum* | | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | | | 1 | 1 | | 1 | 1 | | | | | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | | | | 1 | 1 | 1 |
| Caprifoliaceae | California honeysuckle | *Lonicera hispidula var. vacillans* | | | | 1 | | | | | | | | 1 | | | | 1 | | | | 1 | | | | | | 1 | | | | | | | | 1 | | | | | |
| Caprifoliaceae | Mexican elderberry | *Sambucus mexicana* | 1 | 1 | 1 | 1 | | 1 | | | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 | | | | | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Caprifoliaceae | Creeping snowberry | *Symphoricarpos mollis* | | | | 1 | | | | | | 1 | | 1 | | | | 1 | | | | | | | | | 1 | 1 | 1 | | | | | | | 1 | 1 | 1 | | | | |
| Convolvulaceae | Morning glory | *Calystegia macrostegia cyclostegia* | | | 1 | 1 | | | | | | | | | | | | | 1 | 1 | 1 | 1 | | | | | 1 | 1 | | | 1 | | | | 1 | | | 1 | | 1 | |
| Cornaceae | Dogwood | *Cornus sp.* | | 1 | | 1 | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Crassulaceae | Live-forever | *Dudleya sp.* | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | |
| Cucurbitaceae | Wild cucumber | *Marah macrocarpus* | 1 | | | | | | | | | | | | | | | | 1 | | | | | | | | 1 | | | | | | | | | | | | | | |
| Cyperaceae | Sedge | *Carex sp.* | | | | 1 | | | | | | | | | | | 1 | | | | | | | | | 1 | 1 | | | | | | | | | | | | 1 | 1 | 1 |
| Cyperaceae | Cyperus | *Cyperus spp.* | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | | | | | 1 | 1 |
| Cyperaceae | Bulrushes | *Scirpus spp.* | | | | 1 | | | | 1 | | | | | | | | | 1 | 1 | | | | | | 1 | | | | | | | | | | | | | | 1 | 1 |
| Datiscaceae | Durango root | *Datisca glomerata* | | | | 1 | | | | | | 1 | | | | 1 | | | | | | | | | | | | | | | | | 1 | | | 1 | | | | | |
| Dennstaedtiaceae | Giant chain fern | *Woodwardia fimbriata* | | | | 1 | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | 1 | 1 | | 1 | | |
| Dryopteridaceae | Wood fern | *Dryopteris arguta* | | 1 | | 1 | | | | | | 1 | 1 | 1 | 1 | | | | | | 1 | | | | 1 | | | 1 | | 1 | | | | | | 1 | 1 | 1 | 1 | | |
| Equisetaceae | Horsetail | *Equisetum spp.* | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | | 1 | 1 | 1 |
| Fabacae | Wild sweet pea | *Lathyrus vestitus var. vestitus* | | 1 | | 1 | | | 1 | 1 | 1 | 1 | | | | 1 | 1 | 1 | 1 | 1 | | | | | | 1 | 1 | 1 | | | | | | | | | | | | | 1 |
| Fabacae | Deerweed | *Lotus scoparius* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 |
| Fagaceae | Scrub oak | *Quercus berberdifolia* | | | | 1 | | | | | | | 1 | 1 | 1 | | | 1 | | | | 1 | | 1 | | | | | | | | | | | | | 1 | | 1 | | |
| Grossulariaceae | Chapparal currant | *Ribes malvaceum* | | | | | | | | | | | | | 1 | | | | | | | | | | | | | 1 | | | | | | | | | | | 1 | | |
| Grossulariaceae | Fuscia-flowered gooseberry | *Ribes speciosum* | | | | 1 | | | | | 1 | 1 | 1 | | | | | | | | | | | | | | | 1 | | | | 1 | | | | 1 | 1 | | | | |
| Grossulariaceae | Gooseberry | *Ribes sp.* | | | | | 1 | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | |
| Hydrophyllaceae | Yerba santa | *Eriodictylon crassifolium* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hydrophyllaceae | Branching phacelia | *Phacelia ramosissima* | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 |
| Hydrophyllaceae | Fiesta flower | *Pholistoma auritum var. auritum* | | 1 | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | |
| Juncaceae | Rushes | *Juncus spp.* | | 1 | 1 | 1 | | | | | | 1 | | | | | | | 1 | | | | | | | | | 1 | | | | | 1 | | | | | | | 1 | 1 |
| Lamiaceae | Purple sage | *Salvia leucophylla* | | | | | | | | | | | | 1 | | | | | | | 1 | | | | | | | | | | | | | | | | | 1 | | | |
| Lamiaceae | Black sage | *Salvia mellifera* | | | | 1 | | | | | | | | 1 | 1 | | | 1 | | | 1 | | | | | | | 1 | | | | | | | | | | | | 1 | 1 |
| Lamiaceae | Crimson pitcher sage | *Salvia spathacea* | | | | | | | | | | | | | | | | | | | 1 | | | | | | | 1 | | | | | | | | 1 | | | 1 | | |
| Lamiaceae | Wood mint, hedge nettle | *Stachys bullata* | 1 | | | 1 | | | | | | 1 | 1 | | | | | 1 | | | 1 | | | | | | | 1 | | | | | 1 | | | 1 | | | 1 | | 1 |
| Liliaceae | Humboldt lily | *Lilium humboldtii humboldtii* | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | 1 | 1 | 1 | | 1 | | |
| Onagraceae | Willow herb | *Epilobium ciliatum* | 1 | | | 1 | | | | | | | | | | 1 | 1 | | 1 | | | | | | | 1 | | | | | | | 1 | | | 1 | | | 1 | 1 | 1 |
| Onagraceae | California fuschia | *Epilobium canum ssp. canum* | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | |
| Onagraceae | Hooker's evening primrose | *Oenothera elata ssp. hirsutissma* | | | | | | | | | | | | | | | | | 1 | | | | | | | 1 | | | | | | | | | | | | | | | |
| Orchidaceae | Stream orchid | *Epipactis gigantea* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | |
| Oxalidaceae | Oxalis | *Oxalis albicans* | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | |
| Papaveraceae | California poppy | *Eschscholzia californica* | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | |
| Papaveraceae | Bush poppy | *Dendromecon rigida* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Poaceae | Giant ryegrass | *Elymus condensatus* | | | | 1 | 1 | | 1 | | | | | | | | | 1 | | | 1 | 1 | | | | | | | | | | | 1 | | | 1 | | 1 | 1 | | |
| Polygonaceae | Ashyleaf buckwheat | *Eriogonum cinereum* | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Polygonaceae | California buckwheat | *Eriogonum fasciculatum* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Polygonaceae | Water smartweed | *Polygonum amphibium var. emersum* | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | 1 | 1 | | 1 | 1 | | | | | | 1 | 1 | | | | | | 1 | | | | | | | 1 | 1 |
| Polypodiaceae | California polypody | *Polypodium californicum* | | | | 1 | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | 1 | 1 | 1 | | |
| Potamogetonaceae | Pondweeds | *Potamogeton spp.* | | 1 | | 1 | | 1 | | 1 | | | | | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | | 1 | 1 | | | 1 | 1 | | 1 | | | | | | | 1 | 1 |
| Pteridaceae | Venus-hair fern | *Adiantum capillus-verneris* | | | | 1 | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | 1 | 1 | | 1 | | |
| Ranunculaceae | Virgin's bower | *Clematis ligustifolia* | 1 | 1 | 1 | 1 | | | | | | 1 | | | | 1 | 1 | 1 | 1 | | 1 | 1 | | | | 1 | 1 | 1 | | | 1 | 1 | 1 | | | 1 | | | 1 | 1 | 1 |
| Ranunculaceae | Meadow rue | *Thalictrum fendlerli var. polycarpum* | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | 1 | | | | | |
| Rhamnaceae | Buck brush | *Ceanothus cuneatus* | | | | 1 | | | | | | 1 | 1 | 1 | 1 | | | 1 | | | 1 | 1 | | | | | | 1 | | | | | | | 1 | | 1 | | 1 | 1 | |
| Rhamnaceae | Hairy-leaved ceanothus | *Ceanothus oliganthus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rhamnaceae | Big pod ceanothus | *Ceanothus megacarpus* | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | |
| Rhamnaceae | Greenbark ceanothus | *Ceanothus spinosus* | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Table A-2
Plant Species Observed at the Study Reaches

**Plant Species Checklist**

| Family | Common Name | Scientific Name | RIN1 | C1 | C2 | C3 | MONT1 | SY1 | SY2 | M1 | M2 | M3 | M4 | M5 | M6 | AB1 | AB2 | AB3 | AT1 | AT2 | SA1 | SA2 | MY1 | MY2 | MY3 | SJ1 | SJ2 | SJ3 | SJ4 | T1 | T2 | DP1 | EC1 | R1 | R2 | AH1 | AH2 | SO1 | SO2 | GAV1 | GAV2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 4 | 2 | 4 | 1 | 2 | 1 | 3 | 2 | 3 | 1 | 1 | 1 | 2 | 4 | 4 | 3 | 3 | 1 | 2 | 1 | 1 | 1 | 4 | 4 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 1 | 4 | 2 | 1 |
| Rhamnaceae | Coffee berry | *Rhamnus californica* | | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | | | | | | | | | 1 | | | 1 | | 1 |
| Rhamnaceae | Redberry | *Rhamnus crocea* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | |
| Rhamnaceae | Hollyleaf redberry | *Rhamnus ilicifolia* | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | |
| Rosaceae | Mountain mahogany | *Cercocarpus betuloides* | | | | 1 | | | | | | | 1 | 1 | 1 | | | | | | 1 | 1 | | | | | | | | | | | | | | 1 | 1 | | 1 | | |
| Rosaceae | Toyon | *Heteromeles arbutifolia* | | | | 1 | | | | | | 1 | 1 | 1 | 1 | | | 1 | | | 1 | 1 | | 1 | 1 | | 1 | 1 | 1 | | | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | | 1 |
| Rosaceae | Holly-leaf cherry | *Prunus ilicifolia* | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | |
| Rosaceae | California rose | *Rosa californica* | | | | | | | | | | 1 | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | 1 | | |
| Rosaceae | California blackberry | *Rubus ursinus* | 1 | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Salicaceae | Narrow-leaved willow | *Salix exigua* | | | | | | | | | | | | | | | | | | 1 | | 1 | | 1 | | 1 | | | | | | | | | | | | | | | |
| Scrophulariaceae | Annual paintbrush | *Castilleja minor ssp. spiralis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Scrophulariaceae | Heart-leaved penstemon | *Keckiella cordifolia* | | | | | | | | | | 1 | | | | | | | | | | 1 | | | | | | 1 | | | | | | | | | | | | | |
| Scrophulariaceae | Bush monkey flower | *Mimulus aurantiacus* | | | | 1 | | | | | | | | | | | | 1 | | | 1 | | | 1 | 1 | | | 1 | | | | | | | | 1 | | 1 | 1 | 1 | 1 |
| Scrophulariaceae | Scarlet monkey flower | *Mimulus cardinalis* | | | | 1 | 1 | | | | | 1 | 1 | | | | 1 | | | | | 1 | | | | | | 1 | | | | | 1 | | 1 | 1 | 1 | | 1 | | |
| Scrophulariaceae | California figwort | *Scrophularia californica* | 1 | 1 | 1 | 1 | | | | | | 1 | 1 | | | 1 | | 1 | 1 | | 1 | 1 | 1 | | | 1 | 1 | 1 | | | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Solanaceae | White nightshade | *Solanum douglasi* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 | | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 |
| Solanaceae | Purple nightshade | *Solanum xanti* | | | | 1 | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | |
| Typhaceae | Cattails | *Typha spp.* | 1 | 1 | 1 | 1 | | | | 1 | 1 | | | | 1 | 1 | 1 | | 1 | 1 | | | 1 | 1 | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | | | | | 1 | 1 | 1 |
| Urticaceae | Stinging nettle | *Urtica dioica* | | 1 | | 1 | | 1 | | | | | | | | | 1 | | 1 | 1 | | 1 | | | | 1 | 1 | 1 | | | | | | | | | | | | 1 | 1 |
| Verbenaceae | Western vervain | *Verbena lasiostachys* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | |
| Vitaceae | Wild grape | *Vitis gidiana* | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | |
| **Non-Native Trees** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Anacardiaceae | Peruvian pepper tree | Schinus molle | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | 1 | | | | | |
| Myoporaceae | Myoporum | *Myoporum laetum* | | | 1 | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | |
| Myrtaceae | Eucalyptus | *Eucalyptus spp.* | | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | | | | | 1 | 1 | | 1 | | | | | | | 1 | 1 | | | | | | 1 | | | | | | | | |
| Pittosporaceae | Pittosporum | Pittosporum sp. | | 1 | | | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tamaricaceae | Tamarisk | Tamarisk spp. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Non-Native Shrubs, Vines, and Herbs** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Apiaceae | Poison hemlock | *Conium maculatum* | 1 | 1 | 1 | 1 | | | 1 | | 1 | | | | | 1 | 1 | | | | | 1 | | | | 1 | 1 | | | | | | 1 | | | | | | | 1 | |
| Apiaceae | Sweet fennel | *Foeniculum vulgare* | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | | 1 | | | 1 | 1 | 1 | 1 | | 1 | | 1 | 1 |
| Apocynaceae | Periwinkle | *Vinca major* | | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | | | | 1 | 1 | 1 | 1 | 1 | | | | | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | | | | | | | | |
| Araliaceae | English ivy | *Hedera helix* | | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | | | | 1 | 1 | | | 1 | | | | | | 1 | 1 | | | | | | | | | | | | | | |
| Asteraceae | Thoroughwort | *Ageratina ademorpha* | | 1 | | 1 | 1 | 1 | 1 | | | 1 | | | | | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | |
| Asteraceae | Italian thistle | *Cardus pycnocephalus* | | | | | | | | | | | | | | 1 | 1 | | 1 | | | | | | | | 1 | | | | 1 | | | | | | | | | 1 | |
| Asteraceae | Brassbuttons | *Cortula coronopifolia* | | | | | | | | | | | | | | | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | 1 | 1 |
| Asteraceae | Cudweed | *Gnaphalium luteo-album* | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | 1 | 1 |
| Asteraceae | Cape ivy (formerly German ivy) | *Senecio mikanioides* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | 1 | 1 | | 1 | | | | 1 | | | 1 | 1 | | | | | | | | | | | | | 1 | |
| Asteraceae | Common sow thistle | *Sonchus oleraceus* | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Asteraceae | Milk thistle | *Silyburn marianum* | | | | | | | 1 | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Brassicaceae | Black mustard | *Brassica nigra* | | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | | | | 1 | 1 | | 1 | 1 | 1 | 1 | | | | 1 | 1 | | | | | | 1 | 1 | | 1 | | | | 1 | 1 |
| Brassicaceae | Wild radish | *Raphanus sativus* | | 1 | | | | 1 | | 1 | 1 | | | | | 1 | 1 | | 1 | 1 | | | | | | 1 | 1 | | | | | | | | | 1 | | | | 1 | |
| Caprifoliaceae | Japanese honeysuckle | *Lonicera japonica* | | 1 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cyperaceae | Cyperus | *Cyperus spp.* | | | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Euphorbiaceae | Castor bean | *Ricinus communis* | | 1 | | | 1 | 1 | | 1 | 1 | 1 | | | | 1 | 1 | | 1 | 1 | | 1 | 1 | | | 1 | 1 | | | 1 | | | 1 | | | | | | | 1 | 1 |
| Fabaceae | Broom | *Cytisus sp.* | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fabaceae | Bur-clover | *Medicago polymorpha ssp. hispida* | 1 | | | | | 1 | 1 | | 1 | | | | | 1 | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | |
| Fabaceae | Sweetclover | *Melilotus alba* | 1 | | | | | | | | | | | | | 1 | | | | 1 | | 1 | | | | 1 | 1 | | | | | | | | | | | | | 1 | 1 |
| Geraniaceae | White-stem filaree | *Erodium moschatum* | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| Lamiaceae | Horehound | *Marubium vulgare* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | 1 | | | | 1 | 1 |
| Lamiaceae | Spearmint | *Mentha spicata var. spicata* | | | | | 1 | 1 | 1 | | | 1 | | | | | | 1 | | | | | | | | 1 | | 1 | | | | | | | | | | | | | |
| Oxalidaceae | Bermuda buttercup | *Oxalis pes-caprae* | | 1 | | 1 | | | | | | | | | | | 1 | | | | | | | | | | | 1 | | | | | | | | | | | | | 1 |
| Plantaginaceae | Common plantain | *Plantago major* | | | | | | 1 | 1 | 1 | 1 | 1 | | | | 1 | 1 | | 1 | 1 | | | | | | 1 | | | | | | | | | | | | | | 1 | |
| Poaceae | Bent grass | *Agrostis viridis* | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Poaceae | Giant reed | *Arundo donax* | | 1 | 1 | 1 | | | | 1 | | | | | | 1 | 1 | | | | | | | | | 1 | 1 | | | 1 | | | | | | | | | | | |
| Poaceae | Wild oats | *Avena fatua* | | | | | | | | 1 | | | | | | | | | | 1 | | | | | | | | | | | | | | | | 1 | | | | 1 | 1 |
| Poaceae | Rescue grass | *Bromus catharticus* | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Poaceae | Ripgut brome | *Bromus diandrus* | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | | | | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | 1 | |
| Poaceae | Pampas grass | *Cortaderia selloana* | | | | | | | | | | | | | | | | | 1 | | | | | | | 1 | | | | | | | | | | | | | | | |
| Poaceae | Bermuda grass | *Cynodon dactylon* | | 1 | 1 | | | | | 1 | | 1 | | | | 1 | 1 | | 1 | | | | | | | 1 | | | | | | | | | | | | | | 1 | 1 |
| Poaceae | Harding grass | *Phalaris aquatica* | | | | | | | | | 1 | | | | | | | | | | | 1 | | | | | | | | | | | | | 1 | 1 | | | | | 1 |
| Poaceae | Smilo grass | *Pipatherum milaceum* | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 |
| Poaceae | Rabbitfoot grass, beard grass | *Polypogon monspeliensis* | | | 1 | 1 | | | | 1 | | 1 | | | | 1 | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | 1 | 1 |
| Polygonaceae | Curly dock | *Rumex crispus* | | 1 | 1 | | | | | 1 | | | | | | 1 | 1 | | 1 | 1 | | 1 | | | | | | | | | | | | | | 1 | | | | 1 | 1 |
| Primulaceae | Scarlet pimpernel | *Anagallis arvensis* | | 1 | | | | 1 | | | 1 | | | | | 1 | | | 1 | 1 | | | | | | 1 | | | | | | | | | | 1 | | | | 1 | |
| Rosaceae | Himalayan blackberry | *Rubus discolor* | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Scrophulariaceae | Water speedwell | *Veronica anagallis-aquatica* | | 1 | 1 | 1 | 1 | | | 1 | | | | | | 1 | 1 | 1 | 1 | 1 | | | | | | 1 | 1 | | | 1 | 1 | 1 | 1 | | | | | | | 1 | 1 |
| Solanaceae | Tree tobacco | *Nicotiana glauca* | 1 | | 1 | | | 1 | | 1 | | 1 | | | | 1 | 1 | | | 1 | | 1 | | | | 1 | 1 | 1 | | | | | | | | | | | | 1 | 1 |
| Tropaeolaceae | Garden nasturtium | *Tropaeolum majus* | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | | | | | 1 | 1 | | 1 | 1 | | | | | | 1 | 1 | | | | | | 1 | | | | | | | | |
| | | # native plant species | 17 | 33 | 22 | 57 | 18 | 14 | 15 | 17 | 19 | 37 | 25 | 20 | 21 | 28 | 28 | 34 | 33 | 23 | 32 | 33 | 15 | 22 | 15 | 35 | 33 | 52 | 12 | 14 | 20 | 17 | 31 | 17 | 21 | 39 | 29 | 25 | 42 | 38 | 40 |
| | | # non-native plant species | 9 | 22 | 18 | 13 | 13 | 18 | 14 | 21 | 17 | 14 | 1 | 2 | 2 | 24 | 21 | 4 | 21 | 20 | 4 | 12 | 5 | 3 | 1 | 21 | 17 | 7 | 1 | 7 | 5 | 4 | 11 | 4 | 4 | 11 | 0 | 2 | 1 | 21 | 16 |
| | | Total # plant species | 26 | 55 | 40 | 70 | 31 | 32 | 29 | 38 | 36 | 51 | 26 | 22 | 23 | 52 | 49 | 38 | 54 | 43 | 36 | 45 | 20 | 25 | 16 | 56 | 50 | 59 | 13 | 21 | 25 | 21 | 42 | 21 | 25 | 50 | 29 | 27 | 43 | 59 | 56 |
| | | % native species | 65.4 | 60.0 | 55.0 | 81.4 | 58.1 | 43.8 | 51.7 | 44.7 | 52.8 | 72.5 | 96.2 | 90.9 | 91.3 | 53.8 | 57.1 | 89.5 | 61.1 | 53.5 | 88.9 | 73.3 | 75.0 | 88.0 | 93.8 | 62.5 | 66.0 | 88.1 | 92.3 | 66.7 | 80.0 | 81.0 | 73.8 | 81.0 | 84.0 | 78.0 | 100.0 | 92.6 | 97.7 | 64.4 | 71.4 |

Table A-3
Vertebrate Species Observed at the Study Reaches

| Family | Common Name | Scientific Name | RIN1 | C1 | C2 | C3 | F1 | SM1 | MONT1 | SY1 | SY2 | M1 | M2 | M3 | M4 | M5 | M6 | AB1 | AB2 | AB3 | AT1 | AT2 | SA1 | SA2 | MY1 | MY2 | MY3 | SJ1 | SJ2 | SJ3 | SJ4 | T1 | T2 | DP1 | EC1 | R1 | R2 | AH1 | AH2 | SO1 | SO2 | GAV1 | GAV2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 4 | 2 | 4 | 1 | 1 | 1 | 2 | 1 | 3 | 2 | 3 | 1 | 1 | 1 | 2 | 4 | 4 | 3 | 3 | 1 | 2 | 1 | 1 | 1 | 4 | 4 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 1 | 4 | 2 | 1 |
| CYPRINIDAE | Arroyo chub (introduced) | *Gila orcutti* | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | 1 | 1 |
| GASTEROSTEIDAE | Three-spine stickle back | *Gasterosteus acleatus* | 1 | 1 | | | | | | | | 1 | | | | | | | | | | | | | | | | 1 | 1 | | | | | 1 | | | | | | | | 1 | 1 |
| POECILIIDAE | Mosquito fish (introduced) | *Gambusia affinis* | | 1 | | | | | | | | 1 | | | | | | | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | |
| SALMONIDAE | Steelhead/rainbow trout | *Oncorhynchus mykiss* | | | | 1 | | | 1 | | | | | 1 | 1 | 1 | | | | | | | | | | 1 | | | 1 | 1 | | | | | | 1 | | 1 | 1 | | | | |
| BUFONIDAE | Western toad | *Bufo boreas* | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | |
| HYLIDAE | California tree frog | *Pseudacris cadaverina* | | | | 1 | | | | | | | | | 1 | | 1 | | | | | | | | | 1 | 1 | | | 1 | 1 | | | | | | 1 | 1 | 1 | | 1 | 1 | |
| HYLIDAE | Pacific tree frog | *Pseudacris regilla* | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 |
| RANIDAE | Bullfrog (introduced) | *Rana catesbiana* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SALMANDRIDAE | California newt | *Taricha torosa* | | | | 1 | | | | | | | | | | | 1 | | | 1 | | | | 1 | | 1 | 1 | | | 1 | | | | | | | | 1 | 1 | | 1 | | |
| ANGUIDAE | Alligator lizard | *Elgaria multicarinata* | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | 1 | | 1 | | | |
| COLUBRIDAE | Gopher snake | *Pituophis melanoleucus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| COLUBRIDAE | Ring-neck snake | *Diadophis punctatus* | | | | | | | | | | | | | | | 1 | | | | | | | | | | 1 | | | | | | | | | | | | | | | | |
| COLUBRIDAE | Two-striped garter snake | *Thamnophis hammondii* | | | | | | | | | | | | | | | 1 | | | | | | | 1 | | 1 | | | | | | | 1 | | | | | | | | | | |
| EMYDIDAE | Western pond turtle | *Clemmys marmorata* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | 1 | 1 | |
| PHRYNOSOMATIDAE | Coast-horned lizard | *Phyronosoma coronatum* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | |
| PHRYNOSOMATIDAE | Western fence lizard | *Sceloporus occidentalis* | 1 | | 1 | 1 | | | 1 | | | | | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | | | | | | 1 | 1 | 1 | |
| PHRYNOSOMATIDAE | Side-blotched lizard | *Uta stansburiana* | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | 1 | | |
| PHRYNOSOMATIDAE | Western skink | *Eumeces skiltonianus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | |
| PHRYNOSOMATIDAE | Western whiptail | *Cnemidophorus tigris* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| VIPERIDAE | Western rattlesnake | *Crotalus viridis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | | | | | | | | | | |
| ACCIPITRIDAE | Cooper's hawk | *Accipiter cooperi* | | | 1 | | | | | | | | 1 | | | | | | 1 | | | | | 1 | | | | 1 | 1 | | | | | | | | | | | | | | |
| ACCIPITRIDAE | Red-shouldered hawk | *Buteo lineatus* | 1 | 1 | 1 | | | | | 1 | 1 | 1 | 1 | 1 | | | | | | | | 1 | | 1 | | | | 1 | 1 | | | | | 1 | | | 1 | | | | | | |
| ACCIPITRIDAE | Red-tailed hawk | *Buteo jamaicensis* | 1 | | | 1 | | | | | | | | | | | 1 | | 1 | 1 | 1 | 1 | | 1 | | | | | | 1 | | 1 | | | | | | 1 | | | 1 | | |
| AEGITHALIDAE | Bushtit | *Psaltriparus minimus* | 1 | 1 | 1 | | | | | 1 | | 1 | 1 | | | | | | 1 | 1 | 1 | | | | | | | | 1 | | | | | | | | | 1 | | | 1 | 1 | |
| ALCEDINIDAE | Belted kingfisher | *Ceryle aclyon* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ANATIDAE | Mallard | *Anas platyrhynchos* | 1 | 1 | 1 | 1 | 1 | | | 1 | | 1 | | 1 | | | | | 1 | | 1 | 1 | | | | | | | 1 | | | | | | 1 | | | | | | | | |
| ANATIDAE | Cinnamon teal | *Anas cyanoptera* | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | |
| ANATIDAE | American widgeon | *Anas americana* | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | |
| ARDEIDAE | Great egret | *Casmerodius albus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| ARDEIDAE | Snowy egret | *Egretta thula* | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | |
| ARDEIDAE | Black-crowned night heron | *N. nycticorax* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| ARDEIDAE | Great blue heron | *Ardea heriodas* | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | 1 | | | | |
| ARDEIDAE | Green-backed heron | *Butorides striatus* | | | | | | | | | | 1 | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | |
| BOMBYCILLIDAE | Cedar waxwing | *Bombycilla cedrorum* | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CATHARTIDAE | Turkey vulture | *Cathartes aura* | 1 | | | 1 | | | | | | | | | | | | | 1 | 1 | | | | | | | | | 1 | | | 1 | 1 | | | 1 | 1 | 1 | | | 1 | 1 | 1 |
| CHARADRIIDAE | Killdeer | *Charadrius vociferus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| COLUMBIDAE | Mourning dove | *Zenaida macroura* | 1 | 1 | 1 | | 1 | 1 | | 1 | 1 | 1 | | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | | 1 | | 1 | 1 | 1 | | | 1 | | | 1 | | 1 | | | 1 | 1 | 1 |
| COLUMBIDAE | Band-tailed pigeon | *Columba fasciata* | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| COLUMBIDAE | Rock dove (introduced) | *Columba livia* | | 1 | | | 1 | 1 | | | | 1 | | | | | | 1 | | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 |
| CUCULIDAE | Greater roadrunner | *Geococcyx californianus* | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | |
| CORVIDAE | American crow | *Corvus brachyrhinchos* | | 1 | 1 | | | 1 | 1 | 1 | | 1 | 1 | 1 | | | | 1 | 1 | 1 | | 1 | 1 | | 1 | 1 | | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | | | | | | 1 | 1 |
| CORVIDAE | Western scrub-jay | *Aphelocoma californica* | 1 | 1 | 1 | 1 | | | | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | | 1 | | 1 | 1 | | 1 | | | 1 | 1 | 1 |
| CORVIDAE | Raven | *Corvus corax* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | 1 | | |
| EMBERIZIDAE | Dark-eyed junco | *Junco hyemalis* | | 1 | | 1 | | | | | | | | 1 | 1 | | | | | | | | | 1 | | | | | | | | | | | | | | 1 | | | | | |
| EMBERIZIDAE | Song sparrow | *Melospiza melodia* | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | 1 | 1 | 1 | | | 1 | | 1 | 1 | 1 | |
| EMBERIZIDAE | White-crowned sparrow | *Zonotrichia leucophrys* | | 1 | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | | | | | | | | | | | | | | |
| EMBERIZIDAE | California towhee | *Pipilo crissalis* | | 1 | | 1 | | | | 1 | | 1 | 1 | | | 1 | | 1 | 1 | 1 | 1 | | 1 | | | 1 | | 1 | 1 | | | | | | 1 | 1 | | 1 | | | 1 | 1 | 1 |
| EMBERIZIDAE | Spotted towhee | *Pipilo maculatus* | 1 | 1 | 1 | 1 | | | 1 | | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | | 1 | 1 | | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | | 1 | | 1 | 1 | 1 | 1 |
| EMBERIZIDAE | Orange-crowned warbler | *Vermivora celata* | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| EMBERIZIDAE | Yellow warbler | *Dendroica petechia* | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FALCONIDAE | American kestrel | *Falco sparverius* | | | | | | | | | | | | | | | | | | | | | | | | 1 | | 1 | | | | | | | | | | | | | 1 | | 1 |
| FRINGILLIDAE | House finch | *Carpodactus mexicanus* | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | | | | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | | | 1 | | | 1 | 1 | 1 |
| FRINGILLIDAE | American goldfinch | *Carduelis tristis* | 1 | | 1 | 1 | | | | | | | | | | | | 1 | | | | | | 1 | | | | | 1 | | | 1 | | | | | | | | | | | |
| FRINGILLIDAE | Lesser goldfinch | *Carduelis lawrencei* | 1 | 1 | | 1 | | | | 1 | 1 | | 1 | 1 | | | | 1 | | | | | | | 1 | | | 1 | | | | | 1 | | 1 | | | 1 | | | | | 1 |
| HIRUNDINIDAE | Cliff swallow | *Petrochelidon pyrrhonota* | | | | 1 | | | | | | | | | | | | 1 | | | | 1 | | | | | | 1 | | | | | | 1 | | | | 1 | | | 1 | 1 | |
| HIRUNDINIDAE | Northern rough-winged swallow | *Stelgidopteryx serripennis* | 1 | | | 1 | | | | | | 1 | | | | | | 1 | | 1 | 1 | 1 | | | | | | 1 | | | | | | | | | | 1 | | | 1 | 1 | 1 |
| HIRUNDINIDAE | Violet-green swallow | *Trachycineta bicolor* | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | |
| ICTERIDAE | Blackbird, red-winged | *Agelaius phoeniceus* | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | |
| ICTERIDAE | Bullock's northern oriole | *Icterus galbula bullockii* | | 1 | | | | | | | | | | | | | 1 | | | | | | 1 | | | | | | | | | | | | | | | | | | | | |
| ICTERIDAE | Hooded oriole | *Icterus cucullatus* | | | | | | | | | | | | | | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | |
| LARIDAE | Western gull | *Larus occidentalis* | | 1 | | | 1 | | | | | | 1 | | | | | 1 | | | | | | | | | | 1 | | | | | | | | | | | | | | | |
| MIMIDAE | Northern mockingbird | *Mimus polyglottos* | | 1 | | | 1 | 1 | | | | 1 | | | | | | | | | | 1 | | | 1 | | | | 1 | | | 1 | 1 | | | 1 | | | | | | | |
| ODONTOPHORIDAE | California quail | *Callipepla californica* | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | 1 | | | | | |
| PARIDAE | Plain oak titmouse | *Baeolopus inornatus* | | | | | | | 1 | 1 | | 1 | | 1 | 1 | | | | | 1 | | | | | | | | | | | | | | | | | | 1 | | | | | |
| PARULIDAE | Common yellowthroat | *Geothlypis trichas* | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 | | 1 | 1 | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 | 1 | | | | | | 1 | | | | | | 1 | 1 | 1 |
| PASSERIAE | House sparrow (introduced) | *Passer domesticus* | | | | | 1 | | | | | 1 | 1 | | | | | 1 | | | | | | | | | | 1 | | | | 1 | 1 | | | | | | | | | | |
| PICIDAE | Northern flicker | *Colaptes aurutus* | 1 | | | 1 | | | | | | | | | 1 | | | | | | | | | | | 1 | | | 1 | | | | | | | | | 1 | | | 1 | | |
| PICIDAE | Acorn woodpecker | *Melanerpes formicivorus* | | 1 | | 1 | | | 1 | 1 | 1 | | | 1 | 1 | | | | 1 | 1 | | | 1 | 1 | | 1 | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | | 1 | 1 | | | 1 | | |

Table A-3
Vertebrate Species Observed at the Study Reaches

| Family | Common Name | Scientific Name | RIN1 | C1 | C2 | C3 | F1 | SM1 | MONT1 | SY1 | SY2 | M1 | M2 | M3 | M4 | M5 | M6 | AB1 | AB2 | AB3 | AT1 | AT2 | SA1 | SA2 | MY1 | MY2 | MY3 | SJ1 | SJ2 | SJ3 | SJ4 | T1 | T2 | DP1 | EC1 | R1 | R2 | AH1 | AH2 | SO1 | SO2 | GAV1 | GAV2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 4 | 2 | 4 | 1 | 1 | 1 | 2 | 1 | 3 | 2 | 3 | 1 | 1 | 1 | 2 | 4 | 4 | 3 | 3 | 1 | 2 | 1 | 1 | 1 | 4 | 4 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 1 | 4 | 2 | 1 |
| PICIDAE | Hairy woodpecker | *Picoides villosus* | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | |
| PTILOGONATIDAE | Phainopepla | *Phainopepla nitens* | | | 1 | 1 | | | | | | | | | | | | 1 | | 1 | | | | | 1 | | | | | | | | | | | | | | | | | | |
| RALLIDAE | American coot | *Fulica americana* | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| REGULIDAE | Ruby-crowned kinglet | *Regulus calendula* | 1 | | | | | | | | | | | | | 1 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| SCOLOPACIDAE | Greater yellowlegs | *Tringa melanoleuca* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| STRIGIIDAE | Great-horned owl | *Bubo virginianus* | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | |
| STURNIDAE | European starling (introduced) | *Sturnus vulgaris* | | | | | | | | | | | | | | | | | | | 1 | | | | 1 | | | | | | | | | | | | | | | | | | |
| THRAUPIDAE | Western tanager | *Piranga ludoviciana* | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | |
| TIMALIIDAE | Wrentit | *Chamaea fasciata* | 1 | | | 1 | | | | | | | | 1 | 1 | 1 | 1 | 1 | | 1 | | | 1 | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | | 1 | 1 | 1 | 1 |
| TROCHILIDAE | Allen's hummingbird | *Selasphorus sasin* | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TROCHILIDAE | Anna's hummingbird | *Calypte anna* | 1 | 1 | 1 | 1 | | | 1 | | | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | | 1 | 1 | 1 | 1 | | | 1 | 1 | | | | 1 | 1 | | | 1 | 1 |
| TROCHILIDAE | Rufous hummingbird | *Selasphorus rufus* | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TROGLODYTIDAE | Bewick's wren | *Thryomanes bewickii* | | 1 | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | 1 | | | | | |
| TROGLODYTIDAE | Canyon wren | *Catherpes mexicanus* | | | | 1 | | | 1 | | | | | | | | | | | | | | | 1 | | | | | | 1 | | | | | | | | | 1 | | 1 | | |
| TURDIDAE | American robin | *Turdus migratorius* | 1 | | | 1 | | | | | 1 | | | | | | | | 1 | | 1 | | | | | | | | | 1 | | | | | | | | | | | | | |
| TURDIDAE | Hermit thrush | *Catharus guttatus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | |
| TURDIDAE | Swainson's thrush | *Catharus ustulatus* | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| TYRANNIDAE | Ash-throated flycatcher | *Myiarchus cinerascens* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TYRANNIDAE | Pacific-slope flycatcher | *Empidonax difficilis* | 1 | | | 1 | | | 1 | 1 | 1 | | | 1 | | | | | | 1 | | | | 1 | | | 1 | | 1 | 1 | | | | | | | | 1 | 1 | | 1 | | |
| TYRANNIDAE | Western kingbird | *Tyrannus verticalis* | | 1 | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | |
| TYRANNIDAE | Black phoebe | *Sayornis nigricans* | 1 | 1 | | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| TYRANNIDAE | Western wood-pewee | *Contopus sordidulus* | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CANIDAE | Coyote | *Canis latrans* | 1 | | | 1 | | | | | | | | | | | | 1 | | | 1 | | | 1 | 1 | | | | | | | | 1 | | | | | | 1 | 1 | 1 | 1 | 1 |
| CANIDAE | Gray fox | *Urocyon cineroargenteus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | |
| CERVIDAE | Mule deer | *Odocoileus hemionus* | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | 1 | | | 1 | 1 | 1 |
| DIDELPHIDAE | Oppossum (introduced) | *Didelphis virginiana* | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | 1 | | | 1 | | | | | | | | |
| FELIDAE | Bobcat | *Lynx rufus* | | | | 1 | | | | | | | | | | | | | | 1 | | | | 1 | | | | | | | 1 | | | 1 | | | | 1 | 1 | | 1 | 1 | |
| FELIDAE | Mountain lion | *Felis concolor* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | |
| LEPORIDAE | Brush rabbit | *Sylvilagus bachmanni* | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | 1 | |
| LEPORIDAE | Cottontail rabbit | *Sylvilagus auduboni* | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | |
| PROCYONIDAE | Racoon | *Procyon lotor* | 1 | 1 | | 1 | | | | 1 | 1 | 1 | | | | | | 1 | 1 | 1 | 1 | 1 | | | | | | 1 | 1 | | | | | 1 | 1 | | | 1 | | | | 1 | 1 |
| SCIRIDAE | Merriam's chipmunk | *Eutamias merriami* | | | | | | | | | 1 | | | | | | | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | |
| SCIRIDAE | California ground squirrel | *Spermophilus beecheyi* | | | 1 | | | | | | | | | | | | | | | 1 | | | | | 1 | | | | 1 | | | | | | 1 | | | 1 | | | | | |
| SCIRIDAE | Western gray squirrel | *Sciurus griseus* | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | |
| TALPIDAE | Broad-footed mole | *Scapanus latimanus* | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| URSIDAE | Black bear | *Ursus americanus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | # vertebrate sp. (all yrs.) | 29 | 30 | 20 | 34 | 7 | 6 | 13 | 17 | 13 | 21 | 16 | 20 | 13 | 7 | 15 | 23 | 21 | 31 | 28 | 18 | 13 | 25 | 16 | 19 | 12 | 25 | 32 | 19 | 6 | 15 | 19 | 14 | 18 | 10 | 6 | 36 | 11 | 8 | 31 | 30 | 21 |
| | | # native aq. vert. sp (all yrs.) | 2 | 2 | 1 | 4 | 0 | 0 | 2 | 1 | 1 | 2 | 1 | 2 | 3 | 1 | 4 | 1 | 1 | 2 | 1 | 1 | 1 | 3 | 1 | 5 | 3 | 2 | 3 | 5 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 5 | 4 | 0 | 4 | 4 | 2 |

Table A-4
Benthic Macroinvertebrate Data

| Year | Study Reaches | # specimens picked | # specimens identified | area searched (sq. m) | BMI density (#/sq. m) | # BMI orders | # BMI families | # non-insect taxa | # insect orders | # insect families | # EPT families | % EPT | % PT | % sens EPT | BI score | % sens BMIs | % tol BMIs | % dominant taxa | % two dominant taxa | % Diptera as Chironomidae | % non-insect BMIs | % non-insects + diptera | % non-insects+chironimidae | EPT/Chironomidae | % cg | %sc | %sh | % cf | % pred | %sc+sh | %sc+sh+pred | %cg+sc+sh | %cg+cf | %cg+pred | EPHEMEROPTERA | Baetidae | Caenidae | Emphemerellidae | Heptagenidae | Leptohyphidae | Leptophlebiidae | PLECOPTERA | Chloroperlidae | Nemouridae | Perlidae | Perlodidae | TRICOPTERA | Brachycentridae | Glossostomatidae | Helicopsychidae | Hydropsychidae | Hydroptilidae | Lepidostomatidae | Leptoceridae | Limnophilidae | Odontoceridae | Philopotamidae | Polycentropodidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tolerance Value* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | 7 | 1 | 4 | 4 | 2 | | 1 | 2 | 1 | 2 | | 1 | 0 | 3 | 4 | 4 | 1 | 4 | 4 | 0 | 3 | 6 |
| | S(0-2), M(3-7), T(8-10) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | M | M | S | M | M | S | | S | S | S | S | | S | S | M | M | M | S | M | M | S | M | M |
| | Primary FFG* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | cg | cg | cg | cg | cg | cg | | p | sh | p | p | | NA | sc | sc | cf | ph | sh | om | s | sh | cf | p |
| | | | | | Abundance | | Richness | | | | | | | | | | Composition/Tolerance | | | | | | | | | | | | Trophic Groups | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **2000** | C1 | 362 | 300 | 1.13 | 321.8 | 9 | 18 | 4 | 5 | 14 | 3 | 2.3 | 0 | 0.7 | 6.26 | 1 | 18 | 53 | 66 | 72 | 18 | 92 | 71 | 0.0 | 18 | 2 | 0 | 13 | 11 | 2 | 13 | 20 | 31 | 29 | 7 | 4 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C2 | 337 | 300 | 0.75 | 449.3 | 8 | 18 | 3 | 5 | 15 | 5 | 56 | 0 | 3.7 | 4.92 | 4 | 3 | 37 | 54 | 21 | 3 | 28 | 8 | 10.5 | 58 | 1 | 0 | 19 | 16 | 1 | 17 | 59 | 77 | 74 | 168 | 111 | 21 | 2 | 0 | 25 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C3 | 330 | 300 | 0.92 | 358.7 | 8 | 22 | 0 | 8 | 22 | 12 | 46 | 7.3 | 20 | 4.45 | 20 | 18 | 21 | 38 | 12 | 0 | 20 | 2 | 19.9 | 77 | 2 | 2 | 0 | 16 | 4 | 20 | 81 | 77 | 93 | 117 | 3 | 18 | 40 | 2 | 50 | 4 | 2 | 1 | 1 | 0 | 0 | 20 | 0 | 0 | 5 | 1 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| | F1 | 330 | 300 | 1.22 | 270.5 | 5 | 7 | 1 | 4 | 6 | 1 | 0.3 | 0 | 0 | 7.06 | 0 | 53 | 51 | 97 | 98 | 51 | 98 | 97 | 0.0 | 53 | 0 | 0 | 0 | 0 | 0 | 0 | 53 | 53 | 53 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SM1 | 330 | 300 | 1.33 | 247.6 | 4 | 7 | 1 | 3 | 6 | 0 | 0 | 0 | 0 | 6.03 | 0 | 2 | 95 | 97 | 98 | 2 | 98 | 97 | 0.0 | 0 | 2 | 0 | 0 | 1 | 2 | 3 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M1 | 330 | 300 | 0.13 | 2640.0 | 9 | 13 | 4 | 5 | 9 | 4 | 2.7 | 0.7 | 0 | 7.49 | 0 | 78 | 37 | 63 | 96 | 77 | 96 | 96 | 0.1 | 66 | 14 | 0 | 0 | 1 | 14 | 14 | 79 | 66 | 66 | 6 | 4 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M3 tot | 333 | 300 | 0.10 | 3233.0 | 12 | 33 | 4 | 8 | 29 | 15 | 53 | 25 | 16 | 4.42 | 16 | 3 | 21 | 33 | 66 | 3 | 35 | 24 | 2.5 | 34 | 5 | 14 | 12 | 8 | 18 | 27 | 53 | 46 | 43 | 84 | 36 | 20 | 0 | 8 | 3 | 17 | 2 | 0 | 2 | 0 | 0 | 73 | 5 | 7 | 0 | 11 | 0 | 10 | 1 | 0 | 0 | 0 | 3 |
| | M3 ri | 166 | 150 | 0.02 | 8300.0 | 6 | 22 | 1 | 5 | 21 | 13 | 49 | 26 | 14 | 4.40 | 14 | 3 | 20 | 40 | 53 | 1 | 38 | 21 | 2.6 | 31 | 6 | 6 | 23 | 9 | 12 | 21 | 43 | 55 | 40 | 35 | 30 | 2 | 0 | 3 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 38 | 4 | 7 | 0 | 11 | 0 | 3 | 1 | 0 | 0 | 0 | 1 |
| | M3 po | 167 | 150 | 0.08 | 2012.0 | 12 | 27 | 4 | 8 | 23 | 11 | 57 | 24 | 18 | 4.44 | 19 | 3 | 23 | 39 | 85 | 5 | 31 | 27 | 2.5 | 37 | 3 | 21 | 0 | 8 | 25 | 33 | 62 | 37 | 45 | 49 | 6 | 18 | 0 | 5 | 3 | 17 | 1 | 0 | 1 | 0 | 0 | 35 | 1 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 2 |
| | M4 tot | 339 | 300 | 0.06 | 5467.7 | 12 | 31 | 3 | 9 | 28 | 14 | 52 | 14 | 23 | 4.48 | 23 | 11 | 13 | 25 | 63 | 5 | 24 | 17 | 4.4 | 57 | 8 | 4 | 1 | 12 | 12 | 24 | 69 | 58 | 69 | 113 | 26 | 40 | 0 | 10 | 5 | 32 | 2 | 2 | 0 | 0 | 0 | 40 | 14 | 1 | 0 | 2 | 0 | 12 | 0 | 0 | 0 | 0 | 3 |
| | M4 ri | 174 | 150 | 0.03 | 5612.9 | 12 | 24 | 3 | 9 | 21 | 11 | 49 | 19 | 23 | 4.13 | 24 | 13 | 15 | 30 | 52 | 3 | 21 | 12 | 5.3 | 55 | 9 | 2 | 1 | 12 | 11 | 23 | 67 | 57 | 67 | 45 | 22 | 4 | 0 | 10 | 0 | 9 | 2 | 2 | 0 | 0 | 0 | 27 | 14 | 1 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 1 |
| | M4 po | 165 | 150 | 0.03 | 5322.6 | 8 | 20 | 3 | 5 | 17 | 8 | 54 | 8.7 | 22 | 4.83 | 22 | 9 | 24 | 39 | 72 | 8 | 27 | 22 | 3.9 | 59 | 6 | 7 | 0 | 11 | 13 | 24 | 72 | 59 | 71 | 68 | 4 | 36 | 0 | 0 | 5 | 23 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 2 |
| | M5 | 330 | 300 | 0.16 | 2062.5 | 8 | 20 | 2 | 6 | 18 | 9 | 66 | 9 | 45 | 3.66 | 46 | 3 | 38 | 63 | 86 | 3 | 32 | 28 | 2.6 | 61 | 0 | 6 | 2 | 3 | 6 | 9 | 67 | 63 | 65 | 172 | 58 | 0 | 0 | 0 | 0 | 114 | 1 | 1 | 0 | 0 | 0 | 26 | 1 | 0 | 0 | 2 | 1 | 17 | 0 | 0 | 0 | 0 | 3 |
| | M6 | 330 | 300 | 0.50 | 660.0 | 8 | 26 | 2 | 6 | 24 | 9 | 31 | 3.7 | 2.7 | 6.41 | 3 | 34 | 24 | 43 | 71 | 18 | 52 | 42 | 1.3 | 55 | 6 | 3 | 0 | 9 | 9 | 18 | 64 | 55 | 64 | 83 | 19 | 56 | 0 | 1 | 3 | 4 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 |
| | AB2 | 330 | 300 | 0.25 | 1320.0 | 11 | 21 | 6 | 5 | 15 | 3 | 28 | 0.7 | 0 | 6.12 | 0 | 34 | 30 | 57 | 94 | 32 | 64 | 62 | 0.9 | 45 | 14 | 0 | 0 | 8 | 14 | 22 | 58 | 45 | 53 | 83 | 80 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB3 tot | 334 | 300 | 0.09 | 3591.4 | 12 | 32 | 4 | 8 | 28 | 15 | 58 | 15 | 10 | 5.02 | 11 | 12 | 23 | 38 | 77 | 12 | 35 | 30 | 3.2 | 50 | 7 | 7 | 7 | 8 | 14 | 23 | 65 | 57 | 59 | 127 | 69 | 41 | 0 | 2 | 3 | 12 | 1 | 0 | 0 | 1 | 0 | 45 | 5 | 0 | 0 | 13 | 1 | 11 | 0 | 0 | 0 | 1 | 2 |
| | AB3 ri | 167 | 150 | 0.06 | 2693.5 | 11 | 24 | 3 | 8 | 21 | 12 | 65 | 16 | 7.3 | 4.63 | 9 | 12 | 41 | 53 | 59 | 10 | 29 | 21 | 5.7 | 57 | 5 | 1 | 13 | 9 | 7 | 16 | 64 | 71 | 67 | 73 | 62 | 4 | 0 | 2 | 0 | 5 | 1 | 0 | 0 | 1 | 0 | 23 | 4 | 0 | 0 | 13 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| | AB3 po | 167 | 150 | 0.03 | 5387.1 | 9 | 22 | 3 | 6 | 19 | 9 | 51 | 15 | 13 | 5.40 | 13 | 12 | 25 | 50 | 90 | 13 | 41 | 38 | 2.1 | 43 | 9 | 13 | 0 | 7 | 22 | 29 | 65 | 43 | 51 | 54 | 7 | 37 | 0 | 0 | 3 | 7 | 0 | 0 | 0 | 0 | 0 | 22 | 1 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 1 |
| | SA1 tot | 330 | 300 | 0.11 | 3000.0 | 10 | 30 | 3 | 7 | 27 | 11 | 45 | 6 | 3.3 | 5.67 | 4 | 27 | 16 | 31 | 61 | 16 | 41 | 31 | 3.0 | 61 | 5 | 0 | 2 | 9 | 5 | 14 | 66 | 63 | 70 | 118 | 49 | 30 | 0 | 0 | 37 | 2 | 0 | 0 | 0 | 0 | 0 | 18 | 7 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 1 |
| | SA1 ri | 165 | 150 | 0.05 | 3510.6 | 9 | 21 | 3 | 6 | 18 | 7 | 48 | 8 | 3.3 | 5.32 | 4 | 19 | 21 | 41 | 58 | 7 | 41 | 27 | 2.4 | 58 | 4 | 0 | 4 | 7 | 4 | 11 | 62 | 62 | 65 | 60 | 31 | 10 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 5 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 3 | 0 |
| | SA1 po | 165 | 150 | 0.06 | 2619.0 | 9 | 22 | 3 | 6 | 19 | 9 | 43 | 4 | 3.3 | 6.03 | 4 | 34 | 21 | 34 | 68 | 26 | 41 | 36 | 4.3 | 65 | 5 | 1 | 0 | 10 | 6 | 16 | 71 | 65 | 75 | 58 | 18 | 20 | 0 | 0 | 18 | 2 | 0 | 0 | 0 | 0 | 0 | 6 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| | SA2 | 332 | 300 | 0.06 | 5269.8 | 11 | 34 | 3 | 8 | 31 | 12 | 40 | 17 | 11 | 5.43 | 11 | 31 | 21 | 35 | 20 | 6 | 34 | 11 | 7.1 | 63 | 5 | 3 | 6 | 12 | 7 | 19 | 70 | 69 | 75 | 70 | 24 | 30 | 0 | 0 | 11 | 5 | 3 | 0 | 3 | 0 | 0 | 47 | 12 | 0 | 0 | 14 | 0 | 1 | 0 | 0 | 0 | 2 | 3 |
| | MY1 | 333 | 300 | 0.11 | 3000.0 | 10 | 24 | 3 | 7 | 21 | 5 | 66 | 6 | 0.3 | 4.86 | 0 | 10 | 46 | 56 | 69 | 10 | 25 | 20 | 6.4 | 68 | 6 | 0 | 9 | 7 | 6 | 12 | 73 | 77 | 74 | 180 | 137 | 14 | 0 | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 1 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MY2 | 330 | 300 | 0.56 | 589.3 | 10 | 28 | 2 | 8 | 26 | 10 | 40 | 17 | 3.3 | 4.84 | 3 | 16 | 23 | 41 | 27 | 2 | 27 | 9 | 6.1 | 56 | 0 | 6 | 13 | 15 | 6 | 22 | 62 | 69 | 71 | 71 | 69 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 2 | 0 | 0 | 48 | 1 | 0 | 0 | 21 | 7 | 0 | 0 | 0 | 0 | 1 | 0 |
| | MY3 | 336 | 300 | 0.16 | 2140.1 | 10 | 34 | 2 | 8 | 32 | 15 | 42 | 15 | 18 | 4.42 | 20 | 3 | 32 | 43 | 91 | 2 | 36 | 33 | 1.3 | 30 | 7 | 6 | 4 | 18 | 13 | 31 | 43 | 34 | 47 | 80 | 34 | 4 | 0 | 4 | 6 | 32 | 6 | 1 | 5 | 0 | 0 | 39 | 2 | 0 | 1 | 10 | 1 | 10 | 0 | 0 | 0 | 0 | 9 |
| | SJ1 tot | 333 | 300 | 0.20 | 1681.8 | 11 | 17 | 5 | 6 | 12 | 3 | 22 | 2 | 0 | 5.57 | 0 | 6 | 44 | 61 | 73 | 10 | 70 | 54 | 0.5 | 29 | 1 | 0 | 19 | 5 | 1 | 6 | 30 | 48 | 34 | 59 | 52 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ1 ri | 167 | 150 | 0.03 | 5387.1 | 9 | 14 | 4 | 5 | 10 | 3 | 33 | 4 | 0 | 5.34 | 0 | 3 | 31 | 59 | 44 | 5 | 62 | 30 | 1.3 | 33 | 1 | 0 | 38 | 3 | 1 | 3 | 34 | 71 | 36 | 44 | 42 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ1 po | 166 | 150 | 0.17 | 994.0 | 8 | 11 | 4 | 4 | 7 | 2 | 10 | 0 | 0 | 5.86 | 0 | 11 | 63 | 71 | 100 | 16 | 79 | 79 | 0.2 | 24 | 1 | 0 | 0 | 8 | 1 | 9 | 25 | 24 | 32 | 15 | 10 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ2 | 337 | 300 | 0.06 | 6017.9 | 8 | 20 | 2 | 6 | 18 | 8 | 58 | 10 | 2.7 | 4.79 | 3 | 4 | 32 | 51 | 76 | 3 | 29 | 23 | 3.0 | 61 | 0 | 0 | 13 | 4 | 0 | 4 | 61 | 74 | 65 | 145 | 95 | 19 | 0 | 0 | 28 | 3 | 0 | 0 | 0 | 0 | 0 | 30 | 5 | 0 | 0 | 21 | 0 | 0 | 0 | 1 | 0 | 2 | 0 |
| | SJ3 tot | 332 | 300 | 0.17 | 1908.0 | 10 | 37 | 2 | 8 | 35 | 14 | 39 | 20 | 19 | 4.31 | 20 | 3 | 29 | 41 | 79 | 2 | 39 | 31 | 1.3 | 29 | 1 | 13 | 7 | 14 | 14 | 28 | 43 | 37 | 44 | 59 | 36 | 0 | 0 | 5 | 4 | 14 | 6 | 1 | 5 | 0 | 0 | 53 | 11 | 1 | 0 | 5 | 0 | 18 | 0 | 0 | 0 | 1 | 1 |
| | SJ3 ri | 167 | 150 | 0.11 | 1504.5 | 10 | 27 | 2 | 8 | 25 | 12 | 45 | 21 | 19 | 4.15 | 20 | 4 | 20 | 38 | 60 | 3 | 35 | 22 | 2.3 | 40 | 2 | 7 | 12 | 9 | 9 | 19 | 49 | 52 | 49 | 35 | 28 | 0 | 0 | 5 | 1 | 1 | 5 | 0 | 5 | 0 | 0 | 27 | 11 | 1 | 0 | 3 | 0 | 5 | 0 | 0 | 0 | 1 | 0 |
| | SJ3 po | 165 | 150 | 0.06 | 2619.0 | 9 | 25 | 1 | 8 | 24 | 9 | 34 | 18 | 19 | 4.47 | 19 | 2 | 39 | 48 | 94 | 1 | 43 | 41 | 0.9 | 19 | 1 | 18 | 3 | 19 | 19 | 38 | 37 | 22 | 38 | 24 | 8 | 0 | 0 | 0 | 3 | 13 | 1 | 1 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 2 | 0 | 13 | 0 | 0 | 0 | 0 | 1 |
| | SJ4 | 330 | 300 | 0.25 | 1320.0 | 11 | 22 | 3 | 8 | 19 | 8 | 41 | 6 | 30 | 4.54 | 30 | 4 | 46 | 71 | 91 | 3 | 53 | 49 | 0.9 | 37 | 2 | 4 | 5 | 6 | 6 | 12 | 44 | 42 | 43 | 105 | 27 | 1 | 0 | 0 | 0 | 77 | 9 | 0 | 9 | 0 | 0 | 9 | 0 | 1 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 3 | 0 |
| | T1 | 330 | 300 | 0.06 | 5238.1 | 9 | 21 | 2 | 7 | 19 | 7 | 61 | 2 | 0.7 | 5.84 | 1 | 28 | 30 | 56 | 68 | 27 | 34 | 32 | 12.1 | 86 | 0 | 1 | 2 | 5 | 1 | 6 | 87 | 88 | 91 | 176 | 26 | 58 | 0 | 0 | 90 | 2 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| | T2 | 336 | 300 | 0.08 | 4048.2 | 8 | 23 | 2 | 6 | 21 | 8 | 69 | 11 | 0.7 | 5.17 | 1 | 17 | 25 | 48 | 35 | 4 | 25 | 11 | 9.0 | 72 | 1 | 4 | 8 | 7 | 5 | 12 | 77 | 80 | 79 | 173 | 69 | 30 | 0 | 0 | 74 | 0 | 0 | 0 | 0 | 0 | 0 | 34 | 0 | 0 | 0 | 16 | 2 | 0 | 0 | 0 | 1 | 0 |
| | DP1 | 333 | 300 | 0.17 | 1994.0 | 9 | 22 | 3 | 6 | 19 | 9 | 68 | 25 | 19 | 4.57 | 19 | 18 | 20 | 39 | 76 | 18 | 30 | 27 | 7.3 | 62 | 1 | 0 | 6 | 1 | 1 | 2 | 63 | 68 | 63 | 128 | 48 | 20 | 0 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 75 | 58 | 0 | 2 | 7 | 4 | 0 | 1 | 0 | 0 | 3 | 0 |
| | R1 | 330 | 300 | 0.17 | 1976.0 | 11 | 29 | 5 | 6 | 24 | 13 | 60 | 23 | 6.3 | 5.06 | 6 | 10 | 24 | 43 | 89 | 7 | 34 | 31 | 2.5 | 44 | 4 | 1 | 18 | 5 | 4 | 9 | 48 | 62 | 49 | 111 | 57 | 26 | 0 | 2 | 17 | 9 | 0 | 0 | 0 | 0 | 0 | 69 | 3 | 1 | 0 | 49 | 8 | 1 | 0 | 0 | 0 | 1 | 1 |
| | R2 tot | 338 | 300 | 0.06 | 5633.3 | 11 | 39 | 3 | 8 | 36 | 18 | 49 | 22 | 14 | 4.61 | 15 | 14 | 15 | 25 | 44 | 3 | 24 | 13 | 5.2 | 43 | 17 | 9 | 7 | 10 | 27 | 37 | 70 | 50 | 53 | 81 | 12 | 26 | 0 | 14 | 14 | 15 | 8 | 1 | 6 | 1 | 0 | 57 | 5 | 0 | 4 | 15 | 1 | 7 | 0 | 0 | 0 | 3 | 2 |
| | R2 ri | 171 | 150 | 0.03 | 5343.8 | 10 | 31 | 2 | 8 | 29 | 15 | 49 | 25 | 15 | 4.32 | 16 | 14 | 16 | 27 | 38 | 4 | 25 | 12 | 6.1 | 41 | 19 | 3 | 14 | 10 | 22 | 32 | 63 | 55 | 51 | 35 | 10 | 2 | 0 | 14 | 4 | 5 | 3 | 0 | 2 | 1 | 0 | 35 | 5 | 0 | 2 | 15 | 1 | 2 | 0 | 0 | 0 | 3 | 0 |
| | R2 po | 167 | 150 | 0.03 | 5964.3 | 11 | 28 | 3 | 8 | 25 | 11 | 49 | 18 | 14 | 4.89 | 15 | 13 | 16 | 30 | 52 | 3 | 23 | 13 | 4.6 | 45 | 16 | 15 | 0 | 11 | 31 | 42 | 76 | 45 | 55 | 46 | 2 | 24 | 0 | 0 | 10 | 10 | 5 | 1 | 4 | 0 | 0 | 22 | 0 | 0 | 2 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 2 |
| | AH1 tot | 345 | 300 | 0.09 | 3670.2 | 9 | 28 | 1 | 8 | 27 | 14 | 62 | 38 | 39 | 3.26 | 40 | 1 | 16 | 27 | 69 | 2 | 26 | 18 | 3.9 | 32 | 10 | 23 | 3 | 9 | 33 | 42 | 64 | 35 | 41 | 71 | 25 | 0 | 0 | 18 | 10 | 18 | 37 | 6 | 26 | 5 | 0 | 77 | 14 | 10 | 3 | 4 | 0 | 34 | 0 | 0 | 0 | 0 | 0 |
| | AH1 ri | 180 | 150 | 0.03 | 5806.5 | 8 | 24 | 1 | 7 | 23 | 12 | 58 | 37 | 31 | 3.37 | 33 | 1 | 15 | 29 | 50 | 3 | 31 | 17 | 4.1 | 33 | 10 | 11 | 7 | 11 | 21 | 32 | 54 | 40 | 45 | 32 | 23 | 0 | 0 | 9 | 0 | 0 | 19 | 3 | 12 | 4 | 0 | 36 | 14 | 8 | 3 | 4 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| | AH1 po | 165 | 150 | 0.06 | 2619.0 | 8 | 18 | 1 | 7 | 17 | 10 | 65 | 39 | 47 | 3.15 | 47 | 1 | 21 | 39 | 96 | 1 | 20 | 19 | 3.6 | 30 | 9 | 35 | 0 | 7 | 45 | 51 | 75 | 30 | 37 | 39 | 2 | 0 | 0 | 9 | 10 | 18 | 18 | 3 | 14 | 1 | 0 | 41 | 0 | 2 | 0 | 0 | 0 | 32 | 0 | 0 | 0 | 0 | 0 |
| | AH2 | 334 | 300 | 0.13 | 2672.0 | 10 | 27 | 2 | 8 | 25 | 13 | 52 | 18 | 21 | 4.13 | 22 | 2 | 21 | 39 | 35 | 1 | 33 | 12 | 4.8 | 47 | 3 | 7 | 23 | 5 | 10 | 15 | 57 | 70 | 52 | 104 | 62 | 0 | 0 | 8 | 12 | 22 | 16 | 2 | 12 | 2 | 0 | 37 | 15 | 0 | 2 | 9 | 0 | 7 | 0 | 0 | 0 | 0 | 0 |
| | SO1 tot | 335 | 300 | 0.34 | 976.7 | 9 | 24 | 0 | 9 | 24 | 9 | 74 | 9.7 | 32 | 3.68 | 35 | 3 | 34 | 58 | 44 | 0 | 15 | 7 | 11.1 | 67 | 2 | 2 | 7 | 14 | 4 | 18 | 71 | 74 | 81 | 193 | 101 | 3 | 0 | 17 | 0 | 72 | 22 | 20 | 2 | 0 | 0 | 7 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 1 |
| | SO1 ri | 170 | 150 | 0.13 | 1360.0 | 7 | 16 | 0 | 7 | 16 | 7 | 73 | 13 | 12 | 4.03 | 14 | 0 | 53 | 64 | 38 | 0 | 25 | 9 | 7.9 | 63 | 0 | 1 | 14 | 13 | 1 | 14 | 65 | 77 | 76 | 90 | 80 | 0 | 0 | 8 | 0 | 2 | 16 | 14 | 2 | 0 | 0 | 4 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | SO1 po | 165 | 150 | 0.22 | 756.9 | 9 | 17 | 0 | 9 | 17 | 6 | 75 | 6 | 53 | 3.32 | 55 | 7 | 47 | 61 | 75 | 0 | 5 | 4 | 18.7 | 70 | 5 | 2 | 0 | 16 | 7 | 23 | 77 | 70 | 86 | 103 | 21 | 3 | 0 | 9 | 0 | 70 | 6 | 5 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 |
| | SO2 | 332 | 300 | 0.25 | 1328.0 | 9 | 25 | 0 | 9 | 25 | 10 | 69 | 12 | 18 | 3.70 | 23 | 3 | 44 | 52 | 41 | 0 | 15 | 6 | 11.6 | 61 | 5 | 1 | 4 | 13 | 7 | 19 | 68 | 65 | 74 | 173 | 131 | 8 | 0 | 8 | 0 | 26 | 23 | 20 | 3 | 0 | 0 | 12 | 0 | 0 | 0 | 6 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |

Table A-4
Benthic Macroinvertebrate Data

| Year | Study Reaches | # specimens picked | # specimens identified | area searched (sq. m) | BMI density (#/sq. m) | # BMI orders | # BMI families | # non-insect taxa | # insect orders | # insect families | # EPT families | % EPT | % PT | % sens EPT | BI score | % sens BMIs | % tol BMIs | % dominant taxa | % two dominant taxa | % Diptera as Chironomidae | % non-insect BMIs | % non-insects + diptera | % non-insects+chironimidae | EPT/Chironomidae | % cg | %sc | %sh | % cf | % pred | %sc+sh | %sc+sh+pred | %cg+sc+sh | %cg+cf | %cg+pred | EPHEMEROPTERA | Baetidae | Caenidae | Emphemerellidae | Heptagenidae | Leptohyphidae | Leptophlebiidae | PLECOPTERA | Chloroperlidae | Nemouridae | Perlidae | Perlodidae | TRICOPTERA | Brachycentridae | Glossostomatidae | Helicopsychidae | Hydropsychidae | Hydroptilidae | Lepidostomatidae | Leptoceridae | Limnophilidae | Odontoceridae | Philopotamidae | Polycentropodidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tolerance Value* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | 7 | 1 | 4 | 4 | 2 | | 1 | 2 | 1 | 2 | | 1 | 0 | 3 | 4 | 4 | 1 | 4 | 4 | 0 | 3 | 6 |
| S(0-2), M(3-7), T(8-10) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | M | M | S | M | M | S | | S | S | S | S | | S | S | M | M | M | S | M | M | S | M | M |
| Primary FFG* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | cg | cg | cg | cg | cg | cg | | p | sh | p | p | | NA | sc | sc | cf | ph | sh | om | s | sh | cf | p |
| | | | | | Abundance | | Richness | | | | | Composition/Tolerance | | | | | | | | | | | | | | | | Trophic Groups | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2001 | C1 tot | 330 | 300 | 0.39 | 840.8 | 6 | 13 | 3 | 3 | 10 | 2 | 1 | 0 | 0 | 6.08 | 0 | 6 | 81 | 88 | 91 | 7 | 97 | 88 | 0.0 | 8 | 1 | 0 | 7 | 3 | 1 | 4 | 9 | 15 | 10 | 3 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C1-1 | 110 | 100 | 0.06 | 1760.0 | 5 | 7 | 3 | 2 | 4 | 0 | 0 | 0 | 0 | 6.12 | 0 | 8 | 80 | 88 | 90 | 10 | 99 | 90 | 0.0 | 9 | 2 | 0 | 9 | 1 | 2 | 3 | 11 | 18 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C1-2 | 110 | 100 | 0.14 | 785.7 | 5 | 8 | 2 | 3 | 6 | 2 | 3 | 0 | 0 | 6.08 | 0 | 7 | 86 | 92 | 99 | 7 | 94 | 93 | 0.0 | 9 | 1 | 0 | 0 | 3 | 1 | 4 | 10 | 9 | 12 | 3 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C1-3 | 110 | 100 | 0.19 | 578.9 | 4 | 8 | 2 | 2 | 6 | 0 | 0 | 0 | 0 | 6.04 | 0 | 4 | 78 | 90 | 84 | 4 | 97 | 82 | 0.0 | 5 | 1 | 0 | 13 | 4 | 1 | 5 | 6 | 18 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C2 tot | 335 | 300 | 0.44 | 770.1 | 5 | 13 | 2 | 3 | 11 | 3 | 8.3 | 0 | 1.7 | 5.86 | 2 | 6 | 64 | 78 | 79 | 6 | 86 | 70 | 0.1 | 14 | 0 | 0 | 16 | 6 | 0 | 6 | 15 | 30 | 20 | 25 | 20 | 0 | 3 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C2-1 | 110 | 100 | 0.14 | 785.7 | 4 | 6 | 1 | 3 | 5 | 2 | 8 | 0 | 1 | 5.81 | 1 | 2 | 60 | 86 | 70 | 2 | 88 | 62 | 0.1 | 10 | 0 | 0 | 29 | 4 | 0 | 4 | 10 | 39 | 14 | 8 | 7 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C2-2 | 110 | 100 | 0.13 | 880.0 | 5 | 9 | 2 | 3 | 7 | 2 | 2 | 0 | 1 | 6.05 | 1 | 8 | 80 | 87 | 94 | 8 | 93 | 88 | 0.0 | 9 | 1 | 0 | 2 | 6 | 1 | 7 | 10 | 11 | 15 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C2-3 | 115 | 100 | 0.17 | 676.5 | 4 | 11 | 1 | 3 | 10 | 3 | 15 | 0 | 3 | 5.73 | 3 | 9 | 51 | 67 | 73 | 8 | 78 | 59 | 0.3 | 24 | 0 | 0 | 18 | 8 | 0 | 8 | 24 | 42 | 32 | 15 | 12 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C3 tot | 330 | 300 | 0.21 | 1594.2 | 11 | 37 | 3 | 8 | 34 | 18 | 44 | 9.3 | 11 | 4.60 | 12 | 7 | 27 | 46 | 68 | 1 | 41 | 28 | 1.6 | 50 | 2 | 1 | 6 | 13 | 3 | 16 | 53 | 56 | 63 | 104 | 57 | 2 | 12 | 16 | 11 | 6 | 7 | 1 | 1 | 4 | 1 | 21 | 1 | 1 | 4 | 3 | 0 | 1 | 0 | 0 | 0 | 3 | 2 |
| | C3-1 | 110 | 100 | 0.06 | 1746.0 | 9 | 25 | 1 | 8 | 24 | 13 | 54 | 10 | 17 | 4.20 | 19 | 4 | 21 | 41 | 61 | 1 | 34 | 21 | 2.7 | 55 | 0 | 2 | 10 | 12 | 2 | 14 | 57 | 65 | 67 | 44 | 21 | 1 | 6 | 6 | 6 | 4 | 3 | 0 | 1 | 1 | 1 | 7 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| | C3-2 | 110 | 100 | 0.05 | 2200.0 | 7 | 18 | 0 | 7 | 18 | 9 | 35 | 10 | 12 | 4.66 | 12 | 3 | 39 | 52 | 78 | 0 | 50 | 39 | 0.9 | 37 | 4 | 0 | 7 | 14 | 4 | 18 | 41 | 44 | 51 | 25 | 13 | 0 | 6 | 4 | 2 | 0 | 3 | 0 | 0 | 3 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| | C3-3 | 110 | 100 | 0.09 | 1170.2 | 9 | 24 | 2 | 7 | 22 | 12 | 43 | 8 | 5 | 4.94 | 5 | 13 | 23 | 45 | 59 | 3 | 40 | 25 | 2.0 | 58 | 2 | 0 | 2 | 14 | 2 | 16 | 60 | 60 | 72 | 35 | 23 | 1 | 0 | 6 | 3 | 2 | 1 | 1 | 0 | 0 | 0 | 7 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 2 |
| | AB2 tot | 335 | 300 | 0.56 | 602.5 | 9 | 14 | 3 | 6 | 11 | 2 | 6.7 | 0 | 0.3 | 5.91 | 0 | 7 | 61 | 75 | 81 | 9 | 84 | 69 | 0.1 | 15 | 1 | 0 | 15 | 6 | 1 | 6 | 16 | 30 | 21 | 20 | 19 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB2-1 | 115 | 100 | 0.17 | 688.6 | 5 | 9 | 1 | 4 | 8 | 1 | 2 | 0 | 0 | 6.04 | 0 | 10 | 72 | 80 | 95 | 8 | 84 | 80 | 0.0 | 11 | 0 | 0 | 2 | 7 | 0 | 7 | 11 | 13 | 18 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB2-2 | 110 | 100 | 0.22 | 495.5 | 8 | 10 | 3 | 5 | 7 | 1 | 14 | 0 | 0 | 5.69 | 0 | 4 | 48 | 70 | 69 | 9 | 79 | 57 | 0.3 | 22 | 1 | 0 | 24 | 4 | 1 | 5 | 23 | 46 | 26 | 14 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB2-3 | 110 | 100 | 0.17 | 658.7 | 6 | 9 | 3 | 3 | 6 | 2 | 4 | 0 | 1 | 5.98 | 1 | 8 | 62 | 80 | 78 | 9 | 89 | 71 | 0.1 | 12 | 1 | 0 | 20 | 6 | 1 | 7 | 13 | 32 | 18 | 4 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB3 tot | 330 | 300 | 0.40 | 818.9 | 12 | 35 | 4 | 8 | 31 | 11 | 38 | 7.3 | 6.3 | 5.09 | 7 | 4 | 28 | 49 | 69 | 2 | 42 | 30 | 1.4 | 35 | 0 | 2 | 7 | 24 | 3 | 27 | 37 | 41 | 59 | 92 | 63 | 18 | 3 | 2 | 0 | 6 | 6 | 0 | 1 | 0 | 5 | 16 | 0 | 0 | 0 | 6 | 0 | 4 | 0 | 0 | 0 | 3 | 0 |
| | AB3-1 | 110 | 100 | 0.11 | 991.0 | 10 | 28 | 2 | 8 | 26 | 9 | 33 | 7 | 6 | 5.20 | 7 | 5 | 27 | 41 | 59 | 2 | 48 | 29 | 1.2 | 33 | 0 | 1 | 9 | 28 | 1 | 29 | 34 | 42 | 61 | 26 | 14 | 7 | 1 | 1 | 0 | 3 | 2 | 0 | 1 | 0 | 1 | 5 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 0 |
| | AB3-2 | 110 | 100 | 0.13 | 880.0 | 10 | 23 | 2 | 8 | 21 | 8 | 51 | 9 | 7 | 4.97 | 7 | 4 | 28 | 47 | 68 | 2 | 30 | 21 | 2.7 | 44 | 1 | 3 | 4 | 24 | 4 | 28 | 48 | 48 | 68 | 42 | 28 | 11 | 2 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 2 | 7 | 0 | 0 | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| | AB3-3 | 110 | 100 | 0.17 | 658.7 | 9 | 19 | 1 | 8 | 18 | 7 | 30 | 6 | 6 | 5.09 | 6 | 3 | 38 | 59 | 81 | 1 | 48 | 39 | 0.8 | 27 | 0 | 3 | 7 | 21 | 3 | 24 | 30 | 34 | 48 | 24 | 21 | 0 | 0 | 1 | 0 | 2 | 2 | 0 | 0 | 0 | 2 | 4 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| | AT1 tot | 330 | 300 | 0.22 | 1527.8 | 7 | 12 | 3 | 4 | 9 | 1 | 1 | 0 | 0 | 6.13 | 0 | 12 | 76 | 87 | 95 | 12 | 93 | 89 | 0.0 | 13 | 0 | 0 | 4 | 4 | 0 | 5 | 13 | 17 | 17 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AT1-1 | 110 | 100 | 0.05 | 2200.0 | 4 | 7 | 1 | 3 | 6 | 1 | 3 | 0 | 0 | 5.80 | 0 | 0 | 79 | 89 | 86 | 3 | 95 | 82 | 0.0 | 6 | 0 | 0 | 11 | 1 | 0 | 1 | 6 | 17 | 7 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AT1-2 | 110 | 100 | 0.08 | 1325.3 | 3 | 3 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 6.03 | 0 | 3 | 94 | 97 | 100 | 3 | 97 | 97 | 0.0 | 3 | 0 | 0 | 0 | 3 | 0 | 3 | 3 | 3 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AT1-3 | 110 | 100 | 0.08 | 1325.3 | 5 | 8 | 2 | 3 | 6 | 0 | 0 | 0 | 0 | 6.57 | 0 | 33 | 56 | 86 | 100 | 31 | 87 | 87 | 0.0 | 30 | 1 | 0 | 0 | 9 | 1 | 10 | 31 | 30 | 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AT2 tot | 330 | 300 | 1.09 | 303.3 | 9 | 16 | 5 | 4 | 11 | 2 | 11 | 4 | 0 | 5.85 | 0 | 8 | 59 | 68 | 76 | 8 | 86 | 67 | 0.2 | 22 | 1 | 0 | 6 | 7 | 1 | 8 | 23 | 28 | 29 | 20 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AT2-1 | 110 | 100 | 0.22 | 495.5 | 6 | 10 | 3 | 3 | 7 | 1 | 1 | 1 | 0 | 5.99 | 0 | 9 | 65 | 74 | 79 | 10 | 92 | 75 | 0.0 | 14 | 1 | 0 | 10 | 7 | 1 | 8 | 15 | 24 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AT2-2 | 110 | 100 | 0.67 | 165.2 | 7 | 11 | 3 | 4 | 8 | 2 | 6 | 1 | 0 | 5.98 | 0 | 9 | 57 | 76 | 66 | 5 | 92 | 62 | 0.1 | 32 | 0 | 0 | 1 | 9 | 0 | 9 | 32 | 33 | 41 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AT2-3 | 110 | 100 | 0.20 | 550.0 | 8 | 13 | 4 | 4 | 9 | 2 | 25 | 10 | 0 | 5.62 | 0 | 7 | 56 | 71 | 86 | 8 | 73 | 64 | 0.4 | 19 | 3 | 0 | 7 | 5 | 3 | 8 | 22 | 26 | 24 | 15 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ1 tot | 330 | 300 | 0.57 | 577.9 | 10 | 21 | 3 | 7 | 18 | 4 | 15 | 1.7 | 0.3 | 5.60 | 1 | 3 | 59 | 72 | 78 | 2 | 78 | 61 | 0.2 | 15 | 1 | 0 | 16 | 7 | 1 | 8 | 16 | 31 | 22 | 39 | 14 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ1-1 | 110 | 100 | 0.06 | 1746.0 | 6 | 10 | 1 | 5 | 9 | 3 | 15 | 2 | 0 | 5.64 | 0 | 2 | 49 | 74 | 62 | 1 | 80 | 50 | 0.3 | 13 | 0 | 0 | 30 | 9 | 0 | 9 | 13 | 43 | 22 | 13 | 8 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ1-2 | 110 | 100 | 0.33 | 330.3 | 5 | 10 | 1 | 4 | 9 | 2 | 14 | 0 | 0 | 5.65 | 1 | 2 | 75 | 83 | 97 | 1 | 78 | 76 | 0.2 | 16 | 1 | 0 | 1 | 5 | 1 | 6 | 17 | 17 | 21 | 14 | 6 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ1-3 | 110 | 100 | 0.18 | 628.6 | 9 | 16 | 3 | 6 | 13 | 3 | 15 | 3 | 1 | 5.52 | 2 | 4 | 54 | 67 | 75 | 3 | 75 | 57 | 0.3 | 17 | 2 | 0 | 17 | 7 | 2 | 9 | 19 | 34 | 24 | 12 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ2 tot | 330 | 300 | 0.25 | 1320.0 | 7 | 24 | 1 | 6 | 23 | 9 | 17 | 2 | 0.7 | 5.58 | 1 | 1 | 47 | 76 | 60 | 0 | 78 | 47 | 0.4 | 16 | 0 | 0 | 33 | 5 | 1 | 5 | 17 | 49 | 21 | 44 | 38 | 1 | 0 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| | SJ2-1 | 110 | 100 | 0.08 | 1325.3 | 5 | 10 | 1 | 4 | 9 | 4 | 16 | 2 | 2 | 5.53 | 2 | 0 | 40 | 79 | 49 | 1 | 81 | 40 | 0.4 | 16 | 0 | 0 | 45 | 3 | 0 | 3 | 16 | 61 | 19 | 14 | 13 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ2-2 | 110 | 100 | 0.04 | 2619.0 | 5 | 13 | 0 | 5 | 13 | 6 | 27 | 3 | 0 | 5.40 | 1 | 2 | 38 | 69 | 51 | 0 | 68 | 35 | 0.8 | 25 | 1 | 1 | 36 | 5 | 2 | 7 | 27 | 61 | 30 | 24 | 21 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| | SJ2-3 | 110 | 100 | 0.13 | 880.0 | 6 | 13 | 0 | 6 | 13 | 4 | 7 | 1 | 0 | 5.82 | 0 | 1 | 66 | 82 | 78 | 0 | 85 | 66 | 0.1 | 7 | 0 | 0 | 19 | 6 | 0 | 6 | 7 | 26 | 13 | 6 | 4 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ3 tot | 341 | 300 | 0.26 | 1326.8 | 12 | 36 | 4 | 8 | 32 | 15 | 52 | 20 | 22 | 4.26 | 23 | 3 | 26 | 50 | 78 | 3 | 33 | 26 | 2.2 | 38 | 3 | 16 | 3 | 13 | 19 | 32 | 57 | 41 | 51 | 96 | 78 | 2 | 0 | 2 | 1 | 13 | 44 | 2 | 41 | 0 | 1 | 15 | 3 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 1 | 1 |
| | SJ3-1 | 114 | 100 | 0.11 | 1027.0 | 8 | 19 | 1 | 7 | 18 | 8 | 66 | 19 | 23 | 3.99 | 24 | 2 | 40 | 58 | 75 | 2 | 26 | 20 | 3.7 | 52 | 1 | 15 | 1 | 9 | 16 | 25 | 68 | 53 | 61 | 47 | 40 | 1 | 0 | 0 | 1 | 5 | 16 | 2 | 14 | 0 | 0 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ3-2 | 115 | 100 | 0.08 | 1385.5 | 9 | 22 | 1 | 8 | 21 | 6 | 32 | 15 | 18 | 4.66 | 19 | 5 | 32 | 44 | 84 | 1 | 39 | 33 | 1.0 | 23 | 4 | 14 | 2 | 23 | 18 | 41 | 41 | 25 | 46 | 17 | 12 | 0 | 0 | 0 | 0 | 5 | 12 | 0 | 12 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| | SJ3-3 | 112 | 100 | 0.06 | 1777.8 | 9 | 25 | 3 | 6 | 22 | 13 | 57 | 25 | 24 | 4.14 | 24 | 3 | 26 | 47 | 72 | 5 | 34 | 26 | 2.7 | 39 | 4 | 18 | 6 | 8 | 22 | 30 | 61 | 45 | 47 | 32 | 26 | 1 | 0 | 2 | 0 | 3 | 16 | 0 | 15 | 0 | 1 | 9 | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 1 | 1 |
| | AH1 tot | 330 | 300 | 0.42 | 782.0 | 9 | 25 | 2 | 7 | 23 | 11 | 28 | 10 | 12 | 4.78 | 13 | 0 | 47 | 60 | 77 | 3 | 64 | 49 | 0.6 | 24 | 2 | 3 | 5 | 16 | 4 | 20 | 28 | 28 | 40 | 53 | 39 | 0 | 0 | 4 | 3 | 7 | 24 | 11 | 5 | 8 | 0 | 7 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 1 |
| | AH1-1 | 110 | 100 | 0.06 | 1746.0 | 7 | 18 | 1 | 6 | 17 | 7 | 35 | 9 | 10 | 4.84 | 11 | 0 | 40 | 63 | 73 | 4 | 59 | 44 | 0.9 | 32 | 0 | 6 | 8 | 13 | 6 | 19 | 38 | 40 | 45 | 26 | 23 | 0 | 0 | 1 | 0 | 2 | 6 | 2 | 4 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 |
| | AH1-2 | 110 | 100 | 0.13 | 880.0 | 7 | 16 | 1 | 6 | 15 | 6 | 26 | 14 | 12 | 4.66 | 14 | 0 | 48 | 56 | 77 | 3 | 65 | 51 | 0.5 | 18 | 3 | 0 | 2 | 23 | 3 | 26 | 21 | 20 | 41 | 12 | 8 | 0 | 0 | 1 | 3 | 0 | 12 | 5 | 0 | 7 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AH1-3 | 110 | 100 | 0.23 | 470.1 | 8 | 17 | 1 | 7 | 16 | 8 | 23 | 8 | 13 | 4.86 | 13 | 0 | 52 | 60 | 79 | 1 | 67 | 53 | 0.4 | 21 | 2 | 2 | 4 | 12 | 4 | 16 | 25 | 25 | 33 | 15 | 8 | 0 | 0 | 2 | 0 | 5 | 6 | 4 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| | SO2 tot | 330 | 300 | 0.36 | 916.7 | 10 | 28 | 2 | 8 | 26 | 12 | 60 | 18 | 19 | 3.76 | 23 | 1 | 38 | 51 | 45 | 1 | 29 | 13 | 4.9 | 46 | 8 | 4 | 9 | 14 | 13 | 27 | 59 | 55 | 60 | 127 | 115 | 1 | 0 | 2 | 0 | 9 | 32 | 26 | 6 | 0 | 0 | 21 | 0 | 1 | 0 | 4 | 1 | 7 | 0 | 0 | 0 | 0 | 1 |
| | SO2-1 | 110 | 100 | 0.11 | 1009.2 | 8 | 20 | 1 | 7 | 19 | 8 | 63 | 24 | 26 | 3.59 | 30 | 2 | 34 | 49 | 60 | 1 | 26 | 16 | 4.2 | 44 | 4 | 8 | 6 | 16 | 12 | 28 | 56 | 50 | 60 | 39 | 34 | 1 | 0 | 0 | 0 | 4 | 16 | 11 | 5 | 0 | 0 | 8 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 |
| | SO2-2 | 110 | 100 | 0.06 | 1746.0 | 6 | 16 | 1 | 5 | 15 | 9 | 56 | 11 | 9 | 4.34 | 11 | 0 | 44 | 61 | 41 | 2 | 39 | 17 | 3.7 | 48 | 4 | 3 | 20 | 8 | 7 | 15 | 55 | 68 | 56 | 45 | 44 | 0 | 0 | 0 | 0 | 1 | 4 | 3 | 1 | 0 | 0 | 7 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 1 |
| | SO2-3 | 110 | 100 | 0.19 | 585.1 | 7 | 19 | 0 | 7 | 19 | 8 | 61 | 18 | 21 | 3.35 | 27 | 2 | 37 | 49 | 33 | 0 | 21 | 7 | 8.7 | 46 | 17 | 2 | 2 | 18 | 19 | 37 | 65 | 48 | 64 | 43 | 37 | 0 | 0 | 2 | 0 | 4 | 12 | 12 | 0 | 0 | 0 | 6 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |

Table A-4
Benthic Macroinvertebrate Data

| Year | Study Reaches | # specimens picked | # specimens identified | area searched (sq. m) | BMI density (#/sq. m) | # BMI orders | # BMI families | # non-insect taxa | # insect orders | # insect families | # EPT families | % EPT | % PT | % sens EPT | BI score | % sens BMIs | % tol BMIs | % dominant taxa | % two dominant taxa | % Diptera as Chironomidae | % non-insect BMIs | % non-insects + diptera | % non-insects+chironimidae | EPT/Chironomidae | % cg | %sc | %sh | % cf | % pred | %sc+sh | %sc+sh+pred | %cg+sc+sh | %cg+cf | %cg+pred | EPHEMEROPTERA | Baetidae | Caenidae | Emphemerellidae | Heptagenidae | Leptohyphidae | Leptophlebiidae | PLECOPTERA | Chloroperlidae | Nemouridae | Perlidae | Perlodidae | TRICOPTERA | Brachycentridae | Glossostomatidae | Helicopsychidae | Hydropsychidae | Hydroptilidae | Lepidostomatidae | Leptoceridae | Limnophilidae | Odontoceridae | Philopotamidae | Polycentropodidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tolerance Value* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | 7 | 1 | 4 | 4 | 2 | | 1 | 2 | 1 | 2 | | 1 | 0 | 3 | 4 | 4 | 1 | 4 | 4 | 0 | 3 | 6 |
| S(0-2), M(3-7), T(8-10) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | M | M | S | M | M | S | | S | S | S | S | | S | S | M | M | M | S | M | M | S | M | M |
| Primary FFG* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | cg | cg | cg | cg | cg | cg | | p | sh | p | p | | NA | sc | sc | cf | ph | sh | om | s | sh | cf | p |
| | | | | | Abundance | | Richness | | | | | | | | Composition/Tolerance | | | | | | | | | | | | | | Trophic Groups | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2002 | RIN1 tot | 330 | 300 | 0.21 | 1578.9 | 12 | 34 | 5 | 7 | 29 | 14 | 53 | 8.7 | 7.3 | 5.74 | 7 | 29 | 23 | 43 | 49 | 27 | 40 | 33 | 7.9 | 71 | 4 | 4 | 2 | 9 | 8 | 17 | 79 | 74 | 81 | 132 | 28 | 61 | 0 | 1 | 37 | 5 | 2 | 0 | 0 | 1 | 1 | 24 | 0 | 0 | 0 | 2 | 1 | 8 | 0 | 0 | 0 | 0 | 1 |
| | RIN1-1 | 110 | 100 | 0.06 | 1746.0 | 9 | 22 | 3 | 6 | 19 | 9 | 57 | 11 | 12 | 5.23 | 12 | 18 | 22 | 37 | 41 | 19 | 36 | 26 | 8.1 | 66 | 1 | 5 | 1 | 15 | 6 | 21 | 72 | 67 | 81 | 46 | 11 | 22 | 0 | 1 | 10 | 2 | 1 | 0 | 0 | 0 | 1 | 10 | 0 | 0 | 0 | 1 | 0 | 5 | 0 | 0 | 0 | 0 | 0 |
| | RIN1-2 | 110 | 100 | 0.08 | 1325.3 | 8 | 21 | 2 | 6 | 19 | 9 | 48 | 7 | 5 | 6.20 | 5 | 37 | 33 | 55 | 38 | 34 | 42 | 37 | 16.0 | 76 | 5 | 4 | 3 | 7 | 9 | 16 | 85 | 79 | 83 | 41 | 5 | 22 | 0 | 0 | 12 | 2 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 1 |
| | RIN1-3 | 110 | 100 | 0.06 | 1746.0 | 10 | 22 | 4 | 6 | 18 | 10 | 53 | 8 | 5 | 5.78 | 5 | 30 | 21 | 38 | 63 | 27 | 43 | 37 | 5.3 | 72 | 5 | 4 | 2 | 6 | 9 | 15 | 81 | 74 | 78 | 45 | 12 | 17 | 0 | 0 | 15 | 1 | 1 | 0 | 0 | 1 | 0 | 7 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| | C1 tot | 330 | 300 | 0.36 | 909.1 | 9 | 17 | 5 | 4 | 12 | 1 | 0.7 | 0 | 0 | 6.51 | 0 | 38 | 32 | 49 | 73 | 52 | 96 | 84 | 0.0 | 48 | 7 | 0 | 7 | 4 | 7 | 11 | 55 | 55 | 52 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C1-1 | 110 | 100 | 0.22 | 495.5 | 8 | 12 | 4 | 4 | 8 | 1 | 1 | 0 | 0 | 6.37 | 0 | 35 | 29 | 53 | 73 | 62 | 95 | 86 | 0.0 | 56 | 8 | 0 | 3 | 6 | 8 | 14 | 64 | 59 | 62 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C1-2 | 110 | 100 | 0.09 | 1170.2 | 7 | 14 | 5 | 2 | 9 | 0 | 0 | 0 | 0 | 6.27 | 0 | 23 | 50 | 64 | 81 | 35 | 97 | 85 | 0.0 | 32 | 7 | 0 | 7 | 3 | 7 | 10 | 39 | 39 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C1-3 | 110 | 100 | 0.05 | 2340.4 | 8 | 13 | 5 | 3 | 8 | 1 | 1 | 0 | 0 | 6.90 | 0 | 54 | 35 | 57 | 59 | 60 | 97 | 82 | 0.0 | 57 | 6 | 0 | 11 | 2 | 6 | 8 | 63 | 68 | 59 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C3 tot | 330 | 300 | 0.11 | 2894.7 | 7 | 29 | 1 | 6 | 28 | 18 | 72 | 34 | 23 | 3.86 | 24 | 5 | 13 | 23 | 71 | 2 | 17 | 12 | 6.7 | 49 | 7 | 6 | 5 | 12 | 13 | 25 | 62 | 54 | 61 | 112 | 38 | 27 | 0 | 33 | 11 | 4 | 15 | 1 | 2 | 12 | 0 | 88 | 28 | 2 | 17 | 11 | 0 | 12 | 1 | 0 | 0 | 3 | 0 |
| | C3-1 | 110 | 100 | 0.03 | 3437.5 | 7 | 22 | 1 | 6 | 21 | 14 | 77 | 39 | 27 | 3.71 | 27 | 7 | 15 | 26 | 33 | 1 | 10 | 4 | 25.7 | 49 | 6 | 8 | 4 | 17 | 14 | 31 | 63 | 53 | 66 | 38 | 15 | 10 | 0 | 10 | 3 | 0 | 8 | 0 | 1 | 7 | 0 | 31 | 11 | 1 | 5 | 3 | 0 | 4 | 0 | 0 | 0 | 1 | 0 |
| | C3-2 | 110 | 100 | 0.04 | 2619.0 | 7 | 24 | 1 | 6 | 23 | 15 | 73 | 31 | 18 | 4.01 | 20 | 6 | 16 | 28 | 50 | 4 | 14 | 9 | 14.6 | 58 | 10 | 7 | 3 | 8 | 17 | 25 | 75 | 61 | 66 | 42 | 10 | 12 | 0 | 16 | 4 | 0 | 3 | 1 | 1 | 1 | 0 | 28 | 8 | 0 | 9 | 1 | 0 | 5 | 0 | 0 | 0 | 2 | 0 |
| | C3-3 | 110 | 100 | 0.04 | 2750.0 | 6 | 20 | 0 | 6 | 20 | 14 | 65 | 33 | 25 | 3.86 | 25 | 1 | 24 | 37 | 92 | 0 | 26 | 24 | 2.7 | 41 | 4 | 4 | 8 | 10 | 8 | 18 | 49 | 49 | 51 | 32 | 13 | 5 | 0 | 7 | 4 | 4 | 4 | 0 | 0 | 4 | 0 | 29 | 9 | 1 | 3 | 7 | 0 | 3 | 1 | 0 | 0 | 0 | 0 |
| | SY1 tot | 330 | 300 | 0.28 | 1170.2 | 12 | 23 | 5 | 7 | 18 | 4 | 6 | 5 | 0 | 6.97 | 0 | 60 | 43 | 68 | 81 | 59 | 89 | 83 | 0.2 | 47 | 14 | 4 | 1 | 6 | 18 | 25 | 65 | 48 | 53 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| | SY1-1 | 110 | 100 | 0.09 | 1170.2 | 5 | 6 | 2 | 3 | 4 | 2 | 4 | 1 | 0 | 7.45 | 0 | 75 | 55 | 75 | 95 | 75 | 96 | 95 | 0.2 | 58 | 18 | 1 | 0 | 1 | 19 | 20 | 77 | 58 | 59 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SY1-2 | 110 | 100 | 0.13 | 880.0 | 9 | 17 | 4 | 5 | 13 | 3 | 6 | 6 | 0 | 7.12 | 0 | 68 | 47 | 62 | 58 | 65 | 89 | 79 | 0.4 | 53 | 15 | 4 | 2 | 8 | 19 | 27 | 72 | 55 | 61 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| | SY1-3 | 110 | 100 | 0.06 | 1746.0 | 7 | 12 | 2 | 5 | 10 | 2 | 8 | 8 | 0 | 6.33 | 1 | 37 | 40 | 67 | 87 | 36 | 82 | 76 | 0.2 | 29 | 10 | 7 | 1 | 10 | 17 | 27 | 46 | 30 | 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| | M1 tot | 330 | 300 | 0.18 | 1885.7 | 9 | 10 | 4 | 5 | 6 | 1 | 0.7 | 0 | 0 | 6.52 | 0 | 25 | 73 | 86 | 99 | 20 | 93 | 93 | 0.0 | 19 | 0 | 0 | 1 | 5 | 0 | 6 | 19 | 20 | 24 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M1-1 | 110 | 100 | 0.06 | 1964.3 | 5 | 6 | 2 | 3 | 4 | 1 | 2 | 0 | 0 | 6.05 | 0 | 5 | 90 | 93 | 98 | 5 | 97 | 95 | 0.0 | 7 | 0 | 0 | 2 | 0 | 0 | 0 | 7 | 9 | 7 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M1-2 | 110 | 100 | 0.06 | 1746.0 | 6 | 6 | 4 | 2 | 2 | 0 | 0 | 0 | 0 | 6.44 | 0 | 18 | 81 | 92 | 100 | 18 | 99 | 99 | 0.0 | 13 | 1 | 0 | 0 | 0 | 1 | 1 | 14 | 13 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M1-3 | 110 | 100 | 0.06 | 1964.3 | 4 | 4 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 7.06 | 0 | 53 | 47 | 74 | 100 | 37 | 84 | 84 | 0.0 | 37 | 0 | 0 | 0 | 16 | 0 | 16 | 37 | 37 | 53 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M2 tot | 330 | 300 | 0.23 | 1428.6 | 9 | 11 | 5 | 4 | 6 | 2 | 12 | 5 | 0 | 6.02 | 0 | 9 | 77 | 84 | 97 | 8 | 87 | 85 | 0.2 | 11 | 0 | 0 | 1 | 2 | 0 | 3 | 11 | 11 | 13 | 21 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M2-1 | 110 | 100 | 0.06 | 1718.8 | 6 | 7 | 2 | 4 | 5 | 2 | 26 | 10 | 0 | 5.89 | 0 | 12 | 59 | 75 | 95 | 11 | 73 | 70 | 0.4 | 19 | 0 | 0 | 0 | 4 | 0 | 4 | 19 | 19 | 23 | 16 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M2-2 | 110 | 100 | 0.13 | 880.0 | 8 | 9 | 4 | 4 | 5 | 2 | 4 | 2 | 0 | 6.19 | 0 | 10 | 84 | 88 | 98 | 9 | 95 | 93 | 0.0 | 7 | 1 | 0 | 2 | 1 | 1 | 2 | 8 | 9 | 8 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M2-3 | 110 | 100 | 0.04 | 2619.0 | 8 | 9 | 4 | 4 | 5 | 2 | 6 | 3 | 0 | 5.98 | 0 | 4 | 88 | 91 | 99 | 4 | 93 | 92 | 0.1 | 6 | 0 | 0 | 0 | 2 | 0 | 2 | 6 | 6 | 8 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M3 tot | 330 | 300 | 0.15 | 2200.0 | 13 | 35 | 6 | 7 | 29 | 11 | 41 | 11 | 9.3 | 5.33 | 10 | 17 | 16 | 32 | 58 | 9 | 30 | 21 | 3.4 | 43 | 18 | 8 | 0 | 17 | 25 | 42 | 68 | 43 | 60 | 89 | 6 | 48 | 0 | 8 | 17 | 10 | 0 | 0 | 0 | 0 | 0 | 33 | 2 | 2 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 5 |
| | M3-1 | 110 | 100 | 0.06 | 1964.3 | 9 | 25 | 3 | 6 | 22 | 9 | 36 | 6 | 4 | 5.38 | 4 | 21 | 18 | 29 | 45 | 13 | 33 | 22 | 4.0 | 51 | 18 | 4 | 0 | 15 | 22 | 37 | 73 | 51 | 66 | 30 | 3 | 11 | 0 | 3 | 11 | 2 | 0 | 0 | 0 | 0 | 0 | 6 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| | M3-2 | 110 | 100 | 0.05 | 2340.4 | 10 | 26 | 4 | 6 | 22 | 10 | 37 | 15 | 15 | 5.05 | 16 | 18 | 20 | 33 | 59 | 8 | 30 | 21 | 2.8 | 33 | 21 | 10 | 0 | 18 | 31 | 49 | 64 | 33 | 51 | 22 | 2 | 9 | 0 | 3 | 3 | 5 | 0 | 0 | 0 | 0 | 0 | 15 | 1 | 1 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 2 |
| | M3-3 | 110 | 100 | 0.05 | 2340.4 | 9 | 23 | 4 | 5 | 19 | 9 | 49 | 12 | 9 | 5.53 | 9 | 12 | 28 | 42 | 70 | 7 | 27 | 21 | 3.5 | 44 | 14 | 9 | 0 | 18 | 23 | 41 | 67 | 44 | 62 | 37 | 1 | 28 | 0 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 1 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 2 |
| | AB1 tot | 330 | 300 | 0.10 | 3437.5 | 11 | 18 | 5 | 6 | 13 | 3 | 15 | 0.7 | 0 | 6.43 | 0 | 40 | 35 | 49 | 98 | 36 | 72 | 71 | 0.4 | 45 | 5 | 0 | 0 | 8 | 5 | 14 | 51 | 46 | 54 | 44 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB1-1 | 110 | 100 | 0.03 | 3437.5 | 10 | 13 | 5 | 5 | 8 | 2 | 36 | 1 | 0 | 5.77 | 0 | 28 | 35 | 60 | 93 | 26 | 53 | 51 | 1.4 | 58 | 2 | 0 | 1 | 8 | 2 | 10 | 60 | 59 | 66 | 35 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB1-2 | 110 | 100 | 0.03 | 3437.5 | 9 | 11 | 4 | 5 | 7 | 1 | 2 | 0 | 0 | 7.23 | 0 | 65 | 25 | 46 | 100 | 57 | 82 | 82 | 0.1 | 50 | 9 | 0 | 0 | 9 | 9 | 18 | 59 | 50 | 59 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB1-3 | 110 | 100 | 0.03 | 3437.5 | 10 | 12 | 4 | 6 | 8 | 2 | 8 | 1 | 0 | 6.33 | 0 | 29 | 54 | 67 | 100 | 26 | 80 | 80 | 0.1 | 28 | 5 | 0 | 0 | 8 | 5 | 13 | 33 | 28 | 36 | 7 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB2 tot | 330 | 300 | 0.31 | 1054.3 | 11 | 19 | 6 | 5 | 13 | 2 | 2 | 0.3 | 0 | 6.89 | 0 | 49 | 28 | 54 | 60 | 48 | 94 | 76 | 0.1 | 49 | 2 | 0 | 11 | 7 | 2 | 9 | 51 | 60 | 56 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB2-1 | 110 | 100 | 0.17 | 658.7 | 7 | 12 | 4 | 3 | 8 | 1 | 1 | 0 | 0 | 6.99 | 0 | 55 | 28 | 56 | 68 | 55 | 96 | 83 | 0.0 | 50 | 6 | 0 | 6 | 5 | 6 | 11 | 56 | 56 | 55 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB2-2 | 110 | 100 | 0.06 | 1746.0 | 7 | 12 | 5 | 2 | 7 | 0 | 0 | 0 | 0 | 6.77 | 0 | 40 | 29 | 51 | 46 | 36 | 99 | 65 | 0.0 | 41 | 0 | 0 | 23 | 6 | 0 | 6 | 41 | 64 | 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB2-3 | 110 | 100 | 0.08 | 1325.3 | 8 | 13 | 4 | 4 | 9 | 2 | 5 | 1 | 0 | 6.91 | 0 | 54 | 29 | 55 | 76 | 54 | 88 | 80 | 0.2 | 56 | 1 | 0 | 4 | 10 | 1 | 11 | 57 | 60 | 66 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB3 tot | 330 | 300 | 0.21 | 1578.9 | 9 | 34 | 3 | 6 | 31 | 15 | 42 | 16 | 14 | 5.53 | 14 | 27 | 19 | 36 | 60 | 20 | 49 | 37 | 2.4 | 51 | 3 | 9 | 5 | 13 | 12 | 25 | 63 | 56 | 64 | 77 | 18 | 37 | 3 | 1 | 3 | 15 | 5 | 2 | 0 | 0 | 3 | 43 | 2 | 0 | 0 | 9 | 0 | 15 | 0 | 0 | 0 | 3 | 2 |
| | AB3-1 | 110 | 100 | 0.06 | 1746.0 | 8 | 21 | 2 | 6 | 19 | 9 | 56 | 12 | 24 | 5.28 | 24 | 23 | 25 | 38 | 47 | 13 | 32 | 22 | 6.2 | 64 | 5 | 7 | 2 | 11 | 12 | 23 | 76 | 66 | 75 | 44 | 4 | 25 | 2 | 0 | 0 | 13 | 2 | 2 | 0 | 0 | 0 | 10 | 1 | 0 | 0 | 2 | 0 | 6 | 0 | 0 | 0 | 0 | 0 |
| | AB3-2 | 110 | 100 | 0.06 | 1746.0 | 7 | 25 | 1 | 6 | 24 | 13 | 41 | 24 | 16 | 5.02 | 16 | 16 | 31 | 41 | 74 | 10 | 52 | 41 | 1.3 | 31 | 3 | 9 | 10 | 14 | 12 | 26 | 43 | 41 | 45 | 17 | 9 | 2 | 1 | 1 | 3 | 1 | 3 | 0 | 0 | 0 | 3 | 21 | 1 | 0 | 0 | 6 | 0 | 8 | 0 | 0 | 0 | 3 | 1 |
| | AB3-3 | 110 | 100 | 0.08 | 1325.3 | 7 | 20 | 2 | 5 | 18 | 7 | 28 | 12 | 2 | 6.28 | 2 | 43 | 36 | 48 | 48 | 37 | 62 | 49 | 2.3 | 58 | 2 | 10 | 2 | 15 | 12 | 27 | 70 | 60 | 73 | 16 | 5 | 10 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| | AT1 tot | 330 | 300 | 0.05 | 6875.0 | 7 | 8 | 4 | 3 | 4 | 0 | 0 | 0 | 0 | 7.32 | 0 | 66 | 61 | 94 | 98 | 66 | 99 | 99 | 0.0 | 65 | 0 | 0 | 0 | 0 | 0 | 0 | 65 | 65 | 65 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AT1-1 | 110 | 100 | 0.02 | 6875.0 | 5 | 5 | 4 | 1 | 1 | 0 | 0 | 0 | 0 | 7.42 | 0 | 69 | 62 | 93 | 100 | 69 | 100 | 100 | 0.0 | 67 | 0 | 0 | 0 | 0 | 0 | 0 | 67 | 67 | 67 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AT1-2 | 110 | 100 | 0.02 | 6875.0 | 6 | 6 | 4 | 2 | 2 | 0 | 0 | 0 | 0 | 7.48 | 0 | 73 | 69 | 96 | 100 | 72 | 99 | 99 | 0.0 | 71 | 0 | 0 | 0 | 1 | 0 | 1 | 71 | 71 | 72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AT1-3 | 110 | 100 | 0.02 | 6875.0 | 5 | 5 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 7.05 | 0 | 56 | 51 | 92 | 95 | 56 | 99 | 97 | 0.0 | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 56 | 56 | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AT2 tot | 330 | 300 | 0.17 | 1907.5 | 10 | 13 | 5 | 5 | 8 | 1 | 1.3 | 0 | 0 | 6.06 | 0 | 6 | 87 | 91 | 99 | 7 | 95 | 95 | 0.0 | 8 | 0 | 1 | 0 | 3 | 1 | 4 | 9 | 8 | 11 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AT2-1 | 110 | 100 | 0.06 | 1746.0 | 10 | 11 | 5 | 5 | 6 | 1 | 3 | 0 | 0 | 5.99 | 0 | 6 | 83 | 86 | 99 | 8 | 92 | 91 | 0.0 | 10 | 0 | 1 | 0 | 4 | 1 | 5 | 11 | 10 | 14 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AT2-2 | 110 | 100 | 0.06 | 1746.0 | 5 | 7 | 2 | 3 | 5 | 1 | 1 | 0 | 0 | 6.03 | 0 | 4 | 91 | 94 | 99 | 4 | 96 | 95 | 0.0 | 4 | 0 | 1 | 1 | 3 | 1 | 4 | 5 | 5 | 7 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AT2-3 | 110 | 100 | 0.05 | 2340.4 | 5 | 5 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 6.15 | 0 | 9 | 88 | 94 | 100 | 10 | 98 | 98 | 0.0 | 10 | 0 | 0 | 0 | 2 | 0 | 2 | 10 | 10 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ1 tot | 330 | 300 | 0.42 | 791.4 | 13 | 24 | 8 | 5 | 16 | 2 | 2.3 | 0 | 0 | 6.11 | 0 | 14 | 63 | 69 | 83 | 11 | 88 | 74 | 0.0 | 15 | 1 | 0 | 5 | 13 | 1 | 15 | 16 | 19 | 28 | 7 | 3 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ1-1 | 110 | 100 | 0.17 | 658.7 | 8 | 13 | 4 | 4 | 9 | 1 | 3 | 0 | 0 | 6.32 | 0 | 22 | 62 | 75 | 83 | 17 | 92 | 79 | 0.0 | 22 | 2 | 0 | 0 | 11 | 2 | 13 | 24 | 22 | 33 | 3 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ1-2 | 110 | 100 | 0.13 | 880.0 | 11 | 17 | 7 | 4 | 10 | 1 | 1 | 0 | 0 | 6.04 | 0 | 12 | 64 | 68 | 90 | 12 | 83 | 76 | 0.0 | 11 | 1 | 0 | 2 | 18 | 1 | 19 | 12 | 13 | 29 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Table A-4
Benthic Macroinvertebrate Data

| Year | Study Reaches | # specimens picked | # specimens identified | area searched (sq. m) | BMI density (#/sq. m) | # BMI orders | # BMI families | # non-insect taxa | # insect orders | # insect families | # EPT families | % EPT | % PT | % sens EPT | BI score | % sens BMIs | % tol BMIs | % dominant taxa | % two dominant taxa | % Diptera as Chironomidae | % non-insect BMIs | % non-insects + diptera | % non-insects+chironimidae | EPT/Chironomidae | % cg | %sc | %sh | % cf | % pred | %sc+sh | %sc+sh+pred | %cg+sc+sh | %cg+cf | %cg+pred | EPHEMEROPTERA | Baetidae | Caenidae | Emphemerellidae | Heptagenidae | Leptohyphidae | Leptophlebiidae | PLECOPTERA | Chloroperlidae | Nemouridae | Perlidae | Perlodidae | TRICOPTERA | Brachycentridae | Glossostomatidae | Helicopsychidae | Hydropsychidae | Hydroptilidae | Lepidostomatidae | Leptoceridae | Limnophilidae | Odontoceridae | Philopotamidae | Polycentropodidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tolerance Value* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | 7 | 1 | 4 | 4 | 2 | | 1 | 2 | 1 | 2 | | 1 | 0 | 3 | 4 | 4 | 1 | 4 | 4 | 0 | 3 | 6 |
| S(0-2), M(3-7), T(8-10) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | M | M | S | M | M | S | | S | S | S | S | | S | S | M | M | M | S | M | M | S | M | M |
| Primary FFG* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | cg | cg | cg | cg | cg | cg | | p | sh | p | p | | NA | sc | sc | cf | ph | sh | om | s | sh | cf | p |
| | | | | | Abundance | | Richness | | | | | | | | Composition/Tolerance | | | | | | | | | | | | | | Trophic Groups | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SJ1-3 | 110 | 100 | 0.13 | 880.0 | 9 | 14 | 4 | 5 | 10 | 1 | 3 | 0 | 0 | 5.97 | 0 | 8 | 63 | 74 | 76 | 5 | 88 | 68 | 0.0 | 11 | 1 | 0 | 12 | 11 | 1 | 12 | 12 | 23 | 22 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ2 tot | 330 | 300 | 0.24 | 1404.3 | 9 | 27 | 4 | 5 | 23 | 9 | 33 | 8.3 | 4.3 | 5.54 | 5 | 19 | 33 | 49 | 78 | 19 | 62 | 52 | 1.0 | 47 | 3 | 1 | 3 | 10 | 4 | 14 | 51 | 50 | 56 | 73 | 31 | 12 | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 9 | 0 | 3 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ2-1 | 110 | 100 | 0.05 | 2340.4 | 7 | 17 | 2 | 5 | 15 | 6 | 46 | 8 | 8 | 4.99 | 8 | 15 | 21 | 39 | 67 | 15 | 42 | 33 | 2.6 | 60 | 2 | 0 | 2 | 12 | 2 | 14 | 62 | 62 | 72 | 38 | 21 | 4 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ2-2 | 110 | 100 | 0.06 | 1746.0 | 7 | 18 | 2 | 5 | 16 | 8 | 29 | 10 | 4 | 5.77 | 4 | 24 | 35 | 56 | 78 | 24 | 69 | 59 | 0.8 | 45 | 3 | 4 | 2 | 8 | 7 | 15 | 52 | 47 | 53 | 19 | 6 | 4 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 3 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ2-3 | 110 | 100 | 0.13 | 880.0 | 7 | 16 | 3 | 4 | 13 | 6 | 23 | 7 | 1 | 5.85 | 2 | 17 | 47 | 62 | 82 | 17 | 74 | 64 | 0.5 | 35 | 4 | 0 | 4 | 9 | 4 | 13 | 39 | 39 | 44 | 16 | 4 | 4 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 1 | 0 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ3 tot | 330 | 300 | 0.38 | 873.0 | 10 | 35 | 4 | 6 | 31 | 17 | 59 | 20 | 13 | 4.95 | 13 | 6 | 24 | 43 | 90 | 7 | 28 | 26 | 3.1 | 48 | 8 | 9 | 2 | 10 | 17 | 27 | 65 | 50 | 58 | 116 | 21 | 73 | 1 | 16 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 61 | 7 | 0 | 3 | 5 | 1 | 17 | 1 | 2 | 0 | 0 | 3 |
| | SJ3-1 | 110 | 100 | 0.10 | 1100.0 | 8 | 21 | 3 | 5 | 18 | 11 | 58 | 25 | 16 | 4.59 | 16 | 6 | 18 | 35 | 89 | 9 | 28 | 26 | 3.4 | 45 | 9 | 10 | 6 | 12 | 19 | 31 | 64 | 51 | 57 | 33 | 5 | 18 | 1 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 2 | 0 | 1 | 4 | 0 | 5 | 0 | 0 | 0 | 0 | 0 |
| | SJ3-2 | 110 | 100 | 0.11 | 991.0 | 8 | 23 | 2 | 6 | 21 | 11 | 56 | 15 | 10 | 4.93 | 11 | 5 | 22 | 40 | 95 | 7 | 26 | 25 | 3.1 | 50 | 8 | 8 | 0 | 11 | 16 | 27 | 66 | 50 | 61 | 41 | 11 | 22 | 0 | 5 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 15 | 3 | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 0 | 0 | 2 |
| | SJ3-3 | 110 | 100 | 0.17 | 658.7 | 8 | 24 | 3 | 5 | 21 | 15 | 63 | 21 | 12 | 5.35 | 12 | 6 | 33 | 55 | 88 | 4 | 29 | 26 | 2.9 | 48 | 6 | 10 | 1 | 8 | 16 | 24 | 64 | 49 | 56 | 42 | 5 | 33 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 21 | 2 | 0 | 2 | 1 | 0 | 7 | 1 | 2 | 0 | 0 | 1 |
| | EC1 tot | 330 | 300 | 0.63 | 522.2 | 13 | 33 | 7 | 6 | 26 | 10 | 39 | 6 | 5 | 5.90 | 5 | 35 | 22 | 37 | 87 | 32 | 49 | 47 | 2.6 | 59 | 7 | 0 | 1 | 15 | 8 | 22 | 67 | 60 | 74 | 100 | 42 | 16 | 0 | 5 | 26 | 11 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 2 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| | EC1-1 | 110 | 100 | 0.33 | 330.3 | 12 | 20 | 6 | 6 | 14 | 6 | 31 | 3 | 4 | 6.12 | 4 | 42 | 29 | 46 | 100 | 39 | 56 | 56 | 1.8 | 61 | 4 | 1 | 1 | 14 | 5 | 19 | 66 | 62 | 75 | 28 | 12 | 0 | 0 | 2 | 10 | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| | EC1-2 | 110 | 100 | 0.11 | 991.0 | 9 | 18 | 4 | 5 | 14 | 8 | 45 | 5 | 3 | 5.92 | 3 | 31 | 21 | 39 | 81 | 26 | 42 | 39 | 3.5 | 63 | 1 | 0 | 1 | 20 | 1 | 21 | 64 | 64 | 83 | 40 | 18 | 9 | 0 | 1 | 10 | 2 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| | EC1-3 | 110 | 100 | 0.19 | 585.1 | 10 | 24 | 5 | 5 | 19 | 10 | 42 | 10 | 8 | 5.67 | 9 | 32 | 16 | 31 | 80 | 30 | 50 | 46 | 2.6 | 53 | 17 | 0 | 2 | 10 | 17 | 27 | 70 | 55 | 63 | 32 | 12 | 7 | 0 | 2 | 6 | 5 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 2 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| | AH1 tot | 330 | 300 | 0.21 | 1578.9 | 8 | 29 | 0 | 8 | 29 | 15 | 56 | 22 | 24 | 4.04 | 25 | 2 | 25 | 33 | 66 | 0 | 38 | 25 | 2.2 | 38 | 4 | 10 | 0 | 14 | 14 | 28 | 52 | 38 | 53 | 102 | 22 | 13 | 1 | 24 | 16 | 26 | 28 | 23 | 2 | 3 | 0 | 37 | 1 | 0 | 2 | 0 | 0 | 16 | 2 | 0 | 0 | 0 | 3 |
| | AH1-1 | 110 | 100 | 0.06 | 1746.0 | 6 | 19 | 0 | 6 | 19 | 11 | 57 | 16 | 31 | 4.06 | 31 | 3 | 23 | 43 | 64 | 0 | 36 | 23 | 2.5 | 42 | 4 | 10 | 0 | 12 | 14 | 26 | 56 | 42 | 54 | 41 | 2 | 7 | 0 | 6 | 6 | 20 | 7 | 4 | 2 | 1 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 1 |
| | AH1-2 | 110 | 100 | 0.06 | 1746.0 | 6 | 19 | 0 | 6 | 19 | 11 | 49 | 23 | 25 | 3.92 | 27 | 2 | 29 | 40 | 63 | 0 | 46 | 29 | 1.7 | 34 | 2 | 11 | 0 | 15 | 13 | 28 | 47 | 34 | 49 | 26 | 5 | 1 | 1 | 11 | 4 | 4 | 10 | 8 | 0 | 2 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 2 |
| | AH1-3 | 110 | 100 | 0.08 | 1325.3 | 6 | 21 | 0 | 6 | 21 | 11 | 61 | 26 | 16 | 4.13 | 18 | 1 | 23 | 38 | 74 | 0 | 31 | 23 | 2.7 | 39 | 5 | 10 | 0 | 16 | 15 | 31 | 54 | 39 | 55 | 35 | 15 | 5 | 0 | 7 | 6 | 2 | 11 | 11 | 0 | 0 | 0 | 15 | 1 | 0 | 2 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 |
| | SO2 tot | 330 | 300 | 0.10 | 3437.5 | 11 | 32 | 3 | 8 | 29 | 15 | 54 | 24 | 28 | 3.97 | 29 | 3 | 21 | 31 | 75 | 1 | 29 | 22 | 2.6 | 34 | 12 | 14 | 0 | 13 | 26 | 39 | 60 | 34 | 47 | 90 | 22 | 19 | 0 | 21 | 0 | 28 | 9 | 7 | 1 | 0 | 1 | 62 | 5 | 4 | 0 | 1 | 0 | 30 | 1 | 0 | 0 | 0 | 3 |
| | SO2-1 | 110 | 100 | 0.03 | 3437.5 | 8 | 20 | 2 | 6 | 18 | 10 | 51 | 21 | 26 | 4.33 | 28 | 4 | 27 | 38 | 90 | 2 | 32 | 29 | 1.9 | 35 | 13 | 13 | 0 | 8 | 26 | 34 | 61 | 35 | 43 | 30 | 5 | 11 | 0 | 6 | 0 | 8 | 3 | 3 | 0 | 0 | 0 | 18 | 2 | 2 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 1 |
| | SO2-2 | 110 | 100 | 0.03 | 3437.5 | 8 | 21 | 1 | 7 | 20 | 11 | 50 | 23 | 26 | 3.82 | 27 | 2 | 17 | 27 | 61 | 1 | 29 | 18 | 2.9 | 29 | 11 | 16 | 1 | 19 | 27 | 46 | 56 | 30 | 48 | 27 | 6 | 5 | 0 | 6 | 0 | 10 | 3 | 2 | 0 | 0 | 1 | 20 | 0 | 1 | 0 | 1 | 0 | 10 | 0 | 0 | 0 | 0 | 0 |
| | SO2-3 | 110 | 100 | 0.03 | 3437.5 | 8 | 22 | 1 | 7 | 21 | 13 | 60 | 27 | 31 | 3.75 | 32 | 4 | 19 | 30 | 73 | 1 | 27 | 20 | 3.2 | 38 | 11 | 13 | 0 | 13 | 24 | 37 | 62 | 38 | 51 | 33 | 11 | 3 | 0 | 9 | 0 | 10 | 3 | 2 | 1 | 0 | 0 | 24 | 3 | 1 | 0 | 0 | 0 | 9 | 1 | 0 | 0 | 0 | 2 |
| | GAV1 tot | 330 | 300 | 0.17 | 1988.0 | 11 | 26 | 4 | 7 | 22 | 8 | 52 | 15 | 4.7 | 4.87 | 5 | 9 | 25 | 40 | 66 | 6 | 29 | 21 | 3.4 | 43 | 5 | 1 | 10 | 16 | 6 | 22 | 49 | 53 | 59 | 113 | 37 | 1 | 0 | 0 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 44 | 0 | 0 | 0 | 23 | 2 | 0 | 2 | 0 | 0 | 0 | 3 |
| | GAV1-1 | 110 | 100 | 0.05 | 2340.4 | 7 | 15 | 1 | 6 | 14 | 6 | 54 | 14 | 4 | 4.92 | 4 | 8 | 26 | 46 | 77 | 4 | 30 | 24 | 2.7 | 45 | 4 | 2 | 7 | 17 | 6 | 23 | 51 | 52 | 62 | 40 | 14 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 2 |
| | GAV1-2 | 110 | 100 | 0.06 | 1964.3 | 9 | 20 | 3 | 6 | 17 | 7 | 45 | 17 | 7 | 4.79 | 7 | 6 | 18 | 33 | 64 | 6 | 28 | 20 | 3.2 | 32 | 7 | 1 | 11 | 21 | 8 | 29 | 40 | 43 | 53 | 28 | 9 | 1 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 7 | 0 | 0 | 2 | 0 | 0 | 0 | 1 |
| | GAV1-3 | 110 | 100 | 0.06 | 1746.0 | 10 | 17 | 3 | 7 | 14 | 4 | 58 | 13 | 3 | 4.90 | 3 | 11 | 31 | 45 | 55 | 8 | 30 | 20 | 4.8 | 52 | 4 | 0 | 13 | 11 | 4 | 15 | 56 | 65 | 63 | 45 | 14 | 0 | 0 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | GAV2 tot | 330 | 300 | 0.40 | 831.2 | 12 | 27 | 5 | 7 | 22 | 9 | 52 | 16 | 1.7 | 5.25 | 2 | 11 | 29 | 53 | 80 | 3 | 39 | 32 | 1.8 | 43 | 2 | 1 | 14 | 10 | 3 | 12 | 45 | 56 | 52 | 109 | 20 | 18 | 0 | 0 | 71 | 0 | 0 | 0 | 0 | 0 | 0 | 47 | 0 | 0 | 0 | 34 | 5 | 1 | 0 | 0 | 0 | 0 | 1 |
| | GAV2-1 | 110 | 100 | 0.06 | 1746.0 | 8 | 17 | 2 | 6 | 15 | 7 | 47 | 12 | 1 | 5.28 | 1 | 9 | 32 | 47 | 82 | 3 | 42 | 35 | 1.5 | 39 | 1 | 2 | 8 | 11 | 3 | 14 | 42 | 47 | 50 | 35 | 13 | 7 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 5 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| | GAV2-2 | 110 | 100 | 0.17 | 658.7 | 10 | 17 | 4 | 6 | 13 | 5 | 50 | 22 | 3 | 5.43 | 3 | 12 | 34 | 53 | 94 | 5 | 41 | 39 | 1.5 | 31 | 4 | 0 | 21 | 11 | 4 | 15 | 35 | 52 | 42 | 28 | 3 | 9 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | GAV2-3 | 110 | 100 | 0.17 | 658.7 | 7 | 15 | 0 | 7 | 15 | 7 | 59 | 13 | 1 | 5.03 | 1 | 13 | 40 | 61 | 62 | 0 | 34 | 21 | 2.8 | 58 | 0 | 1 | 12 | 7 | 1 | 8 | 59 | 70 | 65 | 46 | 4 | 2 | 0 | 0 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 10 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |

Table A-4
Benthic Macroinvertebrate Data

| Year | Study Reaches | # specimens picked | # specimens identified | area searched (sq. m) | BMI density (#/sq. m) | # BMI orders | # BMI families | # non-insect taxa | # insect orders | # insect families | # EPT families | % EPT | % PT | % sens EPT | BI score | % sens BMIs | % tol BMIs | % dominant taxa | % two dominant taxa | % Diptera as Chironomidae | % non-insect BMIs | % non-insects + diptera | % non-insects+chironimidae | EPT/Chironomidae | % cg | %sc | %sh | % cf | % pred | %sc+sh | %sc+sh+pred | %cg+sc+sh | %cg+cf | %cg+pred | EPHEMEROPTERA | Baetidae | Caenidae | Emphemerellidae | Heptagenidae | Leptohyphidae | Leptophlebiidae | PLECOPTERA | Chloroperlidae | Nemouridae | Perlidae | Perlodidae | TRICOPTERA | Brachycentridae | Glossostomatidae | Helicopsychidae | Hydropsychidae | Hydroptilidae | Lepidostomatidae | Leptoceridae | Limnophilidae | Odontoceridae | Philopotamidae | Polycentropodidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tolerance Value* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | 7 | 1 | 4 | 4 | 2 | | 1 | 2 | 1 | 2 | | 1 | 0 | 3 | 4 | 4 | 1 | 4 | 4 | 0 | 3 | 6 |
| S(0-2), M(3-7), T(8-10) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | M | M | S | M | M | S | | S | S | S | S | | S | S | M | M | M | S | M | M | S | M | M |
| Primary FFG* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | cg | cg | cg | cg | cg | cg | | p | sh | p | p | | NA | sc | sc | cf | ph | sh | om | s | sh | cf | p |
| | | | | | Abundance | | Richness | | | | | | | | Composition/Tolerance | | | | | | | | | | | | | | Trophic Groups | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2003 | C1 tot | 330 | 300 | 0.30 | 1092.4 | 7 | 17 | 3 | 4 | 13 | 3 | 2.3 | 0 | 1 | 5.98 | 1 | 7 | 77 | 86 | 94 | 13 | 95 | 90 | 0.0 | 18 | 0 | 0 | 1 | 1 | 0 | 1 | 18 | 18 | 19 | 7 | 1 | 3 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C1-1 | 110 | 100 | 0.08 | 1320.0 | 5 | 7 | 2 | 3 | 5 | 1 | 1 | 0 | 1 | 5.91 | 1 | 2 | 88 | 93 | 97 | 7 | 98 | 95 | 0.0 | 8 | 0 | 0 | 2 | 0 | 0 | 0 | 8 | 10 | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C1-2 | 110 | 100 | 0.13 | 880.0 | 6 | 13 | 2 | 4 | 11 | 3 | 5 | 0 | 2 | 5.87 | 2 | 7 | 71 | 79 | 89 | 13 | 93 | 84 | 0.1 | 20 | 0 | 0 | 0 | 4 | 0 | 4 | 20 | 20 | 24 | 5 | 1 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C1-3 | 110 | 100 | 0.09 | 1173.3 | 6 | 8 | 3 | 3 | 5 | 1 | 1 | 0 | 0 | 6.15 | 0 | 11 | 72 | 85 | 96 | 20 | 95 | 92 | 0.0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 25 | 25 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C3 tot | 330 | 300 | 0.17 | 1902.0 | 8 | 30 | 2 | 6 | 28 | 16 | 72 | 14 | 16 | 4.02 | 17 | 1 | 34 | 46 | 59 | 3 | 22 | 14 | 6.3 | 65 | 1 | 6 | 3 | 8 | 8 | 16 | 72 | 67 | 73 | 174 | 103 | 19 | 1 | 30 | 5 | 16 | 9 | 0 | 5 | 3 | 1 | 32 | 0 | 0 | 2 | 0 | 2 | 13 | 0 | 0 | 0 | 4 | 0 |
| | C3-1 | 110 | 100 | 0.06 | 1760.0 | 7 | 22 | 1 | 6 | 21 | 13 | 64 | 12 | 13 | 3.94 | 13 | 1 | 36 | 49 | 41 | 2 | 29 | 13 | 5.8 | 58 | 1 | 3 | 3 | 9 | 4 | 13 | 62 | 61 | 67 | 52 | 36 | 3 | 1 | 7 | 2 | 3 | 3 | 0 | 2 | 0 | 1 | 9 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 0 |
| | C3-2 | 110 | 100 | 0.06 | 1982.0 | 7 | 19 | 1 | 6 | 18 | 10 | 79 | 8 | 14 | 4.25 | 16 | 1 | 40 | 51 | 69 | 2 | 18 | 13 | 7.2 | 77 | 2 | 5 | 2 | 3 | 7 | 10 | 84 | 79 | 80 | 71 | 40 | 11 | 0 | 11 | 1 | 8 | 2 | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 1 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 |
| | C3-3 | 110 | 100 | 0.06 | 1982.0 | 7 | 19 | 2 | 5 | 17 | 12 | 72 | 21 | 22 | 3.87 | 22 | 2 | 27 | 39 | 80 | 5 | 20 | 17 | 6.0 | 59 | 1 | 11 | 2 | 13 | 12 | 25 | 71 | 61 | 72 | 51 | 27 | 5 | 0 | 12 | 2 | 5 | 4 | 0 | 1 | 3 | 0 | 17 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 0 | 0 | 2 | 0 |
| | MONT1 tot | 330 | 300 | 0.17 | 1979.6 | 13 | 34 | 6 | 7 | 28 | 17 | 46 | 30 | 19 | 4.64 | 19 | 22 | 10 | 20 | 58 | 26 | 43 | 36 | 4.7 | 37 | 18 | 11 | 8 | 11 | 29 | 40 | 66 | 45 | 48 | 47 | 31 | 3 | 0 | 5 | 4 | 4 | 2 | 0 | 1 | 1 | 0 | 88 | 5 | 11 | 0 | 4 | 10 | 18 | 0 | 0 | 0 | 1 | 8 |
| | MONT1-1 | 110 | 100 | 0.06 | 1760.0 | 11 | 25 | 5 | 6 | 20 | 14 | 54 | 35 | 19 | 4.48 | 19 | 19 | 16 | 28 | 47 | 22 | 37 | 29 | 7.7 | 34 | 20 | 10 | 11 | 13 | 30 | 43 | 64 | 45 | 47 | 19 | 16 | 0 | 0 | 0 | 3 | 0 | 2 | 0 | 1 | 1 | 0 | 33 | 1 | 6 | 0 | 2 | 4 | 5 | 0 | 0 | 0 | 1 | 5 |
| | MONT1-2 | 110 | 100 | 0.04 | 2637.9 | 11 | 27 | 6 | 5 | 21 | 13 | 39 | 25 | 15 | 5.11 | 16 | 28 | 12 | 23 | 50 | 32 | 50 | 41 | 4.3 | 39 | 19 | 12 | 9 | 7 | 31 | 38 | 70 | 48 | 46 | 14 | 6 | 3 | 0 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 25 | 1 | 4 | 0 | 1 | 4 | 8 | 0 | 0 | 0 | 0 | 2 |
| | MONT1-3 | 110 | 100 | 0.06 | 1760.0 | 9 | 22 | 4 | 5 | 18 | 11 | 44 | 30 | 22 | 4.34 | 22 | 18 | 13 | 23 | 76 | 25 | 42 | 38 | 3.4 | 38 | 14 | 12 | 4 | 12 | 26 | 38 | 64 | 42 | 50 | 14 | 9 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 30 | 3 | 1 | 0 | 1 | 2 | 5 | 0 | 0 | 0 | 0 | 1 |
| | SY1 tot | 330 | 300 | 0.25 | 1322.6 | 9 | 18 | 3 | 6 | 15 | 5 | 45 | 4.7 | 0.3 | 5.00 | 0 | 1 | 40 | 76 | 76 | 2 | 50 | 38 | 1.2 | 43 | 0 | 2 | 15 | 5 | 2 | 7 | 45 | 58 | 48 | 121 | 120 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 |
| | SY1-1 | 110 | 100 | 0.06 | 1760.0 | 5 | 11 | 1 | 4 | 10 | 4 | 40 | 4 | 1 | 5.06 | 1 | 1 | 45 | 81 | 85 | 1 | 54 | 46 | 0.9 | 40 | 0 | 2 | 10 | 3 | 2 | 5 | 42 | 50 | 43 | 36 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| | SY1-2 | 110 | 100 | 0.10 | 1057.7 | 6 | 11 | 1 | 5 | 10 | 3 | 34 | 5 | 0 | 5.27 | 0 | 1 | 38 | 66 | 64 | 1 | 60 | 39 | 0.9 | 30 | 0 | 0 | 25 | 8 | 0 | 8 | 30 | 55 | 38 | 29 | 28 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 |
| | SY1-3 | 110 | 100 | 0.08 | 1325.3 | 7 | 10 | 2 | 5 | 8 | 3 | 61 | 5 | 0 | 4.68 | 0 | 1 | 56 | 82 | 81 | 3 | 35 | 29 | 2.3 | 59 | 0 | 3 | 9 | 4 | 3 | 7 | 62 | 68 | 63 | 56 | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| | SY2 tot | 330 | 300 | 0.22 | 1475.8 | 9 | 21 | 3 | 6 | 18 | 8 | 53 | 2.3 | 1.3 | 4.86 | 1 | 1 | 50 | 74 | 58 | 3 | 44 | 27 | 2.2 | 54 | 1 | 1 | 16 | 5 | 2 | 7 | 56 | 70 | 59 | 152 | 150 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 7 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SY2-1 | 110 | 100 | 0.08 | 1325.3 | 5 | 9 | 1 | 4 | 8 | 4 | 49 | 3 | 1 | 4.89 | 1 | 0 | 46 | 71 | 43 | 2 | 46 | 21 | 2.6 | 51 | 1 | 1 | 29 | 2 | 2 | 4 | 53 | 80 | 53 | 46 | 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SY2-2 | 110 | 100 | 0.06 | 1760.0 | 7 | 14 | 3 | 4 | 11 | 4 | 59 | 2 | 2 | 4.79 | 2 | 2 | 56 | 79 | 62 | 3 | 40 | 26 | 2.6 | 59 | 1 | 0 | 10 | 6 | 1 | 7 | 60 | 69 | 65 | 57 | 56 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SY2-3 | 110 | 100 | 0.08 | 1408.5 | 9 | 12 | 3 | 6 | 9 | 3 | 51 | 2 | 1 | 4.91 | 1 | 2 | 48 | 77 | 69 | 4 | 46 | 33 | 1.8 | 52 | 1 | 2 | 9 | 7 | 3 | 10 | 55 | 61 | 59 | 49 | 48 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M1 tot | 330 | 300 | 0.35 | 951.8 | 7 | 8 | 5 | 2 | 3 | 1 | 4.7 | 0 | 0 | 6.05 | 0 | 13 | 59 | 73 | 86 | 27 | 95 | 86 | 0.1 | 26 | 5 | 0 | 11 | 0 | 5 | 5 | 31 | 36 | 26 | 14 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M1-1 | 110 | 100 | 0.04 | 2637.9 | 5 | 6 | 3 | 2 | 3 | 1 | 1 | 0 | 0 | 5.97 | 0 | 2 | 77 | 92 | 84 | 7 | 99 | 84 | 0.0 | 7 | 1 | 0 | 17 | 0 | 1 | 1 | 8 | 24 | 7 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M1-2 | 110 | 100 | 0.08 | 1325.3 | 7 | 7 | 5 | 2 | 2 | 1 | 1 | 0 | 0 | 6.00 | 0 | 17 | 48 | 82 | 100 | 51 | 99 | 99 | 0.0 | 47 | 4 | 0 | 0 | 0 | 4 | 4 | 51 | 47 | 47 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M1-3 | 110 | 100 | 0.22 | 495.5 | 7 | 8 | 5 | 2 | 3 | 1 | 12 | 0 | 0 | 6.18 | 0 | 21 | 51 | 65 | 78 | 23 | 88 | 74 | 0.2 | 23 | 11 | 0 | 15 | 0 | 11 | 11 | 34 | 38 | 23 | 12 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M2 tot | 330 | 300 | 0.26 | 1248.6 | 9 | 11 | 5 | 4 | 6 | 2 | 5.7 | 1.3 | 0 | 5.95 | 0 | 3 | 76 | 88 | 86 | 4 | 92 | 80 | 0.1 | 7 | 0 | 0 | 13 | 4 | 0 | 4 | 7 | 20 | 11 | 13 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M2-1 | 110 | 100 | 0.04 | 2637.9 | 5 | 7 | 1 | 4 | 6 | 2 | 5 | 2 | 0 | 5.92 | 0 | 1 | 81 | 91 | 87 | 1 | 94 | 82 | 0.1 | 4 | 0 | 0 | 11 | 3 | 0 | 3 | 4 | 15 | 7 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M2-2 | 110 | 100 | 0.06 | 1978.4 | 5 | 6 | 2 | 3 | 4 | 1 | 4 | 0 | 0 | 5.94 | 0 | 2 | 71 | 90 | 79 | 4 | 94 | 75 | 0.1 | 7 | 0 | 0 | 21 | 3 | 0 | 3 | 7 | 28 | 10 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M2-3 | 110 | 100 | 0.17 | 658.7 | 8 | 9 | 4 | 4 | 5 | 2 | 8 | 2 | 0 | 5.98 | 0 | 7 | 76 | 82 | 93 | 6 | 88 | 82 | 0.1 | 10 | 0 | 1 | 7 | 5 | 1 | 6 | 11 | 17 | 15 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M3 tot | 330 | 300 | 0.31 | 1057.7 | 9 | 25 | 4 | 5 | 21 | 13 | 51 | 12 | 6.7 | 4.58 | 7 | 0 | 35 | 59 | 63 | 6 | 43 | 29 | 2.2 | 44 | 3 | 9 | 16 | 5 | 12 | 17 | 56 | 60 | 49 | 118 | 105 | 2 | 0 | 5 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 36 | 1 | 3 | 0 | 1 | 1 | 10 | 0 | 0 | 0 | 2 | 0 |
| | M3-1 | 110 | 100 | 0.10 | 1057.7 | 7 | 14 | 2 | 5 | 12 | 6 | 51 | 9 | 10 | 4.52 | 10 | 0 | 37 | 58 | 55 | 5 | 43 | 26 | 2.4 | 45 | 3 | 6 | 20 | 7 | 9 | 16 | 54 | 65 | 52 | 42 | 37 | 0 | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 2 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 1 | 0 |
| | M3-2 | 110 | 100 | 0.10 | 1057.7 | 7 | 16 | 3 | 4 | 13 | 8 | 47 | 17 | 4 | 4.72 | 4 | 1 | 31 | 57 | 78 | 9 | 49 | 40 | 1.5 | 40 | 1 | 16 | 9 | 3 | 17 | 20 | 57 | 49 | 43 | 30 | 26 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 |
| | M3-3 | 110 | 100 | 0.10 | 1057.7 | 6 | 18 | 2 | 4 | 16 | 11 | 56 | 10 | 6 | 4.49 | 6 | 0 | 42 | 19 | 54 | 3 | 38 | 22 | 2.9 | 47 | 6 | 5 | 19 | 4 | 11 | 15 | 58 | 66 | 51 | 46 | 42 | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 10 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| | AB1 tot | 330 | 300 | 0.22 | 1534.9 | 13 | 17 | 9 | 4 | 8 | 1 | 37 | 0 | 0 | 5.88 | 0 | 34 | 37 | 55 | 43 | 36 | 59 | 46 | 3.9 | 70 | 1 | 0 | 13 | 5 | 1 | 7 | 71 | 83 | 75 | 112 | 112 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB1-1 | 110 | 100 | 0.08 | 1325.3 | 7 | 8 | 3 | 4 | 5 | 1 | 43 | 0 | 0 | 6.01 | 0 | 43 | 43 | 76 | 54 | 41 | 54 | 48 | 6.1 | 84 | 0 | 0 | 7 | 2 | 0 | 2 | 84 | 91 | 86 | 43 | 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB1-2 | 110 | 100 | 0.03 | 3928.6 | 10 | 13 | 7 | 3 | 6 | 1 | 41 | 0 | 0 | 5.44 | 0 | 20 | 41 | 62 | 23 | 24 | 55 | 31 | 5.9 | 61 | 2 | 0 | 23 | 7 | 2 | 9 | 63 | 84 | 68 | 41 | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB1-3 | 110 | 100 | 0.10 | 1057.7 | 10 | 12 | 7 | 3 | 5 | 1 | 28 | 0 | 0 | 6.18 | 0 | 40 | 28 | 53 | 63 | 43 | 67 | 58 | 1.9 | 64 | 2 | 0 | 10 | 7 | 2 | 9 | 66 | 74 | 71 | 28 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB2 tot | 330 | 300 | 0.15 | 2158.3 | 11 | 17 | 5 | 6 | 12 | 2 | 31 | 0 | 0.3 | 5.43 | 0 | 9 | 43 | 74 | 90 | 16 | 64 | 59 | 0.7 | 47 | 0 | 0 | 4 | 3 | 0 | 4 | 47 | 51 | 50 | 94 | 93 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB2-1 | 110 | 100 | 0.04 | 2637.9 | 7 | 8 | 4 | 3 | 4 | 1 | 33 | 0 | 0 | 5.42 | 0 | 8 | 52 | 85 | 98 | 13 | 66 | 65 | 0.6 | 45 | 1 | 0 | 1 | 1 | 1 | 2 | 46 | 46 | 46 | 33 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB2-2 | 110 | 100 | 0.06 | 1978.4 | 9 | 13 | 4 | 5 | 9 | 2 | 31 | 0 | 1 | 5.49 | 1 | 11 | 36 | 66 | 78 | 15 | 61 | 51 | 0.9 | 47 | 0 | 0 | 10 | 5 | 0 | 5 | 47 | 57 | 52 | 31 | 30 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB2-3 | 110 | 100 | 0.06 | 1978.4 | 8 | 12 | 3 | 5 | 9 | 1 | 30 | 0 | 0 | 5.37 | 0 | 9 | 41 | 71 | 91 | 19 | 64 | 60 | 0.7 | 49 | 0 | 0 | 2 | 4 | 0 | 4 | 49 | 51 | 53 | 30 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB3 tot | 330 | 300 | 0.25 | 1338.7 | 11 | 26 | 4 | 7 | 22 | 7 | 41 | 1.7 | 5.7 | 5.07 | 7 | 9 | 36 | 56 | 47 | 10 | 51 | 29 | 2.1 | 47 | 3 | 1 | 21 | 9 | 4 | 13 | 51 | 68 | 56 | 118 | 103 | 0 | 0 | 1 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 1 | 0 |
| | AB3-1 | 110 | 100 | 0.09 | 1172.7 | 9 | 15 | 2 | 7 | 13 | 3 | 40 | 1 | 6 | 5.07 | 8 | 8 | 33 | 55 | 44 | 7 | 55 | 28 | 1.9 | 45 | 3 | 0 | 25 | 8 | 3 | 11 | 48 | 70 | 53 | 39 | 33 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB3-2 | 110 | 100 | 0.04 | 2637.9 | 8 | 12 | 2 | 6 | 10 | 4 | 44 | 1 | 4 | 4.93 | 5 | 5 | 38 | 69 | 24 | 7 | 49 | 17 | 4.4 | 51 | 0 | 0 | 35 | 7 | 0 | 7 | 51 | 86 | 58 | 43 | 38 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| | AB3-3 | 110 | 100 | 0.11 | 991.0 | 9 | 17 | 3 | 6 | 14 | 4 | 39 | 3 | 7 | 5.20 | 7 | 15 | 32 | 60 | 80 | 15 | 50 | 43 | 1.4 | 45 | 7 | 2 | 1 | 13 | 9 | 22 | 54 | 46 | 58 | 36 | 32 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| | AT1 tot | 330 | 300 | 0.14 | 2444.4 | 7 | 7 | 6 | 1 | 1 | 0 | 0 | 0 | 0 | 7.79 | 0 | 89 | 82 | 92 | 100 | 90 | 100 | 100 | 0.0 | 86 | 4 | 0 | 0 | 0 | 4 | 4 | 90 | 86 | 86 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AT1-1 | 110 | 100 | 0.03 | 3548.4 | 4 | 4 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 7.90 | 0 | 95 | 93 | 98 | 100 | 95 | 100 | 100 | 0.0 | 95 | 0 | 0 | 0 | 0 | 0 | 0 | 95 | 95 | 95 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AT1-2 | 110 | 100 | 0.02 | 5238.1 | 6 | 6 | 5 | 1 | 1 | 0 | 0 | 0 | 0 | 7.84 | 0 | 93 | 88 | 93 | 100 | 95 | 100 | 100 | 0.0 | 94 | 1 | 0 | 0 | 0 | 1 | 1 | 95 | 94 | 94 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AT1-3 | 110 | 100 | 0.08 | 1325.3 | 6 | 6 | 5 | 1 | 1 | 0 | 0 | 0 | 0 | 7.62 | 0 | 80 | 65 | 85 | 100 | 80 | 100 | 100 | 0.0 | 69 | 10 | 0 | 0 | 0 | 10 | 10 | 79 | 69 | 69 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AT2 tot | 330 | 300 | 0.21 | 1586.5 | 12 | 14 | 8 | 4 | 6 | 1 | 36 | 0 | 0 | 5.44 | 0 | 16 | 36 | 54 | 43 | 32 | 63 | 45 | 2.7 | 66 | 1 | 0 | 19 | 2 | 1 | 3 | 67 | 85 | 68 | 108 | 108 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AT2-1 | 110 | 100 | 0.06 | 1760.0 | 7 | 8 | 5 | 2 | 3 | 1 | 14 | 0 | 0 | 5.45 | 0 | 7 | 41 | 64 | 61 | 48 | 86 | 71 | 0.6 | 61 | 0 | 1 | 17 | 0 | 1 | 1 | 62 | 78 | 61 | 14 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AT2-2 | 110 | 100 | 0.06 | 1760.0 | 7 | 9 | 5 | 2 | 4 | 1 | 49 | 0 | 0 | 5.27 | 0 | 16 | 49 | 73 | 11 | 23 | 51 | 26 | 16.3 | 70 | 1 | 0 | 26 | 2 | 1 | 3 | 71 | 96 | 72 | 49 | 49 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Table A-4
Benthic Macroinvertebrate Data

| Year | Study Reaches | # specimens picked | # specimens identified | area searched (sq. m) | BMI density (#/sq. m) | # BMI orders | # BMI families | # non-insect taxa | # insect orders | # insect families | # EPT families | % EPT | % PT | % sens EPT | BI score | % sens BMIs | % tol BMIs | % dominant taxa | % two dominant taxa | % Diptera as Chironomidae | % non-insect BMIs | % non-insects + diptera | % non-insects+chironimidae | EPT/Chironomidae | % cg | %sc | %sh | % cf | % pred | %sc+sh | %sc+sh+pred | %cg+sc+sh | %cg+cf | %cg+pred | EPHEMEROPTERA | Baetidae | Caenidae | Emphemerellidae | Heptagenidae | Leptohyphidae | Leptophlebiidae | PLECOPTERA | Chloroperlidae | Nemouridae | Perlidae | Perlodidae | TRICOPTERA | Brachycentridae | Glossostomatidae | Helicopsychidae | Hydropsychidae | Hydroptilidae | Lepidostomatidae | Leptoceridae | Limnophilidae | Odontoceridae | Philopotamidae | Polycentropodidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tolerance Value* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | 7 | 1 | 4 | 4 | 2 | | 1 | 2 | 1 | 2 | | 1 | 0 | 3 | 4 | 4 | 1 | 4 | 4 | 0 | 3 | 6 |
| | S(0-2), M(3-7), T(8-10) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | M | M | S | M | M | S | | S | S | S | S | | S | S | M | M | M | S | M | M | S | M | M |
| | Primary FFG* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | cg | cg | cg | cg | cg | cg | | p | sh | p | p | | NA | sc | sc | cf | ph | sh | om | s | sh | cf | p |
| | | | | | Abundance | Richness | | | | | | Composition/Tolerance | | | | | | | | | | | | | | | | Trophic Groups | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | AT2-3 | 110 | 100 | 0.08 | 1325.3 | 10 | 11 | 6 | 4 | 5 | 1 | 45 | 0 | 0 | 5.59 | 0 | 24 | 45 | 59 | 50 | 24 | 52 | 38 | 3.2 | 67 | 1 | 0 | 15 | 3 | 1 | 4 | 68 | 82 | 70 | 45 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SA2 tot | 330 | 300 | 0.65 | 511.2 | 12 | 32 | 5 | 7 | 27 | 12 | 66 | 11 | 14 | 4.24 | 15 | 5 | 43 | 55 | 75 | 5 | 21 | 17 | 5.5 | 61 | 1 | 2 | 2 | 14 | 3 | 18 | 65 | 64 | 76 | 164 | 129 | 4 | 0 | 5 | 2 | 24 | 5 | 0 | 0 | 0 | 5 | 29 | 10 | 0 | 0 | 6 | 5 | 4 | 0 | 0 | 0 | 0 | 1 |
| | SA2-1 | 110 | 100 | 0.33 | 330.3 | 9 | 22 | 3 | 6 | 19 | 10 | 48 | 10 | 12 | 4.42 | 14 | 5 | 28 | 46 | 72 | 5 | 30 | 23 | 2.7 | 53 | 0 | 5 | 1 | 16 | 5 | 21 | 58 | 54 | 69 | 38 | 28 | 1 | 0 | 2 | 0 | 7 | 2 | 0 | 0 | 0 | 2 | 8 | 1 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 |
| | SA2-2 | 110 | 100 | 0.13 | 880.0 | 7 | 16 | 1 | 6 | 15 | 8 | 70 | 10 | 9 | 4.35 | 10 | 5 | 54 | 66 | 71 | 1 | 18 | 13 | 5.8 | 63 | 1 | 0 | 3 | 18 | 1 | 19 | 64 | 66 | 81 | 60 | 54 | 0 | 0 | 1 | 2 | 3 | 3 | 0 | 0 | 0 | 3 | 7 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | SA2-3 | 110 | 100 | 0.19 | 586.7 | 9 | 16 | 4 | 5 | 12 | 8 | 80 | 14 | 22 | 3.95 | 22 | 5 | 47 | 61 | 100 | 8 | 14 | 14 | 13.3 | 68 | 2 | 2 | 2 | 9 | 4 | 13 | 72 | 70 | 77 | 66 | 47 | 3 | 0 | 2 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 14 | 6 | 0 | 0 | 2 | 4 | 2 | 0 | 0 | 0 | 0 | 0 |
| | SJ1 tot | 330 | 300 | 0.28 | 1191.3 | 10 | 17 | 4 | 6 | 14 | 3 | 30 | 0.3 | 0 | 5.37 | 0 | 2 | 54 | 83 | 89 | 7 | 68 | 61 | 0.6 | 36 | 1 | 0 | 4 | 5 | 1 | 5 | 37 | 40 | 41 | 89 | 87 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ1-1 | 110 | 100 | 0.08 | 1325.3 | 5 | 7 | 3 | 2 | 4 | 1 | 42 | 0 | 0 | 5.12 | 0 | 2 | 42 | 82 | 83 | 10 | 58 | 50 | 1.1 | 51 | 1 | 0 | 8 | 1 | 1 | 2 | 52 | 59 | 52 | 42 | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ1-2 | 110 | 100 | 0.08 | 1325.3 | 7 | 10 | 3 | 4 | 7 | 2 | 13 | 0 | 0 | 5.70 | 0 | 2 | 73 | 85 | 95 | 8 | 85 | 81 | 0.2 | 19 | 1 | 0 | 2 | 4 | 1 | 5 | 20 | 21 | 23 | 13 | 12 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ1-3 | 110 | 100 | 0.11 | 991.0 | 8 | 15 | 3 | 5 | 12 | 3 | 35 | 1 | 0 | 5.28 | 0 | 3 | 48 | 81 | 86 | 4 | 60 | 52 | 0.7 | 38 | 0 | 0 | 3 | 9 | 0 | 9 | 38 | 41 | 47 | 34 | 33 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ2 tot | 330 | 300 | 0.47 | 708.9 | 9 | 24 | 2 | 7 | 22 | 10 | 45 | 3.3 | 2 | 4.98 | 2 | 1 | 39 | 77 | 80 | 1 | 51 | 41 | 1.1 | 44 | 1 | 1 | 8 | 5 | 2 | 7 | 46 | 52 | 49 | 125 | 112 | 3 | 0 | 2 | 7 | 1 | 1 | 0 | 1 | 0 | 0 | 9 | 3 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| | SJ2-1 | 110 | 100 | 0.28 | 395.7 | 9 | 18 | 2 | 7 | 16 | 6 | 36 | 3 | 1 | 5.04 | 2 | 2 | 43 | 70 | 84 | 3 | 54 | 46 | 0.8 | 36 | 2 | 2 | 6 | 10 | 4 | 14 | 40 | 42 | 46 | 33 | 27 | 0 | 0 | 1 | 5 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ2-2 | 110 | 100 | 0.13 | 880.0 | 5 | 12 | 1 | 4 | 11 | 5 | 49 | 4 | 4 | 4.93 | 4 | 0 | 41 | 81 | 85 | 1 | 48 | 41 | 1.2 | 48 | 0 | 1 | 2 | 5 | 1 | 6 | 49 | 50 | 53 | 45 | 41 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| | SJ2-3 | 110 | 100 | 0.06 | 1760.0 | 3 | 9 | 0 | 3 | 9 | 6 | 50 | 3 | 1 | 4.97 | 1 | 0 | 44 | 79 | 70 | 0 | 50 | 35 | 1.4 | 47 | 0 | 1 | 18 | 1 | 1 | 2 | 48 | 65 | 48 | 47 | 44 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ3 tot | 330 | 300 | 0.58 | 571.9 | 10 | 29 | 3 | 7 | 26 | 10 | 42 | 9.7 | 16 | 4.52 | 17 | 2 | 21 | 42 | 50 | 4 | 45 | 24 | 2.0 | 40 | 2 | 5 | 19 | 14 | 7 | 21 | 46 | 58 | 54 | 97 | 64 | 8 | 0 | 3 | 1 | 21 | 5 | 0 | 5 | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 1 |
| | SJ3-1 | 110 | 100 | 0.10 | 1057.7 | 6 | 13 | 0 | 6 | 13 | 7 | 48 | 13 | 15 | 4.47 | 15 | 0 | 30 | 58 | 36 | 0 | 45 | 16 | 3.0 | 39 | 0 | 5 | 31 | 11 | 5 | 16 | 44 | 70 | 50 | 35 | 30 | 2 | 0 | 1 | 0 | 2 | 4 | 0 | 4 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| | SJ3-2 | 110 | 100 | 0.17 | 658.7 | 8 | 21 | 2 | 6 | 19 | 7 | 41 | 5 | 12 | 4.60 | 14 | 3 | 25 | 48 | 63 | 5 | 45 | 30 | 1.6 | 40 | 5 | 3 | 11 | 15 | 8 | 23 | 48 | 51 | 55 | 36 | 23 | 3 | 0 | 2 | 1 | 7 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 |
| | SJ3-3 | 110 | 100 | 0.31 | 359.5 | 10 | 21 | 3 | 7 | 18 | 8 | 37 | 11 | 21 | 4.48 | 22 | 2 | 21 | 34 | 55 | 6 | 44 | 27 | 1.8 | 40 | 1 | 6 | 14 | 16 | 7 | 23 | 47 | 54 | 56 | 26 | 11 | 3 | 0 | 0 | 0 | 12 | 1 | 0 | 1 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 1 |
| | AH1 tot | 330 | 300 | 0.60 | 552.8 | 10 | 30 | 2 | 8 | 28 | 14 | 68 | 28 | 34 | 3.35 | 36 | 1 | 17 | 31 | 62 | 1 | 21 | 13 | 5.7 | 47 | 4 | 20 | 5 | 11 | 23 | 34 | 70 | 52 | 58 | 122 | 52 | 1 | 0 | 24 | 5 | 40 | 17 | 6 | 6 | 5 | 0 | 66 | 0 | 0 | 1 | 1 | 0 | 34 | 0 | 0 | 0 | 0 | 1 |
| | AH1-1 | 110 | 100 | 0.17 | 658.7 | 10 | 25 | 2 | 8 | 23 | 13 | 66 | 26 | 38 | 3.18 | 43 | 1 | 16 | 31 | 53 | 2 | 21 | 12 | 6.6 | 48 | 4 | 18 | 4 | 11 | 22 | 33 | 70 | 52 | 59 | 40 | 11 | 1 | 0 | 11 | 1 | 16 | 4 | 2 | 1 | 1 | 0 | 22 | 0 | 0 | 0 | 1 | 0 | 15 | 0 | 0 | 0 | 0 | 1 |
| | AH1-2 | 110 | 100 | 0.22 | 495.5 | 8 | 20 | 1 | 7 | 19 | 10 | 65 | 19 | 33 | 3.49 | 35 | 1 | 19 | 35 | 50 | 2 | 22 | 12 | 6.5 | 54 | 6 | 8 | 8 | 14 | 14 | 28 | 68 | 62 | 68 | 46 | 19 | 0 | 0 | 9 | 2 | 16 | 7 | 4 | 0 | 3 | 0 | 12 | 0 | 0 | 1 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 |
| | AH1-3 | 110 | 100 | 0.21 | 528.8 | 6 | 17 | 0 | 6 | 17 | 9 | 74 | 38 | 30 | 3.38 | 30 | 0 | 22 | 38 | 84 | 0 | 19 | 16 | 4.6 | 39 | 1 | 33 | 2 | 8 | 34 | 42 | 73 | 41 | 47 | 36 | 22 | 0 | 0 | 4 | 2 | 8 | 6 | 0 | 5 | 1 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 |
| | SO2 tot | 330 | 300 | 0.25 | 1325.3 | 9 | 31 | 1 | 8 | 30 | 12 | 63 | 27 | 34 | 3.64 | 37 | 1 | 16 | 28 | 42 | 0 | 25 | 11 | 6.1 | 42 | 5 | 18 | 11 | 13 | 23 | 36 | 65 | 52 | 55 | 108 | 49 | 11 | 0 | 18 | 0 | 30 | 48 | 14 | 34 | 0 | 0 | 32 | 0 | 1 | 0 | 2 | 0 | 14 | 0 | 0 | 0 | 0 | 1 |
| | SO2-1 | 110 | 100 | 0.08 | 1325.3 | 8 | 24 | 0 | 8 | 24 | 11 | 61 | 24 | 31 | 3.83 | 37 | 2 | 14 | 28 | 30 | 0 | 30 | 9 | 6.8 | 44 | 2 | 13 | 17 | 15 | 15 | 30 | 59 | 61 | 59 | 37 | 14 | 6 | 0 | 7 | 0 | 10 | 14 | 4 | 10 | 0 | 0 | 10 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 |
| | SO2-2 | 110 | 100 | 0.08 | 1325.3 | 7 | 19 | 0 | 7 | 19 | 9 | 68 | 26 | 34 | 3.43 | 35 | 0 | 25 | 37 | 47 | 0 | 17 | 8 | 8.5 | 49 | 6 | 21 | 6 | 8 | 27 | 35 | 76 | 55 | 57 | 42 | 25 | 2 | 0 | 5 | 0 | 10 | 14 | 2 | 12 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 |
| | SO2-3 | 110 | 100 | 0.08 | 1325.3 | 9 | 24 | 1 | 8 | 23 | 11 | 59 | 30 | 37 | 3.67 | 39 | 2 | 14 | 26 | 52 | 1 | 28 | 15 | 4.2 | 32 | 8 | 19 | 10 | 16 | 27 | 43 | 59 | 42 | 48 | 29 | 10 | 3 | 0 | 6 | 0 | 10 | 20 | 8 | 12 | 0 | 0 | 10 | 0 | 1 | 0 | 1 | 0 | 5 | 0 | 0 | 0 | 0 | 0 |
| | GAV1 tot | 330 | 300 | 0.42 | 791.4 | 11 | 24 | 4 | 7 | 20 | 8 | 51 | 9.7 | 1 | 4.95 | 1 | 5 | 27 | 49 | 65 | 5 | 39 | 27 | 2.3 | 46 | 1 | 1 | 19 | 10 | 2 | 13 | 49 | 65 | 57 | 124 | 81 | 3 | 0 | 0 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 0 | 0 | 0 | 20 | 3 | 0 | 1 | 0 | 0 | 0 | 0 |
| | GAV1-1 | 110 | 100 | 0.13 | 880.0 | 9 | 16 | 2 | 7 | 14 | 6 | 24 | 4 | 0 | 5.51 | 0 | 9 | 40 | 52 | 75 | 7 | 60 | 47 | 0.6 | 26 | 1 | 2 | 14 | 15 | 3 | 18 | 29 | 40 | 41 | 20 | 8 | 1 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| | GAV1-2 | 110 | 100 | 0.17 | 658.7 | 9 | 15 | 3 | 6 | 12 | 6 | 56 | 9 | 1 | 4.96 | 1 | 5 | 32 | 50 | 55 | 5 | 38 | 23 | 3.1 | 52 | 1 | 1 | 23 | 6 | 2 | 8 | 54 | 75 | 58 | 47 | 32 | 2 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | GAV1-3 | 110 | 100 | 0.13 | 880.0 | 8 | 15 | 2 | 6 | 13 | 6 | 73 | 16 | 2 | 4.39 | 3 | 2 | 41 | 57 | 53 | 4 | 19 | 12 | 9.1 | 61 | 2 | 0 | 19 | 10 | 2 | 12 | 63 | 80 | 71 | 57 | 41 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 12 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |

* Tolerance values and functional feeding group designations are as listed in CAMLnet (2002). The CAMLnet document references two sources for TVs and FFGs: Robert Wisseman (Aquatic Biology Assoicates, Inc., Corvalis, Washington), and EPA (1999) Northwest

Functional Feeding Groups:
cg = collector/gatherer
sc = scraper
p = predator
sh = shredder
mh = macrophyte herbivore
cf = collector/filterer
om = omnivore
pa = parasite
ph = piercer/herbivore

Table A-4
Benthic Macroinvertebrate Data

| Year | Study Reaches | Psychomyiidae | Rhyacophilidae | Sericostomatidae | Tricoptera Unknown | COLEOPTERA | Carabidae | Dryopidae | Dytiscidae | Elmidae | Gyrinidae | Haliplidae | Hydrophilidae | Psphenidae | DIPTERA | Blephariceridae | Ceratopogonidae | Chironomidae | Culicidae | Dixidae | Dolichopodidae | Empididae | Ephydridae | Muscidae | Psychodidae | Simuliidae | Stratiomyidae | Tipulidae | HEMIPTERA | Belostomatidae | Corixidae | Gerridae | Naucoridae | Notonectidae | Velidae | Hemiptera Unknown | ODONATA | Aeshnidae | Coenagrionidae | Cordulegastridae | Gomphidae | Lestidae | Libellulidae | MEGALOPTERA | Corydalidae | Sialidae | COLLEMBOLA | HYMENOPTERA | ACARI | GASTROPODA (*Physa/Physella*) | OSTRACODA (Cyprididae) | COPEPODA | CLADOCERA | DECAPODA | AMPHIPODA (Hyalellidae+*Hyalella*) | ISOPODA | OLIGOCHAETA | HIRUDINEA | TURBELLARIA | NEMATOMORPHA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tolerance Value* | | 2 | 0 | 3 | NA | | 4 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | | 0 | 6 | 6 | 8 | 2 | 4 | 6 | 6 | 6 | NA | 6 | 8 | 3 | | 8 | 8 | 5 | 5 | NA | NA | NA | | 3 | 9 | 3 | 4 | 9 | 9 | | 0 | 4 | 10 | NA | 5 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 5 | 10 | 4 | NA |
| S(0-2), M(3-7), T(8-10) | | S | S | M | NA | | M | M | M | M | M | M | M | M | | S | M | M | T | S | M | M | M | M | NA | M | T | M | | T | T | M | M | NA | NA | NA | | M | T | M | M | T | T | | S | M | T | NA | M | T | T | T | T | T | T | T | M | T | M | NA |
| Primary FFG* | | sc | p | sh | NA | | p | sh | p | cg | p | s | p | sc | | sc | p | NA | cg | cg | p | p | NA | p | cg | cf | cg | NA | | p | p | p | p | NA | NA | NA | | p | p | p | p | p | p | | p | p | cg | NA | p | sc | cg | cg | cg | sh | cg | cg | cg | pa | p | NA |
| 2000 | C1 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 7 | 0 | 1 | 8 | 0 | 0 | 222 | 0 | 21 | 160 | 0 | 0 | 0 | 1 | 2 | 2 | 0 | 36 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 7 | 39 | 6 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | C2 | 0 | 0 | 0 | 0 | 46 | 0 | 0 | 39 | 1 | 0 | 5 | 1 | 0 | 75 | 0 | 6 | 16 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 52 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 4 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C3 | 0 | 8 | 0 | 0 | 95 | 0 | 0 | 31 | 63 | 0 | 1 | 0 | 0 | 59 | 0 | 1 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 49 | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | F1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 141 | 0 | 0 | 138 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 154 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SM1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 290 | 0 | 2 | 285 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M1 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 57 | 0 | 0 | 55 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 41 | 110 | 80 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M3 tot | 2 | 5 | 29 | 0 | 32 | 0 | 0 | 6 | 11 | 0 | 11 | 0 | 4 | 95 | 0 | 3 | 63 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 4 | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 4 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | M3 ri | 1 | 5 | 5 | 0 | 19 | 0 | 0 | 4 | 8 | 0 | 6 | 0 | 1 | 55 | 0 | 1 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M3 po | 1 | 0 | 24 | 0 | 13 | 0 | 0 | 2 | 3 | 0 | 5 | 0 | 3 | 40 | 0 | 2 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | M4 tot | 1 | 6 | 1 | 0 | 51 | 0 | 0 | 0 | 33 | 0 | 0 | 0 | 18 | 56 | 0 | 1 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 15 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 17 | 1 | 4 | 5 | 7 | 0 | 0 | 3 | 0 | 3 | 0 | 1 | 3 | 3 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M4 ri | 0 | 6 | 0 | 0 | 35 | 0 | 0 | 0 | 23 | 0 | 0 | 0 | 12 | 27 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 12 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 4 | 1 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 1 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M4 po | 1 | 0 | 1 | 0 | 16 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 6 | 29 | 0 | 1 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 1 | 0 | 4 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M5 | 0 | 2 | 0 | 0 | 4 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 88 | 0 | 1 | 76 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M6 | 1 | 0 | 6 | 0 | 24 | 0 | 0 | 1 | 3 | 0 | 3 | 0 | 17 | 101 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 26 | 1 | 6 | 3 | 0 | 0 | 0 | 2 | 1 | 0 | 21 | 0 | 10 | 1 | 1 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 53 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB2 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 3 | 0 | 1 | 3 | 2 | 0 | 96 | 0 | 1 | 90 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 13 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 41 | 40 | 4 | 0 | 0 | 0 | 0 | 6 | 2 | 0 | 0 |
| | AB3 tot | 1 | 1 | 10 | 0 | 11 | 0 | 0 | 5 | 4 | 0 | 2 | 0 | 0 | 70 | 0 | 0 | 54 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 10 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 5 | 1 | 0 | 0 | 1 | 0 | 2 | 2 | 0 | 0 | 0 | 4 | 21 | 1 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 |
| | AB3 ri | 0 | 1 | 2 | 0 | 3 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 29 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 8 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 4 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| | AB3 po | 1 | 0 | 8 | 0 | 8 | 0 | 0 | 4 | 2 | 0 | 2 | 0 | 0 | 41 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 1 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 |
| | SA1 tot | 1 | 0 | 1 | 0 | 26 | 0 | 0 | 14 | 3 | 0 | 9 | 0 | 0 | 74 | 0 | 1 | 45 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 24 | 0 | 11 | 3 | 2 | 1 | 0 | 5 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 13 | 34 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| | SA1 ri | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 7 | 3 | 0 | 3 | 0 | 0 | 52 | 0 | 1 | 30 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 18 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 6 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | SA1 po | 1 | 0 | 1 | 0 | 13 | 0 | 0 | 7 | 0 | 0 | 6 | 0 | 0 | 22 | 0 | 0 | 15 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 10 | 2 | 2 | 1 | 0 | 5 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 31 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | SA2 | 6 | 6 | 3 | 0 | 60 | 0 | 1 | 7 | 42 | 1 | 3 | 0 | 6 | 84 | 0 | 1 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 63 | 1 | 6 | 3 | 0 | 0 | 0 | 1 | 2 | 0 | 11 | 0 | 6 | 1 | 0 | 4 | 0 | 2 | 0 | 2 | 0 | 0 | 2 | 2 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MY1 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 1 | 8 | 1 | 1 | 0 | 0 | 45 | 0 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 5 | 1 | 7 | 1 | 1 | 0 | 4 | 0 | 1 | 0 | 5 | 0 | 2 | 0 | 0 | 2 | 1 | 5 | 0 | 5 | 0 | 0 | 2 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 |
| | MY2 | 0 | 6 | 12 | 0 | 77 | 0 | 4 | 18 | 53 | 0 | 1 | 0 | 1 | 74 | 0 | 1 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 40 | 0 | 4 | 1 | 0 | 0 | 0 | 2 | 1 | 0 | 8 | 1 | 6 | 0 | 0 | 1 | 0 | 9 | 0 | 9 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 |
| | MY3 | 0 | 4 | 2 | 0 | 43 | 0 | 0 | 13 | 7 | 0 | 4 | 0 | 19 | 104 | 0 | 1 | 95 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 1 | 0 | 3 | 6 | 0 | 3 | 0 | 0 | 1 | 2 | 0 | 9 | 0 | 0 | 5 | 0 | 4 | 0 | 8 | 6 | 2 | 0 | 0 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ1 tot | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 6 | 1 | 0 | 9 | 0 | 0 | 180 | 0 | 0 | 132 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 46 | 2 | 0 | 7 | 0 | 4 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 9 | 0 | 0 | 0 | 0 | 0 | 15 | 1 | 0 | 0 |
| | SJ1 ri | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 1 | 1 | 0 | 4 | 0 | 0 | 86 | 0 | 0 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 46 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 |
| | SJ1 po | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 94 | 0 | 0 | 94 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 4 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 9 | 0 | 0 | 0 | 0 | 0 | 12 | 1 | 0 | 0 |
| | SJ2 | 0 | 0 | 0 | 0 | 34 | 0 | 0 | 1 | 29 | 0 | 4 | 0 | 0 | 78 | 0 | 2 | 59 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 5 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ3 tot | 0 | 7 | 9 | 0 | 40 | 1 | 6 | 7 | 22 | 0 | 1 | 1 | 2 | 111 | 0 | 1 | 88 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 14 | 4 | 1 | 9 | 1 | 0 | 2 | 0 | 0 | 6 | 0 | 5 | 1 | 0 | 1 | 1 | 2 | 0 | 11 | 0 | 11 | 0 | 0 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ3 ri | 0 | 5 | 1 | 0 | 22 | 1 | 0 | 1 | 19 | 0 | 0 | 0 | 1 | 48 | 0 | 1 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 12 | 3 | 0 | 7 | 1 | 0 | 0 | 0 | 0 | 6 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ3 po | 0 | 2 | 8 | 0 | 18 | 0 | 6 | 6 | 3 | 0 | 1 | 1 | 1 | 63 | 0 | 0 | 59 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 4 | 1 | 0 | 0 | 1 | 2 | 0 | 10 | 0 | 10 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ4 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 4 | 1 | 0 | 0 | 0 | 0 | 150 | 0 | 1 | 137 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 9 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 1 | 0 | 0 | 0 | 3 | 0 | 8 | 0 | 8 | 0 | 0 | 6 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| | T1 | 0 | 0 | 2 | 0 | 11 | 0 | 0 | 7 | 2 | 0 | 0 | 2 | 0 | 22 | 0 | 0 | 15 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 1 | 3 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 78 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | T2 | 2 | 0 | 13 | 0 | 6 | 0 | 0 | 4 | 1 | 1 | 0 | 0 | 0 | 65 | 0 | 1 | 23 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 33 | 2 | 3 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 8 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | DP1 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 37 | 0 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 2 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 50 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| | R1 | 5 | 0 | 0 | 0 | 3 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 82 | 0 | 0 | 73 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 6 | 1 | 6 | 2 | 0 | 0 | 0 | 0 | 4 | 0 | 9 | 0 | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 9 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 1 |
| | R2 tot | 3 | 5 | 12 | 0 | 64 | 0 | 3 | 4 | 11 | 0 | 1 | 0 | 45 | 63 | 0 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 29 | 3 | 9 | 3 | 3 | 0 | 0 | 1 | 2 | 0 | 5 | 0 | 0 | 1 | 0 | 4 | 0 | 3 | 2 | 1 | 0 | 0 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| | R2 ri | 2 | 5 | 0 | 0 | 31 | 0 | 1 | 1 | 5 | 0 | 0 | 0 | 24 | 32 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 16 | 1 | 6 | 2 | 2 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 |
| | R2 po | 1 | 0 | 12 | 0 | 33 | 0 | 2 | 3 | 6 | 0 | 1 | 0 | 21 | 31 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 2 | 3 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 4 | 0 | 2 | 1 | 1 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| | AH1 tot | 0 | 3 | 9 | 0 | 32 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 16 | 70 | 0 | 1 | 48 | 0 | 2 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 1 | 2 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AH1 ri | 0 | 3 | 2 | 0 | 14 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 4 | 42 | 0 | 1 | 21 | 0 | 2 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 7 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AH1 po | 0 | 0 | 7 | 0 | 18 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 12 | 28 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AH2 | 0 | 3 | 1 | 0 | 40 | 0 | 0 | 1 | 31 | 0 | 0 | 0 | 8 | 95 | 0 | 1 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 54 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SO1 tot | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 6 | 1 | 0 | 0 | 0 | 7 | 45 | 0 | 2 | 20 | 0 | 3 | 0 | 0 | 0 | 0 | 3 | 16 | 0 | 1 | 7 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 3 | 2 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SO1 ri | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 37 | 0 | 1 | 14 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 16 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SO1 po | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 5 | 1 | 0 | 0 | 0 | 7 | 8 | 0 | 1 | 6 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 3 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SO2 | 0 | 4 | 0 | 0 | 14 | 0 | 0 | 2 | 5 | 0 | 0 | 0 | 7 | 44 | 9 | 0 | 18 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 8 | 4 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 5 | 0 | 5 | 0 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Table A-4
Benthic Macroinvertebrate Data

| Year | Study Reaches | Psychomyiidae | Rhyacophilidae | Sericostomatidae | Tricoptera Unknown | COLEOPTERA | Carabidae | Dryopidae | Dytiscidae | Elmidae | Gyrinidae | Haliplidae | Hydrophilidae | Psphenidae | DIPTERA | Blephariceridae | Ceratopogonidae | Chironomidae | Culicidae | Dixidae | Dolichopodidae | Empididae | Ephydridae | Muscidae | Psychodidae | Simuliidae | Stratiomyidae | Tipulidae | HEMIPTERA | Belostomatidae | Corixidae | Gerridae | Naucoridae | Notonectidae | Velidae | Hemiptera Unknown | ODONATA | Aeshnidae | Coenagrionidae | Cordulegastridae | Gomphidae | Lestidae | Libellulidae | MEGALOPTERA | Corydalidae | Sialidae | COLLEMBOLA | HYMENOPTERA | ACARI | GASTROPODA (*Physa/Physella*) | OSTRACODA (Cyprididae) | COPEPODA | CLADOCERA | DECAPODA | AMPHIPODA (Hyalellidae+*Hyalella*) | ISOPODA | OLIGOCHAETA | HIRUDINEA | TURBELLARIA | NEMATOMORPHA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tolerance Value* | | 2 | 0 | 3 | NA | | 4 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | | 0 | 6 | 6 | 8 | 2 | 4 | 6 | 6 | 6 | NA | 6 | 8 | 3 | | 8 | 8 | 5 | 5 | NA | NA | NA | | 3 | 9 | 3 | 4 | 9 | 9 | | 0 | 4 | 10 | NA | 5 | 8 | 8 | 8 | 8 | 8 | 8 | 5 | 10 | 4 | NA |
| S(0-2), M(3-7), T(8-10) | | S | S | M | NA | | M | M | M | M | M | M | M | M | | S | M | M | T | S | M | M | M | M | NA | M | T | M | | T | T | M | M | NA | NA | NA | | M | T | M | M | T | T | | S | M | T | NA | M | T | T | T | T | T | T | M | T | M | NA |
| Primary FFG* | | sc | p | sh | NA | | p | sh | p | cg | p | s | p | sc | | sc | p | NA | cg | cg | p | p | NA | p | cg | cf | cg | NA | | p | p | p | p | NA | NA | NA | | p | p | p | p | p | p | | p | p | cg | NA | p | sc | cg | cg | cg | sh | cg | cg | cg | pa | p | NA |
| 2001 | C1 tot | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 5 | 1 | 0 | 1 | 0 | 0 | 269 | 0 | 3 | 244 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 20 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 14 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| | C1-1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 89 | 0 | 0 | 80 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| | C1-2 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 87 | 0 | 1 | 86 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C1-3 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 93 | 0 | 2 | 78 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C2 tot | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 13 | 0 | 1 | 2 | 0 | 0 | 241 | 0 | 4 | 191 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C2-1 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 86 | 0 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C2-2 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 0 | 85 | 0 | 3 | 80 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C2-3 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 6 | 0 | 1 | 0 | 0 | 0 | 70 | 0 | 1 | 51 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C3 tot | 1 | 5 | 0 | 0 | 34 | 0 | 0 | 9 | 25 | 0 | 0 | 0 | 0 | 120 | 0 | 5 | 81 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 11 | 16 | 4 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 2 | 0 | 2 | 0 | 0 | 2 | 4 | 1 | 3 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | C3-1 | 0 | 3 | 0 | 0 | 10 | 0 | 0 | 3 | 7 | 0 | 0 | 0 | 0 | 33 | 0 | 1 | 20 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 6 | 2 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | C3-2 | 1 | 2 | 0 | 0 | 12 | 0 | 0 | 3 | 9 | 0 | 0 | 0 | 0 | 50 | 0 | 3 | 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C3-3 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 3 | 9 | 0 | 0 | 0 | 0 | 37 | 0 | 1 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 11 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 2 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB2 tot | 0 | 0 | 0 | 0 | 25 | 0 | 0 | 15 | 0 | 0 | 10 | 0 | 0 | 226 | 0 | 1 | 182 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 42 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 18 | 0 | 0 | 0 | 6 | 0 | 0 | 0 |
| | AB2-1 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 5 | 0 | 0 | 8 | 0 | 0 | 76 | 0 | 1 | 72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB2-2 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 4 | 0 | 0 | 1 | 0 | 0 | 70 | 0 | 0 | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 3 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| | AB2-3 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 6 | 0 | 0 | 1 | 0 | 0 | 80 | 0 | 0 | 62 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 7 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | AB3 tot | 0 | 0 | 2 | 1 | 38 | 0 | 0 | 29 | 2 | 0 | 4 | 2 | 1 | 121 | 0 | 20 | 84 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 9 | 4 | 0 | 8 | 2 | 0 | 2 | 0 | 0 | 3 | 1 | 9 | 2 | 2 | 3 | 0 | 2 | 0 | 3 | 0 | 3 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| | AB3-1 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 7 | 2 | 0 | 1 | 2 | 0 | 46 | 0 | 11 | 27 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 3 | 2 | 0 | 3 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 3 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | AB3-2 | 0 | 0 | 1 | 1 | 10 | 0 | 0 | 8 | 0 | 0 | 1 | 0 | 1 | 28 | 0 | 7 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 5 | 1 | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | AB3-3 | 0 | 0 | 1 | 0 | 16 | 0 | 0 | 14 | 0 | 0 | 2 | 0 | 0 | 47 | 0 | 2 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | AT1 tot | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 2 | 0 | 0 | 4 | 9 | 0 | 242 | 0 | 0 | 229 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 3 | 3 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 33 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| | AT1-1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 92 | 0 | 0 | 79 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| | AT1-2 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 94 | 0 | 0 | 94 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AT1-3 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 2 | 0 | 0 | 3 | 5 | 0 | 56 | 0 | 0 | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AT2 tot | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 6 | 0 | 0 | 0 | 5 | 0 | 234 | 0 | 6 | 178 | 0 | 0 | 0 | 0 | 0 | 1 | 25 | 16 | 5 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 4 | 0 | 0 | 13 | 0 | 0 | 0 | 2 | 1 | 0 | 0 |
| | AT2-1 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 3 | 0 | 0 | 0 | 4 | 0 | 82 | 0 | 0 | 65 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 9 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 8 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | AT2-2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 87 | 0 | 6 | 57 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | AT2-3 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 65 | 0 | 0 | 56 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| | SJ1 tot | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 11 | 4 | 0 | 3 | 0 | 0 | 228 | 0 | 3 | 178 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 39 | 2 | 4 | 3 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| | SJ1-1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 79 | 0 | 3 | 49 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ1-2 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 4 | 1 | 0 | 2 | 0 | 0 | 77 | 0 | 0 | 75 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ1-3 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 4 | 3 | 0 | 1 | 0 | 0 | 72 | 0 | 0 | 54 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 13 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| | SJ2 tot | 0 | 1 | 1 | 0 | 12 | 0 | 0 | 8 | 2 | 0 | 1 | 0 | 1 | 233 | 0 | 1 | 140 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 87 | 0 | 2 | 3 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ2-1 | 0 | 1 | 0 | 0 | 3 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 80 | 0 | 0 | 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ2-2 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 68 | 0 | 1 | 35 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 31 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ2-3 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 5 | 0 | 0 | 1 | 0 | 0 | 85 | 0 | 0 | 66 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 16 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ3 tot | 0 | 2 | 3 | 0 | 31 | 0 | 0 | 18 | 6 | 0 | 0 | 0 | 7 | 91 | 1 | 2 | 71 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 5 | 4 | 4 | 4 | 0 | 0 | 1 | 0 | 0 | 3 | 0 | 8 | 2 | 0 | 0 | 2 | 4 | 0 | 3 | 0 | 3 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 1 |
| | SJ3-1 | 0 | 0 | 1 | 0 | 6 | 0 | 0 | 4 | 2 | 0 | 0 | 0 | 0 | 24 | 1 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ3-2 | 0 | 0 | 1 | 0 | 17 | 0 | 0 | 11 | 2 | 0 | 0 | 0 | 4 | 38 | 0 | 1 | 32 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 7 | 2 | 0 | 0 | 1 | 4 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | SJ3-3 | 0 | 2 | 1 | 0 | 8 | 0 | 0 | 3 | 2 | 0 | 0 | 0 | 3 | 29 | 0 | 1 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 |
| | AH1 tot | 0 | 1 | 0 | 0 | 21 | 0 | 0 | 3 | 12 | 0 | 0 | 0 | 5 | 183 | 0 | 14 | 140 | 0 | 3 | 1 | 0 | 0 | 0 | 2 | 11 | 0 | 12 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | AH1-1 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | 55 | 0 | 4 | 40 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 7 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AH1-2 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 3 | 62 | 0 | 5 | 48 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AH1-3 | 0 | 1 | 0 | 0 | 8 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 2 | 66 | 0 | 5 | 52 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | SO2 tot | 0 | 7 | 0 | 0 | 25 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 20 | 83 | 4 | 0 | 37 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 16 | 4 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | 3 | 0 | 0 | 1 | 0 | 1 | 1 | 2 | 2 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SO2-1 | 0 | 3 | 0 | 0 | 6 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 3 | 25 | 1 | 0 | 15 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 5 | 4 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SO2-2 | 0 | 2 | 0 | 0 | 5 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 37 | 0 | 0 | 15 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SO2-3 | 0 | 2 | 0 | 0 | 14 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 13 | 21 | 3 | 0 | 7 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Table A-4
Benthic Macroinvertebrate Data

| Year | Study Reaches | Psychomyiidae | Rhyacophilidae | Sericostomatidae | Tricoptera Unknown | COLEOPTERA | Carabidae | Dryopidae | Dytiscidae | Elmidae | Gyrinidae | Haliplidae | Hydrophilidae | Psphenidae | DIPTERA | Blephariceridae | Ceratopogonidae | Chironomidae | Culicidae | Dixidae | Dolichopodidae | Empididae | Ephydridae | Muscidae | Psychodidae | Simuliidae | Stratiomyidae | Tipulidae | HEMIPTERA | Belostomatidae | Corixidae | Gerridae | Naucoridae | Notonectidae | Velidae | Hemiptera Unknown | ODONATA | Aeshnidae | Coenagrionidae | Cordulegastridae | Gomphidae | Lestidae | Libellulidae | MEGALOPTERA | Corydalidae | Sialidae | COLLEMBOLA | HYMENOPTERA | ACARI | GASTROPODA (*Physa/Physella*) | OSTRACODA (Cyprididae) | COPEPODA | CLADOCERA | DECAPODA | AMPHIPODA (Hyalellidae+*Hyalella*) | ISOPODA | OLIGOCHAETA | HIRUDINEA | TURBELLARIA | NEMATOMORPHA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tolerance Value* | | 2 | 0 | 3 | NA | | 4 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | | 0 | 6 | 6 | 8 | 2 | 4 | 6 | 6 | 6 | NA | 6 | 8 | 3 | | 8 | 8 | 5 | 5 | NA | NA | NA | | 3 | 9 | 3 | 4 | 9 | 9 | | 0 | 4 | 10 | NA | 5 | 8 | 8 | 8 | 8 | 8 | 8 | 5 | 10 | 4 | NA |
| S(0-2), M(3-7), T(8-10) | | S | S | M | NA | | M | M | M | M | M | M | M | M | | S | M | M | T | S | M | M | M | M | NA | M | T | M | | T | T | M | M | NA | NA | NA | | M | T | M | M | T | T | | S | M | T | NA | M | T | T | T | T | T | T | M | T | M | NA |
| Primary FFG* | | sc | p | sh | NA | | p | sh | p | cg | p | s | p | sc | | sc | p | NA | cg | cg | p | p | NA | p | cg | cf | cg | NA | | p | p | p | p | NA | NA | NA | | p | p | p | p | p | p | | p | p | cg | NA | p | sc | cg | cg | cg | sh | cg | cg | cg | pa | p | NA |
| 2002 | RIN1 tot | 1 | 6 | 5 | 0 | 15 | 0 | 0 | 5 | 3 | 1 | 0 | 0 | 6 | 41 | 0 | 3 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 7 | 6 | 4 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 5 | 4 | 69 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| | RIN1-1 | 0 | 4 | 0 | 0 | 6 | 0 | 0 | 3 | 1 | 1 | 0 | 0 | 1 | 17 | 0 | 2 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 5 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | RIN1-2 | 0 | 1 | 2 | 0 | 6 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 4 | 8 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | RIN1-3 | 1 | 1 | 3 | 0 | 3 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 16 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 21 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| | C1 tot | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 5 | 0 | 0 | 1 | 2 | 0 | 132 | 0 | 3 | 96 | 0 | 0 | 0 | 0 | 4 | 0 | 2 | 19 | 5 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 21 | 33 | 14 | 38 | 0 | 0 | 0 | 51 | 0 | 0 | 0 |
| | C1-1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 33 | 0 | 2 | 24 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 23 | 2 | 0 | 0 | 0 | 0 | 29 | 0 | 0 | 0 |
| | C1-2 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 62 | 0 | 1 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 6 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 6 | 5 | 3 | 0 | 0 | 0 | 14 | 0 | 0 | 0 |
| | C1-3 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 37 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 10 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 4 | 7 | 35 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 |
| | C3 tot | 1 | 8 | 5 | 0 | 24 | 0 | 0 | 2 | 22 | 0 | 0 | 0 | 0 | 45 | 0 | 1 | 32 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 6 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C3-1 | 0 | 3 | 3 | 0 | 7 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 9 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C3-2 | 1 | 1 | 1 | 0 | 9 | 0 | 0 | 1 | 8 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 5 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C3-3 | 0 | 4 | 1 | 0 | 8 | 0 | 0 | 1 | 7 | 0 | 0 | 0 | 0 | 26 | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SY1 tot | 0 | 0 | 12 | 0 | 8 | 0 | 0 | 3 | 2 | 0 | 2 | 0 | 1 | 91 | 0 | 11 | 74 | 0 | 0 | 0 | 1 | 0 | 0 | 4 | 0 | 0 | 1 | 5 | 1 | 0 | 0 | 0 | 3 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 42 | 129 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 |
| | SY1-1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 1 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 55 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| | SY1-2 | 0 | 0 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 24 | 0 | 4 | 14 | 0 | 0 | 0 | 1 | 0 | 0 | 4 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 15 | 47 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| | SY1-3 | 0 | 0 | 7 | 0 | 7 | 0 | 0 | 3 | 2 | 0 | 1 | 0 | 1 | 46 | 0 | 6 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 9 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M1 tot | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 220 | 0 | 0 | 218 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 16 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 14 | 0 | 41 | 0 | 0 | 0 | 0 | 4 | 0 | 0 |
| | M1-1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 92 | 0 | 0 | 90 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M1-2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 81 | 0 | 0 | 81 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 11 | 0 | 0 | 0 | 0 | 4 | 0 | 0 |
| | M1-3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 47 | 0 | 0 | 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M2 tot | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 237 | 0 | 0 | 231 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 8 | 0 | 0 | 0 | 0 | 1 | 12 | 0 | 0 |
| | M2-1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 62 | 0 | 0 | 59 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 |
| | M2-2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 86 | 0 | 0 | 84 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 |
| | M2-3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 89 | 0 | 0 | 88 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| | M3 tot | 0 | 0 | 9 | 1 | 63 | 0 | 0 | 9 | 3 | 0 | 2 | 0 | 49 | 62 | 0 | 10 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 12 | 1 | 5 | 3 | 0 | 0 | 0 | 0 | 2 | 0 | 19 | 3 | 3 | 1 | 1 | 9 | 2 | 1 | 0 | 1 | 0 | 0 | 4 | 2 | 12 | 6 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 |
| | M3-1 | 0 | 0 | 3 | 0 | 26 | 0 | 0 | 5 | 2 | 0 | 1 | 0 | 18 | 20 | 0 | 2 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 7 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 2 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 10 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | M3-2 | 0 | 0 | 2 | 1 | 22 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 20 | 22 | 0 | 5 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 5 | 3 | 0 | 0 | 0 | 0 | 2 | 0 | 6 | 1 | 1 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| | M3-3 | 0 | 0 | 4 | 0 | 15 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 11 | 20 | 0 | 3 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 2 | 0 | 0 | 1 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| | AB1 tot | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 14 | 0 | 1 | 7 | 0 | 0 | 106 | 0 | 0 | 104 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 2 | 0 | 0 | 8 | 0 | 0 | 7 | 1 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 42 | 0 | 38 | 0 | 0 | 12 | 0 | 1 | 0 | 0 | 0 |
| | AB1-1 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 5 | 0 | 0 | 4 | 0 | 0 | 27 | 0 | 0 | 25 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 15 | 0 | 4 | 0 | 0 | 4 | 0 | 1 | 0 | 0 | 0 |
| | AB1-2 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 4 | 0 | 1 | 1 | 0 | 0 | 25 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 21 | 0 | 21 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 |
| | AB1-3 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 5 | 0 | 0 | 2 | 0 | 0 | 54 | 0 | 0 | 54 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 6 | 0 | 13 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| | AB2 tot | 0 | 0 | 0 | 1 | 10 | 0 | 0 | 7 | 0 | 2 | 1 | 0 | 0 | 138 | 0 | 9 | 83 | 0 | 0 | 0 | 0 | 7 | 0 | 4 | 30 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 7 | 13 | 43 | 79 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| | AB2-1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 41 | 0 | 2 | 28 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 5 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 8 | 13 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB2-2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 63 | 0 | 4 | 29 | 0 | 0 | 0 | 0 | 2 | 0 | 4 | 21 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 9 | 22 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | AB2-3 | 0 | 0 | 0 | 1 | 7 | 0 | 0 | 5 | 0 | 1 | 1 | 0 | 0 | 34 | 0 | 3 | 26 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 21 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB3 tot | 2 | 0 | 10 | 0 | 15 | 0 | 1 | 7 | 1 | 0 | 0 | 0 | 6 | 86 | 0 | 12 | 52 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 16 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 1 | 3 | 6 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 57 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| | AB3-1 | 0 | 0 | 1 | 0 | 7 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 3 | 19 | 0 | 1 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 1 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB3-2 | 2 | 0 | 0 | 0 | 3 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 42 | 0 | 5 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB3-3 | 0 | 0 | 9 | 0 | 5 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 2 | 25 | 0 | 6 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 36 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| | AT1 tot | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 101 | 0 | 0 | 99 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 2 | 183 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| | AT1-1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31 | 0 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 62 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| | AT1-2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 69 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | AT1-3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 43 | 0 | 0 | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 52 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AT2 tot | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 1 | 0 | 0 | 0 | 6 | 0 | 264 | 0 | 0 | 262 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6 | 11 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| | AT2-1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 84 | 0 | 0 | 83 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 2 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| | AT2-2 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 92 | 0 | 0 | 91 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AT2-3 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 88 | 0 | 0 | 88 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 6 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| | SJ1 tot | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 6 | 3 | 0 | 4 | 9 | 0 | 229 | 0 | 13 | 189 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 13 | 11 | 2 | 7 | 0 | 5 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 4 | 17 | 3 | 0 | 0 | 0 | 2 | 2 | 1 | 1 |
| | SJ1-1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 75 | 0 | 8 | 62 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 13 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 |
| | SJ1-2 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 4 | 2 | 0 | 3 | 3 | 0 | 71 | 0 | 4 | 64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 2 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 |

Table A-4
Benthic Macroinvertebrate Data

| Year | Study Reaches | Psychomyiidae | Rhyacophilidae | Sericostomatidae | Tricoptera Unknown | COLEOPTERA | Carabidae | Dryopidae | Dytiscidae | Elmidae | Gyrinidae | Haliplidae | Hydrophilidae | Psphenidae | DIPTERA | Blephariceridae | Ceratopogonidae | Chironomidae | Culicidae | Dixidae | Dolichopodidae | Empididae | Ephydridae | Muscidae | Psychodidae | Simuliidae | Stratiomyidae | Tipulidae | HEMIPTERA | Belostomatidae | Corixidae | Gerridae | Naucoridae | Notonectidae | Velidae | Hemiptera Unknown | ODONATA | Aeshnidae | Coenagrionidae | Cordulegastridae | Gomphidae | Lestidae | Libellulidae | MEGALOPTERA | Corydalidae | Sialidae | COLLEMBOLA | HYMENOPTERA | ACARI | GASTROPODA (*Physa/Physella*) | OSTRACODA (Cyprididae) | COPEPODA | CLADOCERA | DECAPODA | AMPHIPODA (Hyalellidae-*Hyalella*) | ISOPODA | OLIGOCHAETA | HIRUDINEA | TURBELLARIA | NEMATOMORPHA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tolerance Value* | | 2 | 0 | 3 | NA | | 4 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | | 0 | 6 | 6 | 8 | 2 | 4 | 6 | 6 | 6 | NA | 6 | 8 | 3 | | 8 | 8 | 5 | 5 | NA | NA | NA | | 3 | 9 | 3 | 4 | 9 | 9 | | 0 | 4 | 10 | NA | 5 | 8 | 8 | 8 | 8 | 8 | 8 | 5 | 10 | 4 | NA |
| S(0-2), M(3-7), T(8-10) | | S | S | M | NA | | M | M | M | M | M | M | M | M | | S | M | M | T | S | M | M | M | M | NA | M | T | M | | T | T | M | M | NA | NA | NA | | M | T | M | M | T | T | | S | M | T | NA | M | T | T | T | T | T | T | M | T | M | NA |
| Primary FFG* | | sc | p | sh | NA | | p | sh | p | cg | p | s | p | sc | | sc | p | NA | cg | cg | p | p | NA | p | cg | cf | cg | NA | | p | p | p | p | NA | NA | NA | | p | p | p | p | p | p | | p | p | cg | NA | p | sc | cg | cg | cg | sh | cg | cg | cg | pa | p | NA |
| | SJ1-3 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 1 | 0 | 0 | 0 | 6 | 0 | 83 | 0 | 1 | 63 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 11 | 6 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | SJ2 tot | 1 | 3 | 4 | 0 | 15 | 0 | 0 | 2 | 9 | 1 | 0 | 0 | 3 | 129 | 0 | 16 | 100 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 3 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 2 | 47 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| | SJ2-1 | 1 | 2 | 0 | 0 | 11 | 0 | 0 | 2 | 8 | 0 | 0 | 0 | 1 | 27 | 0 | 3 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ2-2 | 0 | 1 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 45 | 0 | 5 | 35 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 21 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| | SJ2-3 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 57 | 0 | 8 | 47 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 15 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | SJ3 tot | 1 | 10 | 11 | 0 | 31 | 0 | 0 | 5 | 19 | 0 | 1 | 0 | 6 | 63 | 0 | 1 | 57 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 1 | 0 | 2 | 3 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 3 | 13 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| | SJ3-1 | 1 | 7 | 5 | 0 | 13 | 0 | 0 | 2 | 10 | 0 | 0 | 0 | 1 | 19 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | SJ3-2 | 0 | 1 | 3 | 0 | 12 | 0 | 0 | 1 | 7 | 0 | 1 | 0 | 3 | 19 | 0 | 1 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 0 | 1 | 3 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| | SJ3-3 | 0 | 2 | 3 | 0 | 6 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 2 | 25 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | EC1 tot | 0 | 2 | 0 | 0 | 17 | 0 | 1 | 12 | 2 | 1 | 1 | 0 | 0 | 53 | 0 | 1 | 46 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | 15 | 0 | 14 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 16 | 65 | 1 | 0 | 0 | 0 | 3 | 3 | 3 | 0 | 0 |
| | EC1-1 | 0 | 0 | 0 | 0 | 8 | 0 | 1 | 5 | 0 | 1 | 1 | 0 | 0 | 17 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 29 | 0 | 0 | 0 | 0 | 3 | 1 | 1 | 0 | 0 |
| | EC1-2 | 0 | 1 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 1 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 8 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 |
| | EC1-3 | 0 | 1 | 0 | 0 | 4 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 16 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 4 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 12 | 15 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | AH1 tot | 0 | 0 | 13 | 0 | 14 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 9 | 113 | 0 | 8 | 75 | 0 | 1 | 0 | 0 | 0 | 0 | 6 | 0 | 3 | 20 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AH1-1 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 36 | 0 | 3 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AH1-2 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 46 | 0 | 2 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 2 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AH1-3 | 0 | 0 | 8 | 0 | 6 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 3 | 31 | 0 | 3 | 23 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SO2 tot | 0 | 7 | 11 | 0 | 32 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 30 | 84 | 0 | 6 | 63 | 0 | 1 | 0 | 0 | 0 | 0 | 5 | 0 | 2 | 7 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 3 | 4 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SO2-1 | 0 | 0 | 2 | 0 | 12 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 10 | 30 | 0 | 1 | 27 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SO2-2 | 0 | 2 | 6 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 28 | 0 | 5 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SO2-3 | 0 | 5 | 3 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 26 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 1 | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | GAV1 tot | 14 | 0 | 0 | 0 | 6 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 70 | 0 | 2 | 46 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 5 | 0 | 2 | 41 | 2 | 4 | 0 | 28 | 0 | 7 | 0 | 3 | 0 | 2 | 0 | 0 | 1 | 0 | 5 | 0 | 5 | 0 | 0 | 2 | 1 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| | GAV1-1 | 4 | 0 | 0 | 0 | 3 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 26 | 0 | 2 | 20 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 3 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | GAV1-2 | 7 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 0 | 2 | 22 | 1 | 0 | 0 | 15 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| | GAV1-3 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 2 | 0 | 0 | 7 | 1 | 1 | 0 | 4 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 1 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | GAV2 tot | 4 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 109 | 0 | 0 | 87 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 12 | 6 | 10 | 1 | 4 | 0 | 5 | 0 | 0 | 0 | 11 | 0 | 7 | 0 | 0 | 0 | 4 | 4 | 0 | 4 | 0 | 0 | 1 | 1 | 3 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 |
| | GAV2-1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 0 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 4 | 4 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 6 | 0 | 3 | 0 | 0 | 0 | 3 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | GAV2-2 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 36 | 0 | 0 | 34 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| | GAV2-3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 34 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 11 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Table A-4
Benthic Macroinvertebrate Data

| Year | Study Reaches | Psychomyiidae | Rhyacophilidae | Sericostomatidae | Tricoptera Unknown | COLEOPTERA | Carabidae | Dryopidae | Dytiscidae | Elmidae | Gyrinidae | Haliplidae | Hydrophilidae | Psphenidae | DIPTERA | Blephariceridae | Ceratopogonidae | Chironomidae | Culicidae | Dixidae | Dolichopodidae | Empididae | Ephydridae | Muscidae | Psychodidae | Simuliidae | Stratiomyidae | Tipulidae | HEMIPTERA | Belostomatidae | Corixidae | Gerridae | Naucoridae | Notonectidae | Velidae | Hemiptera Unknown | ODONATA | Aeshnidae | Coenagrionidae | Cordulegastridae | Gomphidae | Lestidae | Libellulidae | MEGALOPTERA | Corydalidae | Sialidae | COLLEMBOLA | HYMENOPTERA | ACARI | GASTROPODA (*Physa/Physella*) | OSTRACODA (Cyprididae) | COPEPODA | CLADOCERA | DECAPODA | AMPHIPODA (Hyalellidae-*Hyalella*) | ISOPODA | OLIGOCHAETA | HIRUDINEA | TURBELLARIA | NEMATOMORPHA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tolerance Value* | | 2 | 0 | 3 | NA | | 4 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | | 0 | 6 | 6 | 8 | 2 | 4 | 6 | 6 | 6 | NA | 6 | 8 | 3 | | 8 | 8 | 5 | 5 | NA | NA | NA | | 3 | 9 | 3 | 4 | 9 | 9 | | 0 | 4 | 10 | NA | 5 | 8 | 8 | 8 | 8 | 8 | 8 | 5 | 10 | 4 | NA |
| S(0-2), M(3-7), T(8-10) | | S | S | M | NA | | M | M | M | M | M | M | M | M | | S | M | M | T | S | M | M | M | M | NA | M | T | M | | T | T | M | M | NA | NA | NA | | M | T | M | M | T | T | | S | M | T | NA | M | T | T | T | T | T | T | M | T | M | NA |
| Primary FFG* | | sc | p | sh | NA | | p | sh | p | cg | p | s | p | sc | | sc | p | NA | cg | cg | p | p | NA | p | cg | cf | cg | NA | | p | p | p | p | NA | NA | NA | | p | p | p | p | p | p | | p | p | cg | NA | p | sc | cg | cg | cg | sh | cg | cg | cg | pa | p | NA |
| 2003 | C1 tot | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 246 | 0 | 1 | 231 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 2 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 13 | 0 | 1 | 0 | 0 | 0 | 26 | 0 | 0 | 0 |
| | C1-1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 91 | 0 | 0 | 88 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| | C1-2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 80 | 0 | 1 | 71 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 |
| | C1-3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 75 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 6 | 0 | 1 | 0 | 0 | 0 | 13 | 0 | 0 | 0 |
| | C3 tot | 1 | 9 | 1 | 0 | 15 | 0 | 0 | 6 | 8 | 0 | 0 | 0 | 1 | 58 | 0 | 1 | 34 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 3 | 1 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 |
| | C3-1 | 1 | 4 | 0 | 0 | 5 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | 27 | 0 | 0 | 11 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| | C3-2 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 16 | 0 | 1 | 11 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| | C3-3 | 0 | 4 | 1 | 0 | 8 | 0 | 0 | 5 | 3 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 12 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| | MONT1 tot | 1 | 15 | 15 | 0 | 31 | 0 | 0 | 2 | 17 | 0 | 1 | 0 | 11 | 50 | 0 | 0 | 29 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 17 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 30 | 7 | 0 | 0 | 0 | 25 | 1 | 13 | 0 | 0 | 0 |
| | MONT1-1 | 1 | 4 | 4 | 0 | 8 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 1 | 15 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 12 | 2 | 0 | 0 | 0 | 4 | 0 | 2 | 0 | 0 | 0 |
| | MONT1-2 | 0 | 1 | 4 | 0 | 10 | 0 | 0 | 2 | 4 | 0 | 0 | 0 | 4 | 18 | 0 | 0 | 9 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 7 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 11 | 4 | 0 | 0 | 0 | 12 | 1 | 3 | 0 | 0 | 0 |
| | MONT1-3 | 0 | 10 | 7 | 0 | 13 | 0 | 0 | 0 | 6 | 0 | 1 | 0 | 6 | 17 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 1 | 0 | 0 | 0 | 9 | 0 | 8 | 0 | 0 | 0 |
| | SY1 tot | 0 | 1 | 5 | 0 | 14 | 0 | 0 | 7 | 4 | 0 | 2 | 1 | 0 | 144 | 0 | 2 | 109 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 32 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| | SY1-1 | 0 | 1 | 2 | 0 | 6 | 0 | 0 | 1 | 3 | 0 | 1 | 1 | 0 | 53 | 0 | 0 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SY1-2 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 4 | 0 | 0 | 1 | 0 | 0 | 59 | 0 | 2 | 38 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | SY1-3 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 32 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| | SY2 tot | 1 | 1 | 3 | 0 | 7 | 0 | 0 | 4 | 3 | 0 | 0 | 0 | 0 | 123 | 0 | 7 | 71 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 42 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| | SY2-1 | 1 | 0 | 1 | 0 | 5 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 44 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| | SY2-2 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 37 | 0 | 2 | 23 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 9 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | SY2-3 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 42 | 0 | 5 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| | M1 tot | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 205 | 0 | 0 | 176 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 17 | 5 | 0 | 0 | 0 | 0 | 41 | 2 | 0 | 0 |
| | M1-1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 92 | 0 | 0 | 77 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| | M1-2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 48 | 0 | 0 | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 9 | 3 | 0 | 0 | 0 | 0 | 34 | 1 | 0 | 0 | 0 |
| | M1-3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 65 | 0 | 0 | 51 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 7 | 2 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 |
| | M2 tot | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 265 | 0 | 0 | 228 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 6 | 0 | 1 | 0 |
| | M2-1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 93 | 0 | 0 | 81 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | M2-2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 90 | 0 | 0 | 71 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| | M2-3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 82 | 0 | 0 | 76 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 1 | 0 |
| | M3 tot | 0 | 1 | 17 | 0 | 15 | 0 | 0 | 5 | 4 | 0 | 0 | 0 | 6 | 113 | 0 | 0 | 71 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 40 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 2 | 0 |
| | M3-1 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 1 | 38 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | M3-2 | 0 | 0 | 13 | 0 | 4 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 40 | 0 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 |
| | M3-3 | 0 | 1 | 4 | 0 | 6 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 5 | 35 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 |
| | AB1 tot | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 8 | 0 | 0 | 2 | 0 | 0 | 68 | 0 | 0 | 29 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 36 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 4 | 53 | 2 | 2 | 0 | 0 | 38 | 2 | 2 | 2 | 0 |
| | AB1-1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 13 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 33 | 0 | 1 | 0 | 0 | 7 | 0 | 0 | 0 | 0 |
| | AB1-2 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 31 | 0 | 0 | 7 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 21 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 10 | 1 | 1 | 0 | 0 | 6 | 2 | 0 | 0 | 0 |
| | AB1-3 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 4 | 0 | 0 | 1 | 0 | 0 | 24 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 10 | 1 | 0 | 0 | 0 | 25 | 0 | 2 | 2 | 0 |
| | AB2 tot | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 3 | 0 | 0 | 4 | 0 | 0 | 144 | 0 | 1 | 129 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 14 | 8 | 0 | 0 | 0 | 0 | 23 | 0 | 1 | 0 |
| | AB2-1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 53 | 0 | 0 | 52 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 1 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| | AB2-2 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 46 | 0 | 0 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 2 | 0 | 0 | 0 | 0 | 8 | 0 | 1 | 0 |
| | AB2-3 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 45 | 0 | 1 | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 5 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 |
| | AB3 tot | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 11 | 1 | 0 | 1 | 0 | 0 | 125 | 0 | 7 | 59 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 54 | 2 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 5 | 2 | 3 | 0 | 0 | 0 | 0 | 3 | 1 | 2 | 0 | 0 | 1 | 10 | 16 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| | AB3-1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 48 | 0 | 3 | 21 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 22 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 3 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AB3-2 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 42 | 0 | 0 | 10 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| | AB3-3 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 7 | 1 | 0 | 1 | 0 | 0 | 35 | 0 | 4 | 28 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 7 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AT1 tot | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 5 | 5 | 246 | 0 | 0 | 0 | 2 | 1 | 0 | 0 |
| | AT1-1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 93 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AT1-2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 88 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| | AT1-3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 2 | 2 | 65 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | AT2 tot | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 94 | 0 | 0 | 40 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 53 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 6 | 7 | 28 | 1 | 0 | 0 | 49 | 1 | 0 | 0 |
| | AT2-1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38 | 0 | 0 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 4 | 1 | 0 | 0 | 41 | 0 | 0 | 0 |
| | AT2-2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3 | 0 | 12 | 0 | 0 | 0 | 6 | 0 | 0 | 0 |

Table A-4
Benthic Macroinvertebrate Data

| Year | Study Reaches | Psychomyiidae | Rhyacophilidae | Sericostomatidae | Tricoptera Unknown | COLEOPTERA | Carabidae | Dryopidae | Dytiscidae | Elmidae | Gyrinidae | Haliplidae | Hydrophilidae | Psphenidae | DIPTERA | Blephariceridae | Ceratopogonidae | Chironomidae | Culicidae | Dixidae | Dolichopodidae | Empididae | Ephydridae | Muscidae | Psychodidae | Simuliidae | Stratiomyidae | Tipulidae | HEMIPTERA | Belostomatidae | Corixidae | Gerridae | Naucoridae | Notonectidae | Velidae | Hemiptera Unknown | ODONATA | Aeshnidae | Coenagrionidae | Cordulegastridae | Gomphidae | Lestidae | Libellulidae | MEGALOPTERA | Corydalidae | Sialidae | COLLEMBOLA | HYMENOPTERA | ACARI | GASTROPODA (*Physa/Physella*) | OSTRACODA (Cyprididae) | COPEPODA | CLADOCERA | DECAPODA | AMPHIPODA (Hyalellidae-*Hyalella*) | ISOPODA | OLIGOCHAETA | HIRUDINEA | TURBELLARIA | NEMATOMORPHA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tolerance Value* | | 2 | 0 | 3 | NA | | 4 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | | 0 | 6 | 6 | 8 | 2 | 4 | 6 | 6 | 6 | NA | 6 | 8 | 3 | | 8 | 8 | 5 | 5 | NA | NA | NA | | 3 | 9 | 3 | 4 | 9 | 9 | | 0 | 4 | 10 | NA | 5 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 5 | 10 | 4 | NA |
| S(0-2), M(3-7), T(8-10) | | S | S | M | NA | | M | M | M | M | M | M | M | M | | S | M | M | T | S | M | M | M | M | NA | M | T | M | | T | T | M | M | NA | NA | NA | | M | T | M | M | T | T | | S | M | T | NA | M | T | T | T | T | T | T | T | M | T | M | NA |
| Primary FFG* | | sc | p | sh | NA | | p | sh | p | cg | p | s | p | sc | | sc | p | NA | cg | cg | p | p | NA | p | cg | cf | cg | NA | | p | p | p | p | NA | NA | NA | | p | p | p | p | p | p | | p | p | cg | NA | p | sc | cg | cg | cg | sh | cg | cg | cg | pa | p | NA |
| | AT2-3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 28 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 6 | 12 | 0 | 0 | 0 | 2 | 1 | 0 | 0 |
| | SA2 tot | 0 | 0 | 3 | 0 | 34 | 0 | 0 | 24 | 7 | 0 | 3 | 0 | 0 | 48 | 1 | 1 | 36 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 4 | 2 | 3 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 3 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 |
| | SA2-1 | 0 | 0 | 3 | 0 | 21 | 0 | 0 | 11 | 7 | 0 | 3 | 0 | 0 | 25 | 0 | 1 | 18 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| | SA2-2 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 17 | 1 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SA2-3 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| | SJ1 tot | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 181 | 0 | 6 | 161 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 11 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 |
| | SJ1-1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 48 | 0 | 1 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 |
| | SJ1-2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 77 | 0 | 2 | 73 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 |
| | SJ1-3 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 56 | 0 | 3 | 48 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| | SJ2 tot | 0 | 0 | 2 | 0 | 9 | 0 | 0 | 3 | 3 | 0 | 1 | 0 | 2 | 148 | 0 | 7 | 118 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 20 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| | SJ2-1 | 0 | 0 | 1 | 0 | 6 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 2 | 51 | 0 | 2 | 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| | SJ2-2 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 47 | 0 | 4 | 40 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| | SJ2-3 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 1 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ3 tot | 0 | 14 | 1 | 0 | 31 | 0 | 0 | 13 | 17 | 0 | 0 | 0 | 1 | 123 | 2 | 1 | 62 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 51 | 0 | 4 | 3 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 6 | 1 | 1 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |
| | SJ3-1 | 0 | 8 | 0 | 0 | 6 | 0 | 0 | 2 | 4 | 0 | 0 | 0 | 0 | 45 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ3-2 | 0 | 2 | 0 | 0 | 9 | 0 | 0 | 5 | 3 | 0 | 0 | 0 | 1 | 40 | 2 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 10 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SJ3-3 | 0 | 4 | 1 | 0 | 16 | 0 | 0 | 6 | 10 | 0 | 0 | 0 | 0 | 38 | 0 | 1 | 21 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 13 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |
| | AH1 tot | 0 | 10 | 19 | 0 | 23 | 0 | 0 | 1 | 12 | 0 | 0 | 0 | 10 | 58 | 0 | 0 | 36 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 12 | 1 | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 5 | 0 | 0 | 2 | 3 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AH1-1 | 0 | 3 | 2 | 0 | 8 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 4 | 19 | 0 | 0 | 10 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AH1-2 | 0 | 3 | 1 | 0 | 10 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 5 | 20 | 0 | 0 | 10 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | AH1-3 | 0 | 4 | 16 | 0 | 5 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 1 | 19 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SO2 tot | 0 | 9 | 5 | 0 | 23 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 15 | 74 | 0 | 3 | 31 | 0 | 6 | 0 | 1 | 0 | 0 | 1 | 27 | 1 | 4 | 5 | 1 | 0 | 1 | 0 | 0 | 3 | 0 | 5 | 0 | 1 | 2 | 2 | 0 | 0 | 4 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SO2-1 | 0 | 5 | 1 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 30 | 0 | 0 | 9 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 14 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 3 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SO2-2 | 0 | 3 | 2 | 0 | 12 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 6 | 17 | 0 | 0 | 8 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 5 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SO2-3 | 0 | 1 | 2 | 0 | 8 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 7 | 27 | 0 | 3 | 14 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 1 | 3 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | GAV1 tot | 3 | 0 | 2 | 0 | 5 | 0 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 101 | 0 | 0 | 66 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 31 | 1 | 1 | 14 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 0 | 0 | 4 | 1 | 9 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| | GAV1-1 | 0 | 0 | 1 | 0 | 3 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 53 | 0 | 0 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 1 | 5 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 0 | 0 | 0 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | GAV1-2 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 33 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 14 | 0 | 0 | 3 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | GAV1-3 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 8 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 0 | 6 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |

Table A-5
BIological Metric Screening ANOVAs Summary

| Parameter | r-square | p | Group | n | Mean | Std Error | Lower 95% | Upper 95% |
|---|---|---|---|---|---|---|---|---|
| # I Orders-field | **0.58** | **<.0001** | HIGH DIST | 21 | 3.90476 | 0.2533 | 3.3915 | 4.418 |
| | | | MOD DIST | 11 | 6.36364 | 0.34999 | 5.6545 | 7.0728 |
| | | | REF | 8 | 6.75 | 0.4104 | 5.9184 | 7.5816 |
| # I Fams-field | **0.74** | **<.0001** | HIGH DIST | 21 | 5.8571 | 0.58892 | 4.664 | 7.05 |
| | | | MOD DIST | 11 | 13.9091 | 0.8137 | 12.26 | 15.558 |
| | | | REF | 8 | 15.5 | 0.95415 | 13.567 | 17.433 |
| BMI density | 0.01 | 0.7371 | HIGH DIST | 40 | 1773.92 | 226.73 | 1322.6 | 2225.2 |
| | | | MOD DIST | 18 | 2038.57 | 337.99 | 1365.8 | 2711.3 |
| | | | REF | 24 | 1704.54 | 292.71 | 1121.9 | 2287.2 |
| # BMI orders | **0.16** | **0.001** | HIGH DIST | 40 | 9.075 | 0.28556 | 8.507 | 9.643 |
| | | | MOD DIST | 18 | 11.0556 | 0.42569 | 10.208 | 11.903 |
| | | | REF | 24 | 9.5417 | 0.36865 | 8.808 | 10.275 |
| # BMI families | **0.57** | **<.0001** | HIGH DIST | 40 | 17.025 | 0.8737 | 15.286 | 18.764 |
| | | | MOD DIST | 18 | 30.3333 | 1.3024 | 27.741 | 32.926 |
| | | | REF | 24 | 28.9583 | 1.1279 | 26.713 | 31.203 |
| # non-insect taxa | **0.3** | **<.0001** | HIGH DIST | 40 | 4.075 | 0.24631 | 3.5847 | 4.5653 |
| | | | MOD DIST | 18 | 4.22222 | 0.36718 | 3.4914 | 4.9531 |
| | | | REF | 24 | 1.91667 | 0.31799 | 1.2837 | 2.5496 |
| # insect orders | **0.47** | **<.0001** | HIGH DIST | 40 | 5 | 0.19978 | 4.6023 | 5.3977 |
| | | | MOD DIST | 18 | 6.83333 | 0.29782 | 6.2405 | 7.4261 |
| | | | REF | 24 | 7.625 | 0.25792 | 7.1116 | 8.1384 |
| # insect families | **0.62** | **<.0001** | HIGH DIST | 40 | 12.95 | 0.8727 | 11.213 | 14.687 |
| | | | MOD DIST | 18 | 26.1111 | 1.3009 | 23.522 | 28.701 |
| | | | REF | 24 | 27.0417 | 1.1266 | 24.799 | 29.284 |
| # EPT families | **0.64** | **<.0001** | HIGH DIST | 40 | 3.75 | 0.51974 | 2.715 | 4.785 |
| | | | MOD DIST | 18 | 11.6111 | 0.77478 | 10.069 | 13.153 |
| | | | REF | 24 | 12.9167 | 0.67098 | 11.581 | 14.252 |
| % EPT | **0.36** | **<.0001** | HIGH DIST | 40 | 22.7 | 2.9969 | 16.735 | 28.665 |
| | | | MOD DIST | 18 | 45.8333 | 4.4675 | 36.941 | 54.726 |
| | | | REF | 24 | 53.5 | 3.869 | 45.799 | 61.201 |
| % PT | **0.44** | **<.0001** | HIGH DIST | 40 | 2.975 | 1.1284 | 0.729 | 5.221 |
| | | | MOD DIST | 18 | 12.7778 | 1.6822 | 9.429 | 16.126 |
| | | | REF | 24 | 16.9167 | 1.4568 | 14.017 | 19.816 |
| % sens EPT | **0.66** | **<.0001** | HIGH DIST | 40 | 1.1 | 1.0281 | -0.946 | 3.146 |
| | | | MOD DIST | 18 | 8.3889 | 1.5325 | 5.338 | 11.439 |
| | | | REF | 24 | 21.7917 | 1.3272 | 19.15 | 24.433 |
| BI score | **0.53** | **<.0001** | HIGH DIST | 40 | 5.89975 | 0.10881 | 5.6832 | 6.1163 |
| | | | MOD DIST | 18 | 5.12222 | 0.16221 | 4.7994 | 5.4451 |
| | | | REF | 24 | 4.23458 | 0.14047 | 3.955 | 4.5142 |
| % sens BMIs | **0.67** | **<.0001** | HIGH DIST | 40 | 1.15 | 1.0572 | -0.954 | 3.254 |
| | | | MOD DIST | 18 | 8.7778 | 1.576 | 5.641 | 11.915 |
| | | | REF | 24 | 23.0833 | 1.3649 | 20.367 | 25.8 |
| % tol BMIs | **0.13** | **0.0049** | HIGH DIST | 40 | 20.5 | 2.7133 | 15.099 | 25.901 |
| | | | MOD DIST | 18 | 14.7778 | 4.0447 | 6.727 | 22.829 |
| | | | REF | 24 | 5.5417 | 3.5028 | -1.43 | 12.514 |
| % dominant taxa | **0.37** | **<.0001** | HIGH DIST | 40 | 50.8 | 2.5205 | 45.783 | 55.817 |
| | | | MOD DIST | 18 | 26.2778 | 3.7574 | 18.799 | 33.757 |
| | | | REF | 24 | 27.0833 | 3.254 | 20.606 | 33.56 |
| % two dominant taxa | **0.46** | **<.0001** | HIGH DIST | 40 | 69.475 | 2.349 | 64.799 | 74.151 |
| | | | MOD DIST | 18 | 42.7222 | 3.5017 | 35.752 | 49.692 |
| | | | REF | 24 | 42.7083 | 3.0326 | 36.672 | 48.745 |
| % Diptera as Chironomidae | **0.17** | **0.0008** | HIGH DIST | 40 | 78.925 | 3.0069 | 72.94 | 84.91 |
| | | | MOD DIST | 18 | 62.4444 | 4.4824 | 53.522 | 71.366 |
| | | | REF | 24 | 62.1667 | 3.8819 | 54.44 | 69.893 |
| % non-insect BMIs | **0.2** | **0.0001** | HIGH DIST | 40 | 21.425 | 2.6253 | 16.199 | 26.651 |
| | | | MOD DIST | 18 | 10.9444 | 3.9136 | 3.155 | 18.734 |

Table A-5
BIological Metric Screening ANOVAs Summary

| Parameter | r-square | p | Group | n | Mean | Std Error | Lower 95% | Upper 95% |
|---|---|---|---|---|---|---|---|---|
| | | | REF | 24 | 2.6667 | 3.3893 | -4.08 | 9.413 |
| % non-insects + diptera | **0.47** | **<.0001** | HIGH DIST | 40 | 72.375 | 3.1607 | 66.084 | 78.666 |
| | | | MOD DIST | 18 | 40.5556 | 4.7117 | 31.177 | 49.934 |
| | | | REF | 24 | 31.8333 | 4.0805 | 23.711 | 39.955 |
| % non-insects+chironimidae | **0.46** | **<.0001** | HIGH DIST | 40 | 63.375 | 3.3476 | 56.712 | 70.038 |
| | | | MOD DIST | 18 | 29.8889 | 4.9904 | 19.956 | 39.822 |
| | | | REF | 24 | 21.5417 | 4.3218 | 12.939 | 30.144 |
| EPT/Chironomidae | **0.14** | **0.0027** | HIGH DIST | 40 | 1.69725 | 0.52426 | 0.6537 | 2.7408 |
| | | | MOD DIST | 18 | 3.375 | 0.78151 | 1.8194 | 4.9306 |
| | | | REF | 24 | 4.71208 | 0.67681 | 3.3649 | 6.0592 |
| % cg | 0.03 | 0.2615 | HIGH DIST | 40 | 40.05 | 3.0218 | 34.035 | 46.065 |
| | | | MOD DIST | 18 | 46.9444 | 4.5046 | 37.978 | 55.911 |
| | | | REF | 24 | 47.0833 | 3.9011 | 39.318 | 54.848 |
| %sc | **0.1** | **0.0153** | HIGH DIST | 40 | 2.4 | 0.66276 | 1.0808 | 3.7192 |
| | | | MOD DIST | 18 | 5.77778 | 0.98799 | 3.8112 | 7.7443 |
| | | | REF | 24 | 4.33333 | 0.85562 | 2.6303 | 6.0364 |
| %sh | **0.41** | **<.0001** | HIGH DIST | 40 | 0.4 | 0.63362 | -0.8612 | 1.6612 |
| | | | MOD DIST | 18 | 4.55556 | 0.94455 | 2.6755 | 6.4356 |
| | | | REF | 24 | 7.875 | 0.818 | 6.2468 | 9.5032 |
| %cf | 0.03 | 0.3188 | HIGH DIST | 40 | 8.025 | 1.09 | 5.8555 | 10.195 |
| | | | MOD DIST | 18 | 8.61111 | 1.6248 | 5.377 | 11.845 |
| | | | REF | 24 | 5.70833 | 1.4071 | 2.9075 | 8.509 |
| %pred | **0.45** | **<.0001** | HIGH DIST | 40 | 4.9 | 0.60081 | 3.704 | 6.096 |
| | | | MOD DIST | 18 | 11.4444 | 0.89563 | 9.662 | 13.227 |
| | | | REF | 24 | 11.875 | 0.77564 | 10.331 | 13.419 |
| %sc+sh | **0.31** | **<.0001** | HIGH DIST | 40 | 2.8 | 1.0429 | 0.7242 | 4.876 |
| | | | MOD DIST | 18 | 10.3333 | 1.5547 | 7.2389 | 13.428 |
| | | | REF | 24 | 12.25 | 1.3464 | 9.5701 | 14.93 |
| %sc+sh+pred | **0.52** | **<.0001** | HIGH DIST | 40 | 7.775 | 1.2028 | 5.381 | 10.169 |
| | | | MOD DIST | 18 | 21.8889 | 1.793 | 18.32 | 25.458 |
| | | | REF | 24 | 24.125 | 1.5528 | 21.034 | 27.216 |
| %cg+sc+sh | **0.14** | **0.0027** | HIGH DIST | 40 | 42.8 | 3.1502 | 36.53 | 49.07 |
| | | | MOD DIST | 18 | 57.4444 | 4.6961 | 48.097 | 66.792 |
| | | | REF | 24 | 59.25 | 4.0669 | 51.155 | 67.345 |
| %cg+cf | 0.03 | 0.3524 | HIGH DIST | 40 | 48 | 3.0764 | 41.876 | 54.124 |
| | | | MOD DIST | 18 | 55.5556 | 4.5861 | 46.427 | 64.684 |
| | | | REF | 24 | 52.6667 | 3.9717 | 44.761 | 60.572 |
| %cg+pred | **0.12** | **0.0064** | HIGH DIST | 40 | 44.875 | 3.0481 | 38.808 | 50.942 |
| | | | MOD DIST | 18 | 58.6111 | 4.5439 | 49.567 | 67.655 |
| | | | REF | 24 | 59.0417 | 3.9351 | 51.209 | 66.874 |
| %pred+sh | **0.61** | **<.0001** | HIGH DIST | 40 | 5.325 | 0.8412 | 3.651 | 6.999 |
| | | | MOD DIST | 18 | 16.2222 | 1.2539 | 13.726 | 18.718 |
| | | | REF | 24 | 19.7917 | 1.0859 | 17.63 | 21.953 |
| EPHEMEROPTERA | **0.19** | **0.0003** | HIGH DIST | 40 | 59.05 | 7.919 | 43.288 | 74.81 |
| | | | MOD DIST | 18 | 99.333 | 11.805 | 75.837 | 122.83 |
| | | | REF | 24 | 110.083 | 10.223 | 89.734 | 130.43 |
| Heptagenidae | **0.41** | **<.0001** | HIGH DIST | 40 | 0.175 | 0.9138 | -1.6439 | 1.994 |
| | | | MOD DIST | 18 | 3.1667 | 1.3623 | 0.4551 | 5.878 |
| | | | REF | 24 | 11.125 | 1.1798 | 8.7768 | 13.473 |
| Leptophlebiidae | **0.34** | **<.0001** | HIGH DIST | 40 | 0.825 | 2.383 | -3.918 | 5.568 |
| | | | MOD DIST | 18 | 8.1667 | 3.5524 | 1.096 | 15.237 |
| | | | REF | 24 | 25.75 | 3.0764 | 19.626 | 31.874 |
| PLECOPTERA | **0.43** | **<.0001** | HIGH DIST | 40 | 0.025 | 1.2281 | -2.419 | 2.469 |
| | | | MOD DIST | 18 | 1.8889 | 1.8308 | -1.755 | 5.533 |
| | | | REF | 24 | 15.1667 | 1.5855 | 12.011 | 18.322 |
| TRICOPTERA | **0.31** | **<.0001** | HIGH DIST | 40 | 8.95 | 3.1743 | 2.632 | 15.268 |

Table A-5
BIological Metric Screening ANOVAs Summary

| Parameter | r-square | p | Group | n | Mean | Std Error | Lower 95% | Upper 95% |
|---|---|---|---|---|---|---|---|---|
| | | | MOD DIST | 18 | 36.2222 | 4.732 | 26.803 | 45.641 |
| | | | REF | 24 | 35.2083 | 4.098 | 27.051 | 43.365 |
| COLEOPTERA | **0.27** | **<.0001** | HIGH DIST | 40 | 9.875 | 2.5245 | 4.85 | 14.9 |
| | | | MOD DIST | 18 | 25.7222 | 3.7633 | 18.232 | 33.213 |
| | | | REF | 24 | 30.9583 | 3.2591 | 24.471 | 37.445 |
| Elmidae | **0.25** | **<.0001** | HIGH DIST | 40 | 1.9 | 1.6475 | -1.379 | 5.179 |
| | | | MOD DIST | 18 | 6.5 | 2.4559 | 1.612 | 11.388 |
| | | | REF | 24 | 15.7083 | 2.1269 | 11.475 | 19.942 |
| DIPTERA | **0.22** | **<.0001** | HIGH DIST | 40 | 152.925 | 9.798 | 133.42 | 172.43 |
| | | | MOD DIST | 18 | 89.222 | 14.606 | 60.15 | 118.29 |
| | | | REF | 24 | 87.167 | 12.649 | 61.99 | 112.34 |
| Chironomidae | **0.25** | **<.0001** | HIGH DIST | 40 | 125.85 | 9.494 | 106.95 | 144.75 |
| | | | MOD DIST | 18 | 57.222 | 14.153 | 29.05 | 85.39 |
| | | | REF | 24 | 57 | 12.257 | 32.6 | 81.4 |
| ODONATA | **0.18** | **0.0005** | HIGH DIST | 40 | 2.075 | 0.6767 | 0.7281 | 3.4219 |
| | | | MOD DIST | 18 | 5.61111 | 1.0088 | 3.6032 | 7.619 |
| | | | REF | 24 | 6.20833 | 0.8736 | 4.4695 | 7.9472 |
| EPHEMEROPTERA LOGY+1 | **0.28** | **<.0001** | HIGH DIST | 40 | 1.364 | 0.08338 | 1.198 | 1.53 |
| | | | MOD DIST | 18 | 1.97111 | 0.12429 | 1.7237 | 2.2185 |
| | | | REF | 24 | 2.02417 | 0.10764 | 1.8099 | 2.2384 |
| Heptagenidae LOGY+1 | **0.56** | **<.0001** | HIGH DIST | 40 | 0.039 | 0.05235 | -0.0652 | 0.1432 |
| | | | MOD DIST | 18 | 0.447778 | 0.07803 | 0.29245 | 0.6031 |
| | | | REF | 24 | 0.883333 | 0.06758 | 0.74882 | 1.0178 |
| Leptophlebiidae LOGY+1 | **0.63** | **<.0001** | HIGH DIST | 40 | 0.1415 | 0.0587 | 0.0247 | 0.2583 |
| | | | MOD DIST | 18 | 0.79556 | 0.0875 | 0.6214 | 0.9697 |
| | | | REF | 24 | 1.22667 | 0.07578 | 1.0758 | 1.3775 |
| PLECOPTERA LOGY+1 | **0.65** | **<.0001** | HIGH DIST | 40 | 0.0075 | 0.05026 | -0.0925 | 0.1075 |
| | | | MOD DIST | 18 | 0.316667 | 0.07492 | 0.16755 | 0.4658 |
| | | | REF | 24 | 0.99375 | 0.06488 | 0.86461 | 1.1229 |
| TRICOPTERA LOGY+1 | **0.45** | **<.0001** | HIGH DIST | 40 | 0.55275 | 0.07966 | 0.3942 | 0.7113 |
| | | | MOD DIST | 18 | 1.44 | 0.11875 | 1.2036 | 1.6764 |
| | | | REF | 24 | 1.46292 | 0.10284 | 1.2582 | 1.6676 |
| COLEOPTERA LOGY+1 | **0.32** | **<.0001** | HIGH DIST | 40 | 0.84 | 0.06317 | 0.7143 | 0.9657 |
| | | | MOD DIST | 18 | 1.30167 | 0.09417 | 1.1142 | 1.4891 |
| | | | REF | 24 | 1.42042 | 0.08156 | 1.2581 | 1.5827 |
| Elmidae LOGY+1 | **0.44** | **<.0001** | HIGH DIST | 40 | 0.25125 | 0.06131 | 0.12922 | 0.3733 |
| | | | MOD DIST | 18 | 0.67167 | 0.09139 | 0.48976 | 0.8536 |
| | | | REF | 24 | 1.03375 | 0.07915 | 0.87621 | 1.1913 |
| DIPTERA LOGY+1 | **0.16** | **0.0011** | HIGH DIST | 40 | 2.11275 | 0.03683 | 2.0394 | 2.1861 |
| | | | MOD DIST | 18 | 1.915 | 0.0549 | 1.8057 | 2.0243 |
| | | | REF | 24 | 1.915 | 0.04754 | 1.8204 | 2.0096 |
| Chironomidae LOGY+1 | **0.2** | **0.0001** | HIGH DIST | 40 | 1.99525 | 0.04928 | 1.8972 | 2.0933 |
| | | | MOD DIST | 18 | 1.69722 | 0.07346 | 1.551 | 1.8435 |
| | | | REF | 24 | 1.67958 | 0.06362 | 1.5529 | 1.8062 |
| ODONATA LOGY+1 | **0.25** | **<.0001** | HIGH DIST | 40 | 0.33775 | 0.0547 | 0.22886 | 0.44664 |
| | | | MOD DIST | 18 | 0.683333 | 0.08155 | 0.52101 | 0.84565 |
| | | | REF | 24 | 0.751667 | 0.07062 | 0.61109 | 0.89224 |
| E+P+T LOGY+1 | **0.33** | **<.0001** | HIGH DIST | 40 | 1.42475 | 0.08424 | 1.2571 | 1.5924 |
| | | | MOD DIST | 18 | 2.11556 | 0.12558 | 1.8656 | 2.3655 |
| | | | REF | 24 | 2.19417 | 0.10875 | 1.9777 | 2.4106 |
| P+T LOGY+1 | **0.53** | **<.0001** | HIGH DIST | 40 | 0.55375 | 0.07802 | 0.3985 | 0.709 |
| | | | MOD DIST | 18 | 1.46167 | 0.1163 | 1.2302 | 1.6932 |
| | | | REF | 24 | 1.65333 | 0.10072 | 1.4529 | 1.8538 |
| Hept+Leptophl LOGY+1 | **0.7** | **<.0001** | HIGH DIST | 40 | 0.161 | 0.05938 | 0.0428 | 0.2792 |
| | | | MOD DIST | 18 | 0.89278 | 0.08852 | 0.7166 | 1.069 |
| | | | REF | 24 | 1.44458 | 0.07666 | 1.292 | 1.5972 |

Table A-5
BIological Metric Screening ANOVAs Summary

| Parameter | r-square | p | Group | n | Mean | Std Error | Lower 95% | Upper 95% |
|---|---|---|---|---|---|---|---|---|
| Hept.+Leptophl+Pleco LOGY+1 | **0.74** | **<.0001** | HIGH DIST | 40 | 0.1635 | 0.05995 | 0.0442 | 0.2828 |
| | | | MOD DIST | 18 | 0.94333 | 0.08937 | 0.7654 | 1.1212 |
| | | | REF | 24 | 1.61375 | 0.0774 | 1.4597 | 1.7678 |
| Dipt+NIs LOGY+1 | **0.46** | **<.0001** | HIGH DIST | 40 | 2.3035 | 0.02736 | 2.249 | 2.358 |
| | | | MOD DIST | 18 | 2.06833 | 0.04079 | 1.9871 | 2.1495 |
| | | | REF | 24 | 1.95167 | 0.03533 | 1.8813 | 2.022 |
| Dom. Taxon LOGY+1 | **0.41** | **<.0001** | HIGH DIST | 40 | 2.15375 | 0.02697 | 2.1001 | 2.2074 |
| | | | MOD DIST | 18 | 1.865 | 0.04021 | 1.785 | 1.945 |
| | | | REF | 24 | 1.88667 | 0.03482 | 1.8174 | 1.956 |
| Two Dom. Taxa LOGY+1 | **0.45** | **<.0001** | HIGH DIST | 40 | 2.3085 | 0.0192 | 2.2703 | 2.3467 |
| | | | MOD DIST | 18 | 2.08944 | 0.02863 | 2.0325 | 2.1464 |
| | | | REF | 24 | 2.09208 | 0.02479 | 2.0427 | 2.1414 |

Note: standard error uses a pooled estimate of error variance
P-values 0.05 or less in **bold**.

Table A-6
Biological Metric Screening, Multiple Regression Analyses Summary

| | r-square | p (whole model) | Regressor p-values, positive (+) or negative (-) relationship | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Biological Parameters** | **Whole Model** | **Whole Model** | **order** | **elevation** | **wet width** | **temperature** | **pH** | **sp cond.** |
| # BMI orders | 0.28 | 0.4472 | 0.1858 (-) | 0.9668 (+) | 0.5554 (+) | 0.2312 (+) | 0.4815 (-) | 0.7536 (-) |
| # BMI families | 0.19 | 0.7121 | 0.5215 (+) | 0.9104 (-) | 0.3947 (+) | 0.4092 (-) | 0.5618 (-) | 0.5250 +) |
| # non-insect taxa | 0.26 | 0.4903 | 0.5944 (-) | 0.2517 (+) | 0.2794 (+) | 0.8999 (-) | 0.8982 (-) | 0.5403 (-) |
| # insect orders | *0.51* | *0.0512* | 0.4354 (-) | *0.0884 (-)* | 0.4644 (-) | *0.0732 (+)* | 0.3221 (-) | 0.6598 (+) |
| # insect families | 0.28 | 0.4367 | 0.3087 (+) | 0.643 (-) | 0.4857 (+) | 0.3158 (-) | 0.5176 (-) | 0.3592 (+) |
| # EPT families | **0.56** | **0.0223** | 0.0842 (+) | 0.4664 (-) | 0.4133 (+) | **0.0104 (-)** | 0.337 (-) | 0.5749 (+) |
| % EPT | 0.21 | 0.6404 | 0.7263 (+) | 0.9306 (+) | 0.9648 (-) | 0.3518 (-) | 0.6343 (+) | 0.3346 (+) |
| % PT | 0.43 | 0.1244 | 0.3647 (+) | 0.4864 (-) | 0.4967 (-) | 0.1711 (-) | 0.8474 (-) | *0.0546 (+)* |
| % sens EPT | *0.5* | *0.0555* | 0.8301 (-) | 0.1166 (+) | *0.0519 (-)* | 0.2701 (-) | 0.5675 (+) | 0.1704 (+) |
| BI score | 0.24 | 0.5658 | 0.9684 (-) | 0.7619 (+) | 0.342 (+) | 0.417 (+) | 0.737 (-) | 0.3147 (-) |
| % sens BMIs | *0.47* | *0.0761* | 0.7528 (-) | 0.1815 (+) | *.0657 (-)* | 0.2879 (-) | 0.5924 (+) | 0.1942 (+) |
| % tol BMIs | 0.44 | 0.1062 | *0.0843 (+)* | 0.4407 (+) | 0.9928 (-) | **0.0303 (+)** | 0.4756 (+) | 0.8634 (-) |
| % dominant taxa | *0.48* | *0.0727* | *0.0815 (-)* | 0.6817 (-) | 0.7767 (+) | 0.7779 (-) | 0.1634 (-) | **0.0408 (-)** |
| % two dominant taxa | **0.57** | **0.0207** | **0.0374 (-)** | 0.7388 (+) | 0.5462 (+) | 0.9193 (+) | 0.2245 (-) | **0.0235 (-)** |
| % Diptera as Chironomidae | **0.57** | **0.019** | 0.8838 (-) | *0.0654 (+)* | 0.4633 (-) | **0.0104 (-)** | *0.07 (-)* | 0.9024 (+) |
| % non-insect BMIs | 0.39 | 0.1787 | 0.5103 (-) | **0.0472 (+)** | *0.0572 (+)* | 0.4707 (+) | 0.8243 (-) | 0.6896 (+) |
| % non-insects + diptera | 0.33 | 0.3112 | 0.1214 (-) | 0.7781 (-) | 0.7848 (-) | 0.5894 (-) | 0.6387 (-) | 0.1022 (-) |
| % non-insects+chironimidae | **0.53** | **0.0386** | 0.1536 (-) | 0.5136 (+) | 0.4882 (-) | 0.138 (-) | 0.2016 (-) | 0.1292 (-) |
| EPT/Chironomidae | 0.27 | 0.456 | 0.5885 (+) | 0.4382 (-) | 0.6039 (+) | 0.2634 (+) | 0.3442 (+) | 0.9713 (-) |
| %sh | 0.37 | 0.2189 | 0.9132 (+) | 0.8936 (+) | 0.3833 (-) | 0.3741 (-) | 0.7316 (+) | *0.0741 (+)* |
| %pred | 0.3 | 0.3885 | 0.3058 (+) | 0.1714 (-) | 0.5802 (-) | 0.6577 (+) | 0.7207 (+) | 0.8375 (-) |
| %sc+sh | 0.44 | 0.1123 | 0.7727 (+) | 0.9824 (-) | 0.3826 (-) | 0.1746 (-) | 0.8234 (-) | **0.034 (+)** |
| %sc+sh+pred | 0.4 | 0.1637 | 0.4285 (+) | 0.5135 (-) | 0.2802 (-) | 0.3206 (-) | 0.994 (-) | *0.0639 (+)* |
| %cg+sc+sh | 0.25 | 0.5277 | 0.3242 (+) | 0.6055 (+) | 0.8241 (+) | 0.4385 (+) | 0.2457 (+) | 0.3348 (+) |
| %cg+pred | 0.38 | 0.1952 | 0.2601 (+) | 0.8761 (+) | 0.5523 (+) | 0.1042 (+) | 0.1607 (+) | 0.76 (-) |
| %pred+sh | 0.31 | 0.2176 | 0.5289 (+) | 0.4835 (-) | 0.2772 (-) | 0.5163 (-) | 0.539 (+) | 0.1318 (+) |
| EPHEMEROPTERA | 0.06 | 0.9802 | 0.8474 (-) | 0.6458 (+) | 0.7311 (+) | 0.9365 (-) | 0.5673 (+) | 0.8699 (-) |
| Heptagenidae | **0.59** | **0.0145** | 0.2663 (+) | *0.0604 (-)* | 0.1896 (-) | **0.0100 (-)** | 0.4015 (+) | 0.6462 (+) |
| Leptophlebiidae | **0.63** | **0.0067** | 0.7873 (-) | **0.0066 (+)** | **0.0207 (-)** | 0.8763 (-) | 0.7631 (+) | 0.6563 (+) |
| PLECOPTERA | 0.34 | 0.2784 | 0.1974 (-) | *0.0667 (-)* | 0.7993 (-) | 0.4771 (-) | 0.854 (-) | 0.8189 (+) |
| TRICOPTERA | 0.32 | 0.3199 | *0.0896 (+)* | 0.6369 (+) | 0.5919 (-) | 0.3063 (-) | 0.9172 (-) | *0.0693 (+)* |
| COLEOPTERA | *0.49* | *0.0634* | *0.0514 (+)* | 0.8700 (+) | 0.4769 (+) | **0.0258 (+)** | 0.7824 (+) | 0.4665 (+) |
| Elmidae | **0.54** | **0.0339** | 0.1339 (+) | 0.9901 (-) | 0.2024 (+) | **0.0100 (+)** | 0.4375 (+) | 0.8996 (+) |
| DIPTERA | 0.38 | 0.2854 | 0.1407 (-) | 0.5953 (-) | 0.5708 (-) | 0.4859 (-) | 0.6265 (-) | *0.0828 (-)* |
| Chironomidae | **0.55** | **0.0287** | 0.1624 (-) | 0.7166 (+) | 0.3119 (-) | *0.0834 (-)* | 0.1760 (-) | *0.0915 (-)* |
| ODONATA | 0.11 | 0.9032 | 0.2365 (+) | 0.4252 (+) | 0.567 (-) | 0.6312 (+) | 0.8859 (+) | 0.3576 (+) |
| EPHEMEROPTERA LOGY+1 | 0.1 | 0.9286 | 0.7886 (-) | 0.6065 (+) | 0.739 (+) | 0.7796 (-) | 0.4446 (+) | 0.7733 (-) |
| Heptagenidae LOGY+1 | **0.67** | **0.0035** | 0.306 (+) | **0.0124 (-)** | 0.5957 (-) | **0.026 (-)** | 0.7979 (+) | 0.1555 (+) |
| Leptophlebiidae LOGY+1 | *0.45* | *0.0599* | 0.3821 (-) | 0.1465 (+) | *0.09 (-)* | 0.5949 (-) | 0.9989 (-) | 0.5094 (+) |
| PLECOPTERA LOGY+1 | *0.48* | *0.0707* | 0.1091 (-) | **0.0047 (-)** | 0.5406 (-) | 0.2404 (-) | 0.5692 (-) | 0.5452 (-) |
| TRICOPTERA LOGY+1 | 0.4 | 0.16 | **0.0344 (+)** | 0.2477 (+) | 0.6955 (-) | 0.4057 (-) | 0.7855 (+) | **0.035 (+)** |
| COLEOPTERA LOGY+1 | **0.55** | **0.0273** | *0.0745 (+)* | 0.4016 (-) | 0.1766 (+) | *0.0599 (+)* | 0.9024 (-) | 0.2053 (+) |
| Elmidae LOGY+1 | **0.62** | **0.0094** | 0.1681 (+) | 0.9436 (-) | **0.0177 (+)** | **0.0111 (+)** | 0.4679 (+) | 0.6167 (+) |
| DIPTERA LOGY+1 | 0.29 | 0.4235 | 0.2653 (-) | 0.9461 (-) | 0.5505 (-) | 0.4376 (-) | 0.6392 (-) | 0.183 (-) |
| Chironomidae LOGY+1 | *0.48* | *0.0718* | 0.3018 (-) | 0.4288 (+) | 0.4241 (-) | *0.0503 (-)* | 0.1928 (-) | 0.4738 (-) |
| ODONATA LOGY+1 | 0.06 | 0.9823 | 0.4181 (+) | 0.9502 (+) | 0.8069 (-) | 0.9637 (-) | 0.9846 (+) | 0.5892 (+) |
| E+P+T LOGY+1 | 0.24 | 0.5619 | 0.668 (+) | 0.7895 (+) | 0.9977 (-) | 0.3368 (-) | 0.6561 (+) | 0.2469 (+) |
| P+T LOGY+1 | *0.48* | *0.068* | 0.2487 (+) | 0.5533 (-) | 0.655 (-) | 0.2258 (-) | 0.8171 (-) | **0.0213 (+)** |
| Hept+Leptophl LOGY+1 | *0.45* | *0.0994* | 0.6971 (-) | 0.263 (+) | 0.103 (-) | *0.0537 (-)* | 0.9971 (-) | 0.5094 (+) |
| Hept.+Leptophl+Pleco LOGY+1 | *0.46* | *0.0881* | 0.2235 (-) | 0.8984 (+) | 0.1664 (-) | *0.0526 (-)* | 0.7982 (-) | 0.7354 (+) |
| Dipt+NIs LOGY+1 | 0.27 | 0.4573 | 0.2627 (-) | 0.8244 (+) | 0.7763 (-) | 0.5056 (-) | 0.6331 (-) | 0.2272 (-) |
| Dom. Taxon LOGY+1 | 0.42 | 0.1434 | 0.1646 (-) | 0.7816 (-) | 0.7313 (+) | 0.6283 (-) | 0.1497 (-) | *0.0801 (-)* |
| Two Dom. Taxa LOGY+1 | *0.49* | *0.0631* | *0.0707 (-)* | 0.825 (+) | 0.3875 (+) | 0.9153 (+) | 0.2387 (-) | **0.0468 (-)** |

Note: standard error uses a pooled estimate of error variance
P-values 0.05 or less in **bold**, p-values between 0.05 and 0.10 in *italics* .

Table A-7
IBI Scores and Classifications of Biological Integrity by Study Reach

| Study Reach | 2000 | | 2001 | | 2002 | | 2003 | | No. years | IBI Score | Classification |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | IBI Score | Classification | IBI Score | Classification | IBI Score | Classification | IBI Score | Classification | sampled | Range | Range |
| RIN1 | NS | NS | NS | NS | 40 | Fair | NS | NS | 1 | NA | NA |
| C1 | 20 | Very Poor | 16 | Very Poor | 14 | Very Poor | 18 | Very Poor | 4 | 14-20 | Very Poor |
| C2 | 42 | Fair | 18 | Very Poor | NS | NS | NS | NS | 2 | 18-42 | Very Poor to Fair |
| C3 | 48 | Good | 44 | Fair | 56 | Excellent | 50 | Good | 4 | 44-56 | Fair to Excellent |
| F1 | 12 | Very Poor | NS | NS | NS | NS | NS | NS | 1 | NA | NA |
| SM1 | 14 | Very Poor | NS | NS | NS | NS | NS | NS | 1 | NA | NA |
| MONT1 | NS | NS | NS | NS | NS | NS | 50 | Good | 1 | NA | NA |
| SY1 | NS | NS | NS | NS | 18 | Very Poor | 32 | Poor | 2 | 18-32 | Very Poor to Poor |
| SY2 | NS | NS | NS | NS | NS | NS | 32 | Poor | 1 | NA | NA |
| M1 | 14 | Very Poor | NS | NS | 14 | Very Poor | 14 | Very Poor | 3 | 14 | Very Poor |
| M2 | NS | NS | NS | NS | 14 | Very Poor | 14 | Very Poor | 2 | 14 | Very Poor |
| M3 | 50 | Good | NS | NS | 48 | Good | 42 | Fair | 3 | 42-50 | Fair to Good |
| M4 | 52 | Good | NS | NS | NS | NS | NS | NS | 1 | NA | NA |
| M5 | 48 | Good | NS | NS | NS | NS | NS | NS | 1 | NA | NA |
| AB1 | NS | NS | NS | NS | 22 | Very Poor | 26 | Poor | 2 | 22-26 | Very Poor to Poor |
| AB2 | 26 | Poor | 18 | Very Poor | 18 | Very Poor | 24 | Poor | 4 | 18-26 | Very Poor to Poor |
| AB3 | 44 | Fair | 44 | Fair | 44 | Fair | 36 | Fair | 4 | 36-44 | Fair |
| AT1 | NS | NS | 16 | Very Poor | 12 | Very Poor | 12 | Very Poor | 3 | 12 to 16 | Very Poor |
| AT2 | NS | NS | 18 | Very Poor | 16 | Very Poor | 24 | Poor | 3 | 18-24 | Very Poor to Poor |
| SA1 | 36 | Fair | NS | NS | NS | NS | NS | NS | 1 | NA | NA |
| SA2 | 40 | Fair | NS | NS | NS | NS | 52 | Good | 2 | 40-52 | Fair to Good |
| MY1 | 40 | Fair | NS | NS | NS | NS | NS | NS | 1 | NA | NA |
| MY2 | 42 | Fair | NS | NS | NS | NS | NS | NS | 1 | NA | NA |
| MY3 | 50 | Good | NS | NS | NS | NS | NS | NS | 1 | NA | NA |
| SJ1 | 22 | Very Poor | 24 | Poor | 22 | Very Poor | 28 | Poor | 4 | 22-28 | Very Poor to Poor |
| SJ2 | 36 | Fair | 26 | Poor | 32 | Poor | 34 | Poor | 4 | 26-36 | Poor to Fair |
| SJ3 | 48 | Good | 52 | Good | 48 | Good | 48 | Good | 4 | 48-52 | Good |
| SJ4 | 42 | Fair | NS | NS | NS | NS | NS | NS | 1 | NA | NA |
| T1 | 34 | Poor | NS | NS | NS | NS | NS | NS | 1 | NA | NA |
| T2 | 42 | Fair | NS | NS | NS | NS | NS | NS | 1 | NA | NA |
| DP1 | 44 | Fair | NS | NS | NS | NS | NS | NS | 1 | NA | NA |
| EC1 | NS | NS | NS | NS | 37 | Fair | NS | NS | 1 | NA | NA |
| R1 | 38 | Fair | NS | NS | NS | NS | NS | NS | 1 | NA | NA |
| R2 | 50 | Good | NS | NS | NS | NS | NS | NS | 1 | NA | NA |
| AH1 | 60 | Excellent | 36 | Fair | 54 | Excellent | 60 | Excellent | 4 | 36-60 | Fair-Excellent |
| AH2 | 46 | Fair | NS | NS | NS | NS | NS | NS | 1 | NA | NA |
| SO1 | 56 | Excellent | NS | NS | NS | NS | NS | NS | 1 | NA | NA |
| SO2 | 52 | Good | 56 | Excellent | 58 | Excellent | 58 | Excellent | 4 | 52-58 | Good to Excellent |
| GAV1 | NS | NS | NS | NS | 42 | Fair | 38 | Fair | 2 | 38-42 | Fair |
| GAV2 | NS | NS | NS | NS | 38 | Fair | NS | NS | 1 | NA | NA |

Note: NS indicates the study reach was not sampled in that year. NA indicates not applicable, the study reach was sampled in one year only, there is no range.