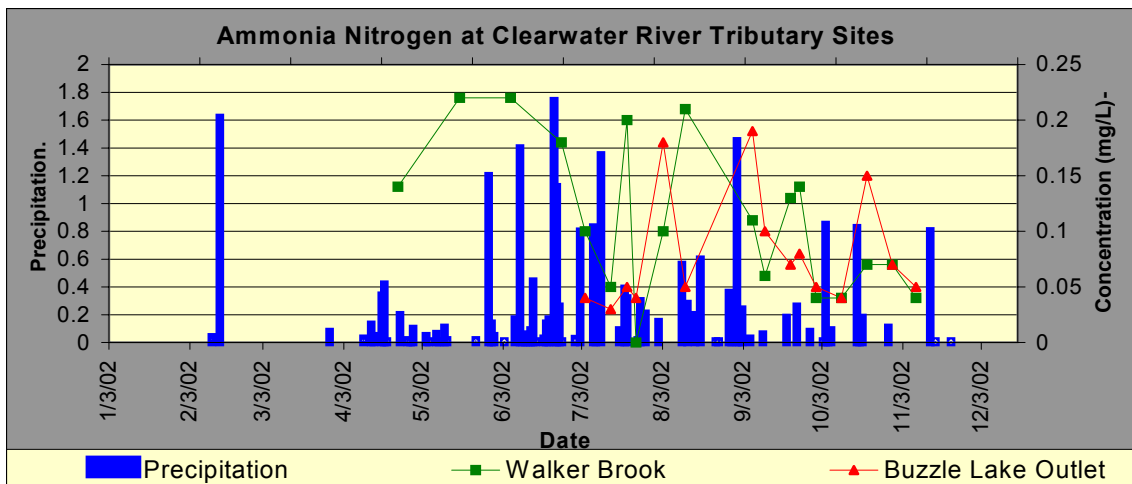
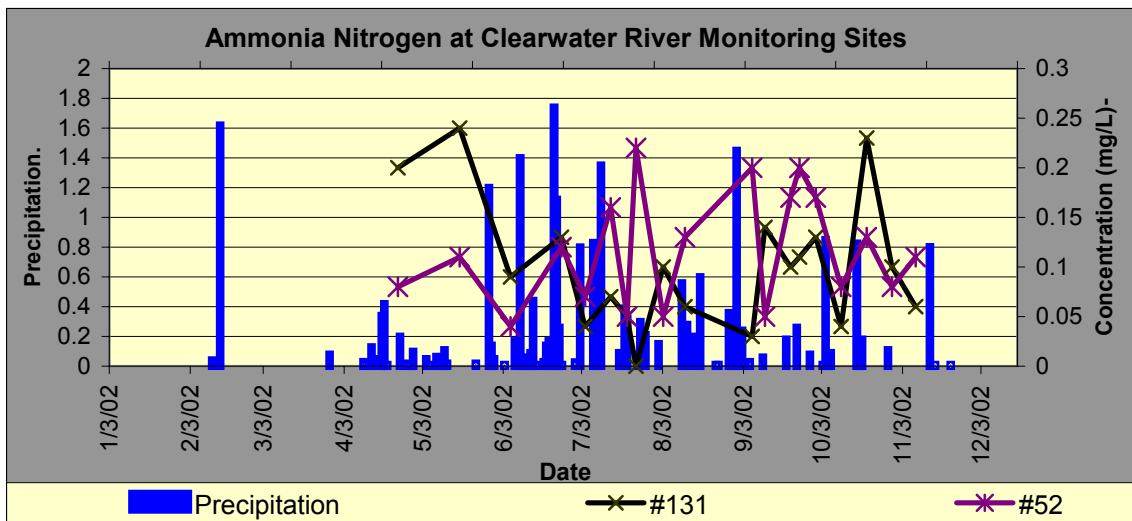
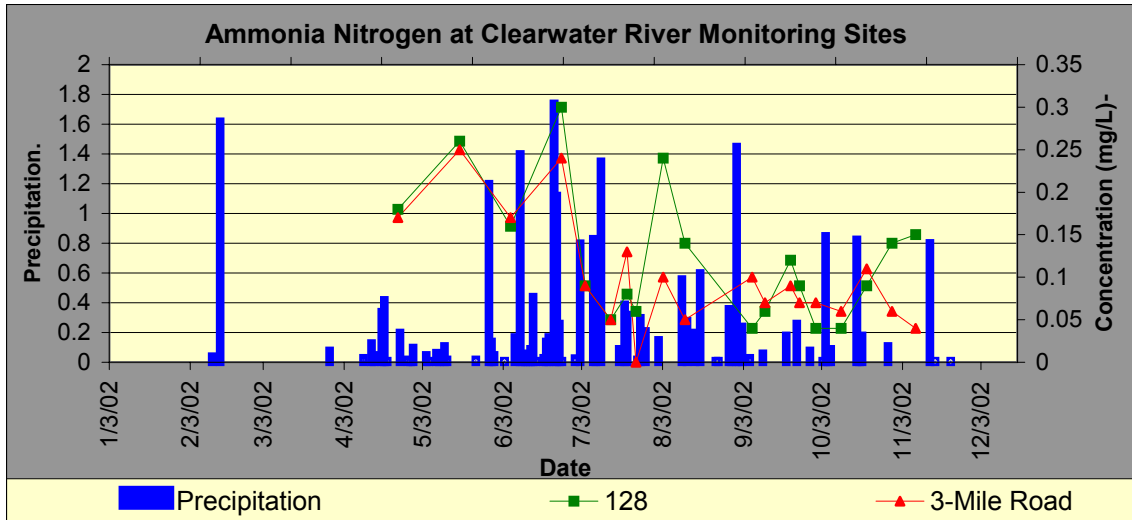
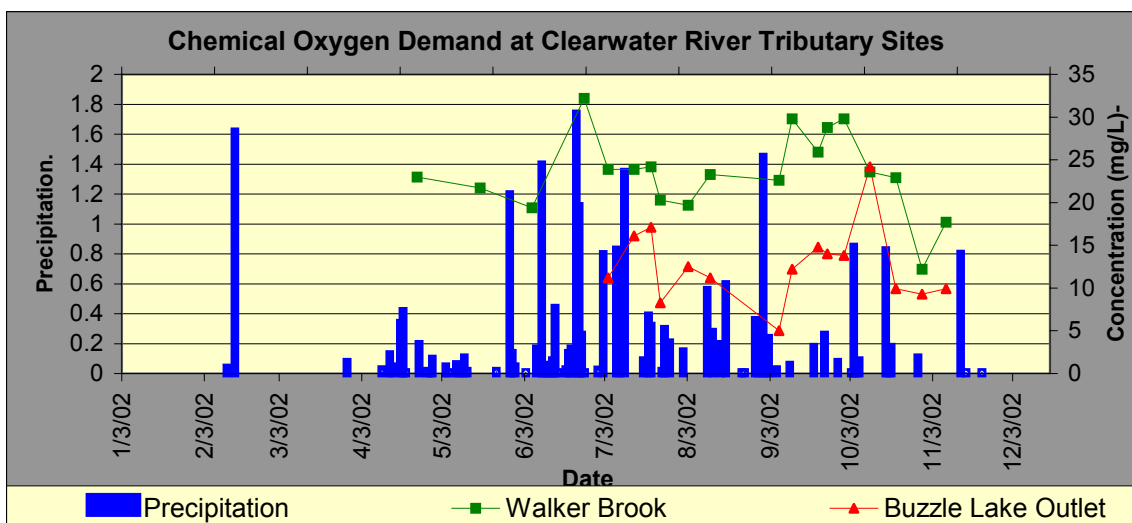
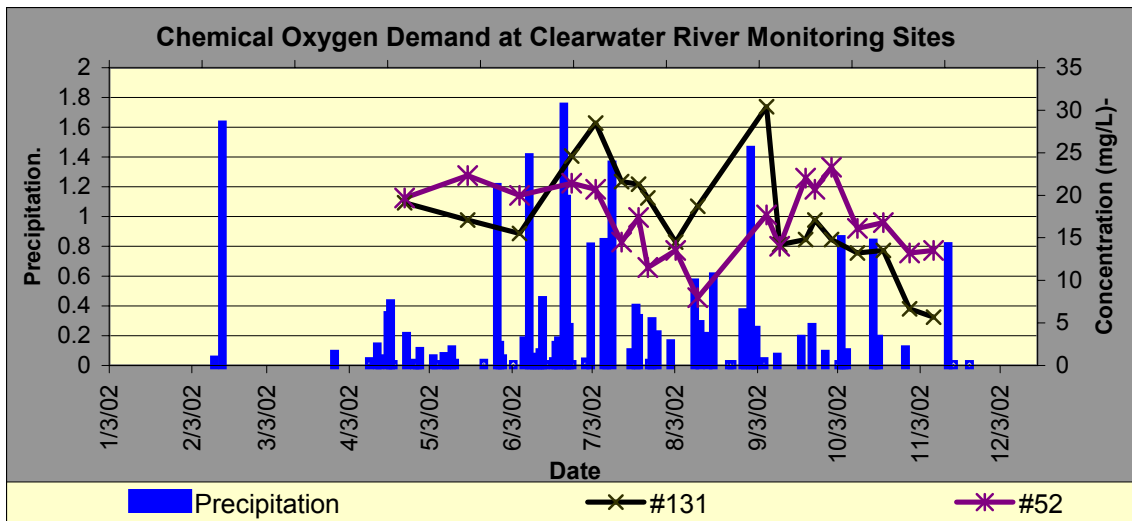
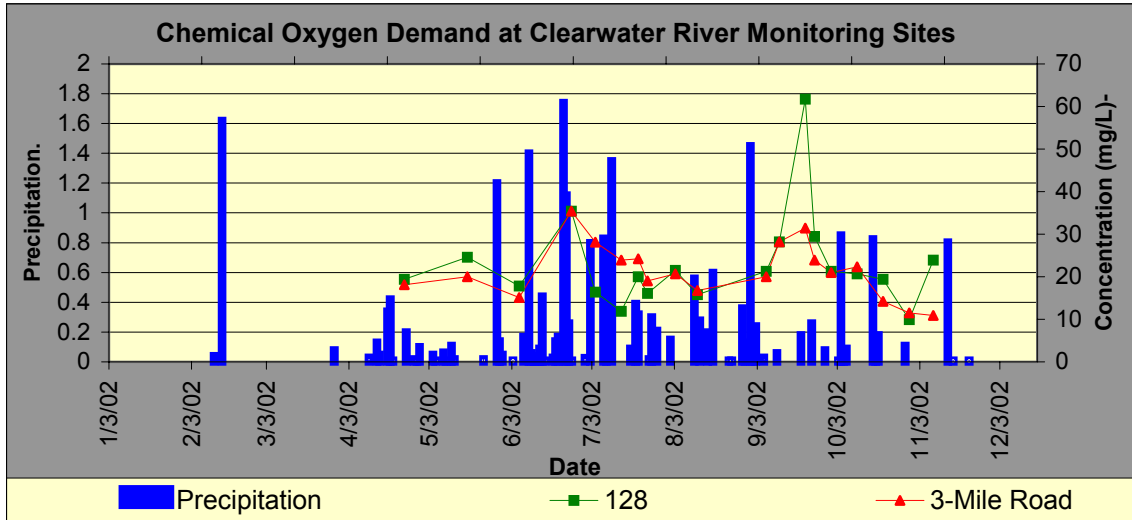


# Appendix C. Stream Water Quality Charts

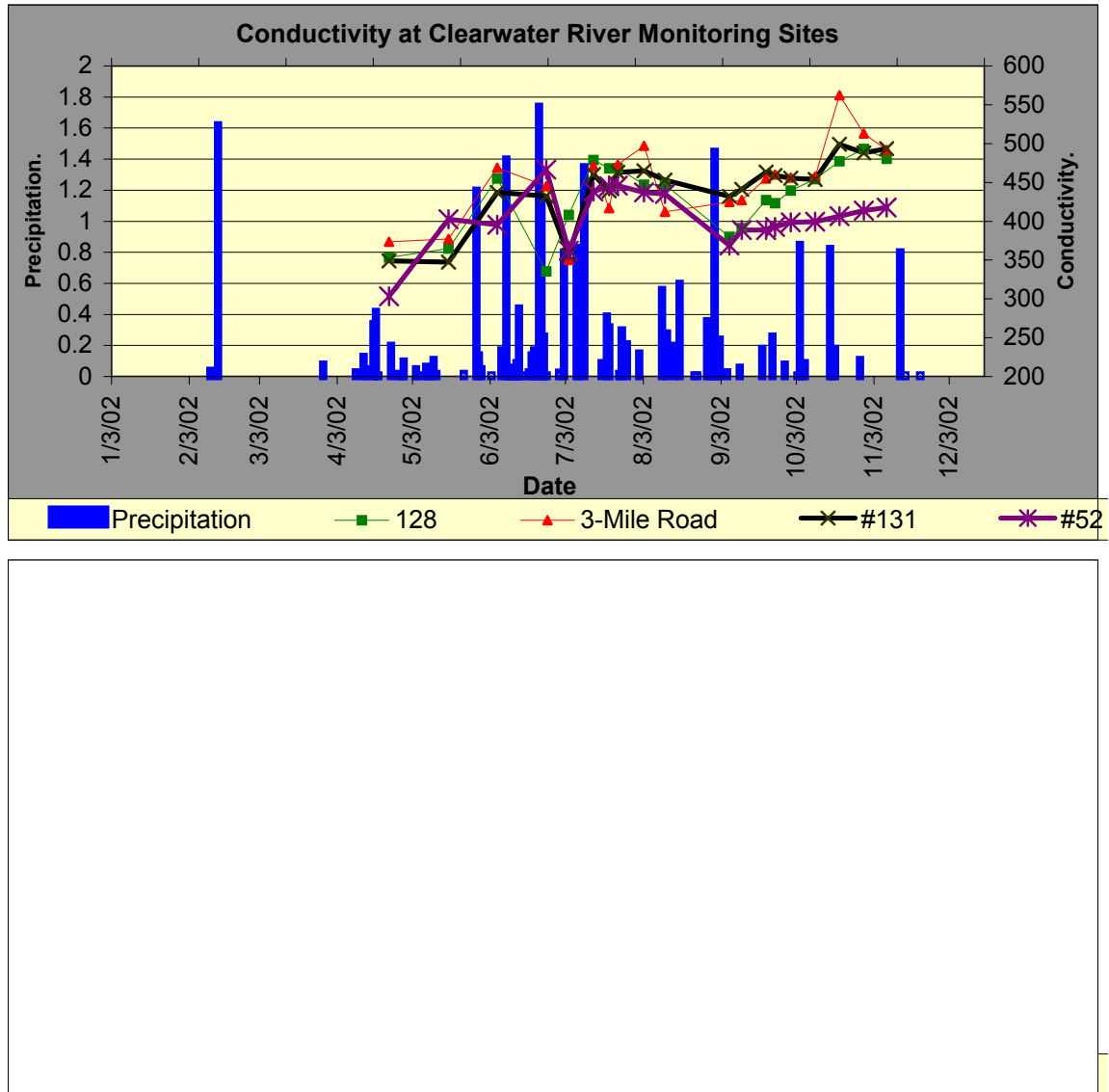
## Ammonia



# Chemical Oxygen Demand

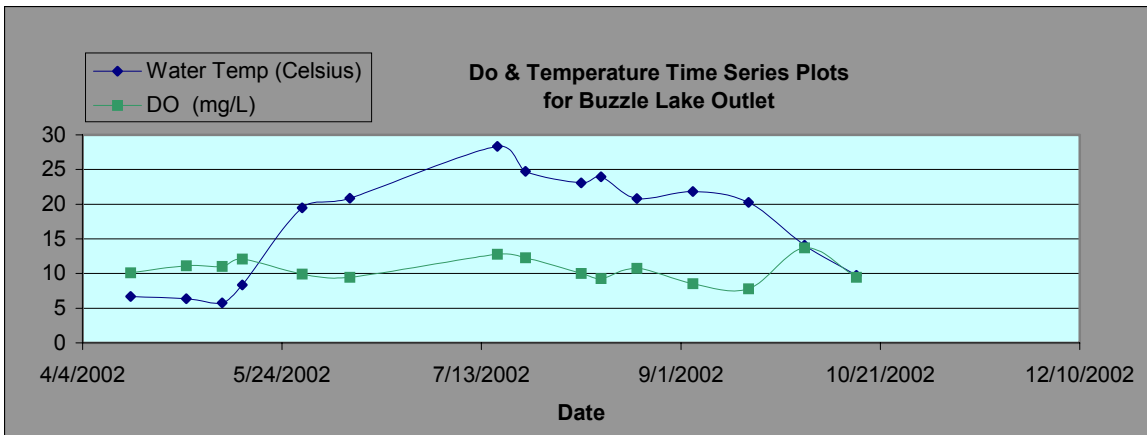
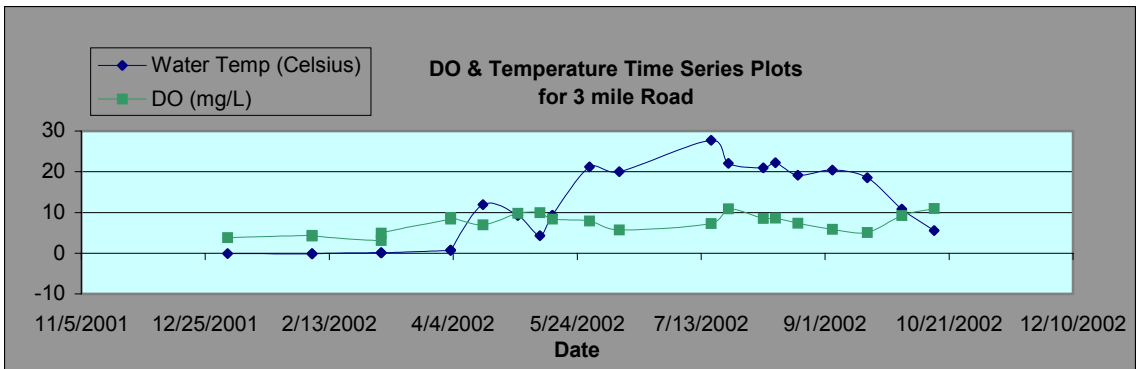
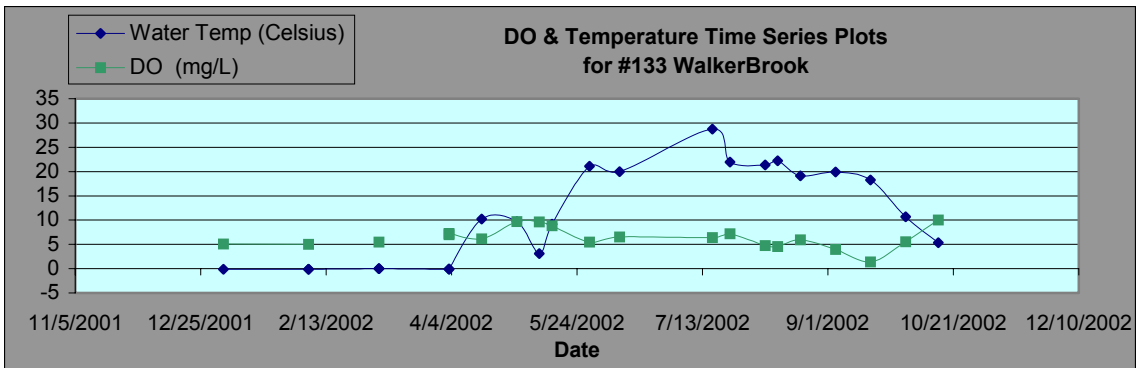
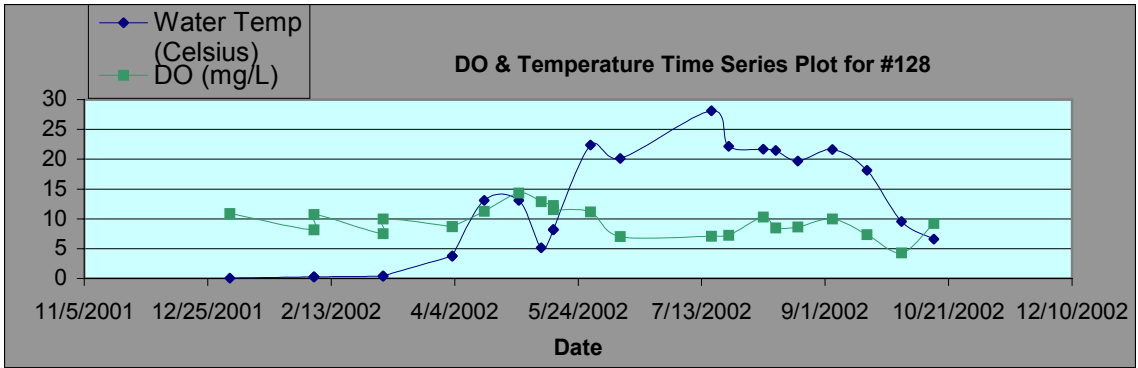


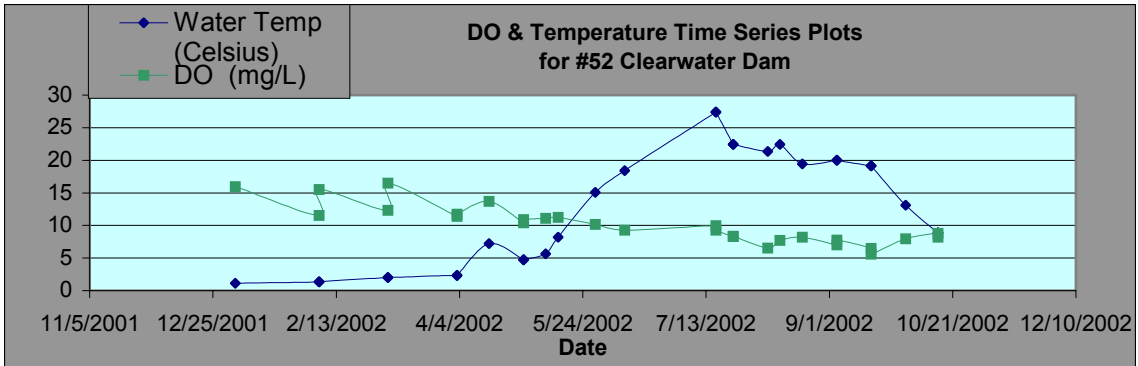
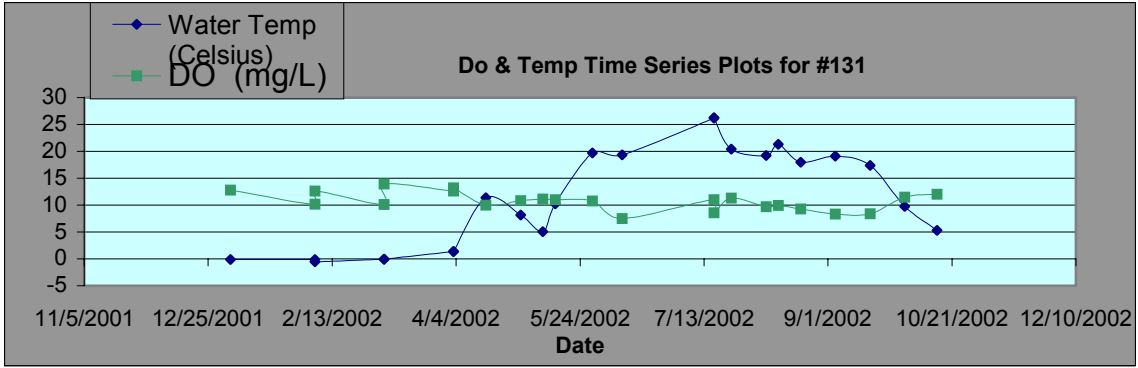
## Conductivity



Page Break

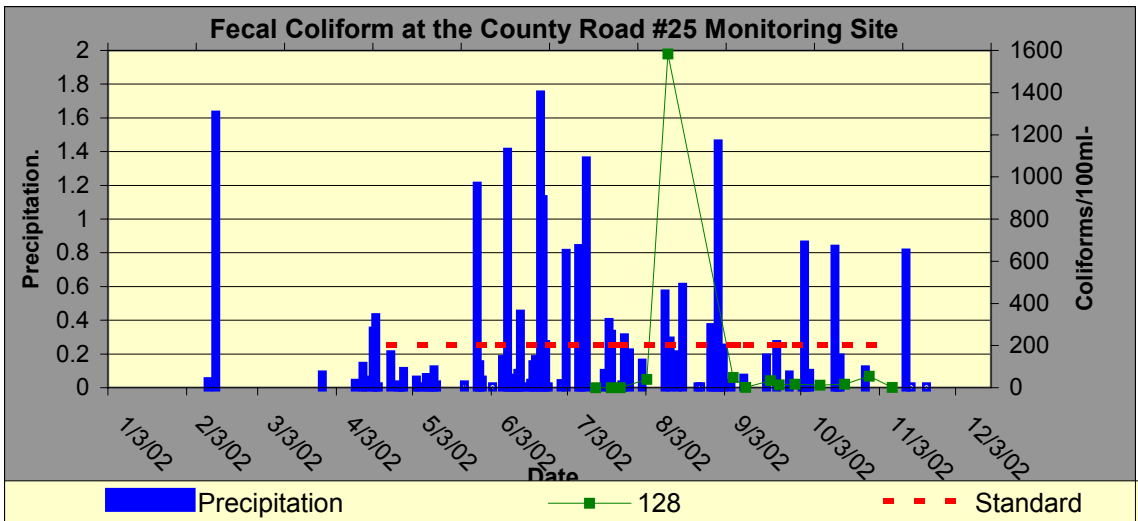
## Dissolved Oxygen and Temperature

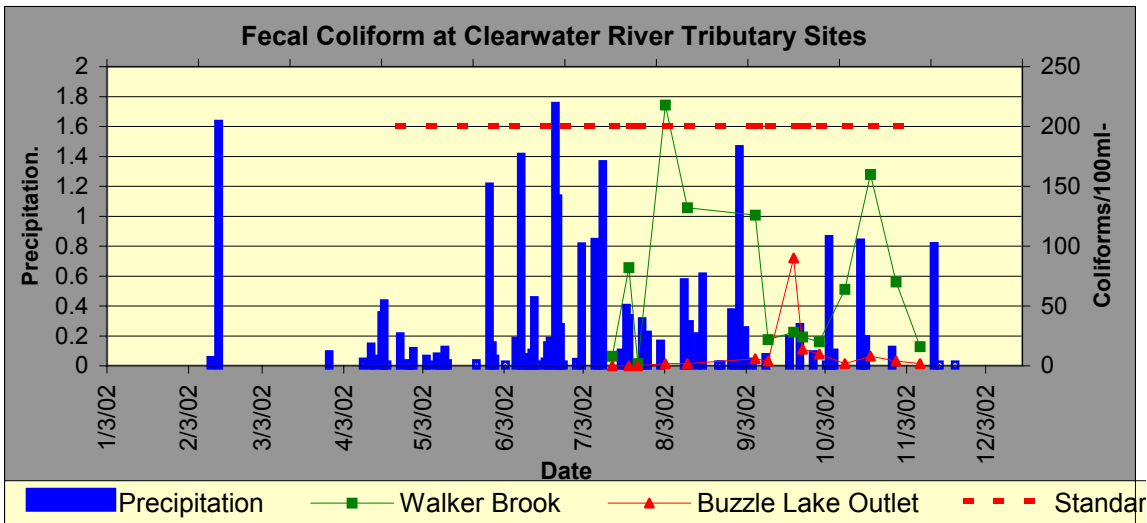
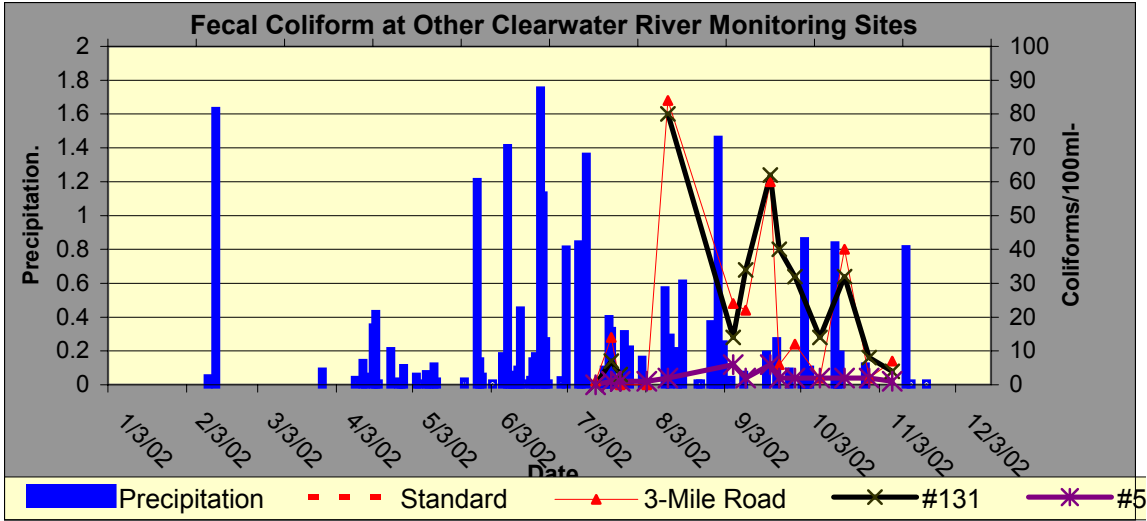




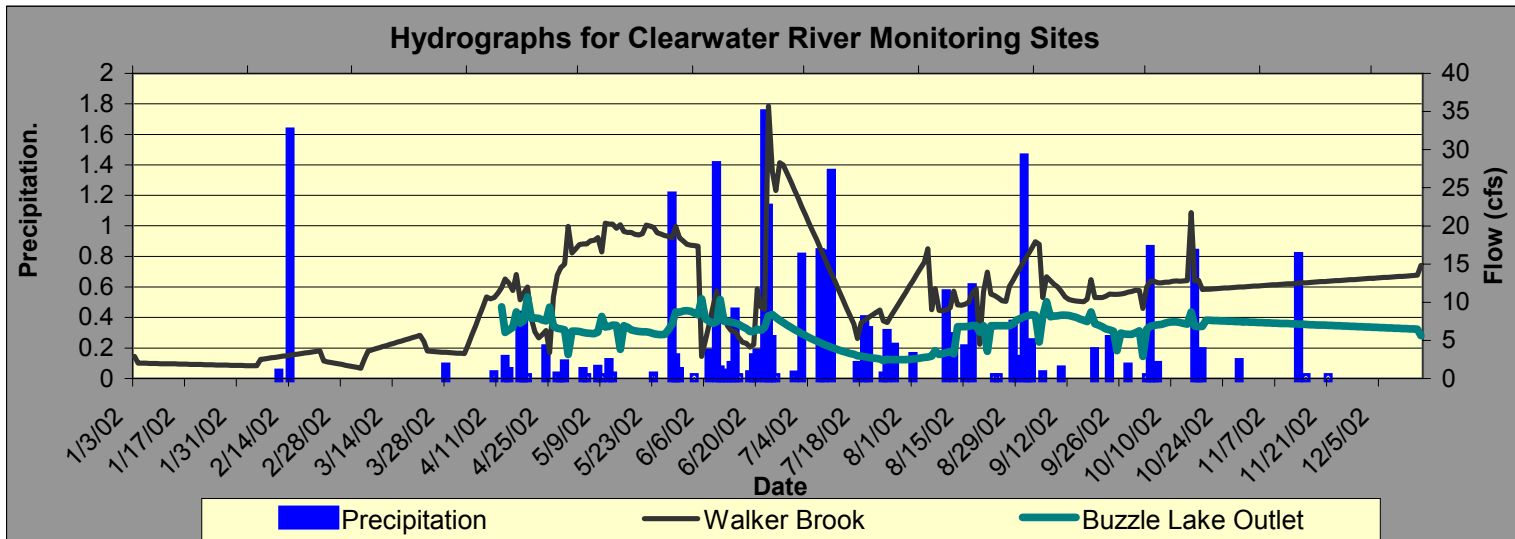
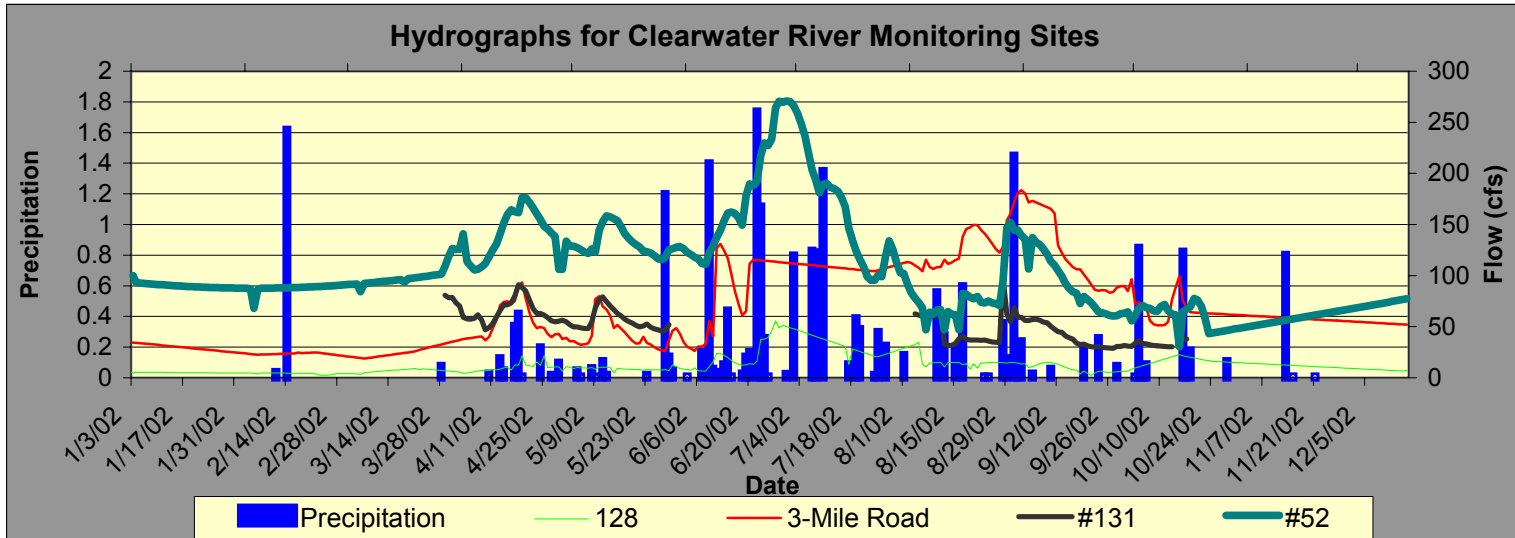
Page Break

### Fecal Coliform



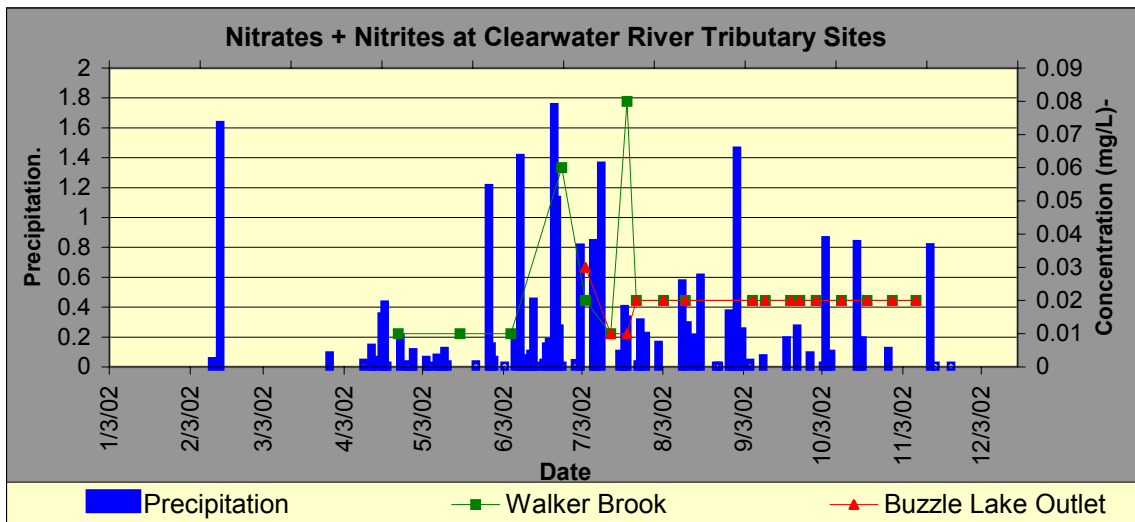
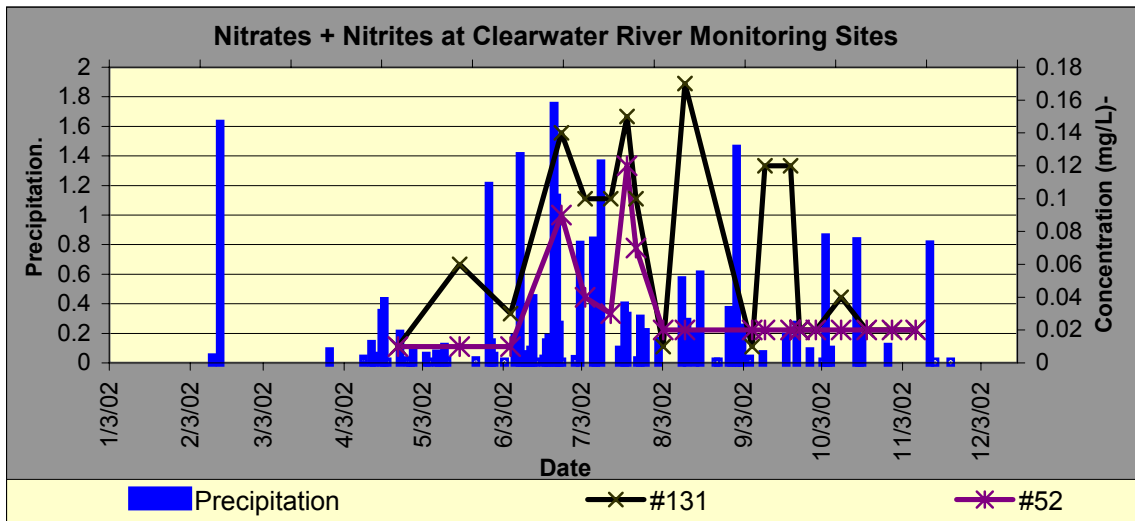
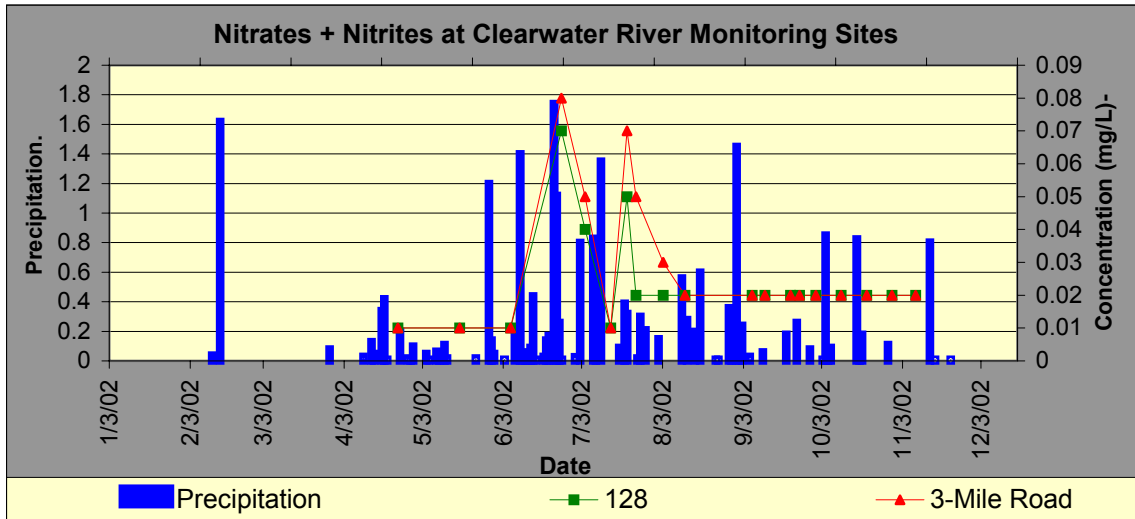


## Hydrographs



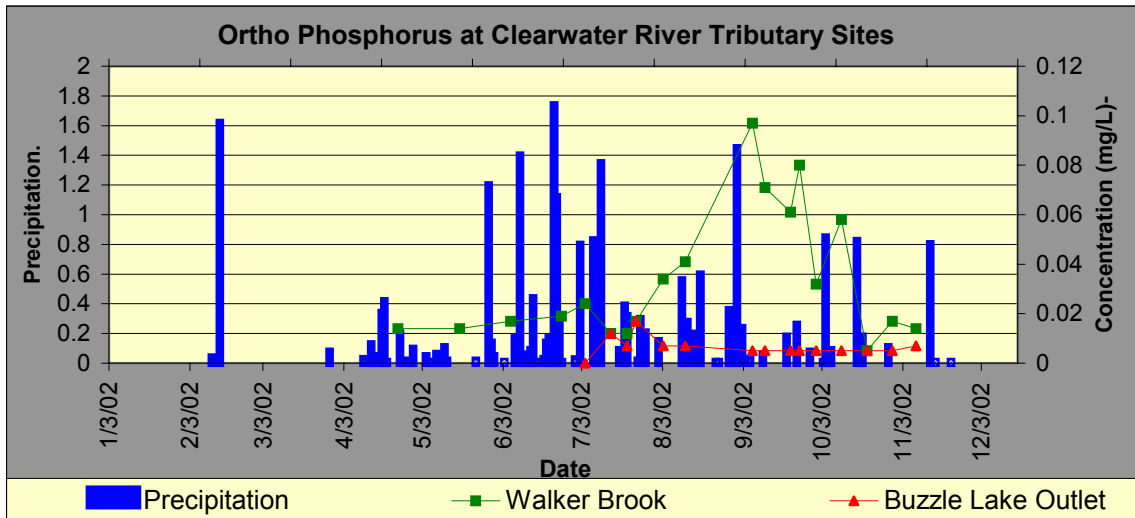
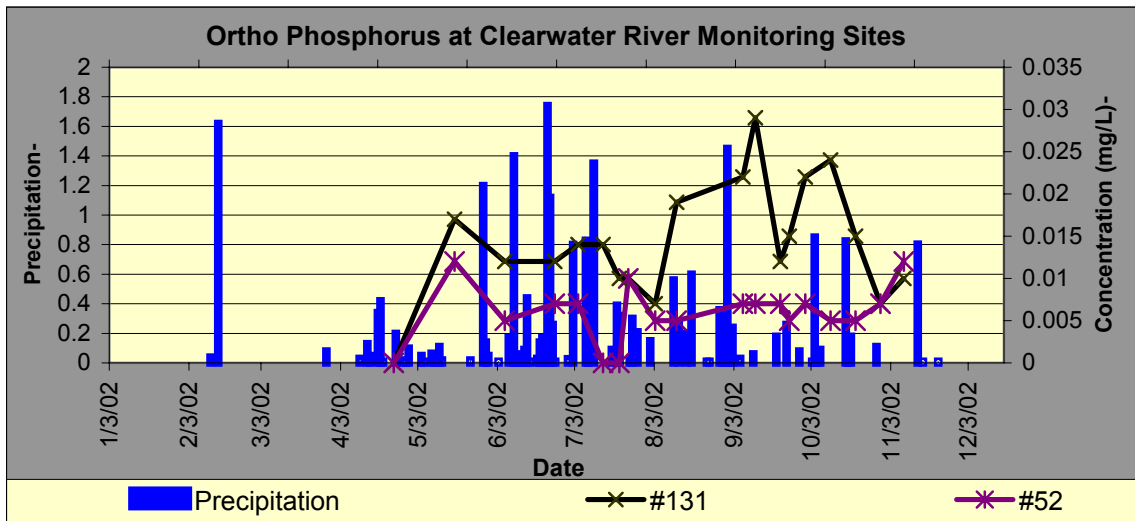
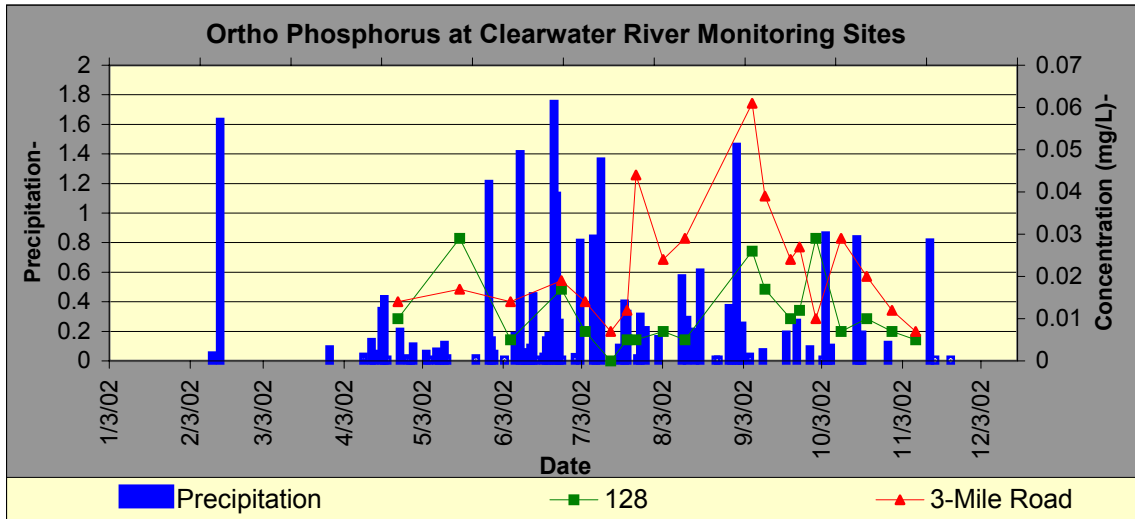
Section Break (Next Page)

## Nitrates and Nitrites

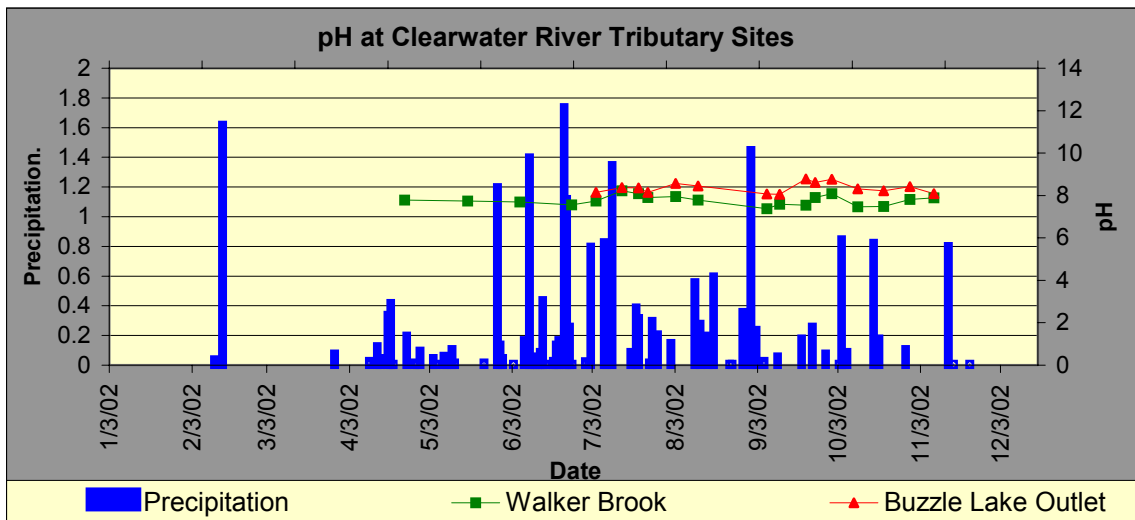
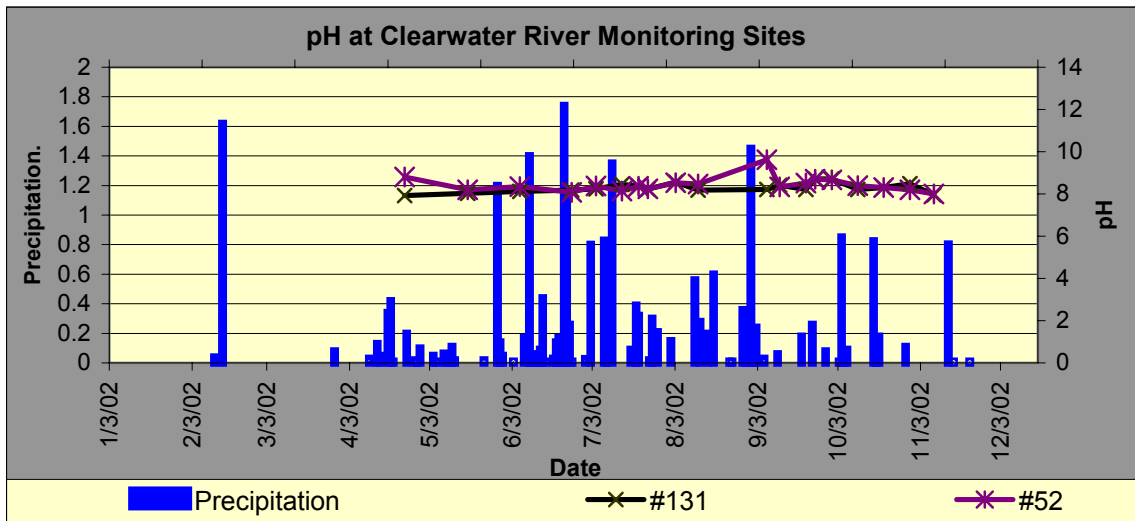
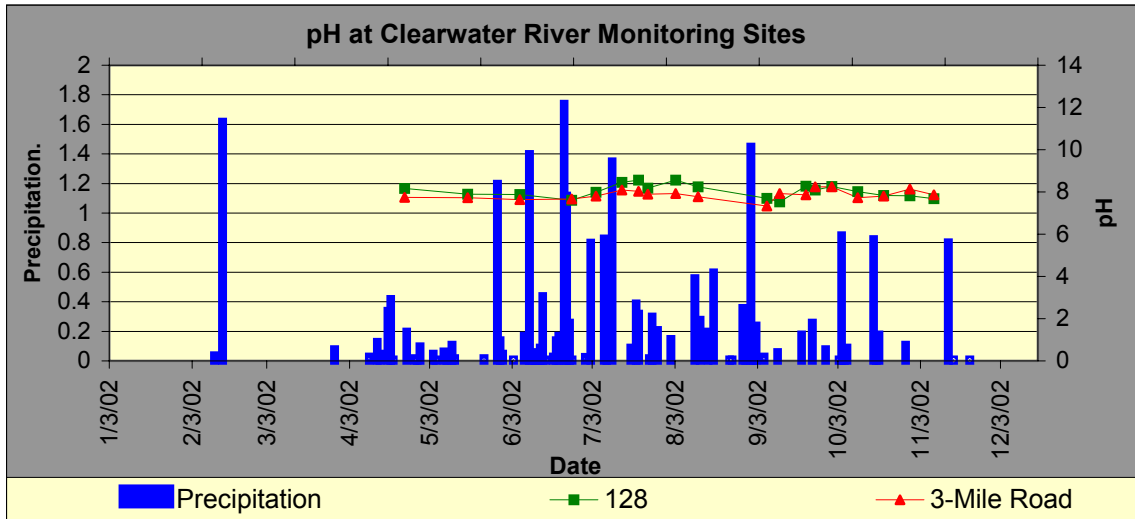




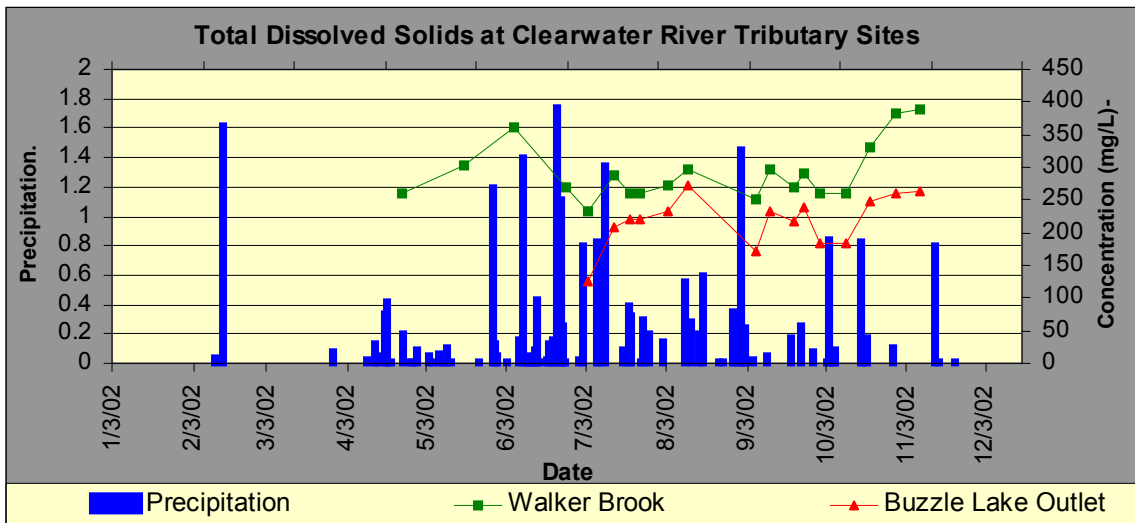
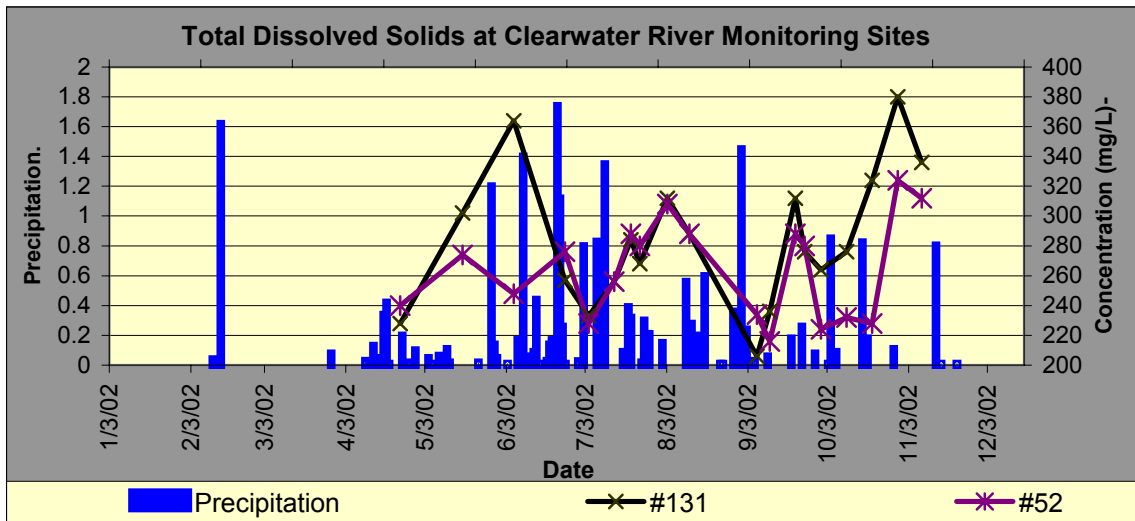
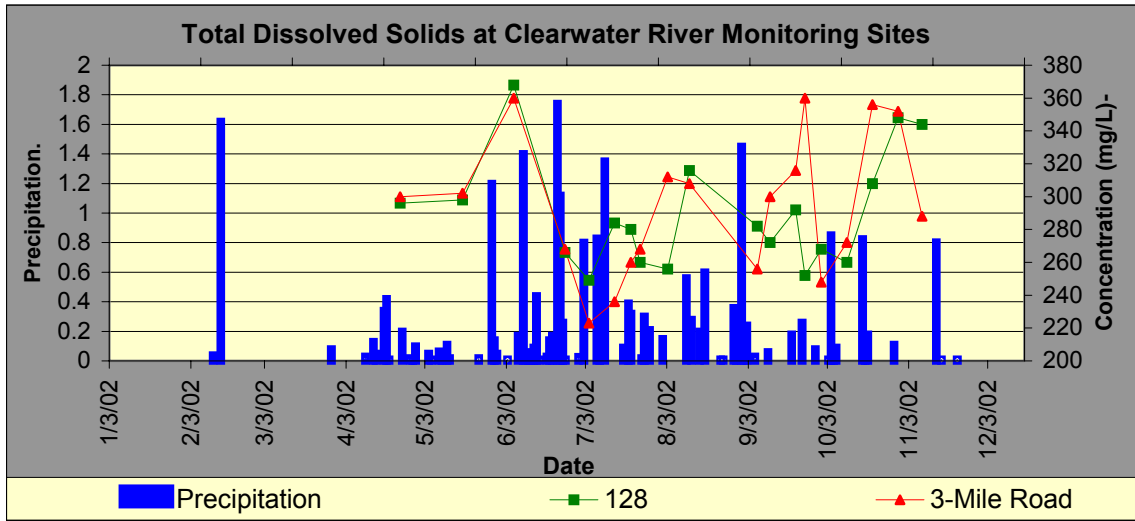
# Ortho Phosphorus



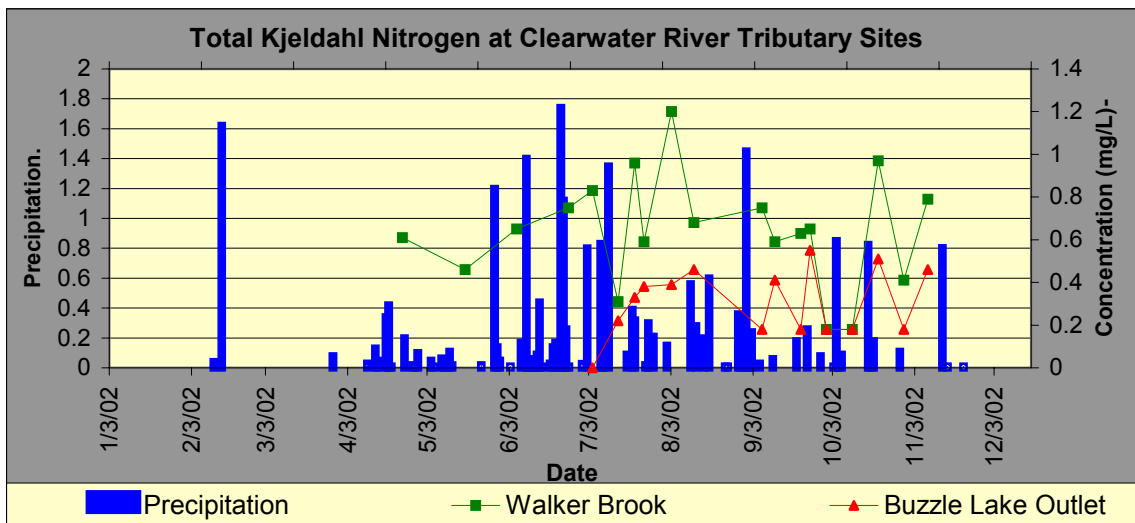
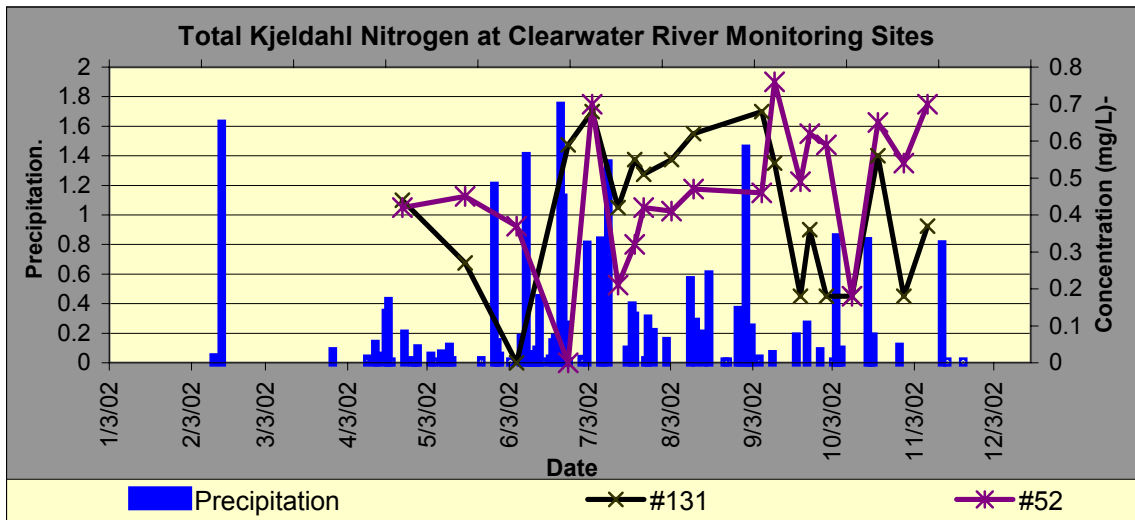
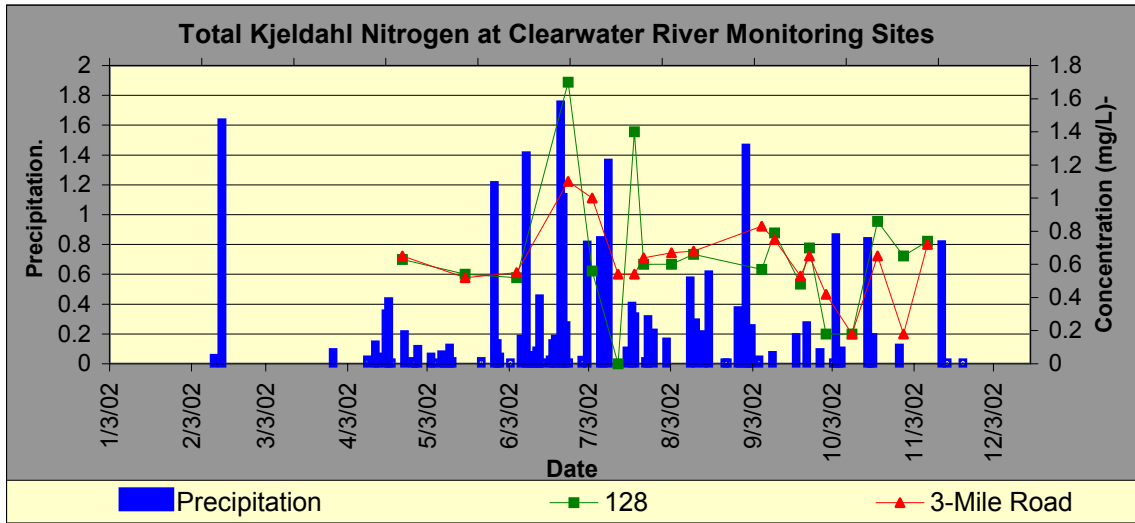
# pH



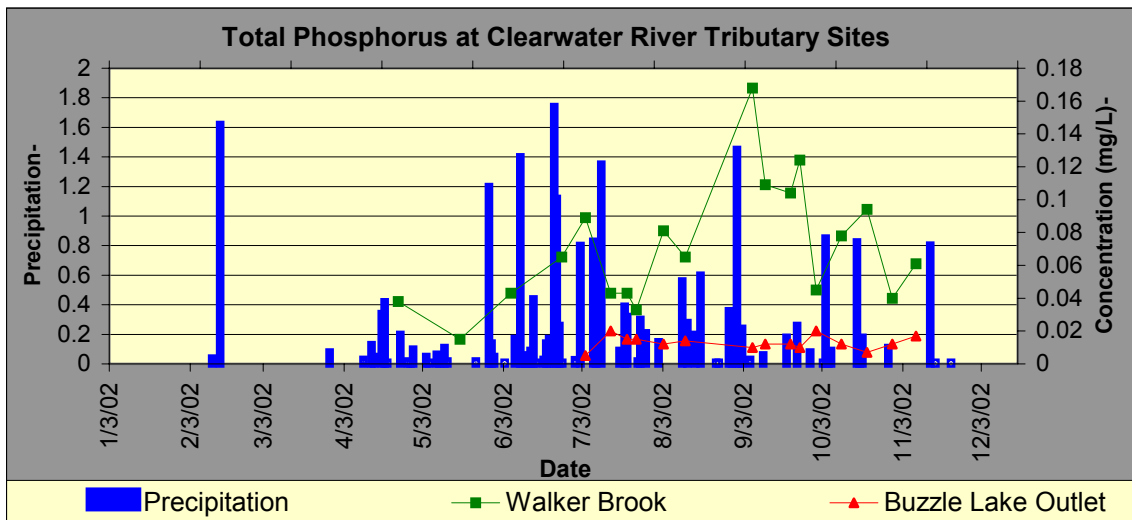
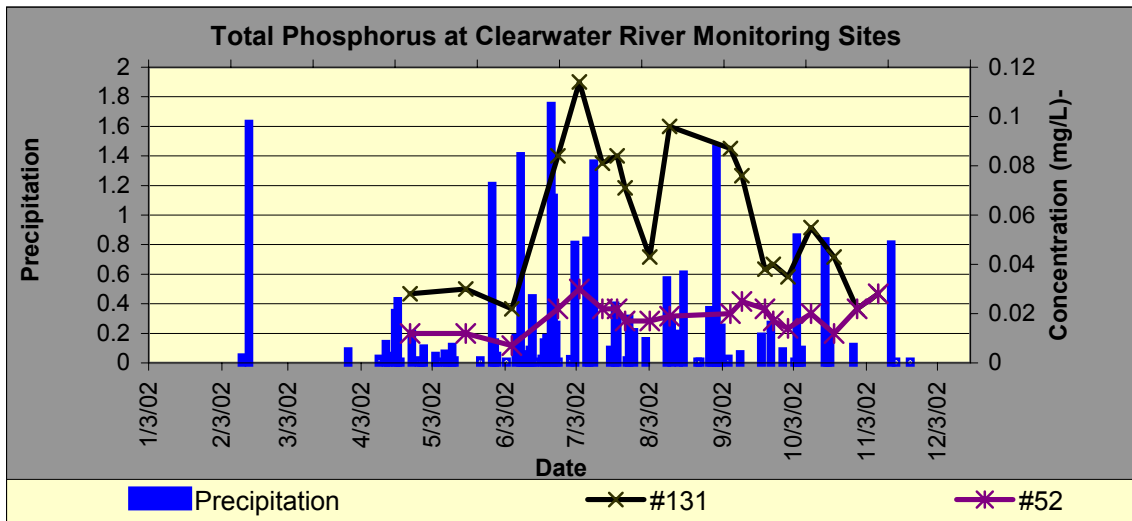
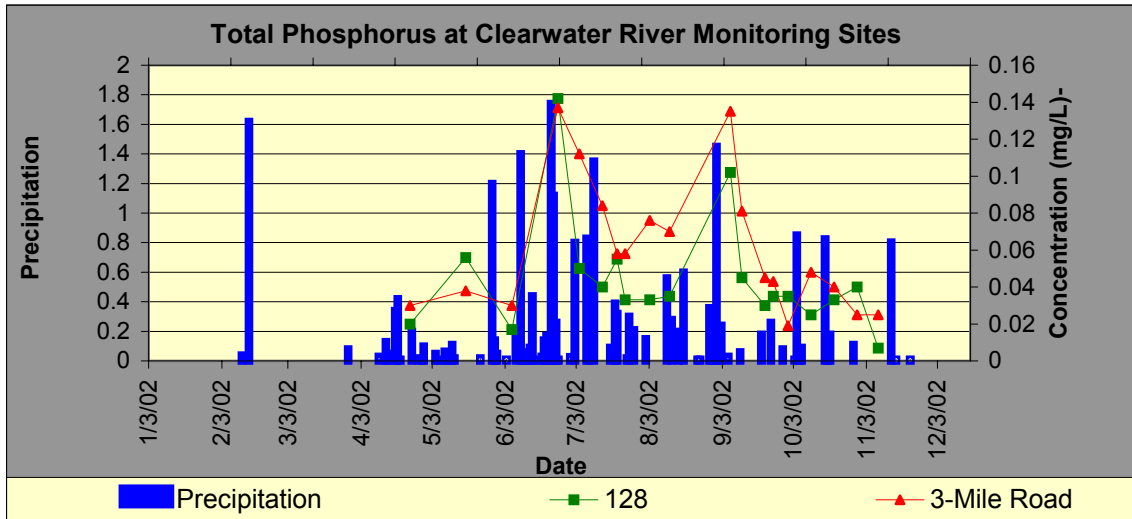
# Total Dissolved Solids



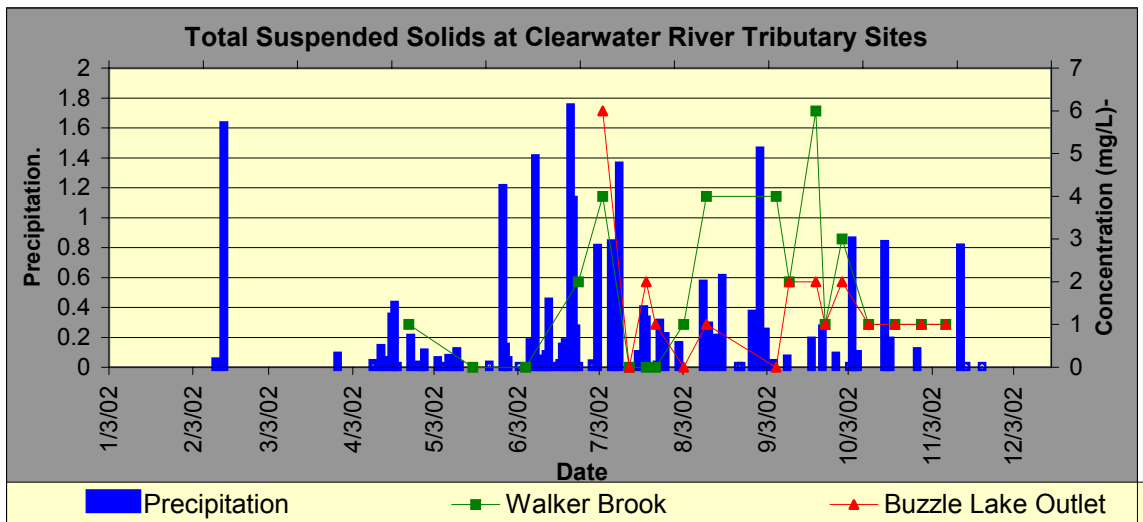
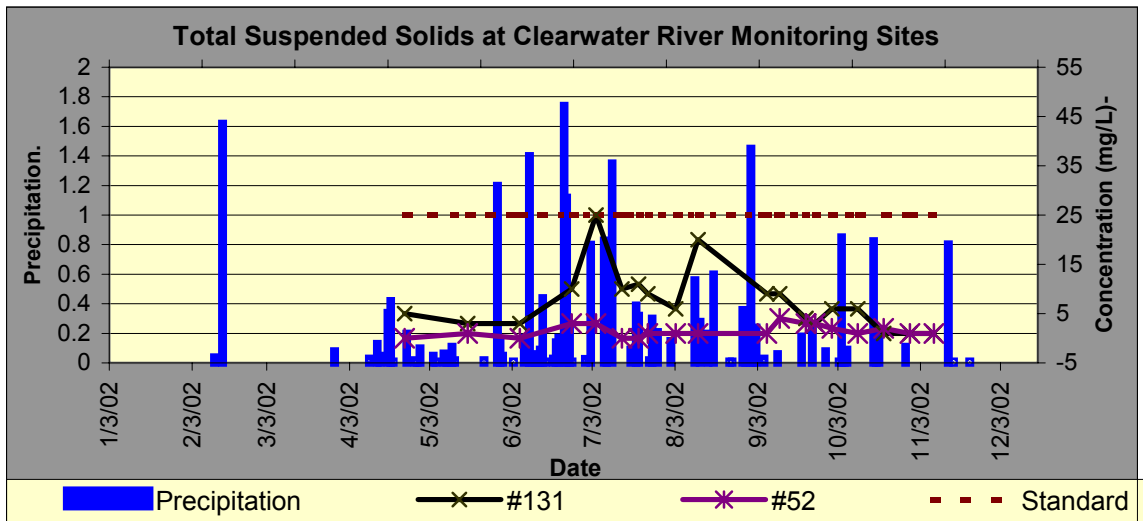
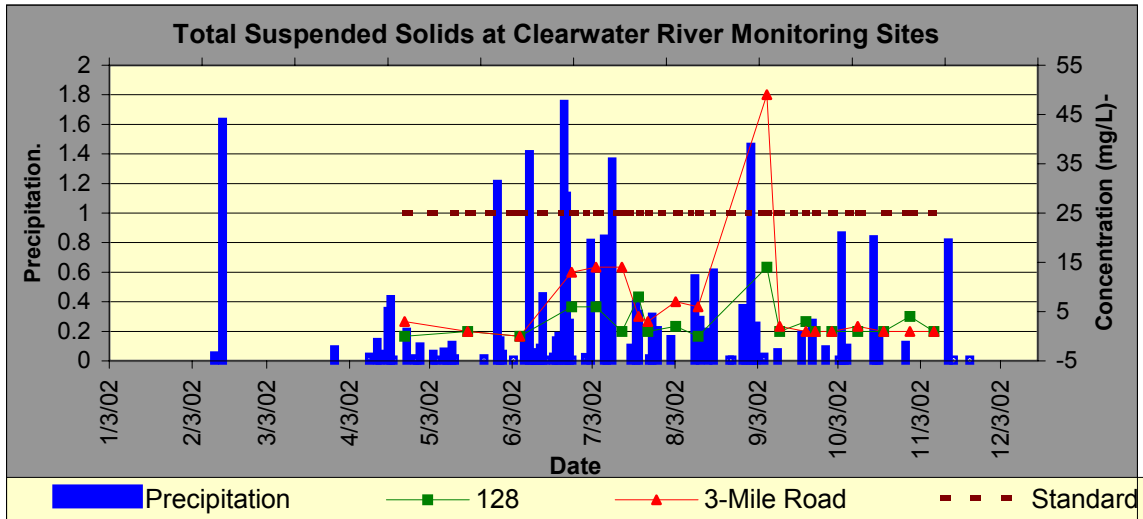
# Total Kjeldahl Nitrogen



# Total Phosphorus



# Total Suspended Solids





## Appendix D. Stream Water Quality Monitoring Data

### Site # 128 - Clearwater River at County Road #25

| <u>Date</u> | <u>TSS</u> | <u>TDS</u> | <u>NH3</u><br>(mg/L) | <u>TKN</u> | <u>COD</u><br>(mg/L) | <u>Fecals</u> | <u>Ortho Phos</u><br>(mg/L) | <u>Org Phos</u><br>(mg/L) | <u>Total Phos</u><br>(mg/L) | <u>NO2 + NO3</u><br>(mg/L) | <u>Cond</u><br>Avg | <u>pH</u><br>Avg | <u>H2O Temp</u><br>Avg | <u>DO</u><br>Avg |
|-------------|------------|------------|----------------------|------------|----------------------|---------------|-----------------------------|---------------------------|-----------------------------|----------------------------|--------------------|------------------|------------------------|------------------|
| 01/03/02    | 0          | 296        | 0.18                 | 0.63       | 19.4                 |               | 0.01                        | 0.01                      | 0.02                        | 0                          | 353.2              | 8.16             | 0.056                  | 10.91            |
| 02/06/02    | 1          | 298        | 0.26                 | 0.54       | 24.6                 |               | 0.029                       | 0.027                     | 0.056                       | 0                          | 365                | 7.895            | 0.28                   | 7.895            |
| 03/06/02    | 0          | 368        | 0.16                 | 0.52       | 17.8                 |               | 0.005                       | 0.012                     | 0.017                       | 0                          | 455                | 7.88             | 0.385                  | 7.88             |
| 04/03/02    | 6          | 266        | 0.3                  | 1.7        | 35.4                 |               | 0.017                       | 0.125                     | 0.142                       | 0.07                       | 335.5              | 7.6              | 3.76                   | 8.68             |
| 04/16/02    | 6          | 249        | 0.09                 | 0.56       | 16.4                 |               | 0.007                       | 0.043                     | 0.05                        | 0.04                       | 408                | 7.98             | 13.08                  | 11.25            |
| 04/30/02    | 1          | 284        | 0.05                 | 0          | 11.9                 | 0             | BDL                         | 0.04                      | 0.04                        | 0                          | 479                | 8.46             | 13.08                  | 14.31            |
| 05/09/02    | 8          | 280        | 0.08                 | 1.4        | 20                   | 0             | 0.005                       | 0.05                      | 0.055                       | 0.05                       | 468                | 8.56             | 5.17                   | 12.87            |
| 05/14/02    | 1          | 260        | 0.06                 | 0.60       | 16.1                 | 0             | 0.005                       | 0.028                     | 0.033                       | 0.02                       | 468.5              | 8.18             | 11.78                  | 8.18             |
| 05/29/02    | 2          | 256        | 0.24                 | 0.60       | 21.5                 | 40            | 0.007                       | 0.026                     | 0.033                       | 0.02                       | 447                | 8.56             | 22.39                  | 11.17            |
| 06/10/02    | 0          | 316        | 0.14                 | 0.66       | 15.8                 | 1584          | 0.005                       | 0.03                      | 0.035                       | 0.02                       | 447                | 8.24             | 20.14                  | 7.01             |
| 07/17/02    | 14         | 282        | 0.04                 | 0.57       | 21.3                 | 48            | 0.026                       | 0.076                     | 0.102                       | 0.02                       | 380                | 7.69             | 28.14                  | 7.1              |
| 07/24/02    | 1          | 272        | 0.06                 | 0.79       | 28.2                 | 2             | 0.017                       | 0.062                     | 0.045                       | 0.02                       | 391.2              | 7.53             | 22.17                  | 7.27             |
| 08/07/02    | 3          | 292        | 0.12                 | 0.48       | 61.7                 | 34            | 0.010                       | 0.020                     | 0.030                       | 0.02                       | 427.4              | 8.28             | 21.68                  | 10.31            |
| 08/12/02    | 1          | 252        | 0.09                 | 0.70       | 29.5                 | 14            | 0.012                       | 0.023                     | 0.035                       | 0.02                       | 423.3              | 8.09             | 21.45                  | 8.47             |
| 08/21/02    | 1          | 268        | 0.04                 | 0.18       | 21.3                 | 16            | 0.029                       | 0.006                     | 0.035                       | 0.02                       | 439.7              | 8.26             | 19.68                  | 8.64             |
| 09/04/02    | 1          | 260        | 0.04                 | 0.18       | 20.7                 | 12            | 0.007                       | 0.019                     | 0.025                       | 0.02                       | 454.2              | 8.01             | 21.65                  | 9.99             |
| 09/18/02    | 1          | 308        | 0.09                 | 0.86       | 19.4                 | 16            | 0.010                       | 0.023                     | 0.033                       | 0.02                       | 477.1              | 7.84             | 18.15                  | 7.34             |
| 10/02/02    | 4          | 348        | 0.14                 | 0.65       | 9.92                 | 54            | 0.007                       | 0.033                     | 0.040                       | 0.02                       | 493.1              | 7.82             | 9.56                   | 4.3              |
| 10/15/02    | 1          | 344        | 0.15                 | 0.74       | 23.9                 | 2             | 0.005                       | 0.007                     | 0.007                       | 0.02                       | 480.4              | 7.68             | 6.58                   | 9.24             |



Site #133 - Walker Brook at Count Road 19

| <u>Date</u> | <u>TSS</u> | <u>TDS</u> | <u>NH3</u> | <u>TKN</u> | <u>COD</u><br><u>(mg/L)</u> | <u>Fecals</u> | <u>Ortho Phos</u><br><u>(mg/L)</u> | <u>Org Phos</u><br><u>(mg/L)</u> | <u>Total Phos</u><br><u>(mg/L)</u> | <u>NO2 + NO3</u><br><u>(mg/L)</u> | <u>Cond</u><br><u>Avg</u> | <u>pH</u><br><u>Avg</u> | <u>H2O Temp</u><br><u>Avg</u> | <u>DO</u><br><u>Avg</u> |
|-------------|------------|------------|------------|------------|-----------------------------|---------------|------------------------------------|----------------------------------|------------------------------------|-----------------------------------|---------------------------|-------------------------|-------------------------------|-------------------------|
| 01/03/02    | 1          | 260        | 0.14       | 0.61       | 23                          |               | 0.014                              | 0.024                            | 0.038                              | 0                                 | 350                       | 7.78                    | -0.11                         | 5.1                     |
| 02/06/02    | 0          | 304        | 0.22       | 0.46       | 21.7                        |               | 0.014                              | 0.001                            | 0.015                              | 0                                 | 354                       | 7.75                    | -0.11                         | 5                       |
| 03/06/02    | 0          | 360        | 0.22       | 0.65       | 19.4                        |               | 0.017                              | 0.026                            | 0.043                              | 0                                 | 439                       | 7.7                     | -0.12                         | 5.5                     |
| 04/03/02    | 2          | 270        | 0.18       | 0.75       | 32.2                        |               | 0.019                              | 0.046                            | 0.065                              | 0.06                              | 451                       | 7.56                    | -0.1                          | 7.135                   |
| 04/16/02    | 4          | 232        | 0.1        | 0.83       | 23.9                        |               | 0.024                              | 0.065                            | 0.089                              | 0.02                              | 360                       | 7.74                    | 10.25                         | 6.14                    |
| 04/30/02    | 0          | 288        | 0.05       | 0.31       | 23.9                        | 8             | 0.012                              | 0.031                            | 0.043                              | 0                                 | 457                       | 8.22                    | 9.72                          | 9.67                    |
| 05/09/02    | 0          | 260        | 0.2        | 0.96       | 24.2                        | 82            | 0.012                              | 0.031                            | 0.043                              | 0.08                              | 0                         | 8.09                    | 3.1                           | 9.64                    |
| 05/14/02    | 0          | 260        | 0          | 0.59       | 20.3                        | 2             | 0.017                              | 0.016                            | 0.033                              | 0.02                              | 435                       | 7.9                     | 9.2                           | 8.83                    |
| 05/29/02    | 1          | 272        | 0.10       | 1.2        | 19.7                        | 218           | 0.034                              | 0.047                            | 0.081                              | 0.02                              | 484                       | 7.95                    | 21.08                         | 5.48                    |
| 06/10/02    | 4          | 296        | 0.21       | 0.68       | 23.3                        | 132           | 0.041                              | 0.024                            | 0.065                              | 0.02                              | 439                       | 7.78                    | 19.97                         | 6.51                    |
| 07/17/02    | 4          | 252        | 0.11       | 0.75       | 22.6                        | 126           | 0.097                              | 0.071                            | 0.168                              | 0.02                              | 412                       | 7.37                    | 28.75                         | 6.43                    |
| 07/24/02    | 2          | 296        | 0.06       | 0.59       | 29.8                        | 22            | 0.071                              | 0.038                            | 0.109                              | 0.02                              | 462                       | 7.59                    | 21.98                         | 7.21                    |
| 08/07/02    | 6          | 268        | 0.13       | 0.63       | 25.9                        | 28            | 0.061                              | 0.043                            | 0.104                              | 0.02                              | 457                       | 7.54                    | 21.37                         | 4.76                    |
| 08/12/02    | 1          | 292        | 0.14       | 0.65       | 28.8                        | 24            | 0.080                              | 0.044                            | 0.124                              | 0.02                              | 450                       | 7.91                    | 22.23                         | 4.57                    |
| 08/21/02    | 3          | 260        | 0.04       | 0.18       | 29.8                        | 20            | 0.032                              | 0.013                            | 0.045                              | 0.02                              | 453                       | 8.08                    | 19.15                         | 5.93                    |
| 09/04/02    | 1          | 260        | 0.04       | 0.18       | 23.6                        | 64            | 0.058                              | 0.020                            | 0.078                              | 0.02                              | 418                       | 7.47                    | 19.91                         | 3.97                    |
| 09/18/02    | 1          | 332        | 0.07       | 0.97       | 22.9                        | 160           | 0.005                              | 0.089                            | 0.094                              | 0.02                              | 506                       | 7.48                    | 18.25                         | 1.37                    |
| 10/02/02    | 1          | 384        | 0.07       | 0.41       | 12.2                        | 70            | 0.017                              | 0.023                            | 0.040                              | 0.02                              | 538                       | 7.82                    | 10.69                         | 5.56                    |
| 10/15/02    | 1          | 388        | 0.04       | 0.79       | 17.7                        | 16            | 0.014                              | 0.047                            | 0.061                              | 0.02                              | 544                       | 7.89                    | 5.34                          | 10.01                   |

### 3-Mile Road Summary of Parameters

| <u>Date</u> | <u>H2O Temp</u> | <u>pH</u>  | <u>Cond</u> | <u>DO</u>  | <u>NO2 + NO3</u> | <u>Ortho Phos</u> | <u>Org Phos</u> | <u>Total Phos</u> | <u>Fecals</u> | <u>COD</u>    | <u>TKN</u> | <u>NH3</u>    | <u>TSS</u> | <u>TDS</u> |
|-------------|-----------------|------------|-------------|------------|------------------|-------------------|-----------------|-------------------|---------------|---------------|------------|---------------|------------|------------|
|             | <u>Avg</u>      | <u>Avg</u> | <u>Avg</u>  | <u>Avg</u> |                  | <u>(mg/L)</u>     | <u>(mg/L)</u>   | <u>(mg/L)</u>     |               | <u>(mg/L)</u> |            | <u>(mg/L)</u> |            |            |
| 01/03/02    | -0.11           | 7.75       | 373.7       | 3.8        | 0                | 0.014             | 0.016           | 0.03              |               | 18.1          | 0.65       | 0.17          | 3          | 300        |
| 02/06/02    | -0.11           | 7.73       | 377         | 4.3        | 0                | 0.017             | 0.021           | 0.038             |               | 20            | 0.52       | 0.25          | 1          | 302        |
| 03/06/02    | -0.167          | 7.635      | 468.9       | 4.01       | 0                | 0.014             | 0.016           | 0.03              |               | 15.1          | 0.55       | 0.17          | 0          | 360        |
| 04/03/02    | 0.74            | 7.66       | 445.15      | 8.56       | 0.08             | 0.019             | 0.118           | 0.137             |               | 35.4          | 1.1        | 0.24          | 13         | 268        |
| 04/16/02    | 11.89           | 7.8        | 350         | 7          | 0.05             | 0.014             | 0.098           | 0.112             |               | 28.1          | 1          | 0.09          | 14         | 223        |
| 04/30/02    | 9.23            | 8.09       | 471         | 9.77       | 0                | 0.007             | 0.077           | 0.084             | 1             | 23.9          | 0.54       | 0.05          | 14         | 236        |
| 05/09/02    | 4.28            | 8.03       | 417         | 10         | 0.07             | 0.012             | 0.046           | 0.058             | 14            | 24.2          | 0.54       | 0.13          | 4          | 260        |
| 05/14/02    | 9.33            | 7.89       | 473         | 8.4        | 0.05             | 0.044             | 0.014           | 0.058             | 0             | 19.0          | 0.64       | 0             | 3          | 268        |
| 05/29/02    | 21.21           | 7.93       | 497         | 7.93       | 0.03             | 0.024             | 0.052           | 0.076             | 0             | 20.7          | 0.67       | 0.10          | 7          | 312        |
| 06/10/02    | 20.05           | 7.78       | 412         | 5.7        | 0.02             | 0.029             | 0.041           | 0.070             | 84            | 16.8          | 0.68       | 0.05          | 6          | 308        |
| 07/17/02    | 27.75           | 7.34       | 425         | 7.32       | 0.02             | 0.061             | 0.074           | 0.135             | 24            | 20.0          | 0.83       | 0.1           | 49         | 256        |
| 07/24/02    | 22.03           | 7.92       | 427.2       | 10.94      | 0.02             | 0.039             | 0.042           | 0.081             | 22            | 28.2          | 0.75       | 0.07          | 2          | 300        |
| 08/07/02    | 20.95           | 7.86       | 455.1       | 8.54       | 0.02             | 0.024             | 0.021           | 0.045             | 60            | 31.4          | 0.53       | 0.09          | 1          | 316        |
| 08/12/02    | 22.24           | 8.25       | 460.1       | 8.61       | 0.02             | 0.027             | 0.016           | 0.043             | 6             | 23.9          | 0.65       | 0.07          | 1          | 360        |
| 08/21/02    | 19.12           | 8.24       | 456.2       | 7.4        | 0.02             | 0.010             | 0.009           | 0.019             | 12            | 21            | 0.42       | 0.07          | 1          | 248        |
| 09/04/02    | 20.45           | 7.73       | 457.3       | 5.84       | 0.02             | 0.029             | 0.019           | 0.048             | 2             | 22.3          | 0.18       | 0.06          | 2          | 272        |
| 09/18/02    | 18.52           | 7.8        | 562.4       | 5.09       | 0.02             | 0.020             | 0.020           | 0.040             | 40            | 14.2          | 0.65       | 0.11          | 1          | 356        |
| 10/02/02    | 10.79           | 8.14       | 512.9       | 9.29       | 0.02             | 0.012             | 0.013           | 0.025             | 2             | 11.5          | 0.18       | 0.06          | 1          | 352        |
| 10/15/02    | 5.54            | 7.87       | 491.9       | 10.97      | 0.02             | 0.007             | 0.018           | 0.025             | 7             | 10.9          | 0.72       | 0.04          | 1          | 288        |

**Buzzle Lake Summary of Parameters**

| <u>Date</u> | <u>TSS</u> | <u>TDS</u> | <u>NH3</u><br><u>(mg/L)</u> | <u>TKN</u> | <u>COD</u><br><u>(mg/L)</u> | <u>Fecals</u> | <u>Ortho Phos</u><br><u>(mg/L)</u> | <u>Org Phos</u><br><u>(mg/L)</u> | <u>Total Phos</u><br><u>(mg/L)</u> | <u>NO2 + NO3</u><br><u>(mg/L)</u> | <u>Cond</u> | <u>pH</u> | <u>H2O Temp</u> | <u>DO</u> |
|-------------|------------|------------|-----------------------------|------------|-----------------------------|---------------|------------------------------------|----------------------------------|------------------------------------|-----------------------------------|-------------|-----------|-----------------|-----------|
| 04/16/02    | 6          | 124        | 0.04                        | 0          | 11.2                        |               | 0                                  | 0.005                            | 0.005                              | 0.03                              | 178         | 8.14      | 6.7             | 10.09     |
| 04/30/02    | 0          | 208        | 0.03                        | 0.22       | 16.1                        | 0             | 0.012                              | 0.008                            | 0.02                               | 0                                 | 374         | 8.38      | 6.38            | 11.11     |
| 05/09/02    | 2          | 220        | 0.05                        | 0.33       | 17.1                        | 0             | 0.007                              | 0.008                            | 0.015                              | 0                                 | 372         | 8.36      | 5.76            | 11.03     |
| 05/14/02    | 1          | 220        | 0.04                        | 0.38       | 8.29                        | 0             | 0.017                              | 0.008                            | 0.015                              | 0.02                              | 376         | 8.15      | 8.36            | 12.1      |
| 05/29/02    | 0          | 232        | 0.18                        | 0.39       | 12.5                        | 2             | 0.007                              | 0.005                            | 0.012                              | 0.02                              | 373.1       | 8.57      | 19.46           | 9.91      |
| 06/10/02    | 1          | 272        | 0.05                        | 0.46       | 11.2                        | 2             | 0.007                              | 0.007                            | 0.014                              | 0.02                              | 370         | 8.45      | 20.84           | 9.44      |
| 07/17/02    | 0          | 170        | 0.19                        | 0.18       | 5.0                         | 6             | 0.005                              | 0.005                            | 0.010                              | 0.02                              | 319         | 8.07      | 28.36           | 12.77     |
| 07/24/02    | 2          | 232        | 0.1                         | 0.41       | 12.2                        | 4             | 0.005                              | 0.007                            | 0.012                              | 0.02                              | 150         | 8.05      | 24.75           | 12.26     |
| 08/07/02    | 2          | 216        | 0.07                        | 0.18       | 14.8                        | 90            | 0.005                              | 0.007                            | 0.012                              | 0.02                              | 324.4       | 8.78      | 23.06           | 10.01     |
| 08/12/02    | 1          | 240        | 0.08                        | 0.55       | 14                          | 14            | 0.005                              | 0.005                            | 0.010                              | 0.02                              | 321         | 8.62      | 23.95           | 9.26      |
| 08/21/02    | 2          | 184        | 0.05                        | 0.18       | 13.8                        | 10            | 0.005                              | 0.015                            | 0.020                              | 0.02                              | 323.8       | 8.76      | 20.83           | 10.77     |
| 09/04/02    | 1          | 184        | 0.04                        | 0.18       | 24.2                        | 2             | 0.005                              | 0.007                            | 0.012                              | 0.02                              | 332.5       | 8.32      | 21.81           | 8.55      |
| 09/18/02    | 1          | 248        | 0.15                        | 0.51       | 9.92                        | 8             | 0.005                              | 0.002                            | 0.007                              | 0.02                              | 333.1       | 8.22      | 20.26           | 7.82      |
| 10/02/02    | 1          | 260        | 0.07                        | 0.18       | 9.27                        | 4             | 0.005                              | 0.007                            | 0.012                              | 0.02                              | 335.9       | 8.42      | 14.07           | 13.72     |
| 10/15/02    | 1          | 264        | 0.05                        | 0.46       | 9.92                        | 2             | 0.007                              | 0.010                            | 0.017                              | 0.02                              | 338.6       | 8.09      | 9.74            | 9.48      |

**Site #131 - Clearwater Lake Inlet Site at County Road #24**

| <u>Date</u> | <u>TSS</u> | <u>TDS</u> | <u>NH3</u><br><u>(mg/L)</u> | <u>TKN</u><br><u>(mg/L)</u> | <u>COD</u><br><u>(mg/L)</u> | <u>Fecals</u> | <u>Ortho Phos</u><br><u>(mg/L)</u> | <u>Org Phos</u><br><u>(mg/L)</u> | <u>TP</u><br><u>(mg/L)</u> | <u>NO2+NO3</u><br><u>(mg/L)</u> | <u>Cond</u><br><u>Avg</u> | <u>pH</u><br><u>Avg</u> | <u>H2O Temp</u><br><u>Avg</u> | <u>DO</u><br><u>Avg</u> |
|-------------|------------|------------|-----------------------------|-----------------------------|-----------------------------|---------------|------------------------------------|----------------------------------|----------------------------|---------------------------------|---------------------------|-------------------------|-------------------------------|-------------------------|
| 01/03/02    | 5          | 228        | 0.2                         | 0.44                        | 19.1                        |               | 0                                  |                                  | 0.028                      | 0                               | 349                       | 7.93                    | -0.11                         | 12.81                   |
| 02/06/02    | 3          | 302        | 0.24                        | 0.27                        | 17.1                        |               | 0.017                              | 0.013                            | 0.03                       | 0.06                            | 347.5                     | 8.03                    | -0.56                         | 11.38                   |
| 03/06/02    | 3          | 364        | 0.09                        | 0                           | 15.5                        |               | 0.012                              | 0.01                             | 0.022                      | 0.03                            | 437.15                    | 8.13                    | -0.111                        | 12                      |
| 04/03/02    | 10         | 257        | 0.13                        | 0.59                        | 24.6                        |               | 0.012                              | 0.072                            | 0.084                      | 0.14                            | 432.5                     | 8.18                    | 1.375                         | 13.12                   |
| 04/16/02    | 25         | 233        | 0.04                        | 0.68                        | 28.5                        |               | 0.014                              | 0.1                              | 0.114                      | 0.1                             | 356                       | 8.25                    | 11.34                         | 10.01                   |
| 04/30/02    | 10         | 256        | 0.07                        | 0.42                        | 21.6                        | 0             | 0.014                              | 0.067                            | 0.081                      | 0.1                             | 460                       | 8.45                    | 8.16                          | 10.81                   |
| 05/09/02    | 11         | 284        | 0.05                        | 0.55                        | 21.3                        | 7             | 0.01                               | 0.074                            | 0.084                      | 0.15                            | 439                       | 8.36                    | 5.08                          | 11.12                   |
| 05/14/02    | 9          | 268        | 0                           | 0.51                        | 19.7                        | 3             | 0.010                              | 0.061                            | 0.071                      | 0.10                            | 462.8                     | 8.22                    | 10.22                         | 11.02                   |
| 05/29/02    | 6          | 312        | 0.10                        | 0.55                        | 14.5                        |               | 0.007                              | 0.036                            | 0.043                      | 0                               | 465                       | 8.56                    | 19.72                         | 10.76                   |
| 06/10/02    | 20         | 288        | 0.06                        | 0.62                        | 18.7                        | 80            | 0.019                              | 0.077                            | 0.096                      | 0.17                            | 453                       | 8.18                    | 19.32                         | 7.51                    |
| 07/17/02    | 9          | 206        | 0.03                        | 0.68                        | 30.4                        | 14            | 0.022                              | 0.065                            | 0.087                      | 0                               | 432                       | 8.2                     | 23.225                        | 9.8                     |
| 07/24/02    | 9          | 236        | 0.14                        | 0.54                        | 14.2                        | 34            | 0.029                              | 0.047                            | 0.076                      | 0.12                            | 441                       | 8.41                    | 20.4                          | 11.3                    |
| 08/07/02    | 4          | 312        | 0.10                        | 0.18                        | 14.8                        | 62            | 0.012                              | 0.026                            | 0.038                      | 0.12                            | 463.2                     | 8.21                    | 19.22                         | 9.71                    |
| 08/12/02    | 3          | 276        | 0.11                        | 0.36                        | 17.1                        | 40            | 0.015                              | 0.025                            | 0.040                      | 0.02                            | 459.1                     | 8.71                    | 21.29                         | 9.97                    |
| 08/21/02    | 6          | 264        | 0.13                        | 0.18                        | 14.8                        | 32            | 0.022                              | 0.013                            | 0.035                      | 0.02                            | 455.3                     | 8.71                    | 18                            | 9.26                    |
| 09/04/02    | 6          | 276        | 0.04                        | 0.18                        | 13.2                        | 14            | 0.024                              | 0.031                            | 0.055                      | 0.04                            | 453.7                     | 8.21                    | 19.08                         | 8.34                    |
| 09/18/02    | 1          | 324        | 0.23                        | 0.56                        | 13.5                        | 32            | 0.015                              | 0.028                            | 0.043                      | 0.02                            | 499.3                     | 8.31                    | 17.38                         | 8.37                    |
| 10/02/02    | 1          | 380        | 0.10                        | 0.18                        | 6.66                        | 8             | 0.007                              | 0.015                            | 0.022                      | 0.02                            | 487.9                     | 8.48                    | 9.77                          | 11.5                    |
| 10/15/02    | 1          | 336        | 0.06                        | 0.37                        | 5.68                        | 4             | 0.01                               | 0.018                            | 0.028                      | 0.02                            | 493.7                     | 7.96                    | 5.31                          | 12.01                   |

**Clearwater Lake Outlet Summary of Parameters**

| <u>Date</u> | <u>H2O Temp</u> | <u>pH</u>  | <u>Cond</u> | <u>DO</u>  | <u>NO2 + NO3</u> | <u>Ortho Phos</u> | <u>Org Phos</u> | <u>Total Phos</u> | <u>Fecals</u> | <u>COD</u>    | <u>TKN</u> | <u>NH3</u>    | <u>TSS</u> | <u>TDS</u> |
|-------------|-----------------|------------|-------------|------------|------------------|-------------------|-----------------|-------------------|---------------|---------------|------------|---------------|------------|------------|
|             | <u>Avg</u>      | <u>Avg</u> | <u>Avg</u>  | <u>Avg</u> | <u>(mg/L)</u>    | <u>(mg/L)</u>     | <u>(mg/L)</u>   | <u>(mg/L)</u>     |               | <u>(mg/L)</u> |            | <u>(mg/L)</u> |            |            |
| 01/03/02    | 1.11            | 8.8        | 303.4       | 15.95      | 0                | 0                 | 0.012           | 0.012             |               | 19.7          | 0.42       | 0.08          | 0          | 240        |
| 02/06/02    | 1.31            | 8.2        | 402.5       | 13.525     | 0                | 0.012             | 0               | 0.012             |               | 22.3          | 0.45       | 0.11          | 1          | 274        |
| 03/06/02    | 2.01            | 8.345      | 395.5       | 14.4       | 0                | 0.005             | 0.002           | 0.007             |               | 20            | 0.37       | 0.04          | 0          | 248        |
| 04/03/02    | 2.33            | 8.07       | 466.5       | 11.565     | 0.09             | 0.007             | 0.015           | 0.022             |               | 21.4          | 0          | 0.12          | 3          | 276        |
| 04/16/02    | 7.22            | 8.38       | 362         | 13.68      | 0.04             | 0.007             | 0.023           | 0.03              |               | 20.7          | 0.7        | 0.07          | 3          | 228        |
| 04/30/02    | 4.72            | 8.135      | 438.45      | 10.675     | 0.03             | 0                 | 0.022           | 0.022             | 0             | 14.5          | 0.21       | 0.16          | 0          | 256        |
| 05/09/02    | 5.65            | 8.37       | 445         | 11.1       | 0.12             | 0                 | 0.022           | 0.022             | 1             | 17.4          | 0.32       | 0.05          | 0          | 288        |
| 05/14/02    | 8.2             | 8.24       | 446         | 11.25      | 0.07             | 0.010             | 0.007           | 0.017             | 1             | 11.5          | 0.42       | 0.22          | 1          | 280        |
| 05/29/02    | 15.06           | 8.53       | 437         | 10.17      | 0.02             | 0.005             | 0.012           | 0.017             | 1             | 13.5          | 0.41       | 0.05          | 1          | 308        |
| 06/10/02    | 18.4            | 8.47       | 435         | 9.28       | 0.02             | 0.005             | 0.014           | 0.019             | 2             | 7.97          | 0.47       | 0.13          | 1          | 288        |
| 07/17/02    | 27.41           | 9.615      | 369         | 9.615      | 0.02             | 0.007             | 0.013           | 0.02              | 6             | 17.7          | 0.46       | 0.20          | 1          | 234        |
| 07/24/02    | 22.43           | 8.33       | 388.6       | 8.33       | 0.02             | 0.007             | 0.018           | 0.025             | 2             | 14            | 0.76       | 0.05          | 4          | 216        |
| 08/07/02    | 21.34           | 8.52       | 388.8       | 6.51       | 0.02             | 0.007             | 0.015           | 0.022             | 6             | 22            | 0.49       | 0.17          | 3          | 288        |
| 08/12/02    | 22.44           | 8.7        | 392.8       | 7.73       | 0.02             | 0.005             | 0.012           | 0.017             | 2             | 20.7          | 0.62       | 0.2           | 3          | 280        |
| 08/21/02    | 19.42           | 8.66       | 398.5       | 8.2        | 0.02             | 0.007             | 0.007           | 0.014             | 2             | 23.3          | 0.59       | 0.17          | 2          | 224        |
| 09/04/02    | 20              | 8.395      | 399.5       | 7.375      | 0.02             | 0.005             | 0.015           | 0.020             | 2             | 16.1          | 0.18       | 0.08          | 1          | 232        |
| 09/18/02    | 19.135          | 8.305      | 406.5       | 6.095      | 0.02             | 0.005             | 0.007           | 0.012             | 2             | 16.8          | 0.65       | 0.13          | 2          | 228        |
| 10/02/02    | 13.09           | 8.2        | 413.7       | 7.97       | 0.02             | 0.007             | 0.015           | 0.022             | 2             | 13.2          | 0.54       | 0.08          | 1          | 324        |
| 10/15/02    | 8.87            | 7.995      | 417.6       | 8.5        | 0.02             | 0.012             | 0.016           | 0.028             | 1             | 13.5          | 0.70       | 0.11          | 1          | 312        |

## References

Clearwater Soil and Water Conservation District, Beltrami Soil and Water Conservation District, Hubbard Soil and Water Conservation district, and the Headwaters Regional Development Commission. Developing and Implementing Strategies to Mitigate Urban Runoff to Surface Waters in Three Communities – City of Bagley Results. Clearwater County, Minnesota. 1995.

Clearwater Soil and Water Conservation District. Urban Runoff Reduction – City of Bagley & MNDOT.

Gerritsen, J, R. Carlson, D. Dycus, C. Faulkner, G. Gibson, J. Harcum, and S. Markowitz. *Lake and Reservoir Bioassessment and Biocriteria, Technical Guidance Document, Appendix A*. Office of Wetlands, Oceans, and Watersheds (4503F), Office of Science and Technology (4304), Office of Water, U.S. Environmental Protection Agency. Washington, DC. <http://www.epa.gov/owow/monitoring/tech/appdixa.html>. Last updated on Tuesday, September 9th, 2003.

Hach, Inc. Water Analysis Handbook, DR/3 and DREL/5 Procedures. 1987

Hanson, C.L., R. Odenbach. *Standard Operating Procedures for Water Quality Monitoring in the Red River Watershed, Revision 6*. Red Lake Watershed District, October 24, 2003

Karypis, D., S. Hanson, C. Matthews, B. Oleson, G. Orning, B. Paakh, C. Schlichting, D. Steward,. *Sustainable Lakes Planning Workbook: A Lake Management Model, Version 1.0*. Minnesota Lakes Association in cooperation with the University of Minnesota Center for Urban and Regional Affairs.

Magner, Joe. “Lake-Ground Water Interactions”. Understanding Your Water Quality Data Workshop. Crookston, Minnesota. April 3-4, 1991.

Melchoir, Robert. Personal communication regarding his geological research on Walker Brook for the TMDLs on the Clearwater River project. 2002-2004.

Minnesota Department of Health. *Fish Consumption Guidelines for the General Population*. <http://www.health.state.mn.us/divs/eh/fish/eating/lakegenpop.pdf>. Updated December 12, 2003.

Minnesota Department of Natural Resources, Section of Fisheries. Lake Survey Report for Clearwater Lake. December 13<sup>th</sup>, 2002.

Minnesota Department of Natural Resources, Surface Water Section. Clearwater River Time of Travel Study. April 1991.

Minnesota Pollution Control Agency. *MPCA Guidance Manual for Assessing the Quality of Minnesota Surface Waters For Determination of Impairment 305(b) Report and 303(d) List*, 2004

Mississippi Headwaters Board, Rivers Council of Minnesota. *River Monitors Manual*. Walker, MN. November 1997.

North, Rebecca. *Oxygen in Freshwater Systems*. University of Waterloo.

Odenbach, Ryan. *Clearwater Lake Water Quality Model Project: Red Lake Watershed District Project #46J Sampling and Analysis Plan*. Red Lake Watershed District, 2001.

Red Lake Watershed District and HDR Engineering. *Clearwater River Nonpoint Study*. June 6, 1994.

Schwab, G., D.D. Fangmeier, W.J. Elliot. *Soil and Water Management Systems*. New York: John Wiley & Sons, 1996.

SUNY College of Environmental Science and Forestry. *Soil pH: What it Means*. <http://www.esf.edu/pubprog/brochure/soilph/soilph.htm>

Walker, William W. *Simplified Procedures for Eutrophication Assessment and Prediction: User Manual*. Washington, DC: U.S. Army Corps of Engineers, September 1996 (Updated April 1999).

*Water on the Web, Glossary*. Co-developers Deb Anderson, Rich Axler, Ken Cawley, Alan Groeger, Cindy Hagley, Nordica Holochuck, Jane Horlings, George Host, Rich Huber, George Kipphut, John Marks, Glenn Merrick, Nate Meyer, Bruce Munson, Barb Peichel, Claus Svendsen, Craig Tikkanen, and Jiyoung Yoon.  
<http://wow.nrri.umn.edu/wow/under/glossary.html>