

**Site Description**

|  |  |
|--|--|
| <b>Study Name</b>                            | CBWQ-Central Kootenay  |
| <b>Site</b>                                  | NGJOS03  |
| <b>Sampling Date</b>                         | Sep 15 2009  |
| <b>Know Your Watershed Basin</b>             | Central Kootenay   |
| <b>Province / Territory</b>                  | British Columbia   |
| <b>Terrestrial Ecological Classification</b> | Montane Cordillera EcoZone<br>Southern Rocky Mountain Trench EcoRegion |
| <b>Coordinates (decimal degrees)</b>         | 49.57722 N, 115.75861 W  |
| <b>Altitude</b>                              | 2739   |
| <b>Local Basin Name</b>                      | Joseph Creek   |
|  | St. Mary River   |
| <b>Stream Order</b>                          | 3  |



Figure 1. Location Map



Across Reach  
Aerial (No image found)



Down Stream  
 Field Sheet (No image found)  
 Miscellaneous (No image found)  
 Substrate (No image found)



Up Stream

**Cabin Assessment Results**

| <b>Reference Model Summary</b>                     |   |          |          |          |          |
|--|---|----------|----------|----------|----------|
| <b>Model</b>                                       | Columbia-Okanagan Preliminary March 2010                    |          |          |          |          |
| <b>Analysis Date</b>                               | July 29, 2013   |          |          |          |          |
| <b>Taxonomic Level</b>                             | Family  |          |          |          |          |
| <b>Predictive Model Variables</b>                  | Depth-Avg<br>Latitude<br>Longitude<br>Reg-Ice<br>SlopeLT30% |          |          |          |          |
| <b>Reference Groups</b>                            | <b>1</b>  | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> |
| <b>Number of Reference Sites</b>                   | 9   | 43       | 17       | 12       | 33       |
| <b>Group Error Rate</b>                            | 22.2%   | 24.5%    | 22.2%    | 25.0%    | 32.4%    |
| <b>Overall Model Error Rate</b>                    | 26.4%   |          |          |          |          |
| <b>Probability of Group Membership</b>             | 0.0%  | 45.2%    | 53.1%    | 1.6%     | 0.1%     |
| <b>CABIN Assessment of NGJOS03 on Sep 15, 2009</b> | Divergent   |          |          |          |          |

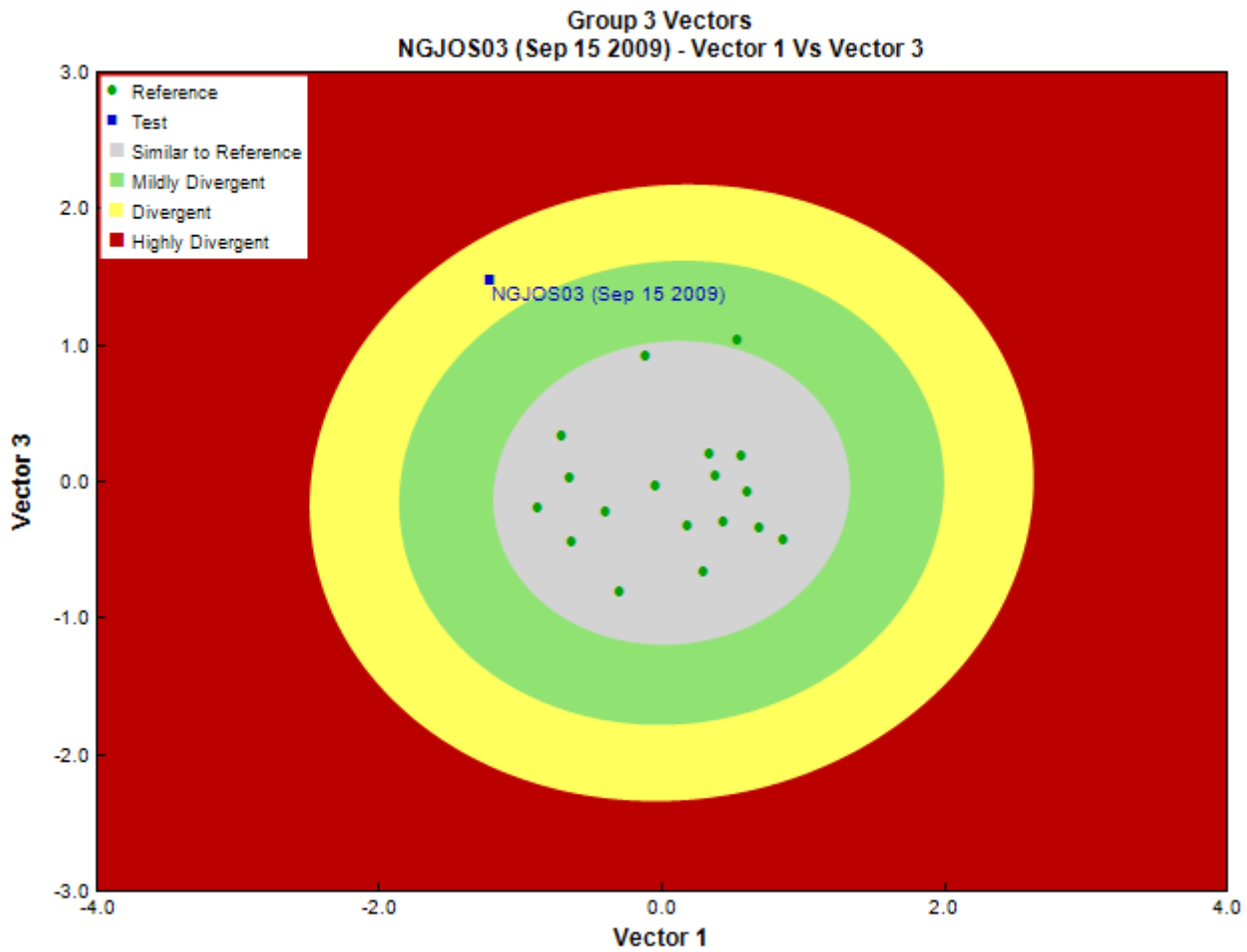


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

**Sample Information**

|                                |                           |
|--------------------------------|---------------------------|
| <b>Sampling Device</b>         | Kick Net                  |
| <b>Mesh Size</b>               | 400                       |
| <b>Sampling Time</b>           | 3                         |
| <b>Taxonomist</b>              | Eco Analsyts, EcoAnalysts |
| <b>Date Taxonomy Completed</b> | January 19, 2010          |
|                                | Marchant Box              |
| <b>Sub-Sample Proportion</b>   | 4/100                     |

**Community Structure**

| Phylum     | Class     | Order          | Family        | Raw Count        | Total Count |         |
|------------|-----------|----------------|---------------|------------------|-------------|---------|
| Arthropoda | Arachnida | Sarcoptiformes |               | 1                | 25.0        |         |
|            |           | Insecta        | Coleoptera    | Elmidae          | 72          | 1,800.0 |
|            |           |                | Diptera       | Chironomidae     | 31          | 775.0   |
|            |           |                |               | Empididae        | 1           | 25.0    |
|            |           |                | Ephemeroptera | Baetidae         | 14          | 350.0   |
|            |           |                |               | Ephemerellidae   | 59          | 1,475.0 |
|            |           |                | Megaloptera   | Sialidae         | 1           | 25.0    |
|            |           |                | Plecoptera    | Perlidae         | 11          | 275.0   |
|            |           |                |               | Perlodidae       | 1           | 25.0    |
|            |           |                | Trichoptera   | Brachycentridae  | 30          | 750.0   |
|            |           |                |               | Glossosomatidae  | 1           | 25.0    |
|            |           |                |               | Hydropsychidae   | 1           | 25.0    |
|            |           |                |               | Lepidostomatidae | 127         | 3,175.0 |
|            | Mollusca  | Malacostraca   | Amphipoda     | Gammaridae       | 3           | 75.0    |
| Gastropoda |           | Basommatophora | Physidae      | 1                | 25.0        |         |

## Community Structure

| Phylum | Class | Order | Family | Raw Count | Total Count |
|--------|-------|-------|--------|-----------|-------------|
|        |       |       | Total  | 354       | 8,850.0     |

## Metrics

| Name  | NGJOS03 | Predicted Group Reference Mean $\pm$ SD |
|---|---------|---|
| Bray-Curtis Distance                            | 0.86    | 0.4 $\pm$ 0.2                           |
| <b>Number Of Individuals</b>                    |         |   |
| % Chironomidae                                  | 8.8     | 8.2 $\pm$ 13.6                          |
| % Ephemeroptera                                 | 20.7    | 43.5 $\pm$ 15.9                         |
| % Ephemeroptera that are Baetidae               | 19.2    | 33.9 $\pm$ 27.7                         |
| % of 2 dominant taxa                            | 56.4    | 59.2 $\pm$ 10.0                         |
| % of dominant taxa                              | 36.0    | 39.7 $\pm$ 10.9                         |
| % Plecoptera                                    | 3.4     | 34.8 $\pm$ 17.8                         |
| % Tricoptera                                    | 45.0    | 6.9 $\pm$ 8.6                           |
| No. EPT individuals/Chironomids+EPT Individuals | 0.9     | 0.9 $\pm$ 0.1                           |
| Total Abundance                                 | 8825.0  | 5757.3 $\pm$ 4889.9                     |
| <b>Richness</b>                                 |         |   |
| Ephemeroptera taxa                              | 2.0     | 3.4 $\pm$ 0.5                           |
| EPT taxa (no)                                   | 8.0     | 11.5 $\pm$ 1.2                          |
| Plecoptera taxa                                 | 2.0     | 5.3 $\pm$ 0.9                           |
| Shannon-Wiener Diversity                        | 1.8     | 1.9 $\pm$ 0.3                           |
| Simpson's Diversity                             | 0.8     | 0.8 $\pm$ 0.1                           |
| Total No. of Taxa                               | 14.0    | 17.1 $\pm$ 2.4                          |
| Trichoptera taxa                                | 4.0     | 2.8 $\pm$ 1.0                           |

## Frequency and Probability of Taxa Occurrence

| Reference Model Taxa | Frequency of Occurrence in Reference Sites |         |         |         |         | Probability Of Occurrence at NGJOS03 |
|----------------------|--|---------|---------|---------|---------|--------------------------------------|
|                      | Group 1                                    | Group 2 | Group 3 | Group 4 | Group 5 |                                      |
| Baetidae             | 100%                                       | 100%    | 100%    | 100%    | 97%     | 1.00                                 |
| Chironomidae         | 100%                                       | 100%    | 100%    | 100%    | 95%     | 1.00                                 |
| Chloroperlidae       | 78%  | 88%     | 94%     | 100%    | 100%    | 0.92                                 |
| Ephemereillidae      | 78%  | 100%    | 100%    | 100%    | 100%    | 1.00                                 |
| Heptageniidae        | 100%                                       | 100%    | 100%    | 100%    | 100%    | 1.00                                 |
| Hydropsychidae       | 11%  | 92%     | 78%     | 92%     | 86%     | 0.84                                 |
| Nemouridae           | 100%                                       | 100%    | 100%    | 100%    | 100%    | 1.00                                 |
| Perlodidae           | 78%  | 78%     | 89%     | 92%     | 81%     | 0.84                                 |
| Psychodidae          | 22%  | 65%     | 94%     | 8%      | 11%     | 0.80                                 |
| Rhyacophilidae       | 100%                                       | 92%     | 100%    | 100%    | 95%     | 0.96                                 |
| Taeniopterygidae     | 89%  | 49%     | 100%    | 92%     | 97%     | 0.77                                 |

## RIVPACS Ratios

|                                |       |
|--------------------------------|-------|
| RIVPACS : Expected taxa P>0.50 | 13.48 |
| RIVPACS : Observed taxa P>0.50 | 8.00  |
| RIVPACS : O:E (p > 0.5)        | 0.59  |
| RIVPACS : Expected taxa P>0.70 | 10.13 |
| RIVPACS : Observed taxa P>0.70 | 5.00  |
| RIVPACS : O:E (p > 0.7)        | 0.49  |

## Habitat Description

| Variable                                | NGJOS03 | Predicted Group Reference Mean $\pm$ SD |
|---|---------|---|
| <b>Channel</b>                          |         |   |
| Depth-Avg (cm)                          | 22.6    | 22.5 $\pm$ 10.5                         |
| Depth-BankfullMinusWetted (cm)          | 52.00   | 26.00 $\pm$ 4.24                        |
| Depth-Max (cm)                          | 26.7    | 32.9 $\pm$ 17.9                         |
| Macrophyte (PercentRange)               | 0       | 0 $\pm$ 0                               |
| Reach-%CanopyCoverage (PercentRange)    | 1.00    | 0.94 $\pm$ 0.80                         |
| Reach-DomStreamsideVeg (Category (1-4)) | 1       | 3 $\pm$ 1                               |
| Reach-Pools (Binary)                    | 0       | 0 $\pm$ 1                               |

## Habitat Description

| Variable                            | NGJOS03     | Predicted Group Reference<br>Mean $\pm$ SD |
|-------------------------------------|-------------|--|
| Reach-Rapids (Binary)               | 0           | 0 $\pm$ 1                                  |
| Reach-Riffles (Binary)              | 0           | 1 $\pm$ 0                                  |
| Reach-StraightRun (Binary)          | 1           | 1 $\pm$ 0                                  |
| Slope (m/m)                         | 0.0120000   | 0.0235102 $\pm$ 0.0284557                  |
| Veg-Coniferous (Binary)             | 0           | 1 $\pm$ 0                                  |
| Veg-Deciduous (Binary)              | 1           | 1 $\pm$ 0                                  |
| Veg-GrassesFerns (Binary)           | 1           | 1 $\pm$ 0                                  |
| Veg-Shrubs (Binary)                 | 0           | 1 $\pm$ 0                                  |
| Velocity-Avg (m/s)                  | 0.34        | 0.51 $\pm$ 0.25                            |
| Velocity-Max (m/s)                  | 0.37        | 0.75 $\pm$ 0.28                            |
| Width-Bankfull (m)                  | 5.9         | 15.6 $\pm$ 12.8                            |
| Width-Wetted (m)                    | 4.0         | 10.2 $\pm$ 7.0                             |
| XSEC-VelMethod (Category (1-3))     | 1           | 2 $\pm$ 1                                  |
| <b>Landcover</b>                    |             |  |
| Reg-Ice (%)                         | 0.00000     | 0.46949 $\pm$ 1.15785                      |
| <b>Substrate Data</b>               |             |  |
| %Bedrock (%)                        | 0           | 0 $\pm$ 0                                  |
| %Boulder (%)                        | 0           | 6 $\pm$ 7                                  |
| %Cobble (%)                         | 31          | 61 $\pm$ 27                                |
| %Gravel (%)                         | 4           | 1 $\pm$ 2                                  |
| %Pebble (%)                         | 65          | 31 $\pm$ 28                                |
| %Sand (%)                           | 0           | 0 $\pm$ 0                                  |
| %Silt+Clay (%)                      | 0           | 1 $\pm$ 3                                  |
| D50 (cm)                            | 5.10        | 79.45 $\pm$ 47.98                          |
| Dg (cm)                             | 4.6         | 73.9 $\pm$ 48.0                            |
| Dominant-1st (Category(0-9))        | 5           | 6 $\pm$ 2                                  |
| Dominant-2nd (Category(0-9))        | 6           | 6 $\pm$ 2                                  |
| Embeddedness (Category(1-5))        | 2           | 4 $\pm$ 1                                  |
| PeriphytonCoverage (Category(1-5))  | 2           | 2 $\pm$ 1                                  |
| <b>Topography</b>                   |             |  |
| SlopeLT30% (%)                      | 85.87000    | 27.92073 $\pm$ 14.83033                    |
| <b>Water Chemistry</b>              |             |  |
| Ag (mg/L)                           | 0.0100000   | 0.0000004 $\pm$ 0.0000014                  |
| Al (mg/L)                           | 55.0000000  | 0.0059500 $\pm$ 0.0039700                  |
| As (mg/L)                           | 0.0000600   | 0.0002175 $\pm$ 0.0001795                  |
| B (mg/L)                            | 0.0250000   | 0.0500000                                  |
| Ba (mg/L)                           | 0.0540000   | 0.0639025 $\pm$ 0.0450861                  |
| Be (mg/L)                           | 0.0000500   | 0.0000025 $\pm$ 0.0000062                  |
| Bi (mg/L)                           | 0.0005000   | 0.0000004 $\pm$ 0.0000014                  |
| Ca (mg/L)                           | 48.9000000  | 38.6142857 $\pm$ 14.8464843                |
| Cd (mg/L)                           | 0.0000050   | 0.0000059 $\pm$ 0.0000067                  |
| Co (mg/L)                           | 0.0002500   | 0.0000043 $\pm$ 0.0000057                  |
| Cr (mg/L)                           | 500.0000000 | 0.0000833 $\pm$ 0.0001403                  |
| Cu (mg/L)                           | 0.0010000   | 0.0001875 $\pm$ 0.0001434                  |
| Fe (mg/L)                           | 0.1420000   | 0.0090000                                  |
| General-Alkalinity (mg/L)           | 170.0000000 | 121.5944444 $\pm$ 36.7225924               |
| General-DO (mg/L)                   | 13.0000000  | 10.4922222 $\pm$ 0.8833463                 |
| General-Hardness (mg/L)             | 181.0000000 | 146.8222222 $\pm$ 41.6699011               |
| General-pH (pH)                     | 8.3         | 8.0 $\pm$ 0.6                              |
| General-SolidsTSS (mg/L)            | 2.0000000   | 0.5604289 $\pm$ 1.4627232                  |
| General-SpCond ( $\mu$ S/cm)        | 403.0000000 | 214.2437500 $\pm$ 77.1891440               |
| General-TempAir (Degrees Celsius)   | 25.0        | 10.5 $\pm$ 4.2                             |
| General-TempWater (Degrees Celsius) | 15.0000000  | 6.8794444 $\pm$ 1.7335020                  |
| Hg (ng/L)                           | 0.0000100   | 0.0000000 $\pm$ 0.0000000                  |
| K (mg/L)                            | 0.0018600   | 0.6471429 $\pm$ 0.7154652                  |
| Li (mg/L)                           | 0.0025000   | 0.0011817 $\pm$ 0.0004768                  |
| Mg (mg/L)                           | 18.4000000  | 9.8814286 $\pm$ 6.1601202                  |
| Mn (mg/L)                           | 0.0080000   | 0.0011426 $\pm$ 0.0016097                  |
| Mo (mg/L)                           | 0.0005000   | 0.0024883 $\pm$ 0.0065339                  |
| Na (mg/L)                           | 17.8000000  | 2.6357143 $\pm$ 3.7712414                  |
| Ni (mg/L)                           | 0.0005000   | 0.0000808 $\pm$ 0.0000811                  |
| Nitrogen-TN (mg/L)                  | 0.7700000   | 0.0688889 $\pm$ 0.0759171                  |

**Habitat Description**

| <b>Variable</b>             | <b>NGJOS03</b> | <b>Predicted Group Reference<br/>Mean <math>\pm</math>SD</b> |
|-----------------------------|----------------|--|
| <b>Pb (mg/L)</b>            | 0.0004000      | 0.0000224 $\pm$ 0.0000176                                    |
| <b>Phosphorus-TP (mg/L)</b> | 0.0070000      | 0.0032778 $\pm$ 0.0061816                                    |
| <b>S (mg/L)</b>             | 6.0000000      | 5.0000000  |
| <b>Sb (mg/L)</b>            | 0.0002500      | 0.0000361 $\pm$ 0.0000135                                    |
| <b>Se (mg/L)</b>            | 0.0025000      | 0.0004382 $\pm$ 0.0004486                                    |
| <b>Si (mg/L)</b>            | 4.1300000      | 3.0657143 $\pm$ 1.4070046                                    |
| <b>Sn (mg/L)</b>            | 0.0000000      | 0.0000167 $\pm$ 0.0000078                                    |
| <b>Sr (mg/L)</b>            | 0.1070000      | 0.1159167 $\pm$ 0.0982749                                    |
| <b>Ti (mg/L)</b>            | 0.0025000      | 0.0009000  |
| <b>Tl (mg/L)</b>            | 0.0002500      | 0.0000038 $\pm$ 0.0000064                                    |
| <b>U (mg/L)</b>             | 0.0013000      | 0.0005298 $\pm$ 0.0003220                                    |
| <b>V (mg/L)</b>             | 0.0025000      | 0.0001642 $\pm$ 0.0001203                                    |
| <b>Zn (mg/L)</b>            | 0.0025000      | 0.0004083 $\pm$ 0.0008361                                    |
| <b>Zr (mg/L)</b>            | 0.0002500      | 0.0000000 $\pm$ 0.0000000                                    |