

**Site Description**

<b>Study Name</b>	CBWQ-Windermere
<b>Site</b>	NAWIN03
<b>Sampling Date</b>	Oct 23 2016
<b>Know Your Watershed Basin</b>	Upper Columbia
<b>Province / Territory</b>	British Columbia
<b>Terrestrial Ecological Classification</b>	Montane Cordillera EcoZone Southern Rocky Mountain Trench EcoRegion
<b>Coordinates (decimal degrees)</b>	50.45889 N, 115.98642 W
<b>Altitude</b>	2664
<b>Local Basin Name</b>	Windermere Creek
	Windermere Creek
<b>Stream Order</b>	4



Figure 1. Location Map



Across Reach  
Aerial (No image found)



Down Stream



Field Sheet

Miscellaneous (No image found)  
Substrate (No image found)

**Cabin Assessment Results**

		<b>Reference Model Summary</b>				
<b>Model</b>	Columbia-Okanagan Preliminary March 2010					
<b>Analysis Date</b>	March 21, 2017					
<b>Taxonomic Level</b>	Family					
<b>Predictive Model Variables</b>	Depth-Avg Latitude Longitude Reg-Ice Reg-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>	0.2%	0.1%	35.6%	30.9%	33.2%	
<b>CABIN Assessment of NAWIN03 on Oct 23, 2016</b>	Highly Divergent					

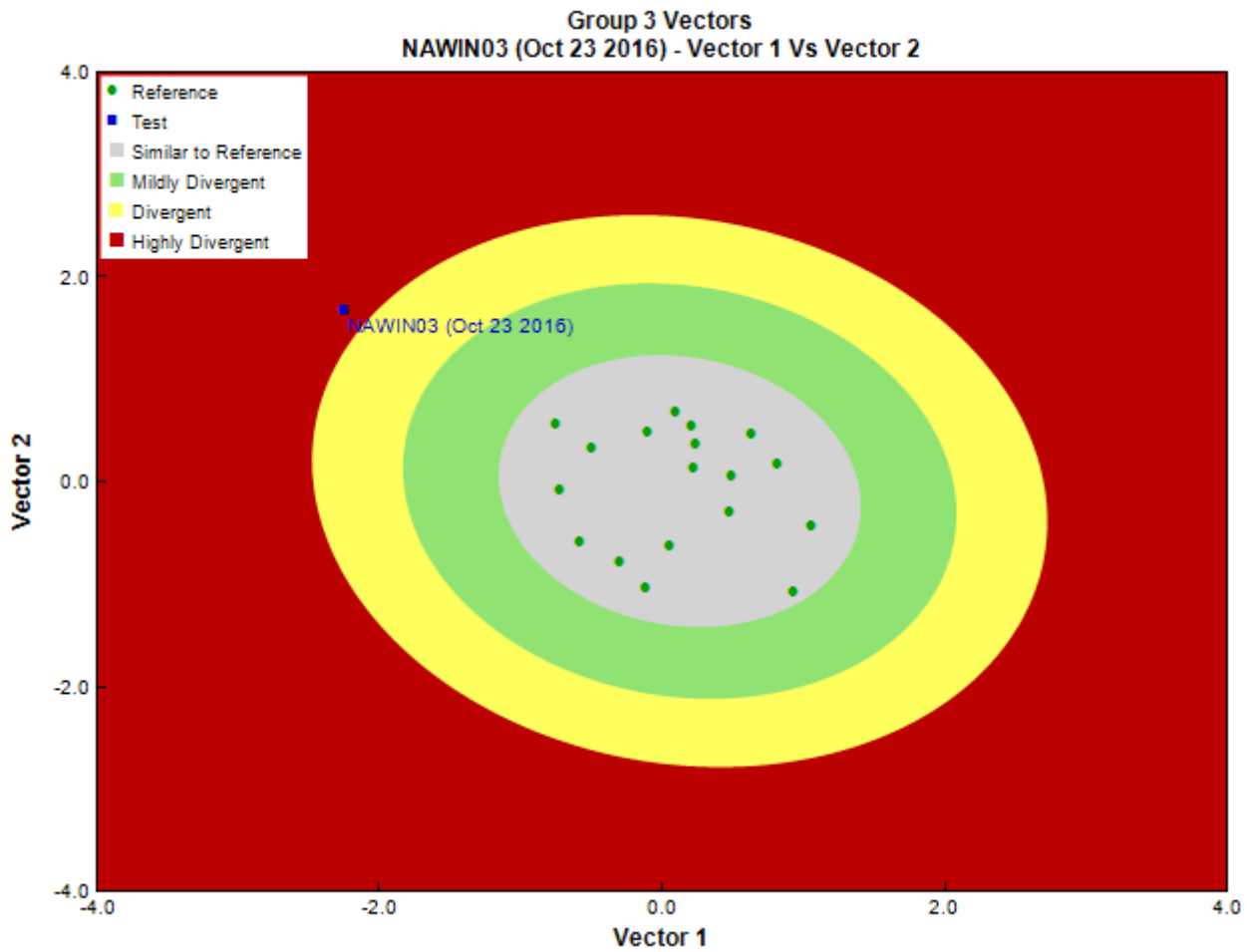


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

**Sample Information**

<b>Sampling Device</b>	Kick Net
<b>Mesh Size</b>	400
<b>Sampling Time</b>	1
<b>Taxonomist</b>	Pina Viola, Consultant
<b>Date Taxonomy Completed</b>	November 05, 2016
	Marchant Box
<b>Sub-Sample Proportion</b>	100/100

**Community Structure**

Phylum	Class	Order	Family	Raw Count	Total Count	
Annelida	Oligochaeta	Enchytraeida	Enchytraeidae	1	1.0	
		Tubificida	Lumbricidae	1	1.0	
Arthropoda	Insecta	Coleoptera	Curculionidae	1	1.0	
			Diptera	Chironomidae	12	12.0
				Empididae	1	1.0
				Sciomyzidae	1	1.0
				Simuliidae	42	42.0
			Ephemeroptera	Baetidae	50	50.0
				Ephemerellidae	3	3.0
				Heptageniidae	14	14.0
			Plecoptera	Capniidae	28	28.0
				Chloroperlidae	7	7.0
				Nemouridae	26	26.0
	Perlidae	4		4.0		
		Perlodidae	1	1.0		

## Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
		Trichoptera	Glossosomatidae	2	2.0
			Hydropsychidae	2	2.0
			Rhyacophilidae	6	6.0
			Total	202	202.0

## Metrics

Name	NAWIN03	Predicted Group Reference Mean $\pm$ SD
<b>Bray-Curtis Distance</b>	0.92	0.4 $\pm$ 0.2
<b>Biotic Indices</b>		
<b>Hilsenhoff Family index (North-West)</b>	3.5	3.2 $\pm$ 0.7
<b>Long-lived taxa</b>	1.0	1.9 $\pm$ 1.3
<b>Tolerant individuals (%)</b>	--	0.3
<b>Functional Measures</b>		
<b>% Filterers</b>	21.8	1.8 $\pm$ 1.6
<b>% Gatherers</b>	24.8	52.4 $\pm$ 14.6
<b>% Predatores</b>	37.6	18.3 $\pm$ 13.3
<b>% Scrapers</b>	56.9	61.8 $\pm$ 17.2
<b>% Shredder</b>	27.2	30.3 $\pm$ 18.6
<b>No. Clinger Taxa</b>	18.0	19.8 $\pm$ 3.9
<b>Number Of Individuals</b>		
<b>% Chironomidae</b>	5.9	8.2 $\pm$ 13.6
<b>% Coleoptera</b>	0.5	0.8 $\pm$ 1.9
<b>% Diptera + Non-insects</b>	28.7	14.3 $\pm$ 14.2
<b>% Ephemeroptera</b>	33.2	43.3 $\pm$ 15.7
<b>% Ephemeroptera that are Baetidae</b>	74.6	33.9 $\pm$ 27.7
<b>% EPT Individuals</b>	70.8	84.9 $\pm$ 14.3
<b>% Odonata</b>	--	0.0 $\pm$ 0.0
<b>% of 2 dominant taxa</b>	45.5	58.9 $\pm$ 10.0
<b>% of 5 dominant taxa</b>	79.2	83.8 $\pm$ 7.3
<b>% of dominant taxa</b>	24.8	39.5 $\pm$ 10.9
<b>% Plecoptera</b>	32.7	34.7 $\pm$ 17.8
<b>% Tribe Tanyatarisini</b>	--	
<b>% Trichoptera that are Hydropsychida</b>	20.0	27.8 $\pm$ 25.2
<b>% Tricoptera</b>	5.0	6.9 $\pm$ 8.6
<b>No. EPT individuals/Chironomids+EPT Individuals</b>	0.9	0.9 $\pm$ 0.1
<b>Total Abundance</b>	202.0	5780.5 $\pm$ 4895.3
<b>Richness</b>		
<b>Chironomidae taxa (genus level only)</b>	1.0	1.0 $\pm$ 0.0
<b>Coleoptera taxa</b>	1.0	0.4 $\pm$ 0.6
<b>Diptera taxa</b>	4.0	3.4 $\pm$ 1.0
<b>Ephemeroptera taxa</b>	3.0	3.4 $\pm$ 0.5
<b>EPT Individuals (Sum)</b>	143.0	4527.1 $\pm$ 3161.8
<b>EPT taxa (no)</b>	11.0	11.5 $\pm$ 1.2
<b>Odonata taxa</b>	--	0.0 $\pm$ 0.0
<b>Pielou's Evenness</b>	0.8	0.7 $\pm$ 0.1
<b>Plecoptera taxa</b>	5.0	5.3 $\pm$ 0.9
<b>Shannon-Wiener Diversity</b>	2.2	1.9 $\pm$ 0.3
<b>Simpson's Diversity</b>	0.8	0.8 $\pm$ 0.1
<b>Simpson's Evenness</b>	0.4	0.3 $\pm$ 0.1
<b>Total No. of Taxa</b>	18.0	17.7 $\pm$ 2.6
<b>Trichoptera taxa</b>	3.0	2.8 $\pm$ 1.0

## Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NAWIN03
	Group 1	Group 2	Group 3	Group 4	Group 5	
Baetidae	100%	100%	100%	100%	97%	0.99
Chironomidae	100%	100%	100%	100%	95%	0.98
Chloroperlidae	78%	88%	94%	100%	100%	0.98
Ephemereillidae	78%	100%	100%	100%	100%	1.00
Heptageniidae	100%	100%	100%	100%	100%	1.00

### Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NAWIN03
	Group 1	Group 2	Group 3	Group 4	Group 5	
Hydropsychidae	11%	92%	78%	92%	86%	0.85
Nemouridae	100%	100%	100%	100%	100%	1.00
Perlodidae	78%	78%	89%	92%	81%	0.87
Rhyacophilidae	100%	92%	100%	100%	95%	0.98
Taeniopterygidae	89%	49%	100%	92%	97%	0.96

### RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	11.99
RIVPACS : Observed taxa P>0.50	11.00
RIVPACS : O:E (p > 0.5)	0.92
RIVPACS : Expected taxa P>0.70	9.62
RIVPACS : Observed taxa P>0.70	9.00
RIVPACS : O:E (p > 0.7)	0.94

### Habitat Description

Variable	NAWIN03	Predicted Group Reference Mean $\pm$ SD
<b>Channel</b>		
Depth-Avg (cm)	21.1	22.5 $\pm$ 10.5
Depth-BankfullMinusWetted (cm)	31.00	67.33 $\pm$ 71.65
Depth-Max (cm)	26.0	32.9 $\pm$ 17.9
Macrophyte (PercentRange)	1	0 $\pm$ 0
Reach-%CanopyCoverage (PercentRange)	1.00	0.94 $\pm$ 0.80
Reach-DomStreamsideVeg (Category (1-4))	4	3 $\pm$ 1
Reach-Riffles (Binary)	1	1 $\pm$ 0
Slope (m/m)	0.0050000	0.0235102 $\pm$ 0.0284557
Veg-Deciduous (Binary)	1	1 $\pm$ 0
Veg-Shrubs (Binary)	1	1 $\pm$ 0
Velocity-Avg (m/s)	1.10	0.50 $\pm$ 0.25
Velocity-Max (m/s)	1.33	0.75 $\pm$ 0.28
Width-Bankfull (m)	3.5	15.6 $\pm$ 12.8
Width-Wetted (m)	3.4	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 (%)	25	61 $\pm$ 27
%Gravel (%)	11	1 $\pm$ 2
%Pebble (%)	61	31 $\pm$ 28
%Sand (%)	0	0 $\pm$ 0
%Silt+Clay (%)	2	0 $\pm$ 1
D50 (cm)	3.50	79.45 $\pm$ 47.98
Dg (cm)	3.4	73.9 $\pm$ 48.0
Dominant-1st (Category(0-9))	4	6 $\pm$ 1
Dominant-2nd (Category(0-9))	5	6 $\pm$ 2
Embeddedness (Category(1-5))	4	4 $\pm$ 1
PeriphytonCoverage (Category(1-5))	3	2 $\pm$ 1
SurroundingMaterial (Category(0-9))	2	3 $\pm$ 1
<b>Topography</b>		
Reg-SlopeLT30% (%)	15.41076	27.92073 $\pm$ 14.83033
<b>Water Chemistry</b>		
Ag (mg/L)	0.0000200	0.0000004 $\pm$ 0.0000014
Al (mg/L)	0.0110000	0.0059500 $\pm$ 0.0039700
As (mg/L)	0.0027100	0.0002175 $\pm$ 0.0001795
B (mg/L)	0.0610000	0.0500000
Ba (mg/L)	0.0305000	0.0639025 $\pm$ 0.0450861
Be (mg/L)	0.0000500	0.0000025 $\pm$ 0.0000062
Bi (mg/L)	0.0000500	0.0000004 $\pm$ 0.0000014

## Habitat Description

Variable	NAWIN03	Predicted Group Reference Mean $\pm$ SD
Ca (mg/L)	0.1590000	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
CO3 (mg/L)	0.2500000	0.0000000 $\pm$ 0.0000000
Cr (mg/L)	0.0005000	0.0000833 $\pm$ 0.0001403
Cu (mg/L)	0.0002500	0.0001875 $\pm$ 0.0001434
Fe (mg/L)	0.0240000	0.0090000
General-Alkalinity (mg/L)	170.0000000	121.5944444 $\pm$ 36.7225924
General-DO (mg/L)	10.0000000	10.4922222 $\pm$ 0.8833463
General-Hardness (mg/L)	549.0000000	146.8222222 $\pm$ 41.6699011
General-pH (pH)	8.5	8.0 $\pm$ 0.6
General-SolidsTSS (mg/L)	2.0000000	0.5604289 $\pm$ 1.4627232
General-SpCond ( $\mu$ S/cm)	964.0000000	214.2437500 $\pm$ 77.1891440
General-TempAir (Degrees Celsius)	1.0	10.5 $\pm$ 4.2
General-TempWater (Degrees Celsius)	4.7000000	6.6716667 $\pm$ 2.0277755
HCO3 (mg/L)	207.0000000	0.0000000 $\pm$ 0.0000000
Hg (ng/L)	10.0000000	0.0000000 $\pm$ 0.0000000
K (mg/L)	0.0009150	0.6471429 $\pm$ 0.7154652
Li (mg/L)	0.0062000	0.0011817 $\pm$ 0.0004768
Mg (mg/L)	0.0365000	9.8814286 $\pm$ 6.1601202
Mn (mg/L)	0.0023000	0.0011426 $\pm$ 0.0016097
Mo (mg/L)	0.0014000	0.0024883 $\pm$ 0.0065339
Na (mg/L)	0.0030200	2.6357143 $\pm$ 3.7712414
Ni (mg/L)	0.0005000	0.0000808 $\pm$ 0.0000811
Nitrogen-NH3 (mg/L)	0.0590000	0.0019286 $\pm$ 0.0059286
Nitrogen-NO2 (mg/L)	0.0025000	0.0023889 $\pm$ 0.0063351
Nitrogen-NO2+NO3 (mg/L)	0.1550000	0.0130000 $\pm$ 0.0088111
Nitrogen-NO3 (mg/L)	0.1550000	0.0245003 $\pm$ 0.0229452
Nitrogen-TN (mg/L)	0.2610000	0.0688889 $\pm$ 0.0759171
Pb (mg/L)	0.0001000	0.0000224 $\pm$ 0.0000176
Phosphorus-OrthoP (mg/L)	0.0025000	0.0035000 $\pm$ 0.0018292
Phosphorus-TDP (mg/L)	0.0025000	0.0016667 $\pm$ 0.0020151
S (mg/L)	0.1320000	5.0000000
Sb (mg/L)	0.0002500	0.0000361 $\pm$ 0.0000135
Se (mg/L)	0.0001400	0.0004382 $\pm$ 0.0004486
Si (mg/L)	3.3500000	3.0657143 $\pm$ 1.4070046
Sn (mg/L)	0.0025000	0.0000167 $\pm$ 0.0000078
SO4 (mg/L)	336.0000000	14.9647059 $\pm$ 10.8432549
Sr (mg/L)	2.0700000	0.1159167 $\pm$ 0.0982749
Ti (mg/L)	0.0025000	0.0009000
Tl (mg/L)	0.0000250	0.0000038 $\pm$ 0.0000064
U (mg/L)	0.0012800	0.0005298 $\pm$ 0.0003220
V (mg/L)	0.0025000	0.0001642 $\pm$ 0.0001203
Zn (mg/L)	0.0025000	0.0004083 $\pm$ 0.0008361
Zr (mg/L)	0.0002500	0.0000000 $\pm$ 0.0000000