

**Site Description**

<b>Study Name</b>	CBWQ-Upper Columbia
<b>Site</b>	NAHOR02
<b>Sampling Date</b>	Sep 28 2010
<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>	51.21306 N, 116.89194 W
<b>Altitude</b>	2936
<b>Local Basin Name</b>	Horse Cr
	Columbia
<b>Stream Order</b>	4



Figure 1. Location Map



Across Reach  
Aerial (No image found)



Down Stream

Field Sheet

Field Code: 00010 Before: 01/01/2017 After: 01/01/2017 Site Code: 001

Sampling Date (DMWY): 01/01/2017  No  Yes  No  Yes  No

OHS: Site Inspection Sheet Completed

Primary Site Data: CABIN Site Name: \_\_\_\_\_

Local River Name: \_\_\_\_\_ Collection: \_\_\_\_\_

River/Stream Name: HORSE CREEK Stream Order (app. width in m): \_\_\_\_\_

Substrate: Test Size:  Potential Reference Site:  Confirmed:  No

Geographical description:

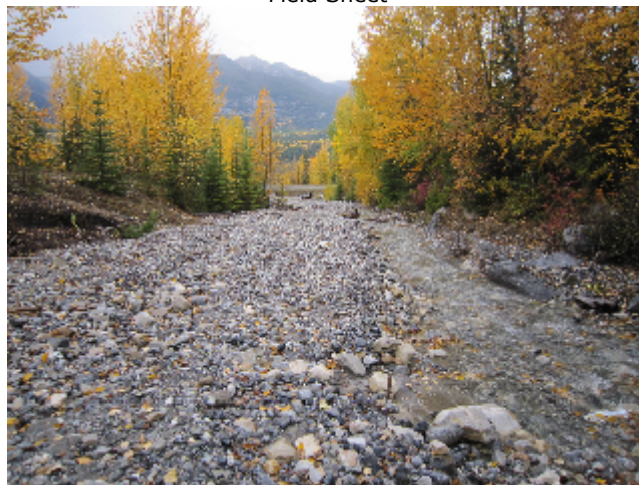
Surrounding Land Use (check those present):

<input type="checkbox"/> Forest	<input type="checkbox"/> Field/Pasture	<input type="checkbox"/> Agriculture	<input type="checkbox"/> Residential/Urban
<input type="checkbox"/> Logging	<input type="checkbox"/> Mining	<input type="checkbox"/> Commercial/Industrial	<input type="checkbox"/> Other

Domestic surrounding Land Use (check none):

<input type="checkbox"/> Forest	<input type="checkbox"/> Field/Pasture	<input type="checkbox"/> Agriculture	<input type="checkbox"/> Residential/Urban
<input type="checkbox"/> Logging	<input type="checkbox"/> Mining	<input type="checkbox"/> Commercial/Industrial	<input type="checkbox"/> Other

Field Sheet



Miscellaneous

Substrate (No image found)  
Up Stream (No image found)

**Cabin Assessment Results**

Reference Model Summary	
<b>Model</b>	Columbia-Okanagan Preliminary March 2010
<b>Analysis Date</b>	November 01, 2017
<b>Taxonomic Level</b>	Family

**Cabin Assessment Results**

<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>	0.1%	0.1%	6.9%	10.8%	82.1%
<b>CABIN Assessment of NAHOR02 on Sep 28, 2010</b>	Similar to Reference				

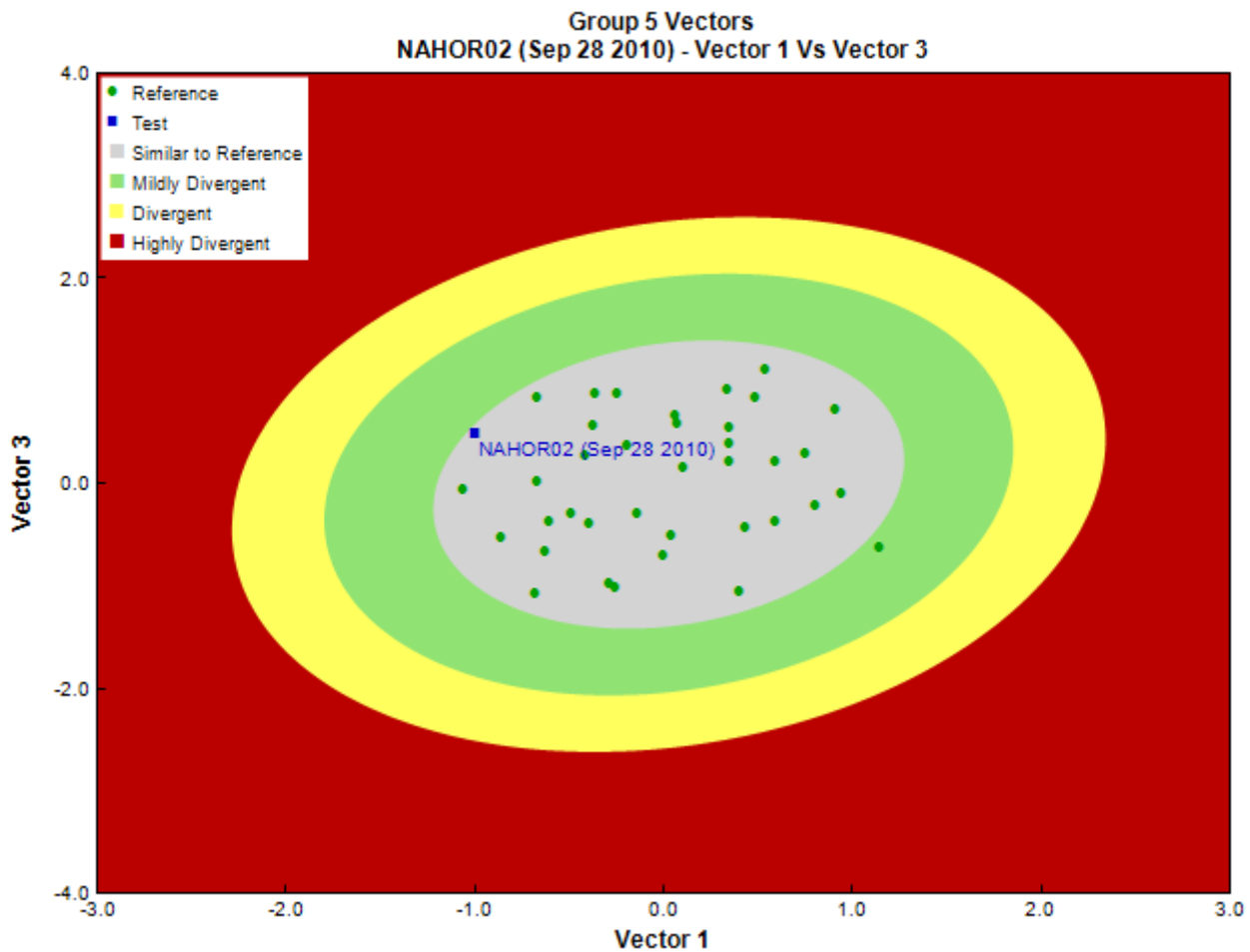


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

**Sample Information**

<b>Sampling Device</b>	Kick Net
<b>Mesh Size</b>	400
<b>Sampling Time</b>	3
<b>Taxonomist</b>	Gary Lester, Ecoanalysts Inc.
<b>Date Taxonomy Completed</b>	March 09, 2011
	Marchant Box
<b>Sub-Sample Proportion</b>	29/100

## Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	1	3.4
Arthropoda	Insecta	Diptera	Chironomidae	13	44.8
			Empididae	15	51.7
			Psychodidae	2	6.9
			Simuliidae	2	6.9
			Stratiomyidae	1	3.4
			Tipulidae	3	10.3
		Ephemeroptera	Ameletidae	1	3.4
			Baetidae	11	37.9
			Heptageniidae	25	86.2
		Plecoptera	Capniidae	1	3.4
			Chloroperlidae	14	48.3
			Nemouridae	53	182.8
			Perlodidae	1	3.4
			Taeniopterygidae	169	582.8
		Trichoptera	Hydropsychidae	3	10.3
			Limnephilidae	2	6.9
			Rhyacophilidae	10	34.5
			Total	327	1,127.3

## Metrics

Name	NAHOR02	Predicted Group Reference Mean $\pm$ SD
Bray-Curtis Distance	0.35	0.4 $\pm$ 0.1
<b>Biotic Indices</b>		
Hilsenhoff Family index (North-West)	2.6	2.8 $\pm$ 0.3
Intolerant taxa	--	1.0 $\pm$ 0.0
Long-lived taxa	--	1.0 $\pm$ 0.0
Tolerant individuals (%)	--	0.3
<b>Functional Measures</b>		
% Filterers	1.5	1.7 $\pm$ 1.7
% Gatherers	78.6	50.6 $\pm$ 14.6
% Predatores	17.7	15.3 $\pm$ 9.0
% Scrapers	68.2	67.2 $\pm$ 16.8
% Shredder	69.7	38.1 $\pm$ 18.2
No. Clinger Taxa	11.0	19.8 $\pm$ 3.4
<b>Number Of Individuals</b>		
% Chironomidae	4.0	4.6 $\pm$ 5.0
% Coleoptera	0.0	0.0 $\pm$ 0.0
% Diptera + Non-insects	11.3	6.3 $\pm$ 5.3
% Ephemeroptera	11.3	44.9 $\pm$ 17.3
% Ephemeroptera that are Baetidae	29.7	26.1 $\pm$ 20.5
% EPT Individuals	88.7	93.7 $\pm$ 5.3
% Odonata	--	0.0 $\pm$ 0.0
% of 2 dominant taxa	67.9	60.2 $\pm$ 11.4
% of 5 dominant taxa	84.4	84.5 $\pm$ 5.9
% of dominant taxa	51.7	39.3 $\pm$ 12.3
% Plecoptera	72.8	42.9 $\pm$ 17.2
% Tribe Tanyatarisini	--	
% Trichoptera that are Hydropsychida	20.0	27.4 $\pm$ 27.1
% Tricoptera	4.6	5.8 $\pm$ 5.7
No. EPT individuals/Chironomids+EPT Individuals	1.0	1.0 $\pm$ 0.1
Total Abundance	1127.5	2163.6 $\pm$ 1274.4
<b>Richness</b>		
Chironomidae taxa (genus level only)	1.0	0.9 $\pm$ 0.2
Coleoptera taxa	0.0	0.1 $\pm$ 0.2
Diptera taxa	6.0	2.4 $\pm$ 1.0
Ephemeroptera taxa	3.0	3.7 $\pm$ 0.5
EPT Individuals (Sum)	999.9	2023.9 $\pm$ 1195.7
EPT taxa (no)	11.0	12.3 $\pm$ 1.9
Odonata taxa	--	0.0 $\pm$ 0.0
Pielou's Evenness	0.6	0.7 $\pm$ 0.1

**Metrics**

Name	NAHOR02	Predicted Group Reference Mean $\pm$ SD
Plecoptera taxa	5.0	5.5 $\pm$ 1.1
Shannon-Wiener Diversity	1.7	1.9 $\pm$ 0.3
Simpson's Diversity	0.7	0.8 $\pm$ 0.1
Simpson's Evenness	0.2	0.3 $\pm$ 0.1
Total No. of Taxa	18.0	16.0 $\pm$ 3.0
Trichoptera taxa	3.0	3.2 $\pm$ 1.0

**Frequency and Probability of Taxa Occurrence**

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NAHOR02
	Group 1	Group 2	Group 3	Group 4	Group 5	
Baetidae	100%	100%	100%	100%	97%	0.98
Chironomidae	100%	100%	100%	100%	95%	0.96
Chloroperlidae	78%	88%	94%	100%	100%	1.00
Ephemereididae	78%	100%	100%	100%	100%	1.00
Heptageniidae	100%	100%	100%	100%	100%	1.00
Hydropsychidae	11%	92%	78%	92%	86%	0.86
Nemouridae	100%	100%	100%	100%	100%	1.00
Perlodidae	78%	78%	89%	92%	81%	0.83
Rhyacophilidae	100%	92%	100%	100%	95%	0.96
Taeniopterygidae	89%	49%	100%	92%	97%	0.97

**RIVPACS Ratios**

RIVPACS : Expected taxa P>0.50	12.60
RIVPACS : Observed taxa P>0.50	12.00
RIVPACS : O:E (p > 0.5)	0.95
RIVPACS : Expected taxa P>0.70	9.54
RIVPACS : Observed taxa P>0.70	9.00
RIVPACS : O:E (p > 0.7)	0.94

**Habitat Description**

Variable	NAHOR02	Predicted Group Reference Mean $\pm$ SD
<b>Bedrock Geology</b>		
Alluvium (%)	0.00000	0.00000 $\pm$ 0.00000
Intrusive (%)	0.00000	0.46153 $\pm$ 2.09955
Metamorphic (%)	0.00000	0.17691 $\pm$ 0.85012
Sedimentary (%)	100.00000	99.36155 $\pm$ 2.22799
Ultramafic (%)	0.00000	0.00000 $\pm$ 0.00000
Volcanic (%)	0.00000	0.00000 $\pm$ 0.00000
<b>Channel</b>		
Depth-Avg (cm)	13.3	21.5 $\pm$ 9.7
Depth-BankfullMinusWetted (cm)	46.00	38.14 $\pm$ 36.11
Depth-Max (cm)	21.5	31.0 $\pm$ 16.5
Macrophyte (PercentRange)	0	0 $\pm$ 0
Reach-%CanopyCoverage (PercentRange)	1.00	1.54 $\pm$ 1.28
Reach-DomStreamsideVeg (Category (1-4))	3	3 $\pm$ 1
Reach-Pools (Binary)	1	1 $\pm$ 0
Reach-Rapids (Binary)	0	0 $\pm$ 0
Reach-Riffles (Binary)	1	1 $\pm$ 0
Reach-StraightRun (Binary)	1	0 $\pm$ 1
Slope (m/m)	0.0380000	0.0581357 $\pm$ 0.0554952
Veg-Coniferous (Binary)	1	1 $\pm$ 0
Veg-Deciduous (Binary)	1	1 $\pm$ 0
Veg-GrassesFerns (Binary)	1	1 $\pm$ 0
Veg-Shrubs (Binary)	1	1 $\pm$ 0
Velocity-Avg (m/s)	0.28	0.51 $\pm$ 0.27
Velocity-Max (m/s)	0.54	0.78 $\pm$ 0.40
Width-Bankfull (m)	14.5	13.7 $\pm$ 16.4
Width-Wetted (m)	3.2	9.0 $\pm$ 13.1

## Habitat Description

Variable	NAHOR02	Predicted Group Reference Mean $\pm$ SD
XSEC-VelMethod (Category (1-3))	1	2 $\pm$ 1
<b>Climate</b>		
Precip01_JAN (mm)	83.00000	130.45668 $\pm$ 67.17180
Precip02_FEB (mm)	54.00000	102.48242 $\pm$ 52.12836
Precip03_MAR (mm)	40.00000	89.80929 $\pm$ 42.79174
Precip04_APR (mm)	83.00000	135.11134 $\pm$ 66.06707
Precip05_MAY (mm)	46.00000	70.51109 $\pm$ 13.79432
Precip06_JUN (mm)	60.00000	86.65922 $\pm$ 19.93623
Precip07_JUL (mm)	61.00000	79.11475 $\pm$ 19.88523
Precip08_AUG (mm)	58.00000	76.86606 $\pm$ 21.34619
Precip09_SEP (mm)	51.00000	71.16784 $\pm$ 23.11306
Precip10_OCT (mm)	56.00000	88.14083 $\pm$ 44.84739
Precip11_NOV (mm)	78.00000	134.64587 $\pm$ 63.61897
Precip12_DEC (mm)	87.00000	142.32359 $\pm$ 65.85239
PrecipTotal_ANNUAL (mm)	714.00000	1143.02476 $\pm$ 453.62461
Temp01_JANMax (Degrees Celsius)	-6.00000	-6.18206 $\pm$ 1.69263
Temp01_JANmin (Degrees Celsius)	-13.00000	-13.62029 $\pm$ 2.05208
Temp02_FEBmax (Degrees Celsius)	-1.00000	-2.89816 $\pm$ 1.88421
Temp02_FEBmin (Degrees Celsius)	-10.00000	-11.14625 $\pm$ 1.99282
Temp03_MARmax (Degrees Celsius)	4.00000	0.98920 $\pm$ 2.35950
Temp03_MARmin (Degrees Celsius)	-6.00000	-7.98295 $\pm$ 1.94687
Temp04_APRmax (Degrees Celsius)	10.00000	5.37616 $\pm$ 3.02243
Temp04_APRmin (Degrees Celsius)	-2.00000	-3.74673 $\pm$ 1.66191
Temp05_MAYmax (Degrees Celsius)	15.00000	10.12548 $\pm$ 3.18022
Temp05_MAYmin (Degrees Celsius)	1.00000	0.09616 $\pm$ 1.15628
Temp06_JUNMax (Degrees Celsius)	19.00000	13.85415 $\pm$ 3.23839
Temp06_JUNMin (Degrees Celsius)	5.00000	2.79527 $\pm$ 1.60213
Temp07_JULmax (Degrees Celsius)	22.00000	17.45582 $\pm$ 3.27590
Temp07_JULmin (Degrees Celsius)	7.00000	4.99257 $\pm$ 1.52992
Temp08_AUGmax (Degrees Celsius)	22.00000	17.36896 $\pm$ 3.11866
Temp08_AUGmin (Degrees Celsius)	6.00000	4.84827 $\pm$ 1.46649
Temp09_SEPmax (Degrees Celsius)	16.00000	12.13974 $\pm$ 2.86510
Temp09_SEPmin (Degrees Celsius)	2.00000	1.12535 $\pm$ 1.20660
Temp10_OCTmax (Degrees Celsius)	8.00000	5.04078 $\pm$ 2.46521
Temp10_OCTmin (Degrees Celsius)	-1.00000	-2.41023 $\pm$ 1.18961
Temp11_NOVmax (Degrees Celsius)	0.00000	-2.24818 $\pm$ 1.93047
Temp11_NOVmin (Degrees Celsius)	-7.00000	-8.35137 $\pm$ 1.96467
Temp12_DECmax (Degrees Celsius)	-6.00000	-6.49458 $\pm$ 1.76429
Temp12_DECmin (Degrees Celsius)	-12.00000	-12.72330 $\pm$ 1.87798
TempANNUALmax (Degrees Celsius)	8.00000	5.16639 $\pm$ 2.57569
TempANNUALmean (Degrees Celsius)	3.00000	0.71683 $\pm$ 1.81248
TempANNUALmin (Degrees Celsius)	-2.00000	-3.38604 $\pm$ 1.60598
<b>Hydrology</b>		
Drainage-Area (km <sup>2</sup> )	23.84194	135.66658 $\pm$ 373.96803
Perimeter (Km)	34.59989	55.78285 $\pm$ 83.00734
StreamDensity (m/km <sup>2</sup> )	2757.66254	2198.74079 $\pm$ 886.68339
StreamLength (m)	65748.03	293250.33 $\pm$ 851854.38
<b>Landcover</b>		
Natl-AnnCrops (%)	0.00000	0.00000 $\pm$ 0.00000
Natl-Barren (%)	0.00000	0.00000 $\pm$ 0.00000
Natl-BroadleafDense (%)	0.00000	0.00523 $\pm$ 0.02638
Natl-BroadleafOpen (%)	1.66113	1.35705 $\pm$ 2.04550
Natl-BroadleafSparse (%)	0.00000	0.31953 $\pm$ 0.53788
Natl-Coniferous (%)	0.00000	0.00000 $\pm$ 0.00000
Natl-ConiferousDense (%)	2.08345	4.95677 $\pm$ 7.46543
Natl-ConiferousOpen (%)	45.69524	34.34335 $\pm$ 18.65764
Natl-ConiferousSparse (%)	5.63003	1.39163 $\pm$ 1.60111
Natl-Deciduous (%)	0.00000	0.00000 $\pm$ 0.00000
Natl-Developed (%)	0.00000	0.00002 $\pm$ 0.00009
Natl-ExposedLand (%)	10.98581	16.95282 $\pm$ 9.64125
Natl-Grassland (%)	8.24811	5.60615 $\pm$ 5.17505
Natl-Herb (%)	0.24413	2.04978 $\pm$ 2.79736

## Habitat Description

Variable	NAHOR02	Predicted Group Reference Mean $\pm$ SD
Natl-MixedForest (%)	0.00000	0.00000 $\pm$ 0.00000
Natl-MixedwoodDense (%)	0.15478	0.02636 $\pm$ 0.08976
Natl-MixedwoodOpen (%)	9.58942	2.10440 $\pm$ 2.63686
Natl-MixedwoodSparse (%)	0.00000	0.01817 $\pm$ 0.04448
Natl-PerennCropsPast (%)	0.00000	0.00000 $\pm$ 0.00000
Natl-Rock/Rubble (%)	3.31291	6.97447 $\pm$ 7.52078
Natl-Shrubland (%)	0.00000	0.00000 $\pm$ 0.00000
Natl-ShrubLow (%)	6.49920	4.49178 $\pm$ 5.44294
Natl-ShrubTall (%)	0.00000	0.33533 $\pm$ 1.14136
Natl-SnowIce (%)	0.00000	7.70046 $\pm$ 9.06096
Natl-Water (%)	0.00000	0.14384 $\pm$ 0.45543
Natl-Wetland (%)	0.00000	0.00000 $\pm$ 0.00000
Natl-WetlandHerb (%)	0.00000	0.00639 $\pm$ 0.02401
Natl-WetlandShrub (%)	0.00000	0.00868 $\pm$ 0.02574
Natl-WetlandTreed (%)	0.00000	0.00226 $\pm$ 0.00959
Reg-Ice (%)	0.00000	3.06094 $\pm$ 5.65390
<b>Substrate Data</b>		
%Bedrock (%)	0	1 $\pm$ 1
%Boulder (%)	0	3 $\pm$ 3
%Cobble (%)	39	64 $\pm$ 17
%Gravel (%)	6	2 $\pm$ 2
%Pebble (%)	55	31 $\pm$ 16
%Sand (%)	0	0 $\pm$ 0
%Silt+Clay (%)	0	0 $\pm$ 0
D50 (cm)	5.00	19.61 $\pm$ 30.65
Dg (cm)	4.9	20.3 $\pm$ 30.8
Dominant-1st (Category(0-9))	6	7 $\pm$ 1
Dominant-2nd (Category(0-9))	5	6 $\pm$ 1
Embeddedness (Category(1-5))	4	4 $\pm$ 1
PeriphytonCoverage (Category(1-5))	1	2 $\pm$ 1
<b>Topography</b>		
ElevationMax (m)	2586.00000	2829.64865 $\pm$ 315.67549
ElevationMin (m)	811.00000	1172.81081 $\pm$ 249.32284
ElevationStdev (m)	365.04788	342.56455 $\pm$ 77.02221
Reg-SlopeLT30% (%)	8.99700	16.26604 $\pm$ 8.50298
Slope30-50% (%)	27.62815	28.13773 $\pm$ 4.86732
Slope50-60% (%)	16.16695	14.11202 $\pm$ 1.82185
SlopeAvg (%)	55.87465	56.75540 $\pm$ 7.27461
SlopeGT60% (%)	41.06465	39.57775 $\pm$ 9.82818
SlopeLT30% (%)	15.14024	18.17250 $\pm$ 6.88627
SlopeMax (%)	229.09795	317.81636 $\pm$ 141.61151
SlopeMin (%)	0.59331	0.79557 $\pm$ 1.30240
SlopeStdev (%)	24.97949	29.56849 $\pm$ 5.64880
<b>Water Chemistry</b>		
General-DO (mg/L)	10.0000000	11.0635135 $\pm$ 0.9899052
General-pH (pH)	8.5	7.7 $\pm$ 0.7
General-SpCond ( $\mu$ S/cm)	366.8000000	160.3567568 $\pm$ 118.4083015
General-TempAir (Degrees Celsius)	9.7	10.5 $\pm$ 0.7
General-TempWater (Degrees Celsius)	8.7000000	5.5262162 $\pm$ 1.8860693
General-Turbidity (NTU)	1.0200000	0.1015000 $\pm$ 0.0459619