YUKON PLACER SECRETARIAT

Fish Habitat Management System for Yukon Placer Mining

Aquatic Health Report (2014)

Prepared by

The Yukon Placer Secretariat

Updated January 2017

Introduction

The Adaptive Management Framework for Yukon placer mining is complemented by traditional knowledge and monitoring of water quality objectives, aquatic health, and economic health. The Aquatic Health Monitoring program is governed by the Aquatic Health Monitoring Protocol. The Protocol describes the locations, timing, frequency and methods employed during sampling, as well as the methods used to analyze sampling data. The Reference Condition Approach (RCA) is the method chosen for assessing the health of freshwater ecosystems in the Yukon, and an RCA model was developed for bioassessment based upon benthic macroinvertebrates.

An RCA model was first adopted for assessing watershed health under the FHMS for Yukon placer mining in 2007. In January 2008, this model was re-calibrated incorporating data collected in 2007. Further development of the model was undertaken in 2010 using new data collected in 2008 and 2009. In 2013, site data collected in 2010-2012 was incorporated into the model and additional data collected in 2007 and 2008 resulted in the expansion of the geographic range of the model. Current analyses and this report rely on a recalibrated 2013 Yukon model developed from a suite of 286 Reference Sites gathered from across the Yukon Territory by Fisheries and Oceans Canada, the Yukon Government and the University of Western Ontario from 2006 to 2012 (https://www.researchgate.net/publication/281067514_Revision_of_the_Yukon_CABIN_Invertebrate_Bioassessment_Model_using_2004-12_Reference_Site_Data).

Please note that subsequent to the issuance of the first Draft 2014 Aquatic Health Monitoring Report fixes were made to the model used to produce the site assessment results. As such, the final site assessment reports published here may differ from the draft site assessment results originally distributed.

There are two fundamental steps in the process of developing the predictive model. The first is to classify the reference sites based on their biological characteristics. This requires defining a number of community types based on the taxonomic composition. The second step is to determine a subset of habitat attributes that are associated with those community types. Following this step the number and type of organisms expected to occur at any given site can be determined from habitat attributes.

The first step resulted in five community groups being defined for reference sites in the Yukon River basin. There are 23 sites in Group 1, 98 sites in Group 2, 44 sites in Group 3, 108 sites in Group 4, and 13 sites in Group 5.

The following is a summary of the general characteristics of each Reference Group:

Group 1. Sites have very low abundance and richness, with a community dominated by Chironomids (34%) which represent over a third of the community with Lumbriculidae and Naidid as the other main characteristic families (4%). However this is a quite variable community. These sites tend to be the lowest altitude and have larger drainage basins. The channels are deeper, velocity slower and have the finest substrate.

Group 2. Also has low abundance but higher taxonomic richness, this is again a community where Chironomids are dominant (39.7%) but Baetid and Heptaegiid mayflies also have high relative abundance (20%). Six families representing the Diptera, Ephemeroptera and Plecoptera characterise this community type. These are streams in the eastern Yukon but tend to be intermediate with regard to their habitat characteristics.

Group 3. These sites have reasonable abundance and have the highest family richness (> 15 families per site). The dominant families are mayflies (Heptageniidae) and stoneflies (Nemouridae) which together

comprise almost 50% of the community, Chironomids are less abundant (15%) but occur at all sites. The same six families as Community 2 characterise this assemblage. These are higher altitude sites in the eastern portion of the study area and with smaller drainage areas, with the highest spring precipitation and also warmer spring temperatures and the largest substrate.

Group 4. This is a more abundant community with 10 times more organisms per sample than communities 1 and 2. The community also has the high taxonomic richness. Chironomids are again the most common family (44%), however the Baetidae are also common (11% relative abundance) and found at more than 80% of the sites. This is the most frequently occurring assemblage (38% of Reference Sites) and also the most variable in terms of habitat attributes.

Group 5. This is a small community representing less than 5% of the Reference Sites. This community has the greatest number of organisms and is again dominated by Chironomids (56%) but Baetid mayflies (22%) are also abundant. These are shallow streams with high stream velocity. They also have the coolest spring and summer temperatures and the least amount of spring precipitation. These sites are located in the northern part of the study area.

Forty sites were sampled under the aquatic health monitoring program in 2013. All sites were in the Yukon River Basin; two of the sites were sampled as potential reference sites, seven were sampled as repeat reference sites, 31 were test sites (the results of reference site revisits are not presented here). Of the test sites sampled in 2013, eight were new and 23 were re-assessments of sites that were sampled in previous years. Our increased focus on revisiting test sites is beginning to allow investigations of temporal trends in site results.

Forty sites were sampled under the aquatic health monitoring program in 2014. All sites were in the Yukon River Basin; 34 were sampled as test sites and 5 were sampled as repeat reference sites and 1 was sampled as a potential reference site (the results of reference site revisits are not presented here). Of the test sites sampled in 2014, 1 was new and 33 were re-assessments of sites that were sampled in previous years. Our increased focus on revisiting test sites is beginning to allow investigations of temporal trends in site assessment results.

The following table summarizes the 2014 test site results.

More detailed information is found in the individual test site assessment reports, which are appended to this report.

Table 1. 2014 Aquatic Health Monitoring results collected under the Yukon Placer Secretariat's Aquatic Health Monitoring Protocol.

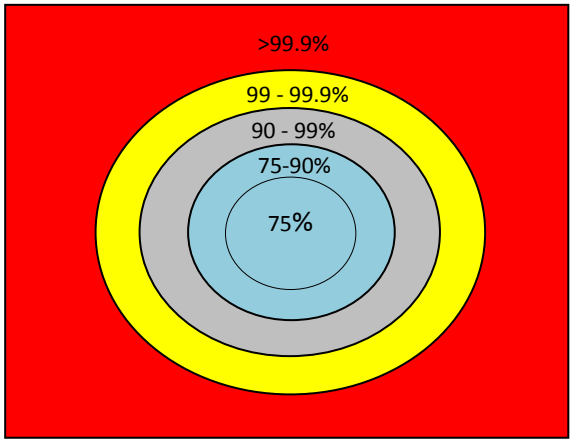
Site Code	Group	Group Probability (%)	Watershed	Watercourse	Site Assessment Result	Discussion
YPS-090	2	40.4	Indian River	Indian River	Mildly Divergent from Reference Condition	Richness much lower than expected.
YPS-094	4	45.7	Indian River	Indian River	Mildly Divergent from Reference Condition	Total abundance is low. Richness is very high. Two expected families were absent, one of them characteristic
YPS-105	4	41.6	Klondike River	Allgold Creek	Similar to Reference	
YPS-107	4	46.7	Klondike River	Eldorado Creek	Mildly Divergent from Reference Condition	Total abundance is low. One characteristic family (Simuliidae) had only one individual.
YPS-152	1	43.8	Yukon River North	Frisco Creek	Mildly Divergent from Reference Condition	Two characteristic families were absent (Naididae and Lumbriculidae).
YPS-153	4	42.4	Yukon River North	Henderson Creek	Highly Divergent from Reference Condition	Total abundance was very low. Three expected families were absent (Nemouridae, Heptageniidae, and Sperchontidae). Two Characteristic families were missing (Nemouridae and Heptageniidae).
YPS-164	1	39.0	Yukon River South	Thistle Creek	Mildly Divergent from Reference Condition	Higher than expected richness. Two characteristic families (Naididae and Lumbriculidae) were absent.
YPS-316	4	48.8	White River	Nansen Creek	Similar to Reference	
YPS-317	4	42.7	White River	Victoria Creek	Mildly Divergent from Reference Condition	Higher than expected richness. Two families expected to occur were absent (Tipulidae and Simuliidae). One family characteristic of the group was absent (Simuliidae).
YPS-323	5	41.9	White River	Klaza Creek	Mildly Divergent from Reference Condition	Total abundance was low. Three families expected to occur were absent. One family characteristic of the group was absent (Simuliidae).
YPS-325	3	58.4	Big Salmon River	Livingstone Creek	Similar to Reference	
YPS-326	3	61.2	Big Salmon River	Marten Creek	Similar to Reference	

Site Code	Group	Group Probability (%)	Watershed	Watercourse	Site Assessment Result	Discussion
YPS-350	2	45.4	Klondike River	Leotta Creek	Similar to Reference	
YPS-372	3	50.8	Big Salmon River	Cottoneva Creek	Similar to Reference	
YPS-373	3	64.0	Big Salmon River	South Big Salmon River	Similar to Reference	
YPS-375	2	42.7	Fortymile River	Maiden Creek	Similar to Reference	
YPS-378	2	39.6	Fortymile River	Marten Creek	Divergent from Reference Condition	Total abundance was low. Six families expected to occur were absent. Four families characteristic of the group were absent (Heptageniida, Nemouridae, Chloroperlidae and Baetidae).
YPS-379	2	33.6	Fortymile River	Bruin Creek	Mildly Divergent from Reference Condition	Of the six families characteristic of the group to which this site was predicted, two (Nemouridae and Sperchontidae) were absent.
YPS-411	4	48.1	Big Creek	Mechanic Creek	Mildly Divergent from Reference Condition	Total abundance was low for characteristic families, particularily Baetidae and Nemouridae. Three families expected to occur were absent.
YPS-412	4	38.5	Big Creek	Big Creek	Highly Divergent from Reference Condition	Total abundance was very low for all families present. Three families expected to occur were absent.
YPS-413	4	51.2	Big Creek	No Name Creek	Mildly Divergent from Reference Condition	Total abundance is below average. Total number of families was much higher than expected.
YPS-414	4	48.3	Big Creek	Seymour Creek	Mildly Divergent from Reference Condition	Total abundance was low particularly for characteristic families Chironomidae, Nemouridae and Simuliidae. Two families expected to occur were absent.
YPS-427	4	54.3	Stewart River	Rosebud Creek	Mildly Divergent from Reference Condition	Total abundance was low, particularly across characteristic families. Richness was much higher than expected.
YPS-428	2	37.5	Stewart River	Black Hills Creek	Similar to Reference	
YPS-430	1	35.8	Stewart River	Maisy May Creek	Similar to Reference	

Site Code	Group	Group Probability (%)	Watershed	Watercourse	Site Assessment Result	Discussion
YPS-431	4	35.6	Stewart River	Scroggie Creek	Mildly Divergent from Reference Condition	Total abundance is low. Three expected families were missing, including one characteristic of the group.
YPS-433	4	36.0	Stewart River	Brewer Creek	Divergent from Reference Condition	Total abundance was low, particularly for characteristic families. One characteristic family was missing.
YPS-435	2	33.2	Stewart River	Clear Creek	Similar to Reference	
YPS-481	4	46.5	Indian River	Australia Creek	Similar to Reference	
YPS-534	4	47.7	Yukon River South	Kirkman Creek	Similar to Reference	
YPS-535	1	63.5	Yukon River South	Thistle Creek	Mildly Divergent from Reference Condition	Abundance and richness are above average. One family expected to occur was absent. Two families characteristic of the group were absent (Naididae and Lumbriculidae).
YPS-544	2	43.0	Klondike River	Hunker Creek	Divergent from Reference Condition	Total abundance and richness are low. 6 families expected to occur were absent and 5 characteristic families were missing.
YPS-547	2	42.5	Indian River	Dominion Creek	Similar to Reference	
YPS-570	4	41.2	Yukon River South	Ballarat Creek	Mildly Divergent from Reference Condition	Total abundance was low for all characteristic families.

Probability bands and legend for the test sites results

(as determined from site assessment graphs - see detailed site assessments)



Highly Divergent from Reference Condition = outside 99.9% probability band

Divergent from Reference Condition = between 99% and 99.9% probability band

Mildly Divergent from Reference Condition = between 90% and 99% probability band

Similar to Reference Condition = inside the 90% & 75% probability band

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Aquatic Health Report (2014)

Prepared by

The Yukon Placer Secretariat

Updated January 2017

Site Assessment Report 2014 - YPS-090

Site Data

Site	YPS-090
Sample Date	Jul 22 2014
Latitude	63.76944 N
Longitude	139.63001 W
Altitude	1201
Feature Name	Indian River at Water Resources Station
Stream Order	6

Site Photograph

Upstream view

Context Map

Refer to Indian River Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site has been sampled on three previous occasions, in 2006, 2009 and 2013.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	2				
Group	1	2	3	4	5
Probability that the site belongs to each Group	17.8%	40.4%	10.2%	31.1%	0.5%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-139.63	-136.93	2.75
Altitude (ft)	1201	2134.49	899.68
Depth-Avg (cm)	39.00	31.44	19.67
Velocity-Avg (m/s)	0.44	0.43	0.26
Precip. FEB (mm)	34.17	28.51	7.47
Precip. MAR (mm)	32.99	26.48	7.73
Precip. JUN (mm)	56.70	57.14	13.59
Precip. JUL (mm)	70.72	73.01	17.74
Rainfall JUN (mm)	53.89	49.32	11.37
April Max Temp (C)	-3.68	0.93	4.20
Broadleaf Open (%)	0.01	0.14	0.34
Bryoids (%)	0.88	0.31	0.61
Mixedwood Open (%)	0.07	0.75	1.44
Wetland Herb (%)	0.12	0.11	0.31

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	130.00	265.34	160.63	
Total No. of Taxa	8.00	11.52	4.32	11.5

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	0.98	7	98	68
Baetidae	0.78	63	27	35
Simuliidae	0.75	0	16	31
Nemouridae	0.73	0	17	24
Heptageniidae	0.62	15	19	27
Sperchontidae	0.52	0	3	7
Tipulidae	0.50	2	2	3

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 11.5 families at this site, but 8 families were observed.

Total abundance is below average for this group but within the normal range. Richness (total number of families) is much lower than expected.

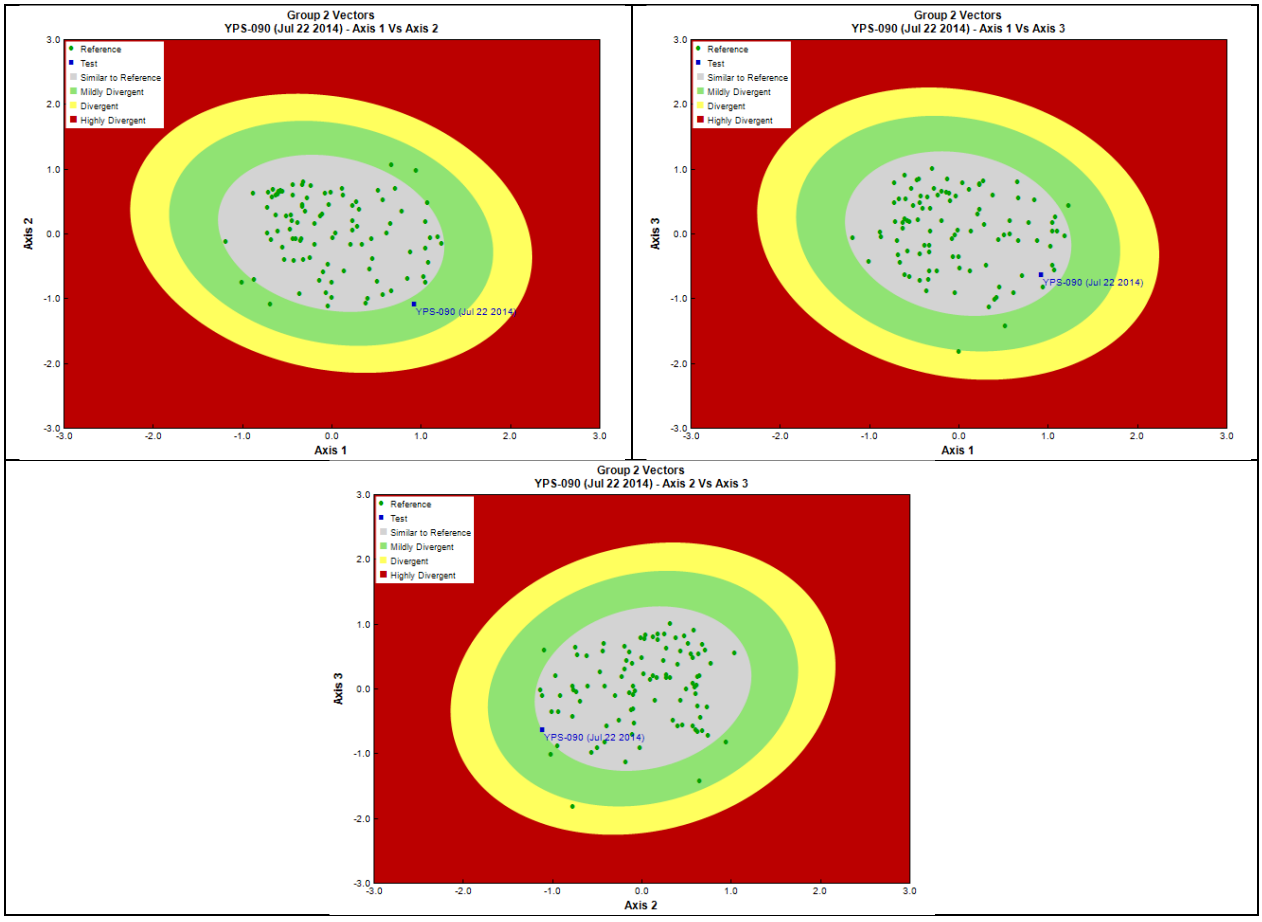
Of the 7 families expected to occur (P>0.5), 3 (Simuliidae, Nemouridae and Sperchontidae) were absent.

Of the six families characteristic of the group to which this site was predicted, three (Simuliidae, Nemouridae and Chloroperlidae) were absent.

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be included here.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Mildly Divergent from Reference Condition
Vector 1 vs Vector 3	Similar to Reference
Vector 2 vs Vector 3	Similar to Reference
Overall	Mildly Divergent from Reference Condition

Using CABIN, YPS-090 is assessed as Mildly Divergent from Reference Condition.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-090**
Sample Year	2014
Status	Test
Bankfull Width (m)	30
Wetted Width (m)	30
Channel Depth Average (cm)	39
Channel Depth Max (cm)	45
Slope m/m	0.05
Slope (%)	5
Max Water Velocity (m/s)	0.5
Average Water Velocity (m/s)	0.44
Dominant Substrate-1st	6.4 – 12.8 cm (cobble)
Dominant Substrate-2nd	3.2 – 6.4 cm (pebble)
Surrounding Substrate Material	0.2 – 1.6 cm (gravel)
Substrate Embeddedness	1/2 Embedded
Pools	Absent
Rapids	Absent
Riffles	Present
Straight Run	Present
Canopy Coverage (%)	None
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	276
Specific Conductance (µS/cm)	352
DO (mg/L)	10.72
pH (pH)	7.9
TDS (mg/L)	208
TSS (mg/L)	20
Air Temp (Degrees Celsius)	17
Water Temp (Degrees Celsius)	13.6
Turbidity (NTU)	29

Site Assessment Report 2014 – YPS-094

Site Data

Site	YPS-094
Sample Date	Jul 22 2014
Latitude	63.79500N
Longitude	-139.40833 W
Altitude	1312
Feature Name	Indian River at 9-Mile Creek
Stream Order	6

Site Photograph

Downstream view

Context Map

Refer to Indian River Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site has been sampled on two previous occasions, in 2006 and 2013.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	4				
Group	1	2	3	4	5
Probability that the site belongs to each Group	9.2%	25.1%	17.7%	45.7%	2.3%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-139.41	-137.45	2.65
Altitude (ft)	1312	2296.81	838.01
Depth-Avg (cm)	28.80	29.80	14.62
Velocity-Avg (m/s)	0.86	0.52	0.32
Precip. FEB (mm)	34.30	29.34	11.79
Precip. MAR (mm)	33.13	27.46	11.91
Precip. JUN (mm)	57.10	53.49	18.49
Precip. JUL (mm)	71.09	65.85	22.37
Rainfall JUN (mm)	54.24	48.44	16.06
April Max Temp (C)	-3.73	-0.98	3.38
Broadleaf Open (%)	0.01	0.38	1.31
Bryoids (%)	0.86	0.54	1.04
Mixedwood Open (%)	0.06	0.77	2.87
Wetland Herb (%)	0.13	0.14	0.46

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	526.00	2059.44	1572.86	
Total No. of Taxa	19.00	12.95	4.37	12.5

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	0.99	159	910	826
Baetidae	0.84	147	232	309
Simuliidae	0.80	5	207	366
Nemouridae	0.80	0	129	183
Heptageniidae	0.71	19	120	216
Sperchontidae	0.58	0	35	59
Empididae	0.55	8	18	37
Tipulidae	0.54	9	18	40
Chloroperlidae	0.50	1	72	72

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 12.5 families at this site, but 19 families were observed.

Total abundance is below average for this group and outside the normal range. Richness (total number of families) is much higher than expected.

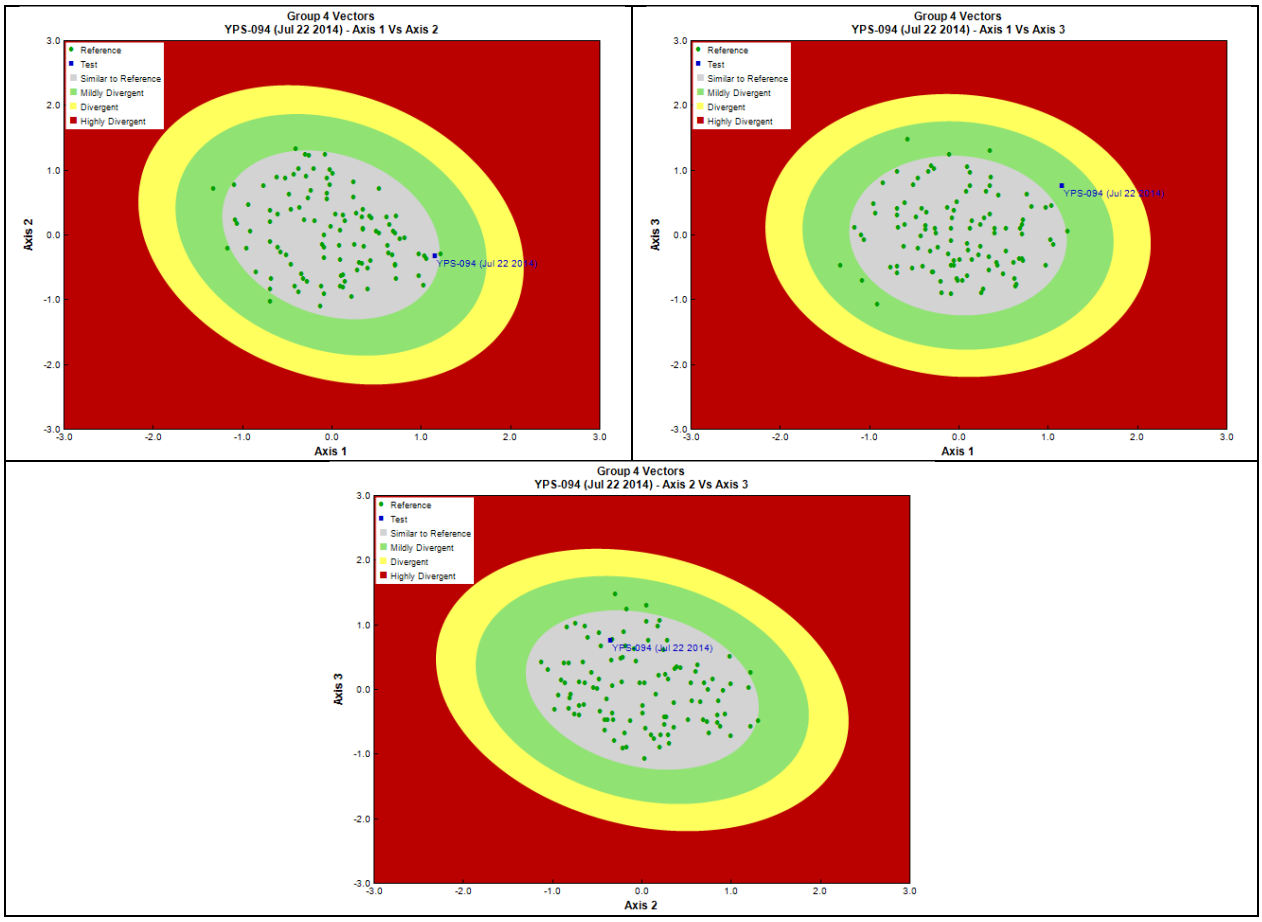
Of the 9 families expected to occur (P>0.5), 2 (Nemouridae and Sperchontidae) were absent.

Of the five families characteristic of the group to which this site was predicted, one was absent (Nemouridae).

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be included here.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Similar to Reference
Vector 1 vs Vector 3	Mildly Divergent from Reference Condition
Vector 2 vs Vector 3	Similar to Reference
Overall	Mildly Divergent from Reference Condition

Using CABIN, YPS-094 is assessed as Mildly Divergent from Reference Condition.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-094**
Sample Year	2014
Status	Test
Bankfull Width (m)	41
Wetted Width (m)	36.5
Channel Depth Average (cm)	28.8
Channel Depth Max (cm)	37
Slope m/m	0.0075
Slope (%)	0.75
Max Water Velocity (m/s)	1.1
Average Water Velocity (m/s)	0.86
Dominant Substrate-1st	6.4 – 12.8 cm (cobble)
Dominant Substrate-2nd	3.2 – 6.4 cm (pebble)
Surrounding Substrate Material	0.2 – 1.6 cm (gravel)
Substrate Embeddedness	1/4 Embedded
Pools	Present
Rapids	Absent
Riffles	Present
Straight Run	Absent
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	1-25
Riparian Vegetation-Coniferous	Absent
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	272.4
Specific Conductance (µS/cm)	340.8
DO (mg/L)	8.18
pH (pH)	8
TDS (mg/L)	
TSS (mg/L)	
Air Temp (Degrees Celsius)	20
Water Temp (Degrees Celsius)	14.5
Turbidity (NTU)	

Site Assessment Report 2014 – YPS-105

Site Data

Site	YPS-105
Sample Date	Jul 21, 2014
Latitude	63.94333 N
Longitude	138.61778 W
Altitude	1509
Feature Name	All Gold Creek downstream of Hwy.
Stream Order	3

Site Photograph

Downstream

Context Map

Refer to Klondike River Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site has been sampled on one previous occasion, in 2006.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	4				
Group	1	2	3	4	5
Probability that the site belongs to each Group	7.6%	38.1%	9.8%	41.6%	2.8%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-138.62	-137.45	2.65
Altitude (ft)	1509	2296.81	838.01
Depth-Avg (cm)	20.40	29.80	14.62
Velocity-Avg (m/s)	0.24	0.52	0.32
Precip. FEB (mm)	33.68	29.34	11.79
Precip. MAR (mm)	32.34	27.46	11.91
Precip. JUN (mm)	56.78	53.49	18.49
Precip. JUL (mm)	69.88	65.85	22.37
Rainfall JUN (mm)	54.09	48.44	16.06
April Max Temp (C)	-4.16	-0.98	3.38
Broadleaf Open (%)	0.00	0.38	1.31
Bryoids (%)	0.37	0.54	1.04
Mixedwood Open (%)	0.01	0.77	2.87
Wetland Herb (%)	0.00	0.14	0.46

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	479.00	2059.44	1572.86	
Total No. of Taxa	11.00	12.95	4.37	12.2

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	0.99	445	910	826
Baetidae	0.84	10	232	309
Simuliida	0.79	1	207	366
Nemouridae	0.78	0	129	183
Heptageniidae	0.69	1	120	216
Sperchontidae	0.56	1	35	59
Empididae	0.53	7	18	37
Tipulidae	0.53	2	18	40

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 12.2 families at this site, but 11 families were observed.

Total abundance is below average for this group and outside the normal range. Richness (total number of families) is slightly lower than expected.

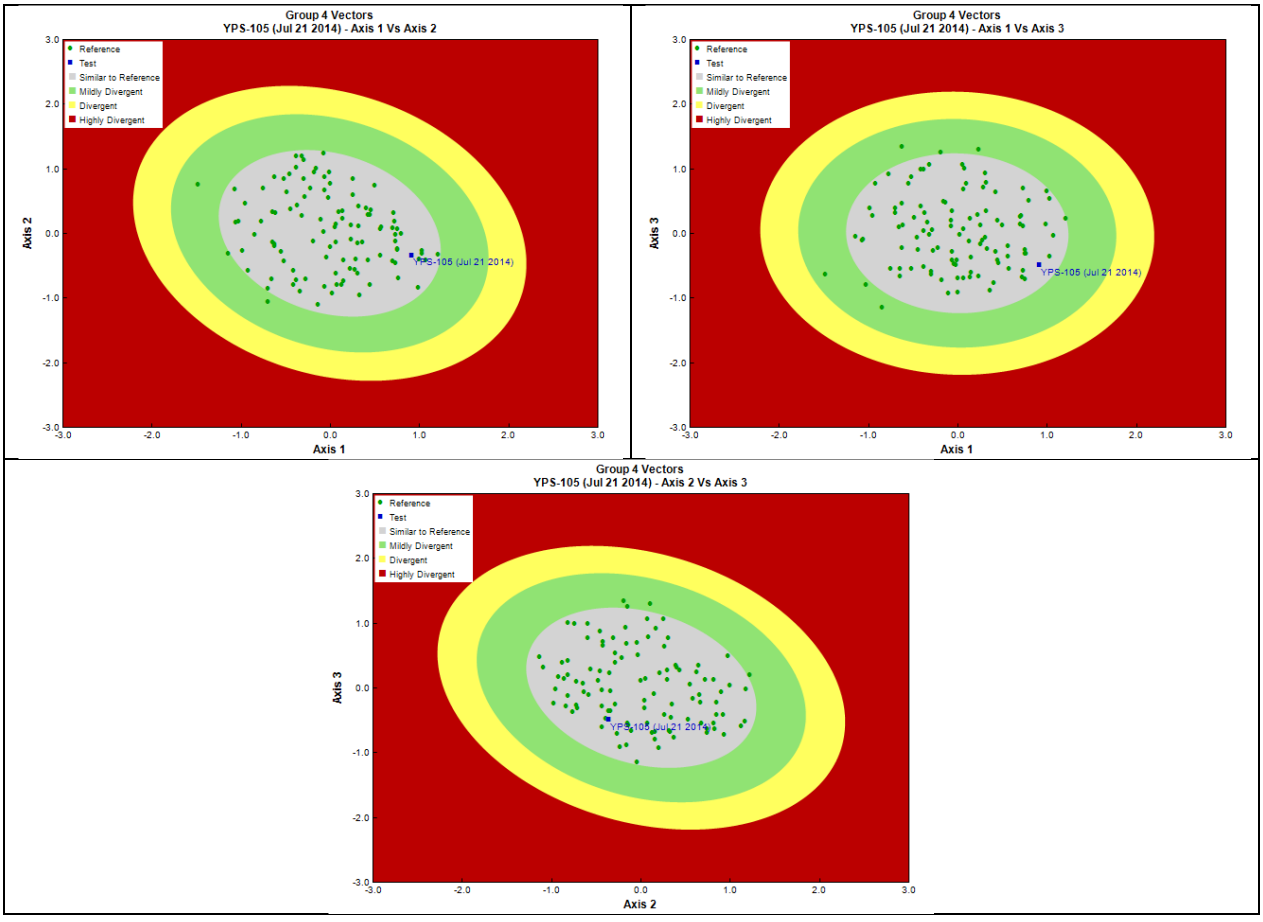
Of the 8 families expected to occur (P>0.5), one (Nemouridae) was absent.

One of the five families characteristic of the group to which this site was predicted, one was absent (Nemouridae).

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be included here.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Similar to Reference
Vector 1 vs Vector 3	Similar to Reference
Vector 2 vs Vector 3	Similar to Reference
Overall	Similar to Reference

Using CABIN, YPS-105 is assessed as Similar to Reference.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-105**
Sample Year	2014
Status	Test
Bankfull Width (m)	20.2
Wetted Width (m)	5.9
Channel Depth Average (cm)	20.4
Channel Depth Max (cm)	33
Slope m/m	0.01
Slope (%)	1
Max Water Velocity (m/s)	0.3
Average Water Velocity (m/s)	0.24
Dominant Substrate-1st	0.2 – 1.6 cm (gravel)
Dominant Substrate-2nd	1.6 – 3.2 cm (pebble)
Surrounding Substrate Material	0.2 – 1.6 cm (gravel)
Substrate Embeddedness	1/2 Embedded
Pools	Absent
Rapids	Absent
Riffles	Present
Straight Run	Present
Canopy Coverage (%)	None
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	338.5
Specific Conductance (µS/cm)	418.7
DO (mg/L)	8.49
pH (pH)	8.2
TDS (mg/L)	261
TSS (mg/L)	29
Air Temp (Degrees Celsius)	22
Water Temp (Degrees Celsius)	15.1
Turbidity (NTU)	34

Site Assessment Report 2014 – YPS-107

Site Data

Site	YPS-107
Sample Date	Jul 24, 2014
Latitude	63.86222 N
Longitude	139.24666 W
Altitude	2060
Feature Name	Eldorado Creek top
Stream Order	2

Site Photograph

Downstream view

Context Map

Refer to Klondike River Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site has been sampled on three previous occasions, in 2006, 2008 and 2013.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	4				
Group	1	2	3	4	5
Probability that the site belongs to each Group	6.3%	26.1%	9.8%	46.7%	11.0%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-139.25	-137.45	2.65
Altitude (ft)	2021	2296.81	838.01
Depth-Avg (cm)	9.40	29.80	14.62
Velocity-Avg (m/s)	0.22	0.52	0.32
Precip. FEB (mm)	34.59	29.34	11.79
Precip. MAR (mm)	33.28	27.46	11.91
Precip. JUN (mm)	55.56	53.49	18.49
Precip. JUL (mm)	69.85	65.85	22.37
Rainfall JUN (mm)	53.26	48.44	16.06
April Max Temp (C)	-4.20	-0.98	3.38
Broadleaf Open (%)	0.00	0.38	1.31
Bryoids (%)	0.30	0.54	1.04
Mixedwood Open (%)	0.14	0.77	2.87
Wetland Herb (%)	0.00	0.14	0.46

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	260.00	2059.44	1572.86	
Total No. of Taxa	11.00	12.95	4.37	12.4

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	0.99	148	910	826
Baetidae	0.87	21	232	309
Nemouridae	0.81	22	130	184
Simuliidae	0.80	1	207	367
Heptageniidae	0.72	41	120	216
Sperchontidae	0.56	1	35	60
Empididae	0.55	0	18	37
Tipulidae	0.54	0	18	41

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 12.4 families at this site, but 11 families were observed.

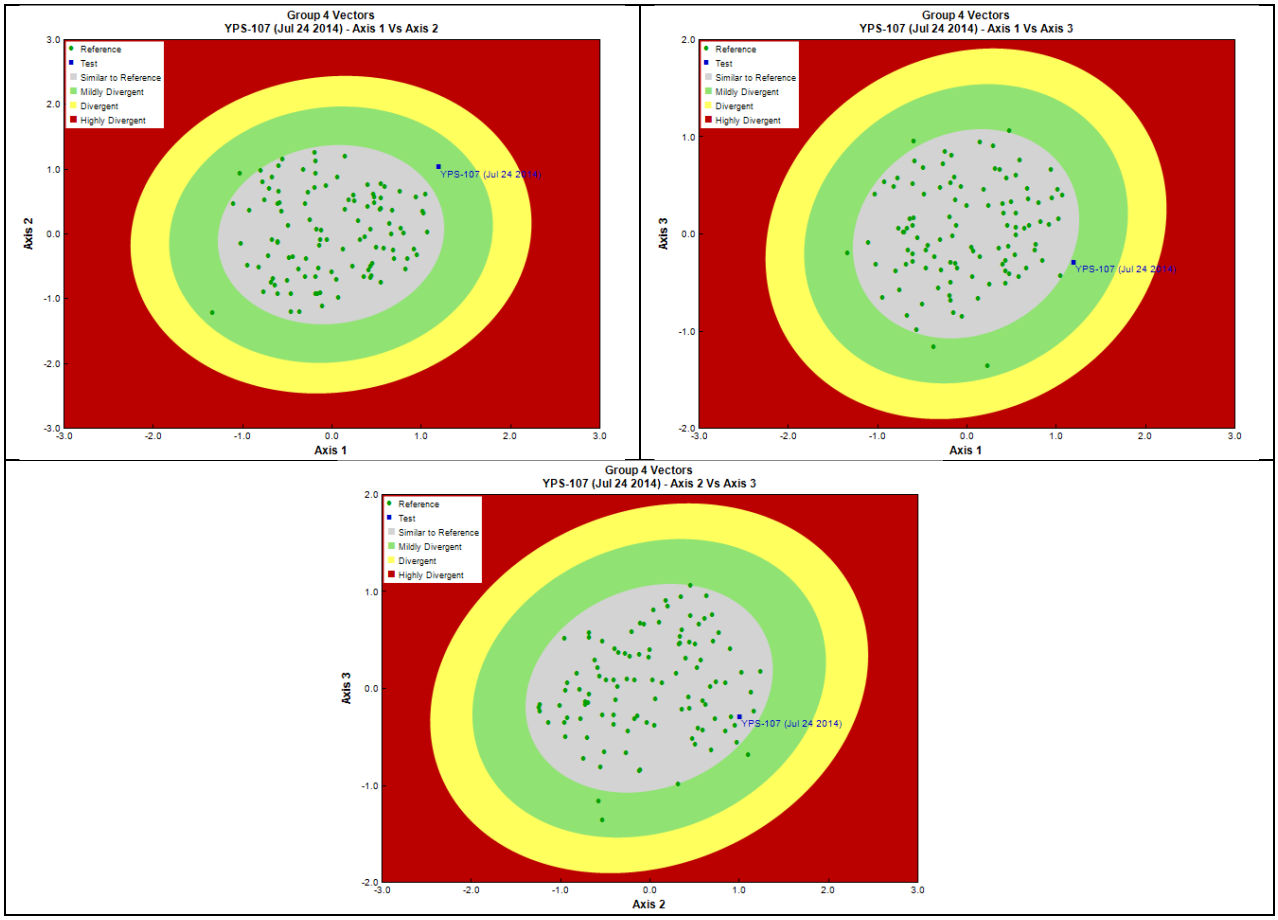
Total abundance is well below average for this group and outside the normal range. Richness (total number of families) is slightly lower than expected.

Of the 8 families expected to occur (P>0.5), 2 (Empididae and Tipulidae) were absent. All five families characteristic of the group to which this site was predicted were present.

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be included here.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Mildly Divergent from Reference Condition
Vector 1 vs Vector 3	Mildly Divergent from Reference Condition
Vector 2 vs Vector 3	Similar to Reference
Overall	Mildly Divergent from Reference Condition

Using CABIN, YPS-107 is assessed as Mildly Divergent from Reference Condition.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-107**
Sample Year	2014
Status	Test
Bankfull Width (m)	12.3
Wetted Width (m)	2.5
Channel Depth Average (cm)	9.4
Channel Depth Max (cm)	16
Slope m/m	0.02
Slope (%)	2
Max Water Velocity (m/s)	0.3
Average Water Velocity (m/s)	0.22
Dominant Substrate-1st	6.4 – 12.8 cm (cobble)
Dominant Substrate-2nd	12.8 – 25.6 cm (cobble)
Surrounding Substrate Material	0.1 – 0.2 cm (sand)
Substrate Embeddedness	1/4 Embedded
Pools	Absent
Rapids	Absent
Riffles	Present
Straight Run	Absent
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	186.4
Specific Conductance (µS/cm)	302.1
DO (mg/L)	10.39
pH (pH)	8
TDS (mg/L)	175
TSS (mg/L)	0.5
Air Temp (Degrees Celsius)	15
Water Temp (Degrees Celsius)	4.9
Turbidity (NTU)	1.9

Site Assessment Report 2014 – YPS-152

Site Data

Site	YPS-152
Sample Date	Jul 21 2014
Latitude	63.21891 N
Longitude	139.53867 W
Altitude	1250
Feature Name	Frisco Creek
Stream Order	4

Site Photograph

Upstream view

Context Map

Refer to Yukon River North Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site was also sampled in 2006.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	1				
Group	1	2	3	4	5
Probability that the site belongs to each Group	43.8%	7.1%	12.7%	33.9%	2.5%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-139.54	-138.27	2.10
Altitude (ft)	1250	1973.87	1104.18
Depth-Avg (cm)	19.70	36.46	24.31
Velocity-Avg (m/s)	1.47	0.42	0.29
Precip. FEB (mm)	34.89	27.74	9.11
Precip. MAR (mm)	33.83	25.55	9.72
Precip. JUN (mm)	53.66	49.78	15.10
Precip. JUL (mm)	69.92	63.45	19.77
Rainfall JUN (mm)	50.99	45.78	13.48
April Max Temp (C)	-2.18	-0.26	3.57
Broadleaf Open (%)	0.00	0.20	0.41
Bryoids (%)	0.09	0.17	0.42
Mixedwood Open (%)	4.47	2.46	5.01
Wetland Herb (%)	0.00	0.22	0.64

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	300.00	192.18	127.13	
Total No. of Taxa	13.00	10.12	4.49	10.4

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	0.96	69	15	12
Simuliidae	0.65	19	1	1
Nemouridae	0.65	175	1	2
Baetidae	0.64	13	2	7
Heptageniidae	0.52	3	1	3

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 10.4 families at this site, but 13 families were observed.

Total abundance is above average for this group but within the normal range. Richness (total number of families) is higher than expected.

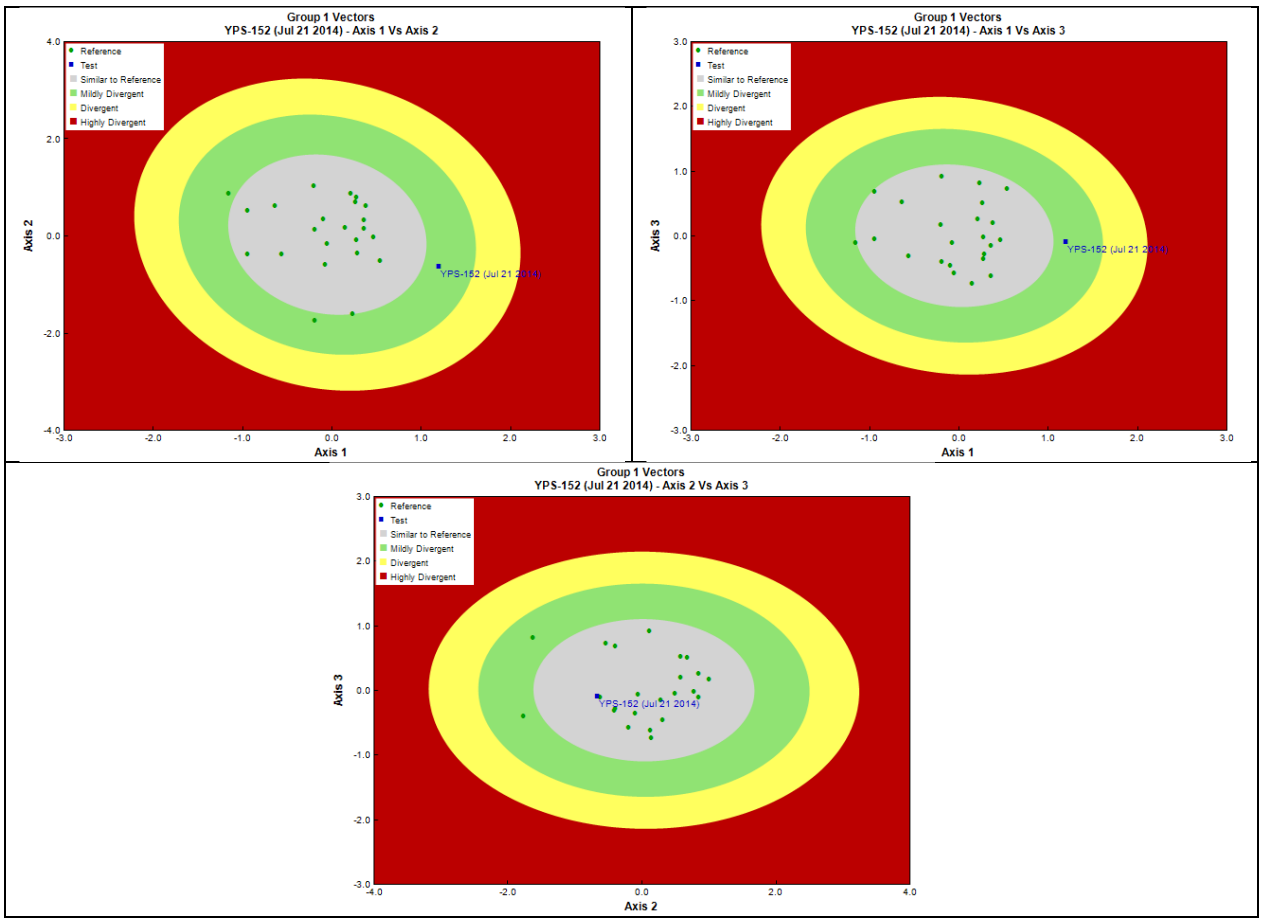
Of the 5 families expected to occur (P>0.5), none were absent.

Of the three families characteristic of the group to which this site was predicted, two (Naididae and Lumbriculidae) were absent.

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be included here.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Mildly Divergent from Reference Condition
Vector 1 vs Vector 3	Mildly Divergent from Reference Condition
Vector 2 vs Vector 3	Similar to Reference
Overall	Mildly Divergent from Reference Condition

Using CABIN, YPS-152 is assessed as Mildly Divergent from Reference Condition.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-152**
Sample Year	2014
Status	Test
Bankfull Width (m)	3.9
Wetted Width (m)	2.5
Channel Depth Average (cm)	19.7
Channel Depth Max (cm)	35
Slope m/m	0.022
Slope (%)	2.2
Max Water Velocity (m/s)	2.5
Average Water Velocity (m/s)	1.47
Dominant Substrate-1st	6.4 – 12.8 cm (cobble)
Dominant Substrate-2nd	3.2 – 6.4 cm (pebble)
Surrounding Substrate Material	0.1 – 0.2 cm (sand)
Substrate Embeddedness	1/4 Embedded
Pools	Present
Rapids	Absent
Riffles	Present
Straight Run	Present
Canopy Coverage (%)	26-50
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	170
Specific Conductance (µS/cm)	262
DO (mg/L)	12.03
pH (pH)	7.8
TDS (mg/L)	151
TSS (mg/L)	193
Air Temp (Degrees Celsius)	21
Water Temp (Degrees Celsius)	6.69
Turbidity (NTU)	73

Site Assessment Report 2014 – YPS-153

Site Data

Site	YPS-153
Sample Date	Jul 22, 2014
Latitude	63.36458 N
Longitude	139.35458 W
Altitude	1282
Feature Name	Henderson Creek
Stream Order	5

Site Photograph

Aerial view

Context Map

Refer to Yukon River North Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site has been sampled on three previous occasions, in 2006, 2009 and 2010.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	4				
Group	1	2	3	4	5
Probability that the site belongs to each Group	23.3%	16.5%	15.2%	42.4%	2.6%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-139.35	-137.45	2.65
Altitude (ft)	1282	2296.81	838.01
Depth-Avg (cm)	36.00	29.80	14.62
Velocity-Avg (m/s)	1.00	0.52	0.32
Precip. FEB (mm)	34.45	29.34	11.79
Precip. MAR (mm)	33.30	27.46	11.91
Precip. JUN (mm)	54.36	53.49	18.49
Precip. JUL (mm)	69.65	65.85	22.37
Rainfall JUN (mm)	51.76	48.44	16.06
April Max Temp (C)	-2.92	-0.98	3.38
Broadleaf Open (%)	0.30	0.38	1.31
Bryoids (%)	0.17	0.54	1.04
Mixedwood Open (%)	1.63	0.77	2.87
Wetland Herb (%)	0.00	0.14	0.46

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	94.00	2059.44	1572.86	
Total No. of Taxa	11.00	12.95	4.37	11.7

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	0.98	7	911	827
Baetidae	0.76	47	233	309
Simuliidae	0.74	1	207	367
Nemouridae	0.74	0	130	184
Heptageniidae	0.63	0	120	216
Sperchontidae	0.53	0	35	60
Tipulidae	0.52	5	18	41

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 11.7 families at this site, but 11 families were observed.

Total abundance is well below average for this group and outside the normal range. Richness (total number of families) is slightly lower than expected.

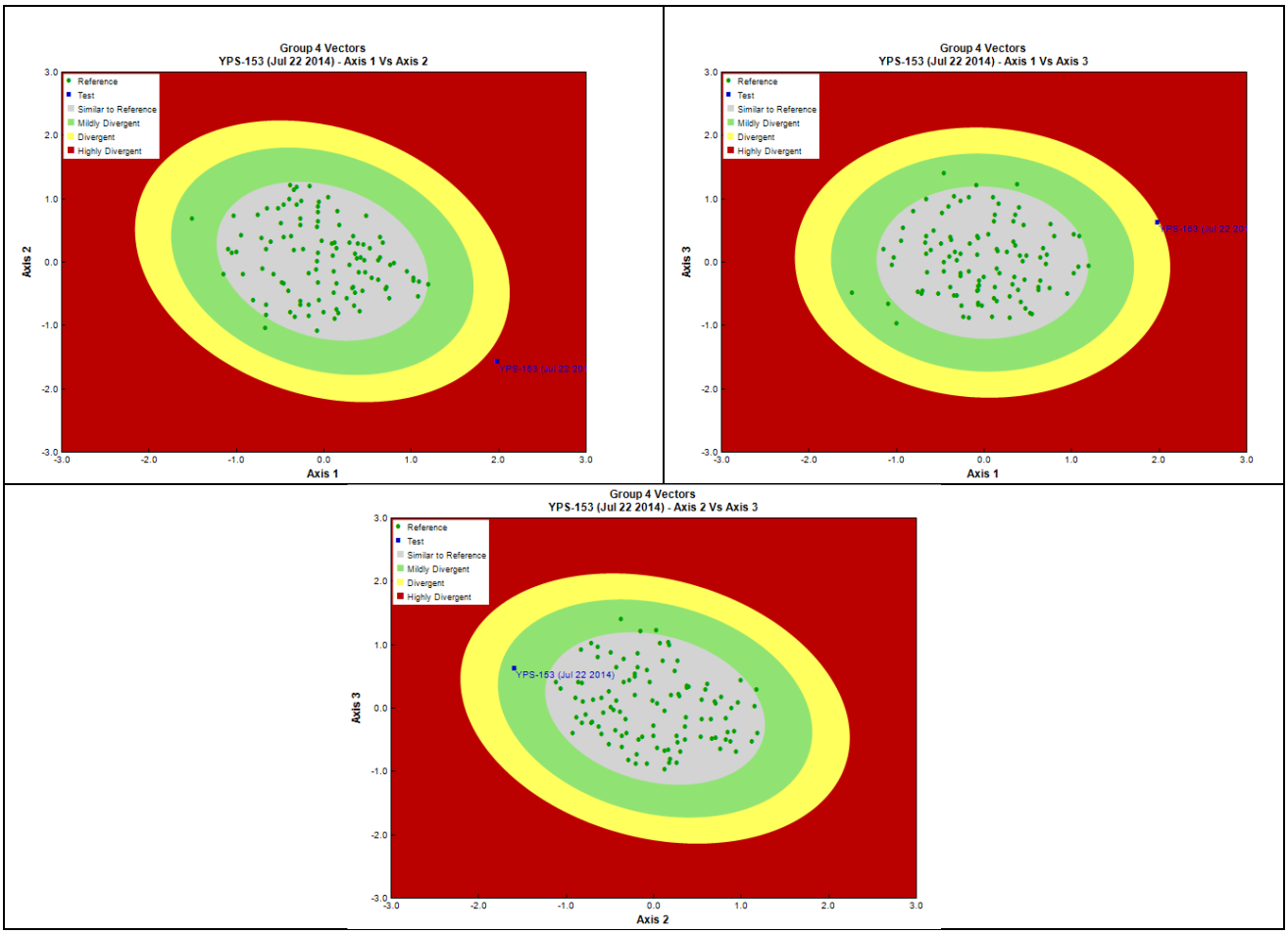
Of the 7 families expected to occur (P>0.5), 3 (Nemouridae, Heptageniidae, and Sperchontidae) were absent.

Five families are characteristic of the group to which this site was predicted and 2 were absent (Nemouridae and Heptageniidae).

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be included here.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Highly Divergent from Reference Condition
Vector 1 vs Vector 3	Divergent from Reference Condition
Vector 2 vs Vector 3	Mildly Divergent from Reference Condition
Overall	Highly Divergent from Reference Condition

Using CABIN, YPS-153 is assessed as Highly Divergent from Reference Condition.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-153**
Sample Year	2014
Status	Test
Bankfull Width (m)	11.2
Wetted Width (m)	7.6
Channel Depth Average (cm)	36
Channel Depth Max (cm)	40
Slope m/m	0.01
Slope (%)	1
Max Water Velocity (m/s)	1.1
Average Water Velocity (m/s)	1
Dominant Substrate-1st	0.2 – 1.6 cm (gravel)
Dominant Substrate-2nd	1.6 – 3.2 cm (pebble)
Surrounding Substrate Material	<0.1 cm (silt)
Substrate Embeddedness	1/2 Embedded
Pools	Absent
Rapids	Absent
Riffles	Present
Straight Run	Absent
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	124.8
Specific Conductance (µS/cm)	192
DO (mg/L)	10.04
pH (pH)	7.7
TDS (mg/L)	109
TSS (mg/L)	82
Air Temp (Degrees Celsius)	14
Water Temp (Degrees Celsius)	6.6
Turbidity (NTU)	47

Site Assessment Report 2014 – YPS-164

Site Data

Site	YPS-164
Sample Date	Jul 21 2014
Latitude	63.07498 N
Longitude	139.31479 W
Altitude	1558
Feature Name	Thistle Creek
Stream Order	5

Site Photograph

Upstream view

Context Map

Refer to Yukon River South Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site has been sampled on three previous occasions, in 2006, 2012, 2013, 2015 and 2016.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	1				
Group	1	2	3	4	5
Probability that the site belongs to each Group	39.0%	18.4%	8.2%	33.2%	1.2%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-139.31	-138.27	2.10
Altitude (ft)	1558	1973.87	1104.18
Depth-Avg (cm)	29.80	36.46	24.31
Velocity-Avg (m/s)	0.48	0.42	0.29
Precip. FEB (mm)	35.30	27.74	9.11
Precip. MAR (mm)	34.36	25.55	9.72
Precip. JUN (mm)	55.59	49.78	15.10
Precip. JUL (mm)	71.90	63.45	19.77
Rainfall JUN (mm)	52.60	45.78	13.48
April Max Temp (C)	-2.04	-0.26	3.57
Broadleaf Open (%)	0.53	0.20	0.41
Bryoids (%)	0.30	0.17	0.42
Mixedwood Open (%)	2.84	2.46	5.01
Wetland Herb (%)	0.00	0.22	0.64

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	517.00	192.18	127.13	
Total No. of Taxa	15.00	10.12	4.49	10.4

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	0.97	90	16	11
Baetidae	0.66	374	2	7
Simuliidae	0.66	18	1	1
Nemouridae	0.65	2	1	2
Heptageniidae	0.52	0	1	3

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 10.4 families at this site, but 15 families were observed.

Total abundance is above average for this group and outside the normal range. Richness (total number of families) is much higher than expected.

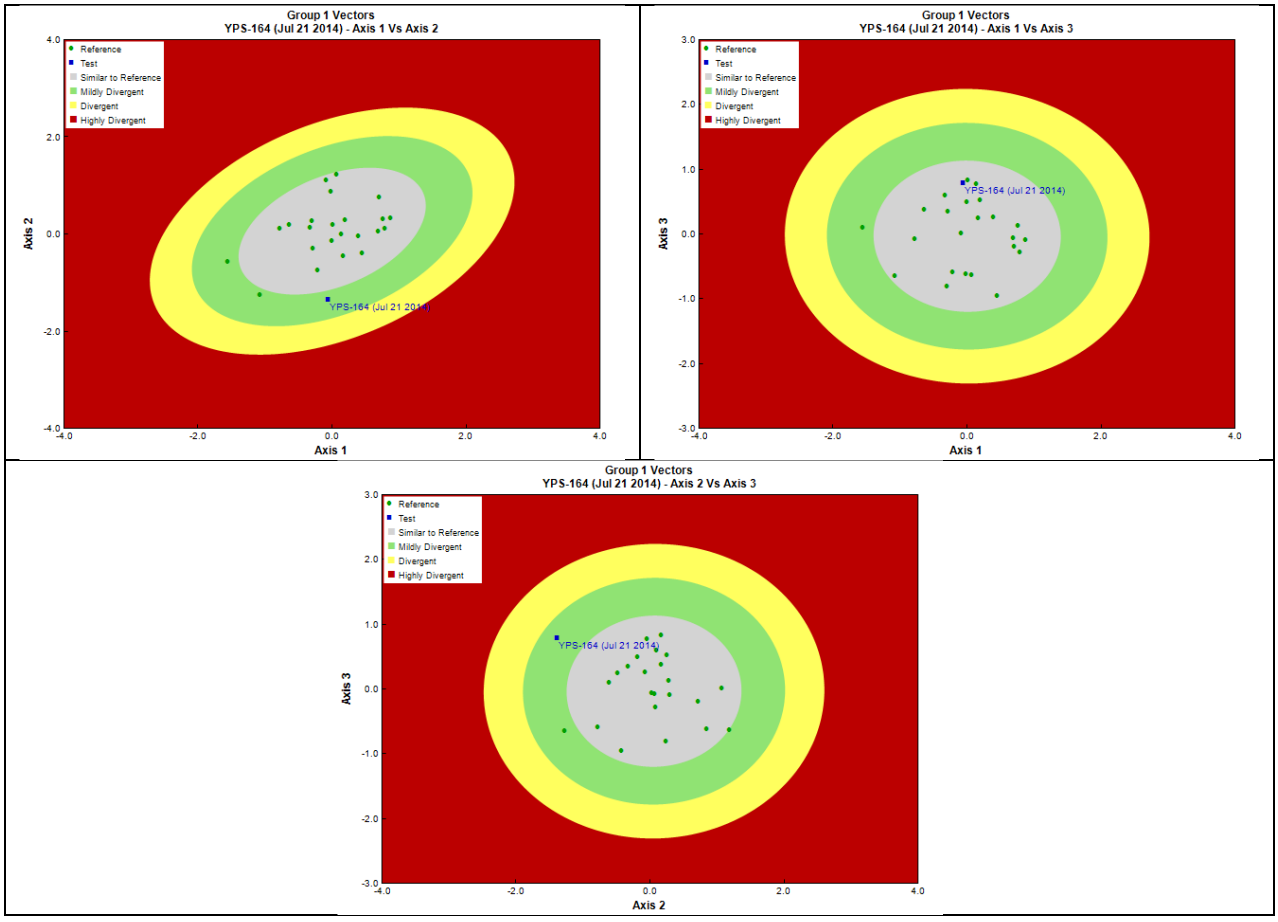
Of the 5 families expected to occur (P>0.5), 1 (Heptageniidae) was absent.

Of the three families characteristic of the group to which this site was predicted, two (Naididae and Lumbriculidae) were absent.

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be included here.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Mildly Divergent from Reference Condition
Vector 1 vs Vector 3	Similar to Reference
Vector 2 vs Vector 3	Mildly Divergent from Reference Condition
Overall	Mildly Divergent from Reference Condition

Using CABIN, YPS-164 is assessed as Mildly Divergent from Reference Condition.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-164**
Sample Year	2014
Status	Test
Bankfull Width (m)	12.3
Wetted Width (m)	10.9
Channel Depth Average (cm)	29.8
Channel Depth Max (cm)	43
Slope m/m	0.015
Slope (%)	1.5
Max Water Velocity (m/s)	0.7
Average Water Velocity (m/s)	0.48
Dominant Substrate-1st	6.4 – 12.8 cm (cobble)
Dominant Substrate-2nd	12.8 – 25.6 cm (cobble)
Surrounding Substrate Material	0.1 – 0.2 cm (sand)
Substrate Embeddedness	1/4 Embedded
Pools	Absent
Rapids	Absent
Riffles	Present
Straight Run	Absent
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Absent
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	289
Specific Conductance (µS/cm)	381
DO (mg/L)	10.97
pH (pH)	8
TDS (mg/L)	227
TSS (mg/L)	403
Air Temp (Degrees Celsius)	22
Water Temp (Degrees Celsius)	12.36
Turbidity (NTU)	160

Site Assessment Report 2014 – YPS-316

Site Data

Site	YPS-316
Sample Date	Jul 25 2014
Latitude	61.98511 N
Longitude	137.18936 W
Altitude	3031
Feature Name	Nansen Creek
Stream Order	3

Site Photograph

Upstream view

Context Map

Refer to Yukon River North Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site has been sampled on two previous occasions, in 2008 and 2012.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	4				
Group	1	2	3	4	5
Probability that the site belongs to each Group	2.4%	15.4%	23.8%	48.8%	9.6%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-137.19	-137.45	2.65
Altitude (ft)	3031	2296.81	838.01
Depth-Avg (cm)	14.80	29.80	14.62
Velocity-Avg (m/s)	0.37	0.52	0.32
Precip. FEB (mm)	39.19	29.34	11.79
Precip. MAR (mm)	38.76	27.46	11.91
Precip. JUN (mm)	72.78	53.49	18.49
Precip. JUL (mm)	91.81	65.85	22.37
Rainfall JUN (mm)	64.41	48.44	16.06
April Max Temp (C)	-1.33	-0.98	3.38
Broadleaf Open (%)	0.85	0.38	1.31
Bryoids (%)	0.00	0.54	1.04
Mixedwood Open (%)	0.00	0.77	2.87
Wetland Herb (%)	0.19	0.14	0.46

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	1200.00	2059.44	1572.86	
Total No. of Taxa	15.00	12.95	4.37	13.2

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	1.00	313	911	827
Baetidae	0.89	573	233	309
Nemouridae	0.86	53	130	184
Simuliidae	0.83	47	207	367
Heptageniidae	0.78	27	120	216
Sperchontidae	0.60	10	35	60
Empididae	0.60	17	18	37
Tipulidae	0.56	20	19	41
Chloroperlidae	0.54	0	29	73
Perlodidae	0.52	27	12	22

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 13.2 families at this site, but 15 families were observed.

Total abundance is below average for this group but within the normal range. Richness (total number of families) is slightly higher than expected.

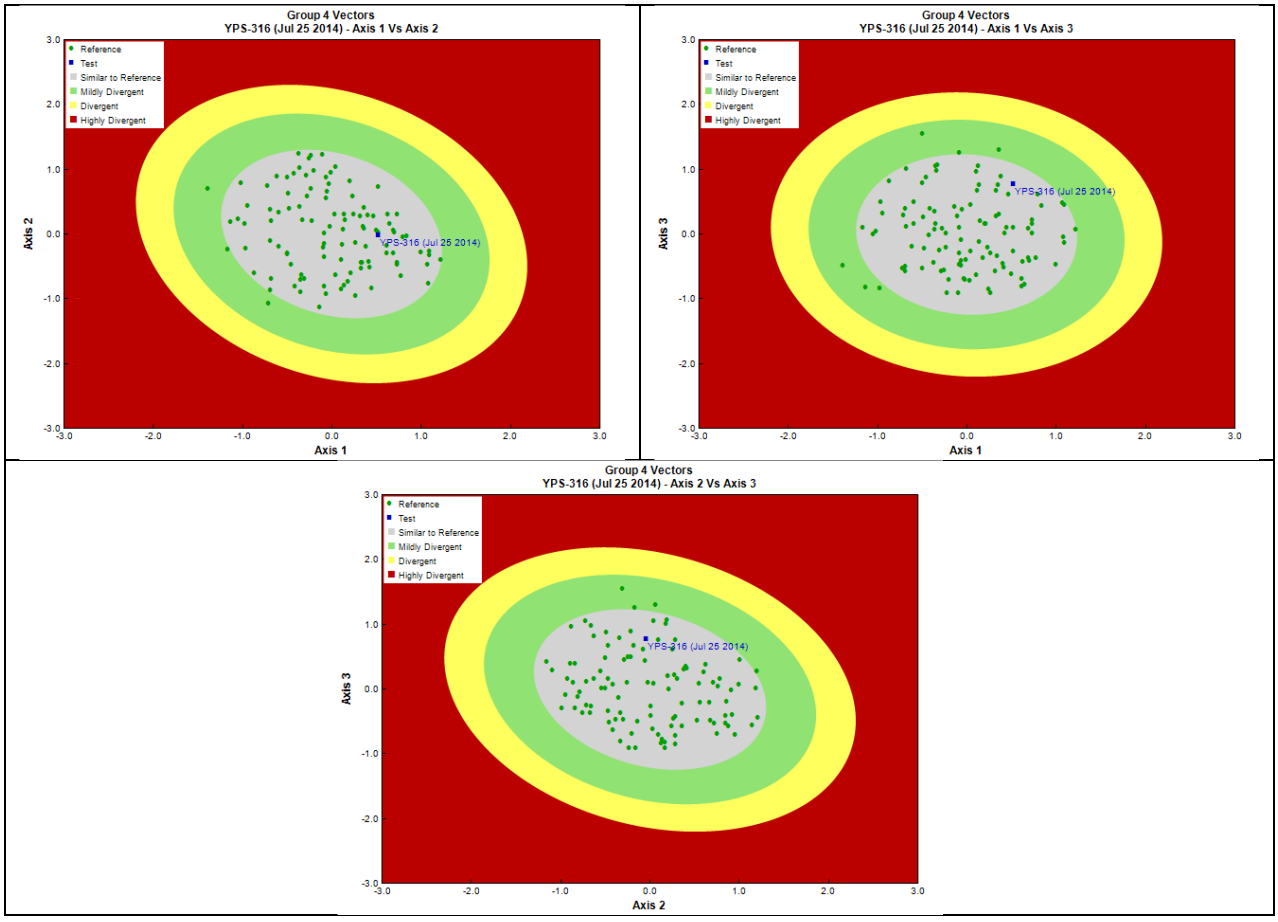
Of the 10 families expected to occur (P>0.5), 1 (Chloroperlidae) was absent.

All of the five families characteristic of the group to which this site was predicted were present.

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be included here.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Similar to Reference
Vector 1 vs Vector 3	Similar to Reference
Vector 2 vs Vector 3	Similar to Reference
Overall	Similar to Reference

Using CABIN, YPS-316 is assessed as Similar to Reference.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

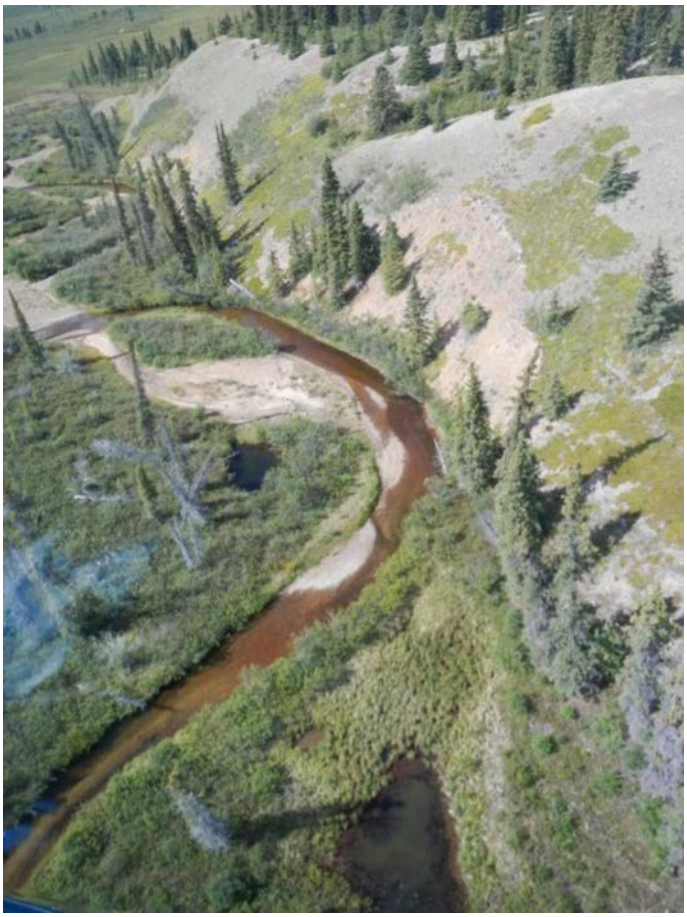
Site	**YPS-316**
Sample Year	2014
Status	Test
Bankfull Width (m)	2.4
Wetted Width (m)	2.4
Channel Depth Average (cm)	14.8
Channel Depth Max (cm)	17.5
Slope m/m	0.01
Slope (%)	1.0
Max Water Velocity (m/s)	0.6
Average Water Velocity (m/s)	0.37
Dominant Substrate-1st	3.2 – 6.4 cm (pebble)
Dominant Substrate-2nd	1.6 – 3.2 cm (pebble)
Surrounding Substrate Material	0.2 – 1.6 cm (gravel)
Substrate Embeddedness	Unembedded
Pools	Absent
Rapids	Absent
Riffles	Present
Straight Run	Absent
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Absent
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	177
Specific Conductance (µS/cm)	261
DO (mg/L)	10.17
pH (pH)	7.5
TDS (mg/L)	151
TSS (mg/L)	717
Air Temp (Degrees Celsius)	14
Water Temp (Degrees Celsius)	8.05
Turbidity (NTU)	

Site Assessment Report 2014 – YPS-317

Site Data

Site	YPS-317
Sample Date	Jul 25 2014
Latitude	61.99720 N
Longitude	137.07944 W
Altitude	3087
Feature Name	Victoria Creek
Stream Order	4

Site Photograph



Aerial view

Context Map

Refer to Yukon River North Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site has been sampled on two previous occasions, in 2008 and 2012.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	4				
Group	1	2	3	4	5
Probability that the site belongs to each Group	1.6%	15.8%	24.4%	42.7%	15.6%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-137.08	-137.45	2.65
Altitude (ft)	3087	2296.81	838.01
Depth-Avg (cm)	13.80	29.80	14.62
Velocity-Avg (m/s)	0.40	0.52	0.32
Precip. FEB (mm)	39.71	29.34	11.79
Precip. MAR (mm)	39.31	27.46	11.91
Precip. JUN (mm)	74.40	53.49	18.49
Precip. JUL (mm)	93.52	65.85	22.37
Rainfall JUN (mm)	65.44	48.44	16.06
April Max Temp (C)	-1.71	-0.98	3.38
Broadleaf Open (%)	0.54	0.38	1.31
Bryoids (%)	0.00	0.54	1.04
Mixedwood Open (%)	0.00	0.77	2.87
Wetland Herb (%)	0.00	0.14	0.46

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	2090.00	2059.44	1572.86	
Total No. of Taxa	14.00	12.95	4.37	13.0

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	1.00	245	911	827
Baetidae	0.89	1365	233	309
Nemouridae	0.87	25	130	184
Simuliidae	0.83	0	207	367
Heptageniidae	0.79	35	120	216
Empididae	0.60	20	18	37
Sperchontidae	0.58	15	35	60
Tipulidae	0.55	0	19	41
Perlodidae	0.53	25	12	22
Chloroperlidae	0.53	20	29	73

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 13 families at this site, but 14 families were observed.

Total abundance is average for this group. Richness (total number of families) is slightly higher than expected.

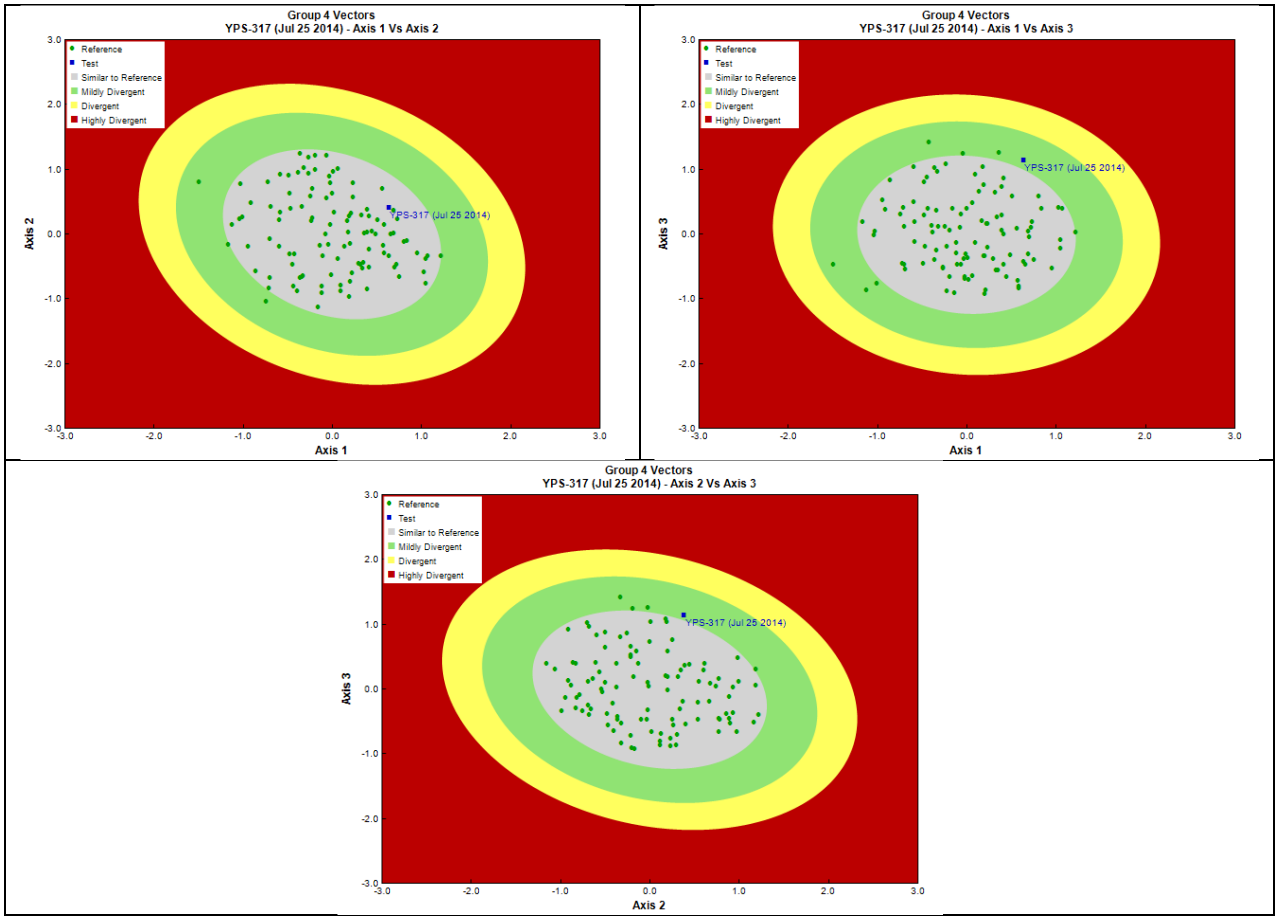
Of the 10 families expected to occur (P>0.5), 2 (Tipulidae and Simuliidae) were absent.

Of the five families characteristic of the group to which this site was predicted, one (Simuliidae) was absent.

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be included here.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Similar to Reference
Vector 1 vs Vector 3	Mildly Divergent from Reference Condition
Vector 2 vs Vector 3	Mildly Divergent from Reference Condition
Overall	Mildly Divergent from Reference Condition

Using CABIN, YPS-317 is assessed as Mildly Divergent from Reference Condition.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-317**
Sample Year	2014
Status	Test
Bankfull Width (m)	5.5
Wetted Width (m)	4.7
Channel Depth Average (cm)	13.8
Channel Depth Max (cm)	21
Slope m/m	0.01
Slope (%)	1.0
Max Water Velocity (m/s)	0.5
Average Water Velocity (m/s)	0.4
Dominant Substrate-1st	1.6 – 3.2 cm (pebble)
Dominant Substrate-2nd	3.2 – 6.4 cm (pebble)
Surrounding Substrate Material	0.2 – 1.6 cm (gravel)
Substrate Embeddedness	1/4 Embedded
Pools	Present
Rapids	Absent
Riffles	Present
Straight Run	Present
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Absent
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	167
Specific Conductance (µS/cm)	242
DO (mg/L)	10.45
pH (pH)	7.6
TDS (mg/L)	136
TSS (mg/L)	0.5
Air Temp (Degrees Celsius)	16
Water Temp (Degrees Celsius)	8.79
Turbidity (NTU)	1.5

Site Assessment Report 2014 – YPS-323

Site Data

Site	YPS-323
Sample Date	Jul 25 2014
Latitude	62.15056 N
Longitude	137.32083 W
Altitude	3717
Feature Name	Klaza River
Stream Order	3

Site Photograph

Upstream view

Context Map

Refer to Yukon River North Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site has been sampled on two previous occasions, in 2008 and 2012.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	5				
Group	1	2	3	4	5
Probability that the site belongs to each Group	0.3%	2.2%	26.8%	28.8%	41.9%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-137.32	-137.47	2.24
Altitude (ft)	3717	2727.00	914.30
Depth-Avg (cm)	23.20	24.00	13.45
Velocity-Avg (m/s)	0.27	0.69	0.41
Precip. FEB (mm)	41.38	23.65	9.87
Precip. MAR (mm)	41.14	21.43	10.29
Precip. JUN (mm)	75.75	42.71	20.01
Precip. JUL (mm)	95.06	53.48	23.83
Rainfall JUN (mm)	67.56	39.59	18.11
April Max Temp (C)	-2.52	-1.99	4.49
Broadleaf Open (%)	2.89	0.11	0.31
Bryoids (%)	0.00	1.01	2.53
Mixedwood Open (%)	0.00	0.14	0.32
Wetland Herb (%)	0.00	0.03	0.08

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	5333.33	12539.40	5669.59	
Total No. of Taxa	13.00	11.28	3.36	12.8

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	1.00	3017	7472	6727
Nemouridae	0.94	717	343	342
Baetidae	0.93	350	2886	2692
Heptageniidae	0.84	17	390	470
Simuliidae	0.82	0	987	1564
Empididae	0.61	0	34	47
Perlodidae	0.60	33	111	151
Capniidae	0.59	0	257	294
Tipulidae	0.53	33	21	27
Sperchontidae	0.52	133	33	83
Chloroperlidae	0.52	33	67	108

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 12.8 families at this site, but 13 families were observed.

Total abundance is below average for this group and outside the normal range. Richness (total number of families) is slightly higher than expected.

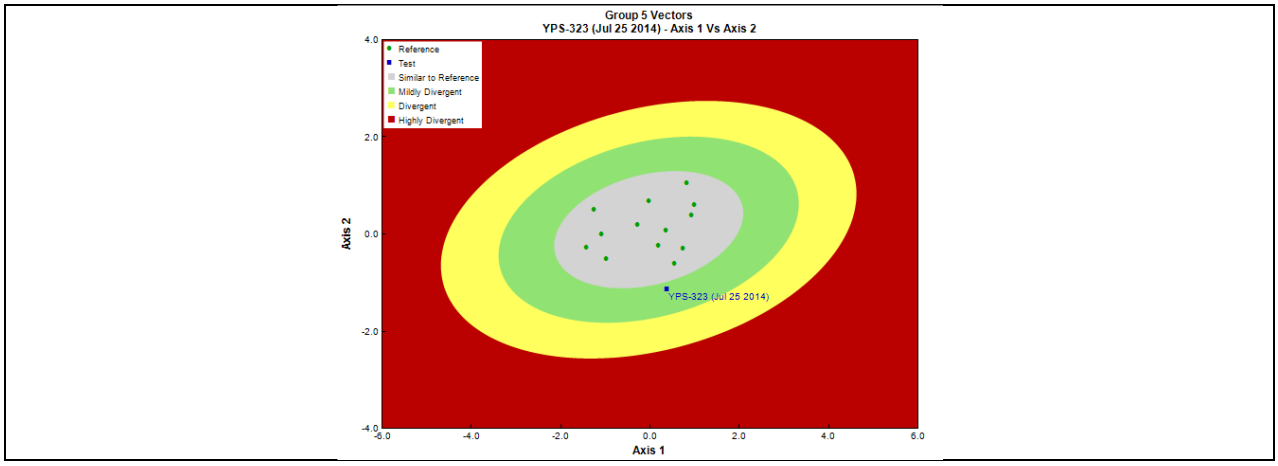
Of the 11 families expected to occur (P>0.5) 3 (Simuliidae, Empididae and Capniidae) were absent.

Of the three families characteristic of the group to which this site was predicted, one (Simuliidae) was absent.

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be included here.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Mildly Divergent from Reference Condition
Vector 1 vs Vector 3	N/A
Vector 2 vs Vector 3	N/A
Overall	Mildly Divergent from Reference Condition

Using CABIN, YPS-323 is assessed as Mildly Divergent from Reference Condition.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-323**
Sample Year	2014
Status	Test
Bankfull Width (m)	4.5
Wetted Width (m)	3
Channel Depth Average (cm)	23.2
Channel Depth Max (cm)	28
Slope m/m	0.01
Slope (%)	1
Max Water Velocity (m/s)	0.3
Average Water Velocity (m/s)	0.27
Dominant Substrate-1st	3.2 – 6.4 cm (pebble)
Dominant Substrate-2nd	6.4 – 12.8 cm (cobble)
Surrounding Substrate Material	0.2 – 1.6 cm (gravel)
Substrate Embeddedness	1/2 Embedded
Pools	Present
Rapids	Absent
Riffles	Present
Straight Run	Present
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Absent
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	70
Specific Conductance (µS/cm)	121
DO (mg/L)	10.72
pH (pH)	7.6
TDS (mg/L)	66
TSS (mg/L)	0.5
Air Temp (Degrees Celsius)	11
Water Temp (Degrees Celsius)	2.78
Turbidity (NTU)	8.5

Site Assessment Report 2014 – YPS-325

Site Data

Site	YPS-325
Sample Date	Jul 25, 2014
Latitude	61.34144 N
Longitude	134.36194 W
Altitude	2706
Feature Name	Livingstone Creek
Stream Order	3

Site Photograph

Aerial view

Context Map

Refer to Yukon River North Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site has been sampled on one previous occasion, in 2008.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	3				
Group	1	2	3	4	5
Probability that the site belongs to each Group	1.4%	32.8%	58.4%	6.9%	0.6%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-134.36	-135.66	3.18
Altitude (ft)	2706	2756.11	719.61
Depth-Avg (cm)	14.60	32.11	15.81
Velocity-Avg (m/s)	0.32	0.58	0.29
Precip. FEB (mm)	26.89	36.14	23.93
Precip. MAR (mm)	25.92	33.13	21.04
Precip. JUN (mm)	66.49	64.67	18.69
Precip. JUL (mm)	84.85	78.30	20.81
Rainfall JUN (mm)	37.65	52.72	13.46
April Max Temp (C)	4.22	1.38	3.74
Broadleaf Open (%)	0.84	0.68	1.62
Bryoids (%)	0.00	0.37	0.84
Mixedwood Open (%)	0.84	0.96	1.72
Wetland Herb (%)	0.00	0.03	0.10

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	333.00	567.00	737.13	
Total No. of Taxa	16.00	10.56	6.13	13.6

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	1.00	97	162	142
Nemouridae	0.90	32	175	168
Baetidae	0.83	3	92	109
Simuliidae	0.83	0	37	55
Heptageniidae	0.82	91	288	288
Empididae	0.66	3	16	29
Chloroperlidae	0.63	24	32	38
Sperchontidae	0.61	16	13	22
Ameletidae	0.56	0	24	58
Perlodidae	0.55	5	10	14
Rhyacophilidae	0.53	12	20	35
Tipulidae	0.52	0	5	10
Ephemerellidae	0.51	18	59	239

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 13.6 families at this site, but 16 families were observed.

Total abundance is below average for this group within the normal range. Richness (total number of families) is slightly higher than expected.

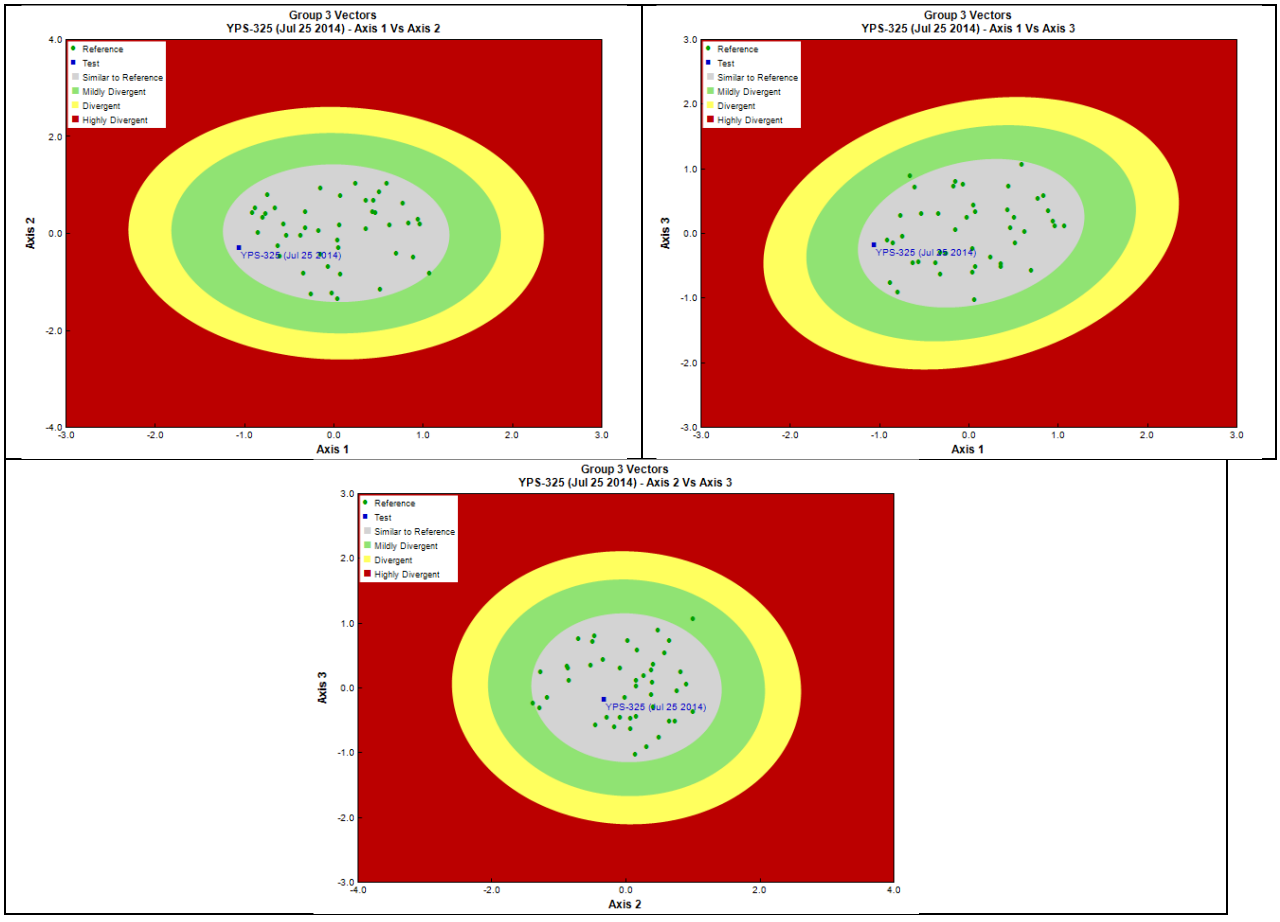
Of the 13 families expected to occur (P>0.5), 3 (Simuliidae, Amelitidae, and Tipulidae) were absent, although Tipulidae was expected at low abundance.

One of the six families characteristic of the group to which this site was predicted one was absent (Simuliidae).

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in the past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be provided.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Similar to Reference
Vector 1 vs Vector 3	Similar to Reference
Vector 2 vs Vector 3	Similar to Reference
Overall	Similar to Reference

Using CABIN, YPS-325 is assessed as Similar to Reference.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-325**
Sample Year	2014
Status	Test
Bankfull Width (m)	18.5
Wetted Width (m)	4.5
Channel Depth Average (cm)	14.6
Channel Depth Max (cm)	18
Slope m/m	0.02
Slope (%)	2
Max Water Velocity (m/s)	0.4
Average Water Velocity (m/s)	0.32
Dominant Substrate-1st	6.4 – 12.8 cm (cobble)
Dominant Substrate-2nd	6.4 – 12.8 cm (cobble)
Surrounding Substrate Material	0.2 – 1.6 cm (gravel)
Substrate Embeddedness	1/4 Embedded
Pools	Absent
Rapids	Absent
Riffles	Present
Straight Run	Present
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	122.6
Specific Conductance (µS/cm)	179.1
DO (mg/L)	9.47
pH (pH)	8.3
TDS (mg/L)	
TSS (mg/L)	
Air Temp (Degrees Celsius)	16
Water Temp (Degrees Celsius)	8.5
Turbidity (NTU)	

Site Assessment Report 2014 – YPS-326

Site Data

Site	YPS-326
Sample Date	Jul 25, 2014
Latitude	61.30084 N
Longitude	134.32138 W
Altitude	2923
Feature Name	Marten Creek
Stream Order	2

Site Photograph

Upstream view

Context Map

Refer to Big Salmon River Watershed Aquatic Health Monitoring Sites 2014 map

Site Sampling History

This site has been sampled on one previous occasion, in 2008.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	3				
Group	1	2	3	4	5
Probability that the site belongs to each Group	1.6%	29.6%	61.2%	6.5%	1.0%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-134.32	-135.66	3.18
Altitude (ft)	2923	2756.11	719.61
Depth-Avg (cm)	14.30	32.11	15.81
Velocity-Avg (m/s)	0.50	0.58	0.29
Precip. FEB (mm)	25.69	36.14	23.93
Precip. MAR (mm)	24.53	33.13	21.04
Precip. JUN (mm)	63.76	64.67	18.69
Precip. JUL (mm)	82.06	78.30	20.81
Rainfall JUN (mm)	34.14	52.72	13.46
April Max Temp (C)	4.97	1.38	3.74
Broadleaf Open (%)	0.29	0.68	1.62
Bryoids (%)	0.00	0.37	0.84
Mixedwood Open (%)	0.91	0.96	1.72
Wetland Herb (%)	0.00	0.03	0.10

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	3290.00	567.00	737.13	
Total No. of Taxa	13.00	10.56	6.13	13.7

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	1.00	400	162	142
Nemouridae	0.90	410	175	168
Heptageniidae	0.83	850	311	288
Simuliidae	0.83	0	37	55
Baetidae	0.83	640	92	109
Empididae	0.66	590	16	29
Chloroperlidae	0.64	130	32	38
Sperchontidae	0.61	10	13	22
Ameletidae	0.57	10	24	58
Perlodidae	0.56	0	10	14
Rhyacophilidae	0.54	70	20	35
Tipulidae	0.52	0	5	10
Ephemerellidae	0.52	70	59	239

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 13.7 families at this site, but 13 families were observed.

Total abundance is well above average for this group and outside the normal range. Richness (total number of families) is as expected.

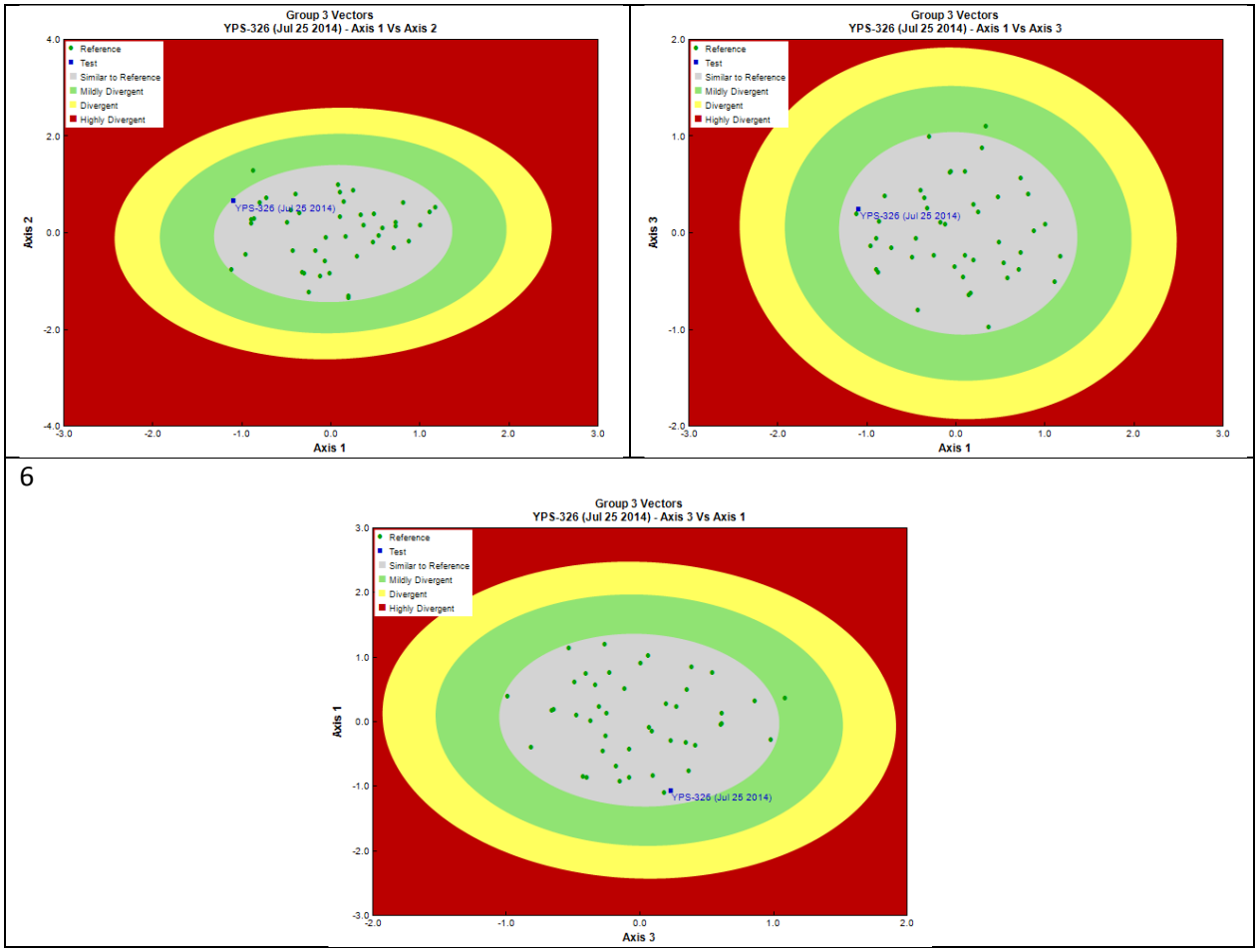
Of the 13 families expected to occur (P>0.5), 3 (Simuliidae, Perlodidae, and Tipulidae) were absent, although Tipulidae were expected at low abundance.

One of the six families characteristic of the group to which this site was predicted one was absent (Simuliidae).

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in the past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be provided.



6

Assessment of Overall Site Condition

Vector 1 vs Vector 2	Similar to Reference
Vector 1 vs Vector 3	Similar to Reference
Vector 2 vs Vector 3	Similar to Reference
Overall	Similar to Reference

Using CABIN, YPS-326 is assessed as Similar to Reference.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-326**
Sample Year	2014
Status	Test
Bankfull Width (m)	15
Wetted Width (m)	1.9
Channel Depth Average (cm)	14.3
Channel Depth Max (cm)	16
Slope m/m	0.06
Slope (%)	6
Max Water Velocity (m/s)	0.6
Average Water Velocity (m/s)	0.5
Dominant Substrate-1st	12.8 – 25.6 cm (cobble)
Dominant Substrate-2nd	6.4 – 12.8 cm (cobble)
Surrounding Substrate Material	0.2 – 1.6 cm (gravel)
Substrate Embeddedness	Unembedded
Pools	Absent
Rapids	Absent
Riffles	Present
Straight Run	Absent
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	153
Specific Conductance (µS/cm)	228.7
DO (mg/L)	9.34
pH (pH)	8.3
TDS (mg/L)	
TSS (mg/L)	
Air Temp (Degrees Celsius)	16
Water Temp (Degrees Celsius)	7.7
Turbidity (NTU)	

Site Assessment Report 2014 - YPS-350

Site Data

Site	YPS-350
Sample Date	Jul 21, 2014
Latitude	63.97312 N
Longitude	-138.73834
Altitude	1453
Feature Name	Leotta Creek
Stream Order	3

Site Photograph

Upstream view

Context Map

Refer to Klondike River Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site has been sampled on one previous occasion, in 2008.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	2				
Group	1	2	3	4	5
Probability that the site belongs to each Group	12.6%	45.4%	7.8%	33.1%	1.1%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-138.74	-136.93	2.75
Altitude (ft)	1453	2134.49	899.68
Depth-Avg (cm)	29.00	31.44	19.67
Velocity-Avg (m/s)	0.10	0.43	0.26
Precip. FEB (mm)	33.47	28.51	7.47
Precip. MAR (mm)	32.08	26.48	7.73
Precip. JUN (mm)	56.34	57.14	13.59
Precip. JUL (mm)	69.34	73.01	17.74
Rainfall JUN (mm)	53.71	49.32	11.37
April Max Temp (C)	-4.17	0.93	4.20
Broadleaf Open (%)	0.00	0.14	0.34
Bryoids (%)	0.18	0.31	0.61
Mixedwood Open (%)	0.00	0.75	1.44
Wetland Herb (%)	0.00	0.11	0.31

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	351.00	265.34	160.63	
Total No. of Taxa	9.00	11.52	4.32	11.7

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	0.99	307	98	68
Baetidae	0.81	0	27	35
Simuliidae	0.77	1	16	31
Nemouridae	0.75	4	17	24
Heptageniidae	0.64	0	19	27
Sperchontidae	0.53	3	3	7
Tipulidae	0.51	0	2	3

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 11.7 families at this site, but 9 families were observed.

Total abundance is above average for this group but within the normal range. Richness (total number of families) is lower than expected.

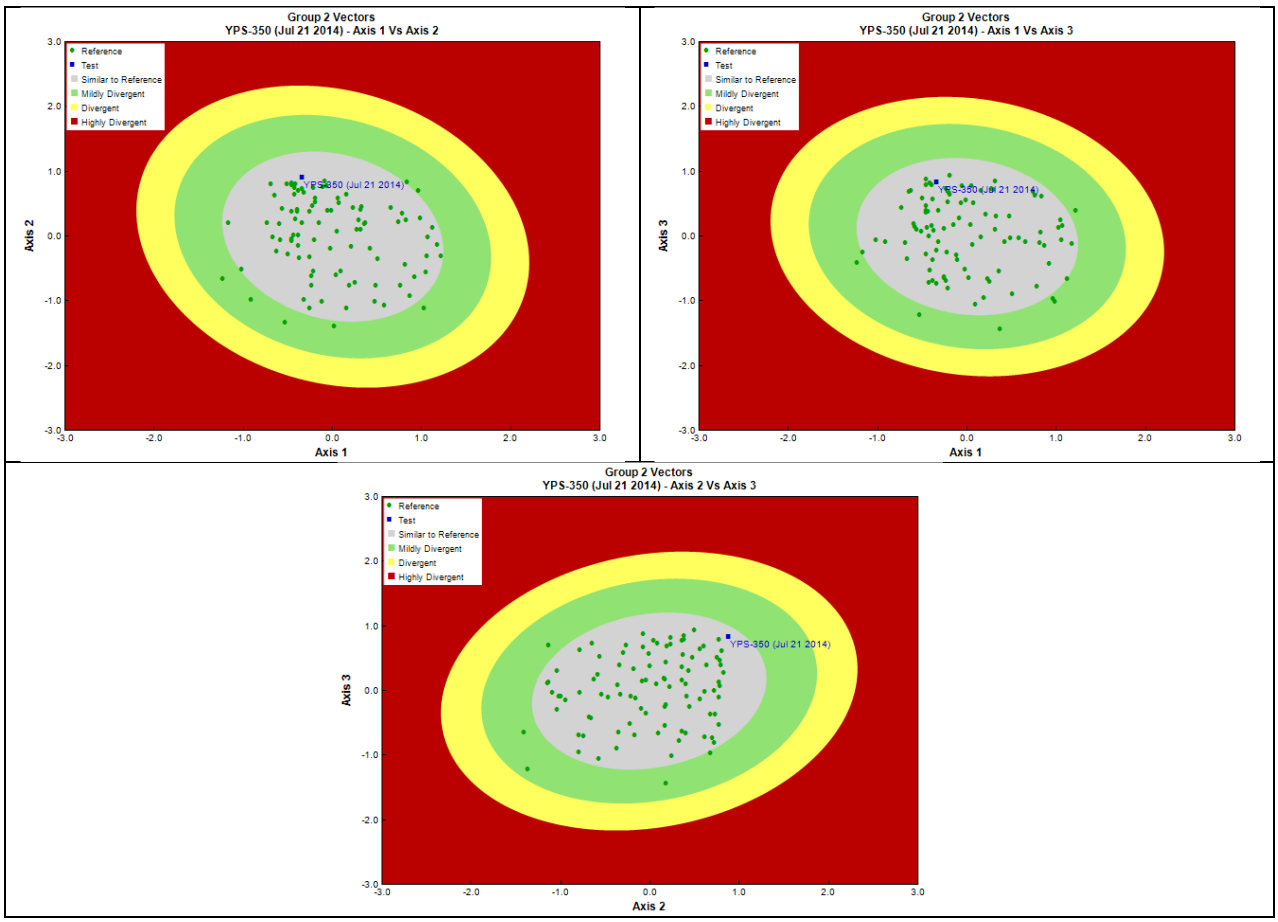
Of the 7 families expected to occur (P>0.5), 3 (Baetidae, Heptageniidae, and Tipulidae) were absent, although Tipulidae was expected at low abundance.

Of the six families characteristic of the group to which this site was predicted, three were absent (Baetidae, Heptageniidae and Chloroperlidae).

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be provided.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Similar to Reference
Vector 1 vs Vector 3	Similar to Reference
Vector 2 vs Vector 3	Similar to Reference
Overall	Similar to Reference

Using CABIN, YPS-350 is assessed as Similar to Reference.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	YPS-350
Sample Year	2014
Status	Test
Bankfull Width (m)	2.2
Wetted Width (m)	2.1
Channel Depth Average (cm)	29
Channel Depth Max (cm)	33
Slope m/m	0.02
Slope (%)	2
Max Water Velocity (m/s)	0.1
Average Water Velocity (m/s)	0.1
Dominant Substrate-1st	0.2 – 1.6 cm (gravel)
Dominant Substrate-2nd	0.1 – 0.2 cm (sand)
Surrounding Substrate Material	0.1 – 0.2 cm (sand)
Substrate Embeddedness	1/4 Embedded
Pools	Absent
Rapids	Absent
Riffles	Present
Straight Run	Present
Canopy Coverage (%)	76-100
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	232
Specific Conductance (µS/cm)	358.1
DO (mg/L)	10.85
pH (pH)	7.9
TDS (mg/L)	210
TSS (mg/L)	0.5
Air Temp (Degrees Celsius)	23
Water Temp (Degrees Celsius)	6.6
Turbidity (NTU)	2.3

Site Assessment Report 2014 – YPS-372

Site Data

Site	YPS-372
Sample Date	Jul 25, 2014
Latitude	61.39361 N
Longitude	134.37056 W
Altitude	2674
Feature Name	Cottoneva Creek
Stream Order	3

Site Photograph

Upstream view

Context Map

Refer to Big Salmon River Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site has been sampled on one previous occasion, in 2008.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	3				
Group	1	2	3	4	5
Probability that the site belongs to each Group	2.2%	38.8%	50.8%	7.8%	0.4%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-134.37	-135.66	3.18
Altitude (ft)	2674	2756.11	719.61
Depth-Avg (cm)	11.40	32.11	15.81
Velocity-Avg (m/s)	0.44	0.58	0.29
Precip. FEB (mm)	30.22	36.14	23.93
Precip. MAR (mm)	29.54	33.13	21.04
Precip. JUN (mm)	74.11	64.67	18.69
Precip. JUL (mm)	93.28	78.30	20.81
Rainfall JUN (mm)	47.91	52.72	13.46
April Max Temp (C)	2.28	1.38	3.74
Broadleaf Open (%)	0.33	0.68	1.62
Bryoids (%)	0.00	0.37	0.84
Mixedwood Open (%)	2.53	0.96	1.72
Wetland Herb (%)	0.00	0.03	0.10

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	2175.00	567.00	737.13	
Total No. of Taxa	15.00	10.56	6.13	13.2

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	1.00	50	162	142
Nemouridae	0.87	906	175	168
Baetidae	0.83	331	92	109
Simuliidae	0.82	0	37	55
Heptageniidae	0.80	488	311	288
Empididae	0.63	56	16	29
Chloroperlidae	0.60	0	32	38
Sperchontidae	0.59	6	13	22
Ameletidae	0.53	0	24	58
Perlodidae	0.52	106	10	14
Tipulidae	0.52	0	5	10

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 13.2 families at this site, but 15 families were observed.

Total abundance is well above average for this group and outside the normal range. Richness (total number of families) is slightly higher than expected.

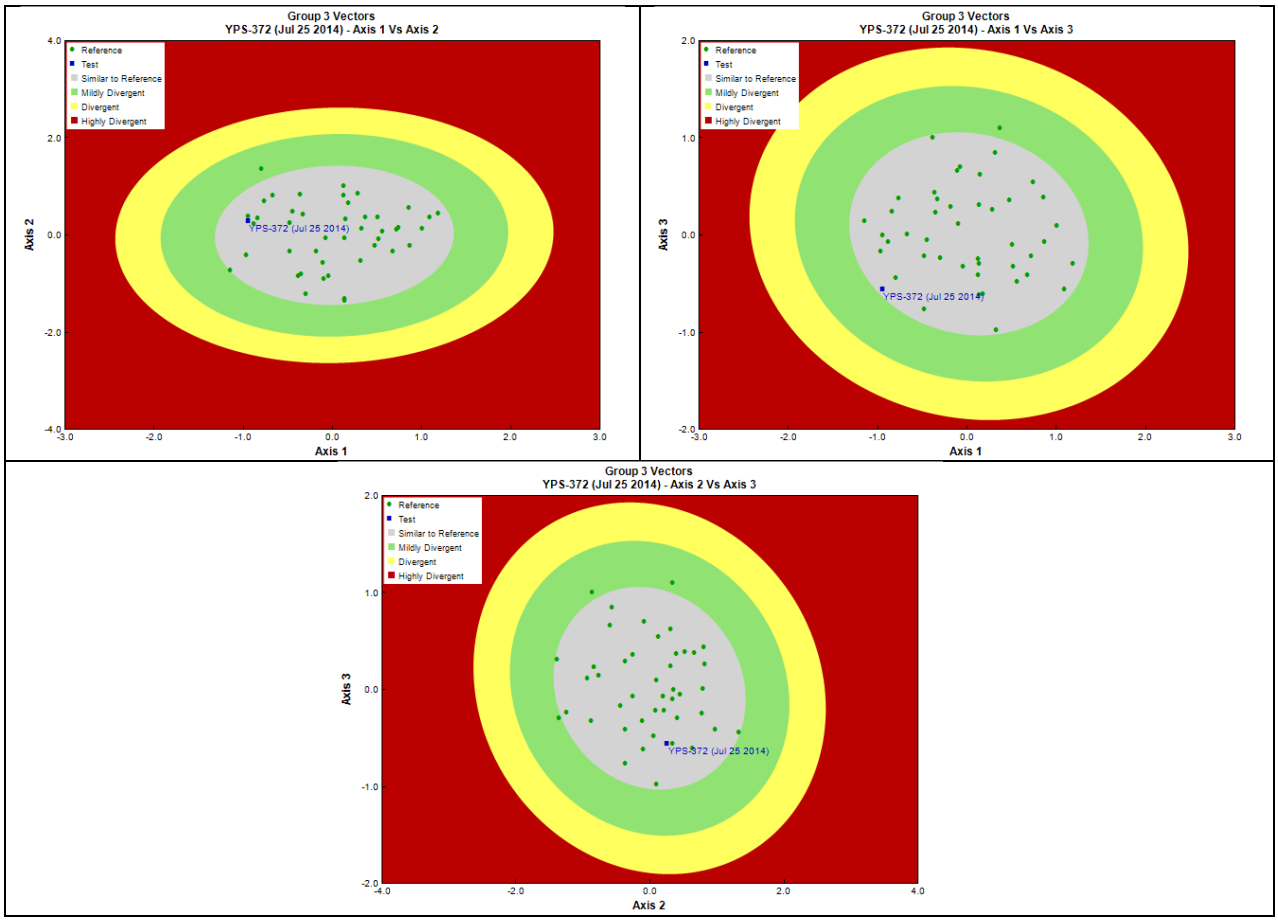
Of the 11 families expected to occur (P>0.5), 4 (Simuliidae, Chloroperlidae, Ameletidae, and Tipulidae) were absent, although Tipulidae was expected at low abundance.

Of the six families characteristic of the group to which this site was predicted, two were absent (Simuliidae and Chloroperlidae).

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be provided.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Similar to Reference
Vector 1 vs Vector 3	Similar to Reference
Vector 2 vs Vector 3	Similar to Reference
Overall	Similar to Reference

Using CABIN, YPS-372 is assessed as Similar to Reference.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-372**
Sample Year	2014
Status	Test
Bankfull Width (m)	7.3
Wetted Width (m)	2.4
Channel Depth Average (cm)	11.4
Channel Depth Max (cm)	17
Slope m/m	0.023
Slope (%)	2.3
Max Water Velocity (m/s)	0.8
Average Water Velocity (m/s)	0.44
Dominant Substrate-1st	6.4 – 12.8 cm (cobble)
Dominant Substrate-2nd	3.2 – 6.4 cm (pebble)
Surrounding Substrate Material	0.1 – 0.2 cm (sand)
Substrate Embeddedness	1/4 Embedded
Pools	Absent
Rapids	Absent
Riffles	Present
Straight Run	Absent
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	215.7
Specific Conductance (µS/cm)	327.8
DO (mg/L)	9.77
pH (pH)	8.4
TDS (mg/L)	
TSS (mg/L)	
Air Temp (Degrees Celsius)	17
Water Temp (Degrees Celsius)	7.1
Turbidity (NTU)	

Site Assessment Report 2014 – YPS-373

Site Data

Site	YPS-373
Sample Date	Jul 25, 2014
Latitude	61.27556 N
Longitude	134.30499 W
Altitude	2887
Feature Name	South Big Salmon River
Stream Order	4

Site Photograph

Downstream view

Context Map

Refer to Big Salmon River Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site has been sampled on one previous occasion, in 2008.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	3				
Group	1	2	3	4	5
Probability that the site belongs to each Group	2.7%	28.4%	64.0%	4.5%	0.4%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-134.30	-135.66	3.18
Altitude (ft)	2887	2756.11	719.61
Depth-Avg (cm)	37.60	32.11	15.81
Velocity-Avg (m/s)	0.50	0.58	0.29
Precip. FEB (mm)	24.01	36.14	23.93
Precip. MAR (mm)	22.62	33.13	21.04
Precip. JUN (mm)	59.88	64.67	18.69
Precip. JUL (mm)	77.63	78.30	20.81
Rainfall JUN (mm)	28.52	52.72	13.46
April Max Temp (C)	6.00	1.38	3.74
Broadleaf Open (%)	0.45	0.68	1.62
Bryoids (%)	0.00	0.37	0.84
Mixedwood Open (%)	0.67	0.96	1.72
Wetland Herb (%)	0.01	0.03	0.10

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	1835.29	567.00	737.13	
Total No. of Taxa	16.00	10.56	6.13	13.7

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	1.00	941	162	142
Nemouridae	0.90	100	175	168
Heptageniidae	0.83	276	311	288
Simuliidae	0.83	82	37	55
Baetidae	0.82	71	92	109
Empididae	0.67	12	16	29
Chloroperlidae	0.65	47	32	38
Sperchontidae	0.61	29	13	22
Ameletidae	0.58	0	24	58
Perlodidae	0.57	18	10	14
Rhyacophilidae	0.55	0	20	35
Ephemerellidae	0.52	129	59	239
Tipulidae	0.52	18	5	10

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 13.7 families at this site, but 16 families were observed.

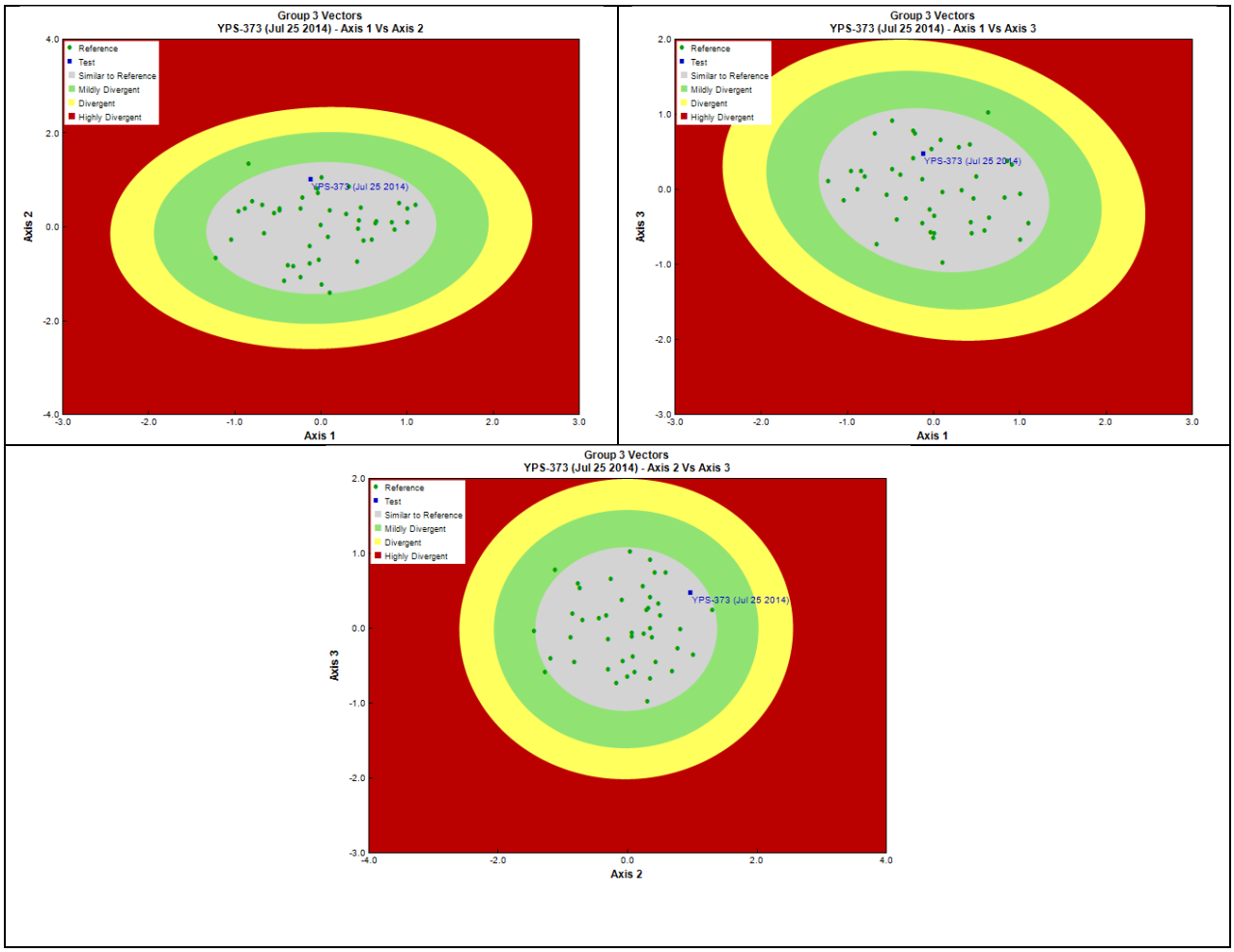
Total abundance is above average for this group and outside the normal range. Richness (total number of families) is slightly higher than expected.

Of the 13 families expected to occur (P>0.5), 2 (Ameletidae and Rhyacophilidae) were absent. All six families characteristic of the group to which this site was predicted were present.

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be provided.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Similar to Reference
Vector 1 vs Vector 3	Similar to Reference
Vector 2 vs Vector 3	Similar to Reference
Overall	Similar to Reference

Using CABIN, YPS-373 is assessed as Similar to Reference.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-373**
Sample Year	2014
Status	Test
Bankfull Width (m)	18
Wetted Width (m)	16
Channel Depth Average (cm)	37.6
Channel Depth Max (cm)	58
Slope m/m	0.01
Slope (%)	1
Max Water Velocity (m/s)	0.9
Average Water Velocity (m/s)	0.5
Dominant Substrate-1st	12.8 – 25.6 cm (cobble)
Dominant Substrate-2nd	6.4 – 12.8 cm (cobble)
Surrounding Substrate Material	1.6 – 3.2 cm (pebble)
Substrate Embeddedness	1/4 Embedded
Pools	Absent
Rapids	Absent
Riffles	Present
Straight Run	Absent
Canopy Coverage (%)	None
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	55.3
Specific Conductance (µS/cm)	80.4
DO (mg/L)	9.3
pH (pH)	8
TDS (mg/L)	
TSS (mg/L)	
Air Temp (Degrees Celsius)	18
Water Temp (Degrees Celsius)	8.6
Turbidity (NTU)	

Site Assessment Report 2014 – YPS-375

Site Data

Site	YPS-375
Sample Date	Jul 22 2014
Latitude	64.38639 N
Longitude	140.63556 W
Altitude	1007
Feature Name	Maiden Creek
Stream Order	3

Site Photograph

Downstream view

Context Map

Refer to Fortymile River Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site was sampled in 2009 and 2015.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	2				
Group	1	2	3	4	5
Probability that the site belongs to each Group	20.3%	42.7%	6.8%	29.7%	0.6%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-140.64	-136.93	2.75
Altitude (ft)	1007	2134.49	899.68
Depth-Avg (cm)	14.70	31.44	19.67
Velocity-Avg (m/s)	0.37	0.43	0.26
Precip. FEB (mm)	34.40	28.51	7.47
Precip. MAR (mm)	33.22	26.48	7.73
Precip. JUN (mm)	54.58	57.14	13.59
Precip. JUL (mm)	70.02	73.01	17.74
Rainfall JUN (mm)	53.12	49.32	11.37
April Max Temp (C)	-4.55	0.93	4.20
Broadleaf Open (%)	0.00	0.14	0.34
Bryoids (%)	0.00	0.31	0.61
Mixedwood Open (%)	0.00	0.75	1.44
Wetland Herb (%)	0.00	0.11	0.31

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	79.00	265.34	160.63	
Total No. of Taxa	9.00	11.52	4.32	11.2

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	0.98	42	98	68
Baetidae	0.76	7	27	35
Simuliidae	0.73	16	16	31
Nemouridae	0.71	0	17	24
Heptageniidae	0.60	2	19	27
Sperchontidae	0.50	2	3	7

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 11.2 families at this site, but 9 families were observed.

Total abundance is below average for this group and outside the normal range. Richness (total number of families) is lower than expected.

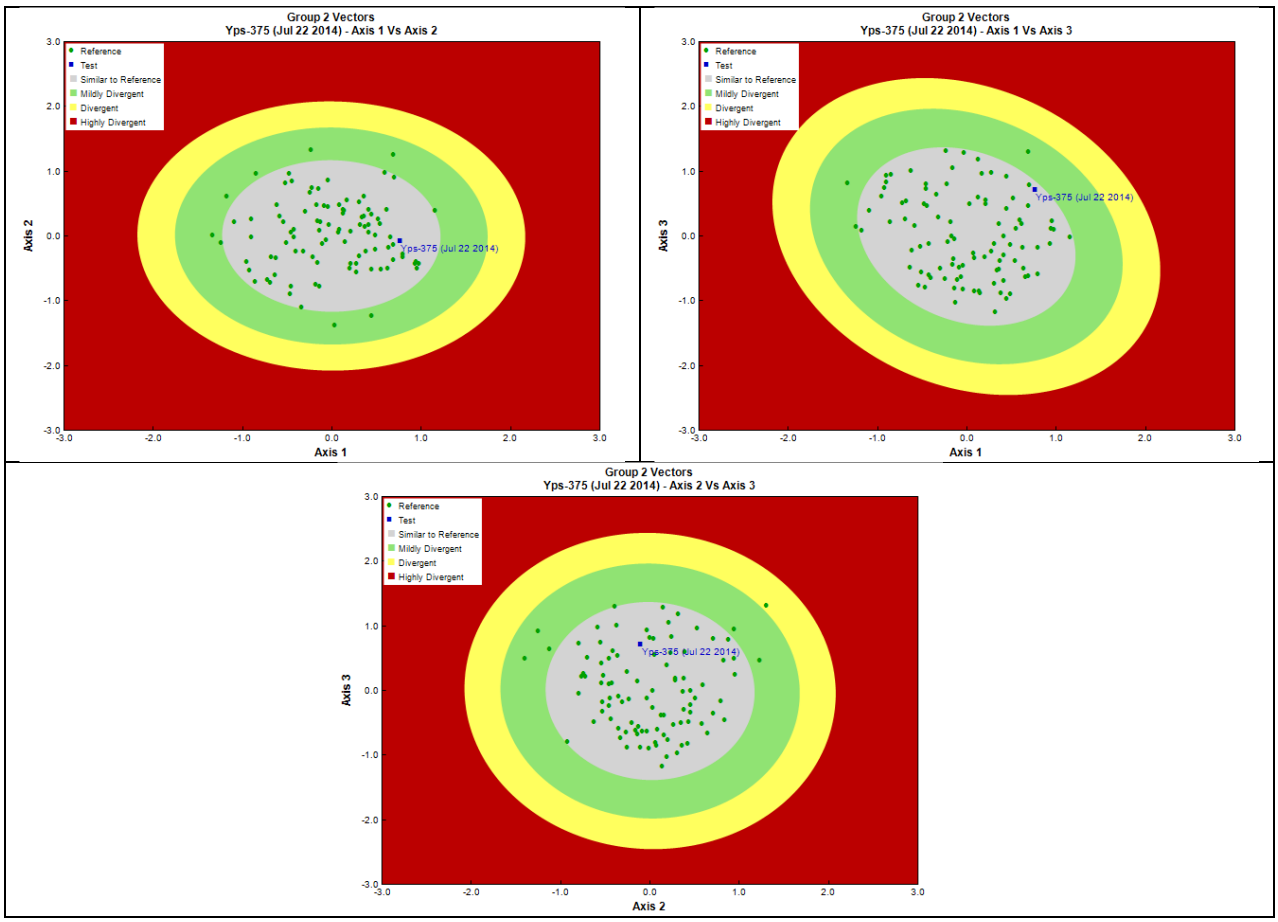
Of the 6 families expected to occur (P>0.5), 1 (Nemouridae) was absent.

Of the Six families characteristic of the group to which this site was predicted, two (Nemouridae and Chloroperlidae) were absent .

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be included here.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Similar to Reference
Vector 1 vs Vector 3	Similar to Reference
Vector 2 vs Vector 3	Similar to Reference
Overall	Similar to Reference

Using CABIN, YPS-375 is assessed as Similar to Reference.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**Yps-375**
Sample Year	2014
Status	Test
Bankfull Width (m)	5.1
Wetted Width (m)	2.4
Channel Depth Average (cm)	14.7
Channel Depth Max (cm)	17
Slope m/m	0.02
Slope (%)	2.0
Max Water Velocity (m/s)	0.5
Average Water Velocity (m/s)	0.37
Dominant Substrate-1st	3.2 – 6.4 cm (pebble)
Dominant Substrate-2nd	1.6 – 3.2 cm (pebble)
Surrounding Substrate Material	0.1 – 0.2 cm (sand)
Substrate Embeddedness	Unembedded
Pools	Present
Rapids	Absent
Riffles	Present
Straight Run	Absent
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	218
Specific Conductance (µS/cm)	325
DO (mg/L)	9.23
pH (pH)	7.3
TDS (mg/L)	187
TSS (mg/L)	0.5
Air Temp (Degrees Celsius)	23
Water Temp (Degrees Celsius)	7.75
Turbidity (NTU)	0.88

Site Assessment Report 2014 – YPS-378

Site Data

Site	YPS-378
Sample Date	Jul 22 2014
Latitude	64.35390 N
Longitude	140.81023 W
Altitude	1099
Feature Name	Marten Creek
Stream Order	4

Site Photograph - Upstream view

Context Map

Refer to Fortymile River Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site was also sampled in 2009.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	2				
Group	1	2	3	4	5
Probability that the site belongs to each Group	13.7%	39.6%	8.3%	37.2%	1.2%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-140.81	-136.93	2.75
Altitude (ft)	1099	2134.49	899.68
Depth-Avg (cm)	11.00	31.44	19.67
Velocity-Avg (m/s)	0.43	0.43	0.26
Precip. FEB (mm)	36.83	28.51	7.47
Precip. MAR (mm)	35.89	26.48	7.73
Precip. JUN (mm)	58.25	57.14	13.59
Precip. JUL (mm)	74.47	73.01	17.74
Rainfall JUN (mm)	57.26	49.32	11.37
April Max Temp (C)	-5.72	0.93	4.20
Broadleaf Open (%)	0.01	0.14	0.34
Bryoids (%)	0.00	0.31	0.61
Mixedwood Open (%)	0.00	0.75	1.44
Wetland Herb (%)	0.00	0.11	0.31

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	15.00	265.34	160.63	
Total No. of Taxa	3.00	11.52	4.32	11.8

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	0.99	8	98	68
Baetidae	0.80	0	27	35
Simuliidae	0.77	6	16	31
Nemouridae	0.75	0	17	24
Heptageniidae	0.65	0	19	27
Sperchontidae	0.54	0	3	7
Tipulidae	0.52	0	2	3
Empididae	0.50	0	4	10

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 11.8 families at this site, but 3 families were observed.

Total abundance is below average for this group and outside of the normal range. Richness (total number of families) is much lower than expected.

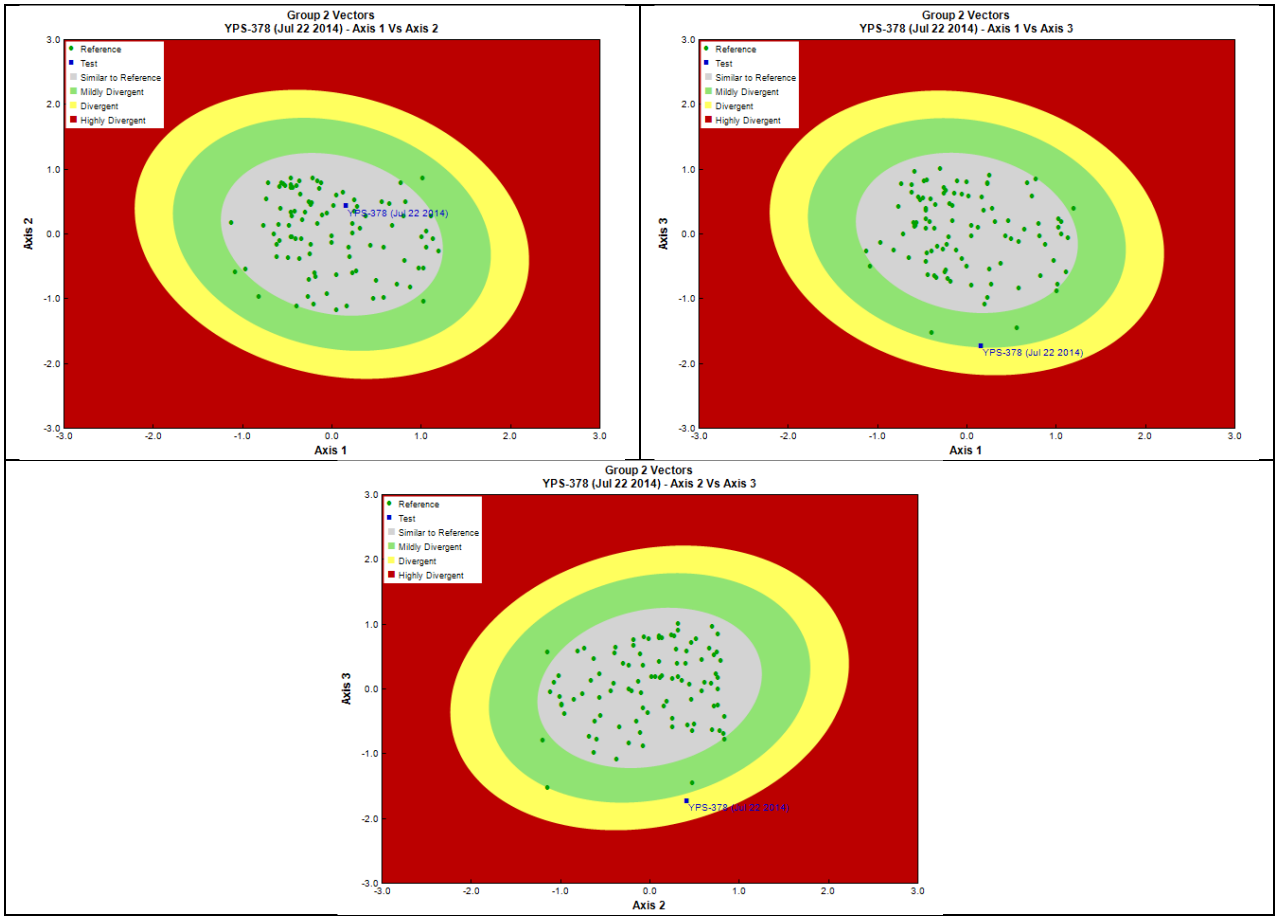
Of the 8 families expected to occur (P>0.5), 6 (Baetidae, Nemouridae, Heptageniidae, Sperchontidae, Tipulidae and Empididae) were absent.

Of the six families characteristic of the group to which this site was predicted, four (Heptageniida, Nemouridae, Baetidae and Chloroperlidae) were absent.

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be included here.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Mildly Divergent from Reference Condition
Vector 1 vs Vector 3	Divergent from Reference Condition
Vector 2 vs Vector 3	Mildly Divergent from Reference Condition
Overall	Divergent from Reference Condition

Using CABIN, YPS-378 is assessed as Divergent from Reference Condition.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-378**
Sample Year	2014
Status	Test
Bankfull Width (m)	4.1
Wetted Width (m)	3.6
Channel Depth Average (cm)	11
Channel Depth Max (cm)	16
Slope m/m	0.025
Slope (%)	2.5
Max Water Velocity (m/s)	0.7
Average Water Velocity (m/s)	0.43
Dominant Substrate-1st	3.2 – 6.4 cm (pebble)
Dominant Substrate-2nd	6.4 – 12.8 cm (cobble)
Surrounding Substrate Material	0.2 – 1.6 cm (gravel)
Substrate Embeddedness	1/4 Embedded
Pools	Present
Rapids	Absent
Riffles	Present
Straight Run	Present
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	422
Specific Conductance (µS/cm)	581
DO (mg/L)	11.02
pH (pH)	7.7
TDS (mg/L)	366
TSS (mg/L)	21
Air Temp (Degrees Celsius)	25
Water Temp (Degrees Celsius)	10.69
Turbidity (NTU)	6.3

Site Assessment Report 2014 – YPS-379

Site Data

Site	YPS-379
Sample Date	Jul 22 2014
Latitude	64.36131 N
Longitude	140.77577 W
Altitude	1001
Feature Name	Bruin Creek
Stream Order	4

Site Photograph - Downstream view

Context Map

Refer to Fortymile River Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site was sampled in 2009 and 2015.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	2				
Group	1	2	3	4	5
Probability that the site belongs to each Group	25.1%	33.6%	9.5%	31.2%	0.6%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-140.78	-136.93	2.75
Altitude (ft)	1001	2134.49	899.68
Depth-Avg (cm)	22.70	31.44	19.67
Velocity-Avg (m/s)	0.66	0.43	0.26
Precip. FEB (mm)	33.71	28.51	7.47
Precip. MAR (mm)	32.54	26.48	7.73
Precip. JUN (mm)	53.47	57.14	13.59
Precip. JUL (mm)	68.94	73.01	17.74
Rainfall JUN (mm)	51.89	49.32	11.37
April Max Temp (C)	-4.02	0.93	4.20
Broadleaf Open (%)	0.08	0.14	0.34
Bryoids (%)	0.00	0.31	0.61
Mixedwood Open (%)	0.01	0.75	1.44
Wetland Herb (%)	0.00	0.11	0.31

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	213.00	265.34	160.63	
Total No. of Taxa	12.00	11.52	4.32	11.1

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	0.98	22	98	68
Baetidae	0.74	9	27	35
Simuliidae	0.72	12	16	31
Nemouridae	0.70	0	17	24
Heptageniidae	0.59	149	19	27
Sperchontidae	0.50	0	3	7

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 11.1 families at this site, but 12 families were observed.

Total abundance is below average for this group although within the normal range. Richness (total number of families) is slightly higher than expected.

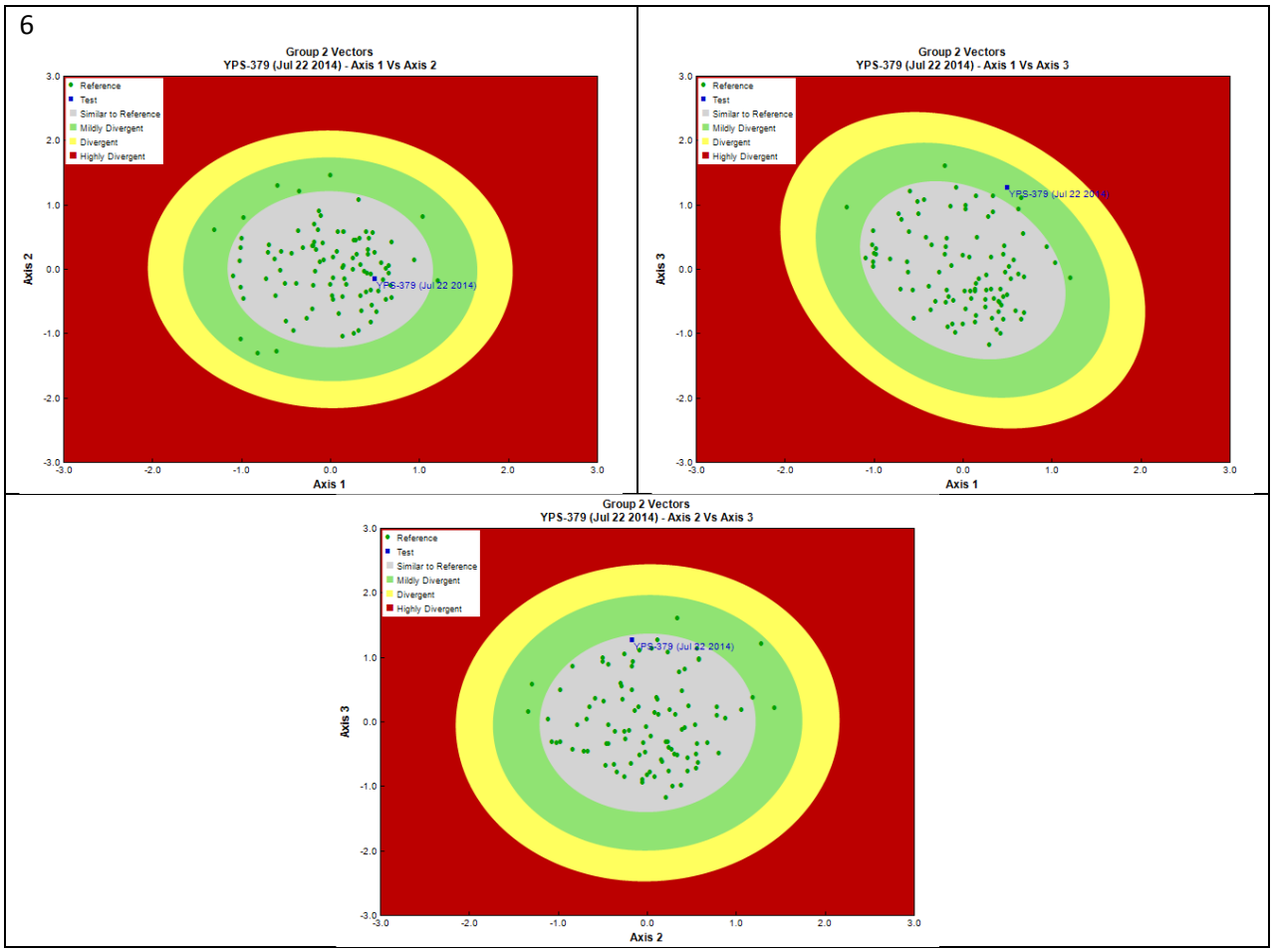
Of the 6 families expected to occur (P>0.5), 2 (Nemouridae and Sperchontidae) were absent.

Of the six families characteristic of the group to which this site was predicted, two (Nemouridae and Chloroperlidae) were absent.

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be included here.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Similar to Reference
Vector 1 vs Vector 3	Mildly Divergent from Reference Condition
Vector 2 vs Vector 3	Similar to Reference
Overall	Mildly Divergent from Reference Condition

Using CABIN, YPS-379 is assessed as Mildly Divergent from Reference Condition.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-379**
Sample Year	2014
Status	Test
Bankfull Width (m)	20.1
Wetted Width (m)	9.5
Channel Depth Average (cm)	22.7
Channel Depth Max (cm)	34
Slope m/m	0.015
Slope (%)	1.5
Max Water Velocity (m/s)	0.8
Average Water Velocity (m/s)	0.66
Dominant Substrate-1st	3.2 – 6.4 cm (pebble)
Dominant Substrate-2nd	6.4 – 12.8 cm (cobble)
Surrounding Substrate Material	0.2 – 1.6 cm (gravel)
Substrate Embeddedness	1/4 Embedded
Pools	Present
Rapids	Absent
Riffles	Present
Straight Run	Present
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	244
Specific Conductance (µS/cm)	327
DO (mg/L)	10.99
pH (pH)	7.7
TDS (mg/L)	191
TSS (mg/L)	0.5
Air Temp (Degrees Celsius)	22
Water Temp (Degrees Celsius)	11.7
Turbidity (NTU)	1.6

Site Assessment Report 2014 – YPS-411

Site Data

Site	YPS-411
Sample Date	Jul 24 2014
Latitude	62.34793 N
Longitude	137.30255 W
Altitude	2700
Feature Name	Mechanic Creek
Stream Order	2

Site Photograph - Downstream view

Context Map

Refer to Big Creek Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site was sampled in 2009 and 2015.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	4				
Group	1	2	3	4	5
Probability that the site belongs to each Group	1.6%	25.6%	13.5%	48.1%	11.2%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-137.30	-137.45	2.65
Altitude (ft)	2700	2296.81	838.01
Depth-Avg (cm)	7.30	29.80	14.62
Velocity-Avg (m/s)	0.13	0.52	0.32
Precip. FEB (mm)	42.83	29.34	11.79
Precip. MAR (mm)	42.75	27.46	11.91
Precip. JUN (mm)	76.96	53.49	18.49
Precip. JUL (mm)	96.10	65.85	22.37
Rainfall JUN (mm)	69.41	48.44	16.06
April Max Temp (C)	-3.55	-0.98	3.38
Broadleaf Open (%)	0.00	0.38	1.31
Bryoids (%)	0.00	0.54	1.04
Mixedwood Open (%)	0.00	0.77	2.87
Wetland Herb (%)	0.00	0.14	0.46

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	254.00	2059.44	1572.86	
Total No. of Taxa	12.00	12.95	4.37	12.8

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	1.00	94	911	827
Baetidae	0.89	4	233	309
Nemouridae	0.84	3	130	184
Simuliidae	0.83	93	207	367
Heptageniidae	0.75	0	120	216
Empididae	0.58	39	18	37
Sperchontidae	0.58	0	35	60
Tipulidae	0.55	4	19	41
Chloroperlidae	0.50	0	29	73

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 12.8 families at this site, but 12 families were observed.

Total abundance is well below average for this group and outside the normal range. Richness (total number of families) is as expected.

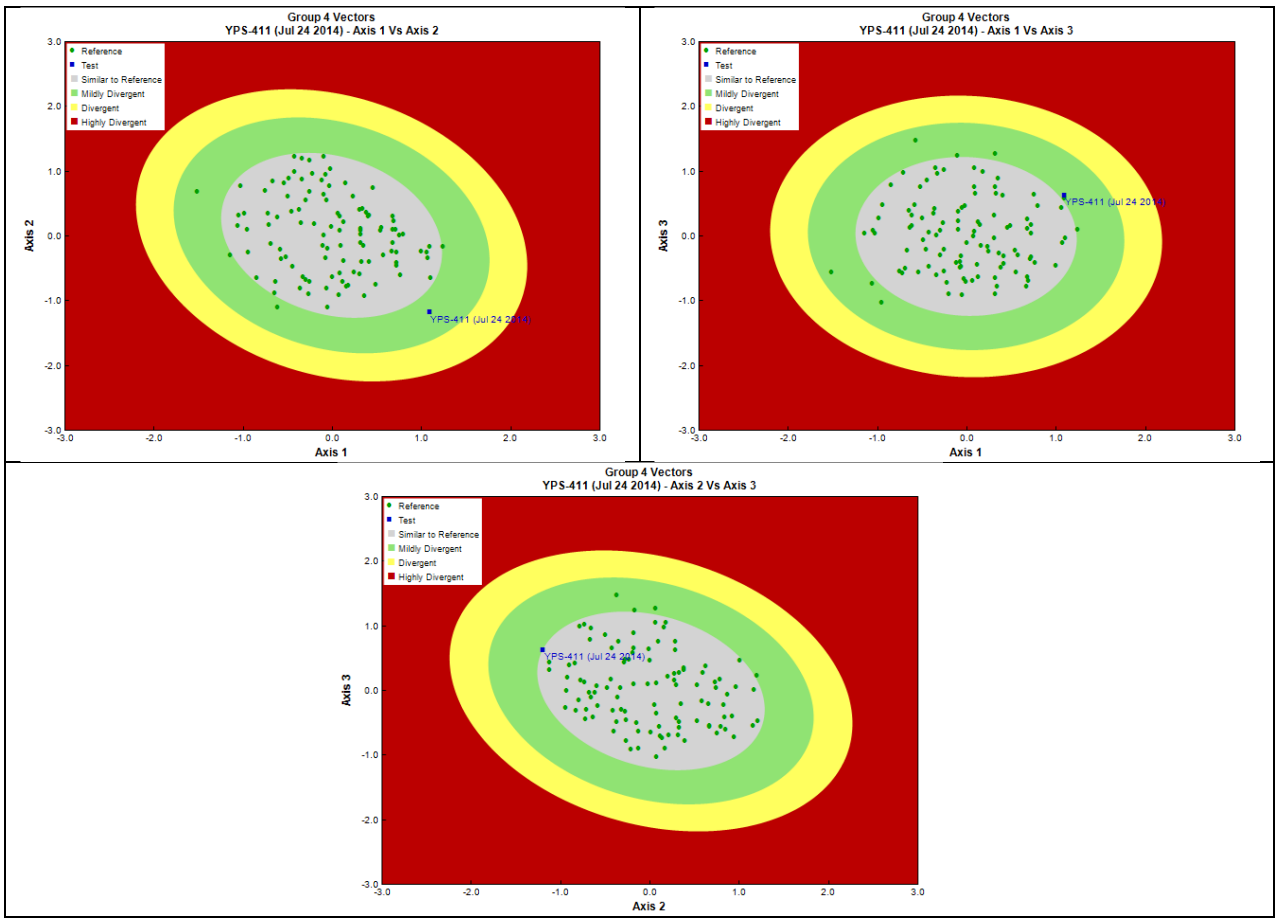
Of the 9 families expected to occur (P>0.5), 3 (Heptageniidae, Sperchontidae and Chloroperlidae) were absent.

Of the five families characteristic of the group to which this site was predicted, one (Heptageniidae) was absent.

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be included here.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Mildly Divergent from Reference Condition
Vector 1 vs Vector 3	Mildly Divergent from Reference Condition
Vector 2 vs Vector 3	Similar to Reference
Overall	Mildly Divergent from Reference Condition

Using CABIN, YPS-411 is assessed as Mildly Divergent from Reference Condition.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-411**
Sample Year	2014
Status	Test
Bankfull Width (m)	11.4
Wetted Width (m)	1.2
Channel Depth Average (cm)	7.3
Channel Depth Max (cm)	11
Slope m/m	0.03
Slope (%)	3
Max Water Velocity (m/s)	0.3
Average Water Velocity (m/s)	0.13
Dominant Substrate-1st	3.2 – 6.4 cm (pebble)
Dominant Substrate-2nd	6.4 – 12.8 cm (cobble)
Surrounding Substrate Material	0.2 – 1.6 cm (gravel)
Substrate Embeddedness	1/4 Embedded
Pools	Present
Rapids	Absent
Riffles	Present
Straight Run	Absent
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	480
Specific Conductance (µS/cm)	643
DO (mg/L)	10.87
pH (pH)	7.8
TDS (mg/L)	411
TSS (mg/L)	33
Air Temp (Degrees Celsius)	16
Water Temp (Degrees Celsius)	11.71
Turbidity (NTU)	60

Site Assessment Report 2014 – YPS-412

Site Data

Site	YPS-412
Sample Date	Jul 24 2014
Latitude	62.34988 N
Longitude	137.27151 W
Altitude	2211
Feature Name	Big Creek
Stream Order	4

Site Photograph - Downstream view

Context Map

Refer to Big Creek Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site was sampled in 2009 and 2015.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	4				
Group	1	2	3	4	5
Probability that the site belongs to each Group	17.7%	23.8%	18.6%	38.5%	1.4%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-137.27	-137.45	2.65
Altitude (ft)	2211	2296.81	838.01
Depth-Avg (cm)	82.80	29.80	14.62
Velocity-Avg (m/s)	0.66	0.52	0.32
Precip. FEB (mm)	37.11	29.34	11.79
Precip. MAR (mm)	36.77	27.46	11.91
Precip. JUN (mm)	66.72	53.49	18.49
Precip. JUL (mm)	84.59	65.85	22.37
Rainfall JUN (mm)	60.45	48.44	16.06
April Max Temp (C)	-0.86	-0.98	3.38
Broadleaf Open (%)	0.47	0.38	1.31
Bryoids (%)	0.00	0.54	1.04
Mixedwood Open (%)	0.00	0.77	2.87
Wetland Herb (%)	0.05	0.14	0.46

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	47.00	2059.44	1572.86	
Total No. of Taxa	11.00	12.95	4.37	12

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	0.98	10	911	827
Baetidae	0.78	4	233	309
Nemouridae	0.76	0	130	184
Simuliidae	0.76	5	207	367
Heptageniidae	0.66	3	120	216
Sperchontidae	0.55	2	35	60
Tipulidae	0.52	0	19	41
Empididae	0.51	0	18	37

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 12 families at this site, but 11 families were observed.

Total abundance is well below average for this group and outside the normal range. Richness (total number of families) is slightly lower than expected.

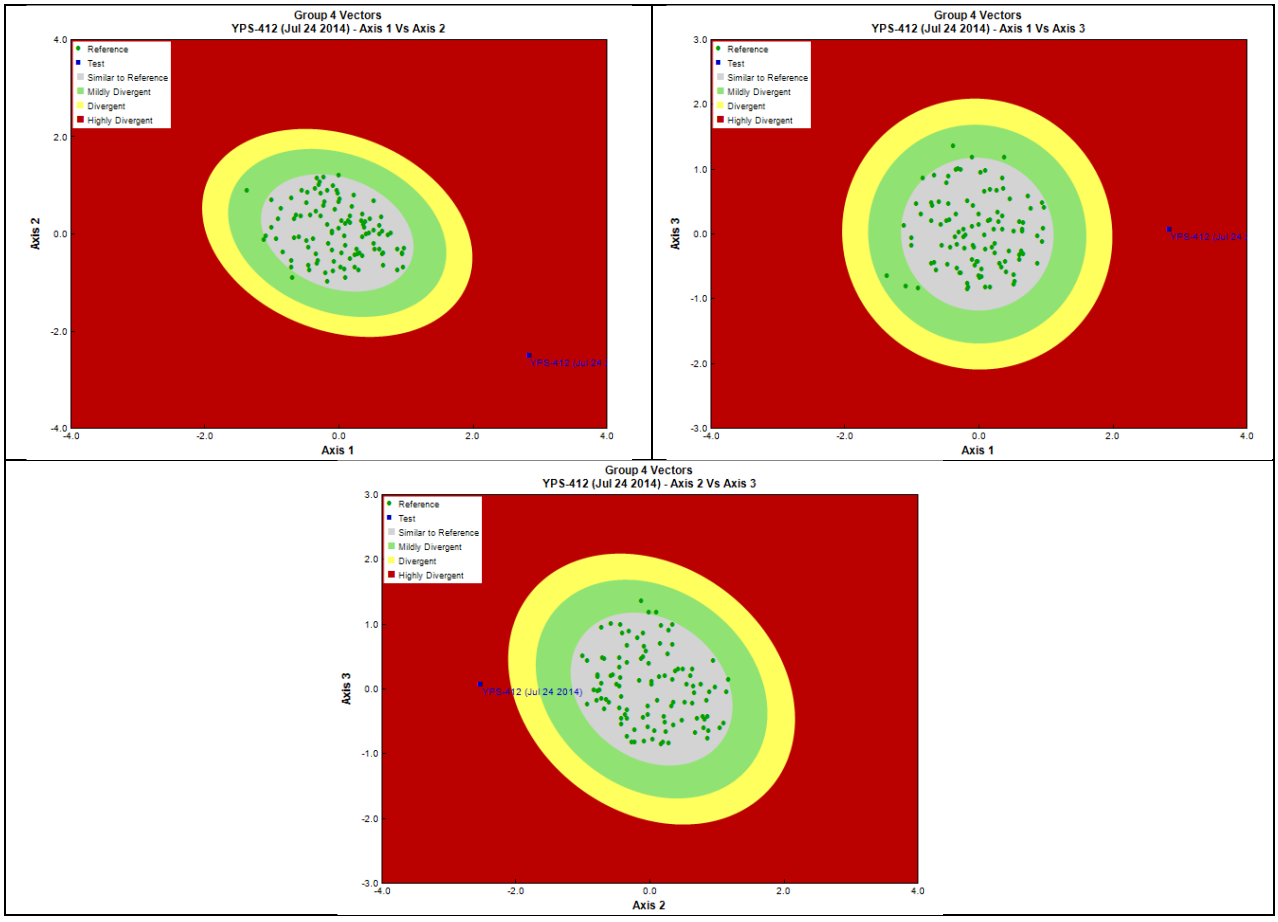
Of the 8 families expected to occur (P>0.5), 3 (Nemouridae, Tipulidae and Empididae) were absent.

Of the five families characteristic of the group to which this site was predicted, one (Nemouridae) was absent.

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be included here.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Highly Divergent from Reference Condition
Vector 1 vs Vector 3	Highly Divergent from Reference Condition
Vector 2 vs Vector 3	Highly Divergent from Reference Condition
Overall	Highly Divergent from Reference Condition

Using CABIN, YPS-412 is assessed as Highly Divergent from Reference Condition.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-412**
Sample Year	2014
Status	Test
Bankfull Width (m)	42.1
Wetted Width (m)	18.6
Channel Depth Average (cm)	82.8
Channel Depth Max (cm)	94
Slope m/m	0.025
Slope (%)	2.5
Max Water Velocity (m/s)	0.9
Average Water Velocity (m/s)	0.66
Dominant Substrate-1st	3.2 – 6.4 cm (pebble)
Dominant Substrate-2nd	1.6 – 3.2 cm (pebble)
Surrounding Substrate Material	0.2 – 1.6 cm (gravel)
Substrate Embeddedness	1/4 Embedded
Pools	Absent
Rapids	Absent
Riffles	Present
Straight Run	Present
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	93
Specific Conductance (µS/cm)	140
DO (mg/L)	10.86
pH (pH)	8.2
TDS (mg/L)	77
TSS (mg/L)	3
Air Temp (Degrees Celsius)	15
Water Temp (Degrees Celsius)	7.62
Turbidity (NTU)	2.9

Site Assessment Report 2014 – YPS-413

Site Data

Site	YPS-413
Sample Date	Jul 24 2014
Latitude	62.37346 N
Longitude	137.38675 W
Altitude	2421
Feature Name	No Name Creek
Stream Order	4

Site Photograph - Downstream view

Context Map

Refer to Big Creek Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site was also sampled in 2009.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	4				
Group	1	2	3	4	5
Probability that the site belongs to each Group	1.3%	11.6%	23.6%	51.2%	12.4%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-137.39	-137.45	2.65
Altitude (ft)	2421	2296.81	838.01
Depth-Avg (cm)	23.70	29.80	14.62
Velocity-Avg (m/s)	0.57	0.52	0.32
Precip. FEB (mm)	41.98	29.34	11.79
Precip. MAR (mm)	41.87	27.46	11.91
Precip. JUN (mm)	74.87	53.49	18.49
Precip. JUL (mm)	93.91	65.85	22.37
Rainfall JUN (mm)	67.80	48.44	16.06
April Max Temp (C)	-3.06	-0.98	3.38
Broadleaf Open (%)	1.10	0.38	1.31
Bryoids (%)	0.00	0.54	1.04
Mixedwood Open (%)	0.00	0.77	2.87
Wetland Herb (%)	0.00	0.14	0.46

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	1396.00	2059.44	1572.86	
Total No. of Taxa	18.00	12.95	4.37	13.2

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	1.00	188	911	827
Baetidae	0.90	120	233	309
Nemouridae	0.87	100	130	184
Simuliidae	0.84	8	207	367
Heptageniidae	0.79	488	120	216
Empididae	0.61	44	18	37
Sperchontidae	0.60	24	35	60
Tipulidae	0.56	4	19	41
Chloroperlidae	0.54	0	29	73
Perlodidae	0.53	16	12	22

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 13.2 families at this site, but 18 families were observed.

Total abundance is below average for this group but within the normal range. Richness (total number of families) is much higher than expected.

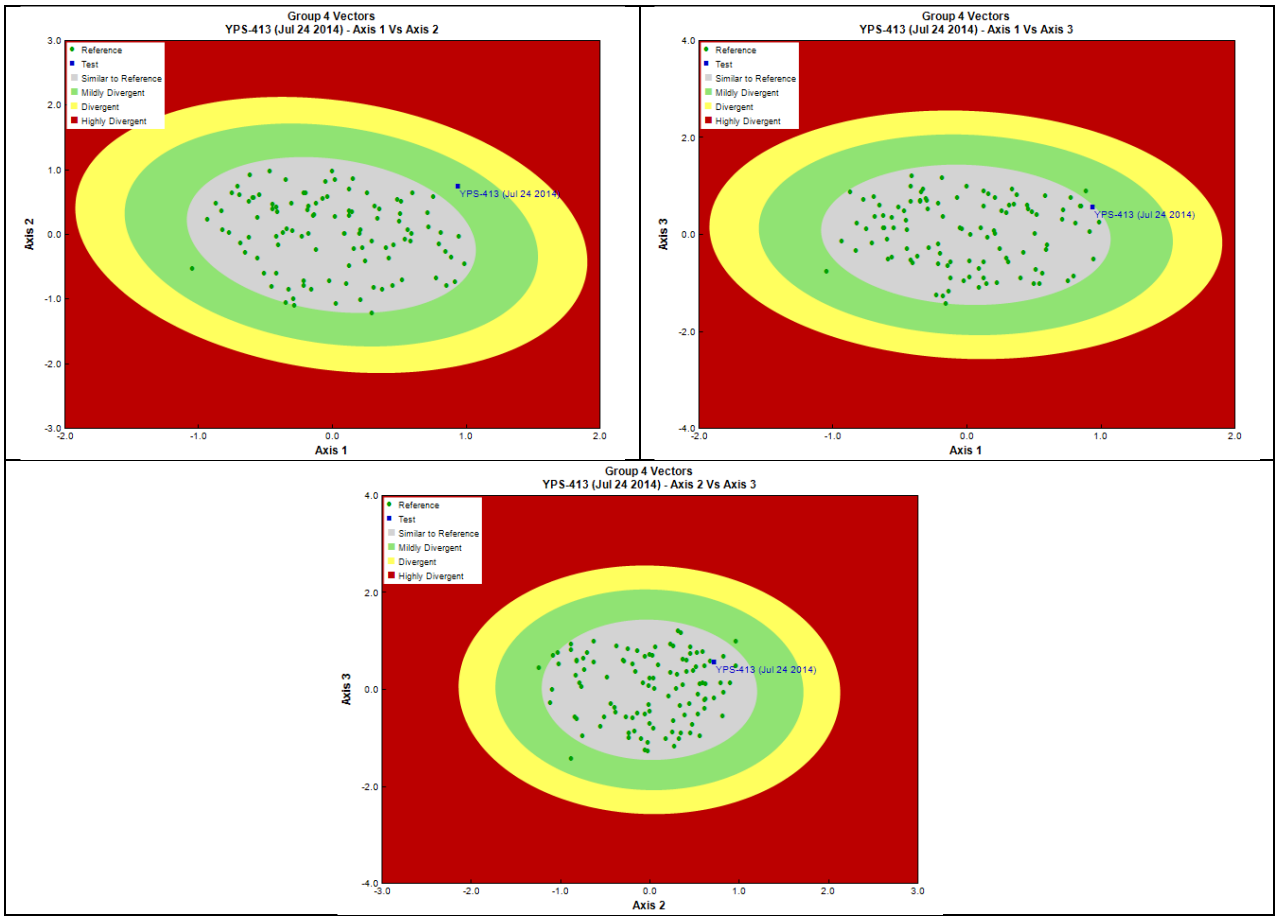
Of the 10 families expected to occur (P>0.5), 1 (Chloroperlidae) was absent.

All of the five families characteristic of the group to which this site was predicted were present.

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be included here.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Mildly Divergent from Reference Condition
Vector 1 vs Vector 3	Similar to Reference
Vector 2 vs Vector 3	Similar to Reference
Overall	Mildly Divergent from Reference Condition

Using CABIN, YPS-413 is assessed as in Mildly Divergent from Reference Condition.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-413**
Sample Year	2014
Status	Test
Bankfull Width (m)	4.9
Wetted Width (m)	2.9
Channel Depth Average (cm)	23.7
Channel Depth Max (cm)	24.5
Slope m/m	0.035
Slope (%)	3.5
Max Water Velocity (m/s)	0.7
Average Water Velocity (m/s)	0.57
Dominant Substrate-1st	6.4 – 12.8 cm (cobble)
Dominant Substrate-2nd	12.8 – 25.6 cm (cobble)
Surrounding Substrate Material	0.2 – 1.6 cm (gravel)
Substrate Embeddedness	1/2 Embedded
Pools	Present
Rapids	Absent
Riffles	Present
Straight Run	Absent
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	92
Specific Conductance (µS/cm)	148
DO (mg/L)	12.02
pH (pH)	8
TDS (mg/L)	80
TSS (mg/L)	5
Air Temp (Degrees Celsius)	13
Water Temp (Degrees Celsius)	5.06
Turbidity (NTU)	1.7

Site Assessment Report 2014 – YPS-414

Site Data

Site	YPS-414
Sample Date	Jul 24 2014
Latitude	62.35588 N
Longitude	137.17303 W
Altitude	2093
Feature Name	Seymour Creek
Stream Order	5

Site Photograph - Upstream view

Context Map

Refer to Big Creek Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site was sampled in 2009 and 2015.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	4				
Group	1	2	3	4	5
Probability that the site belongs to each Group	1.3%	12.8%	30.8%	48.3%	6.9%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-137.17	-137.45	2.65
Altitude (ft)	2093	2296.81	838.01
Depth-Avg (cm)	23.90	29.80	14.62
Velocity-Avg (m/s)	0.76	0.52	0.32
Precip. FEB (mm)	41.42	29.34	11.79
Precip. MAR (mm)	41.25	27.46	11.91
Precip. JUN (mm)	75.84	53.49	18.49
Precip. JUL (mm)	94.89	65.85	22.37
Rainfall JUN (mm)	67.70	48.44	16.06
April Max Temp (C)	-2.81	-0.98	3.38
Broadleaf Open (%)	1.21	0.38	1.31
Bryoids (%)	0.00	0.54	1.04
Mixedwood Open (%)	0.00	0.77	2.87
Wetland Herb (%)	0.00	0.14	0.46

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	476.00	2059.44	1572.86	
Total No. of Taxa	15.00	12.95	4.37	13.5

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	1.00	36	911	827
Baetidae	0.88	44	233	309
Nemouridae	0.87	8	130	184
Simuliidae	0.84	0	207	367
Heptageniidae	0.80	267	120	216
Sperchontidae	0.62	13	35	60
Empididae	0.62	21	18	37
Chloroperlidae	0.56	44	29	73
Tipulidae	0.56	0	19	41
Perlodidae	0.54	3	12	22

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 13.5 families at this site, but 15 families were observed.

Total abundance is below average for this group and outside the normal range. Richness (total number of families) is slightly higher than expected.

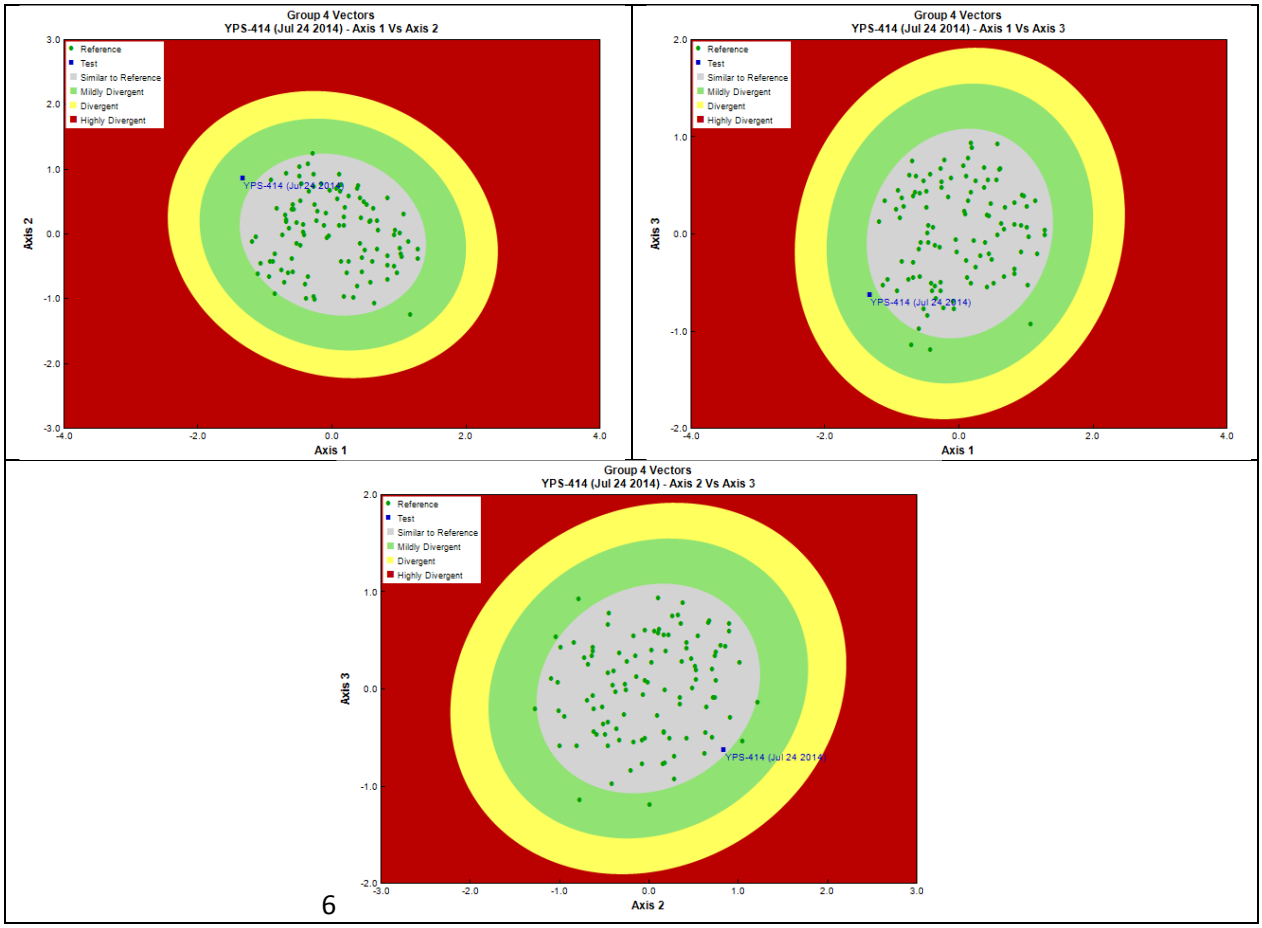
Of the 10 families expected to occur (P>0.5), 2 (Simuliidae and Tipulidae) were absent.

Of the five families characteristic of the group to which this site was predicted, one (Simuliidae) was absent.

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be included here.



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Assessment of Overall Site Condition

Vector 1 vs Vector 2	Mildly Divergent from Reference Condition
Vector 1 vs Vector 3	Mildly Divergent from Reference Condition
Vector 2 vs Vector 3	Similar to Reference
Overall	Mildly Divergent from Reference Condition

Using CABIN, YPS-414 is assessed as Mildly Divergent from Reference Condition.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-414**
Sample Year	2014
Status	Test
Bankfull Width (m)	18.1
Wetted Width (m)	7.1
Channel Depth Average (cm)	23.9
Channel Depth Max (cm)	33
Slope m/m	0.015
Slope (%)	1.5
Max Water Velocity (m/s)	1.1
Average Water Velocity (m/s)	0.76
Dominant Substrate-1st	3.2 – 6.4 cm (pebble)
Dominant Substrate-2nd	6.4 – 12.8 cm (cobble)
Surrounding Substrate Material	0.2 – 1.6 cm (gravel)
Substrate Embeddedness	1/2 Embedded
Pools	Absent
Rapids	Absent
Riffles	Present
Straight Run	Present
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	160
Specific Conductance (µS/cm)	237
DO (mg/L)	11.6
pH (pH)	7.9
TDS (mg/L)	134
TSS (mg/L)	0.5
Air Temp (Degrees Celsius)	16
Water Temp (Degrees Celsius)	7.99
Turbidity (NTU)	1.1

Site Assessment Report 2014 – YPS-427

Site Data

Site	YPS-427
Sample Date	Jul 23, 2014
Latitude	63.27806 N
Longitude	-134.41361 W
Altitude	1308
Feature Name	Rosebud Creek
Stream Order	5

Site Photograph – Aerial View

Context Map

Refer to Stewart River Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site has been sampled on two previous occasions, in 2010 and 2011.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	4				
Group	1	2	3	4	5
Probability that the site belongs to each Group	0.8%	10.8%	7.5%	54.3%	26.6%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-134.41	-137.45	2.65
Altitude (ft)	1308	2296.81	838.01
Depth-Avg (cm)	47.40	29.80	14.62
Velocity-Avg (m/s)	0.70	0.52	0.32
Precip. FEB (mm)	36.57	29.34	11.79
Precip. MAR (mm)	36.07	27.46	11.91
Precip. JUN (mm)	65.48	53.49	18.49
Precip. JUL (mm)	80.70	65.85	22.37
Rainfall JUN (mm)	60.38	48.44	16.06
April Max Temp (C)	-3.35	-0.98	3.38
Broadleaf Open (%)	0.51	0.38	1.31
Bryoids (%)	0.19	0.54	1.04
Mixedwood Open (%)	0.85	0.77	2.87
Wetland Herb (%)	0.22	0.14	0.46

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	394.00	2059.44	1572.86	
Total No. of Taxa	17.00	12.95	4.37	12.7

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	1.00	109	911	827
Baetidae	0.93	41	233	309
Nemouridae	0.87	6	130	184
Simuliidae	0.83	10	207	367
Heptageniidae	0.78	2	120	216
Empididae	0.58	58	18	37
Sperchontidae	0.55	5	35	60
Tipulidae	0.55	23	19	41
Capniidae	0.53	0	21	45
Perlodidae	0.52	0	12	22

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 12.7 families at this site, but 17 families were observed.

Total abundance is below average for this group and outside the normal range. Richness (total number of families) is much higher than expected.

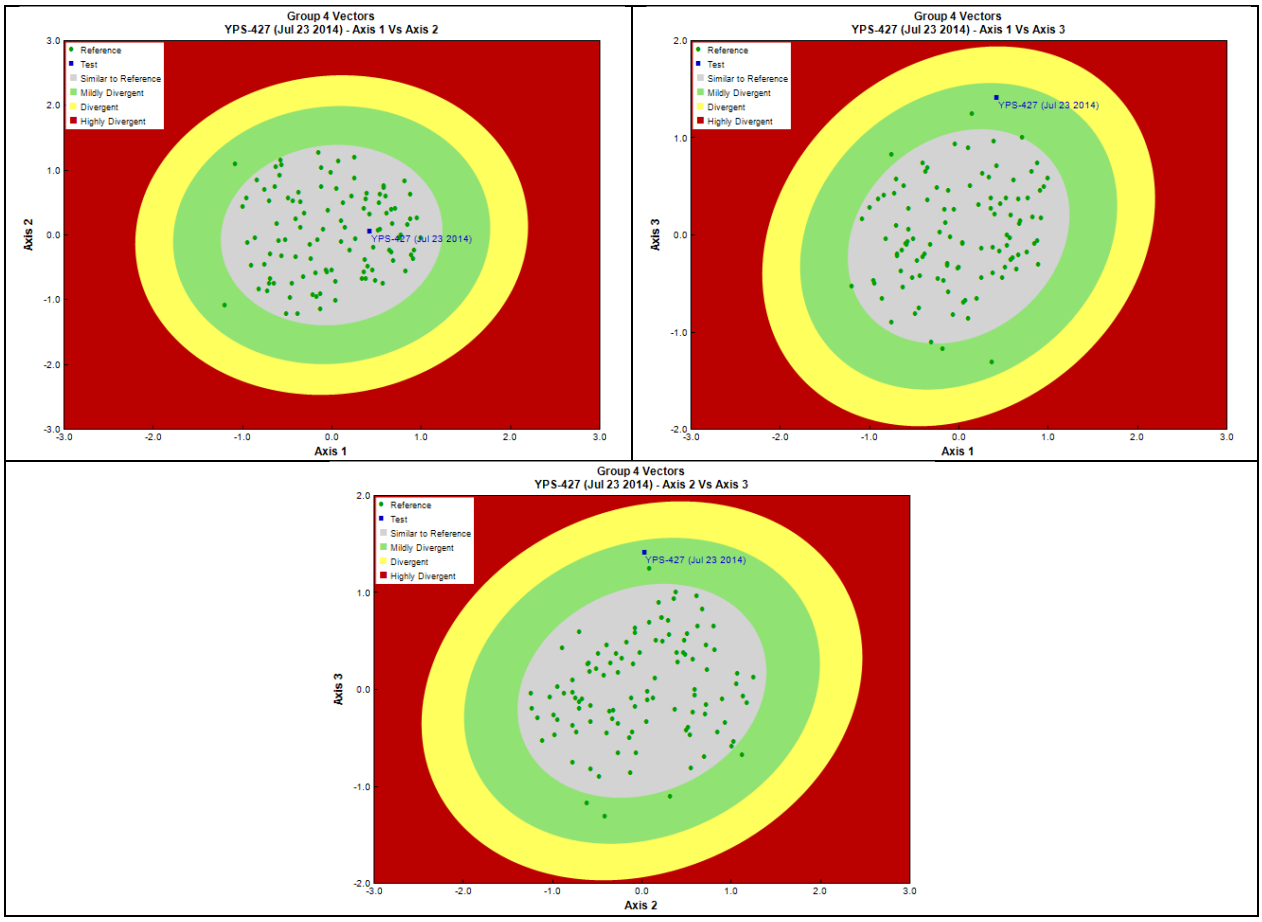
Of the 10 families expected to occur (P>0.5) 2 (Capnidae and Perlodidae) were absent. All five families characteristic of the group to which this site was predicted were present.

Of the five families characteristic of the group to which this site was predicted, all were present.

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be included here.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Similar to Reference
Vector 1 vs Vector 3	Mildly Divergent from Reference Condition
Vector 2 vs Vector 3	Mildly Divergent from Reference Condition
Overall	Mildly Divergent from Reference Condition

Using CABIN, YPS-427 is assessed as Mildly Divergent from Reference Condition.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-427**
Sample Year	2014
Status	Test
Bankfull Width (m)	21.5
Wetted Width (m)	18
Channel Depth Average (cm)	47.4
Channel Depth Max (cm)	62
Slope m/m	0.01
Slope (%)	1
Max Water Velocity (m/s)	0.9
Average Water Velocity (m/s)	0.7
Dominant Substrate-1st	6.4 – 12.8 cm (cobble)
Dominant Substrate-2nd	3.2 – 6.4 cm (pebble)
Surrounding Substrate Material	0.1 – 0.2 cm (sand)
Substrate Embeddedness	1/2 Embedded
Pools	Absent
Rapids	Absent
Riffles	Present
Straight Run	Present
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	1-25
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	193.1
Specific Conductance (µS/cm)	259
DO (mg/L)	8.73
pH (pH)	7.8
TDS (mg/L)	149
TSS (mg/L)	9
Air Temp (Degrees Celsius)	22
Water Temp (Degrees Celsius)	11.7
Turbidity (NTU)	7.2

Site Assessment Report 2014 - YPS-428

Site Data

Site	YPS-428
Sample Date	Jul 23, 2014
Latitude	63.255 N
Longitude	138.69 W
Altitude	1248
Feature Name	Black Hills Creek
Stream Order	4

Site Photograph - Aerial view

Context Map

Refer to Stewart River Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site has been sampled on two previous occasions, in 2010, 2013 and 2015.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	2				
Group	1	2	3	4	5
Probability that the site belongs to each Group	27.3%	37.5%	7.2%	27.4%	0.5%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-138.69	-136.93	2.75
Altitude (ft)	1248	2134.49	899.68
Depth-Avg (cm)	61.20	31.44	19.67
Velocity-Avg (m/s)	0.38	0.43	0.26
Precip. FEB (mm)	34.02	28.51	7.47
Precip. MAR (mm)	32.94	26.48	7.73
Precip. JUN (mm)	55.96	57.14	13.59
Precip. JUL (mm)	70.66	73.01	17.74
Rainfall JUN (mm)	52.92	49.32	11.37
April Max Temp (C)	-2.76	0.93	4.20
Broadleaf Open (%)	0.01	0.14	0.34
Bryoids (%)	0.47	0.31	0.61
Mixedwood Open (%)	0.60	0.75	1.44
Wetland Herb (%)	0.01	0.11	0.31

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	72.00	265.34	160.63	
Total No. of Taxa	8.00	11.52	4.32	10.9

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	0.98	22	98	68
Baetidae	0.72	35	27	35
Simuliidae	0.70	0	16	31
Nemouridae	0.69	0	17	24
Heptageniidae	0.57	0	19	27

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 10.9 families at this site, but 8 families were observed.

Total abundance is well below average for this group and outside the normal range. Richness (total number of families) is lower than expected.

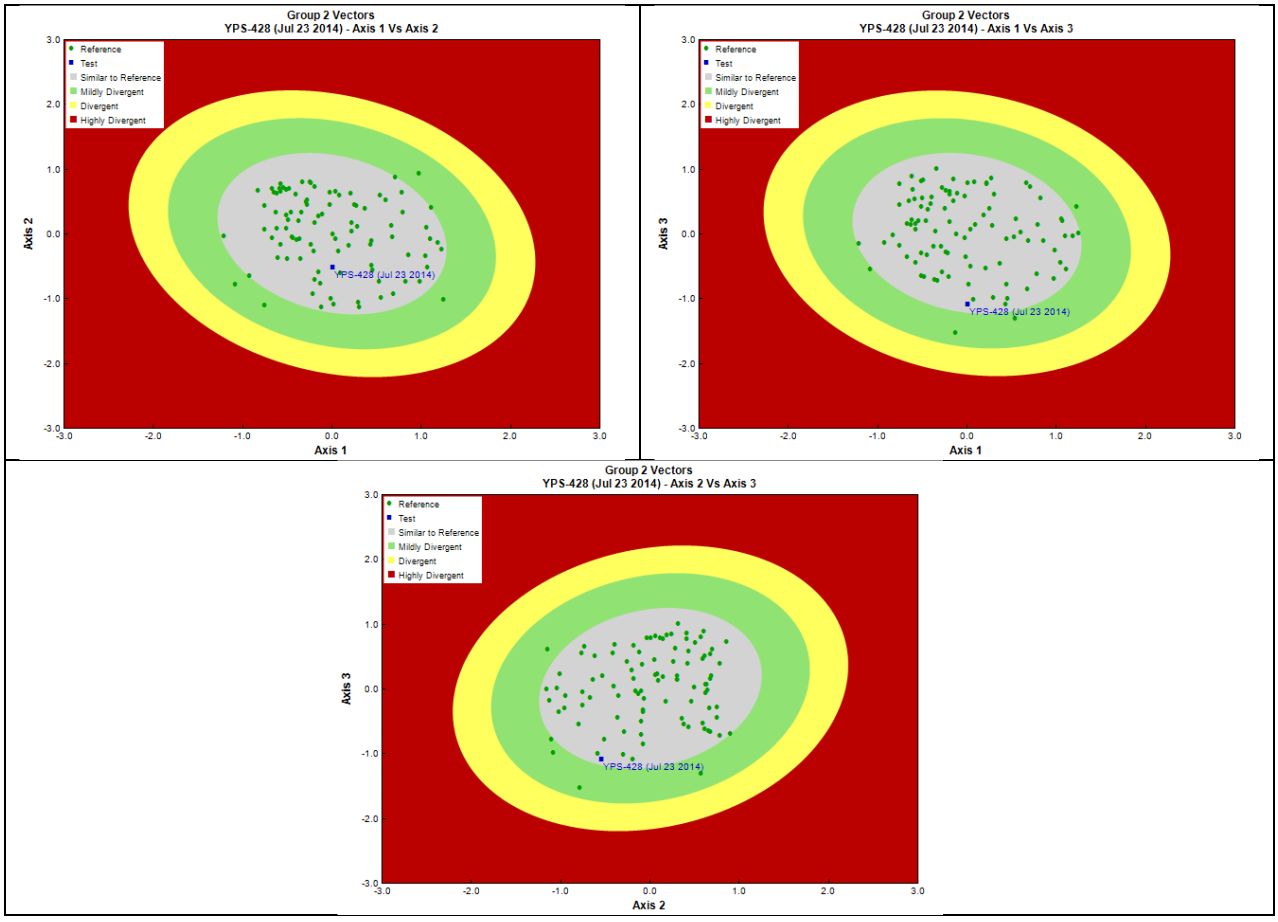
Of the 5 families expected to occur (P>0.5), 3 (Simuliidae, Nemouridae and Heptageniidae) were absent.

Of the six families characteristic of the group to which this site was predicted, four (Simuliidae, Nemouridae, Heptageniidae and Chloroperlidae) were absent.

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in the past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be provided.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Similar to Reference
Vector 1 vs Vector 3	Similar to Reference
Vector 2 vs Vector 3	Similar to Reference
Overall	Similar to Reference

Using CABIN, YPS-428 is assessed as Similar to Reference.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-428**
Sample Year	2014
Status	Test
Bankfull Width (m)	10
Wetted Width (m)	9.7
Channel Depth Average (cm)	61.2
Channel Depth Max (cm)	74
Slope m/m	0.005
Slope (%)	0.5
Max Water Velocity (m/s)	0.5
Average Water Velocity (m/s)	0.38
Dominant Substrate-1st	<0.1 cm (silt)
Dominant Substrate-2nd	0.1 – 0.2 cm (sand)
Surrounding Substrate Material	<0.1 cm (silt)
Substrate Embeddedness	Completely Embedded
Pools	Absent
Rapids	Absent
Riffles	Absent
Straight Run	Present
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	1-25
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	167.2
Specific Conductance (µS/cm)	230.5
DO (mg/L)	8.99
pH (pH)	7.9
TDS (mg/L)	133
TSS (mg/L)	430
Air Temp (Degrees Celsius)	22
Water Temp (Degrees Celsius)	10.6
Turbidity (NTU)	410

Site Assessment Report 2014 – YPS-430

Site Data

Site	YPS-430
Sample Date	Jul 23, 2014
Latitude	63.25528 N
Longitude	138.8494 W
Altitude	1313
Feature Name	Maisy May Creek
Stream Order	5

Site Photograph - Aerial view

Context Map

Refer to Stewart River Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site has been sampled on two previous occasions, in 2010 and 2011.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	1				
Group	1	2	3	4	5
Probability that the site belongs to each Group	35.8%	29.9%	6.0%	27.7%	0.6%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-138.85	-138.27	2.10
Altitude (ft)	1313	1973.87	1104.18
Depth-Avg (cm)	45.20	36.46	24.31
Velocity-Avg (m/s)	0.34	0.42	0.29
Precip. FEB (mm)	35.49	27.74	9.11
Precip. MAR (mm)	34.52	25.55	9.72
Precip. JUN (mm)	56.95	49.78	15.10
Precip. JUL (mm)	72.55	63.45	19.77
Rainfall JUN (mm)	54.00	45.78	13.48
April Max Temp (C)	-2.94	-0.26	3.57
Broadleaf Open (%)	0.11	0.20	0.41
Bryoids (%)	0.07	0.17	0.42
Mixedwood Open (%)	1.78	2.46	5.01
Wetland Herb (%)	0.00	0.22	0.64

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	32.00	192.18	127.13	
Total No. of Taxa	6.00	10.12	4.49	10.4

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	0.97	17	16	11
Baetidae	0.68	1	2	7
Simuliidae	0.67	0	1	1
Nemouridae	0.65	0	1	2
Heptageniidae	0.52	1	3	3

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 10.4 families at this site, but 6 families were observed.

Total abundance is below average for this group and outside the normal range. Richness (total number of families) is much lower than expected.

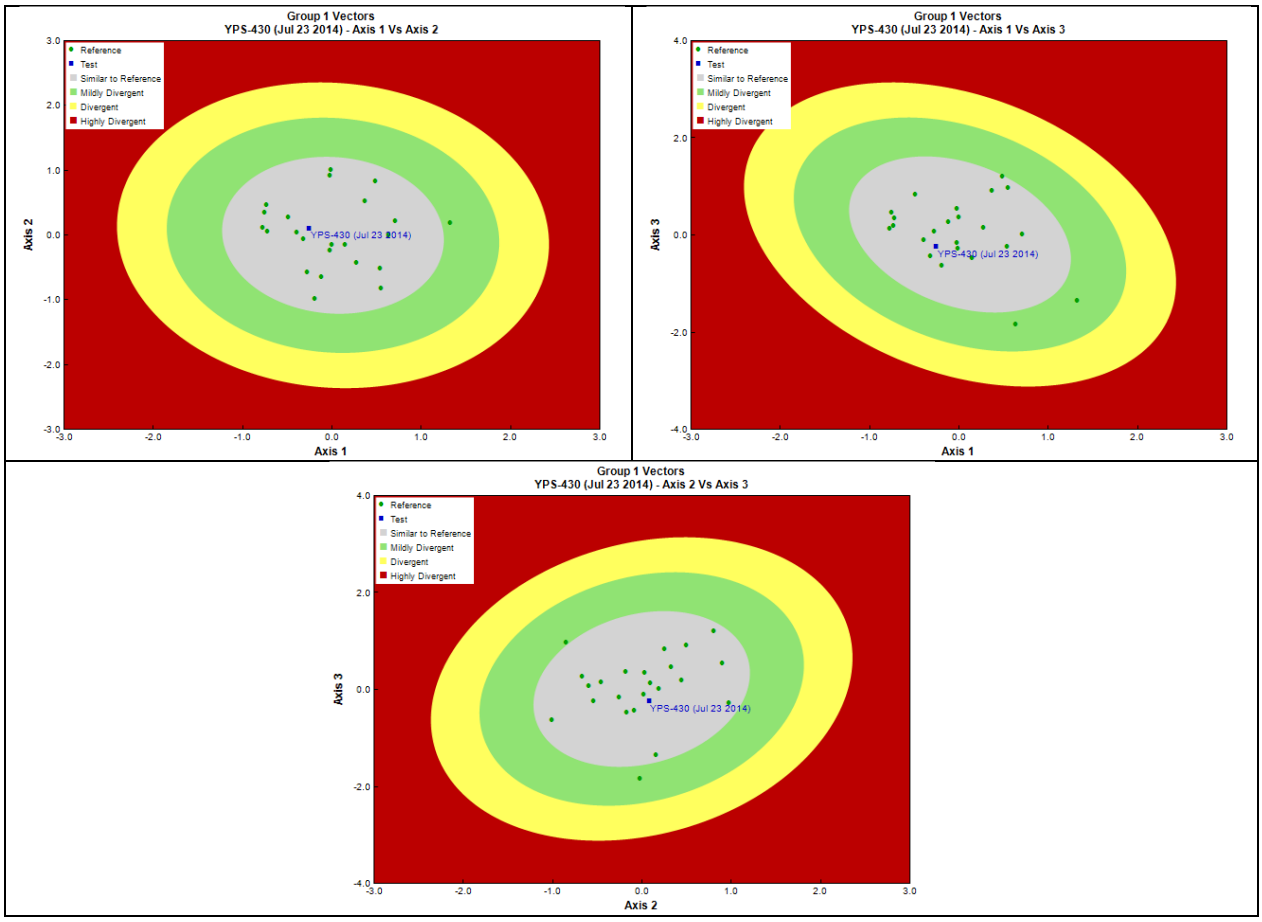
Of the 5 families expected to occur (P>0.5), 2 (Simuliidae and Nemouridae) were absent.

Two of the three families characteristic of the group to which this site was predicted, two were absent (Naididae and Lumbriculidae), although they were expected in low abundance.

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be provided.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Similar to Reference
Vector 1 vs Vector 3	Similar to Reference
Vector 2 vs Vector 3	Similar to Reference
Overall	Similar to Reference

Using CABIN, YPS-430 is assessed as Similar to Reference.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-430**
Sample Year	2014
Status	Test
Bankfull Width (m)	4.8
Wetted Width (m)	4.5
Channel Depth Average (cm)	45.2
Channel Depth Max (cm)	70
Slope m/m	0.015
Slope (%)	1.5
Max Water Velocity (m/s)	0.5
Average Water Velocity (m/s)	0.34
Dominant Substrate-1st	0.1 – 0.2 cm (sand)
Dominant Substrate-2nd	3.2 – 6.4 cm (pebble)
Surrounding Substrate Material	<0.1 cm (silt)
Substrate Embeddedness	1/2 Embedded
Pools	Absent
Rapids	Absent
Riffles	Present
Straight Run	Present
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	266.8
Specific Conductance (µS/cm)	409.4
DO (mg/L)	10.74
pH (pH)	8.1
TDS (mg/L)	252
TSS (mg/L)	31
Air Temp (Degrees Celsius)	20
Water Temp (Degrees Celsius)	6.8
Turbidity (NTU)	29

Site Assessment Report 2014 – YPS-431

Site Data

Site	YPS-431
Sample Date	Jul 23, 2014
Latitude	63.19125 N
Longitude	138.84254 W
Altitude	1227
Feature Name	Scroggie Creek
Stream Order	6

Site Photograph – Aerial View

Context Map

Refer to Stewart River Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site has been sampled on two previous occasions, in 2010 and 2013.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	4				
Group	1	2	3	4	5
Probability that the site belongs to each Group	24.6%	27.9%	11.2%	35.6%	0.7%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-138.84	-137.45	2.65
Altitude (ft)	1227	2296.81	838.01
Depth-Avg (cm)	44.00	29.80	14.62
Velocity-Avg (m/s)	0.68	0.52	0.32
Precip. FEB (mm)	36.39	29.34	11.79
Precip. MAR (mm)	35.74	27.46	11.91
Precip. JUN (mm)	60.86	53.49	18.49
Precip. JUL (mm)	76.91	65.85	22.37
Rainfall JUN (mm)	57.02	48.44	16.06
April Max Temp (C)	-2.61	-0.98	3.38
Broadleaf Open (%)	0.13	0.38	1.31
Bryoids (%)	0.64	0.54	1.04
Mixedwood Open (%)	1.73	0.77	2.87
Wetland Herb (%)	0.02	0.14	0.46

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	401.00	2059.44	1572.86	
Total No. of Taxa	11.00	12.95	4.37	11.3

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	0.98	135	911	827
Baetidae	0.74	97	233	309
Simuliidae	0.72	6	207	367
Nemouridae	0.71	0	130	184
Heptageniidae	0.60	2	120	216
Sperchontidae	0.51	0	35	60
Tipulidae	0.50	0	19	41

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 11.3 families at this site, but 11 families were observed.

Total abundance is well below average for this group and outside the normal range. Richness (total number of families) is as expected.

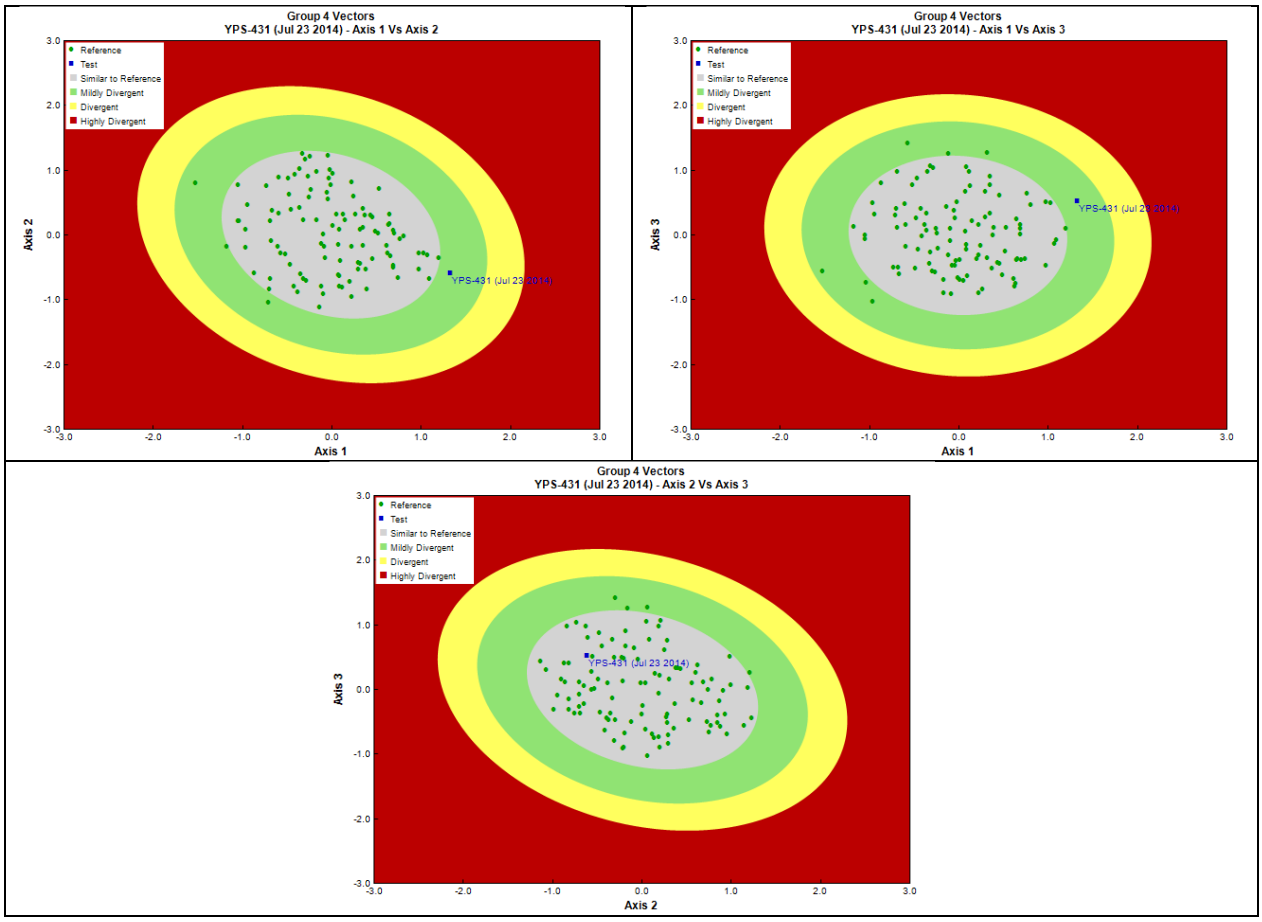
Of the 7 families expected to occur (P>0.5), 3 (Nemouridae, Sperchontidae, and Tipulidae) were absent.

Of the five families characteristic of the group to which this site was predicted, one was absent (Nemouridae).

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be included here.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Mildly Divergent from Reference Condition
Vector 1 vs Vector 3	Mildly Divergent from Reference Condition
Vector 2 vs Vector 3	Similar to Reference
Overall	Mildly Divergent from Reference Condition

Using CABIN, YPS-431 is assessed as Mildly Divergent from Reference Condition.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-431**
Sample Year	2014
Status	Test
Bankfull Width (m)	12.8
Wetted Width (m)	11.9
Channel Depth Average (cm)	44
Channel Depth Max (cm)	51
Slope m/m	0.005
Slope (%)	0.5
Max Water Velocity (m/s)	1
Average Water Velocity (m/s)	0.68
Dominant Substrate-1st	12.8 – 25.6 cm (cobble)
Dominant Substrate-2nd	6.4 – 12.8 cm (cobble)
Surrounding Substrate Material	<0.1 cm (silt)
Substrate Embeddedness	1/4 Embedded
Pools	Present
Rapids	Absent
Riffles	Present
Straight Run	Present
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	143.9
Specific Conductance (µS/cm)	201.8
DO (mg/L)	9.03
pH (pH)	7.9
TDS (mg/L)	115
TSS (mg/L)	81
Air Temp (Degrees Celsius)	17
Water Temp (Degrees Celsius)	10.6
Turbidity (NTU)	54

Site Assessment Report 2014 – YPS-433

Site Data

Site	YPS-433
Sample Date	Jul 23, 2014
Latitude	63.1816 N
Longitude	138.99318 W
Altitude	1230
Feature Name	Brewer Creek
Stream Order	4

Site Photograph – Aerial View

Context Map

Refer to Stewart River Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site has been sampled on two previous occasions, in 2010 and 2013.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	4				
Group	1	2	3	4	5
Probability that the site belongs to each Group	29.1%	28.4%	5.5%	36.0%	0.9%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-138.99	-137.45	2.65
Altitude (ft)	1230	2296.81	838.01
Depth-Avg (cm)	9.00	29.80	14.62
Velocity-Avg (m/s)	0.33	0.52	0.32
Precip. FEB (mm)	36.52	29.34	11.79
Precip. MAR (mm)	35.67	27.46	11.91
Precip. JUN (mm)	57.92	53.49	18.49
Precip. JUL (mm)	74.23	65.85	22.37
Rainfall JUN (mm)	54.92	48.44	16.06
April Max Temp (C)	-2.85	-0.98	3.38
Broadleaf Open (%)	0.02	0.38	1.31
Bryoids (%)	0.00	0.54	1.04
Mixedwood Open (%)	2.72	0.77	2.87
Wetland Herb (%)	0.00	0.14	0.46

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	166.00	2059.44	1572.86	
Total No. of Taxa	10.00	12.95	4.37	10.9

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	0.97	55	911	827
Baetidae	0.72	33	233	309
Simuliidae	0.70	12	207	367
Nemouridae	0.68	50	130	184
Heptageniidae	0.56	0	120	216

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 10.9 families at this site, but 10 families were observed.

Total abundance is well below average for this group and outside the normal range. Richness (total number of families) is as expected.

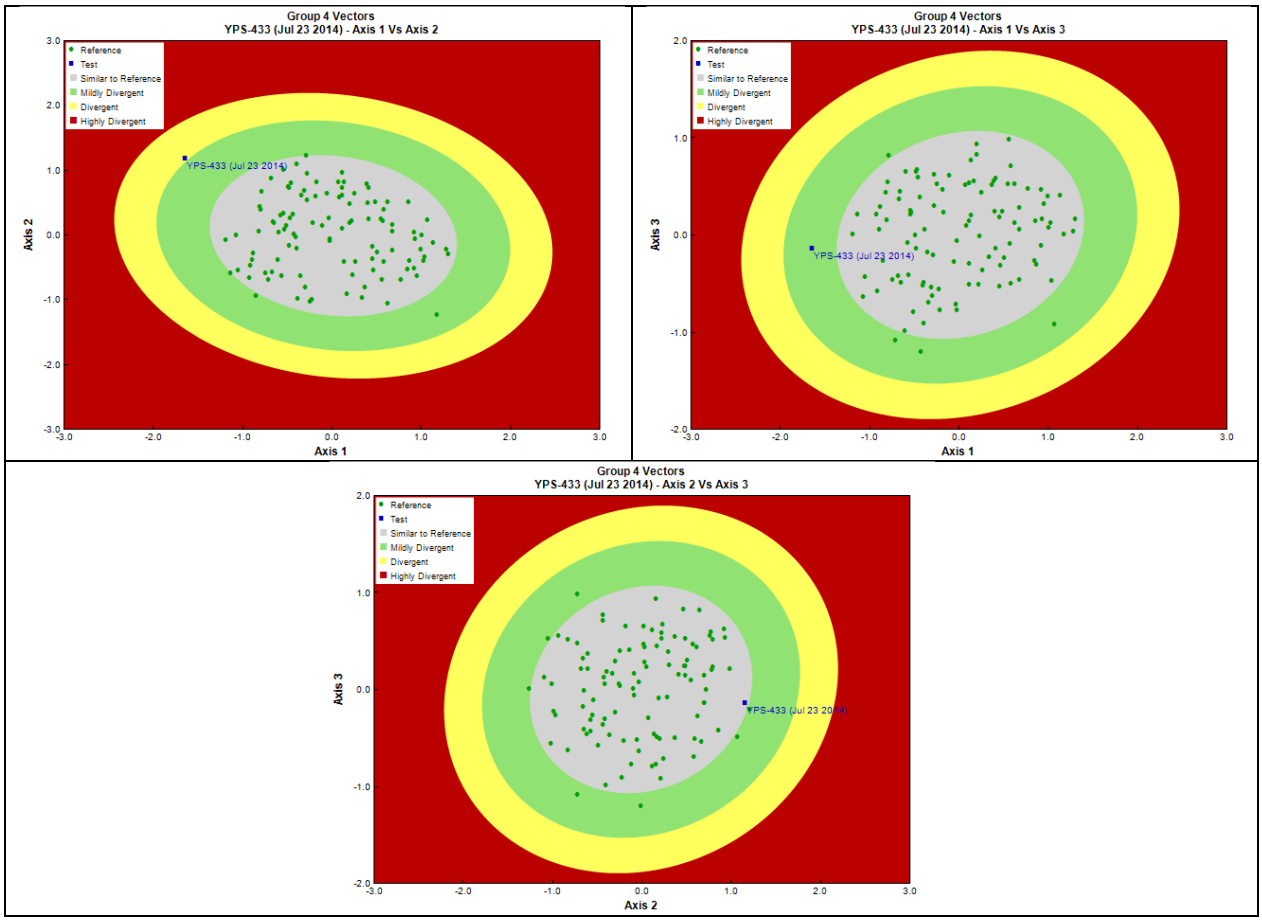
Of the 5 families expected to occur (P>0.5), one (Heptageniidae) was absent.

One of the five families characteristic of the group to which this site was predicted, one was absent (Heptageniidae).

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be included here.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Divergent from Reference Condition
Vector 1 vs Vector 3	Mildly Divergent from Reference Condition
Vector 2 vs Vector 3	Similar to Reference
Overall	Divergent from Reference Condition

Using CABIN, YPS-433 is assessed as Divergent from Reference Condition.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-433**
Sample Year	2014
Status	Test
Bankfull Width (m)	3.9
Wetted Width (m)	2.8
Channel Depth Average (cm)	9
Channel Depth Max (cm)	13
Slope m/m	0.02
Slope (%)	2
Max Water Velocity (m/s)	0.4
Average Water Velocity (m/s)	0.33
Dominant Substrate-1st	6.4 – 12.8 cm (cobble)
Dominant Substrate-2nd	12.8 – 25.6 cm (cobble)
Surrounding Substrate Material	0.2 – 1.6 cm (gravel)
Substrate Embeddedness	1/2 Embedded
Pools	Present
Rapids	Absent
Riffles	Present
Straight Run	Present
Canopy Coverage (%)	51-75
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	284
Specific Conductance (µS/cm)	440.4
DO (mg/L)	10.37
pH (pH)	8
TDS (mg/L)	270
TSS (mg/L)	6
Air Temp (Degrees Celsius)	14
Water Temp (Degrees Celsius)	6.4
Turbidity (NTU)	4

Site Assessment Report 2014 - YPS-435

Site Data

Site	YPS-435
Sample Date	Jul 24, 2014
Latitude	63.61691 N
Longitude	137.6382 W
Altitude	1397
Feature Name	Clear Creek
Stream Order	4

Site Photograph - Downstream view

Context Map

Refer to Stewart River Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site has been sampled on two previous occasions, in 2010 and 2013.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	2				
Group	1	2	3	4	5
Probability that the site belongs to each Group	13.9%	33.2%	20.4%	32.2%	0.3%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-137.64	-136.93	2.75
Altitude (ft)	1397	2134.49	899.68
Depth-Avg (cm)	64.40	31.44	19.67
Velocity-Avg (m/s)	0.54	0.43	0.26
Precip. FEB (mm)	32.75	28.51	7.47
Precip. MAR (mm)	31.75	26.48	7.73
Precip. JUN (mm)	62.55	57.14	13.59
Precip. JUL (mm)	73.96	73.01	17.74
Rainfall JUN (mm)	58.26	49.32	11.37
April Max Temp (C)	-4.18	0.93	4.20
Broadleaf Open (%)	0.63	0.14	0.34
Bryoids (%)	0.17	0.31	0.61
Mixedwood Open (%)	0.07	0.75	1.44
Wetland Herb (%)	0.06	0.11	0.31

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	405.00	265.34	160.63	
Total No. of Taxa	19.00	11.52	4.32	12.1

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	0.99	99	98	68
Baetidae	0.79	127	27	35
Nemouridae	0.77	6	17	24
Simuliidae	0.77	22	16	31
Heptageniidae	0.68	10	19	27
Sperchontidae	0.55	8	3	7
Empididae	0.52	2	4	10
Tipulidae	0.52	12	2	3

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 12.1 families at this site, but 19 families were observed.

Total abundance is above average for this group but within normal range. Richness (total number of families) is much higher than expected.

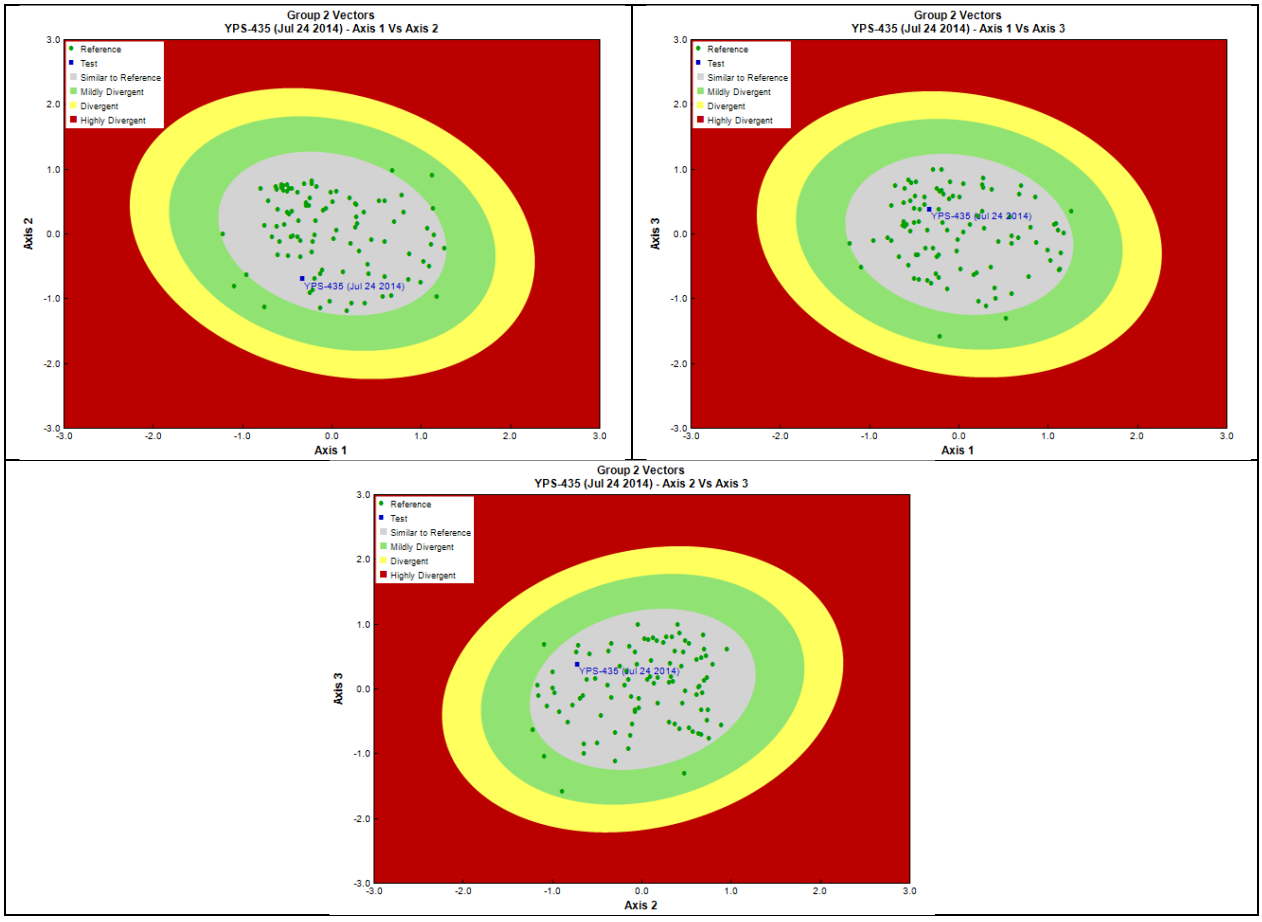
Of the 8 families expected to occur (P>0.5), all were present.

One of the six families characteristic of the group to which this site was predicted, one was absent (Chloroperlidae).

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be provided.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Similar to Reference
Vector 1 vs Vector 3	Similar to Reference
Vector 2 vs Vector 3	Similar to Reference
Overall	Similar to Reference

Using CABIN, YPS-435 is assessed as Similar to Reference.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-435**
Sample Year	2014
Status	Test
Bankfull Width (m)	17.8
Wetted Width (m)	8.2
Channel Depth Average (cm)	64.4
Channel Depth Max (cm)	87
Slope m/m	0.0075
Slope (%)	0.75
Max Water Velocity (m/s)	0.8
Average Water Velocity (m/s)	0.54
Dominant Substrate-1st	3.2 – 6.4 cm (pebble)
Dominant Substrate-2nd	6.4 – 12.8 cm (cobble)
Surrounding Substrate Material	0.1 – 0.2 cm (sand)
Substrate Embeddedness	1/4 Embedded
Pools	Present
Rapids	Absent
Riffles	Present
Straight Run	Present
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	1-25
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	131.4
Specific Conductance (µS/cm)	175.3
DO (mg/L)	8.79
pH (pH)	7.7
TDS (mg/L)	97
TSS (mg/L)	0.5
Air Temp (Degrees Celsius)	21
Water Temp (Degrees Celsius)	11.9
Turbidity (NTU)	2.7

Site Assessment Report 2014 - YPS-481

Site Data

Site	YPS-481
Sample Date	Jul 22, 2014
Latitude	63.61597 N
Longitude	138.67836 W
Altitude	1759
Feature Name	Australia Creek
Stream Order	4

Site Photograph - Aerial view

Context Map

Refer to Indian River Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site has been sampled on two previous occasions, in 2011 and 2013.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	4				
Group	1	2	3	4	5
Probability that the site belongs to each Group	4.1%	22.7%	18.6%	46.5%	8.1%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-138.68	-137.45	2.65
Altitude (ft)	1759	2296.81	838.01
Depth-Avg (cm)	30.60	29.80	14.62
Velocity-Avg (m/s)	0.68	0.52	0.32
Precip. FEB (mm)	33.19	29.34	11.79
Precip. MAR (mm)	32.08	27.46	11.91
Precip. JUN (mm)	57.80	53.49	18.49
Precip. JUL (mm)	71.08	65.85	22.37
Rainfall JUN (mm)	54.40	48.44	16.06
April Max Temp (C)	-3.19	-0.98	3.38
Broadleaf Open (%)	0.01	0.38	1.31
Bryoids (%)	1.43	0.54	1.04
Mixedwood Open (%)	0.04	0.77	2.87
Wetland Herb (%)	0.00	0.14	0.46

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	2364.29	2059.44	1572.86	
Total No. of Taxa	15.00	12.95	4.37	12.8

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	1.00	821	911	827
Baetidae	0.87	407	233	309
Simuliidae	0.82	86	207	367
Nemouridae	0.83	14	130	184
Heptageniidae	0.75	14	120	216
Sperchontidae	0.59	14	35	60
Empididae	0.58	93	18	37
Tipulidae	0.55	0	19	41
Chloroperlidae	0.51	7	29	73

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 12.8 families at this site, but 15 families were observed.

Total abundance is slightly above average for this group. Richness (total number of families) is higher than expected.

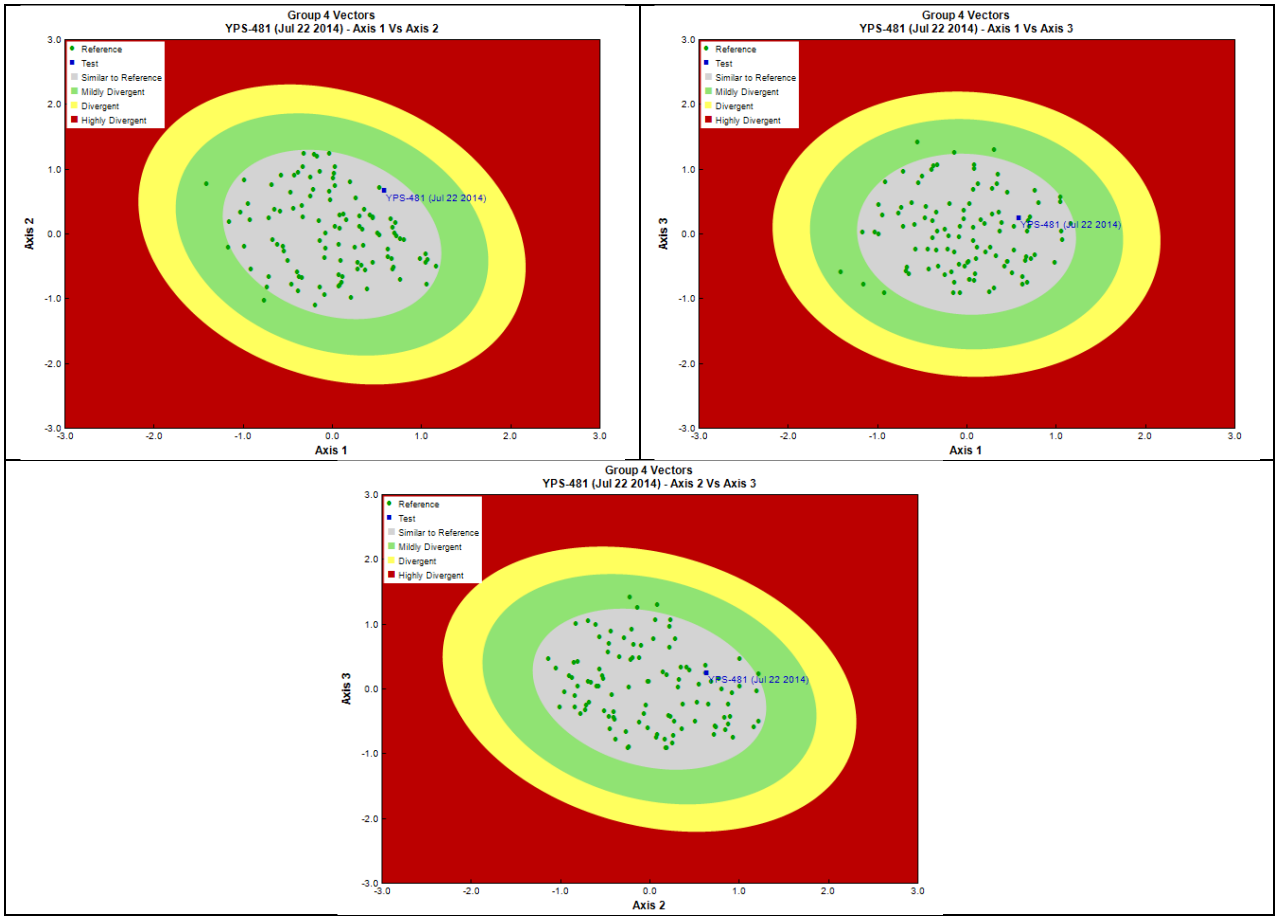
Of the 9 families expected to occur (P>0.5), one (Tipulidae) was absent.

One of the five families characteristic of the group to which this site was predicted, all were present.

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in the past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be provided.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Similar to Reference
Vector 1 vs Vector 3	Similar to Reference
Vector 2 vs Vector 3	Similar to Reference
Overall	Similar to Reference

Using CABIN, YPS-481 is assessed as Similar to Reference.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-481**
Sample Year	2014
Status	Test
Bankfull Width (m)	10.2
Wetted Width (m)	10
Channel Depth Average (cm)	30.6
Channel Depth Max (cm)	41
Slope m/m	0.015
Slope (%)	1.5
Max Water Velocity (m/s)	0.8
Average Water Velocity (m/s)	0.68
Dominant Substrate-1st	6.4 – 12.8 cm (cobble)
Dominant Substrate-2nd	3.2 – 6.4 cm (pebble)
Surrounding Substrate Material	0.2 – 1.6 cm (gravel)
Substrate Embeddedness	1/4 Embedded
Pools	Absent
Rapids	Absent
Riffles	Present
Straight Run	Absent
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	1-25
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	95.7
Specific Conductance (µS/cm)	140
DO (mg/L)	10.09
pH (pH)	7.6
TDS (mg/L)	78
TSS (mg/L)	30
Air Temp (Degrees Celsius)	24
Water Temp (Degrees Celsius)	8.4
Turbidity (NTU)	18

Site Assessment Report 2014 – YPS-534

Site Data

Site	YPS-534
Sample Date	Jul 21 2014
Latitude	63.01108 N
Longitude	139.36092 W
Altitude	1483
Feature Name	Kirkman Creek
Stream Order	3

Site Photograph - Downstream view

Context Map

Refer to Yukon River South Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site was sampled in 2012 and 2016.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	4				
Group	1	2	3	4	5
Probability that the site belongs to each Group	19.0%	15.4%	14.2%	47.7%	3.7%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-139.36	-137.45	2.65
Altitude (ft)	1483	2296.81	838.01
Depth-Avg (cm)	27.00	29.80	14.62
Velocity-Avg (m/s)	0.87	0.52	0.32
Precip. FEB (mm)	34.30	29.34	11.79
Precip. MAR (mm)	33.31	27.46	11.91
Precip. JUN (mm)	53.99	53.49	18.49
Precip. JUL (mm)	70.30	65.85	22.37
Rainfall JUN (mm)	50.93	48.44	16.06
April Max Temp (C)	-1.30	-0.98	3.38
Broadleaf Open (%)	0.53	0.38	1.31
Bryoids (%)	0.49	0.54	1.04
Mixedwood Open (%)	1.45	0.77	2.87
Wetland Herb (%)	0.00	0.14	0.46

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	399.00	2059.44	1572.86	
Total No. of Taxa	14.00	12.95	4.37	12.0

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	0.98	268	911	827
Baetidae	0.79	70	233	309
Nemouridae	0.76	3	130	184
Simuliidae	0.76	7	207	367
Heptageniidae	0.66	0	120	216
Sperchontidae	0.55	0	35	60
Tipulidae	0.53	6	19	41
Empididae	0.50	1	18	37

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 12 families at this site, but 14 families were observed.

Total abundance is below average for this group and outside the normal range. Richness (total number of families) is slightly higher than expected.

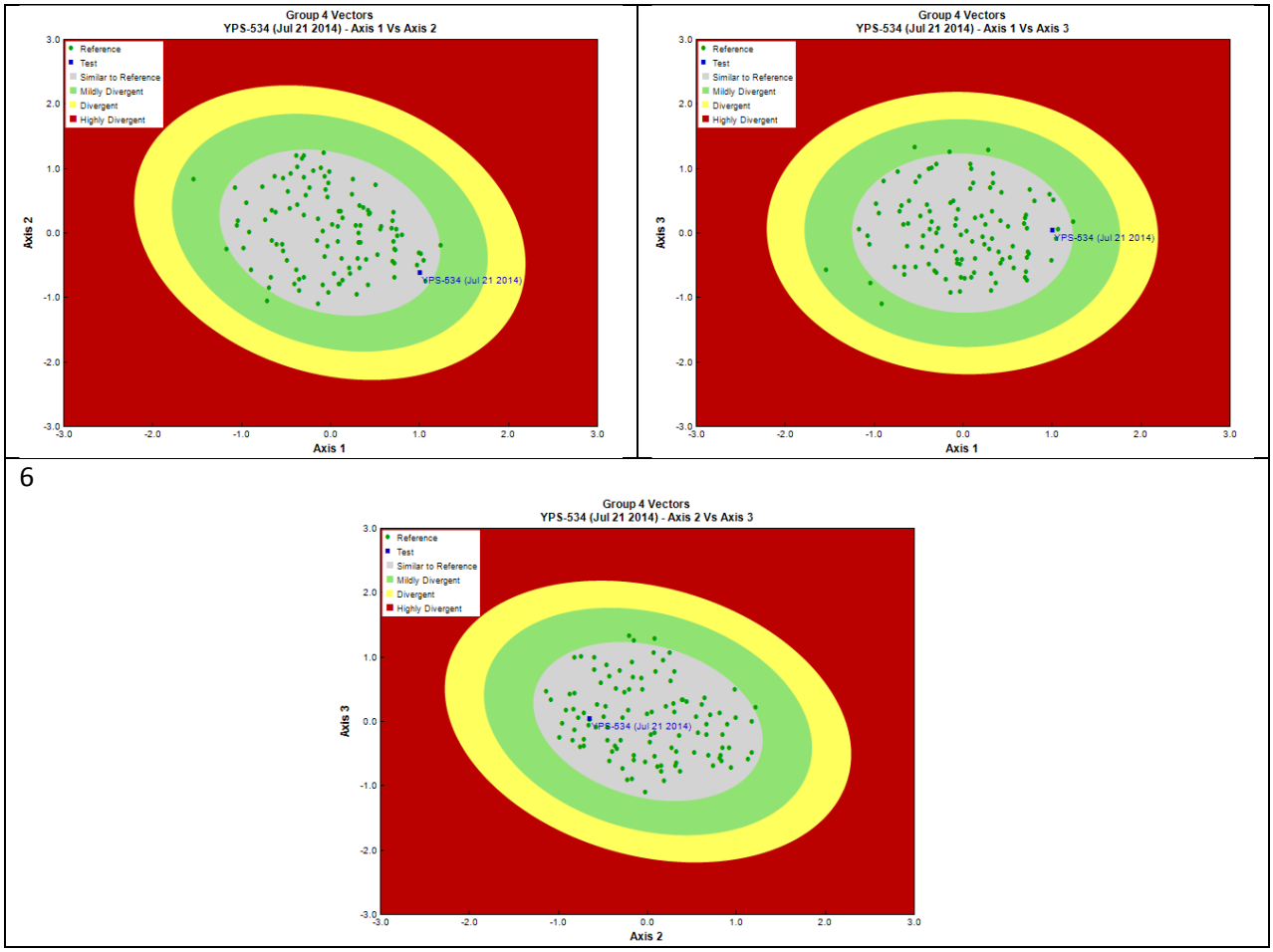
Of the 8 families expected to occur (P>0.5), 2 (Heptageniidae and Sperchontidae) were absent.

Of the five families characteristic of the group to which this site was predicted, one (Heptageniidae) was absent.

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be included here.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Similar to Reference
Vector 1 vs Vector 3	Similar to Reference
Vector 2 vs Vector 3	Similar to Reference
Overall	Similar to Reference

Using CABIN, YPS-534 is assessed as Similar to Reference.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-534**
Sample Year	2014
Status	Test
Bankfull Width (m)	4.8
Wetted Width (m)	4.6
Channel Depth Average (cm)	27
Channel Depth Max (cm)	34
Slope m/m	0.01
Slope (%)	1.0
Max Water Velocity (m/s)	1
Average Water Velocity (m/s)	0.87
Dominant Substrate-1st	6.4 – 12.8 cm (cobble)
Dominant Substrate-2nd	3.2 – 6.4 cm (pebble)
Surrounding Substrate Material	0.1 – 0.2 cm (sand)
Substrate Embeddedness	1/4 Embedded
Pools	Absent
Rapids	Absent
Riffles	Present
Straight Run	Present
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	382
Specific Conductance (µS/cm)	526
DO (mg/L)	11
pH (pH)	7.9
TDS (mg/L)	326
TSS (mg/L)	329
Air Temp (Degrees Celsius)	24
Water Temp (Degrees Celsius)	10.68
Turbidity (NTU)	240

Site Assessment Report 2014 – YPS-535

Site Data

Site	YPS-535
Sample Date	Jul 21 2014
Latitude	63.07125 N
Longitude	139.46545 W
Altitude	1257
Feature Name	Thistle Creek
Stream Order	5

Site Photograph - Downstream view

Context Map

Refer to Yukon River South Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site has been sampled on two previous occasions, in 2012 and 2013.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	1				
Group	1	2	3	4	5
Probability that the site belongs to each Group	63.5%	14.9%	4.7%	16.8%	0.2%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-139.47	-138.27	2.10
Altitude (ft)	1257	1973.87	1104.18
Depth-Avg (cm)	49.00	36.46	24.31
Velocity-Avg (m/s)	0.40	0.42	0.29
Precip. FEB (mm)	34.99	27.74	9.11
Precip. MAR (mm)	34.01	25.55	9.72
Precip. JUN (mm)	54.79	49.78	15.10
Precip. JUL (mm)	71.10	63.45	19.77
Rainfall JUN (mm)	51.86	45.78	13.48
April Max Temp (C)	-1.90	-0.26	3.57
Broadleaf Open (%)	0.81	0.20	0.41
Bryoids (%)	0.24	0.17	0.42
Mixedwood Open (%)	3.29	2.46	5.01
Wetland Herb (%)	0.02	0.22	0.64

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	595.00	192.18	127.13	
Total No. of Taxa	15.00	10.12	4.49	8.8

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	0.94	44	16	11
Simuliidae	0.55	0	1	1
Nemouridae	0.54	2	1	2
Baetidae	0.52	507	2	7

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 8.8 families at this site, but 15 families were observed.

Total abundance is above average for this group and outside the normal range. Richness (total number of families) is much higher than expected.

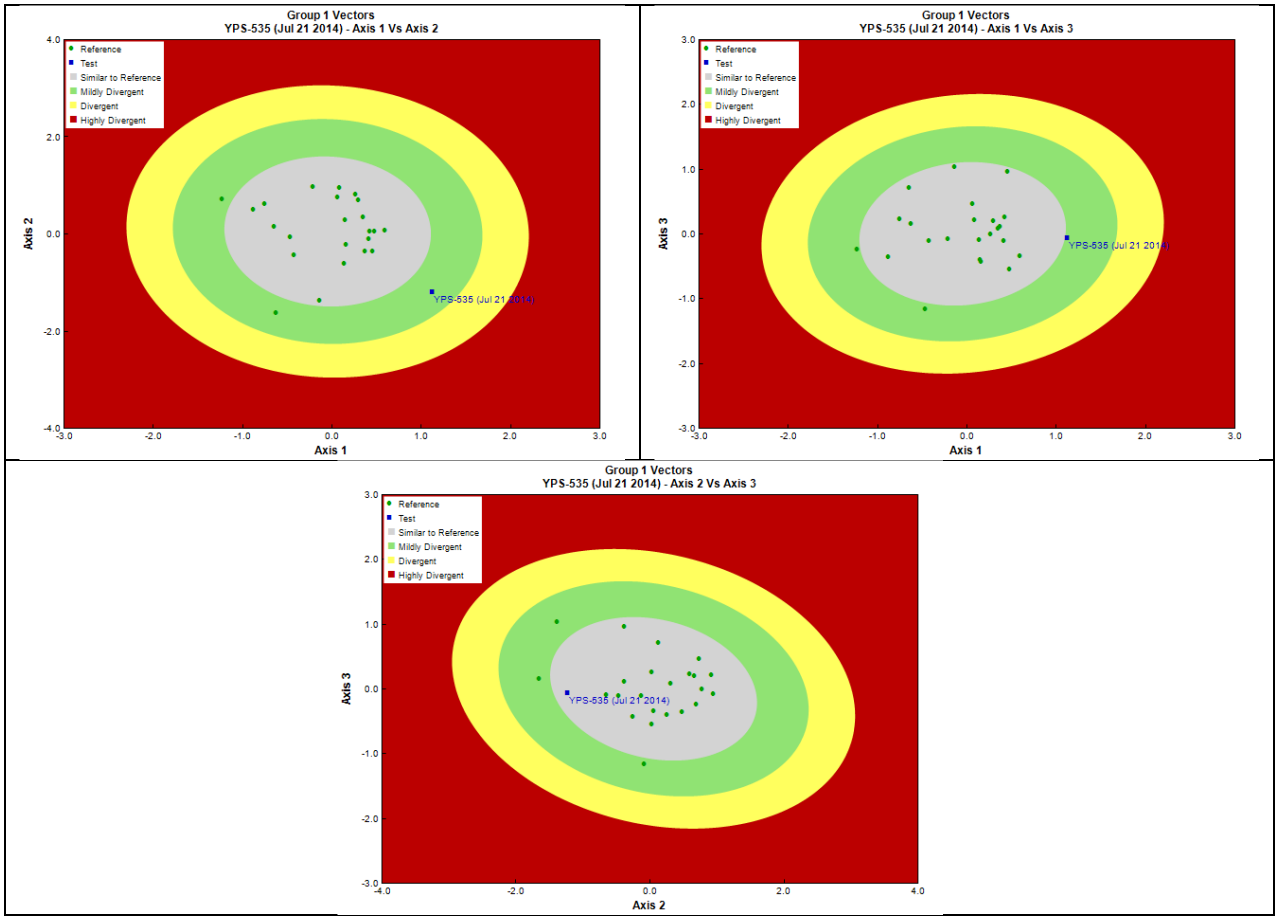
Of the 4 families expected to occur (P>0.5) 1 (Simuliidae) was absent.

Of the three families characteristic of the group to which this site was predicted, two (Naididae and Lumbriculidae) were absent.

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be included here.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Mildly Divergent from Reference Condition
Vector 1 vs Vector 3	Mildly Divergent from Reference Condition
Vector 2 vs Vector 3	Similar to Reference
Overall	Mildly Divergent from Reference Condition

Using CABIN, YPS-535 is assessed as Mildly Divergent from Reference Condition.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-535**
Sample Year	2014
Status	Test
Bankfull Width (m)	7.1
Wetted Width (m)	7.1
Channel Depth Average (cm)	49
Channel Depth Max (cm)	58
Slope m/m	0.005
Slope (%)	0.5
Max Water Velocity (m/s)	0.6
Average Water Velocity (m/s)	0.4
Dominant Substrate-1st	<0.1 cm (silt)
Dominant Substrate-2nd	3.2 – 6.4 cm (pebble)
Surrounding Substrate Material	<0.1 cm (silt)
Substrate Embeddedness	Completely Embedded
Pools	Absent
Rapids	Absent
Riffles	Present
Straight Run	Present
Canopy Coverage (%)	26-50
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	478
Specific Conductance (µS/cm)	616
DO (mg/L)	10.44
pH (pH)	7.9
TDS (mg/L)	388
TSS (mg/L)	316
Air Temp (Degrees Celsius)	19
Water Temp (Degrees Celsius)	13.29
Turbidity (NTU)	240

Site Assessment Report 2014 – YPS-544

Site Data

Site	YPS-544
Sample Date	Jul 23 2014
Latitude	64.02940 N
Longitude	139.17841 W
Altitude	1181
Feature Name	Hunker Creek
Stream Order	4

Site Photograph - Downstream view

Context Map

Refer to Klondike River Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site was sampled in 2013 and 2015.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	2				
Group	1	2	3	4	5
Probability that the site belongs to each Group	15.2%	43.0%	8.5%	32.5%	0.9%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-139.18	-136.93	2.75
Altitude (ft)	1181	2134.49	899.68
Depth-Avg (cm)	24.80	31.44	19.67
Velocity-Avg (m/s)	0.30	0.43	0.26
Precip. FEB (mm)	32.50	28.51	7.47
Precip. MAR (mm)	31.01	26.48	7.73
Precip. JUN (mm)	53.96	57.14	13.59
Precip. JUL (mm)	67.06	73.01	17.74
Rainfall JUN (mm)	51.48	49.32	11.37
April Max Temp (C)	-3.62	0.93	4.20
Broadleaf Open (%)	0.00	0.14	0.34
Bryoids (%)	0.45	0.31	0.61
Mixedwood Open (%)	0.23	0.75	1.44
Wetland Herb (%)	0.00	0.11	0.31

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	45.00	265.34	160.63	
Total No. of Taxa	4.00	11.52	4.32	11.6

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	0.99	0	98	68
Baetidae	0.79	22	27	35
Simuliidae	0.76	0	16	31
Nemouridae	0.74	0	17	24
Heptageniidae	0.63	0	19	27
Sperchontidae	0.52	0	3	7
Tipulidae	0.51	0	2	3

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 11.6 families at this site, but 4 families were observed. Total abundance is below average for this group and outside the normal range. Richness (total number of families) is much lower than expected.

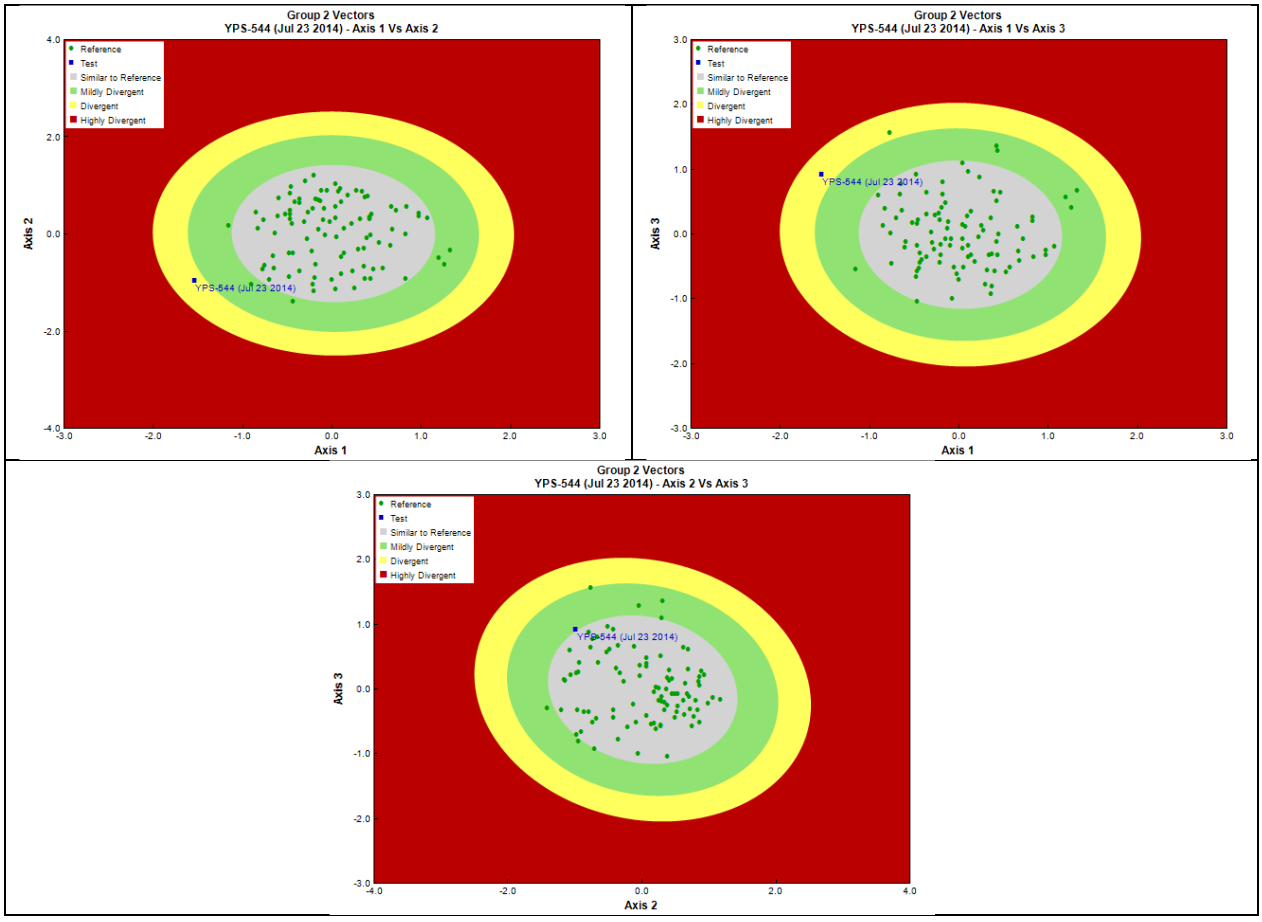
Of the 7 families expected to occur (P>0.5), 6 (Chironomidae, Simuliidae, Nemouridae, Heptageniidae, Sperchontidae and Tipulidae) were absent.

Of the six families characteristic of the group to which this site was predicted, five (Heptageniidae, Nemouridae, Simuliidae, Chironomidae and Chloroperlidae) were absent.

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be included here.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Divergent from Reference Condition
Vector 1 vs Vector 3	Divergent from Reference Condition
Vector 2 vs Vector 3	Similar to Reference
Overall	Divergent from Similar to Reference

Using CABIN, YPS-544 is assessed as Divergent from Reference Condition.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-544**
Sample Year	2014
Status	Test
Bankfull Width (m)	8.7
Wetted Width (m)	8.1
Channel Depth Average (cm)	24.8
Channel Depth Max (cm)	31
Slope m/m	0.005
Slope (%)	0.5
Max Water Velocity (m/s)	0.4
Average Water Velocity (m/s)	0.3
Dominant Substrate-1st	0.2 – 1.6 cm (gravel)
Dominant Substrate-2nd	1.6 – 3.2 cm (pebble)
Surrounding Substrate Material	0.1 – 0.2 cm (sand)
Substrate Embeddedness	1/2 Embedded
Pools	Present
Rapids	Absent
Riffles	Present
Straight Run	Present
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Absent
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	523
Specific Conductance (µS/cm)	742
DO (mg/L)	12.17
pH (pH)	7.8
TDS (mg/L)	481
TSS (mg/L)	22
Air Temp (Degrees Celsius)	14
Water Temp (Degrees Celsius)	9.6
Turbidity (NTU)	26

Site Assessment Report 2014 - YPS-547

Site Data

Site	YPS-547
Sample Date	Jul 22, 2014
Latitude	63.61737 N
Longitude	138.70642 W
Altitude	1660
Feature Name	Dominion Creek
Stream Order	5

Site Photograph - Aerial view

Context Map

Refer to Indian River Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site has been sampled on one previous occasion, in 2013.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	2				
Group	1	2	3	4	5
Probability that the site belongs to each Group	14.4%	42.5%	11.1%	30.6%	1.3%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-138.71	-136.93	2.75
Altitude (ft)	1660	2134.49	899.68
Depth-Avg (cm)	65.90	31.44	19.67
Velocity-Avg (m/s)	0.26	0.43	0.26
Precip. FEB (mm)	33.56	28.51	7.47
Precip. MAR (mm)	32.39	26.48	7.73
Precip. JUN (mm)	57.38	57.14	13.59
Precip. JUL (mm)	70.82	73.01	17.74
Rainfall JUN (mm)	54.26	49.32	11.37
April Max Temp (C)	-3.50	0.93	4.20
Broadleaf Open (%)	0.01	0.14	0.34
Bryoids (%)	1.22	0.31	0.61
Mixedwood Open (%)	0.05	0.75	1.44
Wetland Herb (%)	0.00	0.11	0.31

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	389.00	265.34	160.63	
Total No. of Taxa	20.00	11.52	4.32	11.7

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	0.99	110	98	68
Baetidae	0.79	84	27	35
Simuliidae	0.76	3	16	31
Nemouridae	0.75	1	17	24
Heptageniidae	0.64	5	19	27
Sperchontidae	0.53	2	3	7
Tipulidae	0.51	22	2	3

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 11.7 families at this site, but 20 families were observed.

Total abundance is above average for this group but within the normal range. Richness (total number of families) is much higher than expected.

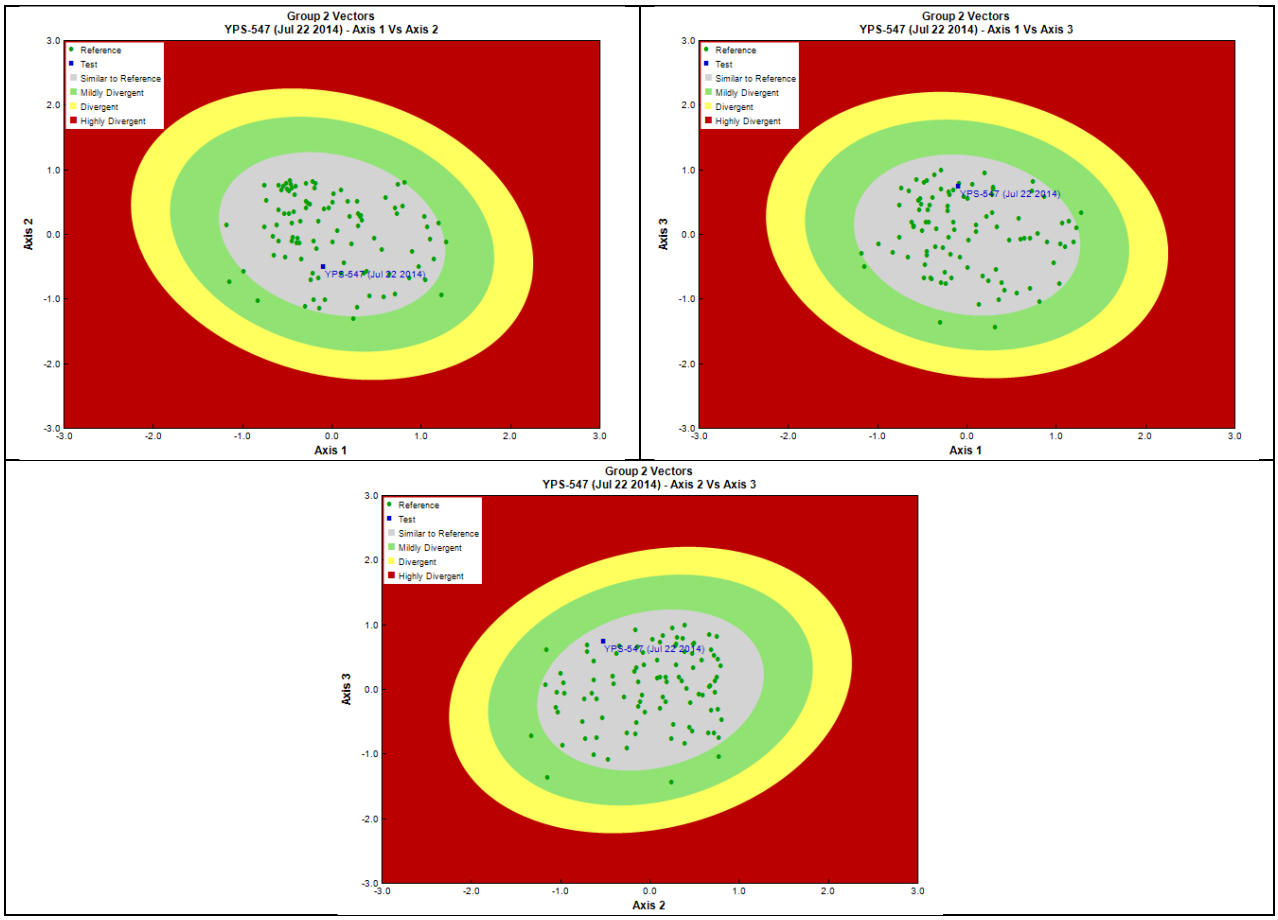
Of the 7 families expected to occur (P>0.5), all were present.

One of the six families characteristic of the group to which this site was predicted, one was absent (Chloroperlidae).

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in the past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be provided.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Similar to Reference
Vector 1 vs Vector 3	Similar to Reference
Vector 2 vs Vector 3	Similar to Reference
Overall	Similar to Reference

Using CABIN, YPS-547 is assessed as Similar to Reference.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

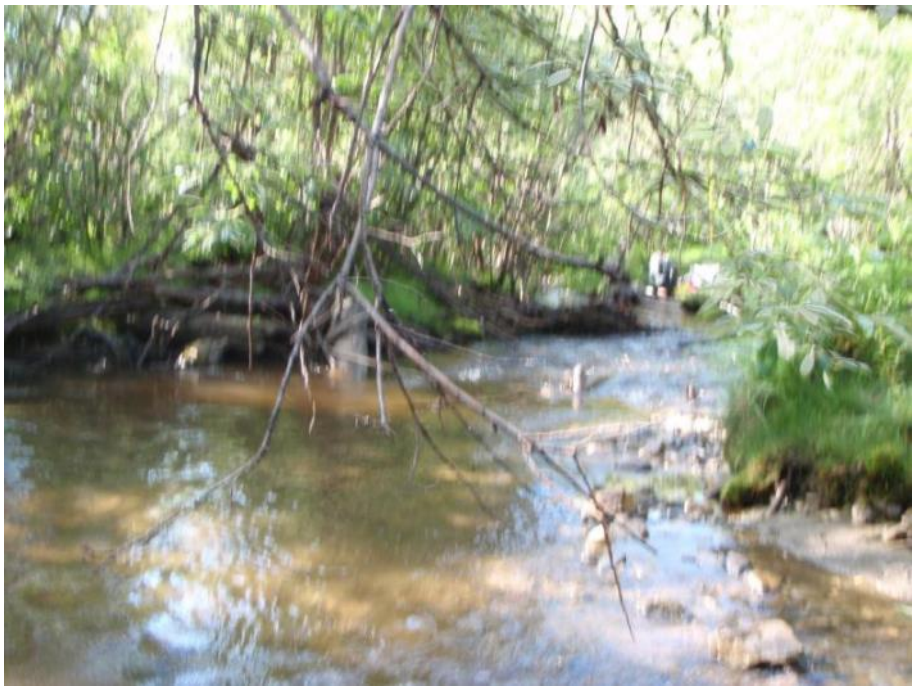
Site	YPS-547
Sample Year	2014
Status	Test
Bankfull Width (m)	19.7
Wetted Width (m)	17.4
Channel Depth Average (cm)	65.9
Channel Depth Max (cm)	95
Slope m/m	0.015
Slope (%)	1.5
Max Water Velocity (m/s)	0.4
Average Water Velocity (m/s)	0.26
Dominant Substrate-1st	6.4 – 12.8 cm (cobble)
Dominant Substrate-2nd	1.6 – 3.2 cm (pebble)
Surrounding Substrate Material	0.1 – 0.2 cm (sand)
Substrate Embeddedness	
Pools	Absent
Rapids	Absent
Riffles	Present
Straight Run	Present
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	
Riparian Vegetation-Coniferous	Absent
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	177.7
Specific Conductance (µS/cm)	246.9
DO (mg/L)	84.3
pH (pH)	7.8
TDS (mg/L)	141
TSS (mg/L)	25
Air Temp (Degrees Celsius)	28
Water Temp (Degrees Celsius)	10.4
Turbidity (NTU)	25

Site Assessment Report 2014 – YPS-570

Site Data

Site	YPS-570
Sample Date	Jul 21 2014
Latitude	62.91865 N
Longitude	139.95653 W
Altitude	1433
Feature Name	Ballarat Creek
Stream Order	4

Site Photograph - Downstream view



Context Map

Refer to Yukon River South Watershed Aquatic Health Monitoring Sites 2014 map.

Site Sampling History

This site was also sampled in 2016.

Assignment of the Test Site to a Group

The test site is assigned to a benthic insect community group (Group) based on the 2013 Yukon CABIN model (BEAST Prediction Results). The site is assigned to the Group for which it has the highest probability of belonging based on habitat attributes.

Predictor Variables	Altitude (ft), Longitude, LC-Bryoids (%), LC-Broadleaf open (%), LC-Mixed wood open (%), LC-Wetland herbaceous (%), Precipitation Feb (mm), Precipitation March (mm), Precipitation June (mm), Precipitation July (mm), Rainfall June (mm), April Max temp (C), Average Depth (cm), Average Velocity (m/s)				
Predicted Group	4				
Group	1	2	3	4	5
Probability that the site belongs to each Group	23.3%	22.2%	12.3%	41.2%	1.0%

Habitat Attributes of Site

This table reports on how the habitat predictor variables measured at the test site compare to the mean habitat predictor variables for the reference sites in the same group.

Variable	Site	Reference Mean	Reference SD
Longitude	-139.96	-137.45	2.65
Altitude (ft)	1433	2296.81	838.01
Depth-Avg (cm)	21.70	29.80	14.62
Velocity-Avg (m/s)	0.43	0.52	0.32
Precip. FEB (mm)	36.68	29.34	11.79
Precip. MAR (mm)	35.92	27.46	11.91
Precip. JUN (mm)	58.32	53.49	18.49
Precip. JUL (mm)	75.08	65.85	22.37
Rainfall JUN (mm)	55.11	48.44	16.06
April Max Temp (C)	-2.25	-0.98	3.38
Broadleaf Open (%)	0.97	0.38	1.31
Bryoids (%)	0.68	0.54	1.04
Mixedwood Open (%)	1.81	0.77	2.87
Wetland Herb (%)	0.00	0.14	0.46

Summary Results of the Benthic Invertebrate Data

The table presents the summary values of the benthic community of the test site compared to expected values and the average benthic community of the reference sites.

	Test Site	Reference Average	Reference Standard Deviation	Expected Families (RIVPACS)
Total Abundance	229.00	2059.44	1572.86	
Total No. of Taxa	12.00	12.95	4.37	11.6

This table shows how the benthic community of the test site compares to the average of the reference sites to which it is being compared. Both the presence of certain families and their abundance (the number of individuals found) are compared.

Family (bold = characteristic of group)	RIVPACS Prediction (probability)	Test Site (# of individuals)	Reference Average	Reference Standard Deviation
Chironomidae	0.98	87	911	827
Baetidae	0.75	27	233	309
Simuliidae	0.74	4	207	367
Nemouridae	0.72	17	130	184
Heptageniidae	0.62	17	120	216
Sperchontidae	0.52	0	35	60
Tipulidae	0.51	7	19	41

Using the predictive model with the RIVAPCS weighted probability of the sites predicted membership, we would expect 11.6 families at this site, but 12 families were observed.

Total abundance is below average for this group and outside the normal range. Richness (total number of families) is as expected.

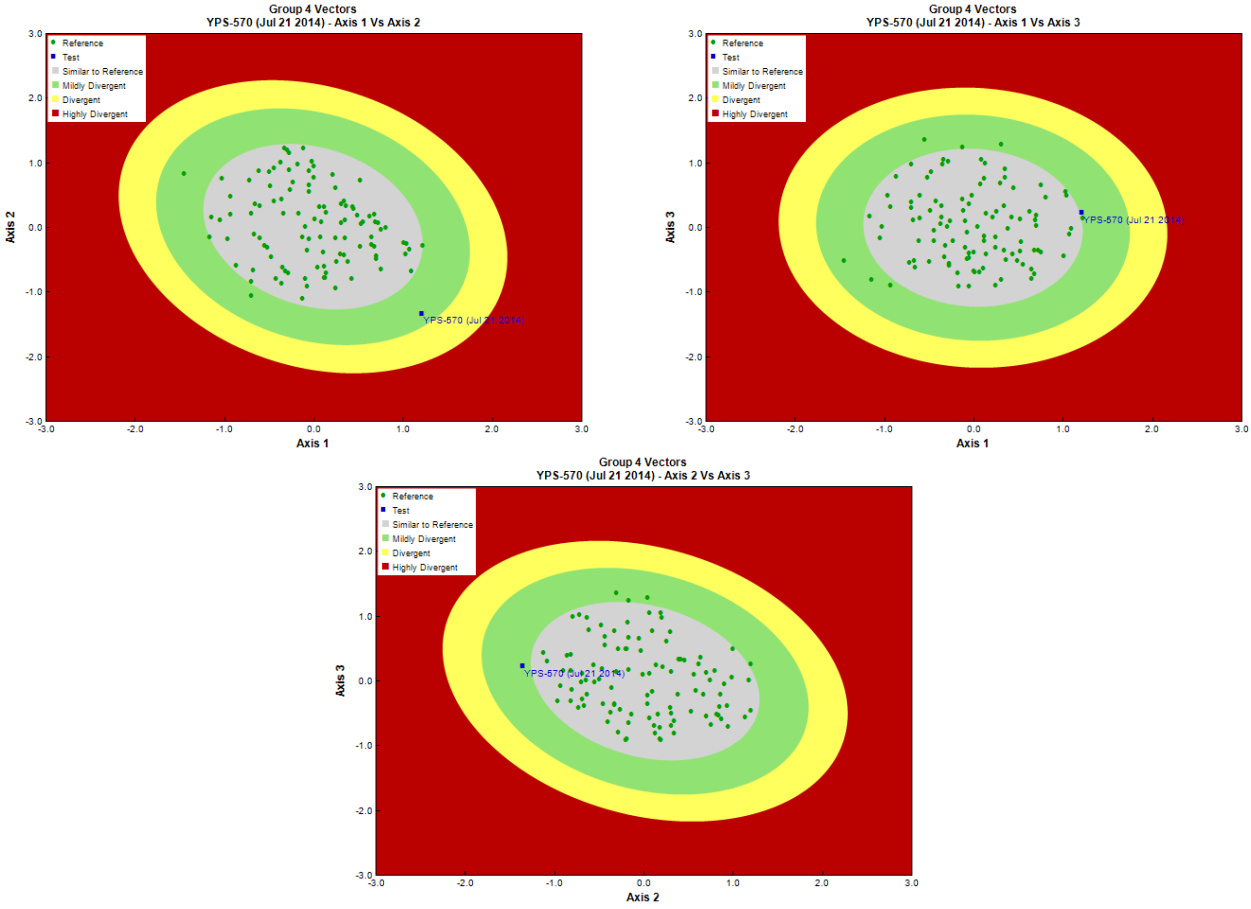
Of the 7 families expected to occur (P>0.5), 1 (Sperchontidae) was absent.

All of the five families characteristic of the group to which this site was predicted were present.

Visual Reports on Site Condition

This figure displays three site assessment graphs which show the site relative to the group of reference sites to which it is compared. The three axes (or vectors) represent three dimensional space, and the probability bands (from center) are 75 - 90% (Similar to Reference), 90 – 99% (Mildly Divergent from Reference), 99 – 99.9% (Divergent from Reference), and outside 99.9% (Highly Divergent from Reference).

A 0-75% probability band was provided in past annual monitoring reports. Programming is currently being developed in order to incorporate this function into the CABIN model, however at this time the 0-75% band cannot be included here.



Assessment of Overall Site Condition

Vector 1 vs Vector 2	Mildly Divergent from Reference Condition
Vector 1 vs Vector 3	Mildly Divergent from Reference Condition
Vector 2 vs Vector 3	Mildly Divergent from Reference Condition
Overall	Mildly Divergent from Reference Condition

Using CABIN, YPS-570 is assessed as Mildly Divergent from Reference Condition.

Field Measurements

The following table shows general information collected at the site as well as water quality parameters when available. All measurements reflect conditions at the time the site visit was conducted.

Site	**YPS-570**
Sample Year	2014
Status	Test
Bankfull Width (m)	3.7
Wetted Width (m)	3.5
Channel Depth Average (cm)	21.7
Channel Depth Max (cm)	26
Slope m/m	0.01
Slope (%)	1.0
Max Water Velocity (m/s)	0.5
Average Water Velocity (m/s)	0.43
Dominant Substrate-1st	0.2 – 1.6 cm (gravel)
Dominant Substrate-2nd	0.1 – 0.2 cm (sand)
Surrounding Substrate Material	0.1 – 0.2 cm (sand)
Substrate Embeddedness	3/4 Embedded
Pools	Present
Rapids	Absent
Riffles	Present
Straight Run	Absent
Canopy Coverage (%)	1-25
Periphyton Coverage	
Macrophyte Coverage (%)	None
Riparian Vegetation-Coniferous	Present
Riparian Vegetation-Deciduous	Present
Riparian Vegetation-Grasses/Ferns	Present
Riparian Vegetation-Shrubs	Present
General Conductivity (µS/cm)	329
Specific Conductance (µS/cm)	533
DO (mg/L)	12.31
pH (pH)	7.8
TDS (mg/L)	321
TSS (mg/L)	53
Air Temp (Degrees Celsius)	13
Water Temp (Degrees Celsius)	5.01
Turbidity (NTU)	6.4