

Theme 2013: Environmental data and Social Responsibility

Your Envirothon team will need to divide into groups to be able to complete the tasks set out for the day. The tasks outlined in this booklet make up the field studies that your group will need to complete, and include in your presentation.

Envirothon presentations.

Your team will conduct studies on Wednesday September 18 and you will have five to six days time to prepare your in school presentation. Your teams performance will be judged based in schools on either Monday or Tuesday and the top two teams from your school will present on Wednesday, September 25. Your presentation will need to address all the tasks outlined in the journal and will need to identify methods used, results and your levels of confidence in your observations. You will be given 20 minutes for presentations, the judging panel will then give 10 minutes for questions. Results will be given to your schools on the following day.

Your presentation may make use of a variety of media for your presentation. A computer with projector, and Power Point will be available.

1. Spook creek gully: potential and problems

This set of activities will ask you to conduct a survey of the upper stretch of Spook Creek and assess the area as a potential uses of the area. Your group will be given large scale images of the area, GPS, clinometers a data booklet and you are asked to provide your own camera in order to identify and locate potential recreational facilities, potential risks to the natural environment, and changes that have occurred to the natural environment.

1. Task 1 map a possible single path through the length of Spook Creek gully. Record and map slope angle along the trail and uphill from the trail identifying possible slide or slump areas. Comment on the advisability of placing a trail through the gully.
2. Task 2 map and photograph human disturbances to the gully. Characterize the nature of these disturbances and identify possible remediation activities.
3. Task 3 Identify and photograph features that may be of historical significance within the gully. Discuss possible clean-up possibilities. . Indicate locations on the map and make notes and photograph the item. (gear: Map, digital camera)

2. Water quality from the headwater springs the confluence with the Yukon River

This set of activities will involve a variety of surveys and interpretation of lab results for Spook Creek drainage basin beginning at the source springs to the confluence with the Yukon River.

Task 1 Your group will be given lab results for samples taken from the source spring on May, 2008, May 2009 And the Spook Creek Report. These samples were analyzed for hydrocarbons, (note the smell of hydrocarbons around the source spring). Based on these lab results, you are asked to speculate about possible treatments. (use your larger scale maps and photos)

Task 2 Your group is to conduct samples of the aquatic invert populations below the springs and above the confluence with the Yukon River. You are asked to interpret the results of these surveys in terms of water quality.

Task 3 Your group is to conduct turbidity tests along the course of Spook Creek. Speculate about sources of and changes in these measures.

Task 4 You are given a report by Yukon Environment identifying the Old Tank Farm as a contaminated site. You are also given newspaper clippings in which the land owner states an interest in developing the land as residential lots. Use this information to speculate on how the city should zone the Old Tank Farm.

Task 5 You are given results of e-coli tests taken from the storm sewer draining the Walmart parking lot. Should the cite zone the parking lot as for no overnight stays? Support your arguments with data.

Notes from aquatic samples:

Net water quality index at each site (from aquatic key):

Class	Order	Family	score	net counts	Net Score	
Hirudinea			1	0	0	
Turbellaria			1	0	0	
Oligochaeta			1	0	0	
Gastropoda		prosobranchia	3	0	0	
		Pulmonata	1	0	0	
Bivalvia		unionids	2	0	0	
		sphaeriidae	2	0	0	
Insecta	Diptera			0	0	
		simuliidae	1	0	0	
		Chironomidae	1	0	0	
		Athericida	2	0	0	
		Nematocera	2	0	0	
		Tipulidae	1	0	0	
		Odonata	Zygoptera	2	0	0
			Anieoptera	2	0	0
		Ephemeroptera		3	0	0
		Plecoptera		3	0	0
Trichoptera		3	0	0		
Megaloptera	Corydalidae	3	0	0		
Coleoptera		3	0	0		
Hemiptera		1	0	0		
Hydracarina		1	0	0		
Crustacea	Amphipoda		2	0	0	
	Decapoda		2	0	0	
	Isopoda		2	0	0	
	Cyclops		2	0	0	
Arachnida	Hydracarina		1	0	0	
Nematoda			1	0	0	
	water flea		1	0	0	

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Hirudinea			1	0	0
Turbellaria			1	0	0
Oligochaeta			1	0	0
Gastropoda	prosobranchia		3	0	0
	Pulmonata		1	0	0
Bivalvia	unionids		2	0	0
	sphaeriidae		2	0	0
Insecta	Diptera			0	0
		simuliidae	1	0	0
		Chironomidae	1	0	0
		Athericida	2	0	0
		Nematocera	2	0	0
		Tipulidae	1	0	0
	Odonata	Zygoptera	2	0	0
		Anieoptera	2	0	0
	Ephemeroptera		3	0	0
	Plecoptera		3	0	0
	Trichoptera		3	0	0
	Megaloptera	Corydalidae	3	0	0
	Coleoptera		3	0	0
	Hemiptera		1	0	0
	Hydracarina		1	0	0
Crustacea	Amphipoda		2	0	0
	Decapoda		2	0	0
	Isopoda		2	0	0
	Cyclops		2	0	0
Arachnida	Hydracarina		1	0	0
Nematoda			1	0	0
	water flea		1	0	0

Task 4 Your group is to conduct turbidity along the course of Spook Creek to the confluence with the Yukon River. Speculate about sources of and changes in these measures. (gear: turbidity tube)

Source site	Test Results
Upstream	Turbidity _____
Mid valley	Turbidity _____
Two Mile Hill	Turbidity _____
Joining with Yukon River	Turbidity _____

5. Assessing the possible impacts on natural systems and remediation along the Spook Creek drainage.

This activity will involve the team pulling together all the information they have collected during their day of study to make a series of recommendations and proposals about the Spook Creek drainage. This part of your work should identify areas needing remediation and propose possible courses of action. Your final activity should show map locations and proposed routes, remediation, etc on Ozi Explorer.

To what extent have invasive exotic plants spread throughout the Spook Creek study area?

1. Spook Creek study area: Invasive exotics in the Yukon.

This set of activities will ask you to conduct a survey along two established 50 meter transects. Your team will be given an identification key, a GPS and a table for data collection. You are to record the identity, location and abundance of invasive plants along each transect.

2. Possible sources for identified exotics.

For your collected information, your group is asked to speculate on the source of the identified exotic plants.

Method: Record all invasive species within 1 meter of either side of the two 50 meter transects. Use the key to identify each of the species.

Useful Information

You can find the Yukon regulations about water contaminants. Here is the link to web page where the Yukon *Contaminated Sites Regulation* is. Scroll down until you see “Contaminated Sites Regulation” in the right hand column and that will be a link to a downloadable PDF of the current regulations.

<http://environmentyukon.gov.yk.ca/monitoringenvironment/regulations.php>