

Conky Campground (Stops 11-20)

STOP 11

Aquatic Ecology - 2 points

The diagram at this stop shows dissolved oxygen concentrations in a pond over a 24 hour period. What causes this fluctuation known as the diurnal oxygen cycle? (2 pts)

2

TABLE:	0
Stop Attendant:	0,
Equipment:	diagram
Answer:	Dissolved oxygen increases during daylight hours when photosynthesis is occurring and decreases at night when respiration continues but photosynthesis does not.
Reference:	Aquatic Ecology Resource Material

Forestry - 2 points

List the four (4) highest growing stock volume of Manitoba’s Forests. (2 pts - 0.5 pts ea)

2

TABLE:	0
Stop Attendant:	0,
Equipment:	
Answer:	Trembling aspen, White Spruce, Jack Pine, Black Spruce
Reference:	Source Manitoba’s Forest Page 3

Conky Campground (Stops 11-20)

Wildlife - 10 points

In Column A write the number of the picture from the species key found at this stop that corresponds to the statement. In Column B write the name of the species. (10 pts – 0.5 pts ea)

10

STATEMENT	A	B
A) This plant signify's spring in North America and is Manitoba's Floral emblem. It is usually found in the mixed-grass prairie.		
B) This plant has lanced-shaped leaves that are densely covered with silky hair, giving it a silvery appearance. It is listed as a Threatened wildflower in Manitoba.		
C) This plant is listed provincially and nationally as Endangered. It grows in clumps and has a "pouch-like" flower.		
D) This bird has a prominent thick coned-shaped bill, which is remarkable for a bird of its size. It has an appetite for the forest pest, spruce budworm.		
E) This bird frequents open places such as fields, pastures, and dry uplands. When intruders are too close to its nest, it will perform a distraction called a broken-wing act.		
F) This bird nests on sandy shores of larger prairie lakes and its eggs are well camouflaged. It is provincially and nationally listed as Endangered.		
G) This animal uses sticks, trees and mud to build its lodge. Its teeth are constantly growing. This animal is also the symbol for the National Parks system in Canada.		
H) This animal has long legs to help it move through snow and a long, dense winter coat that provides effective insulation . It is the only animal where both male and females have antlers.		
I) This animal is the largest land mammal in North America. It has a keen sense of smell and hearing; it can distinguish smells from 3 kilometres away.		
J) This animal has very large antlers that are grown new each year. It is highly vocal and uses grunts and squeals to keep in touch with each other.		

Conky Campground (Stops 11-20)

TABLE:	1
Stop Attendant:	1, An Envirothon volunteer
Equipment:	Picture Key binder
Answer:	(.5 point for matching and .5 point for the name of the species) A) Picture - 2 - Name of Species - Crocus B) Picture - 3 - Name of Species - Western Silvery Aster C) Picture - 5 - Name of Species - Small White Lady's-slipper D) Picture - 10 - Name of Species - Evening Grosbeak E) Picture - 8 - Name of Species - Killdeer F) Picture - 12- Name of Species - Piping Plover G) Picture - 14 - Name of Species - Beaver H) Picture - 18 - Name of Species - Caribou I) Picture - 15 - Name of Species - North America Bison J) Picture - 19 - Name of Species - Elk
Reference:	Wildlife binder - Species at Risk fact Sheets (PDF)

Theme - 2 points

Complete the following table indicating the potential for groundwater contamination (very low, low, moderate, high) for A, B, C and D. (2 pts – 0.5 pts ea)

2

Hydrologic Soil Group (Soil Texture)	Depth to Groundwater			
	Less than 0.9 m (3 ft)	0.9 - 4.5 m (3 – 15 ft)	4.6 – 13.5 m (16 – 45 ft)	Greater than 13.5 m (45 ft)
Bedrock (within 0.9 m) (3 ft)	high	high	high	A
Muck / Organic	high	---	---	---
Rapid (sand)	high	high	high	D
Moderate (loam)	high	high	moderate	low
Slow (clay loam)	high	moderate	C	very low
Very Slow (clay)	B	low	very low	very low

- A) _____
- B) _____
- C) _____
- D) _____

TABLE:	0
Stop Attendant:	0,
Equipment:	
Answer:	In Word document (Table 1)
Reference:	Ontario Envirothon 2009-2010 Current Issue Module: Protection of Groundwater. p 41-42

Conky Campground (Stops 11-20)

STOP 12

Aquatic Ecology - 2 points

<hr/> 2

A) What type of aquatic plant might you find wrapped around your anchor line? (0.5 pts)

B) Fill in the blank. (0.5 pts)

The depth at which these plants are found is limited only by _____.

C) Provide the common name for the aquatic plant depicted at this stop. (0.5 pts)

D) Muskrats and geese commonly feed on a part of the aquatic plant shown here. Name this plant part. (0.5 pts) **(need sample info and labelling info)**

TABLE:	1
Stop Attendant:	1, An Envirothon volunteer
Equipment:	Pictures/specimens
Answer:	A) submergent B) light C) Pondweed D) rhizomes
Reference:	A and B and C and D): Envirothon Resource - Through the Looking Glass - Pages 6, 67

Conky Campground (Stops 11-20)

Forestry - 2 points

Provide four (4) examples of "stakeholders" that offer various perspectives on forest management when involved with Model Forest or certification processes. (2 pts – 0.5 pts ea)

2

TABLE:	0
Stop Attendant:	0,
Equipment:	
Answer:	stakeholder types include: forest companies, Aboriginal communities, private citizens, parks, environmental groups, governments and universities
Reference:	http://www.modelforest.net/cmfn/en/ under: "About Model Forests" and "communities" Certification and Canada's forests pages 3, 9, and 15

Wildlife - 2 points

Name four (4) adaptations or features of how a snowshoe hare has adapted to its environment. (2 pts – 0.5 pts ea)

2

TABLE:	0
Stop Attendant:	0,
Equipment:	
Answer:	0.5 point for any of the following: a. Large, generously furred hind feet b. Four long toes that spread widely in soft snow to increase the size of their feet c. Turns grey-brown in summer and pure white in midwinter d. The coat is comprised of three layers: dense, silky slate grey underfur; longer, buff-tipped hairs; and long coarser guard hairs e. Moults twice a year f. Have smaller ears than most hares' g. Females are often slightly larger than males
Reference:	Wildlife binder - Hinterland Who's Who - Snowshoe Hare fact sheet

Conky Campground (Stops 11-20)**Theme - 10 points**

A well was constructed at this location.

A) Multiple choice. Select the best answer. (1 pt)

How deep did the well have to be dug to find water?

- i) 10 feet (metric too??)
- ii) 2 feet
- iii) 50 feet
- iv) 150 feet

B) Using the fluid conductivity probe, measure the conductivity of a water sample taken from the well at this stop. (1 pt)

C) Using the provided chart, indicate whether the sample is fresh, brackish or saline. (1 pt)

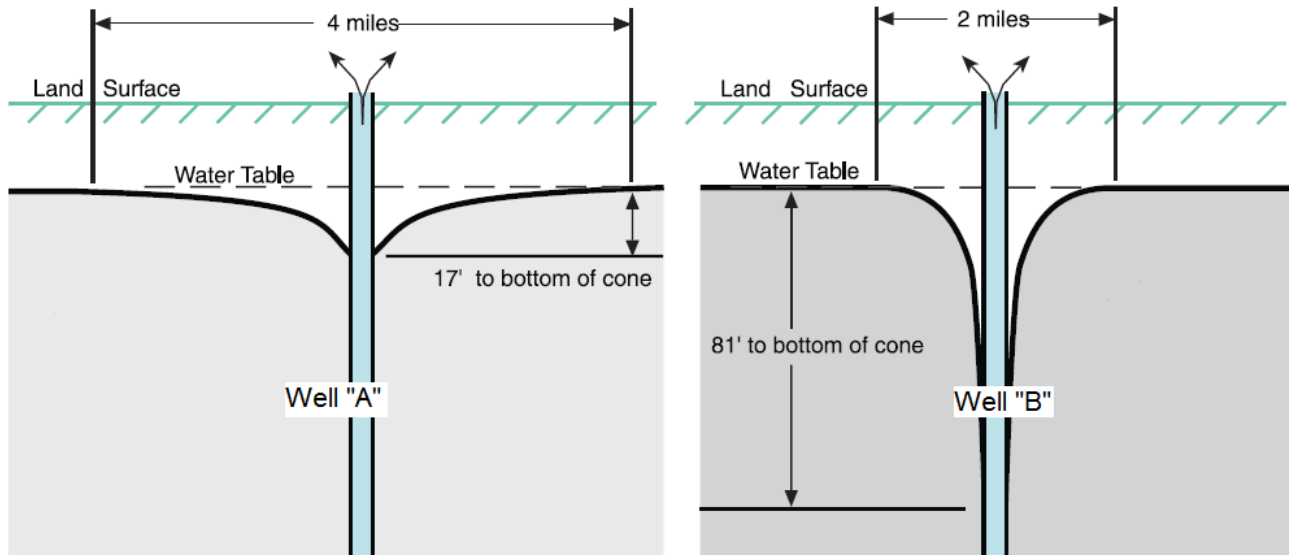
D) Examine the pipe sample found at this stop?. What is the purpose of the screen? (1 pt)

E) Is the water from a confined or unconfined source? (1 pt)

10

Conky Campground (Stops 11-20)

Refer to the following Well Table Depression Cones Diagrams below. Each well is withdrawing water at the rate of 2600 litres per minute.



- F) Which well (A or B) best describes this location? (1 pt)
- G) What two (2) factors are the width and depth of the cone dependent on? (1 pt – 0.5 pts ea)
- H) Describe the difference between the hydraulic head of a well supplied by an unconfined aquifer and the hydraulic head of a well supplied by a confined aquifer. (2 pts)

TABLE:	0
Stop Attendant:	1, Bob Betcher or assistant
Equipment:	2" well, water probe, Salinity chart
Answer:	A) ii-2ft B) TBD C) fresh D) keep aquifer material out of well E) unconfined F) – Well "A" G) Transmissivity (rate that the aquifer materials transmit water), pumping rate H) ???
Reference:	A-E) - ADA Management plan F-G) ADA Management plan page 15 H) Groundwater Monitoring - page 3-4

Conky Campground (Stops 11-20)

STOP 13

Aquatic Ecology - 2 points

A) Fill in the blank. (1 pt)

The following site is showing degradation of an important area (flagged at this stop?).

This area is typically referred to as the _____ zone.

B) If this zone is in an ideal state, it would assist with which some important ecological functions. List two (2) of these function. (1 pt – 0.5 pts ea)

2

TABLE:	0
Stop Attendant:	0,
Equipment:	Site where riparian area is degraded.
Answer:	A) riparian B) Trap sediment, Build and maintain streambanks, Store floodwater and energy, Filter and buffer water (only 2 required)
Reference:	A and B): Managing the Water's Edge: Manitoba Field Guide (Page 9)

Forestry - 2 points

List four (4) elements of a Pre Harvest Assessment. (2 pts – 0.5 pts ea)

2

TABLE:	0
Stop Attendant:	0,
Equipment:	
Answer:	Mensural data Vegetation communities(v – types) Soils Understory trees Competitive plants Special concern, threaten and endanger species Forest health Wildlife evidence (sign) Geographic physical features Heritage resources Forest and other resource values Waterways and wetlands
Reference:	Source: Forest Resources – Pre Harvest Survey Guidelines

Conky Campground (Stops 11-20)

Soils and Land Use - 10 points

<hr/> <p>10</p>

A) Fill in the blanks. (2 pts – 1 pt ea)

Of the three general soil textures (sand, silt & clay) which one is more susceptible to

- i) wind erosion: _____
- ii) water erosion: _____

B) True or False. Circle the best answer. (8 pts – 1 pt ea)

- | | | |
|------|-------|---|
| TRUE | FALSE | i) The maximum tolerable soil loss is 20 tons/acre/year. |
| TRUE | FALSE | ii) Potato crops produce enough leaf material that after harvest of the crop, there is enough left on the field to protect against erosion. |
| TRUE | FALSE | iii) A 30 mph wind has more than three times the erosive power than a 20 mph wind. |
| TRUE | FALSE | iv) Wind erosion increases as the soil dries, given the same surface cover conditions. |
| TRUE | FALSE | v) Standing stubble is more effective at preventing water erosion than flat stubble. |
| TRUE | FALSE | vi) The most susceptible time for field water erosion is when the crop is growing. |
| TRUE | FALSE | vii) The amount of crop cover or residue left after harvest should be decreased on sloping land as compared to flat fields. |
| TRUE | FALSE | vii) Erosion risk increases with increased soil organic matter content. |

Conky Campground (Stops 11-20)

TABLE:	0
Stop Attendant:	0,
Equipment:	
Answer:	A) i. sand (one mark) i i. clay (one mark) B. (one mark each) i. False ii. False iii. True iv. True v. False vi. False vii. False viii. False
Reference:	Soil Management Guide, pages 84-97

Wildlife - 2 points

Using the photo, name four (4) adaptations or features that reflect the typical anatomy of a shorebird. (2 pts – 0.5 pt ea)

<hr/> 2

TABLE:	0
Stop Attendant:	1, An Envirothon volunteer
Equipment:	Photo of shorebird
Answer:	0.5 point for each: long legs for wading, long bills for stabbing food or picking of food, long wings, web-less feet for scratching up food
Reference:	Wildlife binder - Hinterland Who's Who - Shorebirds fact sheet

Theme - 2 points

A) Circle the best answer. (1 pt)

Would you expect to find seeps in this area? YES NO

<hr/> 2

B) What is required for seep to occur at this location? (1 pt)

TABLE:	0
Stop Attendant:	0,
Equipment:	
Answer:	a) Yes, b) ?? the water table is high and could reach levels higher than the water level of the oxbow.
Reference:	ADA Management plan - page 11

Conky Campground (Stops 11-20)

Forestry - 2 points

A) Multiple choice. Circle the best answer. (1 pt)

What invasive forest pest, which has the potential to decimate Manitoba's forests, has been recently discovered in St. Paul Minnesota?

- i) Brown Spruce Beetle
- ii) Mountain Pine Beetle
- iii) Emerald Ash Borer
- iv) Texas Longhorn Beetle

2

B) Multiple choice. Circle the best answer. (1 pt)

What invasive forest pest, which has the potential to decimate Manitoba's forests, was recently discovered around Winnipeg and resulted in an aerial spraying control program in the summer of 2009?

- i) Banded Elm Bark Beetle
- ii) Eastern Larch Beetle
- iii) Gypsy Moth
- iv) Two-lined Chestnut Borer

TABLE:	0
Stop Attendant:	0,
Equipment:	
Answer:	A) iii) Emerald Ash Borer B) iii) Gypsy Moth
Reference:	workshop training, invasive pest and MC websites

Conky Campground (Stops 11-20)

Soils and Land Use - 2 points

- A) A mild solution of hydrochloric acid is used to detect what mineral in the soil? (1 pt)

- B) What are two types of carbonates most commonly found in agricultural soils in Manitoba ? (1 pt – 0.5 pts ea)

2

TABLE:	0
Stop Attendant:	0,
Equipment:	
Answer:	A) Lime or carbonate (one mark)/B. Calcium and magnesium (one mark for both combined)
Reference:	The Soil Management guide page 12.

Wildlife - 2 points

Some mammals such moose, caribou, deer and elk , grow antlers, while other mammals such as Muskoxen, Dall sheep and mountain goat, grow horns.

- A) Explain the difference between antlers and horns. (1 pt – 0.5 pts ea)
 - i) antlers:
 - ii) horns:

- B) Give two (2) examples of how antlers or horns are used by these mammals. (1 pt – 0.5 pts ea)

2

TABLE:	0
Stop Attendant:	0,
Equipment:	
Answer:	A i) antlers are shed and grow back each year ii) horns are not shed B) Used in mating displays, defense and protection from predators and in foraging for food.
Reference:	Wildlife binder - page 38 - Antlers, Horns and Teeth or page 43 - Skulls in Education

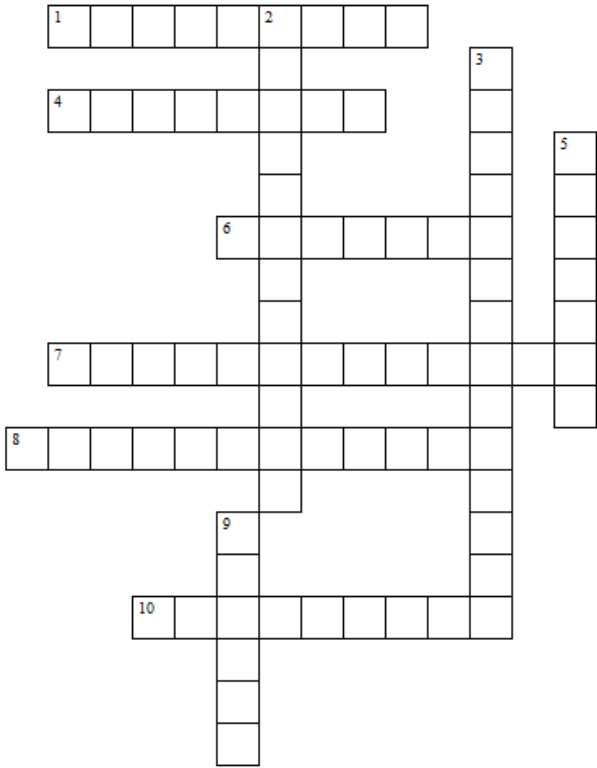
Conky Campground (Stops 11-20)

Theme - 10 points

Fill in the following crossword puzzle (10 pts – 1 pt ea)

10

Groundwater



ACROSS

- 1 The entire geographical area drained by a river and its tributaries.
- 4 The ratio of the total volume of open pore space in a geologic deposit to the total volume of the deposit.
- 6 Water that is safe to drink.
- 7 The amount of time that it takes for groundwater to flow underground from recharge areas to discharge areas (2 words).
- 8 The process where water on the surface of the ground enters into the soil.
- 10 The process by which water leaves an aquifer.

DOWN

- 2 Water occurring in the unsaturated zone that is bound to soil particles by adhesive forces (2 words).
- 3 The drawdown of the water table around a pumping well that is greatest close to the well and gets smaller in all directions as the distance from the well increase (2 words).
- 5 A geologic formation of porous rock or loose material that can hold and transmit significant quantities of water.
- 9 A stream that recharges groundwater by seepage through the stream bed.

Conky Campground (Stops 11-20)

TABLE:	0
Stop Attendant:	0,
Equipment:	
Answer:	On crossword file in Word
Reference:	Ontario glossary

Conky Campground (Stops 11-20)

STOP 15

Aquatic Ecology - 2 points

Examine the piece of sampling equipment on display at this stop.

- A) What region of the nearby lake ecosystem would it be used to sample?

- B) List two (2) kinds of organisms that one might expect to capture with this device.

2

TABLE:	1
Stop Attendant:	0,
Equipment:	Ekman dredge for display (one for each team would be preferable, if available).
Answer:	Answers: a) lake bottom or soft sediments (1 pt) b) Possible answers include the following: benthic invertebrates, crustaceans, insect larvae, chironomids, worms, etc. (1/2 pt each for a total of 1 pt)
Reference:	Aquatic Sampling Techniques Site Training Workshops Limnology, Freshwater Benthic Ecology

Conky Campground (Stops 11-20)

Forestry - 10 points

The tree samples provided at this stop were harvested in the winter of 2009 near Piney Manitoba.

10

A) Using the samples and equipment provided at this stop please determine the age of this tree when it was harvested. (2 pts)

B) Multiple choice. Circle the best answer. (1 pt)

How would you define the trees growth rate during the period 1985-1989 as shown by the annual rings?

- i) slow
- ii) average
- iii) fast
- iv) cannot tell

C) Referring to the graph provided at this stop, name one (1) factor which could explain your answer in B). (2 pts)

D) Trees can be aged using the piece of forestry equipment provided at this stop. What is the name of this piece of equipment? (2 pts)

Conky Campground (Stops 11-20)

E) Multiple choice. Circle the best answer. (1 pt)

Dendrochronology refers to:

- i) the time of year that leaves form on trees
- ii) the study of plant evolution
- iii) the analysis of tree growth ring patterns in science
- iv) the difference in plant growth from one area to another

F) Multiple choice. Circle the best answer. (1 pt)

Dendrochronological timelines can be used by researchers to:

- i) calculate the age of buildings or structures
- ii) calculate the age of archeological sites
- iii) study the effects of climatic factors on tree growth
- iv) all of the above

G) True or False. Circle the best answer. (1 pt)

Tree ring width can be affected by both biotic and abiotic factors.

TRUE FALSE

Conky Campground (Stops 11-20)

TABLE:	0
Stop Attendant:	1, forestry person
Equipment:	tree cookie samples, magnifying glass, tooth picks, precip chart, increment borer
Answer:	A) 29 years, marking range for "close" answers; +/- 3 years - 2 pts, +/- 5 years - 1 Pt. B) i (slow), C) Piney precip chart shows significant drought during that time period, D) increment borer, E) iii) analysis of tree growth ring patterns F) iv) all ove the above, G) true
Reference:	A, B, C, D: Forestry Equipment demonstration at Regional Workshop, E, F, G: Henri D. Grissino-Mayer's Ultimate Tree-Ring website, Virg Tech, Md Enviro websites

Soils and Land Use - 2 points

A) What does fluvial mean? (1 pt)

B) Give an example of where you would find soils formed under this mode of deposition. (1 pt)

2

TABLE:	0
Stop Attendant:	0,
Equipment:	
Answer:	a. Fluvial refers to river or stream-deposited material. it is a mode of deposition under which parent materials were formed. Examples provided in the SMG are Assiniboine River Valley or Pembina valley but any river valley listed or simply a river valley is correct.
Reference:	Soil Management Guide pg 4.

Conky Campground (Stops 11-20)

Wildlife - 2 points

- A) What term is used to describe the food habits of the skull provided at this stop? (1 pt)

- B) How can you tell? (1 pt)

2

TABLE:	0
Stop Attendant:	1, An Envirothon volunteer
Equipment:	Skull
Answer:	(1 point each) 1) TBD 2) TBD
Reference:	Wildlife binder - Skulls in Education, page 39

Theme - 2 points

The flag at this stop represents a septic system.

- A) Given the location of the septic system, which direction would the effluent flow from the septic field? (1 pt)

- B) Name two (2) possible contaminants from a septic system (1pt – 0.5 pts ea)

2

TABLE:	0
Stop Attendant:	0,
Equipment:	Flag
Answer:	Part A - towards the oxbow, Part B - nitrates and pathogens
Reference:	Ontario Envirothon 2009-2010: Protection of Groundwater page-42

Conky Campground (Stops 11-20)

STOP 16

Aquatic Ecology - 2 points

Examine the images on display at this stop. One is a satellite view of nearby Kitch Manitou Lake (dark shape with white line down its centre) and the surrounding area includes Provincial Highway 5 and the Assiniboine River. The other is a map of the same general area, with the lake and river shown.

2

A) How was Kitch Manitou Lake originally created? (1 pt)

B) What is the general name given to this type of lake? (1 pt)

TABLE:	1
Stop Attendant:	0,
Equipment:	Sets of laminated Google Earth photo and scanned map of Kitch Manitou Lake and surrounding area for display at each table.
Answer:	a) A large bend in the river was cut off by erosion and left as a separate water body. b) Oxbow lake (1 pt)
Reference:	On-site observation and reasoning How to Read a Topographic Map

Forestry - 2 points

A) Pioneer species are ideal for clearcut harvest and management that simulates forest fires. Circle two (2) trees from the list below that are pioneer species. (1 pt - 0.5 pts ea)

2

- Jack Pine
- Black Spruce
- White Spruce

- Red Cedar
- Trembling Aspen
- Basswood

- Bur Oak

B) List two ways that clear cut harvesting imitates fire ecology (1 pt – 0.5 pts ea)

Conky Campground (Stops 11-20)

TABLE:	0
Stop Attendant:	0,
Equipment:	
Answer:	1. Any two of Jack Pine, Black Spruce, or Trembling Aspen 2. large area, monoculture, evenaged, scarification of the soil
Reference:	pages 7, 8, 9, and 12 of MFA "Clearcutting in Manitoba" the clearcut silviculture system as related to vegetation management.

Soils and Land Use - 2 points

Inundation (I) is one of the limitations described by the "Dryland Agriculture Capability Guidelines for Manitoba" rating systems. Explain how the river might affect the soil near its edge. (2 pts)

2

TABLE:	0
Stop Attendant:	0,
Equipment:	
Answer:	The river may periodically flood causing soils near its edge to become inundated. As a result, soils may be wet for longer periods in the springtime. This may delay seeding or may drown out crops that were seeded if the flooding occurs later in the season. The river may also deposit nutrient rich sediments making the soil more productive.
Reference:	Soil Management Guide Pg 27-31

Conky Campground (Stops 11-20)

Wildlife - 10 points

Using the field guides and samples provided at this stop, identify the following:

10

A) Scat

- 1) _____
- 2) _____
- 3) _____
- 4) _____

B) Tracks

- 1) _____
- 2) _____
- 3) _____
- 4) _____

C) Furs

- 1) _____
- 2) _____

TABLE:	1
Stop Attendant:	1, An Envirothon volunteer
Equipment:	Field guides, scat, tracks and furs
Answer:	1 point each: TBD
Reference:	Common understanding of using field guides

Conky Campground (Stops 11-20)

Theme - 2 points

Several management plans have been developed for aquifers in Manitoba. What are two (2) key elements to ensure a successful planning process? (2 pts – 1 pt ea)

2

TABLE:	0
Stop Attendant:	0,
Equipment:	
Answer:	1) take account of the land, water and related resources 2) include the interests and participation of all stakeholders
Reference:	ADA Management Plan page-6

Conky Campground (Stops 11-20)

STOP 17

Aquatic Ecology - 10 points

10

A) Circle the best answer. (2 pts – 0.5 pts ea)

Classify the fish species listed below. Indicate whether it is a species of Special Concern (SC) or Threatened (T) or currently being considered as Endangered (E)

bigmouth buffalo	SC	T	E
carmine shiner (formerly roseyface shiner)	SC	T	E
chestnut lamprey	SC	T	E
sturgeon	SC	T	E

B) Degradation/loss of fish habitat affects fish populations. Identify what the implication each of the following has on fish. (3 pts – 1 pt ea)

- i) Poorly set culverts and ford crossings, low head dams and weirs:

- ii) Stream channelization:

- iii) Thermal Effluent:

Conky Campground (Stops 11-20)

Refer to the 2010 Angling Guide provided at this stop to answer the following questions.

- C) Interested in doing your part to conserve fish species you purchase the Conservation Licence. Under the General Limits how many northern pike are you allowed to keep with a Conservation Licence? (0.5 pts)

- D) You want to head to do Northwest Manitoba to do some fishing. When does the fishing season open? (0.5 pts)

- E) Wow! What a catch you've landed at this stop. What is the total length of the fish provided at this stop? (1 pt)

_____ cm

- F) Circle the correct answer. (0.5 pts)

Does it quality as a Master Angler? YES NO

- G) Circle the correct answer. (1 pt – 0.5 pts ea)

Are you allowed to collect, transport or possess live fish? YES NO

If no, why not? If yes, under what circumstances? [I added this – ok?]

Conky Campground (Stops 11-20)

H) Matching. Match the description to the most appropriate word. (1.5 pts – 0.5 pts ea)

WORD	DESCRIPTION
1) carbon	_____ This element is often the most limiting nutrient for plant growth.
2) phosphorus	_____ Basic building block of all living things.
3) nitrogen	_____ Essential element found in the ground.

TABLE:	1
Stop Attendant:	0,
Equipment:	2 sets of the 2010 Angling Guide: measuring board or rulers; couple of catfish
Answer:	A) BB=SC; CS=T; CL=SC; S=E Bi) barriers to upstream feeding, spawning and overwintering areas; Bii) removes diverse instream habitats such as riffles and pools; removes streambank vegetation; moves water downstream faster (increases runoff and peak) as a result may cease to flow later in the year. Biii) heated, warms water which holds less oxygen; in winter can attract fish and cause thermal shock if it shuts down suddenly C) 4; D) May 22; E) TBD; F) TBD G)YES - only under the authorization of a permit issued by Fisheries Branch H) 3,1,2 (in that order)
Reference:	Aquatic Ecology Resource Material: Nutrients; Species at Risk pdf; 2010 Angling Guide

Conky Campground (Stops 11-20)

Forestry - 2 points

Please list 2 (two) features you notice around this stop which would lead you to the conclusion that the forests here are overmature and decadent. (2 pts – 1 pt ea)

2

TABLE:	0
Stop Attendant:	0,
Equipment:	
Answer:	conks and mushrooms, standing dead trees and snags, evidence of cavity nesters and woodpeckers
Reference:	workshop training

Soils and Land Use - 2 points

Why is groundwater contamination a greater risk under coarse textured soils? (2 pts)

2

TABLE:	0
Stop Attendant:	0,
Equipment:	
Answer:	Coarse and very coarse textured soils in higher landscape positions have rapid internal drainage, so water moves through them quickly and easily. Any nutrients or other contaminants on or in the soil can be easily transported through the soil and into the groundwater with heavy rainfall events. (two marks)
Reference:	Soil Management Guide Pg 11.

Wildlife - 2 points

Besides arrangement, name the four (4) basic habitat needs of all living things. (2 pts – 0.5 pts ea)

2

- 1) _____
- 2) _____
- 3) _____
- 4) _____

TEAM NUMBER

Conky Campground (Stops 11-20)

TABLE:	0
Stop Attendant:	0,
Equipment:	
Answer:	0.5 points each: 1. Food 2. Water 3. Cover 4. Space
Reference:	Wildlife binder - Ecology and Wildlife Management, page 11

Theme - 2 points

On the diagram below, label the following: (2 pts – as assigned below)

2

- A) Recharge area (0.5 pts)
- B) Discharge area (0.5 pts)
- C) Seepage face (1 pt)

TABLE:	0
Stop Attendant:	0,
Equipment:	
Answer:	Answer on Chart 3 in word format
Reference:	Ground water and Surface Water: U.S. Geological Survey Circular 1139 page-34,46

**2010 MANITOBA ENVIROTHON
PROVINCIAL TEST**

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Conky Campground (Stops 11-20)

STOP 18

Aquatic Ecology - 2 points

A) Identify the two (2) aquatic invasive species provided at this stop by their common name. No points will be given for partial names. (1 pt - 0.5 pts ea)

- 1) _____
- 2) _____

<hr/> 2

B) Aquatic invasive species threaten aquatic habitat, fisheries and valuable recreational resources. Individuals need to act responsibly to prevent and/or slow the spread of invasive species. Choose two (2) of the four words below and complete the statement to reflect the action necessary to ensure water users do not transport invasive species. (1 pt - 0.5 pts ea)

CLEAN:

DRAIN:

DRY:

DISPOSE:

Conky Campground (Stops 11-20)

TABLE:	1
Stop Attendant:	1, An Envirothon volunteer
Equipment:	AIS samples: rusty crayfish; spiny waterflea; round goby; zebra mussel
Answer:	<p>A) 1) spiny waterflea 2) round goby</p> <p>B) CLEAN and inspect watercraft, trailer and gear. Remove all plants, animals and mud. Rinse using high pressure , hot tap water 50oC (120oF). DRAIN all water from watercraft including the motor, livewell, bilge and bait buckets.</p> <p>DRY water craft for at least 5 days in the hot sun (if rinsing is not available)</p> <p>DISPOSE of unwanted live bait and worms in the trash, and dump bait bucket water on land. Never release aquarium pets, plants or water into our lakes, rivers or wetlands.</p>
Reference:	Aquatics Ecology Resource Manual

Forestry - 2 points

Using the diameter tape provided please measure the diameter of the large cottonwood at this stop as directed by the stop volunteer. (2 pts)

<hr/> 2

TABLE:	0
Stop Attendant:	1, An Envirothon volunteer
Equipment:	diameter tape
Answer:	tbd about; 93 cm
Reference:	site specific

Conky Campground (Stops 11-20)

Wildlife - 10 points

Background: Tunnel Town for the Richardson’s Ground Squirrel.

This grassy area is prime habitat for the Richardson’s ground squirrel. The ground squirrel is part of the rodent family. Currently, this one square kilometre area has 80 ground squirrels. The area can support up to 100 ground squirrels.

10

Assumptions:

The current ground squirrel population is 60 per cent females and all the females have babies. Ground squirrels give birth to an average of seven babies per litter per year; of which 60 per cent are females. In each litter, one male does not survive after birth.

Every time an animal is born, it is added to the population. When a ground squirrel dies, it’s subtracted from the population.

Question:

In order to maintain the Richardson’s ground squirrel population of 100 for this one square kilometre area after the first year, how many would either have to move out of the area or be consumed by predators? **Show your work?** (10 pts)

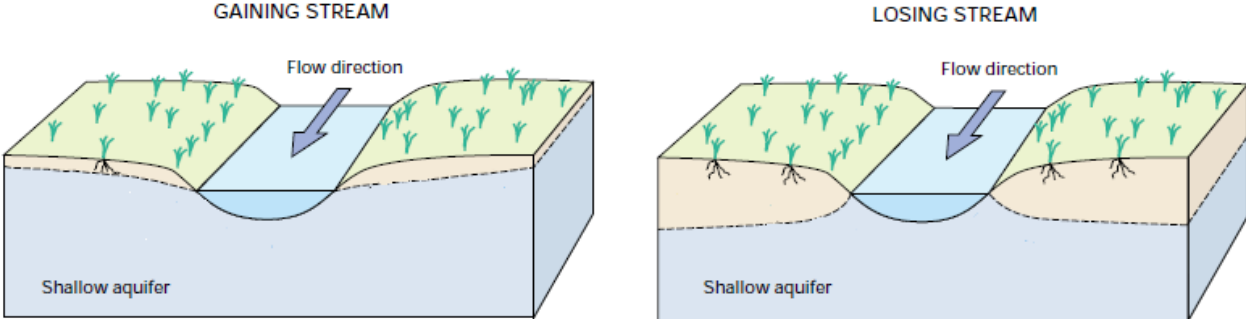
TABLE:	0
Stop Attendant:	0, An Envirothon volunteer
Equipment:	
Answer:	268
Reference:	Wildlife binder - Chapter 1-Wildlife populations attachment

2

Conky Campground (Stops 11-20)

Theme - 2 points

On both of the diagrams below, indicate the following: (2 pts – as assigned below)



- 1) Water table on both diagrams (1/2 point)
- 2) Unsaturated area on both diagrams (1/2 point)
- 3) The direction of water movement on both diagrams (1 point)

TABLE:	0
Stop Attendant:	0,
Equipment:	
Answer:	Answer on Chart 2 in word format
Reference:	Ground water and Surface Water: U.S. Geological Survey Circular 1139 page-9

Conky Campground (Stops 11-20)

STOP 19

Aquatic Ecology - 2 points

Examine the photos of Anabaena spp.? provided at this stop.

2

- A) To what major taxonomic group does this species belong? (0.5 pts)
- B) List two (2) advantageous features that enable this organism to dominate its habitat when phosphorus is plentiful in a lake. (1 pt – 0.5 pts ea)

- C) What do we call the resulting condition in a lake or pond? (0.5 pts)

TABLE:	1
Stop Attendant:	0,
Equipment:	2 sets of laminated photos of Anabaena, a filamentous Cyanophyte.
Answer:	a) Cyanophyta or Cyanobacteria or Blue-green algae (1/2 pt) b) Ability to fix nitrogen for use in its metabolism (1/2 pt) Ability to float near surface and monopolize solar radiation (1/2 pt) c) A surface bloom or eutrophication (1 pt)
Reference:	Freshwater Productivity Limnology, A Treatise on Eutrophication Limnology, Plankton, Blue-green Algae (Cyaobacteria)

Wildlife - 2 points

In Manitoba, what two (2) animals disappeared due to the lack of hunting laws in North America? (2 pts – 1 pt ea)

2

TABLE:	0
Stop Attendant:	0,
Equipment:	
Answer:	1 point for any of the following: 1. Passenger pigeon 2. Bison 3. Plains grizzly 4. Swift fox etc.
Reference:	Wildlife binder - Wildlife Conservation and Management, page 5

Conky Campground (Stops 11-20)

Theme - 10 points

Use the map provided at this stop to answer the following questions.

10

A) Determine the UTM Location of the following dots on the map. (6 pts -1 pt ea)

	Northing	Easting
Green Dot		
Blue Dot		
Yellow Dot		

B) Determine the distance (in meters) between the Yellow Dot and the Blue Dot. (2 pts)

C) Determine the distance (in kilometres) between the Green Dot and the Blue Dot. (2 pts)

TABLE:	1
Stop Attendant:	1, One of Steven's assistants
Equipment:	NTS map, ruler
Answer:	Question 1: Determine the UTM Location of : Northing Easting Red Star 5493000 496000 Blue Star 5504000 477000 Gold Star 5490500 476500 [6 marks] Question 2: A) Determine the distance (in meters) between the Gold Star and the Blue Star [2 marks] 27 cm measured = 13500 meters B) Determine the distance (in kilometres) between the Red Star and the Blue Star [2 marks] 43 cm measured = 21.5 km
Reference:	Training

Conky Campground (Stops 11-20)**STOP 20****Aquatic Ecology - 10 points**

A) Multiple choice. Circle the best answer. (1 pt)

Note the piece of equipment on display at this stop. Which of the following is it designed to measure?

- i) Penetration of solar radiation into the water column
- ii) Depth of the water in a lake
- iii) Sinking rates of particles in the water column

B) List three (3) things that can affect the magnitude of the measurement obtained by the equipment on display at this stop. (3 pts – 1 pt ea)

C) Note the organisms shown in the photograph on display at this stop. To what large group of organisms do they belong? (1 pt)

D) Multiple choice. Circle the best answer. (1 pt)

Which of the following best describes the linkage of the organisms in the photo to the equipment on display?

- i) The depth to which solar radiation penetrates determines the availability of energy for photosynthesis.
- ii) Deeper water means more water volume in which the organisms can live.
- iii) If these organisms sink rapidly, they will have less time to survive.

10

Conky Campground (Stops 11-20)

E) Multiple choice. Circle the best answer. (1 pt)

Which of the following trophic terms describes the role played by the organisms in the photo in this lake ecosystem?

- i) primary producer
- ii) primary consumer
- iii) secondary consumer
- iv) decomposers

F) The following organisms listed below can be found in a lake such as the one at this stop. Write the name of the trophic level (as listed in part E, above) to which each belongs. (3 pts – 1 pt ea)

- i) Bacterium: _____
- ii) Daphnia: _____
- iii) Dragonfly nymph: _____

TABLE:	1
Stop Attendant:	0,
Equipment:	2 sets of the following displayed on tables: Secchi disk, laminated photo of mixed algae
Answer:	Total: 10 points a) (i) (1 pt) b) Possible answers include: suspended clay or silt particles, natural colour from plant decay (humic or fulvic acids), cloud cover, time of day (solar angle), operator's visual acuity, wave action, surface reflection c) algae or phytoplankton (1 pt) d) (i) depth solar radiation (1 pt) e) (i) primary producer (1 pt) f) (i) decomposer (ii) primary consumer (iii) secondary consumer
Reference:	Aquatic Sampling Techniques; Limnology, Eutrophication, Secchi Disk Limnology, Plankton, Phytoplankton

Conky Campground (Stops 11-20)

Wildlife - 2 points

- A) An important part of setting furbearer seasons is when the pelts are at their prime. Between what months is a marten's fur in its prime? (1 pt)

- B) The Registered Trapline (RTL) System is a unique conservation method whereby a person, the "lineholder," is granted the exclusive opportunity to harvest furbearing animals in a certain area, the "RTL line." Why is this system so important? (1 pt)

2

TABLE:	0
Stop Attendant:	0
Equipment:	2009-2010 Trapping Guide??
Answer:	A) mid- November to mid-January B) - The system ensures sustainable furbearer populations by controlling the number of trappers in that area and making the lineholder the steward of the resource. - trapping was out of control and furbearing animal numbers had been depleted - animals were taken without regard of seasons and populations - local people (mostly First Nations) who had been trapping on the land for generations saw their traditional livelihoods threatened
Reference:	Trapping Guide

Theme - 2 points

Using the supplied GPS, input the following coordinates:

14U 0479784 5489979

With this information, determine the distance from your current position (by the flag at this stop) to the inputted coordinates. (2 pts)

2

TABLE:	1
Stop Attendant:	1, Allen Tyrchniewicz or Steven Hills
Equipment:	Garmin GPS Unit Flagged Stake
Answer:	TBD
Reference:	Training