Proposal For Natural Capital Valuation
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Objective:

The main purpose of the proposal is to provide Julienne's lawyer an assessment of her land depending on ecosystem and natural capital perspective. By following scientific and engineering methods, this depends on observing and collecting data.In addition,calculating the time is required to complete the study and the financial cost for the study.

Introduction:

In order to valuate the land we should first know the difference between natural capital and ecosystem. The concept of natural capital has the potential to merge economic and environmental interests by mixing the value of natural capital in decision-making***(Voora, 2008)***.While the ecosystem was defined as an active entity composed of anorganic community and its associated abiotic environment. Often the dynamic interactions that occur within an ecosystem areabundant and complicated. Ecosystems are also always undergoing alterations to their biotic and abiotic components. ***(Pidwirny, 2006).***

Natural systems produce goods and services that contribute to social and economic well-being. As we can see in ***Figure (1***), Carling property is a natural landscape produces cleaner air and water, supports different type of species. All of these biophysical goods and services have an economic value. In Canada, many studies have evaluated the non-market value of natural capital for Canada's boreal region. They estimate that natural capital value in some regions between **$2.6** billion to **$975** billion ***(Wilson, 2008).***

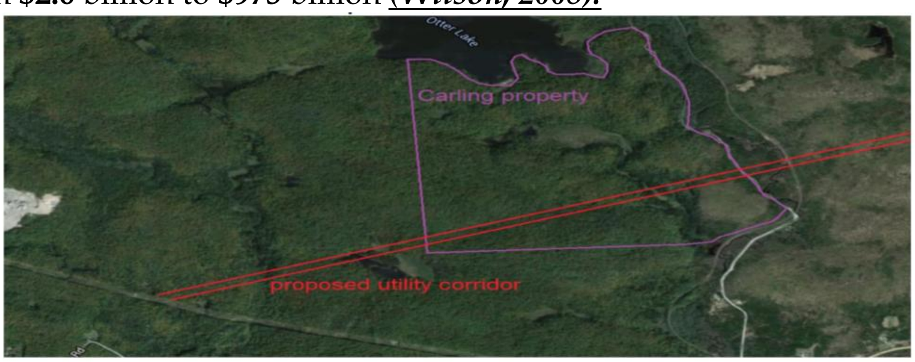

Figure (1), Carling property

Framework:

Sending **15**-technician form our company to study the area and provide a valuation for the ecosystem to know the value of natural capital. Using 'Revealed preference' approach, which is one of the techniques to determine economic value for non-market ecosystem services and this technique based on observation. Our technicians divide the ecosystem services into four categories.

(1) Supporting services, like soil formation and erosion control, **(2)** Provisioning services, like fresh water, **(3)** Regulating services, like climate regulation. Each five technicians work on one category (two juniors, twoseniors and oneintermediates).Our first category is studying the soil formation and erosion control by collecting samples from the area. Gathering and analyzing the data help the technicians to find a method that used to control erosion especially in wetlands and construction sites. ***Figure (2)*** demonstrates a significant impact of soil erosion in Canada.In order to get a productive agricultural area, we should conserve the soil formation form erosion. There are **12** fundamental erosion-control principles**.** **(1)** Maintain vegetative cover, **(2)** Maintain ground cover, **(3)** Maintain cover during periods when erosivity is highest if cover cannot be maintained, **(4)** Incorporate biomass into the soil, **(5)** Minimize soil disturbance, **(6)** Add soil amendments**, (7)** Add supporting practices**, (8)** Prevent excessive rill erosion, **(9)** Modify the topography, if possible, **(10)** Avoid long field lengths, **(11)** Use barriers such as windbreaks around fields, **(12)** Controlling sediment delivery when erosion control is not sufficient ***(Toy & Renard, 2002).***

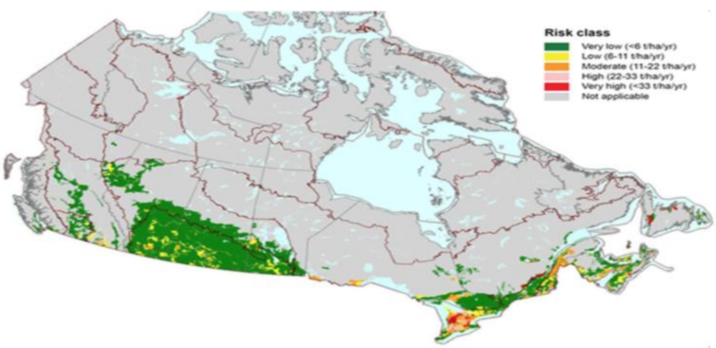

Figure (2), Cropland in Canada by soil erosion risk class (Drury, C.F., Yang, J.Y. and De Jong, R, 2011).

Our second category called provisioning services. Ontario's consumption water comes from lakes, waterways, watercourses or aquifers. Technicians mission is to take a water sample from aquifers because it's pure with a low rate of impurities. Comparing the data with anold sample was taken from a construction site to know the water quality of both sites, by using monitoring well. As we can see in ***figure (3) (ASTM 5092, 2005).***

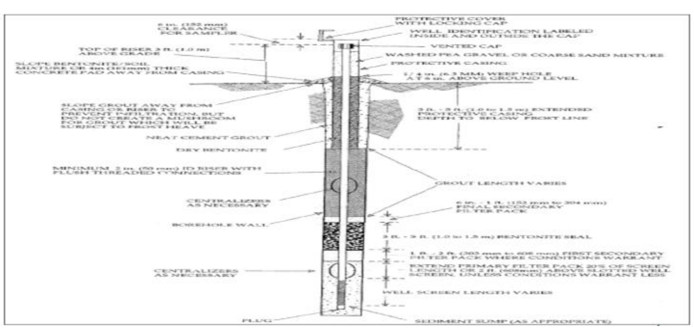

Figure (3), Example monitoring well construction design with filter pack.

Our third category is regulating service, like climate regulation. Terrestrial ecosystems regulate climate through biogeochemical (greenhouse-gas regulation) mechanisms***(Bonan, G. B., 2008).*** The company provides the technicians with a portable greenhouse gas (GHG) analyzer as we can see in figure **(4),** to measure the rate of GHG in Carling property ***(Mather, 2012).***

Figure (4), Ultraportable Greenhouse Gas Analyzer (CH_4,CO_2,H_2O)

Theses categories control the annul value of the land, so any modification or damage leads to change the annual cost as we can see in ***Table (1).***

TABLE (1)*ANNUAL ECOSYSTEM SERVICE VALUE BY LAND COVER TYPE*			
Land cover type	Area (hectares)	Value per hectare ($/ha/year)	Total value ($/year)
Forest	804.3	$5,149	$4,141,841
Urban green space	130	$785	$102,521
Wetlands	414	$9,651	$531,002
Total	1,348.3	$15,585	$4,775,364

Budget:

Table (2) – Budget of the(Salaries, Travel, Equipment and Overhead).

Budget	Project Costs $/Month				Project Financial $/Period (4 months)			
	Mar	Apr	May	Jun	Mar	Apr	May	Jun
Salaries	$5,760	$5,760	$5,760	$5,760	$23,000 (20%)			
Travel (Plane)	$4,380	$4,380	$4,380	$4,500	$18,000 (10%)			
Equipment (Computers, Ground monitoring and GHG Analyzer).	$2,500 + $5,000 + $3,000	$2,500 + $5,000 + $3,000	$2,500 + $5,000 + $3,000	$2,500 + $5,000 + $3,000	$42,000 (53%)			
Overhead								

(Insurance, Set up equipment, Rent 1%, and Taxes).	$5,000	$5,000	$5,000	$5,000	$20,000 (17%)
Total	$26,640	$26,640	$26,640	$26,640	$103,000

Project Schedule:Table (3)-Working System.

	MAR	APR	MAY	JUN
Field Observations: • Field notes	A, B, C			
• Seating Charts	A, B, C			

Implementation: • Set upcomputers	A, B, C			
• Set up Ultraportable Greenhouse Gas Analyzer		C	C	
• Set up ground monitoring		B	B	

Data Analysis: • Study the data			A, B, C	A, B, C
• Detection of mistakes				A, B, C
• Checking of assumption			A, B, C	A, B, C

(1) Team A: Studyingsoil formation and erosion control
(2) Team B: Studying water quality.
(3) Team C: Studying climate regulation.

Work Packages:

1) **Field Observations**: Take notes for the soil type, air quality, and water quality and then make observation chart template.
2) **Implementation**: Set up the machines and computers to collect sample and data.
3**) Data Analysis**: Is the final step of the process. Understand the data and detect any error while assembling the data.

References:

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