

# **Dalhousie Photovoice:**

## **Identifying Environmental Concerns of the Dalhousie Community on Studley Campus**



**A greening the campus project  
ENVS 3502 Final Report  
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## **Abstract**

The Photovoice concept was developed in the early 1990s by Caroline Wang and Mary Ann Burris. It is a tool that enables the public to voice its opinion on important issues through photos and discussion and uses grassroots approaches towards photography to inspire social action. The Dalhousie Photovoice project had two goals: 1) To identify what members of the Dalhousie community felt were the most important environmental problems on Studley campus, and 2) To raise awareness about environmental issues amongst members of the Dalhousie Community. The six members of the research group took photographs based on the nine 'campus issues' identified by Dalhousie's Office of Sustainability: water, energy, food, natural environment, built environment, transportation, products and procurement, waste, and emissions. These photos were displayed at various locations on Studley campus at different time intervals for a total of nine hours. Members of the Dalhousie community were haphazardly sampled. They were asked to choose what they believed were the top ten worst environmental problems on campus as represented in the photographs. They were also asked to identify the ultimate worst problem and comment on what the photo represented and why they chose it. Once the data and comments were analyzed the research group determined which photos the Dalhousie community repeatedly identified as representing the 'worst environmental problems on campus'. Cigarette butts were identified as the number one top ten and the worst environmental issue on campus. The group also found that eight of top ten photographs chosen depicted waste, which might be attributable to the lack of environmental awareness within the community. The research group believed that an environmental themed photovoice could help green the campus by discovering the main areas of concern and develop recommendations, which could be presented to key policy-makers at Dalhousie with the goal of generating positive change.

## **1. Introduction**

### **1.1. Project Description and Objectives**

Communities around the world are becoming more aware of the multitude of environmental issues society faces, on both a global and local level, and there are many sincere efforts aimed at trying to rectify environmental problems. University campuses around the world are following this trend and are joining the greening the campus movement. Dalhousie University has made numerous commendable steps in terms of addressing environmental problems associated with its campus, but there is still room for improvement. This project is a part of the wider movement and was done for the Environmental Problem Solving Class: Campus as a Living Laboratory. This project used tools borrowed from the Photovoice methodology with the purpose of identifying what a cohort of members from the Dalhousie community thinks are the most important environmental issues on campus. The two primary objectives of this project were:

1) To identify what members of the Dalhousie community felt were the most important environmental problems on Studley campus to guide the development of recommendations by key policy-makers at Dalhousie to generate a positive change.

2) To raise awareness about environmental issues amongst members of the Dalhousie Community by presenting them with a new, visual, way of perceiving environmental problems.

This project adapted the elements from the Photovoice methodology to achieve its objectives. Photovoice is a tool used for “collecting information and expressing issues and concerns through photos” (Department of Sustainability and Environment, 2007). Through Photovoice, “community members are empowered with cameras and allowed to define problems of impacts of concern within their community” (Budak & Taylor, 2007). It combines grassroots approaches towards photography with social action (International Centre for Arts and Social Change, 2008), enabling the public to voice its

opinion through photos and discussion. The outputs from Photovoice projects can be used to reach policy makers (Department of Sustainability and Environment, 2007).

The Photovoice concept was developed by Caroline Wang and Mary Ann Burris in the early 1990's (The Communication Initiative Network, 2008). Since its conception, Photovoice has been used by a variety of different organizations around the world, including the Nature Conservancy of China (The Nature Conservancy in China, 2009), First Nations women (CBC News, 2007), and Safe Kids Canada (Safe Kids Canada, 2009) to provide people with the opportunity to express themselves.

Wang and Burris (1997) describe many advantages of using Photovoice. For example, this method is more participatory than conventional research approaches and the community gets more of an input in the final results. This is because community members are encouraged to take pictures and then interpret the pictures themselves. This project deviated from the Photovoice method the pictures were taken by the research team. This meant the community had little influence in determining what environmental problems were represented. Despite this deviation, the Dalhousie community interpreted the photographs.

Another benefit of Photovoice is that it does not discriminate against people who cannot read and/or write because images can speak louder than words. Photovoice also tends to incite discussion and can ultimately bring forth social change by creating a dialogue and making people aware of the issues. Ideas are presented in an innovative way and people are forced to think about the images they see. This can inspire a change in the way people approach the wider world. The biggest disadvantage of using Photovoice is that the outcomes can sometimes be biased (Wang & Burris, 1997). "Personal judgment may intervene at many different levels of representation: who used the camera, what the user photographed, what the user chose not to photograph, who selected which photograph to discuss,

and who recorded whose and what thoughts about whose and which photographs” (Wang & Burris, 1997: 374).

An extensive search revealed that no one has previously conducted a Photovoice project on the Dalhousie campus regarding environmental issues. To begin the Greening the Campus Photovoice project, the researchers took pictures representing different environmental problems on campus. Then, members of the Dalhousie Community were asked to interpret these environmental problems and identify what they believed were the top ten problems on campus. They were then asked to choose and comment on the absolute worst problem. This photograph display was done at various locations on Dalhousie Studley campus. Once the community’s responses were compiled, the top issues were identified and could be used to develop recommendations by policy-makers at Dalhousie to achieve positive environmental change.

This project represents the first Photovoice Greening the Campus project at Dalhousie. It is hoped that this will motivate future students at Dalhousie University, and beyond, to use this new and exciting research tool. Furthermore, it is hoped the awareness initiated by this project will inspire positive changes on campus and beyond in the future.

## **1.2. Systems Analysis**

Dalhousie is comprised of three campuses, Studley, Sexton and Carleton (Appendix 2). This project focused on Studley campus and strove to include as many members of the Dalhousie community as possible – including faculty, staff, students and other campus users. Each campus is unique and potentially has its own specific environmental problems, to time limitations this project focused only on Studley campus. Faculties present on Studley campus include: Law, Management, Sciences, Arts and Social Sciences, Computer Science, and Commerce.

Photovoice, designed as a methodology with a broad scope, is ideal for uniting the diverse Dalhousie community in its interpretation of environmental problems, which may not have otherwise been connected on this topic. Photovoice was used to fulfill the objectives of our study because photography is something everyone within the Dalhousie Community can identify with. Photography is inherently an accessible medium. Its use helped raise awareness in the participants about environmental problems represented in the photographs by engaging them directly.

The research group based their photographs on the nine categories of environmental issues on campus as defined by the Dalhousie Office of Sustainability. The categories were: water, energy, food, natural environment, built environment, transportation, products and procurement, waste, and emissions. The community was asked to reflect on these pictures and to choose the top ten they thought represented the worst environmental problems at Dalhousie. It was hoped this process would raise awareness and make people think more critically about the environment around them after viewing these photos.

In order for a community to act responsibly it must work together as a team. Photography can be used to help create the sense of community that is needed for social responsibility. Photography is, in some ways, a universal language; it has the ability to speak without using words. A civil engineer can say the same thing with a photograph that a dentistry student can.

Integral to the collection and examination of any information is being able to identify the groups that the information is coming from. Three actor groups were considered. The first was the “primary actors”: these are the people who were continuously involved in the project. The primary actors in this project included the Dalhousie students, faculty, and staff who participated in ranking the photographs and Dr. Tarah Wright and John Choptiany who were involved in the project design. The “associate group”, who had an influence but were not involved daily included the Dalhousie Office of Sustainability.



The final group of people was the “should-be” group, which is the group of people that are either not involved because of being left out of the process, or people who have no voice. The project was designed to allow anyone to participate (except for the visually impaired) and minimize size of the third group. It was recognized that certain members of the Dalhousie community would likely not be part of the study, including gym users and delivery people.

This project was a part of the Greening the Campus movement, it is hoped the results will be used to make Dalhousie more eco-friendly. Lately, it appears that societies around the world are moving towards becoming more environmentally friendly. Being eco-friendly is ‘in’ (Teubner, 2008). Dalhousie recently began to follow this trend and “recognizes the crucial role it has to play in providing [environmental] leadership” (Sustainability at Dalhousie, 2009). The steps Dalhousie has taken to green its campus include: launching the Sustainability Office, the Dalhousie Student Union’s Office of Sustainability, the electronics recycling program, taking part in the one million acts of green challenge, and signing on to a few international declarations (Governance, 2008; Sustainability at Dalhousie, 2009). In October 2008, Dalhousie received the privilege of being the first University in Canada to win the Eco-Logo environmental stewardship award for green cleaning (Dalhousie Office of Sustainability, 2008). Dalhousie also recently launched the new College of Sustainability, the first of its kind in Canada. There are numerous smaller student-run organizations at Dalhousie that work on all levels and topics to achieve social and environmental change.

There remains a lot that could be done at Dalhousie to green its campus. Furthermore, many of the environmental projects currently initiated are by people who have special positions of power or are actively involved in environmental issues daily. This group of people is small; there is the potential that the larger Dalhousie community is neglected from being a part of these changes and they might feel excluded and/or feel they have nothing to contribute. This Photovoice project attempted to gauge what

members of the wider community thought were the most important environmental problems on campus. In doing so, it also hoped to foster a sense of environmental awareness in their daily lives, on campus and beyond.

## **2. Methods**

As stated earlier, the purpose of this Photovoice project was to collect information on what the Dalhousie University community perceives to be the worst environmental problems on campus.

This project defines the Dalhousie community as students (both full-time and part-time), faculty, staff, and general users of and on Dalhousie University's Studley campus. The definition of "environmental problems" was deliberately not specified and pictures were only labelled with numbers. In true Photovoice, the community is supposed to interpret and define the project – the integrity of this project would have been lost had descriptions of the represented problems been included. The researchers did not want their definitions and opinions to influence the project's outcomes and add bias to the final results. The vagueness was intended to elicit a wide-range of innovative responses.

Efforts were made to reach out to a variety of members from the Dalhousie Community, whose participation was voluntary. The primary data was collected by asking participants to chose the top ten photos (out of 43 in total) that they felt represented the worst environmental problems on campus and to select the one photo that they felt represented the overall worst (Appendix 3). These photos were taken by group members and were presented on two boards that were displayed in various locations on Studley campus at different time intervals for a total of nine hours (Table 1).

**Table 1: location and time schedule of picture display**

	Monday, March 16th	Tuesday, March 17th	Wednesday, March 18th	Thursday, March 19th	Friday, March 20th
Student Union Building	10:30-11:30 am				1:30-2:30 pm
McCain Building	1:30-2:30 pm				
Life Sciences Centre		12:00-1:00 pm			
Computer Science Building		1:00-2:00 pm			
Killam Library			10:30-11:30am	2:30-3:30 pm	
Rowe Management Building				1:00-2:00 pm	
Weldon Law Building					10:30-11:30 am

### **2.1. Scope, location and sampling methods**

The Photovoice project was limited to the Studley Campus. All members of the Dalhousie community, including students, faculty and staff, were encouraged to participate. The six researchers of the Photovoice group took photographs based on the nine ‘campus issues’ identified by Dalhousie’s Office of Sustainability: water, energy, food, natural environment, built environment, transportation, products and procurement, waste, and emissions (Campus Issues, 2008). However, these categories were not identified or explicitly used during the photo-analysis stage. Each member of the Photovoice group was expected to take nine photographs (one of each of the issues identified by the Office of Sustainability). Eleven duplicates were eliminated and the 43 remaining photos were printed. These photographs were then randomly assembled in rows onto two large foam-boards and numbered from 1 to 43.

Members of the Dalhousie community were haphazardly sampled during the photo-interpretation phase of the project. This was non-probabilistic sampling with convenience, gathering anyone available (Palys, 1997). Though the sampling method was not an accurate random sample, it is believed with the diversity of recruiting locations and length of sampling times, the project optimized the variety of community members who participated in the project. This increased the heterogeneity of the sample. This project did not seek a probabilistic representative sample. As Palys (1997) says, sometimes a “representative sample may be impossible and even undesirable”. During the interpretation stage, the foam-boards were presented in various locations on the Studley Campus. Two members of the photo-voice group were present to ask passers-by if they wanted participate. Willing persons were given a pen and a questionnaire (Appendix 3) on which to identify the ten photographs that they believed represented the top ten environmental problems on campus in no particular order. They were then asked to circle the number of the picture that they believed represented the worst problem and write a brief explanation about what they felt that picture represented. The explanation was used to clarify the responses because each picture could be interpreted in different ways and the participants’ interpretation could easily differ from that of a Photovoice group member. The comments were used at the end to place the photographs into general categories about the environmental problem they represented (i.e. waste, transportation, food issues).

## 2.2. Data analysis

After receiving all the data and comments, these were analyzed to determine which photos the Dalhousie community repeatedly identified as representing the worst environmental problems. This was done by going through each response and tallying the number of times a specific photo was chosen in the top ten environmental problems and as the **worst** environmental problem. The data was entered into Microsoft Excel, where it could easily be sorted and made into graphs. This helped to determine

which environmental problems were seen as the most problematic on Studley campus by the wider Dalhousie community.

### **2.3. Photovoice as a tool**

The Photovoice methodology was an appropriate approach to meet this project's objectives. The goal of this project was to determine what the Dalhousie community – people who are not necessarily made to think about environmental issues daily nor necessarily had as thorough an environmental education as people in environmental sciences – recognizes and interprets as environmental problems. The objective was to identify areas of concern. Photovoice, as an interactive method, actively engages participants as they identify environmental problems on campus. This process raised awareness in participants about the health of the environment around them. The results from this project can be used by various parties to take direct action.

### **2.4. Limitations and delimitations**

Time was a major limiting factor in this project. Time prohibited the project from being a true Photovoice project where participants both take and interpret the photographs. Time restrictions also limited the time to gather information and the length of the photo displays. Another limitation to this project's results was attributable to the Photovoice methodology and relates to errors possibly occurring from the researchers' biases. These biases could have had an effect on the outcome as certain photographs could be clearer or more powerful than others and this could have swayed people's responses.

Certain delimitations were imposed on the project. It was determined that only Studley campus would be examined and only a total of 9 hours would be allocated to displaying the photographs (from Monday, March 16<sup>th</sup> to Friday, March 20<sup>th</sup>). These delimitations were implemented for logistical reasons and to ensure deadlines would be met. In addition, only the main entrances of certain buildings were

sampled, so only people who use those entrances were targeted. This was done because these areas have the highest volume of people and it was necessary to optimize the time available to recruit people and maximize the response rate.

### 3. Results

#### 3.1. Quantitative results

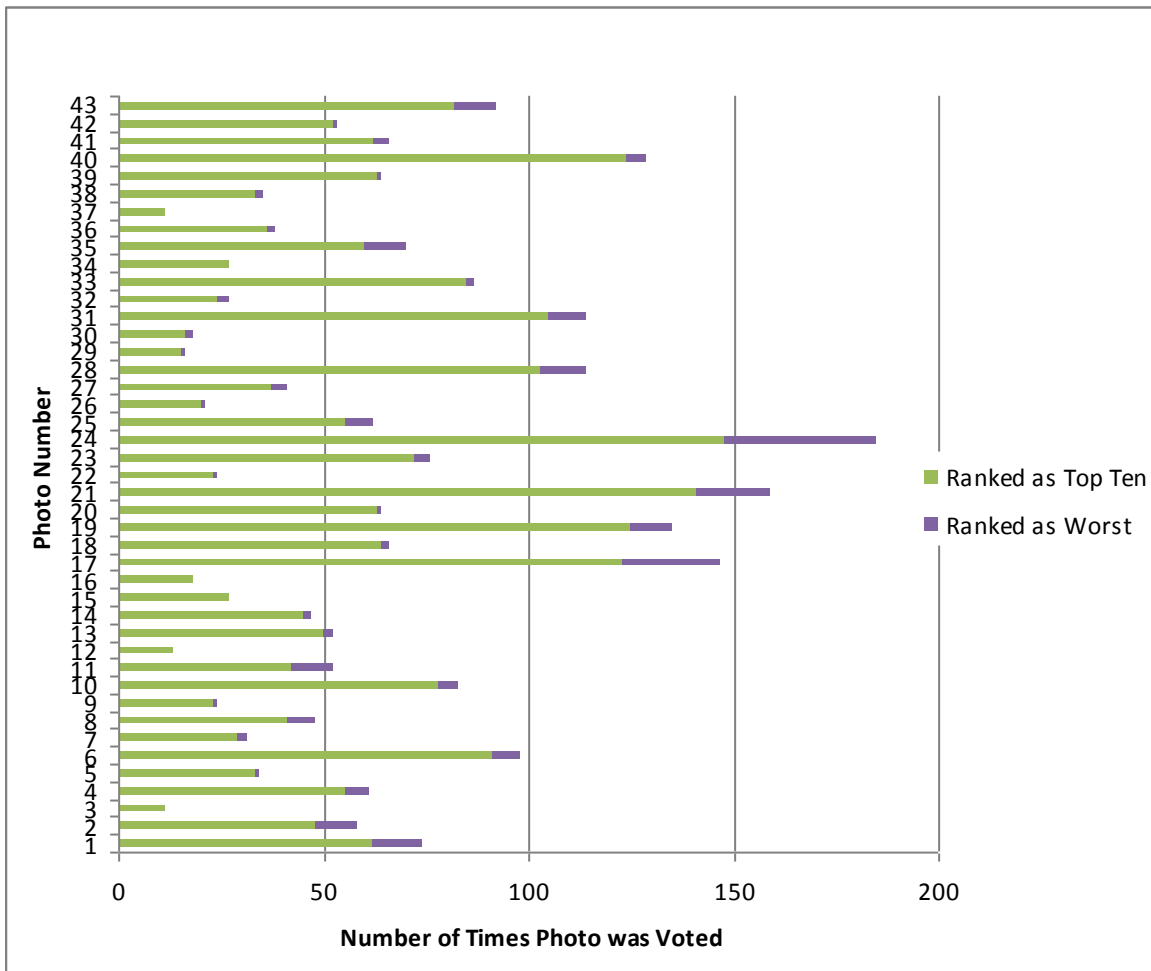


Figure 3: Number of times the photograph was voted as a top ten worst environmental problem on campus, along with the number of times the photograph was voted as the absolute worst. \*See Appendix 4 for picture numbers and corresponding pictures

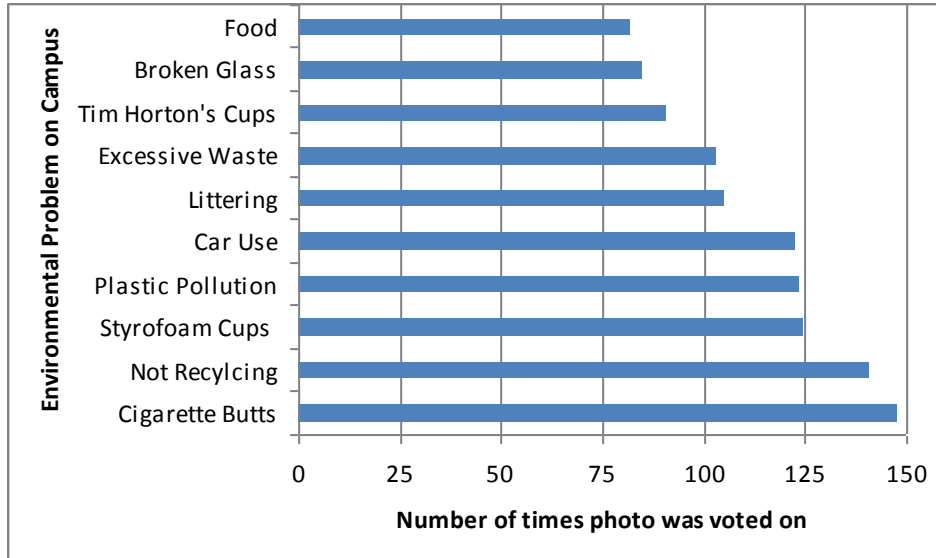


Figure 4: Top 10 environmental problems on Studley campus as chosen by members of the Dalhousie community

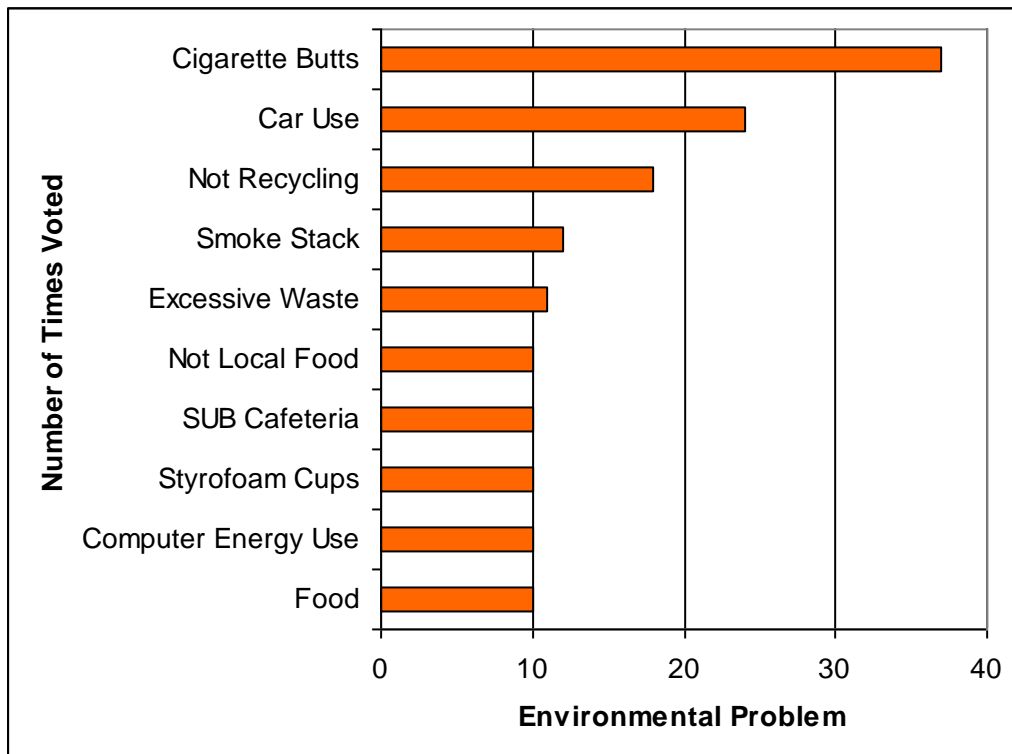


Figure 3: Top 10 worst environmental problems as chosen by members of the Dalhousie community.

### 3.2. Qualitative results

Table 2: Participants' comments of the photographs and what the photograph represented.

<b>IMAGE DEPICTED IN PHOTOGRAPH</b>	<b>COMMENTS</b>
<b>Smoke stacks on campus</b>	<ul style="list-style-type: none"> <li>• Bunker C oil.</li> <li>• Oil use for heating Dalhousie.</li> <li>• This picture represents the problem of pollution.</li> <li>• The physical plant's reliance on Bunker C fuel.</li> <li>• This picture represents to me the emissions that Dal gives off; it should be trying harder to reduce them.</li> <li>• Inefficient fossil fuel based heating; buildings are at least 2-3 degrees warmer than necessary.</li> <li>• Air pollution at it's' worst.</li> <li>• Use of bunker C is the single biggest reason that Dal has such a big eco-footprint.</li> <li>• Air pollution.</li> </ul>
<b>Apple from Washington State offered on Campus</b>	<ul style="list-style-type: none"> <li>• Lack of local food procurement on campus.</li> <li>• While there are old infrastructure issues, provision of poorly thought out food is, in my opinion, the worst environmental problem. Dal should be a leader in providing intelligent food choices.</li> <li>• Relying on non local sources to feed our campus, not growing our own food.</li> <li>• The problem is that apples sold on campus are not local Nova Scotia apples – this is an apple from Washington State. It's not organic either, but apples are produced in Nova Scotia.</li> <li>• Lack of local, organic, sustainable. Our province is poor. Support it.</li> </ul>



	<ul style="list-style-type: none"> <li>• Not local food.</li> <li>• The university needs to push more organic options.</li> <li>• We should be a locally run university, using goods and services from local farmers and workers. Let's buy locally and support our fellow farmers.</li> <li>• Corporate, non-local food all around.</li> <li>• Imported food and Tim Horton's/Styrofoam cups.</li> <li>• There are so many local businesses we can buy from.</li> </ul>
<b>Urinals</b>	<ul style="list-style-type: none"> <li>• Wastes water constantly, they are often always running. Opportunity to use less water?</li> <li>• Waste of food water.</li> <li>• Waste of water is a big deal for me.</li> <li>• Waste of water.</li> </ul>
<b>Tim Hortons Litter</b>	<ul style="list-style-type: none"> <li>• Littering here means not enough trash bins and lack of respect for DAL.</li> <li>• Waste – damaging and energy inefficient.</li> <li>• All of these represent the need for constant maintenance. Every one wants to be a hero and do some big thing. A real hero does a thousand small things, one cup brought from a home at a time.</li> <li>• Tim Hortons garbage is accumulating.</li> <li>• The smoking pits smell bad and look disgusting.</li> </ul>
<b>Construction site of new building on Coburg Road &amp; LeMarchant Street.</b>	<ul style="list-style-type: none"> <li>• New buildings must be built with more stringent environmental standards (minimum LEED platinum) to demonstrate what is possible. Buildings are huge consumers of energy.</li> </ul>
<b>Bucket of salt</b>	<ul style="list-style-type: none"> <li>• Too much salt!</li> <li>• Over-salting.</li> </ul>

	<ul style="list-style-type: none"> <li>• Excessive salt, ocean ecosystem and ecological disaster.</li> <li>• Contamination of ecosystems.</li> <li>• Over salting in winter is not only horrible for the environment but it kills the grass and will be then over fertilized in the summer. It's a vicious cycle.</li> <li>• Salt is bad.</li> <li>• The use of way too much salt on campus to melt snow and ice.</li> </ul>
<p><b>Littered water bottle</b></p>	<ul style="list-style-type: none"> <li>• Perhaps not the worst one but it may be the easiest and most effective “quick-fix”. It represents bottle water disaster.</li> <li>• I think this picture represents the large amount of waste created by water bottles.</li> <li>• As far as I know, waste bottles (disposable) are still unrecyclable.</li> </ul>
<p><b>'Union Market' sign in the Student Union Building</b></p>	<ul style="list-style-type: none"> <li>• It represents the corporatization of our learning institution. This represents limited choice, non-Canadian products fossil fuel depletion, food system monopolies, and corporate benefit over providing quality food at a reasonable price. This is about international food markets and Dalhousie trying to save a buck on the backs of impoverished nations.</li> <li>• We need more local products in our community, better availability – Aramark/Sodexo suck.</li> <li>• The food is disgustingly unhealthy, not local, not organic, run for profit, international organization. It is still expensive and drains students' financial resources.</li> <li>• The campus does not have healthy and fresh food stations. It's horrible.</li> <li>• Too much waste.</li> <li>• Food places waste too much food.</li> <li>• Sodexo.</li> <li>• I think that this picture represents Sodexo and I think they are the worst environment problem on campus, through the products they sell, the overpricing, excessive packaging, and waste generated when holding events (i.e. paper plates, plastic utensils,</li> </ul>

	and plastic cups). could go on, but I'll spare you.
<b>Dumpster with garbage alongside</b>	<ul style="list-style-type: none"> <li>• Garbage over-filling.</li> </ul>
<b>Litter among trees</b>	<ul style="list-style-type: none"> <li>• Garbage contamination which could have a negative effect on the environment.</li> </ul>
<b>Life Science Centre</b>	<ul style="list-style-type: none"> <li>• Energy inefficiency in old buildings.</li> </ul>
<b>Parking lot between Howe Hall and Sir James Dunn building</b>	<ul style="list-style-type: none"> <li>• Too many cars travelling to and from Dalhousie; need effective transit and carpooling.</li> <li>• People driving instead of public transport.</li> <li>• Not doing the things that we know would make a difference – it's symbolic.</li> <li>• Poor public transit; resulting in too many cars at Dalhousie.</li> <li>• Ride the bus or walk.</li> <li>• Over use of vehicles – poor public transit.</li> <li>• Carbon emissions.</li> <li>• Pollution.</li> <li>• Cars.</li> <li>• Too many cars.</li> <li>• Whose cars are they? We need better bus routes from areas outside of Halifax. Clayton Park is where many professors live.</li> <li>• Air pollution from cars.</li> <li>• Pollution, overpopulation and urbanization.</li> <li>• Automobile-dependant campus.</li> <li>• Too many people drive to school.</li> <li>• Students not making use of public transport but driving their cars instead.</li> <li>• Too many gases and pollutants are getting into the atmosphere.</li> <li>• This shows how our campus is not encouraging students to make</li> </ul>

	<p>use of environmentally-friendly travel options.</p> <ul style="list-style-type: none"> <li>• Car emissions pollute the air we breathe and the ozone.</li> <li>• No need for everyone to drive; more than enough public transportation available and many people who can walk do not.</li> </ul>
<b>Hole in the wall of a building</b>	<ul style="list-style-type: none"> <li>• A lot of buildings are old and energy inefficient.</li> </ul>
<b>Booster Juice’s Styrofoam cups</b>	<ul style="list-style-type: none"> <li>• Too much waste being produced, it needs to be more sustainable.</li> <li>• Use of disposable cups (especially Styrofoam).</li> <li>• Styrofoam cups are not recyclable.</li> <li>• The cause of more waste to come. There is no reason that they cannot use compostable cups.</li> <li>• Styrofoam should only be used as a building material. Everyday use as a cup is wasteful and pointless.</li> <li>• We are a very wasteful society. Use reusable containers.</li> </ul>
<b>Industrial sized dumpster</b>	<ul style="list-style-type: none"> <li>• Waste production.</li> </ul>
<b>Recyclables in garbage can</b>	<ul style="list-style-type: none"> <li>• People throwing recycle-able materials in the garbage.</li> <li>• People do not want to recycle.</li> <li>• Even the attempts made to recycle are ignored by most students.</li> <li>• No one recycles! It makes me mad and sad.</li> <li>• Wasted landfill space.</li> <li>• It represents that no one has a concern for doing the little minor things they can to do help the environment.</li> <li>• Problems with properly getting rid of waste.</li> <li>• People not recycling.</li> <li>• Recycling problem.</li> <li>• Huge waste of energy to keep products at a constant temperature.</li> <li>• There is still a great deal of trash on campus that is not properly</li> </ul>

	<p>recycled. More has to be done with this problem.</p> <ul style="list-style-type: none"> <li>• Recycling.</li> <li>• Students do not all know how to recycle properly.</li> <li>• Improper garbage and recycling selection.</li> <li>• Recyclable bottles going into the garbage, great pacific garbage patch anyone?</li> </ul>
<p><b>Decorative lights in trees in the atrium of the Killam Library</b></p>	<ul style="list-style-type: none"> <li>• Wasted energy.</li> <li>• The waste of electricity on campus, especially the McCain. The lights were of all of Christmas and spring break. There is no need. Turn off the lights!</li> </ul>
<p><b>Pepsi vending machine</b></p>	<ul style="list-style-type: none"> <li>• Pepsi monopoly it uses gas, plastic; has terrible business ethics; and it keeps local out.</li> <li>• It you're thirsty, you can choose between soft drinks in non-recyclable containers or a drink from a water fountain that tastes like a mouthful of mould. Strategically placed water coolers would solve the problem: clean water and the companies wish and reuse the bottles.</li> </ul>
<p><b>Littered cigarette butts</b></p>	<ul style="list-style-type: none"> <li>• Bad image, contamination, bad habits.</li> <li>• The mind set of littering is very obvious here and it will spread!</li> <li>• Cigarette butts are over what is supposed to be a SMOKE FREE campus!</li> <li>• Smoking.</li> <li>• Cigarettes are gross!</li> <li>• It represents disrespect and filth.</li> <li>• Tobacco butts causing litter and pollution.</li> <li>• Littering on campus.</li> <li>• Need more cigarette bins and enforcement.</li> <li>• Litter and smoking on campus suck.</li> <li>• Smoking on campus and littering the butts on the ground; second</li> </ul>

	<p>hand smoke too.</p> <ul style="list-style-type: none"> <li>• This represents littering and air pollution. Smoking is bad. I want a scent-free Dalhousie.</li> <li>• People smoking in a non-smoking area and leaving their butts behind.</li> <li>• Cigarette butts on the ground.</li> <li>• Overall bad imagine for Dalhousie; disgusting.</li> <li>• Cig butts everywhere are sick.</li> <li>• We are supposed to be smoke free.</li> <li>• Cigarette butts outside on Studley.</li> <li>• The smoking and environmental impact of littering all together.</li> <li>• Environmental apathy.</li> <li>• Basically just litter in general, all of the pictures of litter are probably the worst.</li> <li>• Cigarette butts on the ground.</li> <li>• Health and environmental damage.</li> <li>• Smokers who pollute the air and environment.</li> </ul>
<p><b>Empty bike racks</b></p>	<ul style="list-style-type: none"> <li>• People not choosing the better alternative, albeit recycling in Halifax in the winter is not very enticing.</li> <li>• Access to good bike racks and not more people using public transport and bikes.</li> <li>• Nobody bikes here!</li> <li>• Need better bike racks.</li> <li>• More emphasis on sustainable transportation, more bike racks in more locations and less concrete, more sustainable building materials.</li> <li>• No one is biking. It is winter but still.</li> <li>• It represents the amount of fossil fuels that are emitted into our</li> </ul>

	<p>atmosphere due to over use of cars.</p> <ul style="list-style-type: none"> <li>• Lack of bicycle use and instead using cars for transportation.</li> </ul>
<b>Lighting in Studley Gym</b>	<ul style="list-style-type: none"> <li>• Waste of energy. Lack of sustainability practice.</li> </ul>
<b>Over filled waste bin outside</b>	<ul style="list-style-type: none"> <li>• Over use of waste management.</li> <li>• Because students do not have the time to recycle and students live in a disposable society.</li> <li>• Garbage should be properly disposed of.</li> <li>• Litter, if there isn't room in the receptacle then people feel inclined to leave it on the ground.</li> <li>• Over consumption.</li> <li>• Too much waste.</li> <li>• Build up of trash. It seems to be mostly disposable coffee cups.</li> </ul>
<b>Air conditioner</b>	<ul style="list-style-type: none"> <li>• Energy use – massive!</li> </ul>
<b>Littered pop bottle</b>	<ul style="list-style-type: none"> <li>• General trash problem.</li> <li>• We litter a lot.</li> <li>• Littering; huge disposals created by food services.</li> <li>• Litter, which is easy to prevent.</li> <li>• Trash in areas that are designated to be for plants, etc. It should be ride of and maintained.</li> <li>• Littering on campus.</li> <li>• Litter.</li> <li>• Every garbage can I pass on campus is almost always close to it, that's what I see when I look at this picture.</li> <li>• Litter all over the place.</li> </ul>
<b>Opened windows during winter</b>	<ul style="list-style-type: none"> <li>• We don't conserve energy; spend it. Need better energy sources, conservation, and garbage management.</li> <li>• Wasted energy for absolutely no reason.</li> </ul>

	<ul style="list-style-type: none"> <li>• Because we are using a lot of energy to heat a large building that are not properly sealed.</li> </ul>
<b>Littered broken beer bottle</b>	<ul style="list-style-type: none"> <li>• The picture shows a broken beer bottle which is very dangerous and can cause injury.</li> <li>• Broken glass on the area where people way walk there.</li> <li>• Not recycling the bottles but throw them aside the road.</li> </ul>
<b>Computer log in screen at Killam Library</b>	<ul style="list-style-type: none"> <li>• Power usage – unnecessary; they are left on overnight.</li> <li>• Things being left on unnecessarily.</li> <li>• The computers are on all day and night, it burns so much energy.</li> <li>• Computers are left on 24/7, when they should be turned off to save energy.</li> <li>• The technological attitude; when man has become divorced from the world, he cannot see his natural moral and spiritual destruction.</li> <li>• So many computers need to be switched off.</li> <li>• Computers being left on all the time are wasting electricity plus the power used to cool the building.</li> </ul>
<b>Gazette newspaper stand</b>	<ul style="list-style-type: none"> <li>• Always a ton of copies left and it will just need to be recycled.</li> <li>• Free weekly newspapers are causing a lot of waste.</li> </ul>
<b>Litter and cigarette butts</b>	<ul style="list-style-type: none"> <li>• You could probably fill a garbage bag with those butts.</li> </ul>
<b>Plastic bag caught in tree</b>	<ul style="list-style-type: none"> <li>• Plastic pollution; it consumes non-renewable resources in its production and endangers wildlife and habitat with improper disposal.</li> <li>• Pollution.</li> <li>• It looks dirty and disgusting.</li> </ul>
<b>Idling buses on LeMarchant street</b>	<ul style="list-style-type: none"> <li>• Idling is unnecessary and avoidable.</li> </ul>



	<ul style="list-style-type: none"> <li>• Greenhouse gas.</li> </ul>
<b>Cooler with food in the atrium of the Killam Library</b>	<ul style="list-style-type: none"> <li>• Having open refrigerators is the stupidest thing ever; nobody would leave their fridge at home open.</li> <li>• Food preservative is very dangerous for our health. All of food items contain food preservatives. We should be eating fresh food.</li> <li>• Food outlets encourage unsustainable food choices.</li> <li>• If we cut down on our intense amounts of packaged products, we would have to worry less about garbage and recycling and we would be using less energy.</li> <li>• The excessive amount of disposable and container food on campus.</li> <li>• So many problems: packaging, no local food, bottled water, and open coolers (harder to keep cold). This would be so easy to fix.</li> <li>• Constant energy and cooling leaves the fridge.</li> <li>• No healthy, sustainable food options on campus.</li> <li>• No local and non-disposable food options.</li> <li>• Packaging waste.</li> <li>• More convenient bussing is needed.</li> </ul>

#### 4. Discussion

The results obtained were unexpected by the research team. The picture depicting cigarette butts was chosen the most in the top ten environmental problems on campus and was also identified as the worst problem on campus. Dalhousie has been a non-smoking university since September 1, 2003. On the University's website they claim that smokers are asked to leave University property to smoke and "while smoking on public property smokers are asked to avoid littering" (Dalhousie University, 2006). Cigarette butts are not a problem typically discussed in environmental science classes, nor are they typically identified when discussing major environmental issues. However, approximately 4.5 trillion cigarettes are sold annually (Clear up Australia, nd). Their butts often become litter and end up washed

into water-ways. Cigarette butts often comprise a majority of the litter collected during coastal cleanups (TD, 2008; Novotney & Zhao, 1999) and contribute the most to Canadian marine debris (Hinds, 2009). The cigarette filters in butts are composed of cellulose acetate and contain many toxic chemicals that are trapped from the cigarette smoke (i.e. cadmium, arsenic, and lead) which can leach out into the soil and water (Clean up Australia, nd).

The cigarette butts were categorized as representing waste. Of the top ten problems selected by participants, eight of the ten photos represented waste. The categories presented in the photos selected as the top ten environmental problems on campus were waste, transportation, and food issues. There are multiple possible explanations for this.

A possible impact on the results was the number and selection of photographs. It is possible that 43 pictures was too many for people to fully absorb, so having fewer photos might be better in future. Furthermore, there was a lot of repetition of the issues represented in the photographs. Also, asking people to choose ten photographs likely affected the results. People might have gotten bored and simply identified photographs quickly, without much consideration, and written them down. Furthermore, many people had questions about what the photographs represented and asked the researchers for their interpretation, which the researchers were unable to provide without jeopardizing the results. Unlike typical Photovoice projects, where the idea is identified before the photo is taken, in this project the photograph was taken first and then people were asked to associate a problem with it. This allowed for bias as people were not challenged to think about what they *really* thought were the biggest environmental problems on campus. The problems were handed to them directly and all they were asked to do was to pick them out, which does not necessarily require much thought.

Members of the Dalhousie community who participated in this study probably have not been exposed to environmental problems as much as the research team who take environmental science classes at Dalhousie. Therefore, the research team believes the reason waste was identified as the most

problematic environmental issue on campus could be attributed to the fact that it is the most tangible issue and the one that is the most clearly visible on campus. Many of the respondents may have been unaware of the heating plant that burns Bunker C fuel or of the embodied energy of concrete.

The top three environmental problems as seen in figure 3, that were chosen to represent the ‘worst’ environmental problem were categorized as waste as depicted by the cigarette butts (37 of 237), transportation as depicted by the cars in the parking lot (24 of 237) and waste as depicted by a photograph of not recycling (18 of 237). The picture of the campus power plant, which burns Bunker C fuel, was listed as fourth (12 out of 237), followed by another picture of waste (11 out of 237). Due to the low number of responses per picture for this portion, it is believed that the results cannot be used to indicate general sentiments within the Dalhousie community, except to say the perceptions of worst environmental problems are diverse.

The reasons for the failure of the initial attempt to get sufficient photograph submissions from the public could include the fact that they were not provided much time. Posters and a Facebook group were used to promote the project but only four submissions were returned and the group had to re-assess the project methodology. It might be beneficial to have a target group who would have both taken and analyzed the photographs.

## **5. Conclusions and Recommendations**

The results of this research show that cigarette butts are seen as the top environmental problem on campus, followed by not recycling, and Styrofoam cups respectively. The top three problems were all concerned with waste, which is a well known and well seen environmental problem by most people. Better education of the environmental problem, such as waste, may have caused a higher vote count of these photographs. The remaining problems ranked as the top ten environmental problems are: plastic pollution, car use, littering, excessive waste, Tim Horton’s cups, broken glass, and

food. From the top ten environmental problems, the categories of concern were waste, transportation, and food.

Recommendations for a similar project in the future are many. Although 43 photographs represented many environmental problems on campus, 43 photographs were too many to properly analyze in a short period of time. A narrower selection of photographs would help participants more fully analyze the environmental problems they were choosing. Comparably, choosing ten photographs was too many for participants to focus on. If the project were to be recreated, the research group would recommend choosing 20 photographs, and choosing a top three.

Education was another factor that the research group felt affected the results. Since the photographs were not labelled, participants may not have known what the photographs represented, and therefore did not include them in their top ten choices. To ameliorate this aspect, true Photovoice methodologies could be practiced, or the photographs could be identified with the problem they represented. To employ proper Photovoice techniques, a smaller group should be targeted, given more direction, and incentives.

This research is important for Dalhousie and can be used in the Greening the Campus project. Since the top ten environmental problems, as chosen by members of the Dalhousie community, have been identified, these problems can be seen as priorities in terms of places for improvement. These results should be presented to: the Office of Sustainability, Dalhousie Student Union, student organizations such as SustainDal, and Dalhousie Administration in general.

The results from this study suggest actions to improve environmental problems on campus, according to the Dalhousie community should be: reducing waste and improving waste management, improving public transportation and reducing car use, addressing food issues such as distribution, sourcing, and packaging.

Along with addressing these issues, education and awareness of environmental problems and solutions is essential. In order for these issues to be properly addressed and solved, the help of Dalhousie's community is necessary. This Photovoice project has been beneficial for the Greening the Campus movement at Dalhousie to help determine what members of the Dalhousie community feel are essential improvements.

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## Appendix

### Appendix 1: Ethics proposal

**Environmental Programmes  
Faculty of Science  
Ethics Application**

**APPLICATION FOR ETHICS REVIEW OF RESEARCH INVOLVING HUMAN PARTICIPANTS  
UNDERGRADUATE THESES AND NON-THESIS COURSE PROJECTS**

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### GENERAL INFORMATION

1. **Title of Project:** Dalhousie University Photovoice: Environmental Problems on Campus

2. <b>Faculty Supervisor(s)</b>	<b>Department</b>	<b>Ext:</b>	<b>e-mail:</b>
Dr. Tarah Wright	Environmental Programmes		tarah.wright@dal.ca
3. <b>Student Investigator(s) Number:</b>	<b>Department</b>	<b>e-mail:</b>	<b>Local Telephone</b>

Nicole d'Entremont, Christiane Verstraten, Lisa Radzikowski, Kritine Richer, Kaley Cochrane, Anna-Sarah Eyrich  
Environmental Programmes

4. **Level of Project:**  
**Non-thesis Course Project** [ X ] Undergraduate [ ] Graduate Specify course and number: ENVS 3502

5. a. **Indicate the anticipated commencement date for this project:** February 18, 2009

b. **Indicate the anticipated completion date for this project:** April 10, 2009

### SUMMARY OF PROPOSED RESEARCH

#### 1. **Purpose and Rationale for Proposed Research**

*Briefly describe the purpose (objectives) and rationale of the proposed project and include any hypothesis(es)/research questions to be investigated.*

We wish to discover what the Dalhousie Community (students, staff, and faculty) perceive as being environmental programs on the Dalhousie Campuses (Carleton, Studley, and Sexton). Our objectives are to:

- Promote awareness in the Dalhousie Community about environmental problems on campus
- To identify the main areas of concern, develop recommendations, and present these to key policy-makers at Dalhousie to generate a positive change.

#### 2. **Methodology/Procedures**

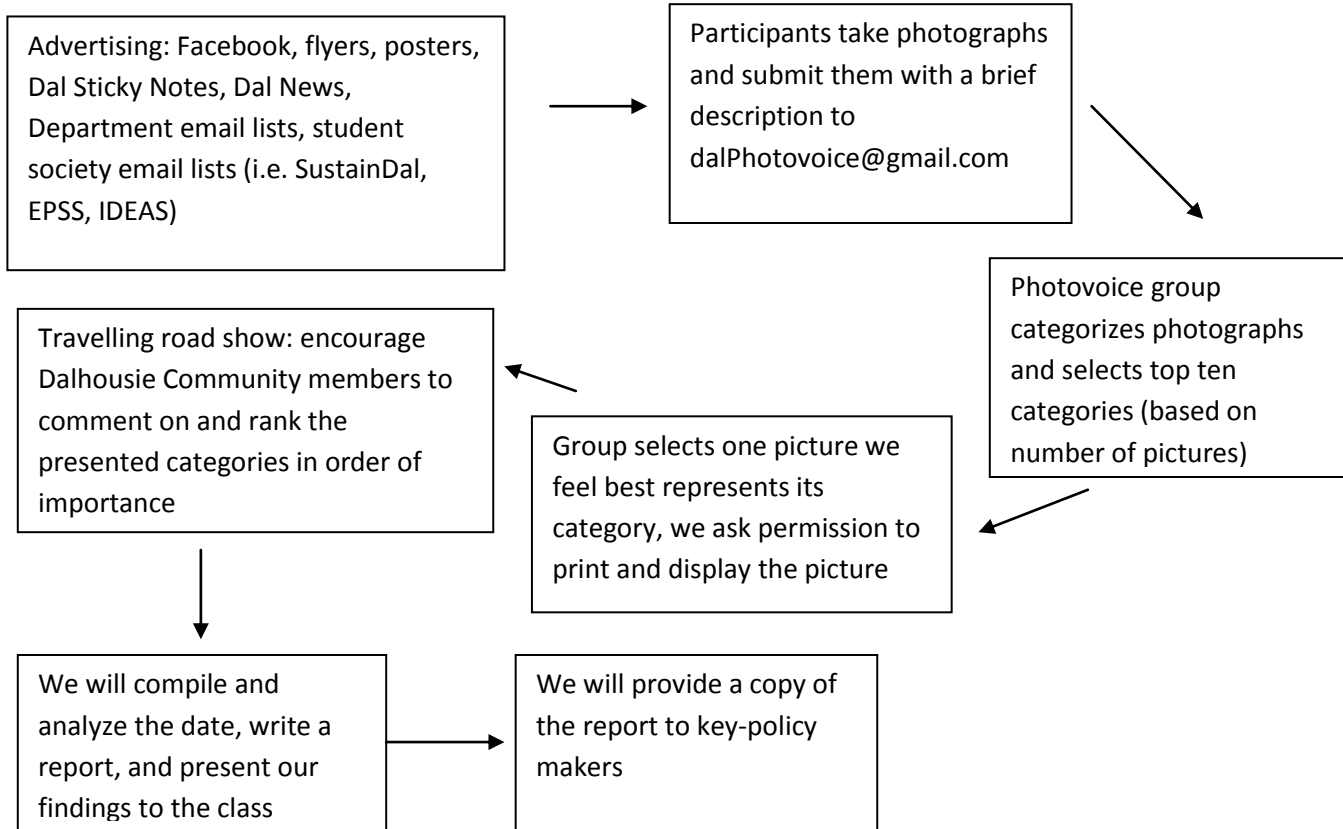
a. *Which of the following procedures will be used? Provide a copy of all materials to be used in*



**this study..**

- Survey(s) or questionnaire(s) (mail-back)
- Survey(s) or questionnaire(s) (in person)
- Computer-administered task(s) or survey(s)]
- Interview(s) (in person)
- Interview(s) (by telephone)
- Focus group(s)
- Audio taping
- Videotaping
- Analysis of secondary data (no involvement with human participants)
- Unobtrusive observations
- Other, specify *\_We will have a sheet and ask people to rank the photographs. We will also ask participants to submit photographs by email; we will have out flyers to encourage participation in this project.*

**b. Provide a brief, sequential description of the procedures to be used in this study. For studies involving multiple procedures or sessions, the use of a flow chart is recommended.**



**3. Participants Involved in the Study**

**a. Indicate who will be recruited as potential participants in this study.**

- Dalhousie Participants:  Undergraduate students  
 Graduate students  
 Faculty and/or staff  
 Non-Dal Participants:  Children

Adolescents

Adults

Seniors

Persons in Institutional Settings (e.g. Nursing Homes, Correctional

Facilities)

Other (specify) \_\_\_\_\_

**b. Describe the potential participants in this study including group affiliation, gender, age range and any other special characteristics. If only one gender is to be recruited, provide a justification for this.**

ANY Dalhousie Community member identified above can participant regardless of gender, age, etc.

**c. How many participants are expected to be involved in this study?** 200 (we hope and remain optimistic!!)

#### 4. Recruitment Process and Study Location

**a. From what source(s) will the potential participants be recruited?**

Dalhousie University undergraduate and/or graduate classes

Other Dalhousie sources (specify) faculty, staff (i.e. facilities management, administrative staff, part-time employees)

Local School Boards

Halifax Community

Agencies

Businesses, Industries, Professions

Health care settings, nursing homes, correctional facilities, etc.

Other, specify (e.g. mailing lists) \_\_\_\_\_

**b. Identify who will recruit potential participants and describe the recruitment process.**

*Provide a copy of any materials to be used for recruitment (e.g. posters(s), flyers, advertisement(s), letter(s), telephone and other verbal scripts).*

*Everyone in our group will recruit people. We will use flyers (leave place and also physically present to people), posters, Dal Sticky Notes, social networking sites (facebook), emails, word-of-mouth*

#### 5. Compensation of Participants

**Will participants receive compensation (financial or otherwise) for participation? Yes  No**

If Yes, provide details:

#### 6. Feedback to Participants

**Briefly describe the plans for provision of feedback and attach a copy of the feedback letter to be used.** Wherever possible, written feedback should be provided to study participants including a statement of appreciation, details about the purpose and predictions of the study, contact information for the researchers, and the ethics review and clearance statement.

Note: When available, a copy of an executive summary of the study outcomes also should be provided to participants.

*(Tarah, we need to ask you about this!)*

We might send emails back to people who have submitted photographs to say thank you for their time and participation. We could also send out a brief summary of our findings and recommendations and tell people what they can continue to do to work towards greening the campus.

### **POTENTIAL BENEFITS FROM THE STUDY**

**1. Identify and describe any known or anticipated direct benefits to the participants from their involvement in the project.**

The participants will have an increased awareness about environmental issues on campus, they will know that their voices were heard by the administrative staff and hopefully their actions will result in a positive change. There is the potential their photograph could be displayed in public.

**2. Identify and describe any known or anticipated benefits to society from this study.**

If we identify the categories of environmental problems that the community thinks are most important and we provide reasonable suggestions for action to generate an improvement there is the possibility that action will be taken to address these problems. If action is taken it would benefit and inspire change in wider community.

### **POTENTIAL RISKS TO PARTICIPANTS FROM THE STUDY**

**1. For each procedure used in this study, provide a description of any known or anticipated risks/stressors to the participants. Consider physiological, psychological, emotional, social, economic, legal, etc. risks/stressors**

No known or anticipated risks

Explain why no risks are anticipated: People who do not want to participate do not have to participate. If people expose a problem which could jeopardize them (financially, socially, etc), they have the option of keeping their information confidential.

Minimal risk

Description of risks:

Greater than minimal risk

Description of risks:

**2. Describe the procedures or safeguards in place to protect the physical and psychological health of the participants in light of the risks/stresses identified in question 1.**

People have the option to keep their information confidential. After the project is done we will destroy all our information.

#### **Informed consent process**

Refer to: <http://pre.ethics.gc.ca/english/policystatement/section2.cfm>

**1. What process will be used to inform the potential participants about the study details and to obtain their consent for participation?**

Information letter with written consent form; provide a copy

Information letter with verbal consent; provide a copy

Information/cover letter; provide a copy

Other (specify): Voluntary participation. They will take part if they want to.\_\_\_\_

**2. If written consent cannot be obtained from the potential participants, provide a justification.**

We assume that members who participate give us their consent.

### **ANONYMITY OF PARTICIPANTS AND CONFIDENTIALITY OF DATA**

**1. Explain the procedures to be used to ensure anonymity of participants and confidentiality of data both during the research and in the release of the findings.**

*Only ten pictures will be shown/ displayed. We will email and ask the photographer if they give us permission to print their picture and display their name*

**2. Describe the procedures for securing written records, questionnaires, video/audio tapes and electronic data, etc.**

*Only group members have access to the email account. The final report will contain the ten pictures and will be store on the Environmental Sciences website and the Environmental Programmes department.*

**3. Indicate how long the data will be securely stored, the storage location, and the method to be used for final disposition of the data.**

Paper Records

Confidential shredding at the END OF APRIL 2009

Data will be retained indefinitely in a secure location

Data will be retained until completion of specific course.

Data will be retained until completion of specific course.

Audio/Video recordings

erasing of audio/video tapes after \_\_ years

data will be retained indefinitely in a secure location

data will be retained until completion of specific course

Electronic Data

erasing of electronic data APRIL 2009

data will be retained indefinitely in a secure location

data will be retained until completion of specific course

Other: ten photographs will be on poster and in final report and will be kept in the environmental programmes department.

Storage location: environmental programmes department

### **ATTACHMENTS**

Please **check** below all appendices that are attached as part of your application package:

**Recruitment Materials:** A copy of any poster(s), flyer(s), advertisement(s), letter(s), telephone or other verbal script(s) used to recruit/gain access to participants.

**Information Letter and Consent Form(s).** Used in studies involving interaction with participants (e.g. interviews, testing, etc.)

**Information/Cover Letter(s).** Used in studies involving surveys or questionnaires.

Parent Information Letter and Permission Form for studies involving minors.

[ ] **Materials:** A copy of all survey(s), questionnaire(s), interview questions, interview themes/sample questions for open-ended interviews, focus group questions, or any standardized tests used to collect data.

<b>SIGNATURES OF RESEARCHERS</b>	
_____ Signature of Student Investigator(s)	_____ Date
_____ Signature of Student Investigator(s)	_____ Date
_____ Signature of Student Investigator(s)	_____ Date
_____ Signature of Student Investigator(s)	_____ Date
_____ Signature of Student Investigator(s)	_____ Date
_____ Signature of Student Investigator(s)	_____ Date
_____ Signature of Student Investigator(s)	_____ Date

**FOR ENVIRONMENTAL PROGRAMMES USE ONLY:**

Ethics proposal been checked for eligibility according to the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans

\_\_\_\_\_  
Signature Date

**Appendix 2: Map of Dalhousie University campus**

This is a map of Dalhousie's three campuses. Retrieved April 9<sup>th</sup>, 2009 from:  
<http://learningandteaching.dal.ca/nas/map.html>



**Appendix 3:** Ballot sheet for participants to rank photographs

Select 10 photos (in no specific order) that you feel represent the worst environmental problems on Dalhousie's Studley Campus.

A\_\_\_\_ B\_\_\_\_ C\_\_\_\_ D\_\_\_\_ E\_\_\_\_ F\_\_\_\_ G\_\_\_\_ H\_\_\_\_ I\_\_\_\_ J\_\_\_\_

Circle the one that you feel represents the worst problem. What problem does this represent?

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**Appendix 4: Photographs labelled 1 to 43**



1. JPG



2.JPG



3.JPG



4.JPG



5.jpg



6.JPG



7.JPG



8.jpg



9.JPG



10.JPG



11.JPG



12.jpg



13.JPG



14.jpg



15.JPG



16.jpg



17.JPG





18.JPG



19.JPG



20.jpg



21.JPG



22.JPG



23.jpg



24.jpg



25.jpg



26.JPG



27.JPG



28.JPG



29.jpg



30.jpg



31.jpg



32.JPG



33.jpg



34.jpg



35.jpg



36.jpg



37.jpg



38.jpg



39.jpg



40.jpg



41.JPG



42.jpg



43.JPG