

**Land Use and Forest Management:
A History of Sustainability at Colgate University**

ENST390: Community-Based Study of Environmental Issues

PJ Bell, Kimberly Duncan, and Martha Montufar

Spring 2017

Colgate University

Table of Contents

Executive Summary	3
1. Introduction	4
2. Literature Review	4
2.1 Sustainability, Forest management and Land Use: A Global Perspective	
2.2 Sustainability and Land Use in Higher Education	
2.3 Land use and Forest management in Central New York	
3. Methods	7
3.1 Scope of the Project	
3.2 Sustainability Criteria	
3.3 Consulted Resources	
4. Results	10
4.1 Early Land Use and Forest Management	
4.2 Frederick Law Olmsted	
4.3 Willow Path and Taylor Lake	
4.4 Olin Life Sciences Center	
4.5 Preserving the Tradition of Aesthetics	
4.6 Contemporary Colgate	
5. Discussion	18
5.1 Social Pillar	
5.2 Economic Pillar	
5.3 Environmental Pillar	
6. Recommendations & Conclusions	23
6.1 Continue current sustainable practices	
6.2 Encourage native planting	
6.3 Increase ‘natural’ and reduced-mow areas	
6.4 Work with social criteria to give attention to other pillars	
Bibliography	25
Appendices	28
Appendix I: Interview Questions	
Appendix II: Informed Consent Form	

Executive Summary

Colgate University has taken pride in their recognition of the most beautiful campus in the nation. This recognition took into consideration, among other things, the physical landscape of campus as it fits together with the rest of the Chenango Valley in Central New York. However, historically, Colgate has not fully embraced the sustainability measures that are important to its development currently and moving forward. As a part of the celebration of Colgate University Bicentennial, we measure the sustainability practices that were involved in making decisions that concern the management of forested and open-area lands since the hill was acquired in 1826.

Our research question asks: *how has the Colgate campus changed throughout history in regards to forested areas and open*

1. Introduction

Colgate University has continuously been praised for its beautiful campus in Hamilton, NY. The idealization of the Colgate “Hill” as a historical and memorable asset to every student’s experience in their time at this institution is an important, distinguishing characteristic of the institution over the years. In recent years, with the Forest Management and Stewardship plan of 2007, the implementation of the Sustainability Office in 2008, and the carbon neutrality goal of 2019, the university has strived to reach and mirror the sustainability goals of the country and other peer institutions. However, the decisions that Colgate University has made for the management of their forested and open area lands have not always been sustainable in concept or practice. This report then aims to look at the historical decisions in regards to the social, economic, and environmental aspects of sustainability that have shaped the landmarks that make the Colgate “Hill” and which students interact with the most. Using primarily archival sources and interviews from key informants, we address the following research questions:

How has the Colgate campus changed throughout history in regards to forested areas and open lands? What were the social, economic, and environmental aspects that led to these changes? At what point were sustainability principles implemented in the decisions that led to the changes in forest management and land use practices?

As the university’s 200 years celebration is approaching in 2019, it is important to recognize the achievements and improvements in sustainable development that the institution has been recognized for. Understanding the past decisions involving sustainability or the lack thereof can help us as a university move forward with the master plan that the administration has proposed to achieve in the next few years. This report will first review the existing literature on forest management and land use in a global, national, and local perspective, followed by a thorough explanation of our methods and results and the analysis of the results. The report will conclude with recommendations that the administration can take in moving forward.

2. Literature Review

2.1 Sustainability, Forest management and Land Use: A Global Perspective

The world’s forests are threatened largely because of deforestation practices, climate change, and the increased pressure to expand agricultural fields for profit. Since the start of the industrial period, the increasing demand to use methods for changing the land that would yield a higher gain has been prevalent. The consequences of industrial farming and grazing, forest fires, industrial pollution, and climate change have led to an unsustainable use of land and deforestation around the world. Forests are not only essential habitats that foster biodiversity but also consist of ecosystem services that benefit human communities such as timber, fuel wood, recreational activities, and oxygen production (Ba!kent, Kele!, Kadio"ulları, & Bingöl, 2010, p. 145). In recent years, conservation practices have become popularly implemented in land usage and forest management. In the last 10 years, there has been a shift to balance the economic and the conservation side of land use by introducing community based conservation strategies that seek for alternative sources of economic profit, while maintaining the land (Dalle, Pulido, & de Blois, 2011, p. 1558). Since the late 1980s, the process of “sustainability” has become a topic of interest for the world due to the consensus that practices before then were not conducive to a lasting environment (Theis & Tomkin, 2012, p. 6). Creating a practice of ‘sustainable’ forest management and land use, in general, is needed to promote development that meets the “needs of

the present without compromising the ability of future generations” (Theis & Tomkin, 2012, p. 6). The rise of sustainable development was then defined into three main considerations-- environmental, social, and economic (Giddings, Hopwood, & O’Brien, 2002, p. 189). The circles of sustainability, divided into 4 subsections (environment, social, political, and economics) provide the criteria and terms needed to measure sustainability as a concept and for implementation (James, 2015, p. 14). The circles of sustainability used by the United Nations envision the four sections as interconnected and should be understood holistically (James, 2014, p. 5). These parameters should be interconnected and are the foundations that should drive decision making for forest management and land use.

Decision-making, however, often falls under one or two pillars that have to do with

p. 5). In addition, the Sustainability and Climate Action plan adopted in 2011 commits Colgate to the reduction and offsetting of greenhouse emissions (Colgate University, 2011). By taking steps to quantify Colgate's Forest's carbon sequestration, the institution has better knowledge of the contribution to climate neutrality efforts (Colgate University, 2013, p. 3, p. 22). Understanding the dynamics of land use and forest management in Colgate's history and the current efforts that the university is taking to promote sustainability practices in this sector are important to address the decisions that will shape the university in the future with the Master Plan that will change the physical campus.

3. Methods

3.1 Scope of the Project

This paper is examining the questions: How has the Colgate campus changed throughout history in regards to forested areas and open lands? What were the social, economic, and environmental aspects that led to these changes? At what point were sustainability principles implemented in the decisions that led to the changes in forest management and land use practices? At what point were sustainability principles implemented in these decisions? In order to address the research question, methods of research and the synthesis of the data were developed. First we need to establish the scope of our project and define the area that our research question suggests as 'Colgate's campus'. Our scope is restricted to the hill: from Broad Street to the ski hill and cross-country trails. We included mowed areas like the academic and residential quads and the area around Taylor Lake, unmowed areas like the Ski Hill and cross-country trails, and areas that receive some manicuring but are largely left to nature. We chose this area because these are the areas most students interact with throughout their four years. Colgate is often symbolized by our hill and it is a nostalgically significant visual for current students and alums. The notion of the hill is a fairly romanticized tradition that situates Colgate as the nucleus in the center of rolling fields and woods and is something students have identified with since Colgate moved up the hill in the 1820's (Williams, 1969, p. 29). Additionally, these areas are most subject to change given the new Master Plan to be executed in the next couple decades. Temporally, the scope of the period we considered in this research spans Colgate's history from its foundation in 1819 to the present. Though some time periods have more significant events than others, we have considered data from the entirety of Colgate's history.



[Figure 1: Scope of Campus (Colgate University)]

3.2 Sustainability Criteria

Our first task to resituate our project within the contemporary conversation about sustainability in land use and forest management was to define a method with which we would use to synthesize the data that we collected. Our foundation is based on the contemporary definition of the term 'sustainability' by the Brundtland Commission in 1983 which states that

sustainability meets the “needs of the present without compromising the ability of future generations” (Theis & Tomkin, 2012, p.6). Within this definition, we are using a three-pillared approach, which function as categories for our data. The criteria for our pillars—social, economic, and environmental— manifested with two approaches: using literature to identify key terms used to categorize each pillar and using the emergent theory to define some characteristics of the pillars within the data we collected. We consulted the Circles of Sustainability method to help define some initial descriptors of our pillars. Social criteria were defined as cultural or traditional customs, equitable labor, and quality of life; the economic criteria were defined as income and budget; and the environmental criteria were defined as increased biodiversity, water and air quality, and carbon footprint (James, 2014, 160).

We also decided to supplement this approach with a bottom-up emergent theory method. The emergent theory is a method that is established through the process of research and defines constructs as research is conducted (Eisenhardt, 1989, 536). As a research question is subject to development over time, we felt it was vital to utilize the emergent theory to define new constructs in our sustainability pillars.



[Figure 3: Sustainability Criteria: Social, Environment, and Economic]

3.3 Consulted Resources

Since the research question spans the entirety of Colgate’s existence, there is a need to acquire archival sources as well as contemporary, electronic sources. We initially approached the archival research by looking for sources that refer to keywords like:

Forest	Maintenance	Grading
Land use	Grounds	Replanting

We also looked at sources with key people and places, such as:

Samuel Payne	Willow Path
Taylor Lake	Olin Life Science Building
Seven Oaks Golf Course	Cross Country Trails

The archives we found most useful for visual data are the boxes in Buildings and Grounds (A1000), including images of: Willow Path, Taylor Lake, Olin Life Science Building, Academic Quad, and aerial views of campus. The most useful printed archival information was the Board of Trustees Minutes Collection (A1001). Within the minutes, updates on the campus are given yearly as well as any mention of alumni donations or shift in landscape. As far as archival data, not much was available that explicitly addressed land use and forest management so it was vital to consider lack information available as data as well.

The electronic resources we used provided more contemporary knowledge of Colgate’s land use and forest management. Within the electronic archives, we consulted official documents from the school like the Forest and Open Lands Stewardship Plan, Colgate’s Forest Carbon Inventory and Projections, and Colgate’s Sustainability and Climate Action Plan. Other documents listed in the literature review helped with the analysis of our data. Additionally, an electronic book entitled *A History of Colgate University 1819-1969*, by Howard D. Williams, was consulted as well.

Finally, the third source of information came from interviews conducted with Colgate faculty and staff. The interviews conducted were done so with the consent of the interviewee's information to be included in this report with one of their identities were abstained. The three interviews were conducted separately for a half an hour each. The questions we posed are indicated in the appendix. The interviews of those who consented to their identities being revealed are as follows:

#

“[Frederick] Olmsted’s visit in 1883 was crucial, because before 1883 the campus oriented East-West on the hill, with college street as a boundary, and a swamp between the hill and College Street. The Colgate Academy, built in 1872, was located between College Street and the swamp. Olmsted used the Academy to orient the campus South-North, which has been the primary focus for the last 150 years. The Academy was set along the only trail that ran through the swamp and up the hill, which would later become Willow Path.”(B. McVaugh, personal communication, April 4, 2017).

McVaugh credits Olmsted for the distinctive park-like features of Colgate’s grounds:

“I know of no other college, and I’ve been to many, with a similar park-like front yard as the intervening between the academic zone and the community. But this idea that there’s an intervening park is almost unique, I know of nothing comparable, and that is, in many ways, the legacy of Olmsted.”(B. McVaugh, personal communication, April 4, 2017).

In Howard D. Williams’ book, *A History of Colgate University 1819-1969* (1969), we found a passage (below) that further details Frederick Olmsted’s visit to Colgate in 1883. Our findings indicate that Olmsted might not have sketched out a plan for Colgate’s grounds, but rather gave suggestions for layout improvements which were later implemented by Professor Taylor. The passage also solidifies our findings of student labor being utilized for the upkeep of grounds. Furthermore, the excerpt reveals that Irish immigrants were employed as janitors and groundsmen to manage Colgate’s campus, marking the origins of what would later become the buildings and grounds department.



[Figure 6: Williams, 1969 (p.179)].

4.3 Willow Path and Taylor Lake

The next notable change in land use and forest management came during the last decade of the nineteenth century, with the creation of Willow Path and Taylor Lake. As our previously mentioned findings from McVaugh explained, there was one walking path, which would later become Willow Path, that connected the Academy with the rest of campus. When Colgate University arranged its sewer lines, a sewage pipe was put in place along the path to connect the Academy to the rest of the system. McVaugh added that:

“In 1893, when Colgate set up its sewer system, it connected pipes from buildings up the hill and the Academy at the bottom of the hill, which led to a leach field on Whitnall Field. The pipes were laid out along Willow Path, which was then filled in and graded, in order to run the sewage out to Whitnall Field.”

Another finding from Williams’ book, *A History of Colgate University 1819-1969* (1969), shows that Professor Taylor began draining the swamp at the bottom of the hill around the same time as the sewage system was being installed. The mud that was dredged from the swamp was used to cover the sewer pipes and grade the path, which was then bordered with willow trees, hence the name Willow Path.



[Figure 7: Williams, 1969 (p.247)]

In the Buildings and Grounds (A1000) archives we found a report from 1946 on Taylor Lake (Figure 8) that presents more background information behind Professor Taylor and the lake. We discovered that the lake was constructed with the goal of creating more space for ice skating, and Professor Taylor acquired the funds to build the lake from an interested group of alumni.



[Figure 8: Taylor Lake, 1946. Buildings and Grounds A1000]

4.4 Olin Life Sciences Center

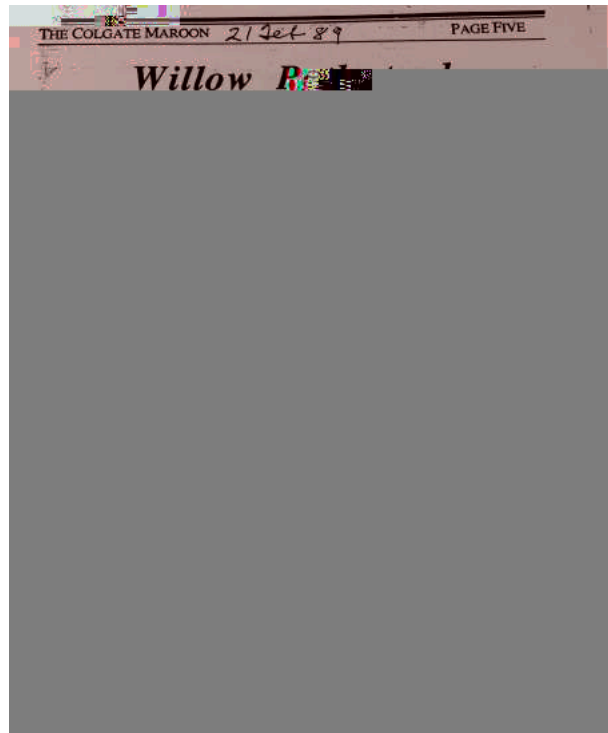
In the 1960s Colgate University received funds from the Olin Foundation to erect a new academic building dedicated to life sciences. In our findings, we discovered that the construction of Olin Hall created controversy on campus due to two issues; the questionable nature of the Olin Foundation, and the slated demolition of the old biology building, Hascall Hall. An archived awareness statement from the Colgate Student Mobilization Committee in 1970 (Figure 9) shows the student's concern with the Olin Foundation's ties to chemical weapons, which "adds death, both human and ecological, to the world community" (Buildings and Grounds A1000). This was the first example we found of the Colgate community advocating for ecological issues not related to campus aesthetics.

[Figure 9: Student Mobilization Committee on the Olin Dedication, Buildings and Grounds A1000, 1970]

4.5 Preserving the Tradition of Aesthetics

Our research on Taylor Lake and Willow Path suggests that they both seemed to create a new standard for the tradition of beautiful aesthetics at Colgate University. The two additions quickly turned into icons of the Colgate campus and were venerated by the faculty, students, and alumni. The Colgate community had such strong bonds to Taylor Lake and Willow Path that they revolted at the thought of changing the grounds and consistently provided funding if needed. For example, we fou

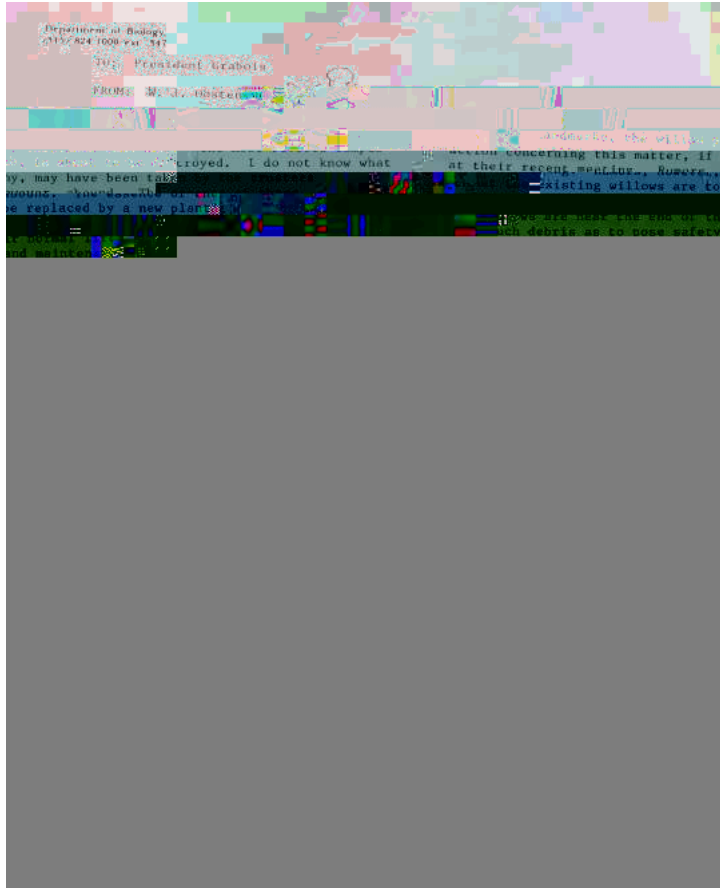
Another finding from the Buildings and Grounds (A1000) archives was a 1989 Colgate Maroon news article (Figure 12), which depicted the troubles with the willow trees and the Campus Planning of Physical Resources Committee's decision to slowly replant Willow Path with beech trees instead of willow trees.



[Figure 12: Romley, 1989. A1000]

However, the Colgate faculty, specifically Professor of Biology and Botany, William Oostenink, ensured that the removal of willow trees from Willow Path would not come about. We found a letter (Figure 13) written on January 16th, 1989 by Professor Oostenink to President Grabois regarding the decision to plant beech trees in lieu of willow trees. Professor Oostenink acknowledges the strong appreciation of tradition at Colgate, identifying himself and most of the community as those who are “unapologetically traditionalists” and expresses his disapproval of the plan (Oostenink, 1989, Figure 13). Furthermore, Professor Oostenink denounces President Grabois as lacking a sense of tradition, and criticizes the administration for not consulting with any of the four botanical experts in the biology department.

Driven by his strong ties to Colgate traditions, Professor Oostenink led the charge to make certain that Willow Path would remain lined with willow trees, not beech trees. We found an old student news article (Figure 14) from The Open ‘Gate that describes Professor Oostenink’s success in procuring replacement willow trees and sustaining the tradition of Willow Path. The article was released on April 28th, 1989, which shows that Professor Oostenink was able to resolve the decade-long issue of finding a similar genus of willow trees in less than four months (Figure 13).



[Figure 13: Oostenink, W. (1989, January 16)]



[Figure 14: The Open 'Gate, 1989]

4.7 Contemporary Colgate

In 2007, Colgate initiated the “Forest and Open Lands Stewardship Plan” which detailed the future of Colgate’s forested and open areas. The report outlines Colgate's goals to enhance their academic mission, provide aesthetic value and recreational opportunities, provide revenue from timber and biomass energy production, provide ecosystem services that result in clean air and water and healthy soils, and finally protect the diversity and health of plants and animals that inhabit the forested areas of campus (Colgate University, 2007). In 2008, the Colgate Office of Sustainability was created along with the hiring of John Pumilio as the Director of Sustainability. The office began hiring student interns to promote sustainability initiatives and culture on campus.

In 2011, “Colgate University released their Sustainability and Climate Action Plan” which boldly announced their goal to achieve carbon neutrality by 2019. The report outlines a clear plan as to how the school will lower their footprint via institutional initiatives on campus as well as a carbon offset purchasing plan (Colgate University, 2011).

5. Discussion

5.1 Social Pillar

In assessing the story of Colgate's campus through a three-pillar lens, we found that the majority of events and data we collected were socially driven. Our social pillar involved the criteria: aesthetics as a sentimental value, cultural or traditional customs, equitable labor, and the quality of life for students. In the written archival data, there were many keywords used to describe the nature of the campus. Words like "beauty", the romanticized notion of "rural", and "lush" were used to speak about the natural spaces like Taylor Lake, the Hill, and Willow Path (Board of Trustees Minutes, 1930). The continual use of these words in many archival documents suggests a strong aesthetic value in these spaces. The vast amount of visual archival data punctuates aesthetics as the main consideration in land use decisions. The visual components of Colgate's campus have been a source of pride long before the Princeton Review named the school as the most beautiful campus in 2015 (Yeoman, 2015). As a result, decisions to

point forward, the lake became a tradition for Colgate students and is a permanent fixture on the landscape. In 1971, Taylor Lake needed to be dredged due to improper irrigation and build up from increased soil erosion. Though it required economic resources to fix and took a toll on the health of surrounding flora, Colgate stakeholders decided it was culturally significant enough to insist it be fixed. This decision is a major indicator that the tradition criterion within the social pillar was the driving force for Colgate's land use decisions at the time. A later example of this criterion guiding land use decisions is when the Russian willow trees along Willow Path were dying and the school proposed to replant the path with Beech trees. The species of Beech tree they proposed required less maintenance and are more native to the area. However, this incited an outcry from the community and a different type of willow tree was found to replace the dying Russian willows (Figure 11). This plan was less economically and environmentally driven but preserved the social quality of traditions on Colgate's campus. This criterion's influence persists today as the Willow Path and Oak Drive areas are required to remain the same and contain their respective types of trees (Buildings and Grounds, personal communication, March 31, 2017). These results reflect the value of cultural symbolism and aesthetic for college campuses, where the landscaping of a campus can be used to "attract and retain faculty, staff and students" (Johnson & Castleden, 2011, p. 354). A study on a Canadian university found that students were for sustainable practices, but were not willing to change certain landmarks around their campus (Johnson & Castleden, 2011, p. 359). Colgate's landmarks like Taylor lake, the Hill, and Willow Path are some of the key important sites in the university that are meant to draw people in, without thinking or making any mention of the environmental and economic aspects.

A third criterion of the social pillar refers to equitable labor. Labor on Colgate's campus also has a foot in the tradition criterion as well, as students worked the lands and built some campus buildings for a physical education requirement up until 1876 (Williams, 1969, p. 87). This labor led to the creation of East and West Halls and as a PE credit was seen as an equitable labor source for an adolescent Colgate. As time progressed, groundskeepers and Buildings and Grounds salaries are expressed in the budget allocations since the move from student-laborers to hired workers (figure 5). Though no information is included on the type of workers hired, there is a steady amount of money allocated to these areas. Currently, the members of Buildings and Grounds and their hired workers are mostly from the surrounding area and have education or degrees in landscape maintenance (Buildings and Grounds, personal communication, March 31 2017). A study in a U.S based university showed that students preferred physical activity when their environment was aesthetically pleasing and was accessible at a shorter distance (Peachy & Baller, 2015, p. 339). The results from on-campus residents in Colgate's early years, reflect this finding--students preferred to do physical activity if it was in an aesthetically pleasing space, of which Colgate's campus would later become. This trend of responsible and equitable labor fit into the criteria of the social pillar and show it is a consistent priority with the landscape.

Lastly, our final criterion for the social pillar is quality of life for students. As previously mentioned, the instigation of some features on the landscape like Taylor Lake were solely created for the improvement of student life. Apart from the lake being used for ice-skating, there are other outdoors opportunities on Colgate's campus that have endured from their creation to improve the quality of life for students. The ski hill, once actually used for skiing, and the cross-country trails on upper campus are two examples of landscape features created around the early 1920's to improve student life (Williams, 1969, p. 309). Another example of this criterion pushing the social pillar to the forefront came the decision to remove parking from the top of the hill in 1936. Though related to the aesthetic criterion, the minimization of parking on campus

was also meant to benefit student health and the atmosphere on campus (Parking regulations, 1936; supplementary). As time generally progressed at Colgate, students and alums became more invested in the landscape. Students and alums were increasingly important stakeholders in the land use and forest management decisions on Colgate's campus (McVaugh, personal communication, April 4, 2017). With this in mind, students considered their quality of life to be intertwined with the aesthetic quality of campus and the maintenance of traditions. This criterion flows neatly back into the other social criteria and reinforces it as one of the driving pillars in land use decisions at Colgate throughout its history.

5.2 Economic Pillar

Through our research we discovered that, along with the social pillar, economic factors influenced many of the decisions that spurred change in the land use and forest management at Colgate University. Our economic pillar involved the criteria: budget allocations, socio-economic income from land use and financial donations from alumni. In the early development

wood-fired boiler that was estimated to “yield about 900 dry tons of biomass” (DeVries, 2013, paragraph 4). Agreements such as these and the efforts of the sustainability office has made Colgate’s administration strive for more environmentally conscious solutions for the future of the university’s forest management and land use.

While the third criteria for environmentally conscious decision making includes bettering the air and water quality, this is not shown in much of the data gathered. The archival data indicated that there was no move on the university’s part to have a better air and water quality, although there were student movements and indirect measures that would lead to a less toxic air and water on campus. The reductions of carbon emissions throughout the years, especially after 2009, indicated that Colgate was invested in creating an overall better space for its students.

A key environmental criteria is having less soil erosion on the landscape and forested area. Essentially, soil erosion occurs when the soil has no nutrients and turns into sand. Soil erosion can occur as a result of deforestation and running water. According to the grand projects made by the administration at Colgate such as Taylor Lake, it seems as this part of the environmental criteria was not reflected in the decisions. After the dredging of Taylor lake in 1910, its banks continue to expand even today, as a result of soil erosion. Multiple flooding throughout the academic year does not help the already weak and nutrient-less soil, which then decreases its biodiversity and richness. While the creation of Taylor Lake was student driven to have more spaces to ice skate in the winter (Student, 1946), the ultimate decision came from the administration resulting in the ecological consequences we see today--i.e. Soil erosion, eutrophication, invasive species, among others (Class discussion, Jan. 26, 2017). This decision further reinforces that the environmental pillar of sustainability was not a factor in the first 100 years of Colgate’s existence. However, there has been a change in the way that Colgate views its property in recent years. Buildings and Grounds mainly envisions the Colgate “hill” as being modeled after the rest of the Madison Valley (Buildings & Grounds, personal communication, March 31, 2017), which means having a lot of green space and being surrounded by forest. One of the ways that the department of B&G helps to conserve soil is through the practice of selective logging, in which they log only old-age trees or unhealthy trees to open the canopy and allow saplings to grow. While their main concern is to minimize their impact in wild areas and having un-mowed areas, B&G works on projects that revitalize the forest as a whole, including the forest and reuse the old wood that they have gained from the logging. Studies and surveys have shown that there is a higher concern for forestry and wildland preservation as younger urban dwellers have shifted their interests from utilitarian beliefs to associating nature with more spiritual and ecological growth (Vaske, Donnelly, Williams, & Jonker, 2001, p. 762). Sites on campus such as the Old golf Course, the cross country trails, and the ski hill has predominantly been left “wild” and B&G have had a minimized ecological impact because they are where students chose to take walks, meditate, and be one with nature.

DeVries, D. (2013, October 3). 13 Ways Colgate is committed to Sustainability. *Colgate University News*. Retrieved from:

- “Taylor Lake’s History Traced.” (N.d.). [Newspaper article]. Buildings and Grounds Collection (A1000). Colgate University, Special Collections and University Archives, Hamilton, NY.
- [The dredging of Taylor Lake]. (c. 1910) Buildings and Grounds Collection (A1000). Colgate University, Special Collections and University Archives, Hamilton, NY.
- [Untitled black and white photograph of Willow Path]. (ca. 1980). Buildings and Grounds Collection (A1000). Colgate University, Special Collections and University Archives, Hamilton, NY.
- [Untitled black and white photograph of Willow Path]. (undated). Buildings and Grounds Collection (A1000). Colgate University, Special Collections and University Archives, Hamilton, NY.
- Vaske, J., Donnelly, M. P., Williams D. R., Jonker, S. J. (2001). Demographic influences on environmental value orientations and normative beliefs about national forest management. *Society & Natural Resources*, 14(9), 761-776. DOI: 10.1080/089419201753210585
- White, S. (2003). Sustainable campuses and campus planning: Experiences from a classroom case study at the University of Kansas. *International Journal of Sustainability in Higher Education*, 4(4), 344-356.
- Williams, H. (1954, 16 July). West and East Halls [Letter to Littlefield]. Board of Trustees minutes (A1001). Colgate University, Special Collections and University Archives, Hamilton, NY.
- Williams, H. (1969). *A History of Colgate University*. New York, NY: Van Nostrand Reinhold Company.
- Theis, T. & Tomkin, J. (2012). *Sustainability: A Comprehensive Foundation*. Rice University: Houston, TX. Retrieved from https://www.earth.illinois.edu/UserFiles/Servers/Server_4102/File/documents/sustain_comp_found.pdf.
- Yeoman, M. (2015). “Colgate University named Most Beautiful College by The Princeton Review”. *Oneida Daily Dispatch*. Retrieved from <http://www.oneidadispatch.com/article/OD/20151021/NEWS/151029908>
- Yu, D., Zhou, L., Zhou, W., Ding, H., Wang, Q., Wang, Y., ... & Dai, L. (2011). Forest management in Northeast China: history, problems, and challenges. *Environmental management*, 48(6), 1122-1135.

Appendices:

Appendix I:

A. Interview Questions**a. Building & Grounds Informant:**

1. What are the priorities for your division? (what do we mean by priorities, who do we manage?)
2. What type of maintenance is B&G responsible for on the hill in terms of grounds?
 - a. How often do you perform maintenance on grounds?
3. What is B&G's understanding of sustainability?
 - a. Does B&G implement sustainability ideals in their jobs? Can you give us examples?
4. What improvements do you think could be realistically implemented on campus to make it more sustainable?
5. Can you give us a snapshot of worker demographic within the division?
6. What are some challenges you encounter with campus maintenance (maintaining campus grounds)?
7. What kinds, if any, reaction/input/feedback from the community/alums when you change something in the landscape? (Examples?) How involved has community members and alums in campus changes?

b. Bob McVaugh

1. What is your knowledge of the history of the land in Hamilton?
 - a. To what extent are you involved in the land management of the town?
2. How would you say Hamilton and Colgate are connected in terms of land use? What are some examples of their relationship?
 - a. Are you involved in any of the decisions that the administration makes on Colgate Property?
3. What is your definition of sustainability? As it relates to land use?
 - a. How sustainable do you think Colgate's land management strategies are, as a faculty and mayor of Hamilton?
4. How have some land use decisions at Colgate affected the town of Hamilton? Are you aware of any more historical examples?
5. As the mayor of Hamilton, are there particular complaints or praises you often hear from permanent residents about Colgate's land use decisions?
6. Has the status of the beauty Colgate's campus played a role in attracting tourist/people who invest in town? I.e. is the campus an asset to this part of the state?

c. John Pumilio:

1. What is your definition of sustainability? As it relates to land use?
 - a. Sustainability policy at Colgate
2. How involved are you in the day to day land use/forest management decisions?
3. In your experience, what seem to be some driving factors in the land use decisions made at Colgate? - money, labor
4. What are some barriers you want to overcome to make Colgate's land more sustainable?
 - a. Where are there pitfalls?
 - b. What are the successes?
 - c.

B. Appendix II: Certificate of Informed Consent:

Certificate of Informed Consent - Colgate University

Overview and Procedure: We are a team of researchers from Colgate University, interested in learning more about the history of forest management and land use on campus. We would like to ask you some questions concerning these topics. The interview will take 20-30 minutes of your time.