

Sustainable Landscaping
At
Northwest Indian College



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Table of Contents

- 1.0 Introduction
 - 1.1 An Overview
 - 1.2 What is Sustainable Landscaping?
 - 1.3 Why Chose Sustainable Landscaping?
- 2.0 Methodology
 - 2.1 Contacts & Meetings
- 3.0 Landscape Analysis
- 4.0 Case Study of Menominee Nation Tribal College
 - 4.1 Overview
 - 4.2 The Sustainable Development Institute
 - 4.3 Sustainable Landscapes
 - 4.4 Other Campus Sustainability Practices
 - 4.5 Case Study Resources
- 5.0 Case Studies of Nearby Sustainable Landscaping
 - 5.1 Case Study #1:Hovander Park
 - 5.2 Case Study #2:Western Washington University
- 6.0 Research and Analysis
 - 6.1 Introduction
 - 6.2 What have we Learned So Far?
 - 6.3 Case Study Analysis: What Can We Do With This Information?
 - 6.3.1 College of Menominee Nation
 - 6.3.2 Hovander Park
 - 6.3.3 Western Washington University
- 7.0 NWIC Student Perspectives & Projects
- 8.0 Conclusions & Future Works
- 9.0 Additional Resources & Works Cited

Introduction

1.1 An Overview

This sustainable landscaping report for Northwest Indian College is a joint effort between students and professors at Northwest Indian College and Western Washington University. Northwest Indian College is located in Bellingham, WA and provides Native American students with a post-secondary education. As of 2007-2008 (the latest year for which data is available) 1014 students are enrolled in the college with a Full-Time-Equivalent of 207 students using the campus. On campus students represented 45% of the population. This number is expected to increase rapidly over the next few years as the campus expands and multiple new buildings, totaling 205,000 square feet, are built.

As stated in the College's strategic plan, faculty, staff, and students of Northwest Indian College (NWIC) intend to build "sustainable tribal communities and people through the promotion of healthy living, leadership development and community development". Several members of the college community that we spoke with in the course of this project have stated that practicing sustainable landscaping techniques will create a physical manifestation of their desire for increased campus sustainability. As noted in the College's Master Plan, "NWIC intends to collaborate with other tribes and tribal communities to develop site-based facilities, using the new Lummi Campus facilities as templates". This is especially important due to the role of native plants in Native traditions, including edible and medicinal plants.

This report begins with a broad outline of sustainable landscaping. The focus is then narrowed to look at NWIC's current landscaping practices and future NWIC construction. Landscaping case studies from other Native colleges and nearby projects are presented as examples of existing landscaping. Landscaping proposals of Northwest Indian College students follow, along with possible strategies for implementing one or several of these proposals. Additional resources and complete contact information are provided at the end of the report.

1.2 What is Sustainable Landscaping?

Sustainable Landscaping, also known as beneficial landscaping, harnesses aesthetic, economic and environmental benefits through a mixture of varying practices. These practices include, but are not limited to: using native species instead of annuals and foreign species when planting, planting shade trees and wind breaks, limiting the use of power maintenance equipment, harmful chemicals and fertilizers and recycling green waste to reduce pollution impacts of landscaping.

1.3 Why choose Sustainable Landscaping?

Traditional landscaping methods usually rip up natural ecosystems and replace them with foreign and invasive species that often require the excessive use of pollutants such as fertilizers, pesticides and gas powered maintenance tools. Not only do traditional landscaping practices completely alter the original plot, but the runoff and pollution created through these practices negatively influence nearby ecosystems and human lives. The chemical pollution produced through this kind of landscaping infects nearby waterways and compromises air quality with harmful toxins. "The rate per acre of residential application of pesticides is typically 20 times that of agriculture" (Beneficial Landscaping). These pesticides are harmful for animals and can lend a hand in oversimplifying the surrounding ecosystem's bio-diversity. Noise pollution is another negative connotation associated with traditional landscaping due to the constant drone of maintenance tools. The negative influences of altering a natural ecosystem don't stop there. It also aids in the increased frequency and severity of localized flooding and increased consumption of water.

For all of the above reasons people are beginning to look for less harmful and low maintenance forms of landscaping while still keeping the aesthetic and functional benefits landscaping provides. Sustainable landscaping practices yield many desirable aesthetic, environmental and economic benefits for the user. Environmentally the extreme limitation of the use of pesticides, herbicides, fertilizers, gas powered machines etc. improves water and air quality. Sustainable landscaping practices also aid in the

reduction of energy consumption, solid waste, water consumption and assist with habitat improvement and restoration. Using native species requires much less time and energy because they naturally thrive with their area's climate conditions and rain levels. A sustainable landscape saves on energy and water bills and reduces the need to purchase fossil fuels, pesticides and fertilizers. It also reduces the amount of landfill space occupied by the waste generated through traditional means. A landscape plan that uses native species and sustainable methods improves and adds to the surrounding ecosystem instead of standing out and contributing invasive species. This is attractive and beneficial for surrounding wildlife.

2.0 Methodology

2.1 Contacts & Meetings

In early October 2009, the student group from Western Washington University met with Susan Given-Seymour (Director of Outreach and Community Education), Brian Compton (NWIC Faculty member), and Vanessa Cooper (Traditional Plants Coordinator). They spoke about possibilities for the project. It was decided that including Compton's weekly seminar students in the project would be a good way for the NWIC and WWU students to work together. Later that week, the NWIC and WWU groups met at the NWIC campus. Through this and subsequent communication, it was decided that the WWU students should do research on existing sites which incorporated sustainable landscaping. The NWIC students would then utilize this information to develop landscaping concepts. The two student groups would then collaborate over this and future quarters to work toward outlined goals.

Western students conducted their landscaping research using the internet as a first resource as many of these landscaping developments are new. They then followed up with phone calls, emails, and in-person meetings with individuals involved in these projects to gain an understanding of the successes and limitations of the established

programs. NWIC students conducted additional research and contacted additional professionals, including those on their campus.

3.0 Current Landscaping and Currently Planned Landscaping

As of Fall 2009, three new buildings have been built on campus, with a fourth in construction. The figure below, courtesy of the 2004 Master Plan, illustrates the older portion of campus (in white) and the newer portion in color. New development on campus will comprise approximately 205,000 square feet.

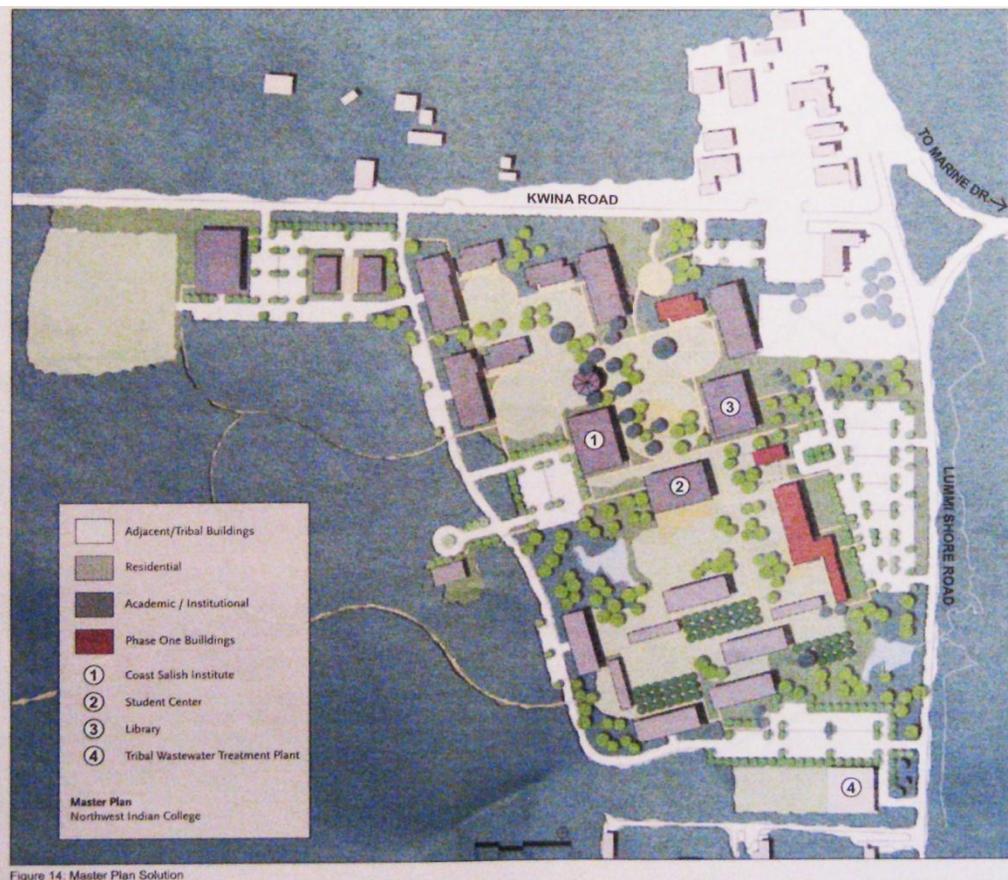


Figure 14. Master Plan Solution

Currently, landscaping on campus consists mostly of trees and grass, as shown in the pictures below. The new Natural Sciences Lab, presently under construction, will be LEED Certified. Members of the University hope to incorporate more sustainable landscaping into this and other campus buildings. One student maintained garden is currently on campus.



Above left: current landscaping consists mostly of grass, trees, and some shrubs

Above right: a student garden on campus

4.0 Case Study of Menominee Nation Tribal College

4.1 Overview

The College of Menominee Nation (CMN) is one of the 34 tribally controlled community colleges in the United States. Located in central Wisconsin, CMN has 228 full time students and 73 full time employees. Founded in 1993, the college is in its 16th year of serving students. Like Northwest Indian College, the College of Menominee Nation is in the process of expanding their campus, and has recently constructed a new Library and a Center for First Americans Forestlands.

4.2 The Sustainable Development Institute at CMN

The College of Menominee Nation's Sustainable Development Institute (SDI) opened in concert with the rest of the College in 1993 and is an exemplary demonstration of campus sustainability implementation. The SDI is a research and resource support institute to the college, and "helped infuse the concepts of sustainability into the fabric of the college right from its inception."¹ As one of the first colleges of any kind to be thinking about sustainability, they are still one of the only two

¹ AASHE article: College of Menominee Nation 2008 Campus Sustainability Leadership Award Application. http://www.aashe.org/resources/profiles/cat1_109.php

year colleges offering associates degrees in sustainability-related subjects such as Sustainable Development and Sustainable Forestry. SDI, made possible through grants and donations, currently employs 5 faculty members, including a sustainability coordinator position. A Sustainability Advisory Group composed of faculty, administration, students, and community members, was assembled by the sustainability coordinator to further campus sustainability efforts and communication.

4.3 Sustainable Landscapes at CMN

Before developing new areas CMN considered the native plants already living there, moving 60 pine trees and various native wildflowers to other locations. This was accomplished in part through a local "Wild Ones" chapter (see Case Study Resources). During the development a bioswale storm water retention area was designed featuring native plants. Additionally, CMN has plans to plant native plants around walking trails around campus.

CMN's maintenance department has greatly limited their use of chemicals on the lawns bushes, and trees around campus.

4.4 Other Campus Sustainability Practices

- CMN's new library will be certified LEED silver, 29% more efficient than Wisconsin's minimum standards. Some of the new library's features include heating and cooling through 36 geothermal wells, and locally sustainably harvested pine paneling.
- The Maintenance Department uses only biodegradable cleaning products.
- Students have participated in recycling competitions, roadside trash pick-up days, and have started a SEEDS (Strategies in Environmental Education, Development, and Sustainability) program selling shade-grown organic fair-trade coffee.

- The Sustainable Development Institute has partnered with Iowa State University to produce a checklist of sustainability indicators that tribal colleges can use to benchmark their progress towards sustainability.

Many more examples of campus sustainability practices are taking place at CMN. For further investigation please check out the Case Study Resources section.

4.5 Case Study Resources

College of Menominee Nation website:

<http://www.menominee.edu/>

CMN Sustainable Development Institute website:

<http://www.sustainabledevelopmentinstitute.org/default.asp>

College of Menominee Nation Annual Report (2007):

<http://www.menominee.edu/01/pdfs/2007annualreport.pdf>

AASHE article on Sustainability at CMN:

http://www.aashe.org/resources/profiles/cat1_109.php

What is a Bioswale?

<http://en.wikipedia.org/wiki/Bioswale>

What is a "Wild Ones" chapter?

<http://www.for-wild.org/chapters.html>

5.0 Case Studies of Nearby Landscaping

It is also important to draw parallels to projects closer to NWIC, so that these projects can be seen firsthand. Two examples (Hovander Park and Western Washington University) are examined in detail below. Several more are listed in the resources section, along with addresses for pertinent websites. In particular, a pdf made by the City of Bellingham is often updated to show new projects with green building and sustainable landscaping features.

5.1 Hovander Park

In our first meeting with the directors at Northwest Indian College, Susan expressed an interest in Hovander Park as an example of landscaping that she was interested in and found particularly captivating. Hovander Park is located in Ferndale, Washington and is an excellent example of blending a community's culture with their appreciation for the outdoors. These two important characteristics are also applicable to the designing of NWIC's sustainable landscaping plan since many of the students in the seminar expressed an interest in cultural identity through the landscape. Though the tactics for cultivating this expression of culture would be different for the two landscapes the idea is the same and ideas can be derived from Hovander Park.

5.2 Western Washington University

Western Washington University is also located in Bellingham and thus provides a good example of landscaping practices that are working towards becoming more sustainable at a location near NWIC. WWU has decreased its reliance on chemicals in recent years. Grounds staff study ways to control pests without pesticides at WWU during annual Integrated Pest Management training from the Washington State Department of Agriculture (WSDA). Insecticide is not used, with the exception of the rose garden, and herbicide is used sparingly. Organic fertilizers are used on all areas except athletic fields, which are treated with conventional fertilizers. Vinegar is used in warmer weather for weed control. Cardboard from Western's recycling center and wood chips are used as mulch, while compost is made from leaves, branches, and the like.

Water conservation is also encouraged through the usage of drought tolerant vegetation. Drip irrigation is installed in the Rose Gardens. The grounds crew is currently converting from two-stroke to four-stroke engines to increase the fuel efficiency of their equipment as well as changing to low decimal blowers to reduce noise pollution. Some signage is used, such as that in front of the Viking Union building, which states "pesticide free".

Western has a farm on campus called the Outback Outdoor Experiential Learning Program. This farm has been in existence since the 1970s, and is composed of four main areas, the community, herb, market, and forest gardens. It is student-run through programs within the Associated Students of Western. Biweekly meetings are held regarding the site and several work parties are conducted each week. Students and community members work in the gardens as volunteers or through work-study. Classes such as ethnobotany and restoration ecology take place in these gardens. A Class II wetland is also located on-site. The wetland is in the process of being restored by groups such as Learning Environment Action Discovery (LEAD). LEAD is a Western-based program through which students can receive extra credit through experiential restoration work.

5.3 WWU Case Study Resources

- AASHE WWU Sustainability Assessment, landscaping (Whiting, Fesler 2008), unpublished
- For more information and contact information of current outback staff/volunteers, see: <http://outback.as.wvu.edu/>

6.0 Research and Analysis

6.1 Introduction

This section details the current state of this project as of early December 2009. In this section, we will discuss what we have learned so far, what we can do with this new information, including why particular approaches are recommended.

6.2 What We Have Learned So Far?

There are many encouraging indicators concerning NWIC's future in sustainable practices. Campus sustainability is an effort endorsed by president Cheryl Crazy Bull, in the educational background and present thinking of NWIC's campus expansion construction manager Jay Conway, and is a contemporary spin on ancient practices that have been a part of native cultures for millennia.

NWIC's interest in sustainability is broad as demonstrated by meetings with administrators, faculty, and students. The goal of developing closer relationships between the human-built campus and the natural campus through landscape design is a priority. This relationship can be addressed in many specific ways- education campaigns, architectural design, gardens, native plantings, and ceremonies to name a few.

Sustainable landscaping includes cultural, educational, and architectural elements in dialogue with the landscape. It goes beyond planting native plants and includes designs that could sustain cultural thinking / practices, landscapes that can educate (like signage in gardens), and landscapes that have relationships to the buildings themselves. This includes successful programs in town and other tribal campuses examples. We combined these learnings through the collaboration of WWU's campus planning studio class and NWIC's native environmental science seminar.

6.3 Case Study Analysis: What can we do with this information?

Below is an analysis of each case study as well as how this information can be applied to specific aspects of the Northwest Indian College campus.

6.3.1 College of Menominee Nation and the Sustainable Development Institute

This college was selected for its outstanding demonstrations in sustainability practices, as well as its relevance to NWIC. Like NWIC, CMN has just over 200 full-time enrolled students and is in the process of expanding their campus with sustainability in mind. At an information gathering level, the faculty at CMN's Sustainable Development Institute are very receptive to helping NWIC's sustainability efforts. (see: Letter from Melissa Cook). Many of CMN's student led initiatives could be replicated and/or planned by students in NWIC's native environmental science seminar. NWIC's construction manager Jay Conway, is an accredited professional of LEED (Leadership in Energy and Environmental Design), the same certification given to CMN's new library. Jay is a valuable resource at NWIC as he has great familiarity with the campus and LEED practices. From conversations with students and Jay, it was discovered that one of the new buildings would be constructed in an area which is currently occupied by native plants. NWIC students suggested maintaining the current landscape around these buildings, a process Jay called landscape retention. This can be done by temporarily removing the plants currently there and replanting them after the buildings are constructed. As mentioned in the case study, CMN had practiced sustainable retention with their new library site by moving 60 pine trees and various native wildflowers before construction, and replanting them after.

College of Menominee Nation's New
LEED silver Library



Organizationally, sustainable developments on CMN's campus are enabled largely by the Sustainable Development Institute and its sustainability coordinator. The communication and participation of all departments is facilitated by the Campus Sustainability Advisory Group. While starting an institute or hiring a sustainability

coordinator may not be NWIC's next step, starting an advisory group would start an active dialogue. We recommend a similar group be initiated on NWIC's campus to promote inclusion and communication of campus sustainability developments and how to achieve them.

6.3.2 Case Study Analysis: Hovander Park

Ferndale has a bit of a reputation for being a farm town and Hovander Park harnesses this cultural aspect by preserving the 350 acres that in 1897 was originally purchased by Swedish architect Hovan Hovander for farmland. Hovander built a farmhouse and barn that still stands today reminding visitors of the history of the area and giving them a small glimpse into the past (Whatcom County Parks). Though there is not historical construction on NWIC's campus, parts of tribal history could definitely be incorporated into the landscape. An idea that was presented by one student in the seminar was to design a flower patch or other construction in the image of tribal emblems, much like the design on WWU's campus of the San Juan Islands. Another way culture could be incorporated into the landscape would be to plant native species that tribes used historically as part of their diets and also for medicinal purposes. Native species are easy to care for and require much less time and energy to flourish because they thrive naturally in their native climate, making them a very sustainable choice for landscaping and also show some of the tribal history and culture in the meantime.

Another aspect Susan expressed that she enjoyed about Hovander Park was the Fragrance Garden and Tennant Lake Interpretive Center. These places give visitors a hands-on experience with the landscape around them and provide them with knowledge about plant species and the surrounding ecosystems. These ecosystems include the wetlands that surround Tennant Lake and the migratory bird species that frequent the area. NWIC could incorporate these ideas into their design with an information center or booth geared towards informing students, faculty and visitors about surrounding ecosystems and how the landscape is incorporated in those systems.

Information about plant species and their relevance to NWIC and the tribal members could also be placed on plaques and set up around the landscape.

6.3.3 Case Study Analysis: Western Washington University

Western's Outback Farm provides a good example of local sustainable landscaping programs. This program allows students the freedom to work in the gardens in classes or on their own time, while providing peer mentors for gardening and restoration projects. Programs like this could enable students at NWIC to participate in hands-on learning, while improving their campus landscape. Work parties are an important tool of the Outback program, as they provide the chance for a diverse section of the student population to participate in projects. Yet, it will likely also be useful to have a coordinator for such programs in order to organize people and materials for work parties. In either Winter quarter or Spring quarter, students from both classes may take a tour of the Outback in order to get a hands-on perspective with some of the projects offered through such sites.

7.0 NWIC Student Perspectives

Students in the Northwest Indian College Seminar class taught by Dr. Brian Compton researched these concepts further and came up with several ideas to implement on their campus. Tyson Oreiro and Maggie Pickard created a survey to ask their campus community members about their views on implementing sustainable landscaping on the campus. Meanwhile, Amanda and Lance Brockard focused their energies on working with the on-campus daycare center to develop sustainable landscaping ideas. Thus far, they have met with the daycare director, who has been very enthusiastic about their ideas. They are putting together a list of plants to use in this project.

8.0 Conclusions & Future Work

As noted above, members of the Northwest Indian College have an excellent opportunity to increase sustainable landscaping on their campus. The construction which will be occurring on the campus will provide great opportunities for restoration and new plantings. They have begun to draw from case study ideas to generate new concepts such as the aforementioned child development center gardens and a broader project incorporating campus landscaping sustainability. Western students intend to continue this partnership in the future, working with NWIC students to generate and begin to construct landscaping ideas on campus.

9.0 Additional Resources and Works Cited

Case Studies in Bellingham

-Downtown Bellingham Farmer's Market, <http://www.bellinghamfarmers.org/>

The Downtown Farmer's Market has pervious pavement and raingardens on the Southern side of the building, adjacent to Maple Street. According to a raingarden manual produced by Washington State University, a raingarden is a shallow depression with good drainage and often filled with native plants. If properly designed, raingardens can remove pollutants from stormwater that enters nearby from roads, roofs, driveways, and the like. The raingardens at the Farmer's Market are open to the public and contain several native species. Moreover, they contain signage describing their purpose, which furthers the education of market-goers and casual passerby. (pictures to be included in final draft)

-Whatcom Creek Restoration Site

This site, maintained by volunteers, includes detailed signage describing nearby pathways and the importance of riparian habitat. (pictures to be included in final draft)

-Other innovative landscaping examples, included on the City of Bellingham's website: <http://www.cob.org/services/environment/lid/green-building.aspx>

- Raingarden Handbook from WSU, details how to make one's own raingarden:
http://www.pierce.wsu.edu/Water_Quality/LID/