

# **THE EVERGREEN STATE COLLEGE**

## **Campus Master Plan**

VOLUME I - Site Specific Recommendations



ZIMMER GUNSUL FRASCA ARCHITECTS LLP | JANUARY 2008

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(companion document)

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(companion document)





01



## PREFACE



# 01 PREFACE



Figure 1.1. Evergreen campus.



Figure 1.2. The clock tower marks the main campus core and Daniel J. Evans Library.



Figure 1.3. Red Square is the heart and 'stage' of the campus.

The Evergreen State College Campus Master Plan is a comprehensive long term plan for the facilities and campus grounds of the college. The plan establishes priorities for campus development consistent with the College's Mission, Strategic Plan and other current initiatives. The multi-volume document identifies opportunities where the College can focus resources to meet future demands on its facilities and land resources.

The Master Plan is structured as follows:

Volume I - Site Specific Recommendations

Volume II - Goals and Policies for Land Use (1998 Campus Master Plan; updated 2005)

Volume III - Appendix

The aim of the process and plan is to provide a comprehensive document that: (1) helps guide campus development, and (2) serves as a concept plan for future development. This plan is a living document that will be frequently revised and updated. This plan contains the core values that guide campus facilities and land use decisions.

## PURPOSE OF THE MASTER PLAN

The College has completed its strategic planning process which incorporates all academic and support operations. A previous Master Plan was completed in 1998 and updated in 2005. The previous Master Plan provides the framework for development on the campus with policies and statements regarding how the College should be developed and landscaped. The earlier documents do not provide definitive plans for various types of academic, administrative, and student space. There is also no discussion of possible sites should additional facilities be needed to meet the expected enrollment target or an identification of which facilities should be modified and renovated to meet the changing academic program needs. The previous Master Plan serves as the philosophy behind the development of the campus and is incorporated as Volume II of the Master Plan. Volume I specifically address facility renovations, sites for potential new facilities, land use policies including the identification of areas for student and faculty research and projects, use of the waterfront and accompanying beach area and similar issues relative to the overall campus.

The overall goal of this campus Master Plan is to assist the College in translating the strategic goals and objectives of the various College units into a physical plan which identifies where the College should be focusing its resources to meet future demands on its facilities and land resources. The Master Plan is a key part of the College's Capital Budget Request and 10-year Capital Plan that will be submitted to the Washington State Office of Financial Management in September 2008. The Master Plan will also guide the capital construction on the campus for at least the next two biennia. The Master Plan covers the period from 2005 - 2020.



02



## EXECUTIVE SUMMARY



## 02 EXECUTIVE SUMMARY

The campus master planning effort represents an important step in a process intended to assist the College in translating the strategic goals and objectives of the various College units into a physical plan. The multi-volume document identifies opportunities where the College could focus resources to meet future demands on its facilities and land resources. The plan is an important part of the College's Capital Budget Request and 10-year Capital Plan that will be submitted to the Washington State Office of Financial Management in September 2008. The plan covers the period from 2007-2020 and will help inform the development of the campus over the next two bienna.

As part of the updated Strategic Plan, the College has established the ambitious goal of being carbon and waste neutral by the year 2020. This sustainability focus has informed a process that is rethinking campus operations and facilities planning at the College.

The plan outlined in this document takes the ambitious sustainability initiatives set by the College and considers a wide range of opportunities to set the stage for making significant contributions towards balancing both carbon use and waste production and include:

- transportation modes and patterns
- energy production and use
- campus biome protection, use and enrichment
- food production
- construction practices
- waste stream management
- student life and housing



Figure 2.1. The legacy of the past and promise of a sustainable future define the campus character.



## PROCESS

From the beginning, a concerted effort was made to engage the campus community in a dialog concerning the future of the College and how to make the campus an even better place to live, work, teach, visit and learn.

Based on the philosophy of ‘building community’, the process utilized for the campus planning process was intensive, inclusive and collaborative. Initial steps included gathering existing data and reviewing past Master Plans. These initial steps were followed by a series of on-campus meetings that included open information sessions, pizza dinner discussions, one-on-one meetings, facility and campus tours, community presentations and focused charrettes. These events took place over a five month period between February and June of 2007 and included participation in the College’s annual Synergy Conference and an Eco Charrette.



Figure 2.2. Planning input was received at the student-sponsored annual Synergy Conference.



Figure 2.3. Meeting in the Campus Activities Building (CAB) engaged the campus community in the process.



Figure 2.4. Seminar II Building was a venue for input sessions to highlight sustainability.

The process was divided into the following tasks: Task 1 – Goals/Objectives/Needs Assessment, Task 2 – Alternatives/Evaluation, Task 3 – Master Plan Recommendations/Implementation and Documentation. This Master Plan contains information on the process, the information collected, and a set of project specific recommendations. This document was initially issued in a preliminary draft format in July of 2007 to provide opportunity for comment from campus constituents. In the fall of 2007, a series of on-campus meetings were held to allow direct input from the community, faculty, students and staff. This revised version of the Master Plan incorporates revisions resulting from the fall 2007 sessions as well as comments submitted via the campus website.





Figure 2.5. The pedestrian bridge connection between CAB and CRC is dysfunctional and disorienting.



Figure 2.6. Green roofs and bioswales harvest rainwater at SEM II.

## EXISTING CONDITIONS

The Evergreen State College campus is part of the Cooper Point Peninsula which reaches into the southern end of Puget Sound and is located west of the City of Olympia. The campus is located on 1,008 acres of land, which remains predominately forested with a mixture of largely native second growth vegetation. The campus was initially conceived in the early 1970's to one day accommodate approximately 12,000 students and initial projects and infrastructure elements were constructed with this ultimate goal in mind. Current development and facilities accommodate approximately 4,500 students (FTEs). There is student housing on campus; however, nearly 80% of students live off-campus and commute to campus for classes and/or events.

References to areas of the campus follow previous Master Plans including: Core ("urban" area of the campus including the main academic, administrative, residential, social and recreational facilities – commonly referred to as upper and lower campus); central Core (Red Square and the major, multi-use buildings that surround it – commonly referred to as upper campus); Clusters (group of facilities outside the Core, including Organic Farm, Geoduck House and Maintenance Shops, serving a specific function) and Reserve (substantially undeveloped areas surrounding the Core and Clusters where natural ecosystems are the predominant feature).

The majority of facilities are concentrated within the campus Core. The upper campus central Core consists of numerous concrete buildings which create a strong unified architectural expression. Organized around Red Square, a large central open space, the instructional and administrative spaces of the College are dispersed and integrated along with faculty offices, science labs and studio spaces. Lower campus is defined by groupings of student housing facilities that adjoin a large open space that serves as the athletic fields for the campus.

The predominant construction technique and aesthetic utilizes exposed concrete and glass scaled to create large spaces with limited visibility into building spaces. The solid and somewhat imposing feel of many of the buildings limits a visitor's exposure to the activities going on inside the buildings and contributes to a sense that there are a limited number of students on the campus at any given time. The large scale of both the buildings and the areas between contribute to a sense that the spaces and buildings are over-scaled and lack definition. Much of the campus housing structures can be typified as being low density, aging wood framed facilities rapidly reaching the end of their usefulness.

Located approximately five miles from downtown Olympia, and somewhat peripheral to population centers in Thurston County, The Evergreen State College's setting poses significant challenges to creating an efficient transportation system for its students, staff and faculty. Despite this relatively remote location, relatively high levels of transit use, cycling, and ridesharing occur. This good performance indicates a strong commitment by the College community to using alternatives to single-occupancy vehicles. This commitment provides an essential foundation for creating a more energy efficient and less polluting campus transportation system.

The Evergreen State College has a Central Utility Plant (CUP) that provides steam and chilled water to the campus for heating, cooling and domestic hot water through a comprehensive underground tunnel system. The tunnel system connects directly to mechanical rooms in the Communications Laboratory (Comm

Lab), Seminar I (Sem I), Seminar II (Sem II), College Recreation Center (CRC), College Activities Building (CAB), Library, Lecture Halls Building, Science Lab I (Lab I) and Science Lab II (Lab II). A crawlspace tunnel to Housing Buildings A, B, C & D provides steam to those buildings. A direct bury branch from that tunnel provides steam to the Community Center and Housing Units E through U. Additional direct bury piping (steam and chilled water) runs from the main tunnels to the Longhouse and Arts Annex buildings. The Modular Housing buildings are heated by electric baseboard and have no connection to the CUP. The Childcare Center has its own gas-fired hot water boiler and is not connected to the CUP. Additional outbuildings consist of the Farmhouse, Geoduck House and Maintenance Shops. Each of these outbuildings has its own stand-alone heating system.

With the exception of Geoduck House, which is currently occupied by the Olympia Community School and located near the shoreline, the campus buildings are connected to the City of Olympia water and wastewater systems. The City of Olympia and Evergreen have agreements for these services and the City will continue to provide water and wastewater service to the campus. The Geoduck House is currently served by a septic tank and drain field. This on-site wastewater treatment system should be evaluated to verify that it is functioning properly, and is sized correctly for the school population and soil conditions.



Figure 2.7. Informal break-out spaces encourage interaction that is at the core of the learning environment at Evergreen.

## GOALS AND OBJECTIVES

*'The Evergreen State College will be a laboratory for sustainability as demonstrated in its operations, curriculum, and quality of life for employees and students. We will nurture values and practical skills that motivate a lifetime commitment to a sustainable, inter-generational just way of living on a healthy planet.'*

- The Evergreen State College Sustainability Task Force

From the beginning of this campus master planning process, the Planning Committee and consultant team understood that past master planning efforts in 1998 and again in 2005 developed very strong foundations from which to build. The mission and goals of this master planning effort (listed below) represent direct developments and refinements from these earlier processes.

The mission of the plan is to provide support for future Capital Budget Requests and integrate programmatic faculty needs. As a result, a particular focus has been placed on identifying:

- Renovations and additions
- Infrastructure improvements
- Sites for potential new facilities
- Land use/landscape policies

The following five goals were developed early in the planning process and built upon previously stated goals from prior master planning efforts. The third goal was significantly refined to emphasize and strengthen the campus focus on sustainability.

- Develop state-of-the-art learning facilities and housing options that advance the mission of the College.
- Provide an open and supportive environment for those who study, work and live on campus.
- Create a visibly sustainable campus that recognizes the College's aspirations of carbon and waste neutral by 2020, through educationally rich, proactive design, planning and goal-setting.
- Provide educational opportunities in the delivery of campus planning, operations and services.
- Integrate College educational activities with cultural, social, civic and business activities of the surrounding community.

## RECOMMENDATIONS

The plan illustrated in this document has been developed as a tool to understand the impact of the projected growth in enrollment and the interrelationship of the various planning objectives established by the College through this and past master planning processes. The plan proposes a pattern of development that is based on both the established building pattern that reinforces the Core of the campus and a new direction that aims to integrate the entire campus into the community, sustainable and educational goals of the College. At the campus Core, proposed renovations and additions are focused on developing and enhancing a sense of place that is sensitively scaled, provides good solar access and forms a connectedness among adjacent buildings. New facility locations also build upon the existing development patterns at the campus Core and reinforce the ideas related to creating appropriately scaled outdoor spaces, establishing visual connections between inside and outside and limiting the sprawl of the campus. Circulation improvements – both vehicular and pedestrian – build on existing patterns and develop a comprehensive network of connections among the various Education Centers, upper and lower campus and the community.

At the core of the recommendations outlined in this document is an understanding that the educational experience nurtured at the College is based in a deeply held series of beliefs that prioritize inclusive, hands-on, experiential, communal, collaborative, interdisciplinary teaching and learning opportunities. The recommendations embrace the open atmosphere embodied by the educational values of the campus and focus on supporting the teaching paradigms that reinforce these important and unique Evergreen characteristics.

The recent addition of the Seminar II Building in the central Core of the campus was originally envisioned to accommodate the current and projected classroom needs in conjunction with a series of renovations to existing facilities. The subsequent renovations have not yielded all of the projected spaces and specific needs remain unfulfilled. The recommendations outlined in this document are intended to address the space needs that have been stated during the Master Plan process. The evaluation of the proposed projects during the earlier preliminary draft review determined a prioritized list of projects to meet anticipated campus needs and is reflected in the listing of projects that exists in subsequent sections of this document.

All of the investigations undertaken during the planning process used sustainability as a touchstone and integrate opportunities for hands-on student learning, participation, engagement and community involvement. Three general organizing categories emerged that focused on notions of Community, Sustainability and Learning.



Figure 2.8. Master Plan focus: community, sustainability and learning.

## LEARNING

- Develop on-campus Education Centers in Clusters in the Reserve areas (forest and marine ecologies, organic farming, sustainable practices, environmental stewardship, waste stream)
- Use Red Square as a stage to showcase College's mission and student life
- Create outdoor laboratories and classrooms – field study emphasis
- Support faculty research
- Improved learning environments – better classroom environments
- Develop flexible instruction space off-campus

## SUSTAINABILITY

- Increase use of low impact alternative transportation (walking, biking, transit, car pool)
- Increase use of self-sustaining resources (recycling, composting, storm water harvesting, ground water)
- Green building practices
- Maintain cultural resources
- Develop alternative power sources (geo-thermal, solar, wind)

## COMMUNITY

- Support Campus as Community Resource - Invite community and neighborhood to use campus as a learning environment (Extended Ed, cultural events, interpretive trails, Organic Farm tours, conferences and sport camps, sustainability tours, teaching gardens, beach walks, nature walks, cultural walks, bicycle loops, volunteer opportunities)
- Increased on-campus student population
- Leadership in innovative programs - Use the campus as a global venue (sustainability innovations, Native American culture, innovative programs, environmental conservation and demonstration)
- Provide services for students and community (shops and restaurants)

One of the primary missions of this master planning process has been to develop Land Use strategies that focus on preserving, supporting and enhancing the Reserve areas of the campus. The approach proposed has been categorized into four primary groups identified as Identity, Education, Circulation and Stewardship.

## IDENTITY

Earlier Master Plans divided the Reserve into four quadrants – north, south, east, and west. This naming convention does not convey the ecological, educational, or recreational significance of the Reserve areas. This planning effort studied and recommends the identification of place and amenity names within the Reserve. The place naming is intended to allow research areas to be protected and the identities of the Reserve's areas and amenities to be formalized.

## EDUCATION

The College has established a set of sustainability goals which include waste and carbon neutrality by 2020. The technologies and practices that will help achieve these goals also provide educational opportunities. This plan proposes Education Centers at various locations within the Reserve, as well as enhancements to existing campus facilities such as the Organic Farm. The proposed and enhanced centers are envisioned to create a greater sense of presence in the Reserve areas by the College that is consistent with the education mission of the College. The centers are not generally envisioned to require the development of significant buildings but rather as stand alone instructional support features that might include signage, monitoring equipment and program staging spaces. By integrating the Reserve into the activities of the College, the biomes can be more deliberately and comprehensively monitored, studied and restored so that the value of the Reserve areas can continue to serve as a unique regional environmental asset.



Figure 2.9. Geoduck House is a unique setting for learning on the shore of Eld Inlet.



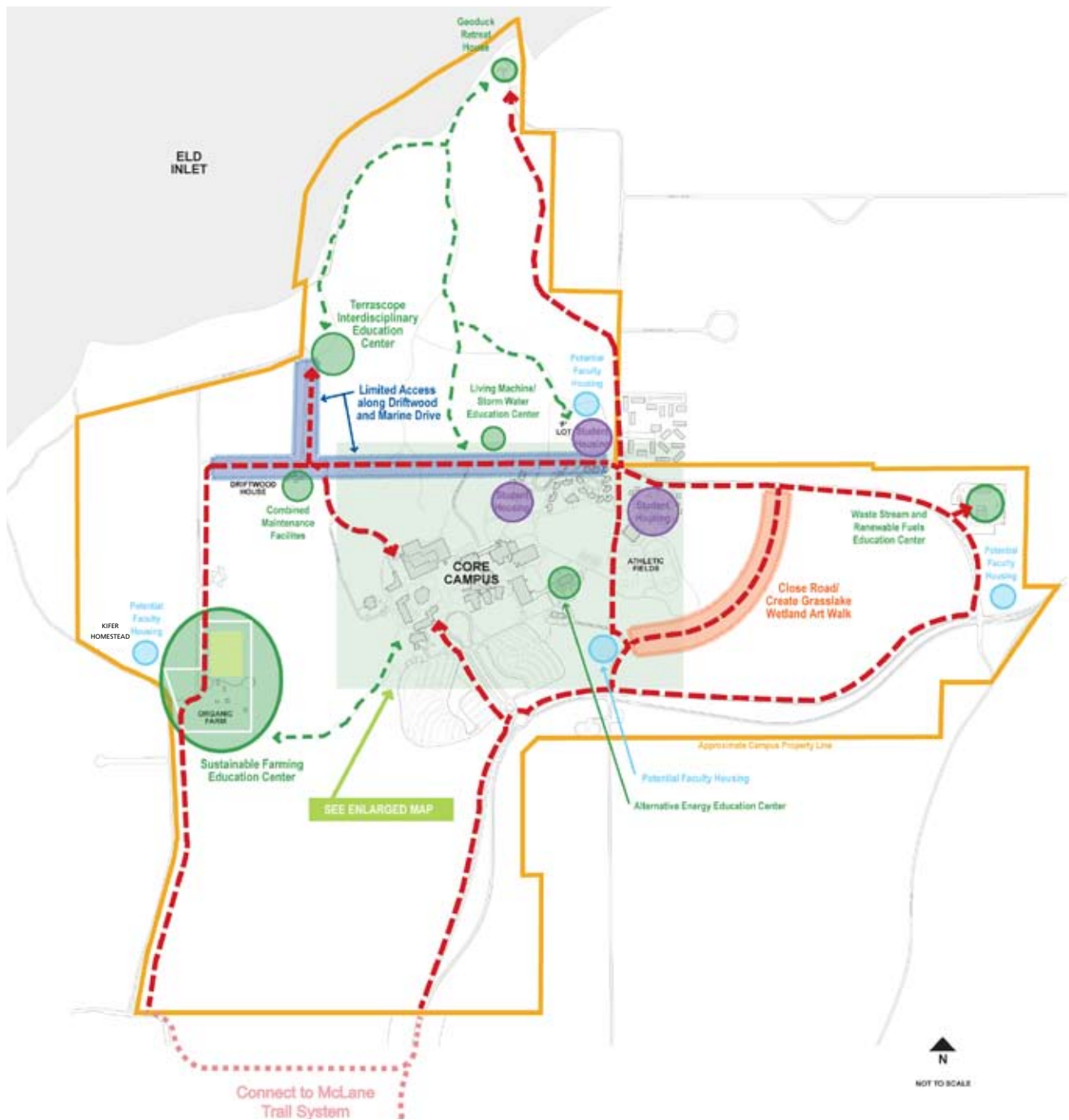


Figure 2.10. Trail and road revisions connect Education Centers located strategically around the campus.

## CIRCULATION

Facilitating easy, accessible and safe campus mobility is a priority of the planning effort. As the campus evolves, the ability to move easily among the Core facilities and around the campus Reserve areas must be accommodated. A revised network of roads, paths and trails are proposed to support and link areas of the campus and connect to off campus networks. In addition to the proposed trail network, two low traffic roads are proposed to be modified to facilitate a reconnecting of the campus Reserve areas and to discourage and reduce non-college traffic.

## STEWARDSHIP

Engendering a sense of ownership by the students, faculty, staff and surrounding community is seen as a powerful way to ensure that the unique environmental assets of the campus are preserved, managed, maintained and treasured for future generations. Currently, the large contiguous land area that makes up the Reserve areas of the campus represents a forest and meadow system that is being replaced by encroaching suburban development as Olympia and surrounding Thurston County populations grow. Through partnerships with state, county, community, and environmental organizations, there may be opportunities to address regional trail, wildlife, and environmental initiatives that leverage campus assets and connect the College to a larger set of regional goals.

## RENOVATIONS, ADDITIONS AND BUILDING SITES

In addition to developing land use strategies, the planning process developed options for future development on the campus that included potential building sites for academic, student life and housing facilities. Building on the idea of enhancing the developed areas of the campus, sites for new facilities and expanded housing options focused on currently or previously disturbed or developed areas of the campus.

The notion of making great exterior spaces that connect directly with interior spaces and functions – we call this ‘placemaking’ - is central to the concepts utilized in the plan. The Master Plan recommends the creation of a series of new and enhanced ‘places’ linked by visual and pedestrian axes. Three campus places are recommended for enhancement as pedestrian activity hubs: Red Square, East Campus Square, and West Campus Square. Under the Master Plan, new buildings are proposed to enhance each of these places.

The goal of making The Evergreen State College a residential liberal arts college adds new opportunities and potential for lower campus. ‘Placemaking’ and community building are central to the long term strategy. Making the campus an attractive place to live and where there is easy access to basic amenities emerged as primary goals in shaping the thinking about the vision for the lower campus. The goal is to add housing to achieve the ability to provide on-campus housing for 33% of the students and some faculty housing.

Working with the assumption that the projected 2020 enrollment will equal 5,000 FTEs and with an on-campus residential student population target of 33% of the total student population, the campus needs to plan for approximately 1,650 beds. Assuming demolition of the Modular housing, the existing bed count totals approximately 907 beds. Meeting the 2020 housing goal will require the addition of 743 beds.

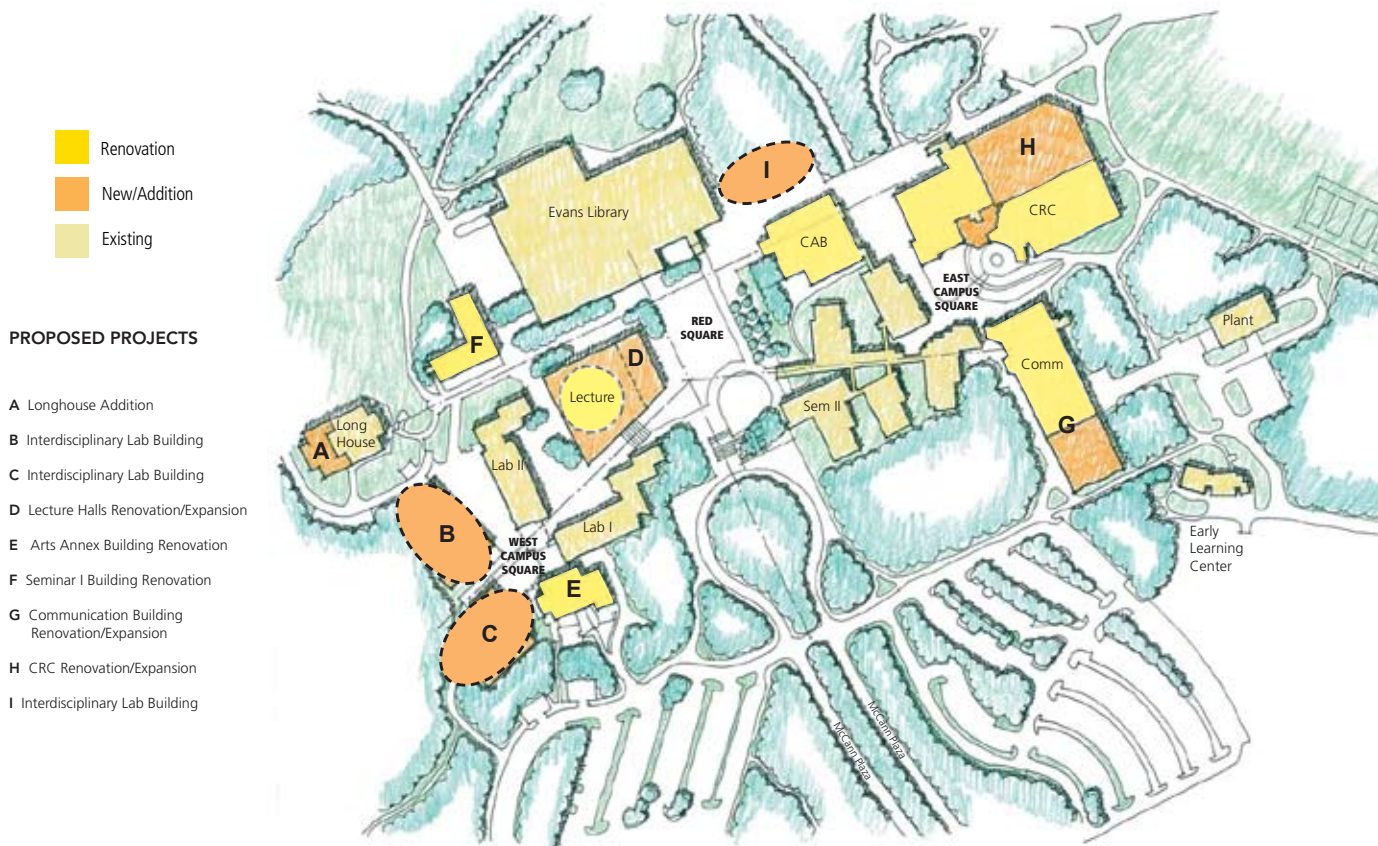


Figure 2.11. Core campus proposed projects.

Several options for increasing the number of housing units on campus have been developed. The illustrated option adds four additional Quad-style buildings (400 beds) enclosing courtyards to accommodate underclassmen. New suite-style housing (Eco-Village) will be developed on the Modular housing site to appeal to students seeking a sustainable life-style (343 beds). Retail with cottage-style faculty housing (18 units) will be built on a portion of Lot F at the intersection of Overhulse Road and Driftwood Road. Lot F will be reconfigured to maintain current capacity and screened from the housing by landscaping. Additional options are illustrated in other sections of the document.

In addition to addressing the needs of the main campus, the planning process addressed recommendations for the Tacoma Campus and Reservation Based/Community Determined Programs that, as with additional housing options, are documented in the Recommendations section of the document.

The following is a summary of proposed new buildings and additions. These proposed facilities are in response to the list of needs compiled during meetings. This list should be reviewed and prioritized by the College community before becoming a final Master Plan recommendation.



**PROPOSED PROJECTS**

- J** Additional Quad Style Housing
- K** Retail/Married/Faculty Housing
- L** New Suite Style Housing
- M** Fieldhouse/Conference Facility

**KEY**

- New/Addition
- Existing

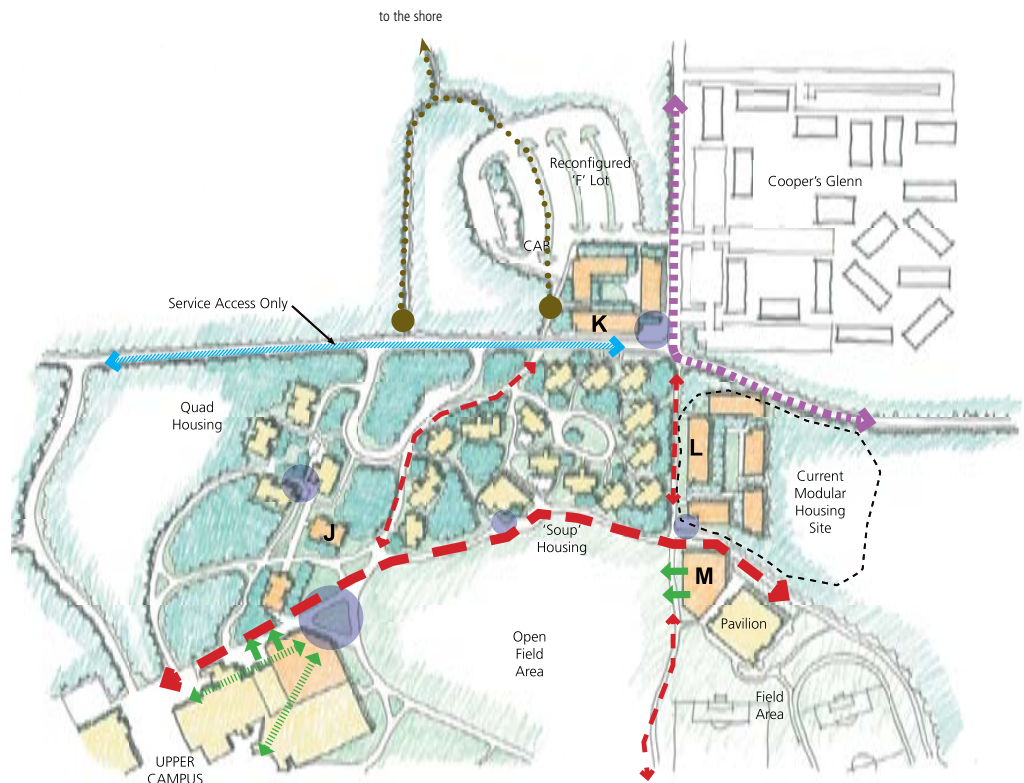


Figure 2.12. One of the proposed housing alternatives.



Figure 2.13. Additional Quad-style buildings enclosing courtyards.

**PROPOSED NEW BUILDINGS, RENOVATIONS AND ADDITIONS****Longhouse Expansion (Project A)**

Total Square Footage: 1,800 gsf

Projected Uses:

- Research, Office, Gallery, Resource Display Space

**Interdisciplinary Lab Building (Project B)**

Floor Plate: 16,500 gsf

Total Square Footage: 2.5 floors = 41,250 gsf

Projected Uses:

- Labs/Dirty Lab
- Flexible Interdisciplinary Labs
- Faculty Offices
- Faculty Lounge/Meeting Space/Coffee Bar

**Interdisciplinary Lab Building (Project C)**

Floor Plate: 16,500 gsf

Total Square Footage: 2.5 floors = 41,250 gsf

Projected Uses:

- Art and Science labs
- Flexible Interdisciplinary Labs
- Faculty Offices
- Art Studio/Gallery
- Extended Education Center (Special Project)

**Lecture Halls Renovation/Expansion (Project D)**

Floor Plate: 36,600 gsf

Total Square Footage: 1.5 floors = 54,900 gsf (31,261 SF addition and 23,639 SF renovation)

Projected Uses:

- Gallery and Breakout Space
- Flexible Interdisciplinary Labs
- Lecture/Seminar Space
- Faculty Offices
- Center for Sustainability
- Campus Information and Tours

**Arts Annex Building Renovation (Project E)**

Floor Plate: 9,126 gsf

Total Square Footage: 3 floors = Approximately 27,377 gsf

Projected Uses:

- Renovated/Updated Studio Art Labs
- Renovated/Updated Studio Art Shops
- Renovated/Updated Flexible Interdisciplinary Labs

**Seminar I Building Renovation (Project F)**

Floor Plate: 11,227 gsf

Total Square Footage: 4 floors = Approximately 44,909 gsf

Projected Uses:

- Campus Police Services Offices
- Campus Health Services Offices
- Renovated Classrooms
- Faculty Offices
- General Campus Administrative Offices

**Communication Building Renovation/Expansion (Project G)**

Total Square Footage: 59,825 gsf (addition only)

Projected Uses:

- Performance/Lecture Space
- Conference Programs and Receptions
- Flexible Interdisciplinary Labs
- Faculty Offices
- Communications Building Renovation and Expansion Predesign Study, July 2002

**CRC Renovation/Expansion (Project H)**

Floor Plate Addition: 40,500 gsf

Total Square Footage Addition: 1.5 floors = 60,750 gsf (addition only)

Projected Uses:

- Exercise, Recreation and Wellness Center
- Cafe, Lounge and other student life amenities
- Entry Lobbies and improved circulation

**Interdisciplinary Lab Building (Project I)**

Floor Plate: 16,500 gsf

Total Square Footage: 2.5 floors = 41,250 gsf

Projected Uses:

- Performance Spaces
- Flexible Interdisciplinary Labs
- Gallery/Display
- Faculty/Staff Offices

**Quad Dorm Expansion (Project J)**

Total Square Footage: varies

Projected Uses:

- First and Second Year Housing

**Driftwood Suites Housing (Project K)**

Total Square Footage: varies

Projected Uses:

- Local retail space
- Student/Married Student Housing
- Potential Faculty Housing
- Visiting Scholar Housing

**Modular Replacement Housing (Project L)**

Total Square Footage: varies

Projected Uses:

- Replaces Modular Housing
- Higher Density Housing
- Eco Village Location

**Fieldhouse Pavilion Expansion (Project M)**

Total Square Footage: 13,000 gsf

Projected Uses:

- Field House activities – lockers and team rooms
- Sport Camp and Conference Services
- Light catering and flexible meeting spaces

**Goeduck House Renovation (Project N)**

Total Square Footage: 5,000 gsf

- Renovation/Updating of existing facility for small retreats
- Limit uses to minimize environmental impact

**Organic Farm Lab Facility (Project O)**

Total Square Footage: 12,000 gsf

- Food Grade Teaching Lab
- Greenhouse
- Equipment Storage

**Terrascope Interdisciplinary Education Center (Project P)**

Total Square Footage: 12,000 gsf

- Flexible Interdisciplinary Labs
- Forest Canopy Studies Lab
- Marine Studies Lab
- Equipment Storage
- Community Education Resource Center

**Combined Housing and Campus Facilities Maintenance Building (Project Q)**

Total Square Footage: 12,000 gsf

- Housing Maintenance Offices
- Campus Maintenance Offices
- Maintenance Vehicle Parking
- Maintenance Shop Space
- Maintenance Material Storage

Funding for the various proposed projects may occur through various possible funding sources. In a time when receiving capital funding dollars from the State continues to be challenging, understanding alternative strategies for funding projects and initiatives is critical. Several various funding groupings are listed below with appropriate project types indicated to provide a sense for how many of the ideas embodied in the plan could be realized and include:

**CAPITAL PROJECTS**

Funding in this category typically supports additions, renovations and new facility projects and may include the proposed:

- Science Buildings/Renovations
- Interdisciplinary Lab Buildings
- Communications Building Renovations/Expansion
- Lecture Halls Renovation/Expansion
- Seminar I Renovations
- CAB Renovations/Additions
- CRC Renovations/Additions
- Arts Annex Renovations/Additions
- Maintenance Facilities

**MAINTENANCE PROJECTS**

Funding in this category typically supports smaller projects that are targeted at supporting and maintaining existing campus facilities and grounds and may include the proposed:

**Trails**

- Accessibility Improvements
- Signage/Gateway Marking
- Red Square Pavement Replacement

Road Removals/Changes

Reforestation Projects

Transit Waiting Areas

## SPECIAL PROJECTS

Projects in this category are typically not supported directly by the Legislature and rely on student fees, grants, gifts and other sources of revenue and may include the proposed:

Conference Center

Extended Education Center

Performing Arts Center

Field House

Canopy Walk

Arable Land Project

Faculty Housing

Student Housing

Careful evaluation of the projects and proposals listed in this report and the input provided during the fall of 2007 review sessions helped distinguish between projects of greater and lesser importance to allow a refined prioritization to occur. Key future actions emerging from the master plan process include:

Add interdisciplinary and flexible lab space

Renovate Arts Annex

Expand arable land and teaching facilities at the Organic Farm

Create Terrascope-Forest Canopy educational and retreat center

Expand student and faculty housing choices

Expand and renovate Recreational Facilities

Enhance student life facilities

Highlight economic, ecological and educational value of making campus a laboratory for sustainability

Define and implement the most effective means of meeting the College's goal of carbon and waste neutrality by 2020

Centralize extended education programs on the main campus to maximize their synergy



03



PROCESS





## 03 PROCESS



Figure 3.1. An 'eco-charrette' identified opportunities to enhance sustainability.



Figure 3.2. Planning workshops defined means to improve campus accessibility.

Throughout the Master Plan process, every effort was made to engage the campus community in a dialog concerning the future of the physical facilities of the campus and how to make the campus an even better place to live, work, teach and learn.

The Master Plan process was intensive, inclusive, collaborative, and based on the philosophy of 'placemaking' and 'building community'. Initial steps included gathering existing data and reviewing past Master Plan documents. These information gathering steps were followed by a series of on-campus meetings that took the form of open information sessions, pizza dinner discussions, one-on-one meetings, facility and campus tours, community presentations and focused charrettes. These campus and community gatherings took place over a five month period between February and June of 2007 and included participation in the annual Evergreen student sponsored Synergy Conference and an Eco Charrette.

The process was divided into the following tasks: Task 1 – Goals/Objectives/Needs Assessment, Task 2 – Alternatives/Evaluation, and Task 3 – Master Plan Recommendations/Implementation. This plan documents the process, information collected, and the list of recommendations developed. Opportunities for students, faculty, staff and the greater community of The Evergreen State College to evaluate the ideas and concepts included in this document were provided over the course of the summer and into the fall of 2007.

Utilizing the process outlined above, functional requirements for master planning (site circulation, parking, loading, etc.) were considered simultaneously with potential views, sun, wind, trees, etc. These issues were evaluated in conjunction with building function (both quantitatively and qualitatively) and in relation to the landscape. It has been an inductive, as opposed to a deductive, process. On a campus such as Evergreen's, the integration of the buildings and roads with the vegetation and the terrain are ideally seamless. In addition to such considerations, the 'readability' of the campus has been enhanced to make it easily understood by visitors, students, staff and surrounding residents. The outdoor spaces that connect the various areas of the campus have been shaped and modified to relate to an overall vision of the campus that will accommodate future programmatic changes and unanticipated growth while maintaining a sense of integrity.

The overall challenge was to create a visionary and comprehensive campus master plan for a unique state liberal arts supported college located on an exceptionally beautiful, natural site.

While building upon past planning efforts, the process was an important new chapter in the development of the College and responds to the challenges of the current strategic and academic plans by creating a graphic and physical plan that will accommodate the future vision of the College. New issues have been addressed and old issues revisited, including ideas related to image and identity, the role of the College in the region and community, new facilities to accommodate enrollment and program growth, updating and renewing aging facilities, integrating environmentally sustainable strategies, transportation and way finding improvements, off campus development, preservation and use of wooded and shoreline areas and making the campus experience more inviting



Figure 3.3. Planning input was gathered at the annual Synergy Conference.



Figure 3.4. Tours allowed faculty and students to express the important and varied uses of campus reserves areas.

and accessible for existing and perspective students, faculty, staff and community. Placemaking – the process of creating places where people want to be and go - and sustainability have been fundamental drivers in the planning process.

This plan builds upon and expands recent College sustainability initiatives stated in the Strategic Plan and exemplified by the Seminar II building. The plan establishes LEED standards and encourages sustainable strategies related to building siting, energy, water, stormwater and landscaping. The plan also considers the historical development of the site, Native American influences, and natural ecologies. The precedents from the original campus plan and its updates have been reviewed and incorporated into this plan.

The engagement of constituents, especially students, in the planning process has been essential in enriching both the product and participants themselves. Early in the process, with the assistance of the faculty, opportunities for student involvement were identified and several students became vital and active participants in the process, focusing on place naming and process support.

In addition to meetings with the Master Plan Committee, The Campus Land Use Committee, Senior Staff, and the Sustainability Task Force, the planning team met with the College's Board of Trustees, Cooper Point Association, Ralph Munro, City, County, Thurston County Regional Planning Council staff, and Intercity Transit. There were three periods of contact with most of these groups; near the beginning of the process the groups were invited to offer ideas and aspirations, later they were asked to comment on concept alternatives and finally, a third feedback session in the fall of 2007 when the plan was updated to include comments generated by the preliminary draft document.

The purpose of this structure was to first engage stakeholders before any major decisions were made, to then demonstrate how their input was incorporated into the concept alternatives, and finally to allow course corrections as the Master Plan was finalized. The resulting product of the process was generated gradually with continual involvement by the College community.



Figure 3.5. Alternatives to suburban development are sought for on-campus housing for faculty and staff to improve sustainability, offer affordability and build community.

## TASK 1 – GOALS/OBJECTIVES/NEEDS ASSESSMENT

The Master Plan process was founded on the values and aspirations of the College community. The planning process was kicked-off by a meeting with the Planning Committee and subsequent individual meetings over a two-day period with key constituents to gain a thorough understanding of their vision, goals, and immediate and future facilities needs. Mutual goals and objectives for the Master Plan were then identified and reviewed by the Planning Committee. These goals and objectives have provided a touchstone throughout the planning process (see the Mission and Goals section of this report).

The needs assessment began with a review of the 2006 Strategic Plan, purpose, role, and recommendations of the Campus Land Use Committee, Facilities Condition Assessment, current Capital Plan, academic plans, past Master Plan documents from 1998 and 2005 and other background materials.

The values of an institution of higher learning are not always reflected in the built environment of a campus. An important part of the Master Plan process has been to detect the changes in values that have occurred over the years, as reflected in the Strategic Plan. Related to this is the constant refocusing and refining of academic programs. We have met with the Program Unit Coordinators (PUCs) to discuss how they anticipate programs will change over the next decade and beyond, and what changes in facilities and functional adjacencies are implied or needed to support those changes.

Four interconnected information categories have been studied in this task: (1) the historical development, natural features and ecology inventory, (2) the buildings inventory, (3) the landscape inventory and (4) the functional infrastructure of the site. Diagramming these existing conditions has informed decisions about expansion, reuse, remodeling and replacement of facilities. The Open Space Inventory evaluates the many landscape features of the campus, with the intention of developing a comprehensive vision of campus landscape, including plantings, public gathering spaces, views and view corridors. The Functional



Infrastructure of the site includes the many overlapping systems that are necessary: utilities, signage, access, circulation, parking, building orientation, and pedestrian circulation. Each system has been mapped to expose how it works, where it may be deficient, and how it can be improved. Much of this information has been gathered from existing mapping, inventories and data available from the College.

Land use and zoning issues have been assessed. The campus is a center of more intense use within a semi-rural area with encroaching suburban development. While sewer, water and transportation needs of the College must be met, areas surrounding the College are desired to retain their rural character. This sensitive land use strategy is also consistent with the green image of the College. Land use and zoning strategies are consistent with this intent. Continued off-campus (satellite) development was also evaluated under the plan.

## TASK 2 – ALTERNATIVES/EVALUATION



Figure 3.6. Current bus service is well used.

In response to input from Task 1 and working with the Planning Committee and Senior Management, the team developed and evaluated alternatives for the components and sub-components of the Master Plan. Attention to sustainability and compatibility with the campus culture were integral to the development of alternatives and the subsequent recommendations.

With the College's commitment to environmental stewardship and zero net carbon and waste production by the year 2020, issues of sustainability are at the core of all of the concepts proposed. This commitment applies to open space and other sustainable strategies such as energy consumption, efficiency, and reduction, view corridors, storm water harvesting, green roofs, building sites, solar orientation, and massing. Wayfinding elements that form "visual gateways," such as signage and monuments at entry points, are proposed. Public gathering spaces and recreational areas have been identified and programming proposed.



Figure 3.7. Recent transportation shelter improvements.

The building renovation and development plan identifies potential new development sites, massing alternatives, additions and renovations. All alternatives incorporate sustainable strategies based both on the design principles established in previous campus planning efforts and as identified during this planning process. New housing units and renewal and renovation of existing housing and food service facilities have been addressed.

The transportation plan has been developed to address transportation issues at the campus core, the student housing and the connections to other regional destinations and off campus facilities. The plan accommodates automobile movements to minimize conflicts, provides for parking that is convenient yet inconspicuous, emphasizes safe and convenient walking routes and will expand paths and bike trails. Alternative transportation ideas and modes are proposed and encouraged.

Intercity Transit (IT) provides public transportation service to the campus and its transit center is prominently located at the entry to Red Square. Means of making public transit a more attractive option for campus users have been investigated and outlined in the recommendations section of this document.

Our approach to determining transportation demands began with building a clear picture of the number of people using campus facilities at specific times. Using



Figure 3.8. Alternate modes of transportation are utilized.



Figure 3.9. Signage and mapping are critical to effective wayfinding.

anticipated enrollment, class schedules, activity programs and employment levels, we have identified staff, faculty, student, and visitor populations by time of day to determine peak periods and their duration. Changes in traffic, parking, transit, and bicycle demand generated by proposed new campus buildings and facilities have been calculated based on available data on the mode of travel to campus for each population group.

In the Reserve areas, park and wildlife sanctuary transportation planning principles have been applied to preserve these natural areas. With the College's input, priorities for new pedestrian and bicycle trail connections and upgrades to existing trails have been developed. Preferred public access routes to and through the campus have been identified. Clearly marked trails with interpretive graphics and providing trailheads near transit stops have been considered to increase accessibility to these outdoor "classrooms." A landscape plan has also been developed to logically integrate open spaces and buildings.

Campus utility needs have been assessed and a diagram of the utilities developed. Wet utility (water, sewer, and storm drainage) and dry utility (power, telephone, gas, and cable) demands have been analyzed to establish needs and evaluated to determine capacities. Again, consideration of sustainability has been central to the assessment and recommendations for meeting the current and future needs of the campus. These considerations are documented in later sections.

### TASK 3 – MASTER PLAN RECOMMENDATIONS/IMPLEMENTATION

The Campus Master Plan has been synthesized from all that is outlined above. The values and physical needs of the institution have been recorded, refined and restated through interviews with those directly affected, through community and stakeholder workshops, and through reviews by the College community, Planning Committee, Senior Management and the Sustainability Task Force.

Careful evaluation of the projects and proposals listed in this report and the input provided during the fall of 2007 review sessions helped distinguish between projects of greater and lesser importance to allow a refined prioritization to occur. Additionally, the value of the previous planning documents were restated and have been incorporated into the overall product of this process as supplemental volumes. This report provides site specific recommendations and works in conjunction with the two additional volumes that comprise the overall Campus Master Plan vision.



04



EXISTING CONDITIONS





## 04 EXISTING CONDITIONS

The Evergreen State College campus is part of the Cooper Point Peninsula which reaches into the southern end of Puget Sound and is located west of the City of Olympia. The campus is located on approximately 1,008 acres of land, which remains predominately forested with a mixture of largely native second growth vegetation. The campus was initially conceived in the early 1970's to one day accommodate approximately 12,000 students and initial projects and infrastructure elements were constructed with this ultimate goal in mind. Current development and facilities accommodate approximately 4,500 students. There is housing on campus; however, nearly 80% of students live off-campus and drive to campus for classes and/or events.

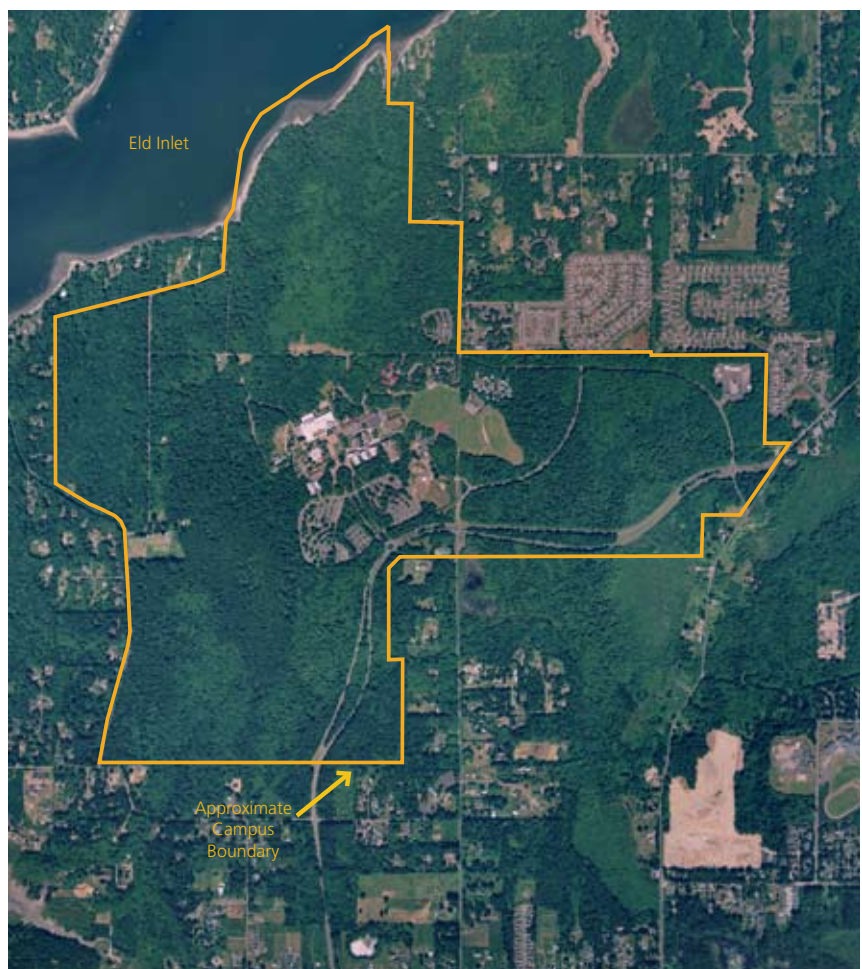


Figure 4.1. The College currently occupies 1.5 million SF of building space that leaves the majority of the campus undeveloped.

The campus topography is generally made up of gradually sloping gentle terrain. Some areas of lower elevation (southeast) and steep ravines (northern) can be found. Bluff areas are located along the northern part adjacent to the shoreline. The highest point lies just west of the campus Core between the main area of facilities development and the Organic Farm on the extreme western edge of campus.

The forested areas of campus are vegetated with species representative of the Western Hemlock zones of Washington and Oregon. This land is mostly unmanaged by the College with the exception of the campus Core areas and the Organic Farm to the east. The entire campus was logged at one time along with much of the surrounding area. Today, there are regions of second growth Douglas Fir found in the eastern and southeastern Reserves between the campus Core and the Organic Farm, as well as in the northern ravine areas of the campus. The Reserve also contains a mix of other conifers such as Western Red Cedar and hardwood species such as Big Leaf Maple and Red Alder.

Wetland areas are located in all quadrants of the Reserve with extensive areas in the southeastern parts of the campus, along streams on the property, north of the meadow area next to Driftwood Road and along Evergreen Parkway. The eastern half of the Reserve is considered by many to be the least disturbed and most pristine on campus. This consists of contiguous patches of Douglas Fir and other conifers. Beach areas in the northern half of the Reserve are dominated by tidal marine plants. Campus Core landscapes are managed and consist of lawn areas, gardens along pathways, recreational field areas and identified teaching garden.

More detailed information regarding vegetation can be found in the 1998 and 2005 Campus Master Plans and in the 2006 Floristic Study located in the Appendix (Volume III).

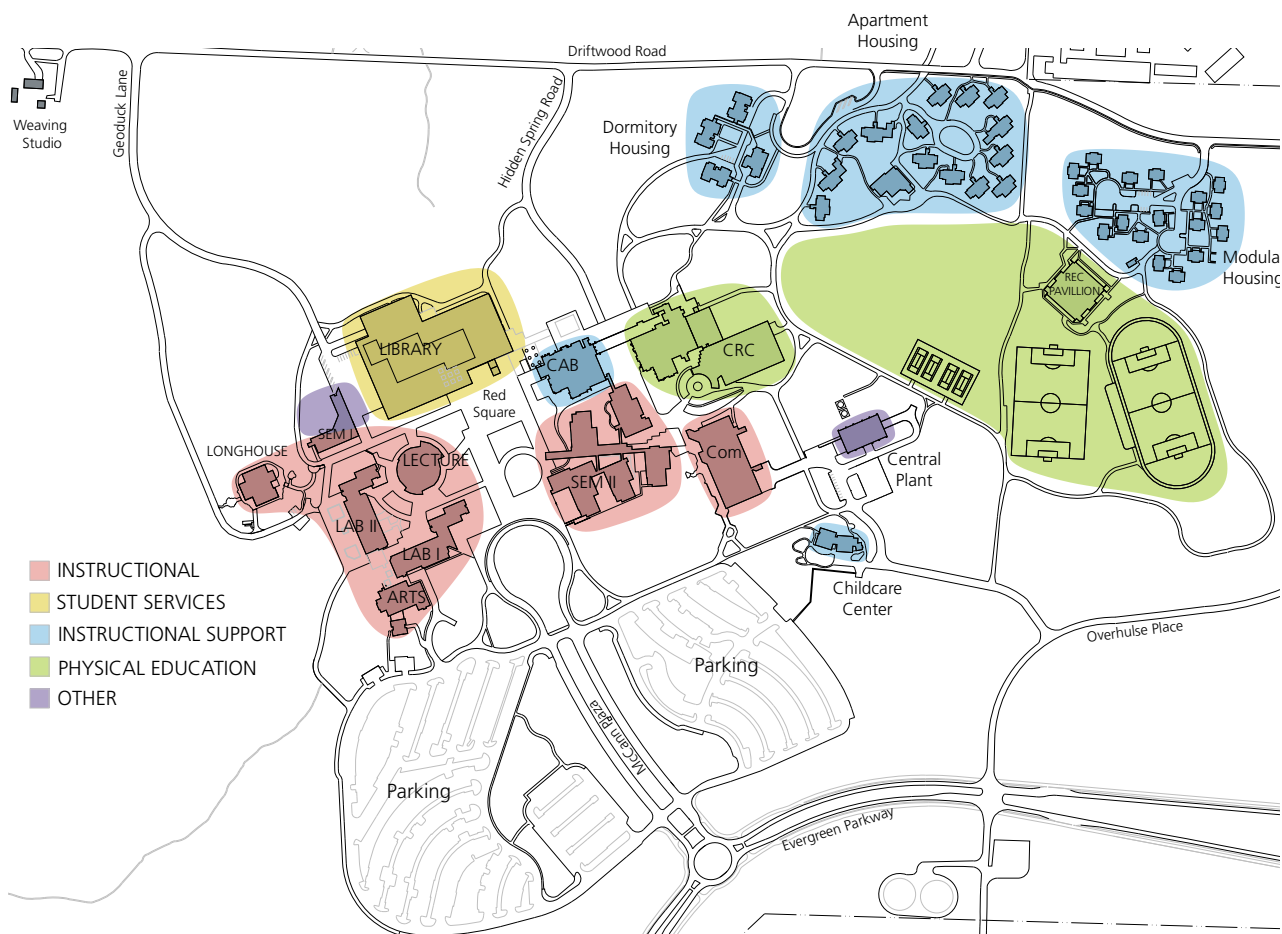


Figure 4.2. Space and Building uses.

The majority of facilities are concentrated around the campus Core. The Core is made up of two general areas referred to as upper and lower campus. The upper campus Core consists of numerous concrete buildings which create a strong unified architectural expression. Organized around Red Square, a large central open space, the instructional and administrative spaces of the College are dispersed and integrated along with faculty offices, science labs and studio spaces.

The predominant construction technique and aesthetic utilizes exposed concrete and glass scaled to create large spaces with limited visibility into building spaces. The solid and somewhat imposing feel of many of the buildings limits a visitor's exposure to the activities going on inside the buildings and contributes to a sense that there are a limited number of students on the campus at any given time. The large scale of both the buildings and the areas between contribute to a sense that the spaces and buildings are over-scaled and lack definition.



*Figure 4.3. The concrete construction used in much of the campus hides the activities within and creates a cold, unfriendly public realm.*



*Figure 4.4. Limited gathering opportunities at CRC Plaza.*



*Figure 4.5. Few indoor/outdoor connections between CAB and CRC.*



Lower campus is a collection of facilities developed to support student housing and the athletic fields. There are several housing options including shared room, multi-story housing (phase I) typically used for first and second year students. Lower density, apartment style units (phase II and III) that provide living rooms and kitchen facilities and an apartment feel. The final option is Modular housing that provides low density and almost an individual house feel. Occupancy rates for all of the options vary from quarter to quarter with Fall and Winter being the most popular with occupancies near 100%. Occupancy rates have been trending upwards across all quarters.

Athletic fields and an open sports pavilion adjoin the housing facilities and are used by both the community and the College for summer camp programs and current athletic programs.

There are several main buildings at the maintenance yard site off Driftwood Road in the east portion of the campus that support grounds maintenance, refuse pickup and motor pool services for the College. The site houses shop buildings for



Figure 4.6. Lower Campus Athletic Fields.



Figure 4.7. Quad dormitory housing built in 1971 houses lower classmen.



Figure 4.8. Soup housing (Alphabet Soup) built as apartment style housing, 1987-1989.



Figure 4.9. The athletic fields of the College provide a central amenity for on-campus housing.



Figure 4.10. Modular housing built in 1971 as temporary student housing.

office space, a woodshop, metal shop, a sign shop, paint shop, a lunch room, tool storage, materials storage rooms and a safety equipment storage room. There are also several other structures on-site that house additional shop and office space including a grounds equipment storage unit, shop equipment storage, a surplus shed, grounds office space, a hazardous materials storage unit and a boat shed. There are two garages, one for motor pool with a mechanics office and another bay containing a lunch room.

The site also has parking and storage space for 51 campus vehicles and maintenance equipment, ranging from trucks, vans, tractors, mowers and forklifts to chippers, sweepers. Vehicles are categorized as for academics, fleet, grounds/shop, grounds, locksmith, maintenance services, motor pool and refuse. Parking is also available for customers and staff at the site.



Figure 4.11. The Organic Farm provides a unique campus identity and learning environments.

Residential Services office and maintenance facilities are currently located within the Quad Buildings. To accommodate additional maintenance space and restore space for residential uses, Residential and Dining Services will be moving temporarily to the Modular housing site where they will potentially occupy two Modular housing units.

The campus also has several developed areas dispersed around the campus that include the Maintenance Shops, a currently unused facility called Driftwood House, a facility at the shore called Geoduck House currently housing a K-3 grade independent school, and an Organic Farm that has approximately four acres of arable land and several support buildings. The road system is comprised of a series of adopted county roads and a parkway constructed to create a formal entry to the College. An earthen trail system connects the farm and the shore with the campus Core.

## TRANSPORTATION

The setting of the main campus of The Evergreen State College, located approximately 5 miles from downtown Olympia and somewhat peripheral to population centers in Thurston County, poses significant challenges to creating an efficient transportation system for its students, staff and faculty. Despite this seemingly remote location, strong levels of transit use, cycling, and ridesharing occur. Such good performance indicates a strong commitment among the College's community to using alternatives to single-occupancy vehicles. This commitment provides an essential foundation for creating a more energy efficient and less polluting campus transportation system.

### Modes of Travel

Table 4.1 shows the mode of travel used by staff and by students for commuting to campus. These data come from separate surveys of those two groups, the Commute Trip Reduction survey for staff (June 2005), and the Evergreen Student Experience Survey 2006 for students.

TABLE 4.1 CURRENT MODE OF TRAVEL		
Mode of Travel	Faculty & Staff	Commuter Students
Drive Alone	66%	60%
Rideshare	16%	15%
Bus	6%	20%
Bike	10%	3%
Walk	2%	2%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>

Bike use appears particularly strong among staff, while transit use is high for commuting students. Both groups have high levels of ridesharing. In fact, ridesharing rarely goes higher than these rates. Walking, not surprisingly, occurs at low rates since comparatively few people live within reasonable walking distance of campus. It should be noted that the strength of alternative modes is only minimally influenced by the very modest parking charges levied on campus.

### Parking Demand and Supply

Parking is monitored by Parking Services which counts the number of vehicles present each weekday at 10:00 am, 1:00 pm and 7:30 pm. Based on counts conducted from January 2006 through February 2007, the peak number of vehicles parked occurs during the fall term. Figure 4.12 illustrates the variations in demand across the academic year.

The peak occurs in the fall quarter at 1:00 pm equally on Tuesdays and Wednesdays. At the peak, approximately 545 spaces remain vacant. Table 4.2 shows the use and availability by lot.

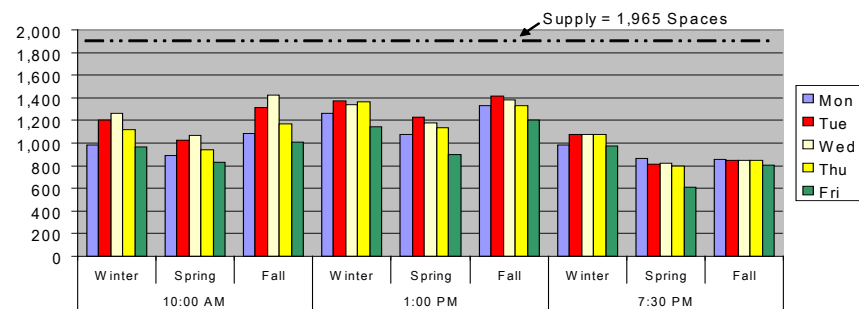


Figure 4.12. Parking Demand by term and time of day.

TABLE 4.2 PARKING OCCUPANCY BY LOT AT PEAK TIME FALL 2006				
LOCATION	SPACES	VEHICLES PARKED	SPACES AVAILABLE	% OCCUPIED
Lot B	777	505	272	65%
Little B	182	33	149	18%
Lot C	557	548	9	98%
Lot F	318	272	46	86%
Fireweed Lot	23	2	21	9%
Meters	16	7	9	44%
Accessible Spaces	41	31	11	77%
Others	50	16	34	32%
	<b>1,965</b>	<b>1,414</b>	<b>551</b>	<b>72%</b>

Only Lot C achieves full use, mainly due to its closer proximity to the campus Core that offers a shorter walk. The bulk of unused parking, over 400 spaces, exists in Lot B and in Small B. Lot F caters primarily to resident students. An early morning (6:30 a.m.) check of Lot F and other housing area parking spaces on three separate days in April, 2007, found an average of 234 vehicles parked, representing peak demand for resident students.

On balance, Evergreen has more than enough parking to meet most current needs. Exceptions include days when athletic fields host games for which too little parking exists near the fields for spectators, and special event days such as Super Saturday and Commencement.

Table 4.3 provides the estimated composition of demand at the peak time among students, staff, faculty and visitors.

TABLE 4.3 ESTIMATED COMPOSITION OF PEAK PARKING DEMAND AT 1 P.M. DURING FALL QUARTER		
POPULATION GROUP	VEHICLES PARKED	% OF TOTAL
Faculty/Staff/Temporary Employees	469	33%
Commuting Students	688	49%
Resident Students	235	17%
Visitors (estimated)	25	2%
<b>TOTAL</b>	<b>1,417</b>	<b>100%</b>

Source: Tilghman Group

Commuting students account for the largest share of peak demand, in spite of having a low rate of auto use. Student vehicles outnumber all other parked cars due simply to the large number of students present.

Auto availability differs widely between resident and commuting students. Based on current usage, one car is available for every 4 resident students while one car is available for every 1.5 commuter students.





Figure 4.13. Adequate parking exists on campus.

### Parking Rates and Revenue

The amount charged to park on campus has remained constant since 2000. A rate increase has been proposed and, if approved, would take effect in the Fall quarter of the 2007/08 academic year. Rates apply commonly to all vehicles parking on campus without regard to student, staff or faculty status. Table 4.4 lists current rates.

TABLE 4.4 PARKING RATES		
PERIOD	RATE (2006)	RATE (2007)
Daily Pass	\$1.25	\$2.00
Quarterly Permit	\$32	\$40
Fall/Winter/Spring Permit	\$90	\$115
Full Year Permit	\$96	\$120
Meters:		
Housing Loop	\$0.40 / hour	\$0.60 / hour
All Others	\$0.30 / hour	\$0.50 / hour

In 2007, people purchasing a \$115 permit pay only \$12.70 per month to park, substantially less than the cost of a transit pass, which is currently \$25 per month.

Parking revenues and expenses are shown in Table 4.5.

TABLE 4.5 PARKING RATES	
SOURCE	REVENUE FY 2006
Permits Sold	\$165,663
Daily Revenue	\$142,846
Infractions	\$ 96,351
<b>TOTAL REVENUE</b>	<b>\$404,860</b>
<b>EXPENSES</b>	<b>\$416,467</b>
<b>NET REVENUE</b>	<b>\$(11,607)</b>

The parking system does not currently take in sufficient revenue to cover its expenses. In addition, the system has outstanding debt incurred to pay for expansion and improvements in parking lots in 2004.

A table found in the appendix compares parking rates at public universities and colleges throughout the Northwest. Since many institutions offer tiered rates, the table groups them into high, middle and low ranges. Evergreen's current and proposed parking rates fall at the lower end of all schools' rate.

### Transit Services

Two bus routes serve the campus from downtown Olympia: Route 41 and Route 48. Operated by Intercity Transit, these routes run from the downtown transit center to the campus every half-hour from 6:00 am to 9:00 pm and then only Route 41 continues hourly until midnight. With their overlapping schedules, these two routes offer a bus every 15 minutes between campus and downtown. Due to the popular destinations served including Evergreen, Westfield Capital Mall and downtown Olympia, these are Intercity Transit's most productive routes. Table 4.6 compares ridership generated by Evergreen's campus to the total route ridership.



Figure 4.14. Transit stop adjacent to Red Square.

TABLE 4.6 TRANSIT RIDERSHIP AT EVERGREEN STATE COLLEGE		
ROUTE	EVERGREEN RIDERS (WEEKDAY, ON + OFF)	% OF TOTAL ROUTE RIDERSHIP
Intercity Transit #41	780	32%
Intercity Transit #48	300	20%
<b>SUM</b>	<b>1,080</b>	<b>28%</b>

Based on Intercity Transit's passenger counts, McCann Plaza is the primary origin and destination of passenger trips, serving 70% of riders. Conversely, the Housing loop generates only 1 of every 6 campus boardings, but is used by many more disembarking riders to reach the campus core sooner than they would by riding around to McCann Plaza (Route 41 goes first to the Housing Loop, then to McCann Plaza requiring an additional 9 minutes). It is estimated that McCann Plaza would actually serve 85% of riders if all routes went directly to it.

Evergreen students pay a fee for transit service amounting to \$1.10 per credit up to 12 credits. This generates over \$150,000 annually which, through a negotiated purchase, provides unlimited use passes for students to ride Intercity Transit buses. This fee amounts to roughly \$0.65 per ride (when counting only those rides to and from campus), less than the regular fare of \$0.75. The state provides college employees with the Star Pass which is paid for with state funds outside of Evergreen's budget. This is a benefit to state employees here and elsewhere. Although student fees do not subsidize employee passes, they do make more service available to them.

### Cycling & Walking Routes

Dedicated multi-purpose bike and walking paths along Evergreen Parkway connect to other trails and roads linking campus to downtown Olympia and area neighborhoods. The McLane trail is the primary connection. Bicycle riders, however, face a number of gaps in the trail system and must also rely on streets without striped paths for bikes. Gaps occur between Division Street and Evergreen Parkway, on Cooper Point Road between Walnut Road and Evergreen Parkway, and on Harrison Street between Kaiser and Evergreen Parkway. Sidewalks lack continuity along Driftwood Road between Overhulse Road and Evergreen Parkway. Trail heads for walking trails through the Reserve tend to be difficult to locate and would benefit from better signs. Trails serving the Reserve north of Driftwood Road lack continuity from the campus Core to their destinations.



Table 4.15. Providing bicycle amenities supports alternative transportation.

### Internal Circulation

The campus was carefully laid out to capture vehicles at the edges and preserve the Core areas for pedestrians. Major walkways and plazas were designed to accommodate service, security and other occasional vehicles when necessary. However, it appears that vendor, service and security vehicles routinely travel into the Core of campus and are frequently present on Red Square and other plazas. While such vehicles travel slowly, avoiding serious conflicts with pedestrians and bicycle riders, their presence and their large size (frequently full-size vans) clearly diminish the walkable character of walkways and plazas that are intended to be free of large vehicles. Some maintenance personnel now use smaller electric vehicles which fit much better on paths and plazas. Opportunities to manage vehicles better on internal roads are discussed in subsequent sections.

## Transportation-related Carbon Emissions

With the goal of achieving zero waste and carbon neutrality by 2020, Evergreen's Sustainability Task Force has undertaken to calculate the College's carbon footprint. It estimates that transportation generates approximately 31% of the campus's total carbon emissions. This includes commuting, transit services to campus, use of the college fleet, deliveries, and long-distance air travel for college purposes. The contribution of each activity is shown in Table 4.8.

TABLE 4.8 TRANSPORTATION GENERATED CARBON EMISSIONS PER YEAR		
ACTIVITY	METRIC TONS OF CARBON DIOXIDE EQUIVALENT (MTCDE)	% OF TOTAL
Commuting	5,392	78%
College Fleet	292	4%
Deliveries	126	2%
Air Travel	1,077	16%
<b>TRANSPORTATION TOTAL</b>	<b>6,887</b>	<b>100%</b>

Source: John Pumilio, Sustainability Task Force

It is clear that the opportunity for the greatest reductions in carbon emissions will be achieved from a focus on addressing commuting patterns.

## ENGINEERING SUMMARIES

### Utility Infrastructures

Chillers, boilers, electrical service, and sewer capacities were initially designed to support a campus of 12,000 students. Not all of the chillers and boilers were installed but space was allocated. As current and anticipated enrollment is significantly lower today, capacity issues are not anticipated. Utility Infrastructure components have been evaluated by the appropriate engineering consultant and their findings follow.

### Mechanical Systems

This section summarizes existing mechanical systems, including observed or reported operational issues, and a condition assessment based on a non-invasive field visual survey. This evaluation of the mechanical systems is based on field notes and a review of documents and drawings made available by the College for this assessment.

In describing and evaluating the mechanical systems, three terms are used that should be defined. These terms are: capacity = what can be produced; connected load = what could be used or needed; and diversity = not using the capacity at any one time. Diversity can result from oversized or inefficient systems, space usage, and building materials and orientation. In general, the capacity of mechanical systems at the College exceeds demand. Although the connected loads are high, diversity results in lower demand – as demonstrated by actual energy usage.

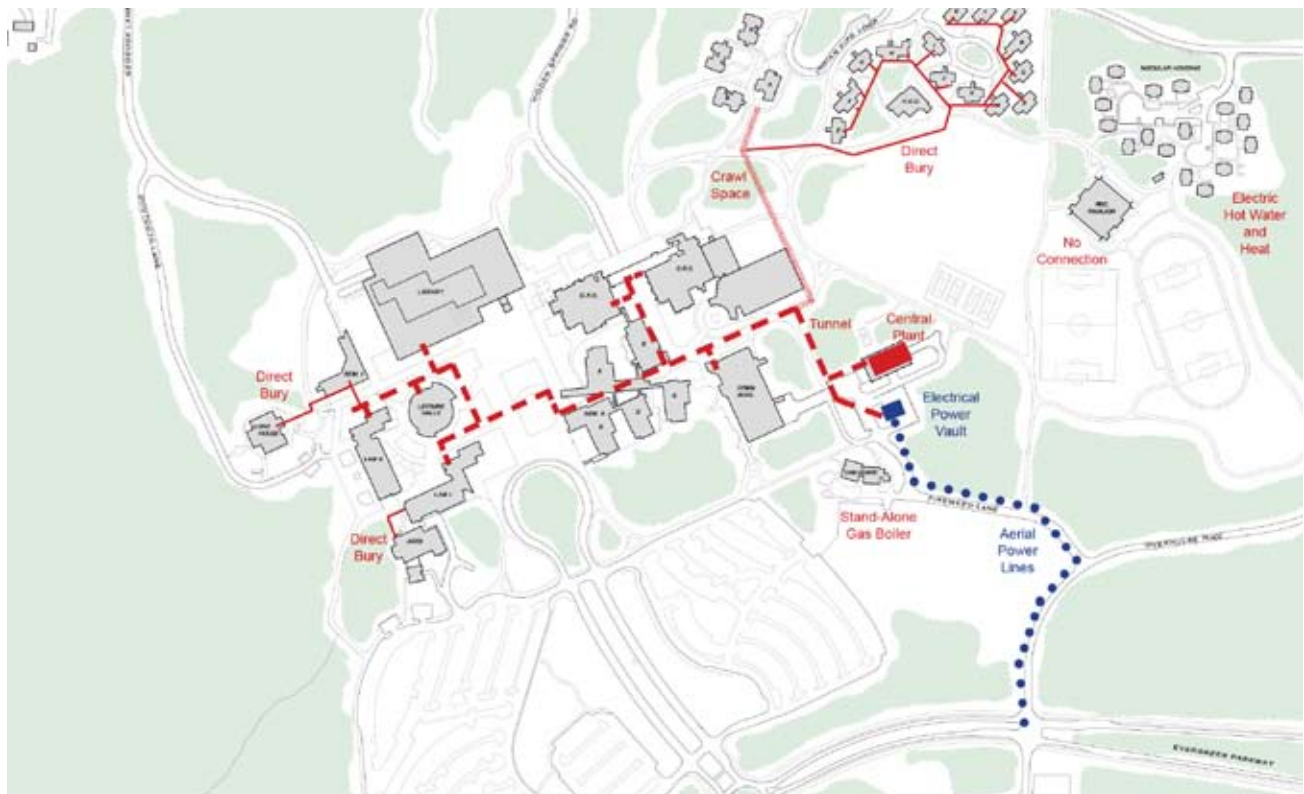


Figure 4.16. Utility framework diagram.

The College has a Central Utility Plant (CUP) that provides steam and chilled water to the campus for heating, cooling and domestic hot water through an underground tunnel system. The tunnel system connects directly to mechanical rooms in the Communications Building (Comm Bldg), Seminar I (SEM I), Seminar II (SEM II), College Recreation Center (CRC), College Activities Building (CAB), Library, Lecture Halls Building, Science Lab I (LAB I) and Science Lab II (LAB II). A crawlspace tunnel to Housing Buildings A, B, C & D provides steam to those buildings. A direct bury branch from that tunnel provides steam to the Community Center and Housing Units E through U. Additional direct bury piping (steam and chilled water) runs from the main tunnels to the Longhouse and Arts Annex buildings. The Modular housing buildings are heated by electric baseboard and have no connection to the CUP. The Childcare Center has its own gas-fired hot water boiler and is not connected to the CUP. Additional outbuildings consist of the Farmhouse, Geoduck House, Driftwood House and Maintenance Shops. Each of these outbuildings has its own stand-alone heating system.

Each main campus building has a steam to hot water heat exchanger for building heating and a separate heat exchanger for domestic hot water. The CRC has a separate heat exchanger for pool water heating, and the CAB utilizes steam directly for kitchen purposes.

#### **Boiler System**

The Central Utility Plant contains three steam boilers. The two main boilers produce 35,000 lbs/hr (approx. 33,964 MBH) of steam. These boilers are designed as 250 psig boilers, but are only run at approximately 100 psig. The BTU's per lb

of steam automatically drop 2-1/2 percent (at full load) by reducing the pressure that amount. The normal full load efficiency of these boilers is approximately 80%. Since these boilers are rarely run at full load, the actual efficiency is much lower than it would be at full load, in addition to the 2-1/2% loss from the pressure reduction. There is an additional 12,000 lb/hr (11,644 MBH) boiler that runs in the summertime to produce steam for domestic hot water heating.

The main campus total heating connected load (total of heating coils) is approximately 56,000 MBH. This does not include housing heating or any (main campus and housing) domestic hot water capacity. From discussions with boiler operating personnel, it appears that only one main boiler operates at any time during the winter. The housing total heating connected load is approximately 7,700 MBH. The main campus total domestic hot water connected load is approximately 25,000 MBH. The housing total domestic hot water connected load is approximately 3,300 MBH. That equals a total connected load of approximately 92,000 MBH. Since only one large boiler (33,964 MBH capacity) is operated at a time and the connected load, or possible total heating need, is 92,000 MBH, then the actual steam production is only 37% of the total connected load. Obviously the connected load is much greater than what is required to actually heat the buildings due to diversity.

The existing steam system suffers from considerable leakage at all converters, valves, condensate receivers, etc., in the existing mechanical rooms and utility tunnel. A steam to hot water system suffers loss through the heat exchanger itself on the magnitude of approximately 10-20%. However, most steam systems rely on accurately receiving condensate back from the system for re-use in producing steam. Most systems have a fair amount of loss in the condensate system, both through transmission loss in the piping and as well as leakage at receivers, valves and pumps. In combination with this, most mechanical rooms have been provided with cooling, thereby using additional energy to offset the heat loss through the steam system.

The main campus currently runs the boilers on an interruptible gas service. This means that when the utility company is under peak load they may call the College to have them switch from gas to oil for their heating needs. This occurs approximately once or twice a year on average.

### ***Cooling System***

The existing Central Utility Plant (CUP) houses an existing 800-ton York centrifugal chiller and associated pump installed in 1997 and a new 1000-ton centrifugal chiller and chilled water pump installed in 2007. Therefore, the capacity is 1800 tons. The current total connected load is 1600 tons with no diversity. There have not been any major complaints about lack of cooling throughout the campus, however, the system does suffer from some pumping issues and lack of circulation in the most remote buildings.

### ***Primary Air Handling Systems***

The eleven main campus buildings each contain a main built-up air handling system (or systems) housed in indoor mechanical rooms that are provided hot water and chilled water to the coils from the main campus system. Air handlers generally have both a supply and return fan. Conditioned air is provided to the spaces through galvanized sheet metal ducts and ceiling mounted diffusers. The majority of equipment observed (not all equipment was visible) appears to be

original to the age of each building, with some minor exceptions. The existing ductwork that was observed was generally insulated and in good condition. Conditioned air is provided at 55°F year round, and then heated as needed to provide the appropriate leaving air temperature, depending upon seasonal and space requirements.

Exhaust fans serve various spaces (mostly bathrooms and locker rooms) throughout the buildings. Most fans are located on rooftops, although some are located in ceilings or crawl spaces. The LAB I and LAB II buildings have mostly 100% outdoor air systems for the labs with fume hood exhaust systems located on the roofs. There is currently only one heat recovery unit serving a lab space in LAB II. All other labs do not have heat recovery. The Arts Annex building also utilizes mostly 100% outdoor air systems and its exhaust does not have heat recovery.

#### ***Pool Conditioning Systems***

The main unit serving the pool area, a built-up air handler located in the lower mechanical room, is operating as a 100% outside air system. It currently has a heat "run-around" coil installed in its air stream. HRC-1A and HRC-1B, as well as HRC-2A thru HRC-2D were installed in the autumn of 2002. This run-around loop is capable of capturing nearly 900 MBH of heating value. The coil currently located in the outside air intake air stream and the coil that is located in the return air stream are both functioning. The pump serving this system has a newer (high efficiency) 1.5 hp motor. All piping insulation appears to be in good condition.

At present, the exhaust air coil is located in the plenum air stream with a large amount of free/bypass area surrounding it, and much of the rigid insulation lining the plenum is no longer attached to the walls, blocking the air stream. This is substantially reducing the efficiency of the run-around loop. This condition is also allowing chlorine-laden air to be absorbed by the concrete walls.

Current drawing schedules suggest that all return air is being processed through HRC-2A thru HRC-2D. This is presently not the case, due to factors noted. Observations currently estimate only approximately 50% of this exhaust air is being processed through the coils.

The main pool filter, heater, valves and main piping are located in a room beneath the pool area. The original sand filter was a large bed style requiring the flow of a 40 HP pump. The large bed style sand filter has been converted to an open tank for skimming. In 1988 two smaller modern, closed vessel type sand filters were added to the system.

The original 40 HP motor SP-2 has been changed. In 1988 the pump was changed to a 20 HP, 925 GPM at 60Ft H.

The two new sand filters added are STARK Model S1-120, having a min surface area of 35 SF and a flow rate of 462 GPM & 13.2 GPM/SF. The flow total for the filters is 924 GPM.

#### ***Plumbing System***

A majority of existing plumbing fixtures appear to be original, but are in reasonably good condition. Some bathrooms appear to have been renovated, and some of the fixtures have been replaced. Many urinals have been updated to no-water type urinals.



Drain and vent lines all appear to be cast iron and in very good condition. Domestic water piping appears to be a mix of copper and galvanized steel, with the majority of visible piping being copper. No dielectric connections were visible during our initial inspection. The majority of domestic water lines appear to be properly jacketed and insulated. There is a mix of old and new insulation visible in the tunnels. Specific tests would need to be performed to determine if any of the insulation contains asbestos or other friable material.

### ***Controls***

The existing controls are a mix of pneumatic and electronic controls with some minor hand operation. There is a main DDC system on campus that is located in the CUP, with control components scattered throughout the buildings. Existing control equipment varies in condition, the majority of it is original to the buildings, but several upgrades have occurred in the last ten years. In addition, the pneumatic system suffers from considerable leakage that affects the quality of control. The building operators appear to have a reasonably good understanding of the equipment and how it should be operated, but the overall DDC System needs to be inventoried and calibrated so that all control functions and sequences are catalogued, recorded and understood.

### ***Fire Protection System***

There is an existing wet-pipe fire protection system that serves the main campus buildings. Existing pipe is conventional black-iron, with standard response sprinkler heads. The piping and heads appeared to be in excellent condition.

## **Campus Power, Lighting and Low Voltage Systems**

### ***Campus Primary Power Distribution***

Campus power is provided via two 12.5kV (kilovolts) distribution feeders (F5-1C and F5-2C) from outdoor fused switches located south of the Central Utility Plant. Service is provided from Puget Sound Energy by overhead lines to the outdoor switchgear. The system was originally designed for a much larger student base. Most of the 12.5kV feeders on campus are located in cable trays that run in the utility tunnel covering most of the main campus. The cables were installed in the original 1971 campus construction. Some direct bury cables have been installed where the utility tunnel does not provide access. An example of this is the cables serving the Housing area. The 12.5kV splices to buildings are made in oil filled link boxes located in the utility tunnel. Transformation from 12.5kV to 480 volt, 3 phase power occurs within the main electrical gear rooms in most building. The majority of the buildings on campus were constructed in the early to mid 1970's. Switchgear, transformers, panel boards and building power distribution are largely untouched in these buildings.

Emergency power is provided at most buildings via emergency backup generators. In some of these building there is a mix of both code required life safety and optional emergency loads. For example in the Campus Activities Building egress lighting loads are mixed with kitchen equipment loads.

Students currently pay \$1 per credit hour towards a Green Energy Fee, which provides the campus with one hundred percent green energy from renewable sources.

### ***Lighting***

Interior lighting consists of a variety of different lamp and fixture types. Many of the existing recessed lens fluorescent and recessed incandescent down lights are



operational and in good shape. Most of the down lights have had the incandescent lamps replaced with screw in type compact fluorescent lamps. There have been upgrades and additions in several of the buildings with the newer type lighting (T8 lamps and electronic ballasts) system installed. The Seminar II and Longhouse buildings have newer lighting technology lamps and ballasts.

Exterior lighting is provided by campus standard light poles, building mounted surface fixtures and walkway mounted recess step light type fixtures.

#### ***Lighting Control***

The majority of interior lighting is controlled via wall switches only. Only a few of the buildings and areas with additions or renovations done within the past ten years have automatic controls to meet the Washington State energy code. Seminar II does have limited daylighting control for fixtures within skylight zones via daylight type photo cells. Seminar II also has a low voltage programmable lighting control relay system and occupancy sensors controls. Lecture rooms in Seminar II have Lutron Grafik Eye control systems for pre-set zone controls and interface with the room audio/visual systems.

Exterior building and campus lighting is controlled via photo cells. The exception is Seminar II which uses the low voltage programmable lighting control relay system with photo cell input for control of exterior lighting.

#### ***Fire Alarm Systems***

The campus standard is EST (Edwards System Technology) that has been installed in newer building and older buildings that have been renovated or have additions. There is a campus fire alarm communication loop in the utility tunnel that provide campus wide monitoring. Several buildings such as the Campus Activities Building have older Simplex/Autocall systems. These systems were installed before ADA requirements for audio/visual and mounting height restrictions were mandated.

#### ***Access Control/CCTV Systems***

Access control and CCTV systems have been added to many of the buildings on campus. The access control system is the Millennium system. CCTV camera systems have been added to cover selected entries and spaces, including the CAB building .

#### ***Clock***

There are two clock systems in use on campus. The original hard wired, 120 volt pulse clock system is operating in most of the original buildings. There have been problems with this system and as a result a second system is being phased in. This is the Primex wireless clock system. This uses battery operated clock with GPS receiver and transmitters for automatic time correction.

### **Telecommunications Campus Cable Distribution Infrastructure**

#### ***Campus Distribution***

Buildings located near the central Core are served by an underground system of utility tunnels that contain cable trays used in the routing of electrical and telecommunications cables.

The tunnel system is sufficiently large enough for pedestrian traffic and small motorized carts to be driven through them to deliver tools and equipment to strategic locations. Separate cable trays for low voltage communications and primary power campus loop are provided throughout the tunnel system.

Cables exit the tunnel system to reach out lying buildings and at these points the cables enter a system of direct buried underground conduits and cast concrete vaults. Examples of these buildings are the Longhouse, Residence Units, and the Shops.

Within this system of underground conduits, plastic innerduct conduits are placed inside of larger metallic or PVC conduits to facilitate the installation of the fiber optic cables.

#### ***Data/Communication System***

The campus' main telephone switching system (PBX) is located in the basement level B-wing of the Library building. From this location, acting as a hub, all copper cables radiate in a star topology out to all other buildings on campus distributing telephone and other miscellaneous services to those buildings. Telephone tie lines connect the Olympia campus system to the Tacoma branch campus PBX. Qwest provides telephone service to the housing residents.

The campus' main data networking system is located in the Library A-wing of the basement level. This room is referred to as the Machine Room and all campus fiber optic cables radiate outward in a star topology to all other buildings also.

Emergency 'blue' telephone stanchions are located through out the main campus that are routed back to the Police Services dispatch.

#### ***Cellular Communication***

Cellular phone service on campus from some service providers is intermittent. Currently, there is no cell tower located on campus.

#### ***Data/Communication Cabling***

The inter-building, or backbone, telecommunications cables used on this campus are made up of large pair count, shielded, twisted pair, (STP), copper cables and fiber optic cables in three types, and coaxial cables. The first type of fiber cable is singlemode (SM) fiber; the second type is 62.5/125 micron multimode (MM) (legacy fiber cables); the third type is 50/125 micron laser optimized multimode (MM) fiber optic cable to support 10 Gbps transmission speeds between buildings.

The backbone fiber and copper cables run through the basement level of the Library until they enter the tunnel system then on to other parts of the campus.

Most buildings are area cabled with Category 5E type cables that are being upgraded to Category 6(t) as buildings are renovated.

Many of the existing communication equipment rooms were carved out of existing closets or storage rooms. These rooms are cramped and do not provide proper clearances, HVAC systems and have no room for expansion. As buildings are being renovated (such as recent renovations to the Library) these rooms are being replaced per College standard.

Lightning protection devices are provided and grounded on both ends of the copper cables that extend beyond the tunnel system into the underground conduits. The College must continue its current practice of installing lightning protection devices and grounding on both ends of the copper cables. This installation is a requirement of the NEC, Article 800.

### ***Cable Television***

A television satellite dish is located on top of the Library, this dish down-links a signal that can be inserted into the campus-wide cable distribution system. The coaxial cable distributes CATV signals to locations throughout the campus. The system also has the capacity for distribution of up to three locally originated channels.

## **Civil**

### ***Water and Wastewater Utilities***

With the exception of Geoduck House which is currently occupied by the Olympia Community School and located near the shoreline, the campus buildings are connected to the City of Olympia water and wastewater systems. The City of Olympia and Evergreen have agreements for these services and the City will continue to provide water and wastewater service to the campus. The Olympia Community School is currently served by a septic tank and drain field. This on-site wastewater treatment system should be evaluated to verify that it is functioning properly, and is sized correctly for the school population and soil conditions.

Existing wastewater and water utilities were originally designed to serve a student population of 12,000 students. Discussions with campus staff indicate that the system is in good working order.

### ***Storm Water Management***

The Evergreen campus lies within four different drainage basins. Portions of the campus drain to the following creeks: Snyder Cove Creek, Green Cove Creek, Unnamed (Evergreen faculty name: Barking Dog) Creek, and Houston Creek.

#### ***Snyder Cove Creek***

The Snyder Cove Creek Drainage Basin lies within the Evergreen campus property. The creek has been degraded over the last 30 years since the campus Core drains into it. A majority of the campus roadways and parking areas also discharge to Snyder Cove Creek. The campus Core is located in the upper portion of the basin, and during large storm events, high flows off the impervious surfaces can cause erosion and carry sediment downstream. Discharge from the campus is not currently monitored. In the past, the United States Geological Survey monitored Snyder Cove Creek just upstream of the culvert and Evergreen faculty used to monitor the discharge location from the campus Core.



Figure 4.17. Snyder Cove Creek outlet.

Snyder Cove Creek discharges into Eld Inlet in Puget Sound. There is a culvert where Sunset Beach Drive NW crosses over Snyder Cove Creek. This culvert is not designed to let fish pass since the invert of the inlet is only submerged during high tides. The College is currently working with environmental groups to make Snyder Cove Creek fish friendly by installing a box culvert at its confluence with Eld Inlet.

#### ***Green Cove Creek***

An eastern portion of the campus drains to Green Cove Creek. This area includes the ball fields, modular housing, and portions of the perimeter road. Green Cove Creek discharges to Budd Inlet in Puget Sound.

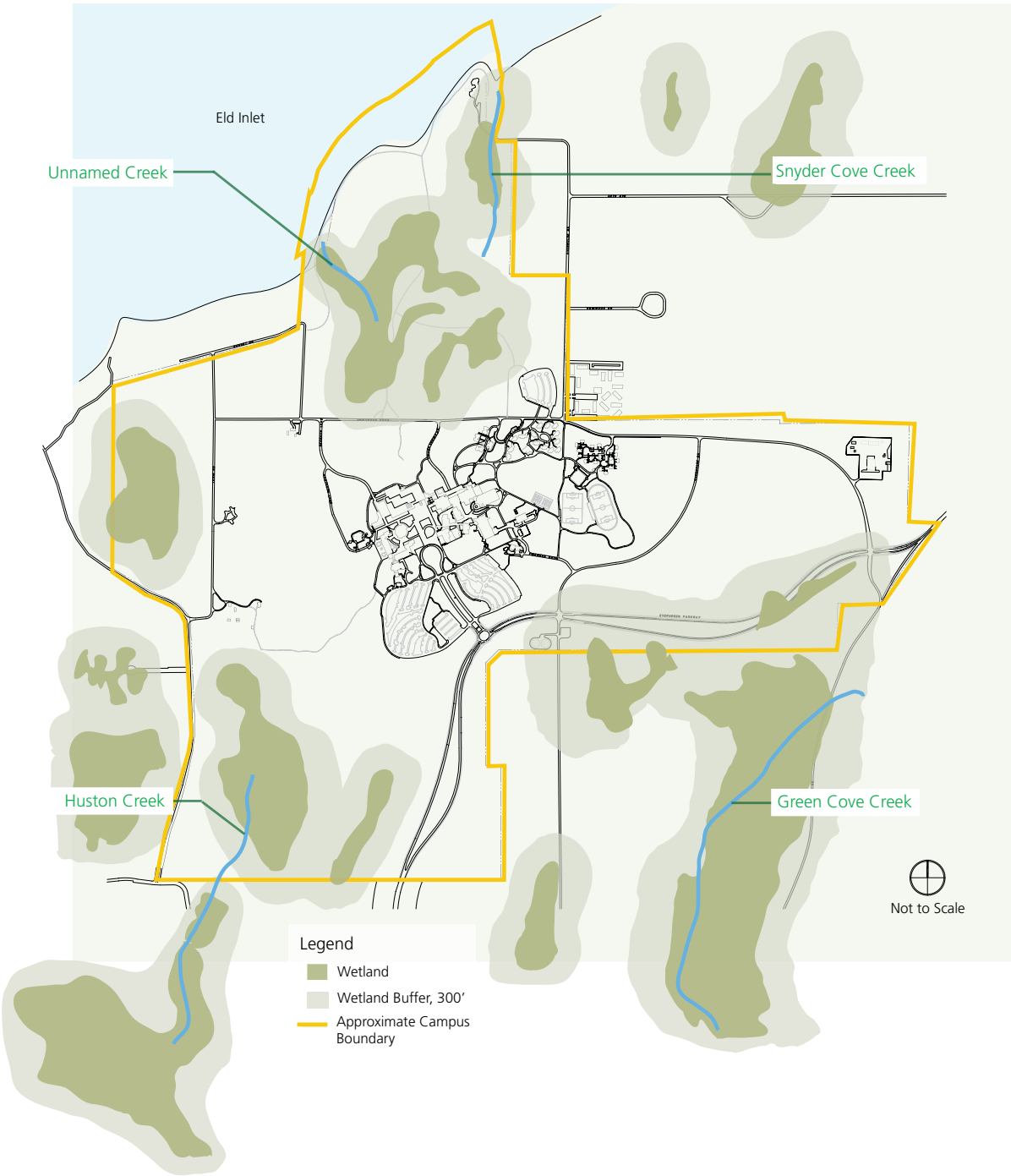


Figure 4.18. Campus Hydrology Diagram.

***Unnamed Creek (Evergreen faculty name: Barking Dog)***

This creek is completely contained within the campus Reserve. This creek is fed by groundwater through seeps in the basin. The Master Plan recommends seeking adoption of the name Barking Dog.

***Houston Creek***

The Evergreen Campus Parkway drains into wetlands that feed into Houston Creek. Houston Creek drains into Mud Bay.

***Evergreen Campus Stormwater System***

Evergreen is in the process of completing a Stormwater Plan for the campus. In addition to mapping the stormwater collection and treatment system, Evergreen is verifying the connections to the system. It is uncertain if the existing core buildings discharge into the existing stormwater pipes.

Evergreen must meet the Washington State Department of Ecology Non-Point Discharge Elimination System (NPDES) Permit as a secondary MS4 permittee. As part of the permit requirements, all new construction at Evergreen that affects more than 2,000 sf must meet current stormwater management requirements as listed in the 2005 Ecology Stormwater Management Manual for Western Washington. This includes any activities to update existing campus buildings, roadways, and classrooms. The permit and manual encourages best management practices, including low impact development elements, erosion and sediment control, and community education.

***Opportunities for Low Impact Development***

Evergreen is taking steps to be a sustainable campus by implementing strategies that mimic the natural hydrologic processes that occurred prior to the campus development. Evergreen is a leader in this type of stormwater management. The Seminar II building contains green roofs, rain gardens and bioswales that attenuate stormwater prior to entering the campus system and discharging into Snyder Cove Creek. The Library was also retrofitted with a green roof that is visible and accessible from the fourth floor. Pervious asphalt was installed at ADA parking stalls near campus housing.



05



## GOALS AND OBJECTIVES





## 05 GOALS AND OBJECTIVES

*'The Evergreen State College will be a laboratory for sustainability as demonstrated in its operations, curriculum, and quality of life for employees and students. We will nurture values and practical skills that motivate a lifetime commitment to a sustainable, inter-generational, just way of living on a healthy planet.'*

*- The Evergreen State College Sustainability Task Force*



Figure 5.1. Community.



Figure 5.2. Learning.



Figure 5.3. Sustainability.

From the beginning of this Campus Master Plan process, the Planning Committee and consultant team understood that past master planning in 1998 and again in 2005 developed very strong foundations from which to build. Both the mission for this Master Plan and the goals listed below represent direct developments and refinements from these earlier processes. To avoid repeating much of the very thorough and descriptive documentation of both campus features and ambitions, the intent of this document and plan is to work in conjunction with the previous documents.

### MISSION

The mission of this Master Plan is to build on past efforts and focus on developing diagrams, programs and descriptive statements of ideas and projects that represent physical manifestations of the evolving vision for the campus.

Specifically, this document aims to develop a comprehensive long term capital plan for College facilities and grounds both on and off campus, establish priorities consistent with the College's mission and strategic plan, ensure that the plan reflects the unique qualities of the College and campus and builds upon the philosophical basis of past planning efforts.

The plan will help provide support for future capital budget requests, a particular focus has been placed on identifying:

- Renovations and additions
- Infrastructure improvements
- Sites for potential new facilities
- Land use/landscape policies

### GOALS

The following five goals represent a refinement of previously stated goals from prior master planning efforts:

- Develop state-of-the-art learning facilities and housing options that advance the mission of the College.
- Provide an open and supportive environment for those who study, work and live on campus.
- Create a visibly sustainable campus through educationally rich, proactive design, planning and goal-setting.
- Provide educational opportunities in the delivery of campus planning, operations and services.
- Integrate College educational activities with cultural, social, civic and business activities of the surrounding community.



06



## RECOMMENDATIONS



## 06 RECOMMENDATIONS

This Master Plan has been developed as a tool to understand the impact of the projected growth in enrollment and the interrelationship of the various planning objectives established by the College through this and past master planning processes. This Master Plan proposes a pattern of development that is based on both the established building pattern that reinforces the Core of the campus and a new direction that aims to integrate the entire campus into the community, sustainable and educational goals of the College. At the campus Core, proposed renovations and additions are focused on developing and enhancing a sense of place that is sensitively scaled, provides good solar access and forms a connectedness among adjacent buildings. New facility locations also build upon the existing development patterns at the campus Core and reinforce the ideas related to creating appropriately scaled outdoor spaces, establishing visual connections between inside and outside and limiting the sprawl of the campus. Circulation improvements – both vehicular and pedestrian – build on existing patterns and develop a comprehensive network of connections among the various proposed and existing educational centers, upper and lower campus and the community.

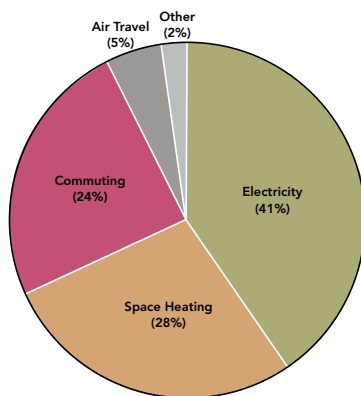


Figure 6.1. Sources of Evergreen's 2006 carbon emissions.

Source: "Carbon Neutrality by 2020: The Evergreen State Colleges Comprehensive Greenhouse Gas Inventory," John F. Pumilio, June 2007.

As part of the campus master planning effort, the College established the goal of achieving a balance in the production of both carbon and waste by the year 2020. This net zero carbon and waste focus has informed the planning process and allowed rethinking of campus operations and facilities planning at the College. Meeting the challenge of carbon neutrality at Evergreen by 2020 will require bold measures. Preserving and expanding the wooded areas of the campus will off-set a small portion of Evergreen's current carbon footprint and represents a unique resource for carbon sequestration. Additionally, fundamental changes are needed to encourage alternative transportation and energy (see Figure 6.1).

Although the College was initially planned to accommodate as many as 12,000 students, the evolving mission as a liberal arts institution as well as the current and planned facilities reflect a 'right sized' capacity of the campus in 2020 of approximately 5,000 students. With a systems infrastructure constructed to support a significantly larger campus, the current land and facility use patterns require careful evaluation and planning in order to achieve the overall sustainable vision. This plan considers a wide range of opportunities that will set the stage for making significant contributions towards balancing both carbon use and waste production and include:

- transportation modes and patterns
- energy production and use
- campus biome protection, use and enrichment
- food production research and training
- construction practices
- waste stream management
- student life and housing

All of the investigations undertaken during the planning process used sustainability as a touchstone and integrate opportunities for hands-on student learning, participation, engagement and community involvement. Three general organizing categories emerged that focused on notions of Community, Sustainability and Learning.



Figure 6.2. The Master Plan focuses on opportunities to enhance community, sustainability, and learning.

## LEARNING

- Develop on-campus Education Centers in Clusters within the Reserve (forest and marine ecologies, organic farming, sustainable practices, environmental stewardship, waste stream, etc.).
- Use Red Square as a stage to showcase College's unique educational mission and student life.
- Create outdoor laboratories and classrooms – field study emphasis.
- Support faculty research.
- Improve interdisciplinary learning environments – classroom environments that support Evergreen teaching paradigms

## SUSTAINABILITY

- Increase use of alternative transportation (walking, biking, transit, car pool)
- Increase and encourage use of self-sustaining resources (recycling, composting, stormwater harvesting).
- Support and utilize Green building practices.
- Maintain and expand multi-cultural resources.
- Develop and explore alternative power sources (geo-thermal, solar, wind).

## COMMUNITY

- Support campus as community resource - Invite community and neighborhood to use campus as a learning environment (Extended Ed, cultural events, interpretive trails, Organic Farm tours, conferences and sport camps, sustainability tours, teaching gardens, beach walks, nature walks, cultural walks, bicycle loops, volunteer opportunities)
- Increased desirability of living on campus
- Provide facilities that support leadership in innovative programs - Use the campus as a global venue (sustainability innovations, Native American culture, innovative programs, environmental conservation and demonstration)

## LAND USE

One of the primary missions of this master planning process has been to develop and use strategies that focus on preserving, supporting and enhancing the Reserve areas of the campus. The approach proposed is categorized into four primary groups conceptualized as Identity, Education, Circulation and Stewardship.



## IDENTITY

Earlier master plans divided the Reserve into four quadrants – north, south, east, and west. This naming convention does not convey the ecological, educational, or recreational significance of the Reserve areas. This planning effort recommends the identification of place and amenity names within the Reserve. The place naming is intended to allow research areas to be protected and to formalize the identities of areas and amenities in the Reserve. The Board of Trustees of the College must approve all campus facility and place names.

Students in the Community Activism/Community Design program have developed a set of sample place names for the broad regions of the Reserve as an initial step in a process of formally renaming areas of campus and include:

- ***Ecoforestry/Ecoagriculture Area***  
This portion of the Reserve is dedicated to providing learning opportunities as they relate to sustainable farming and forestry. This portion of the Reserve is anchored by the existing Organic Farm, but also encompasses the proposed Organic Farm expansion and a stand of Big Leaf Maple and Red Alder that lies north of the farm. This portion of the Ecoforestry/Ecoagriculture Area is set aside for a future sustainable logging and undercropping curriculum.
- ***Old Forest Area***  
This name denotes the portion of the Reserve that extends from the campus' southern boundary northward to the bluff above Geoduck Beach, between the campus Core and the Ecoforestry/Ecoagriculture Area. Many of the Reserve's most significant stands of second growth forest lie within this portion of the Reserve, as does most of the campus trail system.
- ***Geoduck Beach***  
This is simply the formalization of the colloquial name for the College's beach on Eld Inlet.
- ***Grass Lake Wetland Area***  
This portion of the Reserve lies between the athletic fields and the eastern edge of campus. This is currently the most remote part of the Reserve and sees the least amount of recreational use. It is contiguous with a larger wetland system southeast of campus.

These place names are especially important because they convey an ecological, educational or research significance to the place they describe.

A similar convention is envisioned for major trails within the Reserve, as well as discrete places such as meadows and forest stands. These names can be developed on an ongoing basis and submitted to the College's Board of Trustees for approval. The student developed naming recommendations are found in the Appendix.

These place and amenity names can be used on campus maps, signage, and other Reserve related documents. The names suggested here are intended to initiate a broader discussion on the campus to develop names that will ultimately be formally adopted by the College.



Figure 6.3. Naming Reserve areas emphasizes their relationship to learning, sustainability, and community.

## EDUCATION

The College has established a set of sustainability goals which include waste and carbon neutrality by 2020. The technologies and practices that will help achieve these goals may also provide educational opportunities. This plan proposes the creation of Education Centers located at various locations within the Reserve, as well as enhancements to existing educational centers such as the Organic Farm. The proposed and enhanced Education Centers are envisioned to create a greater sense of presence in the Reserve areas by the College that is intended to be consistent with the educational mission of the College. In many cases, these

centers are located in existing Clusters within the Reserve. The centers are not generally envisioned to require the development of significant buildings but rather create discrete, stand alone facilities that provide instructional support, signage and program staging spaces not significant additional buildings. By integrating the Reserve into the activities of the College, the biomes can be more deliberately and comprehensively monitored, studied and restored so that the value of the Reserve areas can continue to serve as a unique regional environmental asset. Education center opportunities are identified in Figure 6.4 and serve as examples of the sort of Reserve activities that can be envisioned.

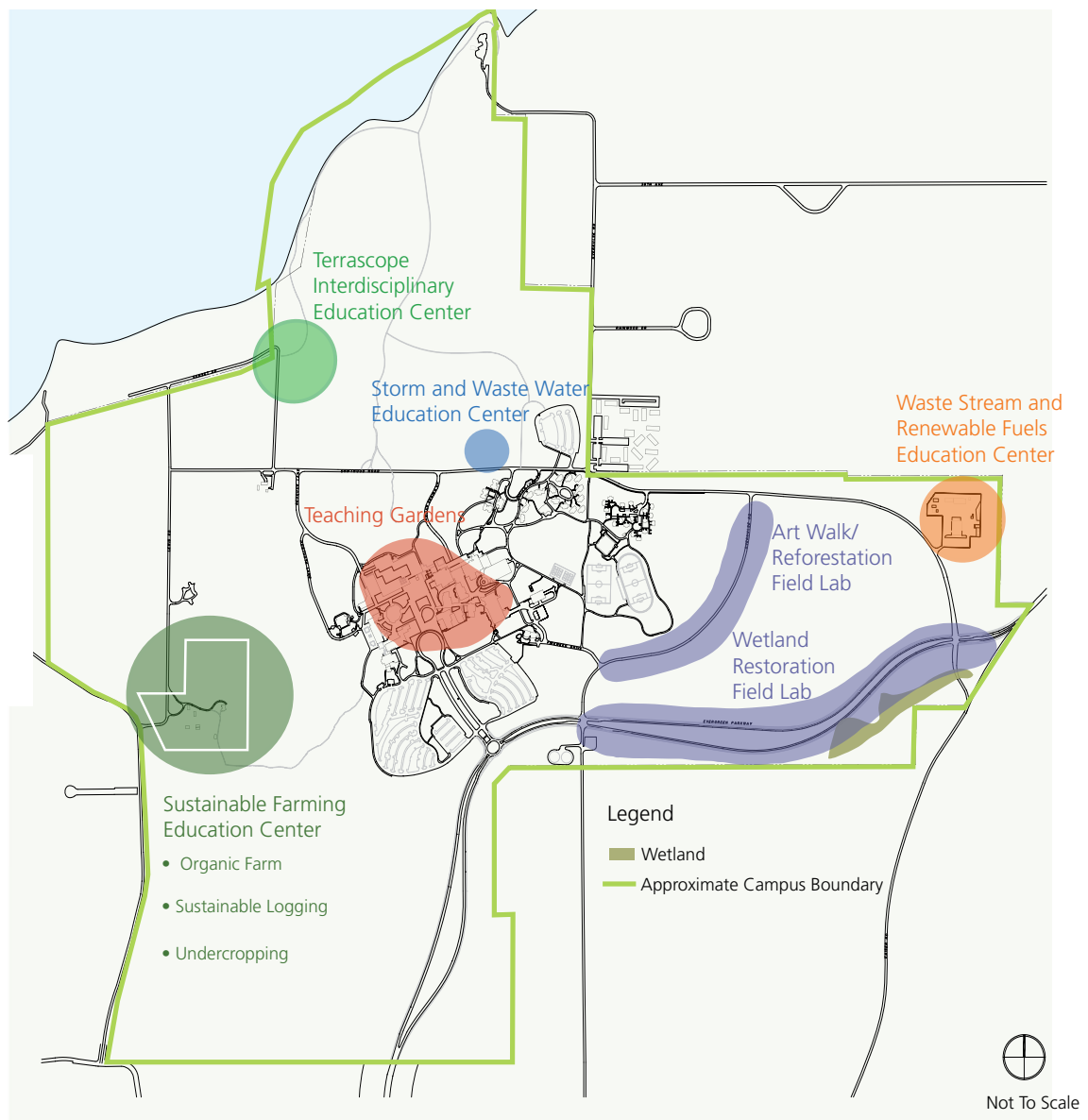


Figure 6.4. Education centers within the Reserve create resources for learning, sustainability and community.



Figure 6.5. Arable land allows for increased educational experiences for students.

### Organic Farm Education Center

The 2007 Evergreen Organic Farm Plan outlines facility needs for the continued development and operation of the farm (the report is included in the Appendix).

The College currently dedicates 24 acres to the Organic Farm Education Center. Today, only a portion of this acreage is being used. The fields themselves cover about four acres, and no other land is cleared at present for crop rotation. Because the soil in the three acre plot has been continuously farmed for about three decades, soil-borne pathogens have had time to establish and proliferate, and currently the farm is not a sustainable enterprise. The farm needs to be able to rotate its crops off the existing plots onto new arable land. The earlier Master Plan identifies land to the east of the current farm as area for expansion, but this would cut into one of the Reserve's prime stands of second-growth Douglas Fir forest. Additionally, this land slopes up onto a ridge and would be more difficult to cultivate. This plan recommends that the farm's allotment of 24 acres be reoriented to the north on level ground into stands of Big Leaf Maple and Red Alder.

Any remodeled or new facilities should be designed and constructed to maintain the unique character of the Organic Farm and do not need to reflect the architectural characteristic of the campus Core.

Building on the success of the current Organic Farm and as outlined in the detailed farm plan prepared in 2006 and 2007 and included in the appendix volume of the Master Plan, the evolution of this Education Center includes adding a food



Figure 6.6. Diagram of organic farm configuration and additions.

production and sciences lab, animal barn, a green house and general storage facilities. Increasing arable land from about 4 to 9 acres is also critical to ensure the continued soil health of the farm. Although produce from the farm will continue to supplement the food needs of the campus and farmers markets, partnerships with area and regional farmers will be required to achieve greater food independence. Composting (excluding limited farm generated materials) and bio-diesel activities should be relocated to the Renewable Fuels and Waste Stream Education Centers as these activities are not directly related to the activities of the farm.

### Geoduck House



Figure 6.7. Existing Geoduck House

The existing Geoduck House sits on a sensitive coastal site that will not easily accommodate increased activity. Envisioned as a retreat facility for small gatherings of faculty and students or other similar low impact groups, the renovated facility will focus on special uses and perhaps support recreational activities such as student-run kayak and canoe rental activities by providing storage and staging space. The facility renovation will incorporate sustainable features targeting carbon and waste neutrality and consist of only minor additions.

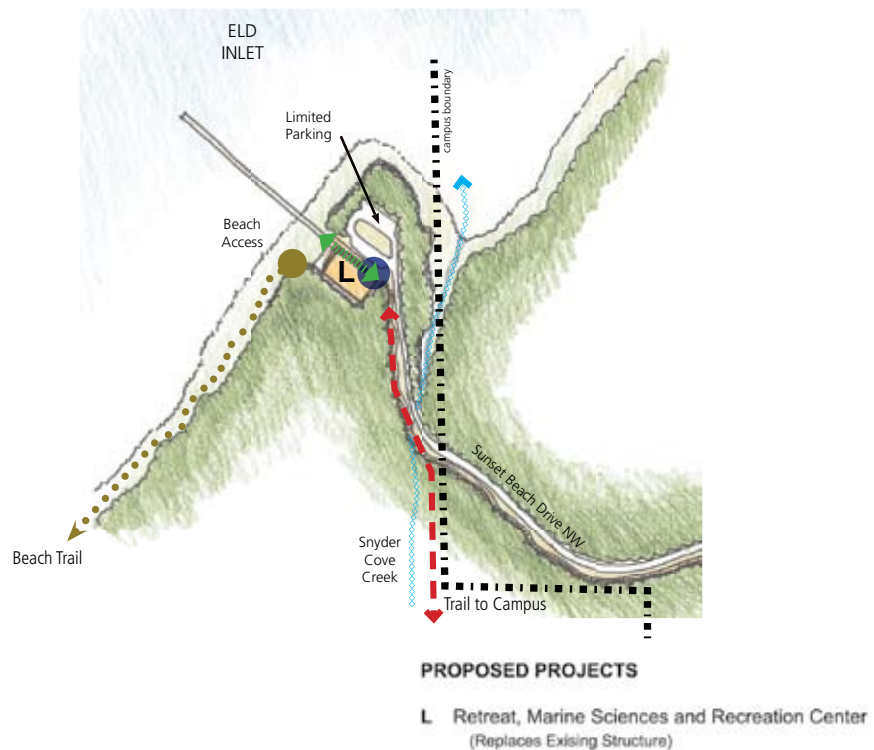


Figure 6.8. Diagram of Geoduck House .



### Terrascope Interdisciplinary Education Center

The “Terrascope” (a structure with which to see the world) will augment the curricular needs of our environmental studies, visual arts, and creative writing programs. It will provide classroom, laboratory, and studio space surrounded by forest and other natural habitats. This structure will also provide access to the forest canopy in safe and non-destructive ways. An open pavilion, located at the beginning of the canopy walk, and descriptive panels provide a place for the community, student groups and other visitors to learn about the campus biomes and share in the experience of the continued monitoring of the forest. The minimal shelter and an adjoining flexible lab space is envisioned to support interpretive materials and be carefully integrated into its site to minimize the impact of the project from both a visual and environmental standpoint.

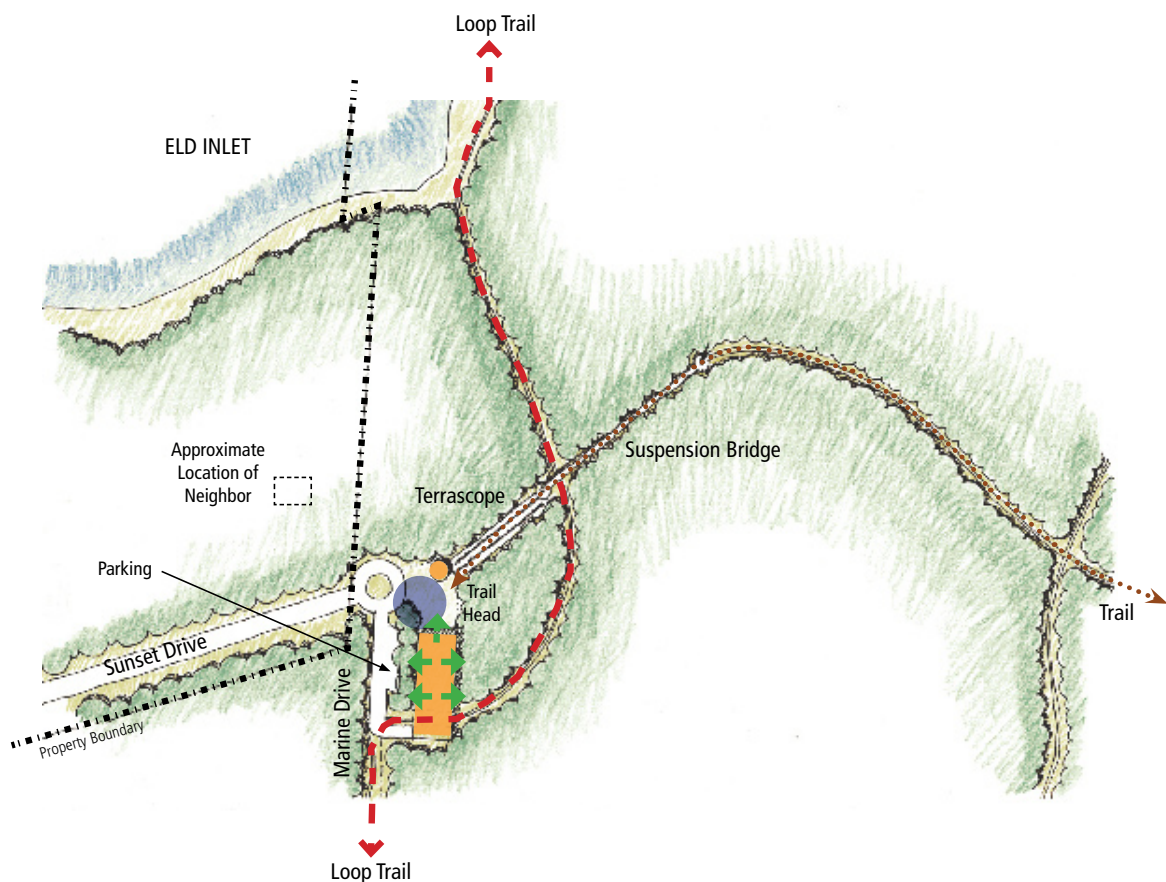


Figure 6.9. Proposed Terrascope education center.

### Grass Lake Art Walk/Forest Reestablishment Field Laboratory

The Grass Lake Wetland Reserve is currently cut in two places by road corridors. This plan proposes the closure of Overhulse Place. The pedestrianized Overhulse Place corridor could become a field laboratory for both the study of forest reestablishment and an alternative venue for the display of art. The corridor could be divided into control and study parcels comparing managed and natural reestablishment processes. The proposed trail would allow art to be displayed in landscape in contrast to the natural environment.

### **Storm and Waste Water Monitoring Education Center**

Building on the existing campus system for treating storm water, this Education Center will allow for the monitoring of the flows and quality of water by developing the infrastructure into a visible system that exposes the way that storm water is managed on campus. Development of the center at the existing oil/water separators located adjacent to Driftwood Lane and between the 'soil farm' and parking lot 'F' will minimize the facilities needed and provide a location near the campus Core. This center will focus on exposing and describing existing systems and providing a platform for monitoring, measuring and testing strategies to address collected water run-off. This center could incorporate bioswales and living machine technology as a means of storm and waste purification and infiltration.

### **Alternative Energy Education Center**

Located at the Central Utility Plant and building on the extensive utility tunnel infrastructure, the Energy Education Center will allow the campus to innovate, monitor and evaluate how the campus heating and cooling needs are met. Replacing aging boilers with new technologies and system options provides the opportunity to implement forward looking solutions that student and faculty can monitor, measure and test to evaluate the effectiveness of different strategies and systems.

### **Solid Waste Stream and Renewable Fuels Education Center**

- Locate a Central Composting/Recycling facility at the current Maintenance Shops site. Limited composting at the Organic Farm will focus on the agricultural program, rather than on the campus-wide effort.
- Develop a Central Archive/Storage Facility at the existing Maintenance Shops site. This facility will provide space for long-term storage and the storage of large, bulky items, such as, furniture, equipment, projects, etc. The intention is to remove long-term storage functions from the campus Core to provide additional space for Core related functions.
- Develop a Central Distribution Center at the existing Maintenance Shops site. This will allow low-volume, non-bulky goods (e.g., vending machine stock, paper products, cleaning supplies, etc.) to be transferred to small, non-polluting vehicles for use within the campus.
- Create a Solar Farm at the current Maintenance Shops site to be used to power that site and charge small, electric vehicles used to distribute goods within the campus.
- As the College explores new fuel technologies for its fleet of vehicles, educational opportunities may present themselves. This center could feature a biodiesel production center, as well as a photovoltaic cell farm, and could support research as it pertains to efficiency and cost analysis.



## CIRCULATION

Facilitating easy, accessible and safe campus mobility is a priority of the planning effort. As the campus evolves, the ability to move easily among the Core facilities and around the campus Reserve areas must be better accommodated. A revised network of roads, paths and trails are proposed to support and link areas of the campus and connect to off campus networks.

### Road Management and Revisions

The character and natural environment of the Reserve will be enhanced by redirecting automobiles to the perimeter of campus. The vehicular rights-of-way within the campus are owned and managed by the College. These rights-of-way include: Evergreen Parkway, Driftwood Road, Overhulse Place, and Marine Drive. The following revisions are recommended:

- Convert Overhulse Place to a bicycle/pedestrian path. Three quarters of the traffic using Overhulse Place are College-related. Trips from the neighborhood for US 101 access are limited. The extra vehicle miles related to those trips are offset by the reduction in College-related trips. This road closure will reconnect the eastern portions of the Reserve with the rest of the campus and create an additional area of habitat restoration and reforestation.
- Limit traffic on Driftwood Road and Marine Drive west of Overhulse Road to campus related services and maintenance traffic, emergency vehicles and ADA parking access.
- Retain current public access to private waterfront homes via Lewis Road.

### Paths and Trails

A comprehensive network of paths and trails are envisioned as a way to connect all areas of the campus for pedestrians and bike users. As illustrated in the diagram, several types of trails are proposed. Most of the trails are proposed as being similar to the current McLane Trail and are intended to knit through the wooded landscape in a manner that minimizes impact to the forest ecology and landscape. The paths would provide a loop that builds upon existing trail components along Evergreen Parkway and adds connections to the campus Core and out to the Geoduck House and other Education Centers. Existing trails to the shore and farm within the Reserve areas would be enhanced but remain primarily earthen trails.

The majority of the campus was constructed prior to the adoption of current accessibility requirements. As a result it is recommended that particular attention be paid to resolving universal access challenges as buildings are remodeled and constructed. It will be important to focus on campus wide connection paths that may not be considered part of one project or another but rather link overall areas of the campus. More appropriate paving choices and attention to issues related to universal access on the campus will increase access to the College for people of all abilities.

Signage improvements combined with the creation of clear departure points from the campus Core to the Reserve trail systems are envisioned to aid in the visibility of the connections to campus features outside the campus Core.

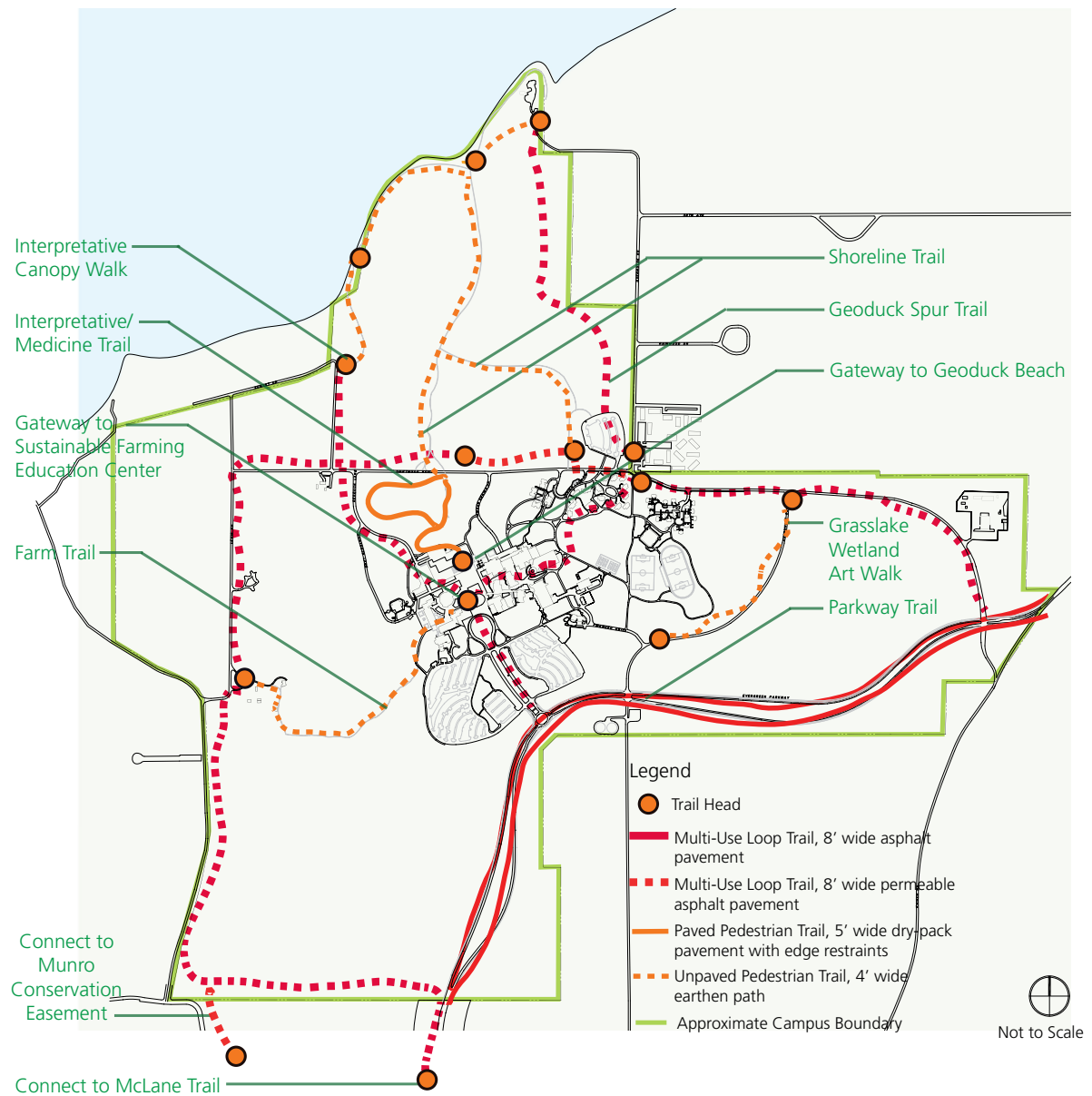


Figure 6.10. Existing and proposed paths and trails.

### Public participation in restoration and maintenance projects.

1. Teaching Gardens
2. Reforestation
3. Wetland Restoration
4. Connect to McLane Trail
5. Connect to Munro Conservation Easement
6. Huston Creek Salmon Habitat Restoration
7. Snyder Cove Creek Salmon Restoration

### Connect biomes across campus boundaries.

8. Overhulse Wetland Preserve
9. Kaiser Preserve (Green Cove Wetland)
10. Paul-Leigh Conservation Easement
11. Munro Conservation Easement

### Public use of the campus features.

12. Interpretative Canopy Walk
13. Interpretative/ Medicine Trail
14. Community Gardens.
15. Grasslake Wetland Art Walk (Unpaved Pedestrian Trail.)

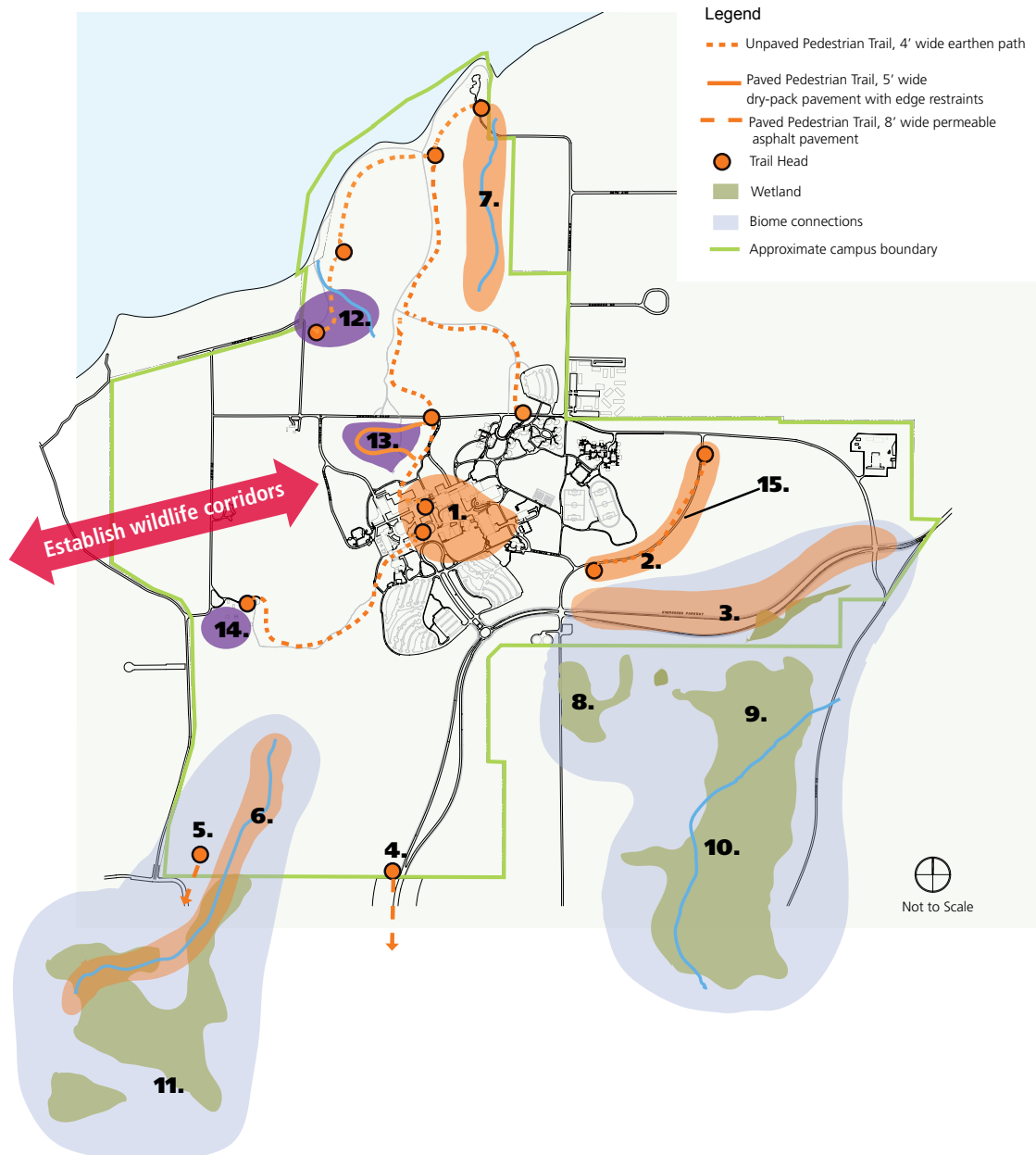


Figure 6.11. Environmental stewardship: encouraging sustainability and community partnerships.



Figure 6.12. Trails provide recreational and educational amenities to the College and the community.

## STEWARDSHIP

Engendering a sense of stewardship by the students, faculty, staff and surrounding community is seen as a powerful way to ensure that the unique environmental assets of the campus are preserved, managed, maintained and treasured for future generations. Currently, the large contiguous land area that makes up the Reserve areas of the campus represents a forest system that is being surrounded by suburban development as the City of Olympia and Thurston County populations grow. Through partnerships with state, county, community, and environmental organizations there may be opportunities to address regional trail, wildlife and environmental initiatives that leverage campus assets and connect the College to a larger set of regional goals.

Connecting to or creating initiatives that link the College and community allows the campus to play a greater community role and allows the creation of programs that encourage participation in the development and preservation of the ecological resources of the campus. Trail and wildlife corridor development and maintenance could be achieved through community volunteer programs not unlike the continuing and successful evolution of the neighboring McLane Trail.

The Reserve trail system and teaching gardens within the Core of the campus are utilized as educational and recreational resources by the College and community. Currently, the College's Grounds Crew manages all campus landscapes including the Reserve. Opportunities for the use of student and community volunteers to supplement campus crews encourages participation in the active management of the campus and establishes partnerships to outside organizations and non-profits interested in restoration, native planting and other related projects. A designated Reserve outreach role could be created to coordinate community involvement and help establish opportunities for desirable partnerships.

Research and evaluation are needed to compile data on regional biodiversity and regional planning goals to identify the College's potential conservation goals. Partnerships and collaboration with regional planning efforts, land trusts and existing corridors could help to develop ways to connect these potential corridor areas to the campus ecologies. Connections to the campus loop trail system and the McLane Trail would open a valuable community corridor that would facilitate alternate modes of transportation. Partnerships with existing land trusts, land conservation easements and preserves located near the College could forge educational opportunities for students and develop environmental solutions to increased development in the area.

Specific Master Plan concepts and recommendations are described below and are grouped based upon generalized campus locations. A prioritized list of the projects is included at the end of this section.

## PROJECTED NEEDS AND RATIONALE

The recent addition of the Seminar II Building in the campus Core was originally envisioned to accommodate the current and projected classroom needs in conjunction with a series of renovations to existing facilities. The subsequent renovations have not yielded all of the projected spaces and specific needs remain unfulfilled. This section documents spaces and features that have emerged as stated needs during the initial phase of the Master Plan process. The following generalized space categories briefly describe the understanding of stated needs.

### **Faculty Offices**

All existing faculty office space on campus is occupied. To support projected student growth of approximately 600 FTE and maintain a 1:20 faculty to student ratio, the College will need to plan for approximately 30 additional faculty offices to meet the need of the increased faculty. Faculty offices are currently distributed around the campus often with a purposeful mixing of disciplines. Due to the distributed nature of the offices on campus, additional offices could be accommodated as existing buildings are renovated, modernized and expanded. Additionally, new facilities should be programmed to include faculty office space.

### **Administrative Support Spaces**

Additional administrative space will also be required to support the growth in both students and faculty. To maintain the current 1:2 faculty to staff ratio, 60 additional staff will be required. At 250 gross square feet per person, 15,000 additional gross square feet will be required. Not unlike the faculty offices, staff space is anticipated to be distributed in both new and renovated spaces.

### **Faculty/Student Research Space**

A shift towards more research by faculty and students is creating a need for additional research focused space. Confirming effective use of existing research space will continue to be critical. Research space needs should be evaluated on a project by project basis.

### **Science Labs**

Science programs anticipate a continued growth in a 'field oriented and hands-on future'. This emerging focus requires more storage and set-up space specifically designed to provide easy access for the loading and unloading of field equipment and instruments. Existing labs are in high demand and expansion will be needed as related programs grow to meet demand. Facilities at the farm do not adequately support program needs. Addressing and improving the variety and flexibility of the lab types provided on campus has been a primary focus of the planning process and facilities to support these program needs are described later in the document.

### **Theater and Media Storage**

Focused on needs related to the Communications Building and anticipated to be addressed as the facility is renovated, the needs include provisions for adequate equipment storage and infrastructure improvements to accommodate increasing technology, performance lighting, and power demands. Performance continues to be a vital part of many programs on campus and is seen as a continued strength of Evergreen programs. Improving and providing adequate space for performance emerged as a top priority during the planning process and is reflected in the prioritization of the Communications Building Renovation project.

### **Design Labs (Homerooms)**

The number of large multipurpose, interdisciplinary, flexible spaces that provide students with project space is limited. With an increasing number of programs occurring over multiple quarters and that require 24 hour student access, the

campus has struggled to find appropriate spaces to support this important need. These project focused classroom lab spaces include:

- Painting studios – current number not adequate to meet demand
- Interdisciplinary studio labs providing project and lecture support space – ‘homeroom classrooms’ like the one added to the top of the Communications Building
- 3D studios for visual arts, environmental studies

### Student Hang-out Spaces

Creating attractive places for students to gather and meet is critical. Renovation of the CAB is anticipated to address some of this need at upper campus. Every effort should be made to ensure that student lounge spaces are included in all newly renovated or expanded facilities. This is an important element of creating an overall campus atmosphere that encourages students and faculty to interact and remain on campus beyond the set class times. Comfortable, technology connected and dispersed informal gathering spaces will contribute to the sense that the campus is an active, learning community setting. Essential to the improvements to hangout spaces will be a focus on improvements to Red Square and the creation of additional outdoor gathering spaces.

### Causal Learning Spaces

Opportunities on campus for quiet, solitary study are limited. Likewise, spaces for small group work sessions represent a growing need that is not accommodated as class assignments focus on team oriented projects and assignments. Both sorts of spaces should be included in the programming of all new buildings, renovations or additions. Emphasis should be placed on ensuring that there is adequate access to technology to create useful and highly functional spaces for study and interaction.



Figure 6.13. The Longhouse and the adjacent ethno-cultural garden are campus landmarks and focal points for Reservation-based programs.



## UPPER CAMPUS RECOMMENDATIONS

Past campus planning principles encouraged compact development and preservation of the natural environment. Development has been ordered around a primary visual and pedestrian axis at McCann Plaza and a cross axis in front of the Library connecting the Longhouse with Lower Campus. Seminar II introduced a diagonal axis in the Core campus as a pedestrian spine. The Master Plan recommends a mirror of this diagonal axis and spine be extended into the west side of the campus terminating in a gateway space and creating an intimately scaled new plaza space.

The notion of making great exterior spaces that connect directly with interior spaces and functions – we call this ‘placemaking’ - is central to the concepts utilized in the plan. The master plan recommends the creation of a series of new and enhanced ‘places’ linked by visual and pedestrian axes. Three campus places are recommended for enhancement as pedestrian activity hubs: Red Square, East Campus Square, and West Campus Square. Under the Master Plan, new buildings are proposed to enhance each of these places.

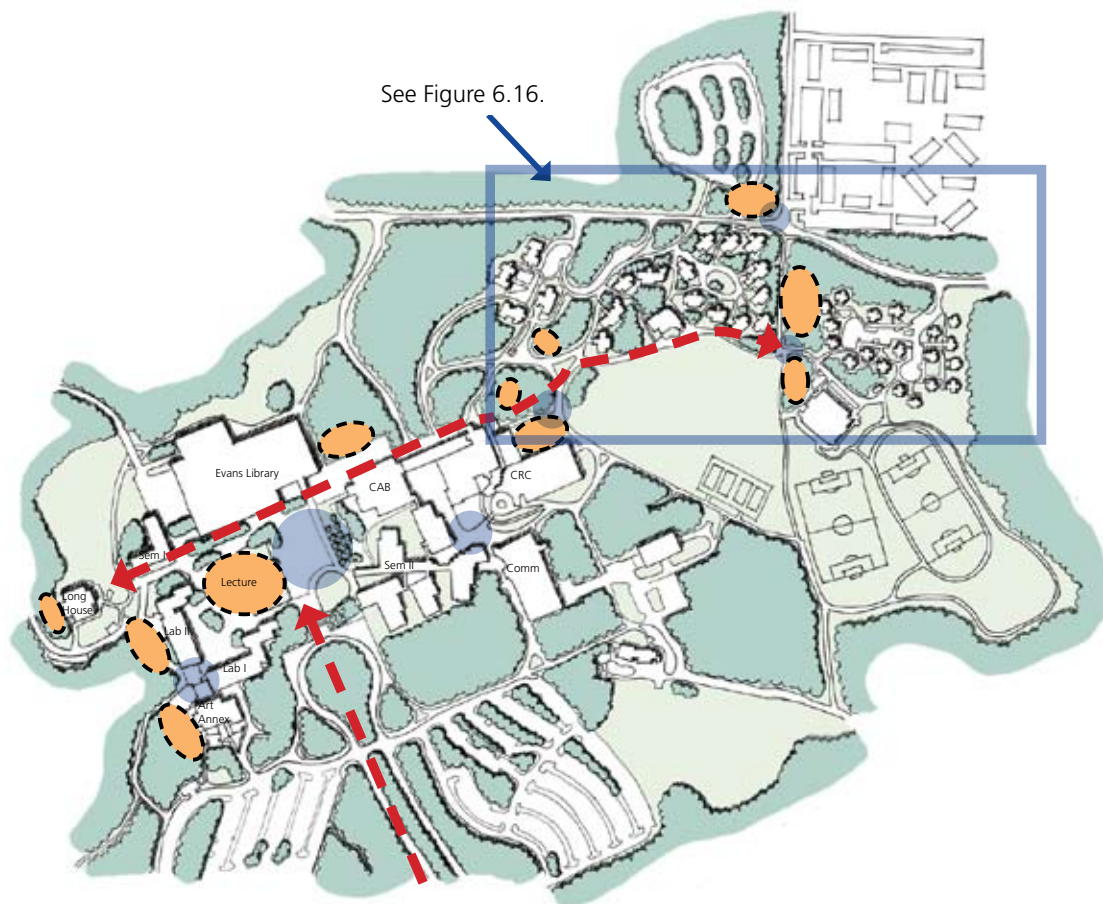


Figure 6.14. Upper and lower campus with proposed projects.



## PROPOSED PROJECTS

- |                                      |   |
|--------------------------------------|---|
| A Longhouse Addition                 | F Seminar I Building Renovation               |
| B Interdisciplinary Lab Building     | G Communication Building Renovation/Expansion |
| C Interdisciplinary Lab Building     | H CRC Renovation/Expansion                    |
| D Lecture Halls Renovation/Expansion | I Interdisciplinary Lab Building              |
| E Arts Annex Building Renovation     |   |



Figure 6.15. Upper campus proposed projects.

## PROPOSED ACTIONS, NEW BUILDINGS AND ADDITIONS

### Red Square

As defined in the original master plan, Red Square is the central gathering place for the College. In this role Red Square functions as a 'great stage' for campus activities and major graduation venue. However, Red Square was scaled for an institution expected to reach 12,000 students, rather than a 5,000 student liberal arts college. Red Square should be scaled down, made more accessible and integrated with surrounding land uses. Uses surrounding Red Square should

reflect the Mission and Strategic Plan of the College and interact with the public open space. Flexible, indoor/outdoor space should front on the square. Library and CAB activities should be encouraged to have greater transparency - visual connection - from and to Red Square.

- **Lecture Halls Addition:** Wrap the Lecture Halls with a flexible and highly transparent addition housing adaptable space for an interdisciplinary studio lab, campus environmental resource center, student display and break out spaces. Incorporate large glass doors and large covered outdoor spaces that allow spaces to be opened up for the sale of organic farm produce and to provide weather-protection during graduation. Reconcile the grade changes between the east and west portions of Red Square and provide ADA accessibility for the Lecture Halls.
- **Red Square Repaving:** Repave Red Square with new paving materials to create a pervious surface that is slip-resistant and sustainable.

### **East Campus Square**

The Seminar II café illustrates the potential of East Campus Square to be a popular gathering place on campus.

- **CRC (Campus Recreation Center) Addition:** Add an addition to the CRC that enhances the accessibility and wayfinding from the East Campus Square and lower campus. Inviting new entries fronting on East Campus Square and the athletic fields will be created as part of the addition. The addition will provide space for expanded recreation and wellness facilities and programs.
- **CAB renovations and additions** will be encouraged to add to the activity and vitality of East Campus Square. Potential improvements include expanded indoor/outdoor dining and the removal of the pedestrian bridge to open-up views, light and air to the square.
- **Communications Building Performing Arts Center Addition:** The Performing Arts Center Addition will provide an opportunity to enhance the relationship of the Communications to the East Campus Square and create a gateway to the campus from the parking on Lot C. The location of the addition to the Communications Building should be carefully studied to ensure issues related to access and campus proximity are addressed.

### **West Campus Square**

Mirroring the Seminar II axis on the west side of the campus Core creates and opportunity to create West Campus Square, a new gathering place on campus. New buildings developed west of Laboratory II and the Arts Annex will enclose and activate the square and create a gateway to the Organic Farm trail.

- **Interdisciplinary Lab Building I:** A classroom lab building will be added west of Lab II to accommodate classroom and multiple lab needs. Lab space will accommodate additional wet labs and a dirty lab that has a direct connection to an adjacent plaza area and easy loading access. This building will also include an interdisciplinary studio lab space and café fronting the square and an adjoining faculty lounge oriented to the west.

- **Interdisciplinary Lab Building II:** As the second interdisciplinary building and forming an integral part of the new West Campus Square, this facility will provide much needed 3D and art studio space. This building will also include an interdisciplinary studio lab, art display space, and space for faculty and staff.

### **Campus Gateways**

Gateways to upper campus should be created and enhanced at the following locations: 1) McCann Plaza (campus front door), 2) the Longhouse, 3) plaza at the new entry to the CRC on lower campus, 4) plaza at the new Interdisciplinary Lab Building on the west edge of campus, and 5) plaza at the Performing Arts Center addition to the Communications Building. New wayfinding systems should be developed to direct visitors to campus facilities including the Organic Farm, Geoduck House, the various Education Centers, gardens and trails.

The following is a summary of proposed new buildings and additions on upper campus. These facilities respond to the wish list of needs compiled from our meetings with the PUCs. This list should be reviewed and prioritized by the College community before becoming a final Master Plan recommendation.

### **Combined Maintenance Facility (Driftwood House)**

Consolidation of campus and Residential Services maintenance facilities closer to the campus Core in a Combined Maintenance Facility will enhance efficiency and sustainability. Relocation and consolidation will reduce vehicle miles traveled, improve access to campus service docks and loading facilities and allow facilities and equipment to be shared. The following is recommended:

- Relocate campus and Residential Services maintenance facilities to the Driftwood House site and develop shared maintenance shop, service and repair facilities. The Driftwood House site is proximate to both upper and lower campus.
- Relocate motor pool and maintenance equipment yard to the Driftwood House site and co-locate with Residential Services maintenance facilities.
- Enhance connections and wayfinding between the campus Core and the Driftwood House site to encourage pedestrian and bicycle access to the motor pool.

## **PROPOSED NEW BUILDINGS, RENOVATIONS AND ADDITIONS**

### **Longhouse Expansion (Project A)**

Total Square Footage: 1,800 gsf

Projected Uses:

- Research, Office, Gallery, Resource Display Space

### **Interdisciplinary Lab Building (Project B)**

Floor Plate: 16,500 gsf

Total Square Footage: 2.5 floors = 41,250 gsf

Projected Uses:

- Labs/Dirty Lab
- Flexible Interdisciplinary Labs
- Faculty Offices
- Faculty Lounge/Meeting Space/Coffee Bar

**Interdisciplinary Lab Building (Project C)**

Floor Plate: 16,500 gsf

Total Square Footage: 2.5 floors = 41,250 gsf

Projected Uses:

- Art and Science labs
- Flexible Interdisciplinary Labs
- Faculty Offices
- Art Studio/Gallery
- Extended Education Center (Special Project)

**Lecture Halls Renovation/Expansion (Project D)**

Floor Plate: 36,600 gsf

Total Square Footage: 1.5 floors = 54,900 gsf (31,261 SF addition and 23,639 SF renovation)

Projected Uses:

- Gallery and Breakout Space
- Flexible Interdisciplinary Labs
- Lecture/Seminar Space
- Faculty Offices
- Center for Sustainability
- Campus Information and Tours

**Arts Annex Building Renovation (Project E)**

Floor Plate: 9,126 gsf

Total Square Footage: 3 floors = Approximately 27,377 gsf

Projected Uses:

- Renovated/Updated Studio Art Labs
- Renovated/Updated Studio Art Shops
- Renovated/Updated Flexible Interdisciplinary Labs

**Seminar I Building Renovation (Project F)**

Floor Plate: 11,227 gsf

Total Square Footage: 4 floors = Approximately 44,909 gsf

Projected Uses:

- Campus Police Services Offices
- Campus Health Services Offices
- Renovated Classrooms
- Faculty Offices
- General Campus Administrative Offices

**Communication Building Renovation/Expansion (Project G)**

Total Square Footage: 59,825 gsf (addition only)

Projected Uses:

- Performance/Lecture Space
- Conference Programs and Receptions
- Flexible Interdisciplinary Labs
- Faculty Offices
- Communications Building Renovation and Expansion Predesign Study, July 2002

**CRC Renovation/Expansion (Project H)**

Floor Plate Addition: 40,500 gsf

Total Square Footage Addition: 1.5 floors = 60,750 gsf (addition only)

Projected Uses:

- Exercise, Recreation and Wellness Center
- Cafe, Lounge and other student life amenities
- Entry Lobbies and improved circulation

**Interdisciplinary Lab Building (Project I)**

Floor Plate: 16,500 gsf

Total Square Footage: 2.5 floors = 41,250 gsf

Projected Uses:

- Performance Spaces
- Flexible Interdisciplinary Labs
- Gallery/Display
- Faculty/Staff Offices

**LOWER CAMPUS RECOMMENDATIONS**

The goal of making The Evergreen State College a residential liberal arts college adds new opportunities and potential for lower campus. Notions related to ‘placemaking’ and community building are central to the long term strategy. Making the campus an attractive place to live and where there is easy access to basic amenities emerged as primary goals in shaping the thinking about the vision for the lower campus. The goal is to add housing to achieve the goal of providing on-campus housing for 33% of the students and some faculty housing.

Working with the assumption that the projected 2020 enrollment will equal 5,000 FTEs and with an on-campus residential student population target of 33% of the total student population, the campus needs to plan for approximately 1,650 beds. Assuming demolition of the modular housing, the existing bed count totals approximately 907 beds. Therefore, new housing will be needed to provide approximately 743 beds by 2020.

**Concepts**

- Create a suite-style, eco-village housing option attractive to students desiring to live an outwardly sustainable life-style.
- Develop unique and attractive rental housing for faculty to assist in recruiting national and international instructors to meet the Mission and Strategic Plan of the College.
- Create retail opportunities within convenient walking distance to student housing, adding to the 24/7 activity and vitality of campus.
- Focus retail at a location visible from the Overhulse Road and Driftwood Road intersection, the “side door” of the campus and connection to off-campus housing.
- Expand the CRC to create an inviting entry oriented to campus housing and add easily accessible recreational options.
- Develop a Fieldhouse Pavilion Expansion to provide additional recreation and conferencing opportunities.

- Convert offices on the third floor of Residential Building A back to dorm rooms and add Quad-style housing to expand the number of rooms available for freshmen.
- Replace the Modular housing with apartments or suite-style residential options to create a more compact campus community.
- Strengthen the east/west connections between upper and lower campus, providing a wide, well lit, accessible pedestrian and bicycle path.
- Emphasize the development of sheltered outdoor gathering spaces that connect directly with renovated, expanded or new facility developments.
- Create gathering place at the proposed entry to the expanded CRC as a gateway to upper campus.
- Reactivate student-operated food services in the HCC.

The following specific projects are proposed to address the needs of the lower campus area:

#### **Quad Dorm Expansion (Project J)**

Total Square Footage: varies

Projected Uses:

- First and Second Year Housing

#### **Driftwood Suites Housing (Project K)**

Total Square Footage: varies

Projected Uses:

- Local retail space
- Student/Married Student Housing
- Potential Faculty Housing
- Visiting Scholar Housing

#### **Modular Replacement Housing (Project L)**

Total Square Footage: varies

Projected Uses:

- Replaces Modular Housing
- Higher Density Housing
- Eco Village Location

#### **Fieldhouse Pavilion Expansion (Project M)**

Total Square Footage: 13,000 gsf

Projected Uses:

- Field House activities – lockers and team rooms
- Sport Camp and Conference Services
- Light catering and flexible meeting spaces

### **Housing Options**

The following three options illustrate opportunities to meet future on-campus housing needs. All three options replace the existing Modular housing and add to the Fieldhouse to provide expanded recreation and convention facilities. In all cases parking demand is accommodated through the use of the modified Lot F



supplemented by remote parking that utilize excess capacity located in the existing little 'B' portion of Lot B. The options are as follows:

#### Option 1

Additional quad-style housing, retail/married student/faculty housing; new suite-style and more "Soup" housing (the existing apartment-style units named for alphabet soup).

Option 1 will add two additional Quad-style buildings (100 beds each) enclosing a courtyard to accommodate additional freshmen. Suite-style and "Soup"-style units (408 beds) will be developed on the Modular housing site. Retail, married student housing (135 beds) and faculty housing (18 units) will be built on Lot F at the intersection of Overhulse Road and Driftwood Road. Lot F will be reconfigured to maintain current capacity and screened from the housing by landscaping.

#### Option 2

Additional Quad-style housing; retail/faculty cottage housing; new suite style housing (Eco-Village).

Option 2 will add four additional Quad-style buildings (400 beds) enclosing courtyards to accommodate underclassmen. New suite-style housing (Eco-Village) will be developed on the Modular housing site to appeal to students seeking a

#### KEY

- New/Addition
- Existing

#### PROPOSED PROJECTS

- J** Additional Quad Style Housing
- K** Retail/Married/Faculty Housing
- L** New Suite Style Housing
- M** Fieldhouse/Conference Facility

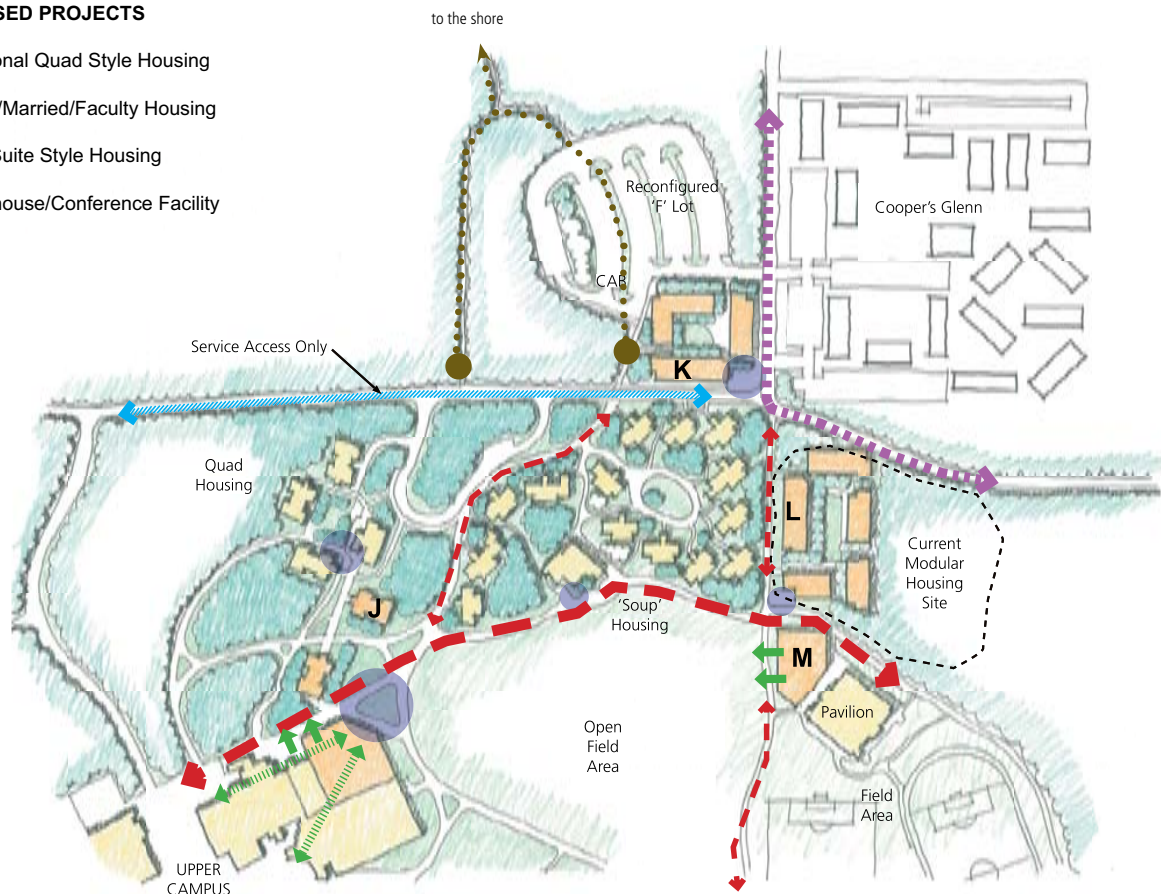


Figure 6.16. Housing option 1.



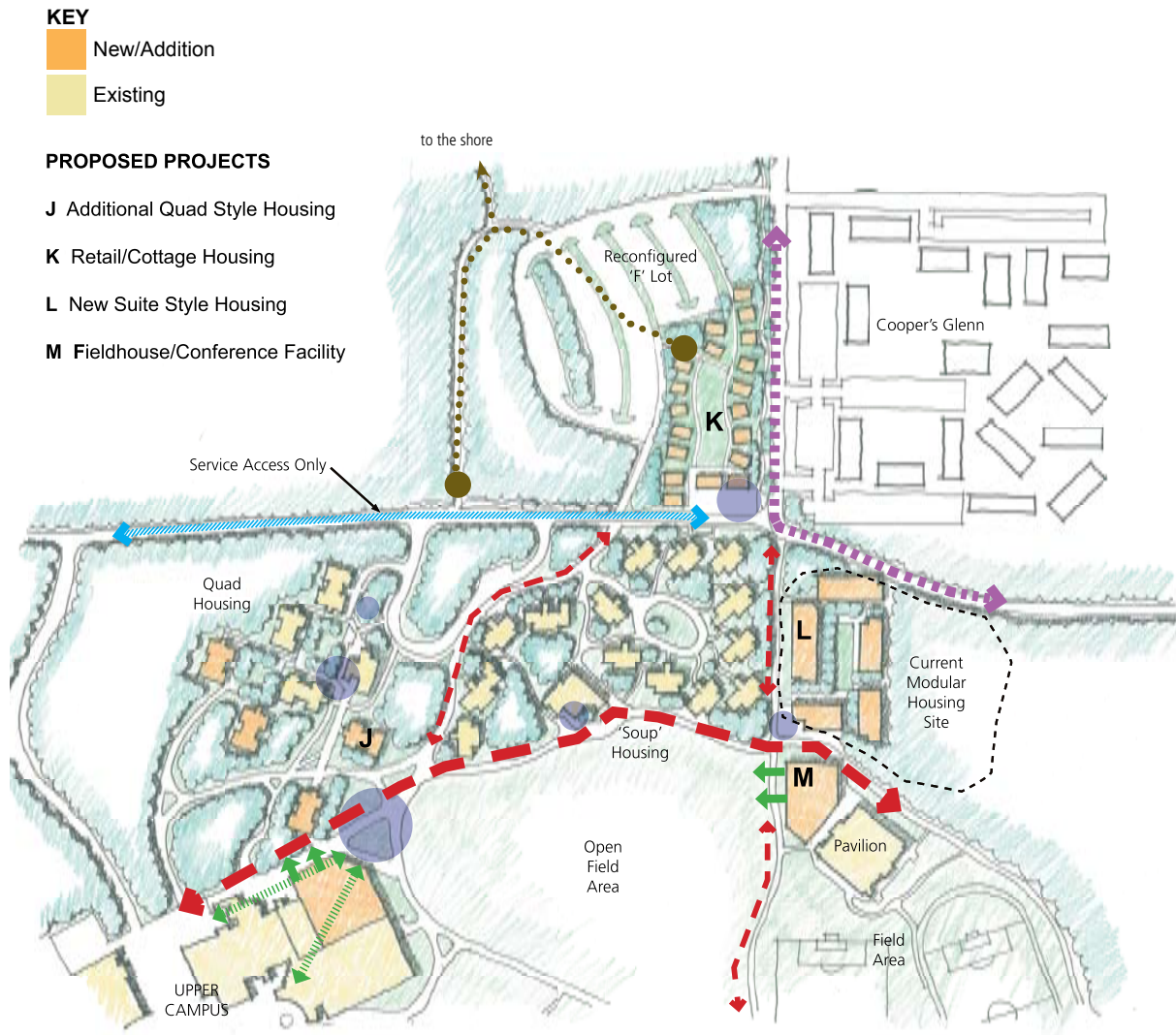


Figure 6.17. Housing option 2.

**KEY**
 New/Addition

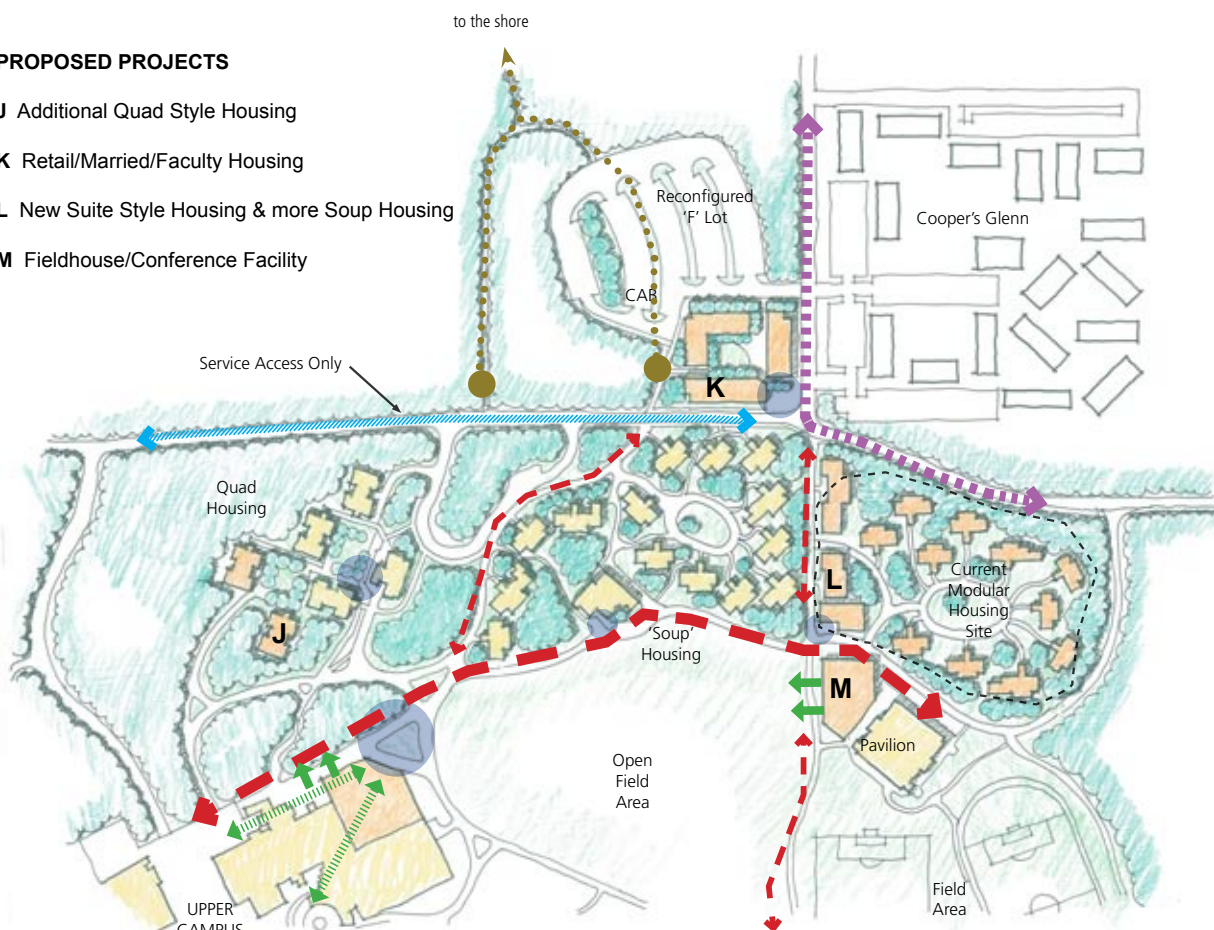
 Existing
**PROPOSED PROJECTS****J** Additional Quad Style Housing**K** Retail/Married/Faculty Housing**L** New Suite Style Housing & more Soup Housing**M** Fieldhouse/Conference Facility

Figure 6.18. Housing option 3.

sustainable life-style (343 beds). Retail with cottage-style faculty housing (18 units) will be built on a portion of Lot F at the intersection of Overhulse Road and Driftwood Road. Lot F will be reconfigured to maintain current capacity and screened from the housing by landscaping.

### ***Option 3***

Additional Quad-style housing; retail/married student/faculty housing; new suite style housing (Eco-Village).

Option 3 will add two additional Quad-style buildings (100 beds each) enclosing a courtyard to accommodate additional freshmen. New suite-style housing (Eco-Village) will be developed on the Modular housing site to appeal students seeking a sustainable life-style (408 beds). Retail, married student housing (135 beds) and faculty housing (18 units) will be built on F Lot at the intersection of Overhulse Road and Driftwood Road. Lot F will be reconfigured to maintain current parking capacity and screened from the housing by landscaping.

## **OTHER RECOMMENDATIONS**

In addition to the projects located at the campus Core, there are several additional projects that round out the recommendations. Listed below are the projects intended to support several of the education centers located outside the campus Core. These projects are equally as important to the continued success of the campus and support the variety of programs and needs that add to the diversity of experiences offered by the College and include:

### **Geoduck House Renovation (Project N)**

Total Square Footage: 5,000 gsf

- Renovation/Update existing facility for small retreats
- Limit uses to minimize environmental impact

### **Organic Farm Lab Facility (Project O)**

Total Square Footage: 12,000 gsf

- Food Grade Teaching Lab
- Greenhouse
- Equipment Storage

### **Terrascope Interdisciplinary Education Center (Project P)**

Total Square Footage: 12,000 gsf

- Flexible Interdisciplinary Labs
- Forest Canopy Studies Lab
- Marine Studies Lab
- Equipment Storage
- Community Education Resource Center

### **Combined Housing and Campus Facilities Maintenance Building (Project Q)**

Total Square Footage: 12,000 gsf

- Housing Maintenance Offices
- Campus Maintenance Offices
- Maintenance Vehicle Parking
- Maintenance Shop Space
- Maintenance Material Storage

### Faculty Housing

Strong support for on-campus faculty housing was expressed during the master planning process. Faculty housing provides the following opportunities:

- Provides a recruitment tool for new and visiting faculty
- Encourages faculty and student interaction
- Supports sustainability goals by reducing commuting trips
- Adds to the walk-in market for on-campus retail
- Allows faculty to experience Evergreen's unique environment
- Expands the inventory of affordable housing for faculty
- Provides transitional housing for newcomers to the community
- Provides temporary housing for visiting faculty and scholars

As the land for the housing would be state-owned, it was assumed that the housing would be rental, rather than owner-occupied. A small quantity (approximately 18) of detached units (cottage-style) or townhouses was envisioned. A number of potential locations were identified, including:

- Lot F (northwest corner of the intersection of Driftwood and Overhulse Road)
- Kifer Homestead site (west of the Organic Farm)
- Fireweed Lot (south of the Athletic Fields)
- Driftwood and Evergreen Parkway (northeast corner of the intersection of Driftwood and Evergreen Parkway)

Some faculty preferred faculty housing sites close to the campus Core, while other faculty preferred sites that were remote. It is assumed that one or two sites might be developed.

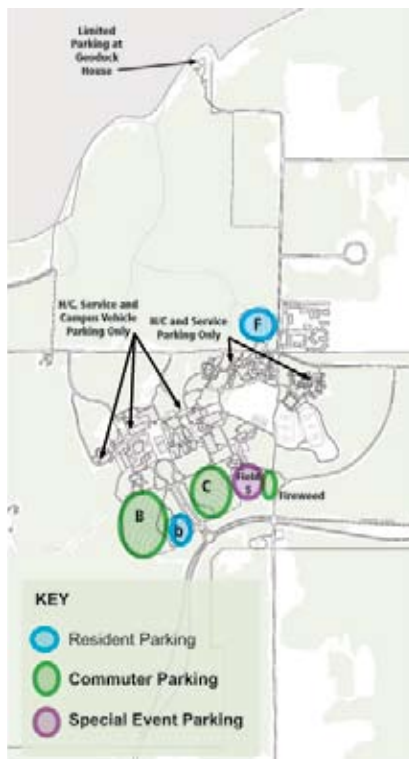


Figure 6.20. Existing parking on campus. Existing campus parking can support an increased student population.

## TRANSPORTATION ENGINEERING RECOMMENDATIONS

### Transit Service Improvements

Centralizing access to the existing 41 and 48 bus routes at McCann Plaza will reduce transit vehicle miles traveled and increase transit service hours. Expanding jitney service and late night and weekend public transportation options serving lower campus, will reduce automobile usage. The following revisions are recommended:

- Consolidate the transit stops for the 41 and 48 routes at McCann Plaza. Eliminate Driftwood/Overhulse Place loop, while retaining stops on Evergreen Parkway.
- Vans to provide jitney service and expanded late night and weekend public transportation options at the Driftwood Road transit stop proximate to student housing.

### Opportunities to Reduce Vehicle Use and Carbon Emissions

While the campus can physically accommodate parking and traffic increases associated with enrollment targets, its goal to achieve carbon neutrality necessitates new measures to reduce transportation related energy use. A comprehensive, campus-wide Transportation Management Plan will be essential to realizing energy and carbon reductions. Components of the plan would include:





Figure 6.19. An Evergreen double decker bus could increase efficiency of trips to and from campus.

1. **Reducing the number of autos used for commuting.** Suggested targets for reducing single-occupancy vehicle are a 10% reduction in use by faculty and staff and a 20% reduction by commuting students. To do this requires:

- a. Raising the cost to park on campus. Significant increases would be needed. Experience at a variety of universities indicates that demand will drop about 1% for each 10% increase in parking price. To achieve a 10% reduction in demand would require Evergreen to raise its rates to \$225 per academic year (up from \$90 now for fall/winter/spring). Even at this amount, parking would cost staff no more than a transit pass. To be most effective, parking should cost more than a transit pass.
- b. Increasing transit service to reach more potential riders and simplifying routes to reduce travel time. For example, preliminary information indicates a number of staff living in the Lacey area who might benefit from direct bus service instead of transferring downtown as is currently required to reach campus. A direct route could reduce total travel time from just over 1 hour to approximately 30 minutes. Also, demand for service from areas not currently served by public transit such as the Steamboat Island Peninsula should be investigated for appropriate types of service. One option would be for Evergreen to operate vans, also called jitneys, on key roads that could be hailed by students, staff or faculty for rides to and from campus during designated hours. Such custom van service could also provide student employment. This type of service would broaden transit options for resident students and faculty.
- c. Maximizing rideshare services with ridematching for carpools and vanpools. Ridesharing already occurs at fairly high levels but it may be possible to assist more people to form a car or vanpool with targeted ride-matching.
- d. Ensuring the availability of fuel-efficient on-campus College vehicles for non-commuting trips.
- e. Encouraging on-campus bicycle use by exploring pilot programs for bike sharing.
- f. Promoting bicycle commuting by partnering with suppliers to provide major discounts on bicycle purchases by College students, faculty and staff.
- g. Improving bicycle access to campus. Filling in gaps in the bike trail network would increase cycling safety and convenience for more people. Important segment include completing connections to the McLane trail, and creating better connections along Mud Bay Road, Harrison, Division and Cooper Point Road.

2. **Use more fuel efficient vehicles and encourage use of alternative fuels.**

Evergreen's drivers already use a fleet more efficiently than the national average (according to findings by the Sustainability Task Force), yet additional efficiencies can be encouraged through incentives either to acquire or use vehicles with greater fuel efficiency and those that allow use of alternative fuels. A goal would be to encourage a 10% increase in efficiency.

3. **Use More Efficient Fleet Vehicles.** The current but limited use of smaller, electric vehicles for maintenance and security functions should be expanded to serve the majority of those trips on campus. Police vehicles could be downsized and supplemented by hybrids for off-campus trips. Greater use of bicycles and

electric carts and scooters for patrols is also recommended. Smaller, quieter vehicles are also more compatible in primarily pedestrian areas such as Red Square and on main walkways.

**4. Investigate central receiving and distribution for vendors' products.** As with maintenance and security vehicles, too many large trucks and vans now enter pedestrian areas to deliver beverages and other goods. By consolidating truck deliveries at existing loading docks and then distributing goods using electric carts, the delivery system can better maintain a pedestrian atmosphere, reduce noise and minimize fuel consumption.

**5. Shorten the distance each auto travels.** Creating park and ride lots for campus commuters would reduce the number of vehicle miles traveled for each trip to and from campus. Remote lots need to be located near major travel corridors such as US 101, I-5 and major arterial streets. Potential locations for park and ride lots include the west end of Mud Bay Road near Madrona Beach Road, the vicinity of the Westfield Capital Mall, and potentially the existing Lacey Park and Ride lot (assuming its expansion). Such locations allow a convenient point to park commuter vehicles from the west, south and east. Based on available information, it is estimated that from 925 to 1,000 remote spaces in total would be appropriate, assuming that some staff and students would still need to park on campus occasionally, as would visitors and resident students. Each location would need approximately 250 – 400 spaces (more precise figures would be determined through more detailed surveys of travel patterns). These locations would reduce daily vehicle miles of travel by about 40% (currently, commuters drive an average of 13 miles each day, and these locations would shorten the trip total by approximately 6 miles). Dedicated buses such as a double-decker bus would shuttle commuters between the remote parking lot and the campus. Buses should arrive frequently, at a minimum every 10 minutes and preferably every 5 minutes. Such buses could operate on bio-fuels or natural gas to reduce carbon and other emissions. It is estimated that 6 buses would be needed to serve three park and ride sites.

Table 6.1 shows the range of emission reductions possible with the implementation of the above transportation management actions. Significant reductions could be achieved through aggressive action, but such results can only be realized through a coordinated set of policies addressing the cost of parking, the provision of convenient commuting options, and greater fuel efficiency and fuel flexibility in the vehicles used.

<b>TABLE 6.1 ESTIMATED ANNUAL CARBON EMISSIONS (MTCDE) FROM COMMUTING TO THE EVERGREEN STATE COLLEGE</b>			
	<b>EXISTING</b>	<b>FUTURE (5,000 ENROLLMENT)</b>	<b>CHANGE OVER EXISTING</b>
<b>Current Policy</b>	5,027	5,258	4.6%
<b>Minimal Action</b> SOV Reductions: -10% Staff; -20% Students		4,519	-10.1%
<b>Moderate Action</b> Above, plus 10% More Efficient Vehicles		4,108	-18.3%
<b>Maximum Action</b> Above, plus Park & Ride		3,540	-29.6%
<b>Maximum Action – with Biodiesel</b>		2,989	-40.5%

### Parking Can Help Pay for New Transportation Services

Increases in parking fees not only reduce parking demand but they can generate substantial new revenue to pay for additional transit services. As previously noted, the current parking system operates at a deficit considering its debt obligations. Even with the proposed 25% fee increase, revenue will only just meet the total obligation, leaving little surplus. The increase, while necessary, barely lifts parking rates to a level that would influence demand. Table 6.2 presents the range of revenue that could be generated from parking rates that equal or exceed the monthly cost of a transit pass.

TABLE 6.2 POTENTIAL PARKING REVENUE				
	2006	2008	2008 OPTION A	2008 OPTION B
REVENUE	ACTUAL	PROJECTED	PARKING PERMIT EQUALS TRANSIT PASS COST	PARKING PERMIT EQUALS TRANSIT PASS COST + 25%
Permits Sold	\$165,663	\$214,000	\$378,647	\$ 447,709
Daily Revenue	\$142,846	\$237,200	\$325,689	\$ 485,676
Infractions	\$ 96,351	\$115,000	\$104,000	\$ 98,375
Total Revenue	\$404,860	\$566,200	\$808,335	\$1,031,760
Expenses	\$416,467	\$451,000	\$451,000	\$ 451,000
<b>Net Revenue</b>	<b>\$ (11,607)</b>	<b>\$115,200</b>	<b>\$357,335</b>	<b>\$ 580,760</b>
Debt Service Interest (on Deficit Balance)		\$ (7,000)	\$ (7,000)	\$ (7,000)
Debt Service Principal & Interest		\$ (72,299)	\$ (72,299)	\$ (72,299)
Funds Available for Other Uses		\$ 35,901	\$278,036	\$ 501,461

Notes:

1. Higher parking rates expected to reduce demand by 5% & 15% for Options A and B, respectively.
2. Repayment of Interfund loan created an account deficit for which additional monies were borrowed accruing additional interest.

### Subsequent Planning and Analysis

As Evergreen pursues its goals of carbon neutrality and evaluates options to meet those goals, the College will need to develop its own internal surveys to get reliable and sufficiently detailed information to plan for and monitor the effect of new transportation services. For example, it will become extremely helpful to map the residential locations of bus riders, carpoolers, bike riders and drivers to identify new service opportunities tailored to their needs. Basic patterns can be identified while protecting individual privacy and the confidentiality of personal information. Also, greater specificity can be achieved in determining the mode of travel by asking for the mode used on specific days rather than asking for the mode 'typically' used.



## **ELECTRICAL ENGINEERING RECOMMENDATIONS**

### **Power Distribution System**

The existing campus 12.5kV power system cables have been tested and are in good condition. The system also has capacity to handle the expected future growth of the campus for the next ten years.

Original switchgear and panel boards in the 1970's era buildings are at or beyond their expected usable life. Evergreen has periodically tested and maintained this equipment but has experienced problems finding replacement breakers and parts for this equipment. Additionally this equipment was installed prior to AIC (Ampere Interrupting Capacity) ratings for gear. Recommend replacing electrical distribution equipment as a part of building addition and renovation projects.

Part of the sustainability energy savings recommendation would be to replace existing dry type transformers (480 volt to 120/208 volt) with new energy efficient type transformers as a part of building additions or renovations.

Monitoring of the power system would provide valuable information on energy usage. Metering of loads such as large mechanical units and lighting would allow the college to identify problems with mechanical and lighting control system, maximize energy savings and prioritize system improvements.

On-site power generation such as co-generation, wind and solar are currently not cost effective. These systems are in a period of major development and in the next few years the payback period will make some or all of these systems feasible. In the mean time small scale demonstration projects are useful for educational purposes and could make sense for the College.

### **Interior Lighting**

Lighting in many of the buildings on campus is very inefficient and does not create a comfortable environment. The replacement of existing recessed acrylic and parabolic lens type fixtures with pendant direct/indirect fixtures with electronic ballasts and T5 type lamp would greatly reduce energy consumption and provide a much better working environment. Newer light fixture reflectors designed around the T5 lamps allow for greater distance between fixtures and reduction in the number of fixtures and lamps. Note many local power companies have payback incentive programs to help offset the cost of fixture replacements (for example Puget Sound Energy).

New lamp technologies such as the development of an array of fixtures using LED (Light Emitting Diode) lamps have potential of greater energy efficiency and reduced maintenance. Recommend that these technologies be evaluated for use in replacement or future projects.

### **Exterior Lighting**

The campus standard area lighting pole fixtures do not meet LEED (Leadership in Energy and Environmental Design) dark sky cut off requirements. Replacement of these fixtures with high cut off type light distribution is recommended. Fixtures installed as part of the Seminar II project should be reviewed for use as replacement fixtures. Additionally many of the building or canopy mounted fixtures are not energy efficient. Replacement of these fixtures with lower wattage, better light distribution fixtures works with sustainability goals.

### **Interior Lighting Controls**

On average, lighting loads make-up 25 to 30 percent of a building's energy consumption. More energy efficient lighting fixtures are part of the overall strategy to reduce energy use. In addition, lighting controls such as motion sensors and zoned switching can double the potential energy savings.

Currently much of the existing lighting system on campus is controlled by local switch controls. This means lighting in toilet rooms, classrooms and offices are generally left on for hours when the rooms are unoccupied. Providing automatic on/off controls such as occupancy sensors ensure lights are not left on when a room or space is not occupied. Public areas where it is not desirable to have fixtures going on and off via motion sensor such as corridors would benefit from a programmable lighting control system to automatically turn on and off the fixtures on a daily schedule.

Using natural daylighting strategies provides the greatest opportunity for energy savings. Many new daylighting control systems are on the market. Typically these use photo cells to control dimming ballasts in the light fixtures. Dimming the lights is much less disrupting to users than turning on and off lamps. Dimming also gives the user much greater control of lighting in a space. Savings can be as high as 50 percent.

### **Exterior Lighting Controls**

Photo cells currently turn on the campus exterior fixtures at dusk and off at dawn. There are many hours where the lights are on with few or no one in many of the areas. Control systems that time the fixtures to 50% at a set hour and use motion sensors to bring fixtures back up to 100% would save energy and provide for personal safety.

Although many of the listed strategies are common energy saving approaches today, it often takes careful coordination and a continued focus to ensure that the systems are not only ultimately included in a project but also are fully realized in workable solutions.

## **TELECOM/DATA RECOMMENDATIONS**

Existing telecommunication equipment rooms in much of the campus are too small and should be replaced with dedicated rooms that meet ANSI/TIA/EIA standards. Adequate equipment rooms should be incorporated into the programs as facilities are renovated.

Wireless LAN (Local Area Network) system coverage has been installed to the B&C wings of Library. Currently the A wing of the Library is under renovation and wireless LAN coverage is being added. The pre-design for the CAB renovation has wireless coverage identified. It is recommended that the wireless network be expanded to cover exterior spaces around buildings, plaza area and all existing and new buildings.

Existing telephone exchange (Private Branch Exchange (PBX)) equipment can not support changing to a VOIP (Voice over Internet Protocol) type telephone system. It is recommended that the benefits of a VOIP system be explored when it is determined that the existing PBX system needs replacement.



Figure 6.21. Wind turbines, solar panels, green roofs and other sustainable features are learning opportunities and help support campus sustainability initiatives.

## MECHANICAL ENGINEERING RECOMMENDATIONS

The Evergreen campus has an excellent infrastructure consisting of the Central Utility Plant (CUP) and main utility tunnels that connect to the 11 main campus buildings. Both the CUP and the tunnels were built to serve a campus of approximately 12,000 students. The current campus population is in the low 4,000's. It therefore makes economic and logistical sense to continue to utilize this infrastructure, as it has plenty of space for growth and change, with very little capital investment in the infrastructure itself.

The service life of the equipment varies throughout the campus. In general, the mechanical systems have been well maintained and are in good condition. Much of the existing HVAC equipment has gone beyond its expected service life, as defined by ASHRAE and technically should be replaced. Service life for the type of equipment found in these buildings is generally in the 20-25 year range. However, many pieces of equipment are still in excellent condition and have had service upgrades to extend their life. The main air handlers in the buildings are generally in good condition and should remain. These units are built-up systems and can have pieces replaced as they wear out. The piping in the tunnels appears in excellent condition as well and can be retained depending upon its particular service. The chillers in the CUP are new or near-new and have had control and service upgrades in the recent past.

The major exception to the above observations is the boiler system. The main, large boilers have exceeded their life expectancy, and have control components that are extremely difficult to replace and maintain. However, the smaller boiler used in the summer is in excellent condition and could be retained.

The other primary factor when evaluating the equipment is efficiency. The existing heating equipment, at its most efficient when new, was approximately 80%. This is at the peak of the heating season with the boiler running at 100% capacity. This type of boiler does not operate very well at part-load, which accounts for the majority of our heating season. In addition, as noted in the boiler section above, these boilers are run at lower than designed for pressures, further limiting their efficiency. The inefficiencies of the steam system were previously outlined. Nearly all of the existing air handlers currently have hot water coils, to convert the steam at each building into hot water for heating purposes. Converting the existing steam to hot water system into an all hot water system, with new, more appropriately sized, high efficiency boilers with modern controls located in the CUP would greatly improve the overall energy efficiency of the building heating systems.

Concurrently, converting the domestic hot water system from a central plant supported function into a distributed, point of use type hot water heater network will also greatly improve the efficiency of this campus system. This type of system could also be tied into rooftop solar thermal systems on each building that could provide some or all of the domestic hot water heating needs. The exception to this recommendation is the CRC and CAB, which have high domestic hot water loads. Further investigation would be required to determine what would be the most efficient domestic hot water system replacement for those particular buildings.

The chillers and chilled water piping appears to be in very good condition, and well insulated. This system also appears to be adequately sized, and does not suffer from gross inefficiencies. Some savings can be seen through certain control and piping revisions that have been identified in previous studies.

The existing controls are in generally good condition and can adequately control the majority of the campus systems. However, a more thorough evaluation of the controls would be necessary to fully determine what measures would be required in order to maximize the efficiency of the current mechanical systems.

### Heating and Cooling Recommendations

- Continue to utilize a central plant and utility tunnel approach – provides potential economies and builds on the more than adequate tunnel infrastructure.
- Replace existing boilers with multiple smaller boilers connected in series – boilers are either on at full capacity (most efficient mode) or off.
- Change the heat delivery method of the system from steam to looped hot water.
- With the exception of the CAB and CRC, remove the heating of domestic hot water from the central plant and localize into instant-on systems. The pool, shower and kitchen functions of the CAB and CRC could still be efficiently handled by the central plant.
- As facilities (Education Centers) develop outside the Core, focus on renewable and localized systems targeted as carbon neutral and combine solar, photovoltaic and wind options.
- Explore partnerships with GE, Westinghouse and others to use the campus as a test facility for innovative power plant initiatives, such as the use of multi-fuel energy generation plants.
- Study the viability of ground source geothermal heat pump systems that utilize well fields under the athletic fields.

Most plumbing fixtures could be retained, but with new faucets and flush valves. Some fixtures would need to be replaced due to age, lack of ADA units and inefficiency. If bathrooms are to be re-configured or updated, we recommend replacing all plumbing fixtures with more water efficient or waterless type units. Existing domestic water piping would need to be further evaluated. It is most likely that the majority of water pipe is copper pipe and does not need replacement in the near future.

The fire protection system will most likely only need revisions to accommodate any new space configuration. Existing heads would need to be replaced with fast action heads. The buildings would need to be evaluated to determine if there are any areas that are currently not sprinklered that need to be under today's code, such as in ceiling plenums and tunnels. These areas would most likely need to be fully sprinklered and could occur on a building-by-building basis.

Many of the sustainability goals for the campus, such as improved envelope and maximizing daylighting, can be achieved on a building-by-building basis. Overall campus energy goals and strategies should mainly focus on efficient delivery of building utilities from the central plant and/or campus. As previously indicated, a more efficient heating system at the central plant would greatly improve the overall campus energy use. Strategies such as the use of bio-fuels for the main heating system could be incorporated with that strategy. Domestic hot water production was also previously addressed. Overall, potable water consumption could be reduced through rainwater catchment and on-site treatment/retention.

The campus cooling system could possibly be supplemented by the use of

ground-source heat pumps. Further study would be required to determine if this is a viable option.

Photovoltaics could provide some of the campus electrical needs, but are unlikely to replace the current grid-fed system due to the high cost of these types of systems. These could, however, be evaluated and possibly used on a smaller, building-by-building, or system-by-system basis.

Large-scale solar thermal systems are similar in that they make environmental sense, but face first cost concerns and thus today make less economic sense in this application. As energy costs rise and alternative energy source costs decline, the campus could begin to implement alternative energy strategies.

Wind generators also do not currently make economic sense in this location. Most wind generators require average wind speeds of 12 mph and greater to achieve any sort of reasonable power generation, and the Puget Sound region has average wind speeds in the 7-9 mph range. Specific data and/or testing would be required to determine if this particular location has applicable wind speeds. However, recent advancements in low-wind-speed technology have created a new genre of wind generators that work well in the 7-9 mph range, and could provide supplementary power generation on a case-by-case basis.

The current infrastructure and CUP facilities lends themselves well to a Co-Gen or Tri-Gen type facility due to the central location, large amount of free space and distributed network. These types of facilities generally produce heat, electricity and possibly chilled water from a single source. However, an economically and environmentally sensible fuel source (such as bio-gas, crop waste, bio-diesel, etc.) must be available for these types of systems to be viable. Currently, there is not an identified source on this campus.

The outlying campus buildings do, however, lend themselves well to many of the above mentioned strategies. A combination strategy of PV Panels, Solar Thermal, Low Wind Speed Generators, Rainwater Catchments, and Bio-fuels could be utilized to meet most, if not all, of these small buildings' needs. This could occur on a demonstration type level, which could then be applied on a larger scale as the economics change due to higher energy costs from conventional energy sources, and reduced production costs of sustainable technologies. Students currently pay \$1 per credit hour towards a clean energy fee.

## **CIVIL ENGINEERING RECOMMENDATIONS**

As part of this master planning effort, Evergreen intends to become a "zero" carbon and "zero" waste campus by 2020. Continuing to effectively manage the infrastructure will help achieve this goal. Evergreen is actively using low impact development/green infrastructure elements around the campus and is committed to including them in future development.

Consistent with other efforts to become more sustainable, it is recommended that Evergreen complete a functional analysis of all resources on campus and in the surrounding areas. This analysis would help to determine what natural systems are degraded and how to target resources to improve them. This functional analysis will allow Evergreen to catalog the existing ecological functions and green infrastructure connections within and around the campus. For example, Evergreen can take advantage of the existing ecological functions and green infrastructure



connections of the adjacent forest preserves, the regional bike and pedestrian trail system, Puget Sound, and the habitat and wetland areas surrounding the campus.

Continued preservation of the forest Reserve and encouraging alternative modes of transportation will reduce the need for pollution generating impervious surfaces and maintain the quality of the adjacent creek basins. Any new development should limit the clearing of trees and dense vegetation to reduce the impacts of increased runoff from the campus. Low impact development should be required for all new and redeveloped facilities on campus including buildings, roadways, parking areas, and related construction activities.

Evergreen may want to explore retrofitting the existing Core buildings to include low impact development elements. These opportunities include stormwater planters around the campus Core buildings, pervious pavements and permeable pavers for the walkways and outdoor gathering spaces, swales and bioswales along the parking areas and walkways, rain gardens at the campus housing and outlying buildings.

Students and the faculty provide maintenance, monitoring, and research resource for the campus. These elements can be applied at varying scales based on demonstration and sustainability goals of Evergreen. Currently, depending on programs, monitoring includes the following:

- Biodiversity of plants and animals over time
- Examining substrate types, freshwater sources and predation patterns that impact biodiversity
- Stream water quality measures should be taken to institutionalize this resource

Water and wastewater management will be controlled by installing low flow fixtures in campus buildings and housing, and controlling and maintaining the wastewater system to prevent inflow and infiltration into the wastewater



Figure 6.22. Living Machines provide learning opportunities and eliminate waste water.



system. Using native plantings that require less irrigation or considering rainwater catchment systems to water vegetation and plants throughout the campus will also help. In addition, incorporating pervious surface materials and strategies when maintaining, renovating or expanding existing parking facilities will also reduce run-off and help the campus meet evolving storm water standards.

### CAPITAL PLAN

The current capital plan indicates numerous projects and renovations over the next several biennia (see Table 6.3).

The Master Plan is intended to initiate discussion to establish a prioritized list of projects that will inform the development of revised 2007 – 2020 Capital Budget Plan vision. The list below in Table 6.3 continues to evolve and will be informed by order of magnitude costs to be applied to the proposed projects. Bold type indicates new capital projects.

TABLE 6.3 PROJECTS AND RENOVATIONS				
BIENNIA	2007 - 17 CAPITAL PLAN	2007 - 09 FUNDED CAPITAL PLAN	MAINTENANCE PROJECTS	SPECIAL PROJECTS
2007-2009	CAB Renovation (major renovation of the infrastructure and exterior)  Longhouse Expansion (design/construction)  College Recreation Center (CRC) Renovation (predesign)  COM Bldg. Renovation (major renovation per the 2002 Predesign)	CAB Renovation (major renovation of infrastructure and exterior)  Longhouse Expansion (design/construction)	Brick Paver Renovation/Restoration- phase I (design/construction)  Interpretive Trails/Bicycle Paths (design all phases)  Life Safety/Code Compliance (design/construction)  Road Revisions & Improvements (design all phases and execution of Overhulse closure)  Reforestation and Landscape Restoration (design and construction of Overhulse)  Signage/Gateway Marking (design)	
		PROPOSED IN FACILITIES MASTER PLAN		
2009-2011	Seminar I Renovation (design/construction)  Science Center Renovation (Labs I & II)  College Recreation Center (CRC) Renovation (design)	COM Bldg. Renovation (design/construction per the 2002 Predesign)  <b>Lecture Halls Renovation/Expansion</b> (predesign)  Science Lab Modernization - Lab II (design/construction)  <b>Sustainable Agriculture Lab/Greenhouse</b> (design/construction)  College Recreation Center (CRC) <b>Renovation and Expansion</b> (predesign)	Interpretive Trails/Bicycle Paths (construction phases I & II)  Life Safety/Code Compliance (design/construction)  Road Revisions & Improvements (construction phases I & II)  Reforestation and Landscape Restoration (construction phases I & II)  Signage/Gateway Marking (construction)  Forest Observation Education Pavilion (design/construction)  Sustainable Agriculture Field Improvements (design/construction)	Geoduck Retreat Center/Marine Sciences Outpost Lab (design/construction)  Revised Housing Master Plan

TABLE 6.3 PROJECTS AND RENOVATIONS (CONTINUED)

BIENNIA	2007 - 17 CAPITAL PLAN	PROPOSED IN FACILITIES MASTER PLAN	MAINTENANCE PROJECTS	SPECIAL PROJECTS
<b>2011-2013</b>	College Recreation Center (CRC) Renovation (construction) COM Bldg. Expansion (design) Science Center Renovation (Labs I & II)	CRC Renovation & <b>Expansion</b> (design ) <b>Lecture Halls Renovation/Expansion</b> (design/construction) Arts Annex Modernization (design/construction) Seminar I Modernization (predesign)	Brick Paver Renovation/Restoration- phase I (design/construction) Interpretive Trails/Bicycle Paths (construction phases III & IV) Life Safety/Code Compliance (design/construction) Road Revisions & Improvements (design and construction phases III & IV) Reforestation and Landscape Restoration (design and construction phases III & IV) Storm & Wastewater Education Projects (design/construction)	Field House Pavilion Expansion (design) Canopy Walk Project Quad Dorm Expansion (design)
<b>2013-2015</b>	COM Bldg. Expansion (construction) Science Center Renovations (Labs I & II)	Science Lab Modernization - Lab I (design/construction) <b>Interdisciplinary Lab Building</b> (predesign) <b>CRC Renovation &amp; Expansion</b> (construction) Seminar I Modernization (design/construction)	Interpretive Trails/Bicycle Paths (construction phases V & VI) Life Safety/Code Compliance (design/construction) Road Revisions & Improvements (construction phases V & VI) Wastestream and Renewable Fuels Education Projects (design/construction)	Field House Pavilion Expansion (construction) Mod. Replacement Housing (design) <b>Extended Ed. Center</b> (predesign) Quad Dorm Expansion (construction)
<b>2015-2017</b>	Arts Annex Renovation (design/construction)	<b>Interdisciplinary Lab Building</b> (design ) Science Lab Office Wing Renovation - Lab I & II (design/construction) Science Lab Modernization - Lab I (design/construction) Combined Maintenance Facility (design/construction)	Interpretive Trails/Bicycle Paths (construction phases VII & VIII) Life Safety/Code Compliance (design/construction) Road Revisions & Improvements (construction phases VII & VIII)	Mod. Replacement Housing (construction) Driftwood Suites Housing (design) <b>Extended Ed. Center</b> (design)
<b>2017-2019</b>		COM Bldg. Expansion (design) <b>Interdisciplinary Lab Building</b> (construction) Science Lab Modernization - Lab I & II (design/construction)	Interpretive Trails/Bicycle Paths (construction phases IX & X) Life Safety/Code Compliance (design/construction) Road Revisions & Improvements (construction phases IX & X)	Driftwood Suites Housing (construction) <b>Extended Ed. Center</b> (construction)

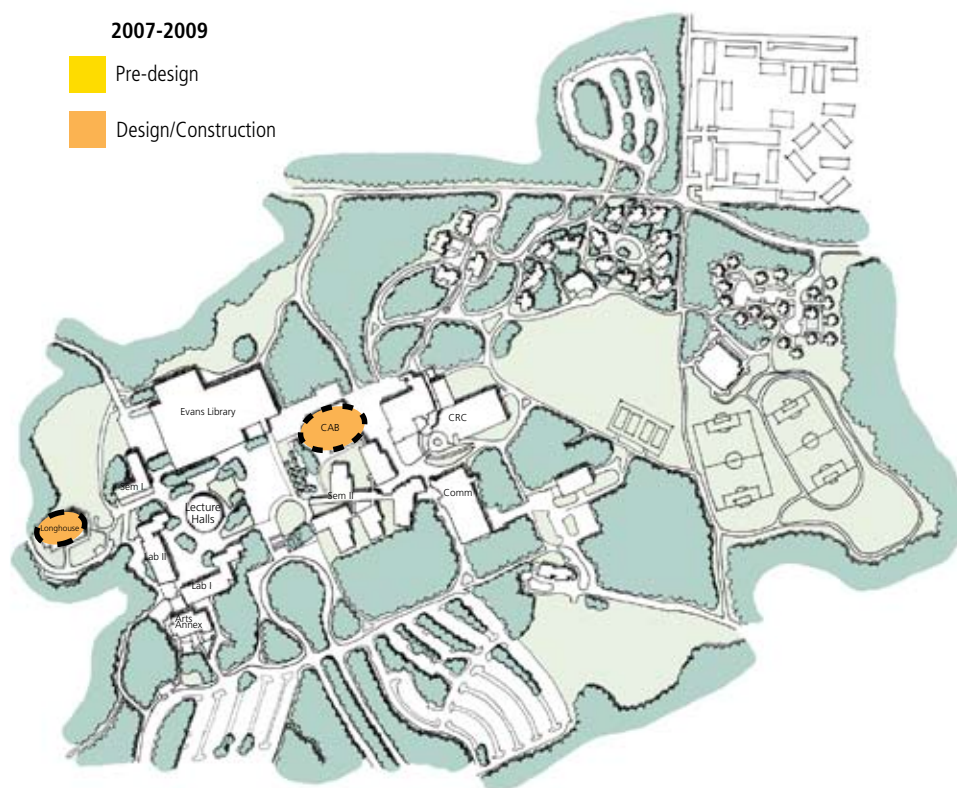


Figure 6.23. Capital Plan biennium diagram showing 2007 – 2009 projects.

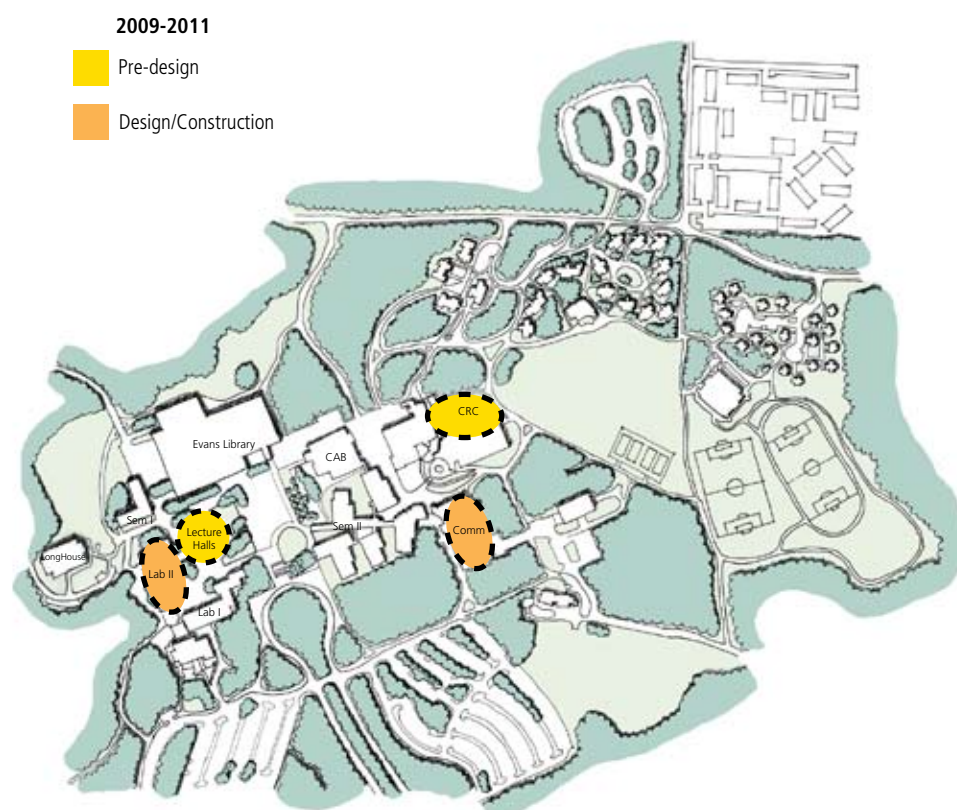


Figure 6.24. Capital Plan biennium diagram showing 2009 – 2011 projects.

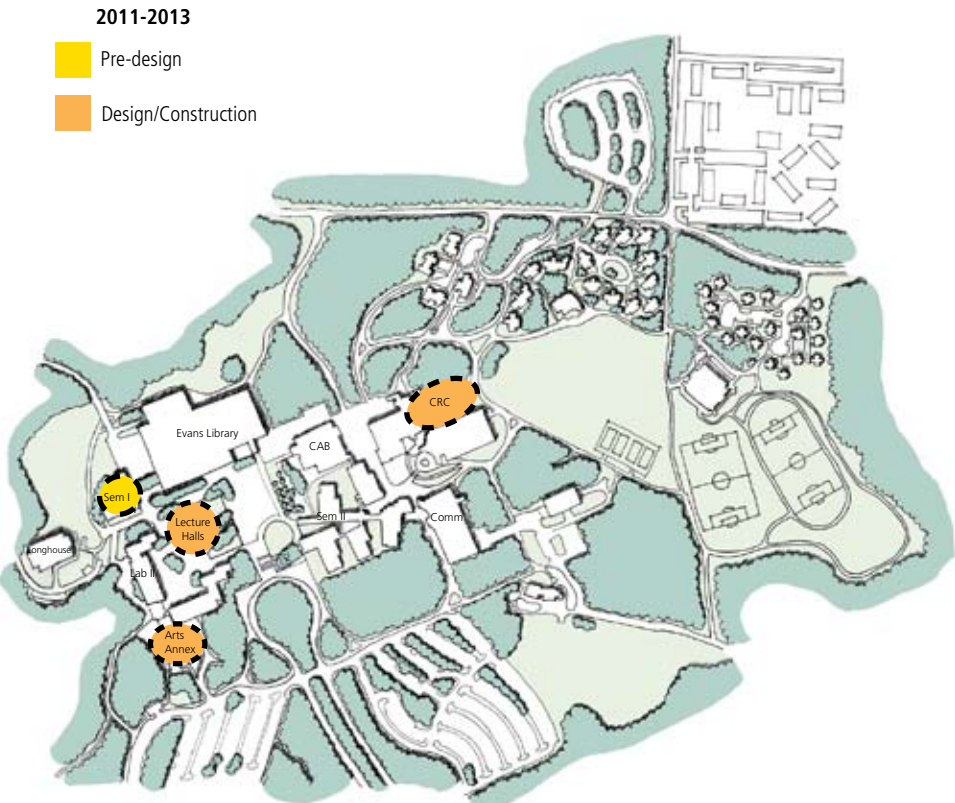


Figure 6.25. Capital Plan biennium diagram showing 2011 – 2013 projects.

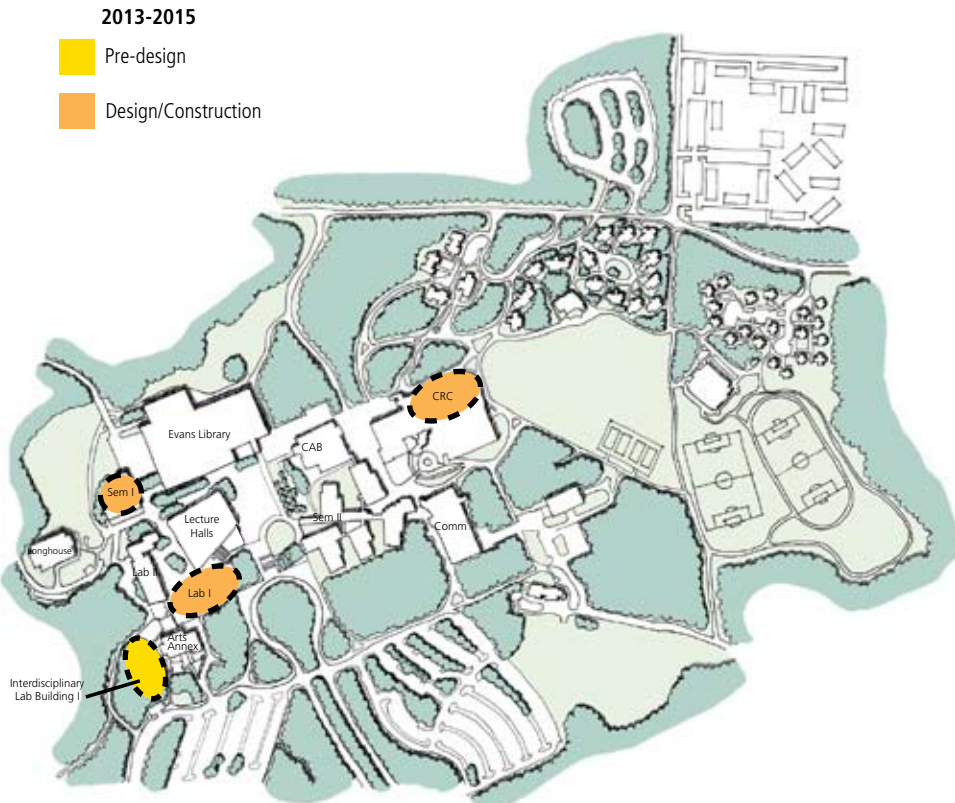


Figure 6.26. Capital Plan biennium diagram showing 2013 – 2015 projects.



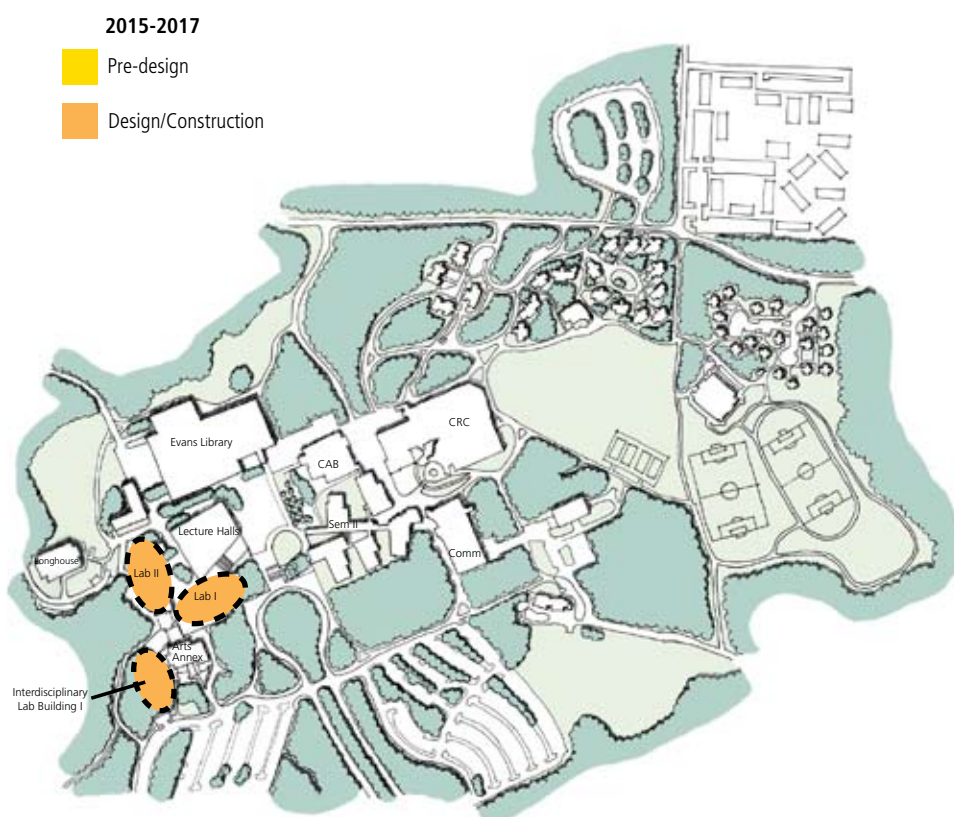


Figure 6.27. Capital Plan biennium diagram showing 2015 – 2017 projects.

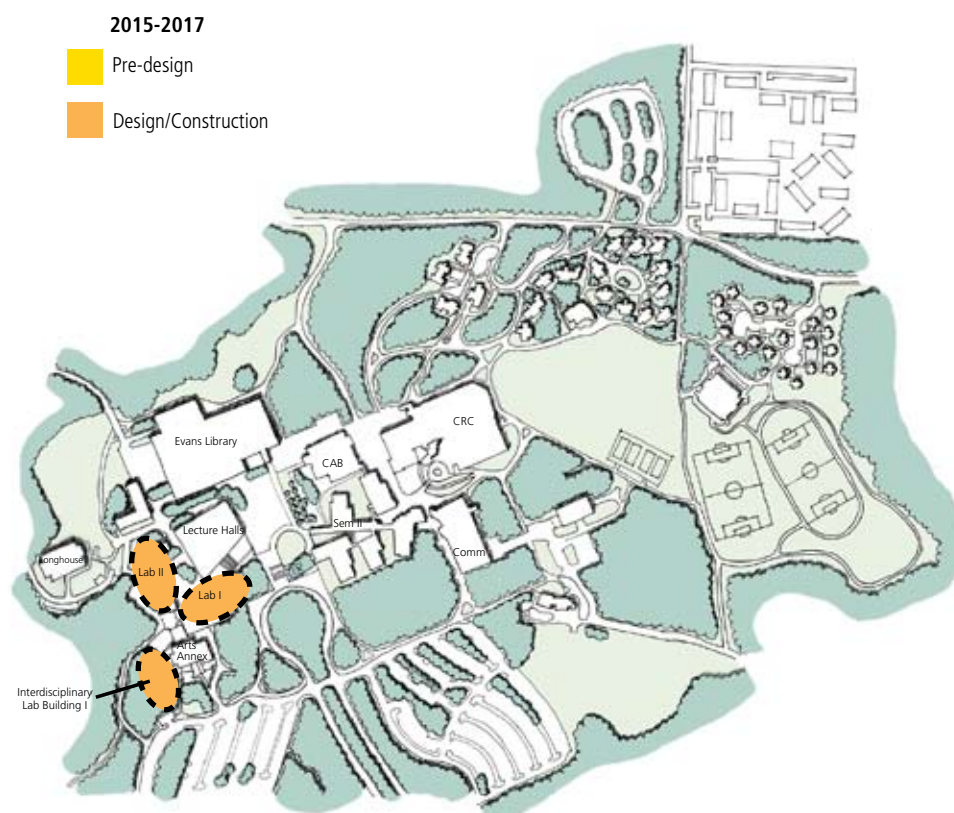


Figure 6.28. Capital Plan biennium diagram showing 2017 – 2019 projects.

## OFF-CAMPUS FACILITIES RECOMMENDATIONS

### Tacoma Campus



Figure 6.29. Murals by African artists reflect ethnic and cultural diversity at the Tacoma campus.

The Tacoma program is committed to providing an interdisciplinary, reality-based, community-responsive liberal arts education. It is preparatory for careers and future studies in community development, organizational development, law and public policy, education, social and human services, public administration, communication and media arts, environmental studies and public health.

Current enrollment is 225 students. Enrollment is exclusively third and fourth year students who have completed two years at community college (Tacoma Community College Bridge Program) or vocational schools, such as Bates and Clover Park Technical Colleges. Currently, three quarters of the students are women. The faculty has grown from four to seven plus two adjunct faculty.

The College is actively seeking faculty of color. Minority students make up a significant percentage of the demographics. The décor of the Tacoma campus reflects its cultural diversity. A mural by African artists graces the main entry. The College at its current location is contributing to the revitalization of the Hilltop neighborhood, a predominantly Afro-American neighborhood.

The existing Tacoma program is located on a full block site in a two story brick and stucco building of recent construction. The facility is accessible and contains the following facilities: lobby, four seminar rooms, wet lab, a large multi-purpose room with four adjacent faculty offices, central administration offices and conference room, work room and storage space. Parking and public transit facilities are adequate.

The existing facility has been designed to allow for the addition of a third floor. Given current enrollment levels, expansion of the facility is not anticipated at this time. Currently the College is negotiating an extension to the current 10 year lease.

### Reservation Based/Community Determined Program

The Reservation Based/Community Determined Program began in 1989. Classes are only for third and fourth year students with the Grays Harbor Community College Bridge program preparing the majority of the students.

Currently six tribes participate in the program (Makah, Muckleshoot, Nisqually, Port Gamble S'Kallam, Quinault and Skokomish). Classes are taught at the following locations: Quinault, Muckleshoot, Nisqually, Lower Elway, Port Gamble and Skokomish. Four Saturdays per quarter all the students in the program (TESC/Grays Harbor interface) attend classes in the Longhouse on The Evergreen State College main campus. Four classrooms (20 students each) are used in the Longhouse at this time. The kitchen at the Longhouse is used extensively during Saturday classes and traditional tribal meals are served to students and faculty.

The Tribal Councils are actively involved in overseeing the program and classes taught and have a 'government to government' agreement with Evergreen on the respective responsibilities of the program.



The Longhouse and adjacent Ethnobotanical Garden on Evergreen main campus are central to the program. The design and construction timbers used in the Longhouse were donated by the tribes. There is a cleansing ceremony at the Longhouse at the beginning of each Saturday program. A separate graduation ceremony for the program with active participation of alumni of the program occurs each year at the Longhouse.

Currently there are 80 students in the program (35 Evergreen and 45 Grays Harbor). The program is expected to double in size, at which point, the Longhouse might be used eight Saturdays per quarter.

An expansion is currently planned for the Longhouse to provide additional classrooms, offices, storage and student display space.



07



## DESIGN GUIDELINES



## 07 DESIGN GUIDELINES

### DESIGN GUIDELINES

#### Purpose

The intent of the design guidelines is to provide guidance for the development and enhancement of existing and planned campus landscape and architectural features under the Master Plan. The design guidelines support the goals and objectives of the Master Plan including:

Reflect mission, strategic plan and pedagogy of the College by:

- Providing interdisciplinary, collaborative learning environments
- Encouraging stewardship of natural resources
- Building community partnerships
- Improving the quality of faculty and staff work life
- Creating a residential liberal arts college by accommodating thirty percent of the students in campus housing and enhancing student life
- Becoming a national model of sustainable design and practices
- Supporting the campus Core and Reserve areas as a teaching and learning environment for students, faculty, staff and community
- Developing memorable places within the campus by harmonizing with nature and clustering activities to foster socialization and gathering in settings of various scales
- Encouraging the integration of students, faculty, administration and staff

In response to these goals and objectives, the design guidelines have been grouped into the following categories: Campus Form, Sustainable Design and Learning Environment. References to areas of the campus follow previous Master Plans including: Core ("urban" area of the campus including the main academic, administrative, residential, social and recreational facilities—commonly referred to as upper and lower campus); central Core (Red Square and the major, multi-use buildings that surround it—commonly referred to as upper campus); Clusters (group of facilities outside the Core, including Organic Farm, Geoduck House and Maintenance Shops, serving a specific function) and Reserve (substantially undeveloped areas surrounding the Core and Clusters where natural ecosystems are the predominant feature).

## LANDSCAPE DESIGN GUIDELINES

### Campus Form



Figure 7.1. Seminar II is integrated into the landscaping which softens and complements the buildings material choices.



Figure 7.2. The Ethnobotanical garden and other teaching gardens use the landscape as a teaching resource.



Figure 7.3. Native plants used in campus teaching gardens enhance the sustainability of campus landscapes.

- Establish transition in the landscape between the more formal landscapes of the Core, to the less formal Education Centers and the natural landscapes on campus.
- Preserve vegetative buffers around the campus boundaries to maintain the site's character and define the relationship with neighboring land uses.
- Provide contrast, color and softening of architectural features with surrounding landscaping.
- Support the integration of parking lots into the natural environment by providing planting strips within parking areas to break up visual effects of cars.
- Establish long range planting designs for planting strips on roadways and parking lots.
- Integrate existing mature plant material into proposed design schemes when possible.

### Sustainable Design

- Preserve, restore and enhance campus landscapes as a carbon off-set.
- Remove invasive plant species such as English Ivy, English Holly and Scot's Broom from campus Core, Clusters and the Reserve areas whenever possible.
- Characterize roadways with low maintenance native vegetation.
- Promote sustainable landscapes with low maintenance native plants and xeriscaping techniques to reduce energy and water usage (see Appendix for list of recommended plants with these qualities).
- Improve wildlife habitat in the Core and Reserve areas.
- Invite faculty to inform projects involving potential land use changes to consider use of native plants and ecological restoration methods in proposed plans.
- Minimize development impact to surrounding landscape when establishing new trails or improving existing ones and in development of buildings, renovations and additions.
- Facilitate access for potential volunteers helping to maintain campus landscapes.
- Establish physical links between campus ecological biomes and surrounding ecologies.
- Establish an extensive trail system and amenities to expand campus pedestrian and bicycle access and encourage alternative transportation modes.





Figure 7.4. Flexible gathering space in the Longhouse is used in interdisciplinary ways.



Figure 7.5. Sem II cafe uses its strong solar orientation to activate the space.

### Learning Environment

- Create opportunities for learning from the landscape.
- Animate the campus landscapes with public art where feasible and appropriate.
- Improve wayfinding and user experience of campus landscapes.
- Implement signage and interpretative amenities in the Core, Clusters and Reserve areas indicating trail systems and recreational and educational opportunities.
- Increase universal access in the Core, Clusters and Reserve areas.

## ARCHITECTURAL DESIGN GUIDELINES

### Campus Form

- Maintain aesthetic continuity by selectively incorporating exposed concrete within the Core in new development.
- Enhance the transparency of buildings and the activities within them (the Sem II building is valued in its extensive use of glass to reveal the activities within the building and to create inviting entrances).
- Utilize materials and forms that complement existing structures while enlivening them through innovative and sustainable design.
- Limit the height of buildings in the Core to the height of the Library, excluding the clock tower.
- Encourage integration of campus populations with buildings incorporating academic, administrative and interdisciplinary uses.
- Develop buildings to incorporate spaces providing interdisciplinary, collaborative learning environments and informal breakout spaces (Sem II is a model of such development).
- Harmonize the development of Clusters with the natural environment and preserve the rural quality of the Organic Farm.
- Emphasize primary pedestrian malls, plazas and pedestrian pathways in the Core.
- Bring campus life and Evergreen ideals to the forefront of design.
- Create a variety of special places on campus by developing indoor/outdoor multipurpose and flexible spaces for socialization.
- Activate places between buildings and provide connections to adjacent buildings.
- Establish new gathering places and activity centers along pedestrian axes.



Figure 7.6. Interpretive amenities animates learning experiences.

### Sustainable Design

- Apply LEED® and other sustainable strategies in campus renovation and development.
- Utilize solar access when designing outdoor and indoor public spaces.
- Encourage design and development that preserves the natural environment.
- Centralize major development close to the Core.

### Learning Environment

- Consider opportunities for learning with interpretive amenities.
- Create opportunities for learning for the campus and community by incorporating interpretive information on the sustainable features for new buildings and renovations.

08



## ACKNOWLEDGEMENTS



## 08 ACKNOWLEDGEMENTS

Campus meetings, informal sessions, open discussions, one-on-one meetings, facility and campus tours, community presentations and focused charrettes were held in order to engage the campus community in a dialog about the future of the College. Evergreen administration, staff, faculty, students and community members participated in these events. We apologize to those we have not included here who have been equally important to the process.

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David McAvity	Steve Trotter
Henry Moyarga	Bruce Van de Walker
Donald Morisato	Robert Worley
Greg Mullins	Artee Young
Nalini Nadkarni	Patti Zimmerman
James Neitzel	
Erik Ordway	Countless other Evergreen students, faculty and staff.



## CONSULTANT AND OTHER CONTRIBUTORS

Susan Andrews, Thurston Regional Planning Council	Nolan Lienhart, ZGF
Emily Angell, ZGF	Greg Matto, ZGF
Thera Black, Thurston Regional Planning Council	Kathy McCormick, Thurston Regional Planning Council
Dennis Bloom, Intercity Transit	Chuck McKinney, Cooper Point Association
John Breshears, ZGF	Don Miles, ZGF
Paul Brewster, Thurston Regional Planning Council	Ralph Munro
Johanna Brickman, ZGF	Crystal Passi, ZGF
G. Z. Brown, University of Oregon	Patricia Pyle, Olympia Public Works
Jennifer Burke, ZGF	Melanie Rabaglia, Thurston County Department of Roads and Transportation Services
Debbie Chow, ZGF	Casey Richart, Washington Department of Fish and Wildlife
Naomi Cole, ZGF	Felix Schein, ZGF
Otto Condon, ZGF	Tom von Schrader, SvR Design Company
Carolyn Cook, ZGF	Troy Thrun, Sparling
Roger Dean, Intercity Transit	Ross Tilghman, Tilghman Group
Jeff Dunn, ZGF	Paddy Tillett, ZGF
Dan Edleson-Stein, Evergreen Alumnus	Joe D. Virnig, Sparling
Mark Foster, ZGF	Michael Welter, Thurston County Development Services
Dave Grant, ZGF	Jan Weydemeyer, City of Olympia
Brian D. Griffith, Stantec	Tim Williams, ZGF
Analisa Gunnell, EcoTrust	Lon Wyrick, Thurston Regional Planning Council
Mike Harbour, Intercity Transit	Gayle Zeller, Thurston County Development Services
Kim Isaacson, ZGF	
Marc Jones, Intercity Transit	
Michael Kain, Thurston County Development Services	
Gil Kelley, Evergreen Alumnus/ City of Portland	
Amalia Leighton, SvR Design Company	



# **THE EVERGREEN STATE COLLEGE**

## **Campus Master Plan**

VOLUME II - Goals and Policies for Land Use



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## INTRODUCTION

The 2008 Evergreen State College Master Plan is a comprehensive long term plan for the facilities and campus grounds of the College. The plan establishes priorities for campus development consistent with the College's Mission, Strategic Plan and other current initiatives. The multi-volume document identifies opportunities where the College could focus resources to meet future demands on its facilities and land resources. The plan is an important part of the College's Capital Budget Request and 10-year Capital Plan that will be submitted to the Washington State Office of Financial Management.

The Master Plan is structured as follows:

Volume I – Site Specific Recommendations

Volume II – Goals and Policies for Land Use (1998 Campus Master Plan; Updated 2005)

Volume III – Appendix

Volume II serves as the philosophy behind the development of the campus and provides a framework and policies for campus development and landscaping. Volume II also addresses land use governance and the ongoing master planning process.

The map in Figure 7 has been revised in Volume II to reflect the recommendations in Volume I.



# The Evergreen State College Campus Master Plan 1998 Goals and Policies for Land Use Updated 2005





# Credits

**Master Plan Steering Committee**

Rino Balatbat, Richard Cellarius, Art Constantino,  
John Cushing, Ruta Fanning, Lee Hoemann, Ken Jacob,  
Nancy McKinney, Walter Niemiec, Tom Rainey,  
Steve Trotter, Patti Zimmerman

**Subcommittees**

Land Use Subcommittee, Space Efficiency Study,  
Physical Analysis Subcommittee (Modernization)

**Editor**

Joslyn Trivett

**Design**

Joslyn Trivett  
Mary Geraci  
Rip Heminway

**Printing**

The Evergreen State College Copy Center

## 2005 Master Plan update

**Coordinated by the Campus Land Use Committee:** Rich Davis, Robyn Herring, Maria Horan, Mark Kormandy, Collin Orr, Deane Rimerman, Susie Seip, Paul Smith, Ken Tabbutt

**Research and Editing**

Joslyn Trivett  
Maria Horan

**Design**

Joslyn Trivett  
Mondana Madjdi

# Acknowledgements

The following individuals contributed to the writing of the 1998 Master Plan. Their time and expertise is much appreciated. Apologies to any contributors that are not mentioned here.

## **Definitions**

**2005**

Rich Davis  
Ken Tabbutt

## **Recommendations**

**2005**

Rich Davis  
Maria Horan  
Paul Smith  
Ken Tabbutt

## **Chapter 1**

### **Chapter 2**

Frederica Bowcutt: Campus Forest Habitat  
Carolyn Cummins, Thurston County Planning: Land Use in the Surrounding Area  
Lynn Dosheery, Thurston County Planning: Land Use in the Surrounding Area  
Karuna Greenberg, student: Campus Forest Habitat  
Arvid Hartley, student: Campus Forest Habitat  
Fred Knostman, Thurston County Planning: Land Use in the Surrounding Area  
Jill Lowe: Campus Meadow Habitat  
Carrie Margolin: Climate  
James Stroh: Geology, Soils, Topography, Drainage, East Campus Reserve, Shoreline Habitat.  
Erik Thuesen: Shoreline Habitat  
Gabe Tucker: Campus Forest Habitat  
Sherri Clarke: Campus Population  
Steve Hunter: Campus Population  
Linda Pickering: Campus Population

**2005**

Anne Fiala: Campus Forest Habitat  
Jennifer Hayes, Thurston County Development Services: Current Growth and Development  
Heather Heying: Campus Forest Habitat  
Tom Hill, City of Olympia: Current Growth and Development  
Steve Hunter: Campus Population  
John Hurley: Evergreen's Influence on Surrounding Land Use  
Debbie Leingang: Campus Population  
Chuck McKinney: Current Growth and Development and Evergreen's Influence on Surrounding Land Use  
Linda Pickering: Campus Population  
Jim Stroh: Drainage  
Ken Tabbutt: Campus Forest Habitat  
Veena Tabbutt, Thurston Regional Planning Council: Thurston County Population

### **Chapter 3**

Frederica Bowcutt: Landscaping  
Barb Crossland: Bicycle Parking  
Rich Davis: Utilities, Use and Modernization  
Shannon Ellis: Community Services  
Martha Henderson: Campus Core  
Cliff Hepburn: Landscaping, Operation and Maintenance Considerations, Maintenance Practices



Bear Holmes: Storm Sewer  
 Michael Huntsberger: Campus Radio Station  
 Steve Huntsberry: Habitation, Police Services  
 Fred Knostman, Thurston County Planning: Environmental Regulations  
 Mark Lacina: Use and Modernization  
 George Leago: Operation and Maintenance Considerations, Maintenance Practices  
 Jill Lowe: Circulation, Police Services  
 Nancy McKinney: Ease of Modification, Commercial Services, Use and Modernization  
 Tom Mercado: Social Space and Entertainment  
 Pat Moore: Organic Farm  
 Ralph Munro, McClane Forest Committee: South Campus Reserve  
 Linda Pickering: Access Services  
 Al Saari: Communications  
 Mike Segawa: Housing, Services and Activities  
 Kelly Smith: Organic Farm, West Campus Reserve  
 Clint Steele: Operation and Maintenance Considerations, Maintenance Practices  
 Pete Steilberg: Recreation, Wellness and Athletics  
 Sophie Stimson, City of Olympia: Bicycle Circulation  
 James Stroh: Reserve Areas  
 Erik Thuesen: Shoreline, Environmental Regulations  
 Joslyn Trivett, alumna: Reserve Areas, Landscaping  
 Steve Trotter: Utilities, Use and Modernization  
 Gabe Tucker: Reserve Areas  
 Laurel Uznanski: Transportation Services  
 Hal Van Gilder: Storm Sewer  
 Bob Worley: Building List  
 Patti Zimmermon: Building List  
 Chris Zimmerman, student: East Campus Reserve

## **2005**

Marty Beagle: Recreation, Wellness and Athletics  
 Frederica Bowcutt: Landscaping  
 Brady Clark, alumnus: Commute Trip Reduction  
 Rich Davis: Ease of Modification and Flexibility of Spaces, Building List, Utilities, Circulation, Modernization, Habitation  
 Anne Fiala: Types of Land Use  
 Cliff Hepburn: Refuse/Recycling Services  
 Mark Kormandy: Trail System  
 John Lauer: Building List, Commercial Services, Campus Housing  
 Chuck McKinney: Fire Protection  
 Tom Mercado: Commute Trip Reduction,  
 Steve Morrison, Thurston Regional Planning Council: Shoreline Regulation  
 Collin Orr: Commercial Services  
 Linda Pickering: The Pedestrian Environment, Automobile Parking  
 Robert Rensel: Communications  
 Martha Rosemeyer: Organic Farm Cluster  
 Susie Seip: Commute Trip Reduction, Parking  
 Sophie Stimson, City of Olympia: External Bicycle Circulation  
 Ken Tabbutt: Resource and Land Use Inventory, Building List  
 Dave Weber: Recreation, Wellness and Athletics

## **Chapter 4**

Russ Fox  
 Lee Lyttle  
 Nancy McKinney

## **2005 - Addendum to Chapter 4**

Maria Horan

**Appendices**

Jeannie Chandler: Planning and Governance Groups  
Lee Hoemann: Planning and Governance Groups  
Steve Hunter: Student Demographics  
Mike Segawa: Building Descriptions  
Clint Steele: Building Descriptions  
Patti Zimmerman: Building Descriptions

**2005**

Jeannie Chandler: Planning and Governance Groups  
Rich Davis: Building Descriptions  
Jennifer Minner: Student Demographic Statistics

**Figures**

Rip Heminway  
Bob Worley

**General Consulting**

Academic Deans  
Richard Cellarius  
John Cushing  
Kathy Dean  
Carolyn Dobbs  
Ruta Fanning  
Russ Fox  
Michel George  
Mary Geraci  
Tom Hill, City of Olympia  
Lee Hoemann  
Steve Huntsberry  
Lee Lyttle  
John McGee  
Nancy McKinney  
Craig McLaughlin  
Mike Segawa  
Mike Simmons  
Rudy Sookbirsingh, student  
Staff of the Office of Facilities  
Pete Steilberg  
James Stroh  
Joslyn Trivett, alumna

**2005**

Rich Davis  
Rip Heminway  
Maria Horan  
Jennifer Minner  
Paul Smith  
Ken Tabbutt  
Joslyn Trivett, alumna

# Definition of Terms

**Land Use**

Consideration of the physical setting (the land itself), design and maintenance of buildings and other facilities, and the ways in which we use spaces (both developed and undeveloped).

**Goal**

Desired outcome.

**Policy**

Specific directives founded on the goals, as approved by the Board of Trustees.

**Procedure**

How to accomplish the policy.

**Recommendation**

Proposals for further investigation of unresolved issues.

**Core**

The central, "urban" area of campus where the main academic, administrative, residential, social, and recreational facilities are concentrated and where future expansion of the campus facilities would most likely occur. This area does include open space and forested sections.

**Central Core**

The area of campus most highly concentrated with buildings—Red Square and the major, multi-use buildings that surround it. Does not include residential buildings.

**Cluster**

A group of facilities in an area outlying the Core that fulfills a specific function.

**Reserve**

Substantially undeveloped areas surrounding the Core and Clusters where natural ecosystems are the predominant feature. These areas are "reserved" for a wide range of possible future land uses, including continued nondevelopment and preservation as natural areas.

# Executive Summary for 2005 Update

Based on the framework established in the *1998 Campus Master Plan*, the Campus Land Use Committee (CLUC) was formed to review land use proposals, and the policies and procedures of the Master Plan guide their recommendations.

Their work with the Master Plan has exposed both strengths and the weaknesses of the 1998 document. The *1998 Campus Master Plan* continues to provide the philosophical basis for land use planning at The Evergreen State College. At the same time, the CLUC has seen the need to update the information contained in the plan, and also to consider a major revision and restructuring of the plan for the near future.

## Information Updated

The CLUC have become the stewards of the Master Plan itself, although specific responsibility for keeping the plan updated has been unclear. The annual updates specified by the 1998 Plan did not occur. The 2005 update represents seven years of “catch up” on this front; the current document is the result of the effort to renew data and descriptions within the plan so that they reflect existing conditions. Areas of focus included:

- status of the 1998 recommendations indicated
- campus population statistics updated; plans for growth of student body updated; 1997 Growth Plan removed (formerly Appendix C)
- descriptions of surrounding land use and zoning figure updated
- changes in built campus described: Seminar II and new Child Care Center; major renovations; Parkway rebuild; increased densities in Parking lots B and C
- the need for modernization efforts de-emphasized, as modernization plans are well underway
- changes in Organic Farm operations and management
- operations of the Campus Land Use Committee described

Appendix G gives further details on where changes were made, and, in a few cases, where information was not brought up to date.

## Scope for Future Master Plan

The CLUC is aware that our Campus Master Plan is not consistent with those of most other colleges because it focuses on the philosophical principles that guide the use of the campus. A future Master Plan may include site-specific recommendations that are consistent with these values in order to guide capital improvements and land use decisions. Creation of a new Campus Master Plan that will address the next five to twenty years of campus use is the topic of the only recommendation added to the 2005 update.

Other more substantial changes being considered for a future version of the Master Plan are adding new topics, such as sustainability and transportation, and re-organizing the document to merge descriptions of historical and current conditions. Comments from the CLUC and other staff and faculty members on scope of the plan, suggested changes to policy, and other potential revisions are compiled in Appendix H; these comments should be addressed as part of the upcoming revision of the Master Plan.

# Executive Summary for the Original 1998 Document

The Campus Master Plan contains the philosophical basis for land use planning at The Evergreen State College; it provides the foundation for the creation and maintenance of an ideal campus environment.

The current plan, last revised in 1983, has been a sound document. But the college is now twenty-five years old and is facing new issues about how we use our land and facilities. The issues of growth, both internal and external, the age of our facilities, and how we use our land have been major drivers in revising our Campus Master Plan.

The 1998 Master Plan is based on the vision developed during the earliest planning for the physical campus. The goals, policies, and procedures of the Master Plan continue to provide guidelines for the best fit of maintenance and development into the existing campus environment. The document covers all elements of land use planning for both the developed and undeveloped campus and, in addition, addresses the planning process itself.

This document is the result of a collaborative effort that has included staff, faculty, and students at the college, as well as outside entities. The [acknowledgments](#) and the [responses](#) to the earlier draft of the plan demonstrate the wide range of input that went into developing this document.

## Focus of the Revision Process

The 1998 Master Plan needs to provide a foundation for current and future planning efforts. Revitalizing Evergreen's Master Plan focused on the following tasks:

- Creating a well-defined process for reviewing land use proposals—establishing a mechanism to serve as the focal point for land use planners and as a major proponent of the Master Plan.
- Re-formatting the Master Plan in order to provide a more logical framework, to facilitate ease of reference, and to remove redundancy.
- Updating data within the plan to reflect the current conditions of Evergreen's campus.

## Components of the Plan

The [policies and procedures](#) of the Master Plan, found at the beginning of Chapter 3, are a primary point of interest. The overall layout of the document is as follows: Chapter 1 provides introduction; Chapter 2 addresses the context of the Master Plan, both the regulating elements and the physical setting; Chapter 3 is the heart of the Master Plan with the policies and procedures applied to all land use activities on campus; and Chapter 4 discusses the planning process itself and presents the proposed workings of the Campus Land Use Committee.

The 1998 Master Plan, like the 1983 version, does not provide site-specific recommendations. It addresses the goals and policies for campus planning. It is intended to be a catalyst and guiding document for other more specific planning studies, such as the 10-Year Capital Plan and the Space Efficiency Study.

Revision of the Master Plan has brought to light the need for further study on several issues. The following recommendations address these issues.

# Recommendations

## New for 2005

### Campus Master Plan Revision

A new Campus Master Plan should be developed during the 2005-2007 biennium to address the next five to twenty years of campus use. During the revision process, comments listed in [Appendix H](#) will help to guide discussions about changes to policy and scope.

## From the Original 1998 Document

### Planning Process

The Campus Land Use Committee should be formed as a standing, major planning group as a mechanism to support land use planning and provide focus and structure to evaluating land use proposals. Committee recommendations on land use would ultimately be made to the college President and the Board of Trustees for final evaluation. The CLUC is intended replace the Environmental Advisory Committee (EAC). The activities of the CLUC would encompass those of the former EAC and broaden its functions to include oversight of all land use issues.

### Status in 2005

The CLUC was formed soon after publication of the 1998 Master Plan, and the EAC is no longer active. The CLUC provides focus and structure to evaluating minor land use proposals on campus. The committee also provides input and assistance on proposals for major land use projects when asked; however, major, high impact projects generally have been beyond the scope of the CLUC's work. For more information, see [Addendum to Chapter 4](#).

### Land Use Zoning

A Disappearing Task Force (DTF) should be charged with a full examination of creating land use zones on Evergreen's campus, particularly within the Reserve areas. Land use issues to consider as components of the examination include: academic (ecological) research, recreation, public access, Evergreen's trail network, Ecological Preserves, protection of natural resources, management for safety, and areas for future development.

### Status in 2005

No DTF on Land Use Zoning was formed.

### Modernization

Facilities Services is charged with forming an Advisory Committee to determine operational and structural standards for the college's facilities and infrastructure. Attributes to consider include: space requirements of students, faculty and staff; energy efficiency; cosmetic appearance; flexibility of interior arrangement; patterns of use; ease of maintenance, seismic standards; and safety and security needs. The Advisory Committee should include representatives of maintenance staff, faculty, students, and administrative staff.

### Status in 2005

Facilities Services developed a Facilities Renewal Plan for modernization. Since 1998, major renovations have updated the support systems in the Library, Lab II, and the Lecture Halls. Modernization will continue based on the results of a Facilities Condition Audit, currently underway. Also contributing to modernization efforts is the Space Management Committee, a standing, advisory committee that is responsible for strategic and long range space use planning; they review all proposals to change interior spaces on campus (except for residential), from small repairs and improvements to remodels.

## **Landscaping**

Develop and adopt a Landscaping Plan as a companion piece to the Master Plan. Issues to address include: removal of invasive, exotic species from landscaped areas and increased reliance on native species and species that are valuable academically.

### **Status in 2005**

A Landscaping Plan has not been created. However, with the addition of teaching gardens on campus, there has been increased use of species native to the area and of academic interest. See the section on Landscaping: Campus Core for more information.

## **Aesthetics**

The CLUC should develop a process for creating an aesthetic vision for the campus. This should include expanding the discussion of aesthetics within the Master Plan.

### **Status in 2005**

This has not occurred.

## **Innovative Facilities and Utilities Systems**

Members of the CLUC, Facilities Services, and other planners for the college should consider comments from the campus community suggesting that the college has been too conservative in its choice of building materials, design, and utilities systems. Planning efforts should give increased consideration to becoming a leader in this field.

### **Status in 2005**

The construction of Seminar II used concepts, construction methods, and materials focused on sustainability, life-cycle costs, and energy conservation.

## **Parking**

The senior staff should explore the need for another parking DTF (following the results of the traffic study). Comments from the campus community raised varied questions on whether or not parking spaces should be added and, if so, what form the expansion should take.

### **Status in 2005**

Parking spaces added for Seminar II by increasing densities in B and C lots. There are no current plans for future expansion.



# Chapter 1: Introduction

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In Acrobat Reader, you may also click on the section titles listed in the Bookmark window (select “Bookmark” tab on left side of the document to open) to go to the section you want to read.

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- [History of the Campus Master Plan](#)
  - [1968: Master Plan Phase I](#)
  - [1969: Master Plan Phase II](#)
  - [Interim Documents](#)
  - [The 1983 Campus Master Plan](#)
  - [The 1998 Campus Master Plan](#)
  - [The 2005 Update of the 1998 Master Plan](#)
- [Founding History of the College](#)
- [The Educational Program at Evergreen](#)

## STATEMENT OF PURPOSE

The primary purpose of the Master Plan is to provide a comprehensive and clearly stated document of the direction for facilities and land use planning at The Evergreen State College. The document provides a foundation for the creation and maintenance of an ideal campus environment that can only be achieved through the continued efforts of the people who make up the campus community. Thus, it addresses both the product and process of campus planning.

This plan does not offer a blueprint depicting exactly what will be needed and where development on campus will take place. Instead, Evergreen's Master Plan focuses on the philosophy intended to guide land use decision making. The policies and procedures contained within this plan reflect a careful review of past and present land use policies and practices, as well as consideration of prospective land uses. The policies are flexible enough to allow for future revisions of the more specific procedures without necessitating a total reassessment of the basic ideas when new issues arise.

The policy and procedures for the land use planning process aim toward integrating community participation with administrative practices in campus land use and facilities planning. It has always been a priority at Evergreen to encourage and include community input in the planning process. Yet coordination and oversight of this interchange has been lacking and the responsiveness of planning process has suffered as a result. Formation of the Campus Land Use Committee, as proposed in the 1998 Master Plan, is intended to provide focus to the planning process. It is conceived as a mechanism for collaboration of all segments of the campus population in shaping land use for the college.

# HISTORY OF THE CAMPUS MASTER PLAN

## 1968: *Master Plan Phase I*

After land acquisition for the college began in 1968, Durham, Anderson, and Freed Architects and Quinton-Budlong Engineers were hired to prepare the *Master Plan Phase I*. The document included extensive background information on site factors and preliminary architectural, engineering, and site plan concepts. It also established twenty-two "principle planning conclusions" which have been maintained in every version of the Master Plan and continue to be viable in the present day. From the 1968 Plan:

The proposed Master Plan reflects the accumulated conclusions of the planning-architectural team, and their consultants in the fields of ecology, biology, oceanology, soils, geology, and traffic research. The site influences brought into focus by the work of these people are combined with and modified by the findings of the Arthur D. Little Company, the educational consultants. The evolved Master Plan is based upon the following principal planning conclusions:

1. The recognition of outstanding land forms and environmental qualities of the site;
2. The creation of an approach corridor/prime thoroughfare/limited access roadway from the U.S. 101 freeway;
3. The necessity for two major entrances, one from the west Olympia-Cooper Point area and the other from the U.S. 101 freeway;
4. The recognition of a need to preserve certain areas of prime growth or other superior or unique natural environmental qualities as ecological laboratory and classroom areas;
5. The need to recognize the added benefits and capabilities afforded the site by the water frontage;
6. The recognition of certain areas of potential foundation instability on the site and the need for additional detailed investigation;
7. The desire that structures should not dominate the site with relation to the human element and site qualities;
8. The desire to create an academic campus in which the integral units are capable of both individual function and relatively convenient interaction;
9. The desire to create a campus in which student participation is made a part of the fabric of the campus structure and program, rather than separating it and, perhaps, alienating such feeling;
10. The desire to create a campus whereby a student/community interaction core area is created, thus heightening possible involvement of the student and off-campus community while intensifying possible community participation and interest in support of the college program;
11. The necessity to recognize the essential service of the automobile on the Evergreen State College campus, and the necessity to recognize the potential hazard created for the campus by the automobile in the domination of land use and daily campus life;
12. The necessity to separate automobile and pedestrian traffic areas while still recognizing the need for internal service, vehicular traffic security, and minimization of through traffic;

13. The necessity to recognize the effects upon campus plan and structure of a sizable evening program for non-resident students who will commute, oftentimes after dark;
14. The necessity to recognize certain legal or physical limitations and obligations created by the off-site utility service conditions and connections;
15. The necessity to plan and construct community utility systems in coordination with Thurston County and the City of Olympia;
16. The desire to limit site grading to that required for buildings, utilities, roads, parking, and playfield areas;
17. The need to hold important the view potential to the Olympic Mountain Range, Mount Rainier, and Puget Sound;
18. The necessity to establish and maintain zoning restrictions outside the campus to assure compatible community growth;
19. The need to provide buffer protection in the planning program on the campus perimeter;
20. The need to preserve the ecological and biological qualities of the campus;
21. The need to develop architectural concepts compatible with site characteristics, utilizing low maintenance cost materials, uniquely Northwest in character;
22. The desire to present an exciting, imaginative, functional, and flexible development plan. (Page 2)

These conclusions, along with standards for space and function developed by the educational consultants, shaped the early planning efforts.

## **1969: Master Plan Phase II**

A revised Master Plan was prepared a year later by the same architectural and engineering firms in response to critique of the original document. They changed the planned layout for the campus based on input from the new college staff regarding the needs of Evergreen's developing educational philosophy. Recommendations from outside planning consultants were also incorporated. However, the original "principle planning conclusions" of the Phase I Master Plan continued to be valid and were maintained.

The most dramatic change in Phase II of the Master Plan is the location and arrangement of the campus core: it is shifted to the geographical center of the site and the buildings are more tightly clustered to allow for more interaction among the campus population in a pedestrian-oriented campus. Other recommendations within Phase II include the location of the campus parkway and architectural design concepts such as the choice of concrete as the dominant material for all academic buildings. The layout and design of the existing campus reflects the recommendations of the Phase II document.

## **Interim Documents**

The progress of campus development was reviewed and evaluated in the *1972 Report of the Master Planning Team*; the Master Planning Team included consultants from three architectural and engineering firms (including the two mentioned above) and representatives of the Evergreen community. They concluded that the basic premises within the Master Plan had been achieved and focused on selected issues which had become increasingly important during Evergreen's formative years.

Detailed attention was given to development of the Art/Drama/Music area, housing areas, science addition, preservation of environmental features on campus, and maintaining the pedestrian nature of the campus Core. The report made no significant departures from any of the original "principle planning conclusions" and gave particular attention to points 6, 7, 8, 12, 16, and 20 listed above. An overall recommendation was that a team such as themselves "become a permanent tool for effective control of the long-range plan." (Durham et al., 1972, page 1).

In 1975, a Disappearing Task Force produced the *Environmental and Facilities Planning DTF Report* recommending the creation of a new Campus Master Plan by a team of students, staff, and faculty. This recommendation was based on conclusions that the existing Master Plan did not address the campus and educational program as it had developed since the college opened and that Evergreen student and the campus community at large could and should be directly involved in planning and maintaining the campus environment (EFPIT, 1975, page 1).

## **1983 Campus Master Plan**

The 1983 Master Plan was the result of efforts by several groups within the college. An academic program prepared the first draft. This was refined by two students from that program, hired as assistants to the Vice President for Business. The Campus Planner and the Environmental Advisory Committee completed the final review.

Again, the principle planning conclusions of the earlier versions of the plan were maintained. Some of these points were relatively de-emphasized since the principles addressed plans already complete; for example, creating two major entrances to the college was already a reality. Other conclusions were emphasized and goals, objectives, and policies based on these points were presented. The overall focus of the document shifted from planning for specific site development to planning for on-going management of existing facilities, campus services and campus lands. The Master Plan became mainly a philosophical document with policies as the foundation.

## **1998 Campus Master Plan**

Eleven years after the acceptance of the 1983 Master Plan, the 1994 Long-Range Plan identified the need to update and publicize the plan. The process began in 1996 and the Master Plan Steering Committee made up of Evergreen faculty and staff met for the first time in early 1997 to complete the pre-planning phase. The next step was given to three sub-committees: the Land Use Sub-committee, the Physical Analysis Sub-committee, and the Space Efficiency Study. Within the sub-committees, various sections of the plan were discussed and revisions of certain sections of the plan were assigned to individuals or small groups. Discussions of the Master Plan also occurred at Board of Trustee meetings and a faculty retreat.

In order to facilitate the revision process, an Evergreen alumna was hired to work exclusively on the Master Plan in March 1998. She consulted with many faculty, staff and students while developing the first draft of the revised Plan. This draft was completed in May 1998 and out-reach to the Evergreen community on the draft prompted a substantial amount of feedback. Revision based on the feedback was incorporated over the summer of 1998.

Extensive updating and re-organizing was needed to reflect the changes over fifteen years. The Campus Master Plan Steering Committee reviewed the goals and principles of the 1983 document and agreed that "...goals and principles, which were formulated in the original Master Plan, remain viable today." (Memo from Ruta Fanning, 1997). However, certain components of the plan required extensive updating and expansion. Five themes were identified as needing special attention in the 1998 Master Plan:

- growth and change (within and external to the college)
- external relations
- infrastructure issues
- fiscal constraints
- preservation of land

As the updating effort progressed, it became clear that adequate examination of these topics could not be expected within a reasonable timeline; extensive investigation and community input will be needed to obtain satisfactory conclusions. Therefore, writing of the 1998 Master Plan focused on providing a foundation from which future planning efforts could draw. It is intended as a catalyst for examination of planning issues such as those listed above. In order to achieve these effects, revitalizing Evergreen's Master Plan focused on the following tasks:

- Creating a well-defined process for reviewing land use proposals to establish a mechanism to serve as the focal point for land use planners and as a major proponent of the Master Plan.
- Re-formatting the Master Plan in order to provide a more logical framework to facilitate ease of reference and remove redundancy.
- Updating descriptions of the campus environment and activities to reflect the current conditions.

The *1998 Campus Master Plan*, like the 1983 version, does not provide site-specific recommendations. It addresses the guiding philosophies and the policies for campus planning.

## 2005 Update to the 1998 Master Plan

Based on the framework established in the *1998 Campus Master Plan*, the Campus Land Use Committee (CLUC) was formed to review land use proposals. The CLUC also became stewards of the Master Plan itself, although specific responsibility for keeping the plan updated was unclear. When updating the plan was addressed, discussion turned to the overall scope of the Master Plan. The CLUC is aware that our Campus Master Plan is not consistent with those of most other colleges because it focuses on the philosophical principles that guide the use of the campus. A future Master Plan may include site-specific recommendations that are consistent with these values in order to guide capital improvements and land use decisions. The CLUC also discussed adding new topics, such as sustainability and transportation, to the Master Plan.

A major change in scope will require a substantial effort on the part of the college and likely with the help of a consulting firm; the only recommendation added to the 2005 update is to develop a new Master Plan within the 2005-2007 biennium to address the next five to twenty years of campus use (see [Recommendations](#)). In the meantime, it was deemed important to update the facts within the existing plan; for the plan to be useful in its current form, it should reflect the changes of the last seven years.

The same Evergreen alumna that worked on the 1998 Master Plan was re-hired to help move the process forward. She focused on updating information throughout the plan, and an outline of the data addressed is in [Appendix G](#); a few items known to be out-of-date but not changed are also indicated. Additionally, all the CLUC's comments on the scope of the plan, suggested changes to policy, and other potential revisions were compiled and organized into an Appendix (see [Appendix H](#)) so that these thoughts could be addressed as part of the future re-write. The guiding philosophies and policies established in earlier versions of the Master Plan, including the twenty-two original planning principles, are retained in this update and there has been no significant change in these values.

## FOUNDING HISTORY OF THE COLLEGE

In 1966, then-Governor Daniel J. Evans charged the Temporary Advisory Council on Public Higher Education (TACPHE) with determining the need for additional college facilities in the State of Washington. The Council concluded that 17,900 additional students would need placement within undergraduate and graduate level programs in Washington State by 1975.

The development of a new four-year state college in Thurston County was authorized by House Bill No. 596, Chapter 47, Laws of 1967, State of Washington. The Act passed the Legislature on March 8, 1967, and Governor Evans signed the Bill on March 21, 1967. Subsequently, a Board of Trustees was formed and a name, "The Evergreen State College", was selected.

Late in 1967, the State of Washington contracted with the Stanford Research Institute, Inc., to select and evaluate sites and report to the Board of Trustees and the State. Whitacre Engineers, Inc., supported SRI in the investigation of twenty-one sites. Their studies included establishment of general site selection guidelines; identification, collection, organization, and evaluation of data pertaining to sites offered; interviews with persons responsible for decisions concerning sites selected elsewhere, and with college and university administrations; defining specific evaluation criteria; and ranking sites in terms of criteria. Their studies considered site configuration, landforms, utility services, development influences, and acquisition costs. The Cooper Point site emerged from the selection process as clearly the outstanding choice. The Institute's report stated:

The Cooper Point Peninsula site includes approximately 1,000 acres of land with about 3,000 feet of water frontage on Eld Inlet of Puget Sound. While the site is divided into numerous parcels, relatively few homes will be disturbed because the site is largely undeveloped acreage. The site satisfied all limiting criteria. It is easily within the ten-mile radius of Olympia city limits. Assurances that the site can be purchased within the budget are based on prices paid in recent sales in the area. The topography and soil conditions, both subsoil and topsoil, are such that at least 600 acres would be available in one contiguous parcel for economical construction of the physical plant. There are no known extreme nuisance factors or hazards in the area. Because of its close proximity to the City of Olympia water and sewage services can be provided to the college by the city at a reasonable cost.

The area is served by a grid of country roads and is approximately two miles from the Grays Harbor-Shelton limited access highway, and within five miles of the State Capitol.

The site is endowed with natural beauty, having a sweeping view of Puget Sound, the Olympics, the Black Hills, Mount Rainier, and the Cascade Range. The topography is gently rolling and the terrain should not create unusual construction problems. The highest elevation in the area is 243 feet, gradually sloping to Eld Inlet. The view of Puget Sound and the potential opportunity to develop water-front recreational activities add greatly to the attractiveness of the site.

The Board of Trustees of the college received the Stanford Research Institute report on December 1, 1967, and the enclosed site was publicly identified. Land acquisition was begun in April, 1968. Facilities planning commenced based on a target enrollment of 12,000 students. In the development of Evergreen's educational philosophy, the founders strived to be innovative and flexible. They initiated an alternative form of education, which offered a pragmatic learning experience with close student-to-faculty interaction, and an interdisciplinary curriculum. The institution was to be "...dedicated to meeting the present and future needs of the society it serves." (McCann 1970).

## THE EDUCATIONAL PROGRAM AT EVERGREEN

The Evergreen State College was purposely designed to be an institution focused on undergraduate education and on collaborative interdisciplinary teaching and learning. Now thirty-six years old, the central institutional values and practices remain largely intact. Hallmarks of the college are interdisciplinary studies, personal engagement in learning, linking theoretical perspectives into practice, collaborative/cooperative work and teaching across significant differences. To support these, Evergreen's goal is to have modern facilities, high quality equipment, and a large and diverse campus land area used for a variety of academic purposes.

### **The Evergreen Mission Statement: "Making Learning Happen"**

The Evergreen State College is a public, liberal arts college serving Washington State. Its mission is to help students realize their potential through innovative, interdisciplinary educational programs in the arts, humanities, social sciences, and natural sciences. In addition to preparing students within their academic fields, Evergreen provides graduates with the fundamental skills to communicate, to solve problems, and to work collaboratively and independently in addressing real issues and problems. This mission is based on a set of principles that underlie the development of all college programs and services.

Principles that guide Evergreen's educational programs:

- Teaching is the central work of the faculty at both the undergraduate and graduate levels. Supporting student learning engages everyone at Evergreen—faculty and staff.
- Academic offerings are interdisciplinary and collaborative, a structure that accurately reflects how people learn and work in their occupations and personal lives.
- Students are taught to be aware of what they know, how they learn, and how to apply what they know; this allows them to be responsible for their own education, both at college and throughout their lives.
- College offerings require active participation in learning, rather than passive reception of information, and integrate theory with practical applications.
- Evergreen supports community-based learning, with research and applications focused on issues and problems found within students' communities. This principle, as well as the desire to serve diverse placebound populations, guides Evergreen's community-based programs at Tacoma and Tribal Reservations.
- Because learning is enhanced when topics are examined from the perspectives of diverse groups and because such differences reflect the world around us, the college strives to create a rich mix in the composition of its student body, staff and faculty, and to give serious consideration to issues of social class, age, race, ethnicity, gender, and sexual orientation.
- Faculty and staff continually review, assess and modify programs and services to fit changing needs of students and society.

As evidences by these principles, an important part of Evergreen's educational mission is engagement with the community, the state, and the nation. One focus of this engagement is through the work of public service centers that both disseminate the best work of the college and bring back to the college the best ideas of the wider community. (As last revised 4/9/97.)



# Chapter 2: Master Plan Context

## CONTENTS

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## INTRODUCTION

This chapter presents the parameters within which land use and facilities planning must operate. The authority of the Board of Trustees is the first consideration. Other entities, both internal and external, that regulate campus planning are also recognized, followed by a discussion of the campus population. Location and physical environment of the campus are described to set the physical context for the Master Plan. Finally, an overview of land use trends in the surrounding area is provided.

## AUTHORITY OF THE BOARD OF TRUSTEES

The Board of Trustees is given the legal authority to acquire and manage property for the college. The various boards of trustees of the regional universities and The Evergreen State College have the power and authority to acquire by exchange, gift, purchase, lease, or condemnation such lands as they deem necessary for the institution (RCW 28B.10.020). Trustees of The Evergreen State College have, in addition, the express statutory authority to exercise full control of the college and its property of various kinds (RCW 28B.40.120).

The Board of Trustees also has the authority to delegate its powers and duties under RCW 28B.10.528. Evergreen's Board of Trustees has reviewed the legally mandated functions of the board and assessed which areas of this policy-making function are of the long-term strategic nature. As part of this review, the board has reserved the authority to approve all elements of the college Campus Master Plan and 10-Year Capital Plan, modifications to the 10-Year Capital Plan that vary by more than 5 percent for each individual program project or preservation category, biennial capital budget requests, and capital spending plans regardless of fund source.

The Board of Trustees delegates to the President the authority to exercise in the name of the Board all of the powers and duties which are required for the effective management of the institution and which do not set major policy or strategic direction or which are expressly reserved by the Board. The President may designate other college employees to exercise specific powers and duties delegated to the President.

The President has delegated the primary administrative responsibility for campus planning to the Vice President for Finance and Administration.

## OTHER INFLUENCES ON LAND USE PLANNING

Internal and external regulations and policies influence land use planning. Internally, the Campus Master Plan guides the development of technical documents such as the *10-Year Capital Plan*, the *Space Efficiency Study*, and the *Facilities Renewal and Adaptation Plan*. These internal documents serve as companion pieces to the Master Plan and depict the complete picture of how the college develops and maintains the existing campus environment.

Policies of the Master Plan influence the development of college policies in other areas, such as Facilities planning and management. The policies from the Master Plan will be included in the college's *Policy and Procedure Manual*.

Externally, the college is part of the *Thurston County Comprehensive Plan* required by the Growth Management laws in Washington State. The college must comply with Thurston County Zoning Ordinances and *Shoreline Master Plan* (see [Regulations](#)). Additionally, the City of Olympia provides water and sewer services to the college. The planning, initiation and carrying out of projects on campus require college personnel to work closely with all county and city permitting and approval processes. The Campus Land Use Committee (CLUC) will provide guidance for compliance with the external regulators appropriate to a land use proposal.

The Space Management Committee is responsible for the allocation and assignment of all non-residential college facilities. This committee must approve all requests involving changes in dimensional space (e.g., physical expansion or contraction of fixed wall workspace), and/or changes in the functional usage of space (from classroom usage to office usage). All space requests for changes in assignments, remodeling, leasing, exchanges, sales, or trades are subject to prior approval by the Space Management Committee. The director of Housing is responsible for space scheduling and assignment of all residential facilities.

## CAMPUS POPULATION

The Evergreen State College opened its doors in the fall of 1971 as a four-year, undergraduate institution, with an enrollment of 1,177 students. Original projections were for 12,000 students by the mid-1980s. While student enrollment grew in the following years, it was far from this anticipated rate as changes in economic, social, and educational trends resulted in more gradual growth (Chance and Curry 1979, pages 39-42). By the academic year of 1974 student enrollment was 2,446, and it was obvious that the original projections were no longer accurate. Since that time, enrollment levels have generally increased, with minor recessions in the late 1970s and early 1980s. Since 1983, the student population has grown steadily with an all-time high of 4,410 full and part-time students in the fall of 2004, with full-time student enrollment at 4,292 (see [Appendix B](#)).

The Board of Trustees is responsible for adopting the college's strategic plan, which includes levels of enrollment. In 1994 the Board of Trustees adopted the Long-Range Plan that estimated enrollment of 4,000 to 5,000 full-time students by the year 2010. In response to the state's demographic changes and the increased demand for access to higher education, Evergreen fine-tuned its enrollment plan in 1996. The Enrollment Coordinating Committee, the Academic Deans, and Vice Presidents worked together to create the Revised Growth Plan for the 1997-98 academic year. This plan, reviewed by the Board of Trustees, presented updated projections for enrollment of approximately 5,000 students by 2010. More recently, this goal has been adjusted to

5,000 FTE by the year 2014-2015. For this biennium, growth has been set at 105 for each year; there is no formal plan for rate of growth for 2007-2014, but it will likely be about 100 students per year, as it has tended to be historically. Specific plans for faculty hiring and curriculum are in place for the first 325 new seats, from a funded enrollment of 3,933 to a maximum of 4,258—planning beyond this point will likely be the charge of a future DTF (*Final Recommendations of the Enrollment Growth DTF*, 2005).

Graduate studies were an important addition to the college curriculum in the fall of 1980. The college currently offers a master's degree in Public Administration, Environmental Studies and a Master in Teaching enrolling approximately 300 students in total. Additional modes of study include upper-division programs at Evergreen's Tacoma campus, enrolling over one hundred students, and a small number of students enrolled in the college's tribal-based programs.

Currently, 49 percent of the students at Evergreen are between 17 and 22 years old, with 76 percent younger than 30 years old. Approximately 19 percent are non-white, and 55 percent are women (see [Appendix B](#)). In addition to serving 3,600 full-time and 538 part-time students, the college is the workplace for 288 classified staff, 298 exempt staff, and 254 faculty. Thurston Regional Planning Council reports a total of 827 employees for Evergreen in 2003, with a forecast for 1,336 by 2030. For the 2005-2006 academic year, there were 408 students enrolled who self-reported as disabled; of these, 219 are being served by the Access Services office. A total of 27 faculty and staff members self-identify as having various handicaps or disabilities.

## PHYSICAL SETTING

### Location and Property

The Evergreen State College is a four-year, post-secondary education institution in Thurston County, Washington. The college is located on the Cooper Point Peninsula in the southern portion of the Puget Sound Basin, three miles northwest of Olympia, the state capitol of Washington. Other urban centers in close proximity are Seattle (66 miles to the north), Tacoma (29 miles to the northeast), and Portland (123 miles to the south). Vehicles may gain access to the college on U.S. Highway 101 via the Evergreen Parkway and a network of Thurston County roads (see [Figures 1 and 2](#)).

The rural setting of the campus on the Cooper Point Peninsula affords scenic views of the Black Hills, the Olympic Mountain Range, Mount Rainier, the Cascade Mountain Range, and Puget Sound. The campus consists of approximately 1,008 acres of land, the largest land area of any post-secondary institution in Washington State. The campus is fortunate to possess 3,300 feet of waterfront on Eld Inlet of the Puget Sound.

Most of the academic and social activities on campus occur in the campus Core area where academic buildings, administrative offices, and student residences are concentrated. Only one Cluster of academic facilities, the Organic Farm, is removed from the campus Core. Over 700 acres of the campus property is undeveloped forest, meadow, and shoreline and it is used for a variety of academic as well as recreational purposes. A key asset of the Evergreen campus environment is the presence of open space, in both the developed and undeveloped areas of campus, providing a pleasant atmosphere for study and work.

### The Physical Environment

Various physical factors have and continue to affect planning in the campus environment. Among the many factors considered in the original planning phases of the college were climate, geology, topography, drainage, vegetation, shoreline, existing utilities and roads, prevailing winds, and view potential. Another important site factor is ecology which represents the interface between many of the previously listed site factors; an understanding of basic ecological parameters is of great importance in planning, development, and educational programs at Evergreen.

This section provides baseline information on elements of the physical environment including the climate, geology, topography, drainage, and ecology of the campus land area.

## Macro-Climate

The climate at The Evergreen State College site is, in general, the same as that to be found throughout the immediate shoreline areas of Puget Sound. In all cases, the Pacific Ocean serves to modify and equalize temperatures. Additionally, the immediate presence of the water increases the incidence of fog and may increase the chances of heavy localized precipitation in areas close to the shoreline.

Precipitation in the area averages approximately 51 inches per year ([Appendix E](#)). Most of this falls as rain and is spread over a large number of days; nearly half the days of year report measurable precipitation (Thurston County Profile, 1997, page I-6). The highest number of rainy days occur during the fall, winter, and early spring months, with extremely limited precipitation during July and August. Cloud cover in some form is present on 86 percent of the days of the year (Thurston County Profile, 1997, page I-6), again with the clear, fair-weather days in the summer months: about two-thirds of the days are sunny in July, August and September, and about half the days are sunny in May and June.

Snowfall averages approximately 20 inches, with January recording the heaviest accumulation. Maximum snowfall on record for a 24-hour period totaled 20.5 inches, and occurred in January of 1972. The average frost-free growing season is 166 days (The National Oceanic and Atmospheric Administration, 1996).

The maximum average temperatures throughout the year range from 44°F in January to 77°F in July. Minimum average temperatures range from 31°F in January to 49°F in July. Annual averages are 39°F minimum and 60°F maximum, indicating the tempering effects of the large body of water nearby. Since these readings are taken at the Municipal Airport, it is probable that campus site would be even more temperate because it is closer to the water. See [Appendix E](#) for monthly temperature statistics. For Olympia, there are an average of 88 days of heavy fog in a year, relative humidity at 10:00 am varies from 65-90 percent, and an average of 5.3 thunderstorms occur annually (NOAA, 1996).

Southerly winds prevail during most of the year. Olympia is shielded from the strong south and southwest winds of Pacific storms by the Coastal Range; winds can gust up to 55 mph, but the average is less than 8 mph, even for the winter months. Fall and winter storms generally result in some downed and broken utility lines, but buildings are rarely damaged. Summertime, fair-weather winds are gentle and most often originate from the north or east.

## Micro-Climate

Evergreen's site is undoubtedly affected by the presence of the Black Hills to the south. This landmass may quite effectively divert or channel portions of the airflow from the south. On occasion, the shape of the Black Hills may actually "funnel" southerly winds of unexpectedly high velocity into the campus area. This indicates a strong possibility that the northwesterly and northeasterly airflow off the water, coupled with these occasional high velocity gusts, may be the dominant factors in wind or storm activities at the site.

Undoubtedly, the most exposed area on the site is the bluff face above Eld Inlet (see [Figure 5](#)). Winds and storm conditions of occasional violence have occurred, arising on the waters of Puget Sound and causing some damage to the slopes exposed to the Sound. Airflow on campus generally gravitates toward the ravines, with cooler moist air following these channels. Such air is additionally cooled by the presence of moisture and heavy foliage in the ravines. Exposed westerly sloping hillsides, which have little foliage, will receive and radiate greater local heat conditions during hot weather. Thus, they may be drastically affected in their growth regeneration by periods of hot dry weather. Planning efforts should consider preserving vegetation on steeper slopes (see [Figure 5](#)).

Localized humidity within the site is likely to be increased by the degree and nature of forest cover (the more dense the cover, the greater the humidity). In general it is known that lower, more moist areas encourage the continued presence of fog, and areas subject to the sweep of wind and exposure to bright sunlight clear more rapidly. Fog pockets have not been noted for any particular locations on campus.

## Geology

The Puget Sound Basin and surrounding land areas were shaped during the Ice Age. Four major glacial advances occurred during this period, each one moving vast quantities of rock and sand. Each advance was followed by a

retreat and non-glacial interval during which the landscape looked much like the present Puget Lowland, but without Puget Sound.

The Vashon Glaciation, the most recent of the four advances, moved south from Canada less than 28,000 years ago. This glaciation is most directly responsible for the formation of the present landscape. Before retreating about 15,000 years ago, the glacier extended to about twenty miles (thirty-two kilometers) south of Olympia (McKee, 1972, page 294). Deposits from this glaciation form the surface and near-surface material for this area.

The retreat of the Vashon Glaciation left complex drainage patterns on the land; meltwaters from the ice covering the Puget lowlands shifted pathways and left a large lake in the southern Puget Sound area. After the ice retreated, the northern Puget lowlands experienced a period of marine submergence. Water drowned adjacent valleys and formed high marine shorelines. Gradually the land, including the area near the college, uplifted to its present elevation while sea level also was rising to its current level.

## Soils

The soils of the Cooper Point peninsula are derived from various glacial and post-glacial materials. Each soil type developed from a particular combination of underlying deposits and their interaction with biological processes and water. Four principal soil types are found on the Evergreen campus. Alderwood Gravelly Loam, at 3-15 percent slope, is the most prominent, comprising about 55 percent of the campus land. Other soil types include Kapowsin Gravelly Loam, at 0-15 percent slope; Chehalis Silty Clay loam, at 0-2 percent; and Giles Fine Sandy Loam, at 0-15 percent slope (Soil Conservation Service 1947, 1972, 1990; Cooper Point Association 1972). Soil distributions are shown in [Figure 4](#), and detailed soil engineering reports are available from the Facilities Services at the college.

## Topography

The topography of the campus is characterized by gradual slopes with some small rolling hills and lower elevation, very low relief "terrace" areas. Most of the campus is fairly level with slopes of 10 percent or less (Durham et al. 1968, page 18). The steep-sided drainage ravines and waterfront bluffs on the northern part of the campus are notable exceptions to the otherwise gentle terrain. Table 1 shows campus areas classified by slope. [Figure 5](#) shows the general topography of the campus.

The highest point on campus ("Mt. Evergreen") is a knoll rising 243 feet (74 meters) above sea level located a few hundred feet west of the campus plaza.

Table 1: Slope Analysis of the Evergreen State College campus (Durham et al. 1968, page 18)

Slope Range	Acres	Percent of Total
0-8% slope	725	76.8 %
8-15%	101	10.6
16-24%	40	4.3
25% and over	77	8.3
Total	943	100.0

## Drainage

Most of the campus' forested land area is well drained through a combination of downward percolation and surface runoff. Major drainage channels carry excess runoff with intermittent or perennial streams. Other drainage ways simply act as seepage areas.

The developed and disturbed portions of the campus account for over 20 percent of the total land area and constitute an important part of campus hydrology. Unlike the forested portions of campus, the developed and disturbed surfaces allow little to no water infiltration and therefore surface runoff is high. The college's drainage system quickly moves this runoff out of the campus Core as described in [Storm Sewer](#).

In the 2000s, new construction and renovations have included measures to reduce runoff from the developed campus. Both Seminar II and the Library building have green roofs. Seminar II also has on site water retention. Parking spaces added to B and C lots were surfaced with pervious pavers (see [Parking](#)). Redesign of the Evergreen Parkway entailed significant reduction of paved surface (see [External Circulation](#)).

Poorly drained areas of the undeveloped campus have surface water present through all or most of the wet months (November through April). A small swampy area between the dormitories and Hidden Springs Drive (the service road leading to the College Activities Building) is all that remains of a much larger swampy area that was drained in the initial campus Core construction. A peat area just east of the original alignment of Overhulse Road was removed during construction of the recreation fields.

Larger areas of poor drainage outside the campus Core include a red alder woodland with some forested wetland characteristics south of the Core and a flat area in the eastern area of the campus along the Evergreen Parkway which forms a marshy meadow. In this latter area, a drainage ditch and culvert installed by the college allows drainage to the northward-flowing water-course just east of the easternmost campus boundary. Wetlands have formed, apparently resulting from beaver activity, abutting campus property near the pump station on Overhulse Road and in the land between Overhulse and Kaiser Roads. During very heavy rainfall, flooding of the Parkway occurs, but the event is rare enough that it probably is not a major concern.

Before construction of the college, almost the entire Evergreen campus was underlain by two saturated zones (referred to as aquifers in the engineering reports, Shannon and Wilson 196x). The evidence came from over a hundred boreholes placed as part of the general campus foundation study (Shannon and Wilson 196x). A near-surface to surface (probably seasonal over part of the campus) saturated zone perched over very low permeability glacial drift or lake sediment. Below this lay an unsaturated zone, then a lower saturated zone. Under the buildings of the campus Core the upper perched "aquifer" was drained into the lower to avoid having to pump water from the foundation areas. Under the unbuilt part of the campus the upper perched saturated zones still exists. The lower saturated zone probably helps supply water to the local aquifers used for residential water.

For planning purposes the college should try to limit runoff on campus by minimizing hardened surfaces and maximizing undisturbed forest. Promoting infiltration can be achieved in the same manner: by maximizing undisturbed forest. As the development of hardened surfaces increases around the college, Evergreen's role in providing infiltration areas will become more critical.

No current studies have determined the impact of the college on surface or ground-water quality. The college is the major source of automobile and fertilizer use in the local area; it is reasonable to assume that these activities result in some impact to water quality.

## Ecology

### Introduction

The Evergreen State College possesses a large amount of acreage in a relatively natural condition, meaning that biological and ecological processes are the predominant forces that shape the character of these areas. Assessment of the ecological features of this land is of great importance in planning. Only through knowledge of the natural processes occurring can the land and resources be used in a responsible manner. This section provides ecological descriptions of the campus' natural areas; land *uses* occurring in these natural areas are addressed throughout [Chapter 3: The Master Plan](#).

The trustees and administration of The Evergreen State College have shown an enduring dedication to the preservation of the ecological and biological qualities of the campus. This commitment gives Evergreen its unique and appealing atmosphere providing great opportunities for scientific study of a variety of different ecosystems and recreational activities unavailable at other colleges.



The following discussion of ecological features of the campus is included for three purposes:

1. To provide a basis of understanding and necessary background for making planning policy decisions.
2. To make available valuable information to a widespread audience.
3. To use in a systematic zoning of the campus for various uses, and for selection of areas to be preserved as sanctuaries, scientific study sites, and outdoor laboratories (Ecological Preserves).

Three types of vegetation habitats characterize the land area of the campus: forest (includes riparian woodland), meadow, and shoreline. The remainder of this section will first discuss the general vegetation zone prevalent in western Washington (generally forested habitat), based on information found in Franklin and Dyrness, 1973, pages 70-92. Descriptions of the meadow and shoreline habitats on campus, and the animals that live there, complete the section on ecology of the campus environment. Additional contributions from faculty and students are needed to provide more comprehensive and up-to-date descriptions of flora and fauna on campus. The Resource and Land Use Inventory should facilitate this effort.

## **Campus Forest Habitat**

### **Vegetation Zone Description**

Most of the campus lands are composed of forests typical of the Western Hemlock Zone in the most extensive vegetation zone in western Washington and Oregon. Most of the college land has been logged during the past century and thus is in varying stages of secondary plant succession. Currently the overstory of the college's forested lands is characterized by a mix of Douglas-fir, red alder, bigleaf maple, and Pacific madrone. Western hemlock and Western redcedar are also present and would theoretically become the dominant species in the absence of any major disturbances over several hundred years.

When existing vegetation within this zone is disturbed by activities such as clear cutting or construction, the successional stages of re-establishment begin quickly. Herbaceous and shrub species are the first to volunteer in a barren site. These pioneer species are responding to increased light on the ground due to a lack of forest canopy. Various kinds of pioneers may characterize these early stages of succession, dependent on soil, moisture, disturbance, and burn conditions, but generally some nonnative weeds can be expected to invade.

By the fifth growing season after a slash burn, shrub species begin to gain dominance over the herbaceous species. The shrub-dominant phase is followed by development of an intermediate forest canopy. Red alder, a very common deciduous tree species of moist sites in the Western Hemlock Zone, grows very quickly and is often the dominant species of early-successional forests; the meadow north of Driftwood Road is currently in this stage of succession. On drier sites, Douglas-fir is the most important species in this intermediate or seral stage. Cleared areas on the Evergreen campus are generally being invaded by one or both of these tree species.

As the forest canopy develops, the amount of light available to plants in the forest floor is drastically reduced. In darker understory, the more shade-tolerant species of Western red cedar and Western hemlock begin to develop. In areas with more light, Douglas-fir becomes the most important understory species. In some places on campus, bigleaf maple grows in the understory. Theoretically, Western hemlock and Western redcedar would become dominant all over the campus if no major disturbance altered the progression for several hundred years, although there is disagreement over whether Western redcedar is truly a climax (the last successful stage) species, or just an intermediate.

### **Campus Forest**

The forest acts as a buffer against such physical factors as temperature, wind, and noise. The trees and understory vegetation anchor the soils with their roots and intercept rainfall. At the same time, forest vegetation serves to maintain fairly consistent levels of light and moisture on the forest floor.

The forest provides habitat for wildlife, and many species of animals feed on the ground herbs and shrubs of the forest floor, the trees themselves, and dead vegetation debris. Most of these species perform vital functions in the maintenance of the forest ecosystem.



Mammalian species found in the campus woodlands include mice, shrews, squirrels, moles, Mountain Beavers, weasels, Black-tailed Deer, and Black Bear. The Northern Flying Squirrel and the Short-tailed Weasel have also been sighted on campus. A wide variety of birds inhabit the campus forests, including sparrows, wrens, warblers, jays, crows, and owls. Most bird populations are rather sensitive to changes in their environment. For example, the Pileated Woodpecker is vulnerable to disruption of its habitat because it has specific needs for nesting sites in snags (standing dead trees) (McAllister, interview, 1981). Known amphibian and reptiles on campus are Long-toed, Northwestern, and Western Red-backed salamanders, *Ensatina*, Pacific and Northern Red-legged frogs (the latter is designated a “species of concern” by the Washington Natural Heritage Information System, 2005), Rough-skinned Newt, Northwestern and Common garter snakes, and Northern Alligator Lizard. There has been recent work on terrestrial mollusks (slugs and snails) and millipedes on campus, with several new species discovered and named, or in the process of being named, in the last few years.

More specific forest types vary according to site factors such as soil conditions, moisture, and elevation. According to a preliminary study of forest typing based on canopy cover, four major categories of forest exist on campus: conifer dominant (Douglas-fir); deciduous dominant (red alder or bigleaf maple); deciduous/conifer shared dominance (the aforementioned species plus Western redcedar); and mixed conifer and deciduous (less than 30 percent cover by any one species) (Greenberg and Hartley, 1998).

Figure 6 shows the distribution of forest typing by sub-categories as found by the Greenberg and Hartley study. Douglas-fir dominated forest covers the largest area of campus, encompassing approximately 207 acres. Mixed forest is the second most common (137 acres) and red alder dominated is the third (91 acres). More detailed descriptions of the campus forests, based largely on the same study, are given below for the four forested Reserve areas of the campus (for locations of Reserve areas, see [Major Campus Land Areas, Figure 7](#)). These descriptions may require corrections and additions from other members of the campus community. Discussions of land uses in these areas is given beginning in [Chapter 3](#).

### **Forest of the East Campus Reserve**

A mix of forest types is present in the East Campus Reserve, with no one type especially prominent. The eastern area is characterized by dominance or shared dominance of red alder and bigleaf maple; stands of bigleaf maple with conifers are present on both sides of Driftwood Road north of the Evergreen Parkway and red alder is most prevalent in the adjacent area to the west. An area of Western hemlock cover in the eastern part of the Reserve, noted in earlier studies, were not found to provide significant cover.

Western redcedar is most common in the southern part of the East Campus Reserve. The central and western part of this area is covered by a mix of coniferous and deciduous trees (no one species with greater than thirty percent cover). An area of Douglas-fir dominated forest, mostly within the campus Core, extends across Overhulse Place. A few Sitka spruce grow near the marshy meadow on the campus Parkway. Oregon ash, black cottonwood, and bitter cherry are also present. The understory is dominated by sword fern, salmonberry, and salal, with many other species present. Vine maple is abundant in the western part of the Reserve. Species found at drier sites on campus are absent.

The East Campus Reserve has very low relief with the lowest point at the southeast corner. Ten soil types are present within the area. The area is dominated by fine textured soils, often associated with a near-surface water table, (54 percent), but the coarse gravel-rich Alderwood and Everett series also have importance (34 percent). One small patch of waterlogged “muck” soil still exists south of the Evergreen Parkway in the only muck soil on campus according to soil survey maps. Campus construction changed the hydrology of the East Campus Reserve from one of almost complete local infiltration, with some winter ponding, to one with substantial runoff from the recreational fields, roads and Housing. The majority of the runoff is routed to the artificial drainage ditch along the Parkway and then into Green Cove Creek.

The forest north of the East Campus Reserve was cleared in the mid 1990s for development of subdivisions (see [Growth and Development](#)) and the campus forest has lost its connection to wild lands to the north. The main forest area of the Reserve was already relatively isolated by the arterials that surround it; this change has made it even more of an ecological island. The thin forest strip remaining north of Driftwood Road, only about 150 feet wide, suffers edge effects, such as increased light penetration and windthrow. Species composition of this strip

has likely changed as a result. Traffic has increased on the Parkway and on Driftwood Road as well, with the new subdivisions. The noise level within the East Campus Reserve has increased as a result.

#### **Forest of the North Campus Reserve**

The majority of the North Campus forest is dominated by deciduous tree species. Red alder is prevalent in a large area north of the meadow on Driftwood Road and bigleaf maple dominates areas surrounding Snyder Creek and the West End Drainage. Coniferous forest dominated by Douglas-fir is found along the length of the shoreline and in an area north and west of Parking Lot F. Bigleaf maple and Western redcedar have shared dominance on the mid-section of Snyder Creek. Large areas of mixed forest also exist within the North Campus Reserve in which no one species has over thirty percent cover.

#### **Forest of the West Campus Reserve**

A large area of west of the campus Core and extending north to Driftwood Road is mixed deciduous and coniferous forest with shared dominance of bigleaf maple and Douglas-fir. The large block dominated by Douglas-fir, shared with the South Campus Reserve, covers the central area up to the edge of the Organic Farm; salal is the dominant understory species.

The Kifer tract, the area west of Lewis Road, was logged immediately prior to its purchase by the college. Currently, forest cover is mainly bigleaf maple with other deciduous and some coniferous trees providing secondary cover. Douglas-fir forest is more common at the edges of the Kifer tract on higher ground.

#### **Forest of the South Campus Reserve**

This is the only Reserve with the majority of cover provided by coniferous tree species. The largest contiguous block of Douglas-fir dominated forest on campus, shared with the West Campus Reserve, covers the higher ground; a long ridge oriented north-south in the center of the Reserve is covered in a dense stand of nearly pure Douglas-fir with luxuriant undergrowth dominated by salal.

Red alder is most prevalent in the drainage to the west of the ridge with scattered Western hemlock, bigleaf maple, and Western redcedar. The understory in this area is primarily salal closer to the ridge and sword fern in low-lying areas with poorer drainage. The drainage to the east of the ridge consists of swampy lowlands supporting vigorous stands of red alder and bigleaf maple. The dominant understory species are sword fern and salmonberry. Pockets of root rot, a malignant fungal disease carried in the roots of trees, are found in the northwestern part of this area.

### **Campus Meadow Habitat**

Two major meadow areas exist on the Evergreen campus, as shown on [Figure 6](#). Each is an open area that provides a unique habitat for flora and fauna.

#### **Meadow North of Driftwood Road**

This meadow forms a narrow strip of open area that extends north from Driftwood Road, in the North Campus Reserve. During initial construction of the college, the area adjacent to the road was used for equipment storage and dirt dumping. Within the meadow three distinct habitats exist: the open field, the field edge, and the forest fringe (McCartan et al. 1977). Red alder thickets have invaded much of the slopes to the north. At the northern end is a lower flat section characterized by meadow grasses and shrubs.

Diverse forms of wildlife inhabit this area. Garter snakes, frogs, small mammals, and numerous insect species have been sighted (McCartan et al., 1977). The meadow also provides a food source for deer, predatory mammals, and birds.

In 1992, soils contaminated with unleaded gasoline were found in the area of the Central Utility Plant. This soil was moved to a section of the meadow north of Driftwood Road for bioremediation with oversight provided by the Department of Ecology. Prior to its removal from the meadow, the soil was tested and met DOE clean soil standards.

### **Marshy Meadow along the Parkway**

A marshy meadow lies along the Evergreen Parkway east of Overhulse Road, in the East Campus Reserve. It is part of a larger wetland that extends south from the eastern part of the college campus. The area is poorly drained and vegetated primarily by sedges, spirea, and other species tolerant of the moist environment.

Although no inventory of fauna is currently available, deer are frequently seen browsing in the area. Due to the uniqueness of the habitat, it is likely that species of birds, rodents, and amphibians not found elsewhere on campus inhabit the marsh.

### **Campus Shoreline Habitat**

The 3,300 feet of Evergreen's shoreline on Eld Inlet, a part of Puget Sound, include a variety of ecosystems and natural environmental features. The coastal habitat is characterized by steep bluffs, gravelly beaches with many washed-up logs, and the marine intertidal zone which extends 125 to 150 feet out into Eld Inlet during low tides. There are approximately 27 acres of tidelands belonging to Evergreen (this area is included in the calculation of total campus acreage). Land uses of the Shoreline are described in [Shoreline Reserve](#).

The bluffs range from 15 to 60 feet (5 to 20 meters) in height. Analysis shows that higher banks are generally less stable, but overall bank erosion is slow at Evergreen's beach. The bluffs are forested with a mix of Douglas-fir, Western redcedar, and bigleaf maple trees of considerable size and age (relative to other campus woodlands) in several places. The forested bluffs were logged eighty to one-hundred years ago (Professional Forestry Service Inc. 1975, page 10); old logging traces descend to the waterfront from the West End Drainage and from the woods west of the marine slough.

Erosion has felled many trees making the beach impassable during higher tides. Low bulkheads are in place at the northern end of the beach. Due to storm damage from the winter of 1996-97, the bridge road and adjoining bulkhead at Snyder Creek were repaired and upgraded during the late summer 1997.

The beach near the bluffs is composed of large rocks and coarse gravels mixed with fine gravels and sand. These materials originate from the glacially deposited layers in the bluffs. Three freshwater drainages empty into Eld Inlet along the beach. The middle drainage terminates in a small marine slough. These areas provide a transition zone between fresh and saline water, creating a unique estuarine habitat for fish, waterfowl, and other species. The entire coastal area offers a rich diversity of habitat for life forms. The marine intertidal zone supports shellfish, crustaceans, and other marine species. Studies done in 1972 showed a variety of marine plantlife (Liebman and Zito 1972). The composition of the sediments in this area is particularly important because it is the gravel, rocks, and similar hard substrates that provide attachment points for tidal species of flora and fauna (Globerman and Olson 1975). Other important faunas in the coastal zone include waterfowl and numerous species of fish. Several that have been sighted at the waterfront were named as "species of concern" in the 1998 Master Plan and their current status is: the Olympia Oyster, not yet ranked by state; Coho Salmon, Puget Sound populations are considered a "species of concern, Steelhead, not yet ranked by state, and the Harbor Seal, monitor; taxa of potential concern (Washington Natural Heritage Information System 2005).

## **LAND USE IN THE SURROUNDING AREA**

### **Thurston County Population**

The 2004 population estimate for Thurston County is 218,500 (TRPC) according to the census of that year. Approximately 67 percent of the county population live in Olympia, Lacey, Tumwater, and the surrounding unincorporated metropolitan area. While the average annual rate of growth for Thurston County has decreased from a high of 4.9 percent in the 1970s, growth continues at a relatively high rate:

With a total county population of 207,355, there were 46,117 more people residing in the County in the year 2000 than in 1990. The county's average annual growth rate for the 1990s (2.5%) slowed only slightly as compared to the 1980s (2.6%). A larger proportion of the county's population lives within city limits (45%) than did so in 1990 (41.6%). However, much of this change is the result of annexation, that is, of changing city boundaries. Within the cities, growth has not been evenly

distributed over the 1990s. Lacey added the most new residents over the decade, increasing by 11,947 people. Yelm by far had the largest population growth rate, growing by 146%. Significant annexation has occurred in both of these communities. (Thurston Regional Planning Council website, 2005)

The county's population is getting older in general; however, relative to the rest of the county, Olympia has the most children and the highest proportion of aged 18-64 years (65 percent), typically considered the working age population. Based on the 2000 census, Thurston County is more racially diverse than in 1990. People reporting a single race were 86 percent white and 4 percent Asian. The Hispanic population was up from 3 percent in 1990 to 5 percent in 2000 (race and Hispanic origin are considered two distinct concepts by the federal government).

On November 5th, 2004 the Thurston Regional Planning Council adopted the County-Wide Population and Employment Forecast. The new forecast is lower than the 1999 forecast for 2005 and 2010, the same for 2015, and higher for 2020 and 2025. In addition, the new forecast extends the projections to 2030. The new forecast remains within the high-to-low range of the OFM Growth Management Projections for Thurston County. The forecast for population increase from 1995-2005 is now about 17 percent (estimated at 29 percent when the Master Plan was updated in 1998), and 27 percent for 2005-2015 (up from 21 percent). Based on these projections, the Thurston County's population will be nearly 285,000 by 2015 and 319,000 by 2020. The furthest projections, for 2030, are for 373,000 people in the county (Thurston Regional Planning Council, 2005).

## History of Growth and Development Planning

With the adoption of the Cooper Point Sub-area Plan in 1972, Cooper Point became one of the first areas in the south Sound to adopt zoning to preserve its rural character. Zoning was first established county-wide in 1980, and then updated with the Urban Growth Management Agreement in 1983. The Urban Growth Management Boundary associated with this agreement maintained northern Cooper Point as a rural area, but Evergreen's campus, as well as the rural areas to the south, were within the urban growth boundary. In 1990 and 1991, the Washington State Legislature passed a series of laws known as the Growth Management Act which required fast growing counties and the cities within them to upgrade their comprehensive plans to meet new standards (Comprehensive Plan for Olympia and Olympia Growth Area, 1994, page 2). The new planning efforts included reevaluating the Urban Growth Boundary. The revised boundary, established 1994, is intended to accommodate urban growth for the following 20 years. It no longer includes Evergreen's campus or the rural area to the south; however, a "finger" of the Urban Growth Area remained bordering the college to the northeast (see [Figure 3](#) and following section).

## Current Growth and Development

The majority of the Cooper Point peninsula, mainly excluding the southeast area (where it transitions to the "west side" of Olympia), is zoned rural-residential (see [Figure 3](#)). The rural area designation, according to the *Thurston County Comprehensive Plan*, is meant to preserve areas "characterized by a balance between the natural environment and human uses with low density residential dwellings farms, forests, mining areas, outdoor recreation and other open space activities." (page 2-17). While growth does continue in the rural areas of Cooper Point, development has been limited to zones of one unit per five, two and one acre. Urban sewer and water services are not provided.

An area immediately north and east of the campus has been zoned at urban densities since 1972. In 1995, the forest was cleared from this area for construction of four housing developments, and these were mostly completed by 1999. Two of the developments, Cedrona and Madera, contain 350 single-family residences. The other two, Hidden Ridge and Rock Maple, comprise 200 multi-family units. At the time of construction, this area was zoned at 4 units per acre. Since that time, the area has been down-zoned to "residential low impact (see below).

The college has seen several types of impacts on the campus resulting from this development. Motor traffic has increased along Driftwood Road and the Parkway. Recreational and incidental use of the campus Reserve areas, especially the North and East Campus Reserves, have increased. (see [Public Access](#)). Also, the forest habitat of East Campus has lost its connection to other wild lands to the north, isolating it ecologically (see [Forest of the East Campus Reserve](#)).

The Cedrona area has recently been down-zoned as a part of an effort to protect Green Cove Creek basin. A new designation—"residential low impact"—applies to a large portion of northwest Olympia and the Urban Growth Area near the college. This designation calls for denser developments, with narrow streets and other measures to reduce stormwater runoff, separated by areas of undeveloped vegetation and soils. (Cooper's Crest, off 20<sup>th</sup> Avenue NW (north of Goldcrest), is an example of development that meets the new zoning requirement.) Any new development within the Urban Growth Area bordering the campus, should reflect the zoning change, but existing developments, such as Cedrona, are grandfathered under the previous zoning requirements. (Tom Hill, City of Olympia, interview 2005).

In July 2005, the Western Washington Growth Management Hearings Board ruled that the county's land use plan and development regulations do not comply with the state's Growth Management Act. The Hearings Board gave Thurston County until January 17, 2006 to achieve compliance. The areas of focus are to shrink the urban growth area, decrease densities outside the urban growth area boundary and set more land aside for agricultural use, and increase densities within the urban growth area boundary (The Olympian, July 29, 2005 and Thurston County Developments Services). The Green Cove Basin area, northeast of the college on Cooper Point peninsula, is one place where the Urban Growth Area boundary may get pulled in (Jennifer Hayes, Thurston County Development Services, interview 2005). For more information and updates on GMA compliance, check the website: <http://www.co.thurston.wa.us/permitting/gma/>.

## College Influence on Surrounding Land Use

Members of the college community have been working proactively to minimize negative effects to the campus from development in the surrounding areas. During construction of the Cedrona complex, college officials worked closely with city and county agencies to examine and measure the impact of the proposed development to transportation and utility systems. In the early 2000s, the college commissioned a traffic study to determine the effects of the growth to our roads and intersections; results from this study indicated that reducing the Evergreen Parkway to one lane of travel in each direction would be more than sufficient to accommodate projected traffic from the college and surrounding area for the next ten years (see [External Circulation](#)).

The college has become aware of the need to actively strive to be good neighbors to the surrounding community. Therefore, the college has worked to develop more contact with the local neighborhood associations through participation in revising the Master Plan and consultation on proposed development plans. Currently, a member of Evergreen's staff is president of the Cooper Point Neighborhood Association. In the spring of 2005, the college created a Neighborhood Advisory Board including a representative from Thurston County to advise the college; they meet quarterly. The college has become more active in providing input to documents being developed by the city and county and sought out their consultation during the 1998 revision of the Master Plan.

In order to ensure that the quality of the campus environment is maintained, the college should continue to monitor development plans for the surrounding area and make every effort to promote patterns of use that complement those of the college. There has been concern that the campus Reserve areas are not overtaxed by public use. However, the college has welcomed neighborhood use of Evergreen's trail system, and in particular the beach trail (originating at F Lot) has seen increased community use in recent years. Improvements made to this trail in the early 2000s and regular maintenance have meant that it has been able to absorb the increase in traffic without significant degradation (see [Trails](#)). The college is now linked to a large trail network through the north end of the McLane Forest trail, where it connects to the Evergreen Parkway pathway (see [South Campus Reserve](#)).

The Cooper Point Association expects to see much more growth in the area bounded by the Evergreen Parkway, Cooper Point, and Mudbay Roads, and that additional areas for recreation and wildlife habitat will be needed to support the increased population of the area. The county has made a tentative agreement with the Cooper Point Association to create a park on a site off 43<sup>rd</sup> Avenue on the Budd Bay side of Cooper Point Road, but there are no plans to develop the park in the near future (no improved trails, toilets, or signage). Since a new park would take pressure off the campus Reserves, the college may want to encourage the county to make the park as viable as possible.

# Chapter 3: The Master Plan

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## INTRODUCTION TO THE MASTER PLAN

This chapter presents the goals and policies of the Master Plan; these are the fundamental concepts of the plan and they are based on principles that have guided land use planning since development of the college began. Procedures for achieving the policies are outlined as well. The policies and procedures are intended as the primary reference within the Master Plan.

The remainder of the chapter is divided into three sections: descriptions of the major land area designations for the campus (Core, Clusters, and Reserves), land use of the developed campus, and land use of the undeveloped campus. These sections provide an expanded discussion of the intent of the policies and the application of the procedures. Descriptions of existing land use and planning activities demonstrate the college's success in achieving the vision of the Master Plan. Clear discrepancies between land use practices and the intent of the Master Plan are indicated and the [recommendations](#) of this Master Plan also address these issues.



## GOALS FOR LAND USE

The 1983 Master Plan presented five goals for land use on campus. These goals summarize conclusions made in the earlier planning documents for the college and they continue to be relevant to creating and maintaining the contemporary campus environment. The policies and procedures of the Master Plan, presented on the following pages, are based on these goals.

### **Goal 1**

**To provide and maintain the facilities and academic environment necessary to fulfill Evergreen's stated academic mission.**

### **Goal 2**

**To maintain a healthy living environment for those who study, work, and live on campus.**

### **Goal 3**

**To preserve the ecological character of the campus.**

### **Goal 4**

**To maximize educational opportunities in campus planning and in the operation of campus service functions.**

### **Goal 5**

**To integrate educational services and opportunities at the College with general cultural, social, civic, and business activities of the surrounding community.**



## POLICIES AND PROCEDURES FOR LAND USE

The following policies and procedures were originally outlined in the *1983 Campus Master Plan* and they continue to be vital to campus land use planning. The policies are specific directives founded on the goals presented on the previous page. The procedures listed with each policy indicate how the directives can be accomplished.

The policies and procedures are the core of the Master Plan and they may stand alone as a guide for land use planning.

The remainder of this chapter (the descriptions of the major land areas and the uses of those areas) provides an expanded discussion of the intent of the policies and the application of the procedures. Descriptions of existing land use and planning activities demonstrate the college's success in realizing the vision of the Master Plan. Any discrepancies between land use practices and the intent of the Master Plan are also addressed, and recommendations to further investigate these topics are made.

The process for land use planning, the subject of Policy 15, is the topic of Chapter 4 (see also 2005's Addendum to Chapter 4). An entire chapter is devoted to this topic to emphasize its importance; an effective and responsive planning process is essential to fulfilling the vision of the Master Plan.

**Use the policies and procedures as the primary reference within the Master Plan. These directives encompass the vision of the plan and can stand on their own as a guide for land use planning. If you wish for elaboration on a selected subject, refer to the detailed discussions in the remainder of this chapter and Chapter 4.**

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### Policy 1

**To consider academic needs first and foremost in land use planning and management decisions.** In order to support Evergreen's mission, land use decision-making entities should always place first priority on academic needs of the college. It is recognized that many other land uses auxiliary to academic are completely valid and necessary, but efforts should be made to have these compliment rather than interfere with academic programs.

#### Procedure

1. The **academic needs** of the college shall be a **primary consideration** when developing and managing campus facilities and land.

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### Policy 2

**To concentrate facilities within the Core and Cluster areas.** The concentration of physical development to the campus Core and Cluster areas fulfills many desired goals of the college. Concentration of land use reduces expenditures on utility lines and other physical plant costs. The principle of concentration also helps to achieve the college's educational goals by creating a continuous, high activity, learning environment that encourages interaction of many segments of the campus population and interdisciplinary study and problem solving. It also helps to preserve the ecological and biological character of a large area of the campus.

#### Procedures

1. **New major academic facilities** shall be concentrated in the campus Core. Developed areas outside the campus Core shall be concentrated into Clusters.

2. **Activities within Cluster areas** shall be limited to the formally designated land area. Expansion of a Cluster will occur only if the existing area is insufficient to meet a substantial need.
3. If **new development** is necessary within the Reserve areas, it shall be clustered.
4. **New Cluster areas** shall be constructed only when the provision of these facilities cannot be made within the campus Core or existing Cluster area. New Cluster areas shall be located in areas that lend themselves to site-specific needs of the Cluster, and not in Ecological Preserves (as defined by the college).

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## Policy 3

**To maintain a set of unified design concepts to guide campus growth.** The Master Plan provides a set of unified design concepts for construction and maintenance that creates the sense of a continuous campus environment. These concepts have been developed and employed since the formation of the college. The application of these concepts differ among the concentrated urban Core area, Cluster areas, and Reserve areas, but each area should contain a continuity of design that is reflected throughout the campus environment.

## Procedures

1. The college shall approach all building projects (additions, modifications, remodelings, etc.) with **design quality** as a top priority. The original quality level of campus facilities shall be maintained. (Also applies to Policy 11.)
2. **Building orientation** and design in the central Core shall follow the axes established to recognize the view potential to the Olympic Mountains, Mt. Rainier and Puget Sound.
3. Design for buildings and outdoor spaces should give careful consideration to **solar orientation** and use of **natural lighting**.
4. **Building heights** in the central Core shall be limited to four stories, in keeping with the pedestrian scale and original design of the campus.
5. Academic buildings in the central Core shall continue to use concrete as the predominant **structural material**.
6. New **pathways** on the campus Core shall be designed with ease of pedestrian and bicycle circulation in mind and shall incorporate similar design standards as the existing path network. (Also applies to Objective 4.)
7. New construction should include in its design **overhangs, breezeways, and covered walkways** to facilitate ease of pedestrian movement in rainy weather.
8. The **interior space** of buildings shall be designed to contain a **variety of functions**—such as classrooms, office space, and informal lounge areas— on one floor to encourage mixing of campus population. (Also applies to Policy 10.)
9. Abundant **student workspace** shall be provided close to laboratories, classrooms, and living quarters. Lounges with worktables, small unscheduled meeting rooms, individual student storage space and offices are all needed.
10. Formal and informal spaces for **social activities and recreation** shall be provided and maintained in a variety of places on campus, both indoors and outdoors. (Also applies to Policy 9.)
11. Indoor and outdoor **display spaces for artwork** should be included in and around the campus Core.

12. The **aesthetic** component of design shall be a consideration in construction, and renewal of campus facilities. Installation and maintenance of **artwork** and **landscaping** that compliments campus design shall be promoted.

13. Site development and landscaping design shall strive to promote **awareness and appreciation** of the rich **variety of environments** on campus by emphasizing and enhancing natural features.

#### **Landscape Plantings**

14. The basic concept for all landscape plantings shall be **simplicity of expression** and **compatibility with existing vegetation**.

15. **Campus Core landscaping** shall allow the native forest to penetrate into the Core to some degree while every effort shall be made to create a landscape compatible with the structural quality of the Core. Native trees shall be allowed to remain in defined areas. (Also applies to Policy 6.)

16. **Cluster area landscaping** shall serve to visually integrate facilities with the surrounding vegetation as much as possible.

17. Landscaping practices in the area of **parking lots** shall serve to emphasize and preserve existing vegetation to the greatest extent possible.

18. **Plantings along roadways** shall be compatible with surrounding native vegetation. Roadway approaches to areas of formal plantings will be landscaped in a manner that will visually enhance the transition.

19. New construction shall be designed with **ease of modification** in mind. This can be achieved with flexible mechanical and lighting systems and moveable interior partitions.

20. When meeting new space requirements on campus, possibility of **modifying** or adding to **existing buildings** shall be given serious consideration.

21. Although architecture differs in the Core and Cluster areas, **appropriate design concepts** of the campus Core shall be **applied to the Cluster areas**.

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## **Policy 4**

**To emphasize the pedestrian and bicycle-oriented nature of the campus.** Foot travel is the most practical, desirable, and cost effective mode of circulation for on-campus movement. The pedestrian-dominated environment of the college creates a unique atmosphere that is safe, visually attractive, quiet, and clean. Bicycle travel on campus is also desirable but should be encouraged in areas separate from areas of high pedestrian concentration.

### **Procedures**

1. The potential undesirableness of the **automobile** in the domination of land use and daily campus life shall be recognized. The provision of additional **parking spaces** in the campus Core shall be discouraged.

2. The use of **public transit, self-propelled modes of services, and carpooling** for accessing campus shall be encouraged over the individual use of automobiles.

3. New **pathways** in the campus Core shall be designed and maintained with ease of pedestrian and bicycle circulation in mind. New pathways shall incorporate similar design standards as the existing path network. (Also applies to Policy 3.)

4. Campus facilities shall be designed and modified to meet the letter and spirit of the Americans with Disabilities Act and **barrier-free design**.
5. Safe and visually comfortable **lighting** shall be provided and maintained for all **pathways** in the campus Core. Primary concern is to discourage personal assaults while minimizing energy consumption and glare.
6. To aid in ease of movement for **pedestrians**, the college shall strive to provide **weather protection** around and between central Core buildings wherever feasible.
7. **Service facilities, including residences**, should be located as close to the pedestrian center of the campus as possible, except in cases where more remote locations are desirable.

#### **Separation of Traffic**

8. **Pedestrian, bicycle and vehicular traffic** shall be **separated** wherever possible and feasible.
9. **Maintenance and personal vehicles'** use of the pedestrian plazas and walkways shall be strictly limited to essential business purposes.
10. Safe bicycle, pedestrian, and vehicular routes on campus shall be maintained with special attention given to the **safety of intersections and shared paths**. Any unsafe areas should be studied and modified as needed.
11. The college shall maintain strips of forest around the perimeter of the campus Core to act as **buffer zones** from surrounding roadways.
12. Provisions for **separation of bicycle traffic** shall be made wherever hazardous conditions on campus present conflict between bicyclists and autos or pedestrians (e.g. through roads without adequate shoulders, or areas of heavy pedestrian flow).

#### **Bicycles**

13. **Safe** bicycle operation shall be encouraged.
14. The college shall encourage the development of adequate and safe **bicycle routes** linking the campus and the **surrounding community**.
15. Sheltered, secure, and convenient **bicycle parking** shall be provided wherever needed, but so as not to impede pedestrian traffic flow or cause safety hazards.

#### **Transportation Links to the Surrounding Community**

16. The college shall encourage public transit services to provide **comprehensive and convenient transportation links** to the surrounding community. (Also applies to Policy 13.)
17. Transportation links to the surrounding community should accommodate the needs of a **diverse service population**, including individuals who have disabilities and those who need transportation during non-business hours.
18. The college should **supplement public transit services** to meet the more specialized and limited needs of the campus community where those services cannot do so.

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## Policy 5

**To provide open spaces in the developed portions of the campus.** The developed areas of campus, particularly the "urban" Core, include clearly defined open spaces that create sharp distinction between the developed and undeveloped portions of the campus. Major design emphasis focuses on the open spaces between buildings to provide connection between the individual structures. These areas help provide a framework for the total campus environment.

### Procedures

1. Any new major building project in the campus Core should continue the pattern of inclusion of **plazas, pedestrian malls and outdoor seating areas**. (Also applies to Policy 10.)
2. Open spaces on campus should provide **social and recreation areas** for a range of interaction.
3. Open spaces shall include lighting, seating, and green belts that emphasize the **pedestrian scale and student uses**.
4. The existing **open spaces** between the major buildings **shall not be "filled in"** with structures unless a careful assessment of the use and the psychological value of the space suggests that it is expendable and that the new structure will contribute more to the total value of the campus Core.

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## Policy 6

**To protect and efficiently manage campus environmental resources.** The natural features of Evergreen's campus are valuable as an academic resource in their own right. These features also contribute to the quality of life on campus in many ways and create a buffer between the college and the surrounding area.

### Procedures

1. **Ecological environments** necessary to fulfill the **academic mission** of the college shall be provided.
2. Sizable portions of the campus land area shall be preserved as **undeveloped land areas** with minimum habitat destruction for the purposes of academic study, minimization of resource expenditures, and the protection of ecological functions. (Also applies to Policy 7.)
3. **Environmental impacts** shall be evaluated when **planning** construction, modification and management of campus facilities and minimized to meet criteria at least as stringent as those provided by law. This same approach will be employed during the actual **construction or management** of campus facilities. (Also applies to Policy 7.)
4. **Tree clearing** shall be undertaken only when specific plans for the site to be cleared have been completed, and when that clearing is shown to be necessary.
5. **Critical areas** (including wetlands, critical wildlife habitat, steep slopes, geologically hazardous areas), the shoreline, and other environmentally sensitive areas shall be identified, designated and protected from the impacts of construction, modification, and management activities. The college shall adopt and utilize criteria for the protection of critical areas at least as stringent as that provided by local law.

### Ecological Preserves

6. Certain areas of prime growth, significant wildlife or environmentally sensitive habitat, or other unique sites on campus shall be **identified and formally designated as Ecological Preserves**, in which no significant alteration of the environment may take place. The primary concern in these areas shall be to completely maintain the native quality of the site.

7. **Access** to Ecological Preserves **shall be limited** for the purposes of environmental protection.
8. The college should administer **protective maintenance** in the Ecological Preserve areas only when necessary to maintain the integrity of the area and approved by the Campus Land Use Committee.
9. Proposals for ecological studies or other **academic uses** that involve **manipulation or alteration of ecosystems** shall be submitted to the Campus Land Use Committee for review and shall not occur in areas designated as Ecological Preserves.
10. **Non-manipulative, minimally disruptive academic uses** of the Reserve areas that do not conflict with other campus activities may be conducted anywhere on campus. Off-trail travel should be limited as much as possible.
11. Efforts to **restore native plant populations** in the Reserve areas shall be encouraged where invasive exotics currently dominate.
12. Any **plantings occurring in Reserve areas**, i.e. for erosion control or restoration, shall be species native to the site. Ideally, propagules should be collected from the site or at a minimum from the south Puget Sound to maintain genetic integrity.
13. The ecological environments on the campus shall be made available to the campus community for **social and recreational purposes** within the limits stated above.
14. The college shall establish and maintain a **resource and land use inventory** to guide land use decision-making.

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## Policy 7

**To provide a safe and healthy campus environment.** The comfort of the people who use campus is an important consideration in creating a productive campus. The college campus should be a safe and healthy environment for all segments of the Evergreen community.

### Procedures

1. **Interior spaces** shall be maintained as healthy and safe environments with consideration to air quality, reducing noise pollution, improving the comfort of lighting and furniture, removing unnecessary physical risks, and educating the community on safety procedures relating to their course of study (e.g. laboratory practices) and emergency situations.
2. Buildings shall meet or exceed legal **structural standards**.
3. The campus should be maintained as a **peaceful environment** by protecting community members from apparent threats, taking steps to prevent crime, and promoting peacekeeping activities
4. **Hazardous waste** generated on campus shall be disposed of in a manner that is safe to the handler and meets or exceeds legal standards for disposal. (Also applies to Policy 8.)
5. **Chemical use** shall be minimized and the **least toxic and least contaminating** methods shall be selected for applications on campus.

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## Policy 8

**To minimize negative environmental impacts in the development, maintenance, and operation of the campus.** Environmental degradation associated with operation of the college should be recognized and minimized. The college should strive to have an overall positive effect on the campus and surrounding landscapes.

### Procedures

1. Use of **alternative materials** for building, operating, and maintaining campus facilities should be considered.
2. The volume of **refuse** generated by the campus community and facilities operation shall be reduced as much as possible. **Reusing** materials on campus whenever feasible and separating out items accepted for **recycling** shall be promoted.
3. **Hazardous waste** generated on campus shall be disposed of in a manner that is safe to the handler and meets or exceeds legal standards for disposal. (Also applies to Policy 7.)
4. Campus utility systems should be upgraded for improved **energy efficiency** whenever possible.
5. Sizable portions of the campus land area shall be preserved as **undeveloped land areas** with minimum habitat destruction for the purposes of academic study, minimization of resource expenditures, and the protection of ecological functions. (Also applies to Policy 6.)
6. Landscaping on campus shall serve to emphasize the **native qualities** of the site. Scots Broom, English ivy, English holly, and other **invasive exotics are not appropriate** for landscaping purposes, particularly on the campus edges where it interfaces with the native forest.
7. **Environmental impacts** shall be evaluated when planning construction, modification, and management of campus facilities and minimized to meet criteria at least as stringent as those provided by local law. This same approach will be employed during the actual construction or management of campus facilities. (Also applies to Policy 6.)
8. Strategies for **preserving** and **enhancing** the ecological functions of the campus environment should be investigated and applied whenever possible.
9. **Vendors** and **contractors** for the college shall be encouraged to follow the above guidelines.

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## Policy 9

**To provide for informal and formal recreational and social activities on campus.** Evergreen's relative isolation and intense academic demands heighten the need for recreation and social facilities. These facilities and services must be tailored for students' needs, preferences, and desires.

### Procedures

1. **Formal and informal spaces** for social activities and recreation shall be provided and maintained in a variety of places on campus, both indoors and outdoors. (Also applies to Policy 3.)
2. Social space should be designed to provide for **a range of public to private interactions**.
3. **Major centers for social and entertainment events** should be sited in the most central location possible.



4. **Informal recreational use** of campus lands and facilities shall be permitted when such use is not disruptive to academic programs or other aspects of the college environment.
5. The college shall encourage the creation for "**home spaces**" for various segments of the campus population such as cultural, ethnic, academic, and employee groups.
6. Social, study, and recreational areas and space for other casual activities normal to residential life shall be provided in or **near campus housing**.

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## Policy 10

**To encourage different segments of the campus population to mix during their daily activities.** Interactions between members of different segments of the campus population encourage a sense of community, an atmosphere of cooperation and collaboration, and the exchange of ideas. This can be enhanced through facility design and space allocations. Operations of campus activities and services should further stimulate this interaction between various interest groups and various campus constituencies.

### Procedures

1. Any new major building project in the campus Core should continue the pattern of inclusion of **plazas, pedestrian malls and outdoor seating areas**. (Also applies to Policy 5.)
2. The **interior space** of buildings shall be designed to contain a **variety of functions**—such as classrooms, office space, and informal lounge areas—on one floor to encourage mixing of campus population. (Also applies to Policy 3.)
3. Planning for the **location of new service facilities** shall consider areas that are easily accessible to the various segments of the campus population, including people with disabilities.
4. All segments of the campus population shall be encouraged to use **service facilities**.
5. The **interior space** of **service facilities** should be designed to encourage the mixing of different segments of the campus population.
6. The college shall allow for the development of various **ethnic, cultural, and academic centers**, while maintaining the need to encourage mixing of segments of the campus population.

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## Policy 11

**To provide high quality, diverse, and flexible health, safety, and social services for the campus community.** Campus services fulfill a wide range of human needs for those who study, work, and live on campus. A diversity of services is necessary to meet the needs of the campus community and to complement academic programs and functions. These needs will vary with changing societal values, educational needs, and student populations.

### Procedures

1. The college shall provide health, safety, and social services for the campus community to the **fullest extent possible** for the convenience of the Evergreen population and in order to not create undue strain on surrounding community resources.

2. The college shall approach all building projects (additions, modifications, remodelings, etc.) with **design quality** as a top priority. The original quality level of campus facilities shall be maintained. (Also applies to Policy 3.)

3. **Flexibility of design and operation** shall allow major service facilities to perform a wide variety of functions that reflects the diverse needs and desires of the Evergreen community. It should also allow accommodation of new activities with changes in Evergreen's needs.

4. **Planners for new service facilities** shall consult with other campus planners and the Evergreen community in order to assure that any new facility will be compatible with the long-range development of the college and that it will meet campus community needs.

#### **Campus Housing**

5. Campus housing shall be designed and managed so as to provide a **mixture of unit sizes and living arrangements** that reflect the needs and desires of the residents.

6. On-campus housing should be planned to house a **diverse service population**—not only single renters, but also married students, students with children, and others in addition to first and second-year students.

7. Residents shall be consulted in the setting of **rental rates** and a variety of rental rates in campus housing shall be maintained. Off-campus rental rates should be monitored.

#### **Human services in the surrounding community**

8. Evergreen should **encourage the use** of human services offered by the surrounding community when such use is appropriate and does not place undue strain on community resources.

9. **Off-campus housing sources** shall be evaluated prior to providing new on-campus housing.

10. Availability of **commercial resources** in the surrounding community shall be evaluated prior to providing them on campus.

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## **Policy 12**

**To emphasize a cooperative and collaborative living and learning atmosphere by involving students, staff, and faculty in the planning and provision of campus activities and services.** The Evergreen academic curriculum encourages students to work cooperatively with others and take responsibility for their environment. Bringing together students, staff, and faculty in the planning of campus services enhances this important academic goal and provides valuable educational opportunities, maintains responsiveness to student needs, and encourages the sense of individual and collective responsibility for the campus environment.

### **Procedures**

1. **Academic opportunities** should be generated through the use of student interns and academic program efforts to participate in planning and providing campus activities and services.

2. **Student involvement** in the provision of campus services shall be maximized. The college shall utilize student interns, employees and work-study students in the provision of campus activities and services.

3. **Student operated services** shall be encouraged where they can adequately meet campus needs.

4. Campus housing shall be operated to encourage **involvement of residents** in maintaining the facilities and meeting specific housing function needs (examples: resident assistants, maintenance/custodial staff).

5. Provision of cooperative and collaborative service and activity functions shall include **frequent consultation with** the intended service population including **students, faculty, and staff**.

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## Policy 13

**To use off-campus resources and facilities in the operation of educational programs when feasible and advantageous to the academic curriculum of the college.** Valuable educational opportunities are provided in the surrounding community. Evergreen should strive to use these facilities and opportunities when they complement academic programs. This can result in increased interaction with the surrounding community, increased college resources, and reduced expenditures of state funds and resources.

### Procedures

1. The feasibility of **using existing off-campus facilities** or jointly operating such facilities with nearby educational institutions or community groups should be investigated as a possible strategy for minimizing expenditures on construction of new facilities.
2. The college shall provide logistical and academic support to students seeking **internships**, volunteer work or employment outside the college as a component of their educational program.
3. The college shall encourage public transit services to provide comprehensive and convenient **transportation links** to the surrounding community. (Also applies to Policy 4.)

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## Policy 14

**To provide access for the surrounding community to services provided on campus where compatible with Evergreen's educational program and campus community needs.** With Evergreen's academic mission in mind, Evergreen services should consider surrounding community needs and the highest practical degree of public access should be maintained. This should result in increased interaction between Evergreen and the larger surrounding community.

### Procedures

1. The **primary service population** for campus services shall be the campus population itself. Services to the surrounding community shall be of secondary concern.
2. The highest practical degree of **public access**, without compromising the needs of the college, shall be maintained in order to encourage interaction with the surrounding community and meet Olympia area needs.
3. Provisions such as **signs and maps** shall be made for the **orientation of visitors** who are not familiar with the campus.
4. The college should consider establishment of **private or governmental research facilities** on campus if such facilities clearly demonstrate that they supplement the academic needs of the college community.
5. On a contractual basis, the college should maintain specific **access privileges for other schools or state institutions** in need of Evergreen's. However, this shall not interfere with the priority of campus program needs.

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## Policy 15

**To foster an effective and responsive planning process for land use through collaborative efforts of the campus community using the Master Plan as a foundation.** All people who use the campus should have access to and be encouraged to participate in land use planning at the college. A planning process that stimulates active community involvement will help to ensure responsive planning while adding to feelings of responsibility and commitment to the campus environment.

### Procedures

1. The planning process and the Master Plan itself shall be flexible while preserving the basic intent of the **Master Plan's goals and policies**.
2. The **expediency of process** shall be maintained throughout the development of proposals while allowing **adequate time for consultation** with the campus community, on and off campus experts, and impact consideration.
3. The campus community shall be **publicly informed** of all major planning proposals and decisions.
4. **Faculty expertise, academic program efforts**, and other campus resources shall be incorporated into the planning process whenever feasible.
5. **Explicit and organized means of input** into the planning process shall be provided in order to promote the expression of campus community needs, ideas, and opinions.
6. The **campus community shall be consulted** widely at all appropriate points in the development and management of campus facilities and land.
7. The process of ongoing planning shall be compatible with methods and procedures of **college governance** and **state and local codes**.
8. Facilities and land use planning shall be supportive of ongoing **academic and institutional development** and shall be **responsive** to changing campus needs.
9. Land use and facilities planning shall be coordinated with long and short range **academic planning, administrative planning**, and other college **program development**.
10. **Locatable responsibility** and an **explicitly defined process** for land use and facilities planning shall be maintained.
11. College planners shall monitor **development plans** for the area **surrounding the campus** and ensure that community growth is compatible with campus land use.
12. The **Master Plan** shall be **reviewed and revised** on a regular basis in order to evaluate its workability and keep it updated to incorporate changing needs and issues not yet addressed by the plan.
13. A **standing committee** for the review of land use proposals shall be created.

# MAJOR LAND AREAS OF CAMPUS

## Introduction: The Clustering Concept

Original spatial arrangement of the campus was driven by the economic, social, and academic benefits of clustering the college's facilities. Engineers and planners discuss the reasoning behind the creation of a campus Core in *The 1972 Report of the Master Planning Team*:

The site was originally heavily forested and still is in large part. Knowing of the enormous clearing and grading required to construct but a single building or a single road, and wishing to be able to get around easily, it was decided to concentrate buildings and functions into a tightly knit core. This objective has resulted in the clearing and grading of one very large land area for the campus Core functions and smaller areas for residence halls.

Because the cleared and graded areas to accommodate buildings, walks, service roads, plazas, and the utility tunnel overlap each other, perhaps 50 percent less clearing and grading has been required than would have been required by a decentralized plan as was originally envisioned. The result is that great areas of the college property that would have been altered are still in a natural state. Economics in grading, clearing, drainage, roads, and other utilities have also been a logical result of the decision to concentrate activities into a tightly knit core (Durham et al. 1972, page 15).

Concentrating facilities onto a relatively small section of the campus land area promotes convenient maneuverability of the central campus by pedestrians and results in increased social interaction across the population of students, faculty and staff. Leaving large blocks of the land undeveloped is useful for campus activities such as ecological studies and recreation; the widest possible range of options for future land use of these areas is also maintained.

Original planners and architects envisioned that this approach to spatial arrangement would create a variety of settings on the campus: "If the plans are carefully developed over the years, one should be able to experience every kind of landscape [on campus] from isolated wilderness-like areas to highly sophisticated urban street-like scenes." (Durham et al. 1972, page 16). The current campus, containing an "urban" Core, "rural" Cluster areas, and large "wilderness" areas, illustrates that this vision is a reality.

The distinctive character of each of the major land areas has been well maintained since the original development of the campus. Since the college opened in 1971, all new construction except the Organic Farmhouse has taken place in the campus Core area. Based on feedback on the Master Plan from the campus community, continuing to limit development to the Core and Cluster areas is a priority for maintaining an inviting and healthy campus; projections for future construction intend to adhere to this pattern without significant intrusion into the Reserves.

However, conflicts of land use do arise and may increase as the college grows. Conflicts exist at the boundaries between major land areas—especially between the developed and undeveloped areas (where it is not clear whether priority should be given to the college's maintenance activities or to the forest ecosystem. Conflicts exist within the major land areas where a wide variety of activities take place; for example, heavy recreational use of a Reserve area can have deleterious impacts on its value as a research area. Finally, it is important to determine what situations would warrant the expansion of the Core or any of the Clusters and where exactly this expansion could take place. Establishment of land use zones on campus could possibly address these ambiguities—a recommendation to charge a DTF with evaluation of this possibility is made in this document.

## Land Area Descriptions

The following descriptions establish the boundaries and the general activities within the three types of major land areas on campus: the Core, Clusters, and Reserves. Specifics regarding the types of land use occurring on campus can be found in the remainder of Chapter 3 following this section.

## The Core

The geographic center of Evergreen's campus functions as an "urban" core where the major academic, administrative, residential, and recreational facilities are located (see [Figure 8](#)). These facilities are clustered on 190 acres of land which is roughly 19 percent of the college property (see [Figure 7](#)). Driftwood Road defines the northern edge of the campus Core; the eastern edge is Overhulse Place; to the south, the Evergreen Parkway and the edge of B Lot define the boundary; to the west, the edge of the Core is a line joining the edge of B Lot and Dogtooth Lane (see [Figure 7](#)).

These boundaries were established in the 1983 Master Plan and they include most of the highly developed areas on campus as well as some undeveloped forest and field areas. Located within the Core are the residential halls, modular housing, the parking lots (excluding F Lot), services and utilities buildings, the athletic field area, the major service roads, and the central Core.

The "central Core" refers to the area of Red Square and the major, multi-use buildings that surround it: the Library, College Activities Building (CAB), Art and Science Laboratories I and II, Seminar Buildings I and II, Lecture Halls, Communications Building, Art Annex, Longhouse, and Recreation Center. It is the "center of the center" for the campus. However, it is important to demarcate the central Core since land use activities are most concentrated in this area. Many of the Master Plan policies and procedures are most applicable to the central Core as well. For example, the procedures given for Policy 3 (regarding a unity of design) all apply to the central Core, whereas only a portion of them apply to other areas of campus.

Further descriptions of the campus Core are found throughout this chapter. The section that follows, Land Use: Developed Areas, focuses mainly on design and activities of the Core with emphasis on the central Core. The last section of Chapter 3, Land Use: Undeveloped Areas, best describes the activities within the unbuilt blocks of the Core. Following the existing pattern of clustering campus facilities, these undeveloped areas within the Core are the most likely sites for future construction on campus. However, this should be discussed further as a part of a land use zoning investigation.

## The Clusters

The major campus facilities outside of the campus Core are located within small groups or Clusters. These areas have a limited amount of land area dedicated to fulfilling specific functions that are best provided outside of the Core. Evolving academic programs and changing institutional needs will occasionally create the need to establish new, modify existing, or alter the usage of Cluster areas and facilities. Since grading and installation of utility services and roadways is very expensive, new Cluster facilities should be constructed remote from the Core only when overriding justification can be developed.

The college maintains three outlying Cluster areas from the campus Core, as indicated on [Figure 7](#). They are the Organic Farm, Geoduck House, and the Maintenance Shops Clusters. The Organic Farm is primarily an academic use area while the Shops is a maintenance and storage facility. In the Geoduck House Cluster, the launch and storage areas are used by the college, but the house itself is currently rented to a grade school.

### The Organic Farm Cluster: Center for Ecological Learning and Living (CELL)

The CELL's mission is to provide students and the broader community with experiential opportunities, linking theory to practice through the development of evolving models of sustainable agriculture practices, ecological design, and holistic living in the Pacific Northwest Bioregion. It is currently made up of six areas: the organic farm fields, the Community Gardens, Demeter's Garden permaculture model, compost facility, farmhouse, and biodiesel generation facility.

The entire Cluster area occupies 24 acres of land, historically known as the Churchman tract, on the west side of the Evergreen campus, east of the corner of Lewis and Simmons Roads. Facilities of this Cluster area include a large farmhouse with a classroom, kitchen, and caretaker's quarters, the farm operations building, and several temporary greenhouses and sheds (refer to Appendix A for more detail). Five acres of the land (two acres of which are Washington State certified organic) are devoted to agricultural areas including a small apple orchard, chicken barn with 3 yards, berry bushes, vegetable crops, medieval medicinal garden, and cutting flowers.

Demeter's Garden (0.6 ac) is student-run model permaculture and outside social gathering area. The biodiesel generation facility has been installed in one of the sheds with attention to safety.

Primary use of the Organic Farm facilities is by the Practice of Sustainable Agriculture academic program; secondary use is by the Ecological Agriculture Program and Natural Products Chemistry (a.k.a. "Alliums") class through Evening-Weekend studies. Food grown at the Farm by the Sustainable Agriculture program participants is sold on campus at a student operated farm stand and to the campus food service. Other classes, such as Secret Garden and Farm to Table use growing space in field bordering Simmons Road in the Community Garden area. Designated research fields for individual student and faculty projects are in the south half of this plot. Community garden plots at the Organic Farm are available for use by members of the college and surrounding community. The Community Gardens hosts a daylong, educational, community Harvest Festival every year in October. The farmhouse is also used for art, literature and Evening-Weekend classes, as well as social events because of the large classroom and kitchen. In 2000, the college removed second-growth Douglas-fir from the front field, next to the road, to create the current space for the Community Garden plots. The earlier location of the Community Gardens, north of the entrance drive, had become too shady for this use; this area is now the site for Demeter's garden.

The Farm complex is managed by the Organic Farm Manager in consultation with the CELL steering committee, known as "Friends of the Farm" (meetings twice a month). Funding for the farm manager position is provided by the Academics Division of the college. Demeter's (through Developing Ecological Agriculture Practices (DEAP) student club) and the Community Garden have part-time student positions paid for by Student Activities.

### **The Geoduck House Cluster**

The Geoduck House Cluster is located on Squaw Point, the northernmost extremity of the college's 3,300 feet of waterfront property. Sunset Beach Drive leads to the Geoduck House from Overhulse Road, providing the only vehicular access to Evergreen's waterfront; a gate across Sunset Beach Drive closes the Cluster area to vehicles between 3:00 pm and 9:00 am. The Geoduck House Cluster occupies approximately 3 acres of the campus property.

The main building in the Cluster was originally used as a small laboratory for marine studies at the college. Marine studies faculty discontinued use of this facility because it was not well suited to academic applications. Currently, the Geoduck House is leased to the Olympia Community School (OCS), a private elementary school, on a year-to-year basis. Remnants of a formally landscaped lawn surround the building with a small parking area on the north side. OCS has installed two playground areas for children.

A boat ramp located in the area is still used by Evergreen's marine study programs and the college stores small boats on the beach periodically. For description of the beach area adjacent to the Geoduck House Cluster, refer to [The Shoreline Reserve](#), below.

Storm damage to the bulkhead that protects the road from erosion was repaired during summer/fall, 1997. The college was asked by Thurston County to improve the bulkhead culvert leading to Synder Creek making it "salmon friendly", but the college did not make any improvements due to time constraints.

### **The Maintenance Shops Cluster**

This maintenance facility is situated on roughly four acres of land about one-thousand feet north of the Evergreen Parkway on Driftwood Road. The yard is operated by Facilities Services. The area houses campus grounds maintenance, shop, and motor pool garage operations in several shop, garage and storage buildings. For further description of the yard's facilities, see [Appendix A](#).

### **The Reserve Areas**

The majority of the land areas outside of the campus Core and Cluster areas are referred to as "Reserve" areas (see [Figure 7](#)). They are designated as "reserves" because current land use of college property allow a wide range of options for future land use of this area, from development to stringent environmental protection. The natural ecosystems are the predominant features of these areas, although human activities have changed the character of ecosystems in almost all parts of the campus—the entire campus was logged at one time or another before the



college purchased the land. Areas such as the meadow north of Driftwood Road were altered more recently during the construction of the college. Nevertheless, this land supports a wide variety of vegetation and wildlife, and has been utilized by academic programs for numerous studies in natural history, field ecology, biology, forestry, hydrology, and marine sciences. The land is also used for recreational purposes.

For the purposes of land use planning discussions, the Reserves are divided into five areas: the East, South, West, North, and Shoreline Reserves ([Figure 7](#)). [Land uses](#) within each of these areas are described later in this chapter. [Ecology](#) of the Reserve areas is described in Chapter 2.

#### **The Shoreline Reserve**

The area designated as the shoreline includes the beach west of the Geoduck House Cluster lawn area. This discussion addresses the area regulated by the Shorelines Management Act of Washington State, RCW 90 .58, which extends 200 feet inland from the ordinary high water mark. This area totals about 27 acres of land.

#### **The East Campus Reserve**

The East Campus Reserve is comprised of all campus property east of Overhulse Place, a thin strip of forest north of Driftwood Road (east of Overhulse Road), and south of the campus core east of McCann Plaza. Three major access roads cut through this area—Driftwood Road, Evergreen Parkway and Overhulse Place—and the largest block of forest is bounded by these roads. The East Campus Reserve encompasses 187 acres. The [Maintenance Shops Cluster](#) is located within this area, off Driftwood Road.

#### **The North Campus Reserve**

The North Campus Reserve includes all college property north of Driftwood Road, between Sunset Drive and Overhulse Road, except for the shoreline. This 189 acre area includes woodlands and meadows. Snyder Creek drains the eastern part of the area; the West End Drainage drains the western part; and a smaller creek, between the two larger streams, ends in a small marine slough at the waterfront. The [Geoduck House Cluster](#) is located adjacent to the northeast corner of the North Campus Reserve.

#### **The West Campus Reserve**

The West Campus Reserve is a 170 acre area located north and west of the Campus Core. The area is divided into three sections by Driftwood, Lewis, and Simmons roads. The Organic Farm Cluster is surrounded by the West Campus Reserve.

#### **The South Campus Reserve**

The South Campus Reserve consists of 214 acres south of the Organic Farm Trail and the campus Core. It is bordered by Simmons Road to the west, McCann Plaza to the northeast, and the college boundaries on the south and east.

## **LAND USE: DEVELOPED AREAS OF CAMPUS**

### **Campus Buildings**

#### **Introduction: A Unity of Design**

After extensive research and visitation to other campuses, the original architectural planning team for Evergreen initiated a campus design that embraced the stated educational vision for the college within the designated land area. The primary goals of the original design were to create a high degree of cross-campus social interaction, emphasize pedestrian and bicycle modes of transportation, limit costs of construction, and protect the land base. Relationships between spaces, continuity of architectural design and parking solutions were also considered. New construction technologies of the period were studied and used for Evergreen: pre-cast concrete, integration of mechanical and electrical facilities with architectural treatment, operation and maintenance factors, and efforts to create flexibility for future change (Durham et al. 1968, page 37). Together these concepts created a unity of design for the new, innovative learning institution.

The unity of design mainly applies to the campus Core, and the central area of the Core most particularly—this area is the major focus for activities on campus and the attention given to its design reflects its importance. Some of the design concepts also apply to the Cluster areas; for example, design quality, the design of interior spaces, and the provision spaces for recreation are consistent elements throughout the developed areas of campus. In contrast, strict orientation axes and use of concrete are not necessary in the Clusters and may even interfere with the "rural" character of these areas (see [Major Land Areas of Campus](#)).

This section addresses components of the campus design including spatial arrangement of buildings, pedestrian malls, plazas, pathways, the architectural treatment, and open space.

## Spatial Arrangement

The overall spatial arrangement of the campus is described in [Major Land Areas of Campus](#). Within the campus Core, the central Core is most heavily concentrated with buildings. This area includes the major facilities of the Library, College Activities Building (CAB), Art and Science Laboratories I and II, Seminar Buildings I and II, Lecture Halls, Communications Building, Art Annex, Longhouse, and Recreation Center. These buildings are arranged around a large pedestrian plaza, popularly known as Red Square, which provides a broad expanse of red brick surrounded by grassy areas with trees and benches. The maximum height of buildings around Red Square is four stories, with the exception of the clocktower. However, no building "appears" to be higher than three stories high from the level of the square because of their second story entrances.

### Relationship of Buildings

The Core is arranged spatially on two major axes (see [Figure 9](#)). The entrance axis points across Red Square through the Library Building toward the Olympic Mountains. The mall axis connects the Recreation Center, the CAB, and the Lab and Lecture Hall Buildings. Two secondary axes parallel the entrance axis and provide logical orientation guidelines for expansion of academic facilities. The entrance and primary axes were originally intended to provide views of the Olympic Mountains to the northwest. However, the current view from campus is of the forest environment that has grown to block the view of the mountains since the college's construction.

The Library and attached clocktower serve as the central landmark for individuals arriving on Red Square from the main drop-off loop known as Charles McCann Plaza.

An interrelationship of special purpose buildings was established to assure that the buildings considered most academically important would have the greatest psychological and visual impact. Hence, the Library is placed on the main axis for maximum visibility upon arrival in the campus Core. The major pedestrian plaza within the Core area creates a unity with the other buildings that are only slightly less important psychologically such as the student center (CAB) and the large group instruction building (Lecture Halls) (Durham et al. 1972, pages 45-46).

While the Library Building is clearly a focal point, the overall arrangement of the major buildings clustered around Red Square creates the epicenter for campus activities. From *The Report of the Master Planning Team*:

Although buildings are arranged one to another by function, it might be said that no single building, by function, is central but rather the space between the Library, Student Activities, Science, Seminar Buildings, and the entrance is the center of campus. That this mall contains the large group instruction building (Lecture Halls) only reinforces this concept. Within this space "all paths cross"—not literally perhaps but in a broad sense (Durham et al. 1972, page 18).

In this way, the emphasis in planning the spatial arrangement of the campus Core area was on the total campus environment, not just isolated buildings.

One of the principle design concepts of this spatial arrangement was that the buildings should be arranged to encourage mixing of various segments of the campus community. From the original master planners in their Phase II studies: "Particular attention has been given to an arrangement of buildings and campus facilities that encourages the greatest possible interaction of students and faculty." (Durham et al. 1972, pages 45-46). Design

of spatial organization and facility size focused on the scale of social interactions. They sought to provide spaces for public and private, formal and informal meetings on both the interior and exterior of the built environment.

### **Plazas and Pedestrian Malls**

The term "plaza" denotes an enclosure of space. With the construction of new buildings, additional plazas with seating areas (indoor and outdoor) were created secondary to the main pedestrian mall, Red Square. Some of the considerations in designing these spaces were: nature and extent of enclosure, scale, size and shape, relation to other spaces, surfacing and enhancement, and satisfaction of functional requirements (Durham et al. 1972, page 18). The effect of creating large and small plazas and malls allows a range from public to private interaction in the main campus plaza.

Red Square functions as the primary pedestrian mall in the campus Core. It is the "town square" where people meet or travel across in their numerous daily activities. Other plazas and malls serve as secondary or smaller scale pedestrian areas on all sides of the square. Concrete paving connects Red Square with these smaller plazas and seating areas and forms a network of pathways extending from the square to surrounding buildings. This arrangement allows for a sense of open space within the "urban" environment (see [Figure 8](#)).

One good example of a major pedestrian mall on campus secondary to Red Square is the College Activities Building (CAB). Contained within this building are food services, the bookstore, ATM cash machines, student offices, and other services. The second/main floor is set as an indoor street cafe with tables, chairs, couches, and formal plantings. It provides a major indoor meeting place for members of the college community. The building itself encloses a very large space and, to a great extent, utilizes natural light.

### **Pathways**

The path network of the campus Core was planned to strict physical and aesthetic standards. Plazas are located in areas of heavy pedestrian concentration or cross-directional movement. One of the main design criteria for campus pathways is ease of circulation (Durham et al. 1969, page 17). Wider walkways accommodate the heaviest pedestrian flows, and corners in these areas have extra width or diagonal cutoffs. Walkway gradients are not steep, and ramps are provided on most pedestrian routes for individuals in wheelchairs. The college follows all ADA requirements for new construction and is assessing where existing pathways need updating for ADA compliance. Pathways are also designed to accommodate service and emergency vehicles in the plaza areas of the campus Core. More information on pedestrian movement in the campus Core can be found in [Circulation](#).

## **Architectural Design**

Most of the buildings of the campus Core—campus center buildings, residential hall cluster Phase I, and the steam plant in the service and utilities area—are similar in architectural design. Some "temporary" structures that are pre-fabricated or modular, such as modular housing, also exist in the Core.

Design and construction of facilities was highly influenced by institutional objectives for interaction with social groups and the environment, as well as the technology and building material of the early 1970s. Some of the important aspects of architectural planning at Evergreen include interior space arrangement, ease of modification and flexibility of spaces, materials and structure, weather protection, and ease of operation and maintenance. This section will describe these design concepts.

### **Materials and Structure**

Nearly all the buildings in the central Core, although designed by different architects, share similar structural and architectural characteristics. Concrete is the predominant structural material. Although building with concrete has high initial costs, continuing maintenance needs are minimal. The concrete must be washed about once every five years, but no significant deterioration of the structure occurs. If the buildings in the campus center had been made out of another material such as wood, for example, initial costs would have been lower but continuing maintenance costs would have been tremendous.

The dominance of concrete allows for continuity in the appearance of the buildings of the central Core. Continuity is also emphasized by expression of the structural frames on both the interior and exterior of all concrete buildings. According to original architects and planners, elements of diversity are provided by a variety

of textural finishes and architectural composition. The varying structural shapes and arrangements of windows and doors help to reflect different campus activities and allow for "...adequate individual expression, avoid monotony, and achieve a unity in environmental expression as the complex develops through the years." (Durham et al. 1969, page 47).

The dominance of concrete as a structural material has been praised by some, while others feel that its grayness serves to intensify the often-cloudy Olympia environment and that the architecture should be more colorful. The team that wrote *The Report of the Master Planning Team* is of the former opinion:

The freedom for design innovation given to each architect has fostered an interesting contrast between buildings without loss of harmony and repose. The result as now measured reinforces the wisdom of the decision to limit exterior materials solely to warm-toned concrete. The Team reaffirms its recommendation that no other exterior materials be used on future buildings in the Core area (Durham et al. 1972, page 2).

Planning efforts continue to follow this recommendation, although exceptions have been made. For example, if a concrete exterior had been compulsory for the addition made to the existing Campus Activities Building in 1990, the cost of the structural upgrade necessary to support the heavy material would have been prohibitive. Construction of the Longhouse, an addition to the campus center in 1994, was guided by the design of a traditional northwest coast longhouse. Olympic Peninsula cedar was chosen as the most appropriate material for this purpose.

All surface materials for the buildings were selected and designed to produce a fifty-year usable life. The buildings are type I and II construction (for more information, see the International Building Code available at Facilities Services). Structural planning concepts also incorporate the influence of mechanical needs. For example, the floor-to-floor heights of the Library conceal massive air conditioning, heating, and communication systems. The total building design also coordinates multiple structural systems solutions evident in the framing, lighting, suspended ceiling, and acoustical dispersion systems (Durham et al. 1969, page 47).

Over the years, there has been advocacy for the use of alternative structural materials and utility systems in campus buildings. The choice of materials for the central Core facilities is somewhat limited if architectural continuity is to be maintained. However, there is room for experimentation in the Cluster areas and in student residences, shops buildings, and other structures outside of the central Core.

### **Interior Space Arrangement**

Architectural design of the interior of buildings can in many ways determine how well the space is used. Planners and architects studied spatial use at other alternative colleges in order to effectively meet the spatial needs of the architectural design for The Evergreen State College.

A major objective of the early planning efforts for all aspects of the campus environment was to encourage the mixing of different segments of the campus population. That objective was met by provisions in the architectural design that created space for classrooms, offices and lounges on each floor of campus buildings. Each academic building also serves different types of academic programs and this also contributes to the mixing of the campus population.

This major objective of promoting mixing of different segments of the campus population was highly visible for a number of years. Recently, faculty and staff offices and lab space have tended to become constant. Specific areas of the campus are currently recognized by the Evergreen community as the domain of specific faculty and their expertise. Some areas are incrementally being re-defined from highly interactive space to partitioned areas for specified and individually-oriented use. While compartmentalization of space has increased ease of accessibility for specific learning needs, the institution's commitment to re-conceptualization of program themes and interdisciplinary learning is less visible on the landscape. Seminar II includes design that is intended to help move away from this compartmentalization trend.

The overall variety of shapes and sizes of interior spaces lends itself well to flexibility. Due to increasing student enrollment and student/teacher ratios, classroom space is currently at maximum use and this flexibility has become all the more crucial. Modification of space (see discussion below), reallocation of space and other modernization strategies should be applied in order to accommodate the growing campus population. Refer to [Modernization](#) for more details.

The small lounges located in campus buildings also provide a more informal atmosphere where seminars or individuals can meet and converse. These areas contain couches and table lamps, and provide relief from the more formal atmosphere of offices and classrooms. These spaces are similar to the numerous outdoor plazas, and serve the same function. These spaces have also become more crowded as the campus population has increased; informal learning spaces are at a premium during classroom hours both during the day and evening programs.

Another feature of campus building interiors is use of natural lighting. Windows containing large panes of glass allow a great deal of light into campus buildings. This light supplements the interior lighting and allows views of the outdoor environment. Although the buildings are oriented to maintain the axes and cluster concepts discussed earlier (see [Relationships of Buildings](#)) and not for maximizing solar radiation, they are designed for efficient use of light from the outdoors.

#### **Ease of Modification and Flexibility of Spaces**

Original design of campus buildings was intended to accommodate changing space needs of the college, inside and out. Interior partitions were removable and re-locatable, to allow changing the sites of rooms. However, re-partitioning rooms often interfered with heating and ventilation. Since the early 1990s, space design has been more rigid to allow for better functioning.

Exterior modifications are also designed into the structure of the buildings. Most buildings are designed to be built in phases, as actual need of more space arises. Therefore new additions on buildings can incorporate new spatial needs, while fitting into the structural integrity of the existing structures.

Most of the furnishings and equipment in the buildings is portable and can be relocated fairly easily. This feature enables rooms to be easily remodeled for different purposes. A good example of this ease of modification is the portable seating units in the Experimental Theater. These can be easily removed and used in smaller pieces or one large unit, allowing freedom of set design for productions in the theater.

#### **Weather Protection**

One of the important architectural concepts of the original Master Plan was to include overhangs and covered walkways by and between buildings. This objective has only been carried out in part in the campus Core area. Overhangs and breezeways attached to buildings are prevalent, but few covered arcades between buildings exist, making it difficult to stay dry when moving around campus in rainy weather (the covered walkways between the buildings of Seminar II are a welcome exception).

#### **Operation and Maintenance Considerations**

Service entrances and loading docks on the basement levels of many of the buildings of the campus plaza provide convenient accesses from peripheral service roads and arterials without disrupting the pedestrian nature of the campus. However, certain vehicles must have access to the central Core—to deliver supplies, collect trash, maintain landscaping and buildings, and meet emergency and security requirements—and the design and maintenance of the paved and brick surfaces should allow for this level of use. Non-essential traffic within the pedestrian areas of the Core should be strictly discouraged (see [The Pedestrian Environment](#)).

#### **Open Spaces**

Many outdoor areas in the campus Core offer respite from the fast-paced daily routine on campus. In a range of sizes and designs, these spaces offer the opportunity for a variety of social interactions and contribute to the overall campus environment aesthetically. The arrangement of space throughout building clusters of the campus Core center is visually important so as not to create a harsh transition from the developed Core to the surrounding forested areas. Open spaces are described here in four categories: buffer zones, fields, plazas and outdoor seating, and green belts.

### **Buffer Zones**

Buffer zones consist mainly of strips and small areas of forest along the fringe of the campus Core. These forested areas for the most part protect the campus Core from visual and audible impact of arterial roadways. This protection strengthens the pedestrian nature of the campus. People can walk through their daily routine without seeing or hearing cars while in most sections of the campus Core.

### **Fields**

Large fields are found north of the Library, west of the seminar building, and behind the Recreation Center. Currently these areas are for the most part cleared of trees and often used for outdoor social gatherings and class meetings when the weather permits. These fields are potential sites for additional academic buildings. The athletic fields in the east campus Core can also be considered open space, but they also serve a more formal purpose than other open areas.

### **Plazas and Outdoor Seating**

Plazas and outdoor seating areas are found amongst the buildings of the campus Core's center. These areas are also mentioned in Plazas and Pedestrian Malls. Many of these areas contain artificial lighting or are oriented to make good use of natural lighting. Benches and other seating arrangements outdoors can be found throughout the campus Core, allowing one to pick and choose a convenient area in which to converse, relax, or study.

### **Green Belts**

Green belts in the campus Core are areas in which formal landscaping gives relief to the structural intensity of the campus plaza. These can be found in Red Square, and among the buildings in the immediate campus plaza. Green belts consist of trees, grass, and plantings that enhance and brighten the buildings they surround. More on the theories and design in landscaping can be found in Landscaping.

### **Aesthetic Considerations**

The aesthetic element of the campus was a major consideration in the design of buildings, pathways and plazas. The continuity of architectural design is visually pleasing, as is the use of open spaces and pathways between buildings. The formal landscaping and the abundance of natural vegetation create an attractive, park-like setting for most areas on campus.

As mentioned in Materials and Structure, some members of the campus community find the concrete structures of the campus Core to be unattractive and "cold". Given the expense, replacing the concrete is not possible, but other steps may be taken to make the Core visually softer and more comfortable. Changes in lighting and furniture, landscaping, and indoor plantings could all enhance the visual environment. Adding installations of public art could also be a major contribution to the aesthetic environment. The 1998 Master Plan calls for further study to determine an overall aesthetic vision for the campus.

### **Design Outside of the Core**

#### **Clusters**

The rural nature of the Cluster areas requires less formal structures, spatial orientation, and landscaping than the "urban" campus Core.

The atmosphere of the Organic Farm Cluster is residential. Wood is the primary structural material with woodstoves for heating. The existing farmhouse replaces a similar structure that existed on the property when the land was purchased by the state. The Geoduck house is a two story residential house constructed prior to the college purchasing. The Maintenance Shops Cluster includes metal, concrete, and wood buildings with the emphasis on function.

#### **Outlying Buildings**

Other buildings on campus outside of the campus Core were constructed prior to the purchase of campus property and thus do not reflect the design concepts associated with other college buildings. Some of these structures are used for specific, limited functions. For example, a small house on Driftwood Road is currently used as storage for Housing. Other structures, such as the Kifer homestead, do not have a designated use and



present maintenance and liability concerns that will need to be addressed (*Space Efficiency Report*, page 15) (See [Appendix A](#) for detailed building descriptions).

## Building List

The following building list was compiled in order to provide a reference for the existing buildings on Evergreen's campus. Further descriptions of the buildings' structure and use can be found in [Appendix A](#). Minor buildings not included in this list are also listed in [Appendix A](#).

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## Campus Core Buildings

### Central Core

#### **Daniel J. Evans Library**

Date of Construction: 1971

Architect: Durham Anderson Freed Architects AIA

Gross Sq. Ft.: 346,969

Usage: Library, Media Services, computer center, classrooms, faculty and staff offices

#### **Large Group Instruction (Lecture Halls)**

Date of Construction: 1971

Architect: Harris Reed & Litzenberger

Gross Sq. Ft.: 23,639

Usage: Lectures and seminars

#### **College Activities Building**

Date of Construction: 1972

Architect: Phase I 1972 Kirk Wallace McKinley AIA & Associates

Phase II 1990 Olson Sundberg Architects

Gross Sq. Ft.: 112,239

Usage: Food services, bookstore, college FM radio station, student activity coordinating offices, bike repair, conference services, classrooms

#### **Science Lab Phase I**

Date of Construction: 1972

Architect: Naramore Bain Brady & Johnson

Gross Sq. Ft.: 85,268

Usage: Science laboratories, classrooms, faculty offices, shop areas

#### **Science Lab Annex**

Date of Construction: 1973

Architect: Phase I 1973 Naramore Bain Brady & Johnson

Phase II 1988 The Miller / Hill Partnership

Phase III 1992 Carlson / Ferrin Architects, P.S.

Gross Sq. Ft.: 27,377

Usage: Art laboratory, art studios, critique room, receiving dock

#### **College Recreation Center**

Date of Construction: 1972

Architect: Phase I 1972 Robert Billsbrough Price FAIA & Associates

Phase II 1987 Cummings Schlatter Associates

Loschky Marquard & Nesholm

Gross Sq. Ft.: 115,680

Usage: Recreation and wellness activities, health services, staff offices, classrooms



**Seminar Building Phase I**

Date of Construction: 1974

Architect: The Bumgardner Partnership

Gross Sq. Ft.: 44,910

Usage: Classrooms, faculty offices, counseling services, Police Services, EF Language School

**Science Lab Phase II**

Date of Construction: 1975

Architect: Naramore Bain Brady &amp; Johnson

Gross Sq. Ft.: 88,176

Usage: Science laboratories, classrooms, faculty offices, shop areas, facilities office

**Communications Lab**

Date of Construction: 1977

Architect: 1977 Walker / McGough / Foltz / Lyerla Addition

1996 Buffalo Design Inc.

Gross Sq. Ft.: 116,298

Usage: Performing arts, classrooms, faculty offices, staff offices

**Longhouse Education and Cultural Center**

Date of Construction: 1995

Architect: Jones and Jones

Gross Sq. Ft.: 12,177

Usage: Native American programs, classrooms, staff office, commercial kitchen

**Seminar Phase II**

Date of Construction: 2004

Architect: Mahlum Architects

Gross Sq. Ft.: 198,775

Usage: Classroom, Evening and Weekend Studies Program, Public Service Centers, faculty offices, staff offices, cafe

**Residences****Student Residences Phase I (A-D)**

Date of Construction: 1971-72

Architect: The Bumgardner Partnership

Gross Sq. Ft.: 108,506 (4 units)

Usage: Student residences, housing office, shop space, academic advising and writing center evening program, laundry, storage, summer guest housing, community social spaces

**Modular Housing**

Date of Construction: 1971

Architect: St. Regis Fabricated Structures

Gross Sq. Ft.: 30,096 (19 units)

Usage: Student residences, family housing, English First (EF) program housing, laundry, community social space

**Student Residences Phase II (E-K)**

Date of Construction: 1987

Architect: Michael and Lakeman AIA

Gross Sq. Ft.: 60,695 (7 units)

Usage: Student residences, summer guest housing

**Student Housing Community Center (HCC)**

Date of Construction: 1987

Architect: Michael and Lakeman AIA

Gross Sq. Ft.: 7,268

Usage: Community center, food service convenience store (Corner Store), laundry, mail room and mail boxes, audio-visual equipment, game room

**Student Residences Phase III (N-U)**

Date of Construction: 1989

Architect: Michael and Lakeman AIA

Gross Sq. Ft.: 62,412 (7 units)

Usage: Student residences, summer guest housing

**Other Buildings in the Core**

**Central Utility Plant**

Date of Construction: 1971

Architect: Bouillon Christofferson & Schairer

Gross Sq. Ft.: 24,912

Usage: Heating and cooling equipment, basketball court

**Covered Recreation Pavilion**

Date of Construction: 1973

Architect: Robert Billsbrough Price FAIA & Associates

Gross Sq. Ft.: 18,559

Usage: Recreational activities, outdoor assemblies

**Buildings in Cluster Areas**

**Organic Farm House**

Date of Construction: 1972

Architect: Jon Collier

Gross Sq. Ft.: 3,478

Usage: Classroom, kitchen, caretaker's apartment

**Shops**

Date of Construction: 1971

Architect: 1971 Bennett & Johnson AIA & Associates

1971 Bennett Johnson Slenes & Smith AIA & Associates

Gross Sq. Ft.: 12,710

Usage: Paint shop, metal/fabrication shop, wood shop, sign shop, storage, offices, meeting room

**Garage**

Date of Construction: 1971

Architect: Bennett & Johnson AIA & Associates

Gross Sq. Ft.: 2,709

Usage: Automotive services, motor pool and mechanics' offices

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## Utilities

### Introduction

This section is intended primarily as a reference for existing utilities on campus. Current proposals and ideas for improvements in utility and control systems are also addressed. However, it is important to recognize that the current placement and type of utilities was in part dictated by the services already in place when the college property was purchased. Major alterations in the type and design of utilities are extremely costly and therefore modifications, then and now, can be expected to occur only rarely.

Steam heat, chilled water cooling, electrical feeders, and communications systems are extended to all campus plaza buildings through a system of utility tunnels shown in [Figure 10](#). Additional water, natural gas, electrical, and sanitary sewer lines are indicated in [Figure 10](#) as well. The dormitory cluster is served by a buried extension from the utility tunnel system.

Two of the campus utilities, water and sanitary sewer, are provided by the City of Olympia based on an agreement made during the initial planning of the college infrastructure. The city continues to be committed to this agreement and asserts that development permitted outside of Evergreen's boundary should not have an affect on the supply or cost of this service.

### Natural Gas

A Puget Sound Energy line runs across the campus Core area beneath the old roadbed of Overhulse Road, just west of the athletic/recreation field. The college currently uses natural gas for science lab equipment, pottery kilns, and steam generation boilers ([steam](#) is used to heat major campus buildings). [Figure 10](#) indicates the location of on-campus gas lines.

### Oil

The boilers in the steam plant can be fired on No. 2 fuel oil in the event that the natural gas supply system is interrupted. This fuel is stored in five double-walled tanks with a combined capacity of 100,000 gallons; the tanks are buried adjacent to the Central Utility Plant.

### Water

In accordance with an August 1969 agreement with the City of Olympia, Evergreen paid a major share of the cost for water main extension to the campus, and paid for a 750,000 gallon reserve capacity at the city's 2,000,000 gallon storage reservoir on Elliot Road. The city continues to be committed to providing the college with the capacity necessary to serve the campus (see [Sanitary Sewer](#), below).

The water system presently serving the college consists of a twelve-inch main along Kaiser and Overhulse Roads, plus the 750,000 gallon reserve storage capacity in the city reservoir. Also included in that initial agreement was a future water main extension along the college's northern boundary just north of Driftwood Road. This extension would provide the college with a reliable service loop. A break in either line would simply cause the closing of that portion of the water main system and allow continued flow along the remainder of the lines. A more recent alternative proposal is to install a new water main from the city's new water supply at Allison Springs, off Delphi Road near Mud Bay. This would similarly provide the college with reliable water service.

The on-site water system was designed as a closed system and designed for 5,000 gallons per minute (gpm) flow at the farthest residential area.

Evergreen has two 1,000,000 gallon ground level storage reservoirs which operate at approximately 80 percent of capacity normally. The interior and weather-exposed exterior surfaces of the reservoirs were stripped and surfaced with epoxy coatings in the summer of 1996. They supply water to the pump station which is fitted with electrically driven pumps for normal operation and diesel-powered pumps for emergency operation. The water system could easily be fitted with an elevated storage tank if needed in the future (Arvid Grant and Associates, Inc. 1980, page II-2). On-campus water lines are shown in [Figure 10](#).

## Sanitary Sewer

Through an agreement with the City of Olympia (discussed in [Water](#), above), the college paid a major portion of the cost of installing the Grass Lake/Percival Creek Interceptor System (that which currently serves the college's sanitary sewer needs). In that agreement, the city contracted to provide sanitary sewage facilities and service to "accept/transmit/treat all sewage received from TESC", with peak sanitary flow not to exceed 6.76 cubic feet per second (cfs), assessed at .007 cfs/acre for 965 acres (Arvid Grant and Associates, Inc. 1980, page 11-7).

College staff have voiced concerns that the growth and development permitted by the City of Olympia surrounding Evergreen could use capacity built for college growth. Staff expressions of these concerns are met with commitments that the college's growth needs will be met by the city.

## Refuse/Recycling Services

The purpose of the Refuse/Recycling program is to collect, sort, and sell recyclable materials from the academic, residential, and service areas of campus. In 2005, mixed paper, cardboard, and metals go to South Sound Steel. Glass and plastic containers are picked up by Pacific Disposal and Recycling. Items not recycled by Pacific Recycling, such as tires, carpet, used engine oil, and scrap metal, are handled by specialized vendors. Materials that are not recycled are disposed of at the Hawks Prairie Transfer Station.

Recycling "SMART" stations are located on each floor of all academic buildings. Centralized recycling stations are located in the courtyard of "A" dorm, in Phase II housing, Phase III housing, MODS housing area, and loading docks of all academic buildings. Waste collection stations are located at the loading docks of all academic building and throughout the housing areas. Campus Refuse/Recycling operations are located in the Maintenance Yard Cluster on Driftwood Road.

The Hawks Prairie landfill closed in 2001 (replaced by the Hawks Prairie Transfer Station, mentioned above) and disposal rates increased. In response, the college began collecting and composting food scraps at the Organic Farm; collection occurs in the basement of the CAB and in the dorms. It is not yet known how much this new program reduces the volume of waste requiring disposal. The college should encourage the increased use of recycled products in new construction and remodeling projects, require contractors and college to recycle construction debris, require vendors to ship materials in recyclable containers or take back their non-recyclable containers, and encourage the purchase of recycled products whenever possible.

## Storm Sewer

Runoff from most of the campus Core is discharged at the main outfall at the head of Snyder Creek which is located on the north side of Driftwood Road just west of campus housing (see [Figure 10](#)). The central Core, recreational fields, Housing, and the Central Utility Plant, an area estimated at fifty-seven acres, all drain to this outfall. The outfall pipe is fitted with a device to meter the discharge; storm surges are retained in the system and discharged gradually to limit erosion damage to the creek bed. The actual maximum discharge is currently unknown. The maximum capacity of the system, above which the outfall would overflow, is also unknown but could be calculated. However, the system does not appear to have failed in the past as no signs of severe erosion damage are apparent.

Water from Parking Lots B and C and the Parkway north of McCann Plaza drains via the large roadside ditch east and into the wetland adjacent to the pump station or, further up, into Green Cove Creek. Runoff from the Evergreen Parkway south of McCann Plaza is retained in a red alder woodland south of the campus Core, before draining into Eld Inlet. Parking Lot F drains northward in a ditch along Overhulse Road, and then east to empty into Snyder Creek below the main outfall mentioned above.

The campus has on-site stormwater retention at Seminar II and at the restricted outfall noted above. Campus runoff has minimal impact on off-campus land since the storm sewer channels nearly all the flow into Eld Inlet. The metering device on the main outfall and the retention in the red alder woodland help to lower peak flows and allow for some infiltration.

Oil-water separators are in place in four locations: the main outfall at Snyder Creek, F Lot, the joint drain for B and C Parking Lots, and the Modular Housing area. In 1997, the separators at B and C Lot and the main outfall were upgraded and a biofilter was added to the system at Modular Housing.

## **Electrical**

Puget Sound Energy provides the college with a power supply of 12.5 kilovolts (kV). An overhead line feeds the campus substation located just south of the Central Utility Plant. An underground cable runs along Overhulse Place and Driftwood Road eventually continuing the overhead utility line north of the campus. Most 12.5 kV feeders on campus are located in the utility tunnel system (see [Figure 10](#)). The most significant exception are the direct bury cables serving Housing. The 1972 Master Planning team recommended that the college generally avoid the installation of direct bury cable in the future (Durham et al. 1972, page 38). The present system can easily support a campus population of five-thousand students, consistent with the current growth plan, while maintaining the redundancy of feeders, as shown in the original construction plans. Loss of redundancy should not be allowed to occur where construction occurs in the future to support substantial enrollment growth.

In 2004, in order to bring “green” energy to campus, students voted to self-impose an annual fee to pay the additional utility cost.

## **Steam and Chilled Water**

Steam is used to heat major campus buildings. High-pressure steam and chilled water are delivered to buildings via piping in the utility tunnel system. Housing is served with steam and condensate pipes which are buried; no chilled water is supplied to Housing. The buried pipes to Housing exit the tunnel at the closest point to the Housing complex. The Modular Housing complex is heated with electricity; there is no steam or chilled water.

The Central Utility Plant contains two 35,000 pound per hour (lb. per hr.) water tube boilers, one 12,000 lb. per hr. boiler, and one 800 ton chiller (R134a). The building is designed to accommodate one additional boiler and two additional chillers. If the heating and cooling equipment were fully installed, this structure is capable of providing heat and air-conditioning to a campus of up to twelve-thousand students (TESC 1979c, page 18).

The college is now exploring abandoning the steam boilers and the associated distribution piping in favor of hot water boilers located in each building.

## **Communications**

### **Telephone System**

AT&T provides telephone connectivity to the college-owned PBX for local service. Long distance service is provided through the Department of Information Services SCAN network. The college's PBX switches incoming and outgoing calls over cabling to all administrative and academic areas on campus. The college's telephone system provides voice mail service (Meridian Mail) as well as twenty-four hour attendant operator service. Telephone tie lines connect the Olympia campus system to the Tacoma branch campus PBX. Qwest currently provides Housing residents' telephone service.

There are thirteen strategically located emergency telephones in blue stanchions on campus. Pressing a button on the emergency telephone connects it to a telephone at Police Services dispatch.

### **Cable Television**

The college has an installed coax cable system that distributes approximately seventy television channels to all major campus buildings, classrooms, and Housing units. A television satellite dish on top of the Library Building down-links a signal that can be inserted into the campus-wide television cable distribution system. Additionally, the system has the capability for inserting up to three local origination television programs into the distribution system.

### **Radio Communications Systems**

Police Services operates a VHF radio communications system for campus security and fire protection services. The system consists of a base station/repeater, mobile radios for Police cars and portable units. Facilities operate

an UHF base station/repeater and portable units for maintenance and custodial coordination. The system also includes an underground radio base station for tunnel operations using radio communications. Parking operates an UHF base station/repeater and portable units for patrol and enforcement purposes. That frequency is also shared by Grounds operations. The college operates on the UHF marine band radios for the Seawulff.

### **Data, Video, and Audio Communications Systems**

The campus data communications network infrastructure connects all of the campus buildings via fiber optics cabling to the Computer machine Room in the Library Building. Copper cabling provides a high-speed data pathway from each building's telecommunications room to data outlets in offices, laboratories, classrooms, and dormitories.

The Evergreen State College is interfaced to the State's K-20 Educational Telecommunications Network. The statewide K-20 Network is an integrated inter-operable, state-of-the-art educational technology network serving kindergarten through higher education. It provides the capability for video conferencing, distance learning, and other lifelong learning opportunities utilizing data, video, graphics, and audio communications in various formats. The college has constructed electronic classrooms providing the capability for video-enhanced instruction and training. This system also has the capability for portable operations from various offices and classrooms for video conferencing and distance learning.

## **Circulation**

### **Introduction**

The vehicle access and circulation system at Evergreen was designed to integrally relate to the patterns of land use developed in the original Master Plans. The planners and engineers designed the campus to be externally oriented to the automobile, but internally oriented to the pedestrian. Roadways linking the campus to the surrounding community provide peripheral access to the campus Core through drop-off loops, parking lots, and service roads. Within the campus Core area, detailed consideration was given to the pedestrian's needs: convenience, ease of movement, weather protection, and isolation from roadways and other vehicular movement.

This section will address the circulation system at Evergreen from two perspectives: internal to the campus and external to the surrounding community. The discussion of circulation given here is mainly philosophical.

### **Internal Circulation**

The uses of the pavement, concrete, and brick surfaces within the campus are the topics for this section. Uses of the college's unpaved paths, found mainly in the Reserve areas, are discussed in [Trail System](#).

### **The Pedestrian Environment**

Original planners designed the internal circulation system of the campus Core to facilitate ease of movement for pedestrians. From the *Master Plan, Phase II*:

The walks, paths, roads, and plazas which will accommodate pedestrian movement on the campus have been studied and planned around a concept which permits walking with ease to and from the various pedestrian generators, while avoiding the creation of a maze of unsightly concrete walkways. (Durham et al, 1969, page 17).

The majority of the campus land area is a pedestrian environment. Through-roads provide access to the campus Core, woodlands, Cluster areas, and waterfront by way of passenger drop-off loops, commuter parking lots, and service entrances. After arriving on campus, most people travel by foot or bicycle, circulating among the campus Core, Clusters, residence areas, and the campus woodlands along roadways, paths, and trails.

Wide walkways radiate from central pedestrian plazas toward outlying buildings and areas. The walkway network design centers plazas in areas of high pedestrian concentration or cross-directional movement and includes other provisions for heavy pedestrian movement in and out of campus. Walkways in the campus Core are fifteen feet wide and made out of concrete, in part to provide adequate emergency and service vehicle access.

Most pathways, with the exception of those in the areas of heavy pedestrian concentration, are curvilinear in design, avoiding a grid-like pattern.

Further from the formal campus plaza, the concrete pathways become fewer and farther spread apart. Outside of the campus Core, all pathways are automobile roadways or trails. Trails lead from the campus Core to the Organic Farm, Geoduck House, the beach, and through many sections of the woods.

Many design features of the circulation system promote ease of movement for the pedestrian. One is the location of main entrances of the major campus buildings around Red Square. Entrances for the Library, the CAB, Seminar II, and the Recreation Center are all on the same level, with bridges connecting them. This design limits the amount of vertical movement necessary to go from one building to another, and provides the most direct access to buildings. Because the main entrances are located on the middle floors of the Library, Seminar II, and the CAB, this design also minimizes the amount of vertical movement necessary once inside the buildings.

In order to facilitate ease of movement for people with disabilities, buildings within the central Core are equipped with automatic doors and elevators. Ramps allow for circulation between buildings and parking lots. The office of Access Services for Students with Disabilities provides tours of barrier-free routes through campus.

Another concern in circulation design was to provide weather protection for pathways around and between campus buildings (see Weather Protection). Most buildings have overhangs and covered breezeway areas around the outside. The only covered walkways between buildings are between the CAB and the Recreation Center and amongst the cluster of buildings in Seminar II.

Two additional design features that help to facilitate ease of movement are lighting of pathways and informational signs. All campus pathways are well lit, and emergency telephones are in several locations within the campus Core (see Police Services). Informational signs label buildings and provide maps that help orient visitors and newcomers on campus. These signs are on kiosks and wooden posts with similar types of lettering. More information regarding the design of the campus Core can be found in Major Land Areas of Campus, and Campus Buildings.

### **Separation of Automobile and Pedestrian Traffic**

Original planners designed circulation systems on campus to provide almost complete separation of automobile and pedestrian traffic. With the exception of service and emergency vehicles, automobiles are intended to penetrate only the edge of the urban Core. Vegetative buffers surrounding the Core visually separate pedestrian areas from roadways so that the only vehicle traffic that can be seen from the central campus is on the main drop-off loop. From the *1969 Master Plan, Phase II*:

A primary requisite has been to protect the campus Core from the intrusion of the automobile. By limiting automobile access to the central Core area and by providing attractive, pleasant, and convenient pedestrian walking routes from vehicular parking areas, this objective has been met. However, there must be provision for access by certain types of vehicles into the central campus. Supplies must be delivered, trash must be collected, lawns and plantings must be maintained, and emergency and security requirements must be met. These special service uses are expected to be strictly regulated and controlled and the campus, to the maximum extent possible, will belong to those who walk. They should not be forced to compete with the automobile for their rightful space in the campus Core (Durham et al, 1969, page 17).

Since the opening of the college, there have been problems with maintaining exclusion of automobiles from the campus Core. Efforts of the parking enforcement staff have resulted in a significant decrease in the number of vehicles in pedestrian areas but some parts of the Core are still often used by vehicle traffic.

The college has a responsibility to address this hazard to the pedestrian environment. The strain of the automobile traffic on brick and concrete surfaces not designed to withstand heavy loads is also a concern (see Operation and Maintenance Considerations). One partial solution is using small, battery-powered vehicles for campus maintenance activities—these electric vehicles are both lighter and generally less offensive to



pedestrians. Facilities Services has already begun replacing their fleet of traditional motor vehicles with electric ones.

### **Internal Bicycle Circulation**

Many people use bicycles to circulate in the campus land area. Bicycle and pedestrian traffic is somewhat intermixed in the campus Core, although original designers attempted to separate it. They foresaw a problem with mixed pedestrian and bicycle traffic on campus pathways:

The number of bicycles on campus has far exceeded expectations. The conflict of movement and repose inherent in uncontrolled use of bicycles on plaza areas will create serious damage to the total campus environment. It is, therefore, urged that order be achieved by regulation. A bicycle ring road can be accomplished giving opportunity for rapid movement around the [central Core] rather than through it. Convenient storage areas should be maintained in order to enforce strict exclusion of vehicles from the Core walls and walkways. Obviously, storage facilities must meet functional demands of weather protection and locking potential. It is hoped that effective facilities meeting student needs will produce appropriate areas of movement varying from one mile to twenty miles per hour (Durham et al, 1972, page 3).

The objectives contained in the quote above have only in part been realized. Bicycle traffic is effectively separated from pedestrian flow where pedestrian pathways contain stairways without bicycle ramps and peripheral pathways are more convenient for bicycle use—an example of this is in the area of heavy pedestrian flow between the Recreation Center and the college residences. However, the spatial arrangement of plazas in the campus Core, especially Red Square, encourages the mixing of bicycles and pedestrians circulating from the walkways and paths that radiate from the plazas.

In 1992, nine new bicycle parking racks (holding ten bikes each) were installed on campus to provide secure and convenient locking locations. The majority of the new racks were placed at the entrance to the first floor of the Library Building and the others were installed at the CAB, Communications Building, between Labs I and II, and the CRC. Each of these locking areas is easily accessible from the ring road routes, encouraging bicycle use of these paths. Bicycle parking racks were also installed with Seminar II construction. For other new bicycle facilities on campus, see [Commute Trip Reduction](#). Many of these storage areas provide weather protection for bicycle parking.

### **Hazards to Circulation**

The following examples illustrate hazards currently existing within the campus. At the corner of Overhulse and Driftwood Roads, bicycles and cars often go through the intersection without stopping, and pedestrians cross these roads frequently walking to and from Cooper's Glen Apartments. This crossing of paths is often dangerous. The lack of shoulder along most of Driftwood Road also allows no separation of bicycle and automobile. Another problem area is along the Evergreen Parkway near the southern campus boundary: a brief interruption in the paved shoulder forces bicycles to share a narrow passage with automobile traffic, directed by a temporary guardrail. In these areas, a separation of automobile roadways from bicycle and pedestrian pathways would help reduce these hazards. The problems at Overhulse and Driftwood and at the south end of the Parkway are scheduled for improvement in the current (2005-2007) biennium.

Other hazards include vehicles within the campus Core (see [Separation of Traffic](#), above), and gravel and debris in bike lanes (encourages cyclists to ride in the roadways).

### **External Circulation to the Surrounding Community**

Primary access to the campus is provided on the Evergreen Parkway through two major points of entry. The main entrance approaches the campus from the south where it connects by an interchange with U.S. 101. The secondary access approaches the campus from the east, where it connects with Cooper Point Road. Other Thurston County roads provide peripheral access to the campus Core, Reserve areas, and Cluster areas (see [Figure 2](#)).

The Parkway provides access to the campus Core at Red Square by a roundabout, a drop-off loop (Charles McCann Plaza), and the two major commuter lots, B and C. Other roadways leading to the western and northern edge of the campus Core connect with the Parkway. Use of the roadways surrounding the campus, the Parkway in particular, has been increasing with the development of new housing in the area urban-zoned area adjacent to the campus. However, traffic studies conducted early in the 2000s indicated that the original four-lane Parkway far exceeded capacity needs, even taking growth of the college and surrounding area into consideration. Therefore, the Parkway was redesigned in 2005 to one lane of motor traffic in each direction. This change will reduce maintenance costs and help to reduce driving speeds on the Parkway. A vegetated buffer separates the main pavement from a paved path for bicycle and pedestrian traffic, improving non-motorized access to the college. Additionally, a sidewalk was installed between Overhulse Place and the main entrance on both sides of the Parkway.

The Parkway continues to be a divided, major artery for vehicles circulating on campus. Other connected intermediate roadways are undivided and designed to bring traffic to other sections of the campus land area. Most roads built for the Evergreen circulation system have 12 ft wide lanes with curbs and gutters on both sides. *The Report of the Master Planning Team, 1972*, discusses other specific design elements of the Parkway:

Design of the Parkway...should approximate a 45 mph arterial. Generous use of curvilinear alignments and long vertical curves will produce a pleasant roadway corridor. Tangents between horizontal curves should be minimized. Concrete curbs and gutters should be provided wherever possible to control drainage, define the roadway, and maintain the structural integrity of the roadway (Durham et al, 1972, page 22).

The generous-sized median strip of the Parkway contains natural and formal landscaping. The more formal landscaping appears around and upon the entranceway area of the Charles McCann Plaza. Generally the landscaped median and edges of the Parkway help to provide a buffer from noise and visual impact of large volumes of fast-moving cars. From the *Master Planning Study, Phase II*:

[The Parkway is] to be designed and constructed so as to take full advantage of the natural terrain and foliage. Although (it) must serve sizable volumes of traffic (it) should have a quiet, drive-like appearance with low speed tolerance, tasteful plantings of center islands and shoulders, and minimum use of signs, markings, or other non-compatible street hardware, consistent with good safety standards (Durham et al, 1969, page 14).

Small service roads penetrate the campus Core from its periphery to provide loading dock access to most of the major buildings of the campus Core. Other secondary drop-off loops provide convenient loading access at the dormitory cluster and the modular housing area. External roadways also provide automobile access to the Organic Farm Cluster on Lewis Road and the Geoduck House Cluster on Overhulse Road.

In summary, the external access system is designed to serve the campus peripherally while influencing the internal pedestrian environment as little as possible. Streets are designed to safely accommodate vehicles entering, circulating about the periphery, parking near, and leaving the campus. These roads are not meant to function as high-speed expressways, but rather as attractive and functional facilities designed to accommodate the internal pedestrian environment, the college community, and the visiting public (Durham et al, 1969, page 14).

### **Commute Trip Reduction**

The great majority of commuters to campus arrive by private automobiles—data from 2004-05 puts Single Occupancy Vehicles (SOV) trips at over 80 percent of arrivals. Bus, bicycle, foot and boat are also employed. The Intercity Transit System (IT) provides bus service to the campus at frequent intervals during the working day, and continues service during the evening and weekends. The original master planning studies spoke of the great desirability of public transportation over individual usage of automobiles, while recognizing the fact that private automobiles are likely to remain the primary mode of transportation to and from Evergreen's campus for the foreseeable future (Durham et al, 1969, page 14).

The Commute Trip Reduction committee has been inactive since 2001, but the CTR program has continued. Commute Trip Reduction supports and promotes carpooling, vanpooling, pedestrian and bicycle commuting, employee subsidies, public transit, telecommuting, commuter ridematching, guaranteed ride home, and alternative and flexible work schedules. The college has developed a quarterly Commuter Contest (it includes and augments the county's spring Bicycle Commuter Contest) for all members of the college community, encouraging them to use transportation alternatives and keep track of mileage. The Thurston Regional Planning Council helped the college obtain state and federal funds to add new bicycle lockers to many buildings on campus, and remaining funds will be used for more lockers and bike racks, subsidizing commuters' helmets and lights, and installing an outdoor hose for tire inflation. There are year-round incentives for permanent staff and faculty such as parking passports (free parking for a limited number of times) for those who commute primarily by alternative means. The Commute Trip Reduction Committee should be reinstated in 2005-6 and will help the college move toward increasing use of alternative transportation in the future.

Evergreen maintains a close working relationship with Intercity Transit that has resulted in expansion of the services it provides. A group of Evergreen students initiated a program for student bus passes in the late 1990s. The first year, funding came from a grant from the Services and Activities Fee Allocation Board. At the end of the one-year demonstration project, the student body overwhelmingly approved continuation of the program, with funding now provided by a new student fee. At this time, students can ride anywhere in the IT system by showing their student identification. The state provides Star passes for permanent and temporary staff, so in effect all members of the Evergreen community can ride the bus for free.

Increased use of these transportation alternatives would reduce automobile traffic; this would correspond to a reduction in environmental degradation due to pollution from high traffic volumes and the cost of roadway/parking lot provision and maintenance while safety for campus pedestrians and bicyclists would increase. Continuation of policies and practices that restrict automobile access to parking areas separated from the central buildings in the campus Core will help maintain a pedestrian environment on campus.

### **Automobile Parking**

Major parking areas on campus are designed to carefully minimize visual impact. Median strips containing vegetation belts of trees and grass separate each row of cars so as to nullify the "sea of cars" effect common in many parking lots. All major parking lots also are encircled by a buffer zone of forest to isolate them from the internal academic area and nearby arterials. The 1972 Master Plan update recommended that future construction of parking lots maintain densities of 75 and 100 cars per acre, and provide adequate plantings within each lot (Durham et al, 1972, page 21). This strategy certainly has the advantage of maintaining visually attractive parking lots.

However, higher density parking allows for less land area under pavement and more efficacious lighting. When increased parking was needed to satisfy the building permit for Seminar II, over 300 spaces were added to B and C parking lots without expanding their boundaries. Some of the new spaces were paved with a pervious paver called "eco block", a strategy that, although expensive, gave the new parking areas an environmental rating. If the creation of additional parking spaces is again necessary to accommodate the growth of the college, the optimum density for parking should be re-visited to ensure a reasonable compromise between ecological and aesthetic considerations.

An automated "pay in display" machine was installed in F Lot in 2000, eliminating side trips to the parking booth for day passes. There are plans to add these machines to B and C lots, further reducing traffic at the parking booth. The only free parking on campus is at the Organic Farm.

Parking spaces designated for people with disabilities are located in all parking areas; Evergreen meets or exceeds codes (mandated by the ADA Accessibility Guidelines) in all aspects of parking facilities. The office of Access Services for Students with Disabilities provides maps of parking facilities and gives tours of barrier-free routes through campus.

### **External Bicycle Circulation**

In outlying areas of the campus, bicycle riders use automobile roadways or multi-use, off street trails. The Evergreen Parkway, rebuilt in 2005, includes bicycle and pedestrian paths in both directions, parallel to the

roadway and separated from motor vehicles with a landscaped buffer. Cyclists may also ride on the Parkway shoulder. To the west, the Parkway connects to Mud Bay Road, which has a bike lane or shoulder. To the east, the Parkway connects to Cooper Point Road which has bike lanes or shoulders.

Most TESC bicyclists travel to or through Olympia's west side. Between Cooper Point and the west side, bicycles typically travel on 28th Avenue and Division Street, both of which have bike lanes. From the west side to the downtown core, the primary arterial street, Harrison Avenue, does not have bicycle facilities; as an alternative to Harrison Avenue, bicyclists typically use low volume neighborhood streets. Recent improvements to the 4<sup>th</sup> and 5<sup>th</sup> Avenue bridges have improved bicycle access from the west side to the downtown core.

Bike lanes are identified for arterial and collector streets in west Olympia either through city construction or the frontage improvements built by private development. Currently, bike lanes are planned for Walnut/14<sup>th</sup> Avenue, West Bay Drive, and Kaiser Road, and these will further enhance bicycle travel to the campus.

The college should encourage the ongoing enhancement of bicycle lanes and trails leading to campus as well as throughout the Olympia area. The college should continue to work with Intercity Transit to make the bike-transit interface convenient, such as increasing the capacity of bike racks on buses and adding bike racks at bus stops. The college should support bicyclists with end-of-trip facilities on campus including showers, clothing lockers, and covered, secure bike parking. A program whereby bike locks, lights, helmets and tire pumps can be loaned for short-term use will support cycling to and from campus. (Sophie Stimson, City of Olympia)

## Modernization

### Introduction

This section addresses topics new to the discussions of the Master Plan: use and maintenance of the college's facilities and infrastructure. Previous editions of the Master Plan were written when Evergreen's facilities were relatively new and maintenance was not a major concern. More recently, however, college buildings and support systems have shown signs of decline that could develop to interfere with the delivery of Evergreen's academic mission. *The Long-Range Plan* (1994) specifically requested that the updated Master Plan should address use and maintenance of facilities in order to provide guidance on these subjects. From the *Long-Range Plan*: "This chapter should recognize first and foremost the interrelationship of the academic teaching/learning philosophy and the importance of well-maintained and preserved buildings and grounds." (page 13).

The majority of campus buildings were constructed in the early seventies and thus are approximately thirty years old. A few small buildings were purchased with the college property and are significantly older. Two major academic buildings, Seminar II and the Longhouse, have been built in the last twenty years; some second and third phase projects and additions have also been constructed relatively recently.

The shells of the original, major buildings on campus were designed for a fifty-year usable life (see [Materials and Structure](#)) and thus are expected to be reliable for another twenty years. However, many of the systems that support the buildings operations—the lighting, temperature control, and plumbing are examples—have an economic life estimated at fifteen to twenty-five years. This life span varies depending on maintenance, changes in technology, institutional goals, and changing programmatic needs. The availability of funds to overhaul or replace a system also plays a part in how long a system will be made to operate.

Maintenance practices up to the present have allowed the campus community to enjoy these facilities for the maximum extent of their intended life span, but deterioration of the systems can be expected to continue. It is possible that corrective maintenance could stretch the life span further. However, applying stop gap measures at this point could ultimately be more resource intensive than undertaking large-scale renewing and remodeling projects. Plus, the facilities were designed to provide for the programmatic needs of the early seventies; renewing and remodeling campus facilities could allow for a much better fit of current space and support needs. In response to these conditions, Facilities Services has developed a Facilities Renewal Plan for modernization. Since 1998, major renovations have taken place to update the support systems in the Library, Lab II, and the Lecture Halls.

## The Concept of Modernization

"Modernization" refers to activities of renewal and adaptation of the existing campus facilities. It includes the full spectrum of maintenance activities, both corrective and preventive, as well as renovations to meet changing needs and renewal of aging support systems. The following definitions, as they are used in this document at least, are provided for additional clarity:

**Renewal:** The combination of corrective and preventive maintenance is referred to as "renewal".

**Corrective Maintenance:** Maintenance in response to small-scale breakdowns. Corrective maintenance tends to be reactionary and generally does not take into account the larger scope of maintenance needs. Most of the maintenance currently taking place at the college is of the corrective type.

**Preventive Maintenance:** Activities that help to avoid or delay equipment failure. This kind of maintenance is also sometimes included in "deferred maintenance" since it can be postponed without immediate crisis. However, if it is neglected, more breakdowns will occur which creates the need for more corrective maintenance.

**Adaptation:** This term refers to a wide scope of activities, ranging from minor remodels to gutting and redesigning mechanical, electrical, and plumbing systems in the interior of an entire building. Adaptation is a strategy for revitalizing support systems and meeting new demands of the Evergreen community within existing structures.

Modernization projects can be driven by the need to update support systems, changing programmatic demands, or a combination of the two. Dialogue between Facilities Services and administrative planning staff at the college allows for renovations and remodels that improve the existing facilities from the stand point of both maintenance requirements and use of the space by the college community.

The vision for future modernization of any facility on campus should take into account all possible strategies to determine which would be the most appropriate use of college resources. The long-term vision for campus facilities should continue to include major modernization efforts at twenty-five year intervals, with less intensive maintenance activities in the interim periods.

Modernization strategies allow the most efficient use of space in existing facilities.

Before specific modernization strategies for the campus can be determined, two other subjects need to be discussed: the minimum operational and structural standards for the college's facilities and the current status of those facilities.

## Operational and Structural Standards

Standards for the construction and maintenance of the campus buildings should reflect the needs of the people who use the facilities.

Setting standards for construction and maintenance of campus facilities should consider input from a variety of staff, students, and faculty. A collaborative effort should result in a set of standards that are likely to suit the majority of the people who use the campus; the colors of paint, types of lighting, temperature controls, air quality and many other characteristics should be comfortable for as many people as possible. However, once an agreement is made on a set of standards, they should not be re-negotiated until the time of the next formal review; continuous updating of standards would interfere with the continuity within the campus environment and would lead to duplication of effort.

Establishing or updating standards should take into account how the current and projected needs of the campus population can best be met by all attributes of campus facilities. Changes in technology over the last twenty-five years should be taken into account as they may allow for higher standards for spaces to be renovated.

Attributes to consider include: space requirements of students, faculty, and staff; energy efficiency; cosmetic appearance; flexibility of interior arrangement and patterns of use; seismic standards; and safety and security needs. The overall order of priority of the various standards also needs to be determined. A few standards, such as structural code, are legal requirements and therefore relatively inflexible, but still should be discussed as a part of the overall scheme. Guidance for determining these standards and their priority is provided by this Master Plan as well as by other sources such as the *Space Efficiency Report*, Indoor Air Quality policy and the *Emergency Operations Plan*.

A charge to Facilities Services to convene an advisory committee to address construction and maintenance standards is a recommendation of this document. This remains a critical step in the modernization process; without standards, the specific goals of modernization projects are difficult to determine.

## Examination of Facilities

Also crucial to the modernization process is examining the patterns of use, the status of the facilities and support systems themselves, and current maintenance practices.

### Facilities Audit

In order for efficient and effective modernization of the campus to occur, systematic evaluation of the current condition of facilities is required. A Housing audit was completed in 1998. The same type of process is underway in 2005 for the rest of campus. Results from the current facilities condition audit will be available in October 2005.

This audit includes operations and maintenance staff working with outside consultants to assess the status of critical systems. Once the audit is complete for a building, the Space Management Committee (or a similar committee) should reconvene to address the findings. The results should be compared to standards set by an advisory committee, as discussed above, to determine where deficiencies exist. Refer to Modernization Strategies, below, for discussion of how to prioritize the upgrades of problem areas.

### Maintenance Practices

An examination of maintenance practices seems an appropriate part of the modernization effort. Important questions to be addressed by Facilities Services include:

- How is maintenance initiated? How is it tracked?
- How can preventive maintenance and adaptation become priorities?
- Is there adequate funding for essential needs?
- Do we have adequate staff to care for college facilities?
- Does the current staff have the skills needed? What training is needed?

## Modernization Strategies

A plan for modernizing the campus facilities and infrastructure must take into account problem areas for both the condition of facilities and the patterns of use within them. As discussed above, these deficiencies can be identified by comparing the results of facilities' audits and the reports on current and projected use of facilities to desired operational and structural standards.

Determining appropriate modernization strategies should consider each deficiency in its larger context—a deficiency may be a symptom of a much larger, systematic problem that should be addressed as a whole. For each problem area it should be determined which course of action would allow the standards to be met with the minimum financial and environmental expenditure.

The scope, and generally the initial expense, of renewal activities increases when the focus moves from corrective to preventive maintenance. However, concentrating on preventive maintenance should substantially reduce the amount of corrective maintenance needed. Similarly, adaptation that involves renovating an entire floor of a building requires much larger scope than minor remodels. However, where systematic problems exist, choosing the large-scale projects can eliminate excessive maintenance activities and inefficient infrastructure while providing for more effective use of space.



Proponents of the modernization effort should establish a flow chart or checklist to aid college planners in choosing and implementing modernization strategies.

## Landscaping

### Introduction

Landscaping and grounds maintenance help provide the college community with an attractive and functional environment. Evergreen's landscaping architecture serves three major functions: to strengthen the relationship between different land and activity areas on campus; to visually enhance the design characteristics of campus buildings and facilities; and to promote general awareness and preservation of the surrounding natural landscape.

The *1969 Master Plan, Phase II* document offers the following statement of Evergreen's landscaping philosophy:

In the organization of space, the landscape development can be the unifying element or the common denominator for areas [that] encompass a group of buildings of diverse but not incompatible design. To ultimately create an atmosphere that is at peace with itself, it is necessary to control the size, proportion, color, texture, and use of contrasting elements that are basic to the organization of spaces. Moreover, the relationship of the landscape to the buildings in a structural environment is of critical importance since the landscape architectural treatment should properly be an extension of the spaces generated by the architectural forms. Within the Core of the campus structure, a landscape will be created which is stimulating to the extent that each individual might be challenged to observe, enjoy, and preserve his environment (Durham et al, 1969, page 21).

Landscaping provides the transition between a variety of settings on campus ranging from relatively unfrequented woodland or swampy areas to the rural character of the Organic Farm, to the highly institutional and urban nature of the center of the campus Core.

### The Forest Fringe

In constructing the main campus Core buildings and central plaza, it was nearly impossible to save the native trees right in these areas. The *1972 Report of the Master Planning Team* states "the resulting visual contrast between the campus Core and the forest around it is severe, dramatic or startling to some, depending upon how they look at it." (Durham et al, 1972, page 15).

The hardness of the forest fringe differs depending upon which direction one travels outward from the campus Core areas; traveling northward from the Library Building or east from the Recreation Center, the formal landscaping continues but is softened by larger areas of plantings, forest, and rolling lawns. Moving further away, the progression continues toward more informal landscaping, and gradually phases out to where the natural character of the campus Reserve areas predominates. This effect was carefully created in the following manner:

At the hard edges where construction meets forest, the decision has been made to mend the "carved out" appearance left by clearing the forest to a line, careful thinning of trees is proposed in order to soften the line and allow the cleared space to penetrate the forest somewhat. This softening will be enhanced in some places where isolated trees or groups of trees are saved within the construction area...New plantings in these areas are of two kinds: first to reinforce and rejuvenate the natural areas; and second, to make a transition between the Core area and the native forest...

Along the edges of the native forest, new plantings to fill in bare areas are intended to match the existing ground cover and therefore are similar materials, predominantly salal, huckleberry, etc. In the areas where grading removed the native trees or where there were none, the new plantings include both natives and exotics that are compatible to them. Therefore, these areas contain new plantings of Douglas-fir, dogwood, maples, honey locust, salal, [and] huckleberry, just to name a few. (Durham et al, 1972, page 17).



## Campus Core

The overall design of the formal landscaping plantings within the campus Core enhance the concepts of spatial allotment, relationship of buildings, pedestrian malls and plazas, and pathways described in [Campus Buildings](#). The landscaping generally remains as a decorative fringe, giving additional contrast to and softening the inherent hardness of major buildings and other constructed facilities. Tree species have been selected which will not tower over these central campus buildings or visually dominate the spaces between them. Views of the surrounding forest are maintained, and walkways enter or depart the various areas within the campus Core through prominent breaks in the vegetative buffers that surround the central campus plaza, the recreation/athletic fields, campus housing, and the utilities/steam plant area.

Landscaping around the campus housing areas, the Steam Plant and utility area, and the water storage facility on the Evergreen Parkway is slightly less formal than that in the campus center, although the emphasis on exotic institutional landscaping species, complementary design characteristics, spatial arrangement, and pathways is very similar.

The 1972 *Report of the Master Planning Team* contains the following explanation of the philosophy underlying the selection of landscaping species used in the campus Core:

It was decided that in the Core area of the campus, the planting palette would not be limited strictly to native plants, but would be expanded to include those trees and shrubs familiar to the Northwest, though exotic, such as: sycamores, other-than-native evergreens, rhododendrons, etc., and flowering shrubs such as crabs, cherries, plums, etc. By widening the palette, plants could be chosen that were commonly associated with, and appropriate to, the kinds of uses and maintenance required of an urban situation. Most if not all of the plants in the (plaza) areas are exotics, therefore (Durham et al, 1972, page 17).

Over the past several years, urban area plantings in the Pacific Northwest have increasingly made use of native plants. Many native species are well suited to formal landscaping require minimal maintenance once established. The college should place emphasis on native species more than has been historically.

Invasive, exotic species such as Scot's broom, English holly and English ivy are inappropriate for landscaping. While these species may be attractive in a formal setting, they quickly spread to invade native habitat, and can displace native vegetation (see [Ecological Restoration](#)). Efforts should be made to remove these species from the campus Core and Clusters whenever possible.

Installation of the Longhouse Ethnobotanical Garden began in 1995. In fall 2002, the Campus Land Use Committee and the faculty endorsed installation of twelve additional teaching gardens on campus. The arboretum plan approved in 2002 is available at the Evergreen library, with the title *Imagine a Greener Future*. Goals for these teaching gardens include: improve the educational value of campus plantings; celebrate cultural diversity; create low maintenance designs; improve wildlife habitat; reduce lawns; and increase inviting places to sit. The gardens are concentrated in the campus Core, with demonstration medicinal herb and permaculture gardens at the Organic Farm. As of fall 2004, the Basket Garden, Demeter Garden, Laurasian Landscape, Medicinal Herb Garden, Native Plant Demonstration Gardens, Post Glacial Forest, Primitive Plant Garden, Prairie Roof Garden, Rain Roof Gardens, and Waterwise Pollinator Garden have all been installed. Many of the gardens were designed and installed by students. Individual plants have been labeled to improve educational value. Several student designed interpretive panels have been installed. A garden of deer-resistant plants is planned for fall 2006. An alumna installed a new plant-themed public art piece in the gardens at Seminar II. More public art is planned for the future.

## Cluster Areas

The lawns, gardens, and other regularly maintained landscaping that surround the buildings and parking areas of the Clusters are generally far less formal in character than that found around the campus plaza area. The landscaping practices in the Clusters enhance the atmosphere of each area in different ways: the Organic Farm has lawns and gardens, and the Geoduck House has a playground and lawn area appropriate to and suggestive of a residential or relaxing atmosphere; the perimeter of the Maintenance Shops Cluster is surrounded by a cleared,

sharply defined and mowed area which helps make nighttime security protection easier. The maintenance practices and landscaping species in these areas differ according to the specific functions they serve and their overall character. Certain species planted around the perimeter of the Organic Farm might not tolerate the intense sunlight around the maintenance compound, for example, and it would not be appropriate to plant landscaping species that require chemical fertilizers in the areas of the Organic Farm.

The unique features of the Evergreen campus are best highlighted and protected in Cluster areas by promoting landscaping which emphasizes native species. This is especially desirable and most practical in areas where construction activities and constructed facilities did not alter or only partially altered the character of the native vegetation. Institutional landscaping species may have desirable characteristics, which make them more practical in some instances, but native species and those with minimal maintenance needs will generally have the least long term economic and environmental cost.

### **Indoor Plantings**

Due to budget reductions, the facilities staff has been unable to maintain the majority of Evergreen's indoor plantings. With the exception of the small greenhouse (vivarium) adjacent to the lobby in Lab I, indoor plantings are now limited to those cared for by individual staff and faculty members on campus. If the maintenance budget does allow for the re-establishment of indoor plantings in the future, species should be chosen for their interest, educational value, and compatibility with the architectural style and indoor environment.

### **Artwork**

Sculptures and prominent artwork displays are often complementary to or visually highlighted by adjacent landscaping. A careful integration of major artwork displays (indoor and out) with campus landscaping is important in order to maintain a visually pleasing environment. Small or sometimes unnoticed artwork such as the nearly hidden ceramic "monsters" near the Lab Annex offer pleasant surprises and should be considered valuable just as are large displays.

### **Roadways and Parking Lots**

Originally, one found formal plantings on the center median directly around the Charles McCann Plaza approach from the Evergreen Parkway to the parking lots and Library Loop. In 2005, construction of the Parkway redesign removed the median in the entranceway and replaced it with a roundabout. The redesign added planter strips on both sides of the Parkway along its entire length, separating motorized and bicycle/pedestrian traffic. Both the roundabout and the planter strips were vegetated with a grass mix for the short term. Plans for long term landscaping in these areas are currently being developed.

The parking lots adjacent to the entrance drive are landscaped in a less formal manner, being broken into separate rows of parking stalls by belts of natural vegetation, lawn, and trees. These greenbelts within the parking area break up the "sea of cars" effect when viewing the parking lots as a whole, and form another step in the transition from the natural to the built environment.

The remainder of the Parkway is largely characterized by native vegetation. Other campus roadsides are characterized by native vegetation that requires little maintenance other than periodic trimming to maintain roadside drainage and good roadway visibility. See [Circulation](#) for more discussion of landscaping in roadway and parking lot areas.

### **Buffering**

Vegetative buffers surround areas of different primary land uses within the campus Core area. These buffers help maintain the pedestrian nature of the area by reducing the passage of sound from surrounding roadways and blocking the view of passing traffic. The buffers also heighten general awareness of the natural character of the campus area, aid recognition and understanding of differences between areas, and emphasize the continuity of design within each. Such buffers should be maintained except in cases where they might serve to isolate important campus functions by undesirably reducing accessibility.

Perimeter buffering serves a slightly different function. The primary objectives in maintaining a vegetative buffer zone around the entire campus boundary are to preserve the site character of the campus and to ensure the highest degree of compatibility with neighboring land uses in the future. Both the understory and overstory vegetation on campus are very dense; a fifty-foot vegetative buffer will, in most cases, insulate the college or its neighbors from the passage of normal noise and nighttime glare from lighting. Wider buffers may be required where academic or Ecological Preserve areas exist near the campus boundary, or where specific local conditions require more extensive buffering. Further discussion on buffers is found in the section on [Open Spaces](#).

### **Chemical Use**

The use of chemical herbicides and insecticides has been minimal in campus landscaping. Some chemical biocide applications were permitted in the original establishment of the landscaped vegetation, but use has not been on going. Historically, any proposed biocide use has required the approval of Environmental Health and Safety Coordinator. Any proposals for chemical use in landscaping must be reviewed by the [Campus Land Use Committee](#) (CLUC). In all cases of chemical use, the least toxic method should be employed.

## **Campus Services and Activities**

### **Introduction**

The continued maintenance of high levels of academic achievement, human health, and institutional efficiency requires the provision of a variety of support services which extends beyond the provision of academic curriculum and instructional facilities. College administration, academic advising, and other institutional functions related to the operation of Evergreen academic programs are beyond the scope of a land use and facilities plan, but the provision of community services, student housing, commercial outlets, social and entertainment space, and recreational opportunities are closely related to facilities and land use planning. These operations are discussed in a series of distinct but interrelated categories.

### **Community Services**

The college cannot provide all community services for the entire campus population. Some services may be more economically and appropriately served by the surrounding community by the City of Olympia and Thurston County. However, the college has an obligation to not create an undue strain on these surrounding community resources by ensuring that community service needs are met to the fullest extent possible. This is particularly true in the case of its on-campus residential population.

Community services should be located and operated in a manner that makes them as visible and accessible to the campus community as possible. This can be achieved in part through maintaining central office locations and in part through directly involving the campus population in their planning and operation. Educational opportunities generated in the provision of these services should be used to the fullest extent possible. For example, the use of student interns by Health Services increases their ability to meet campus community needs while providing educational experiences and enhancing their working relationships with the student population.

### **On-campus Community Services**

Medical and counseling services are provided for enrolled students at the Health and Counseling Centers on campus; the centers are staffed by professionals and student interns. Mail service is available on campus. The campus radio station, KAOS 89.3 FM, is a community radio station operated and programmed by college professionals, students, and volunteers from the Puget Sound area. Child daycare service on campus is also provided. The office of Access Services for Students with Disabilities serves over two-hundred students in accordance with the Americans with Disabilities Act of 1990.

### **Commercial Services**

All members of the campus community need access to numerous commercial services. Some of these needs can be met on campus while others are more appropriately met in the surrounding Olympia area. Facilities on campus are appropriate when their services are needed by the campus community and are not conveniently provided off campus, and when their operation is compatible with other college goals and operations.

Commercial services should primarily serve the campus community. They can also attract members of the surrounding community to Evergreen and, in this way, commercial services could meet a limited range of surrounding community needs and enhance public relations. However, commercial services must be appropriate to the needs of the campus community and consistent with the design concepts of the college.

Centrally located commercial services help to maintain the pedestrian nature of the campus, allowing people to take care of commercial needs quickly and efficiently. Concentrated commercial services also promote mixing of the campus population because students, staff, faculty, and administrators will use one facility that is central to the campus Core. In some cases, remote commercial services designed to appeal to a more limited segment of the campus population are appropriate. For example, The Corner Store is located for the convenience of the on-campus housing residents, but is appropriate since it supplements other campus food services.

Students should be involved in the provision of on-campus commercial services to the fullest extent possible through academic involvement, employment, and consultation. In this way, Evergreen can maximize work-related academic opportunities while providing services that are responsive to student needs. Campus housing residents in particular need to be consulted regularly about commercial service needs, since theirs are much broader than the daily commuter population. Student involvement in the provision of commercial services will help strengthen the cooperative and collaborative living and learning atmosphere at Evergreen, and may help to reduce costs of providing such service.

#### **On-campus Commercial Services**

The College Activities Building (CAB) is the hub of commercial activity on campus. Within the CAB is a cash machine, bookstore, cafeteria, grab-and-go food outlet with café, bicycle repair shop, and postal and food vending machines. Vending machines are provided in many campus buildings around campus. Additional commercial outlets are located in the Housing Community Center, a convenience store called the Corner Store, and in the Seminar II B building, a café called the Sem II Café.

#### **Off-campus Commercial Services**

Off-campus enterprises fulfill the remaining commercial needs of the campus community. Public transportation provides regular access to the west side and downtown Olympia. All students, staff, and faculty with identification can ride Intercity Transit for free.

Considerable concern has been voiced over the relative distance of the campus from the Olympia area commercial services. The prospects for major commercial development in any closer proximity to the college are limited; Cooper Point, zoned as rural-residential (see [Surrounding Land Use](#)), can only develop small-scale commercial services intended for neighborhoods. The nearest commercially zoned real estate is on Mud Bay Road, about two miles south of the campus. One solution to this problem of commercial isolation might be to lease campus property for commercial development on a larger scale than is presently available in the CAB.

### **Campus Housing**

Evergreen provides a variety of living arrangements for its on-campus residential population. Residence halls, modular duplexes, and apartment buildings are all available within the campus Core. For a full description of housing facilities, refer to [Building List](#) and [Appendix A: Building Descriptions](#).

#### **Service Population**

Campus housing primarily serves students; in recent years the campus residents have been predominantly undergraduates, 18-20 years of age, and first or second-year students. A Disappearing Task Force (DTF), charged with recommending the future directions for campus housing, acknowledged the continued importance of serving this cohort. However, the DTF recommended an expanded service population for housing that could include students who are parents, older, and enrolled in the part-time and evening program (1997 Housing DTF Report, page 6). The report also noted the possibilities with a "hostel" type offering for short-term guests (1997 Housing DTF Report, page 5).

Early college planning called for residential facilities to accommodate twenty-five percent of the enrollment (TESC 1979c, page 295). Since the late 1980s, the percentage of enrollment living in housing has been higher

and the recent DTF has affirmed the desire to house almost a third of the growing college population (1997 Housing DTF Report, page 4). Occupancy rates have historically fluctuated from fall to spring quarter, with nearly all on-campus beds occupied during the fall quarter and vacancy rates up to forty percent during the spring (TESC 1979c, page 296). In more recent years this seasonal variation has decreased, and in fact winter quarter occupancy has been close to one-hundred percent for the last two years. Vacancy rates continue to be less than twenty percent in the spring quarter.

### **Provision of Services**

Students are integrally involved in the provision of housing services and this trend should continue. Housing employs many students as custodians, maintenance workers, clerical support staff, resident assistants, and front office assistants. This dynamic encourages a sense of community and offers important opportunities for students to earn and learn outside of the classroom. Complementing the academic mission of the college is a critical goal for housing and reinforced in the DTF report on numerous occasions and a 1997 *External Review Team Report*. Housing has been integrated with academic support services and the writing center through the Prime Time Advisor program.

### **Considerations for Future Housing**

College plans to grow to five-thousand students by the year 2014-2015 will put new demands on housing—both DTF and External Review Team reports have noted this. The DTF was especially specific in recommending new facilities that are tailored to both individual privacy and community gathering (1997 *Housing DTF Report*, page 4). The DTF also recommended consideration be given to what services this larger population will require and the possibilities for expanded retail opportunities within the living community (1997 *Housing DTF Report*, page 8). The External Review Team highlighted the lack of social space and the need to develop more community gathering space (*External Review Team Report*, page 9).

Past consultation with residents and an examination of occupancy rates suggest that the lower density Phase II/III and modular housing complexes are more popular than Phase I. In reference to the modular housing complex, the 1972 *Report of the Master Planning Team* states: "the team strongly urges maximum conservation of land area. This suggests no further use of one story modular units..." (Durham et al, 1972, page 13). The campus architect at the time suggested that the desirability of the modular units may in part be due to their convenience and residential atmosphere, and that these qualities could be designed into residential clusters of higher densities (J. Collier, Interview, 1982). This was done with Phase II/III and these units have proven to be the most popular on campus.

Housing should continue to be constructed only within the campus Core or in Clusters nearby, in order to maintain the cluster concept that has guided all construction activities to date (see [Major Land Areas of Campus](#)). This concentration of campus housing also maintains convenient access to classes or other campus activities. The evaluation of off-campus housing and retail resources should also be a consideration in any effort to plan and construct new campus residences.

Housing has often worked with Facilities Services in planning new construction. In addition, frequent consultation with students in facilities work has led to some creative and effective solutions to problems of limited social space or inadequate community kitchens. This consultation with college planners and the residential community should be continued.

The competing demands of new construction and maintenance/upgrade of existing structures will be the task facing housing planners for many years. A Facilities Audit was completed in 1998 and the recommendations in the audit focus on the need to address deferred and preventive maintenance issues and even longer term major projects such as the replacement of plumbing and roof systems (see [Modernization](#)). And, as the *External Review Team Report* noted, there appears to be an institutional perspective that the operation is in good financial health but there are concerns (i.e. limited repair/replacement resources) that need to be acknowledged (*External Review Team Report*, page 13). At the same time, pressures to keep the cost of attending the college as low as possible will most likely remain a high priority. The result of all these dynamics is the challenge of planning for new construction, maintaining, and upgrading aging existing facilities, maintaining and improving services which support learning and community, and keeping costs to residents as low as possible.

## Safety

### Fire Protection

The college will be consistent with the general practice in the United States to exclude and suppress fire in forested areas. Fire exclusion is necessary to protect the Evergreen community, buildings, and the college's neighbors. Prescribed burning consistent with policies of the United States Forest Service may be necessary at a future date to manage fuel supplies on the forest floor.

Evergreen is located in the McLane Fire District; Station 91 on Mud Bay Road and Station 92 on 36th Avenue are both located within two miles of the campus and respond to all alarms and fire calls at the college. In the event of an actual fire, Station 94 on Cooper Point Road near 58th Avenue and Station 95 at Summit Lake will dispatch vehicles as well. The McLane Fire District has an inter-local agreement with the City of Olympia and this improves fire suppression and emergency services to the college. McLane Fire District is planning to build a new station that includes a City of Olympia training facility. The district and the college have also discussed the possibility of building a station on campus—this would create the highest quality response time for the college and benefit the surrounding community by lowering fire insurance fees. For additional discussion on fire protection see section on [Wild Fires](#).

### Campus Police Services

The Department of Police Services, located in Seminar I, is responsible for law and campus regulation enforcement and public safety on campus. Police officers are sworn and commissioned by the college under provisions of state law pertaining to standards and training requisites for police officers. Officers patrol the residential areas, campus roads, buildings and grounds by vehicle, foot and on bicycle. In addition to crime prevention and detection, the department performs service functions including personal safety escorts, motorist assists, and building access. The department also coordinates a student security patrol and conducts other programs designed to promote personal safety awareness and property theft prevention.

The primary work of Police Services involves community peace-keeping, problem prevention, and conflict resolution. However, officers are responsible for enforcing state, federal and local laws, and college regulations. Violations of the law are usually referred for criminal prosecution. Failure to comply with college rules and regulations is typically assigned to the campus Grievance Officer.

Thirteen emergency telephones have been installed in locations around the campus to provide improved access to Police Services twenty-four hours a day.

## Social Space and Entertainment

Although Evergreen is primarily an academic institution, the campus also serves as a social environment for those who work and live on campus. Since Evergreen is relatively isolated, it is especially important that the college pay special attention to the provision of social activities. The campus should provide space for a range of social activities ranging from formal to informal and public to private. Spatial patterns of building locations, interior spaces, landscaping, plazas, and pathways encourage informal social interaction. Campus design should allow people who would not ordinarily interact to mix, simply because their pathways cross ([Spatial Arrangement](#) and [Architectural Design](#)). Within the context of overall social mixing, the college shall allow for the development of various ethnic, cultural, and academic centers.

As intended, the plazas and lounges on campus are primary areas for informal social interactions. Outdoor smoking shelters are also places of informal social gatherings. Formal social events such as films, lectures, small and large-scale performances, and meetings continue to take place on a regular basis in the theaters, gymnasium, plazas, offices, and classrooms on campus. While there are a variety of venues on campus for these activities, more are needed to meet the demand of the current college population. There has been a dramatic increase in student enrollment, new emerging student populations (e.g. evening/weekend and graduate student programs), and greater use by off campus entities over the past ten years. During this same period various activities have further limited access to performance and social space; for example, the Recital Hall and the Experimental Theater are rarely available for nonacademic use, Library 4300 has become the home for units in transition, and the basketball program limits access to the gym for large stage events. Future planning should consider social and entertainment space as a priority.



To encourage interaction with the surrounding community, it is important to maintain public access to on-campus social facilities. Cultural and ethnic centers on campus could become an important community asset for Olympia, and help link Evergreen to the surrounding community. However, open access to the social areas in the student residences has led to vandalism and other problems in the past. Clearly, the degree of public access maintained, and the extent to which Evergreen should strive to meet surrounding community needs for specific services not directly related to education, are issues where considerations differ with each particular situation.

### **Recreation, Wellness, and Athletics**

A healthy community needs opportunities for both formal and informal recreation. The dual mission of Evergreen's Athletics & Recreation Department is to provide a wide variety of recreational and leisure opportunities for the Evergreen community and to provide opportunities for students to compete at the intercollegiate level in a variety of sports.

Formal and informal recreation activities are encouraged. The service population of Evergreen's athletic and recreational facilities includes members of the surrounding community and students of neighboring colleges in addition to Evergreen students, staff, and faculty.

Evergreen's recreational facilities are located on roughly twenty-five acres of the campus Core and include the Recreation Center, the covered Recreation Pavilion, tennis courts and four playing fields. These facilities provide opportunities for swimming, racquetball, saunas, weight lifting, dance, martial arts, rock-climbing practice, soccer and other field sports, basketball, and tennis. Activities in these areas range from formal classes and sporting events to casual use of the facilities for personal recreation. For description of the College Recreation Center, refer to [Appendix A](#).

The undeveloped areas on campus provide a setting for many types of informal recreational activities such as walking, bicycling, bird watching, etc. Campus roads and pathways are used for jogging and organized competitive running. The waterfront offers additional opportunities for recreational activities. Swimming, sunbathing, and other casual recreational activities take place on the campus waterfront. Kayaking, rafting, and canoeing programs emanate from the College Recreation Center.

Early campus planning directed that Evergreen would emphasize club and recreational programs. In 1979, the college began to develop intercollegiate athletics which included soccer, swimming, cross-country running, track and field, tennis, and sailing. These activities persisted until 1986 when all but soccer and swimming were eliminated in accordance with the recommendations outlined in the Strategic Plan of 1985-86. These two sports have prospered programmatically as affiliates of the National Intercollegiate Athletic Association (NAIA) since 1979. Since that time, men's and women's basketball have been added along with men's and women's cross country and women's volleyball. A small track and field program has been reinstituted. Swimming has been dropped. Although the college briefly held dual affiliation with both the NAIA and NCAA Division III, that ended in 2001. All college teams are now fully committed to the NAIA and the Cascade Collegiate Conference. Outside of the intercollegiate program, club sports exist in crew, baseball and martial arts. The crew program has been quite successful and shares a new boathouse at Swantown Marina with Olympia Area Rowing and the City of Olympia.

Public access to Evergreen's athletic and recreational facilities is important in maintaining good public relations and helps the college to meet surrounding community needs for such facilities. On a contractual basis, the college should maintain specific access privileges for other schools or state institutions in need of Evergreen's recreational facilities. This has taken the form of drop in use by students of South Puget Sound Community College and Saint Martin's University as well as use of the college's fields and gym by the University of Washington for pre-season football and basketball practices. However, this will not interfere with the priority of campus program needs; such public access should be provided with an eye toward assuring that it balances with Evergreen's own program needs. Access to facilities not available on campus may be found in the surrounding community or by contracting with other schools and community groups.

Evergreen's athletic and recreational programs are continuously evolving. Flexible and multiuse facilities, which serve many purposes or can be easily modified for different purposes, are needed. Siting and design must also



promote convenient access. With the expanding enrollment of the college expected in the next several years (2005-2010), the addition of sports and expansion of recreational offerings is anticipated, along with the renovation of existing facilities and the likely creation of added facilities.

## LAND USE: UNDEVELOPED AREAS OF CAMPUS

### Introduction

Over 700 acres of the 1,008 campus have been left undeveloped since the founding of the college. The majority of this area falls within the campus Reserves (also see Figure 7) with smaller blocks of forest and fields within the campus Core. The entire campus was logged at one time or another before the college purchased the land (some detail of logging history available in Campus Forest Habitat subsections). Nevertheless, the undeveloped areas currently support a wide variety of vegetation and wildlife. Descriptions of the forest, meadow, and shoreline habitat on campus can be found in Chapter 2.

The undeveloped land area, especially the Reserves, is used by academic programs for activities and the subject of research. In addition, this land is frequently used for recreational purposes by both the college community and members of the surrounding community. The intensity of activity within the Reserves has increased along with the college population and observations suggest that some habitats are being degraded by this heavy use.

This section outlines the current and possible land uses within the undeveloped lands of the campus, again focusing on the Reserve areas. Additionally, the current and possible future land use will be discussed specific to the five Reserve areas designated for the purposes of discussion: the Shoreline, the East Campus Reserve, the North Campus Reserve, the West Campus Reserve, and the South Campus Reserve. These same divisions are used in the description of the campus ecology in Chapter 2.

### A Note on Zoning

Many of the activities that occur (or may occur in the future) on the college's undeveloped land have the potential to interfere with or exclude one another. For example, large-scale public use could interfere with designation of Ecological Preserve areas or long-term research projects could be terminated if an area was ultimately developed for college facilities. Other activities, such as management to preserve the natural resources, should apply to the entire area, but certain areas could be given priority. Zoning for these different activities may alleviate land use conflicts and facilitate efficient management of college land. The recommendation to investigate the zoning of campus land is given in the 1998 Master Plan.

Zoning of the Reserve areas should consider academic use as the priority. Academic purposes include building new academic facilities as well as preserving and maintaining the ecological laboratory for study and research. The college community's enjoyment of and attachment to Evergreen's undeveloped land should also be a major consideration.

## Types of Land Use

### Academic use

Almost every area of the undeveloped campus has been the subject of some sort of academic project or activity at one time or another. For examples of various academic land uses, refer to Types of Land Use Proposals. Many student reports are compiled in the Resource and Land Use Inventory database. For many years there has been interest in establishing a set of permanent forest plots on campus for use by programs and classes. In 2005, faculty members have a preliminary plan for locating plots spread throughout the Reserve areas. Location and design of the plots would facilitate study of specific ecological players and the long term, general condition of Evergreen's forests.

The varying impacts associated with the different types of academic use have important ramifications in land use planning. Since observational uses have minimal impact on the environment, they can safely occur anywhere on

campus although off-trail travel should be limited. Manipulative ecological research and environmental education uses need to be carefully located so as not to destroy Ecological Preserves (see below) or to conflict with other ecological studies or land uses. Plans for manipulative land use must be reviewed by the Campus Land Use Committee (CLUC) (see [Types of Land Use Proposals](#)); notification to the CLUC is requested for non-manipulative academic uses.

## Ecological Preserve

The 1983 *Master Plan* proposed specific Ecological Preserve areas within the campus Reserves in order to preserve the native quality of certain sites. From the 1983 Plan:

Ecological Preserves are areas set aside because of their unique natural ecosystems or environmental features. They should include environmentally sensitive areas, [areas] with slopes over 15 percent, unique plant communities, critical wildlife habitats, marshes and wetlands, and anadromous fish rearing habitats. These areas are often unsuitable for development because they are fragile and valuable elements of the campus environment and extremely risky and costly sites for development.

The Master Plan proposes specific areas of the campus be set aside as permanent Ecological Preserves. Use of these areas would be limited to observational ecological study and light recreation. Light recreation is considered to be such activities as walking, bird watching, or other low impact activities.

According to the 1983 Plan, Ecological Preserve areas should include the entire drainage of the small stream leading to the west end of the waterfront (the West Side Drainage), the shoreline and adjacent bluffs, and 200 foot buffer zones along shorelines and major streams. Another Ecological Preserve area is the marshy meadow north of the Evergreen Parkway between the Kaiser Road and Overhulse Road. The drainage in the southwest corner of campus property would also be preserved with a buffer. See [Figure 11](#) for a map of the boundaries.

It is not clear whether the criteria listed for designating an Ecological Preserve is still appropriate or comprehensive. In addition, while excluding development from these areas seems relatively simple to carry out, limiting recreational and academic activities would be much more difficult to enforce (although formation of the CLUC could make it possible). If restrictions are deemed necessary, discussion should address whether or not cycling (mountain biking) and off-trail travel should be considered as high or low-impact activities. Re-evaluation of the delineation and status of Ecological Preserves should be addressed as a part of the [Zoning Disappearing Task Force](#).

## Recreation

### College Community

Recreational uses of Reserve areas include jogging, hiking, mountain biking, swimming, sunbathing, and group gatherings. Presently, the North Campus Reserve experiences the heaviest concentration of recreational use.

Recreational use needs to be carefully coordinated with other land uses. Heavy recreational use can destroy environmentally sensitive areas or Ecological Preserve areas where delicate ecological processes occur. The marine marsh at the campus shoreline, a delicate and unique estuary that has been the subject of many ecological studies, has been impacted by heavy pedestrian traffic. This example illustrates the need to identify and protect resources such as the marine marsh so they can be preserved for future study and appreciation (see [Management: Protection of Natural Resources](#), below).

Ideas for future recreational land uses include jogging trails, interpretive nature trails, and recreational camping areas. Construction of these types of installations should be sited in areas where they would be easily accessible and widely used, but not degrading to valuable ecological resources that are used for academic study. A solution to the separation of recreational use from academic is to designate specific and limited recreational areas, trails, and zones, using signs to define these areas. Major recreational facilities should be concentrated within existing Core and Cluster areas.

### Surrounding Community (Public Access)

The undeveloped areas of the college campus offer recreational opportunities to the surrounding community.

People come to Evergreen to enjoy the woodlands, nature trails, and waterfront. Currently, the college has no formal policy concerning public access to campus Reserve lands.

Population growth in Thurston County, and more specifically on the west side of Olympia, may at some point force the college to develop a policy concerning public access and use of undisturbed natural areas: forests, meadows, and shorelines. Public (as well as campus community) access to research areas, Ecological Preserves, and environmentally sensitive areas needs to be controlled in order to maintain the natural integrity of these areas.

Substantial changes have occurred since 1996 on property lying to the north of the East Campus Reserve. Land adjoining the college boundary has been developed into urban residential houses and apartments (see Current Growth and Development in Chapter 2). The residents of the new development have easy access to the Reserve and will surely see the campus as an extension of their backyards. More children, pets and perhaps yard and household waste have shown up on the north border of the East Campus Reserve. In general, the college has seen increased recreational and "incidental" use of Evergreen's existing trails as well as the development of new ones.

If a public access policy were to be developed, the college should keep in mind its educational objectives and the need to maintain good relations with the surrounding community. Should it become necessary to limit public access, it may be feasible to concentrate public activity in a developed interpretive area or arboretum, thus providing informal public education while controlling impacts on other parts of the campus.

## **Habitation**

Campers and squatters have long been unofficial residents of the forested areas of the college campus. This has been a reality despite the fact that Evergreen's Habitation Policy prohibits overnight habitation by any persons in any part of campus with the exception of the facilities provided by the college specifically for that purpose (WAC 174-136-040). Evergreen students who camp in the forest surrounding the college are "at risk of running afoul of the college Grievance Procedure and, potentially, violating criminal statutes" (Huntsberry, 1997). The relative isolation of campers also makes them vulnerable to criminal activity. It is reasonable to assume that some inhabitants may be instigators of crime as well.

Human habitation in Evergreen's forests results in garbage dumps, damaged vegetation, increased soil erosion, and wildlife habitat degradation. Direct interactions between campers and wildlife can also result in changes in animal behavior. Accumulations of body and solid waste can have several negative affects, including a reduction in water quality. Smoke pollution from campfires and the risk of fires becoming out of control are additional negative impacts. Overall, informal camping in the Reserve areas detracts from the ecological integrity and beauty of the forest areas.

Prohibition of forest habitation has been a long-standing college policy; it is now generally enforced, and has been since campus police officers became armed.

## **Management: Safety Considerations**

### **Wild Fires**

It is college policy to exclude or suppress wild fires in wooded areas in order to protect people and property on and surrounding campus. However, without fire, woody debris accumulates and gradually changes the environment with resulting impacts to ecosystems. The accumulation also can become a dangerous fire hazard in itself. Prescribed burning consistent with policies of the United States Forest Service may be necessary at a future date to manage fuel supplies on the forest floor and may also allow for rejuvenation of ecosystems on campus. In addition, removal of fuel from areas adjacent to paved areas, including fire lanes, may be needed. For additional discussion, refer to Safety.

### **Snags**

Removal of snags (standing dead trees) may occasionally be necessary when an individual snag presents an obvious threat to safety. Snags do offer wildlife habitat and are considered by many to be attractive in and around even the developed portions of the campus.

## **Management: Protection of Natural Resources**

### **Impacts to the Undeveloped Lands**

As the population of the college and the surrounding area has grown, the Reserve areas have reflected the impacts of more and more people exploring and enjoying the forest, meadow, and shoreline habitat on Evergreen's land. Thus, protection of the natural resources of the Reserve areas has increasingly become a concern. Many factors should be considered as contributing to the impacts on Reserve land, including

- unlimited public access
- human habitation in the campus woods
- invasion of exotic plants
- management for safety considerations
- academic uses
- recreation

There are many viable approaches to protecting the natural resources of the Reserve areas and more than one tactic should be employed for the best results. Establishment of a resource and land use inventory, protective maintenance, and environmental regulations pertaining to campus lands are discussed as possible components of the effort to protect Evergreen's natural resources. Establishing land use zones could also serve to protect the natural resources of specific areas. Historically, academic programs have had minimal involvement with initiating or implementing management activities in the Reserve areas, but this should become a focus in the future.

### **Resource and Land Use Inventory**

Implementing a recommendation of the 1998 Master Plan, a member of the faculty developed a Resource and Land Use Inventory. He compiled ecological studies of the campus into a searchable database. The database is not yet complete, but every year of the college is represented; it is a random sampling of projects based on what faculty had available in electronic form. The Resource and Land Use Inventory is housed on a server in the Computer Applications Lab, and is available anywhere on campus to a user logged onto the network (<http://kokanee/eludb/>). There is a link to the database on the CLUC homepage under the name "Campus Land Use Projects and Reports database". The database is not available outside of the campus network.

In its present form, the inventory is already a valuable resource for land use planning—it documents the academic usefulness of the Reserve areas, may help locate ecologically sensitive or unique areas, and directs future activities to the most appropriate location. It also can provide inspiration for further academic study. If it becomes a more comprehensive compilation of academic studies, its effectiveness will increase, although how to assess data integrity should be addressed (are there any studies that should not be included because they were unfinished or of poor science?). Adding land use reports from staff could also be valuable. However, the most important improvement to the database would be to add a map component. Currently, the database includes written geographical information; the goal is to attach a geographic reference point to each study that could be displayed on a map.

### **Protective Maintenance**

Sometimes it is necessary to alter some areas in order to protect them from destruction by natural forces or human activities. The college should carefully administer this type of maintenance as such activities may also bring about additional and unforeseen problems. Any protective maintenance involving even minor construction should be approved by the CLUC or other body responsible for environmental protection.

Two types of protective maintenance may become increasingly crucial to maintaining the health of the Reserve areas: maintaining the trail system and ecological restoration or enhancement of degraded areas.

### **Trail System**

As the academic and recreational use of the Reserve areas has increased, the system of trails has expanded. In the early 2000s, the trail system was in poor shape: many unimproved foot paths exist throughout the Reserve areas including innumerable short segments that had no clear destination and contributed to the overall impact to the native habitat. Particularly in the North Campus Reserve, the most popular area for recreation, trails were

widening and becoming “braided” due to avoidance of poorly drained, muddy areas. Mountain bike riding on the forest trails also was a significant contributor to both the deterioration of the trail tread and the creation of new trails.

In the early 2000s, a student completed an inventory and mapping project of Evergreen’s trail system. He then created a trail rehabilitation program and maintenance plan that were approved by the Campus Land Use Committee and adopted by Facilities Services. Facilities Services hired the student as a temporary employee to implement the rehabilitation plan, and several improvement projects were completed in the fall of 2002, using in-house labor. On the most popular trail to the beach, they replaced the boardwalk and bridge over Snyder Creek, installed turnpike (raised trail tread filled with crushed gravel) in muddy sections, and installed water bars in sloping areas to direct water off the trail. On an alternate route, they built a new bridge over Snyder Creek where pedestrians, dogs, and bikes had been fording the stream. On Barking Dog Creek trail—another sloping trail to the beach—they installed water bars. As they improved the sanctioned trails, entrances to side trails and braided sections were blocked with debris and plantings.

Maps of the trail system were placed at all major trailheads. Small plastic signs at key locations along the trails were numbered corresponding to numbers on the maps. However, trail users apparently rejected the plastic signs; many were removed while others were intentionally covered with plant matter. A different strategy for on-trail signage is clearly needed. Since 2002, the trailhead maps have been damaged by water and graffiti and are becoming ugly and unreadable; replacing the maps with enamel versions is under consideration.

The improvements have made a significant difference to the durability and walkability of these trails. Since the plan’s author graduated and moved on, the focus has moved from improvement projects to maintenance. Facilities Services regularly removes downed trees from the trail, and cleans water bars and the gravel trail tread, activities that will extend the life of existing trail structures. It is likely that continued and increasing heavy use of campus trail will necessitate more improvement projects in the future. These improvements and other management activities should take into account:

- policy for off-trail use
- restrictions for ecologically sensitive areas (Ecological Preserves, if established)
- policy for public access
- policy for mountain bike use
- allowance for possible future expansion of the campus Core, Clusters, and housing; changes in recreational use; and possible long-term forest management studies

### **Ecological Restoration**

Various techniques of ecological restoration should be applied to many situations on Evergreen’s Reserve lands. Development of a formal trail system should be accompanied by revegetation of closed trail segments. Enhancement activities, such as planting climax or relatively rare native species in certain areas, would provide excellent opportunities for ecological study while adding diversity to campus habitat. Creation of an artificial wetland is another restoration project with academic potential (see [Future Land Use of the East Campus](#)).

Removal of invasive, exotic plant species should be a major, ongoing restoration activity in the Reserves as well as other areas of campus. The invasion of exotics is beginning to have an obvious impact to the vegetation communities in several areas on campus and this threatens a valuable academic resource. While it is probably impossible to entirely eradicate invasive species, efforts should be made to keep them under control. Also, since invasive species tend to flourish in disturbed areas, protecting native habitat from negative impacts such as overuse will aid in slowing their spread. Application of ecological restoration theory on campus should be considered as a part of both academic and land use planning. These activities directly benefit the health of the ecological laboratory and provide invaluable educational experiences for the students involved in any part of the process.

### **Regulations - General**

The regulations found in county code are intended to protect natural resources from the potential damage of poorly planned development. All development at the college should comply with these regulations. The Campus

Land Use Committee (CLUC) provides guidance for compliance appropriate to a land use proposal. A brief overview of the permitting process is given here.

Development of any facility requires a Special Use Permit. Application for a Permit includes an environmental checklist, the results of which are considered by the SEPA review process. SEPA review considers the environmental regulations applicable to the project: the Critical Areas Ordinance applies to wetlands, steep slopes, critical wildlife habitat, and geologically hazardous areas; the Shoreline Master Program (see following section) takes into account all land within 200 ft of mean high water. Applications for major expansion of existing facilities or construction of a new facility will probably require public review of the application. Minor construction projects will be reviewed administratively by Thurston County.

### **Regulations - Shoreline**

Use of the shoreline 200 feet inland from the ordinary high water mark (OHWM) is regulated by The Shorelines Management Act of 1971. The *Thurston Regional Shoreline Master Program*, the document for regulation of specific shoreline uses in Thurston County as part of the Shorelines Management Act, designates Evergreen's 3300 feet of waterfront as a "Conservancy Environment". This designation is based on "the degree of man's intrusion into the shoreline and the degree of uniqueness of the shoreline." (*Thurston Regional Shoreline Master Program*, 1990, page 28). The Shoreline Master Program defines the conservancy designation as follows:

Definition. The "Conservancy Environment" designates shoreline areas for the protection, conservation and management of existing valuable natural resources and historic and cultural areas. This environment is characterized by low-intensity land use and moderate-intensity water use with moderate to little visual evidence of permanent structures and occupancy. Sustained management of the pastoral, aquatic and forest resources, as well as rigidly controlled utilization of nonrenewable and other nonmineral resources which do not result in long-term irreversible impacts on the natural character of the environment are permitted. Intensity of recreation and public access may be limited by the capacity of the environment for sustained recreational use. (*Thurston Regional Shoreline Master Program*, 1990, page 28).

The Shoreline Master Program contains guidelines for the educational, research, and recreational uses of the shorelines; these are the heaviest uses of the beach at Evergreen. The Thurston Regional Planning Council (TRPC) prepared the document, and continues to play a coordinating role for all the local jurisdictions which have adopted common goals, policies and development regulations for shorelines.

No major changes have been made to the Master Program regulations since 1990, and Thurston County is not scheduled for an update to the program until 2011. However, there are some new efforts that potentially affect restoration and preservation of Thurston County's shorelines. One is the update to the Critical Areas Ordinance; the current proposal includes adding a marine shoreline designation that would address a 200 ft wide strip of marine habitat (draft regulations can be found at [http://www.co.thurston.wa.us/permitting/Critical\\_Areas/critical\\_areas\\_home.htm](http://www.co.thurston.wa.us/permitting/Critical_Areas/critical_areas_home.htm)) (these regulations also affect streams on campus). Another is the *Marine Shoreline Sediment Survey and Assessment - Thurston County, Washington* (<http://www.trpc.org/programs/environment/water/nearshore.htm>), completed in 2005, which documented current beach conditions that affect forage fish spawning. This survey found four landslide locations on the Evergreen shoreline. Finally, a plan to reclassify stream drainages on Cooper Point has been funded as a part of the WRIA (Water Resource Inventory Area) 13 Watershed Management Project's effort to assess and restore fish habitat in Thurston County. Streams within Evergreen's campus will be included in the surveys (Steve Morrison, Thurston Regional Planning Council, interview 2005).

### **Future Development**

Certain areas of the Reserve lands may provide sites for future development of additional academic structures and campus facilities that cannot be contained in the Core or existing Clusters. Major considerations for the siting of these areas are construction costs of siting and grading, availability of utility hookups, access to roadways, and environmental and social impacts. While these types of long-range plans can be zoned so that specific areas are set aside for future growth, uses in the interim period could be any type of ecological research or recreation. It would not be suitable to establish Ecological Preserves in future development areas, since they



could eventually be drastically altered. Future development areas may provide ideal sites for short-term manipulative studies or other land use that alters the character of the environment temporarily.

## The Reserve Areas

Ecological descriptions of the Reserve areas are provided in Chapter 2. Refer to Figure 7 for Reserve area boundaries. Land uses within each Reserve area are presented here.

### Shoreline Reserve

The college has not altered the character of the shoreline west of the Geoduck House since it bought the land. The undeveloped portion of the shoreline provides an ideal setting for college academic studies and recreational activities. It also maintains a habitat for a wide variety of birds and animals.

Many student projects have researched the various physical and biological features of this area. Several studies have addressed the small marine slough on the waterfront and found it to be extremely vulnerable to human impact. The soft sand surrounding the slough make it an attractive site for recreation, potentially damaging the unique habitat. Other studies have addressed the bluffs and the two large drainages that terminate on Evergreen's waterfront.

Many trails lead to the waterfront from the developed portions of the campus. A major trail traverses the woods on the bluffs from the Geoduck House to the small marine slough, midway along the waterfront. Another trail, known as the Nature Trail, leads to the eastern portion of the waterfront. An overall abundance of informal trails and other signs of use indicate that the beach and forested bluffs are favorite recreational spots for those who spend time in the Reserve areas.

#### Future Uses of Shoreline Reserve

The idea of constructing an expanded marine facility with a dock at the shoreline has been given serious consideration at various times in the college's history and has been supported by faculty and students. This project could be sited within the Geoduck House Cluster, or off Marine Drive on the waterfront near the West End Drainage. Land use zoning efforts should take this possible future development into consideration.

The beach has been and will continue to be used primarily for academic and recreational purposes. Heavy recreational use has come into conflict with the academic use of the waterfront for an ecological study area. Natural features such as these should be protected for their intrinsic value in addition to their value for ecological or other academic studies, as well as for their scenic quality.

A 1979 shorelines DTF and a 1976 student report entitled *Campus Inventory and Land Use Planning* both recommended that the entire waterfront area be made into an Ecological Preserve, with human activities limited to ecological research. With careful management, an Ecological Preserve area could support a combination of recreational and academic uses.

### East Campus Reserve

This area contains more arterial roadways per unit area than any other part of the campus. It has been used moderately for academic study and informal recreational purposes. A large marshy meadow located adjacent to the Evergreen Parkway has been the subject of a number of ecological studies. The forested area currently contains a series of fire lanes that are used primarily for walking, but there are no improved trails within this land area. It is likely that the inhabitants of Cedrona complex are making use of the campus forest here. This area of campus is a logical recreational resource for our neighbors and they may see it as a dumping area for yard and household waste. It is reasonable to assume that pets associated with Cedrona are visiting Evergreen's forested property as well.

#### Future Uses of East Campus Reserve

This area will continue to be used for academic and recreational purposes. It is possible that future development of the campus could dictate expansion of the campus Core into the western portion of this area. Part of the



forested strip north of Driftwood Road may be a logical place to build new student housing given the recent change of adjoining land use to residential housing.

With the subdivisions to the north, the college should expect increased use of the East Campus Reserve by the public. This area of campus should be considered in particular if a policy for public access is formed; signing and/or fencing the campus boundary may be appropriate at least along this portion of the college's boundary. Traffic through the East Campus Reserve has increased as the residents of the subdivisions moved in.

A very different possibility for future land use in the East Campus Reserve is the construction of an artificial wetland directed by an academic program. A promising, potential site for this activity exists on land south of Evergreen Parkway that was heavily disturbed during construction of the college. The subsurface hydrology indicates at least a possibility of a water table very close to the surface for much of the year if not year-round. This site is also located close to the area that occasionally floods, described in [Drainage](#). Planning, constructing and monitoring a wetland could provide excellent educational opportunities for environmental programs. Restoration ecology has been a popular topic of study at Evergreen, but has been without significant on-campus focus.

### **North Campus Reserve**

The North Campus experiences the heaviest concentration of recreational use on campus. The nature trail leading to the waterfront, the waterfront itself, and the meadow are the most frequently used areas. The meadow is a favorite outdoor gathering spot for picnics, bonfires, and other recreational activities. Sunbathers and other casual recreators frequent the waterfront. The main trail that leads from Parking Lot F (with an alternate entrance off the meadow north of Driftwood Road) is heavily used for walking, jogging, and mountain bike riding. Another main trail, which receives somewhat less use, runs down an old logging grade along the West End Drainage from the corner of Sunset Beach Drive and Marine Drive to the waterfront. In addition to the improved trails, numerous informal trails and trail segments have been created by frequent traffic throughout most of the North Campus Reserve. Overall, this Reserve contains the highest concentration of trails of all types on campus (Greenberg and Hartley, 1998; also see [Trail System](#)).

The North Campus Reserve is also heavily used for academic study. Currently, the study in this area tends to be informal or small-scale. Observational studies are generally concentrated in the same areas as those popular for recreation: the nature trail, shoreline, and lower meadow. However, academic use surely occurs throughout the North Campus Reserve and has contributed to the creation of the expanded trail network.

### **Future Uses of North Campus Reserve**

The land will continue to be used for academic and recreational purposes. Since the North Campus Reserve is used heavily for both academic study and recreation, land use conflicts could easily arise. For example, the Snyder Creek and West End Drainages are both steep-sided, over 15 percent slope, and thus susceptible to degradation through loss of vegetation and erosion. These areas require protection as Ecological Preserves to maintain their integrity and keep them as valuable ecological resources for study.

Ecological restoration efforts should focus on the North Campus Reserve. English Ivy should be controlled at least in the areas where it is most concentrated—along the West End Drainage and in an area along the main nature trail. Revegetation and enhancement activities could benefit many areas within the North Campus Reserve where the vegetation has been degraded by heavy traffic (see [Ecological Restoration](#)). The main trails have been formalized and upgraded, and more work may be necessary in the future ([Trail System](#)). Planning and implementing restoration and other management activities could provide excellent educational opportunities for environmental programs at Evergreen. In addition, these activities could preserve and potentially improve the health of the ecological laboratory valued for academic study and research.

### **West Campus Reserve**

The West Campus Reserve has two minor facility areas within it. One is a small farm known as the "Kifer Homestead", west of Lewis Road on Simmons Road. The house is no longer occupied and currently is not used. The other facility area is a site known as the "Batch Plant", north of the Organic Farm on Lewis Road. This area

is used for the storage of materials for the Organic Farm along with brush and clippings from campus landscaping maintenance.

The West Campus Reserve is the primary area for ecological study and research, especially for projects that are long-term or relatively formal in nature. The area west of Lewis Road (the Kifer tract) was logged immediately before purchase of the land by the college and has been the subject of an ongoing study on forest succession. The study began in 1977 by D. Hall et al. and the permanent plots established by this group continue to be revisited.

The West Campus Reserve is the second most popular for recreational activities. A single, improved trail crosses the southern section of the area linking the campus Core with the Organic Farm. Numerous unmaintained and intermittent trails also lead through the West Campus Reserve.

#### **Future Uses of West Campus Reserve**

This area will continue to be used for academic purposes and recreation. The establishment of permanent vegetation plots on the east side of Lewis Road, toward the southern end of the Reserve, is planned. Current plans for the Organic Farm do not envision expansion into the West Campus Reserve.

Forest succession studies of the Kifer tract, mentioned above, have proposed that the area is an ideal location for long-term experiments in sustainable forestry. Segments of the forest to the east of Lewis Road could also be included in a forestry study. Such a study could be accompanied by construction of an interpretive trail that would allow viewing of the effects of various techniques of ecological forestry.

### **South Campus Reserve**

The South Campus Reserve is the most infrequently used of the four forested Reserves. It is rarely used for recreational purposes, in part because there are few trails and portions of this area are poorly drained. Some academic study does take place. The campus water reservoir tanks are located within this Reserve east of the Parkway, directly west of Overhulse Road.

The McLane Forest is an area adjacent to the Evergreen Parkway that has been reforested by members of McLane Elementary and others in the community, and it currently ends at the Evergreen Parkway, just north of 17<sup>th</sup> Avenue, near the southern campus boundary. While a proposal by McLane Forest advocates to extend the trail into the South Campus Reserve was not accepted by the college, the improved walkability of the Evergreen Parkway (since the Parkway rebuild) has effectively included the campus in a trail network that links to Capitol Forest and the state Capitol—the “Capitol to Capitol trail”. (*The Olympian*, January 18, 2002 <http://news.theolympian.com/specialsections/Outdoors/20020118/940.shtml>)

#### **Future Uses of South Campus Reserve**

The South Campus Reserve contains the largest block of contiguous coniferous forest on campus (see [Figure 6](#)), making it a likely site for future sustainable forestry practices. However, this activity is contingent upon redefinition of the Ecological Preserve that may include this forested area (see [Figure 11](#)). It is not clear what criteria define this particular Ecological Preserve; if the delineation followed the two-hundred foot buffer zone for the main stream of the Reserve, the Ecological Preserve would no longer include this forest area. The boundary of this Ecological Preserve should be included on the agenda of [land use zoning](#) discussions.

# Chapter 4: The Process for Land Use Planning

## CONTENTS

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## NOTE FOR THE 2005 UPDATE

See Addendum to Chapter 4 for operations of the CLUC since 1998 (content indicated below). Original text from 1998 is retained for reference, unchanged except for grammatical corrections.

Original Chapter 4 (1998 Document)—for Reference

Addendum to Chapter 4 (for 2005 Update): The Process for Land Use Planning

- Introduction
- Principles of Land Use Planning and Community Participation
- The Campus Land Use Committee (CLUC)
  - Committee Membership
  - Committee Operations and Authority
  - Evaluation of Committee
- The Master Plan Updating Process

## INTRODUCTION (1998 Document)

The fundamental task of campus planning is to maintain highly functional campus facilities that support the college's educational and operational programs while maintaining a healthy and attractive environment for the people who live and work at Evergreen. Although it is impossible to anticipate long-range changes in college curriculum and enrollment, the college must carefully manage and develop the campus to best serve operational and community needs with as much long-range vision as possible.

In 1972, the Master Planning Team reviewed the progress of campus development and evaluated that progress based on the planning principles of the Master Plan. An overall recommendation of their report was that a team such as themselves "Become a permanent tool for effective control of the long-range plan." (Durham et al. 1972, pages 1). Currently, no such team exists, and the process for evaluating land use proposals is not clear. Many land use issues have not received the attention or action that they merit and this has somewhat hindered the development of campus facilities and procedures. In order to address this deficiency, the 1998 Master Plan proposes the formation of the Campus Land Use Committee to provide focus and structure to the process of encouraging and evaluating land use planning.

Chapter 4 outlines the principles of the planning process at Evergreen and the current process for land use planning. Discussion of the Campus Land Use Committee follows and this is the main focus for this chapter.

Finally, update of the Campus Master Plan is outlined.

## PRINCIPLES OF THE LAND USE PLANNING PROCESS

Six underlying principles for effective and responsive planning underlie the policy and procedures for the planning process, as well as provide the impetus for creation of the Campus Land Use Committee (see [Policy 15](#)). The importance of campus community participation is emphasized in the following subsection.

The planning process needs to provide for coordination of all the components of a planning action including the various experts, decision-makers, consultants, the campus community at large, and the use of the Master Plan. The process must also allow adequate time for careful design, community input, review, planning, and completion, while providing for expedient action. Further, the process should include frequent consultation with the affected community, encouraging and providing for direct community participation where possible. Planning processes at Evergreen should be compatible with all governing policies and procedures of the college and the State. On-campus experts possess knowledge and skills that should be used to aid and enrich the planning process at Evergreen. Finally, the planning process should allow flexibility so that changing needs, values, and political or economic conditions can be incorporated into on-going decision making.

### Campus Community Participation

Campus community involvement is essential in the operation of flexible, responsive services and facilities. Students, staff, and faculty of the college are usually the most experienced and knowledgeable people concerning the workability of the campus environment during daily activities and many members of the campus community possess knowledge and expertise that could aid and enrich the planning process at Evergreen. Open discussion about planning issues is essential in making user participation meaningful, in which "...people are forced to deliberately and precisely discuss the issues relative to the purpose of the activities to be housed." (J. Rowe, page 15).

Campus community involvement in decision making is an important concept in governance at Evergreen. In campus planning activities, community participation is an important tool as well as a goal in itself. Community participation is not new in the planning process at Evergreen. A number of student projects have addressed planning issues over the years, including the 1976 study entitled Campus Inventory and Land Use Planning (H. Hall, H. Lockwood, C. Lomax), and the 1982 Environmental design seminar/library remodeling project. Involvement of a wider segment of the campus community has been possible through the inclusion of student, staff, and faculty representatives on DTF committees (examples include the 1975 Environment and Facilities Planning and Interim DTF, the 1976 Shorelines DTF, and the 1997 Space Efficiency Study).

Effective and useful community participation is an ideal that can only be realized by continuous efforts to provide opportunities for involvement with a visible influence on the outcome of planning decisions.

## LAND USE PLANNING AT EVERGREEN

For a history of the Master Plan, refer to [Chapter 1](#) of this document. Other influences on land use planning at the college (both [internal](#) and [external](#) entities) are described in Chapter 2.

The current land use planning process involves many separate groups. The Space Management Committee manages internal use of buildings. Proposals for land use outside of buildings are generated by the senior staff, Capitol Planning group, Facilities Services, and many other organizational units and individuals throughout the campus community. Some of these proposals are developed further through the biennial budget submittal process. However, many elements of land use, such as most recreation and research in the Reserve areas, are not tied to budget submittals and thus are overlooked in the planning process. Institutional oversight over all elements of land use planning is lacking.

Primary administrative responsibility for campus planning lies with the Vice President for Finance and Administration. Final decisions on land use are made by the Board of Trustees.

## THE CAMPUS LAND USE COMMITTEE

The 1998 Master Plan proposes formation of a standing committee to review designated proposals for uses of the college's land, excluding uses within buildings (see Recommendations). The Campus Land Use Committee (CLUC) is not intended to replace the entities currently involved in land use planning; instead, it is meant to become a focal point for campus planners. The CLUC would provide oversight, support, and encouragement for the development of land use proposals from all segments of the campus population. Members of this committee would be locatable and accountable to the Board of Trustees and the members of the Evergreen community.

The CLUC would also provide oversight for the land use review process and ensure consistent and expedient review of proposals. The CLUC would employ specific procedures, outlined below, in order to ensure that the goals and policies of the Master Plan are considered during the review process and brought to bear on all activities that affect the physical character of the campus. Creation of the CLUC would allow the college to better carry out the procedures regarding the land use planning process itself.

The CLUC would also be responsible for updating the Master Plan on a regular basis, thereby ensuring that the Master Plan will be a sustainable document relevant to contemporary planning needs.

### Membership of the Campus Land Use Committee

The CLUC will consist of the following members appointed by the Vice President for Finance and Administration:

- Campus Architect/Planner (CA/P)
- Director of Facilities
- Environmental Health and Safety Officer
- Geographical Information Systems (GIS) staff person
- two members of the faculty (governance assignments)
- two staff members
- two students

The Campus Architect/Planner (CA/P) plays a key role for the CLUC. She or he is intended as the primary contact for members of the campus community for assistance with developing ideas into proposals. By working closely with project proposers, the CA/P could advise on the use of the Master Plan as a design tool and provide technical information and support during the early stages of design development. As the project concept is further developed, the CA/P could help proposers with preparations for formal presentations to the community.

The CA/P's current responsibilities on campus would augment his or her work for the CLUC. He or she works with Facilities Services, the Space Management Committee, and the Budget Officer in the preparation of the Ten Year Capital Plan and Capital Budget Request and also Facilities Services in their responsibilities for construction and operational management of the campus. These responsibilities and contacts give the CA/P an overview of land use plans and thus he or she should be an excellent resource for people with new ideas for the campus.

The CA/P has been proposed as the chair for the CLUC as well. Given the responsibilities already assigned to the CA/P (described above), other options for the committee chair should be considered as well. Possible alternatives include the Director of Facilities and a member of the faculty as co-chairs and the Vice President for Finance and Administration as the chair or co-chair, again with a faculty member. Further discussion is needed on this topic.

### Operations and Authority of the CLUC

The proposed functions of the CLUC include the following:

- review of land use proposals and applications
- assist with development of ideas for land use into formal proposals
- publicize land use proposals and decisions made following the review
- develop a Resource and Land Use Inventory and Land Use Activities Map
- coordinate the process of updating the Campus Master Plan

The primary responsibility of the CLUC would be as a mechanism to encourage and review proposals for land use from the Evergreen community. The scope and nature of projects to be considered by this planning process are widely varied. Generally projects include, but are not limited to, construction activities which alter public areas, changes in landscaping and maintenance practices which may noticeably impact the visual or natural environment, changes in campus services which will alter land or facilities use patterns, and academic or recreational activities which involve environmental impacts or designation of land areas for specific uses.

The CLUC would also serve as a clearinghouse of land use information, resources, and contacts. In addition, the CLUC must make every reasonable effort to involve and inform the college community of campus land use proposals and decisions.

The CLUC is not intended as a decision making body. The recommendations of the CLUC may be influential, but final decisions on land use proposals will be made by the President and the Board of Trustees. Recommendations of the CLUC will be given to the President for her or his determination. If the proposal concerns policy, changes to the current 10 Year Capital Plan, or changes to the Master Plan, the Board of Trustees must make the final decision.

Specific proceedings for the CLUC will be determined early in its formation; the committee will write procedures for its operations to be included in the updated Policy and Procedures Manual.

## Developing Proposals and Applications

All members of the campus community must be encouraged to express their ideas concerning the need or opportunity for improvement in campus facilities and land use practices. Many members of the Evergreen community may have ideas that could address campus needs. Specific proposals for the use of campus land may also come from off campus institutions, companies, agencies, or individuals.

Before an idea will be reviewed by the CLUC, it must be developed into a formal proposal. The CA/P or appropriate administrative official can aid in the development of the proposals generated by students, DTFs, faculty, staff, administrators, and other groups by giving comments and advice to the idea generators. The CA/P should also aid idea generators in the application of the Master Plan to the particular proposal or issue raised and in attaining compatibility with approved land use designations. References to the Resource and Land Use Inventory or the Land Use Activities Map may help project development best fit into the context of past and present activities on campus.

In its deliberations, the CLUC may see a need for additional land use plans and proposals that will be of benefit to the entire community. It can therefore also proactively recommend that studies and DTFs be charged in order to initiate land use proposals of value to the college.

## Types of Land Use Proposals

The level of disruption associated with academic uses varies greatly. Activities that will not last for more than three quarters, will not significantly disturb the soils or vegetation of an area, and the disruption will not be evident beyond the life of the project are considered **Short-term, Low Disruptive Projects**. Projects that will last for more than three quarters or will significantly disturb the soils or vegetation of an area and that disruption will be evident beyond the life of the project are considered **Permanent Educational Facilities and Structures and Disruptive Activities**. Academic uses of the college land are generally of three types: ecological studies, environmental education, and art projects; examples of each of these types of uses and the associated level of disruption are given here for additional clarity.

Ecological studies can be manipulative or observational. Observational applies to descriptive studies of plant communities, bird identification, field plant identification, or animal behavior studies. These academic activities



do not seriously disrupt ecosystems and should be able to take place anywhere on campus although travel off of improved trails should be limited whenever possible. Manipulative ecological studies have some impact on the nature of the ecosystem. Some examples of this would be timber management, animal collecting and trapping, trampling of delicate vegetation communities, and agriculture activities.

Most environmental education involves observational activities. However, building a nature trail or a campsite are possible components of an educational programs that would involve manipulation or disruption of the natural environment.

The amount of manipulation involved with art projects varies with each piece of work. In most cases, an art piece is placed within the natural setting without impacting soils or vegetation significantly. However, manipulation of the environment does occasionally take place as a part of an installation or performance.

### **The Content of Proposal Applications**

The application for Short Term, Low Disruptive projects shall be a simple single-page check sheet that includes, among other things, the applicant's or academic program's name, a brief project description and duration of the activities, who will be in charge at the site during the activities, and an agreement to clean up and restore the area when the activity is completed.

The application for Permanent Educational Facilities or Land Uses by Non-college Entities shall consist of full documentation about the proposal including but not limited to the applicant's name and affiliation, a project description, justification, timeframe, cost and funding information, on-site maintenance/management, and a site restoration/cleanup plan.

### **Review of Proposals**

Allowing time for and placing emphasis on the process of public circulation and review of project proposals will be of prime importance in the CLUC's work. When people are given the opportunity and invitation to participate within the process, they become more responsible and involved with the end project and the campus environment in general. Although everyone may not participate, they should still have that opportunity. The return benefit is that the users of the campus environment can often give the best advice on how a proposal may work and what may be needed to make it better.

The committee itself will determine the most appropriate forums and opportunities for gaining community input on each proposal depending upon its nature and scope. These may include open community meetings, hearing, open houses, and surveys/questionnaires.

The CLUC shall review proposals for:

- consistency with the educational mission of the college
- consistency with the Policies and Procedures of the Master Plan,
- suitability with the use criteria for specific land areas of the campus
- environmental sensitivity and SEPA compliance if required
- conflicts with other approved and proposed uses within or near the desired site.

When review of a proposal is complete, the CLUC must then recommend approval, conditioned approval, or denial. This recommendation will be forwarded in accordance with the Board of Trustees delegation of authority for final decision.

### **Short-term, Low Disruptive Projects**

Short-term (one to three academic quarters), minimally disruptive activities are not a serious concern in terms of land use impacts by definition (see Types of Land Use Proposals). However, since unplanned and overlapping uses of an area are a concern, information regarding short-term, minimally disruptive projects must be submitted to the CA/P before the activity is begun. The location of the activity will be posted on an openly accessible Land Use Activities Map. This map must indicate where all campus land use activities are occurring, including educational and non-educational activities, maintenance and repair activities, and minor temporary structures. On



proposals of this nature, the CA/P will do an expeditious "checklist type" review to ensure that the proposed activity is situated in an appropriately designated area and does not conflict with other activities or proposals occurring in or near the area.

Those contemplating using a part of the campus for educational or research purposes are encouraged to consult the Land Use Activities Map when planning their projects to avoid potential conflicts with other planned and ongoing activities. If a conflict between several appropriate planned or ongoing uses occurs, all involved proponents will be notified and asked to resolve the conflicts among themselves. If no resolution is reached, the issue may be then referred to mediation.

The CA/P reserves the right to undertake a more formal review of all short-term proposals from non-community members.

#### **Permanent Educational Facilities and Structures, And Disruptive Activities**

Land use proposals by members of the TESC community for long-term activities, extensions of short-term activities beyond three quarters, permanent structures, and disruptive activities must be submitted to the CA/P. The CA/P will call the CLUC into session for review of the proposal within 10 working days. At the CA/P's discretion, additional time for the CLUC to convene is allowed to accommodate summer sessions, inter-session breaks, and unforeseen situations.

#### **Land Uses by Non-college Entities**

Land use proposals by individuals who are not members of the TESC community for permanent structures and long-term activities must be submitted to the CA/P who within 10 working days will call the CLUC into session for review of the proposal.

### **Evaluation of the Committee**

The chair of the committee shall annually review the functioning of the CLUC and make recommendations for its modification to the Vice President for Finance and Administration during the Master Plan updating process.

## **THE MASTER PLAN UPDATING PROCESS**

Copies of the Master Plan will be available to all segments of the Evergreen community; paper copies will be available to the public in many locations on campus and the document will be a component of Evergreen's policy page on the Internet as well. Proposals to modify the Master Plan can be submitted at any time to the CLUC by any community member and will be considered during the annual review of the Master Plan.

The Campus Land Use Committee is responsible for coordinating review of the Master Plan once a year, thereby ensuring that it will be a sustainable document relevant to contemporary planning needs. Based on the review process, the CLUC will make recommendations for changes to the Master Plan to the vice president for finance and administration who will carry the recommendations to the college president and Board of Trustees for final approval. At his/her discretion, the vice president has the authority to assemble and convene a Master Plan Review Team to hold hearings and recommend updates to the Master Plan.

# Chapter 4 Addendum: The Process for Land Use Planning

## INTRODUCTION

The Campus Land Use Committee (CLUC) is a working committee charged by the President of the college to be a focal point for the Evergreen community for activities that affect the existing use of the outdoor environment of the campus and the Campus Master Plan. These activities may include short and long-term land use research projects, temporary and permanent construction not envisioned in the Campus Master Plan, and other activities that temporarily or permanently change the existing use and composition of the land. Regularly scheduled committee meetings are open to all members of the community.

The 1998 Campus Master Plan proposed "... the formation of the Campus Land Use Committee which is to provide focus and structure to the process of encouraging and evaluating land use planning."

The committee has been formed. The committee authorizes low impact land use projects and is an advisory and resource entity for campus land use planners and community members wanting to make land use changes on campus. The committee draws upon the Campus Master Plan to evaluate land use proposals submitted to the committee and those developed by committee members. The College's Long-Range Strategic Plan and Bi-Annual Capital Budget Request may also be used to guide the committee's work.

## PRINCIPLES OF LAND USE PLANNING AND CAMPUS COMMUNITY PARTICIPATION

Committee members encourage the principles outlined in the Campus Master Plan about community participation on land use projects. "Proposals for [outdoor] land use are generated by the senior staff, Capitol Planning group, Office of Facilities, and many other organizational units and individuals throughout the campus community. Some of these proposals are developed further through the biennial budget submittal process." The responsibility of complying with the planning process as is described is with the individual responsible for the land use project.

## THE CAMPUS LAND USE COMMITTEE (CLUC)

The CLUC is an advisory and resource committee for campus land use planners and provides assistance with the development of low and high-impact outdoor land use proposals. It is comprised of faculty, students, and staff from different segments of the campus community. A process has been set to review project proposals and is available on the committee's web page ([www.evergreen.edu/committee/cluc](http://www.evergreen.edu/committee/cluc)).

### Committee Membership

Committee membership consists of the following members, which are appointed by the Vice President for Finance and Administration (except for faculty, which are appointed by the Provost):

**Permanent:**

Director of Facilities  
 Academic Dean  
 College Engineer  
 Environmental Health & Safety Coordinator  
 Geographical Information Staff Person

**Assigned annually:**

Two members of the faculty  
 Two college staff members  
 Two students

The chair and co-chair of the committee are the Director of Facilities and the Academic Dean, respectively. Current member names and contact information are posted on the committee's web page.

**Committee Operations and Authority**

The functions of the CLUC:

- Develop for recommendation policy and procedures that affect land use on campus;
- Identify land use issues that should be considered, determine whether it's within the committee's authority to take action, or recommend that a Disappearing Task Force committee(s) be set up to evaluate;
- Maintain and make the resource and land use projects database accessible (inventory of campus academic and non-academic research project results);
- Develop and maintain a land use activities map;
- Assist with the development of land use proposals;
- Assist with the application process for land use proposals;
- Review, recommend modifications, and authorize or reject low-impact land use proposals,
- Review, recommend modifications, authorize recommendation, or reject high-impact land use proposals;
- Ensure that the committee's work and decisions made are transparent to the college community (publicize when needed);
- Update the Campus Master Plan.

The committee is a clearinghouse of land use information, resources, and contacts. The committee has the authority to authorize low-impact land use projects and develop procedures affecting land use that are within the committee's control (e.g., the Director of Facilities has decision making authority of Facilities Services functions, the Academic Dean is similarly responsible for academics, as does the Environmental Health and Safety coordinator for health and safety issues).

High-impact proposals and policy change recommendations that the committee determines to be acceptable are submitted for consideration to the Vice President for Finance and Administration. The Vice President for Finance and Administration determines if the proposal is required to go to Senior Management and/or the Board of Trustees. Committee decisions may be appealed to the Vice President for Finance and Administration.

The committee can recommend that studies and/or Disappearing Task Forces be charged to initiate land use proposals of value to the college.

**Proposing a Project**

The committee has developed an application process for community members to follow when requesting a land use change. The application process is posted on the committee web page at [www.evergreen.edu/committee/cluc](http://www.evergreen.edu/committee/cluc). Committee members may assist students, staff, faculty, and the general public to develop the land use proposal and follow the application process.

It is preferred that the requestor be present at the committee meeting in which the proposal is to be introduced, so that they may answer committee member's questions on the proposal. In special circumstances, low-impact proposals may be presented by committee members on behalf of the requestor for committee authorization. Similarly, low-impact proposals may also be submitted to the committee's distribution list ([clucdl@evergreen.edu](mailto:clucdl@evergreen.edu)), and members may respond with their approval, rejection, or comments. Members may request that action on a proposal be postponed until the committee is able to meet. For these requests, the chair or co-chair will respond to the requestor and the committee by email with the action to be taken.

## **Types of Land Use Proposals**

### **Short Term, Low Disruptive Projects (low impact)**

Activities that will not last more than three quarters, will not significantly disturb the soils or vegetation of an area, and the disruption will not be evident beyond the life of the project.

Observational ecological studies of plant communities, bird identification, field plant identification, or animal behavior studies are academic activities that do not seriously disrupt ecosystems and may take place anywhere on campus. However, travel off designated trails should be limited whenever possible. The committee should be informed of observational and manipulative ecological studies before they begin to ensure that they occur in appropriately designated areas and to minimize conflict with other activities or studies occurring in or near the area.

Those planning these projects should consult the [land use research database](#) and the committee to determine if similar projects have been done in the past or if any are occurring in the area(s) of interest. The application process should be followed when requesting authorization for this type of project.

### **Permanent Educational Facilities, Structures, Fixtures and Disruptive Activities (high impact)**

Activities that will last more than three quarters, or will significantly disturb the soils or vegetation and the disruption will be evident beyond the life of the project, or a considerable number of community members will be affected by the project.

Manipulation of the existing environment, such as installation or construction of a temporary or permanent structure not envisioned in the Master Plan, or outdoor fixture that changes the existing use of an area, creation of a new trail, or re-designation of an area are examples of high impact projects.

The application process should be followed when requesting authorization for this type of project. Additional information may be required for construction projects such as schematic drawings, a maintenance plan, and the funding source.

## **The Content of Proposal Applications**

An application should be submitted to the committee. The application process is described on the committee's web page. Basic information that is required for the committee to evaluate a project (low or high impact);

- consistency with the college's academic mission,
- suitability for the designated use of the area,
- address any potential environmental impact,
- address if there will be any health and safety issues.

Additionally, construction projects should also address the maintenance plan and submit necessary construction drawings. All proposals should be accompanied with a map of where the project will occur on campus.

## **Review of Proposals**

The committee will review all proposals submitted at regularly scheduled meetings and action will be taken based on the majority consensus of the members present. For low-impact projects, or under special circumstances high-impact projects, committee review of proposals may also be done by email. If an email review is done, then action will be taken on the majority consensus of those members that respond.

Meetings are generally held monthly. Proposals should be submitted to the committee at least one week before the meeting in which the requestor wants the project to be reviewed. The proposals will be evaluated for the

information requested in the application, compliance with the Campus Master Plan, and applicable government laws and regulations.

Action that be taken by the committee may range from authorization or rejection of low-impact projects, recommendation to modify proposal for resubmission, and recommendation or rejection to recommend the authorization of high-impact projects.

The committee requires that the appropriate clean up and restoration be conducted by the requestor, or his/her designee(s), on all authorized projects. Areas that are modified must be returned to as close to a natural condition as possible.

#### **Land Uses by Non-college Entities**

Land use proposals may be submitted by faculty, staff, and students, as well as by members of the general public. The application process should be followed by all. Members of the general public may be asked to provide additional supporting documentation to be included with their application.

## **Evaluation of the Committee**

The chair of the committee shall annually review the functioning of the CLUC and make recommendations for its modification to the Vice President for Finance and Administration.

# **THE MASTER PLAN UPDATING PROCESS**

The Master Plan will be made available to all members of the community (the most up-to-date version is posted on Evergreen's web page). Proposals to modify the Master Plan are accepted by the committee. Suggestions may be made in person to committee members or by sending an email to the committee distribution list ([clucdl@evergreen.edu](mailto:clucdl@evergreen.edu)). Comments submitted will be recorded and forwarded to the Vice President for Finance and Administration during the chair's annual review of the committee. Policy change recommendations must follow the college's policy development process ([www.evergreen.edu/policies/g-process](http://www.evergreen.edu/policies/g-process)).

The Campus Master Plan will be updated as determined by the chair of the committee. The editor also will be designated by the chair of the committee.

# Appendices

## CONTENTS

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# Appendix A: Building Descriptions

## Campus Core

### Central Core

The buildings in central Core are of similar structure and concrete is the dominant surface material, with a few exceptions. Every building in the central Core is supported by systems that provide temperature control, access to the computer network, as well as other utilities. From the 1998 reaccreditation study: "All...major buildings serve as multiuse facilities. With the exception of the lecture halls and college activities building, all of these major buildings have a mixture of faculty, staff and student offices, and classrooms."

**Daniel J. Evans Library Building:** The library is a large, multipurpose structure containing the campus library, media services space, classrooms, faculty offices, administrative offices, conference rooms, lounge, and storage areas. Admissions, Registration, Controller's, and Student Advising are also located in this building. Most floor areas of this structure are carpeted. Phase I of modernization renovations encompasses B & C wings and is underway this biennium (03-05). Improvements will be made to the library, computer, media, and photo areas and to the building infrastructure (seismic, HVAC, electrical, plumbing, life safety, etc.). Funds are being requested in the 05-07 capital budget to complete the second phase of the renovation. This will improve administration offices, classrooms, fourth floor, lobbies, and infrastructure.

**Lecture Halls:** This building contains five lecture halls with capacities of 75, 75, 100, 150, and 300. Each lecture hall is designed to accommodate rear, front, and overhead projection. Also included in this facility are a centrally-located lounge area and a lecture-preparation area. There is an underground corridor leading to the Laboratory Building. Major renovations were made to update support systems in 1998.

**College Activities Building:** This building houses the main food service facility for both the Residence Hall students and the commuter students; included are a cafeteria and a full-service deli. Besides the dining hall, there is additional seating located in the staff/faculty lounge. A complete bookstore is provided on the main level for the sale of instructional materials and supplies. Other facilities included in this structure are two large classrooms, a cash machine, vending area, the college's FM radio station, student activity coordinating office area, bike repair shop, and Conference Services. There is a large receiving-storage area connected to an underground entrance. The building has its own loading dock. An addition was made to the third floor of the CAB in 1990; the Student Activities office area currently uses this space.

**Arts and Sciences Laboratory, Phase I:** Lab I includes general laboratory areas, faculty offices, conference rooms, classrooms, a terrarium, shop areas, a small animal room complex, and general storage areas. First floor classroom renovations are currently in the planning stage.

**Art and Science Laboratory Annex:** The Annex contains a large, high-ceiling laboratory space for art and other large-scale instructional activities involving metal, wood, glass, clay, and stone work. Also included in the building are art studios and a critique room. Additionally, this project has a large receiving-working dock area and an outdoor casting area with four kilns. This structure is connected to the Phase I laboratory structure.

**College Recreation Center:** The CRC has been built in two phases. The original space houses a large swimming pool with a separate diving bowl, five handballs courts, multipurpose rooms, exercise/weight rooms, two sauna bathrooms, locker-shower facilities, and an office area. The new addition contains a large gymnasium area with bleacher seating, movement rooms for dance or martial arts, a classroom, wellness lab, and a new office suite with work-rooms and conference space. The Health Center was recently moved to this facility.

**Seminar Building, Phase I:** This facility includes small classrooms, faculty offices, counseling services, and the campus Police Services. The EF Language School is also housed in this building.



**Arts and Sciences Laboratory, Phase II:** Lab II contains academic offices, interdisciplinary laboratory areas, a herbarium and collection room, classroom areas, shop areas, photo lab areas, and permanent office space for Facilities Services. This facility is connected on all floor levels to the west end of Phase I Laboratory. The Computer Application Lab, on the first floor, was remodeled in 2000. The third floor modernization renovations were completed in 2005.

**Communications Laboratory:** The Communications Building houses classrooms, faculty and staff offices, and specialized production facilities that support the performing arts, audio, film, and animation curriculum at Evergreen. The facility includes the Experimental Theater black box performance space, the Recital Hall performance space, the production scenic and costume shop, two dance/theater rehearsal rooms, 16 and 8 track audio recording facilities, electronic music studios, post production film and animation facilities, and several multi-use classroom/meeting/rehearsal rooms. There have been two significant projects for the Communications Building: the south side addition, completed in 1997, and the fourth floor addition, completed in 2001.

**Longhouse Educational and Cultural Center:** This building is designed after a Northwest Coast longhouse and is constructed from Olympic Peninsula cedar. It contains a large, open space which is used primarily by the Native American programs. Also included in the building are a full commercial kitchen and four large classrooms with flexible walls to allow configurations for large or small groups. The building also has a small conference room, an office, and two gas/wood fireplaces.

**Seminar Building, Phase II:** This five-cluster building adds academic and support service space. Included within the building are areas for the Public Service Centers (Community Based-Learning and Action; The Evergreen Center for Educational Improvement; Labor Education & Research Center; Longhouse Education & Cultural Center; NW Indian Applied Research Institute; Washington Center for Improving the Quality of Undergraduate Education; and the Washington State Institute for Public Policy), Evening and Weekend Studies Program, and a small satellite cafe. Design concepts and construction methods and materials focused on sustainability, life-cycle costs, and energy conservation.

**Residences:** All apartments include kitchen facilities with the exception of the studio units in "A" building (these units have access to community kitchens on the same floor). Laundry facilities are provided in the residence halls, the Mods and the Housing Community Center. Two recreation areas within the residence buildings are "The Edge" located in "A" Building and "The Far Side" located in the Mods. Both rooms have video and audio equipment as well as meeting and kitchen facilities. All rooms, except the Mods, were equipped in 1997-98 with technology upgrades consisting of data connections, cable TV, and phone service provided by the college. In 1997, "A" Building was retrofitted for fire system improvements which included the installation of a new fire alarm and sprinkler system. A new high security lock system was installed in 1996-97.

**Phase I (A-D):** Four residence halls stand in a cluster around a courtyard about five minutes walk northeast of the major campus plaza buildings. The residence halls are constructed of reinforced concrete. "A" Building is ten stories tall, and buildings "B", "C", and "D" are five stories tall and very similar in design. "A" Building is the only facility that contains any traditional residence hall rooms, having single studios and double studios. The residence halls also contain three-, four-, and five-person apartments of varying floor plans.

**Modular Housing:** A complex of nineteen modular duplexes lies east of campus, about a fifteen-minute walk from the campus Core. The Mods, originally designed as temporary housing structures, are constructed of wood and have a more residential atmosphere than the residence halls. Each Mod contains two two-bedroom apartments housing four students each.

**Phases II and III (E-K, N-U):** Fourteen apartment buildings lie between Phase I and the Mods. Phase II and III buildings are wooden structures and are comprised of four- and six-bedroom apartments.

**Housing Community Center:** The Community Center contains a convenience store, social and dining space, recreational equipment such as pool tables and foosball, a video/television viewing area, and a variety of vending operations. Laundry facilities and all residential mailboxes are also located in this building.

## Other Buildings within the Core

**Central Utility Plant:** This facility is located east of the Communications building. It contains two 35,000 pound per hour, and one 12,000 pound per hour fire tube boiler. Eight hundred and five hundred ton centrifugal chillers provide most of the cooling for campus buildings. These are R-134a and R-11 machines, respectively. The building is designed to accommodate one additional boiler and two additional chillers. If the heating and cooling equipment were fully installed, this structure would be capable of providing heat and air-conditioning to a campus of approximately 12,000 students. The unequipped area presently houses a temporary half-court basketball area and volleyball court. Present electrical utilities are sized for approximately 8,000 students

**Recreation Pavilion:** A large covered, but open, facility contains an artificial-turf field for indoor field sports such as soccer and lacrosse. It can also serve as a large outdoor assembly facility.

**Childcare Center:** A wooden structure that the college purchased with the campus property in 1967, the Center was originally a privately owned meat-processing facility. The building was remodeled in 1983 and previously served as the Facilities' Office and has also housed art studios and other functions in years past. The center was remodeled in 2004 and now functions as a full service childcare center for the college.

**Water pump station; Combustible storage; Utility Tunnels and Substation; and Well House:** These facilities house elements of the support system for the college.

## Cluster Areas

**Maintenance Shops:** The shops cluster is located off Driftwood Road, surrounded by the East Campus Reserve. The main structure within the yard is the Shops building which houses several offices, a paint shop, a metal/fabrication shop, a wood shop, a sign shop, a meeting room/lunch room, a tool storage room, materials storage room, and a safety equipment storage room. Several other buildings provide additional office, storage, and shop space: the shops equipment storage building; grounds equipment storage buildings (two metal structures); surplus shed, grounds office; and hazardous materials storage building. Two garage buildings, the garage/motor pool and the garage annex, provide full automotive services and house the motor pool and automotive mechanics' offices.

**Geoduck House:** (originally known as the Marine Lab West) A residential home that the college acquired when purchasing its current land holdings. The house is currently used as a rental property by the Olympia Community School. The house is in need of major repair and its future status is in question.

## Organic Farm

**Farmhouse:** A wooden structure with two floors and a third story loft. It contains classroom, kitchen, and caretaker's apartment. The farmhouse has a residential atmosphere and is heated by baseboard heat and a wood stove. The current structure replaces a farmhouse that existed on the property when the land was acquired by the state.

**Greenhouses:** Three plastic and pole greenhouses, one of them heated, are maintained for agricultural use. Several temporary hoop houses are also in use.

**Farm Operations Building:** A permanent structure provides the Farm Manager office and headquarters for the Practice of Sustainable Agriculture students.

**Other structures:** An outbuilding provides Community Garden storage of garden tools, storage space, and an area for biodiesel generation. Two composting sheds, vermicomposting shed, three small compost reactors, and a few smaller outbuildings provide additional agricultural functions and storage space.

## Outlying Buildings

**Driftwood House:** A wooden structure purchased with the college property in 1967. It was originally a private residence. Up until 1983, this house served as the Childcare Center, and then was remodeled as a Leisure Education facility. It currently is used as storage for Housing.

**Driftwood House Annex:** A metal/aluminum building, originally designed as a mobile home. This facility housed staff offices when Driftwood House was used as the Childcare

**Kifer Homestead:** A small farmhouse located on Simmons Road west of Lewis Road that was acquired with the purchase of campus property in 1967; the house was occupied by Mr. Kifer, the owner of the life estate. It became property of the college when he died. Currently this facility is not used.

**President's Residence:** A waterfront home, five-thousand square feet, purchased by the college in 1968. It is located off-campus at 4202 Leavelle NW.

## Appendix B: Student Demographic Statistics

### Age Distribution of All Enrolled Evergreen Students

Enrollment Excludes individuals "not indicated"

	1971	1976	1981	1986	1991	1996	2001	2004
<b>18 or younger</b>	39%	8%	8%	11%	10%	10%	7%	9%
<b>19-20</b>	30%	19%	16%	17%	21%	23%	22%	20%
<b>21-22</b>	10%	22%	17%	14%	24%	20%	21%	20%
<b>23-29</b>	15%	29%	30%	24%	21%	24%	26%	27%
<b>30+</b>	6%	21%	26%	34%	24%	23%	24%	24%

### Enrollment by Gender - Percent of Total Head Count

	1971	1976	1981	1986	1991	1996	2001	2004
<b>Females</b>	42%	50%	53%	53%	58%	57%	58%	55%
<b>Males</b>	58%	50%	47%	47%	42%	43%	42%	45%

### Distribution of Total Enrollment, Fall Quarter 1971-2004

	1971	1976	1981	1986	1991	1996	2001	2004
<b>Total Enrollment</b>	1178	2636	2766	2965	3377	3715	4227	4410
<b>Undergraduate</b>	100%	100%	98%*	95%	92%	94%	95%	94%
<b>Graduate</b>	0%	0%	2%	5%	8%	6%	5%	6%
<b>Full-time</b>	94%	81%	83%	85%	88%	84%	86%	84%
<b>Part-time</b>	6%	19%	17%	15%	12%	16%	14%	16%
<b>FTE Enrollment**</b>	1121	2496	2623	2838	3386	3610	4169	4292

\*Graduate studies were introduced in 1980

\*\*Full Time Equivalents corresponds to 15 credit hours for undergraduates and 10 credit hours for graduate students

### Fall 2004 Enrollment – Olympia Student Body Demographics

	All Students	%	Undergraduates	% of UG	Graduate	% of GR
<b>TOTAL</b>	<b>4113</b>	100%	<b>3841</b>	100%	<b>272</b>	100%
African American	129	3%	119	3%	10	4%
Asian/Pacific Islander	185	4%	175	5%	10	4%
Native American/Alaskan	140	3%	119	3%	21	8%
Hispanic/Latino	190	5%	179	5%	11	4%
Students of Color	644	16%	592	15%	52	19%
White	2836	69%	2644	69%	192	71%
Not Indicated/Other	633	15%	605	16%	28	10%
Male	1897	46%	1794	47%	103	38%
Female	2216	54%	2047	53%	169	62%
WA Resident	3210	78%	2957	77%	253	93%
Non-Resident	903	22%	884	23%	19	7%
Average Age	26		25		34	

# Appendix D: Planning and Governance Groups

## 2005-2006 Academic Year

### Standing Committees (all Major)

Agenda Committee (elected)  
Council of Faculty Representatives (elected)  
Enrollment Coordinating Committee  
Faculty Hiring DTF  
Planning Unit Coordinators

### DTFs (all Major)

Diversity DTF  
First-Year Experience DTF  
Hiring Priorities  
Long Range Curriculum DTF  
MIT Director Search  
MPA Director Search  
Narrative Evaluations Processing Checkpoint Criteria DTF  
Strategic Planning

### Other Work/Committees (Major)

Academic Advisors  
Campus Land Use Committee  
Computing & Communications Director Search  
Community Outreach  
Expressive Arts Sub-Area Conveners  
Evening/Weekend Studies Coordinating Committee  
Faculty Representative to Athletics  
Food Service Advisory Committee  
Food Service Strategic Planning Committee  
Health and Safety Committee  
International Studies Advisory Board  
Information Technology Collaboration Hive (ITCH)  
Parking Infraction Review Committee  
Prior Learning from Experience Document Approval  
Space Management Committee  
Sponsored Research Committee  
Sustainability Group  
VP for Advancement Search

### Other Work/Committees (Minor: typically meet once per quarter)

ADA Compliance Advisory Board  
Campus Violence Advisory Group  
Communications Board  
Commute Trip Reduction Advisory Committee  
Conflict Resolution Officer  
Deadly Force Review Board  
Ethics Review Board (2 years)  
Friends of the Library  
Human Subjects Review Committee

Lab Council  
Longhouse Advisory  
PLATO Royalty Award Committee  
Police Services Community Review Board  
Public Art Advisory Committee  
Student Conduct Code Hearing Board



## Appendix E: Selected Climatological Data

**Olympia, Washington (National Oceanic and Atmospheric Administration, 1996)**

Month	Average Precipitation	Average Maximum	Average Minimum	Average Mean
January	8.01	44.2	31.1	37.6
February	5.77	49.1	32.6	40.8
March	4.95	53.3	33.5	43.4
April	3.29	58.9	36.5	47.8
May	2.09	65.9	41.4	53.8
June	1.63	71.1	46.6	58.7
July	0.82	77.1	49.3	63.2
August	1.29	76.9	49.4	63.2
September	2.26	71.5	45.3	58.4
October	4.31	60.8	39.5	50.3
November	8.05	50.4	35.4	42.9
December	8.12	43.8	31.9	38.0
Annual	50.59	60.2	39.4	49.8

# Appendix F: Responses to the Campus Master Plan

## May 1998 Draft

### Introduction: The Outreach Process

Copies of the revised Campus Master Plan were made available in several locations around campus, as well as on a web page. Memos asking for input on the draft were delivered to all mail boxes on campus and an e-mail memo to planning unit groups of faculty made the same request. In response to the memo, I have received responses from eight faculty and three staff members.

Public forums were held on two consecutive days advertised in the CPJ, Greener Scene, and the memos. The first was well attended; about ten people, including faculty, staff, and a few students, participated in a discussion that mainly concentrated on the CLUC. Only a single staff member attended the second forum.

A voice mail message was sent to all student organizations on campus. There was only one obvious response to this, but the message likely helped to pique interest and recognition of the Master Plan in other settings. A "banner" was placed as header for opening all email accounts in the "pine" system as well, and this seems to have resulted in a few letters. A chat room type forum was set up on the topic of the revised Master Plan, but it received minimal use (one entry so far).

The largest number of responses was gained by setting up a table in the CAB for a day and a half. This set up allowed people to casually inquire about the plan. Comments—from the very general to the specific—were encouraged and recorded. Responses were recorded from fifty-six students, ten staff, and four faculty members. However, it was estimated that overall more than two-hundred people stopped at the table; most of them inquired about the plan but did not give a response beyond accepting the information given to them. Many expressed their appreciation of this particular outreach effort. A few students that talked to me in this setting have contacted me with further questions and comments. Three students and one alumna have sent email messages, but none of them specified where they heard about the Master Plan.

All of the responses received on the draft Campus Master Plan, from all the various venues, are outlined below. While the intent of speaker or writer has been maintained as closely as possible, most of the responses have been edited for brevity. Those responses that do not directly apply to the Master Plan, e.g. those that are site specific, were passed on to appropriate members of the staff for further consideration. Those responses that do directly address an element of the Master Plan were discussed at length and many modifications were made to the plan as a result.

## Responses to May 1998 Draft

### Facilities

The Longhouse is in the wrong place. It would be ideal if Longhouse and Seminar II could switch locations. (Staff)

Likes the aesthetics of the Longhouse. The concrete buildings are ugly. Should use alternative building materials, design, systems (e.g. straw bale). Need to set an example. (Student)

A new building for administrative purposes or for classroom space would be welcomed. (Student)

Many check-ins on the location of Seminar II. Responses to are mixed – some people have no problem with it. Others are initially upset, but nearly all appear to accept the location choice when the reasons behind it are explained. Students at Evergreen for Ecological Design (SEED) came to meetings about Seminar II and they feel that their suggestions regarding systems design for the new building were not taken seriously. (Student)

The administration doesn't care about student opinions. Doesn't want to hear the reasons for locating Seminar II next to the CAB. (Student)

Sad about the trees to be cut down for the location of Seminar II. Somewhat alleviated by hearing of the background in making the location choice. (Staff)

Supports proposal for new theater attached to the Communications Building. (Student)

Paint murals on the outsides of the buildings – it would improve the exterior appearance and give opportunities to art students. Paint would seal the pores of the concrete, so mosses, algae and lichens wouldn't take hold as quickly (reduced washing needs would offset additional maintenance of murals). (Student)

Include roof gardens in the design of new buildings. Terrace the different levels, with gardens on each terrace. Existing buildings are ugly and depressing. This strategy would green-up the exteriors. Why not expand the campus vertically rather than horizontally? (Student)

Daycare Center building needs to be replaced. It isn't big enough (long waiting list) and it is in poor repair. Should be a high priority for the college. (Student)

Need a bigger daycare. (Student)

Don't build a stadium, or any sports events facilities unless it's for something outrageous. (Student)

Don't put the new building in front of my window. (Staff)

No mention of earthquake preparedness, disaster planning in the Master Plan. Include in modernization section? (Staff?)

The TESC woods are a unique, non-replaceable asset. Every effort should be made to minimize further encroachment into these areas. Limiting new construction to the core campus area, minimizing non-permeable surfaces, etc. are all part of the process. Grow up, not out. (Faculty)

We don't need another building. We don't need another clear-cut. What happened to progressive Evergreen? It's gone mainstream...ban the plan. (Alum)

Is there anything that pushes the school to keep with environmental goals when planning and executing construction? (or does it generally come down to economics?) Why has past construction on campus been so conservative? Evergreen should be a leader in innovative, environmentally sensitive development. The technology exists for alternative building materials and support systems – why do we balk at using it? (Fits with Objective 15) (Student)

### **Utilities**

Need discussion of solid waste management on campus. Add a policy to address recycling and adding composting of all organic matter. If money is the concern, consider that the existing waste disposal system may already be losing money (how about the long term?)...would this really make it any worse? Possible site for composting facilities could be meadow on Driftwood. (Student)

### **Other Structures**

Many check-ins about the status of the canopy walkway. Those who stated an opinion were in favor of the walkway. Supports the location of KAOS tower in B Lot. (Student)

### **Interior Spaces**

Move the bike shop to ground floor access... it would receive much more frequent use. In current location, have to use elevator to access, plus not very visible. (Student)

Need to display more artwork on campus. It is difficult for students to show their work on campus, and there is plenty of bare wall space that could be beautified with art. Needs to be a consideration for the new construction on campus. Also minor renovations of existing space to accommodate art work (better lighting). Student work should be given priority over faculty exhibitions. (Student)

Lounge areas are not well equipped. Furniture is missing or dirty. Many areas are dark. Adding art work to these areas would help to make them more inviting. (Student)

Use full-spectrum lighting in all classrooms. It would help prevent winter depression. We deserve better than the same old flourescents we've suffered with since grade school. (Student)

Glad to see that display spaces for artwork is one of the design concepts for campus. However, not sure the campus adequately supports the actual installation and exhibition of artwork in these display spaces with financial, equipment and staff resources. (Faculty)

Could not find issues of indoor air quality and aesthetics adequately addressed anywhere in this plan. I believe both concepts are essential to the quality of our lives on campus. It seems these issues might more directly be addressed under "Section III - 2.2 Objectives and Policies: Facilities, Objective 3: To maintain a set of unified design concepts to guide campus growth". (Faculty)

One of the main disappointments I have had about this college is the lack of outdoor or environmental art on our grounds. On other campuses there are collections of art that elicit wonder, curiosity, commentary (even conflict) and illustrates a wonderful cultural diversity and history. These are also items of a mature campus and do not appear overnight. Now that Evergreen is maturing, I suggest we have a statement of a goal for soliciting or encouraging outdoor sculpture, structure, fountains and the like. (Staff)

I would like to suggest that when Police Services moves into the CAB, space and venting be made available in their lobby for a copy machine. Presently, the only student access copiers are in the library and this limits access when the library is closed. Having the machines in the lobby of Police Services would allow for supervision of the copiers and increase contact and exposure between the campus community and the Police Services staff. (Staff)

### **Parking**

Parking is awful for people who have to make trips from campus during the day – waste time finding and re-finding parking spaces and walking to and from the outlying edges of the parking lots. (Staff)

Could faculty park under the library? They could use existing service roads for access. (Student)

Why not multi-level parking? Parking lots could maintain existing foot prints (avoid cutting down more trees or increasing walking distance) while providing more spaces. Could have trees growing up through the parking structure to maintain that feel. (Student)

Underground parking would allow for more parking spaces. Could use area over the underground parking for athletic fields or gardens. (Student)

Need more parking closer in to the Core. Should be a larger parking area by the Longhouse.(?)

### **Housing**

Use the meadow north of Driftwood Road as the location for the new dorms. Excellent solar exposure. (Student)

Use Driftwood House for a cooperative living residence. Humboldt Community College (not sure if I wrote the name down correctly) has such a set up – students get 2 credits per quarter to live as an intentional community, sharing responsibilities of the house (growing food for the house included). It would be best if the house was retrofitted for more appropriate technology, but even without that kind of renovation it would be a useful experiment/example of cooperative living. (Student)

The mods are in terrible shape – hard to clean, infested, falling apart, unhealthy. They were intended as temporary structures but instead have been used for 25 plus years. Should be torn down and re-built. Could provide site for future dorms (if they were multi-story structures, there still would be a net gain in dorm area). Use sustainable building materials for new structures. (Student)

Did campus ever own Cooper's Glen land? What was Evergreen's involvement with developing ASH? (Student)

Regarding dorms: likes the layout of Phase II and III dorms – more natural than Phase I or mods. For future dorms, have more variation in the appearances of interiors and exteriors. Leave as many trees between buildings as possible. (Student)

Campus housing is adequate. Housing has talked about "needing" to build, but many, many apartments (especially the mods) had extra beds and plenty extra space. TESC computing and networking officials, get your act together!! It is a sad day when the connection to the internet (the heinously over-done firewall) that serves all of campus and resnet cannot be reset quickly when it goes down. Who's responsible for such irresponsibility? Housing costs were raised for net connections that housing members can't use. Not fair! (?)

### **Organic Farm**

Wants the farm to expand. (Student)

Wants more space at the farm. Free Community Garden plots for students. (Student)

### **Growth (within and outside Evergreen)**

College shouldn't grow any more. Be stubborn. (Student)

Need to address more directly in the plan what the policy is on growth adjacent to the college boundaries. What kinds of things do we want developers to consider? (Student)

Make tables of student demographics and student population growth more clear (Appendices B and C). What about the extra students that were enrolled in 1997? When was the decision made to grow (what process decided this?). Discuss the ratio of in-state to out-of-state as well. (Student)

Any particular study area targeted for growth? (Student)

Can we affect how the land is developed at our borders? Can we buy adjacent property? (Faculty)

No growth would be best. Keep Evergreen small. That is what is attractive about the school. (Student)

Hope that Evergreen grows in a responsible way that is in accordance with the founding notion of simplicity and conservation of our natural surroundings. (Student)

Given the pressures of development, there will likely be no significant wooded areas on Cooper Point twenty years from now, unless development is controlled in the very near future. A very serious concern becomes maintaining connections to other habitat areas, if possible. Will the pressures of development increase the value of the land to the point where the College has to sell it off or develop it? Is there any way to forever lock the wooded areas into a land trust that precludes any development? (Faculty)

Could outside entities ever buy up campus land? (Student)

Appendix F: Responses to the May 1998 Draft of the Campus Master Plan

**Landscaping**

Worried about ivy – it has already started killing trees on campus. Need to salvage the landscape. Involve academic programs and coordinate with outside entities (Sound Native Plants, Native Plant Salvage Project) to establish landscaping with native species. Expand the ethnobotanical garden at the Longhouse – have it spill over into other areas of the Core. Using natives will save money on maintenance. (Student)

Should use native plants on campus. Ivy is stupid; it is radiating out from the library building, invading other parts of campus. Grass is stupid; water requirements are high (and the sprinklers are sometimes turned on while it's raining). (Student)

Is there a policy to replant a tree for any that are cut down? (Student)

It is important to maintain plantings that are strictly native. Herbicide and pesticides be kept to an absolute minimum. Regarding new development, plan around the especially large trees which contribute to the richness of campus. (Student)

Fruit and nut trees, berry bushes, and culinary and medicinal herbs planted around the campus would be a great asset to future students. Add color and variety to the landscape, great for wildlife, and perennial herbs have low maintenance needs. Also wonderful to have food for campus population – supplying even a small portion of the food we need locally can help us to be more sustainable, healthier and happier. (Student)

**Reserve Areas**

Trails are in terrible shape. Need to improve existing trails and build new ones. Could employ a group of students to do the work (cheaper than hiring professionals). Have pay boxes at trail heads for non-TESC users. (Student)

Need to clean up forests. Garbage from students partying in the woods all over the place. (Student)

Supports idea of Ecological Reserves. (Student)

Small-scale (sustainable) forestry should be done by academic programs on campus. Have a program as an extension of the Organic Farm program. The forests as they are now don't look healthy and are a fire hazard. (Student)

Land base of Reserve areas not large enough to do much "real" science in terms of sustainable forestry experiments. Could Evergreen programs use off-campus (existing) forestry areas (e.g. H. J. Andrews and UW experimental forests)? Reserve areas provide the perfect balance to the developed campus. These areas are part of the reason this student chose Evergreen. (Student)

When will habitation policy start to be enforced? Could we create a new position to cover this? (a forest ranger type) Ecological Preserves need to include blocks of land, not just narrow strips. Should allow for some coherence of ecosystems on campus. (Faculty)

Impressed that so much of the campus is undeveloped. (Student)

Communication among the users of the Reserve areas is lacking. Now that we have a GIS gridwork in, and a staff person in charge of it, that we should be able to keep track of the use of these areas. Need an active committee to help with decision making, provide strong and fair guidance in determining what sorts of activities are carried out on our lands. Sampling and marking plants must be done in a minimally destructive way. (Faculty)

Make a small campground in the campus woods, near a road so that it's easy for police to check-up on. For students only. With student ID they would have access to showers/toilets in the CRC. Camping should be free in exchange for residents being responsible for a certain section of the woods: trail maintenance, trash pick-up, making sure no transients living there. (Student)

The more woods we keep, the happier I'll be. (Staff)

Save as much woods as possible. (Staff)

Maybe log it a little bit. (Student)

Need trail maintenance. Also, why are we using non-native species on campus? Especially ivy – why use it and then spend time removing it? (Student)

Many trails emerging in the North Campus land area. How can these be prevented? Maintained? It is a complex problem warranting at least a year's worth of discussion. Perhaps an academic program should take it on. (Faculty)

Connect Ecological Preserve areas so that there are corridors for wildlife that use more than one area of campus. (Faculty)

The reward for commuting to Evergreen is the sweet air I get to breathe when I arrive...short walks between buildings rejuvenate me with truly fresh air. Walks to Organic Farm give respite from job stress. I can see all kinds of birds from office window. These are the selfish reasons why I enjoy the forests and want them to be preserved...evidence not only that our immediate environment is now in balance but also that there is a potential for more to be so. If we are constantly reminded of that potential, then perhaps we will better guided our steps in that direction. (Faculty)

#### **Campus Land Use Committee (CLUC)**

Likes idea of CLUC. (Student)

As a part of CLUC operations, they should regularly publish details of the process and results of review (in newspaper and/or other locations). If zoning is established, that should be publicized. (Student)

The CLUC should be set up so that committee members can't push their own agenda, push their own proposals through. How do we address potential conflicts of interest? Members shouldn't review their own proposals. (Student)

What is the timetable for formation of the CLUC? Need more specific details of operations of the CLUC. (Faculty)

Need formal inventory of vegetation and wildlife distribution on campus. Need to compile the studies that have been done (by students, faculty and others) so that we can build on earlier research and not waste time duplicating. Develop a protocol for how studies for the inventory are conducted? Copies of the reports and overall inventory should be centrally located (archives, data base) and accessible and indexed. (Faculty and Students)

The proposal to form the CLUC makes sense. (Student)

Supportive of the CLUC concept – need to hire some people to make it possible, though (existing staff already very busy). Should split the Campus Planner/Architect into two positions. (Faculty)

Replacing EAC with the CLUC is another step in the wrong direction. The aesthetic component has been removed from the original mission. Need to be concerned with the philosophy of pre-serving what is just a bit wild on our campus, not with developing a logging program. (Faculty)

Planning for the CLUC is very thorough; impressed with how much detail there is on what the committee will do and how it will work. It is essential to clearly communicate this to the campus community and to clearly define and support the jurisdiction and decision-making powers of the CLUC. From the plan, understand that the CLUC



will make decision-making recommendations only. Also wonder what the relationship between the CLUC and the Health and Safety Committee and the Environmental Committee will be? (Faculty)

### **Format**

Doesn't understand section numbering. (Student)

Citations should be at ends of sentences, not between sentences. (Faculty)

Reading it the first time was a little overwhelming – so much information. But went back to investigate specific areas of confusion, able to easily answer own questions. So, format works well. (Faculty)

Change the name of the corporation yard – doesn't make sense. (Several Students)

In the electronic version of the plan, it would be great to have word search capability. If you weren't familiar with the organization of the document, you could type in the topic that you're interested in and get all the references. (Staff)

### **Goals and Objectives**

(Note: "Objectives" corresponds to "Policies" in the September 1998 Draft)

Re: Objective 9, need more consultation with intended service population. Faculty and students need to be included in planning and provision of campus activities and services to a greater extent. (Student)

Re: Objective 12, EF Language school needs to be integrated with rest of the college. Wants to mix with that part of the population. (Student)

Re: Objective 12, EF students are isolated – both housing and classrooms. (Student)

Re: Objective 4, police vehicles are the most prevalent automobiles within the campus core. While this makes some sense for night patrols, no reason for driving around the core during the day – why not use the bikes more?

Re: Objective 4, Need more parking/locking spaces for bicycles. Need bicycle lanes on all campus and access roads – especially on the Parkway at the main entrance. (Student)

Re: Objective 4, what about the services needed for cyclists (e.g. showers, lockers)? What encouragement are we providing for users of alternative transportation (Section III – 5.4.2)? (Student)

Re: Objective 15, Only one policy based on this objective. Needs to be more that address vision for campus utilities (waste management, energy sources etc.) and building design. (Student)

Which objective covers growth? (internal and external?) How about policies on these issues? (Student)

### **Overall**

Include an appendix of input/responses in the Master Plan so that there is documentation of this part of the process. Will be able to see which responses resulted in changes to the document and show where opinions differed. (Student)

Agrees with concept of core and cluster areas. (Student)

Ugliest campus ever seen (referring to the campus core). (Student)

It looks great. (Student)

Appendix F: Responses to the May 1998 Draft of the Campus Master Plan

Generally positive response to the revised Plan. Likes that the Master Plan is setting the stage for these discussions instead of leaping ahead to conclusions. (Student)

Many positive responses to setting up the table in the CAB. Students and faculty appreciated the administration reaching out in that way. Great to look at the Master Plan on the web page. Final copy of the Master Plan should be a permanent part of the TESC home page. (Faculty)

Likes the campus how it is. Doesn't want anything to change – change is probably for the worse. (Student)

Liked subject heading on e-mail memo (Why not develop evergreen's forests?).(Staff)

Good job of assembling material. (Staff)

Add a section on the data communication network (under Section III – 2.4.9, Communications). (Staff)

Leaving the forests here as intact as possible ought to be our first goal. (Student)

Found much of the material in the plan to be extremely useful on a number of levels. For instance, the information on the climate of the area is an excellent resource for people new to the area. Will definitely reference many of the figures and appendices in the future. Would like to see the planning and governance groups list updated as part of the annual update and specifically up-dated to include the names of who is currently serving on those planning and governance groups. This would be a very useful resource to the campus. (Faculty) Note: While a list of the planning and governance groups will continue to be included in the Master Plan, it probably isn't the appropriate place for listing the names of those that serve on the committees. However, it does seem like this could be a useful resource to have available somewhere on campus.

The development plan is seriously flawed. If there are any ecological considerations, even concessions in the plan, they are well hidden under a mass of details concerning large-scale developments which may or may not be in the best interest of the college. Where and when will the AM/PM, Burger King, McDonald's and various stripsprawl be built...will transfer to another college where the character of the institution is a known, rather than unpredictable, evil. (Student)

Plans for the future should consider the many other things besides the academic program. In the dominating American culture, human beings are too often planning in their own behalf without thinking of all the other creatures around them. This place is an important place because of the way in which it preserves habitat for all our relations in the natural world. If we consider developing anything on campus, we should think, not just economically, not just environmentally, not just aesthetically, but wholistically and then we will talk carefully with the scientists and call in NativeAmerican elders from the area, and think about everything that this campus natures and makes possible so that we may act as an example for students needing to find harmony as they create human culture on an earth that supports more than just human life. (Faculty)

Heard that Evergreen is the only state college that breaks even. If this is so, why don't we have more flexibility to do what we want? How much pressure is there to not change this situation? (If other colleges are losing money, why can't we?) (Student)

Let's face it, the planet is at stake! The Master Plan is unquestionable, beyond challenge. Who ever wrote the Master Plan will not be held at fault. However, it is incomplete. It has obviously been shortened to this brief length so as to appeal to the quick/casual reader. I think someone who can more fully express the plan should create an addendum. After all the voter may pass by and want to know exactly what the Master Plan says (other than – to be presumptuous – the President is charged with the duty to decide which bush or shrub is to be KILLED to make room for some new structure. (?)

# Appendix G: Topics Updated in the 2005 Update of the 1998 Campus Master Plan

During the 2005 update of the *1998 Campus Master Plan*, the starred (\*) topics listed below were identified as out-of-date. College staff, faculty, and city and county staff provided current information on as many out-of-date items as timeline allowed. Updating status is indicated next to each subject in the list to aide future revision efforts of the Master Plan.

Potentially out-of-date policy and potential changes in scope are not listed here, as they were not included in investigations for the 2005 update (see [2005 Update](#) in Chapter 1). However, comments on these larger issues are compiled in [Appendix H](#) and will be addressed further when the next substantial re-write of the Master Plan takes place.

Topics are listed here as section titles as they are found in the 1998 Master Plan; section titles not starred did not appear to need significant data update at this time

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## Prologue

\***Acknowledgements**: added for 2005 update

\***Definitions**: clarified wording of a few; changed definition of “land use”—removed the words “interior and exterior”

\***Executive Summary**: added one for 2005 update

\***Recommendations**: gave status report on 1998 recommendations; added one new for 2005

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## Chapter 1: Introduction

**Statement of Purpose**

\***History of the Campus Master Plan**: added 2005 update

**Founding History of the College**

**The Educational Program at Evergreen**

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## Chapter Two: Master Plan Context

**Introduction**

**Authority of the Board of Trustees**

\***Other Influences on Land Use Planning**: added Space Management Committee; other minor changes to wording

\***Campus Population**: updated statistics and plans for growth; did not have updates for financial aid recipients or breakdown for types of faculty, so cut

**Physical Setting:**

**Location and Property**

**The Physical Environment**

\***Macro-Climate**: not updated

**Micro-Climate**

**Geology**

**Soils**

**Topography**

\***Drainage**: updated to include reductions in impervious surfaces; apparently Parkway still occasionally floods, still not current studies on impacts to surface and ground water, and college major source of automobile and fertilizer use

**Ecology:**

\***Introduction**: clarified wording

\***Campus Forest Habitat**: updated “species of concern” status, added amphibian and reptile species and mention of invertebrates

\***East Campus Reserve**: updated references to development to appropriate tense, added year forest was cleared

**North Campus Reserve****West Campus Reserve****South Campus Reserve****Campus Meadow Habitat**

**\*Campus Shoreline Habitat:** updated “species of concern” status

**Land Use in the Surrounding Area:**

**\*Thurston County Population:** updated current statistics and projections; added information on demographics

**History of Growth and Development Planning:**

**\*Current Growth and Development:** updated information on Cedrona complex, now completed; added rezoning to protect Green Cove Creek; added recent GMA compliance issues

**\*College Influence on Surrounding Land Use:** updated discussion of traffic study; added Neighborhood Advisory Board; updated public access to trails; added potential for Cooper Point park

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**Chapter 3: The Master Plan****Introduction to the Master Plan****Goals for Land Use**

**\*Policies and Procedures for Land Use:** updated language referring to people with disabilities (Policy 4); other minor wording changes for clarification

**Major Land Areas of Campus****Introduction****Land Area Descriptions:****The Core**

**\*The Clusters:** updated Organic Farm description

**\*The Reserve Areas:** bulkhead at shoreline has not changed

**Land Use: Developed Areas of Campus****Campus Buildings****Spatial Arrangement:**

**\*Pathways:** added language about ADA compliance

**Architectural Design:**

**\*Materials and Structure:** updated terms for type of construction and building code; did not update discussion of alternative building materials and utilities, although may warrant since Sem II construction (and remodels?)

**\*Ease of Modification and Flexibility of Spaces:** updated; less use of this now

**Open Spaces****Aesthetic Considerations****Design Outside the Core:**

**\*Outlying Buildings:** updated use of Driftwood House

**\*Building List:** added Seminar II; other minor updates

**Utilities:**

**\*Introduction:** removed outdated discussion of controls and monitoring systems

**\*Water:** verified numbers in agreement with city

**\*Refuse/Recycling Service:** updated disposal companies and added food waste composting

**\*Storm Sewer:** updated storm water retention

**\*Electrical:** updated; added adoption of “green” energy

**\*Steam and Chilled Water:** updated

**\*Communications:** updated all except Data section (didn’t need it)

**Circulation:**

**\*Introduction:** removed out-of-date text on traffic study

**Internal Circulation**

**\*The Pedestrian Environment:** updated ease of movement for people with disabilities; added covered walkways of Sem II

**\*Separation of Automobile and Pedestrian Traffic:** added battery powered vehicles solution

**\*Internal Bicycle Circulation:** added Seminar II bike racks

**\*Hazards to circulation:** updated intersection of Driftwood and Overhulse and plan for south end of Parkway; removed lack of pedestrian access to Parkway

**\*External circulation:** updated Parkway description

- \***Commute Trip Reduction:** updated CTR program, current lack of committee; added Commuter Contest, Passports, new bike facilities, IT passes
- \***Automobile Parking:** added new spaces in B and C lots; added new pay machines; added parking for people with disabilities
- \***External Bicycle Circulation:** updated Parkway access and bike lanes on major routes

#### **Modernization:**

- \***Introduction:** updated status of modernization efforts
- \***The Concept of Modernization:** clarified wording
- \***Patterns of Use:** removed section
- \***Facilities Audit:** updated status

#### **Landscaping:**

- \***Campus Core:** minor changes in wording; added teaching gardens
- \***Indoor Plantings:** still is a small greenhouse in lobby of Lab I
- \***Roadways and Parking Lots:** updated landscaping on the Parkway
- \***Chemical Use:** updated language

#### **Campus Services and Activities:**

- \***Community Services:** limited update—may warrant more
- \***Commercial Services:** updated on-campus facilities
- \***Campus Housing:** updated Provision of Service; updated Considerations for Future Housing
- \***Fire Protection:** added potential plans for McLane Fire District
- \***Campus Police Services:** updated emergency telephones
- \***Social space and entertainment:** added smoking shelters
- \***Recreation, Wellness and Athletics:** updated mission; updated athletics and clubs; updated public access; added future expectations

#### **Land Use: Undeveloped Areas of Campus**

##### **Types of Land Use:**

- \***Academic Use:** updated reference to database; added permanent plots discussion
- \***Ecological Preserves:** minor changes to language, since don't currently exist
- \***Recreation:** updated public access
- \***Habitation:** removed confusing text; updated enforcement
- \***Fire Protection:** added fire lanes consideration
- \***Resource and Land Use Inventory:** described current status and future plans
- \***Regulations:** added regulation of shoreline section (see below)
- \***Trail System:** described improvement projects, signage, and on-going maintenance

##### **The Reserve Areas:**

- \***Regulation of Shoreline Reserve:** moved this section to general Regulation section, above; updated status of Shoreline Master Program and added discussion of other programs that may affect shoreline regulations
- \***Future Uses of East Campus Reserve:** removed discussion of easements
- \***Future Uses of North Campus Reserve:** updated discussion of trails
- \***South Campus Reserve:** updated discussion of McLane Forest trail

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## **Chapter 4: The Process for Land Use Planning**

Added reference to Chapter 4 Addendum; otherwise only minor grammatical changes; inserted Chapter 4 Addendum following

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## **Appendices**

- \***Appendix A: Building Descriptions:** added major renovations, changes in use, description of Seminar II
- \***Appendix B: Student Demographic Statistics:** Added 2001 and 2004 stats for Age Distribution, Enrollment by Gender, Distribution; added demographic table for fall 2004 enrollment
- \***Appendix C: Growth Plan:** removed (no longer relevant; no update available at that level of detail)
- \***Appendix D: Planning and Governance Groups:** updated
- \***Appendix E: Selected Climatological Data:** did not update
- \***Appendix F: Responses to Drafts of the 1998 CMP**
- \***Appendix G: added Topics updated in the 2005 update of the 1998 Campus Master Plan**

Appendix G: Topics Updated in the 2005 Update of the 1998 Campus Master Plan

**\*Appendix H: added Comments for Future Revision of Evergreen’s Campus Master Plan**

**\*Bibliographic Notes:** updated with new references, mostly urls

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## **Figures**

**Figure 1: Regional Location**

**Figure 2: Vicinity Map**

**\*Figure 3: Thurston County Zoning:** updated

**Figure 4: Soils**

**Figure 5: Topographic and Site Factors**

**Figure 6: Forest Typing**

**\*Figure 7: Major Campus Land Areas:** did not update—does not reflect changes to Parkway or new buildings in Core

**\*Figure 8: Campus Core:** same as above

**\*Figure 9: Orientation Axes:** same as above

**\*Figure 10: Central Campus Utilities:** same as above

**Figure 11: Ecological Preserves as proposed in the 1983 *Campus Master Plan***

## Appendix H: Comments for Future Revision of Evergreen's *1998 Campus Master Plan*

The 2005 update of the *1998 Campus Master Plan* has been an effort to renew data and descriptions to reflect current conditions; no significant changes to policy, scope, or organization of the plan were made. Comments on potential changes of those kinds are compiled below, so that these thoughts may be addressed as part of the future re-write (see new [recommendation](#) for 2005). This compilation does not include comments about smaller updates; updates to data, grammar, and other “housekeeping” changes were made directly to the text or are indicated as unchanged in [Appendix G](#).

Some of these comments come from files kept during the last several years of CLUC meetings; others were submitted during the 2005 update investigation. In October of 2005, a draft of the update was posted online for review by members of the CLUC and other contributors to the update—the review period was just over three weeks and did not yield any additional comments. The Director of Facilities Services asked two members of the CLUC, the Academic Budget Dean (the CLUC co-chair) and the Facilities Engineer, to review the draft and this did result in several corrections and minor revisions, and a few new comments for this appendix. Comments from the campus community were not solicited during the updating process, but will be critical to any future *revisions* of the Master Plan.

Comments are listed as bullets following the title of the section where they are found in the *MP*; sections that did not receive comments are not listed. All comments were submitted by members of the CLUC, unless otherwise indicated.

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### Overall Scope and Updating Process

#### From the CLUC File

##### Campus Master Planning

The current plan continues to be useful in many ways but it does not provide guidance for several current issues facing the college. Those issues are:

- “Changing External Regional and surrounding community growth planning
- Evolution of academic and campus life programming internally and
- Expanded enrollment planning beyond current programming.”

“A master plan can be thought of as a strategic matrix. It should offer a framework for applying institutional design intentions to a broad range of locales across a long period of time. Organizing a complex village design problem into a set of thematic districts is helpful in articulating the application of design principles and policies to the evolution of specific places. A master plan articulates how the campus and surrounding community will develop from both a qualitative and quantitative framework. A master plan addresses the evolution of:

- Academic programming (teaching, research and community outreach/public services)
- Expanded enrollment programming
- Surrounding community (population growth, regional planning, zoning, roads, sewer, etc.)
- Campus life (social living, dining, recreation, etc.)
- New programming (partnerships, businesses, grants, new services, co-locations, etc.)”

“Full master planning (beyond our 1000 acres and includes the built and not built future programming)

[or] land use only (just focusing on the “zoning” of the no-built environment)

[or] facilities plan only (what are we modernizing into)

[or] campus life only (just to finalize housing, food, CAB, S&A, and other common spaces).”



### General Need to Update the Plan

The Space Management Committee "...acknowledged that there were already several planning processes that need to be folded/synchronized into one process as it relates to Campus Master Planning. Support would be needed from Senior Staff, the Financial Futures Group, ECC/Growth Planning, The Deans, Campus Life and Food Services, Housing Expansion Planning, CLUC, etc."

"Some members of the CLUC have wanted to re-open the plan to articulate a 'Green' campus focus. This was reflected in the planning goals for the current fiscal year – 'Develop an integrated capital facilities and properties plan, emphasizing sustainability'."

Need to update the description of the reserve areas.

#### Questions to ask ourselves during the master planning process:

What will the 1000 acre campus look like in a hundred years?

What can we do today, via the campus master plan, in order to gain a positive outcome for the campus forest 100 years from now?

#### A way to answer these Questions:

Chapter 2, page 22 of the CMP explains the context: "...the college needs to be more diligent about management and documentation of its undeveloped land..."

As a long-term planning document the CMP works. What is lacking is the accumulation of forest reserve data and the accumulation of forest reserve interpretations. The CMP recognizes that the forests on the Evergreen campus will face future development pressures. Much development has occurred since the CMP was written. To protect the ecology of the campus forests in the long run we must develop a knowledge base of ecologic data. This data will help us fend off long-term city and state attempts to sell-off or exploit the campus forest reserves.

The committee agrees that the sustainability plan should be a part of the campus master plan.

Look at the pro's and con's of rezoning college land.

Add sustainability and Transportation Plan as new topics for MP, merge the 10 year capital plan with the master plan, and address how the strategic plan fit with the master plan.

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## Definitions

- *Reserve*: Add forest management allusion?

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## Chapter Two: Master Plan Context

### Physical Setting

- *Location and Environment*: What about off-campus locations (Tacoma, Gig Harbor)? Add paragraph about offsite locations.

### Campus Forest Habitat

- Knowing when the major loggings of campus occurred would be great.
- Curious to know approximately what age the different areas provided in the forest map (Fig. 6) are, whether they were replanted or reseeded naturally, etc. I have my students asking me questions like: Why is this all western redcedar, and while I have potential ecology-based reasons that I can infer, I don't know if they match up with the realities of what actually occurred in the past on campus. So, I think it would be GREAT if there was a way to enhance the level of information provided on the campus forests, to better distinguish relative times when the different areas were logged in the past, etc. (Staff/adjunct faculty)

- Description of species on campus for campus forest and shoreline habitats provides a nice narration, but it's not clear how comprehensive this information is, or is meant to be. A few invertebrates are mentioned for shoreline habitat, but none for forest, so that is at least one hole in the information.

I think it would be in keeping with the current spirit and scope of the plan to add comprehensive lists for taxa groups on campus: mammals, birds, herps, invertebrates, plants, etc. Location could be indicated only if distribution is limited. Compiling these lists could be a great academic project (I'm sure all kinds of such lists are already available and just need to be amassed and reviewed) and it would be a fabulous resource within the Master Plan that could help with future land use decisions (and tie into the Resource and Land Use Inventory database). How much text would it add to the document? I would guess three or four pages. I would recommend listing it in columns or tables.

At the very least, there should be a reference given in the Master Plan where the reader *could* find such information. (Staff/alum)

- Curious of whether we have a comprehensive tree list for the campus (at least in terms of the native species in the reserves rather than species like the Sycamores (*Platanus*) that have obviously been planted in the building areas)? If we do, it would be cool to have that in the Master Plan. (Staff/adjunct faculty)
- 1998 document has confusing organization around describing the Reserve areas that could be improved. In Chapter 2, the main descriptions of the East, North, West, and South Reserves are imbedded within the forest habitat description. I think it would make more sense to give an overview of the types of habitat existing on campus, a general sense of where, and then present a complete description of each Reserve (including any forest, meadow, and shoreline). (Staff/alum)

#### College Influence on Surrounding Land Use

- Add forest management potential

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## Chapter 3: The Master Plan

### Policies and Procedures

- "The policies and procedures are the core of the MP and they may stand alone as a guide for land use planning": Land use planning is not this simple anymore. The governor's adoption of sustainability standards, green building standards, and LEED-Silver design standards must now be incorporated into land use planning. All of these additions can either be incorporated into this paragraph or the sustainability plan/report, which will be an appendix to the MP. Or these additions could be summarized in an appendix separate from the sustainability plan/ report. (Also applies to Policy 15, Procedure 7)
- Some of the procedures have changed since the 1998 printing—for example, the procedures about structural materials and innovative facilities, under Policy 3, are gone, and replaced with one specifically about concrete. Were these changes ever approved by the BOT? (Staff, alum)

### Policy 1

- What about safety? Legal requirements?

### Policy 3

- Procedure 2: Regarding view potential, is there a view?
- Procedures 15-19 are about landscape plantings: This area needs to reflect the addition of the Arboretum plan of by Frederica Bowcutt. It could be as simple as referencing her plan as an appendix to the MP.
- Procedure 19: "New construction shall be designed with ease of modification in mind. This can be achieved with flexible mechanical and lighting systems and moveable interior partitions." Causes problems

### Policy 6

- Add a procedure to plant a tree for each one that's cut.
- Procedure 2: Remove words "with minimum habitat destruction"
- Procedure 6: "...shall be identified and formally designated as ecological preserves..." It is my understanding that this has already been done yet it has only been given the term reserves instead of

preserves. So the term 'shall be' needs to either be replaced with the term 'are', or an appropriate footnote needs to be made. (Also applies to Policy 8, Procedure 5)

- Ecological Preserves: Add discussion of forest and fire management.
- Procedure 12: "...propagules should be collected from the site or at a minimum from the south Puget Sound to maintain genetic integrity." Action taken documented?

#### **Policy 8**

- Procedure 2: "The volume of refuse...shall be reduced as much as possible": Reducing as much as possible has never been the practice; that would be too expensive. Change wording to "as much as feasible" or "as practicable".
- Procedure 4: "Campus utility systems should be upgraded..." really?
- Procedure 8: May want to indicate that forest management should consider using controlled burns to mitigate fire risk, at least along pathways. There is a huge buildup of forest litter on campus; serious fire hazard.
- Procedure 9: Change "guidelines" to "procedures". Use stronger language overall, such as "Public works contracts and purchase orders shall incorporate/ require compliance with above elements"

#### **Policy 9**

- Procedure 5: "The college shall encourage the creation for 'home spaces'..." How?

#### **Policy 10**

- Procedure 6: statement is self-contradicting. How can college allow for development of centers and encourage mixing at the same time?

#### **Policy 11**

- Procedure 1: Delete the words "to the fullest extent possible"
- Procedure 3: What is a "service facility"? Define.

#### **Policy 14**

- Procedure 2: "The highest practical degree of public access..." this is contradicted by the college's refusing requests for easements.

#### **Policy 15**

- Procedure 20: "When meeting new space requirements on campus, possibility of modifying or adding to existing buildings shall be given serious consideration." How? (eg CAB and COM)
- Procedure 11: Meaning? Buffers are not around roads, as stated.
- Procedure 13: "Safe bicycle operation shall be encouraged" How?

#### **Major Land Areas of Campus**

- *The Reserve Areas*: describes the 5 different reserve areas on campus. The terminology of the word 'reserve' implies these places are held for some later future use. The truth is these areas are multiple-use areas that are already being extensively used and have already reached their carrying capacity. The spirit and intent of Evergreen planning asserts that these 'reserve' areas are primarily used for the purpose of academic study. But what are these areas really? Are they designated as reserves, ecological preserves, or undeveloped areas? Or maybe they are: Academic Research Areas, Research Natural Areas, Academic Research Areas, Ecological Study Areas, Outdoor Learning Labs which are also referred to in the MP as Nature Preserves
- *The Reserve Areas*: The ecological descriptions of these areas precede their definitions.

#### **Campus Buildings**

- *Introduction*: "...operations and maintenance factors" Meaning?
- *Architectural Design*: "...ease of modification and flexibility of spaces..." Did not work well.
- *Architectural Design*: architectural design based on concepts that originate in the 1970s. An additional section or reference needs to be added that expresses the many new state mandated concepts of sustainable and green design. A reference to these additions could simply refer to an appendix, or a new section in the chapter.

- *Interior Space Arrangement*: "...at other alternative colleges..." Do we want to refer to the college as "alternative"? Is that an official label?
- *Open Spaces*: greenbelts in the campus core have been changed to the Arboretum project. A reference or footnote, or rewrite of this section is needed.
- *Aesthetic Considerations*: "MP 98 calls for further study to determine an overall aesthetic vision for the campus." How do we respond to this call in the MP update? We could add a new section to the sustainability plan. We could also rally faculty interest to formulate concepts and develop a stand-alone Aesthetic plan. Or we could simply explain that the transient nature of students, combined with Trustee opposition to allow the concrete to be covered in art makes any sort of aesthetic vision unfeasible.
- *Outlying buildings*: talks about outlying buildings that existed prior to the purchase of the campus. The current status of these structures needs to be updated and it needs to be noted that an Evergreen Strategic Plan is the best forum through which to address the future of these structures.
- *Building list*: In an effort to condense areas that need updating...why not put building name and usage here and all other descriptive information in appendix?

#### Utilities

- Reference needs to be made to the sustainability appendix.

#### Circulation

- *Separation of Automobile and Pedestrian Traffic*: While original design of separating automobiles and pedestrians has been effective in the campus core, the original designers failed to incorporate this design concept into the main roadways surrounding the campus core. The intersection of Overhulse and Driftwood and the entire Evergreen Parkway are going to be redesigned with this in mind. What is the best way to document this intention? Perhaps Hazards to Circulation section would be the best place to address these matters?
- *Commute Trip Reduction*: Does this committee exist? Is parking responsible for this? This issue is addressed in the new campus sustainability report / plan. Either an appendix reference can be made or this section of the sustainability appendix could be incorporated into the existing document.
- *Commute Trip Reduction*: The original and current master plans have underestimated the role of bicycle commuting in TESC's transportation picture. The college is only 5 miles from downtown, and 7-10 from many eastside Olympia residences. Towards the end of last academic year, I was working with institutional research on mapping student and faculty residences to get a picture of what percentages of people live how far from campus. It would be nice to include a completed map in the updated plan.

CTR goals have changed over time to become more lax.

There is good research (from UW's U-PASS program and others) that indicates that the single most effective way to reduce SOV (single occupant vehicle) traffic is to "de-incentivize" commuters who want to drive alone. the most common way of doing this is to raise parking fees. Evergreen is one of the most affordable colleges to park at. A costly lot reconfiguration in the past to provide more parking spaces put parking services into debt. They plan to raise prices to help recover, but it is an opportunity to re-evaluate the parking fee structure. Currently annual permits incentivize people to drive regularly by being priced cheaper than if you were to drive every day and pay at the booth. In my opinion, annual permits should be priced higher for the convenience that they offer.

I would also add that programs/staff/incentives to encourage carpooling and bicycling to campus are very important. Last year I helped launch a rideshare website that was created by students, but it could use a lot of help to be a well-functioning tool for commuters.

One more aspect that is important to mention—many other campuses have in their master plan policy to include showers and lockers for alternative commuters in new capital projects. The library renovation would

have been perfect for this kind of attention, since it has functioned as a hub of activity in the past. Talk about a new student union should definitely draw from a master plan that makes accommodations for alternative commuters.

The Commute Trip Reduction Committee should be reinstated. To my knowledge the committee never tapped into student energy/enthusiasm—I would hope future reincarnations would include student input. (Alum/former staff)

### **Modernization**

- This section will likely be replaced with an overall strategic plan, which will cost about 1/4 of a million dollars. To leave these sections as is would not be appropriate. Likewise to rewrite this section is not viable without the needed funding to do it justice. It seems we need a temporary, as well as a long-term solution for how to deal with this section.
- Still true that most of the maintenance is still the corrective type?

### **Landscaping**

- *Introduction*: two paragraphs that were in the original 1998 document are missing from this section. Is that intentional? They were regarding recommendations of that document. (Staff/alum)
- *Forest fringe*: the concept of the forest fringe, how forest edges and buildings interact, needs to be updated to explain how these concepts did and didn't work in relationship to the construction of the new seminar building.
- *Cluster Areas*: landscaping in the Cluster Areas is outside the scope of the arboretum plan. These areas are unchanged, with exception to the new landscaping in the expanded parking lots, which merits further discussion.
- *Indoor Plantings*: this section discusses a lack of funds, which has caused indoor plants to be primarily owned and cared for by individual staff and faculty members. The sustainability plan needs to be referenced in this section because indoor plants clean the air of harmful chemicals. Even a single spider plant can significantly reduce formaldehyde levels in the air. Also in the long run there is an interest in building a rooftop greenhouse by Frederica Bowcutt and others.
- *Artwork*: Art shows and displays at Evergreen are an all too often undervalued and underutilized aspect of Evergreen aesthetics. Display cases in the Lab buildings often go empty for many months, if not entire academic years. Gallery spaces are limited in size and art students don't have enough opportunity to share and gain feedback from the Evergreen community. An aesthetic plan needs to address these issues. New areas for art exhibits need to be developed. Also annual funds need to be secured to coordinate and promote exhibits in display cases, on walls, outside and in galleries.
- *Artwork*: Plan should address State art in public places requirements for new construction and remodels.

### **Campus Services and Activities**

- *On-Campus Commercial Services*: consider adding more information on the Evergreen Bike Shop. It has been student run for a number of years now and it is one of the most well supported student activities on campus. It also was an early model for other universities (including PSU in Portland and UBC in Vancouver) who have set up student-run shops. Contact them for a mission statement if appropriate for the plan. (Alum/former staff)
- *Considerations for Future Housing*: this is an issue to be intensively studied in a future strategic plan. Faculty may be interested in adding the concept of faculty housing into the fray.
- *Considerations for Future Housing*: "Housing should continue to be constructed only within the campus Core or in Clusters nearby..." Needs to be revisited. New housing should not result in demolition of the Mods. Better to refurbish A-D and find new land for additional housing.

- *Fire Protection:* Add text to end of first paragraph “Loose litter near roads and walkways should be managed.” Add to recommendations.
- *Social Space and Entertainment:* Campus is not as isolated as it used to be; housing developments creeping towards campus.

#### **Land Use: Undeveloped Areas of Campus**

- In terms of these Reserves, not much has changed in the past 10 years. I think the last version of the Master Plan did a great job describing them and, although further delineation of zones (critical areas?) may be needed in the future, the main concern is that it is clear that they are an important resource for the academic programs and they need to be protected—from the campus community and the off-campus community.

There is a need to stress the increasingly unique character of our undeveloped Reserves. With development along our borders, the Reserves are increasingly important habitat.

The Reserves will face increased public use. What policies should be implemented to maintain the habitat as pressure of use increases? What is the carrying capacity of these Reserves? Do we limit access?

- Page 37, paragraph 2 uses the terminology of 'developed' and 'undeveloped' areas of the campus. The second term does not accurately represent the constant authorized and unauthorized development of these 'undeveloped' areas. Homeless campsites, resource harvesting and trail blazing are examples of unauthorized development. Bridge building, maintenance and removal of portions the trail system, signs and general maintenance along roads are all examples of authorized development of the 'undeveloped' areas. The most significant aspect of development in the 'undeveloped' areas is ongoing scientific research. These research studies are currently being gathered into a campus land use database.

The greater Evergreen campus is undergoing long-term nearly irreversible negative cumulative harms caused by ecological fragmentation both on and off campus. Over the past 30 years the forested areas of the Cooper Point bioregion have been so drastically reduced that the Evergreen campus has become an isolated island of forest diversity. In 15 years when the city's urban growth boundary gets redrawn we need to be very clear that there is nothing about the 1000-acre campus that is 'undeveloped' or up for grabs. Alternative terminology: Academic Research Areas, Research Natural Areas, Academic Research Areas, Ecological Study Areas, Outdoor Learning Labs which are also referred to in the MP as Nature Preserves. (See item #7 #28 and #31)

- *A Note on Zoning:* Lacks an explanation of the periodic rewriting of the city of Olympia's urban growth boundary as well as chronic legislative interest in logging and real estate development. These concepts need to be thrown into the mix and a defensive strategy needs to be written via the Sustainability appendix or directly onto this particular page.
- *A Note on Zoning:* May want to modify word “zoning” here so it is not confused with city or county zoning. Could always refer to it as “the college’s zoning” or something similar. (Staff/alum)
- *Ecological Preserves:* "establishing preserves has not been realized." Is this true? I mean if it walks like duck, quacks like a duck and has feathers and wings maybe it's already a duck? It seems this issue has been pushed aside a bit and some kind of decisive resolution for or against the preserve idea, as well as an appropriate terminology needs to be developed.
- *Ecological Preserves:* most of the final paragraph of this section from the original 1998 document is missing. Is this intentional? (Staff/alum)
- *Recreation:* this section talks about how heavy recreational use can destroy an area. With the housing boom going on around Evergreen we can foresee this heavy recreational use increasing for at least the next couple of decades and steps need to be taken to deal with this before it gets too far out of control.
- *Snags:* a recent CLUC procedure for these matters is nearing final approval, which could be mentioned here, or at least referenced to the sustainability appendix.



- *Resource and Land Use Inventory*: this section talks about land use inventory and the needs for more extensive research. In truth this research has been done again and again by students who reinvent their own wheel and then leave without an option to donate their research to some sort of a repository to benefit future students. Tabbutt's Campus Land Use Database is attempting to create this repository.
- *Resource and Land Use Inventory*: Land use Database exists but needs someone to administer it and solicit additions. This database can be improved and serve as a better tool for archiving work and describing the campus.
- Draft Report from the Property Development Task Force, December 9, 2003  
 "The Property Development Task Force was charged as a subcommittee of the Financial Futures Committee." Task is to "generate discussion surrounding land use as possible revenue generation for the college." "...it became apparent that a necessary next step was the development of a Campus Master Plan, especially one that emphasized land use designations. Effective use of this physical resource is contingent upon good, campus-wide planning and the parameters for doing that kind of work are presently lacking. This lack of context limits our ability to make sound judgments on possible revenue generating uses of our property."  
  
 "Therefore, we are recommending that a process be initiated that would lead to the creation of a Campus Master Plan by December, 2004. Because of the importance of this task, and the limitation on present campus resources, we are also recommending that a consultant be hired to complete this project." (Facilities and other Staff)
- *Future Development*: Which areas may be sites for future development?

### Types of Land Use

- Regulations: I am not recommending changes to the Shoreline update, but I do find it confusing in that it does not clearly distinguish between the authority of the college as the landowner and a regulator versus the role of the county as a regulator.

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## Chapter 4: The Process for Land Use Planning

Note: An addendum that describes the committee's current membership, practices and processes is inserted in the Master Plan. Below are comments that are not addressed in that addendum.

### Introduction

- Remove the Campus Land Use Committee's charge and committee details from the campus master plan. This committee is a regular working committee that is charged out of the master plan and main goals of the committee should be in the plan, but committee details should be treated as other working committees on campus.

### The Campus Land Use Committee

- When this description says the CLUC is responsible for reviewing and making recommendations for plans it is accurate. But when the scope includes the CLUC as creator of an aesthetic vision, or as the developer of innovative facilities and utilities the description is not at all accurate.

### Operations and Authority of the CLUC

- Make the CLUC's operation outside of the MP so that the committee can evolve without needing approval from senior management. (Applies to *Evaluation of the Committee* as well)

### The Content of Proposal Applications

- Regarding the CLUC single-page check sheets for low impact proposals: I know these sheets exist on the website but after several years on the CLUC I have yet to see one. Rather than changing this requirement I



hope we can instead do a better job at using these sheets to advise CLUC members, as well as the rest of the Evergreen community.

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## Appendices

### Appendix A: Building Descriptions

- Alphabetize.

### Appendix G: Responses to Drafts of the *1998 Campus Master Plan*

- What happened to the responses to the September 1998 Final Draft? They were in the original, printed document, but they were missing in the online version of the document. The introductory text explains only the May 1998 Draft outreach process, and claims that “all” the responses are listed, but the entire second set of responses is missing. I don’t know how much it matters anymore, but it is peculiar and makes me wonder what other changes (that I missed) were made to the 1998 document between then and 2005. (Staff/alum)

# Bibliographic Notes

Franklin, Jerry F., & Dyrness, C. T. (1973). *Natural vegetation of Oregon and Washington*. Corvallis: Oregon State University Press.

*Local climatological data: annual summary with comparative data*. (1996). Asheville: The National Climatic Data Center.

## Campus Planning Documents

*Long-range plan for The Evergreen State College*. (1994). Olympia: The Evergreen State College.

Durham, Anderson & Freed, architects and Quinton & Budlong, engineers. (1969). *The Evergreen State College: development plan – phase 2 studies*. Seattle.

Durham, Anderson & Freed, architects and Quinton & Budlong, engineers. (1968). *The Evergreen State College: master plan – phase 1 studies*. Seattle.

*The Evergreen State College campus master plan*. (1983). Olympia: The Evergreen State College.

*Final report of the Space Committee [space efficiency report]*. (1997). Olympia: Space Efficiency Committee, The Evergreen State College.

Durham, R. L., Torkko, C. E., & Williams, E. D. (1972). *Report of the master planning team*. Olympia: The Evergreen State College.

Environmental and facilities planning DTF report. (1975). *Olympia: Environmental and Facilities Planning Interim Team*, The Evergreen State College.

## Student/Faculty Reports

Greenberg, K., & Hartley, A. (1998). *Trails mapping on the Evergreen State College*. Olympia: student report, The Evergreen State College.

Greenberg, K., & Hartley, A. (1998). *Forest canopy cover typing*. Olympia.

Foltz, K. & Tucker, G. (1997). *The Evergreen arboretum: a preliminary study*. Olympia.

Zimmerman, C. (1998). *Ecological assessment of stand structure and species composition on the Kifer and Organic Farm sites*. Olympia.

## Public Documents

*Thurston County profile*. (1997). Olympia: Thurston Regional Planning Council

*Shoreline master program for the Thurston region*. (1990). Olympia: Thurston Regional Planning Council.

*Comprehensive plan for Olympia and Olympia growth area*. (1994). Thurston County comprehensive plan.

## New for 2005

*Final Recommendation of the Enrollment Growth DTF* (2005). Olympia: The Evergreen State College.

Mohr, Jesse. (2002). *Evergreen State College Trail Rehabilitation Program and Future Capital Budget Requests*. Olympia: Facilities Services, The Evergreen State College.

Mohr, Jesse. (2002). *The Evergreen State College Annual Trail Maintenance Plan*. Olympia: Facilities Services, The Evergreen State College.

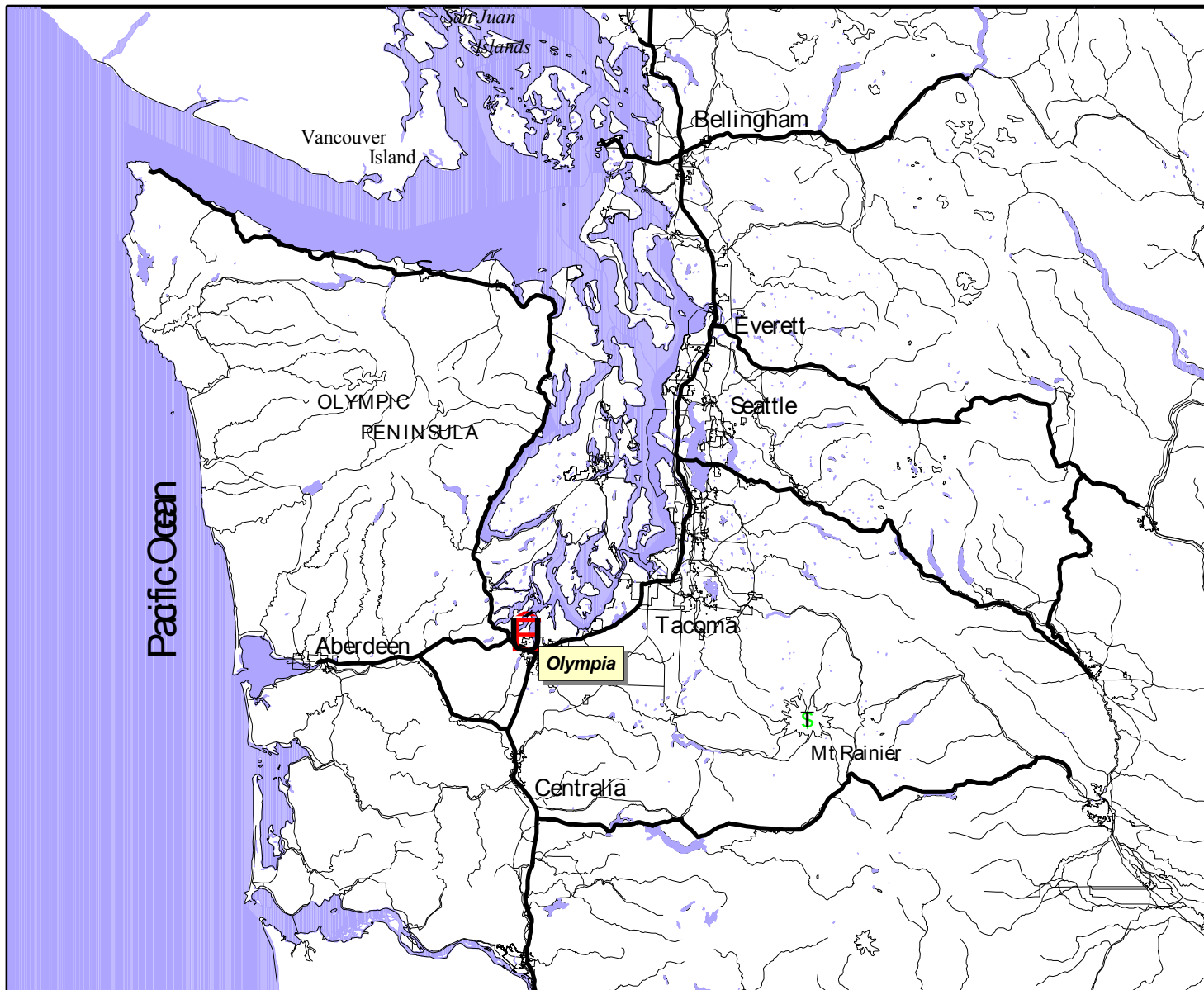
Thurston County Development Services Comprehensive Plan:  
[http://www.co.thurston.wa.us/permitting/Comprehensive%20Plan/Comprehensive\\_Plan.htm](http://www.co.thurston.wa.us/permitting/Comprehensive%20Plan/Comprehensive_Plan.htm)

Thurston County Development Services Growth Management Act (GMA) Compliance:  
<http://www.co.thurston.wa.us/permitting/gma/>

Thurston GeoData Center cadastral (parcel information): <http://www.geodata.org/online.htm>

Thurston Regional Planning Council Estimates and Forecasts:  
<http://www.trpc.org/programs/estimates+and+forecasts/census/index.htm>

Washington Natural Heritage Information System: A Partial List of Animals in Washington July 2005:  
[http://www.dnr.wa.gov/nhp/refdesk/lists/animal\\_ranks.html](http://www.dnr.wa.gov/nhp/refdesk/lists/animal_ranks.html)



**FIGURE 1**  
*Regional Location*


DRAFT


September 1998

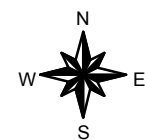
**Legend**

Roads

 Main Highways

 Secondary Roads

 Evergreen Campus



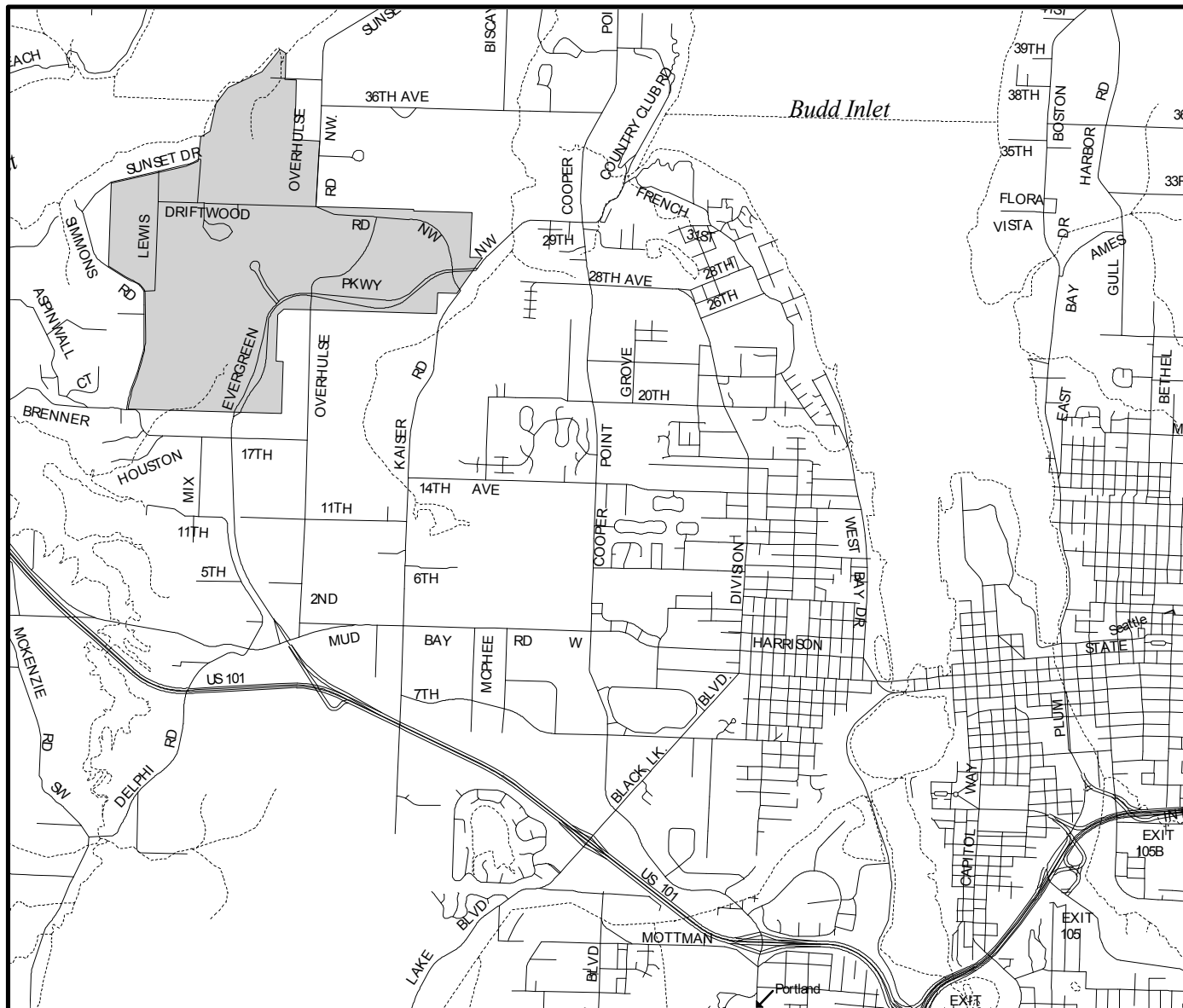
Scale = 1:2,000,000

10 0 10 20 30 Miles



The  
Evergreen  
State  
College

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# FIGURE 2

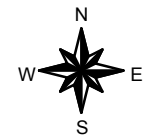
## Vicinity Map

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September 1998

### Legend

-  Highway
-  Secondary Road
-  Streams
-  TESC Campus



Scale = 1:50,000

1000 0 1000 2000 Feet



The  
Evergreen  
State  
College

\\coho\gis\users\rip\m\map\map.apr - VICINITY



# FIGURE 3

## Thurston County Zoning













































DRAFT

September 1998

### Legend

 Olympia Urban Growth Area Boundary  
 TESC Campus

Zoning

-  AGRICULTURE
-  BUSINESSPARK
-  CEMETARY
-  CENTRAL BUSINESS DISTRICT
-  COMMERCIAL
-  COMMUNITY COMMERCIAL
-  GENERAL COMMERCIAL
-  HAWKS PRAIRIE BUSINESS
-  HIGH DENSITY RESIDENTIAL
-  HISTORIC
-  INDUSTRIAL
-  LAKE
-  LIGHT INDUSTRIAL
-  LIGHT INDUSTRIAL COMMERCIAL
-  LIGHT INDUSTRIAL
-  LOW DENSITY 3-6
-  LOW DENSITY RESIDENTIAL
-  MCALLISTER GEOLOGICAL
-  MINERAL EXTRACTION
-  MIXED USE HIGH DENSITY
-  MIXED USE MODERATE DENSITY
-  MODERATE DENSITY RESIDENTIAL
-  NEIGHBORHOOD COMMERCIAL
-  OFFICE COMMERCIAL
-  OPEN SPACE INSTITUTIONAL
-  PARK/ OFFICE/ INSTITUTIONAL
-  PUD
-  R4
-  R4-8
-  R6-12
-  R/SR
-  R/SF2
-  R1
-  R3-6/1
-  R4
-  R4-16/1
-  RR1/1
-  RR1/2
-  RR1/5
-  RR2/1
-  RRR1/5
-  SCHOOL
-  SINGLE FAMILY RESIDENTIAL
-  VILLAGE CENTER



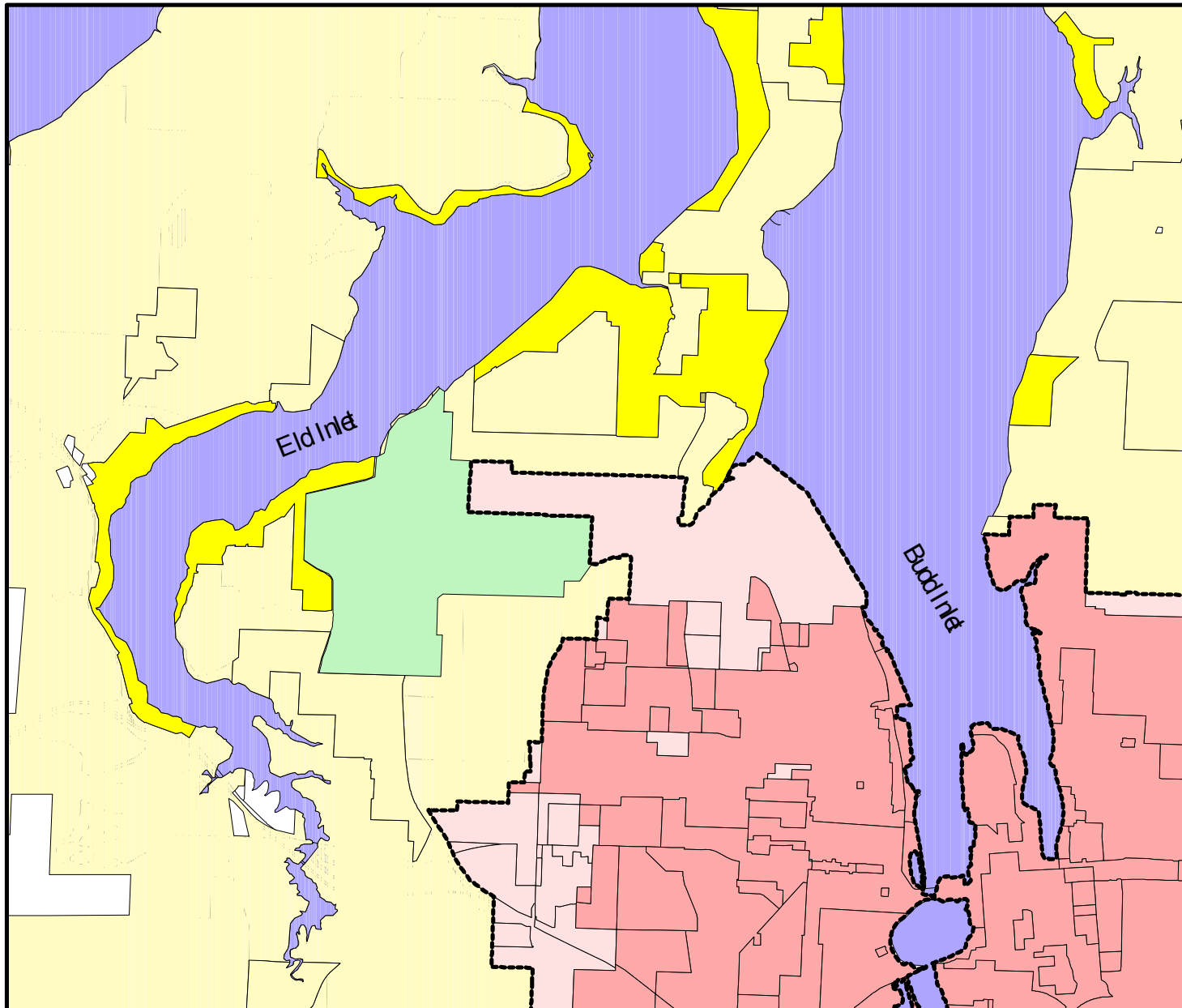
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# FIGURE 4

## Soils

DRAFT

September 1998

### Legend

-  Campus Boundary
-  Roads and Walks
- Soils**
-  Alderwood gravelly sandy loam
-  Bellingham silty clay loam
-  Dystic Xerochrepts
-  Everett very sandy gravelly loam
-  Everson clay loam
-  Giles silt loam
-  Kapowsin silt loam
-  McKenna gravelly silt loam
-  Mukilteo muck
-  Norma silt loam
-  Shalcar Variant muck
-  Skipopa silt loam
-  Tisch silt loam
-  Xerorthents
-  Yelm fine sandy loam



Scale = 1:20,000

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



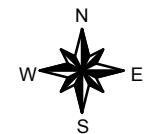
# FIGURE 5

## Topography and Site Factors

DRAFT

September 1998

- Legend
-  Campus Boundary
  -  Roads and Walks
  -  5 Foot Contours
  - Slope**
    -  0 - 5 % Slope
    -  5 - 10 % Slope
    -  10 - 20 % Slope



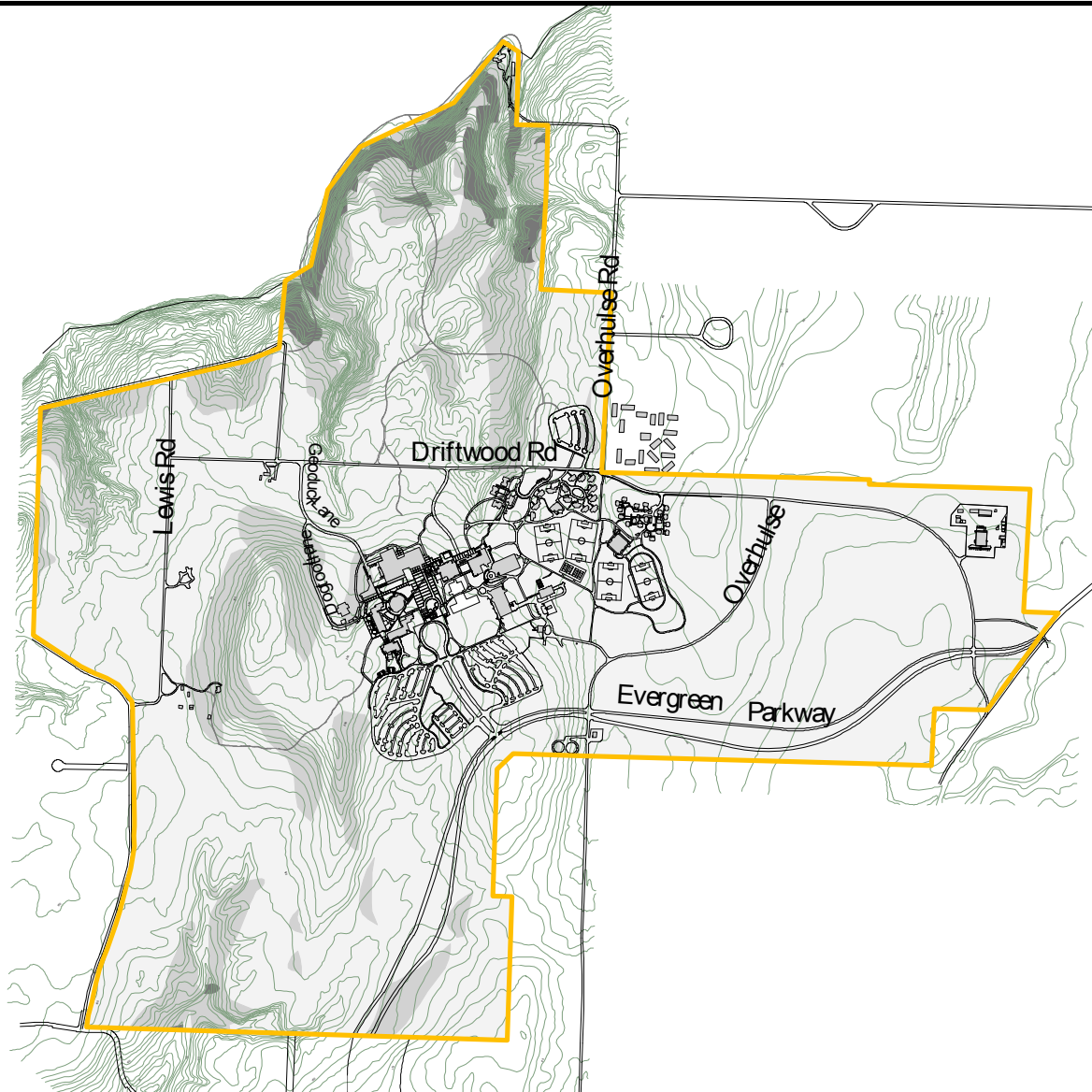
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









# FIGURE 6

## Forest Typing

DRAFT

September 1998

### Legend

-  Campus Boundary
-  Roads and Walks
- Forest Typing**
-  ACMA & ALRU
-  ACMA & PSME
-  ACMA & THPL
-  ACMA with conifer
-  ACMA with deciduous
-  ACMA with mix
-  ALRU & THPL
-  ALRU dominant
-  ALRU with conifer
-  ALRU with deciduous
-  ALRU with mix
-  PSME dominant
-  PSME with conifer
-  PSME with deciduous
-  THPL with deciduous
-  THPL with mix
-  mix
-  open or developed

Scale = 1:20,000

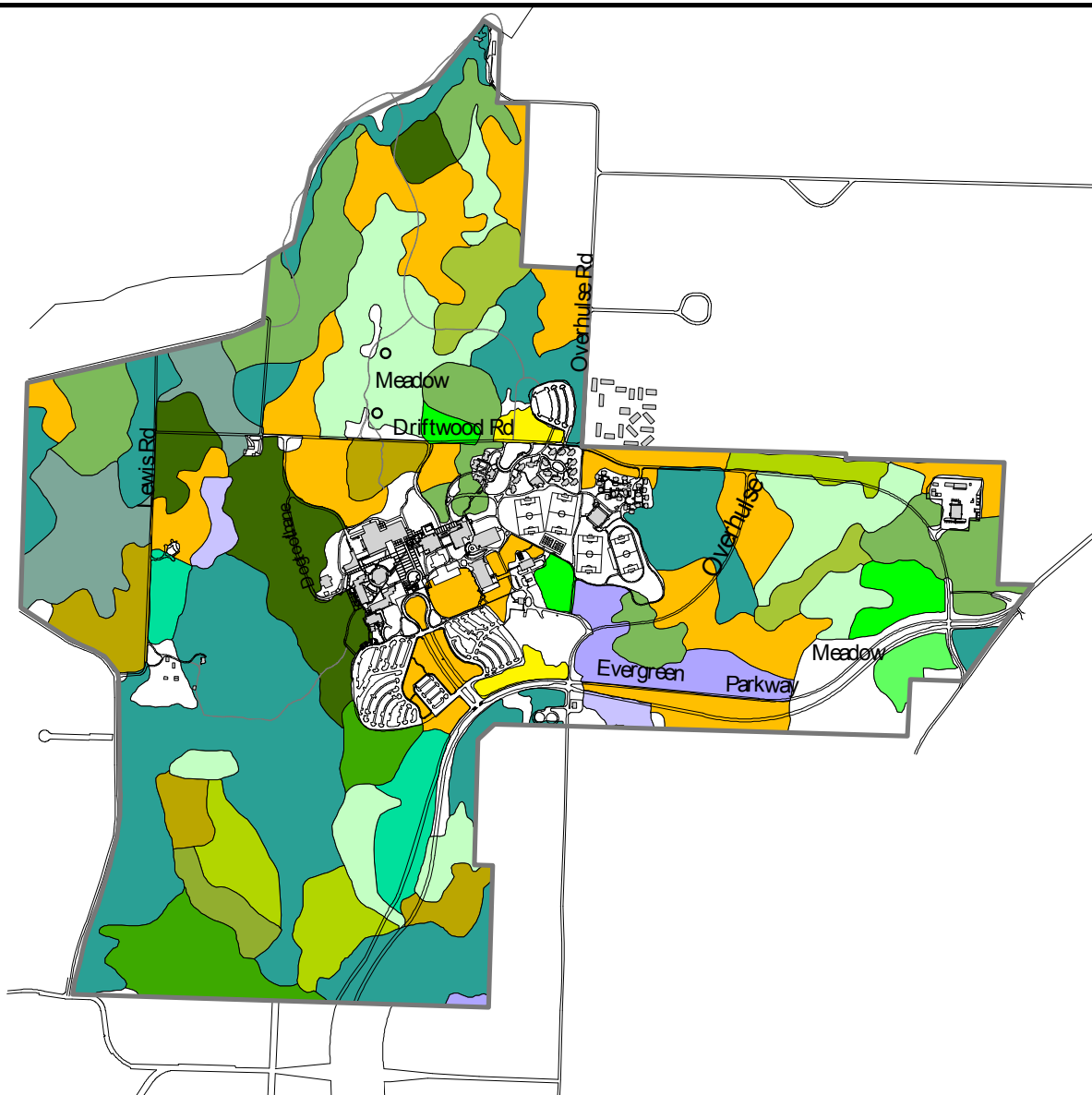
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# FIGURE 7

## Major Campus Areas

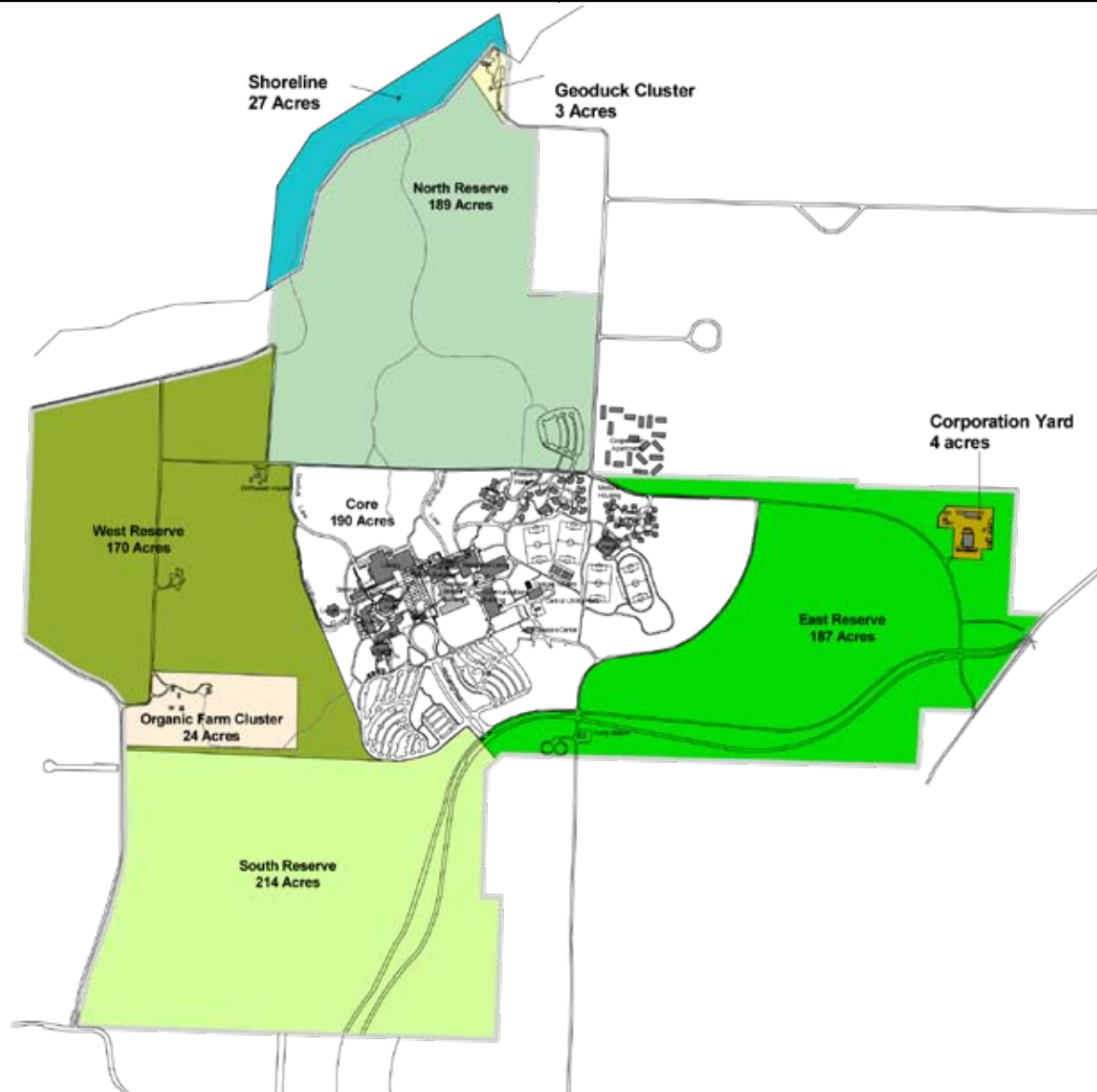
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September 1998

### Legend

#### Major Campus Areas

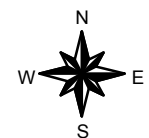
- Campus Core
- East Campus Reserve
- Geoduck Cluster
- Maintenance Yard
- North Campus Reserve
- Organic Farm
- Shoreline
- South Campus Reserve
- West Campus Reserve



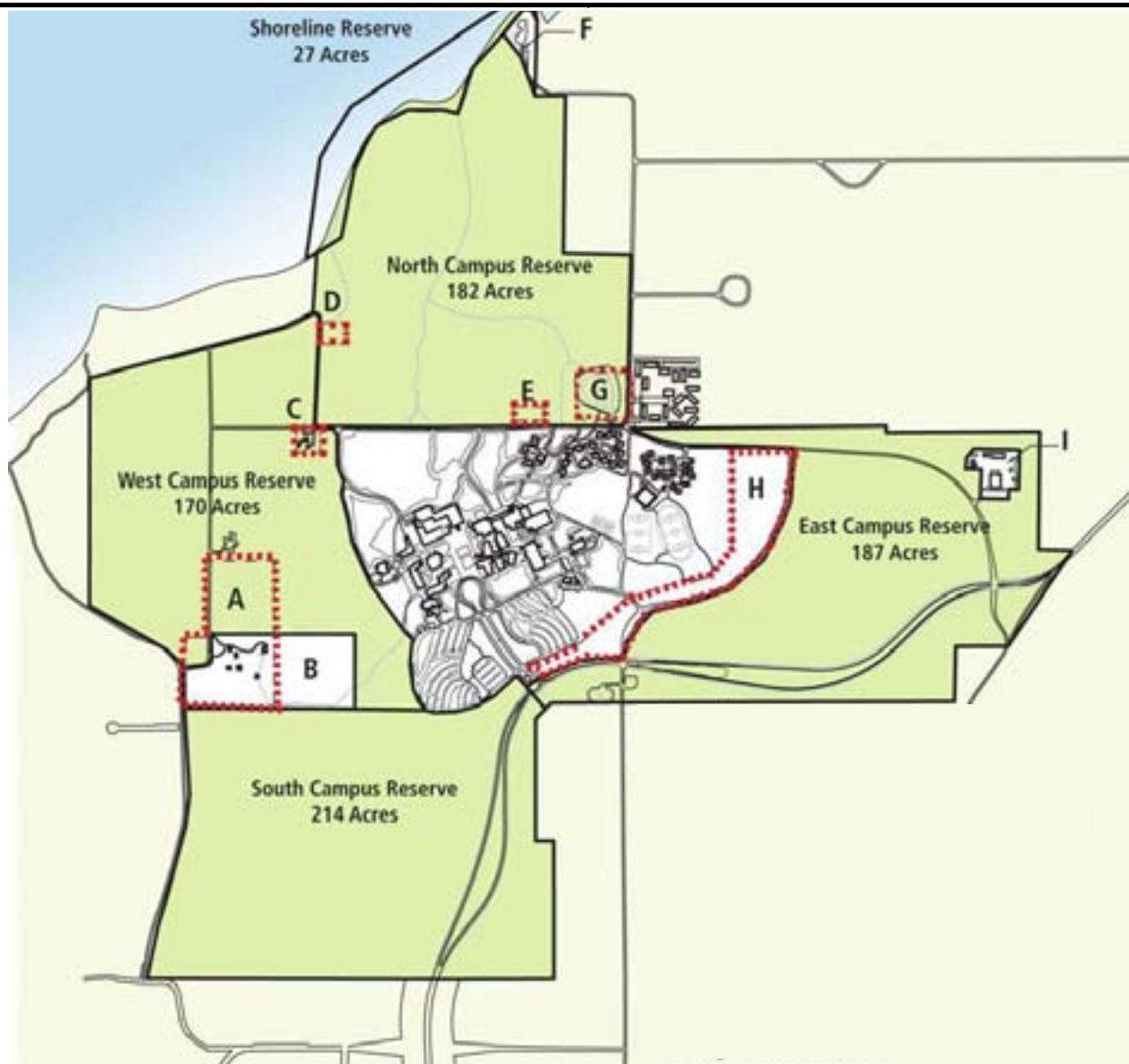
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**FIGURE 7**  
*Major Campus Areas*

DRAFT

Updated by ZGF November, 2007

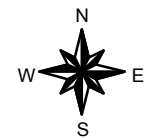
### Legend

- Reserve Boundary
- Proposed Changes to Reserve Boundaries

- A. Proposed Configuration of Organic Farm Center, 24 Acres
- B. Previous Configuration, 24 Acres
- C. Driftwood House, 1 Acre
- D. Terrascope Interdisciplinary Education Center, 1 Acre
- E. Living Machine/Wastewater Management Center, 1 Acre
- F. Existing Geoduck House, 3 Acres
- G. Additional Housing at F Lot Parking, 5 Acres
- H. East Campus Reserve Addition/Grass Lake Wetland Art Walk, 21 Acres
- I. Maintenance Yard, 4 Acres



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FIGURE 8  
*Campus Core*

DRAFT

September 1998

Legend

- Campus Boundary
- Roads and walks
- Trails



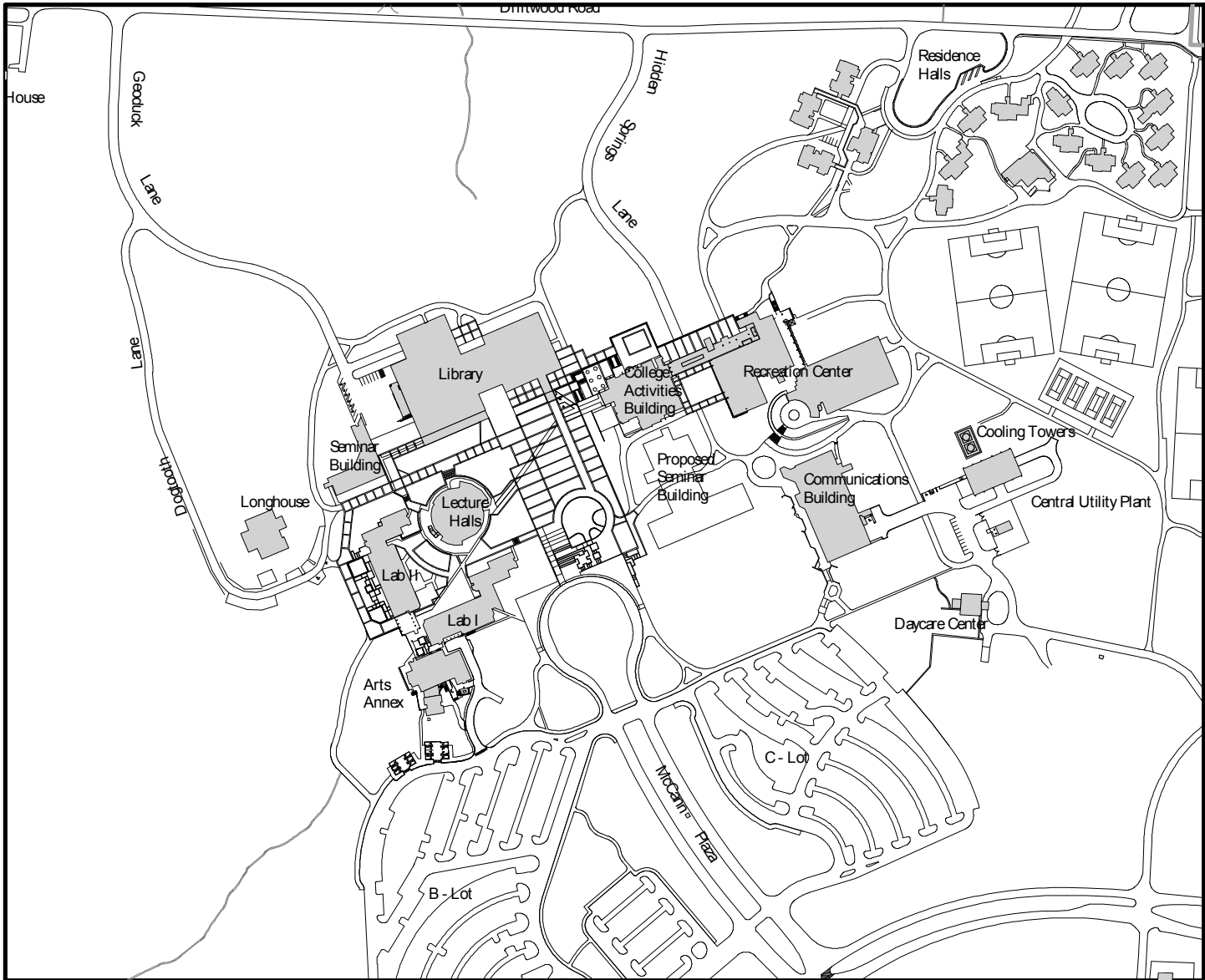
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# THE EVERGREEN STATE COLLEGE

## Campus Master Plan

VOLUME III - Appendix



ZIMMER GUNSUL FRASCA ARCHITECTS LLP | JANUARY 2008

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(companion document)

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A

INTRODUCTION



## INTRODUCTION

The Evergreen State College Master Plan is a comprehensive long term plan for the facilities and campus grounds of the College. The plan establishes priorities for campus development consistent with the College's Mission, Strategic Plan and other current initiatives. The multi-volume document identifies opportunities where the College could focus resources to meet future demands on its facilities and land resources. The plan is an important part of the College's Capital Budget Request and 10-year Capital Plan that will be submitted to the Washington State Office of Financial Management.

The Master Plan is structured as follows:

Volume I – Site Specific Recommendations

Volume II – Goals and Policies for Land Use (1998 Campus Master Plan; Updated 2005)

Volume III – Appendix

Volume III contains technical information gathered during the planning process that provides a resource for future planning and supporting information for volumes I and II. Relevant technical reports prepared by the College's consultants, staff, faculty and students are included and cover a wide range of issues including carbon emissions, organic agriculture, place naming, transportation, utilities, teaching gardens, and other issues. Volume III also includes comments received from the College community during the planning process.







# THE EVERGREEN STATE COLLEGE ORGANIC FARM REPORT (March, 2007)

This report was provided by Melissa Barker, Paul Przybylowicz, Martha Rosemeyer and Steve Scheuerell and describes long-term planning for the Organic Farm.



## **TESC Organic Farm—Past, Present, and Future**

**by** (listed alphabetically)

**Melissa Barker, Paul Przybylowicz, Martha Rosemeyer, & Steve Scheuerell**

### **Executive Summary**

The call for input to the TESC Master Plan inspired us to do some long-term thinking about the future of the Organic Farm. In this document, we propose deliberate and managed growth of Evergreen's Organic Farm. However, our main intent is to begin a campus-wide discussion on the future role of the Farm in Evergreen's curriculum and operations. In order to address the challenges outlined below, we will need to create a master plan for the Farm that considers a variety of potential alternatives and evaluates the possible impacts of proposed actions. As a way to help frame the discussion, we suggest a number of potential solutions and identify the planning that will need to occur before any actions are implemented.

Today, as never before, the Organic Farm is at a crossroads. The Farm—in its current location and configuration—has run into a number of challenges, which are primarily the result of increased demand for the services that the Farm supplies to the Evergreen and broader community. The demand for these services—hands-on learning experiences, composting on-campus food wastes, research space, and information requests—exceeds our present ability to provide them sustainably.

These challenges are pressing and, with future demands projected to increase, must be addressed in the near future. The sustainable solutions will determine the future direction of the Farm and its role in both the campus and local communities. Current challenges facing the Farm fall into four major categories:

- **Staffing.** Our current farm manager position has been temporarily increased to full-time. To address the issue of the manager working full-time but getting only  $\frac{3}{4}$  salary, a permanent increase is needed.
- **Faculty availability for the *Practice of Sustainable Agriculture* (PSA) program.** We currently rely on half-time visitors, which has often resulted in a last-minute scramble to fill the position and places an additional burden on the farm manager, associated faculty and Deans. Student demand is high enough to support a full-time faculty member to serve the PSA program.
- **Limited field space.** Our current field space is about 3.5 acres. Thirty-five years of vegetable production has resulted in a high level of soil-borne diseases that limit the types of crops that can be grown. Resting these fields by rotating them into grazing pasture or other uses for several years will increase the health of our soils. The need to rotate between cropping and resting, as well as demand for field research space creates a need for additional field space.
- **Cramped and limited academic facilities.** The Farmhouse is too small to accommodate a two-faculty program with 50 students; this space needs to be remodeled. Adding additional student-designed and -built facilities such as a greenhouse and attached workshop space would ameliorate existing limitations to curriculum delivery and research. The compost facility is already overburdened, and there is the potential to combine it with recycling of campus landscape trimmings.

The Farm, where sustainable agriculture has been taught for years, has the potential to grow and become a central part of the College's path towards sustainability. Involving students in all aspects of resolving the challenges outlined above would create programs that will be enormously attractive to students. There would be a myriad of opportunities for faculty and students from many different disciplines to be actively involved in all aspects of applying the tenets of sustainability to various projects at the Farm. By linking academic theory with actual hands-on implementation, our students will leave the College prepared to envision and implement positive new directions after graduation.

## Introduction

The Organic Farm has a long and respected history at Evergreen. From its inception, the Farm has been a foremost a place of learning, as well as a gathering place, a symbol, and an experience for many individuals interested in agriculture, community food systems, ecological building, group dynamics, hands-on work, and a sustainable future.

This document reviews some of the history and current usage and outlines the current challenges facing the Farm. Integrated with an examination of the challenges/opportunities, we will outline our vision for the Farm that will continue to place Evergreen at the forefront of the sustainable agriculture/ community/food systems movement. **The proposals contained herein are one possible set of solutions and we present them to provide a focal point for the discussions that need to ensue, rather than as a finished blueprint to be implemented.**

Successful resolution of these challenges, combined with our dedication to full-time interdisciplinary programs, will demonstrate our uniqueness and excellence to students, academia, the State of Washington and the U.S. The enhancements and improvements outlined in this document are necessary if we hope to be the “greenest college in the west” (Don Bantz, Summer 2005). Throughout this document, we use “we” collectively to refer to the primary authors, as well as to include the voices of various farm users.

## **The Organic Farm and its associated programs are nationally recognized and regionally crucial.**

Evergreen’s agriculture offerings are among the most recognized and important programs that attract students to Evergreen, particularly out-of-state students. Currently 50% of the students in the *Ecological Agriculture (Eco Ag)* program are paying out-of-state tuition, significantly higher than the percentage of the students in general. In a recent poll, some 70% of the current *Eco Ag* class has said that they came to Evergreen specifically to study sustainable agriculture.

Our *Practice of Sustainable Agriculture* program is nationally recognized as one of the best hands-on sustainable agriculture programs in the US. Over the last few years, despite the proliferation of similar programs elsewhere, *PSA* has grown and the number of applicants has almost doubled. Students’ self-evaluations indicate a high level of satisfaction with the direction of the program.

We are recognized leaders in the area of integrating the theory and practice in sustainable agriculture. In the last year, Martha Rosemeyer has been asked to speak on the interdisciplinary and experiential aspects of the program at Iowa State University, Oregon State University, and Cornell, as well as attend an invited networking conference for “shakers and movers” in US food system change. This past January Steve Scheuerell, Martha Rosemeyer, and eight students participated in the International Facilitating Sustainable Agriculture conference associated with the Ecofarm conference in Asilomar, CA. Evergreen was a visible participant:

*“I enjoyed learning more about Evergreen’s programs and certainly your school’s enthusiastic contingent was a highlight of the conference. Your program projected a strong sense of coherence and student engagement.”* Mark Keating, U of Kentucky faculty

The *Eco Ag* and *Practice of Sustainable Agriculture (PSA)* programs have had a lasting impact on the Puget Sound area and beyond. Our students are well represented at most farmers’ markets in Western Washington and local farmers depend on our interns for labor, and in turn provide training. Other program alumnae work in county, state and federal agencies and operate small businesses such as nurseries.

## **The Farm is facing challenges resulting from past and current success**

Over its long history, the Farm has been extraordinarily successful at inspiring a deep appreciation for and knowledge of organic agriculture. Use of the Farm has increased significantly in the recent past, beginning with the incorporation of *Ecological Agriculture* lab exercises at the farm in 2001 and hiring Melissa Barker as farm manager. The demand for the services that the Farm provides to the students, campus community, and local community has also increased during this time and we expect these trends to continue. This success has manifested a number of challenges and opportunities.

- External competition from other colleges has considerably raised the bar (see <http://www.newfarm.org/features/2006/0506/wsu/sullivan.shtml> for specific details, especially at the end of the article).
- Lack of full-time faculty teaching in PSA and other personnel issues are limiting utilization
- Current farm facilities are restricting pedagogical approaches

These will be outlined and discussed in the following sections. By their nature, these issues are complex and inter-related. Thus, there will be some overlap in topics in the sections below.

## ***Building on our early success, other colleges have developed similar programs***

In the 1970s and 1980s, Evergreen was one of the first colleges in America to offer academic training in sustainable agriculture and as a result, was a cutting-edge institution in the sustainable agriculture movement. The Farm and the academic programs associated with it are nationally recognized and have been for decades. The interest spawned by the success of the early sustainable agriculture programs has resulted in numerous competing programs. While Evergreen is still a leader in terms of agriculture-related curriculum, our facilities have been somewhat eclipsed by other programs throughout the country.

The reality is in the last three years, many colleges have surpassed our facilities for teaching about sustainable agriculture and food systems. For example, the University of Guelph is the first college in North America to offer an accredited undergraduate degree in organic farming. Washington State University has had their organic farming major approved for fall, 2006.

“John Reganold, the WSU professor who has spearheaded the plan for the Organic Agriculture major says that organic agriculture appeals to many students who would not otherwise consider a degree in agriculture. Enrollment in WSU’s traditional agriculture programs has dipped in the past 10 years, but Reganold says he gets “a call at least once a week from someone who wants information about the organic ag major.” Many of those calls come from people living and working on the West side of the Cascades.”  
(<http://csanr.wsu.edu/Organic/TeachingFarmTukeyOrchard.htm>)

WSU will be tapping our traditional student base, along with the 70 other United States colleges listed as having organic farming coursework and farm internships available to students (*New Farm* magazine’s “Farming for Credit Directory” (<http://www.newfarm.org/depts/student-farm/directory.shtml>)).

Providing hands-on training in sustainable food production systems is a widely recognized necessity for the future of biodiversity protection and indeed civilization since 75% of the world’s arable land use is dedicated to food production (crops and livestock). How we grow food is critical to goals of environmental stewardship. We need to capitalize on our unique curricular structure and facilities to continue in our role as a national leader. The creative possibilities are endless and the potential for campus and community involvement at a multitude of levels is an opportunity we must develop fully.

***Current demands on the Farm are straining our abilities to manage them.***

Activities on the Farm fall into two major categories—academic and operational. At some points these categories overlap and mesh well, for example in the *Practice of Sustainable Agriculture (PSA)* program, students learn academic disciplines needed for successful farm management while simultaneously working on the Farm and providing much of the necessary labor for Farm operations. Students also complete a variety of internships and individual contracts on the Farm, which can provide both operational labor and academic learning.

The management of Farm operations, along with supervision of various academic activities on the Farm, has a long and varied history. In the recent past, the Farm manager occupied both a staff and a part-time faculty position (teaching the academic portions of *PSA*). This arrangement “worked” for a number of years but also created a number of problems. With the hiring of the current Farm manager, Melissa Barker, the Farm manager position reverted back to a strictly staff position and we have been hiring visiting half-time faculty annually to teach *PSA*.

***The current Farm Manager position needs to be increased to full time.***

With the increased operational demands of the Farm, the Farm manager (currently a temporary full-time position) has a full-time job managing operations and overseeing student interns. A number of these operations, such as the composting and biodiesel facilities, have campus-wide importance and deserve campus-wide support. We have been surviving by exploiting our manager’s dedication to the Farm and willingness to “volunteer” the extra hours needed. This is not a sustainable or equitable situation. To address this, the Farm manager position needs to be increased to full-time.

While the Farm is a natural center for community outreach to TESC students, homeowners/organic gardeners and farmers, this community need cannot be met by the current farm manager schedule. The farm manager is constantly barraged with requests for information on organic agriculture that she is unable to respond to due to lack of time. Many have proposed that we offer an extension type service, and TESC could always benefit from good community relations that would result.

Adding a full-time faculty person to *PSA* and increasing the farm manager to full time, would strengthen our connections with the local agricultural community, which would result in increased internships and cooperative arrangements with local farmers, WSU, and other agricultural organizations.

***We need to hire a full-time faculty to teach in Practice of Sustainable Agriculture.***

*PSA* is taught every year and enrollment has been limited because the visiting faculty position has been only halftime. There is clearly enough student demand for sustainable agriculture offerings to justify a full-time position. Currently, there are over 40 applicants for the 20 available *PSA* slots. This is partially responsible for the numerous sustainable agriculture contracts that are sponsored by other faculty (for example, in 2005 there were about 28 additional contracts). This resulted in increased demands on Melissa Barker (Farm manager) to provide contract support that the sponsoring faculty were unable to provide. A full-time faculty member teaching at the Farm also would provide an advisory presence for students outside the *PSA* program.

Continued staffing of this position with visiting faculty is not desirable. We have just recently had to deal with yet another “situation” that continued reliance on visitors has created—our visitor took a full-time position elsewhere, leaving us to scramble to pull together some resources and people at the last minute to attempt to meet the students’ needs. This situation resulted in unanticipated demands on faculty, deans, and the Farm manager during spring break, as well as creating a great deal of stress for the students registered in the program. It has been difficult to find a half-time visitor to staff this program in the past. If we are committed to having a sustainable agriculture academic program on campus, we need to have the academic support for the program that keeps the Farm working. There is the danger of damaging our reputation in sustainable agriculture through repeated last-minute changes and staffing issues.



Working with visiting faculty also places additional demands on the Farm manager at the busiest time in the agricultural calendar to orient a new visitor. Visiting faculty cannot effectively be involved in the advance planning required for academic and practical endeavors (for example early season crops). The lack of continuity eliminates the possibilities of students participating in multi-year research projects, such as breeding new crop varieties, which would be both exciting and give context to their work. Receiving the legacy of the previous program in the form of seeds, evaluating them, and creating new ones would be exciting for the future students. Continuity in this position would also strengthen our ability to connect with the local agricultural community and regional institutions, as well as creating the possibility that PSA could expand to a two-faculty program that explored other academic disciplines while still meeting the operational needs of the Farm. These academic offerings would attract many students that are currently interning on farms in the area or enrolling in courses elsewhere.

Having a full-time PSA faculty member is integral to having the Organic Farm be one of the focal points for sustainability on campus—both in terms of learning and applied practice—and there is the potential for greater involvement and integration of the Farm in the near future. With the increasing interest in sustainability, both on campus and in society, the Organic Farm and associated academic programs have experienced a recent upsurge in student demand; all signs indicate future student demand will continue to increase. The Farm and its associated programs continue to be one of the very strong attractors for students from all over the U.S. We have the opportunity to become a regional center for organic and sustainable agriculture for small farms in western Washington. This position facilitates the opportunity to develop cutting edge models of campus food system sustainability.

The constraints of the agricultural season make the timing of this position unique. The academic calendar evolved from the seasonality of agriculture and the need to have students out of school during the summers to work on farms. Thus, there is a structural dissonance in the needs of *PSA* with the traditional academic year. This, coupled with the inability to put all the organisms on the Farm “on hold” every other year, means that *PSA* needs to be offered every year, spring through fall. This unique situation deserves considering a unique faculty arrangement, either having one faculty member serve for a number of consecutive years, such as in the Deanery, or hire a faculty member that is dedicated to the Farm and *PSA* similar to the Quantitative Resource and Writing Center directors.

### ***The Farm is currently too small to be truly sustainable***

In the campus Master Plan, 24 acres are dedicated to the Farm. However, much of this land is forested and the soils and topography indicate that it would be better left in forest. In its current manifestation, the Farm uses about 2 acres of cleared land to run a very successful farm program (The additional 1.5 acres are occupied by the community garden and the permaculture site for the student club, DEAP). The intensive use of the cleared areas at the Farm over the last 35 years has increased the incidence of soil-borne diseases and pests such that a rotation out of vegetable crops is crucial. Yet, growing vegetable crops is integral to student learning in the *PSA* program. In order to continue effectively teaching *PSA*, additional field space is needed to permit crop rotation.

In most traditional sustainable farming operations, long-term soil health is maintained by periodically converting fields used for vegetable production to pasture for grazing animals. This rotation between different types of farm production restores soil fertility through manure application and lowers the incidence of soil pests and diseases. In addition, there is increasing demand from *PSA* and *Ecological Agriculture* students to learn diversified farming, which includes integration of animals into the farming system. Adding field space to permit crop rotation and including animals as part of the Farm is a critical step towards sustainability. The recent hire of a large-animal veterinarian in a new health sciences faculty position expands the possibilities for additional teaching opportunities at the Farm.

Besides expanding field acreage to sustainably meet the educational goals of the PSA program, more area is needed to provide dedicated field space to meet hands-on learning objectives of other recurring academic programs such as *Eco Ag* and *Farm to Table*. For example, the *Eco Ag* program could include a number of activities to demonstrate cover cropping systems and the feasibility of winter vegetable production in the Pacific Northwest. Students from *Eco Ag* are currently planning an experiment that students in next year's *Food Program* will analyze for nutritional status. In addition to the expanding use of the Farm by agriculture programs, other TESC programs have increased their use of the farm, e.g. Peter Pessiki's *Organic Chemistry* and Frederica Bowcutt's medicinal plant courses.

Another growing demand for field space at the Farm comes from the need for student and faculty experimentation in sustainable agriculture and other areas. Currently, students and faculty members negotiate with the community garden coordinators for space in the community garden, and research temporarily occupies half of the community garden area. Research projects, such as Navazio and Rosemeyer's tomato breeding for late blight resistance have occupied 6000 square feet of farm space in 2004 and 2005, about half of the available research space, leaving little for others. Steve Scheuerell is interested in developing a research program that utilizes both the campus composting system and food production zones on the farm. Dylan Fischer is interested in creating a tree nursery for research and restoration work. In addition, there are several programs currently in the planning phase—an MES program in sustainable agriculture and community-based research projects—that would necessitate expanded acreage for research.

While it is clear that there is a need for additional field space at the Farm to meet the projected demands of current, recurring programs as well as planned future programs, the exact size, location, and extent of expansion still needs to be determined. Integrating agroforestry into Farm operations is one potential interesting direction that could be considered. Whether this proposed expansion would occur immediately adjacent to the existing fields or at another site would be decided in a planning process that includes campus-wide discussions (which could be the focus of a program in land-use planning). The balance between impacts and benefits would need to be carefully evaluated for all potential solutions to this challenge.

### ***The available built facilities are inadequate for current and future demand***

At the present time, there is a great deal of hands-on and experiential teaching occurring at the Farm. There is also an anticipated future increase in demand for the types of services and experiences that uniquely happen at the Farm. The Organic Farmhouse is the only indoor heated space available for academic use on the Farm. The size and organization of this space is better suited to small group activities (occupancy is 40); nevertheless, fifty+ students from the *Ecological Agriculture* program regularly squeeze in there. Additional teaching space at the Farm is needed to accommodate current use and provide for future opportunities.

We see this happening in several ways, which include:

- **Remodeling the Organic Farmhouse** to create a more flexible space. Expanding and reconfiguring the Farmhouse to accommodate three-faculty programs would increase its utility. A combination of teaching, gathering, and social place would maintain the Farmhouse's central role. Another possible addition could be a commercial kitchen.
- **Creating a commercial kitchen** for teaching food processing to create added-value products directly from the farm. Value-added grants are the way that the government is currently stimulating farming and food processing entrepreneurs. A cutting edge sustainable agriculture course might also offer traditional food processing (e.g. butter and cheese-making) for value-added and/or as a lab.

- **Building a laboratory/teaching facility** that will facilitate working with soil and large-group teaching activities. The lab facility could be broadly utilized by “dirty” learning activities that are critical hands-on components of botany, mycology, forest ecology, limnology, hydrology, soil and compost science, and all agricultural-related programs.
- **Building an integrated greenhouse facility** with the lab/teaching space to give our students crucial research and analysis skills, and allow hands-on activities during the winter. In addition to the tradition uses of a greenhouse, it would permit research and pilot demonstrations of innovative wastewater treatment using the outflow from the commercial kitchen.
- **Expanding the compost facility** that is currently over capacity processing about 2.5 tons of food waste per week. There are additional food wastes generated on campus that could be processed together with other organic materials from the campus including landscape trimming, wood waste and sawdust. Developing another composting site that could efficiently process a range of organic materials is necessary to work towards the goal of zero waste on campus as is recommended by the campus Sustainability Task Force and in the current draft of the campus Strategic Plan that is undergoing revision. The *Eco Ag* program is currently analyzing options for expanding composting on the campus; a report to the campus will be finished and placed on the CELL web site by June 16<sup>th</sup>.

The current lack of these facilities, especially the greenhouse, greatly impacts the types of teaching that can be done. In *Ecological Agriculture* and other classes taught by the authors, we have learned that growth chambers do not work adequately for student research. *Eco Ag* students would greatly benefit from greenhouse access for experimentation, or to start plants for research plots. Additional space to start plants for the Farm operations is also needed. Newly hired Forest Ecologist, Dylan Fischer, has stated his desire for a greenhouse and plant nursery location to propagate and grow tree seedlings for class use. Frederica Bowcutt has been requesting research greenhouse space for a number of years. In addition to greenhouse space, this would include suitable area for soil preparation, potting and other tasks.

Much of the planning, design, and construction of these facilities could be done by students in academic programs. The Sustainable Building/Eco-Design program is a natural fit to focus on some of these projects. Evening and Weekend faculty, Darryl Morgan, has expressed an interest in creating a facility at the Organic Farm where trees that are removed on any part of campus could be milled and dried. He is particularly interested in using this wood with his classes to create furniture to be used on campus—sustainability in action!

### **The Farm has the potential to grow and become a central part of the College’s path to sustainability.**

The current demands on the Farm exceed our present ability to sustainably provide them. With future demands projected to increase, it is apparent that we must take steps now to grow in a sustainable manner. This planning has already started with the formation of the Center for Ecological Learning and Living (CELL), which includes the Organic Farm. CELL’s mission statement is “to provide students and the broader community with experiential learning opportunities that link theory to practice through the development of evolving models of sustainable agriculture practices, ecological design, and holistic living in the Pacific Northwest Bioregion.” The CELL has the potential to expand in many directions. By keeping the Farm at the center of its planning, we can create an integrated learning facility where students can get academic and practical experience with a wide range of approaches to sustainability.

Central to our vision for the Farm is the expansion of both the agricultural area and the on-site built teaching facilities.

**Successful implementation of this vision will require support from the entire campus community.**

The current emphasis on campus sustainability illuminates the need for strengthening the connections between the Farm and the broader campus community. Sustainable food systems are at the heart of the definition of sustainability. There is great interest on behalf of the campus food provider to utilize more food that is produced on campus. Implementation of this vision will provide opportunities for a wide range of learning opportunities that will give our students concrete experience with sustainable development. There are endless possibilities for involving faculty from all over campus in this vision.

A few examples of possible program activities are: developing a master plan for the Farm, compiling a history/ethnography of the Farm community, creating a documentary film of the entire process, a survey of the campus community to determine the values attached to all the services from the Farm, economic modeling of Farm operations, and an examination of the pastoral aesthetic appeal combined with nature-focused art. The proposed expansion of the field space could be used as a program project where GIS skills, community surveys, forest ecology, and sustainable forestry all intersect to identify the most suitable area for expansion. Exploring water-use technologies and alternative wastewater systems could be a theme for another program.

The proposed remodel of the Organic Farmhouse and the new lab/teaching/greenhouse facility could all be designed, planned, and built using state-of-the-art green building techniques. In addition to providing the space to meet the demands on the Farm, these expansions will provide a myriad of opportunities to involve students in all aspects of the various projects.

The proposed additional buildings and remodel could be the focus of our *Sustainable Design* programs over a number of years. If funding is procured, students could actually build it. This blend of academics with hands-on experience will continue to attract students nationally. An Extended Education summer offering dedicated to a sustainable building practicum could round out the offerings. This will give our students critical experience with conceiving, designing, planning, and creating sustainable systems.

These possibilities and other exciting programs with a real-world project connection to the Farm will be enormously attractive to students throughout the U.S. and will further strengthen our reputation as a unique, dynamic and practical learning community.

***Making this vision a reality***

To realize the vision contained herein, we need community involvement and support at all levels, from the students to the top levels of the administration. There are many steps on the path towards integrating the Farm into a campus-wide sustainability strategy. A Master Plan for the Farm needs to be developed. A campus dialogue is urgently needed to discuss the need to dedicate existing open space or clear more land to meet the agricultural and food systems educational needs of our students.

With both grassroots support and administrative commitment, we can create new learning opportunities that will both challenge and sustain us for the foreseeable future. Solid support from the administration to make this vision a reality would attract and permit faculty to commit to making these projects a central part of their teaching. In addition, non-traditional funding opportunities outside of legislative appropriations, such as foundation support, should be explored to fund infrastructure improvements (again, this could be part of a program).

This document is the first step along what could be a long path. The world values what we propose to do, and there are donors willing to help make this vision a reality. Lets walk our talk and invest in the people and facilities that can make this vision a reality!

*"It [the Organic Farm] is a special place and its impact on students that pass through is irreplaceable."*

—Tom Gilbert, who as a student, started the compost facility.



# TERRASCOPE REPORT

(October, 2007)



Proposal for Interdisciplinary Terrascope Education Center  
The Evergreen State College  
Input to Draft Master Plan October 7, 2007

## OVERVIEW

We propose an interdisciplinary, multiuse facility that will bring together the disciplines of science and the visual arts and that will enable students, faculty, and outside community members to investigate and understand our campus wildlands in ways that do not currently exist. Traditionally, Evergreen has striven to bring together seemingly different elements to understand the world: the disciplines of art and science; terrestrial and aquatic habitats; and humans and nature. The “Terrascope” (literally, a structure with which to see the world”) will augment the curricular needs of our environmental studies, visual arts, and creative writing programs. It will provide classroom, laboratory, and studio space surrounded by forest and other natural habitats. This structure will also provide access to the forest canopy in safe and non-destructive ways.

## RATIONALE AND STATEMENT OF NEED

We recognize that any new facilities must primarily fulfill curricular needs. Provision of space and facilities to meet research and creative work are important, but secondary.

In the mission statement of the Environmental Studies Planning Unit, the three main curricular foci are: a) Human Communities and the Environment; b) Natural History; and c) Environmental Sciences. These foci are manifested through our use of our 1000 acre campus and field trips. The geographic size and protected status of the TESC campus and its location at the interface of diverse social communities and natural habitats of the Pacific Northwest make it physically appropriate for these curricular foci. Our hands-on approach to environmental studies fills a niche within the Washington State system of higher education, and one that has drawn and continues to draw a large and growing number of students to the College.

In the mission statement of the Environmental Studies Planning Unit, the three main curricular foci are: a) Human Communities and the Environment, b) Natural History, and c) Environmental Sciences. These foci are manifested through our use of our 1000-acre campus and field trips to other habitats and regions. The geographic size and protected status of the TESC campus and its location at the interface of diverse social communities and natural habitats of the Pacific Northwest make it physically appropriate for these curricular foci. Our hands-on approach to environmental studies fills a niche within the Washington State system of higher education, and one that has drawn and continues to draw a large number of students to the College.

[add analogous paragraph from Visual Arts Planning Area here]

We observe with concern the growing impacts of humans on the natural world. As cities and suburbs grow, more and more people are now affecting wild and rural areas. This increasing proximity is a major source of the severe environmental problems that humans face. Part of the solution is to provide the next generation with the tools to foster a passion and understanding for the natural world through direct experience with it. Our students are eager to learn techniques of field studies in the wide variety of marine, freshwater, terrestrial, and celestial habitats our campus encompasses. Although TESC supports some tools and facilities (e.g., GPS equipment, Organic Farm), we lack certain facilities that would bring our students and faculty in more direct contact with the natural world in our own surroundings.

To carry out its mission, the college relies on facilities typical of college campuses: classrooms, science laboratories, computer centers, the library. Another major facility used by the Environmental Studies Planning Unit, but not officially recognized as such, is the campus itself: the set of habitats, ecological processes, geographic features, land use histories, and community connections that comprise the 1000 acres. The proposed facilities has as its centerpiece the campus itself, not as undeveloped land being used opportunistically for field studies, but as a facility as substantial and valued as a library or science laboratory.

The campus is quickly becoming a habitat island surrounded by suburban development. Increasingly such enclaves are being viewed positively by expanding communities, and are likely to become more and more common. The proposed facility will create a connection between our un-built lands and the built suburbs in a way that is minimally disruptive to the un-built



lands. It could become a center for research on the role of such reserves in biodiversity maintenance, ecological changes that accompany insularization, and the kinds of ecosystem services that suburban reserves provide. It could also provide training in reserve management and similar efforts in other communities. We anticipate that the facilities we describe will support the following uses:

- Support of other existing academic programs (e.g., core programs, Introduction to Environmental Studies, Botany, Ecological Agriculture, Entomology, Herpetology, Hydrology, Mammalogy, Marine Environments, Temperate Rainforests);
- A new program offered regularly that addresses the ecological and social features of a south Puget Sound suburban reserve;
- Student/Faculty research projects;
- Community and professional outreach

[need to add Visual Arts and Creative Writing curriculum]

## HISTORY

In 1999, a number of faculty from the Environmental Studies Planning Unit proposed creating the Evergreen Environmental Field Laboratory (EEFL), a laboratory to investigate the relationship between the urbanizing society of south Puget Sound and the natural components of the local landscape. It comprised a number of facilities that were conceptually linked to facilitate teaching and learning by our students, faculty, and outside community members about our campus lands. A number of structures were proposed, several of which have already come into being (natural history collection space, trail system, teaching gardens). Other structures are yet to be built.

## USAGE

The structures we anticipate are innovative and will serve multiple disciplines. Environmental Studies programs and projects will use the new classroom and wet lab space. Expressive/visual Arts programs and projects will use the new classroom and studio space. All of those plus creative writing programs will use the classroom and seminar spaces. All of those plus other planning units will use the canopy walkway. The general campus and outside community members will also use the Walkway and Canopy Education Center.

We anticipate that this will meet the curricular and creative work needs of Expressive Arts.

## STRUCTURE COMPONENTS:

Components of the structure include the following:

- 1) **One large classroom teaching space** for teaching ecological labs, with a “dirty space” for storing boots and outer clothing; plant dryers; large sinks and shelf storage space along the walls; capacity of 50 students and two faculty;
- 2) **One wet lab with marine and freshwater tanks** for observing and experimenting with marine and aquatic organisms;
- 3) **One large art studio space** for teaching nature drawing, with “dirty space” for storing boots and outdoor clothes; large sinks, and shelf storage space; capacity of 50 students and two faculty;
- 4) **Three breakout/seminar/critique rooms** with smooth walls for hanging artwork, and use for seminars; capacity of 25 students and one faculty;
- 5) **Connection paths and a staging area to an ADA accessible Forest Canopy Walkway/suspension bridge.** The latter will span a deep ravine that will provide access to the treetops of the forest below the bridge. The staging area, a covered space adjacent to the proposed building, will serve as a place for orientation/education about the canopy and the ecological functions of canopy biota for students and visitors. This will encompass the structure described in the Draft Master Plan, the “Forest Observation Walk Facility”, an education center that will “provide the opportunity to study and monitor an area of the evolving tree canopy on the campus” That was envisioned as “minimal shelter...to support interpretive materials and be

carefully integrated into its site to minimize the impact of the project from both a visual and environmental standpoint” [p. 54, draft Master Plan].

6) **Caretakers’ residence** to enhance security and safety of the facility, parallel to the caretaker’s residence at the Organic Farm.

#### **LOCATION AND LOGISTICS:**

We envision that these structures will be sited at the end of Marine Drive, where there is an existing area of disturbed forest/open area, at the elbow of the road.

The total square footage of the building is anticipated as between 12,000-16,000 square feet; the walkway will be 400 linear feet; the Walkway Staging area will be 700 square feet. An engineering component will be piping water from the Puget sound for the marine lab tanks.

#### **COMMUNITY RELATIONS**

Because of the location (at the edge of campus) and the exciting education/outreach potential of the structures (particularly the Canopy Walkway), we will need to develop mechanisms that allow inclusiveness of outside community members without disrupting curricular activities. We anticipate that these structures and offerings will be an important component to enhance Evergreen/community relationships as human population density increases in the lands that surround Evergreen.

Submitted by Nalini M. Nadkarni  
Member of the Faculty  
nadkarnn@evergreen.edu  
867 6621





# MECHANICAL SYSTEMS

(July, 2007)



## MECHANICAL SYSTEMS – GENERAL OVERVIEW

### EXISTING CONDITIONS

This section summarizes existing mechanical systems, including observed or reported operation issues, and a condition assessment based on a non-invasive field visual survey. This evaluation of the mechanical systems is based on field notes and a review of documents and drawings made available for this assessment.

### GENERAL

The Evergreen State College was constructed in the early 1970s. It has a main Central Utility Plant (CUP) that provides steam and chilled water to the campus for heating, cooling and domestic hot water through an underground tunnel system. The tunnel system connects directly to mechanical rooms in the Communications Laboratory (Comm Lab), Seminar I (Sem I), Seminar II (Sem II), College Recreation Center (CRC), College Activities Building (CAB), Library, Lecture Halls Building, Science Lab I (Lab I) and Science Lab II (Lab II). A crawlspace tunnel to Housing Buildings A, B, C & D provides steam to those buildings. A direct bury branch from that tunnel provides steam to the Community Center and Housing Units E through U. Additional direct bury piping (steam and chilled water) runs from the main tunnels to the Longhouse and Lab Annex buildings. The Modular Housing Buildings are heated by electric baseboard and have no connection to the CUP. The Childcare Center has its own gas-fired hot water boiler, but is not connected to the CUP. Additional outbuildings consist of the Farmhouse, Geoduck House and Shop Buildings. Each of these outbuildings has its own stand-alone heating system.

Each main campus building has a steam to hot water heat exchanger for building heating and a separate heat exchanger for domestic hot water. The CRC has a separate heat exchanger for pool water heating, and the CAB utilizes steam directly for kitchen purposes.

### BOILER SYSTEM

The central utility plant contains three steam boilers. The two main boilers produce 35,000 lbs/hr (approx. 33,964 MBH) of steam. These boilers are designed as 250 psig boilers, but are only run at approximately 100 psig. The btu's per lb of steam automatically drop 2-1/2 percent (at full load) by reducing the pressure that amount. The normal full load efficiency of these boilers is approximately 80%. Since these boilers are rarely run at full load, the actual efficiency is much lower than it would be at full load, in addition to the 2-1/2% loss from the pressure reduction.

There is an additional 12,000 lb/hr (11,644 MBH) boiler that runs in the summertime to produce steam for domestic hot water heating.

The main campus total heating capacity is approximately 56,000 MBH. This does not include housing heating or any (main campus and housing) domestic hot water capacity. From discussions with boiler operating personnel, it appears that only one main boiler operates at one time during the winter. The housing total heating capacity is approximately 7,700 MBH. The main campus total domestic hot water capacity is approximately 25,000 MBH. The housing total domestic hot water capacity is approximately 3,300 MBH. That equals a total capacity (or connected load) of approximately 92,000 MBH. This means the total steam production is only 37% of the connected load. Obviously the connected load is much greater than what is required to actually heat the buildings.

The existing steam system suffers from considerable leakage at all converters, valves, condensate receivers, etc., in the existing mechanical rooms and utility tunnel. A steam to hot water system suffers loss through the heat exchanger itself on the magnitude of approximately 10-20%. However, most steam systems rely on accurately receiving condensate back from the system for re-use in producing steam. Most systems have a fair amount of loss in the condensate system, both through transmission loss in the piping and as well as leakage at receivers, valves and pumps. In combination with this, most mechanical rooms have been provided with cooling, thereby using additional energy to offset the heat loss through the steam system.

The main campus currently runs the boilers on an interruptible gas service. This means that when the utility company is under peak load they may call the school to have them switch from gas to oil for their heating needs. This occurs approximately once or twice a year on average.

## COOLING SYSTEM (CHILLERS AND COOLING TOWERS)

The existing Central Utility Plant (CUP) houses an existing 800-ton York centrifugal chiller and associated pump installed in 1997 and a new 1000-ton centrifugal chiller and chilled water pump installed in 2006-2007. The current total connected load is 1600 tons with no diversity. There has not been any major complaints about lack of cooling throughout the campus, however, the system does suffer from some pumping issues and lack of circulation in the most remote buildings.

## PRIMARY AIR HANDLING SYSTEMS

The eleven main campus buildings each contain a main built-up air handling system (or systems) housed in indoor mechanical rooms that are provided hot water and chilled water to the coils from the main campus system. Air handlers generally have both a supply and return fan. Conditioned air is provided to the spaces through galvanized sheet metal ducts and ceiling mounted diffusers. The majority of equipment observed (not all equipment was visible) appears to be original to the age of each building, with some minor exceptions. The existing ductwork that was observed was generally insulated and in good condition. Conditioned air is provided at 55°F year round, and then heated as needed to provide the correct leaving air temperature, depending upon seasonal and space requirements.

Exhaust fans serve various spaces (mostly bathrooms and locker rooms) throughout the buildings. Most fans are located on rooftops, although some are located in ceilings or crawl spaces. The Lab I and Lab II buildings have mostly 100% Outdoor Air systems for the labs and fume hood exhaust systems located on the rooftops. There is currently only one heat recovery unit serving a lab space in Lab II. All other labs do not have heat recovery. The Lab Annex building also utilizes mostly 100% Outdoor Air systems and exhaust without heat recovery.

## POOL CONDITIONING SYSTEMS

The main unit serving the pool area, a built-up air handler located in the lower mechanical room, is operating as a 100% outside air system. It currently has a heat "run-around" coil installed in its air stream. HRC-1A and HRC-1B, as well as HRC-2A thru HRC-2D were installed in the autumn of 2002. This run-around loop is capable of capturing nearly 900 mbh of heating value. The coil currently located in the outside air intake air stream, and the coil that is located in the return air stream are both functioning. The pump serving this system has a newer (high efficiency) 1.5 hp motor. All piping insulation appears to be in good condition.

At present, the exhaust air coil is located in the plenum air stream with a large amount of free/bypass area surrounding it, and much of the rigid insulation lining the plenum is no longer attached to the walls, blocking the air stream. This is substantially reducing the efficiency of the run-around loop. This condition is also allowing chlorine-laden air to be absorbed by the concrete walls.

Current drawing schedules suggest that all return air is being processed through HRC-2A thru HRC-2D. This is presently not the case, due to factors noted. Observations currently estimate only approximately 50% of this exhaust air is being processed through the coils.

The main pool filter, heater, valves and main piping are located in a room beneath the pool area. The original sand filter was a large bed style requiring the flow of a 40 HP pump. The large bed style sand filter has been converted to an open tank for skimming. In 1988 two smaller modern, closed vessel type sand filters were added to the system.

The original 40 HP motor SP-2 has been changed. In 1988 the pump was changed to a 20 HP, 925 GPM at 60Ft H.

The two new sand filters added are STARK Model S1-120, having a min surface area of 35 SF and a flow rate of 462 GPM & 13.2 GPM/SF. The flow total for the filters is 924 GPM.

## PLUMBING SYSTEMS

The majority of existing plumbing fixtures appear to be original, but are in reasonably good condition. Some bathrooms appear to have been renovated, and some of the fixtures have been replaced. Many urinals have been updated to No-Water type urinals.



Drain and vent lines all appear to be cast iron and in very good condition. Domestic water piping appears to be a mix of copper and galvanized steel, with the majority of visible piping being copper. No dielectric connections were visible during our initial inspection. The majority of domestic water lines appear to be properly jacketed and insulated. There is a mix of old and new insulation visible in the tunnels. Specific tests would need to be performed to determine if any of the insulation contains asbestos or other friable material.

## CONTROLS

The existing controls are a mix of pneumatic and electronic controls with some minor hand operation. There is a main DDC system on campus that is located in the CUP, with control components scattered throughout the buildings. Existing control equipment varies in condition, the majority of it is original to the buildings, but several upgrades have occurred in the last ten years. In addition, the pneumatic system suffers from considerable leakage and affects the quality of control. The building operators appear to have a reasonably good understanding of the equipment and how it should be operated, but the overall DDC System needs to be inventoried and calibrated so that all control functions and sequences are catalogued, recorded and understood.

## FIRE PROTECTION SYSTEM

There is an existing wet-pipe fire protection system that serves the main campus buildings. Existing pipe is conventional black-iron, with standard response sprinkler heads. The piping and heads appeared to be in excellent condition.

## RECOMMENDATIONS

The TESC campus has an excellent main infrastructure consisting of the Central Utility Plant (CUP) and main utility tunnels that connect to the 11 main campus buildings. Both the CUP and the tunnels were built to serve a campus of approximately 12,000 students. The current campus population is in the low 4,000's. It therefore makes economic and logistical sense to continue to utilize this infrastructure, as it has plenty of space for growth and change, with very little capital investment in the infrastructure itself.

The service life of the equipment varies throughout the campus. In general, the mechanical systems have been well maintained and are in good condition. Much of the existing HVAC equipment has gone beyond its expected service life, as defined by ASHRAE and technically should be replaced. Service life for the type of equipment found in these buildings is generally in the 20-25 year range. However, many pieces of equipment are still in excellent condition and have had service upgrades to extend their life. The main air handlers in the buildings are generally in good condition and should remain. These units are built-up systems and can have pieces replaced as they wear out. The piping in the tunnels appears in excellent condition as well and can be retained depending upon it's particular service. The chillers in the CUP are new or near-new and have had control and service upgrades in the recent past.

The major exception to the above observations is the boiler system. The main, large boilers have exceeded their life expectancy, and have control components that are extremely difficult to replace or maintain. However, the smaller boiler used in the summer is in excellent condition and could be retained.

The other primary factor when evaluating the equipment is efficiency. The existing heating equipment, at it's most efficient when new, was approximately 80%. This is at the peak of the heating season with the boiler running at 100% capacity. This type of boiler does not operate very well at part-load, which the majority of our heating season is comprised of. In addition, as noted in the boiler section above, these boilers are run at a lower pressure than they were designed for, further limiting their efficiency. The inefficiencies of the steam system were also previously outlined. Nearly all of the existing air handlers currently have hot water coils, as the steam is converted at each building to hot water for heating purposes. Converting the existing steam to hot water system to an all hot water system, with new, more appropriately sized, high efficiency boilers with modern controls located in the CUP would greatly improve the overall energy efficiency of the building heating systems.

Concurrently, conversion of the domestic hot water system from central plant to distributed, point of use type hot water heaters will also greatly improve the efficiency of this campus system. This type of system could also be tied into rooftop solar

thermal systems on each building that could provide some or all of the domestic hot water heating needs. The exception would be the CRC and CAB, which have high domestic hot water loads. Further investigation would be required to determine what would be the most efficient domestic hot water system replacement for those particular buildings.

The chillers and chilled water piping appears to be in very good condition, and well insulated. This system also appears to be adequately sized, and does not suffer from gross inefficiencies. Some savings can be seen through certain control and piping revisions that have been identified in previous studies.

The existing controls are in generally good condition and can adequately control the majority of the campus systems. However, a more thorough evaluation of the controls would be necessary to fully determine what measures would be required in order to maximize the efficiency of the current mechanical systems.

Most plumbing fixtures could be retained, but with new faucets and flush valves. Some fixtures would need to be replaced due to age, lack of ADA units and inefficiency. If bathrooms are to be re-configured or updated, we recommend replacing all plumbing fixtures with more water efficient units. Existing domestic water piping would need to be further evaluated. It is most likely though, that the majority of water pipe is copper pipe and does not need replacement in the near future.

The fire protection system will most likely only need revisions to accommodate any new space configuration. Existing heads would need to be replaced with fast action heads. The buildings would need to be evaluated to determine if there are any areas that are currently not sprinklered that need to be under today's code, such as in ceiling plenums and tunnels. These areas would most likely need to be fully sprinklered and could occur on a building-by-building basis.

## SUSTAINABILITY

Many of the sustainability goals for the campus, such as improved envelope and maximizing daylighting, can be achieved on a building-by-building basis. Overall campus energy goals and strategies should mainly focus on efficient delivery of building utilities from the central plant and/or campus. It was previously indicated that a more efficient heating system would greatly improve the overall campus energy use. Strategies such as the use of bio-fuels for the main heating system could be incorporated with that strategy. Domestic hot water production was also previously addressed. Overall, potable water consumption could be reduced through rainwater catchment and on-site treatment/retention.

The campus cooling system could possibly be supplemented by the use of ground-source heat pumps. Further study would be required to determine if this is a viable option.

Photovoltaics could provide some of the campus electrical needs, but are unlikely to replace the current grid-fed system due to the high cost of these types of systems. These could, however, be evaluated and possibly used on a smaller, building-by-building, or system-by-system basis.

Large-scale solar thermal systems are similar in that they make environmental sense, but currently do not make economic sense in this application.

Wind generators also do not currently make economic sense in this location. Most wind generators require average wind speeds of 12 mph and greater to achieve any sort of reasonable power generation, and the Puget Sound region has average wind speeds in the 7-9 mph range. Specific data and/or testing would be required to determine if this particular location has applicable wind speeds, but most likely it does not. However, recent advancements in low-wind-speed technology have created a new genre of wind generators that work well in the 7-9 mph range, and could provide supplementary power generation on a case-by-case basis.

The current infrastructure lends itself well to a Co-Gen or Tri-Gen type facility due to its central location, large amount of free space and distributed network. These type of facilities generally produce heat, electricity and possibly chilled water from a single source. However, an economically and environmentally sensible fuel source (such as bio-gas, crop waste, bio-diesel, etc.) must be available for this type of system to be viable. Currently, no such source exists on this campus.

The outlying campus buildings do, however, lend themselves well to many of the above strategies. A combination strategy of PV Panels, Solar Thermal, Low Wind Speed Generators, Rainwater Catchment, and Bio-fuels could be utilized to meet most, if not all, of these small building's needs. This could occur on a demonstration type level, which could then be applied on a larger scale as the economics change due to higher energy costs from conventional energy sources, and reduced production costs of sustainable technologies.





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# POWER AND LIGHTING SYSTEMS

(June, 2007)



## TESC CAMPUS POWER, LIGHTING AND LOW VOLTAGE SYSTEMS

### CAMPUS PRIMARY POWER DISTRIBUTION

Campus power is provided via two 12.5kV (kilovolts) distribution feeders (F5-1C and F5-2C) from outdoor fused switches located south of the Central Utility Plant. Service is provided from Puget Sound Energy by overhead lines to the outdoor switchgear. The system was originally designed for a much larger student base. Most of the 12.5kV feeders on campus are located in cable trays that run in the utility tunnel covering most of the main campus. The cables were installed in the original 1971 campus construction. Some direct bury cables have been installed where the utility tunnel does not provide access. An example of this is the cables serving the Housing area. The 12.5kV splices to buildings are made in oil filled link boxes located in the utility tunnel. Transformation from 12.5kV to 480 volt, 3 phase power occurs within the main electrical gear rooms in most building. The majority of the buildings on campus were constructed in the early to mid 1970's. Switchgear, transformers, panel boards and building power distribution are largely untouched in these buildings.

Emergency power is provided at most buildings via emergency backup generators. In some of these building there is a mix of both code required life safety and optional emergency loads. For example in the Campus Activities Building egress lighting loads are mixed with kitchen equipment loads.

### LIGHTING AND LIGHTING CONTROLS

#### Interior

Lighting consists of a variety of different lamp and fixture types. Many of the existing recessed lens fluorescent and recessed incandescent down lights are operational and in good shape. Most of the down lights have replaced the incandescent lamps with screw in type compact fluorescent lamps. There have been upgrades and additions in several of the buildings with newer type lighting (T8 lamps and electronic ballasts) system installed. The Seminar II and Longhouse Education and Cultural Center buildings have newer lighting technology lamps and ballasts.

Exterior lighting is provided by campus standard light poles, building mounted surface fixtures and walkway mounted recess step light type fixtures.

#### Lighting Control

The majority of interior lighting is controlled via wall switches only. Only a few of the buildings and areas with additions or renovations done within the past ten years have automatic controls to meet the Washington State energy code. Seminar II does have limited daylighting control for fixture with in skylight zones via daylight type photo cells. Seminar II also has a low voltage programmable lighting control relay system and occupancy sensors controls. Lecture rooms in Seminar II have Lutron Grafik Eye control systems for pre-set zone controls and interface with the room audio/visual systems.

Exterior building and campus lighting is controlled via photo cells. The exception is Seminar II which uses the low voltage programmable lighting control relay system with photo cell input for control of exterior lighting.

### FIRE ALARM SYSTEMS

The campus standard is EST (Edwards System Technology) that has been installed in newer building and older buildings that have been renovated or have additions. There is a campus fire alarm communication loop in the utility tunnel that provide campus wide monitoring. Several buildings such as the Campus Activities Building have older Simplex/Autocall systems. These systems were installed before ADA requirements for audio/visual and mounting height restrictions were mandated.



## **ACCESS CONTROL/CCTV SYSTEMS**

Access control and CCTV systems have been added to many of the buildings on campus. The access control systems are Millennium systems. CCTV camera systems have been added to cover selected entries and spaces.

## **CLOCK**

There are two clock systems in use on campus. The original hard wired, 120 volt pulse clock system is operating in most of the original buildings. There have been problems with this system and as a result a second system is being phased in. This is the Primex wireless clock system. This uses battery operated clock with GPS receiver and transmitters for automatic time correction.

## **RECOMMENDATIONS FOR THE FUTURE**

### **POWER DISTRIBUTION SYSTEM**

The existing campus 12.5kV power system cables have been tested and are in good condition. System has capacity to handle the expected future growth of the campus for the next ten years.

Original switchgear and panel boards in the 1970's buildings are at or beyond their expected useable life. TESC has periodically tested and maintained this equipment. The college has experienced problems finding replacement breakers and parts for this equipment. Additionally this equipment was installed prior to AIC ratings for gear. Recommend replacing electrical distribution equipment as a part of building additions and renovations.

Part of the sustainability energy savings recommendation would be to replace existing dry type transformers (480 volt to 120/208 volt) with new energy efficient type transformers as a part of building additions or renovations.

Monitoring of the power system would provide valuable information on energy usage. Metering of loads such as large mechanical units and lighting would allow the College to identify problems with mechanical and lighting control systems to maximize energy savings.

On-site power generation such as co-generation, wind and solar are currently not cost effective. These systems are in a period of major development and in the next few years the payback period will make some or all of these systems feasible. In the mean time small scale demonstration projects are useful for educational purposes.

### **LIGHTING AND LIGHTING CONTROLS**

#### **Interior**

Lighting in many of the buildings on campus is very inefficient and does not create a comfortable environment. The replacement of existing recessed acrylic and parabolic lens type fixtures with pendant direct/indirect fixtures with electronic ballasts and T5 type lamp would greatly reduce energy and provide a much better working environment. Newer light fixture reflectors designed around the T5 lamps allow for greater distance between fixtures and reduction in the number of fixtures and lamps. Note Puget Sound Energy does have pay back incentive programs to help offset the cost of fixture replacements.

New lamp technologies such as the development of an array of fixtures using LED lamps have potential of greater energy efficiency and reduced maintenance. Recommend that these technologies be evaluated for use in replacement or future projects.

#### **Exterior**

The campus standard area lighting pole fixtures do not meet LEED dark sky cut off requirements. Recommend replacement of these fixtures with high cut off type light distribution. Fixtures installed as part of the Seminar II project should be reviewed for use as replacement fixtures. Additionally many of the building or canopy mounted fixtures are not energy efficient. Replacement of these fixtures with lower wattage, better light distribution fixtures works with sustainability goals.

### **Lighting Controls**

#### **Interior**

On average lighting loads are 25 to 30 percent of a building's energy consumption. More energy efficient lighting fixtures are part of the overall answer to reducing energy use, lighting controls can provide as much or more in energy reduction.

Currently much of the existing lighting on campus only have local switch controls. This means lighting in toilet rooms, classrooms and offices are generally left on for hours when the rooms are unoccupied. Providing automatic on/off controls such as occupancy sensor make sure lights are not left on. Public areas where it is not desirable to have fixtures going on and off via motion sensor such as corridors would benefit from a programmable lighting control system to automatically turn on and off the fixtures on a daily schedule.

Using natural daylighting makes the most of energy savings. Many new daylighting control systems are on the market. Typically these use photo cells to control dimming ballasts in the light fixtures. Dimming the lights is much less disrupting to users than turning on and off lamps. Dimming also give the user much greater control of lighting in a space. Savings can be as high as 50 percent.

#### **Exterior**

Photo cells currently turn on the campus exterior fixtures at dusk and off at dawn. There are many hours where the lights are on with few or no one in many of the areas. Control systems that time the fixtures to 50% at a set hour and use motion sensors to bring fixtures back up to 100% would save energy use and provide for personal safety.





# COMMUNICATIONS AND CABLE SYSTEMS

(June, 2007)



## TESC TELECOMMUNICATIONS CAMPUS CABLE DISTRIBUTION INFRASTRUCTURE

### CAMPUS DISTRIBUTION

Buildings located near the core of the central campus area are served by an underground system of utility tunnels that contain cable trays used in the routing of electrical and telecommunications cables.

The tunnel system is sufficiently large enough for pedestrian traffic and small motorized carts to be driven through them to deliver tools and equipment to strategic locations. Separate cable trays for low voltage communications and primary power campus loop are provide though out the tunnel system.

Cables exit the tunnel system to reach out lying buildings and at these points the cables enter a system of direct buried underground conduits and cast concrete vaults. Examples of these buildings are the Long House, Residence Units, and the Shops.

Within this system of underground conduits plastic innerduct conduits are placed inside of larger metallic or PVC conduits to facilitate the installation of the fiber optic cables.

### TELEPHONE SYSTEM

The campus' main telephone switching system (PBX) is located in the basement level B-wing of the Daniel J. Evans Library building. From this location, acting as a hub, all copper cables radiate in a star topology out to all other buildings on campus distributing telephone and other miscellaneous services to those buildings. Telephone tie lines connect the Olympia campus system to the Tacoma branch campus PBX. Qwest provides telephone service to the housing residents.

The campus' main data networking system is located in the Library A-wing of the basement level. This room is referred to as the Machine Room and all campus fiber optic cables radiate outward in a star topology to all other buildings.

Emergency 'blue' telephone stanchions are located through out the main campus that are routed back to the Police Services dispatch.

### DATA/COMMUNICATION CABLING

The inter-building, or backbone, telecommunications cables used on campus are made up of large pair count, shielded, twisted pair, (STP), copper cables and fiber optic cables in three types, and coaxial cables. The first type of fiber cable is singlemode (SM) fiber; the second type is 62.5/125 micron multimode (MM) (legacy fiber cables); the third type is 50/125 micron laser optimized multimode (MM) fiber optic cable to support 10 Gbps transmission speeds between buildings.

The backbone fiber and copper cables run through the basement level of the Library until they enter the tunnel system then on to other parts of the campus.

Most buildings are area cabled with Category 5E type cables that are being upgraded to Category 6(t) as buildings are being renovated.

Many of the existing communication equipment rooms were carved out of existing closets or storage rooms. These rooms are cramped and do not provide proper clearances, HVAC systems and have no room for expansion. As buildings are being renovated (such as recent renovations to the Library) these rooms are being replaced with industry standard spaces.

Lightning protection devices are provided and grounded on both ends of the copper cables that extend beyond the tunnel system into the underground conduits. This form of protection is a requirement of the NEC, Article 800.

**CABLE TELEVISION**

The coaxial cable distributes CATV signals to locations throughout the campus. Located on top of the Library Building is a television satellite dish. This down-links a signal that can be inserted into the campus-wide television cable distribution system. The system also has the capacity for distribution of up to three locally originated programs.

**RECOMMENDATIONS FOR THE FUTURE**

Existing telecommunication equipment rooms in much of the campus are too small and should be replaced with dedicated rooms that meet ANSI/TIA/EIA standards.

Wireless LAN network system coverage has been installed to the B&C wings of Library. Currently the A wing of the Library is under renovation and wireless LAN coverage is being added. The pre-design for the CAB renovation has wireless coverage planned for this building. Recommend expansion of this system to cover exterior spaces around buildings, plaza area and all existing and new buildings.

Existing telephone exchange (PBX) equipment can not support changing to a VOIP type telephone system. Recommend reviewing the benefits of a VOIP system when time for replacement of the existing PBX's.





CIVIL SYSTEMS

(June, 2007)





Civil Engineering  
Landscape Architecture  
Environmental Restoration  
Planning

1205 Second Avenue  
Suite 200  
Seattle, WA 98101

Phone: 206.223.0326  
Fax: 206.223.0125  
svr@svrdesign.com

## MEMORANDUM # 01

DATE: May 10, 2007

TO: Tim Williams, ZGF  
David Grant, ZGF  
Jeff Dunn, ZGF

FROM: Amalia Leighton, PE  
Tom von Schrader, PE

RE: Conditions / Infrastructure & Master Plan Recommendations  
The Evergreen State College Master Plan  
SvR Project No. 07007

This memorandum addresses conditions of the existing campus infrastructure and recommendations for the master plan for The Evergreen State College ("Evergreen") in Olympia, Washington.

## CAMPUS SUMMARY

The Evergreen Campus is located on the Cooper Point Peninsula in the Eld Inlet of Puget Sound. The campus is located on 1,008 acres of land, which remains predominately forested. The campus was initially designed for 12,000 students and currently has approximately 4,500 students. There is housing on campus; however, many students live off-campus and drive onto the campus for classes or events.

## WATER AND WASTEWATER UTILITIES

With the exception of the building that currently houses Olympia Community School (located near the shoreline), the campus buildings are connected to the City of Olympia water and wastewater systems. The City of Olympia ("City") and Evergreen have agreements for these services and the City will continue to provide water and wastewater service to the campus. The Olympia Community School is currently served by a septic tank and drain field. This on-site wastewater treatment system should be evaluated to verify it is functioning properly, and is sized correctly for the school population and the soils along the shoreline bluff.

Existing wastewater and water utilities were originally designed to serve a student population of 12,000 students. Discussions with campus staff indicate that the system is in good working order.

## STORMWATER MANAGEMENT

The Evergreen campus lies within four different drainage basins. Portions of the campus drain to the following creeks: Snyder Cove Creek, Green Cove Creek, Unnamed (Evergreen Faculty name: Barking Dog) Creek, and Houston Creek (see attached Figure 1).

*Snyder Creek*

The Snyder Creek Drainage Basin lies within the Evergreen campus property. The creek has been degraded over the last 30 years since the Core area of the campus drains into it. A majority of the campus roadways and parking areas also discharge to Snyder Creek. The campus Core is located in the upper portion of the basin, and during large storm events, high flows off the impervious surfaces can cause erosion and carry sediment downstream. Discharge from the campus is not currently monitored. In the past, the United States Geological Survey monitored Snyder Creek just upstream of the culvert and Evergreen faculty used to monitor the discharge location from the campus Core.

Snyder Creek discharges into Eld Inlet in Puget Sound. There is a culvert where Sunset Beach Drive NW crosses over Snyder Creek. This culvert is not designed to let fish pass since the invert of the inlet is only submerged during high tides.

*Green Cove Creek*

An eastern portion the campus drains to Green Cove Creek. This area includes the ball fields, modular housing, and portions of the perimeter road. Green Cove Creek discharges to Budd Inlet in Puget Sound.

*Unnamed (Evergreen Faculty name: Barking Dog) Creek*

This creek is completely contained within the campus forest Reserve. This creek is fed by groundwater through seeps in the basin.

*Houston Creek*

The Evergreen Campus Parkway drains into wetlands that feed into Houston Creek. Houston Creek drains into Mud Bay.

*Evergreen Campus Stormwater System*

Evergreen is in the process of completing a Stormwater Plan for the campus. In addition to mapping the stormwater collection and treatment system, Evergreen is verifying the connections to the system. It is uncertain if the existing Core buildings discharge into the existing stormwater pipes.

Evergreen must meet the Washington State Department of Ecology ("Ecology") Non-Point Discharge Elimination System (NPDES) Permit as a secondary MS4 permittee. As part of the permit requirements, all new construction at Evergreen that affects more than 2,000 sf must meet current stormwater management requirements as listed in the 2005 Ecology Stormwater Management Manual for Western Washington. This includes any activities to update existing campus buildings, roadways, and classrooms. The permit and manual encourages best management practices, including low impact development elements, erosion and sediment control, and community education.

*Opportunities for Low Impact Development*

Evergreen is taking steps to be a sustainable campus by implementing strategies that mimic the natural hydrologic processes that occurred prior to the campus development. Evergreen is a leader in this type of stormwater management. The Seminar 2 building contains green roofs, rain gardens and bioswales that attenuate stormwater prior to entering the campus system and discharging into Snyder Creek. The library was also retrofitted with a green roof that is visible and accessible from the fourth floor. Pervious asphalt was installed at ADA parking stalls near the campus housing.

Evergreen may want to explore retrofitting the existing Core buildings to include low impact development elements. These opportunities include stormwater planters around the campus Core buildings, pervious pavements and permeable pavers for the walkways and outdoor gathering spaces, swales and bioswales along the parking areas and walkways, rain gardens at the campus housing and outlying buildings.

*Campus Involvement*

Students and the faculty provide maintenance, monitoring, and research resource for the campus. These elements can be applied at varying scales based on demonstration and sustainability goals of Evergreen.

## MASTER PLAN RECOMMENDATIONS

As part of this master planning effort, Evergreen intends to become a “zero” carbon and “zero” waste campus by 2020. Continuing to effectively manage the infrastructure will help achieve this goal. Evergreen is actively using low impact development/green infrastructure elements around the campus and is committed to including them in future development.

In efforts to become more sustainable, we recommend Evergreen complete a functional analysis of all resources on campus and in the surrounding areas. This analysis would help to determine what natural systems are degraded and how to target resources to improve them. This functional analysis will allow Evergreen to catalog the existing ecological functions and green infrastructure connections within and around the campus. For example, Evergreen can take advantage of the existing ecological functions and green infrastructure connections of the adjacent forest preserves, the regional bike and pedestrian trail system, Puget Sound processes, and the habitat and wetland areas surrounding the campus.

Continued preservation of the adjacent Reserve and encouraging alternative modes of transportation will reduce the need for pollution generating impervious surfaces and maintain the quality of the adjacent creek basins. Any new development should limit the clearing of trees and dense vegetation to reduce the impacts of increased runoff from the campus. Low impact development should be required for all new and redeveloped facilities on campus including buildings, roadways, parking areas, and related construction activities.

Water and wastewater management will be controlled by installing low flow fixtures in campus buildings and housing, and controlling and maintaining the wastewater system to prevent inflow and infiltration into the wastewater system. In addition, using native plantings that require less irrigation or considering rainwater catchment systems to water vegetation and plants throughout the campus will also help.

If you have any questions please contact Amalia Leighton or Tom von Schrader at 206.223.0326.

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# PARKING RATE COMPARISONS

(2007)

Table provided by Ross Tilghman and Central Washington University Parking Services giving regional parking rate comparisons.





## Parking Rate Peer &amp; Regional Comparison 2006-2007

Updated December  
28, 2006

Regional Institutions	Annual Rate-High
U of Washington	\$1,019.04
WSU Pullman	\$496.00
U of Oregon	\$436.00
Western Washington	\$314.59
Boise State	\$257.00
U of Idaho	\$250.00
Eastern Washington	\$210.00
U of Montana	\$210.00
WSU Vancouver	\$203.93
WSU Spokane	\$187.88
Oregon State	\$186.00
Montana State	\$141.00
Central Washington	\$120.00
<b>Evergreen State College</b>	<b>\$120.00</b>
<b>Evergreen State College</b>	<b>\$96.00</b>

Regional Institutions	Annual Rate-Mid
U of Washington	\$509.52
Western Washington	\$276.80
U of Oregon	\$261.00
WSU Pullman	\$226.00
Boise State	\$218.00
U of Montana	\$165.00
Eastern Washington	\$160.00
WSU Vancouver	\$153.43
Oregon State	\$144.00
WSU Spokane	\$143.35
U of Idaho	\$125.00
<b>Evergreen State College</b>	<b>\$120.00</b>
Montana State	\$114.00
Central Washington	\$110.00
<b>Evergreen State College</b>	<b>\$96.00</b>

Regional Institutions	Annual Rate-Low
U of Washington	\$312.00
U of Oregon	\$226.00
Western Washington	\$204.76
<b>Evergreen State College</b>	<b>\$120.00</b>
<b>Evergreen State College</b>	<b>\$96.00</b>
WSU Pullman	\$95.00
WSU Spokane	\$91.22
Eastern Washington	\$90.00
WSU Vancouver	\$85.24
Boise State	\$80.00
U of Montana	\$69.00
Montana State	\$69.00
Central Washington	\$60.00
U of Idaho	\$55.00
Oregon State	\$40.00

Regional Institutions	Daily Rate-High
U of Washington	\$11.00
Western Washington	\$9.25
WSU Pullman	\$7.75
Boise State	\$7.00
Eastern Washington	\$5.00
Oregon State	\$5.00
U of Oregon	\$4.00
U of Idaho	\$4.00
Central Washington	\$3.00
Montana State	\$2.50
U of Montana	\$2.50
WSU Spokane	\$2.17
WSU Vancouver	\$2.00
<b>Evergreen State College</b>	<b>\$2.00</b>
<b>Evergreen State College</b>	<b>\$1.25</b>

Regional Institutions	Daily Rate-Mid
Western Washington	\$5.55
U of Washington	\$5.00
WSU Pullman	\$4.25
U of Idaho	\$2.00
<b>Evergreen State College</b>	<b>\$2.00</b>
WSU Spokane	\$1.63
<b>Evergreen State College</b>	<b>\$1.25</b>
Montana State	N/A
Boise State	N/A
Eastern Washington	N/A
Central Washington	N/A
U of Montana	N/A
U of Oregon	N/A
Oregon State	N/A
WSU Vancouver	N/A

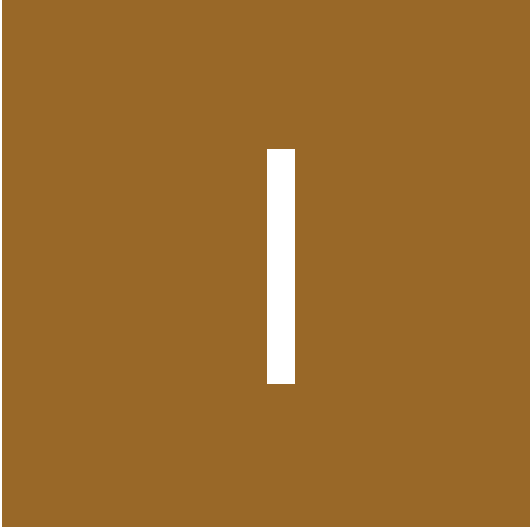
Regional Institutions	Daily Rate-Low
U of Washington	\$4.25
<b>Evergreen State College</b>	<b>\$2.00</b>
Western Washington	\$1.85
<b>Evergreen State College</b>	<b>\$1.25</b>
WSU Spokane	\$1.09
WSU Pullman	\$1.00
Montana State	N/A
Idaho	N/A
Boise State	N/A
Central Washington	N/A
U of Montana	N/A
U of Oregon	N/A
Oregon State	N/A
WSU Spokane	N/A
WSU Vancouver	N/A

Source: Central Washington University Parking Services

TESC information added by Ross Tilghman

Existing Rate  
Proposed Rate





TRANSPORTATION REPORT  
(July,2007)



## CURRENT TRANSPORTATION CHARACTERISTICS

Located approximately 5 miles from downtown Olympia, and somewhat peripheral to population centers in Thurston County, the Evergreen State College's setting poses significant challenges to creating an efficient transportation system for its students, staff and faculty. Despite this seemingly remote location, strong levels of transit use, cycling, and ridesharing occur. Such good performance indicates a strong commitment among the College's people to using alternatives to single-occupancy vehicles. This commitment provides an essential foundation for creating a more energy efficient and less polluting campus transportation system.

## MODES OF TRAVEL

Table I.1 shows the mode of travel used by staff and by students for commuting to campus. This data comes from separate surveys of those two groups, the Commute Trip Reduction survey for staff (June 2005), and the Evergreen Student Experience Survey 2006 for students.

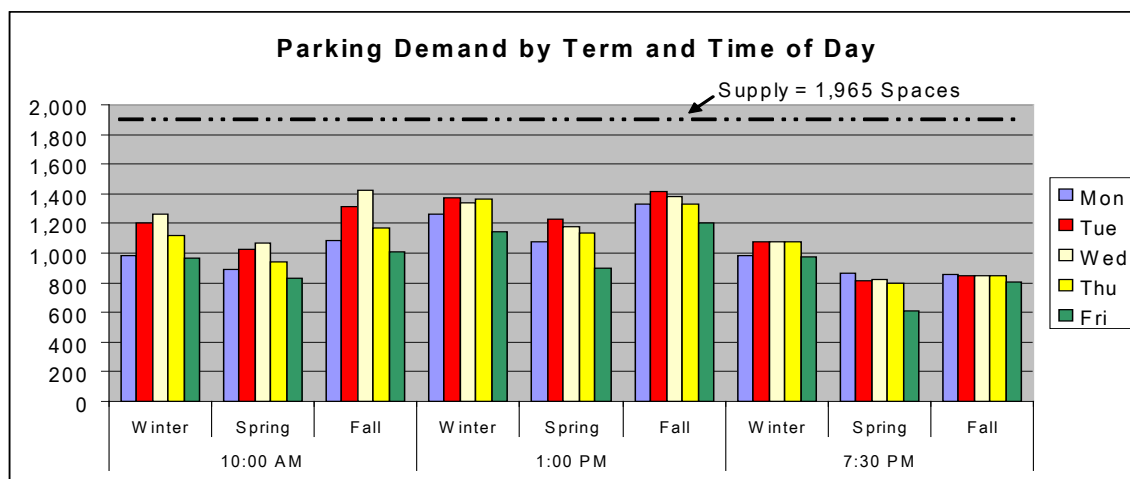
Table I.1 Current Mode of Travel		
Mode of Travel	Faculty & Staff	Commuter Students
Drive Alone	66%	60%
Rideshare	16%	15%
Bus	6%	20%
Bike	10%	3%
Walk	2%	2%
Total	100%	100%

Bike use appears particularly strong among staff, while transit use is high for commuting students. Both groups have high levels of ridesharing. In fact, ridesharing rarely goes higher than these rates. Walking, not surprisingly, occurs at low rates since comparatively few people live within reasonable walking distance of campus. It should be noted that the strength of alternative modes is only minimally influenced by the very modest parking charges levied on campus.

## PARKING DEMAND AND SUPPLY

Parking is monitored by Parking Services which counts the number of vehicles present each weekday at 10:00 am, 1:00 pm and 7:30 pm. Based on counts conducted from January 2006 through February 2007, the peak number of vehicles parked occurs during the fall term. Figure I.1 illustrates the variations in demand across the academic year.

Figure I.1



The peak occurs in the fall quarter at 1:00 pm equally on Tuesdays and Wednesdays. At the peak, approximately 545 spaces remain vacant. Table I.2 lists the use and availability by lot.

<b>Table I.2 Parking Occupancy by Lot at Peak Time</b>				
<b>Fall 2006</b>				
Location	Spaces	Vehicles Parked	Spaces Available	% Occupied
Lot B	777	505	272	65%
Little B	182	33	149	18%
Lot C	557	548	9	98%
Lot F	318	272	46	86%
Fireweed Lot	23	2	21	9%
Meters	16	7	9	44%
Accessible Spaces	48	37	11	77%
Others	50	16	34	32%
	1,971	1,420	551	72%

Only Lot C achieves full use, mainly due to its closer proximity to the campus core that offers a shorter walk. The bulk of unused parking, over 400 spaces, exists in Lot B and in Small B. Lot F caters primarily to resident students. An early morning (6:30 a.m.) check of Lot F and other housing area parking spaces on three separate days in April, 2007, found an average of 234 vehicles parked, representing peak demand for resident students.

On balance, Evergreen has more than enough parking to meet most current needs. Exceptions include days when athletic fields host games for which too little parking exists near the fields for spectators, and special event days such as Super Saturday and Commencement.

Table I.3 provides the estimated composition of demand at the peak time among students, staff, faculty and visitors.

<b>Table I.3 Estimated Composition of Peak Parking Demand at 1 P.M.</b>		
<b>during Fall Quarter</b>		
Population Group	Vehicles Parked	% of Total
Faculty/Staff/Temporary Employees	469	33%
Commuting Students	688	49%
Resident Students	235	17%
Visitors (estimated)	25	2%
Total	1,417	100%

Source: Tilghman Group

Commuting students account for the largest share of peak demand, even though they have the lowest share of auto use for access to campus. This results solely from the number of students needing to commute.

Auto availability differs widely between resident and commuting students. Based on current usage, one car is available for every 4 resident students while one car is available for every 1.5 commuter students.

## PARKING RATES AND REVENUE

The amount charged to park on campus has remained stable since 2000. A rate increase has been proposed and, if approved, would take effect in the Fall quarter of the 2007/08 academic year. Rates apply commonly to all vehicles parking on campus without regard to student, staff or faculty status. Table I.4 lists current rates.



<b>Table I.4 Current Parking Rates</b>	
<b>Period</b>	<b>Rate</b>
Daily Pass	\$1.25
Quarterly Permit	\$32
Fall/Winter/Spring Permit	\$90
Full Year Permit	\$96
Meters:	
Housing Loop	\$0.40 per hour
All Others	\$0.30 per hour

Compared to public universities and colleges throughout the Northwest, Evergreen's parking rates fall at the lower end of all schools' rates. Even the proposed increase in rates does little to raise Evergreen's place among peer institutions. While many institutions offer tiered rates, rather than a flat rate, Evergreen consistently ranks at the bottom except for the lowest rates offered. (See Appendix H for a detailed comparison of rates among peer institutions).

Even if one purchased a daily pass every weekday of the month, it would cost no more to park than to buy a transit pass, currently \$25 per month. People purchasing a \$90 permit pay only \$10 per month to park, substantially less than the cost of a transit pass.

Parking revenues and expenses are shown in Table I.5.

<b>Table I.5 Parking Revenues and Expenses</b>	
<b>Source</b>	<b>Revenue FY 2006</b>
Permits Sold	\$165,663
Daily Revenue	\$142,846
Infractions	\$ 96,351
Total Revenue	\$404,860
Expenses	\$416,467
<b>Net Revenue</b>	<b>\$ (11,607)</b>

The parking system does not currently take in sufficient revenue to cover its expenses. In addition, the system has outstanding debt incurred to pay for expansion and improvements in parking lots in 2004.

## TRANSIT SERVICES

Two bus routes serve the campus from downtown Olympia: Route 41 and Route 48. Operated by Intercity Transit, these routes run from the downtown transit center to the campus every half-hour beginning at 6:00 am and on to 9:00 pm and then only Route 41 continues hourly until midnight. With their overlapping schedules, these two routes offer a bus every 15 minutes between campus and downtown. Due to the popular destinations served including Evergreen, Westfield Shopping Town and downtown Olympia, these are Intercity Transit's most productive routes. Table I.6 compares ridership generated by Evergreen's campus to the total route ridership.

**Table I.6 Transit Ridership at Evergreen State College**

Route	Evergreen Riders (Weekday, On + Off)	% of Total Route Ridership
Intercity Transit #41	780	32%
Intercity Transit #48	300	20%
Sum	1,080	28%

Based on Intercity Transit's passenger counts, McCann Plaza is the primary origin and destination of passenger trips, serving 70% of riders. Conversely, the Housing loop generates only 1 of every 6 campus boardings, but is used by many more disembarking riders to reach the campus Core sooner than they would by riding around to McCann Plaza (Route 41 goes first to the Housing Loop, then to McCann Plaza requiring an additional 9 minutes). It is estimated that McCann Plaza would actually serve 85% of riders if all routes went directly to it.

Evergreen students pay a fee for transit service amounting to \$1.10 per credit up to 12 credits. This generates over \$150,000 annually which, through a negotiated purchase, provides unlimited use passes for students to ride Intercity Transit buses. This fee amounts to roughly \$0.65 per ride (when counting only those rides to and from campus), less than the regular fare of \$0.75.

### CYCLING & WALKING ROUTES

Dedicated multi-purpose bike and walking paths along Evergreen Parkway connect to other trails and roads linking campus to downtown Olympia and area neighborhoods. The McClane trail is the primary connection. Bicycle riders, however, face a number of gaps in the trail system and must also rely on streets without stripped paths for bikes. Gaps occur between Division Street and Evergreen Parkway, on Cooper Point Road between Walnut Rd and Evergreen Parkway, and on Harrison Street between Kaiser and Evergreen Parkway. Sidewalks lack continuity along Driftwood Rd between Overhulse Rd. and Evergreen Parkway. Trail heads for walking trails through the College's Reserve tend to be difficult to locate and would benefit from better signs. Trails serving the Reserve north of Driftwood Road lack continuity from the campus Core to their destinations.

### INTERNAL CIRCULATION

The campus was carefully laid out to capture vehicles at the edges and Reserve the core areas for pedestrians. Major walkways and plazas were designed to accommodate service, security and other occasional vehicles when necessary. However, it appears that vendor, service and security vehicles routinely travel into the campus Core and are frequently present on Red Square and other plazas. While such vehicles travel slowly, avoiding serious conflicts with pedestrians and bicycle riders, their presence and their large size (frequently full-size vans) clearly diminish the walkable character of walkways and plazas that are intended to be free of large vehicles. Some maintenance personnel now use smaller electric vehicles which fit much better on paths and plazas. Opportunities to manage vehicles better on internal roads are discussed in subsequent sections.

### TRANSPORTATION-RELATED CARBON EMISSIONS

With the goal of achieving zero waste and carbon neutrality by 2020, Evergreen's Sustainability Task Force has undertaken to calculate the College's carbon footprint. It estimates that transportation generates approximately 31% of the campus's total carbon emissions. This includes commuting, transit services to campus, use of the college fleet, deliveries, and long-distance air travel for college purposes. The contribution of each activity is shown in Table I.7.

<b>Table I.7. Transportation Generated Carbon Emissions per Year</b>		
<b>Activity</b>	<b>Metric Tons of Carbon Dioxide Equivalent (MTCDE)</b>	<b>% of Total</b>
Commuting	5,392	78%
College Fleet	292	4%
Deliveries	126	2%
Air Travel	1,077	16%
<b>Transportation Total</b>	<b>6,887</b>	<b>100%</b>

Source: John Pumilio, Sustainability Task Force

Obviously, the opportunity for the greatest reductions in carbon emissions rests with commuting.

## FUTURE TRANSPORTATION NEEDS AND OPPORTUNITIES

Forecasts of transportation needs assume that enrollment will grow to 5,000 students, approximately a 10% increase over current enrollment. That growth also assumes the addition of 800 beds on campus to bring the resident student population to 1,650. Growth in faculty and staff positions is assumed to be proportional to the increase in enrollment. As discussed below, such growth can be readily accommodated by the current transportation system. Accordingly, this plan focuses less on the capacity requirements of roads and parking and more on the potential for managing transportation demand to achieve significant reductions in carbon emissions.

## CHANGES IN PARKING AND TRAVEL DEMAND DUE TO ENROLLMENT GROWTH

Table I.8 presents the change in peak parking demand based on anticipated enrollment growth. The projection assumes that current transportation policies continue, and provides a point of comparison with which to judge the effectiveness of alternative policies.

<b>Table I.8 Future Parking Demand Under Current Transportation Policies</b>		
<b>Vehicles Parked at Peak Time</b>		
	<b>Existing</b>	<b>Future with 5,000 enrollment</b>
Faculty/Staff	473	533
Commuter Students	688	656
Resident Students	235	431
Visitors	25	25
<b>Total</b>	<b>1,421</b>	<b>1,644</b>
Supply	1,971	1,971
Utilization at Peak	72%	83%

Campus has sufficient parking capacity to absorb the additional demand that would result from reaching enrollment of 5,000 students. Higher enrollments, however, would begin to strain parking availability unless more aggressive actions were instituted to manage parking demand.

The number of trips to campus and the change in carbon emissions from higher levels of commuting is shown in Table I.9.

<b>Table I.9 Estimated Net Change in Travel and Carbon Emissions Under Current Transportation Policies</b>			
	<b>Weekday Vehicle Trips</b>	<b>Annual Vehicle Miles of Travel</b>	<b>Annual Carbon Emissions (MTCDE)</b>
Future with 5,000 Enrollment	5,200	14,342,250	5,258
Existing	5,060	13,713,465	5,027
Net Change	140	628,785	231
Percent Change	2.7%	4.4%	4.4%

Weekday vehicle trips grow only modestly with more resident students. Annual miles of travel and resulting carbon emissions grow somewhat more due to additional weekend travel from resident students.

### PARKING SUPPLY ON CAMPUS

While no changes to the total amount of parking are warranted by the anticipated increase in enrollment, minor modifications to the parking supply and its allocation are suggested to meet certain needs of the campus. These modifications include:

- Improving parking near the athletic fields to serve events. A hard but still permeable surface should be installed on the Fireweed lot to control dust and erosion, and a grass parking area should be constructed on the spoils site above the Fireweed lot and adjacent to Lot C. Access to this larger grass area should be provided on event days only; it should not become a daily parking area.
- Allocating some resident student parking to the small B lot. With more student housing on campus, about 200 more resident vehicles will need parking, exceeding the capacity of Lot F which currently serves student housing. Based on the housing plans envisioned in this Master Plan, it is estimated that approximately 125 to 150 vehicles would need to be parked elsewhere on campus. The small B lot, currently underused, provides a compact and appropriately sized area to accommodate additional resident student parking. Joint use of existing facilities avoids the need to build new parking lots, retains trees, and helps to maintain a more residential character for the housing area.

### MODIFICATIONS TO ROADS

Two changes are proposed:

- Closing Overhulse Place between Fireweed Lane and Driftwood Road. Closure would eliminate the road as a barrier between campus and the Reserve to the east. Owned by Evergreen State College, this road was realigned when the housing area and athletic fields were built. Overhulse Place allows a shorter route of travel between the neighborhood north of Driftwood and Evergreen Parkway, but its function is duplicated by Driftwood Road with its link to Evergreen Parkway. It carries between 1,500 and 2,000 daily vehicles, a modest volume.
- Modifying the cross-section of Driftwood west of Overhulse Road. The intent is to emphasize the local access function of this former County road, and to make it appear more a part of campus and less a perceived boundary line. Between Overhulse Road and Geoduck Lane, Driftwood would be a 22' wide, 2-lane road. West of Geoduck Road, Driftwood would narrow to be 16 – 18 feet wide, without lane striping, but sufficient to allow low volumes of two-way traffic to use the road. Its access to Lewis Road would be limited to emergency vehicles only.

## OPPORTUNITIES TO REDUCE VEHICLE USE AND CARBON EMISSIONS

While the campus can physically accommodate parking and traffic increases associated with enrollment targets, its goal to achieve carbon neutrality necessitates new measures to reduce transportation related energy use. A comprehensive, campus-wide Transportation Management Plan will be essential to realizing energy and carbon reductions. Components of the plan would include:

1. Reducing the number of autos used for commuting. Suggested targets for reducing single-occupancy vehicle are a 10% reduction in use by faculty and staff and a 20% reduction by commuting students. To do this requires:
  - a. Raising the cost to park on campus. Significant increases would be needed. Experience at a variety of universities indicates that demand will drop about 1% for each 10% increase in parking price. To achieve a 10% reduction in demand would require Evergreen to raise its rates to \$225 per academic year (up from \$90 now for fall/winter/spring). Even at this amount, parking would cost staff no more than a transit pass. To be most effective, parking should cost more than a transit pass.
  - b. Increasing transit service to reach more potential riders and simplifying routes to reduce travel time. For example, preliminary information indicates a number of staff living in the Lacey area who may benefit from direct bus service instead of transferring downtown as is currently required to reach campus. A direct route could reduce total travel time from just over 1 hour to approximately 30 minutes. Also, demand for service from areas not currently served by public transit such as Steamboat Peninsula should be investigated for appropriate types of service. One option would be for Evergreen to operate vans on key roads that could be hailed by students, staff or faculty for rides to and from campus during designated hours. Such custom van service could also provide student employment
  - c. Maximizing rideshare services with ridematching for carpools and vanpools. Ridesharing already occurs at fairly high levels but it may be possible to assist more people to form a car or vanpool with targeted ride-matching.
  - d. Improving bicycle access to campus. Filling in gaps in the bike trail network would increase cycling safety and convenience for more people. Important segment include completing connections to the McClain trail, and creating better connections along Mud Bay Road, Harrison, Division and Cooper Point Road.
2. Use more fuel efficient vehicles and encourage use of alternative fuels. Evergreen's drivers already use a fleet more efficient than the national average (according to findings by the Sustainability Task Force), yet additional efficiencies can be encouraged through incentives either to acquire or use vehicles with greater fuel efficiency and those that allow use of alternative fuels. A goal would be to encourage a 10% increase in efficiency.
3. Use More Efficient Fleet Vehicles. The current but limited use of smaller, electric vehicles for maintenance and security functions should be expanded to serve the majority of those trips on campus. Police vehicles could be downsized and supplemented by hybrids for off-campus trips. Greater use of bicycles and electric carts and scooters for patrols is also recommended. Smaller, quieter vehicles are also more compatible in primarily pedestrian areas such as Red Square and on main walkways.
4. Investigate central receiving and distribution for vendors' products. As with maintenance and security vehicles, too many large trucks and vans now enter pedestrian areas to deliver beverages and other goods. By consolidating truck deliveries at existing loading docks and then distributing goods using electric carts, the delivery system can better maintain a pedestrian atmosphere, reduce noise and minimize fuel consumption.
5. Shorten the distance each auto travels. Creating park and ride lots for campus commuters would reduce the number of vehicle miles traveled for each trip to and from campus. Remote lots need to be located near major travel corridors such as US 101, I-5 and major arterial streets. Potential locations for park and ride lots include the west end of Mud Bay Road near Madronna Beach Rd, the vicinity of the Westfield Shopping Town Mall, and

potentially the existing Lacey Park and Ride lot (assuming its expansion). Such locations allow a convenient point to park commuter vehicles from the west, south and east. Based on available information, it is estimated that from 925 to 1,000 remote spaces in total would be appropriate, assuming that some staff and students would still need to park on campus occasionally, as would visitors and resident students. Each location would need approximately 250 – 400 spaces (more precise figures would be determined through more detailed surveys of travel patterns). These locations would reduce daily vehicle miles of travel by about 40% (currently, commuters drive an average of 13 miles each day, and these locations would shorten the trip total by approximately 6 miles). Dedicated buses such as a double-decker bus would shuttle commuters between the remote parking lot and the campus. Buses should arrive frequently, at a minimum every 10 minutes and preferably every 5 minutes. Such buses could operate on bio-fuels or natural gas to reduce carbon and other emissions. It is estimated that 6 buses would be needed to serve three park and ride sites.

Table I.10 shows the range of emission reductions possible with the implementation of the above transportation management actions. Significant reductions could be achieved through aggressive action, but such results can only be realized through a coordinated set of policies addressing the cost of parking, the provision of convenient commuting options, and greater fuel efficiency and fuel flexibility in the vehicles used.

<b>Table I.10 Estimated Annual Carbon Emissions (MTCDE) from Commuting to The Evergreen State College</b>			
	<b>Existing</b>	<b>Future (5,000 enrollment)</b>	<b>Change over Existing</b>
<b>Current Policy</b>	5,027	5,258	4.6%
<b>Minimal Action</b> Reductions: -10% Staff; -20% Students	SOV	4,519	-10.1%
<b>Moderate Action</b> More Efficient Vehicles	Above, plus 10%	4,108	-18.3%
<b>Maximum Action</b> & Ride	Above, plus Park	3,540	-29.6%
<b>Maximum Action – with Biodiesel</b>		2,989	-40.5%

## PARKING CAN HELP PAY FOR NEW TRANSPORTATION SERVICES

Increases in parking fees not only reduce parking demand but they can generate substantial new revenue to pay for additional transit services. As previously noted, the current parking system operates at a deficit considering its debt obligations. Even with the proposed 25% fee increase, revenue will only just meet the total obligation, leaving little surplus. The increase, while necessary, barely lifts parking rates to a level that would influence demand. Table I.11 presents the range of revenue that could be generated from parking rates that equal or exceed the monthly cost of a transit pass.

<b>Table I.11 Potential Parking Revenue</b>				
<b>Revenue</b>	<b>2006 Actual</b>	<b>2008 Projected</b>	<b>2008 Option A Parking Permit Equals Transit Pass Cost</b>	<b>2008 Option B Parking Permit Equals Transit Pass Cost + 25%</b>
Permits Sold	\$165,663	\$214,000	\$378,647	\$ 447,709
Daily Revenue	\$142,846	\$237,200	\$325,689	\$ 485,676
Infractions	\$ 96,351	\$115,000	\$104,000	\$ 98,375
<b>Total Revenue</b>	<b>\$404,860</b>	<b>\$566,200</b>	<b>\$808,335</b>	<b>\$1,031,760</b>
Expenses	\$416,467	\$451,000	\$451,000	\$ 451,000
<b>Net Revenue</b>	<b>\$ (11,607)</b>	<b>\$115,200</b>	<b>\$357,335</b>	<b>\$ 580,760</b>
Debt Service Interest (on Deficit Balance)		\$ (7,000)	\$ (7,000)	\$ (7,000)
Debt Service Principal & Interest		\$ (72,299)	\$ (72,299)	\$ (72,299)
Funds Available for Other Uses		\$ 35,901	\$278,036	\$ 501,461

## Notes:

1. Higher parking rates expected to reduce demand by 5% & 15% for Options A and B, respectively.
2. Repayment of Interfund loan created an account deficit for which additional monies were borrowed accruing additional interest.

## SUBSEQUENT PLANNING AND ANALYSIS

As Evergreen pursues its goals of carbon neutrality and evaluates options to meet those goals, the College will need to develop its own internal surveys to get reliable and sufficiently detailed information to plan for and monitor the effect of new transportation services. For example, it will become extremely helpful to map the residential locations of bus riders, carpoolers, bike riders and drivers to identify new service opportunities tailored to their needs. Basic patterns can be identified while protecting individual privacy and the confidentiality of personal information. Also, greater specificity can be achieved in determining the mode of travel by asking for the mode used on specific days rather than asking for the mode “typically” used.







# FLORISTIC STUDY

(2007)

This document (provided by Evergreen faculty member Federica Bowcutt), is a student report by Sam Lohmann created in 2006, indicating the plant communities that occur on campus.



## **A Floristic Study of The Evergreen State College Campus**

Sam Lohmann

June 12, 2006

### **INTRODUCTION**

This paper lists the vascular plants that occur on the campus of The Evergreen State College (TESC), and describes the nine principle plant communities of the campus. It is based on my field observations and collections during Spring Quarter of 2006, and also on the specimens housed in the TESC herbarium, collected by numerous workers since the mid-1970s. Pene Speaks's "The Campus of The Evergreen State College: Soils and Vegetation" (1982) was also a useful resource, and my study is partially a revision and expansion of the floristic information in that article.

I used Hitchcock and Cronquist's *Flora of the Pacific Northwest* (1973) for my identifications, and follow its nomenclature, except for revised family names. The paper follows a format adapted from Bowcutt (1999).

It should be noted that this study is not exhaustive. It does not include the many cultivated plants on campus, except if they have naturalized. Although I made an effort to cover many trails and range widely and representatively over the campus, I did not have time to systematically cover the entire grounds. I did not concentrate on grasses or small weeds, and my study does not do full justice to the diversity of these groups on campus. In addition, there were some species collected on campus by other workers, whose presence I was not able to confirm in the field; this is noted in the plant list. Thus the plant list should be regarded as an introduction to the plants of the campus and a starting point for further floristic work, rather than as a complete, definitive catalog.

### **LOCATION AND GEOGRAPHY**

The TESC campus covers 965 acres, about two thirds of which is covered by woodland and forest. It is located approximately five air-miles northwest of Olympia, Washington, and includes 1000 meters of shoreline on Eld Inlet. Its latitude and longitude are 47°4' N, 122° 58' W, and in the U. S. Geological Survey it occupies most of Township 18 N Range 2 W Section 6, as well as small portions of Township 18 N Range 2 W Section 7 and of Township 19 N Range 2 W Section 31. According to Speaks (1982), who does not give his sources, "Before purchase by the state, beginning in 1968, the campus lands were made up of residences, small farms, and undeveloped land. . . . Old growth forest was removed shortly after 1845, when Thurston County was first settled. It was logged again in the 1930's and 1940's, and parts of it again in the 1960's." The forests and woodlands on campus have been well preserved since the founding of the college.

The climate and geology of the campus are typical of the Puget Sound Area of the *Tsuga heterophylla* Zone as described in Franklin and Dyrness (1988). It is characterized by cool, wet winters and mild, dry summers, and by a geology shaped by glaciation. The specific geography and geology of the campus are well described in Speaks (1982).

FLORA

This study documents a total of 210 vascular plant species found on the TESC campus, representing 53 plant families. Of these families, Asteraceae has by far the most species (24 species), with Rosaceae (16 species) and Poaceae (14 species) coming in second and third. Although there are undoubtedly other species to be found on campus, this study represents the majority of the plant diversity there.

VEGETATION

Nine plant communities occur on the TESC campus: red alder—bigleaf maple woodland; Douglas-fir forest; western red-cedar—western hemlock forest; red alder—bigleaf maple—Douglas-fir—western red-cedar forest; salmonberry—skunk-cabbage riparian bog; Lyngby’s sedge—pickleweed salt marsh; willow—hardhack riparian scrub; non-native perennial grasslands; and ruderal. Table 1 summarizes these communities according to their vegetation types.

The boundaries between plant communities tend to intergrade, although salt marsh, roadside ditch, and roadside willow—hardhack riparian bog communities tend to be rather sharply delimited by topography and hydrology. Red alder—bigleaf maple—Douglas-fir—western red-cedar forest might be thought of as a mere intermediary state between red alder—bigleaf maple woodland and coniferous forest; however, since it is so extensive and seems to have its own particular type of community, including some species not found elsewhere, I have chosen to consider it as a distinct vegetation type.

Table 1. Vegetation types and plant communities on the TESC campus.

Vegetation types	Plant communities
Woodland	Red alder—bigleaf maple woodland
Forest	Douglas-fir forest Western red-cedar—western hemlock forest Red alder—bigleaf maple—Douglas-fir — Western red-cedar forest
Wetlands and riparian vegetation	Salmonberry—skunk-cabbage riparian bogs Lyngby’s sedge—pickleweed salt marsh
Scrub	Willow—hardhack riparian scrub
Grasslands and other herbaceous vegetation	Non-native perennial grasslands Ruderal

Descriptions of each of these plant communities follow.

### Red Alder—Bigleaf Maple Woodland

*Alnus rubra* and *Acer macrophyllum* codominate in relatively open woodlands on moist sites which have been disturbed or cleared. There is considerable diversity in the understories of these woodlands, and considerable variety among them, but they can be divided into two main types: moister areas carpeted densely by *Dicentra formosa*, *Hydrophyllum tenuipes*, *Montia sibirica* and *Rubus ursinus*, to the exclusion of shrubs; and dryer, more diverse areas with a shrub understory including *Gaultheria shallon*, *Holodiscus discolor*, *Berberis nervosa*, *Oemleria cerasiformis*, *Rubus spectabilis*, *Rubus parviflorus*, *Rosa gymnocarpa*, and *Vaccinium parvifolium*, and a sometimes sparse herb layer including *Dicentra formosa*, *Carex* spp., *Geum macrophyllum*, *Hydrophyllum tenuipes*, *Juncus* spp., *Montia sibirica*, *Polystichum munitum*, *Pteridium aquilinum*, and *Rubus ursinus*. Near roadsides and fields, the grasses and weeds listed above for the field vegetation type are also common. These woodlands, where they are adjacent to older forest, tend to grade into the mixed forest type described below.

### Douglas-fir Forest

Large portions of the campus are covered by *Pseudotsuga menziesii* forest, in which this tree is almost totally dominant, although several other trees may occur occasionally: *Acer macrophyllum*, *Alnus rubra*, *Cornus nuttallii*, *Taxus brevifolia*, *Thuja plicata*, and *Tsuga heterophylla*. This is an early succession stage of coniferous forest; it occupies land which was logged in the 1950s and 1960s (Winn and Jackson 1975). This forest can be divided into two main types: wetter areas where the ground is more or less exclusively dominated by *Polystichum munitum*, and shrubs and other herbs are sparse (although all the species found in the dryer type of Douglas-fir Forest may occur); and the more diverse and widespread dryer areas where the ground-cover is dominated by *Gaultheria shallon*. Common shrubs are *Berberis nervosa*, *Holodiscus discolor*, *Sambucus racemosa*, *Vaccinium ovatum*, and *V. parvifolium*. *Acer circinatum*, *Berberis aquifolium*, *Rhamnus purshiana* saplings, and *Symphoricarpos albus* are occasional. *Ilex aquifolium*, an invasive tree, is also occasional but seems to be rapidly spreading, and should be controlled. Common understory species are *Athyrium filix-femina*, *Dicentra formosa*, *Osmorhiza chilensis*, *Polystichum munitum*, *Rubus ursinus*, *Trientalis latifolia*, *Trillium ovatum*, and *Viola sempervirens*. *Corallorhiza maculata* occurs occasionally. Where this forest borders on roads, parking lots or the main campus, it is sometimes host to invasive weeds, particularly *Geranium robertianum* and *Hedera helix*.

### Western Red-Cedar—Western Hemlock Forest

The older coniferous forests on the campus, reflecting climax conditions for our floristic zone (Franklin and Dyrness 1988), are dominated by *Thuja plicata* and *Tsuga heterophylla*. *Pseudotsuga menziesii* is also common, while other tree species—*Acer macrophyllum*, *Abies grandis*, and *Taxus brevifolia*—occur occasionally. Where this type of forest borders the beach, *Arbutus menziesii*, *Populus trichocarpa*, *Rhamnus purshiana* and *Salix* spp. are also found. Common shrubs are *Berberis nervosa*, *Gaultheria shallon*, *Sambucus racemosa*, *Vaccinium ovatum* and *V. parvifolium*. *Berberis aquifolium* and saplings of *Rhamnus purshiana* are occasional. *Polystichum munitum* is a dominant ground-cover in many areas. Common understory species include *Achlys triphyllum*, *Athyrium filix-femina*, *Rubus ursinus*, *Maianthemum dilatatum*, *Smilacina racemosa*,

*Trientalis latifolia*, *Trillium ovatum*, and *Viola sempervirens*. *Adiantum pedatum*, *Blechnum spicant*, and *Polypodium glycyrrhiza* are occasional. *Asarum caudatum*, *Calypso bulbosa*, *Chimaphila umbellata*, *Corallorhiza maculata*, and *Monotropa uniflora* occur rarely. This type of forest surrounds several salmonberry—skunk-cabbage riparian bog communities.

#### *Red Alder—Bigleaf maple—Douglas-Fir—Western Red-cedar Forest*

Large areas of forest on campus are codominated by *Acer macrophyllum*, *Alnus rubra*, *Pseudotsuga mensiezi*, and *Thuja plicata*. *Cornus nuttallii*, *Taxus brevifolia*, and *Tsuga heterophylla* occur occasionally. This type of forest is usually intermediary between red alder—bigleaf maple woodland and western red-cedar—western hemlock forest, but is far more extensive than the former and constitutes its own unique and extremely diverse community. Common shrubs are *Holodiscus discolor*, *Oemleria cerasiformis*, *Rubus parviflorum*, *R. spectabilis*, *Sambucus racemosa*, and *Vaccinium parvifolium*. *Amelanchier alnifolia*, *Berberis nervosa*, *Gaultheria shallon*, *Rosa gymnocarpa*, *Symphoricarpos albus*, and *Vaccinium ovatum* occur occasionally. Common understory are *Adenocaulon bicolor*, *Athyrium filix-femina*, *Dicentra formosa*, *Hydrophyllum tenuipes*, *Maianthemum dilatatum*, *Montia sibirica*, *Osmorhiza chilensis*, *Polystichum munitum*, *Pteridium munitum*, *Rubus ursinus*, and *Smilacina racemosa*. A wide variety of other herbs occur occasionally (see “Annotated Checklist of Vascular Plants,” below). This type of forest surrounds several salmonberry—skunk-cabbage riparian bog communities, as described below.

#### *Salmonberry—Skunk-cabbage Riparian Bogs*

Riparian bogs occur around streams and creeks, especially near shallows where the soil is muddy rather than sandy or rocky. They are characterized by year-round standing water or mud, although the amount of moisture can vary widely. These communities are surrounded by forest, but are themselves characterized by a lack of large trees, although some plants of the bog community may permeate among nearby trees. The bog shrubs may be divided between those that prefer more sunlit areas in mixed forest—*Acer circinatum*, *Ribes bracteosum*, *Rubus spectabilis*, and *Salix sitchensis*—and those that prefer the shade of primary coniferous forest—*Oplopanax horridum* and *Sambucus racemosa*. However, all these shrubs may occur in both types of forest. Similarly, different herbs characterize these two types of bog, though all may be found in either type. In mixed forest, *Athyrium filix-femina*, *Cardamine angulata*, *Carex amplifolia*, *Hydrophyllum tenuipes*, *Lysichitum americanum*, *Oenanthe sarmentosa*, *Maianthemum dilatatum*, and *Smilacina racemosa* are common. In primary coniferous forest, *Achlys triphylla*, *Disporum hookeri*, *Polystichum munitum*, *Smilacina stellata*, *Streptopus amplexifolius*, *Tiarella trifoliata* and *Trientalis latifolia* are common.

#### *Lyngby’s Sedge—Pickleweed Salt Marsh*

There is a small salt marsh on the beach, bordered to the south by a riparian bog community, and to the east and west by western red-cedar—western hemlock forest. It is dominated by *Carex lyngbyei*, with patches of *Grindelia integrifolia*, *Plantago maritima*, *Salicornus virginica*, and *Troglochin maritimum* along the edge. *Glaux maritima* and

*Jaumea carnosa* have been collected here in the past, but were not observed during the present study.

#### *Willow—Hardhack Riparian scrub*

Deep, boggy drainage ditches along the southern half of Evergreen Parkway are populated by a dense thicket codominated by *Salix lasiandra*, *S. scouleriana*, *S. sitchensis*, and *Spiraea douglasii*. *Rubus discolor*, *R. parviflorum*, and *R. spectabilis* are occasional. The ground is covered by *R. ursinus* and a variety of grasses and weeds.

#### *Ruderal*

Small, moist roadside ditches constitute their own community of grasses, weeds and herbs. All the grasses and weeds occurring in fields (see above) occur, with *Anthoxanthum odoratum*, *Dactylis glomerata* and *Poa palustris* being most common. The various nonnative field weeds also occur, especially *Ranunculus repens* and *Pteridium aquilinum*. However, the ditches are generally dominated by native understory species. *Dicentra formosa*, *Equisetum telmateia*, *Hydrophyllum tenuipes*, *Montia sibirica*, and *Rubus ursinus* are common. *Equisetum arvense*, and *Urtica dioica* are occasional, as is the nonnative *Geranium robertianum*.

Other ditches and ruderal areas are dominated by one or more of the following: *Anchusa* cf. *azurea*, *Hedera helix*, *Rubus discolor*, *R. parviflorum*, and *Symphytum officinale*.

#### *Non-native Perennial Grasslands*

There are several small fields and meadows on the campus, dominated by grasses; among the most abundant are *Anthoxanthum odoratum*, *Dactylis glomerata*, *Festuca* spp., *Holcus lanatus*, *Lolium multiflorum*, *Poa palustris*, and *P. pratensis*. A wide variety of weed associates are present, including *Bellis perennis*, *Capsella bursa-pastoris*, *Hypochaeris radicata*, *Myosotis* spp., *Taraxacum officinale*, and *Veronica serpyllifolia*, in frequently mowed areas. In less frequently mowed areas, *Daucus carota*, *Galium trifidum*, *G. triflorum*, *Plantago major*, *P. lanceolata*, *Pteridium aquilinum*, *Ranunculus repens*, *Rubus ursinus*, *Rumex acetosella*, and *Trifolium* spp. are also found. Some of these areas have been invaded by dense patches of nonnative weeds, including *Cytisus scoparius*, *Rubus discolor*, and *Vinca major*. Others (notably the old field on the north side of driftwood road, to the west of Parking Lot F) have given way to the succession of red alder—bigleaf maple woodland.

### MANAGEMENT RECOMMENDATIONS

Although much of the forest on campus is very healthy, certain areas are threatened by invasive weeds. *Hedera helix* is the most abundant of these, forming large mats in the forest on the edges of the main campus, and also along the beach. It prevents the growth of native understory species and can damage trees. This species is so well established in some places that it will be difficult to eradicate, but an effort should be made to remove as much as possible, especially along the beach.

Other invasive species are much less well established, and could be controlled by a manual removal program. These include *Geranium robertianum* (on roadsides and along trails); *Ilex aquifolium* (occasional in all forest types); and *Cytisus scoparius* and



*Rubus discolor* (both in non-native perennial grasslands, roadsides, and willow-hardhack riparian scrub).

#### ACKNOWLEDGEMENTS

I am indebted to Frederica Bowcutt for her advice, encouragement and practical assistance to me in this project, and especially for her painstaking reading and editing of several drafts of this study. Thanks are also due to Nicole Allen and Jesse Dutton Miller for their help and advice.

#### ANNOTATED CHECKLIST OF THE VASCULAR PLANTS

Voucher specimens are housed in The Evergreen State College Herbarium. Nomenclature follows Hitchcock and Cronquist (1973). An asterisk (\*) indicates nonnative species. An additional sign (+) indicates those unnaturalized cultivated species which happen to be vouchered in the herbarium. Some species are vouchered but were not observed in the field during the present study, and these are noted as such. Undoubtedly there are other species present on campus which have not yet been collected or identified, including several grasses.

#### PTEROPHYTA

##### POLYPODIACEAE—Common Fern Family

*Adiantum pedatum* L.—Maidenhair fern. Occasional. Western red-cedar—western hemlock forest. *Wiedemann 230-1, Wiedemann 230-2.*

*Athyrium filix-femina* (L.) Roth.—Lady-fern. Abundant. Red alder—bigleaf maple—Douglas-fir—western red-cedar forest and western red-cedar—western hemlock forest. *Peterson 231-2*

*Blechnum spicant* (L.) Roth.—Deer fern. Occasional. Red alder—bigleaf maple—Douglas-fir—western red-cedar forest. *Schwennesen (unnumbered).*

*Polypodium glycyrrhiza* D. C. Eat.—Licorice-fern. Occasional. Epiphytic on *Acer macrophyllum* in red alder—bigleaf maple—Douglas-fir—western red-cedar forest. *Schwennesen 134, Schwennesen 135, Peterson 233-1.*

*Polystichum munitum* (Kaulf.) Presl—Sword-fern. Abundant, locally dominant. Douglas-fir forest, western red-cedar—western hemlock forest, and Red alder—bigleaf maple—Douglas-fir—western red-cedar forest. *Schwennesen 136, Schwennesen 137, Peterson 234-2, S. B. H. & R. S. 25.*

*Pteridium aquilinum* (L.) Kuhn. var. *pubescens* Underw.—Bracken, brake-fern. Abundant. Red alder—bigleaf maple forest and ruderal. *S. B. H. & R. S. 26.*

#### SPHENOPHYTA

##### EQUISETACEAE—Horsetail Family

*Equisetum arvense* L.—Common horsetail. Occasional. Wet ruderal areas and red alder—bigleaf maple woodland. *Lohmann 23*.

*Equisetum telmateia* Erh.—Giant horsetail. Common. Wet ruderal areas and salmonberry—skunk cabbage riparian bogs. *Lohmann 5*.

## CONIFEROPHYTA

### CUPRESSACEAE—Cypress Family

*Thuja plicata* Donn.—Western red-cedar. Abundant, locally dominant. Western red-cedar—western hemlock forest and red alder—bigleaf maple—Douglas fir—western red-cedar forest. *Schwennesen 59, S. B. H. & R. H. 3, Peterson 102-3*.

### PINACEAE—Pine Family

*Abies grandis* (Dougl.) Forbes.—Grand fir. Rare. Western red-cedar—western hemlock forest. *Schwennesen 123, Schwennesen 124, Wiedemann 205-1, Peterson 205-2*.

+*Pinus ponderosa* Dougl.—Ponderosa pine. Planted on the main campus, but not observed in the field during this study. *Schwennesen (unnumbered)*.

*Pseudotsuga menziesii* (Mirbel) Franco.—Douglas fir. Abundant. Locally dominant in Douglas-fir forest; scattered in Western red-cedar—western hemlock forest and red alder—bigleaf maple—Douglas-fir—western red-cedar forest. *Wiedemann 206-2, Peterson 206-3, S. B. H. & R. S. 206-1, Schwennesen 125*.

*Tsuga heterophylla* (Raf.) Sarg.—Western hemlock. Common. Western red-cedar—western hemlock forest. *Lohmann 9*.

### TAXACACEAE—Yew Family

*Taxus brevifolia* Nutt.—Pacific yew. Rare. Western red-cedar—western hemlock forest and red alder—bigleaf maple—Douglas-fir—western red-cedar forest. *Schwennesen 169, Schwennesen 170, Wiedemann 207-1, Wiedemann 207-2*.

## ANTHOPHYTA

### Magnoliids

#### ARISTOLOCHIACEAE—Birthwort Family

*Asarum caudatum* Lindl.—Wild ginger. Rare. Western red-cedar—western hemlock forest. Not collected due to small population size.

### Eudicots

#### ACERACEAE—Maple Family

*Acer circinatum* Pursh—Vine maple. Occasional. Red alder—bigleaf maple—Douglas-fir—western red-cedar forest. *Schwennesen 1, Schwennesen 2*.

*Acer macrophyllum* Pursh—Big-leaf maple. Abundant. Red alder—bigleaf maple woodland and red alder—bigleaf maple—Douglas-fir—western red-cedar forest. *Schwennesen 3*.

## APIACEAE (formerly UMBELLIFERAE)—Carrot Family

\**Daucus carota* L.—Queen Anne’s lace. Common. Ruderal. Native to Europe.

*Schwennesen 6, Schwennesen 7, Schwennesen 8.*

*Oenanthe sarmentosa* Presl.—American water-parsley. Locally abundant. Salmonberry –  
–skunk-cabbage riparian bogs. *Wiedemann 323-1.*

*Osmorhiza chilensis* H. & A.—Mountain sweet-cicely. Abundant. Red alder—bigleaf  
maple—Douglas-fir—western red-cedar forest and Douglas-fir forest.

*Schwennesen 9, Wiedemann 420-2 (det. Brown).*

## APOCYNACEAE—Dogbane Family

\**Vinca major* L.—Periwinkle. Rare. Escaped ornamental established in a red alder—  
bigleaf maple woodland at edge of meadow. Native to Europe. *Lohmann 22.*

## AQUIFOLIACEAE—Holly Family

\**Ilex aquifolium* L.—English holly. Occasional. Douglas-fir forest and western red-  
cedar—western hemlock forest. Native to Europe. *Lohmann 24.*

## ARALIACEAE—Ginseng Family

\**Hedera helix* L.—English ivy. Locally abundant. Escaped ornamental heavily  
established in parts of Douglas-fir forest and western red-cedar—western  
hemlock forest. Native to Europe. *Lohmann 38.*

*Oplopanax horridum* (Smith) Miq.—Devil’s club. Locally abundant. Salmonberry—  
skunk cabbage riparian bogs, especially in western red-cedar—western hemlock  
forest. *Lohmann 52.*

## ASTERACEAE (formerly COMPOSITAE)—Aster Family

*Adenocaulon bicolor* Hook.—Pathfinder. Common. Douglas-fir forest and red alder—  
bigleaf maple—Douglas-fir—western red-cedar forest. *Schwennesen 192,*  
*Schwennesen 193, Wiedemann 45-1.*

*Anaphalis margaritacea* (L.) B. & H.—Pearly-everlasting. Edges of Red alder—bigleaf  
maple—Douglas-fir—western red-cedar forest. *Wiedemann 46-1, Schwennesen*  
*189, Schwennesen 190, Schwennesen 191.*

*Aster chilensis* Nees—Aster. Fields and ruderal. *Schwennesen 184, Schwennesen 185,*  
*Schwennesen 186.*

\**Bellis perennis* L.—English daisy. Common. Ruderal. *Lohmann 6.*

*Bidens frondosa* L.—Leafy beggars-tick, sticktight. Ruderal. Not observed in the field  
during this study. *Schwennesen (un-numbered).*

\**Chrysanthemum leucanthemum* L.—Oxeye daisy, moon daisy, marguerite. Occasional.  
Fields and ruderal. Native to Eurasia. *Schwennesen 181, Schwennesen 182,*  
*Schwennesen 183, Wiedemann 52-2.*

\**Cirsium arvense* (L.) Scop. Var. *horridum* Wimm. & Grab.—Canadian thistle, creeping  
thistle. Occasional. Ruderal. Native to Eurasia. *S. B. H. & R. S. 47, Schwennesen*  
*178, Schwennesen 179, Schwennesen 180.*

\**Cirsium vulgare* (Savi) Tenore—Bull thistle, spear thistle, common thistle. Occasional.

- Ruderal. Native to Eurasia. *Schwennesen 176, Schwennesen 177, Schwennesen (unnumbered), S. B. H. & R. S. 32.*
- \**Crepis iscoese* (L.) Wallr.—Smooth hawksbeard. Abundant. Ruderal. Native to Eurasia. *Schwennesen 175 (det. Campb.), Wiedemann (unnumbered), S. B. H. & R. S. 23, Wiedemann 56-2.*
- \**Crepis nicaeensis* Balb.—French hawksbeard. Ruderal. Not observed in the field during this study. Native to Europe. *Schwennesen 196.*
- Grindelia integrifolia* DC. var. *macrophylla* (Greene) Cronq.—Puget Sound gumweed. Rare. Lyngby's sedge—pickleweed salt marsh. *Wiedemann 411-1 (det. Gerrish).*
- Hieracium albiflorum* Hook.—White-flowered hawkweed. Sandy slopes at edges of western red-cedar—western hemlock forests. *Lohmann 35.*
- \**Hypochaeris radicata* L.—Hairy cat's-ear, false dandelion, gosmore. Abundant. Ruderal. Native to Europe. *Schwennesen 201 (det. Campbell), S. B. H. & R. S. 18, Wiedemann 61-2 (det. Gerrish).*
- Jaumea carnosa* (Less.) Gray.—Fleshy jaumea. Intertidal zone. Not observed in the field during this study. *Abair 63-1.*
- \**Lapsana communis* L.—Nipplewort. Occasional. Ruderal. Native to Eurasia. *Schwennesen 204, Schwennesen 205.*
- \**Leontodon nudicaulis* (L.) Merat ssp. *taraxacoides* (Vill.) Schinz & Thell.—Hairy hawkbit. Occasional. Ruderal. Native to Europe. *Wiedemann 417-1 (det. Gerrish), Schwennesen 206 (det. Campbell), Schwennesen (unnumbered, det. Campbell).*
- Madia sativa* Mol. var. *sativa*—Coast tarweed. Not observed in the field during this study. *Wiedemann 412-1.*
- Matricaria matricarioides* (Less.) Porter—Pineapple weed. Occasional. Ruderal. *Wiedemann 383-1.*
- Petasites frigidus* (L.) Fries var. *palmatus* (Ait.) Cronq.—Sweet coltsfoot. Occasional. Edges of Red alder—bigleaf maple—Douglas-fir—western red-cedar forest. *Wiedemann 68-1.*
- \**Senecio jacobaea* L.—Tansy ragwort. Occasional. Ruderal. Native to Eurasia. *Schwennesen 208, Schwennesen 210, Wiedemann 74-1.*
- \**Senecio vulgaris* L.—Old-man-in-the-spring, old-man-in-the-woods, common groundsel. Occasional. Ruderal. Native to Eurasia. *Gerrish 452-1.*
- Solidago iscoese* L. var. *salebrosa* (Piper) Jones.—Canada goldenrod, meadow goldenrod. Abundant. Ruderal. *S. B. H. & R. S. 48, Schwennesen 211, Schwennesen 212, Wiedemann 414-4 (det. Gerrish).*
- \**Tanacetum vulgare* L.—Common tansy. Occasional. Ruderal. Native to Eurasia. *Rickert 8, Rickert 4.*
- \**Taraxacum officinale* Weber—Common dandelion. Abundant. Ruderal. Native to Eurasia. *Bowcutt 2286.*

#### BERBERIDACEAE—Barberry Family

- Achlys triphylla* (Smith.) DC.—Vanilla-leaf. Occasional. Moist areas in red alder—bigleaf maple—Douglas-fir—western red-cedar forest. *Wiedemann 6.*
- Berberis aquifolium* Pursh.—Shining Oregon-grape, tall Oregon-grape. Occasional. Douglas-fir forest and western red-cedar—western hemlock forest. *Schwennesen*

217.

- Berberis nervosa* Pursh.—Dull Oregon-grape, dwarf Oregon-grape. Abundant. Douglas-fir forest and western red-cedar—western hemlock forest. *Schwennesen* 220, *Schwennesen* 221, *Schwennesen* 222, *Wiedemann* 8-2, *Wiedemann* 8-1.
- Vancouveria hexandra* (Hook.) Morr. & Dec.—Inside-out flower. Occasional. Red alder—bigleaf maple forest. *Lohmann* 21.

## BETULACEAE—Birch Family

- Alnus rubra* Bong.—Red alder. Common, locally dominant. Red alder—bigleaf maple woodland and red alder—bigleaf maple—Douglas-fir—western red-cedar forest. *Soule* 16, *Wiedemann* 10-1, *Wiedemann* 10-3, *S. B. H. & R. S.* 1.
- Corylus cornuta* Marsh. var. *californica* (DC.) Sharp—Western hazelnut. Common. Open areas in red alder—bigleaf maple—Douglas-fir—western red-cedar forest. *S. B. H. & R. S.* 4, *Wiedemann* 12-1.

## BORAGINACEAE—Borage Family

- \**Anchusa cf. azurea* Mill.—Italian bugloss. Occasional. Ruderal. Native to Europe. *Lohmann* 47.
- Myosotis arvensis* (L.) Hill—Field forget-me-not, field scorpiongrass. Occasional. Ruderal. Native to Europe. *Schwennesen* 225, *Schwennesen* 226, *Wiedemann* 415-1 (det. *Gerrish*).
- \**Myosotis discolor* Pers.—Yellow and blue forget-me-not. Occasional. Ruderal. Native to Europe. *Wiedemann* 416-1 (det. *Gerrish*).
- Myosotis laxa* Lehm.—Small-flowered forget-me-not. Occasional. Wet fields. *Schwennesen* 224 (det. *Campbell*), *Schwennesen* 227, *Wiedemann* 19-1.
- \**Symphytum officinale* L.—Common comfrey. Occasional. Escaped from cultivation at edges of bigleaf maple forest. Native to Europe.

## BRASSICACEAE (formerly CRUCIFERAE)—Mustard Family

- \**Barbarea vulgaris* R. Br.—Yellow rocket. Occasional. Ruderal. Native to Europe. *Schwennesen* (unnumbered).
- \**Capsella bursa-pastoris* L.—Shepherd's-purse. Abundant. Ruderal. Native to Europe. *Wiedemann* 91-1, *Gerrish* 91-2.
- Cardamine angulata* Hook.—Angled bittercress. Common. Red alder—bigleaf maple—Douglas-fir—western red-cedar forest. *Wiedemann* 92-3.
- Cardamine flexuosa* With.—Bittercress. Occasional. Ruderal. *Gerrish* 95-2 (det. *Zika*), *Peterson* 95-1 (det. *Zika*).
- Cardamine oligosperma* var. *oligosperma* Nutt.—Little western bittercress. Common. Ruderal. *Wiedemann* 94-1, *Schwennesen* 231.
- \**Hesperis matronalis* L.—Damask violet, dame's violet, sweet rocket. Occasional. Forest-edges and roadsides. Native to Europe. *Schwennesen* (unnumbered, two specimens).
- \**Sisymbrium officinale* (L.) Scop.—Hedge mustard. Occasional. Ruderal. Native to Europe. *Schwennesen* 233, *Schwennesen* (unnumbered).
- \**Teesdalia nudicaulis* (L.) R. Br.—Shepherd's cress. Common. Ruderal. Native to

Europe. *Wiedemann 100-2 (det. Gerrish), Gerrish 100-3.*

#### CAPRIFOLIACEAE—Honeysuckle Family

*Linnaea borealis* L. var. *longifolia* Torr.—Twinsflower. Common. Red alder—bigleaf maple—Douglas-fir—western red-cedar forest and Douglas-fir forest.

*Schwennesen 35, Lohmann 50.*

*Lonicera ciliosa* (Pursh) DC.—Northwest honeysuckle, trumpet honeysuckle, orange honeysuckle. Common. Edges of all forest types. *Schwennesen 36, Wiedemann 24-2 (det. Schwennesen).*

\**Lonicera etrusca* Santi—Etruscan honeysuckle. Locally abundant. Established at edge of red alder—bigleaf maple woodland. Native to the Mediterranean. *Lohmann 44.*

*Lonicera hispidula* (Lindl.) Dougl.—California honeysuckle, hairy honeysuckle, pink honeysuckle. Occasional. Edges of all forest types. *Schwennesen 38 (det. Campbell), Schwennesen (unnumbered, det. Campbell).*

*Lonicera involucrata* (Rich.) Banks var. *involucrata* .—Black twinberry. Occasional. Willow—hardhack riparian scrub and edges of all forest types. *Wiedemann & Gerrish (unnumbered), Neill 4670, Smith (unnumbered).*

*Sambucus racemosa* L. var. *arborescens* (T. & G.) Gray.—Red elderberry. Common. Red alder—bigleaf maple—Douglas-fir—western red-cedar forest and Douglas-fir forest. *Wiedemann 27-2, Wiedemann 27-2.*

*Symphoricarpos albus* (L.) Blake.—Common snowberry. Occasional. Douglas-fir forest and red alder—bigleaf maple—Douglas-fir—western red-cedar forest. *Lohmann 34.*

#### CARYOPHYLLACEAE—Pink Family

\**Cerastium viscosum* L.—Sticky chickweed. Occasional. Ruderal. Native to Europe. *Schwennesen 44, Wiedemann 413-1 (det. Gerrish).*

\**Lychnis alba* Mill.—Evening campion. Not observed in the field during this study. Native to Europe. *Wiedemann 31-1.*

*Spergularia canadensis* (Pers.) G. Don.—Canadian sandspurry. Occasional. Gravelly and sandy beach. *Schwennesen 47, Schwennesen (unnumbered).*

\**Stellaria media* (L.) Cyrill.—Chickweed. Occasional. Red alder—bigleaf maple forest and ruderal. Native to Europe. *Neill 4652, Wiedemann 34-1, Wiedemann 32-2.*

#### CHENOPODIACEAE—Goosefoot Family

*Salicornia virginica* L.—Pickleweed, woody glasswort. Locally abundant. Lyngby's sedge—pickleweed salt marsh. *Wiedemann 41-1.*

#### CORNACEAE—Dogwood Family

*Cornus nuttallii* Aud.—Western dogwood. Rare. Red alder—bigleaf maple—Douglas-fir—western red-cedar forest. *Wiedemann 85-2, Soule 13.*

#### ERICACEAE—Heath Family

*Arbutus menziesii* Pursh.—Madrone. Occasional. Edges of Red alder—bigleaf maple—Douglas-fir—western red-cedar forest and western red-cedar—western hemlock



forest, especially near beach. *Wiedemann 106-2.*

*Chimaphila umbellata* (L.) Bart. var. *occidentalis* (Rydb.) Blake—Prince's-pine. Rare. Douglas-fir forest. Not observed in the field during this study. *Wiedemann 110-2.*

*Gaultheria shallon* Pursh—Salal. Abundant. Dominant in Douglas-fir forest, common in other forest types. *Schwennesen 238, Schwennesen 238, Schwennesen (unnumbered), S. B. H. & R. S. 8, Peterson 112-3, Wiedemann 112-2, Soule 4, Lohmann 51.*

*Monotropa uniflora* L.—Indian pipe. Rare. Western red-cedar—western hemlock forest. Not observed in the field during this study. *Wiedemann 116-1.*

*Vaccinium ovatum* Pursh.—Evergreen huckleberry. Common. Douglas-fir forest and Red alder—bigleaf maple—Douglas-fir—western red-cedar forest. *Schwennesen 244, Schwennesen 245, Schwennesen 246, Schwennesen (unnumbered).*

*Vaccinium parvifolium* Smith.—Red huckleberry. Common. Red alder—bigleaf maple woodland and all forest types. *Schwennesen (unnumbered), S. B. H. & R. S. 7.*

#### FABACEAE (formerly LEGUMINOSAE)—Pea Family

\**Cytisus scoparius* (L.) Link.—Locally abundant. Willow—hardhack riparian scrub and ruderal. Native to Europe. *Schwennesen 247, Schwennesen 249, Peterson 148-2, Wiedemann 148-3.*

*Lathyrus polyphyllus* Nutt.—Leafy peavine. Occasional. Red alder—bigleaf maple—Douglas-fir—western red-cedar forest *Wiedemann 418-1 (det. Gerrish).*

\**Lotus corniculatus* L.—Birdsfoot-trefoil. Occasional. Fields. Native to Europe. *Schwennesen 253, Schwennesen 254.*

*Lotus crassifolius* (Benth.) Greene var. *subglaber* (Ottley) Hitchc.—Big deervetch. Occasional. Ruderal. *Wiedemann 152-2, Wiedemann (unnumbered), Schwennesen 255, Lohmann 20.*

*Lotus micranthus* Benth.—Small-flowered deervetch. Occasional. Fields and ruderal. *Wiedemann 154-2 (det. Gerrish).*

*Lupinus polyphyllus* Lindl. var. *pallidipes* (Heller) Smith.—Many-leaved lupine. Occasional. Ruderal. *Schwennesen 257 (det. Campbell), Schwennesen 258 (det. Campbell).*

\**Robinia pseudo-acacia* L.—Black or yellow locust, false acacia. Naturalized garden remnant. Beach at edge of western red-cedar—western hemlock forest. Native to eastern North America. *Lohmann 33.*

*Trifolium dubium* Sibth.—Least hop-clover. Abundant. Fields and ruderal. *Wiedemann 157-3, Schwennesen 261.*

\**Trifolium pratense* L.—Red clover. Abundant. Fields and ruderal. Native to Europe. *S. B. H. & R. S. 30.*

\**Trifolium repens* L.—White clover, Dutch clover. Abundant. Fields and ruderal. Native to Europe. *Schwennesen 269, Schwennesen 269, S. B. H. & R. S. 29.*

\**Vicia hirsuta* (L.) S. F. Gray—Tiny vetch. Occasional. Ruderal. Native to Europe. *Wiedemann 166-1.*

\**Vicia sativa* L. var. *angustifolia* (L.) Wahlb.—Common vetch. Common. Ruderal. Native to Europe. *Wiedemann 167-1.*

## FUMARIACEAE—Fumitory Family

*Dicentra formosa* (Andr.) Walp.—Pacific bleedingheart. Common. Red alder—bigleaf maple woodland, Red alder—bigleaf maple—Douglas-fir—western red-cedar forest, and ruderal. *Wiedemann 122-2, Smith (unnumbered)*.

## GENTIANACEAE—Gentian Family

\**Centaurium umbellatum* Gilib.—European centaury, common centaury. Occasional. Roadsides, waste areas. Native to Europe. *Schwennesen 70, Schwennesen 71, Wiedemann 123-2, S. B. H. & R. S. 22*.

## GERANIACEAE—Geranium Family

\**Erodium cicutarium* (L.) L'Her.—Crane's-bill. Occasional. Ruderal. *Schwennesen (unnumbered)*.

\**Geranium robertianum* L.—Herb Robert. Occasional in red alder—bigleaf maple woodland, locally abundant in ruderal areas. Native to Europe. *Lohmann 13*.

## GROSSULARIACEAE—Currant Family

*Ribes bracteosum* Dougl.—Stink currant. Locally abundant. Salmonberry—skunk-cabbage riparian bogs, especially in red alder—bigleaf maple—Douglas-fir—western red-cedar forests. *Lohmann 40*.

*Ribes sanguineum* Pursh—Redflowering currant, red currant, blood currant. Occasional. Edges of red alder—bigleaf maple—Douglas-fir—western red-cedar forest. *Schwennesen 73, Smith (unnumbered), Peterson 127-2*.

## HIPPOCASTANACEAE—Horse-chestnut family

+\**Aesculus hippocastanum* L.—Horse chestnut. Single individual growing at the edge of a red alder—bigleaf maple woodland. *Lohmann 45*.

## HYDROPHYLLACEAE—Waterleaf Family

*Hydrophyllum tenuipes* Heller—Pacific waterleaf, slender-stemmed waterleaf. Abundant. Red alder—bigleaf maple woodland and red alder—bigleaf maple—Douglas-fir—western red-cedar forest. *Schwennesen 74, Schwennesen 75, Wallding 87, Wiedemann 130-1, Wiedemann 130-2*.

*Nemophila parviflora* var. *parviflora* Dougl.—Small-flowered nemophila. Common. Red alder—bigleaf maple woodland. *Schwennesen 77, Lohmann 14*.

*Nemophila pedunculata* Dougl.—Meadow nemophila. Occasional. Fields. *Gerrish 131-3, Wiedemann 131-1 (det. Gerrish), Wiedemann 131-2 (det. Gerrish)*.

## HYPERICACEAE—St. John's-wort Family

*Hypericum anagalloides* C. & S. Bog St. John's-wort. Rare. Wet meadow. Not observed in the field during this study. *Schwennesen 78, Schwennesen 79, Schwennesen 80*.

\**Hypericum perforatum* L.—Common St. John's-wort. Occasional. Ruderal. Native to Europe. *Schwennesen 81, Schwennesen 82, Schwennesen 84, Lohmann 43*.



## LAMIACEAE (formerly LABIATAE)—Mint Family

- \**Glechoma hedeacea* L.—Ground ivy. Occasional. Ruderal. Native to Eurasia. *Wiedemann 139-1*.
- Mentha arvensis* L. var. *glabrata* (Benth.) Fern.—Field mint. Occasional. Ruderal. *Schwennesen 92, Schwennesen 93, Schwennesen 94, Wiedemann (unnumbered), Gerrish 429-1*.
- \**Origanum vulgare* L. Oregano. Rare. Ruderal. Not observed in the field as part of this study. Native to Eurasia. *Rickert 2, Rickert 3*.
- Prunella vulgaris* L.—Self-heal. Abundant. Ruderal. *Schwennesen 96, Schwennesen 97, S. B. H. & R. S. 20, Wiedemann 141-2*.
- Stachys cooleyae* Heller—Cooley's hedge-nettle. Occasional. Ruderal. *Schwennesen 98, Schwennesen 99, Schwennesen (unnumbered)*.

## ONAGRACEAE—Willow-herb Family

- Circaea alpina* L.—Enchanter's nightshade. Common. Red alder—bigleaf maple—Douglas-fir—western red-cedar forest and red alder—bigleaf maple woodland. *Schwennesen 111, Lohmann 41*.
- Epilobium angustifolium* L.—Fireweed. Occasional. Ruderal. *Schwennesen (unnumbered, two specimens), S. B. H. & R. S. 19*.
- Epilobium watsonii* Barbey—Watson's willow-herb. Occasional. Ruderal. *Gerrish 199-1 (det. Smith), Wiedemann 199-2 (det. Smith), Wiedemann 199-3 (det. Smith), Schwennesen 112, Schwennesen 113, Schwennesen 114*.
- \**Oenothera* × *erythrosepala* Borb.—Red-sepaled evening-primrose. Rare. Ruderal. Escaped garden hybrid. Not observed in the field during this study. *Burg (unnumbered)*.

## OXALIDACEAE—Oxalis Family

- Oxalis oregana* Nutt.—Oregon wood-sorrel. Rare. Established (probably planted) near Organic Farm. *Lohmann 48*.

## PLANTAGINACEAE—Plantain Family

- \**Plantago lanceolata* L.—English plantain. Common. Fields and ruderal. Native to Europe. *S. B. H. & R. S. 35, S. B. H. & R. S. 56 (det. Smith)*.
- \**Plantago major* L.—Common plantain, nippleseed plantain. Common. Fields and ruderal. Native to Europe. *Schwennesen (unnumbered)*.
- Plantago maritima* L.—Seaside plantain. Occasional. Lyngby's sedge—pickleweed salt marsh and along beach. *Schwennesen 130 (det. Campbell), Schwennesen 131 (det. Campbell), Schwennesen (unnumbered), Wiedemann 210-2 (det. Gerrish)*.

## POLYGONACEAE—Buckwheat Family

- Polygonum fowleri* Robins.—Fowler's knotweed. Rare. Sandy or gravelly beach. Not observed in the field during this study. *Schwennesen 138, Schwennesen (unnumbered)*.
- Polygonum persicaria* L.—Lady's thumb, heartweed. Occasional. Ruderal. *Schwennesen 140 (det. Campbell), Schwennesen 141, Schwennesen 142, S. B. H. & R. S. 408-1*

(det. Gerrish).

\**Rumex acetosella* L.—Sheep sorrel, sour dock. Abundant. Fields and ruderal; prefers acidic soil. Native to Europe. *Schwennesen 143, Schwennesen 144, Schwennesen 145, Wiedemann 228-1, S. B. H. & R. S. 34.*

\**Rumex crispus* L.—Curly dock. Common. Ruderal. Native to Europe. *Lohmann 31.*

*Rumex obtusifolius* L.—Bitterdock, butterdock, broad-leaved dock. Common. Ruderal. *S. B. H. & R. S. 33, Schwennesen 147, Schwennesen 148, Schwennesen 149.*

#### PORTULACACEAE—Purslane Family

*Montia sibirica* (L.) Howell—Siberian miner's-lettuce, candyflower. Abundant. Red alder—bigleaf maple woodland, all forest types, and ruderal. *Smith (unnumbered), Schwennesen 150, Neill 4654, Wiedemann 238-1, Peterson 237-1.*

#### PRIMULACEAE—Primrose Family

*Glaux maritima* L.—Saltwort, sea-milkwort. Rare. Beach. Not observed in the field during this study. *Wiedemann 242-1.*

*Trientalis latifolia* Hook.—Western starflower, broadleaved starflower. Common. Douglas-fir forest and western red-cedar—western hemlock forest. *Schwennesen (unnumbered), Wiedemann 243-1, Wiedemann 243-2,*

#### RANUNCULACEAE—Buttercup Family

*Actaea rubra* (Ait.) Willd.—Baneberry. Occasional. Red alder—bigleaf maple—Douglas-fir—western red-cedar forest. *Neill 4676.*

*Ranunculus occidentalis* Nutt.—Western buttercup. Rare. Not observed in the field during this study. *Peterson 253-1.*

\**Ranunculus repens* L.—Creeping buttercup. Abundant. Red alder—bigleaf maple woodland, fields and ruderal. Native to Europe. *Schwennesen 275.*

*Ranunculus uncinatus* D. Don var. *parviflorus* (Torr.) Benson—Little buttercup. Occasional. Red alder—bigleaf maple woodland. *Schwennesen (unnumbered), Wiedemann 409-1 (det. Gerrish).*

*Ranunculus uncinatus* D. Don var. *uncinatus*—Little buttercup. Occasional. Red alder—western red-cedar woodland. *Neill 4677.*

#### RHAMNACEAE—Buckthorn Family

*Rhamnus purshiana* DC.—Cascara. Occasional. All forest types. *Lohmann 8.*

#### ROSACEAE—Rose Family

*Amelanchier alnifolia* Nutt. var. *semiintegrifolia* (Hook.) Hitch.—Saskatoon, serviceberry, shadbush. Occasional. Red alder—bigleaf maple—Douglas-fir—western red-cedar forest. *Wiedemann 259-1.*

*Geum macrophyllum* Willd. var. *macrophyllum*—Largeleaved avens. Locally abundant. Red alder—bigleaf maple woodland and ruderal. *Wiedemann 262-1, Lohmann 42.*

*Holodiscus discolor* (Pursh) Maxim.—Creambush ocean-spray. Common. Red alder—bigleaf maple woodland, red alder—bigleaf maple—Douglas-fir—western red-cedar forest, and Douglas-fir forest. *Wiedemann 264-1.*

- Oemleria cerasiformis* (H. & A.) Landon—Osoberry. Common. Red alder—bigleaf maple—Douglas-fir—western red-cedar forest and red alder—bigleaf maple woodland. *Wiedemann 266-2, Wiedemann 266-3, Peterson 266-4*. N.B.: All specimens are labeled “*Osmaronia cerasiformis* (T. & G.) Greene.”
- Prunus emarginata* (Dougl.) Walp.—bittercherry. Occasional. Edges of red alder—bigleaf maple—Douglas-fir—western red-cedar forest. *S. B. H. & R. S. 10, Wiedemann 269-2 (det. Gerrish), Wiedemann 269-1, Schwennesen 287*.
- Prunus virginiana* L. var. *demissa* (Nutt.) Torr.—Common chokecherry. Not observed in the field during this study. *Holder 395-1*.
- Pyrus fusca* Raf.—Western crabapple. A few individuals on beach at edge of red alder—bigleaf maple—western red-cedar—Douglas-fir forest. *Lohmann 36*.
- Rosa gymnocarpa* Nutt.—Baldhip rose, little wild rose. Occasional. All forest types. *Schwennesen (unnumbered)*.
- Rosa pisocarpa* Gray—Peafruit rose. Rare. Beach at edge of western redcedar—western hemlock forest. *Lohmann 27*.
- \**Rubus discolor* Weihe & Nees—Himalayan blackberry. Occasional. Ruderal. Native to Eurasia. *Lohmann 32, Lohmann 46*.
- \**Rubus laciniatus* Willd.—Evergreen blackberry. Rare. Ruderal. Native to Europe. *Schwennesen 289, Schwennesen (unnumbered), S. B. H. & R. S. 11*.
- Rubus parviflorus* Nutt.—Thimbleberry. Common. Red alder—bigleaf maple woodland, red alder—bigleaf maple—Douglas-fir—western red-cedar forest, salmonberry—skunk-cabbage riparian bogs, willow—hardhack riparian scrub. *Schwennesen 290, Schwennesen 291, Schwennesen (unnumbered), Wiedemann 275-2*.
- Rubus spectabilis* Pursh—Salmonberry. Common, locally dominant. Red alder—bigleaf maple woodland, red alder—bigleaf maple—Douglas-fir—western red-cedar forest, salmonberry—skunk-cabbage riparian bogs. *Smith (unnumbered), Schwennesen 292*.
- Rubus ursinus* Cham. & Schlecht.—Pacific blackberry. Abundant. Nearly ubiquitous in red alder—bigleaf maple woodland, all forest types, and many ruderal areas. *S. B. H. & R. S. 12, Schwennesen 293, Schwennesen 294, Peterson 277-3, Wiedemann 277-1*.
- Spiraea douglasii* Hook., var. *menziesii* (Hook.) Presl—Western spiraea, hardhack. Common. Willow—hardhack riparian scrub. *Schwennesen 297, Schwennesen 298, S. B. H. & R. S. 5, Wiedemann 282-2 (det. Gerrish)*.

#### RUBIACEAE—Madder Family

- Galium trifidum* L.—Small bedstraw. Common. Ruderal. *Schwennesen 301, Schwennesen 302 (det. Campbell), Schwennesen 303*.
- Galium triflorum* Michx.—Sweetscented bedstraw. Occasional. Ruderal. *Schwennesen 304, Schwennesen 305*.

#### RUTACEAE—Rue Family

- \**Skimmia japonica* Thunb.—Skimmia. Rare. Garden ornamental planted and apparently naturalizing along a paved walkway in Douglas-fir forest at the edge of campus. Native to Asia. *Lohmann 37*.

## SALICACEAE—Willow Family

- +\**Populus alba* L.—Silver poplar. Rare. Edges of red alder—bigleaf maple woodland. Native to Eurasia. No evidence of naturalization. *Holder 384-1*.
- Populus trichocarpa* T. & G.—Black cottonwood. Occasional. Edges of red alder—bigleaf maple—western red-cedar—Douglas fir forest. *Lohmann 28*.
- Salix hookeriana* Barratt—Hooker's willow. Occasional. Willow—hardhack riparian scrub. *Wiedemann* (unnumbered).
- Salix lasiandra* Benth.—Pacific willow. Occasional. Willow—hardhack riparian scrub and edges of red alder—bigleaf maple—Douglas-fir—western red-cedar forest. *Neill 4668, Neill 4671*.
- Salix scouleriana* Barratt.—Scouler willow. Occasional. Willow—hardhack riparian scrub. *Neill 4667*.
- Salix sitchensis* Sanson—Sitka willow. Occasional. Willow—hardhack riparian scrub. *Neill 4658*.

## SAXIFRAGACEAE—Saxifrage Family

- Chrysopenium glechomaefolium* Nutt.—Western golden-carpet. Rare. Salmonberry—skunk cabbage riparian bogs. Not observed in the field during this study. *Smith* (unnumbered).
- Tellima grandiflora* (Pursh) Dougl.—Fragrant fringe-cup. Occasional. Red alder—bigleaf maple—Douglas-fir—western red-cedar forest. *Wiedemann 301-2 (det. Brown)*.
- Tolmeia menziesii* (Pursh) T. & G.—Youth-on-age, pig-a-back plant. Common. Red alder—bigleaf maple—Douglas-fir—western red-cedar forest and ruderal. *Wiedemann 304-2 (det. Brown), Wiedemann 304-3 (det. Brown), Schwennesen 153*.
- Tiarella trifoliata* L. var. *trifoliata*—Trefoil foamflower. Occasional. Red alder—bigleaf maple—Douglas-fir—western red-cedar forest and salmonberry—skunk-cabbage riparian bogs. *Lohmann 19*.

## SCROPHULARIACEAE—Figwort Family

- \**Digitalis purpurea* L.—Foxglove. Locally abundant. Ruderal. Native to Eurasia. *Wiedemann 310-1, Wiedemann 310-2, Schwennesen 155*.
- Mimulus guttatus* DC. var. *guttatus*—Yellow monkeyflower. Occasional. Ruderal. *Schwennesen 157, Schwennesen 158*.
- \**Parentucellia iscosa* (L.) Car.—Yellow parentucellia. Locally abundant. Fields and ruderal. Native to Mediterranean. *Schwennesen 159, Schwennesen 160, Schwennesen 161, Wiedemann 361-3, Wiedemann 361-4*.
- Synthyris reniformis* (Dougl.) Benth.—Spring queen, snow-queen, round-leaved synthyris. Western red-cedar—western hemlock forest. Not observed in the field during this study. *Wiedemann 314-2 (det. Gerrish), Peterson 314-3*.
- Veronica scutellata* L.—Marsh speedwell. Wet meadow. Not observed in the field during this study. *Schwennesen 165*.
- \**Veronica serpyllifolia* L. var. *serpyllifolia*. Common. Ruderal. Native to Europe. *Wiedemann 410-1 (det. Gerrish), Wiedemann 410-2 (det. Gerrish)*.

## URTICACEAE—Nettle Family

*Urtica dioica* L. var. *lyallii* (Wats.) Hitchc.—Stinging nettle. Locally abundant. Moist ditches and edges of red alder—bigleaf maple woodland. *Lohmann 29*.

## VIOLACEAE—Violet Family

*Viola glabella* Nutt.—Stream violet. Occasional. Red alder—bigleaf maple woodland and red alder—bigleaf maple—Douglas-fir—western red-cedar forest. *Lohmann 39*.

*Viola sempervirens* Greene—Evergreen violet. Occasional. All forest types. *Wiedemann 400-1, Smith (unnumbered)*.

**Monocotyledoneae**

## ARACEAE—Arum Family

*Lysichitum americanum* Hultén & St. John—Skunk cabbage. Locally abundant. Salmonberry—skunk-cabbage riparian bogs. *Wiedemann 3*.

## CYPERACEAE—Sedge Family

*Carex amplifolia* Boott.—Big-leaf sedge, ample-leafed sedge. Locally abundant. Salmonberry—skunk-cabbage riparian bogs. *Wozniak 9*.

*Carex* cf. *deweyana* Schw.—Dewey's sedge. Occasional. Red alder—bigleaf maple—Douglas-fir—western red-cedar forest. *Lohmann 16*.

*Carex lyngbyei* Hornem var. *robusta* (Bailey) Cronq.—Lyngby's sedge. Locally dominant. Salt marsh. *Lohmann 25*.

*Carex* cf. *obnupta* Bailey—Slough sedge. Ruderal. *Schwennesen 63*.

## JUNCACEAE—Rush Family

*Juncus effusus* L. ssp. *pacificus* (Fernald & Wigand) Lint.—Soft rush, common rush. Common. Ruderal. *Schwennesen 85 (det. Zika)*.

*Juncus tenuis* Willd.—Slender rush. Ruderal. Not observed in the field during this study. *Schwennesen 91 (det. Zika)*.

*Juncus ensifolius* Wikst. Dagger-leaf rush. Not observed in the field during this study. Wet meadow. *Schwennesen 87*.

*Luzula campestris* (L.) DC.—Field woodrush. Occasional. Sandy cliffs near beach, red alder—bigleaf maple—Douglas-fir—western red-cedar forest, and ruderal. *Lohmann 10, Lohmann 49*.

## JUNCAGINACEAE—Arrowgrass Family

*Triglochin maritimum* L.—Maritime arrowgrass. Locally abundant. Salt marsh. *Lohmann 26*.

## LILIACEAE—Lily Family

*Disporum hookeri* (Torr.) Nicholson var. *oreganum* (Wats.) Jones—Hooker fairy-bell. Rare. Western red-cedar—western hemlock forest. *Lohmann 17*.

*Lilium columbianum* Hanson—Tiger lily. Rare. Western red-cedar—western hemlock



forest. Not observed in the field during this study. *Wiedemann 177-1, Wiedemann 177-2.*

*Maianthemum dilatatum* (Wood) Nels. & Macbr.—Beadruby, deerberry, may-lily, false lily-of-the-valley. Common. Moist areas in all forest types. *Schwennesen 102.*

*Smilacina racemosa* (L.) Desf.—False Solomon’s seal, false spikenard, western Solomon-plume. Common. Red alder—bigleaf maple—Douglas-fir—western red-cedar forest. *Wiedemann 180-1, Schwennesen 104, Schwennesen 105, Neill 4678.*

*Smilacina stellata* (L.) Desf.—Starry Solomon-plume. Occasional. Salmonberry—skunk-cabbage riparian bogs and western red-cedar—western hemlock forest. *Lohmann 18.*

*Streptopus amplexifolius* (L.) DC. var. *americanus* Schult.—Clasping-leaved twisted-stalk. Occasional. Salmonberry—skunk-cabbage riparian bogs. *Lohmann 11, Lohmann 12.*

*Trillium ovatum* Pursh—Wake-robin. Occasional. Douglas-fir forest and western red-cedar—western hemlock forest. *Peterson 184-3, Wiedemann 184-2, Lohmann 2.*

#### ORCHIDACEAE—Orchid Family

*Calypso bulbosa* (L.) Oakes.—Fairy-slipper, Venus-slipper. Rare. Western red-cedar—western hemlock forest. Not collected due to small population size.

*Corallorhiza maculata* Raf.—Spotted coralroot. Occasional. Douglas-fir forest. *Lohmann 7.*

*Goodyera oblongifolia* Raf.—Western rattlesnake plantain. Occasional. Douglas-fir forest. Not observed in the field during this study. *Schwennesen 118, Schwennesen 119, Wiedemann 201-1, Brockway & Williams 201-2.*

*Spiranthes romanzoffiana* Cham. Ladies-tresses. Rare. Wet meadow, moist roadsides. Not observed in the field during this study. *Schwennesen 120, Schwennesen 121, S. B. H. & R. S. 16, Gerrish 202-2.*

#### POACEAE—Grass Family

\**Aira caryophyllea* L.—Silver hairgrass. Common. Non-native perennial grasslands. Native to Europe. *S.B.H. and R. S. 44.*

\**Aira praecox* L.—Early hairgrass, little hairgrass. Rare. Non-native perennial grasslands. Native to Europe. *S.B.H. and R.S. 40 (det. Smith).*

\**Anthoxanthum odoratum* L.—Sweet vernalgrass. Common, locally dominant. Non-native perennial grasslands and ruderal. Native to Europe. *Lohmann 15.*

\**Dactylis glomerata* L. Orchard-grass, cock’s-foot grass. Abundant. Non-native perennial grasslands and ruderal. Native to Eurasia. *Wozniak 1.*

*Festuca* cf. *ovina* L., var. *rydbergii* St.-Yves—Sheep fescue. Occasional. Non-native perennial grasslands. *Wozniak 11.*

*Festuca* cf. *subuliflora* Scribn.—Coast Range fescue, crinkle awn fescue. Common. Non-native perennial grasslands. *Wozniak 15.*

*Glyceria borealis* (Nash) Batch.—Northern mannagrass. Rare. Around Seminar II Building. *Wozniak 10.*

\**Holcus lanatus* L.—Common velvetgrass. Common, locally dominant. Non-native

\**Holcus mollis* L.—Creeping softgrass, creeping velvetgrass. Occasional. Meadow near longhouse. Native to Europe. *Wozniak* 8.

\**Lolium multiflorum* Lam.—Italian ryegrass, Australian ryegrass. Common. Non-native perennial grasslands. Native to Europe. *Wozniak* 5.



# STUDENT NAMING REPORT

## (2007)

This report was provided by Evergreen students Sara Apler and Nathaniel Ashlock in the Community Design, Community Action program (spring quarter 2007). It provides recommendations for the process of naming within the college Reserves.





**Sara Apler and Nathaniel Ashlock**  
**Community Design, Community Action**  
**Rob Knapp and Helena Myer-Knapp**  
**June 10, 2007**

## **THE NAMER'S MANIFESTO**

We propose to generate names for the Evergreen State College forest reserves in order to protect the reserves from careless development; to provide the land with a spirit and identity that reflect the Evergreen community; to promote education and awareness of Evergreen's natural and cultural histories; and to promote education and awareness of Evergreen's natural resources.

In order to achieve these goals we propose a system of naming that will emphasize Evergreen's leadership in sustainability and its strong history as decentralized democratic community. (However, we are aware of Evergreen's recent centralization of decision making processes.)

### *What the Naming Process Covers:*

Every identifiable forest, grove, meadow, wetland, and beach outside of the Core campus will be eligible to be named. Please see map of the reserves for details.

### *Qualified Names:*

- 1) Names must be historically significant to the college or the land.
- 2) Names must be regionally significant (Western Washington should be the first consideration followed by the entire state).
- 3) For any name proposed to honor a person, the person must have been dead for at least five years.

### *The Initiative Process:*

- 1) Any student, faculty, or staff can propose a name.
- 2) In order to get a name on the ballot one needs to acquire:
  - 7% of students at Olympia Campus
  - 7% of faculty at Olympia campus
  - 7% of staff at Olympia campus
- 3) If there is the demand, elections will be held every quarter. Full signatures must be acquired one quarter ahead of the next elections (For a vote at the end of Spring Quarter all signatures must be turned in by the end of Winter Quarter.)
- 4) All students, faculty, and staff at Olympia campus are eligible to vote on name suggestions.
- 5) Once approved through a vote, a Geoduck Student Union representative will present the selection as a recommendation to the Board of Trustees. This allows the Board of Trustees to maintain their authority to name all spaces on campus.

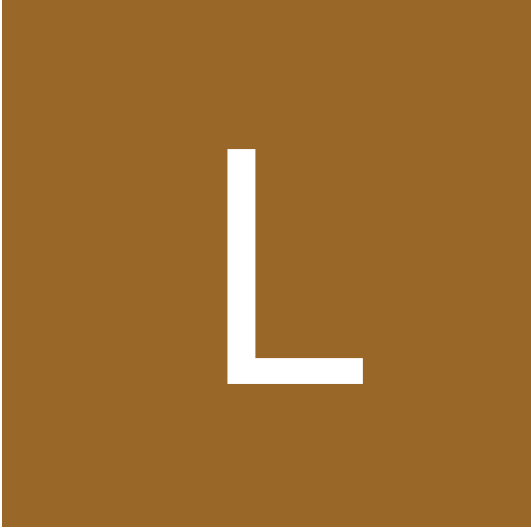
### *Timetable:*

There is no timetable for naming the natural spaces in the reserves. The names change as the

community finds the motivation to name them.

**Further Recommendations:**

- 1) We recommend that a poll be held on gateway to create a unifying theme for all names.*
- 2) We recommend that after the Board of Trustees approves a name that an official naming ceremony be held.*
- 3) We recommend that ultimately, the authority to name the reserves be delegated to the Geoduck Student Union by the Board of Trustees.*
- 4) We recommend that the Board of Trustees consider a process for naming buildings and spaces in the Core campus that is both democratic and able to generate funds for donors.*



# BUILDING INVENTORY

(February, 2007)

Table provided by Ray Ruiz, Facilities Supervisor, Residential and Dining Services, showing square footages for buildings on campus.



BUILDING SQUARE FOOTAGE LIST  
BY BUILDING

NO. - BUILDING	GROSS	CONST YR	CONST TYPE	OCCUPANCY	Occupancy Address	Tax Parcel No.	Zoning	UBC
001 - Library	346,969	1971	I - FR & II-FR	A-2.1 & B-2	2737	McCann Plaza NW	12806410000	
002 - Lecture Halls	23,639	1971	I - FR	A-2.1	2725	McCann Plaza NW		
003 - CRC	115,679	1972	I - FR	A-2.1	2745	McCann Plaza NW		
004 - Lab I	85,269	1972	I - FR	B	2713	McCann Plaza NW		
005 - CUP	24,913	1971	I - FR	H-7	2836	Fireweed Dr. NW		
006 - Shops	12,701	1971	V - B	S-3 & H-4	3540	Driftwood Rd. NW		
007 - Garage	2,709	1971	V - N	H-4	3538	Driftwood Rd. NW		
008 - Water Pump Station	1,881	1970	IV - N		2648	Overhulse Rd. NW		
009 - Covered Rec. Pavillion	18,559	1973	V - N	A-3	4201	Driftwood Rd. NW		
010 - Presidents Residence	5,559	0	V - N		4202	Leavelle St. NW		
011 - Seminar	44,909	1974	I - FR	A-2.1 & B-2	2731	McCann Plaza NW		
012 - Lab II	88,176	1975	I - FR	B	2721	McCann Plaza NW		
013 - Combustible Storage	508	1974	V - N	H-2 / H-7	3506	Driftwood Rd. NW		
014 - Comm Lab	121,513	1977	I - FR - Sprinkled & II-FR	A-1 & A-2.1 & B	2749	McCann Plaza NW		
015 - Lab Annex	27,377	1973	I - FR - Sprinkled	B-2 & H-2	2709	McCann Plaza NW		
016 - Utility Tunnels	40,137	2004	I - FR			Not occupied		
018 - Seminar II	198,775	2,003	II - FR	B & A-3	2751	McCann Plaza NW		
101 - CAB	112,238	1972	I - FR	A-2.1 & B-2	2741	McCann Plaza NW		
102 - Dorm "A"	47,510	1971	V-N & Sprinkled	R-1	4315	Indian Pipe Lp NW		
103 - Dorm "B"	20,332	1971	V-N	R-1	4319	Indian Pipe Lp NW		
104 - Dorm "C"	20,332	1971	V-N	R-1	4323	Indian Pipe Lp NW		
105 - Dorm "D"	20,332	1971	V-N & Sprinkled	R-1	4327	Indian Pipe Lp NW		
106 - Residence Apartment "E"	8,305	1987	V - N		4201	Indian Pipe Lp NW		
107 - Residence Apartment "F"	9,803	1987	V - N		4203	Indian Pipe Lp NW		
108 - Residence Apartment "G"	8,305	1987	V - N		4205	Indian Pipe Lp NW		
109 - Residence Apartment "H"	9,803	1987	V - N		4207	Indian Pipe Lp NW		
110 - Residence Apartment "I"	7,969	1987	V - N		4231	Indian Pipe Lp NW		
111 - Residence Apartment "J"	8,305	1987	V - N		4229	Indian Pipe Lp NW		
112 - Residence Apartment "K"	8,305	1987	V - N		4227	Indian Pipe Lp NW		
113 - Residence Community Center	7,218	1987	V - N	R-1 & A3	4225	Driftwood Rd. NW		
114 - Residence Apartment "N"	8,617	1989	V - N		4223	Indian Pipe Lp NW		
115 - Residence Apartment "P"	8,617	1989	V - N		4221	Indian Pipe Lp NW		
116 - Residence Apartment "Q"	8,617	1989	V - N		4219	Indian Pipe Lp NW		
117 - Residence Apartment "R"	10,682	1989	V - N		4217	Indian Pipe Lp NW		
118 - Residence Apartment "S"	8,617	1989	V - N		4215	Indian Pipe Lp NW		
119 - Residence Apartment "T"	8,617	1989	V - N		4211	Indian Pipe Lp NW		
120 - Residence Apartment "U"	8,617	1989	V - N		4209	Indian Pipe Lp NW		
201 - Child Care Center	6,477	1969	V - N	E-3	2824	Fireweed Dr. NW		
204 - Geoduck House	3,785	1971	V - N		4346	Sunset Beach Dr. NW		
205 - Pottery Shop ( Driftwood House )	1,390	1971	V-1H	C-3	4900	Driftwood Dr. NW - 9		
206 - Organic Farm House	3,479	1972	V - N	R-1	2712	Lewis Rd. NW #A		
210 - Well House	59	1969	V - N			Not occupied		
213 - Grounds Office	216	1975	V - N	B	3544	Driftwood Rd. NW		
214 - Pottery Shop Annex ( Leisure Ed )	811	1972	V - N	C-3		Not occupied		
215 - Grounds Equipment & Vehicle Storage	2,700	1975	V - N	S-1	3528	Driftwood Rd. NW		
216 - Grounds Supply Storage	4,800	1969	V - N	S-1	3528	Driftwood Rd. NW		
218 - Parking Booth	48	1990	V - N	B-2	2701	McCann Plaza NW		
219 - Organic Farm Operations	864	1990	V - N	B-2	2712	Lewis Rd. NW #B		
220 - Organic Farm Storage	432	0	V - N	S-1	2712	Lewis Rd. NW #C		
221 - Longhouse	12,177	1995	Type III - 1hr & V - Heavy Timber		2800	Dogtooth Lane NW #		
222 - Shops Storage	1,152	0	V - N	S-1	3534	Driftwood Rd. NW		
223 - Kiefer residence								
224 - Emergency Preparedness Storage	1,580	1996	V - N		2818	Fireweed Dr. NW		
301 - MOD Housing	1,584	1971	V - N		3040	Wild Current Loop NW		
302 - MOD Housing	1,584	1971	V - N		3040	Wild Current Loop NW		
303 - MOD Housing	1,584	1971	V - N		3040	Wild Current Loop NW		
304 - MOD Housing	1,584	1971	V - N		3040	Wild Current Loop NW		
305 - MOD Housing	1,584	1971	V - N		3040	Wild Current Loop NW		
306 - MOD Housing	1,584	1971	V - N		3040	Wild Current Loop NW		
307 - MOD Housing	1,584	1971	V - N		3040	Wild Current Loop NW		
308 - MOD Housing	1,584	1971	V - N		3040	Wild Current Loop NW		
309 - MOD Housing	1,584	1971	V - N		3040	Wild Current Loop NW		
310 - MOD Housing	1,584	1971	V - N		3040	Wild Current Loop NW		
311 - MOD Housing	1,584	1971	V - N		3040	Wild Current Loop NW		
312 - MOD Housing	1,584	1971	V - N		3040	Wild Current Loop NW		
313 - MOD Housing	1,584	1971	V - N		3040	Wild Current Loop NW		
314 - MOD Housing	1,584	1971	V - N		3040	Wild Current Loop NW		
315 - MOD Housing	1,584	1971	V - N		3040	Wild Current Loop NW		
316 - MOD Housing	1,584	1971	V - N		3040	Wild Current Loop NW		
317 - MOD Housing	1,584	1971	V - N		3040	Wild Current Loop NW		

315 - MOD Housing	1,584	1971	V - N		3040	Wild Current Loop NV	
316 - MOD Housing	1,584	1971	V - N		3040	Wild Current Loop NV	
317 - MOD Housing	1,584	1971	V - N		3040	Wild Current Loop NV	
318 - MOD Housing	1,584	1971	V - N		3040	Wild Current Loop NV	
319 - MOD Housing	1,584	1971	V - N		3040	Wild Current Loop NV	
320 - MOD Housing Laundry	527	1971	V - N		3040	Wild Current Loop NV	
TOTALS	1,581,007						



# ECO-CHARRETTE REPORT

(November, 2007)

This section documents the eco-charrette that took place at ZGF's Portland office.





# ECO-CHARRETTE REPORT

THE EVERGREEN STATE COLLEGE

5.18.07



*Prepared by Zimmer, Gunsul, Frasca Architects LLP*



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6. BREAKOUT GROUPS
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# 1. PREFACE

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This eco-charrette is part of a larger process to gather information, to understand goals, and to consider priorities during the campus master planning process for The Evergreen State College. There is a strong desire and commitment from the College faculty and student body for development and renovation plans to prioritize ecological health and sustainability as inherently fundamental to the educational mission and operation of the school. This workshop was designed to consider opportunities for the next twelve years of development that engage sustainability best practices as they relate to the unique location and site of the campus.

This report supports the mission of the team to create a visibly sustainable campus through educationally rich and proactive design, planning, and goal setting and supplements four primary goals of the Evergreen Master Plan:

1. Develop comprehensive long term capital plan for college facilities and grounds both on and off campus through a collaborative process.
2. Establish priorities consistent with the Strategic Plan of Evergreen.
3. Ensure that the plan reflects the unique qualities of the College and campus.
4. Build on the philosophical basis of past planning efforts and focus on identifying:

- Renovations and additions
- Infrastructure improvements
- Sites for potential new facilities
- Land use/landscape policies



Open feedback sessions that took place on campus as part of the first task of the Master Plan process.

## 2. EXECUTIVE SUMMARY

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The Evergreen State College has identified sustainability, learning, and community as guiding principles for the master plan process. An eco charrette was held on May 18th to discuss sustainable design opportunities. Members of the project team and the urban design department from ZGF Architects met with university representatives and the project consultants to evaluate integrated solutions for future development.

To explore what sustainability goals mean to the campus, Evergreen formed a Sustainability Task Force whose mission is to help establish the campus as a laboratory for sustainability in operations, curriculum, and quality of life. This goal could be achieved through eight categories of impact including: 1) Curricular Pathways in Sustainability; 2) Student Participation and Education in Sustainability; 3) Resource Strategies; 4) Communication; 5) Evergreen Land Stewardship; 6) College Communities Collaboration; 7) Campus Neighborhoods, Greater Community and Region Relationships; and 8) Campus Spirit – Internal Wellness/Health. These categories framed conversations at the eco charrette.

An exercise in Strengths, Weaknesses, Opportunities, and Threats (SWOT) allowed the group to understand the institutional and regional forces that affect development on the site.

One breakout group addressed renovations, additions, and potential sites for new facilities, and another breakout group discussed infrastructure improvements, land use, and landscape policies. Out of these conversations came opportunities for integrated solutions to achieve the goals of the Sustainability Task Force and improve campus life.

With many buildings slated for renovation in the next several years, there are numerous opportunities for greening the existing building stock with retrofits like lighting upgrades, reflective paint for improved light quality, and skylight additions. Buildings can be programmed to match usage patterns so that conditioning is not required at all times. The thermal mass of the existing concrete buildings lends itself to night flushing. Future buildings can be oriented on an east and west axis for daylight and energy savings. New development will occur along the existing service tunnel to minimize infrastructure additions and encourage a pedestrian oriented main street along the main core of campus, improving public spaces like the Red Square. Increasing mixed-use development could help bridge the upper and lower zones and attract students to campus.

The upgrade of the central plant allows for new efficiencies and integration of renewable energy systems. Dual fuel boilers allow flexibility for use of biofuel in the future. Ground source heat pumps and photovoltaic panels are options for efficiencies at the building level. A broad range of energy options should be used as demonstrations for student learning and research and to support emerging technologies. With so many single occupancy vehicle trips to campus, transportation represents the campus' most significant environmental impact. This can be reduced by limiting parking, developing bike access routes from the city, and providing biodiesel shuttles. The overflow parking can become on a native meadow that serves as parking twice a year and provides



ecosystem services when parking demand is low. The Reserve could be seen in a new way by establishing a naming protocol expressing the ecological and educational value of the Reserve land to the College. Stormwater can be treated on-site with bioswales that infiltrate water into the ground and also provide public amenities.

With the goals outlined by the Sustainability Task Force and expressed at the eco charrette, the development of the Evergreen campus would perform well when assessed by a metric like LEED. In the master plan, the sustainability goals will be refined into a set of criteria for development. It is often helpful to develop a set of design criteria to guide decisions and frame conversations with sustainability goals in mind.



# 3. INTRODUCTION

On May 18, 2007, a team of students, alumni, staff (The Evergreen State College), architects (Zimmer Gunsul Frasca Architects), consultants (Tilghman Group, Stantec and SvR), and regional resource representatives (EcoTrust, University of Oregon and the City of Portland) met for an eco charrette in Portland, Oregon to assess sustainable development opportunities for the master plan. The three Evergreen priorities for campus integration are sustainability, learning and community.





## SUSTAINABILITY:

- Green commuting
- Alternative transportation
- Green/alternate energy
- Increased on-campus population
- Off-campus learning centers
- Slow foods
- Reuse and recycling
- On-site storm and wastewater management



Recycling at dormitory buildings.

## LEARNING:

### CENTERS:

- Organic Farm
- Sustainable building practices
- Terrestrial sciences
- Stormwater systems
- Waste stream systems
- Alternative energy systems
- Campus as a laboratory
- Student/faculty research opportunities
- Focus on the right kind of learning spaces
- State-of-the-art technology



Student run Synergy Conference explores sustainability.

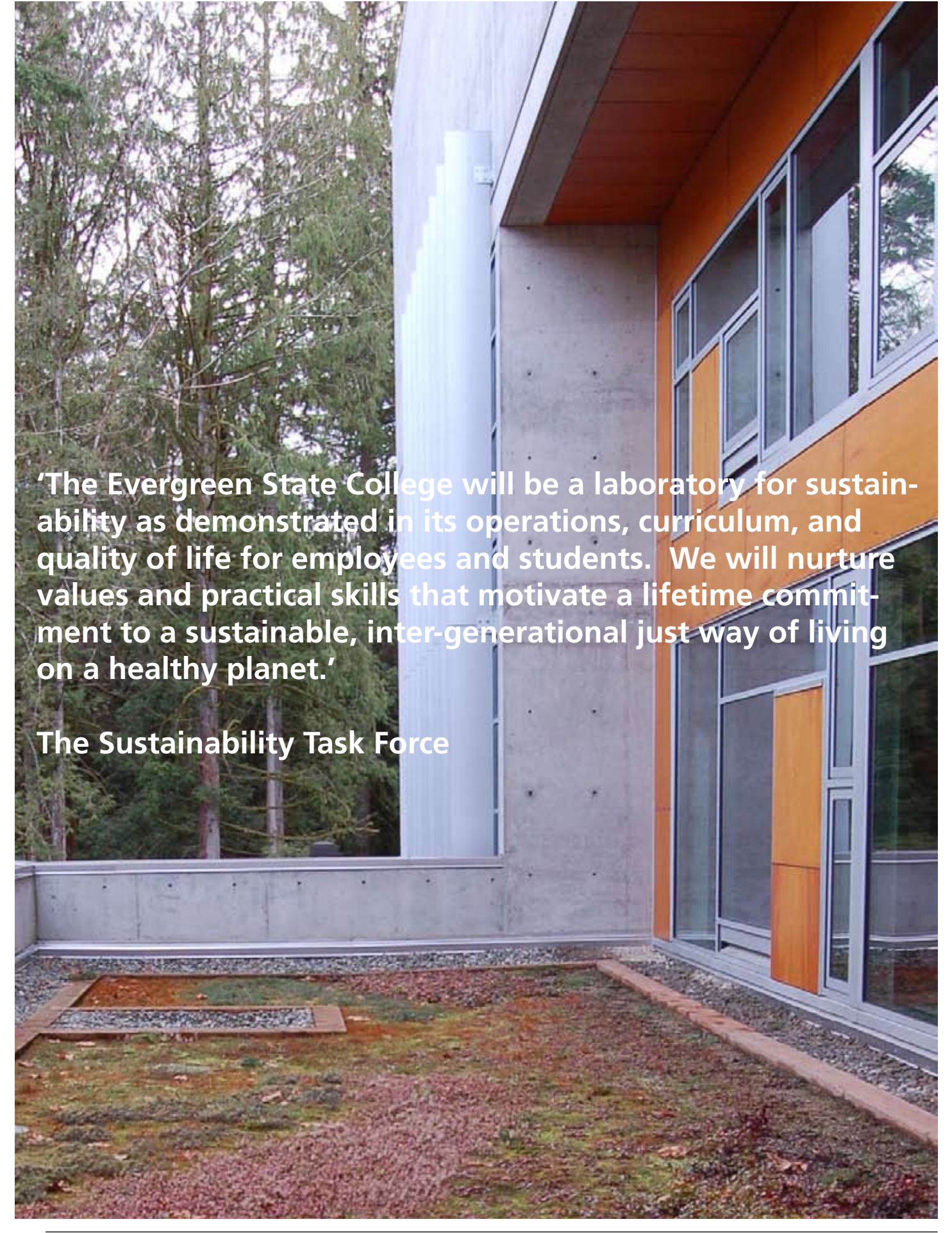
## COMMUNITY:

- Campus as resource
- Connections/access
- Increased on-campus population
- Great on-campus places
- Strong ties to neighbors
- Leadership in innovative programs



Seminar II cafe takes advantage of its solar orientation and creates a welcoming hang-out spot.





**'The Evergreen State College will be a laboratory for sustainability as demonstrated in its operations, curriculum, and quality of life for employees and students. We will nurture values and practical skills that motivate a lifetime commitment to a sustainable, inter-generational just way of living on a healthy planet.'**

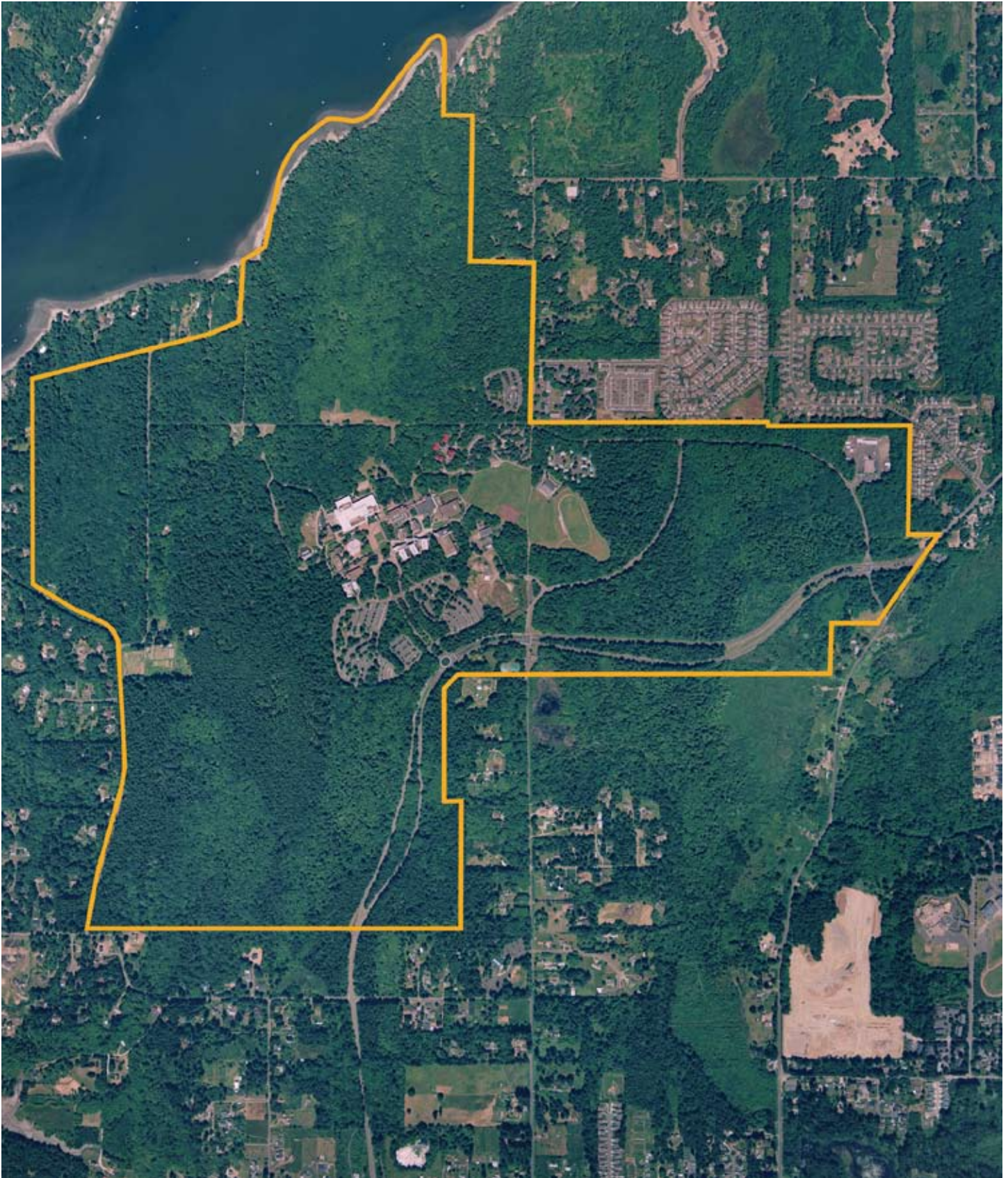
**The Sustainability Task Force**

## GOALS FROM THE SUSTAINABILITY TASK FORCE

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- 1.0 Curricular Pathways in Sustainability
  - 1.1 Develop and implement a curriculum in sustainability
  - 1.2 Publicize the education in sustainability at Evergreen
- 2.0 Student Participation and Education in Sustainability
  - 2.1 Increase practical educational opportunities in sustainability
  - 2.2 Increase student involvement and participation in sustainability-based planning
- 3.0 Resource Strategies
  - 3.1 Promote broad adoption of best sustainable practices/purchasing successes
- 4.0 Communication
  - 4.1 Use signage to identify sustainable features
  - 4.2 Promote programs that educate the general public in sustainability
  - 4.3 Promote institutional memory
- 5.0 Evergreen Land Stewardship
  - 5.1 Strengthen biodiversity and ecosystem health
  - 5.2 Develop a Land Ethic educational program
  - 5.3 Emphasize the Center for Ecological Learning and Living
  - 5.4 Carbon Neutrality by 2020
  - 5.5 Significantly reduce SOV travel
- 6.0 College Communities Collaboration
  - 6.1 Integrate the needs of the Tacoma and Reservation-based programs
- 7.0 Campus Neighborhoods, Greater Community and Region Relationships
  - 7.1 Increase regional and national recognition
  - 7.2 Buy local
  - 7.3 Support cultural sustainability
  - 7.4 Lead in ecological agriculture, gardening, and building
  - 7.5 Promote a regional land ethic
  - 7.6 Consult with local and regional entities on growth and sustainability
- 8.0 Campus Spirit – Internal Wellness/Health
  - 8.1 Prioritize important college objectives to focus efforts
  - 8.2 Improve community relationships and diversity
  - 8.3 Monitor community vitality





Aerial photograph of Evergreen Campus.

## 4. PROJECT CONTEXT AND ECOLOGY

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The Evergreen State College is located in an area that retains some rural and isolated character, but is beginning to be impacted by development in the adjacent communities. The campus is also unique in the scale, making the Reserve areas some of the only local representatives of key habitat and plant communities, which are vitally important ecological assets for the entire region.

Land use planning directly impacts water quality in the region as the College campus sits at the head of four major drainage basins. Snyder Cove Creek, Green Cove Creek, Huston Creek and an unnamed creek informally called Barking Dog Creek by the faculty. To minimize impacts to local water quality, the College has identified a desire to limit runoff by minimizing hardscape and increasing permeable surfaces. Several greenroof additions have also been installed. Further related actions have been recognized that could increase the Colleges' watershed stewardship such as the potential for stream restoration projects on campus.

Because of these unique ecological features and concern for local water quality, The Evergreen State College Master Plan has a unique opportunity to guide the campus towards becoming an even greater environmental asset and leader of sustainability in the community.

## BACKGROUND

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The College campus was initially conceived to accommodate as many as 12,000 students and has never exceeded 4,500, so current infrastructure is significantly oversized. This excess capacity means that current land and facility use patterns require careful reevaluation and planning in order to achieve the overall sustainable vision that meets realistic demand. The new plan considers broad opportunities that will allow the campus to make significant contributions towards balancing both carbon use and waste production and include:

- transportation modes and patterns
- energy production and use
- campus biome protection, use and enrichment
- food production
- construction practices
- waste stream management
- student life and housing

All of the investigations use sustainability as a touchstone and integrate opportunities for hands-on student learning, participation, engagement and community involvement.

With moderate student growth predicted, many buildings scheduled for renovation, and the ambitious goal to make the campus carbon and waste neutral by the year 2020, one of the challenges of the master plan is to create land use goals that maintain a healthy living environment for work, study, and play, while accommodating inevitable redevelopment demands.

The process thus far has focused on information gathering including participation of ZGF in open forums, workshops, one-on-one meetings, and tours with staff, students, and faculty on the Evergreen campus. Initial concept development includes improved circulation routes, integration of campus “centers,” and preserved forest areas.





Evergreen beach on the Puget Sound.

## 5. STRENGTH, WEAKNESSES, OPPORTUNITIES AND THREATS ANALYSIS

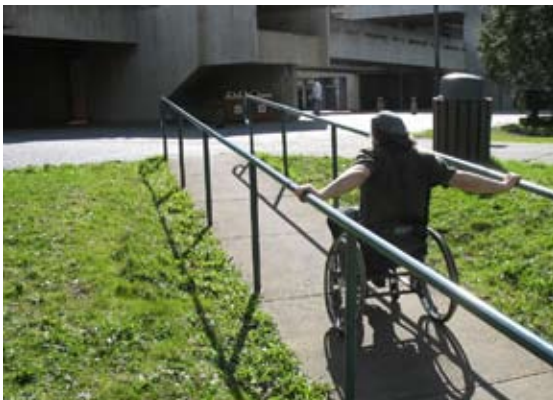
An exercise to review strengths, weaknesses, opportunities, and threats (SWOT) allowed the group to understand the institutional and regional forces that affect development on the site. The SWOT analysis focuses discussion on the project's inherent strengths and weaknesses, with regard to sustainable design potential, and opportunities and threats, beyond the control of the team that impact the project's success. Strategically combining strengths and opportunities suggests an aggressive action, and combining weaknesses and threats suggests that defensive measures may need to be taken. Combining weaknesses and opportunities suggests the need to enhance project goals and to take advantage of outside support. Finally, combining strengths with threats suggests needed contingency planning for the project (and possibly some diversification of goals) if identified threats materialize.



Living machine at Clatsop Community College in Oregon.



Snyder Creek flows into Puget Sound.



ADA compliant accessible routes around campus required.



Expansion of urban growth.

## Strengths

- Access to nature
- Bridge between urban and rural
- Concentrated development and abundant land
- Diverse habitat
- Contiguous Land
- Engaged student body
- Sustainability commitment and initiatives
- Wildlife stewardship
- Potential for student body to drive energy demand
- Infrastructure- Campus distribution of services
- Tidal power
- Energy savings competition- potential
- Many buildings slated for re-development creates day-light and energy efficiency potential
- Living Machine for waste water treatment

## Opportunities

- Option to connect to transit via shuttle to get to services
- Connections/adjacency to four watersheds - education and leadership opportunity
- Effort to return Snyder Creek to salmon habitat
- Alumni connection to community organizations in Olympia region, energy, land use etc.
- Seasonal usage-phased operations with campus zones?
- "Super Saturday" 15 k people on campus attendees from broader community-opportunity to draw in people from the area
- "Isolation builds community"
- Provide excess capacity to community?- Power, heat etc.
- LEED Silver required by state- build sustainable infrastructure to support this
- Potential to partner with Ecotrust

## Weaknesses

- Isolated campus with many SOV trips
- Opposing views about use of land
- Resistance to any development
- Lack of comfortable public spaces and student amenities
- Inflexible existing buildings, though average from an energy standpoint
- Campus design standards as a constraint
- Disconnect from local community
- Non compliant buildings- ADA? Housing accessible routes around campus
- Central plant out of date
- No monitoring of existing buildings
- Academic vision does not match reality of built environment
- No sense of connectedness- create places of community

## Threats

- Commercial services distant
- Perception of reserved land as "untouchable"
- Development pressured to expand urban growth
- Boundary to campus edge
- Limited wind resource





## 6. BREAKOUT GROUPS

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Two break out groups were formed to review sustainability opportunities relative to identified master plan goals. The groups discussed the campus and initial concepts to transform the Sustainability Task Force goals into criteria for informing the built environment of the campus.

## RENOVATIONS AND ADDITIONS AND POTENTIAL SITES FOR NEW FACILITIES

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### EXISTING BUILDINGS:

Many of the existing buildings on campus are slated for renovation in the next few years and present an opportunity for energy savings and sustainability retrofits like improved indoor environmental quality. Lighting upgrades that could save as much as 60% of the current electricity load. Repainting with reflective colors can improve light and visibility in the rooms. Renovations offer opportunities to add skylights and open up walls to create better day light and connections to activities.

In all cases the program of the existing facilities could be enhanced by matching demand and usage patterns. Conditioning and lighting are not required around the clock for most daytime occupied classroom buildings. Rather than operating all buildings for nighttime classes, plan class schedules for efficient use of spaces. Co-locating functions and programs that can be dormant for periods of time create energy savings opportunities. In the library, for example, 20% of books are used 80% of the time. A solution could be to warehouse the vast majority of books and only condition the spaces used for display. Non-summer functions can be grouped to reduce conditioning demands on off months. The Seminar I, building for example, could be an administrative and service building for facilities.

The massive concrete form of the existing campus vernacular may lend itself to a night flushing strategy. If building uses are programmed with this in mind, and opened at night for temperature flushing, then the thermal mass may be an adequate heat sink and reduce conditioning demands during the day.

An existing building audit and survey can provide an accurate account of energy demand and alert facilities to key challenge areas. This survey could provide a baseline for comparison as retrofits occur. Because center corridors consume huge amounts of energy, when renovating, consider the width of the facility to determine if a single space can replace an otherwise double-loaded corridor to improve day light and efficiency.





Seminar I



Library Building



CAB Building



COM Building



## FUTURE BUILDINGS:

Future buildings can be oriented on an east and west axis to prioritize daylight and passive solar heating and energy savings.

Future designs should focus the buildings to the “main street.” Place making is a critical component of the master plan and entry points to key campus buildings can focus activity around a central courtyard and create a friendly public zone. Daylight could be harvested where reasonable and existing buildings retrofit with light wells.

An energy use threshold based on regional temperature patterns and occupancy demands provides a baseline for all new construction projects.



Potential for mixed residential and retail buildings.



Red Square could be scaled to reflect campus population more accurately.

## BUILDING SITES:

New development should continue along the existing service tunnel to take advantage of well defined infrastructure and limit demand for new below ground excavation. The main east west connection path demands awareness to micro climates, particularly the north side of buildings, which are challenges in the northwest. Consider pulling new facilities further back to enhance southern exposure and create great places. This further strengthens and reinforces the main street. Orientation for energy savings and daylight is essential.

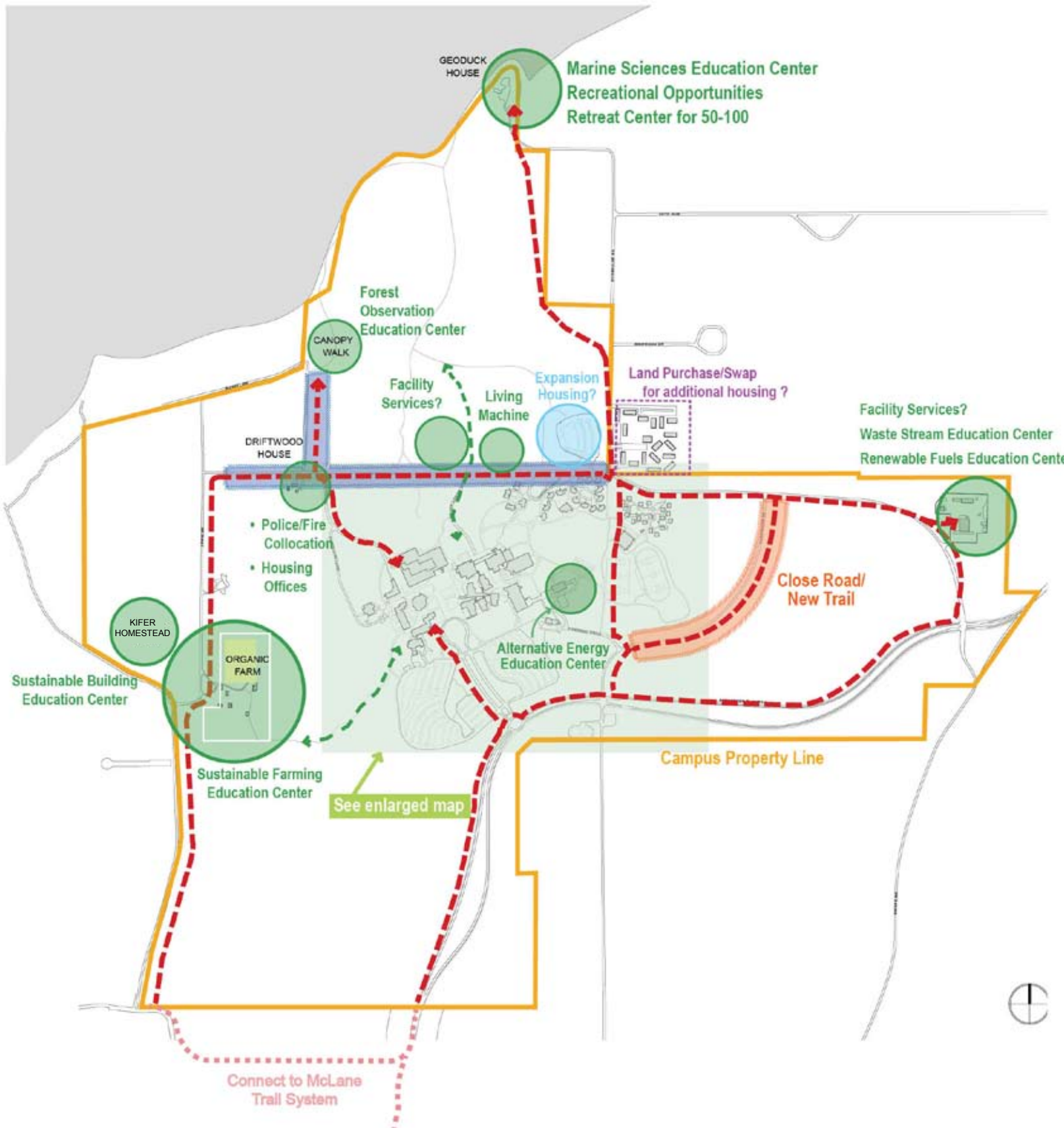
Improving the Red Square space is important to creating human centered zones and helping to define spaces between buildings. Consider adding buildings at Red Square to shape the space and provide opportunities for putting the campus teaching ethos on stage.

The Organic Farm currently has two wells which provide an opportunity for ground source heat and may be a natural building site. Increasing mixed-use development will help to bridge the upper and lower campus zones. The development of student housing should be explored to build the relationship between the academic core and existing housing. The bridge between housing and teaching/conference zones could create opportunities for living/learning buildings. Retail options should also be explored. Originally the campus perimeter seemed to be a good candidate, but with the interest in mixed use, the academic core might be a better option.

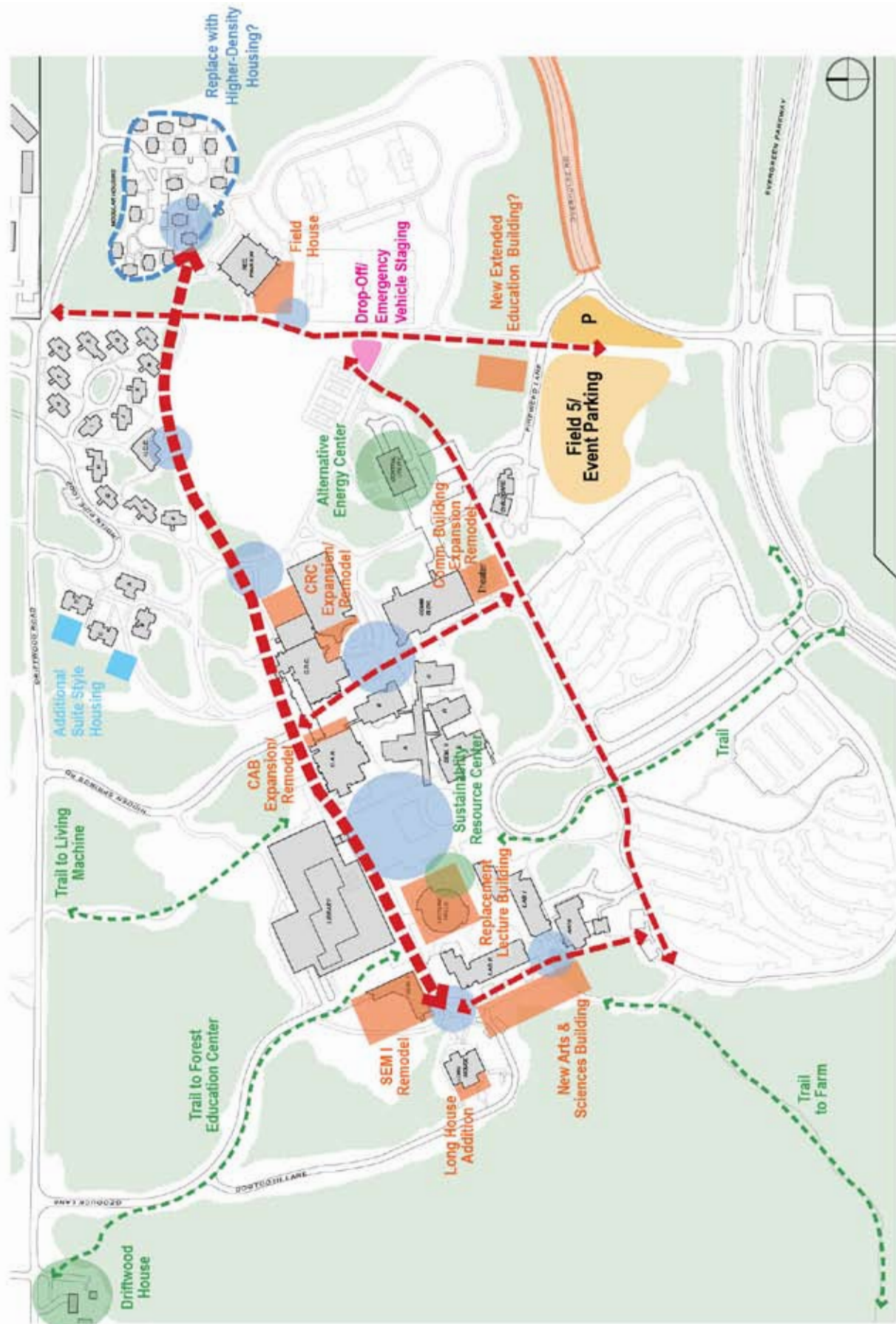


Red Square is a central zone of activity. Students hang out in front of the CAB Building.





Possible campus circulation, education centers and potential developments.



Campus Core detail.

## INFRASTRUCTURE IMPROVEMENTS AND LAND USE AND LANDSCAPE POLICIES

### ENERGY SYSTEMS:

The location of the Central Utility Plant (CUP) and the utility corridor which runs along the center of the campus means that a retrofit of new mechanical equipment could be easily maintained. The current equipment was also oversized to accommodate a larger campus population so much of this capacity remains dormant. The excess equipment could run at full capacity and potentially return energy to the grid. With the emphasis on the teaching potential, the plant could be transparent to show the types of energy produced. Dual fuel boilers, as in the current CUP, could be used in the redesign to provide long term flexibility for biofuels, which are currently produced on campus in small quantities. This may provide future energy security.

Ground source heat pumps are a promising option on campus and could be used at undeveloped sites with minimal landscape impact. The predicted 20 year financial payback may be offset by the potential for student learning opportunities.

The dense tree canopies limit light access to the campus and make solar panels challenging at the ground level. Rooftop surface can be retrofitted to produce energy for each building. Solar thermal hot water could provide domestic water heating for each building.

A broad range of fuel and energy sources provide visible demonstrations for student learning and flexibility with evolving advances in technology.

Energy use and systems should be visible and transparent with monitors to track savings.



Above left: Solar thermal hot water and wind turbines are an economical and environmentally focused energy solution.  
Above Right: Waste to energy system.



## TRANSPORTATION:

For maximum reduction of environmental footprint, a key focus of the master plan must be reduction in single occupancy vehicle trips to campus. Evergreen can work with the city on a number of measures that would significantly improve the accessibility of the campus by bike or shuttle. Since many students live off campus, a simple biodiesel run shuttle could bring students to campus running in a continuous loop. Improved bike routes from downtown and creation of a non-stop path, that is well lit and safe, would make the route more appealing. The money typically paid for parking would go towards these efforts. The large parking lot currently marking the entrance to campus could be replaced with a more welcoming visual statement. Because this lot is primarily used for overflow purposes like graduation and festivals that attract city residents to the campus, parking could be moved to another location that functions as a bi-yearly parking lot and a wild planted meadow all other days. This has the advantage of decreasing the visual prominence of parking and preserving the existing lot for future development while providing a parking lot that continues ecosystem services. By increasing the cost of parking on campus, students would be discouraged from driving and encouraged to take advantage of alternative means. The main route to campus could become a visible transit corridor that is an attractive route and tells a story of Evergreen's sustainability commitment as student and campus visitors approach it from the city.



A planted parking lot at Willamette Park, reduces runoff and promotes water quality.



Bike and pedestrian connections could be made to the McLane Trail system adjacent to the campus.



Side door to campus.

## LANDSCAPE OPPORTUNITIES:

The extensive vegetated acres of Evergreen's campus are a unique resource. With Evergreen's commitment to carbon neutrality by 2020, the greatest asset of the second growth forest is to sequester the carbon emitted by regular campus operations in a kind of closed loop environment. The other opportunity is the existing infrastructure of artesian wells that could potentially provide water for irrigation.

The value of the landscape may lead to community partnerships, on-campus attraction, and ecosystem services that benefit the surrounding neighborhood.



Big leaf maples are prominent in the Reserve.

Biofuels can continue to be produced on-site and in greater quantities to power a biodiesel shuttle on campus or the dual fuel boilers in the central plant. This biodiesel production facility requires sufficient space for operation.

One approach to help convey the value of the Reserve is a naming protocol in which the different services of the forest are expressed. This may draw from the cultural and tribal connections of the land and provide protections through historical context.

Community gardens near the housing could support sustainable practices like on-site production of organic produce.

Stormwater can be treated on-site with bioswales that infiltrate treated water back into the ground or on-site collection basins that store water for irrigation.



Seminar II building uses bioswale technology for storm water management.



The Evergreen State College Organic Farm produces biofuels on-site.







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# 7. RELEVANT ASSESSMENT CRITERIA

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Throughout the design and development process, it is helpful to select a metric or filter to assess sustainable design decisions and focus the design on the overarching sustainability aspirations of the project. Evergreen may choose to use an industry-wide standard or develop unique design principles. The industry standards applicable to a master plan are limited, but with the rapidly changing nature of the green building industry, other metrics for assessment will likely become available in the future. As part of the master plan document, a set of Evergreen-specific sustainability principles may be derived from the eco-charrette. There are a few existing frameworks that could be applied to the project and have been explored briefly.

## LEED CAMPUS APPLICATION GUIDE

Leadership in Energy and Environmental Design (LEED) is a third party rating system created by the US Green Building Council that has become the industry standard for what makes a green building. Washington State now requires LEED Silver for publicly funded buildings. LEED evaluates buildings in five primary impact categories: 1) Sustainable Sites; 2) Water Efficiency; 3) Energy and Atmosphere; 4) Materials and Resources; and 5) Indoor Environmental Quality. Success is based on a 69 point rating system in four threshold rankings: certified, silver, gold, and platinum. LEED has a campus application guide to support use of LEED credits for multiple buildings on a campus, which may be a good fit for Evergreen. The rating system has some limitations for the large undeveloped area on the campus, because it is primarily focused on developed land and does not provide guidelines for broader ecosystem services of the on-site forest lands. Based on the goals set forth in the eco-charrette and identified by the Sustainability Task Force, Evergreen buildings could perform well when assessed by the LEED framework.



LEED plaque displayed on Seminar II Building.

## LEED FOR NEIGHBORHOOD DEVELOPMENT

Another LEED standard currently in its pilot phase is LEED for Neighborhood Development. This standard was designed primarily for urban, mixed-use neighborhoods that include residential, retail, and commercial components. Given some of the priorities discussed at the charrette, like promoting mixed-use on the campus to attract more students to residential life, the neighborhood development standard might be a good fit. The standard is based on 106 points over the same five impact categories and receive one of four threshold ratings of: certified, silver, gold, and platinum.



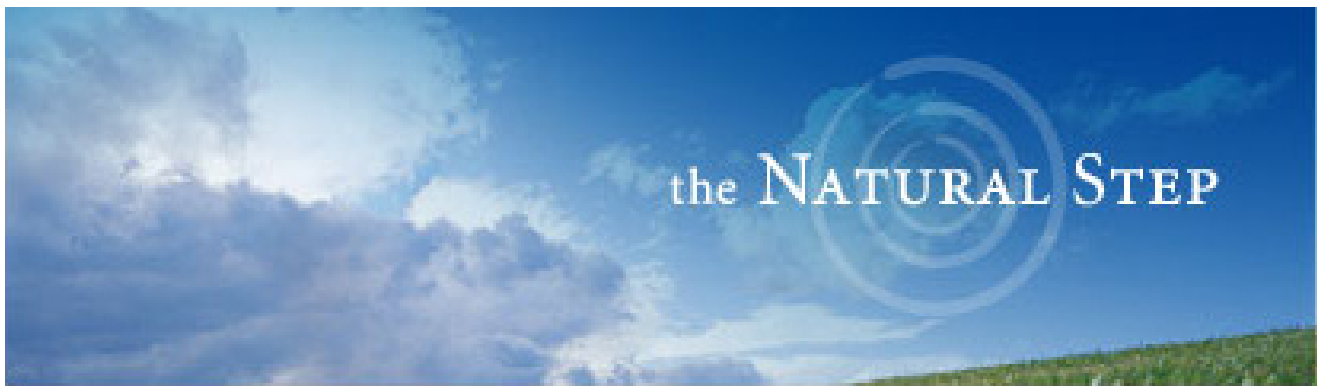
Green Roof Institute in Augustenbord; bioswales provide educational opportunities and environmental solutions.



## THE NATURAL STEP

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The Natural Step is a framework for assessing sustainability that can be applied on any level from a product to an entire city. It is a systems based approach to solve problems in a way that avoids new problems and develops core values within a framework for social and ecological sustainability. It is an appropriate means to evaluating a master plan because it looks broadly at impact and resource flows. The Natural Step defines sustainability based on four principles or conditions that must all be met. An evaluation of a building or campus based on The Natural Step must not increase 1) concentrations of substances extracted from the Earth's crust; 2) concentrations of substances produced by society; or 3) degradation by physical means; and 4) in that development, people are not subject to conditions that systematically undermine their ability to meet their own needs. Use of The Natural Step as a metric for assessing sustainability on the Evergreen campus requires significant analysis and commitment to meeting these identified goals, and would demand this rigor at every step of design. There is no performance assessment associated with this rating.



## EVERGREEN SUSTAINABILITY CHARTER

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Building a new framework may be appropriate for Evergreen at this stage in planning for the future. ZGF can help develop a campus charter or working set of sustainability criteria to clarify the goals identified in this report and frame them to guide decisions in the future. ZGF has created similar charters for healthcare master plans and a similar structure would work well for an educational campus. These documents help build consensus to help everyone involved understand priorities. This effort would build on the goals and missions identified by the Sustainability Task Force and transform them into a set of criteria that relates to sustainability in the physical environment. It would require close collaboration between ZGF and Evergreen to draft an initiative that is specific enough to be useful, but broad enough to apply to a range of development.



LDS Conference Center, greenroofs on campus can help to manage stormwater.



## 8. NEXT STEPS AND TASKS

One of the primary goals of an eco-charrette is to prioritize analysis and next steps associated with some of the opportunities discussed. Because these ideas are only as effective as their follow through, it is important to incorporate certain milestones into the project schedule. The opportunities and goals discussed at the eco-charrette have already been incorporated into the team's thinking and process as they move forward with the master plan. Implementation of these goals can establish the college's commitment.



Above: A salmon habitat restoration project.



## PROGRESS

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- Student groups on campus are currently working to gather existing utility data, which will be used to set benchmarks for retrofit improvements. Included in these calculations will be quantifications of current carbon emissions and energy consumption by fuel type.
- The eco-charrette established a partnership between the project team and Ecotrust to provide GIS information and analyze the Reserve to help inform decisions along the way. This process will quantify ecosystem services provided by the site and allow preservation plans to be created.
- Accurate weather data and microclimate information should be used to inform orientation of buildings and location of outdoor public spaces. In addition, this information would provide insight to programming for new buildings and reprogramming of existing buildings to ensure that spaces are used to their full capacity when demand is high and allow buildings that are not used during summer months to remain unconditioned.
- Ecotect modeling is being used to inform building orientation and incident radiation on-site.
- The Reserve areas will be preserved through a naming protocol that creates positive associations with the identified areas.
- The location of student housing will be studied to encourage more mixed use and collocation of services to make campus living more appealing while reducing the number of vehicle trips to campus.
- Further conversations with the City of Olympia and Thurston County are essential to develop partnerships to design and implement an integrated transportation plan that will improve bike access from the city and surrounding communities to campus.
- Further exploration of a college funded shuttle service would increase access to campus for students who live in the city and resident students who need to get into town.
- In order to fund these projects, the team is developing the idea of environmental offsets that allow students to offset negative environmental actions through purchases from the university that create a pool of funds for sustainability improvements. For example, a student could purchase an offset for air travel from the College for airfare, the funds from which build a fund for buying biodiesel or electric vehicles for the college fleet.

## PROJECT SCHEDULE (INCLUDE TASKS WITH THIS TIMELINE)

### JUNE 2007

Sustainability Task Force  
Planning Committee  
Senior Management  
Trustees Meeting

### JULY - SEPTEMBER 2007

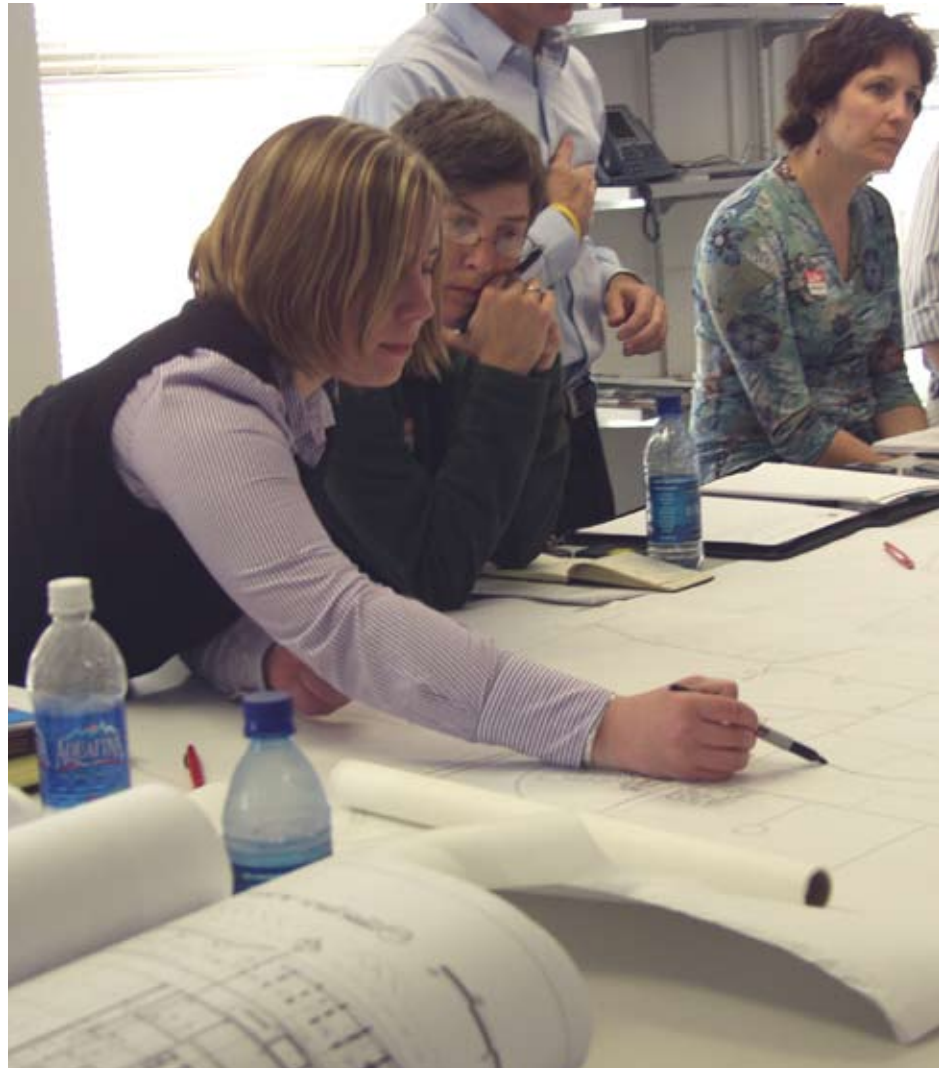
Submit Preliminary Draft  
Plan Development  
Update Preliminary Draft  
Feedback Sessions on Campus

### OCTOBER 2007

Submit Draft Document

### NOVEMBER 2007

Document Updates  
Submit Final Document



Above: Breakout group discussing campus landscape initiatives.

# 9. APPENDIX

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## WORKSHOP AGENDA

### THE EVERGREEN STATE COLLEGE ECO-CHARRETTE AGENDA

May 18, 2007

#### GOAL:

To develop strategies for creating a Sustainable Campus with implementable, challenging and forward thinking concepts to achieve the values of the Sustainable Campus Mission Statement.

1:00-1:30

- 1.0 Introduction
- 1.1 Attendees (Naomi/Johanna)
- 1.2 Project (Tim)
  - 1.2.1 Site and existing conditions
  - 1.2.2 Master plan mission and goals
  - 1.2.3 Ideas to date

1:30-2:00

- 2.0 SWOT Analysis (Naomi/Johanna)
  - 2.1 Frame forces in play for project development
    - 2.1.1 Strengths and weaknesses internal to institution
    - 2.1.2 Opportunities and threats from external community

2:00-2:15

- 3.0 Sustainable Campus Missions (Naomi)
  - 3.1 Eight categories identified by the Sustainability Task Force

## 2:15-3:45

## 4.0 Discussion Groups

## 4.1 Group 1 (facilitated by Johanna and Tim)

## 4.1.1 Renovations and additions

- What criteria should inform how and where additions are planned?
- How can we best leverage the existing building stock to serve the needs of the campus over the next 10-15 years?

## 4.1.2 Potential sites for new facilities

- What are the most important criteria for locating new building sites?
- Which sites offer the best opportunities for building in a sustainable manner?

## 4.2 Group 2 (facilitated by Naomi and Don)

## 4.2.1 Infrastructure Improvements

- Which model for the renovated central plant makes the most sense?
- What are the best reconfiguration options for campus circulation systems – pedestrian, service, bus and car?
- How can the plan encourage greater use of bikes, buses and other alternatives to the SOV?

## 4.2.2 Land use and landscape policies

- How can the Plan best protect the reserve from inappropriate development?
- Can/should the Plan also be leveraged to protect adjacent habitat that is contiguous with the Evergreen reserve?
- How can the reserve actively contribute to the college's sustainability goals?

## 3:45-4:15

## 5.0 Synthesis and Discussion (Naomi/Johanna)

## 5.1 Group 1 reports

## 5.2 Group 2 reports

## 5.3 Shared lessons

## 4:15-4:30

## 6.0 Next Steps and Follow Up (Naomi/Johanna)

## 6.1 Tools for analysis, decision-making, benchmarking

## 6.2 Potential incentives and strategic partnerships

## 6.3 Project schedule and integration of sustainable goals

## ATTENDEES

Attendee	Relation	Email
Blake Hamann	TESC Alumnus	blake_hamann@yahoo.com
Crystal Passi	TESC Student	crystalile@gmail.com
Paul Smith	TESC	smithpa@evergreen.edu
Nathaniel Ashlock	TESC Student	ashnat22@evergreen.edu
Dan Edleson-Stein	TESC Alumnus	daniel.edlesonstein@gmail.com
Carolyn Cook	ZGF	ccook@zgf.com
Felix Schein	ZGF	fschein@zgf.com
Debbie Chow	ZGF	dchow@zgf.com
Greg Matto	ZGF	gmatto@zgf.com
Mark Foster	ZGF	mfoster@zgf.com
John Breshears	ZGF	jbreshears@zgf.com
Kim Isaacson	ZGF	kisaacson@zgf.com
Otto Condon	ZGF	ocondon@zgf.com
Naomi Cole	ZGF	ncole@zgf.com
Nolan Lienhart	ZGF	nlienhart@zgf.com
Paddy Tillet	ZGF	ptillet@zgf.com
Don Miles	ZGF	dmiles@zgf.com
Tim Williams	ZGF	twilliams@zgf.com
Dave Grant	ZGF	dgrant@zgf.com
Johanna Brickman	ZGF	jbrickman@zgf.com
Brian Griffith	Stantec	bgriffith@stantec.com
Ross Tilghman	Tilghman Group	rtilghman@leora.com
Amalia Leighton	SvR	amalial@svrdesign.com
Analisa Gunnell	EcoTrust	analisa@ecotrust.com
C.Z. Brown	UO	gzbrown@uoregon.edu
Gil Kelley	TESC Alum and City of Portland	gkelley@ci.portland.or.us

## SUSTAINABILITY FINANCING

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### FEDERAL INCENTIVES

Energy Policy Act of 2005

\$1.80/SF for 50% efficiency increase of whole building or

\$.60/Sf for 16 2/3% efficiency for unique building system

Business Energy Tax Credit (BETC)

Through end of 2008, then reduced

30% credit for solar, solar hybrid lighting, and fuel cells, and 10% for microturbines

Renewable Electricity Production Incentive

Tax credit of 1.9 cents per kilowatt hour

Electricity generated by renewable energy resources including solar, wind, geothermal, closed-loop biomass.

### LOCAL INCENTIVES

Washington Renewable Energy Production Incentives

\$0.12/kWh - \$0.54/kWh depending on technology type and where equipment was manufactured

Incentive capped at \$2,000/year

Washington Biofuels Production Incentive

Awards low-interest loan and grants for research and development of renewable energy sources, including infrastructure, facilities, and technologies that will advance Washington's move towards energy independence.





CARBON NEUTRALITY BY 2020:  
THE EVERGREEN STATE COLLEGE  
COMPREHENSIVE GREENHOUSE  
GAS INVENTORY  
(2007)

Thesis by Master's of Environmental Studies student John F. Pumilio.





**CARBON NEUTRALITY BY 2020:  
THE EVERGREEN STATE COLLEGE'S  
COMPREHENSIVE GREENHOUSE GAS INVENTORY**

by  
John F. Pumilio

A Thesis: Essay of Distinction  
Submitted in partial fulfillment  
of the requirements for the degree  
Master of Environmental Studies  
The Evergreen State College  
June 2007

This Thesis for the Master of Environmental Studies Degree  
by  
John F. Pumilio

has been approved for  
The Evergreen State College  
by

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Rob Cole  
Member of the Faculty

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Date

## ABSTRACT

### Carbon Neutrality by 2020: The Evergreen State College's Comprehensive Greenhouse Gas Inventory

John F. Pumilio

This study provides the results of The Evergreen State College's comprehensive greenhouse gas inventory. In light of the latest scientific research on the issue of global warming and in response to recommendations made by the Sustainability Task Force, The Evergreen State College committed to carbon neutrality by 2020 as specified in the 2006 updated Strategic Plan. Furthermore, in January 2007, Evergreen President Les Purce joined the Leadership Circle of the Presidents Climate Commitment agreeing to achieve "climate neutrality as soon as possible." I conducted Evergreen's comprehensive greenhouse gas inventory as an essential step of these new climate policies in order to begin the process of tracking Evergreen's emissions over time. I followed the protocol established by the Clean Air-Cool Planet Campus Carbon Calculator. Evergreen's gross greenhouse gas emissions were 19,870, 21,671 and 22,112 metric tonnes for the years 2004, 2005, and 2006, respectively. In all three years, Evergreen's single largest source of emissions came from purchased electricity. Electricity use combined with space heating and commuter habits accounted for over 90% of total emissions for each of the three years. Partially offsetting emissions, Evergreen's forest ecosystem and composting facility sequesters less than 800 tonnes of carbon dioxide per year. Based on these results, achieving net-zero emissions (by reducing gross emissions and/or increasing rates of sequestration) is highly improbable in the foreseeable future without the purchase of offsets from the retail carbon market. Therefore, I recommend that The Evergreen State College achieve carbon neutrality sooner (by Fiscal Year 2009), rather than later (Fiscal Year 2020) through the purchase of high quality retail carbon offsets. Most importantly, Evergreen should commit to specific and incremental greenhouse gas reduction targets. I recommend the following goals: 1) reduce 2006 emissions 15% by 2012; 2) reduce 2006 emissions 40% by 2020; and 3) reduce 2006 emissions 80% by 2050.

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## PREFACE

Global warming has seen a hundred years of scientific investigation, decades of congressional hearings, and nearly 20 years of international scientific collaboration, however, no other time has changed the debate like this past year. In 12 short months global warming has come to dominate the national conversation and the vast majority of Americans are no longer wondering whether human activities are driving global warming. Instead, they are wondering how severe the impacts are going to be and what we are going to do about it. In response to this meteoric rise in public awareness, many companies, local governments, organizations, and institutions have enacted self-imposed climate policies. Most, like the U.S. Mayors Climate Protection Agreement, are commitments to reduce greenhouse gas emissions by a certain percentage by a certain date (i.e. 7% below 1990 levels by 2012). Others, like The Evergreen State College, are striving for carbon neutrality. For most Americans, the tide has shifted and business-as-usual is no longer acceptable policy.

In an attempt to capture this sudden shift in national sentiment and awareness, I have divided this thesis into two parts. Part I will examine how Americans have suddenly come to terms with the fact that the issue of global warming will not go away and must be dealt with. Chapter 1 will take a close look at the science behind global warming and investigate how scientists understand global warming to be an “unequivocal” fact, that it is “unprecedented” in at least the past 1300 years, and how anthropogenic greenhouse gas emissions are the main driving force behind our current warming trend. Chapter 2 will concentrate on both the global and regional impacts of climate change. Much of this chapter will be devoted to the current and projected impacts of global warming to Washington State. Chapter 3 will retrace a history of inaction around the issue of anthropogenic climate change and support my argument as to why any further delay to reduce greenhouse gas emissions is dangerous and irrational.

Part II will bring the global and national issue of climate change home by detailing the events that led to The Evergreen State College’s commitment to reduce greenhouse gas emissions (Chapter 4) and the necessary decision to complete Evergreen’s comprehensive greenhouse gas inventory. Chapter 5 will help the reader understand the basic concepts and calculations of any carbon inventory and my decision to use the protocol established by Clean Air-Cool Planet (a New Hampshire based organization that partners with college campuses all over North America to help reduce

greenhouse gas emissions). Chapter 6 will detail the approach I took in gathering the necessary institutional data in order to complete the inventory. Chapter 7 details my step-by-step decision-making process and calculations behind Evergreen's greenhouse gas inventory. This chapter is essential reading for anyone interested in conducting Evergreen's next greenhouse gas inventory or for anyone interested in the results of the inventory for the years 2004-2006. Finally, Chapter 8 will peer into the future and ask, "where does Evergreen go from here now that the inventory results are in?" While Evergreen's effort to reduce greenhouse gas emissions must involve thoughtful community dialogue and well-reasoned decision-making, in Chapter 8 I will provide my personal recommendations on what I believe Evergreen's next steps ought to be.

## ***PART I***

### ***COMING TO TERMS WITH GLOBAL WARMING***

## CHAPTER 1

### *Climate Change – An Anthropogenic Effect*

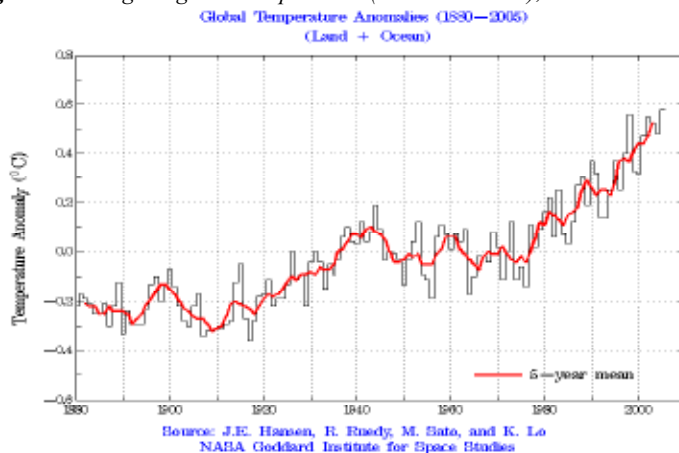
#### ***I. Global Warming: An Unequivocal Fact***

*“Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air temperature and ocean temperatures, widespread melting of snow and ice, and rising global mean sea-level.”*

*IPCC, Fourth Assessment Report, Working Group I, 2007*

According to the 2007 Fourth Assessment Report published by the Intergovernmental Panel on Climate Change (IPCC), it is an “unequivocal” fact that Earth’s temperature is rising. Humans have been witness to this change and it is well documented. Since 1850, the average global temperature has risen 0.74 degrees Celsius (IPCC, 2007b). However, this warming trend has not been evenly distributed. The rise in temperature (for both the United States and the world) has been accelerating at a rate approximately three times faster over the past 30 years than it did during the rest of the 20<sup>th</sup> century (Figure 1) (NOAA, 2007b). More significantly, eleven of the past twelve years have been the warmest in recorded history (IPCC, 2007b). And, according to the National Oceanic and Atmospheric Administration (NOAA), 2006 was the warmest year ever recorded in the U.S. and our annual average temperature is now approximately 1.0 degrees Fahrenheit warmer than it was at the turn of the century (NOAA, 2007b). Because this warming trend has been gradual, up until the last few years, the scientific community and especially the general public have been slow to reach consensus that our planet is warming.

**Figure 1.** Change in global temperature (land and ocean), 1880-2005.



As late as 1985, the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) – after their conference in Villach, Austria – concluded that global warming was a serious *possibility* (Houghton & Woodwell, 1989). One year later, the National Aeronautic and Space Administration (NASA) and the WMO issued a three-volume report with much stronger wording. They agreed that climate change was not only taking place but that it was happening at a relatively rapid rate (Porter, Brown, & Chasek, 2000). In 1995, the Intergovernmental Panel on Climate Change released their Second Assessment Report indicating that Earth’s temperature had increased by 0.3 to 0.6% over the past 100 years.

Air temperature is not the only indicator that our planet is heating up. Our oceans absorb more than 80% of the heat added to the climate system (IPCC, 2007b). Consequently, oceans have not only been warming up on the surface, but the warming has increased to at least 3000 m in depth (IPCC, 2007b).

Taken altogether, there is no longer any doubt that the Earth is warming and that the rate of warming is increasing, but how significant is a 0.74 degree C rise in temperature in the span of a hundred years? Is it unprecedented or typical of a natural pattern? Answering this question is critical, because it can help reveal what may be causing this change, whether it is threatening to life as we know it, and what (if anything) can be done about it. In order to answer these questions and put the recent warming trend in perspective we need to have a historical understanding of global temperature change. That is, knowledge of global temperatures extending far beyond human records. Here lies a challenge: how can scientists know, with any kind of precision, what global temperatures were like hundreds, thousands, or hundreds of thousands of years ago? Incredibly, the answer lies (in part) in the very substance vulnerable to warming itself: glacial ice.

## ***II. The Paleoclimatic Record: Glacial Ice Reveals an Unprecedented Warming Trend***

*“Recent record high hemispheric temperatures are probably unprecedented in at least 1200 years. Twentieth Century global warming is a reality and should be taken seriously.”*

*Jonathon Overpeck, Director, NOAA National Climatic Data Center*

Researchers have been drilling cores of ice out of Greenland and Antarctic ice sheets since the late 1960s (NASA, 2005). These cores of ice contain archived information on the chemical composition of Earth's atmosphere in the form of tiny air bubbles. These air bubbles are ancient and incredibly important because scientists have the ability to precisely age them. This deserves a brief explanation.

In the polar regions, there is a difference between summer and winter snow. In the summer, incessant sun causes changes in the texture and composition of the snow and this snow is distinct from the winter snow that falls under dark, cold skies (NASA, 2005). The difference in these seasonal snowfalls causes an annual layer in the ice. By drilling and removing ice cores, researchers can count the number of layers, and by counting back from the present, can estimate the year that each layer was formed.

By the early 1990's, scientists had pulled a nearly 2-mile-long core of ice out of both the Greenland Ice Sheet and the Vostok Ice Sheet in Antarctica (Lorius et al., 1990; NASA, 2005). The tiny air bubbles contained within each layer represented over 110,000 and 750,000 years of atmospheric information, respectively (NASA, 2005).

As one would expect, these air bubbles contain atmospheric oxygen. Oxygen comes in different isotopes including "light" oxygen ( $^{16}\text{O}$ ) and "heavy" oxygen ( $^{18}\text{O}$ ). As it turns out, determining the ratio of these oxygen isotopes ends up being a remarkably accurate predictor of air temperature from a long time ago (Gore, 2006). More specifically, cooler air causes water molecules with  $^{18}\text{O}$  to condense and precipitate at a greater ratio than  $^{16}\text{O}$ . This condensation and precipitation happens at lower latitudes and by the time air reaches the poles it has become depleted of  $^{18}\text{O}$  (NASA, 2005). Therefore, oxygen from polar ice cores with a low ratio of  $^{18}\text{O}$  reveals lower global air temperatures. This is just the type information needed to put Earth's current warming trend in perspective. The Vostok ice core in particular has been extremely valuable because its 750,000-year record transcends a complete glacial-interglacial cycle.

Data from these ice cores (along with a multitude of other proxy data<sup>1</sup>) have confirmed that there have been both warmer and cooler periods relative to today. For example, during the last interglacial period (about 125,000 years ago), polar temperatures were approximately 3 to 5 degrees C warmer than today (IPCC, 2007b). And only 18,000 years ago (at the height of the Last Glacial Maximum) temperatures were cooler

---

<sup>1</sup> Proxy data include a suite of climatically sensitive indicators that reveal past changes in global climatic patterns. Examples of proxy data include tree ring width, preserved pollen grains, oxygen isotopes, ice texture, fossils, marine sediments, etc.



than present (Lorius et al., 1990). Understanding what caused this estimated 5 degree C fluctuation in temperature is critical because it may shed light on what causes global climate change and why global warming is happening today.

Remarkably, these glacial and interglacial periods coincide fairly well with the astronomical theory of ice ages. The astronomical theory suggests that the beginning and ending of ice ages is ultimately the result of the interplay between the Earth's orbit and aspect in relation to the sun. There are three main factors: 1) the changing shape of the Earth's orbit around the sun (eccentricity) which is a 100,000 year cycle; 2) the changing tilt of the Earth's rotation axis (obliquity) which is a 44,000 year cycle; and 3) the changing "wobble" of the Earth's axis (precession) which is a 23,000 year cycle (Keller, 2003). The interrelationship between these patterns and their resulting radiative forcing<sup>2</sup> is commonly known as the Milankovitch Cycle (Schneider, 1997).

The question now before us is whether or not the Earth is at a period in the Milankovitch Cycle that is the root cause of our current warming trend. In other words, in terms of the Milankovitch Cycle should Earth be getting warmer or cooler? The answer is cooler. According to the Milankovitch Cycle, solar forcing began increasing around 20,000 years ago and peaked around 10,000 years ago (Pielou, 1991). Therefore, over the past 10,000 years, solar forcing should be decreasing (or negative) and the Earth should be experiencing an overall cooling trend. The paleoclimatic record agrees. We know that our latest glaciation (the Last Glacial Maximum) peaked around 18,000 years ago. At that time, our planet began to warm and Earth's huge continental ice sheets began to recede. In North America, for example, the Laurentide and Cordilleran ice sheets (which together covered most of Canada and the northern half of the U.S.) began melting away and eventually disappeared. We also know that we should be entering our next glacial period and that average global ice coverage should be increasing.

However, as with all things related to climate, nothing is this straightforward. In other words, the Milankovitch Cycle by itself cannot and never has completely explained Earth's prevailing climate pattern. Numerous "other" climate forcings such as volcanic eruptions, water vapor, CO<sub>2</sub> levels, cloud properties, the eleven-year sunspot cycle, etc. superimpose themselves over the general pattern of the Milankovitch Cycle. As a result, actual climatic patterns vary from what is predicted from the Milankovitch Cycle alone.

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<sup>2</sup> Forcing refers to any variable that may influence global temperatures. Examples include, carbon dioxide, solar radiation, aerosols, etc. A positive forcing tends to cause a warming affect while a negative forcing has a cooling affect.

The Medieval Warming Period (890 to 1170) and the Little Ice Age (1300 to 1850) offer two prime examples. And, the paleoclimatic record from the past several hundred thousand years also confirms this. At first, original reconstructions of Earth's past climate cycles from the Vostok ice core showed a "strong" correlation between the Milankovitch Cycle and global temperatures (Lorius et al., 1990). However, a more recent reevaluation of the data demonstrated that there was a "mismatch" in the one hundred thousand year cycle (Rind, 2002). More specifically, the warming trend ended before the astronomical forcing predicted it would. This "mismatch" is not limited to ice cores. Oxygen isotope data from sediment, corals, and more recently from Devils Hole Cave in Nevada suggest that the glacial termination event was virtually completed 135,000 years ago (Karner & Muller, 2000). This is approximately 10,000 years before solar forcing began according to the Milankovitch Cycle. Furthermore, it has also long been realized that the Milankovitch Cycle is inconsistent with more rapid and shorter-term climate events that have been well documented in ice cores (Lorius et al., 1990). In other words, interrelated climate forcings (other than solar radiation) have a powerful influence over global temperature.

None of this, of course, implies that the Milankovitch Cycle is wrong. On the contrary there is considerable evidence supporting the astronomical theory and the influence that solar forcing has over glacial periods (Rind, 2002). What paleoclimatologists are telling us, however, is that global temperatures are not solely influenced by anyone factor (including the Earth's rotation and tilt as it relates to the sun). The dominant theory of today suggests that solar forcing is the ultimate decider over the start and end of ice ages while other forms of climate forcings amplify or overshadow this affect at smaller temporal scales (Rind, 2002).

Ultimately, what this boils down to is that the Milankovitch Cycle deals with time scales too large and patterns too broad to provide much insight into what is causing Earth's recent and comparatively short-lived temperature surge. For this reason, scientists have been forced to narrow their focus to relatively modern time periods (within the past couple of thousand years) where data is more universal and more reliable. Within this timeframe, ice cores taken from thick mountainous glaciers throughout the world (including the Mendenhall Glacier in Alaska, Mt. Kilimanjaro in Tanzania, as well as glaciers in the Himalayas and Andes Mountains) become a source of extremely valuable data. After decades of intense ice core research, spanning all of these

various geographic locations, paleoclimatologists have learned a great deal about climatic patterns within the past several thousand years.

At this temporal scale, it becomes obvious that Earth's current warming trend is highly unusual. The scientific community is in near consensus that the late 20<sup>th</sup> century warming is "unprecedented" (Jones & Mann, 2004). In a study of the paleoclimatology of the Northern Hemisphere, Osborn and Briffa (2006) concluded that the warming event that has taken place within the past 50 years is more widespread and of greater significance than any other climatic event that has taken place within the past 1200 years (Osborne & Briffa, 2006). And, the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (2007) concluded that average Northern Hemisphere temperatures during the late 20<sup>th</sup> century are likely higher than any other 50-year period in at least the past 1300 years. This means that our current warming trend is even more significant than the Medieval Warming Period. More significant, not only because average temperatures are greater today, but also because the MWP was mainly limited to Europe and the North Atlantic while our current warming is global in nature. Moreover, scientists have ruled out the simple explanation that our current warming pattern is a "recovery" from the Last Glacial Maximum or even the Little Ice Age (which ended in the mid-1800's) (U.S. National Assessment Synthesis Team, 2001).

In summary, it is now obvious and with a high degree of scientific certainty that Earth's current warming trend is taking place at a level and at a rate that is unnatural and unprecedented in recorded human history.

### ***III. The Facts Are In: Anthropogenic Greenhouse Gas Emissions are Very Likely the Cause of Global Warming.***

*"The understanding of anthropogenic warming and cooling influences on climate has improved since the Third Assessment Report (TAR), leading to very high confidence<sup>3</sup> that the globally averaged net effect of human activities since 1750 has been one of warming."*

*IPCC, Fourth Assessment Report, Working Group I, 2007*

Now that we have established "unequivocally" that the Earth's temperature is rising and that this warming trend is likely "unprecedented" in at least the last 1300 years

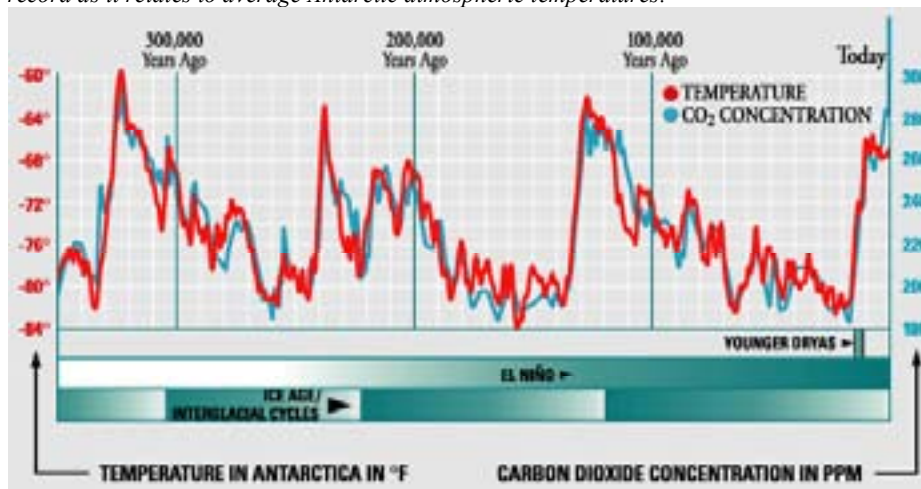
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<sup>3</sup> *Very high confidence* is defined by the IPCC as having at least of 90% chance of being correct.

it is critical to know why. Knowing why can help us better understand how long the warming may continue and how intense it could get.

Over the past several decades the number one public debate in the global warming controversy is whether or not human activities are causing today's warming trend. The circumstantial evidence that humans may be causing global warming has long been known and is irrefutable. Scientists have long understood the direct relationship between levels of atmospheric greenhouse gases (i.e. water vapor, carbon dioxide, ozone, methane, nitrous oxide, etc.) and global temperatures. Figure 2, for example, shows the direct relationship between atmospheric levels of carbon dioxide and Antarctic temperatures. Furthermore, because humans are adding concentrations of GHGs to Earth's atmosphere through the combustion of fossil fuels and certain land use activities, it is entirely plausible that humans are contributing to global warming. However, without scientific measurements we can never fully understand the degree to which we are affecting our planet's climate.

**Figure 2.** Levels of atmospheric carbon dioxide as determined from the Antarctic ice core record as it relates to average Antarctic atmospheric temperatures.



Source: Koshland Science Museum

From a scientific perspective, it is difficult to precisely measure how AGHG emissions are impacting global temperatures. There are two major reasons for this: 1) climate fluctuates regardless of human activities, therefore, scientists attempt to tease out the human effect in order to better understand potential impacts; and 2) atmospheric greenhouse gas composition also naturally fluctuates regardless of human activities. It is

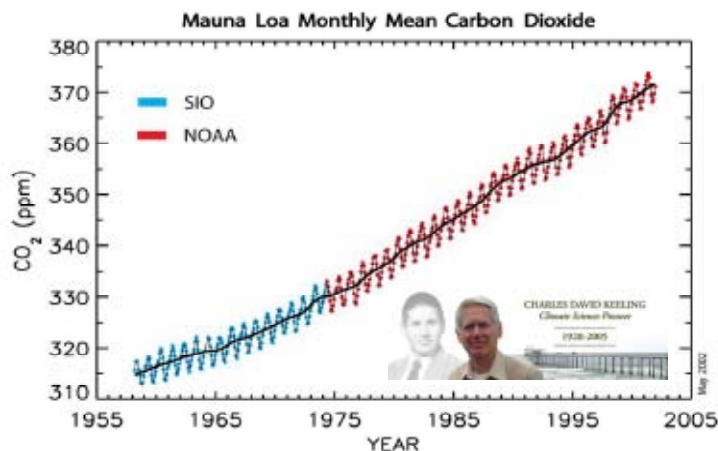
worth remembering that the greenhouse effect occurs naturally and is necessary to life as we know it. Greenhouse gases play an essential role in Earth's overall heat balance: they trap radiant heat that would otherwise pass through Earth's atmosphere back into space resulting in an overall warming effect. This natural greenhouse effect is relatively well understood. Water vapor is the most powerful of the GHGs contributing approximately 60% to the natural greenhouse effect. Carbon dioxide contributes another 25% while ozone, methane, nitrous oxide, and clouds make up the rest. Without these gases, climatologists estimate that the average global temperature would be negative 18 degrees C causing the surface of the Earth to be covered in snow and ice (U.S. National Assessment Synthesis Team, 2001). Paleoclimatologists have enlightened us to the fact that fluctuating levels of naturally occurring GHGs have had profound consequences on Earth's past climate regime.

Because Earth's climate naturally fluctuates and because composition of naturally occurring greenhouse gases also naturally fluctuates, it is challenging for climatologists to decipher the anthropogenic effect of our planet's current warming trend. In order to help simplify matters, climatologists have focused on one greenhouse gas in particular: carbon dioxide. Carbon dioxide is a natural choice not only because human activities directly add it to the atmosphere, but also because it has a larger overall greenhouse effect than the other major AGHGs (ozone, methane, and nitrous oxide) (Lorius et al., 1990). For these reasons, climatologists are more interested in CO<sub>2</sub> levels than on any other GHG.

As early as 1904, Swedish scientist Svante Arrhenius, was studying the effect that doubling atmospheric CO<sub>2</sub> would have on global climate (PBS: *Science & Health*, 2005). And in the 1950's, famous climatologist Roger Revelle understood the potential implications of the world's dependence on fossil fuels as it relates to global warming. He worried that, "Within a few centuries we are returning to the atmosphere and oceans the concentrated organic carbon stored in sedimentary rocks over hundreds of millions of years..." (Revelle & Suess, 1957). More importantly, Revelle understood the necessity of measuring CO<sub>2</sub> levels in order to verify and quantify the possible anthropogenic effect. He hired Charles David Keeling to begin measuring CO<sub>2</sub> from the Mauna Loa research station on the big island of Hawaii. From Mauna Loa, atmospheric CO<sub>2</sub> has now been measured continuously since 1958. In 1958, the atmospheric concentration of CO<sub>2</sub> was just over 310 parts per million (ppm). Atmospheric CO<sub>2</sub> levels have steadily increased over this time and in 2005 they measured 381 ppm (Gore, 2006). The nearly 50 years of

measurements from the top of Mauna Loa have produced the famous “Keeling Curve” the most widely recognized graph in all of climatology (Figure 3).

**Figure 3.** The “Keeling Curve.” Atmospheric carbon dioxide levels as recorded from the Mauna Loa research station on the big island of Hawaii.



Through this direct measurement we now know that there has been a rise in atmospheric CO<sub>2</sub>. However, is a 70 ppm increase in 50 years significant? Once again, to put this increase in perspective, scientists look to the paleoclimatic record. The same tiny air bubbles from the same ice cores used to measure oxygen isotope ratios are also used to measure CO<sub>2</sub> levels and other GHGs. The results are alarming. These ice cores have revealed that for hundreds of thousands of years the composition of Earth’s atmosphere has been relatively consistent. Then, starting around the time of the Industrial Revolution (about 150 to 200 years ago), levels of carbon dioxide along with methane, nitrous oxide, and sulfur dioxide all increased (Schneider, 1997).

Methane levels, for example, have risen about 150% since the Industrial Revolution and this is most likely due to an increase in the spread of global agriculture and mining activities (Schneider, 1997). In 2005, the global atmospheric concentration of methane was 1774 parts per billion (ppb) (IPCC, 2007b). This remarkable increase from pre-industrial levels (about 715 ppb) is well above the natural range (320 to 790 ppb) of the last 650,000 years as determined from ice cores (IPCC, 2007b). The Intergovernmental Panel on Climate Change concludes with 90% certainty that the global rise in atmospheric levels of methane is a direct result of anthropogenic activities (IPCC,

2007b). Since methane is 23 times more powerful as a greenhouse gas than CO<sub>2</sub>, its levels must also be closely watched (EPA, 2006b).

Nitrous oxide is another GHG whose levels have increased. According to the Intergovernmental Panel on Climate Change, global nitrous oxide levels have increased about 18% from a pre-industrial value of 270 parts per billion (ppb) to 319 ppb in 2005 (EPA, 2006b; IPCC, 2007b). The Intergovernmental Panel on Climate Change estimates that more than a third of all nitrous oxide emissions are anthropogenic in nature caused by a rapid increase in the global use of nitrogen fertilizers (IPCC, 2007b; Schneider, 1997).

However, for the reasons mentioned above, CO<sub>2</sub> levels are of the greatest interest and are also the most alarming. The rate at which humans have been adding CO<sub>2</sub> to the atmosphere is astonishing. In the United States alone, researchers estimate that deforestation, agricultural practices, and the combustion of fossil fuels have increased levels of atmospheric carbon by roughly 35% since 1750 (EPA, 2006b). This increase should not be surprising when one realizes that since 1750 the U.S. has taken over 400 gigatonnes of carbon (GtC) from the biosphere and added to the atmosphere (U.S. National Assessment Synthesis Team, 2001)). This pattern is not unique to the United States but is found throughout the world especially in the industrialized north. A global estimate by the U.S. Department of Energy places 305 billion tons of carbon into the atmosphere from the burning of fossil fuels since the start of the Industrial Revolution (Marland, Boden, & Andres, 2006). Not surprisingly, global levels of atmospheric carbon have skyrocketed. Pre-industrial levels of atmospheric CO<sub>2</sub> fluctuated around 280 ppm and at no point in the past 650,000 years did levels exceed 300 ppm (Gore, 2006). As illustrated in Figure 2, we can now see that levels have surged to approximately 381 ppm. This data is not controversial. Former vice president and presidential candidate Al Gore, who was a former student of Dr. Revelle, expresses this clearly and succinctly, “There is not a single part of this graph – no fact, date, or number – that is controversial in any way or in dispute by anybody” (Gore, 2006).

The fact that CO<sub>2</sub> concentrations are directly correlated to warmer global temperatures, that humans are emitting over 25 million tons annually of CO<sub>2</sub> into the atmosphere (EIA, 2006), and that current CO<sub>2</sub> levels have exceeded anything seen within hundreds of thousands of years is quite convincing that human activities are in some way responsible for today’s global warming. In fact, modern state-of-the-science climate models conclude that natural forcings are not enough to explain today’s warming trend



(Zwiers & Weaver, 2000). Only anthropogenic forcings can account for Earth's rising global temperatures. As a result, the 2007 Intergovernmental Panel on Climate Change Fourth Assessment Report profoundly changed the debate by concluding, with 90% certainty, that the rise in global temperatures since the mid-20<sup>th</sup> century is caused by anthropogenic emissions of GHGs (IPCC, 2007b).

#### ***IV. Chapter Summary***

In summary, we have seen that it is an unequivocal fact that global warming is happening, that our current warming trend is unprecedented in at least the past 1300 years, and finally, that we can no longer reasonably question whether humans are responsible for today's global warming. The next logical step is to consider what the potential impacts of anthropogenic warming may be. This will be the focus of the next chapter.

## **CHAPTER 2**

### ***Impacts of Anthropogenic Warming***

*“Humanity’s influence on the global climate will grow in the 21<sup>st</sup> century. Increasingly, there will be significant climate-related changes that will affect each one of us.”*

*U.S. National Assessment Synthesis Team, 2001*

As discussed in the previous chapter, we know that global warming is a reality and that only anthropogenic greenhouse gas (AGHG) emissions can explain the unprecedented rise in average global temperatures during the past 50 years. The next logical question to consider is what the impacts of global warming may be. This should be a main focus of policymakers, scientists, and the general public in the months and years ahead.

Society needs to understand the potential consequences of global warming for two predominate reasons: 1) to judiciously decide what priority global warming should be given on the list of threats and challenges facing modern-day civilization, and 2) understanding the severity of global warming impacts allows societies to weigh the risks associated with addressing the problem against the risks associated with global warming itself. In other words, decision-makers and citizens need to ask, “Are the consequences of global warming going to outweigh the risks associated with sufficiently reducing GHG emissions?”

So, what are the potential consequences of global warming? How widespread will they be? Will you be personally affected by global warming? When will these impacts occur and how severe will they be? The objective of this chapter is to answer these questions. I have organized it into two parts: 1) global and U.S. impacts of climate change and 2) impacts of global warming for the Northwest focusing on Washington State.

#### ***I. Global and U.S. Impacts of Climate Change***

*“At continental, regional, and ocean basin scales, numerous long-term changes in climate have been observed. These include changes in Arctic temperatures and ice, widespread changes in precipitation amounts, ocean salinity, wind patterns and aspects of extreme weather including droughts, heavy precipitation, heat waves and the intensity of tropical cyclones.”*

*IPCC, Fourth Assessment Report, 2007*

Unquestionably, climate change is a global issue. This is true for two specific reasons. First, anthropogenic greenhouse gas emissions do not remain in the place where they are emitted (impacting that place and nowhere else). In other words, CO<sub>2</sub> molecules emitted from a factory in Seattle can drift halfway around the world within weeks and remain in the atmosphere for over one hundred years contributing to climate change in every part of the world. Second, no one is isolated from the consequences of global warming. Today's unparalleled level of globalization virtually guarantees that any significant event happening in one part of the world will have ripple effects throughout. Whether it is a gradual collapse of a regional agricultural industry, the displacement of entire communities living along a flooded coast, or a powerful hurricane that slams into America's Gulf Coast, the effects can be felt nationwide and in some cases worldwide. Hurricane Katrina, for example, struck land several thousand miles away from Washington State yet drained millions of dollars from our local economy due to a surge in oil prices (Sightline Institute, 2006). The point is, the sustenance of cultures and economies are highly dependent on resources and labor that cross national and continental boundaries. Because no one is immune from the consequences of global warming, every nation and every individual must take it seriously. These are two of the reasons why climate change is a global issue.

As emphasized in the previous chapter, we know that global temperatures have risen 0.74 degrees C since the 1850's and that the rate of warming has significantly increased over the past 50 years. What have the impacts been? In other words, what discernable consequences have paralleled these warmer temperatures and what can we expect in the future?

### *~ Melting & Thawing ~*

**Melting Sea Ice.** Let us start with a seemingly obvious expectation. One would expect that warmer temperatures would result in an average reduction of global ice cover. Has this happened? The answer is yes. According to the latest U.S. Climate Change Science Program report (2006), perennial Arctic sea ice has declined 9.8% per decade in area since 1978. And, since 2002, satellite images have revealed a 1.3 million km<sup>2</sup> reduction in area of Arctic Sea Ice (double the size of Texas) (U.S. Climate Change Science Program, 2006). The thickness of the sea ice is also affected. An estimated 40% reduction in volume has occurred since the 1950s (Diaz, 2006). This trend is expected to continue well into the future for both the Arctic and Antarctic regions. In fact, some

projections predict that by the end of the 21<sup>st</sup> century, Arctic late-summer sea ice will almost entirely disappear (IPCC, 2007b). This reduction in sea ice is threatening the arctic ecosystem (most notably the polar bear population) and the subsistence lifestyle of northern indigenous peoples.

**Melting Polar Ice Sheets and Alpine Glaciers.** Continental ice sheets are also affected. Greenland contains the Northern Hemisphere's largest ice sheet. It is about 1.7 million km<sup>2</sup> in area or nearly the size of Mexico (U.S. Climate Change Science Program, 2006). Over the past 15 years, approximately 105 million acres in area of this ice has melted (Arctic Climate Impact Assessment, 2004). But this only tells part of the story. The Greenland ice sheet is also 3 km thick in some areas and what it is losing in volume every year is even more revealing. The U.S. Climate Change Science Program estimates that approximately 162 km<sup>3</sup> (39 mi<sup>3</sup>) of volume reduction has occurred in Greenland every year since 2002 (U.S. Climate Change Science Program, 2006). Earth's other pole is experiencing similar affects. The Antarctic Ice Sheet – the largest reservoir of fresh water on the planet – is losing an estimated 150 km<sup>2</sup> of ice every year (Velicogna & Wahr, 2006). And over 1,000 mi<sup>2</sup> of the Larsen Ice Shelf (on the Western Antarctic Peninsula) have melted (Diaz, 2006). Of course, melting ice is not limited to the poles. Most people are familiar with the disappearing glaciers at the summit of certain famous mountains such as Mt. Kilimanjaro. But the effect is pandemic. Today, an estimated 90% of the world's alpine glaciers are receding (Landler, 2006). This is striking, because as recently as 1980 approximately 75% of these same glaciers were advancing.

**Rising Sea-Level.** Should we be alarmed at this sudden change in course of the world's glaciers? Once again, the answer is yes. The rate and volume of landlocked ice melting into freshwater is substantial and this has consequences for the human race. One consequence is a rise in sea-level. The U.S. National Assessment Synthesis Team (2001) estimates that global sea-level has risen 4 to 8 inches throughout the 20<sup>th</sup> century. And, the rate is increasing. Since 1993, the average rise in sea-level has been 3.1 mm per year compared to 1.8 mm per year from 1961 to 1993 (IPCC, 2007b). Thus far, the problems associated with this rise in sea-level have been local, but should this trend continue we could expect widespread problems in the form of human displacement and mass migrations. The reason being, a large percentage of the world's population lives along the coast. Nearly 70% of the worlds population lives within 100 miles of the ocean and approximately 50 million people currently live at risk of coastal flooding and storm surges (Diaz, 2006). In the U.S., the problem is no better – more than half of the

population lives within 50 miles of the coast (NOAA, 2007a). The fact is, if even a portion of our planet's coast becomes inundated it would cause enormous social and economic disruption. Where will all of these people go and how is this going to impact the communities they settle into? Furthermore, coastal areas are hubs of commerce, home to corporate headquarters, and serve as essential ports of trade (NOAA, 2007a). Not to mention that some of humanities most affluent development exists along the waterfront.

The question now before us is will sea-level continue to rise and how far will it go? Once again, the past provides a key to the future. The last time arctic temperatures were comparable to today's temperatures for an extended period was 125,000 years ago. At that time, sea-level was 12 to 18 feet higher (IPCC, 2007b). In fact, sea-level will continue to rise. There are two very straightforward reasons why. First, CO<sub>2</sub> is long-lived with a residence time of over a century (Keller, 2003). This means that the CO<sub>2</sub> released into the atmosphere today will still be there in 2100. Because the rate of global CO<sub>2</sub> emissions continues to increase at a rate of about 1% per year (Karl & Trenberth, 2003), we know that atmospheric levels of CO<sub>2</sub> will continue to do the same and for many decades to come. Second, climate change from CO<sub>2</sub> emissions has a delayed reaction. In other words, even if global CO<sub>2</sub> emissions were stabilized today, we know that Earth's atmosphere will continue to warm as it reacts to the CO<sub>2</sub> already in the atmosphere (Karl & Trenberth, 2003). For these two reasons, even conservative estimates predict that by 2100 the Earth's temperature will be 2.4 degrees C (4 degrees F) warmer than today (U.S. National Assessment Synthesis Team, 2001). According to James Hansen (NASA's chief climate scientist at the Goddard Institute for Space Studies), the last time atmospheric temperatures were that warm sea-level was approximately 80 feet higher than today (Time Magazine, 2006).

Air temperature is not the only factor accounting for a rising sea-level. Warmer ocean temperatures cause an expansion of water molecules also resulting in sea-level rise. Therefore, even if the amount of freshwater running into the ocean somehow stabilized, sea-level would still rise due to thermal expansion alone. The 2007 Intergovernmental Panel on Climate Change report states that an expanding ocean will continue for many centuries to come due to the delayed time it takes to vertically transport heat from the surface into the deep ocean (IPCC, 2007b).

To be sure, glacial recession and the thermal expansion of the ocean will continue and so will a rise in sea-level. By some estimates, sea-level could rise three feet by the end of the century and continue to rise for centuries (Karl & Trenberth, 2003; U.S.

National Assessment Synthesis Team, 2001). Some coastal communities are already taking action. The residents of Shishmaref, Alaska, for example, have recently voted in favor of spending \$100 million to pick-up and move their entire town inland to escape coastal erosion and flooding (Diaz, 2006).

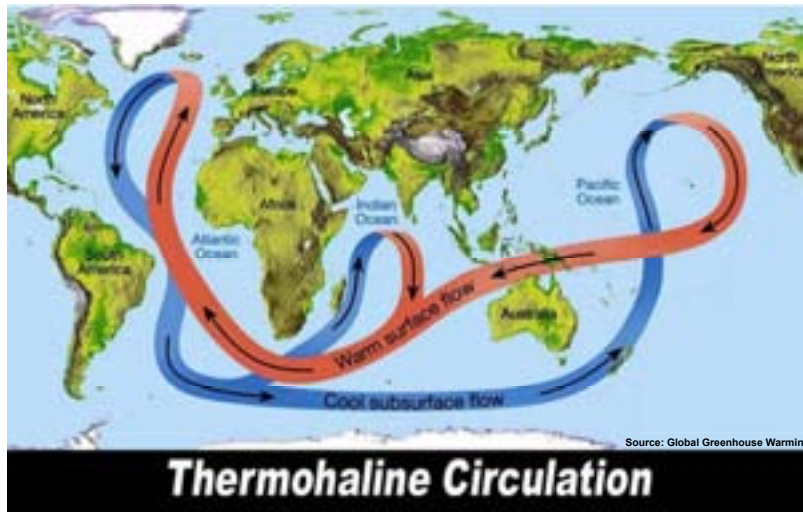
It is important to note that future estimates of sea-level rise are conservative. The Intergovernmental Panel on Climate Change, the U.S. National Assessment Synthesis Team, and the U.S. Climate Change Science Program do not account for the potential catastrophic collapse of huge ice shelves in either Greenland or Antarctica. If this were to happen, the affect would be sudden and severe. For example, if the Western Antarctic ice sheet were to suddenly collapse, global average sea-level would increase by approximately 18 feet (Diaz, 2006). This would submerge huge portions of Florida (including the Florida Keys), Bangladesh, the Marshall Islands, and many other islands and coastal areas (Diaz, 2006). James Hansen guarantees that these ice sheets will collapse if the world continues with a business-as-usual scenario. Hansen also believes that “sea-level rise is going to be the big issue soon, more even than warming itself (Hansen, 2006).”

**Decline in Global Fisheries.** Mass migrations and property damage are not the only problems associated with the melting of Earth’s glaciers. The huge volume of freshwater rushing into mid and high latitude oceans have caused an overall decrease in ocean salinity (IPCC, 2007b). Additionally, there is a direct relationship between the amount of atmospheric CO<sub>2</sub> and acidification of the world’s oceans. Average ocean surface acidity has already increased since pre-industrial times and this trend is expected to rise at a greater rate during the 21<sup>st</sup> century (IPCC, 2007b).

As these trends continue we need to consider how this will affect the ocean’s ecosystem. Warming ocean temperatures, a rapid change in ocean salinity, and increased acidification will further exacerbate the depletion of today’s overexploited fish stocks. Putting economic losses aside, commercial fisheries provide 40% of the human population with its source of dietary protein (Diaz, 2006).

**Disruption of Global Ocean Currents.** One truly frightening scenario is the possible shut down or disruption of the Global Ocean Conveyor Belt (Figure 4).

**Figure 4.** *Diagram of the Global Ocean Conveyor Belt.*



This interconnected global circulation of ocean water is fundamental to our planet's overall climate and nutrient cycling. The Gulf Stream portion (in the North Atlantic) of the Global Ocean Conveyor Belt, for example, is responsible for the relatively warm temperatures in Western Europe. Officially, it is called the Atlantic Meridional Overturning Circulation. It is a classic thermohaline circulation: thermo for temperature and haline for salinity. It is the combination of temperature and salinity that makes this Global Ocean Conveyor Belt possible. However, the warming of the ocean's temperatures coupled with its changing salinity (from the invasion of freshwater from the melting Greenland Ice Sheet) threaten to shut down the Gulf Stream portion of the Conveyor Belt. This happened at the end of the last ice age (around 10,000 years ago), and when it did, Europe slipped back into its own ice age for approximately another 1,000 years (Gore, 2006; U.S. Climate Change Science Program, 2006). If this were to happen today, the consequences would be nothing short of a global catastrophe. The 2007 Intergovernmental Panel on Climate Change Fourth Assessment Report (IPCC, 2007b) concludes – with near certainty – that the Atlantic Meridional Overturning Circulation will slow down during the 21<sup>st</sup> century. Fortunately, the Intergovernmental Panel on Climate Change report also concludes that the possibility of a large abrupt shutdown of the Global Ocean Conveyor Belt during the next 100 years is remote (IPCC, 2007b). However, when faced with consequences as severe as the shutdown of the



Global Ocean Conveyor Belt, pre-emptive action should be taken seriously (no matter how remote the possibility).

**Thawing Permafrost.** Ice also exists in the form of permanently frozen ground known as permafrost. And, as expected, warmer global temperatures are reducing the total land area covered by permafrost. Since 1900, the area covered by permafrost in the Northern Hemisphere has decreased by 7% (IPCC, 2007b). Alaska provides a well-documented case study of the problems caused as permanently frozen land begins to thaw. Permafrost underlies 85% of Alaska and the discontinuous permafrost – found in the central and southern part of the state – has experienced significant thawing. As this permafrost thaws, the land subsides in some places and heaves in others causing infrastructure damage to roads, airports, homes, and other forms of development. Current damage to Alaska’s infrastructure is costing the state approximately \$35 million annually (U.S. National Assessment Synthesis Team, 2001). Similar to melting ice, the problem is going to get worse as global temperatures continue to rise. For example, in central and southern Alaska, the top 30 feet of permafrost is likely to thaw by 2100 (U.S. National Assessment Synthesis Team, 2001).

People may take comfort knowing that permafrost, found in the northern reaches of the Northern Hemisphere, exists where few people do. However, the consequences of thawing permafrost are far reaching. Alaska’s North Slope, for example, provides America with nearly one-quarter of its domestic oil supply. This oil is delivered to the lower 48 by the 800-mile long Trans-Alaska pipeline. The pipeline was built to handle some ground instability, but future increased maintenance costs due to the thawing of the permafrost is likely. If the pipeline’s support structures fail, it would cost roughly \$2 million per mile to replace them (U.S. National Assessment Synthesis Team, 2001).

From an ecological standpoint, the disappearing permafrost also has global consequences. Permafrost regions support vast areas of wetlands: the frozen ground prevents infiltration of melting snow and ice. As a result, water becomes locked on the surface creating globally important wetlands during the spring and summer. These places create critical breeding habitat for migrating birds (especially waterfowl). If the subsurface thaws and these wetlands disappear, the consequences will be far reaching for ecosystems throughout the Northern Hemisphere.

**Melting Snowpack.** Of course, warmer global temperatures not only melt ice, but snow as well. Since the 1960s satellite data has revealed about a 10% decrease in global snow cover (Diaz, 2006). As more wintertime precipitation comes in the form of

rain and ice rather than snow, the snowpack is dwindling. This is troubling because there is less springtime snowmelt to refill reservoirs for human consumption and use. Inevitably, if this trend continues it will exacerbate already contentious water rights issues.

### *~ Extreme Weather Events ~*

Extreme weather events are also a source of significant concern. As tropical sea surface temperatures increase so does the intensity of tropical cyclone activity in the North Atlantic. According to the Intergovernmental Panel on Climate Change's latest assessment report, there is observational evidence to support that this has already happened since the 1970's and more severe hurricanes are likely to become more frequent in the future (IPCC, 2007b). Additionally, the El Nino Southern Oscillation (ENSO) events have been more severe, more frequent, and longer lasting in the past 30 years when compared to the previous 100 years (Berliner, 2003). To be sure, the effects of El Nino are global with varying regional impacts. One particularly problematic effect of El Nino occurs along the Pacific coast of the Americas. Here, the normally cold, nutrient-rich ocean currents fail causing a break down in the food chain. This has enormous impacts on the marine ecosystem and commercial fishing industries in this part of the world. Furthermore, heavy precipitation events go hand-in-hand with El Nino causing significant flooding, landslides, and infrastructure damage. In fact, heavy precipitation events have significantly increased over most land areas since 1900 while at the same time more intense and longer droughts have been observed throughout the tropics and subtropics since the 1970s (IPCC, 2007b). This is another example of extreme and highly variable weather patterns correlated with global warming. Of course, all of these trends are expected to not only continue but increase in frequency and severity as global warming continues.

### *~ Extinction & Loss of Biodiversity ~*

Conservation biologists are reaching consensus that anthropogenic climate change is going to have severe ecological consequences. Understanding the problem is rational enough. Long-term warming temperatures, changing water regimes, longer droughts, disappearing sea and glacial ice, thawing permafrost, changing wind patterns, and more extreme weather patterns are profoundly changing the biosphere. Inevitably,

this is and will continue to impact ecosystems around the world as living organisms try to keep pace with these changes. The specific question on the mind of most conservation biologists' is, "how are ecological communities going to adapt to a rapidly changing climate?" Vastly altered plant and animal communities, the spread of invasive species, increasing rates of extinction, and the widespread loss of ecosystem services are the main concern. I am going to cover each of these, briefly, below.

Let us start with altered plant and animal communities. There is a common misconception that as the Earth continues to warm, ecosystems will migrate northward, intact. Those adhering to this belief, envision today's ecological communities still existing in their integrity, but simply moving higher in latitude or higher in altitude. This over simplistic view will be the exception rather than the norm. It rarely happened during the warming period following the end of the last glaciation and it is even more unlikely to happen in today's world. Paleontologists, especially those who specialize in the study of fossil pollen (palynologists), learned from past records that species have different migratory histories (Pielou, 1991). That is, every species making up an ecological community is unique in its ability to adapt and disperse in response to changing climatic conditions. Some species spread at faster rates and at different times. Consequently, the plant and animal communities that established themselves after the last glaciation were quite different from the communities they originated from. What resulted were entirely new classes of species associations and ecosystems.

We do not have to rely on historic records for this evidence – it is happening all around us today. Researchers have documented recent widespread northward shifts in species of mammals, birds, and butterflies throughout North America and Europe (McCarty, 2001). In Great Britain, for example, 59 species of birds and 34 species of butterflies shifted their range northward within the past several decades (Parmesan et al., 1999; Thomas & Lennon, 1999). This shift in range occurred faster than the plant communities they were formerly associated with. As a result, ecosystems are changing.

Plant communities are also changing in response to increased temperature and varying precipitation patterns. In the southwestern United States, for example, arid grasslands are being replaced by desert shrubland in response to climate change (Brown, Valone, & Curtin, 1997). This change in habitat has led to the extirpation of several locally abundant species (Brown et al., 1997). Northern latitude ecosystems are also under threat. The plant and animal communities adapted to cold, dry climates are losing ground in the southern portion of their boundary to species better adapted to warmer,

wetter climates (McCarty, 2001). Montane ecosystems are another high-risk ecosystem. As higher elevations warm, species from lower elevations advance upward pushing existing vegetative communities (i.e. alpine meadows, cloud forests, etc.) to the brink of extirpation (Grabherr, Gottfried, & Pauli, 1994; Still, Foster, & Schneider, 1999; U.S. National Assessment Synthesis Team, 2001).

Widespread changes in biotic communities have not been limited to terrestrial ecosystems. Ocean surface temperatures have warmed significantly off the coast of southern California over the past few decades. This has caused an 80% decrease in the amount of zooplankton which is likely responsible for species declines higher up the food chain (such as the collapse of the Sooty Shearwater population) (Roemmich & McGowan, 1995; Veit, McGowan, Ainley, Wahls, & Pyle, 1997).

Range and abundance are not the only ways species are affected by global warming. Phenology<sup>4</sup> is another. For example, a study of 65 species of breeding birds in the United Kingdom revealed that 78% of them were breeding, on average, nine days earlier in 1995 than in 1971 (Crick, Dudley, Glue, & Thomson, 1997). In New York, over half of the migratory birds studied (76 species) are now returning from their wintering grounds significantly earlier than they were at the beginning of the century (McCarty, 2001). Phenological changes are not limited to birds. Species of amphibians, insects (especially butterflies), trees, and spring wildflowers have all experienced significant changes in the timing of their life history traits (McCarty, 2001). Problems emerge when shifts in phenology result in a breakdown of symbiotic relationships and when basic species' requirements become mismatched with important ecological events. For example, bird species time their breeding cycle so that their chicks hatch at or around the peak abundance of insects. A variation of a few days can make a big difference. This has happened in the Netherlands with Great Tits. Their insect food source is now peaking nine days earlier and on the wane when Great Tit chicks hatch (McCarty, 2001). The result of less food is less reproductive success and a decline in the overall population. Darwinian theory suggests that individual Great Tits that breed earlier will increase their reproductive success and the species will adapt to this change in phenology. This may happen, however, climate change is happening so fast and impacting all ecological variables that it may prove to be impossible for the Great Tits to adjust their reproductive

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<sup>4</sup> Phenology, as used here, refers to long-term changes in the timing of species' natural history traits (i.e. the onset of courtship, nest-building, egg laying, flowering, hibernating, etc.) as a consequence of changing climatic conditions.

timing. Of course, this example of the Great Tit and its food source represents one specific (and simplified) case study. Shifts in species phenology are now pervasive and affecting the dynamic relationships between and within ecosystems in a manner that we are only beginning to understand.

Abundance, range, and phenology are just a few of the many ways species are likely to change in response to global warming. Physiology, behavior, and morphology will likely be others. The point is, change does not necessarily mean worse. So why are conservation biologists so concerned? A primary reason is the unprecedented rate and magnitude of our current warming trend. Once again, the main question is: “will ecosystems and their corresponding species be able to adapt quickly enough to keep pace with our rapidly changing climate?” For some biotic communities the answer is likely no. The U.S. National Assessment Synthesis Team (2001), predicts that some alpine meadows, mangroves, tropical mountain forests, and coral reef communities will disappear by 2100.

Another reason why conservation biologists are so concerned about the effects of climate change on biodiversity is that the landscape has been extremely modified since the end of the last glaciation. In this case, the past may not be key to the present. The present is not favorable to species dispersal and reestablishment (Schneider, 1997). Human activities have created significant barriers over the past couple hundred years. People have cleared natural areas, built freeways, constructed large cities (complete with urban sprawl), and developed huge agricultural zones, industrial parks, and military bases. Additionally, we have dug, cleared, or altered the landscape in order to extract natural resources (i.e. natural gas, oil, coal, water, forests, limestone, copper, etc.) and create massive landfills. How will these barriers affect plant and animal communities as they struggle to adapt to a vastly different climate? The outlook is worrisome since many of today’s biotic communities are already fragmented, polluted, and otherwise weakened.

Conservation biologists are also concerned about the spread of invasive species. Unfortunately, aggressive and highly adaptive invasive species are poised for proliferation under our new climate regime. In other words, the natural history traits of weedy plants, agricultural pests, mosquitoes, ticks, rats and others are best prepared to deal with unstable but warmer future conditions. Their proliferation will likely come at the expense of native species.

Taken as a whole, the synergistic effects of a rapidly changing climate, with profoundly altered ecological communities, combined with the likely spread of invasive

species could push many of the world's declining and most charismatic species to the edge of extinction. Already, a conservative estimate of 20,000-30,000 species become extinct every year (Meffe, Carroll, & Contributors, 1997). In the U.S., where we have already lost approximately 500 of our native species since European settlement, one has to wonder what the future has in store for our 1,264 federally protected species (USFWS, 2007). If the past is any indication, then American citizens should be deeply concerned about the potential of wide-ranging species extinction. At the end of the last glaciation, our continent experienced a mass extinction. Thirty-five to forty of our largest most charismatic species (i.e. mammoths, giant ground sloths, sabertooth tigers, camels, shruboxen, bison, giant beavers, etc.) disappeared between 12,000 and 9,000 years ago (Pielou, 1991). While some of the underlying causes remain controversial, we can be quite certain that a rapidly changing climate coupled with hunting pressure from indigenous peoples played a key role. It seems reasonable to assume that today's climate change coupled with pressures from contemporary human societies would have similar if not worse results for U.S. and globally threatened species.

It is important to remember that species are essential and defining components of healthy ecosystems. The loss of enough species can compromise the integrity of functioning ecosystems. Researchers have demonstrated that greater biodiversity leads to greater productivity and greater productivity leads to greater ecosystem stability (Tilman, 2000). How many species can we lose before entire ecosystems collapse? Paul Ehrlich's "popping-rivet" analogy helps explain the situation: "The Earth is like a plane flying in the sky and the rivets that hold the plane together are its inhabiting species. Losing one or two rivets from the plane is not critical. However, rivets are popping out of the plane at an unprecedented rate. The impending result is obvious... (Ehrlich & Ehrlich, 1981)." Ehrlich wrote that in 1981. Since then, the rate of global extinction has continued to increase, and if predictions are right, we can expect this trend to continue as another consequence of global warming.

### *~ Threats to Human Health ~*

Needless to say, when ecological communities change, when invasive species proliferate, and when species become extinct humans are affected. The quality of human life is utterly dependant on healthy and functioning ecosystems. Ecosystems cleanse the air and water, recycle nutrients, and provide us with fertile soils (Speth, 2004). Nature provides us with food, fuel, fiber, and medicines (Tilman, 2000). And, for countless

millions of people worldwide, nature provides aesthetic beauty, psycho-spiritual benefits, and recreational opportunities. Simply put, humans must protect the biodiversity and natural ecosystems that sustain our lives.

The potential loss of biodiversity and ecosystem services is not the only direct threats of a changing climate to human health. Other concerns include surging cases of heat stroke. The U.S., should especially take note: average U.S. temperatures are expected to increase 3-5 degrees C compared to 2.4 degrees C for the global average by 2100 (U.S. National Assessment Synthesis Team, 2001). There is scientific consensus that heat waves throughout this period will increase in both frequency and intensity putting segments of the human population (i.e. infants, elderly, poor, etc.) at a much greater risk of heat induced mortality. The 1995 Chicago heat wave and the 2003 heat wave that swept through Western Europe provides insight into what can be expected. In Chicago, temperatures reached 106 degrees F (41 degrees C) and resulted in the deaths of approximately 600 people (The University of Chicago, 2002). In Western Europe, over 30,000 people died in their heat wave (McMichael, Woodruff, & Hales, 2006). France was hit especially hard: temperatures exceeded 104 degrees F (40 degrees C) resulting in the death of an estimated 14,000 people (Diaz, 2006). Closer to home, the summer of 2006 saw record-breaking heat throughout Washington State. East of the Cascades, for example, temperatures exceeded 107 degrees F in places. Air-conditioning is the often the best option to prevent heat stroke. Unfortunately, air-conditioning is also energy intensive increasing the amount of CO<sub>2</sub> emissions and further exacerbating global warming.

Global warming is also likely to spread certain human diseases. The spread of seasonal asthma and other respiratory diseases is now under investigation. In the U.S., for example, rates of acute asthma increased from 19 to 35 per 10,000 children from 1979 to 2001 (Diaz, 2006). This trend is expected to increase as warmer, drier summers cause more forest fires resulting in greater levels of air pollutants. Malaria is also spreading to new altitudes and latitudes where it was absent just a few years ago (Diaz, 2006). The combination of global warming and increased precipitation is believed to be the cause. This is of great concern because malaria is already the number one insect-borne killer of people worldwide. Besides malaria, shorter, milder winters will likely result in the spread of other insect-borne infectious diseases such as West Nile Virus, St. Louis encephalitis, and Lyme disease in North America; dengue and yellow fever in Latin America; dengue and Japanese encephalitis throughout Asia; and Ross River fever in



Australia, just to name a few (Diaz, 2006). And, bacterial infections, such as salmonella and cholera, also proliferate under warmer conditions and are expected to thrive under future scenarios (McMichael et al., 2006).

## ***II. Impacts of Climate Change in the Northwest (especially Washington State)***

*"Climate change poses a profound threat to Washington's and the world's environment. The potential adverse impacts are of a scale and magnitude that are beyond daunting"*

*Jay Manning, Director, WA Dept. of Ecology*

Despite the fact that climate change is a global issue, the local impacts will be vastly different. To develop a better sense of how global warming will affect you, it is important to consider how global warming will affect the people, place, and region where you live. This section will focus on climate change impacts specific to the Northwest (Washington State, Oregon, & Idaho) with particular attention on Washington State and the Puget Sound region.

To start, it is important to realize that no matter which region you live in, global warming will likely exacerbate many of the natural resource and sustainability issues that already exist. The Northwest is no exception. Our region is already faced with significant sustainability challenges and threats to our biodiversity. For example, only 10-20% of our regions old-growth forests remain, freshwater availability and quality are a constant source of tension including periodic severe shortages (i.e. 1987, 1992, and 1999), many wild salmon stocks are endangered with nearly half of the 58 wild stocks currently protected under the Endangered Species Act, and our orca population is considered the most contaminated marine mammal population on Earth and in 2005 was placed on the Endangered Species List (Sightline Institute, 2006; U.S. National Assessment Synthesis Team, 2001). This list, of course, is far from comprehensive. The question to consider is, "how will global warming impact these and other natural resource and sustainability challenges our region already faces?" It is time to consider the impacts of climate change to Washington State and our region.

### ***~ Water Shortages ~***

There is no better place to start than with freshwater issues. To be sure, of all the global warming impacts the Northwest is likely to experience, none will be more problematic than water shortages. This may come as a surprise to some since the Northwest is widely recognized as being wet and rainy. However, this is over

exaggerated. Most of the precipitation our region receives occurs on the west side of the Cascades and even this area is fairly dry during the summer months. The truth is that the Northwest averages only about 20 inches of annual rainfall and water shortages are already a problem throughout the region (U.S. National Assessment Synthesis Team, 2001).

**Figure 5.** *The Columbia River Drainage Basin in Washington State.*



**Problems along the Columbia River.** No single source of freshwater better exemplifies the water problems of the Northwest than the Columbia River drainage basin. The Columbia River is the second largest river in the United States. It stretches for over 1200 miles as it cuts through Washington State and delineates the border between Washington State and Oregon (Figure 5). Without a doubt, it is the most heavily relied upon river in the region and its health and status are critical to the economy and quality of life for the millions of people who depend on it. This river sustains Native cultures and their traditions, supplies irrigation water for agricultural purposes, provides fishing opportunities, generates hydroelectric power, serves as habitat for endangered species, and allows for numerous recreational opportunities. Unfortunately, there is not enough water to support these multifarious needs and water shortages are a reoccurring problem.

Furthermore, this problem is going to get worse because the Northwest is experiencing a population boom. Since 1970, the regions population has nearly doubled with a growth rate almost twice that of the national average (U.S. National Assessment

Synthesis Team, 2001). In Washington State, population growth outpaced the national average 6.7% to 5.3%, respectively, from 2000-2005 (U.S. Census Bureau, 2007). For both the region and the state, this trend is expected to continue. Needless to say, more people will be demanding diminishing supplies of freshwater from the Columbia River basin further straining ecosystems, wildlife populations, agricultural productivity, and the economic and industrial sectors. And there is not much more that can be done. The Columbia River is already one of the most highly developed river systems in the world – it has been repeatedly dammed, drained, and altered. Yet, no one has figured out how to create more water. The result is an intense political battle (centered on value-sets) as to how available water should be allocated.

Battle-lines and value-sets are especially poignant and uncompromising in water issues. Water is highly valued for its aesthetic and recreational attributes (such as rafting, kayaking, fishing). It is valued as essential habitat for endangered species (i.e. such as salmon and/or riparian species such as migratory birds). Today, there is increasing recognition of the intrinsic value of in-stream flow. In other words, more people are demanding that more water be left in the river to support these recreational values and healthy ecosystems. At the same time, water is valued for economic growth and industrial purposes. And, most importantly, water is highly valued as a basic necessity to support human life (such as clean drinking water and crop irrigation). Supporting these values requires that water be pumped out of the river system. The point is, different values create different demands and as long as there is a water shortage there will continue to be troublesome value disagreements. Unfortunately, overcoming value disagreements require a cumbersome and long-term effort.

**The Problem in Yakima Valley.** The water situation in Eastern Washington is especially problematic. The Yakima Valley, which is the agricultural hub of Washington State, receives only seven inches of rain per year; making it one of the most arid places in the United States (U.S. National Assessment Synthesis Team, 2001). To be sure, the agricultural industry in the Yakima Valley is vital to the economy of Washington State. It is a \$2.5 billion industry (U.S. National Assessment Synthesis Team, 2001). Unfortunately, it can only be supported through irrigation. Much of the water provided for summer irrigation is supplied by melting glaciers and winter snowpack. The rest comes from the pumping of groundwater from aquifers (particularly the Odessa Aquifer). The problem is that the farmers in this region are pumping the groundwater faster than it can be replenished. Inevitably, wells run dry and crops fail.

How did Yakima Valley farmers get in this situation? When agricultural interests first settled in Eastern Washington they were granted water rights on the supposition that dam storage would provide future water for their use. Until then, they were free to siphon water from the Odessa aquifer. The dams were never built and more farmers (along with industry and municipalities) kept requesting and receiving additional water rights. As a result, the Odessa aquifer is being sucked dry at the same time demand for its water has been steadily increasing. This situation has forced the Department of Ecology to place a moratorium on permitting new water rights. Therefore, the problem in Eastern Washington with the Columbia River watershed can be boiled down to one straightforward reality that captures the larger problem throughout the region: water has been over-allocated and today there is simply not enough water to satisfy everyone's needs.

**Impacts of Global Warming on Existing Water Supplies.** So, how will global warming impact the existing water problem of the Northwest (particularly Washington State)? The short answer: water problems will be amplified. The severity of future water problems will be directly correlated to increases in temperature (especially during the summer months). As we know, the rate of warming is expected to increase, therefore, so are water problems. More specifically, Northwest temperatures increased between 1-3 degrees F (0.6-1.7 degrees C) during the 20<sup>th</sup> century and are expected to increase another 2 degrees F before 2030 (U.S. National Assessment Synthesis Team, 2001; Climate Leadership Initiative, 2006). The reason being that warmer temperatures in the Northwest translate into warmer, wetter winters and longer, drier summers. As a result, mountain snowpack will decline because warmer winters mean less precipitation falling as snow and longer summers mean existing snow will melt at a greater rate than it can be replenished. Already, the snowpack in the North Cascades is disappearing: average snowpack has declined at nearly  $\frac{3}{4}$  of the mountains studied thus far (Climate Leadership Initiative, 2006). Of course, warmer temperatures are also melting the region's glaciers. Glaciers in the North Cascades have lost nearly  $\frac{1}{3}$  of their volume since 1983 and by some estimates up to  $\frac{3}{4}$  of them may disappear by 2100 (Climate Leadership Initiative, 2006).

For a region already stressed by water issues, warmer average temperatures are an unwanted reality. Warmer temperatures cause an earlier spring runoff (snowmelt). In Puget Sound, for example, spring snowmelt is now occurring 12 days earlier than it did just a few decades ago (Snover et al., 2005). And disappearing glaciers coupled with a

diminishing snowpack means that less water is available to feed the region's rivers during the summer months. The combination of these factors means that these precious sources of freshwater are insufficient when they are needed most – in mid to late summer. The result is drought. Over the past 30 years, droughts have increased in both frequency and intensity. Streams have dried, crops have failed, fish have been killed, and revenue from hydroelectric power has been reduced (Climate Leadership Initiative, 2006). In the last few years, the Northwest has already experienced two severe droughts forcing gubernatorial intervention by declaring drought emergencies (Climate Leadership Initiative, 2006). In particular, the winter drought of 2004-05 was the worst in recent memory. By March the snowpack was only 26% of what it normally is (U.S. National Assessment Synthesis Team, 2001).

**Pacific Salmon.** Freshwater, as an available resource is not just threatening to humans, salmon populations are also at risk. All species of Pacific salmon (*Oncorhynchus spp.*) depend on freshwater for breeding purposes and to complete their lifecycle. When the Northwest Pacific salmon return to their natal grounds (between late summer and the end of fall) they depend on clean, cold, and oxygen rich water. Unfortunately, global warming is creating a situation where the flows are lower, the water is warmer, and the amount of dissolved oxygen is insufficient. And this all happens during the most stressful time in the lifecycle of the salmon – as they migrate upstream to their spawning grounds. It is exactly this combination of factors that weakens spawning salmon and causes the spread of pathogens. The result can be massive die-offs. For example, low flows and high temperatures appeared to be the ultimate cause of the massive Klamath River, California die-off of 2002 (where 20,000-30,000 fish died in the lower reaches of the river) (Quinn, 2005). And, on the Fraser River in 2004, there was a major die-off of sockeye salmon. Apparently the result of warm water temperatures (Climate Leadership Initiative, 2006).

The challenge for salmon populations does not end with the arrival to their spawning grounds. Low river flows can be problematic at anytime of the year for salmon. The drought of 2001 is a case in point. Juvenile salmon undertaking their annual migration from their natal grounds in the Columbia River to the ocean encountered extremely low-flowing sections of the riverbed and became stranded. Hundreds of thousands of salmon perished (Climate Leadership Initiative, 2006).

Another major problem salmon are encountering in the face of climate change is a disruption in the timing of their natural history events. Events, such as date of

spawning, length of incubation, time spent in freshwater, when to commence their migration to the sea, etc., are all carefully coordinated (through natural selection) to maximize the populations likelihood of survival. The timing of these events is not only specific to each population but are perhaps the most important set of factors influencing each populations long-term survival. Global warming is changing the environmental in such a manner that the timing of these events is being critically altered. For example, each population of salmon has a range of dates in which to spawn that will maximize its chances of survival. Water temperature is an important environmental factor because it determines the rate of embryonic development (Quinn, 2005). More specifically, the warmer the temperature the faster the embryo's metabolism and development is. Because of this relationship, adult salmon have "selected" a spawning date that optimizes their offspring's chance of survival. However, warmer temperatures may result in faster embryonic development throwing their reproductive cycle out of whack. If this was the only factor influencing the timing of important natural history events then we could be more confident salmon would adapt. However, levels of dissolved oxygen, nutrient availability, spring runoff, predator abundance, inter and intra specific competition, and ocean temperature are just a few of the many factors that influence important timing events in each population's lifecycle. Throw in already existing stressors such as habitat degradation and pollution, hatchery fish, commercial fishing pressures, disease, dams, and predators and it may be more than wild salmon populations can handle. Already, Northwest salmon have disappeared from nearly 40% of their former range and many of the remaining populations are in decline or at risk of extinction (Climate Leadership Initiative, 2006). Despite their protection under the Endangered Species Act and the fact that millions of dollars are spent annually on salmon research and recovery, climate change is likely to hinder or completely overwhelm conservation efforts. In Washington State, for example, it is estimated that only 38% of the salmon populations are healthy (Quinn, 2005). The others are either in jeopardy (22%), already extinct (16%), or information is insufficient to know (24%) (Quinn, 2005). As global warming continues to intensify it will compound already existing pressures on salmon evolutionary capabilities. To say the least, this ought to make one feel uncomfortable about the fate of this all-important Northwest species.

**Hydroelectricity.** Global warming will also affect energy production throughout the Northwest. This region is highly dependent on hydropower. In Washington State, for example, dams generate 72% of the state's electricity (Climate Leadership Initiative,

2006). As mentioned above, global warming is causing earlier peak flows in the spring and reduced in-stream flows in the summer. Consequently, hydroelectric energy production is reduced at the very time when it is needed most – during the hot, dry summer months – to run air conditioners. Because the summertime supply will be reduced and the demand will be greater, residents can expect to pay higher rates for electricity and the hydroelectric industry can expect to lose substantial amounts of money because the dams will be unable to reach their potential production.

**Groundwater.** The regions other main source of freshwater – groundwater – is also at risk from climate change. Glacial runoff and snowmelt are both important factors for recharging aquifers. Also, longer, warmer summers will increase the amount of evaporation that will contribute to drier soils. Inevitably, wells are going to run dry. None of this translates very well for the agricultural community or aspiring water-rights holders.

In sum, climate change is exacerbating water shortage issues throughout the Northwest. For sure, water allocation will be a continuing challenge for Northwest decision makers in the years ahead.

### *~ Rising Sea-Level ~*

Unfortunately, water availability is not the only threat to the Northwest from global warming. Rising sea-level is also a major concern. In Washington State, for example, a large portion of the population lives, works, and recreates near the states 2,300 miles of coastline (Climate Leadership Initiative, 2006). In some areas of the Northwest the problem is compounded by the fact that the land is also subsiding. South Puget Sound (between Tacoma and Olympia), for example, is subsiding more than 8 inches per century (or 2mm/yr) (Snover et al., 2005). The combination of sea-level rise with subsidence means that 1 to 5 inches of land per decade will be inundated by intruding salt water (Climate Leadership Initiative, 2006). A two-foot rise in sea-level, for example, would inundated approximately 56 square miles of land and displace over 44,000 Washingtonians (Climate Leadership Initiative, 2006).

**Coastal Erosion and Infrastructure Damage.** At the same time seawater is creeping closer to coastal communities, climate change is expected to produce more frequent heavy precipitation events and more powerful storms. This will not only increase the potential for landslides and erosion, but coastal infrastructure will be at an additional risk from storm surges and more intense wave action (Climate Leadership



Initiative, 2006). For example, above average winter rainfall contributed to the destructive 1999 landslide in the Carlyon Beach area of Thurston County. This landslide damaged 41 homes and millions of dollars worth the damage (Climate Leadership Initiative, 2006). Already, storm waves off the coast of Oregon and Washington have been measured eight feet higher today than only 25 years ago (Climate Leadership Initiative, 2006). By all accounts, the rate of property and road damage is expected to increase as a result of flooding and greater wave action.

**Salinization of Aquifers.** Rising sea-level is also a threat to coastal and low-lying freshwater aquifers. The fear is saltwater intrusion. As mentioned above, aquifers are already at risk from over-pumping and reduced recharge. The last thing coastal communities need is for their groundwater to become contaminated by saltwater. Unfortunately, this is likely to become reality as sea-level continues to rise.

**Salt Marshes.** Another impact of rising sea-level will be the likely loss of coastal salt marshes. From an ecological standpoint, these areas are incredibly important. They serve as nurseries for all kinds of aquatic organisms, are feeding grounds for shorebirds and wading birds, they purify the water, regulate levels of dissolved oxygen, and serve as buffer zones between the sea and shore (Snover et al., 2005). Regrettably, somewhere close to  $\frac{3}{4}$  of the salt marshes that once existed in Puget Sound are now gone due to human activities. The character of the remaining salt marshes are highly affected by sea-level, salinity, temperature, and varying levels of freshwater inputs (Snover et al., 2005). Global warming will influence all of these factors. Whether or not salt marshes can overcome these near-term changes is a matter of speculation. What is certain is how important they are to the communities and biodiversity in the coastal Northwest.

### *~ Forest Ecosystems ~*

The forest ecosystem is incredibly important to the people of the Northwest. The typical Northwest resident is hard-pressed to travel very far without encountering a stand of trees. Over half of Washington State (22 million acres out of 43 million acres) is forestland (Climate Leadership Initiative, 2006). These forests are essential for their ecosystem services, biodiversity, aesthetic value, and for the recreational opportunities they provide. In particular, half of the world's temperate rainforests are found in this region and are considered to be among the most biologically productive and beautiful places on the planet (U.S. National Assessment Synthesis Team, 2001). For many people these massive, dense, dark, and moist forests are some of the most awe-inspiring places

on Earth. Taken together, the Northwest forest defines the character of its people. Washington's motto as "The Evergreen State" is only one indicator of this.

However, even these highly revered forests are not immune from the threats of modern day society. As mentioned above, approximately 80% of the old-growth forests have been harvested and no longer remain. By one account, this activity has resulted in the release of over 2 billion metric tons of carbon into the atmosphere (U.S. National Assessment Synthesis Team, 2001). Particular species, like the ponderosa pine (which formerly covered  $\frac{3}{4}$  of the eastside of the Cascades), have been so selectively targeted that less than 10% of their stands remain (U.S. National Assessment Synthesis Team, 2001). Furthermore, a growing population coupled with urban sprawl, air pollution, clearing forests for agriculture, and invasive species will continue to threaten the composition and character of Northwest forests.

**Forest Fires.** Like all aspects of the biosphere, global warming is also impacting Northwest forests. Longer, drier summers are increasing the frequency, size, longevity, and intensity of large forest fires. The number of annual large forest fires (greater than 500 acres in area) are more than three times more frequent today than they were in the 1970's (Climate Leadership Initiative, 2006). Additionally, the number of acres projected to burn annually, will double by 2040 (Climate Leadership Initiative, 2006). This will not only cause air quality problems but will also threaten communities and precious forest resources when these fires burn out of control. Fires are also an effective means to rapidly release decades of stored carbon into the atmosphere in a very short period of time. Obviously, this positive feedback mechanism will further contribute to global warming.

**Insect Outbreaks.** Under the influence of a new climate regime, Northwest forests are ripe for massive insect infestations. Bark beetles, for example, have a lower rate of mortality during shorter, milder winters. These circumstances not only extend their breeding season, but more survive to reproduce. Additionally, much of the logged old-growth forests throughout the Northwest, have been replanted with dense, even aged stands of the same type of trees. Under these conditions the spread of bark beetles can be rampant. Huge tracts of standing dead trees, all in close proximity, only facilitate the likelihood of forest fires. This exact situation is currently happening in the Tongass National Forest in Alaska. Millions of acres of forest have been killed by bark beetles and every summer there are massive forest fires. Closer to home, in British Columbia,

Canada, more than 21 million acres of forest have already been killed by the beetle and that number is likely to triple in the next few years (Climate Leadership Initiative, 2006).

As mentioned earlier, drought conditions are likely to increase under the new climate regime. Because droughts stress trees they make them less resistant to insect pests. Studies have shown a direct correlation between outbreaks of bark beetles, spruce budworms, and other defoliating insects with drought conditions (Swetnam & Lynch, 1993).

**Forest Productivity.** Not all of these impacts are potentially bad. Trees, of course, breathe in CO<sub>2</sub> and convert it to food (carbohydrates) through photosynthesis. Therefore, increasing the amount of atmospheric CO<sub>2</sub> may increase the growth rate and productivity of managed forests (U.S. National Assessment Synthesis Team, 2001). However, trees also need water in combination with CO<sub>2</sub> in order to grow. As it turns out, water (in the form of soil moisture) may be in short supply especially in the arid eastern part of the region. In sum, the combination of drought, reduced soil moisture, insect pest outbreaks, and more frequent and intense large forest fires will likely offset any long-term benefit increasing levels of CO<sub>2</sub> may have on Northwest forest ecosystems (U.S. National Assessment Synthesis Team, 2001).

### *~ Economic Consequences ~*

Obviously, the costs of global warming are not only measured in frequency of forest fires, inches of sea-level rise, occurrence of water shortages, or any of the other impacts associated with global warming, they are also starting to be measured in economic terms. In fact, the Climate Leadership Institute out of the University of Oregon just completed the first ever state-level assessment of the economic costs of climate change to the state of Washington<sup>5</sup>. To be sure, there are significant information gaps in that report. Imagine the daunting task of determining (with a reasonable degree of certainty) the total cost of all possible economic impacts associated with global warming. There are many assumptions and uncertainties. As a result, no final all encompassing lump sum can be given at this time. Furthermore, the researchers took a conservative approach so what figures are available are likely underestimated. Nevertheless, this is a highly valuable

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<sup>5</sup> In this section, I relied heavily on the results of the Climate Leadership Initiative Report. The full report, and all of its details, can be accessed through the Washington State Department of Ecology website: <http://www.ecy.wa.gov/climatechange/>

assessment and a great place to begin our look into the fiscal costs of global warming to Washington State.

**Water Shortages Associated with Longer, Drier Summers.** The most easily quantifiable costs associated with global warming come from straightforward projections stemming from water shortages. For example, we know that global warming will likely result in longer, drier summers throughout most of Washington State. As a result, Seattle, Spokane, and Yakima-area communities are all likely to face water conservation costs of \$8 million annually by 2020, while at the same time the state government will spend an additional \$680,000 per million gallons per day in conservation efforts (Climate Leadership Initiative, 2006).

Another major concern with longer, drier summers is a lack of irrigation water needed to support Washington's multi-billion dollar agricultural industry. Eastern Washington, for example, provides our nation with 60% of its apples and a significant portion of other crops (i.e. wheat) and fruit (U.S. National Assessment Synthesis Team, 2001). The Climate Leadership Institute estimates that summer droughts could cost Yakima Valley alone \$79 million per year by mid-century (Climate Leadership Initiative, 2006).

As mentioned earlier, global warming will also be a financial burden to the hydroelectric industry. This could present a significant economic impact for Washington State and its citizens because hydropower is produced relatively cheap and it comprises the overwhelming majority (72%) of all electricity produced in the state (Climate Leadership Initiative, 2006). Right now, Washington State residents pay some of the lowest energy rates in the nation (i.e. 9<sup>th</sup> lowest in 2003) (Climate Leadership Initiative, 2006). Global warming is likely to change this desirable condition, because the supply of hydroelectricity will, at best, remain the same while summertime demand increases. Unfortunately, lower summer in-stream flows are less able to generate electricity at the time when more electricity is needed to run energy intensive air-conditioners and irrigation pumps. Furthermore, Washington's rapid population growth will add further demand to limited supplies. Inevitably, this increase in demand will increase the cost of electricity.

Fortunately, milder winters will reduce the energy needed to heat homes. Consequently, demand and cost will likely be lower during the winter season. However, these savings will be more than offset by a protracted and more intense summer season. Researchers at the University of Washington concluded, under a wide variety of

scenarios, that up to \$165 million could be lost annually in Washington's hydroelectric industry (Climate Leadership Initiative, 2006). Complicating the situation will be the unknown affects of warmer temperatures on juvenile salmon. If water temperature increases too much, it could result in massive die-offs of salmon. Dam managers will be forced to consider the release of precious water through dam spillways in order to save federally protected salmon populations (Climate Leadership Initiative, 2006).

**Forest Resources.** I mentioned above some of the ways Washington's forests will be affected by climate change. Obviously, economic impacts will be profound as these vast forests are a vital component to the regions economy. Over 43,000 Washingtonians have jobs associated with the timber industry (Climate Leadership Initiative, 2006). Coniferous trees, for example, are especially abundant and they provide our country with about 3.6 billion board feet annually or about ¼ of its softwood lumber and plywood (U.S. National Assessment Synthesis Team, 2001; Climate Leadership Initiative, 2006). Forest fires may prove to be the largest drain to Washington State's timber industry. Global warming is expected to be the cause of a doubling of the number of acres burned annually by 2040 (Climate Leadership Initiative, 2006). The Climate Leadership Initiative figures that the cost of fire prevention and response to Washington State could double from \$26 million today to \$52 million by 2040 and the direct costs of fighting wildfires could increase 50% by 2020 (exceeding \$75 million annually) (Climate Leadership Initiative, 2006)<sup>6</sup>. These costs do not account for a loss in timber sales, health impacts due to air pollution, tourist revenue lost from park closures, or other costs associated with forest fires. The total cost of increased forest fires to Washington State could be 4-5 times the estimates stated by the Climate Leadership Initiative (2006).

Besides the obvious loss of product from forest fires, timber yield is likely to also decrease due to reduced soil moisture, spread of disease, and insect infestations associated with warmer summer temperatures. Though there are no current quantitative estimates as to how much this might cost, one study out of California predicted an 18% reduction in yield (Battles et al., 2006). Surveys have revealed that forest managers are not overly concern about how climate change will impact their productivity because they feel that increased CO<sub>2</sub> and warmer temperatures will actually increase yield in the short-term (U.S. National Assessment Synthesis Team, 2001). However, as this study indicates, forecasts for long-term yields are much less promising.

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<sup>6</sup> This does not include federal expenditures in Washington State that are also expected to double from \$24 million to \$48 million by 2040.

**Public Health Costs.** Washington State health costs are likely to increase as a result of global warming. We have already seen that the frequency and intensity of forest fires will increase and this will significantly reduce air quality. According to the Washington Department of Health, costs associated with asthma, for example, currently cost the state about \$400 million per year (Washington Department of Health, 2007). Unfortunately, Washington State has one of the highest rates of asthma in the country and it is increasing faster than the national average (Center for Disease Control and Prevention, 2007).

In September 2006, Washington State saw its first case of West Nile Virus (Center for Disease Control and Prevention, 2007). Future climate scenarios (droughts punctuated by short periods of intense rain), favors the spread of West Nile Virus. By considering what West Nile Virus has cost other states, health officials can project what it might cost Washington State. That projection is between \$20 and \$25 million per year (Center for Disease Control and Prevention, 2007). This does not include the “value of a statistical life” estimate. If the number of deaths is estimated and a “statistical life” is factored in then the annual costs exceed \$670 million (Climate Leadership Initiative, 2006).

**Sea-Level Rise and Flooding Damage.** Washington State’s vulnerability to sea-level rise may turn out to be the most costly effect of global warming. There are no comprehensive estimates as to how much this may cost, but undoubtedly, if sea-level rise projections occur, the price tag will be in the billions of dollars. Specific projects help to shed light on the enormous potential costs. Seattle’s Alaskan Way seawall, for example, if it is re-designed to factor in a 2-foot rise in sea-level, would cost an additional \$25-\$50 million (Climate Leadership Initiative, 2006).

The Climate Leadership Initiative is clear to express how a final, lump sum, cost of global warming to Washington State cannot be estimated. The dynamic relationships between different economic sectors and on the economy as a whole are too complex for comprehensive projections. Additionally, the fiscal impacts of global warming on Washington State tourism, recreation, agriculture, commercial fishing (declining salmon stocks especially), wine production, and dairy revenues are just a few of the many economic sectors where uncertainties are so prevalent that even rough estimates are difficult to make. One of the challenges, of course, is the fact that Washington’s economy is very much influenced by the economic conditions outside of state and national borders. For example, how will the specific impacts of global warming to Alaska, California, or Japan influence Washington’s economy? A difficult analysis, to

say the least. For these reasons, economists are only beginning to examine the potential costs of global warming and the estimates that are available are crude. Despite this, one relationship is seemingly obvious: *the economic costs of climate change in Washington State (and elsewhere) will grow as temperatures increase* (Climate Leadership Initiative, 2006).

### ***III. Chapter Summary***

It is critical for policymakers and citizens in general to understand the ongoing and potential impacts of global warming. Only then can informed decisions be made on how and when to address global warming. In this chapter, we have seen that climate change is a global problem for two specific reasons. First, the greenhouse gas emissions of one nation or region will impact the climate of other nations and regions. Second, no nation will be impervious to steadily increasing global temperatures and the impacts associated with them. This is especially true in today's highly globalized world where cultures and economies are dependent on events happening elsewhere. With this being said, specific local and regional impacts of global warming will be quite different and it is important for individuals to understand these impacts. "How will global warming affect the people and the place where you live?" is a question everyone should ask.

Until recently researchers have focused primarily on the geophysical impacts of climate change. However, serious attention is now being given to its economic costs. These impacts will be substantial and are a critical component in helping us to understand the full spectrum of climate change impacts.

Finally, a key theme underlying this chapter is that global warming will further exacerbate many of the social and environmental problems we already face as a modern-day civilization. Taken as a whole, global warming is a pervasive and significant threat to needs to be addressed.



## CHAPTER 3

### *A Time for Action:*

#### *The Imperative Need to Reduce Greenhouse Gas Emissions*

*“We have to stabilize emissions of carbon dioxide within a decade, or temperatures will warm by more than one degree. That will be warmer than it has been for half a million years, and many things could become unstoppable. It's hard to say what the world will be like if this happens. It would be another planet.”*

*James Hansen, Director of the NASA Goddard Institute for Space Studies, 2006*

#### **I. A History of Business-As-Usual**

The issue of anthropogenic global warming is not new. Scientists have been studying the issue for over 100 years. For example, as far back as 1904, Swedish scientist Svante Arrhenius was researching what possible effect the doubling of CO<sub>2</sub> would have on our planet's climate regime (PBS, 2005). And, in the 1950s, Roger Revelle and Hans Suess demonstrated that the widespread burning of fossil fuels were causing global atmospheric CO<sub>2</sub> levels to rise (PBS, 2005). Global warming, as a political issue, is not new either. In the 1980s, representative Al Gore (D-TN), co-sponsored the first congressional hearings on the subject; and in 1988, NASA climate scientist James Hansen, submitted a report to Congress with a warning that global warming will have major social and environmental impacts (PBS, 2005). Also in 1988, the international community began to organize on the issue. The United Nations Environment Programme and the World Meteorological Organization established the Intergovernmental Panel on Climate Change. Its purpose was to thoroughly investigate global warming from a scientific, socio-economic, and policy perspective. The Intergovernmental Panel on Climate Change has since published four comprehensive reports with contributions from over 1,000 of the world's leading climate scientists. The four reports evolved from a suggestion of human induced global warming (First Assessment Report, 1990) to a greater than 90% probability that human activities are contributing to the unequivocal warming our planet is experiencing today (Fourth Assessment Report, 2007). Personally, I remember lengthy and unsettling discussions on global warming in my high school Earth Science class in 1989.

Yet, through it all, most of the industrialized world has done very little (if anything) to address the problem. The U.S., in particular, is the world's leading laggard. America emits an overwhelming majority (22%) of the world's anthropogenic

greenhouse gases and instead of making an effort to lower or even stabilize emissions they continue to rise (Porter et al., 2000). The EPA recently reported that from 1990 to 2004, total U.S. greenhouse gas emissions rose 15.8% with an increase of 1.7% from 2003 to 2004 (the latest year the EPA had complete data for) (EPA, 2006b). Moreover, a 2007 White House report to the United Nations projected that the U.S. would increase their 2000 level emissions 20% by 2020 (McKibben, 2007).

One has to wonder why. Why – after 100 years of scientific investigation, decades of congressional hearings, nearly 20 years of international scientific collaboration, and in light of all the potential consequences that global warming imposes – has the global community utterly failed to take decisive action? There are three overarching reasons:

1. **Scientific Uncertainty.** A lack of consensus among the scientific community is a primary reason why modern civilization has failed to properly address global warming. Despite many decades of scientific inquiry, the science has been somewhat inconclusive. How could anyone expect otherwise? The climate system routinely fluctuates and is very complex. As a result, the debate as to whether global warming was occurring and whether human activities were responsible for it persisted. In fact, as late as the 1960s, the majority of scientists thought it impossible that humans could actually affect our planet's climate (PBS, 2005). To be sure, understanding global climate patterns as it relates to the human effect is a daunting challenge and scientific debate and uncertainty should be expected.

In the U.S., another disturbing trend has recently emerged. The integrity of science has been under attack. Junk science, partisan funding and research, filtering of objective science that is in disagreement with political motives, and crafty editing and neutralization of scientific reports have cast a large shadow of doubt over the level of confidence and trust the American people once placed in the scientific community. This neutering of science has reached unprecedented heights over the past few years and creates a genuine concern for citizens trying to understand what is going on with our climate and what we need to do about it. Nevertheless, the 2007 Intergovernmental Panel on Climate Change Fourth Assessment Report virtually closed the door on the issues of scientific uncertainty and integrity. The report concluded that it is an unequivocal fact that the planet is warming with a greater than 90% probability that human activities

are contributing to it (see Chapter 1). Furthermore, because the report had input from over 113 nations and over 1,000 of the world's leading scientists, eases concern over whether the report was done with integrity. As a result, scientific uncertainty over whether warming is happening and whether humans are contributing to it can no longer be considered acceptable reasons for inaction.

- 2. Perception that Global Warming is Benign.** For years, there was a pervasive view among the general public that global warming was not a significant threat. After all, CO<sub>2</sub> (the villain greenhouse gas) is not exactly a frightening pollutant. It does not excite people into action the way other pollutants might. On the contrary, CO<sub>2</sub> is a basic and necessary component of our atmosphere. It makes life as we know it possible. Recognizing this, Svante Arrhenius in 1904, was the first of many scientists to suggest that warming would make the climate more favorable to humans and that an increase in atmospheric CO<sub>2</sub> would favor plant growth and world food production (PBS, 2005). For decades, the fossil fuel industry also promoted the vision of a greener more comfortable planet that would accompany increased CO<sub>2</sub> emissions. Undoubtedly, the thought of longer, greener summers, and shorter, warmer winters sounds quite welcoming to millions of residents living in northern latitudes in January. This view quells the social will to take compromising action against global warming.

Furthermore, even citizens who are concerned about global warming may not place it high on their list of things to act upon. To them, there may be more pressing social issues to be concerned about. War, disease, substantial poverty, social and environmental injustice, population growth, sustainable use of natural resources, etc. are all important issues of our time. In the United States, major political concerns currently include, threats of terrorism, the war in Iraq, immigration reform, economic growth and prosperity, health care, and social security. How important is the threat of global warming when compared to these other societal challenges? In short, very important. Working Group II of the Intergovernmental Panel on Climate Change (2007a) reported that climate could threaten the lives of hundreds of millions of people in this century. And, as we saw in Chapter 2, the consequences of global warming will exacerbate many other social and environmental issues that we already deem to be important.

The point is, the looming consequences of global warming are a major cause for concern. Visions of a global warming utopia have been replaced by

images of more intense hurricanes, flooding coastlines, calving glaciers, and apocalyptic views such as those depicted in the movie “The Day After Tomorrow.” A Doomsday scenario aside, the fact is, our modern-day civilization (since the Industrial Revolution) has been built under a relatively stable and predictable climate. That climate helped establish the “ground rules” for development, for industry, and for establishing cultural identity. Climate helps determine where we live, how we build, how and where we grow our food, etc. A rapid modification of the “rules” changes the game and sets the stage for harsh consequences.

In the previous chapter, I predominately focused on the negative impacts of global warming. To be sure, global warming will also have a suite of benefits. For example, milder winter temperatures will result in fewer deaths per year associated with exposure, longer agricultural growing seasons are expected in northern latitudes, and perhaps some land managers will benefit from increased forest productivity (over the short-term) (IPCC, 2007a). In the United States, overall agricultural output is not expected to be significantly impacted by global warming (U.S. National Assessment Synthesis Team, 2001). And, some nationally important crops, like Washington State’s \$524 million wheat yield, may actually increase under a new climate regime (Thomson et al., 2002; Climate Leadership Initiative, 2006).

However, no reputable scientist, policymaker, or informed citizen can cogently argue that global warming will have a net benefit for humanity. In fact, the potential negative consequences are so likely and so severe that no one has attempted to make this argument. Global warming as a benign situation can no longer be used to rationalize inaction.

3. **Fighting Global Warming is Economically Irrational.** The combustion of fossil fuels is the number one source of greenhouse gas emissions. Globally, over 25,500 Tg<sup>7</sup> of CO<sub>2</sub> are added to the atmosphere every year from the burning of fossil fuels (EPA, 2006b). And, in the United States, meeting our energy needs contributes over 86% of our GHG emissions (EPA, 2006b). Any serious attempt to reduce emissions would require a complete overhaul of our industrial and economic systems because our entire infrastructure is designed for the extraction, transportation, and combustion of fossil fuels to provide our energy and

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<sup>7</sup> Tg = teragram. One teragram = 1,000,000,000,000 grams or 1,000,000,000 kilograms

transportation needs. Certainly, a radical shift away from fossil fuels would come with its own set of risks. Economic prosperity, human health and well-being, and individual standard of living could all be compromised. Today's loudest voices against aggressive action to reduce greenhouse gas emissions are coming out of the economic community. Their argument is clear. Many economists claim that it is economically dangerous to substantially reduce greenhouse gas emissions and the consequences of global warming are just not worth the risk. Jonah Goldberg, contributing editor for the National Review Online, captured their sentiment when he wrote in a February 2007 article that global GDP rose about 1,800% in the 20<sup>th</sup> century. The cost? ...about 0.7 degrees C of warming. The benefits? ...longer lifespan, better healthcare, less poverty, and an overall better quality of life. Given the option of another 1,800% increase in global GDP during the 21<sup>st</sup> century for another 0.7 degrees C of warming, Mr. Goldberg wrote that he would "take the heat in a heartbeat (Goldberg, 2007)."

The fear of economic slowdown or even collapse cannot be taken lightly. In fact, it is a major reason why the international communities greatest attempt to combat global warming – the Kyoto Protocol – ultimately failed. The U.S., for example, would have been required to reduce greenhouse gas emissions 7% below 1990 levels. When our elected officials realized this would cost approximately \$1,000 per household per year and result in the premature disposal of expensive "capital stock" they decided against ratification (Victor, 2001). To be sure, the fact that developing nations such as China and India were not held accountable under Kyoto is also an important reason for the protocol's demise. However, that reason is also economic. Developing nations would have an economic advantage because it is cheaper to continue with a business-as-usual scenario while the U.S. and other industrialized nations would be forced to make expensive investments in order to comply with aggressive emission standards.

## ***II. U.S. Inaction is No Longer a Rational Option***

Today, economic fears remain the number reason why global warming skeptics are against aggressive measures to reduce greenhouse gas emissions. However, economic fears are no longer a sensible reason for inaction either. Economists are in the early phase of determining what the true financial costs of global warming may be. The

conclusions from these initial studies are staggering and support the hypothesis that inaction is irrational.

The remainder of this chapter will focus on the United States and layout the reasons why inaction can no longer be justified. While much of this discussion will revolve around economic consequences of inaction, there are three general topic areas to support aggressive action against global warming:

1. **Economic Opportunities.** Undeniably, there will be risks associated with an aggressive campaign to shift our energy economy away from fossil fuels to one that is cleaner and more sustainable. However, economists and policymakers often overlook the enormous potential for economic prosperity and the corresponding costs of inaction.

At the state level, California offers one example where aggressive policies and investments have been economically beneficial. Over the past 30 years (while the U.S. government has failed to take decisive action on global warming), the state of California (whose populous and economy is larger than many nations) has invested in newer, cleaner, and more energy efficient technologies (Kammen, 2007). At the same time, California has shutdown many outdated and polluting coal-fired electric generating plants (Kammen, 2007). As a result, California's energy use per person has remained constant for over 30 years while they have grown jobs and their economy has surged. Moreover, as a state, California is going to beat the targets established by the Kyoto Protocol.

On the other hand, the state of Michigan offers a stark contrast. In the 1970s Michigan decision makers bet against global warming and a surge in oil prices. They continued to ignore the opportunity to invest in energy efficiency and cleaner technologies. Detroit automakers in particular carried on with a business-as-usual scenario and today the state is mired in debt and staring at an uncertain future (Rabe, 2007). While Detroit's problems run deeper than their shunning of global warming (i.e. union demands, pension plans, foreign competition), it is certainly a major factor in their problems of today.

At a national level, Denmark provides a good example of how countries can prosper with aggressive policies and actions to thwart global warming. Denmark embraced homegrown, renewable energy in the 1970s and today they are world leaders in wind energy technology. Over 20% of Denmark's electricity comes from wind energy (compared to only 0.7% in the U.S.) and the industry

provides more than 20,000 jobs and the Danish company Vestas controls over 35% of the market in the manufacture and sales of wind turbines (Schulte, 2007). Denmark is also revered for their global stewardship and this cannot be overlooked as another important reason why reducing carbon emissions can be beneficial.

On a global level, the 2006 Stern Review, published by the United Kingdom's Treasury Department, concluded that inaction today could cause economic and social disruption equal to the World Wars and economic depression experienced in the early part of the 20<sup>th</sup> century. The Stern Review estimates that an investment of 1% of GDP per year over the next 10-20 years could avoid the most catastrophic consequences of global warming (Stern, 2007). On the other hand, if the global community continues with a business-as-usual scenario the cost of global warming could reach 20% of annual GDP "now and forever" by the latter part of the 21<sup>st</sup> century (Stern, 2007). Clearly, action today demonstrates moral integrity, judicious decision-making, and fiscal responsibility.

2. **The Oil Crisis.** In the U.S., oil consumption is the number one contributor to global warming – even more than burning coal for electric power generation (Klare, 2005). Roughly, 45% of our carbon dioxide emissions come from burning oil through the transportation sector (Klare, 2005). However, U.S. dependency on oil is not only a global warming problem, it is also a geopolitical problem. In fact, America's dependency on oil (especially on foreign oil) can be characterized as a crisis. Oil provides 40% of our total energy needs; however, we do not have enough of our own supply to meet a 20 million barrel per day (bpd) consumption rate (Roberts, 2004; The National Commission on Energy Policy, 2004). This is not a new situation: domestic demand exceeded supply in 1946 when for the first time the United States became a net oil importer (Roberts, 2004). Our reliance on foreign oil became more pointed in 1970 when domestic production peaked at 9.6 million bpd and has steadily declined since (EIA, 2003). As a result, America's reliance on foreign imports is growing annually: our demand continues to increase while our domestic supply decreases (Riley, 2004). Today, we are forced to import a staggering 12 million barrels of oil every day (Roberts, 2004). This problem of foreign oil dependency has become a crisis for several reasons:



- i. Global competition for diminishing oil supplies is intensifying. Global demand is forecasted to increase by 50% by the year 2025 (The National Commission on Energy Policy, 2004). However, since 1995, the world has consumed 24 billion barrels of oil annually while discovering only 9 billion barrels of new oil annually (Roberts, 2004). The competition for remaining oil is exacerbated by the fast growing economies of China and India who are aggressively pursuing a seat at the oil bargaining table. To say the least, this places the United States in a vulnerable situation.
- ii. It is a geologic fact, global oil production will peak and no longer be able to meet global demand. This is known as Hubbert's Peak and no one knows with a high degree of certainty when this "peak" will occur. Some geologists, industry analysts, and government officials believe that Hubbert's Peak will be reached soon, possibly even this year, while the majority predict sometime between 2010 – 2015 (Hirsch, 2005; Roberts, 2004). Whenever peak production is realized, it will cause oil prices to rise suddenly and dramatically; most forecasts predict oil prices will rise to over \$100 per barrel and stay there permanently (Klare, 2005; Roberts, 2004). For our society and economy that is dependent on cheap oil, this price spike would slow manufacturing, transportation, and most commercial activity while causing the cost of goods and services to increase (Roberts, 2004). In the words of author Paul Roberts (2004), this would drive the "entire economy into an enduring depression that would make 1929 look like a dress rehearsal." According to Hirsch et al. (2005), this dreadful scenario can be mitigated but preparations must be initiated at least 10 years in advance of peak oil. Currently, the U.S. is not making significant preparations towards a post oil energy economy.
- iii. Crude oil is now over \$60 per barrel (compared to an average of \$17 per barrel in 1999), meaning that every barrel of high priced oil that we import is adding to our record high trade deficit that is approaching \$700 billion annually (Bureau of Economic Analysis, 2005).
- iv. Buying foreign oil transfers enormous amounts of money from our national treasury to politically unstable oil-rich regimes that financially support some of the most brutal and anti-American networks in the

world. Publicly, this has become a salient irony since the terrorist attacks of 2001.

- v. Defending our foreign oil supplies is a risky proposition. While the role of oil in our recent military campaigns in the Middle East is debated, oil certainly has *something* to do with it. Protecting our foreign oil supply with military force is not clandestine. In the 1980 State of the Union address Jimmy Carter warned "let our position be absolutely clear: an attempt by any outside force to gain control of the Persian Gulf region will be regarded as an assault on the vital interests of the United States of America. And such an assault will be repelled by any means necessary, including military force" (Jimmy Carter Library, 2004). The Carter Doctrine (as it is now called) still guides American foreign policy. For Americans, war is perpetually on the horizon. Any doubters should compare the world's largest oil reserves with the location of our international military presence.

America's growing dependence on oil threatens our economy, national security, and our quality of life. These issues cannot be thought of separately from oil's contribution to global warming: they are one of the same because they all threaten our long-term sustainability as a prosperous nation. Overall, switching our energy economy away from oil to newer, cleaner, more sustainable technologies is all-around good policy.

3. **Surprises.** Future climate projections are based on complex global climate models. Unfortunately, climate modeling is an inexact science. In fact, it is an art-form replete with uncertainties and assumptions. When scientists are faced with uncertainties and forced to make assumptions, they will, by nature, err on the side of caution. In other words, scientists do not like to be wrong and they inherently reduce their probability of making a mistake. In the case of predicting Earth's future climate regime, scientists favor assumptions that reduce the severity and potential impacts of global warming (because they can be more confident that these predictions will actually happen). The result of this is that the impacts of global warming – discussed in Chapter 2 – are *conservative* predictions of what is likely to happen. In other words, 21<sup>st</sup> century reality could be much worse. In fact, the U.S. National Assessment Synthesis Team (2001) states that the chances of unanticipated negative impacts from climate change are

“very likely.” These are often referred to as “surprises” and they may result in dramatic and irreversible consequences unforeseen in future climate predictions. Future “surprises” are likely to occur from three different sources:

- a. **Uncertainty.** Climate models attempt to numerically represent the biological, geological, and chemical processes of Earth’s environment as it relates to the sun and other influences (such as volcanic eruptions) (Berliner, 2003). This translation is imperfect and increases uncertainty in the models conclusions.

But, this is not the only type of uncertainty. Climate scientists are faced with others. And when they are, they are forced to make assumptions. In the case of climate modeling, assumptions are made for several reasons. First, the global climate system is very complex and only partially understood. For example, important aspects of the complex flow of carbon between the Earth’s soils, its plants, the oceans, and the atmosphere are still unknown (Schiermeier, 2007). Other critical uncertainties include the ocean’s ability to uptake CO<sub>2</sub>. A leading hypothesis suggests that as atmospheric CO<sub>2</sub> increases, it causes the ocean to acidify, reducing its ability to absorb more carbon (Schiermeier, 2007). Obviously, if this is true, it will cause an increase in the greenhouse effect. The point is, the ability of the ocean to uptake carbon under a warmer climate regime is largely unknown. Perhaps the single largest source of uncertainty involves cloud feedback. Clouds can both reflect incoming solar radiation (having a cooling effect) or they can block reflected radiation from escaping back into the atmosphere (having a warming effect). How clouds influence the climate depends on their density, height, form, and location (Karl & Trenberth, 2003). Again, this is a significant source of uncertainty for climate predictions.

Second, climate modelers depend on climatic records from the past. Unfortunately, these data are often incomplete or inaccurate. The work of paleoclimatologists, for example, is like that of a detective. They often have to base their conclusions on limited and sometimes insufficient evidence. As a result, paleontologists are forced to make assumptions; and, these assumptions become part of the data used by climate modelers.

Third, inevitable assumptions stem from the fact that what is happening to the Earth’s climate today is unprecedented (see Chapter 1). No one knows

how the Earth's climate system will react to anthropogenic warming – we are embarking in uncharted waters. Some people refer to global warming as humanity's experiment with Earth's climate system. However, by no means is anthropogenic climate change a controlled experiment; we know of no other planets similar to Earth to use as reference (Berliner, 2003). Therefore, computer modelers have to assume that the climate system will behave in a certain way without much verification. These are some of the reasons why climate projections based on global climate models are replete with uncertainties and assumptions.

- b. ***Positive Feedback Loops.*** When climate modelers do not scientifically understand certain climatic events or interactions, they often exclude this “uncertainty” from their calculations. In other words, some important characteristics of the global climate system are not factored into climate models. Climate feedback effects are a case in point. Relatively little is known about them and how they might enhance (or weaken) the rate and overall effects of climate change (Schiermeier, 2007). So, how does the scientific community deal with this situation? They exclude some feedback effects from their calculations. For example, the Intergovernmental Panel on Climate Change explains how they decided to exclude information on the climate-carbon cycle feedback because there is too much uncertainty and the data that is available is unpublished (IPCC, 2007b).

Excluding positive feedback systems from climate calculations is especially worrisome for two main reasons: 1) they are likely to occur; and 2) when they do occur they will result in climate impacts that will likely exceed the impact projections mentioned in Chapter 2. In other words, positive feedback systems are likely to result in greater warming, higher sea-levels, faster rate of melting ice, more hurricanes, etc., than those predicted by the Intergovernmental Panel on Climate Change and other climate assessment teams. Examples of positive feedbacks include:

- The water vapor feedback. Water vapor is by far the most powerful contributor to the greenhouse effect. When atmospheric temperature increases, the amount of water vapor the atmosphere can hold also increases (Karl & Trenberth, 2003; Lorius et al., 1990). This positive reinforcing cycle will significantly amplify the global

warming affect. However, because this affect is not fully understood it is not factored into future climate projections.

- Ice-albedo feedback. Another commonly known positive feedback loop occurs with the melting of snow and ice. Snow and ice (and other brightly lit surfaces reflect the sun's radiation having a cooling effect. When snow and ice melts (as a result of global warming) this bright surface is replaced with a darker surface that absorbs and further heats the planet (Karl & Trenberth, 2003). Of course, a warmer planet further increases the rate at which snow and ice melt. The result? A classic positive feedback loop.
- Atmospheric CO<sub>2</sub>. As we have discussed, when atmospheric levels of CO<sub>2</sub> increase so will global temperature. When global temperature increases it reduces the ability of the land and ocean to absorb CO<sub>2</sub>, thereby increasing the amount in the atmosphere, causing further warming. Another frightening example of a positive feedback loop that can increase the greenhouse effect beyond most 21<sup>st</sup> century predictions.
- Forests fires. Longer, drier summers will continue to increase the rate and severity of forest fires. When trees burn carbon is released into the atmosphere, further contributing to longer, drier summers.

c. **Thresholds.** The most complex and widely used global climate models all assume that climate change is linear. That is, climate trends will move in a steady and predictable direction. However, paleontologists and climatologists know that this is not true. The climate has thresholds and once they are breached abrupt and extreme climate events can occur. For example, scientists assume that the rate at which the Greenland Ice Sheet will melt, and the amount of freshwater flowing into the North Atlantic, will remain somewhat constant. As a result, they predict that the slowing of the global ocean conveyor belt will also occur in a predictable and corresponding manner. However, neither of these assumptions may be true. In particular, the North Atlantic Ocean current may have a temperature and freshwater threshold that once crossed could cause this section of the global ocean conveyor belt to shut down resulting in catastrophic climate change. However, the dynamics involved are so complex and there is so much

scientific uncertainty that scientists use the most conservative and reliable data. This approach caused the Intergovernmental Panel on Climate Change to conservatively conclude in their Fourth Assessment Report (2007a) that an abrupt transition of the North Atlantic ocean current is “very unlikely” in the 21<sup>st</sup> century but slowing of the ocean current is also “very likely.” Another threshold involves the arctic tundra. Currently, the tundra acts as an important carbon sink, however, there is scientific evidence suggesting that there is a warming threshold that when breach may turn the tundra into a carbon source (Schiermeier, 2007).

Uncertainty, positive feedback loops, and thresholds have not been factored into future climate projections. Certainly, they will increase the consequences and therefore the economic costs of global warming.

### ***III. Chapter Summary***

Over the past 100 years, scientific uncertainty, the pervasive belief that global warming was relatively benign, and economic recession have all been major reasons why decisive action has yet to be taken to combat global warming. The 2007 Intergovernmental Panel on Climate Change report put to rest any reasonable doubt that human activities are contributing to global warming. The scientific community has also made it quite clear that the consequences of global warming will be severe unless greenhouse gas emissions are reduced. Today, economic fears remain the number one reason why global warming skeptics are against aggressive measures to reduce greenhouse gas emissions. However, the science is absolutely clear: the impacts of global warming will occur for decades and perhaps centuries, whether society prepares for it or not. Societies that do prepare, can achieve economic growth and sustainability. Those that do not will face increasing geopolitical and economic costs as the impacts of global warming increase their intensity.

Most importantly, no one knows how warm Earth can get and how severe the true consequences may be. But, one thing is certain; every day that passes without aggressive action to thwart greenhouse gas emissions increases the likelihood of climate “surprises.” As the Intergovernmental Panel on Climate Change so clearly points out in their Fourth Assessment Report (2007a), impacts and economic costs will continue to increase with global average temperature. We already know that past anthropogenic greenhouse gas emissions will contribute to warming and sea-level rise for centuries into

the future (IPCC, 2007a). Society can no longer wait to reduce emissions; the global community must take action today to slow the rate of climate change. For all of these reasons, avoiding decisive action to combat global warming is irrational at best, and a crime against humanity at worst.



**PART II**

**EVERGREEN'S**

**GREENHOUSE GAS INVENTORY**

## **CHAPTER 4**

### ***The Evergreen State College Commits to Reducing Greenhouse Gas***

#### ***Emissions:***

#### ***The Goal of Carbon Neutrality by 2020***

#### ***I. Higher Education's Obligation to Fight Global Warming***

*"Leading society to reverse human-induced global warming is a task that fits squarely into the educational, research, and public service missions of higher education. There is no other institution in society that has the influence, the critical mass and the diversity of skills needed to successfully make this transformation."*

*Presidents Climate Commitment, A Call for Climate Leadership, 2007*

In many ways fighting climate change is one of the greatest and most perplexing challenges humanity has ever faced. The international community's most concentrated effort to reduce greenhouse gas emissions – the Kyoto Protocol – is in obvious need of amendment, as few nations will meet their target. Moreover, most scientists agree that global emissions need to be reduced 80% by 2050 in order to avoid the most serious impacts of climate change (Porter et al., 2000). This means that even if the Protocol succeeded it would be far too little. It would take an additional 30 to 80 Kyoto Protocols to stabilize global emissions (Goldberg, 2007; Kammen, 2007); humbling, since the international community cannot accomplish one. Furthermore, the U.S. continues to increase annual emissions, and China is planning on building one new coal-fired power plant per week for the next several years. Finally, even if emissions were somehow stabilized at 2000 levels, our planet will continue to warm and sea-level will continue to rise for decades (perhaps centuries). Clearly, the situation is problematic.

Faced with this reality, some economists and U.S. policymakers simply throw up their arms believing that mitigation is too costly and too late. They argue that adaptation is the better policy now. However, because there is no known upper limit on how severe the impacts of global warming may get and because we know that the fiscal costs of climate change will continue to increase with emissions, adaptation without mitigation is a dangerous public policy. Simply put, this way of thinking threatens societies' long-term viability.

What is needed is a new way of thinking. It is time for skeptics, laggards, and pessimists to step aside and make way for proactive leadership. Thinking about climate

change in a new way must be pervasive and infiltrate all levels of society. Additionally, the effort to fight climate change must be sustained – there is no quick fix to this problem. It will take aggressive research, technological innovation, whole systems thinking, and a much higher degree of environmental and ecological literacy. Clearly, these criteria fall directly into the purview of higher education. Without higher education's dedicated effort to fight global warming, society will be less capable of slowing the rate of warming and less capable of dealing with its effects. Let us examine the reasons why.

First, higher education is a powerful economic force. Currently, over 4,100 U.S. colleges and universities employ over 1.2 million faculty and enroll over 17 million students (National Center for Education Statistics, 2005). Obviously, this creates huge economic leverage. In fact, the higher education sector is a \$315 billion industry (National Center for Education Statistics, 2005) with billions being spent every year purchasing fuel and energy (The Apollo Alliance, 2005). Imagine if all U.S. institutions of higher education purchased 100% renewable energy – it would increase demand, increase production, lower the cost of manufacturing, and lower the overall purchasing cost. We have witnessed this trend in western Washington State. In 2005, The Evergreen State College and Western Washington University initiated a policy to offset 100% of their energy use by purchasing Green Tags<sup>8</sup>. The University of Washington (a much larger institution) followed suit by also agreeing to a 100% renewable energy policy. Suddenly, Puget Sound Energy had a huge customer-base interested in clean, renewable energy. Consequently, the cost of Green Tags and the cost of renewable energy have been substantially reduced. At the same time, the amount of investment targeted for new production of renewable sources or energy has grown exponentially which has increased production. This is a win-win-win situation for producers of renewable energy, Puget Sound Energy, and the region in general. This example demonstrates how the purchasing power of higher education can be used to reduce greenhouse gas emissions.

Second, our country's future political leaders, CEO's, engineers, architects, developers, scientists, lobbyists, business-owners, and educators are currently enrolled in college. Imagine if their educational experience included a robust practical and philosophical training in sustainability. If institutions of higher education incorporated a 100% renewable energy portfolio, they would become working models for every student

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<sup>8</sup> Specific information about Green Tags can be found on their website: [www.greentagsusa.org](http://www.greentagsusa.org)

that passed through their doors. If past graduates have led us down this unsustainable path – partly because they are energy and ecologically illiterate – then future graduates can be expected to help society change course towards a better, more sustainable energy economy (Cortese, 2003). No matter what economic sector they eventually find themselves in (or what level of employment) they would be prepared to contribute knowledge and ideological support towards sustainable planning.

Third, reversing global warming requires the advancement of renewable energy technologies such as solar, wind, geothermal, hydrogen fuel cells, biofuels, and others. Few institutions in the world are better situated for cutting-edge research than colleges and universities. Housed within academic institutions are some of the most innovative and brilliant minds in the world. They benefit from tax-free status, academic freedom, and are the recipients of billions of dollars annually in endowment funds (Cortese, 2003).

Fourth, solving the problems created by global warming and working to reduce emissions will take a motivated, interdisciplinary, and collaborative effort. Who else contains such a diverse level of brainpower and expertise in a central location? Moreover, the collegiate student body is highly motivated and creative. Already, tens of thousands of students in collaboration with faculty, staff, and community neighbors are forming new climate action groups, lobbying their administrators, fostering new community partnerships, and implementing innovative solutions to reverse global warming (Dautremont-Smith et al., 2006).

Fifth, many colleges and universities embrace a civic duty and moral responsibility to strengthen society and contribute to the public good. As former Vice President Al Gore so fervently reminds us, global warming is a moral issue (Gore, 2006). And, the latest Intergovernmental Panel on Climate Change Report (2007a) makes it clear that the most underprivileged people in the poorest nations are likely to be the most adversely affected by climate change.

Reducing greenhouse gas emissions 80% by 2050 is the greatest challenge of our time. Any chance of accomplishing this – and therefore overcoming the worst impacts of global warming – requires a new way of thinking, will take a fundamental transformation in the way society is organized, an overhaul of our economic system, landmark shifts in public policy, considerable investments in new infrastructure, considerable investments in research and development (in the hopes of inventing or advancing existing technologies), and extensive conservation efforts. And this must all be accomplished within one generation. Higher education has the influence, diversity of expertise, civic

duty, motivation, and fiscal resources to be leaders in the fight against global warming. And, therefore, has a critical role to play. As Tony Cortese (2003) of Second Nature so provocatively asks, “If higher education does not lead this effort, who will?”

## ***II. The Goal of Carbon Neutrality at The Evergreen State College***

If higher education must play an important role in fighting climate change, then The Evergreen State College is welcoming the responsibility. To start, Evergreen began purchasing 100% green energy in 2005. Which, according to the EPA, made it the 8<sup>th</sup> largest purchaser of green energy in the country by January 2006 (EPA, 2006a). However, this is nothing new, Evergreen has long been dedicated to environmental education and social activism. Moreover, Evergreen is widely known as a premier liberal arts college focused on interdisciplinary, collaborative learning. Evergreen’s faculty members are highly principled, they focus on teaching, and they strongly encourage student participation. Indeed, students are active participants in the learning process (not passive recipients of information). Through individual learning contracts, students have the added opportunity for community-based learning where turning theory into practical application is routine. It is just this mix of institutional principles that fosters sustainable thinking. As a result, Evergreen’s faculty, staff, and students have established themselves as leaders in the field of sustainability and have taken a prominent role in the fight against global warming.

Evergreen is one of the first institutions in the country to establish the all-important goal of becoming carbon neutral by 2020. Evergreen’s story of carbon neutrality begins with the formation of the Sustainability Task Force. Evergreen’s President and Vice Presidents created the Task Force in 2005 following three summers of faculty-initiated sustainability institutes. Members of the Task Force include the director of institutional planning and budgeting, the director of purchasing, the director of residential and dining services, the college engineer, ten faculty members, and two students. The initial charge of the Task Force was to create a long-term plan intended to guide the Evergreen community to a sustainable future. This “plan” was to become the new sustainability section in the College’s five-year Strategic Plan. As far as institutional planning goes, the strategic plan is an ideal place for sustainability. The Strategic Plan identifies Evergreen’s core values, guides operations, and is closely linked to budget allocations. I became the first coordinator of the Task Force shortly after it was created. Therefore, in many ways, Evergreen’s story of carbon neutrality is a personal story. I

have either been involved with or a firsthand witness to the major events that have led to this goal.

As a Task Force, we spent our first year organizing, collecting information, and writing Evergreen's long-term sustainability plan. We realized that in order for our plan to be both meaningful and enduring we had to engage a large cross-section of the Evergreen community. Accordingly, we developed a broad-based community outreach program asking what sustainability means to the people at Evergreen. We realized that it would be difficult to engage a diverse and busy population in our deliberations. So, we chose several different methods that would bring a large number of people into the conversation. These included one-on-one interviews with faculty members, interviews with students and student groups, well-designed student workshops that were facilitated within academic programs, initial visits to sector staff meetings culminating in a cross-campus staff institute, interviews with key administrators and decision-makers at the college, and an online web survey.

Thinking about all of these different forms of engagement with our many diverse community members, we needed to have some measure of consistency. This would be especially critical when it came time to analyze the feedback from our engagements.

Therefore, we chose three central themes for our questioning. These were:

- What is your current perception of sustainability at Evergreen?
- What should a sustainable Evergreen look like in the future?
- How do we make the transition from your current perception to your future vision?

By the time Spring Quarter 2006 was over, we had face-to-face interactions with over 380 employees and students. This generated a tremendous amount of feedback and provided directive and great insight as we labored toward our final report.

Attempting to manage and make sense of all this data, the Task Force divided itself into working groups. Each focused on a different constituent of the Evergreen community (i.e. students, faculty, staff, and administration). Next, each working group prepared a synthesis report, and the Task Force convened for a day-long retreat to organize and discuss the results.

Based on the community feedback and insights of the Task Force members, several key strategies and goals emerged<sup>9</sup>. They included:

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<sup>9</sup> The Sustainability Task Force's complete report with its full complement of strategies and goals can be viewed online at: [www.evergreen.edu/committee/sustainability/interimreport.htm](http://www.evergreen.edu/committee/sustainability/interimreport.htm)

- Establish a curricular pathway in sustainability
- Increase opportunities for a practical education in sustainability
- Initiate a robust plan for the reduced and efficient use of resources
- Examine and implement best sustainable practices/purchases policies
- Increase communication and assemble the history behind Evergreen's sustainability goals, achievements, and indicators
- Manage Evergreen's land endowment for increased biodiversity and maximum educational opportunities related to sustainable practices
- Strengthen bonds and relationships among all Evergreen's programs
- Strengthen bonds and relationships with Evergreen's neighbors and greater community region
- Improve campus spirit and internal wellness and foster healthy relationships
- *Become a carbon neutral college by 2020*

In essence, the strategies and goals represented in the final Task Force report are a product of the entire Evergreen community. Of all the details in the report, the goal of carbon neutrality has spawned the most discussion and has generated the greatest level of excitement. The majority of the Evergreen community and Task Force members believe that if our institution cannot achieve carbon neutrality, then we have failed to achieve sustainability. In other words, carbon neutrality is a key indicator of Evergreen's progression towards a sustainable future. The reason is simple: Evergreen's greenhouse gas emissions contribute to global warming which threatens our economic viability, threatens the services that our ecosystem provides, and exposes social and environmental inequities. On the other hand, balancing Evergreen's carbon budget would indicate that college operations and community activities were no longer contributing to global warming.

By the end of 2006, the Sustainability Task Force's recommendation to become a carbon neutral college by 2020 had been approved by Evergreen's President, the Vice Presidents, and by the Board of Trustees; thereby, becoming official college policy.

In October 2006 (at the time when the Task Force's Sustainability Report was going through the approval process), seven members of the Task Force attended the largest campus sustainability conference in the history of North America. More than 650 faculty, staff, and students representing 44 states and 4 countries gathered at Arizona State University to attend the Association for the Advancement of Sustainability in



Higher Education (AASHE) meeting. The purpose of the conference was for academic institutions to come together to share information and demonstrate how higher education can lead the way to a sustainable future. A central theme of the conference was global warming.

One speaker's message was particularly affecting. Eban Goodstein (faculty member in economics at Lewis and Clark College) called all to action. He is using his sabbatical to organize a year-long nationwide discussion on global warming solutions that will culminate with a national teach-in on January 31, 2008. It is called *Focus the Nation* and it fits really well with Evergreen's intention to raise community and regional awareness on the issue of global warming. Therefore, the Sustainability Task Force embraced *Focus the Nation* and is helping the Evergreen community in planning for this event.

As 2006 came to a close, another initiative emerged also with a focus on global warming. A number of college and university presidents were organizing a campaign called the Presidents Climate Commitment<sup>10</sup>. Modeled after the U.S. Mayor's Climate Protection Agreement, the Presidents Climate Commitment is a call for college and university presidents to commit to a carbon neutral policy. The goal is to have a commitment from 200 college and university presidents by June 2007 and 1,000 by the end of 2009 (Dautremont-Smith et al., 2006).

Throughout 2006, members of the Sustainability Task Force became aware of two significant realities that relate to Evergreen's role as a national leader in sustainability.

First, the October AASHE conference clearly reconfirmed that Evergreen's institutional approach to the teaching and practice of sustainability places us at the forefront of advancing sustainability on campus. For example, very few colleges have sustainability as a key component of their institutional strategic plan, have a committee devoted towards advancing sustainability on campus, offset 100% of their energy purchases with renewable sources, have a LEED certified Gold building on campus, have the opportunity for students to put sustainability theory into practice through individual learning contracts, and have a built-in collaborative, interdisciplinary teaching philosophy that is essential to sustainable thinking. While these examples represent only a portion of Evergreen's overall dedication to sustainability, taken as a whole they certainly indicate a

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<sup>10</sup> Detailed information on the Presidents Climate Commitment can be found online at [www.presidentsclimatecommitment.org](http://www.presidentsclimatecommitment.org)

high level of dedication to sustainability and place Evergreen among the most progressive in the advancement of sustainability.

Second, it also became quite obvious that the Evergreen community was not effectively communicating our sustainability accomplishments within our community, region, and country. In other words, Evergreen was not living up to its capability as a community and national leader on the issue of climate change despite the fact that we were well-positioned to do so. An unfortunate result of this is that our consultation is not extensively sought within South Puget Sound and among the national collegiate community.

The combination of these factors prompted the Sustainability Task Force to devote significant energy to raising awareness and educating others on the issue of global warming. Task Force members also realized that, as an institution, we could not consider ourselves a regional and national leader without proactive leadership measures from our administration. Therefore, the Task Force initiated a meeting with Evergreen President Les Purce to ask for his support.

On January 17, 2007 we met with President Purce and requested two actions in relation to global warming:

1) **Support Evergreen's efforts in promoting and organizing for the “*Focus the Nation*” event.** The Sustainability Task Force envisions a large community event held in a prominent location that will bring our regional community together to raise awareness and discuss solutions regarding impending threats associated with global warming and climate destabilization. We asked President Purce for his commitment to help the Task Force promote and organize for this event. We explained how this would better demonstrate Evergreen's leadership in the region and be further recognized as an institution that can provide expertise on issues of sustainability.

Without hesitation President Purce asked the Task Force members to draft up a memo explaining how he would invite local colleges and universities to join Evergreen in making January 31, 2008 remarkable. Additionally, President Purce sent an all-campus email stating, “For my part, I will take a personal role in raising the regional and national visibility of global warming issues by reaching out to higher education institutions in our region and to leaders in the community, in an effort to generate broad-based momentum for *Focus the Nation*.”

2) **Join the “Leadership Circle” of the American College & University Presidents Climate Commitment.** Because Evergreen already established the goal of

carbon neutrality and was therefore ahead of most other institutions in their thinking on the issue, we asked President Purce to become one of the founding members and key supporters of the Presidents Climate Commitment. This is known as the Leadership Circle and was intended to be made up of 15-25 presidents. Task Force members believed President Purce's membership on the Leadership Circle was important for a few different reasons:

- a. **A national leader from the outset:** Undoubtedly, Leadership Circle presidents are going to receive nationwide recognition for their institutions and for their leadership on addressing global warming. This recognition will be a clear indicator that Evergreen is a leader in sustainability.
- b. **A valued member of the Leadership Circle:** Evergreen's decentralized organization, distinctive philosophical approach to education, and rich history of sustainable thinking would add to the diversity of the Leadership Circle. Among other benefits, this would ensure another unique perspective in institutional planning for reductions in greenhouse gas emissions.
- c. **Increased morale:** The Sustainability Task Force considers global warming to be the number one threat to a sustainable future. President Purce's membership on the Leadership Circle would signify to the Task Force (and our community as a whole) that our President also considers global warming to be an imposing threat to our society. To be sure, this would lead to an increased recognition of the problem throughout our community and result in an increased devotion to address the problem.
- d. **Evergreen is well-positioned to achieve the Presidents Climate Commitment and be a leading institution of the pledge:** Signatories of the Presidents Climate Commitment will agree to: 1) plan for climate neutrality; 2) create an appropriate infrastructure to guide in the development and implementation of a climate neutral plan by late 2007; 3) complete a comprehensive carbon inventory by the middle of 2008; and 4) create an institutional action plan for becoming climate neutral by 2009. In light of the actions already taken at Evergreen these target dates and goals are "soft." In other words, Evergreen has already committed to carbon neutrality by 2020; the Sustainability Task Force already provides

the necessary infrastructure to guide in the development of a carbon neutral plan; and a comprehensive carbon inventory is the subject of my thesis and will be completed by June 2007. It is obvious that Evergreen is already a leading institution in addressing global warming and the Presidents Climate Commitment is entirely achievable. However, achieving carbon neutrality in isolation will be of little educational value to our community and the academic world as a whole.

Once again, President Purce agreed with this rationale and within days had completed the Presidents Climate Commitment “Letter of Intent.” President Purce is now a member of the Leadership Circle.

When Evergreen’s President, Vice Presidents, and Board of Trustees accepted the Sustainability Task Force recommendation to become carbon neutral by 2020, when President Purce and the Sustainability Task Force took on a leadership role in planning and organizing for *Focus the Nation*, and when President Purce signed on the Leadership Circle of the Presidents Climate Commitment, Evergreen firmly committed itself to the goal of carbon neutrality and the fight against global warming.

### ***III. The Rationale Behind Evergreen’s Carbon Inventory***

Can Evergreen achieve carbon neutrality by 2020? The answer is somewhat of a mystery. When the goal was established, Evergreen had never officially calculated its carbon emissions, and therefore, had no quantitative data as to where and at what levels our emissions were coming from. The truth is, Evergreen knows very little about its emissions and contribution to global warming. Without this information, attaching a timeframe to the goal is a bit presumptuous. Certainly, calculating Evergreen’s carbon emissions would have been a reasonable first step. Then, Task Force members would have had more insight prior to determining a specific climate policy and timeframe. However, completing a carbon inventory is not exactly a strategic goal and by itself does not reduce emissions. In other words, a carbon inventory is not a final goal; rather it is a critical first step in the process. In terms of Evergreen’s Strategic Plan, completing a carbon inventory would be an action step in route to achieve the ultimate goal of carbon neutrality. This is why the goal was established before the inventory.

Because the goal and the timeframe are somewhat arbitrary, one might also wonder why carbon neutrality was picked at all. After all, some other institutions that have passed a climate policy have decided on a reduction of greenhouse gas emissions

over a specified period of time<sup>11</sup>. For example, Bowdoin College in Maine established a policy of 11% below 2002 emissions to be achieved by 2010. So, why did the Sustainability Task Force decide on a carbon neutral policy? Well, members of the Sustainability Task Force consider carbon neutrality to be a minimum goal. It means that once achieved the institution will have a net-zero impact on global warming. More specifically, carbon neutrality means that the institutions emissions through operations and daily activities are balanced by other activities that offset or remove greenhouse gases from the atmosphere. If every nation, institution, organization, and individual accomplished this, then the human contribution to global warming would be stopped. With that being said, we do not know at what level this could be achieved. For example, on a global basis, if carbon neutrality is ever reached this could happen at 500, 600, or 1,000 ppm. In other words, achieving carbon neutrality does not necessarily mean the problem of global warming has been solved; only that society is no longer contributing to further warming. This is one reason why it should be considered a minimum goal and became the goal specified by the Sustainability Task Force.

Another reason why carbon neutrality was the goal favored by Evergreen's Sustainability Task Force was because it is easier to conceptualize on an annual basis. Because carbon neutrality means balancing Evergreen's carbon emissions with its carbon sinks, the institution can evaluate its contribution to global warming on an annual basis. On the other hand, establishing a goal of say 10% below 2000 levels by 2010 without the concurrent goal of achieving carbon neutrality, may or may not look at sinks or offsets. Ultimately, carbon sinks and offsets will be a critical part of any climate policy and must also be measured. Additionally, comparing future emissions with an arbitrary baseline year may not account for institutional growth or major changes. Both can influence the level of emissions causing the undue failure *or* success of the policy. This has been a major roadblock in the Kyoto Protocol. For example, Russia and Ukraine's 1990 emissions were accounted for, but after their economies declined they had virtually no chance of failing to meet their specified reductions. On the contrary, the United States found it nearly impossible to meet their specified goal within the timeframe required because the U.S. economy continued to surge. Initially, the goal of balancing each nation's carbon budget may have been a better policy. Learning from this, the Task Force decided on a carbon neutral policy. Ultimately, the goal of carbon neutrality not

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<sup>11</sup> A list of U.S. college and university commitments to climate change can be accessed from the AASHE website at [http://www.aashe.org/resources/gw\\_commitments.php](http://www.aashe.org/resources/gw_commitments.php)

only necessitates a reduction of emissions but also necessitates increasing carbon sinks and/or offsets.

#### ***V. Chapter Conclusion***

Clearly, higher education has a fundamental role if global and especially U.S. greenhouse gas emissions are going to be brought under control. The Evergreen State College has taken responsibility for global warming by making an institutional commitment to reach carbon neutrality by 2020. This is one of the most aggressive climate policies of any college or university in the United States. An initial step in the process of achieving carbon neutrality is to complete a comprehensive greenhouse gas inventory.

## **CHAPTER 5**

### ***Understanding Evergreen's Carbon Inventory***

Climate policies are pervasive. Nations, governments, cities, businesses, organizations, and of course, institutions of higher education have all established goals to reduce greenhouse gas emissions. As mentioned in the previous chapter, the first step in accomplishing any climate policy is to complete a carbon inventory. Understanding the basic concepts and calculations of the inventory is not only important for the individuals carrying out the methodology but is also important for anyone interested in what the inventory is telling us and how the results were derived. In this chapter I will discuss: 1) understanding the basic concepts and calculations behind the methods and 2) the decision to use the Clean Air-Cool Planet Campus Carbon Calculator.

#### ***I. Basic Concepts and Calculations of the Carbon Inventory***

Evergreen's policy of carbon neutrality is actually a bold statement indicating that the college will no longer contribute to global warming by 2020. A critical step in achieving this goal is to quantify Evergreen's current contribution to global warming. This is accomplished by completing a carbon inventory. A carbon inventory will reveal an institution's net greenhouse gas emissions (total emissions minus the sum of its offsets). Offsets can be any process or activity that removes greenhouse gases from the atmosphere (i.e. forest productivity, composting, etc.) or any strategy that increases the amount of energy produced from clean, renewable sources (i.e. purchase of "Green Tags" or any other green electricity investments). A carbon inventory produces a greenhouse gas budget. Because The Evergreen State College initiated a policy of carbon neutrality the goal is to balance our greenhouse gas budget at zero. In other words, where total emissions equal total offsets. Once armed with a greenhouse gas budget, the Evergreen community can make informed decisions on how to reduce its emissions and increase its offsets in order to achieve net-zero emissions.

Evergreen's contribution to global warming will be measured in the internationally recognized units of metric tonnes of carbon dioxide equivalents (MTCDE). Therefore, it is important to understand what metric tonnes of carbon dioxide equivalents really mean and how it is derived. As a metric measure, a carbon dioxide equivalent is the amount of a greenhouse gas emitted multiplied by its radiative forcing or global warming potential (GWP). For Evergreen's inventory, I am interested in



measuring each of the greenhouse gases specified by the Kyoto Protocol. These are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulphur hexafluoride (SF<sub>6</sub>) (UNFCCC, 2007). Therefore, it should be understood, without ambiguity, that Evergreen's goal is actually *climate* neutrality despite the stated goal of *carbon* neutrality.

Four important pieces of information are necessary in order to determine the metric tonnes of carbon dioxide equivalent for a particular energy source or activity that emits greenhouse gases:

1. The amount of activity or quantity of energy used over a specified period of time. Common units of measurement are: kWh (kilowatt-hours), MMBtu's (one million British thermal units), or any unit of weight, distance, or volume. For example, in 2006 Evergreen used 115,753.3 MMBtu's of natural gas, 16.5 million kWh of purchased electricity, and six thousand gallons of diesel fuel for transportation for the college fleet.
2. The greenhouse gases emitted from each activity or energy source. For example, Evergreen burns natural gas for the purpose of space heating and cooling. This process releases the greenhouse gases of carbon dioxide, methane, and nitrous oxide into the atmosphere.
3. The emissions factor for each greenhouse gas. The emissions factor is a measure of the average rate of emission of a particular greenhouse gas from a particular source. To clarify, it simply means that certain activities – whether it is converting coal into electricity, burning gasoline for transportation, or combusting oil for space heating and cooling – release different greenhouse gases into the atmosphere in different amounts. For the stationary internal combustion of natural gas, the emission factor (or rate of emission of greenhouse gas into the atmosphere) is 52.8 kg of CO<sub>2</sub>, 0.00528 kg of CH<sub>4</sub>, and 0.00011 kg of N<sub>2</sub>O for every MMBtu of heat (EPA, 2006b). The U.S. EPA (2007) maintains a complete list of standard emission factors, which is available to the public and can be accessed from their website.

4. The global warming potential for each different greenhouse gas. The global warming potential is a measure of each gas's radiative forcing. The greater the radiative forcing the more potent the greenhouse gas. Carbon dioxide is used as the standard for which the other greenhouse gases are compared (hence the term carbon dioxide equivalent), and therefore, has a global warming potential of one. Methane has a global warming potential of 23 and nitrous oxide is more powerful yet with a global warming potential of 296. To explain in further detail, because methane has a global warming potential of 23, it means that one kilogram of methane has a radiative forcing that is 23 times greater than one kilogram of carbon dioxide over a 100 year period (EPA, 2006b). Table 1 lists the global warming potentials for additional greenhouse gases.

**Table 1.** Global warming potentials for the greenhouse gases emitted through Evergreen's operations and daily activities.

Greenhouse Gas	100 Year GWP
CO <sub>2</sub>	1
CH <sub>4</sub>	23
N <sub>2</sub> O	296
HFC-134a	1,300

Once these four pieces of information are obtained, then metric tonnes of carbon dioxide equivalent can be calculated for any particular energy source or activity. For example, as stated above, Evergreen burned 115,753.3 MMBtu's of natural gas in 2006. Because natural gas emits carbon dioxide, methane, and nitrous oxide we need to multiply each gas's emissions factor by their global warming potential. Adding each of these three values together equals the emissions coefficient for the internal combustion of natural gas. Emission coefficients are fixed values and in the case of natural gas it is 0.053 metric tonnes of carbon dioxide equivalent. See Table 2 for the list of emissions coefficients used in Evergreen's greenhouse gas inventory. Multiplying the emission coefficient by the total amount of activity or energy used gives metric tonnes of carbon dioxide equivalent over the specified time period. In the case of natural gas Evergreen used 115,753 MMBtus in 2006. Multiplying 115,753 MMBtus by natural gas's emissions coefficient (0.053) equals 6,134.9 metric tonnes of carbon dioxide equivalent

for 2006. This value was Evergreen's contribution to global warming in 2006 just from our on-campus stationary burning of natural gas. Adding each source of emissions (i.e. purchased electricity, air travel, commuter habits, etc.) in a similar manner will lead to Evergreen's total emissions of all greenhouse gases.

**Table 2.** *Emission coefficients (conversion factors) for the greenhouse gases emitted through Evergreen's operations and daily activities.*

Evergreen Activity		Emission Coefficients	
Electricity Consumption	Purchased Electricity	0.00054	MTCDE/kWh
Space Heating	Combustion of Natural Gas	0.05300	MTCDE/MMBtu
	Distillate Oil #2	0.01000	MTCDE/gallon
Forklift, Labs, Longhouse	Propane Use	0.00500	MTCDE/gallon
Transportation	Commuter Gasoline Use	0.00900	MTCDE/gallon
	Commuter Diesel Use	0.01000	MTCDE/gallon
	Air Travel	0.00078	MTCDE/mile
Agriculture	Swine (pigs)	0.35950	MTCDE/head
	Goats	0.14140	MTCDE/head
	Poultry	0.00483	MTCDE/head
Fertilizer	Organic	0.00380	MTCDE/lb
Solid Waste	Landfill	0.14670	MTCDE/short ton
Space Cooling	Refrigerant (HFC-134a)	0.59000	MTCDE/lb
Offsets	Purchased Green Tags	0.00054	MTCDE/kWh
	Composting	0.18000	MTCDE/short ton
	Forest Productivity	No Standard Rate	

## ***II. Choosing The Clean Air-Cool Planet Campus Carbon Calculator v5.0***

A “carbon calculator” is the most widespread and effective tool for analyzing an institutions greenhouse gas budget. While there are various organizations and government agencies that provide carbon calculators to the general public, my decision to use the Clean Air-Cool Planet Campus Carbon Calculator was an easy choice. There are several reasons why:

1. The Clean Air-Cool Planet Carbon Calculator (2006b) is presently used at over 200 schools throughout North America. Therefore, it has not only become a

reputable tool but is also the standard for calculating emissions. Furthermore, because the Clean Air-Cool Planet Carbon Calculator is so widely used it allows institutions to learn from one another as they complete their inventories.

2. The American College and University Presidents Climate Commitment specifically recommends the use of the Clean Air-Cool Planet Carbon Calculator. Obviously, it would be wise to use this tool since Evergreen President Les Purce is on the Leadership Circle of that commitment.
3. Incorporates reporting standards established jointly by the World Business Council for Sustainable Development and the World Resource Institute. This avoids “double counting” emissions and prioritizes the institutions accountability for the source of its emissions.
4. Because the Clean Air-Cool Planet Carbon Calculator has become so widely used institutions can be confident that this tool will not disappear anytime soon and will likely be updated and improved over time. At the time of my thesis, for example, Clean Air-Cool Planet had already released version 5.0. This is important for institutions like Evergreen with a long-term commitment to global warming where a carbon inventory should be completed on an annual or biannual basis.
5. As we learned in Chapter 1, CO<sub>2</sub> may be the most important of the greenhouse gases but it is not the only one. The Clean Air-Cool Planet Carbon Calculator (despite the specific reference to “carbon” in its title) includes the calculation of the other greenhouse gases (CH<sub>4</sub>, N<sub>2</sub>O, HFC, PFC, and SF<sub>4</sub>) specified in the Kyoto Protocol (Clean-Air Cool-Planet, 2006b). This is important for Evergreen because we want to complete a full assessment of our contribution to global warming (not only our carbon emissions).
6. The Clean Air-Cool Planet Carbon Calculator is relatively easy to use. Calculating an institutions carbon budget involves complex formulas, conversion factors, global warming potentials, and subjective decision-making on what should or should not be included. Fortunately, the Clean Air-Cool Planet Carbon Calculator (which is a Microsoft Excel spreadsheet) has these formulas built-in and they follow Intergovernmental Panel on Climate Change protocol based on the latest science. Therefore, once the data is collected and entered, most of the calculations can be performed automatically.

7. The developers of the Clean Air-Cool Planet Carbon Calculator created a users guide to help facilitate data collection and analysis. The guide helps to standardize the methodology and permits different institutions to compare the work of other institutions. Moreover, a standardized protocol is important at the college and university level where a high rate of turnover means that different individual students or faculty members are likely to repeat the calculations. Ultimately, this eliminates some of the subjective decision-making regarding what should or should not be included in the inventory.
8. If there is unavailable emissions data, the Clean Air-Cool Planet Carbon Calculator allows the user to carry-on with the inventory and allows analyses with the information that is available.
9. The Clean Air-Cool Planet Carbon Calculator facilitates analyzing and summarizing the results by automatically producing charts and graphs once the data is entered.
10. The Clean Air-Cool Planet Carbon Calculator is designed to be used on an annual basis permitting institutions to track their emission trends over time.

Overall, the Clean Air-Cool Planet Carbon Calculator is the most reputable, comprehensive, and widely used campus carbon calculator in the country. For these reasons, I have decided to use it as the primary tool to complete Evergreen's emissions inventory. When possible I followed their protocol. With this being said, a significant challenge with completing Evergreen's carbon inventory is the numerous judgment calls and decisions that must be made. For example, whether or not to include certain activities in the inventory such as emissions from the application of lawn fertilizer, transportation miles from food distribution centers, or student out-of-state travel during vacations, just to name a few. Other decisions concerned what to do with partial data sets, lack of data, and choosing between various methods of estimation. Therefore, understanding the decision-making process and details behind the numbers are important and will be a major focus in the remainder of this chapter.

## CHAPTER 6

### *The Data Acquisition Process*

Prior to using the Clean Air-Cool Planet Campus Carbon Calculator I highly recommend reading the latest version of their *User's Guide*. The *User's Guide* can be downloaded from the Clean Air-Cool Planet website ([www.cleanair-coolplanet.org](http://www.cleanair-coolplanet.org)). This document provides a general overview of the data acquisition process.

It is important to note that the most time consuming part in the entire process of completing Evergreen's carbon inventory was acquiring the necessary data. Therefore, allow at least one month for the data acquisition process. To provide a frame of reference, I began the process of collecting Evergreen's inventory data in early February 2007. By the second week of April, I still had not received some transportation and refrigerant data. However, because I was asking Evergreen staff for this data for the first time, it took longer than I expect it to in the future. I made a considerable effort to explain to the various departments and personnel what the purpose of the study was, why I was doing it, and informing them that this data will be asked for again on a regular basis in the future. Therefore, I expect that this will help speed the process for future inventories. Regardless, because of busy schedules and data that are not easily available, Evergreen staff members will need time to meet your request. Furthermore, you must anticipate that you may have to make multiple requests for the same data. Be courteous but persistent in explaining the importance of these data. Explain that you will be using the data they provide to help meet an important strategic goal of the college.

Officially, I began the data acquisition process on February 1, 2007. On that date, I met with Paul Smith (director of facilities), Rich Davis (college engineer), and Azeem Hoosein (assistant director for planning and construction). I provided an overview of Evergreen's climate policy of carbon neutrality and why it is an important strategic goal of the college. Then, I informed them that completing a carbon inventory was a critical step in the process and how it will provide Evergreen with important information necessary for future decision-making. Because Rich Davis is a member of the Sustainability Task Force, he is already familiar with this goal and the process that led to it. This, of course, helped facilitate the meeting. I then projected the Carbon Calculator (via digital projector) and walked them through the spreadsheet.

For reasons of consistency, I followed the protocol of the Clean Air-Cool Planet Campus Carbon Calculator. Their calculator is divided into the following broad data collection categories:

- Institutional Data
- Energy
- Transportation
- Agriculture
- Solid Waste
- Refrigeration and other chemicals (PFC's, HFC's, SF6)
- Offsets

For each of these categories, the Clean Air-Cool Planet calculator specifies what data are needed (i.e. purchased electricity, natural gas consumption, air travel, etc.) and in what units (i.e. kWh, MMBtu's, miles traveled per year, etc.). As we went through the spreadsheet the facilities team helped me identify who within each department is likely to have the data I needed.

Following our meeting Rich Davis sent an email to all the individuals we identified informing them that I will soon be contacting them for specific data related to the college's sustainability and strategic planning goals. At this point I created a "Data Acquisition Journal" using Microsoft Excel. This allowed me to fully document all communications and dates of data requests and deliveries. The Journal was an invaluable resource as it allowed me to keep track of whom I contacted, when, what method (i.e. email, phone, personal conversation, meeting, etc.), and what the outcome was. Furthermore, with Excel's data sorting capabilities, I was able to reorganize the information by date, person, data category, etc. This allowed me to manage the data and was a great asset for organizational purposes. I would highly recommend that whoever undertakes Evergreen's next greenhouse gas inventory to create a similar data acquisition journal listing who you contacted, what department they are in, and what method of communication was successful. This will likely save you time and effort.

Starting on February 5, I began emailing the individuals identified during my meeting with the facilities staff. I made three general requests:

1. I specified that I would like to have the data by February 19;
2. I requested data for Evergreen's main Olympia campus, Tacoma campus, and Gray's Harbor program (if appropriate);



3. I asked for information dating back to 1990 (if possible).

In most cases, I followed-up this initial data request with other emails, phone calls, office visits, and small group meetings. Expectedly, I received some responses stating that two weeks was not enough time to meet my request. In these cases I negotiated as to how much time was needed and we agreed on a future date. Additionally, I learned early on that I would need to focus on the Evergreen campus. I included data for the Tacoma and Gray's Harbor programs when possible, but at this time little of this data was available. Finally, I received relatively little data prior to 2004. Either records have not been kept or were not easily accessible. The main problem occurred because of Evergreen's recent transition to the Banner system. Because of this seemingly accessible data was difficult to acquire without significant effort. For example, detailed institutional budget data was not easily accessible prior to 2004. With this being said, I had a really strong and reliable data set between the years 2004-2006 for Evergreen's main Olympia campus.

## **CHAPTER 7**

### ***The Step-by-Step Process in Completing Evergreen's Carbon***

#### ***Inventory:***

##### ***Inventory Data, Calculations and Results***

In order to track The Evergreen State College's progression towards carbon neutrality, Evergreen's greenhouse gas inventory will need to be completed on a regular basis. Because this procedure requires numerous data acquisitions, calculations, and frequent judgment calls, it is important to provide the reader with the rationale and step-by-step process for how Evergreen's carbon inventory was calculated.

The Clean Air-Cool Planet Campus Carbon Calculator (2006b) follows the emissions reporting protocol established by the Intergovernmental Panel on Climate Change, the World Business Council for Sustainable Development, and the World Resources Institute. The result of this is accounting principles and formulas that require specific units of measure. These units must be entered into the Clean Air-Cool Planet Carbon Calculator. However, the data I acquired from Evergreen and the data required by the calculator were often different. There are a few reasons why. First, sometimes Evergreen recorded their data in different units of measurement. For example, pounds instead of gallons. This form of inconsistency was the easiest to rectify. Second, Evergreen had only partial or incomplete data, in some cases. For example, only the last six months of air travel data was available for Fiscal Year 2005. Third, some data required by the calculator forces judgment calls or estimates from Evergreen's available data because of incomplete knowledge. For example, determining the productivity and therefore the metric tonnes of CO<sub>2</sub> offset by Evergreen's forest. Fourth, some data required by the calculator is not measured at Evergreen. For example, the Carbon Calculator asks for student commuter miles per year. However, obtaining this data is very difficult forcing estimations by extrapolating existing institutional data. Fifth, in some cases I decided to include data and certain activities not specified by Clean Air-Cool Planet's Campus Carbon Calculator. For example, I decided to include Evergreen's application of lawn fertilizer on campus grounds and the greenhouse gas emissions released in delivering food from our vendor's distribution centers to campus.

For each of these reasons, the inventory (at one level or another) is subjective. I was forced to make estimates and utilize available data in a manner that required my best judgment. Because of this it is important to highlight the rationale I used in the

methodology. I will do this by breaking down each general category of the inventory independently.

### *~ Institutional Data ~*

Tracking institutional data is useful because it establishes a frame of historical reference. Obviously, significant changes in budget allocations, population or physical size can have a great influence over college activities and energy consumption and therefore greenhouse gas emissions. Therefore, institutional data should be recorded every year that an inventory is completed. Table 3 provides an overview of Evergreen's institutional data for Fiscal Years 2004–06.

**Table 3.** *Evergreen's Institutional Data for Fiscal Years 2004-06.*

Fiscal Year	Budget (dollars)		Population				Physical Size (sq ft)
	Operating Budget	Energy Budget	Full-Time Students	Part-Time Students	Faculty	Staff	Total Building Space
2004	\$95,619,333.16	\$1,499,980.95	3,872	538	224	495	1,618,039
2005	\$90,384,806.57	\$2,220,036.43	3,954	516	221	505	1,618,039
2006	\$101,672,907.22	\$2,410,483.48	3,909	507	232	502	1,618,039

### **Budget**

- Data Requested: Total operating budget, research dollars, and energy budget from 1990 to 2006.
- Data Received: Operating budget and energy budget data from 2004-06.
- Data Received by: Accounting manager (Clifford Frederickson, CPA) and Executive Director of Operational Planning and Budget (Steve Trotter).
- Comments: Budget data prior to 2004 was unavailable within the specified period of time because of Evergreen's transition to the Banner system. Research dollars is not applicable because Evergreen does very little sponsored research. Finally, Pell awards were subtracted from the operating budget because this money simply moves through the system. Evergreen does not have financial control of these dollars and they are not used to operate the college.

**Population**

- Data Requested: Total number of full-time students, part-time students, faculty, and staff.
- Data Received: 1992-2006 full-time and part-time student enrollment; Operating budget and energy budget data from 2004-06.
- Data Received by: Office of Institutional Research and Assessment.  
This data is available on the Evergreen website at:  
<http://www.evergreen.edu/institutionalresearch/factpage.htm>

**Physical Size**

- Data Requested: Total building space and total research building space in square feet for Evergreen's Olympia and Tacoma campuses.
- Data Received: Total building space for Olympia and Tacoma campuses in square feet.
- Data Received by: Facilities College Engineer (Rich Davis).
- Comments: Evergreen does have research space within the Lab buildings; however, this is included in the total building space. Furthermore, Evergreen does not have buildings designated solely for research. Therefore, it was not necessary to account for total research building space required by the Carbon Calculator. The total building space number includes the campus core, shops, student housing, organic farm, and Tacoma campus. Construction of the Seminar II building was completed by 2004 and is therefore included in the total building space for 2004.

*~ Energy ~*

Energy use is fundamental to any carbon inventory. Generally speaking, emissions from either purchased electricity or on-campus stationary sources of energy are responsible for the vast majority of a campus's overall emissions. Therefore, tracking Evergreen's energy use over time is critical.

**Purchased Electricity**

Table 4 reveals the amount of greenhouse gases emitted from Evergreen's use of purchased electricity from Puget Sound Energy and Tacoma Power and Light between Fiscal Years 2004 and 2006. For each year the total amount of energy used, and therefore greenhouse gases emitted, increased.

**Table 4.** *Evergreen's Greenhouse Gas Emissions from Purchased Electricity, Fiscal Years 2004-06.*

<b>Fiscal Year</b>	<b>Purchased Electricity (kWh)</b>	<b>Emission Coefficients</b>	<b>Evergreen's Emissions (MTCDE)</b>
2004	15,299,000	0.00054 MTCDE/kWh	<b>8,298</b>
2005	16,066,000	0.00054 MTCDE/kWh	<b>8,740</b>
2006	16,459,000	0.00054 MTCDE/kWh	<b>8,954</b>

- **Data Requested:** Kilowatt-hours of purchased electricity from Puget Sound Energy for Evergreen's Olympia, Tacoma, and Gray's Harbor programs from 1990 to 2006.
- **Data Received:** Megawatt-hours of purchased electricity from 2002-06 for Evergreen's main campus.
- **Data Received by:** Facilities College Engineer (Rich Davis).
- **Comments:** Multiplying megawatt-hours by 1000 converts the data to kilowatt-hours. When purchasing data from a provider one has the option of entering the standard fuel mix for the region or one can get more specific and enter a custom fuel mix. I contacted Puget Sound Energy to receive their power supply profile and entered this data. In 2005, Puget Sound Energy's fuel mix was: hydroelectric (42.10%), coal (36.35%), natural gas (18.92%), nuclear (1.12%), wind<sup>12</sup> (0.15%), and

<sup>12</sup> Wind power was expected to increase to 5% of Puget Sound Energy's power supply by the end of 2006 but this was not confirmed at the time of this writing.

other (1.36%). The “other” category included petroleum, waste to energy, and biomass. Since I did not have specific values for each I simply divided 1.36% by three and entered 0.45% for each category. Finally, Evergreen does not purchase steam or chilled water so there was no data to enter for these categories.

### **On-Campus Stationary Sources of Energy**

Evergreen purchases natural gas and distillate oil #2 from Puget Sound Energy to produce steam in order to provide heat to the buildings. When Puget Sound Energy experiences high demand for natural gas they inform Evergreen and we purchase distillate oil until regional demand decreases. This is a contractual agreement between Puget Sound Energy and Evergreen. Evergreen does not co-generate electricity and therefore has no data to enter in the calculator.

Evergreen burns propane fuel to power a forklift, lab equipment, and for the fireplace in the Longhouse. Evergreen’s combined use of natural gas, distillate oil #2, and propane fuel comprises Evergreen’s on-campus stationary sources of energy that emit greenhouse gases (Table 5).

***Natural Gas:***

- Data Requested: MMBtu's of natural gas for Evergreen's Olympia, Tacoma, and Gray's Harbor programs from 1990 to 2006.
- Data Received: I received natural gas in therms from 2002-06 for Evergreen's main campus.
- Data Received by: Facilities College Engineer (Rich Davis).
- Comments: I had to convert from therms to MMBtu's. 1 therm = 100,000 Btu's and 1,000,000 Btu's = 1 MMBtu's. Or, 10 therms = 1 MMBtu. Therefore, all I had to do was divide the total number of therms by 10 in order to convert Evergreen's data into MMBtu.

***Table 5. Evergreen's Greenhouse Gas Emissions from On-Campus Stationary Sources, FY 2004-06.***

<b>Fiscal Year 2004</b>		<b>Consumption</b>	<b>Emission Coefficients</b>	<b>Evergreen's Emissions (MTCDE)</b>
Space Heating & Hot Water	Natural Gas	109,605 MMBtu	0.05300 MTCDE/MMBtu	<b>5,809</b>
	Distillate Oil #2	3,542 Gallons	0.01000 MTCDE/gallon	<b>35</b>
Forklift, Labs, Longhouse	Propane Use	250 Gallons	0.00500 MTCDE/gallon	<b>1</b>
				<b>Total Emissions = 5,845</b>
<b>Fiscal Year 2005</b>		<b>Consumption</b>	<b>Emission Coefficients</b>	<b>Evergreen's Emissions (MTCDE)</b>
Space Heating & Hot Water	Natural Gas	107,237 MMBtu	0.05300 MTCDE/MMBtu	<b>5,683</b>
	Distillate Oil #2	3,542 Gallons	0.01000 MTCDE/gallon	<b>35</b>
Forklift, Labs, Longhouse	Propane Use	250 Gallons	0.00500 MTCDE/gallon	<b>1</b>
				<b>Total Emissions = 5,719</b>
<b>Fiscal Year 2006</b>		<b>Consumption</b>	<b>Emission Coefficients</b>	<b>Evergreen's Emissions (MTCDE)</b>
Space Heating & Hot Water	Natural Gas	115,753 MMBtu	0.05300 MTCDE/MMBtu	<b>6,135</b>
	Distillate Oil #2	3,542 Gallons	0.01000 MTCDE/gallon	<b>35</b>
Forklift, Labs, Longhouse	Propane Use	250 Gallons	0.00500 MTCDE/gallon	<b>1</b>
				<b>Total Emissions = 6,171</b>



***Distillate Oil #2:***

- Data Requested: Gallons of distillate oil #2 for Evergreen's Olympia, Tacoma, and Gray's Harbor programs from 1990 to 2006.
- Data Received: 3,542 gallons of distillate oil #2 for 2006.
- Data Received by: Facilities Utility Services Specialist (Ed Rivera); Facilities Maintenance Mechanic (Patty Van de Walker); Introduction to Environmental Studies Program (Student Project – *Why we should care, why we must act: TESC Carbon Budget, Preliminary Report*, March 2007), instructed by Rob Cole and Dylan Fischer.<sup>13</sup>
- Comments: After several requests by email and during two guided tours of Evergreen's Central Utility Plant I had not received gallons of distillate oil used per year. But, I was told on several occasions that Evergreen's use of distillate oil is low (averaging about two weeks per). When in use, Evergreen burns about 253 gallons per day of oil. This information was stated by the facilities staff and corroborated in the Introduction to Environmental Studies student report. Therefore, I estimated that Evergreen uses about 3,542 gallons of distillate oil #2 per year (14 days per year multiplied by 253 gallons per day).

***Propane:***

- Data Requested: Gallons of propane for Evergreen's Olympia, Tacoma, and Gray's Harbor programs from 1990 to 2006.
- Data Received: 250 gallons per year.
- Data Received by: Facilities Maintenance Services (Sherry Parsons).

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<sup>13</sup> A copy of this report can be requested by contacting Evergreen faculty member Rob Cole.

- Comments: Evergreen uses propane for a forklift, laboratory work in the Lab buildings, and for a fireplace in the Longhouse. Sherry informed me that Evergreen had previously used a 250-gallon propane tank that was filled on average less than once per year. In the fall of 2006, facilities removed the tank and are now using three cylinders that they take into town to have refilled. Since no specific records are kept I gave a high estimate of 250-gallons of propane used per year.

~ *Transportation* ~

**College Fleet**

Evergreen, like most colleges and universities, owns and maintains a fleet of vehicles. The decisions Evergreen makes regarding the purchase and operation of this fleet has a direct impact on our institutions greenhouse gas emissions. Therefore, it is important to keep track of Evergreen's fleet fuel use, as it is a direct contribution to global warming. Evergreen does maintain an electric fleet used by facilities personnel. However, charging these vehicles is not recorded in the transportation sector because the electricity used to recharge them is recorded under purchased electricity from Puget Sound Energy. Table 6 shows Evergreen's greenhouse gas

*Table 6. Evergreen's Greenhouse Gas Emissions from College Fleet Vehicles, FY 2004-06.*

<b>Fiscal Year 2004</b>			
<b>Fuel</b>	<b>Consumption</b>	<b>Emission Coefficients</b>	<b>Evergreen's Emissions (MTCDE)</b>
Gasoline	25,111 gallons	0.009 MTCDE/gallon	226
Diesel	5,504 gallons	0.010 MTCDE/gallon	55
			<b>Total Emissions = 281</b>
<b>Fiscal Year 2005</b>			
<b>Fuel</b>	<b>Consumption</b>	<b>Emission Coefficients</b>	<b>Evergreen's Emissions (MTCDE)</b>
Gasoline	23,782 gallons	0.009 MTCDE/gallon	214
Diesel	5,768 gallons	0.010 MTCDE/gallon	58
			<b>Total Emissions = 272</b>
<b>Fiscal Year 2006</b>			
<b>Fuel</b>	<b>Consumption</b>	<b>Emission Coefficients</b>	<b>Evergreen's Emissions (MTCDE)</b>
Gasoline	25,550 gallons	0.009 MTCDE/gallon	230
Diesel	6,240 gallons	0.010 MTCDE/gallon	62
			<b>Total Emissions = 292</b>

emissions from the college fleet for Fiscal Years 2004-06.

***Gasoline Fleet:***

- Data Requested: Total gallons of gasoline purchased for Evergreen's Olympia, Tacoma, and Gray's Harbor programs from 1990 to 2006.
- Data Received: Total gallons of gasoline purchased from 2004-06 for Evergreen's main campus fleet.
- Data Received by: Facilities Maintenance Services (Sherry Parsons).
- Comments: Facilities keeps records for fuel consumption at Evergreen's motor pool garage gas pump. However, this does not include information for vehicles fueled off campus. For this information, Sherry had receipts recording the total dollar amount. By knowing the total amount of money spent on gasoline for the off-campus vehicle fleet, Sherry estimated the total gallons used based on the average cost of fuel. However, data for off-campus gasoline use was unavailable for the year 2004. Because of this I averaged the 2005 and 2006 data in order to estimate 2004 off-campus fleet fuel consumption. Based on this estimation, Evergreen's 2004 total fleet gasoline consumption was 25,111 gallons. In 2005, it was 23,782 gallons. And, in 2006, it was 25,550 gallons.

***Diesel Fleet:***

- Data Requested: Total gallons of diesel fuel purchased for Evergreen's Olympia, Tacoma, and Gray's Harbor programs from 1990 to 2006.
- Data Received: Total gallons of diesel purchased from 2004-06 for Evergreen's main campus fleet.
- Data Received by: Facilities Maintenance Services (Sherry Parsons).
- Comments: Again, similar to the data for gasoline use, gallons of diesel use were available from the motor pool and from an estimation of receipts. Once again, data for off-campus diesel use was unavailable for the year 2004 so I averaged the 2005 and 2006 data. Based on this estimation, Evergreen's 2004 fleet diesel fuel consumption was 5,504 gallons. In 2005, it was 5,768 gallons. And, in 2006, it was 6,240 gallons.

### **Food Delivery**

There are many factors that ultimately decide what food Evergreen purchases and from whom. One of these factors should be the amount of greenhouse gases emitted as a result of the distance that Evergreen's food needs to travel to get to campus. In Fiscal Year 2006, the total distance traveled to bring food to Evergreen's main Olympia campus from our supplier's food distribution centers was 151,410 miles which emitted 126 metric tonnes of carbon dioxide equivalent (Table 7). See Appendix A for the complete list of vendors and the distance and frequency they traveled to campus. This data was unavailable for Fiscal Years 2004 and 2005.

**Table 7.** *Evergreen's Greenhouse Gas Emissions from Food Delivery for FY 2006.*

<b>Total Roundtrip Distance</b>	<b>Estimated Average Fuel Economy</b>	<b>Diesel Fuel</b>	<b>Emissions Coefficient</b>	<b>Evergreen's Emissions (MTCDE)</b>
151,410 miles	12 mpg	12,618 gallons	0.01 MTCDE/gallon	<b>126</b>

#### ***Details Behind the Data:***

- Data Requested: Total gallons of diesel fuel used to deliver food to the Evergreen campus in 2006 from our suppliers distribution centers.
- Data Received: Total roundtrip miles traveled from Evergreen's food suppliers (distribution centers) to camps for 2006.
- Data Received by: Director of Food Services for Aramark (Craig Ward).
- Comments: Ultimately, I had to make a rough estimate as to the average fuel economy and type of fuel use because I did not have information on what type of vehicles are used for food deliveries. I decided on 12 miles per gallon of diesel fuel as an estimated average.

### **Air Travel**

- Data Requested: Faculty, staff, and student air miles traveled per year. This includes air travel for conferences, educational programs, awards, business trips, athletics, etc. that the institutional pays for. It does not include any personal travel. For example, student travel to and from home during breaks.

- Data Received: I received information on the airport of origin and destination city for each trip paid for by Evergreen. I received 5 months of information for 2005 and the complete year for 2006.
- Data Received by: Air Travel Department (Jennifer Dumpert).
- Comments: I had to calculate the number of miles between airport of origin and destination. I used Google Earth ruler to measure the distance between cities and corroborated this with an online airport calculator that is available online at: <http://www.world-airport-codes.com>. Once I determined the number of miles between airports I summed up the total for the year. For 2005, I only had data for five months (February – June). So, I determined the average air miles traveled per month and extended this for the other seven months to get an estimation for the year. The number of annual air miles I entered for 2006 is a low estimate because the air travel department did not have data for the number of flights that were originally purchased by Evergreen community members then reimbursed by the college. Though the Air Travel Department stated that reimbursement for air travel was uncommon. Table 8 shows the number of air miles traveled and the greenhouse gas emissions associated with it.

**Table 8.** *Evergreen's Greenhouse Gas Emissions from Air Travel for FY 2005-06.*

Fiscal Year	Total Distance	Emissions Coefficient	Evergreen's Emissions (MTCDE)
2005	1,819,099 miles	0.00078 MTCDE/mile	<b>1,419</b>
2006	1,380,178 miles	0.00078 MTCDE/mile	<b>1,077</b>

### **Commuters**

Evergreen is located several miles from the nearest urban area (Olympia) and does not provide enough living accommodations for all of its community members. As a result, many faculty, staff, and students either choose or are forced to commute several miles to get to work or to attend classes at Evergreen. Transportation to and from campus can be a significant contribution to Evergreen's overall greenhouse emissions. Ultimately, the approximate number of gallons of gasoline and diesel fuel used per year is needed to determine overall emissions from commuter habits.

Unfortunately, this data is difficult to come by. Parking Services does a thorough job of conducting daily parking lot counts. This information tells how many cars are in the parking lot at any one time, but fails to account for how far they have driven to get to campus, whether the driver has come alone or part of a carpool, and what the turnover is. In other words, in all likelihood many community members commute to Evergreen and stay for part of the day and are replaced by other commuters. Parking lot counts do not track different vehicles coming and going into the parking area (only the number of open parking spaces).

Parking Services also conducts “random moment counts.” One day per quarter, staff will count the number of vehicles and the number of passengers within each vehicle driving into Evergreen’s main entrance (McCann Plaza). However, this method also has several limitations when determining the number of commuter miles per year. First, the counts were done on the same day each quarter (Thursday). This can be problematic because some days of the week are very busy while others are relatively quiet. Counting the same day every quarter may lead to results that are far above or far below the average. Second, the counts started at 8:30am which means that a fair number of commuters are likely missed from 7:00-8:30am. Third, commuters parking at the Dorm Loop or any of Evergreen’s other entrances are not counted in the survey. Fourth, counts do not reveal whether the commuters are students coming to campus three times per week or staff arriving everyday. Fifth, random counts do not reveal how far the commuter has traveled. Additionally, I did not have random count data for 2006. For these reasons, I decided not to use the data from either the daily parking lot counts or the random moment counts.

So, how did I estimate the average number of gallons used per year? Four questions need to be answered:

- 1) How many commuters are there and how do they get to campus (i.e. drive personal vehicle alone, carpool, public transportation, etc.)?
- 2) How far do they travel?
- 3) How many times per week do they commute?
- 4) What is the fuel efficiency of the vehicle(s) they use to get to campus?

Fortunately, the answers for each of these questions can be estimated using existing institutional data.

***Faculty/Staff Gasoline:***

The first step is to estimate the number of gallons of gasoline used by faculty and staff on an annual basis to get back and forth to work. Estimating this was possible from data contained in Evergreen's 2005 Commute Trip Reduction Survey Report. This report is available through the Parking Supervisor (Susie Seip) in Parking Services. The easiest way to break this down is to look at each of the above questions in turn.

- 1) How many commuters are there and how do they get to campus (i.e. drive personal vehicle alone, carpool, public transportation, etc.)?

According to the 2005 Commute Trip Reduction Survey, 71% of Evergreen employees drive alone to work and 24% carpool.

- 2) How far do they travel?

The average home to work distance was 13.3 miles or 26.6 miles roundtrip.

- 3) How many times per week do they commute and how many weeks per year do they work?

Employees who drive alone do so 4.1 times per week. Those who carpool do so three times per week. The average Evergreen employee works 48 weeks per year. Evergreen's payroll manager (Ladronna Herigstad) informed me that staff members have 10 days off per year for holidays and receive a minimum of four days of leave per year. So, the average staff member works 50 weeks per year with 2 weeks of vacation/holiday time. Additionally, I estimated that faculty members work on average 44 weeks per year (there are 4 quarters with 11 weeks per quarter). Because there is more than twice as many staff as faculty the weighted average comes out to be 48 weeks per year for the average Evergreen employee.

- 4) What is the fuel efficiency of the vehicle(s) they use to get to campus?

Students working in the Parking Office who were also enrolled in the 2007 Introduction to Environmental Studies program estimated that vehicles registered through parking services average 24.3 miles per gallon.

With all of the necessary information in place, it is now possible to estimate the metric tonnes of carbon dioxide equivalent emitted annually by Evergreen employees commuting back and forth to work.



**Calculations:***Employees who drive alone:*

Step 1: Determine total annual miles traveled:

$$(\text{Total \# employees}) \times (\% \text{ that drive alone}) \times (\# \text{ of trips per week}) \times (\text{roundtrip distance}) \times (\# \text{ weeks per year}) = \text{total annual miles traveled.}$$

Step 2: Determine total gallons of fuel used per year:

$$(\text{Total annual miles traveled}) / (\text{average miles per gallon of Evergreen fleet}) = \text{gallons of gasoline used annually.}$$

Step 3: Determine the metric tonnes of carbon dioxide equivalent:

$$(\text{Gallons of gasoline used annually}) \times (\text{gasoline's emissions factor}) = \text{total amount of metric tonnes of carbon dioxide equivalent emitted annually from Evergreen employees who drive alone to work.}$$

*Employees who carpool:*

Step 1: Determine total annual miles traveled:

$$(\text{Total \# employees}) \times (\% \text{ that carpool}) \times (\# \text{ of trips per week}) \times (\text{roundtrip distance}) \times (\# \text{ weeks per year}) = \text{total annual miles traveled.}$$

Step 2: Determine total gallons of fuel used per year:

$$(\text{Total annual miles traveled}) / (\text{average miles per gallon of Evergreen fleet}) = \text{gallons of gasoline used annually.}$$

Step 3: Determine the metric tonnes of carbon dioxide equivalent:

$$(\text{Gallons of gasoline used annually}) \times (\text{gasoline's emissions factor}) = \text{total amount of metric tonnes of carbon dioxide equivalent emitted annually from Evergreen employees who carpool to work.}$$

See Table 9 for an overview of Evergreen employee commuter habits.

***Student Gasoline:***

Determining an estimate for the number of gallons of gasoline used by student commuters follows the same methodology for employees. However, since the Commute Trip Reduction Survey only questions employees, I had to find another source for the information. This came from the Evergreen Student Experience Survey 2006 conducted by the Office of Institutional Research and Assessment.

**Table 9. Employee Commuter Habits that Contribute to Evergreen's Overall Greenhouse Gas Emissions.**

Employees that Drive Alone: Single Occupancy Vehicle (SOV)									
Year	Employees that Drive Alone	Trips Per Week	Roundtrip Miles	Weeks Per Year	Annual Miles Traveled	Average Miles Per Gallon	Gallons Per Year	Gasoline Emissions Coefficient	Total MTCDE
2004	510	4.1	26.6	48	2,672,354	24.3	109,973	0.009	990
2005	515	4.1	26.6	48	2,698,371	24.3	111,044	0.009	999
2006	521	4.1	26.6	48	2,728,105	24.3	112,268	0.009	1,010

Employees that Car Pool: Estimated Average is 2.5 Passengers Per Vehicle									
Year	Employees that Carpool	Trips Per Week	Roundtrip Miles	Weeks Per Year	Annual Miles Traveled Per Commuter	Average Miles Per Gallon	Gallons Per Year Per Person	Gasoline Emissions Coefficient	Total MTCDE
2004	173	3	26.6	48	264,390	24.3	10,880	0.009	245
2005	174	3	26.6	48	266,964	24.3	10,986	0.009	247
2006	176	3	26.6	48	269,905	24.3	11,107	0.009	250

Let's once again answer each of the necessary questions:

- 1) How many commuters are there and how do they get to campus (i.e. drive personal vehicle alone, carpool, etc.)?

According to the 2006 Student Experience Survey, 56.3% of Evergreen students drive alone to work and 17.7% carpool.

- 2) How far do they travel?

The average home to campus distance was 13.3 miles or 26.6 miles roundtrip.

- 3) How many times per week do they commute and how many weeks per year do they work?

Students who drive alone do so 2.9 times per week; those who carpool do so 2.1 times per week; and those who take the bus do so 3.1 times per week. The average Evergreen student commutes to campus 44 weeks per year. This, of course, is an estimate. I figured four quarters per year with 11 weeks per quarter.

- 4) What is the fuel efficiency of the vehicle(s) they use to get to campus?

Once again, I obtained this information from the research done by the students working in the Parking Office (who were also enrolled in the 2007 Introduction to Environmental Studies program). They estimated

that vehicles registered through parking services average 24.3 miles per gallon.

Once again, with all of the necessary information, it is now possible to estimate the metric tonnes of carbon dioxide equivalent emitted annually by Evergreen students commuting back and forth to classes.

Calculations:

*Students who drive alone:*

Step 1: Determine total annual miles traveled:

$(\text{Total \# students}) \times (\% \text{ that drive alone}) \times (\# \text{ of trips per week}) \times (\text{roundtrip distance}) \times (\# \text{ weeks per year}) = \text{total annual miles traveled.}$

Step 2: Determine total gallons of fuel used per year:

$(\text{Total annual miles traveled}) / (\text{average miles per gallon of Evergreen fleet}) = \text{gallons of gasoline used annually.}$

Step 3: Determine the metric tonnes of carbon dioxide equivalent:

$(\text{Gallons of gasoline used annually}) \times (\text{gasoline's emissions factor}) = \text{total amount of metric tonnes of carbon dioxide equivalent emitted annually from Evergreen students who drive alone to work.}$

*Students who carpool:*

Step 1: Determine total annual miles traveled:

$(\text{Total \# students}) \times (\% \text{ that carpool}) \times (\# \text{ of trips per week}) \times (\text{roundtrip distance}) \times (\# \text{ weeks per year}) = \text{total annual miles traveled.}$

Step 2: Determine total gallons of fuel used per year:

$(\text{Total annual miles traveled}) / (\text{average miles per gallon of Evergreen fleet}) = \text{gallons of gasoline used annually.}$

Step 3: Determine the metric tonnes of carbon dioxide equivalent:

$(\text{Gallons of gasoline used annually}) \times (\text{gasoline's emissions factor}) = \text{total amount of metric tonnes of carbon dioxide equivalent emitted annually from Evergreen students who carpool to campus.}$

See Table 10 for an overview of student commuter habits.

**Table 10.** *Student Commuter Habits that Contribute to Evergreen's Overall Greenhouse Gas Emissions.***Students that Drive Alone: Single Occupancy Vehicle (SOV)**

Year	Students that Drive Alone	Trips Per Week	Roundtrip Miles	Weeks Per Year	Annual Miles Traveled	Average Miles Per Gallon	Gallons Per Year	Gasoline Emissions Factor	Total MTCDE
2004	2,331	2.9	26.6	44	7,913,087	24.3	325,641	0.009	<b>2,931</b>
2005	2,371	2.9	26.6	44	8,048,762	24.3	331,225	0.009	<b>2,981</b>
2006	2,344	2.9	26.6	44	7,955,127	24.3	327,371	0.009	<b>2,946</b>

**Students that Car Pool: Estimated Average is 2.5 Passengers Per Vehicle**

Year	Students that Carpool	Trips Per Week	Roundtrip Miles	Weeks Per Year	Annual Miles Traveled Per Commuter	Average Miles Per Gallon	Gallons Per Year Per Person	Gasoline Emissions Factor	Total MTCDE
2004	733	2.1	26.6	44	720,596	24.3	29,654	0.009	<b>667</b>
2005	746	2.1	26.6	44	732,951	24.3	30,163	0.009	<b>679</b>
2006	737	2.1	26.6	44	724,425	24.3	29,812	0.009	<b>671</b>

***Public Transportation – Intercity Transit (Bus):***

Public transportation is also available to the Evergreen community. Intercity Transit provides two bus routes to the Evergreen campus: routes 41 and 48. These buses run regardless of how many community members take advantage of the transportation. Therefore, in order to determine total emissions, it is necessary to calculate the total metric tonnes of carbon dioxide equivalent emitted by the two buses that service Evergreen without factoring in the number of riders. With this being said, there is an obvious advantage to increasing ridership on the bus. For example, the bus will emit the same amount of metric tonnes of carbon dioxide equivalent whether one person takes the bus or forty.

Determining an estimate for the number of gallons of fuel used by the two buses servicing Evergreen one needs to ask:

- 1) What is the number of times per week each bus stops at Evergreen?
- 2) What is the distance from downtown to the campus?
- 3) What type of fuel is used and what are the average miles per gallon?

Again, I will answer each of these questions in turn:

- 1) What is the number of times per week each bus stops at Evergreen? Route 41 makes 216 trips to Evergreen per week and route 48 makes 135 trips

per week. This information came from the students working in Parking Services who also conducted Evergreen's carbon budget preliminary report.

- 2) What is the distance from downtown to the campus? Bus 41 makes a 13.4-mile loop from downtown to campus and bus 48 makes a 13-mile loop. This information also came from the students working in Parking Services who conducted Evergreen's carbon budget preliminary report.
- 3) What type of fuel is used and what are the average miles per gallon? The bus uses ultra low sulfur B20 diesel fuel and gets 4.7 miles per gallon. This information can be obtained from the Intercity Transit website at: <http://www.intercitytransit.com/page.cfm?ID=0075>. It is important to note that according to the EPA, B20 biodiesel emits the same level of greenhouse gases as regular diesel (EPA, 2002a). The advantage to biodiesel is of course that it is renewable.

Equipped with all of the necessary information, it is once again possible to estimate the metric tonnes of carbon dioxide equivalent emitted annually by the two bus routes that service the Evergreen campus.

*Community members who use public transportation (bus):*

Step 1: Determine total annual miles traveled:

$(\text{Total trips per week}) \times (\text{miles per trip}) \times (\# \text{ weeks per year}) = \text{total annual miles traveled.}$

Step 2: Determine total gallons of fuel used per year:

$(\text{Total annual miles traveled}) / (\text{average miles per gallon of buses 41 and 48}) = \text{gallons of gasoline used annually.}$

Step 3: Determine the metric tonnes of carbon dioxide equivalent:

$(\text{Gallons of gasoline used annually}) \times (\text{biodiesel (20\% biodiesel; 80\% diesel mix) emissions factor}) = \text{total amount of metric tonnes of carbon dioxide equivalent emitted annually from the two buses that service the Evergreen Campus.}$

See Table 11 for an overview of Intercity Transit emissions in metric tonnes of carbon dioxide equivalent.

**Table 11. Public Transportation (Bus): Employee and Student Use.**

<b>Intercity Transit: The Bus uses B20 Ultra Low Sulfur Diesel</b>								
Year	Total Trips Per Week	Total Miles Per Week	Weeks Per Year	Annual Miles Traveled	Average Miles Per Gallon	Gallons Per Year	Biodiesel Emissions Factor	<b>Total MTCDE</b>
2004	351	4,649	52	241,769	4.7	51,440	0.01	<b>514</b>
2005	351	4,649	52	241,769	4.7	51,440	0.01	<b>514</b>
2006	351	4,649	52	241,769	4.7	51,440	0.01	<b>514</b>

Year	% that Bus	Employees that take the Bus	% that Bus	Students that take the Bus	Evergreen Commuters that take the Bus	Total MTCDE	MTCDE Per Evergreen Commuter	<b>Pounds Per Person Per Year</b>
2004	6	43	29	1,180	1,223	514	0.42	<b>924</b>
2005	6	44	29	1,200	1,244	514	0.41	<b>902</b>
2006	6	44	29	1,186	1,230	514	0.42	<b>924</b>

Finally, by adding the sums together (the values of step 3 above from each section) we can get the grand total metric tonnes of carbon dioxide equivalent emissions from Evergreen's commuter habits for Fiscal Years 2004-06 (Table 12).

**Table 12. Evergreen's Total Commuter Greenhouse Gas Emissions (MTCDE).**

Year	Single Occupancy Vehicles			Carpool			Intercity Transit	<b>TOTAL EMISSIONS (MTCDE)</b>
	Employees	Students	Total	Employees	Students	Total	Total	
2004	989.8	2930.8	3920.6	244.8	667.2	912.0	514.4	<b>5347.0</b>
2005	999.4	2981.0	3980.4	247.2	678.7	925.9	514.4	<b>5420.7</b>
2006	1010.4	2946.3	3956.7	249.9	670.8	920.7	514.4	<b>5391.8</b>

**Table 13.** Comparison of Greenhouse Gases Emitted Per Person for Different Commuter Habits. Carpooling significantly reduces greenhouse gas emissions per commuter. Commuters who take the bus also have a much smaller greenhouse gas footprint than those who drive alone. As bus ridership continues to increase the emissions per person decreases.

	Employees				Students				Intercity Transit	
	Drive Alone: SOV		Carpool		Drive Alone: SOV		Carpool		Bus	
Year	MTCDE Per Person Per Year	lbs Per Person Per Year	MTCDE Per Person Per Year	lbs Per Person Per Year	MTCDE Per Person Per Year	lbs Per Person Per Year	MTCDE Per Person Per Year	lbs Per Person Per Year	MTCDE Per Person Per Year	lbs Per Person Per Year
2004	1.94	4,265	0.57	1,248	1.26	2,766	0.36	801	0.42	924
2005	1.94	4,265	0.57	1,248	1.26	2,766	0.36	801	0.41	902
2006	1.94	4,265	0.57	1,248	1.26	2,766	0.36	801	0.42	924

However, it is also instructional to know the average emissions per person for each mode of commuting. For those who drive alone this is straightforward: take the total metric tonnes of carbon dioxide equivalent and divide it by the total number of commuters who drive alone to campus. For those who carpool, take the total metric tonnes of carbon dioxide equivalent, divide it by the total number of commuters who carpool, then divide it again by the average number of people in each carpool. I estimated 2.5 people per carpool for the Evergreen community. For those who take the bus to campus, take the total metric tonnes of carbon dioxide equivalent and divide it by the total number of commuters who take the bus. Obviously, the more community members that take the bus, the smaller the emissions are per person. Increasing bus ridership is, therefore, one possible way to reduce Evergreen's overall greenhouse gas footprint. Table 13 provides an overview of metric tonnes and pounds of carbon dioxide equivalent emitted per person for the different types of commuter habits. Carpooling and taking the bus significantly reduces the level of greenhouse gas emissions per commuter.



- Data Received: I received information on the airport of origin and destination city for each trip paid for by Evergreen. I received 5 months of information for 2005 and the complete year for 2006.
- Data Received by: Air Travel Department (Jennifer Dumpert).
- Comments: I had to calculate the number of miles between airport of origin and destination. I used Google Earth ruler to measure the distance between cities and corroborated this with an online airport calculator that is available online at: <http://www.world-airport-codes.com>. Once I determined the number of miles between airports I summed up the total for the year. For 2005, I only had data for five months (February – June). So, I determined the average air miles traveled per month and extended this for the other seven months to get an estimation for the year. The number of annual air miles I entered for 2006 is a low estimate because the air travel department did not have data for the number of flights that were originally purchased by Evergreen community members then reimbursed by the college. Though the Air Travel Department stated that reimbursement for air travel was uncommon. Table 8 shows the number of air miles traveled and the greenhouse gas emissions associated with it.

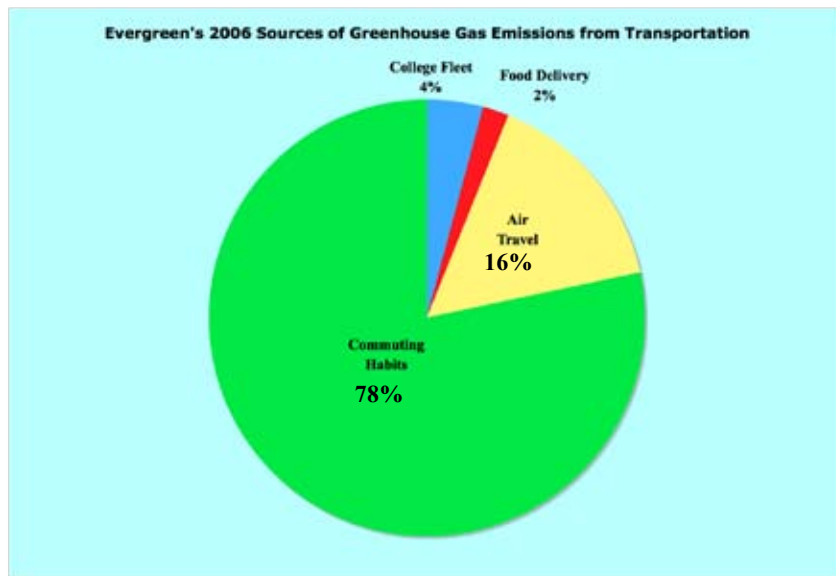
**Table 8.** *Evergreen's Greenhouse Gas Emissions from Air Travel for FY 2005-06.*

Fiscal Year	Total Distance	Emissions Coefficient	Evergreen's Emissions (MTCDE)
2005	1,819,099 miles	0.00078 MTCDE/mile	<b>1,419</b>
2006	1,380,178 miles	0.00078 MTCDE/mile	<b>1,077</b>

### **Commuters**

Evergreen is located several miles from the nearest urban area (Olympia) and does not provide enough living accommodations for all of its community members. As a result, many faculty, staff, and students either choose or are forced to commute several miles to get to work or to attend classes at Evergreen. Transportation to and from campus can be a significant contribution to Evergreen's overall greenhouse emissions. Ultimately, the approximate number of gallons of gasoline and diesel fuel used per year is needed to determine overall emissions from commuter habits.

**Figure 7.** Evergreen's 2006 Sources of Greenhouse Gas Emissions from Transportation. Commuting habits contribute the majority (78%) of Evergreen's transportation emissions.



Year 2006. Commuting was responsible for over 78% of transportation emissions in 2006.

### *~ Fertilizer Application and Agricultural Practices ~*

Any fertilizer used on campus that contains nitrogen will release nitrous oxides into the atmosphere and should be calculated in Evergreen's carbon inventory. Additionally, dairy animals from Evergreen's organic farm will also contribute methane to the atmosphere as they metabolize their food and as their waste decomposes (Clean-Air Cool-Planet, 2006b). Calculating emissions from fertilizer application and agricultural practices are a small percentage of Evergreen's overall emissions but they do contribute to global warming and are therefore worth tracking (Tables 15 and 16).

#### **Fertilizer Application**

- Data Requested: Pounds of synthetic and organic fertilizer used on campus per year and what percentage of nitrogen they contain.

**Table 15.** Evergreen's Greenhouse Gas Emissions from Fertilizer Application on College Grounds including the Organic Farm for FY 2004-06.

Fiscal Year	Organic Fertilizer	% Nitrogen	Emissions Coefficient	Evergreen's Emissions (MTCDE)
2004	8,200 pounds	22%	0.0038 MTCDE/lb	<b>6.9</b>
2005	8,140 pounds	22%	0.0038 MTCDE/lb	<b>6.8</b>
2006	8,125 pounds	22%	0.0038 MTCDE/lb	<b>6.8</b>

- Data Received: from 2004-2006 Evergreen applied 8,000 lbs of Wilbur Ellis organic based fertilizer containing 22% nitrogen (22-2-12) on campus grounds. On the organic farm it varied between years:
  - 2004: 200 pounds of Biogrow with 7% nitrogen (7-7-2);
  - 2005: 100 pounds of feathermeal and 40 pounds of BioGrow with 7% nitrogen (7-7-2);
  - 2006: 100 pounds of canola meal with 6% nitrogen (6-2.5-1) and 25 pounds of kelp meal with 14% nitrogen.
- Data Received by: Facilities Grounds and Motor Pool Manager (Mark Kormondy) and Organic Farm Manager (Melissa Barker).
- Comments: Annually, at least 97.6% of the fertilizer used on campus contains 22% nitrogen. Since the Carbon Calculator asks for only one percentage, I decided to sum the total weight of all the fertilizer used at Evergreen at 22% nitrogen. For example, for 2006, I entered 8,125 pounds of fertilizer containing 22% nitrogen. This amounts to an insignificant overestimate of the total amount of nitrogen applied as fertilizer. Annually, less than eight metric tonnes of carbon dioxide equivalent are emitted from Evergreen's campus-wide use of organic fertilizer (Table 15).

**Table 16.** Evergreen's Greenhouse Gas Emissions from Animal Agriculture on the Organic Farm for FY 2004-06.

Fiscal Year	# Swine (Pigs)	# Goats	# Poultry	Evergreen's Emissions (MTCDE)
2004	2	0	140	<b>1.4</b>
2005	0	0	145	<b>0.7</b>
2006	0	2	176	<b>1.1</b>

#### Animal Agriculture

- Data Requested: Average number of animals living on the Organic Farm from 2004-2006.

- Data Received:
  - 2004: 140 chickens and 2 pigs;
  - 2005: 130 chickens and 15 ducks;
  - 2006: 155 chickens, 12 ducks, 9 turkeys, and 2 goats.
- Data Received by: Organic Farm Manager (Melissa Barker).

### ~ ***Solid Waste*** ~

Solid waste includes mixed paper, co-mingle (glass and plastic), cardboard, aluminum, wood, ferrous metals, and garbage that ends up in a landfill. For the purposes of Evergreen's carbon inventory, I am only concerned about the amount of solid waste that ends up in a landfill (this does not include composted or recycled waste). Landfill waste will emit methane as it decomposes. However, different landfills have different techniques and methods for how it handles its solid waste and these different techniques result in different levels of greenhouse gas emissions. Therefore, it is important to know where Evergreen's waste ends up and how it is processed.

The facilities department trucks Evergreen's solid waste to the Hawk's Prairie Transfer Station in Lacey, WA. From Hawk's Prairie, it is trucked to Centralia, WA where it is loaded onto a train destined for Goldendale, WA. From Goldendale, Evergreen's landfill waste is trucked to the Roosevelt Landfill in Klickitat County, WA. The fuel used, and therefore greenhouse gas emissions, to transport Evergreen's solid waste from campus to the Hawk's Prairie Transfer Station is included in the College Fleet

**Table 17.** *Gallons of Diesel Fuel Per Year to Transport Landfilled Waste from Hawk's Prairie to Centralia, WA.*

Distance (Roundtrip): Hawk's Prairie – Centralia (miles)	64
Average Fuel Economy (mpg)	7
Diesel Fuel per Roundtrip (gallons)	9.1
Trucks Capacity (tons)	19.5
Annual Trips to Centralia	16
<b>Gallons of Fuel per Year</b>	<b>146</b>

data. However, the fuel used to bring Evergreen's waste from Hawk's Prairie to Centralia, WA is unaccounted for and ought to be included in the inventory. Approximately, 146 gallons of diesel fuel per year are used to transport Evergreen's landfilled waste to Centralia and this accounts for 1.5 metric tonnes of emissions (Tables 17 and 18).

I was unable to account for the amount of emissions to transport Evergreen's waste from Centralia to Goldendale via freight train on the Burlington Northern Santa Fe Railway (BNSF). To calculate this information one would need to know the fuel economy of the train, how many trips the train makes per year carrying Evergreen's solid waste, and what portion of the emissions Evergreen should be accountable for. Ultimately, this accounts for a very small percentage of Evergreen's overall emissions so I made a decision not to inquire about the train logistics for this inventory due to time constraints. Perhaps this information could be included in future inventories.

What is important for carbon inventory purposes is that the Roosevelt Landfill practices methane recovery and generates electricity. The process of turning this methane gas into electricity ultimately reduces Evergreen's overall emissions footprint

**Table 18.** *Evergreen's Greenhouse Gas Emissions from Landfilled Waste and from Transporting that Waste to the Roosevelt Landfill in Klickitat County, WA for FY 2004-06.*

Fiscal Year	Landfilled Waste (Short tons)	Emissions Coefficient	Evergreen's Emissions (MTCDE)	Diesel Fuel Per Year (Hawk's Prairie to Centralia)	Emissions Coefficient	Evergreen's Emissions (MTCDE)	Total Emissions from Landfilled Waste (MTCDE)
2004	311	0.1467 MTCDE/short ton	45.6	146	0.01 MTCDE/gallon	1.5	47.1
2005	318	0.1467 MTCDE/short ton	46.7	146	0.01 MTCDE/gallon	1.5	48.2
2006	319	0.1467 MTCDE/short ton	46.8	146	0.01 MTCDE/gallon	1.5	48.3

and therefore has a unique emissions coefficient (Table 18). It is important to record and track the amount of solid waste produced by the campus as it is an annual source of greenhouse gas emissions. Evergreen produces just over 300 short tons of landfilled waste per year that emits just under 50 metric tonnes of greenhouse gases annually (Table 18).

#### **Landfill Waste**

- Data Requested: Short tons of landfill waste per year.
- Data Received: pounds of solid waste from 2004-2006 Evergreen:
  - 2004: 622,990 pounds or 311 short tons;
  - 2005: 636,278 pounds or 318 short tons;
  - 2006: 637,200 pounds or 319 short tons.

- Data Received by: Facilities Motor Pool Coordinator (Sherry Parsons).
- Comments: I needed to convert pounds to short tons. The conversion is 1 short ton equals 2,000 pounds or 1 pound equals 0.0005 short tons.

***Landfill Waste (Transported from Hawk's Prairie to Centralia):***

- Data Requested: Total gallons of diesel fuel used in order to bring Evergreen's landfill waste from the Hawk's Prairie Transport Station to Centralia.
- Data Received: Average fuel economy (mpg), gallons of diesel fuel per roundtrip, annual trips to Centralia to bring Evergreen's landfill waste from Hawk's Prairie (Table 17).
- Data Received by: Introduction to Environmental Studies Program (Student Project – *Why we should care, why we must act: TESC Carbon Budget, Preliminary Report*, March 2007), instructed by Rob Cole and Dylan Fischer.<sup>14</sup>
- Comments: Because there was no separate category in the calculator for the amount of diesel used per year (146 gallons) to transport landfill waste, I entered this data under College Fleet (Diesel).

**Table 19.** *Evergreen's Annual Greenhouse Gas Emissions from HFC-134a Refrigerant Chemical Use in College Chiller, Refrigerators, and Water Coolers.*

Source	Estimated Rate of Loss Per Year	Emissions Coefficient	Evergreen's Emissions (MTCDE)
800-Ton Chiller	50 pounds	0.59 MTCDE/lb	29.5
Refrigerators	20 pounds	0.59 MTCDE/lb	11.8
Water Coolers (including drinking fountains)	5 pounds	0.59 MTCDE/lb	3.0

**TOTAL EMISSIONS = 44.3**

***~ Refrigerant Chemicals ~***

Evergreen has an 800-ton chiller, water fountains, and refrigerators across campus that use HFC-134a refrigerant. HFC-134a is a hydrocarbon that meets all the

<sup>14</sup> A copy of this report can be requested by contacting Evergreen faculty member Rob Cole.

required standards specified by the EPA in order to reduce the rate of ozone depletion. Unfortunately, hydrocarbons are powerful greenhouse gases. HFC-134a, for example, has a global warming potential of 1,300 (meaning that it is 1,300 times more potent as a greenhouse gas than carbon dioxide). Therefore, it is important to calculate the amount of HFC-134a refrigerant Evergreen uses on an annual basis. Currently, HFC-134a accounts for over 40 metric tonnes of greenhouse gas emissions annually (Table 19).

#### **HFC-134a for 800-Ton Chiller**

- Data Requested: Pounds of HFC-134a used on an annual basis.
- Data Received: Seventy-five pounds of HFC-134a refrigerant used per year. This was an estimate of refrigerant lost annually from Evergreen's 800-ton chiller, water fountains, and on-campus refrigerators.
- Data Received by: Facilities College Engineer (Rich Davis).
- Comments: York is the company that manufactures centrifugal water chillers and is responsible for checking and filling Evergreen's chiller. In order to get the amount of HFC-134a refrigerant that Evergreen uses, facilities had to contact them for this information. Unfortunately, they never returned facilities calls and Rich had to estimate the amount of refrigerant used on campus. This will be the last carbon inventory before Evergreen installs a new 1,000-ton chiller (also using HFC-134a). Therefore, Evergreen's emissions will increase from refrigerant chemical use in future inventories.

*Table 20. Evergreen's Gross Greenhouse Gas Emissions, FY 2004-06.*

Source of Emissions	2004 Emissions (MTCDE)	2005 Emissions (MTCDE)	2006 Emissions (MTCDE)
Electricity	8,298	8,740	8,954
Space Heating/Hot Water	5,845	5,719	6,171
Commuting	5,347	5,421	5,392
Air Travel	NA	1,419	1,077
College Fleet	281	272	292
Food Delivery	NA	NA	126
Fertilizer/Animal Agriculture	8	8	8
Solid Waste	47	48	48
Refrigerant Chemicals (Space Cooling)	44	44	44
<b>Total Greenhouse Gas Emissions:</b>	<b>19,870</b>	<b>21,671</b>	<b>22,112</b>

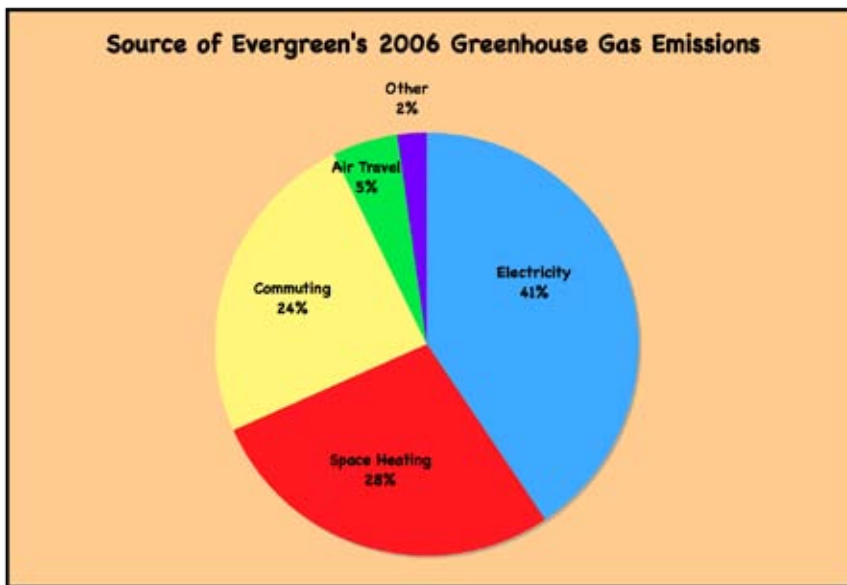


~ *Evergreen's Gross Greenhouse Gas Emissions* ~

With only three years of reliable data it is difficult to make general statements about trends. However, one trend was clear. Evergreen's electricity use increased annually and comprises the single largest source of greenhouse gas emissions (Table 20). In fact, in 2006, Evergreen's electricity consumption *and* combustion of natural gas (for space heating) both increased from 2004 and 2005 levels. As a result, Evergreen emitted more metric tonnes of greenhouse gases in 2006 than in either 2004 or 2005. It should be noted however, that the 2006 inventory took into account more sources of emissions than the other two years. Specifically, Fiscal Year 2004 did not include air travel nor food delivery emissions, while Fiscal Year 2005 lacked food delivery data. Obviously, if these data were available gross emissions for the three years would be closer in value. Unfortunately, even when considering the absence of air travel and food delivery data in previous years, Evergreen's annual emission increased in 2006 taking us farther away from our goal of carbon neutrality.

Annually, purchased electricity, space heating, and commuting back and forth to campus account for over 90% of Evergreen's greenhouse gas emissions. In 2006, for example, these three sources of emissions accounted for 93% of Evergreen's 22,112

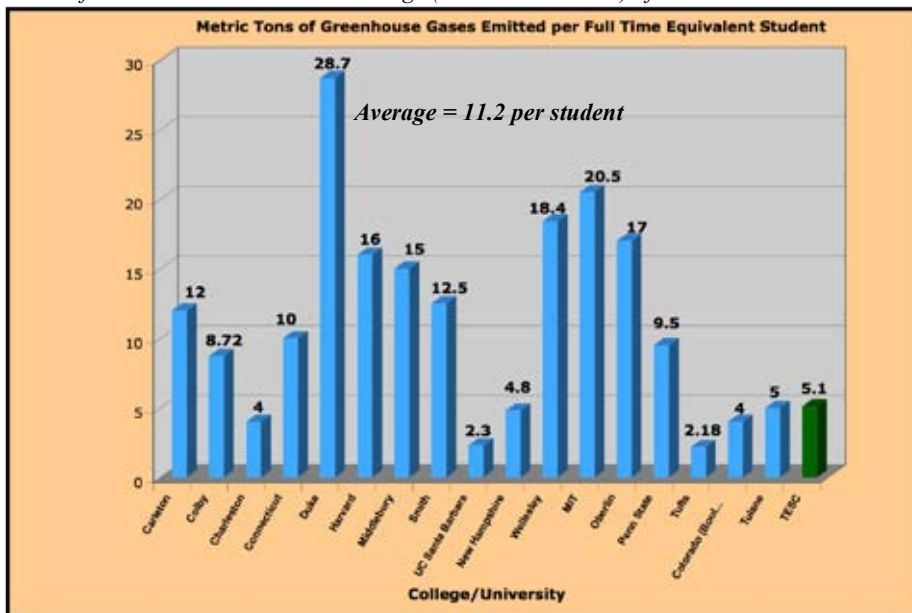
**Figure 8.** Source of Evergreen's 2006 greenhouse gas emissions. Electricity consumption, combustion of natural gas for space and water heating, and commuting habits were responsible for 93% of Evergreen's gross emissions. The category "other" equals college fleet, food delivery, fertilizer and animal agriculture, solid waste, and refrigerants.



metric tonnes of emissions (Figure 8). To put 22,112 metric tonnes in some kind of perspective, one pound of CO<sub>2</sub> could fill 120 party balloons. Therefore, on average, every student, faculty and staff member at Evergreen emits 1.1 million balloons worth of greenhouse gases.

How does this compare to other institutions? In short, quite well. The average of 17 other campuses (who have completed their carbon inventories) is 11.2 metric tonnes per full-time equivalent student (Figure 9). Evergreen averages less than half as much emissions (5.1 metric tonnes) per full-time equivalent student.

**Figure 9.** Average greenhouse gas emissions per full-time equivalent student for 17 campuses across the U.S. Evergreen averages 5.1 metric tonnes per full-time equivalent student or less than half as much as the combined average (11.2 metric tonnes) of other schools.



### ~ Offsets ~

Thus far we have examined Evergreen's activities that contribute to global warming by placing greenhouse gases into the atmosphere. However, Evergreen has also undertaken certain activities (composting and forest preservation) and initiated certain policies (Clean Energy Initiative) that partially offset our emissions. Generally, speaking, offsets are any activity that 1) removes greenhouse gases from the atmosphere (i.e. carbon sinks), 2) avoids adding greenhouse gases into the atmosphere (i.e. methane capture and destruction), or 3) increases the amount of energy produced from clean, renewable sources (i.e. investing in windfarm projects). The quantity of Evergreen's offsets are summed up in Table 21 and will be considered in turn below.

**Table 21.** *Evergreen's Annual Greenhouse Gas Offsets, FY 2004-06.*

Offsets	2004 Offsets (MTCDE)	2005 Offsets (MTCDE)	2006 Offsets (MTCDE)
Green Tags	0	0	6,584
Composting	18	28	4
Forest Productivity	757	757	757
<b>Total Greenhouse Gas Offsets:</b>	<b>775</b>	<b>785</b>	<b>7,345</b>

### **Evergreen Forest**

The purest way for Evergreen to achieve carbon neutrality would be if the amount of greenhouse gases removed or absorbed from the atmosphere by Evergreen's forest and through composting equaled its total emissions. Evergreen contains 1,033 acres of forest on its Olympia campus. The trees within this forest, like all plants, store carbon. The United States Forest Service estimates that the average northwest forest contains 93 metric tonnes of stored carbon per acre (Birdsey, 1992). Using this value we can estimate the total amount of stored carbon in Evergreen's forest to be around 96,069 metric tonnes of carbon.

More importantly, as the trees on Evergreen's campus continue to grow they continue to remove carbon from the atmosphere through photosynthesis. More specifically, trees take in CO<sub>2</sub>, water and sunlight and convert it into glucose (C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>). Glucose serves as food for further growth. Therefore, Evergreen's trees should not only be viewed as a carbon storage center but also as an annual carbon sink that may be calculated in the inventory. Does Evergreen's forest absorb enough carbon to render our college carbon neutral?

In order to determine the amount of carbon absorbed by Evergreen's trees, one needs to study the productivity or annual growth rate of the trees. Researchers at Evergreen are in the process of doing this now and preliminary results may be available later in 2007. I say preliminary because an accurate data set requires a multi-year study that mitigates a potential year where growth conditions were high above or below the norm. Either way, even these initial results were not available at the time of this inventory.

Even so, Evergreen's trees are only one component of Evergreen's forest ecosystem. In order to determine the role the forest plays in Evergreen's carbon

inventory one needs to take a more holistic approach and measure total forest carbon.

Measuring total forest carbon must consider each of the four forest components:

- 1) Trees – rate of growth and level of decomposition;
- 2) Understory Vegetation – saplings, shrubs, bushes, etc.;
- 3) Forest Floor – dead organic matter, litter humus, woody debris, etc.;
- 4) Soil – it is estimated that the vast majority of organic carbon in any forest

ecosystem is locked up in the soil. Therefore, measuring the organic matter in the soil should be considered necessary when evaluating the role Evergreen's forest ecosystem plays in the carbon inventory.

The point is, Evergreen's forest is actually a separate carbon budget complete with its own sources and sinks. Trees not only absorb carbon (acting as a sink), but also "breathe" it out through respiration (acting as a source). The difference between a tree's rate of absorption and respiration of carbon is called its net primary productivity (NPP). Even determining NPP will not give a final answer to a forest's overall carbon budget. After all, leaves and trees themselves decompose and release carbon after death. Determining rates of decomposition, soil types, species of trees present, their age class, other kinds of plant species, animal species, and natural disturbances (such as fires, wind storms, insect outbreaks, etc.) all interact affecting the forest's overall rate of carbon budget. Complex indeed. Once again the United States Forest Service researchers have estimated that the average northwest forest absorbs 0.568 metric tonnes of carbon per acre per year (Birdsey, 1992). Using this figure reveals that Evergreen's total forest carbon sequestration is approximately 586.7 metric tonnes per year.

Unfortunately, the forest ecosystem contained on Evergreen's campus may be profoundly different in character and composition than a forest found in south central Alaska or interior Idaho. Therefore, any estimation over this vast region may not leave us feeling very confident in these numbers. On the spot field study would help remove some of the uncertainty in the numbers. Fortunately, Evergreen has a team of researchers along with committed academic programs that have already initiated a long-term in-depth study of Evergreen's forest. Over the years, their research will contribute data to the rate of sequestration of Evergreen's forest. Their work is titled The Evergreen Ecological Observation Network (EEON) and information is available from their website at <http://academic.evergreen.edu/projects/EEON/>. Also, I suggest that whoever completes Evergreen's next carbon inventory checks directly with Evergreen faculty members

Dylan Fischer, Carri LeRoy, and Paul Przybylowicz. They oversee the EEON project and can be an invaluable source of information on forest carbon sinks.

For this inventory, I used the research from the 2007 Introduction to Environmental Studies program (co-taught by Dylan Fischer and Rob Cole). The students here combined data specific to Evergreen's forest structure along with peer-reviewed research on rates of forest sequestration to make an initial estimation for Evergreen's forest. They concluded that Evergreen's forest sequesters approximately 757 metric tonnes of carbon dioxide equivalent every year.

### **Composting**

According to the EPA (2002b), composting can lead to carbon sequestration for a few different reasons. First, adding compost to depleted soils raises the overall carbon level of the soil by adding organic matter. Second, nitrogen (contained in compost) stimulates increased plant growth that serves as a carbon sink. Third, composting stabilizes carbon compounds, such as humic substances, that can be stored in the soil for long periods of time (over 50 years). For these reasons, it is worth recording how much composting Evergreen does and the estimated amount of annual carbon sequestration (Table 22).

**Table 22.** *Evergreen's Rate of Greenhouse Gas Sequestration from Composting at the Organic Farm for FY 2004-06.*

<b>Fiscal Year</b>	<b>Composting</b>	<b>Sequestration Coefficient</b>	<b>Evergreen's Rate of Sequestration (MTCDE)</b>
2004	100 short tons	0.18 MTCDE/short ton	<b>18.0</b>
2005	150 short tons	0.18 MTCDE/short ton	<b>27.0</b>
2006	23 short tons	0.18 MTCDE/short ton	<b>4.1</b>

- Data Requested: The amount of compost per year in short tons.
- Data Received: short tons of compost per year from 2004-2006:
  - 2004: 100 short tons;
  - 2005: 150 short tons;
  - 2006: 23 short tons.
- Data Received by: Organic Farm Manager (Melissa Barker).
- Comments: In 2006, the Organic Farm experienced problems with their composting facility and was forced to significantly reduce the amount of food scraps they were able to accommodate.

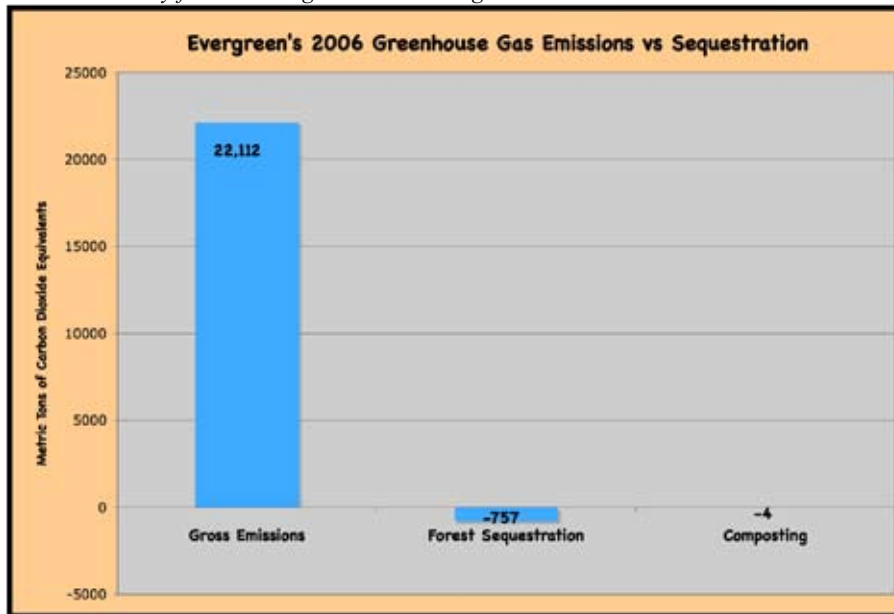
Annually, forest sequestration combined with carbon intake from composting accounted for a small percent of Evergreen's annual rate of greenhouse gas emissions (Table 23). In other words, Evergreen's carbon budget is out of balance and strongly

**Table 23.** Carbon Inventory: Evergreen's Net Greenhouse Gas Emissions, FY 2004-2006.

Fiscal Year	Gross Emissions (MTCDE)	Sinks (MTCDE)		Net Emissions
		Forest Preservation	Composting	
2004	19,870	757	18	19,095
2005	21,671	757	28	20,886
2006	22,112	757	4	21,351

skewed towards the emissions side of the equation. In 2006, for example, Evergreen emitted 21,351 metric tonnes more greenhouse gases than it absorbed (Figure 10). This is problematic because Evergreen's forest may be at or near its maximum rate of carbon

**Figure 10.** Evergreen's 2006 gross greenhouse emissions compared to the estimated rate of carbon sequestration from the forest ecosystem and composting. Any strategy focusing solely on increasing the rate of carbon sequestration from these two sources will not achieve carbon neutrality for The Evergreen State College.



absorption. As forests continue to mature the annual rate of absorption is thought to decrease. And, composting alone cannot make up the difference. Evergreen would have to compost approximately 120,000 tons of food scrap annually to offset Evergreen's current emissions. This is 5,000 times greater than our current level of composting of 23



tons. Evergreen does not have the capacity or produce enough food scraps to make this a reality. Therefore, achieving carbon neutrality has to come from a combination of reducing overall emissions and purchasing carbon offsets from retail providers.

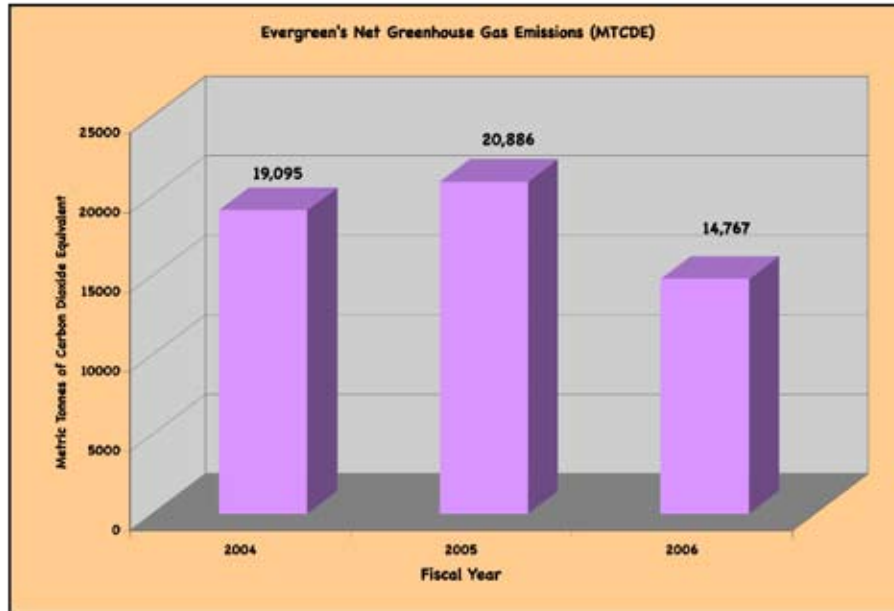
### **Renewable Energy Credits or Green Tags**

In the winter of 2005, Evergreen students voted in favor (91% of those who voted, voted yes) of a self-imposed clean energy fee. As a result, every student currently pays \$1.00 per credit, every quarter, in order to purchase Renewable Energy Credits or Green Tags from Evergreen's energy providers (Puget Sound Energy and Tacoma Public Utilities). Because of this student vote, Evergreen now offsets 100% of our electricity purchases with third party qualified renewable sources (wind, solar, biomass, etc.).

So, what exactly does this mean for Evergreen's carbon inventory? Simply put, it has the potential to balance Evergreen's emissions from electricity to zero. Why? Because for every megawatt-hour of electricity Evergreen uses, we pay for another megawatt-hour of electricity to be produced by a new clean energy facility. All in all, it means that Evergreen is investing in clean, renewable energy. Most importantly the money Evergreen spends to purchase Green Tags is invested in *new* green energy projects that might not otherwise be feasible. Puget Sound Energy purchases the Green Tags from the Bonneville Environmental Foundation that is Green-e certified. Green-e is a third party regulator who pre-certifies every Green Tag to assure that the money is spent on qualified renewable sources and that they are not double-counted. Because Evergreen buys Green Tags, and therefore pays for new clean, renewable energy production, Green Tags are frequently considered legitimate offsets for any institution's carbon budget. Regardless, purchasing Green Tags does not alleviate Evergreen's responsibility to reduce electricity consumption (as long as it contributes greenhouse gas emissions).

Evergreen began purchasing Green Tags in October of 2005. That was 3½ months into Fiscal Year 2006. As a result, Evergreen did not purchase enough Green Tags to offset the entire year. More specifically, Evergreen purchased 12.1 million kWh worth of Green Tags but used 16.5 million kWh of purchased electricity. Starting in Fiscal Year 2007, Evergreen will achieve its stated objective of offsetting 100% of its electricity purchases.

**Figure 11.** Evergreen's annual net greenhouse emissions including purchase of Green Tags. In 2006, Evergreen's gross emissions were greater than in 2004 and 2005, however, Evergreen's net emissions in 2006 were lower because Evergreen offset 6,584 metric tonnes of emissions from the purchase of Green Tags from Puget Sound Energy.



### ~ Balancing Evergreen's Carbon Budget ~

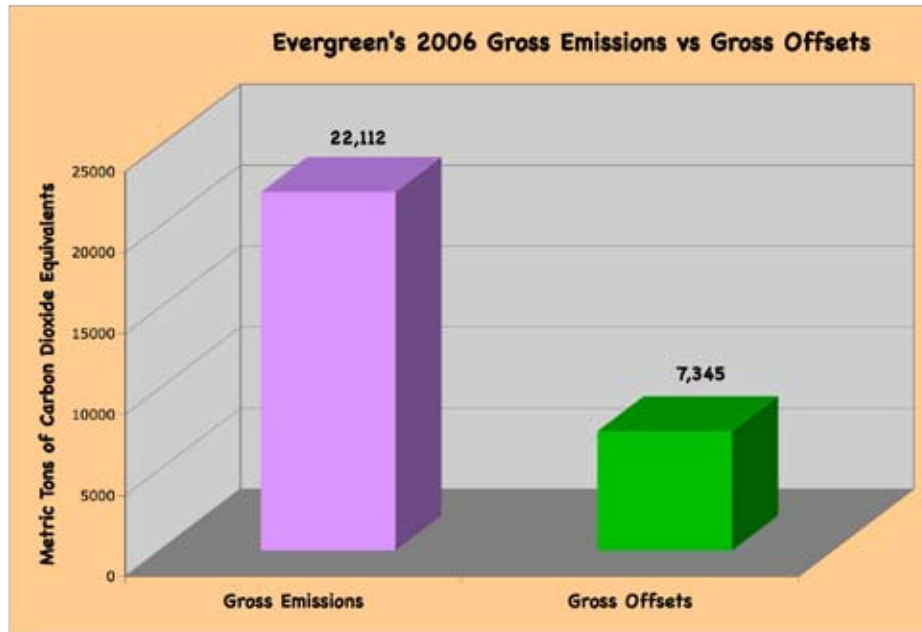
Once Evergreen's data is collected and converted into metric tonnes of carbon dioxide equivalent it is time to perform the calculation that will result in Evergreen's annual carbon budget. I had reliable data from 2004-2006. Therefore, I calculated a budget for those three years. For each year, I totaled the levels of emissions from the energy, transportation, agriculture, solid waste, and refrigerant chemicals sectors. The result is Evergreen's gross emissions. From this sum, I then subtracted the total offsets (Green Tags, composting, & forest productivity). The result is Evergreen's net emissions (Figure 11). In 2006, Evergreen's net greenhouse gas emissions were 14,767 metric tonnes of carbon dioxide equivalent (Figures 11 and 12). The Evergreen State College would need to reduce greenhouse gas emissions by over 1,000 metric tonnes per year to meet the specified goal of carbon neutrality by 2020.

*~ Summary of Inventory Results: Key Discoveries ~*

The process of completing The Evergreen State College's comprehensive greenhouse gas inventory and the results of that inventory has revealed several key discoveries. In summary, these discoveries are:

- ***Data acquisition is time consuming.*** By far the most time consuming aspect of completing Evergreen's greenhouse gas inventory was gathering the necessary data. I spent the better part of 10 weeks emailing, calling, and meeting with numerous community members in order to gather the necessary data. Whoever completes Evergreen's next inventory should allow for ample time to request and gather the necessary data.
- ***Purchased electricity, combustion of natural gas for space heating, and commuter habits account for over 90% of Evergreen's greenhouse gas emissions.***
- ***Evergreen's gross greenhouse gas emissions per full-time equivalent student (5.1 metric tonnes of carbon dioxide equivalent) are comparatively low.*** Again, the average of 17 different colleges equaled 11.2 metric tonnes per full-time equivalent student. Furthermore, Evergreen's value does not take into account any offsets. If one chooses to include net greenhouse gases per full-time equivalent student the value is much lower.
- ***Evergreen's commuter emissions are comparatively high.*** Evergreen's rural location means that many students and nearly all staff and faculty need to travel further distances to get to campus than most other institutions. As a result, 24% of all of Evergreen's greenhouse gases are emitted by commuters. This is a significantly higher proportion than most other institutions that I looked at.
- ***Evergreen will need to average a 1,000 metric tonne reduction of greenhouse gas emissions per year in order to achieve carbon neutrality by 2020.***
- ***Ultimately, Evergreen will need to purchase offsets from the retail market in order to accomplish carbon neutrality.*** That is, unless Evergreen somehow produces on-campus energy from clean, renewable sources *and* figures out a way to eliminate greenhouse gas emissions from commuting while at the same time increasing the rate of carbon uptake from our forest and compost.

**Figure 12.** Evergreen's 2006 gross greenhouse emissions compared to Evergreen's gross offsets (the combined rate of carbon sequestration from the forest ecosystem, composting, and purchase of Green Tags from Puget Sound Energy). In 2006, Evergreen's net emissions were 14,767 metric tonnes of carbon dioxide equivalent. The Evergreen State College would need to reduce emissions by over 1,000 metric tonnes per year to meet the stated goal of carbon neutrality by 2020.



## CHAPTER 8

### *Where does Evergreen go from here?*

#### *Next Steps/Recommendations*

- ***Establish Greenhouse Gas Data Collection as an Institutional Priority.***

Significantly reducing greenhouse gas emissions will not be easy. It will take a dedicated community who not only comprehends the issue but also is capable of making significant operational and behavioral changes. This sort of commitment requires strong administrative leadership. Evergreen's administration has already demonstrated that our college is dedicated to the issue of global warming. Now, they will need to communicate this to the rest of the Evergreen community. When change happens and difficult decisions are made (in order to reduce greenhouse gas emissions), the Evergreen community will need to understand, clearly, why these changes are important. The Evergreen community will need to understand the threats of global warming to our region as well as the opportunities available as a reward for decisive action.

One immediate step the administration can take is to communicate the importance of Evergreen's carbon inventory. Because we already know that Evergreen's carbon inventory will need to be completed on a regular basis<sup>15</sup> and because we already know what data is needed, Evergreen's staff should collect the data in real-time and have it readily available upon request. The best way to make this happen is if it is clearly expressed and made a requirement by Evergreen's administration. In other words, staff members should be notified that they are expected to provide relevant greenhouse gas emissions data in a timely manner. To help facilitate this, I created a summary page (Appendix B) that lists what information is needed and what departments are expected to provide it.

Obviously, one of my greatest concerns for whoever carries out the next inventory is that they will have to go through the process of explaining what the inventory is, why it is important, and what data they need all over again.

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<sup>15</sup> The Presidents Climate Commitment recommends that member institutions update their carbon inventory every two years and report this information to the Association for the Advancement of Sustainability in Higher Education (AASHE).

Repeating this process is so time consuming that I doubt whether any student, student group, or academic program could gather the data, perform the calculations, and summarize the results within a 10-week timeframe. Furthermore, I am concerned that the quality of the data will fail to improve or even degrade. These possibilities could jeopardize the completion of future inventories and threaten Evergreen's progress to reduce greenhouse gas emissions. On the other hand, if Evergreen's emissions data is routinely collected and readily available upon request, the quality and process of repeating Evergreen's carbon inventory will improve. Then, more energy can be spent on evaluating the results and communicating them to the Evergreen community.

Commuting habits are one specific problem. In order to evaluate the amount of annual fuel used by Evergreen commuters I had to rely on data extrapolated from Evergreen's 2005 Commute Trip Reduction Survey for staff and faculty. This data set sufficed for this inventory but it should be noted that a small percentage (27.4%) of Evergreen employees completed the survey and it is not random. Community members complete the survey on a volunteer basis – that could skew the results. For example, it is a possibility that staff and faculty members who use alternative modes of travel (i.e. walk, bus, carpool, etc.) are more likely to complete the survey because they are proud of their behavior. Furthermore, the Commute Trip Reduction Survey does not include information on student commuting behavior. For that information I relied upon the 2006 Student Experience Survey available through Institutional Research. Unfortunately, there is no guarantee that this survey will be repeated in the future. If not, the quality of the data would be degraded for a significant component of Evergreen's overall emissions. As previously mentioned, Parking Services currently conducts parking lot counts three times daily. As far as I know, this data is not being used by anyone and does not provide useful information for the carbon inventory. Perhaps these efforts can be changed to better capture appropriate data for all of Evergreen's commuters (i.e. ratio of drivers who commute alone, number of carpoolers, distance of commute, trips per week, weeks per year, etc.).

Air travel presents another potential problem. Unless the air travel department is notified that they are expected to provide annual air travel

miles staff members will be forced to rifle through receipts again when it is time complete the next inventory. This is not only frustrating work but time consuming also. Furthermore, someone then has to calculate the distance traveled for each and every flight. Determining the distance between airports for hundreds of flights took two complete workdays. Because this is now important institutional data it should be captured at the time the flight is issued and maintained in a database that sums the total distance traveled of all flights. If the next inventory is completed in 2009, then it should not come as a surprise to anyone when air travel miles are requested once again.

- ***Rethink Goal of Carbon Neutrality by 2020. Change to Carbon Neutral by 2009?*** I strongly recommend that the Evergreen community achieve carbon neutrality by FY 2009. How? By purchasing greenhouse gas offsets from the retail market. Currently, Evergreen has the opportunity to invest in new renewable energy projects, reforestation projects, energy efficiency projects, methane capture and destruction projects, and others by purchasing offsets from any of 35 retail carbon offset providers.

The average offset sells at \$10/metric ton (Clean-Air Cool-Planet, 2006a). Therefore, Evergreen could become carbon neutral (at current levels of emissions) at an estimated cost of \$147,670 annually (or 0.15% of Evergreen's 2006 operating budget). To be sure, there is widespread pushback coming from environmental groups and higher education institutions that it is improper to "purchase" one's way to carbon neutrality without making a substantial effort to reduce emissions. In Evergreen's case, this does not make much sense. There are several reasons why:

1. I believe that "neutralizing" Evergreen's carbon footprint cannot wait until 2020 or any date too far into the future. Due to the severity of the problem and the need to reduce emissions as soon as possible, I think postponing investment in quality offset projects is immoral.
2. It seems to be assumed that once a company or institution purchases offsets they will abandon their responsibility to further reduce emissions. In Evergreen's case this is highly unlikely. This community is far too principled to avoid responsibility on the global warming issue. It seems more than reasonable, that the best



policy would be a combination of establishing short-term reduction strategies and targets coupled with the purchase of high quality offsets.

3. Evergreen already has comparatively low per student emissions. In fact, as mentioned earlier, Evergreen's emissions per full-time equivalent student is less than half the average of other institutions. When has a "substantial effort" to further reduce emissions been reached? In Evergreen's case, it seems reasonable to conclude that this threshold has been achieved.
4. Everyday that goes by where Evergreen does not hold itself financially accountable for contributing to global warming is at best a statement that global warming is not a priority and at worse an affront to future generations. In essence, avoiding the purchase of carbon offsets is a statement that Evergreen does not believe it should internalize the cost of global warming and we are passing this burden on to future generations.
5. For nearly 2 years now Evergreen students have been digging into their pockets to purchase Green Tags from Puget Sound Energy. Student money has helped finance local wind projects and helped to increase clean, renewable energy coming into our regional electric grid. It is time for the rest of the Evergreen community to follow suit and equally contribute. This would be a wonderful message to Evergreen's student body and the rest of the Olympia community.
6. Evergreen could leverage its purchasing power to improve the retail offset market. Perhaps this is the most far-reaching and influential reason why Evergreen ought to purchase retail carbon offsets. Currently, there are no standards and no clear assurance that purchasing offsets meets the intended purpose. Through careful research and by demanding project transparency and evidence of additionality, Evergreen has the power to help improve the quality of offsets being provided to the average consumer. The fact is, the only way Evergreen and countless other institutions are going to achieve their carbon neutrality goals are through the

purchase of retail offsets. Evergreen can play an important role in helping to improve that market. And that brings me to my seventh and final point.

7. Eventually, Evergreen is going to have to purchase more offsets to meet the goal of carbon neutrality. So, why wait?

- ***Establish Short-term Emissions Reduction Targets.*** Regardless of when Evergreen achieves carbon neutrality (whether it is in 2020 as specified in the college's updated Strategic Plan or in 2009 as suggested above), our college needs to establish specific greenhouse gas reduction targets. Again, the ultimate goal is to reduce greenhouse gas emissions. This is even more important than achieving carbon neutrality. Therefore, I suggest the following challenging but feasible goals of reducing greenhouse gas emissions:

- *15% below 2006 levels by 2012.* If this goal is established and achieved it would be a reduction of 3,317 metric tonnes of greenhouse gases by 2012.
- *40% reduction of 2006 levels by 2020.* This would eliminate 8,845 metric tonnes of greenhouse gas emissions.
- *80% reduction by 2050* (the target agreed upon by the Intergovernmental Panel on Climate Change to avoid the worst impacts of global warming). This would eliminate 17,690 metric tonnes of emissions leaving Evergreen with a gross emissions value of 4,422 metric tonnes.

See Appendix C for a list of climate commitments and emissions reduction targets established by other institutions of higher education.

- ***Establish and Implement Greenhouse Gas Reduction Strategies.*** This involves research and a discussion worthy of another thesis. Nevertheless, it is an important next step if Evergreen is going to achieve significant emissions reductions. I would suggest that any strategy look at each of the three main contributors to Evergreen's gross emissions (purchased electricity, combustion of natural gas, and commuter behaviors) and determine short-term and long-term strategies to reduce emissions, piecemeal.

- ***The Sustainability Task Force Formally Establishes Global Warming as a Major Sustainability Issue and Dedicates itself to Advancing Evergreen's Global Warming Initiatives.*** As a result, the timely completion of future greenhouse gas inventories fall under the purview of the Sustainability Task Force.

## ***CONCLUSION***

### ***Global Warming: A Year to Remember***

How will this past year be remembered? Will it be remembered for today's horrific war in Iraq? How about the global war on terrorism? Will Americans long remember today's debate over immigration reform or the so-called domestic spy program? Hardly. Global warming, on the other hand, will be familiar to everyone, everywhere for a long time to come. Polar icecaps will continue to melt away while sea-level and global air temperature will continue to rise well into the next century. A hundred years from now, the consequences associated with those trends will influence everyday life. Lag times in the climate system, the long persistence time of atmospheric greenhouse gases, and the fact that global emissions continue to rise ensure that global warming will still be an issue for 22<sup>nd</sup> century citizens. Future generations will understand, clearly, that it was our 25 billion tons of annual greenhouse gas emissions that is the root cause of their climate problems. Historical records will also remind them how we basically ignored over 20 years of international scientific consensus that global warming was not only happening but that our activities were the driving force. So, how will future generations remember us? I am going to guess, unfavorably. However, it doesn't have to be this way. It is never too late to redefine our legacy. And, that is exactly what we are doing.

### ***Changing The National and Global Conversation***

Few could have imagined only one year ago how the issue of global warming would come to dominate the national conversation. Al Gore introduced Americans to an "Inconvenient Truth," Thomas Friedman encouraged Americans that "Green" is "The new Red, White and Blue," and Tom Brokaw emerged from retirement just to tell you "What You Need to Know" about global warming. And, if you don't watch much TV, then reading the headlines on any given day would have likely taught you something new about global warming. This past year also saw the U.S. Supreme Court rule that greenhouse gases are pollutants and that the EPA is responsible for regulating them. Just what kind of impact this decision will have is yet to be determined, but some are calling it the most important environmental decision the Supreme Court has made in decades.

Internationally, Britain's chief economist, Sir Nicholas Stern, published the most extensive report thus far detailing the economic impacts of global warming. The so-

called Stern Review concluded that global efforts to reduce greenhouse gas emissions could cost the world about 1% of its annual GDP. While the impacts of global warming, under a “do nothing” scenario, could cost the world upwards of 20% of its annual GDP. And, of course, the most widely anticipated international report on global warming was also published this past year. The Fourth Assessment Report of the Intergovernmental Panel on Climate Change ended any doubt as to whether global warming is happening and ended any reasonable doubt as to whether human activities are a main contributing factor.

### ***From Talk to Action?***

So, has all this talk led to any action? Yes. Many companies, organizations, institutions, and local governments have established climate policies. Most, like the U.S. Mayors Climate Protection Agreement, are commitments to reduce greenhouse gas emissions by a certain percentage by a certain date (i.e. 7% below 1990 levels by 2012). Others are striving for carbon neutrality. In fact, “carbon neutral” has become so pervasive that the New Oxford American Dictionary selected it as its 2006 “Word of the Year.”

What does carbon neutral mean? As we have learned in this thesis, carbon neutrality is achieved when greenhouse gas emissions – through operations and daily activities – are balanced by other activities that offset or remove greenhouse gases from the atmosphere. If every nation, institution, organization, and individual accomplished this, then the human contribution to global warming would effectively end.

### ***What About Evergreen?***

As expected, Evergreen has been anything but passive. In November of 2006, Evergreen’s Board of Trustees approved the updated Strategic Plan with the stated goal of “achieving carbon neutrality by 2020.” Then, on January 18, 2007, President Les Purce joined the Leadership Circle of the Presidents Climate Commitment. An agreement to “achieve climate neutrality as soon as possible.” And just recently, Evergreen’s administration officially formed a Focus the Nation Steering Committee. The Committee – comprised of faculty, staff, and students – will be organizing a regional event dedicated to global warming solutions.

### ***From Action to Action...***

Indeed, for those long concerned about global warming this has been a year to remember. The level of national dialogue and policy implementation crossed a threshold. Global warming is officially mainstream. These are reasons to feel good, but not too good. Avoiding the most serious impacts of global warming will, according to most scientists, require an 80% reduction of greenhouse gas emissions by 2050.

Unfortunately, global emissions continue to rise (not decline as they ought to be). The U.S., which contributes around 22% of global emissions, is the world's leading laggard. A 2007 White House report to the United Nations was discouraging. It projected that the U.S. would increase 2000 level emissions 20% by 2020. China is another major concern. The Wall Street Journal recently reported that last year China built the equivalent of one large coal-fired power plant per week and (perhaps as early as November 2007) they will overtake the U.S. in gross emissions. Not even the Evergreen community can point fingers. According to our recently completed greenhouse gas inventory, our gross emissions have increased every year for the past three years.

### ***Our Legacy***

How will this past year be remembered? That depends on our ability to reduce emissions. All the talk and all the policies in the world won't make a difference until emissions begin to decline. The coming generation will not say, "Hey, at least they talked about it" and give us a "good try" pat on the back. They will hold us accountable. Can we succeed? Well, if you believe – like John F. Kennedy believed – that humans are capable of solving all human-made problems, then we better get to work. And, if the global picture is too daunting, then I encourage Evergreen community members to focus closer to home. Small changes can have large effects. Ask, "What will Evergreen's greenhouse gas emissions be next year?" Then, do your part to ensure that they do not increase for the fourth year in a row.

## ~ REFERENCES ~

- Arctic Climate Impact Assessment. (2004). *Impacts of a Warming Arctic*. Retrieved from: <http://www.acia.uaf.edu/>.
- Battles, J. J., Robards, T., Das, A., Waring, K., Gilles, J. K., Schurr, F., et al. (2006). *Climate Change Impact on Forest Resources*. Retrieved from: <http://www.energy.ca.gov/2005publications/CEC-500-2005-193/CEC-500-2005-193-SF.PDF>.
- Berliner, L. M. (2003). Uncertainty and Climate Change. *Statistical Science*, 18(4), 430-435.
- Birdsey, R. A. (1992). *Carbon Storage and Accumulation in United States Forest Ecosystems*. Retrieved from: <http://www.ilea.org/birdsey/>.
- Brown, J. H., Valone, T. J., & Curtin, C. G. (1997). Reorganization of an Arid Ecosystem in Response to Recent Climate Change. *Proceedings of the National Academy of Science of the United States of America*, 94, 9729-9733.
- Bureau of Economic Analysis. (2005). U.S. International Transactions: Fourth Quarter and Year 2004.
- Center for Disease Control and Prevention. (2007). West Nile Virus. Retrieved from: <http://www.cdc.gov/ncidod/dvbid/westnile/surv&control.htm>.
- Clean-Air Cool-Planet. (2006a). *A Consumer's Guide to Retail Carbon Offset Providers*. December.
- Clean-Air Cool-Planet. (2006b). *Campus Carbon Calculator User's Guide: Conducting a Campus Greenhouse Gas Emissions Inventory on your Campus*. CA-CP Calculator v5.0. Retrieved from: <http://www.cleanair-coolplanet.org>.
- Cortese, A. D. (2003). The Critical Role of Higher Education in Creating a Sustainable Future. *Planning for Higher Education*, 15-22.
- Crick, H. Q. P., Dudley, C., Glue, D. E., & Thomson, D. L. (1997). UK Birds are Laying Eggs Earlier. *Nature*, 388, 526.
- Dautremont-Smith, J., Gamble, N., Perkowitz, R. M., & Rosenfeld, D. (2006). *A Call For Climate Leadership: Progress and Opportunities in Addressing the Defining Challenge of our Time*. Retrieved from: [www.presidentsclimatecommitment.org](http://www.presidentsclimatecommitment.org).
- Diaz, J. H. (2006). Global climate changes, natural disasters, and travel health risks. *J Travel Med*, 13(6), 361-372.
- Ehrlich, P. R., & Ehrlich, A. H. (1981). *Extinction: The Causes and Consequences of the Disappearance of Species*. New York: Random House.
- Energy Information Administration (EIA). (2003). Annual Review. Retrieved from: [http://www.eia.doe.gov/emeu/aer/pdf/pages/sec5\\_7.pdf](http://www.eia.doe.gov/emeu/aer/pdf/pages/sec5_7.pdf). May 2005.
- Energy Information Administration (EIA). (2006). *International Energy Outlook 2006: Energy-Related Carbon Dioxide Emissions*. Retrieved from: <http://www.eia.doe.gov/oiaf/ieo/emissions.html>.
- Environmental Protection Agency (EPA). (2002a). *A Comprehensive Analysis of Biodiesel Impacts on Exhaust Emissions: Draft Technical Report*. Retrieved from: <http://www.epa.gov/OMS/models/analysis/biodsl/p02001.pdf>.
- Environmental Protection Agency (EPA). (2002b). *Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks*. Retrieved from: <http://www.epa.gov/climatechange/wywd/waste/downloads/greengas.pdf>.
- Environmental Protection Agency (EPA). (2006a). EPA Green Power Partnership: Top 10 College and University Partners. Retrieved from: [http://www.epa.gov/greenpower/pdf/top10ed\\_jan06.pdf](http://www.epa.gov/greenpower/pdf/top10ed_jan06.pdf).
- Environmental Protection Agency (EPA). (2006b). *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2004*. Report Number: 430-R-06-002.
- Environmental Protection Agency (EPA). (2007). *AP 42, Fifth Edition: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources*. Retrieved from: <http://www.epa.gov/ttn/chief/ap42/index.html>.
- Goldberg, J. (2007). Global Cooling Costs Too Much. *National Review Online*. February 9.



- Gore, A. (2006). *An Inconvenient Truth: The planetary emergency of global warming and what we can do about it*: Rodale.
- Grabherr, G., Gottfried, M., & Pauli, H. (1994). Climate Effects on Mountain Plants. *Nature*, 369, 448.
- Hansen, J. (2006). Climate Change: On the Edge. *The Independent*. February 17.
- Hirsch, R., L.; Bezdek, Roger; Wendling, Robert. (2005). Peaking of World Oil Production: Impacts, Mitigation, & Risk Management. Retrieved from: <http://www.hubbertpeak.com/us/NETL/OilPeaking.pdf>.
- Houghton, R. A., & Woodwell, G. M. (1989). Global Climatic Change. *Scientific American*, 260(4), 42-43.
- IPCC. (2007a). *Climate Change 2007: Climate Change Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*.
- IPCC. (2007b). *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*.
- Jimmy Carter Library. (2004). Jimmy Carter State of the Union Address 1980.
- Jones, P. D., & Mann, M. E. (2004). Climate Over Past Millennia. *Reviews of Geophysics*, 42.
- Kammen, D. (2007). What Will it Cost to Fight Global Warming? [Electronic Version]. *National Public Radio: Talk of the Nation*. Retrieved February 22 (date discussion aired) from: <http://www.npr.org/templates/story/story.php?storyId=7551080>.
- Karl, T. R., & Trenberth, K. E. (2003). Modern global climate change. *Science*, 302(5651), 1719-1723.
- Karner, D. B., & Muller, R. A. (2000). PALEOCLIMATE: A Causality Problem for Milankovitch. *Science*, 288(5474), 2143-2144.
- Keller, C. F. (2003). Global warming: the balance of evidence and its policy implications. A review of the current state-of-the-controversy. *ScientificWorldJournal*, 3, 357-411.
- Klare, M. (2005, May 14). *Blood and Oil: The Dangers and Consequences of America's Growing Dependency on Imported Petroleum*. Paper presented at the Beyond Oil: Challenges and Opportunities for Peace, Jobs, Justice, and Sustainability.
- Landler, M. (2006). Global Warming Poses Threat to Ski Resorts in the Alps. *The New York Times*. December 16.
- Lorius, C., Jouzel, J., Raynaud, D., Hansen, J., & Le Treut, H. (1990). The Ice-Core Record: Climate Sensitivity and Future Greenhouse Warming. *Nature*, 347(6289), 7.
- Marland, G., Boden, T. A., & Andres, R. J. (2006). *Global, Regional, and National CO2 Emissions. In Trends: A Compendium of Data on Global Change*. Retrieved from: [http://cdiac.esd.ornl.gov/trends/emis/tre\\_glob.htm](http://cdiac.esd.ornl.gov/trends/emis/tre_glob.htm).
- McCarty, J. P. (2001). Ecological Consequences of Recent Climate Change. *Conservation Biology*, 15(2).
- McKibben, B. (2007). Global Warming Can't Buy Happiness. *Los Angeles Times*. March 21.
- McMichael, A. J., Woodruff, R. E., & Hales, S. (2006). Climate change and human health: present and future risks. *Lancet*, 367(9513), 859-869.
- Meffe, G. K., Carroll, C. R., & Contributors. (1997). *Principles of Conservation Biology* (2nd ed.): Sinauer Associates, Inc.
- NASA. (2005). Paleoclimatology: The Ice Core Record: Earth Observatory.
- National Center for Education Statistics. (2005). Digest of Education Statistics, 2005. Retrieved from: [www.nces.ed.gov/programs/digest/d05/](http://www.nces.ed.gov/programs/digest/d05/).
- NOAA. (2007a). Coasts. Retrieved March 2007 from: <http://www.noaa.gov/coasts.html>
- NOAA. (2007b). NOAA Reports 2006 Warmest Year on Record For U.S. NOAA Magazine.
- Osborne, T. J., & Briffa, K. R. (2006). The Spatial Extent of 20th-Century Warmth in the Context of the Past 1200 Years. *Science*, 841-844.
- Parmesan, C., Ryrholm, N., Stefanescu, C., Hill, J. K., Thomas, C. D., Descimon, H., et al. (1999). Poleward Shifts in Geographical Ranges of Butterfly Species Associated with Regional Warming. *Nature*, 399, 579-583.
- PBS: Science & Health. (2005). History of Global Warming. In NOW (Ed.). Retrieved from: <http://www.pbs.org/now/science/climatechange.html>.

- Pielou, E. C. (1991). *After the Ice Age: the Return of Life to Glaciated North America*: The University of Chicago Press.
- Porter, G., Brown, J. W., & Chasek, P. S. (2000). *Global Environmental Politics* (Third Edition ed.): Westview Press.
- Quinn, T. P. (2005). *The Behavior and Ecology of Pacific Salmon & Trout* (1st ed.): University of Washington Press.
- Rabe, B. (2007). What Will it Cost to Fight Global Warming? *National Public Radio: Talk of the Nation*. Aired: February 22. Retrieved from: <http://www.npr.org/templates/story/story.php?storyId=7551080>.
- Revelle, R., & Suess, T. (1957). Carbon Dioxide Exchange between Atmosphere and Ocean and the Question of an Increase of Atmospheric CO<sub>2</sub> during the Past Decades. *Tellus, IX*, 19-20.
- Riley, T., Z. (2004). *A Review of Energy Development in the West*. Technical Appendix for the National Commission on Energy Policy by Izaak Walton League of America, Wildlife Management Institute, Trout Unlimited, Theodore Roosevelt Conservation Partnership.
- Rind, D. (2002). The Sun's Role in Climate Variations. *Science*, 296(5568), 673-677.
- Roberts, P. (2004). *The End of Oil: On the Edge of a Perilous New World*. New York: Houghton Mifflin Company.
- Roemmich, D., & McGowan, J. (1995). Climatic Warming and the Decline of Zooplankton in the California Current. *Nature*, 267, 1324-1326.
- Schiermeier, Q. (2007). What we don't know about Climate Change. *Nature*, 445, 580-581.
- Schneider, S. H. (1997). *Laboratory Earth: The planetary gamble we can't afford to lose*: Basic Books.
- Schulte, B. (2007). Energy Efficiency From the Wind. *U.S. News & World Report*. March 18.
- Sightline Institute. (2006). *Cascadia Scorecard: Seven Key Trends Shaping the Northwest - Focus on Sprawl & Health 2006*: Sightline Institute.
- Snover, A. K., Mote, P. W., Whitely Binder, L. C., Hamlet, A. F., & Mantua, N. (2005). *Uncertain Future: Climate Change and its Effects on Puget Sound*.
- Speth, J. G. (2004). *Red Sky at Morning: America and the crisis of the global environment*: Yale University Press.
- Stern, N. (2007). *The Economics of Climate Change: The Stern Review*. Retrieved from: [http://www.hm-treasury.gov.uk/Independent\\_Reviews/stern\\_review\\_economics\\_climate\\_change/sternreview\\_index.cfm](http://www.hm-treasury.gov.uk/Independent_Reviews/stern_review_economics_climate_change/sternreview_index.cfm).
- Still, C. J., Foster, N., & Schneider, S. H. (1999). Simulating the Effects of Climate Change on Tropical Montane Cloud Forests. *Nature*, 398, 608-610.
- Swetnam, T. W., & Lynch, A. M. (1993). Multicentury Regional-scale Patterns of Western Spruce Budworm Outbreaks. *Ecological Monographs*, 63, 399-422.
- The Apollo Alliance & The Campus Climate Challenge. (2005). *New Energy for Campuses: Energy-Saving Policies for Colleges and Universities*.
- The National Commission on Energy Policy. (2004). Ending the Energy Stalemate: A Bipartisan Strategy to Meet America's Energy Challenges.
- The University of Chicago. (2002). Dying Alone: An Interview with Eric Klinenberg (Author of Heat Wave: A Social Autopsy of Disaster in Chicago). Retrieved from: <http://www.press.uchicago.edu/Misc/Chicago/443213in.html>.
- Thomas, C. D., & Lennon, J. J. (1999). Birds Extend their Ranges Northwards. *Nature*, 399, 213.
- Thomson, A. M., Brown, R. A., Ghan, S. J., Izaurralde, R. C., Rosenberg, N. J., & Leung, L. R. (2002). Elevation Dependence of Winter Wheat Production in Eastern Washington State with Climate Change: A Methodological Study. *Climatic Change*, 54, 141-164.
- Tilman, D. (2000). Causes, Consequences, and Ethics of Biodiversity. *Nature*, 405.
- Time Magazine. (2006). A Science Adviser Unmuzzled. Retrieved from: <http://www.time.com/time/magazine/article/0,9171,1176828,00.html>.
- U.S. Census Bureau. (2007). State & County QuickFacts: Washington State. Retrieved from: <http://quickfacts.census.gov/qfd/states/53000.html>.

- U.S. Climate Change Science Program. (2006). *Our Changing Planet: The U.S. Climate Change Science Program for Fiscal Year 2007*. Retrieved from <http://www.usgcrp.gov/usgcrp/Library/ocp2007/default.htm>.
- U.S. Fish & Wildlife Service (USFWS). (2007). The Endangered Species Listing Program. Retrieved from: <http://www.fws.gov/endangered/listing/index.html#species>.
- U.S. National Assessment Synthesis Team. (2001). *Climate Change Impacts on the United States: The Potential Consequences of Climate Variability and Change*. U.S. Global Change Research Program. Cambridge University Press.
- United Nations Framework Convention on Climate Change\_ (UNFCCC). (2007). *Kyoto Protocol Reference Manual on Accounting of Emissions and Assigned Amounts*. Retrieved from: [http://unfccc.int/files/national\\_reports/accounting\\_reporting\\_and\\_review\\_under\\_the\\_kyoto\\_protocol/application/pdf/rm\\_final.pdf](http://unfccc.int/files/national_reports/accounting_reporting_and_review_under_the_kyoto_protocol/application/pdf/rm_final.pdf).
- Veit, R. R., McGowan, J. A., Ainley, D. G., Wahls, T. R., & Pyle, P. (1997). Apex Marine Predator Declines Ninety Percent in Association with Changing Oceanic Climate. *Global Change Biology*, 3, 23-28.
- Velicogna, I., & Wahr, J. (2006). Measurements of Time-Variable Gravity Show Mass Loss in Antarctica. *Science*, 311(5768), 1754-1756.
- Victor, D. G. (2001). *The Collapse of the Kyoto Protocol and the Struggle to Slow Global Warming*. Princeton University Press.
- Washington Department of Health. (2007). Asthma Program. Retrieved from: <http://www.doh.wa.gov/CFH/asthma/default.htm>.
- Washington Economic Steering Committee and the Climate Leadership Initiative Institute for a Sustainable Environment. (2006). *Impacts of Climate Change on Washington's Economy: A Preliminary Assessment of Risks and Opportunities*. Retrieved from: <http://www.ecy.wa.gov/biblio/0701010>.
- Zwiers, F. W., & Weaver, A. J. (2000). The Causes of 20th Century Warming. *Science*, 290, 2081 - 2083.

~ APPENDIX A ~

Estimated food delivery miles traveled per year from vendor distribution center/store to Olympia campus.

Vendor	Vendor Round Trip Distance (Miles)	Deliveries Per Week	Miles Traveled Per Week
Bagel Brothers	6.8	6.0	40.8
Be Bop Biscotti	271.3	0.1	35.3
Black Hills Distribution	10.8	0.3	2.7
Brinks Incorporated	69.8	5.0	349.0
Charlie's Produce	127.6	6.0	765.6
Coca Cola Bottling	62.4	1.0	62.4
Danny's Delivery	11.6	2.0	23.2
Dreyers Grand Ice Cream	108.4	1.0	108.4
EK Beverage	107.2	0.5	53.6
Franz Family Bakery	26.6	5.0	133.0
Frito Lay	21.6	1.0	21.6
Fuji Restaurant	10.0	2.0	20.0
Harbor Wholesale	16.0	1.0	16.0
Healthy Baking	743.5	0.3	185.9
L&E Bottling Company	7.4	1.0	7.4
Mountain People's	92.4	1.0	92.4
Naked Juice	121.2	1.0	121.2
R&K Foods	128.6	2.0	257.2
Revi Incorporated	112.2	0.1	14.6
Service Linen Supply	114.2	2.0	228.4
Sysco Food Service	121.4	2.0	242.8
Tri City Meats	23.2	3.0	69.6
Tully's Coffee	121.4	0.5	60.7

**TOTAL MILES TRAVELED PER WEEK 2,911.70**

**x 52 weeks/yr**

**TOTAL MILES TRAVELED PER YEAR 151,410**

## ~ APPENDIX B ~

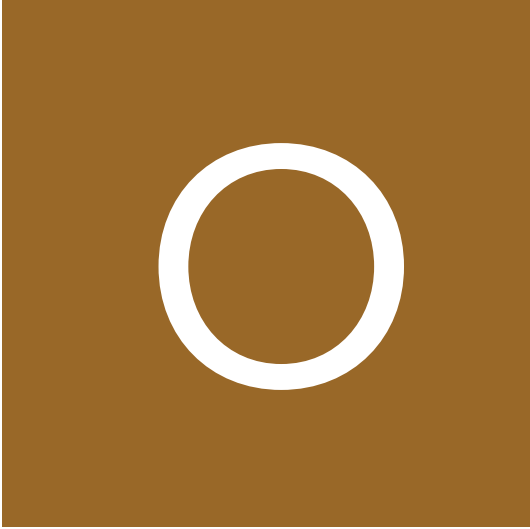
Source and type of information needed for future greenhouse gas inventories at The Evergreen State College

DEPARTMENT	INFORMATION SOUGHT	COMMENTS
The Evergreen Ecological Observation Network	Total Forest Carbon (MTCDE)	Does Evergreen's forest serve as a carbon sink or source? What is the quantity in metric tons? Ideally, estimates should include tree productivity/decomposition, soil carbon content/emissions, understory data, and forest floor sources and sinks of carbon
Budget & Planning	Operating Budget and Energy Budget	
Institutional Research	Number of full-time, part-time, summer students/faculty/staff	
Facilities	Total Building Space (square feet) including Tacoma Campus	
Facilities	Electricity purchased in kWh/year and number of green tags purchased per year in kWh	
Facilities	On-Campus Stationary Energy Use: Natural Gas (MMBtu), Distillate Oil #2 (Gallons), Propane (Gallons)	
Facilities	College Fleet: Gallons of Gasoline and Diesel Fuel Used	
Facilities	Fertilizer used for lawn and grounds maintenance (pounds)	
Facilities	Landfilled Solid Waste (short tons)	
Facilities	Refrigeration Chemicals Used (pounds)	Amount of HFC-134a (and other refrigerants) used in Chillers, Water Coolers, Refrigerators, etc.
Travel Office	Air Miles Traveled: Student Programs and Faculty/Staff Business	
Parking	Student Commuting: Gallons of Gasoline and Diesel Fuel Used Commuting to Campus in Personal Vehicles and by Intercity Transit	Need % that drive alone, % that carpool, trips per week, weeks per year, roundtrip miles, average fuel efficiency
Parking	Faculty Commuting: Gallons of Gasoline and Diesel Fuel Used Commuting to Campus in Personal Vehicles and by Intercity Transit	Need % that drive alone, % that carpool, trips per week, weeks per year, roundtrip miles, average fuel efficiency
Parking	Staff Commuting: Gallons of Gasoline and Diesel Fuel Used Commuting to Campus in Personal Vehicles and by Intercity Transit	Need % that drive alone, % that carpool, trips per week, weeks per year, roundtrip miles, average fuel efficiency
Organic Farm	Number of Farm animals (poultry, pigs, goats, cows, horses, sheep, etc.)	
Organic Farm	Fertilizer Use	Amount of Fertilizer used (pounds), type of Fertilizer (organic/synthetic), and % Nitrogen
Organic Farm	Total Compost (short tons)	
Aramark	Gallons of Gasoline and Diesel Fuel Used to Delivery Food to Campus from Vendor Store or Distribution Center	Need list of vendors, distance to campus, trips per week, weeks per year, fuel economy, type of fuel used.

## ~ APPENDIX C ~

**Campus Global Warming Commitments (as of June 2007)**

<b>Institution</b>	<b>Commitment</b>	<b>Date of Commitment</b>
College of the Atlantic	Climate Neutrality (Immediately)	October 2006
Cornell University	7% Below 1990 Levels by 2008	April 2001
Middlebury College	8% Below 1990 Levels by 2012 on a Per Student Basis	May 2004
Tufts University	7% Below 1990 Levels by 2012	April 1999
Yale University	10% Below 1990 Levels by 2020	October 2005
Williams College	10% Below 1990 Levels by 2020	January 2007
University of British Columbia	25% Below 2000 Levels by 2010 (only for emissions from buildings)	2006
Bowdoin College	11% Below 2002 Levels by 2010	January 2006
University of Oklahoma	4% Below 1998-2001 Baseline by 2006	January 2004
University of Iowa	4% Below 1998-2001 Baseline by 2007	May 2004
University of Minnesota	4% Below 1998-2001 Baseline by 2008	December 2004
Michigan State University	6% Below 1998-2001 Baseline by 2010	November 2006
University of California System	80% Below 1990 Levels by 2050	January 2006
UNC at Chapel Hill	60% Below 2005 Levels by 2050	June 2006
Oberlin College	Carbon Neutrality (No Timetable)	April 2004
Carleton College	Carbon Neutrality (No Timetable)	May 2006
University of Florida	Carbon Neutrality (No Timetable)	October 2006



# TEACHING GARDENS PLANT LIST AND GARDEN DESCRIPTIONS (2007)

Report provided by Frederica Bowcutt offering plant recommendations and descriptions of existing teaching garden themes for consideration in future landscaping endeavors.





# Imagine a Greener Future

## An Arboretum Plan for The Evergreen State College



Updated for:  
The Evergreen State College  
Master Plan

Prepared by:  
Frederica Bowcutt, Faculty Member  
The Evergreen State College

**September 2002**

(December 2002: Approved by the Campus Land Use Committee and the Faculty)  
(February 2008: Abbreviated Text, Updated Map and New Appendices)

“Americans have a deeply ingrained habit of seeing nature and culture as irreconcilably opposed; we automatically assume that whenever one gains, the other must lose. Forced to choose, we usually opt for nature (at least in our books). This choice, which I believe is a false one, is what led Thoreau and his descendants out of the garden. To be sure, there is much to be learned in the wilderness; our unsurpassed tradition of nature writing is sufficient proof of that. But my experience in the garden leads me to believe that there are many important things about our relationship to nature that *cannot* be learned in the wild. For one thing, we need, and now more than ever, to learn how to use nature without damaging it. That probably can’t be done as long as we continue to think of nature and culture simply as antagonists. So how do we begin to find some middle ground between the two? To provide for our needs and desires without diminishing nature? ...the place to look for some of the answers to these questions may not be in the woods, but in the garden.”

Michael Pollan, *Second Nature: A Gardener’s Education*, p. 5

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## Evergreen Arboretum 2008 Update

In the summer of 2002 the former director of Facilities Michel George commissioned an arboretum plan. Since the plan's approval in the fall of 2002 by the Campus Land Use Committee (CLUC) and the Faculty, nearly all of the proposed teaching gardens have been established.

The goals driving design of these new gardens are:

- Improve educational value of plantings
- Celebrate cultural diversity
- Foster social justice

As well as

- Promote environmentally sustainable garden design
- Create low maintenance designs
- Improve wildlife habitat
- Integrate existing mature trees and shrubs into proposed designs
- Work within existing irrigated beds
- Reduce water and energy usage
- Remove as much lawn as possible while meeting needs for inviting places to sit
- Improve aesthetics in the core of the campus
- Create opportunities for students to link theory with praxis and
- Integrate the arboretum with the forest trail system.

Since 2002, nine new teaching gardens have been added to the campus' first teaching garden, the Longhouse Ethnobotanical Garden. Students created many of the new gardens. Students designed and installed the Waterwise Pollinator Garden and Basket Garden. Students installed the Medicinal Herb Garden at the Organic Farm. Other gardens were added with building renovation or new construction. When the Library roof was renovated in 2003, we added a Prairie Roof Garden. With the construction of the new Seminar II building, we installed four new types of teaching gardens: Native Plant Demonstration Gardens, Rain Roof Gardens, a Post Glacial Forest and a Primitive Plant Garden. By modifying the plantings around the lab buildings we created a Laurasian garden that educates visitors about the influence of continental drift and evolution of the world flora. Seven student designed interpretive panels have been installed. Hundreds of plant identification signs have been put in place. One memorial bench was donated. Alumna Deborah Mersky installed two public art pieces linked to the teaching gardens around SEM II. A directory for the teaching gardens in the core of campus was installed in front of the library building, and a directory was placed next to the Organic Farmhouse with descriptions of the various gardens on the Organic Farm. Both directories were student designed.

In the future we hope to:

- install phase II of the Waterwise Pollinator Garden,

- install the Deer Garden along with interpretive panel,
- augment the Primitive Plant Garden plantings,
- add interpretive panels for the Basket Garden, Longhouse Ethnobotanical Garden, Native Plant Demonstration Gardens, Primitive Plant Garden and Lawns.
- remove lawns designated for removal in the original arboretum plan,
- remove more English ivy and add edible landscaping in the core of campus,
- create a small medicinal herb garden in the core for the Student Health Center,
- create a low maintenance labyrinth,
- add more comfortable seating, and add more public art in the gardens.

A copy of the original plan, “Imagine a Greener Future,” is available in our library (Bowcutt 2002). The table below summarizes the progress made towards meeting the goals laid out in the 2002 arboretum plan.

Teaching Garden or Other Expense	Installed	Source of Funds	Left to be done
Basket Garden	√	TESC Facilities paid for plants Student design & installation	Interpretive panel Deer protection Summer irrigation
Deer Garden		Possibly local nurseries plus Dept. of Ecology or other govt. agency	Design and installation
Labyrinth		Design work done by student & proposed to CLUC	Resubmit plans that address maintenance concerns
Laurasian Landscape	in process	Possibly Local Nurseries (plants)	Increase species diversity
Longhouse Ethnobotanical Garden	in process	Donations from the Sierra Club, Elizabeth Wakeman Henderson Foundation and others.	Add memorial garden for Bruce Miller
Medicinal Herb Garden	√	Small General Education Grant	
Native Plant Demonstration Gardens	√	SEM II budget	
Post-Glacial Forest	√	SEM II budget	
Prairie Roof Garden	√	Library Roof Remodel	Repair irrigation; restore failing areas
Primitive Plant Garden	√	SEM II budget	
Rain Roof Gardens	√	SEM II budget	
Waterwise Pollinator Garden	√	City of Olympia & Evergreen Foundation Student design & installation	Phase II including wheelchair access trail/public art
Benches		Possibly private donations and/or created by students	



Directory signs	√	TESC Facilities paid for two	
Interpretive panels	√	TESC Facilities paid for seven	Add six more
Tool Storage space		Included in Longhouse remodel	Build
Sculptural Elements	√	Public Arts Funds from SEM II	Student installations

Critical to the ongoing success of all these gardens is routine weeding and mulching.

## Introduction

The original landscaping on the Evergreen State College campus was installed in the late 1960s. The design called for eastern deciduous forest trees, Japanese and other Asian species, and a number of common European ornamentals. A few native trees and shrubs were also intermixed. Now the mature plants provide shade and color. However, the full potential for using the landscaping to educate people about plants and their ecology was not realized. Until 2002 little changed in the landscape design with the notable addition of native plant and medicinal plant gardens around the Longhouse. The arboretum plan proposed modifying existing plantings and creating teaching gardens with interpretive panels and more public art (Bowcutt 2002). Installation of some of the gardens occurred during the construction of SEM II and when the library roof was renovated. Students installed the remaining gardens.

An arboretum creates a draw to our campus. Educators already use the labeled plants to help school children and college students learn about local plants and their ecology. Increasingly the campus is used by neighbors many from new, dense suburban subdivisions. They walk or jog the trails and the campus core. This increased visitation creates opportunities for environmental education including issues around sustainability. By integrating the arboretum with the existing trail system in the roughly thousand acres of native forest surrounding the core campus, we can introduce more people to our community and educate them about local ecology.

At the time landscape architects designed The Evergreen State College landscape, little awareness existed about the invasiveness of English ivy and a number of other common horticultural species. Now many in our community express concern about the use and ecological impact of such plants. Students have removed ivy to make room for native plants in several locations on campus. If fully implemented, this plan would significantly reduce the amount of English ivy and other aggressive non-natives in the core of the campus. Non-invasive species, both native and non-native, will be used to replace them. Along with many invasive species, turf dominates American horticulture and the Evergreen campus is no exception. Lawns, with their high demands for energy and water, do not reflect Evergreen values for sustainable relations with nature. By reducing the amount of turf and replacing it with drought tolerant species we can reduce our water use.

## Existing Conditions

Creation of an arboretum on The Evergreen State College campus is based on the premise advocated by Ian McHarg to “design with nature”. Poet Gary Snyder says the same thing a little differently. Go with the grain of nature. To do so means less maintenance, less disease, more efficient water use. It means not imposing the will of people on the land without being sensitive to what is already there. To design with nature requires knowing the conditions of the site, including the physical, biological,

and human community the gardens will live within. The following is a summary of those preexisting conditions.

## Location

The Evergreen State College is located on a peninsula jutting into the south end of the Puget Sound. The campus occurs west of the Cascade Mountains, a volcanic range. It lies within the city limits of Olympia. Most of the 1,000 acre campus is forested with second growth coniferous forests. Douglas-fir (*Pseudotsuga menziesii*) dominates much of the forest along with red alder (*Alnus rubra*), western red cedar (*Thuja plicata*), and western hemlock (*Tsuga heterophylla*). For a plant species list and a more thorough description of the vegetation of the undeveloped portions of the campus see Lohmann 2006. The campus buildings are clustered together and surrounded by forest. Roughly 20 acres of the core of the campus are under irrigation. Irrigated lawns comprise the lion's share. Rough-cut nonirrigated lawns are not included in this figure. Irrigated lawns require high maintenance, energy use and water use. English ivy and periwinkle cover the majority of the remaining grounds with an overstory of both native and exotic trees and shrubs.

## Climate

Olympia, Washington enjoys a Mediterranean climate. This means that despite our high rainfall (55" on average), during the months of July, August and September drought conditions exist. For a good general description of the Puget Sound region's climate and weather refer to Arthur Kruckeberg's *Natural History of Puget Sound Country*. As many gardeners know, this region is ideal for growing northern temperate hemisphere plants including those from the Eurasian continent. A variety of arboreta in the Pacific Northwest demonstrate good plant selections for our region.

According to Sunset's *Western Garden Book*, The Evergreen State College occurs in climate zone 5 (Brenzel, p. 36). It is under the marine influence of the Puget Sound with more moderate temperatures than nearby climate zone 4. These zone designations are used extensively by horticulturists and should inform any plant selections for our arboretum. This information enables us to select plants appropriate to the climate and thus to design with nature, not despite it. The danger of frosts as late as May and as early as October means that tropical and subtropical species are not hardy here. Desert species can't tolerate the high rainfall. However, some Mediterranean species from Greece, Italy and southern France can survive on well-drained soils like many created by glacial deposits. Given one of the goals is to create low maintenance plantings, frost sensitive species and beds of annual plants are not appropriate choices.

Microclimatic conditions vary in relation to buildings and this must be taken into account when designing placement of plants. More frost tender plants can thrive against a concrete wall on the south side of a building. The thermal mass created by the

building results in heat being radiated back out. Some plants adapted to forest understory conditions and with higher moisture-needs can be badly sun burnt in such a location and may prefer the north side of a building. Since stressed plants are more prone to disease and death, placement for optimal growth is important to meet the low maintenance goal. The *Western Garden Book*, and other garden reference books, can aid in identifying conditions favored by various plants. Consider also monographs on specific genera for more detailed cultivation information.

## Soil

All of the soils on campus are derived from glacial deposits or volcanic ash and loess. The predominant soil type in the core of the campus is Alderwood gravelly sandy loam. The authoritative source on the subject of our soils is the *Soil Survey of Thurston County* (Soil Conservation District 1982). It has the following to say about the Alderwood series: “moderately deep, moderately well drained soils on glacial till plains.” Soils that drain well can accommodate drought resistant species from Mediterranean regions such as lavender, *Cistus*, and *Santolina*. It’s this kind of customizing we need to do when we design gardens on campus using the soil survey data. Skipopa silt loam occurs around the Campus Activities Building (CAB) and to the northeast and east of the Library building. According to the soil survey, it was derived from volcanic ash and wind blown sediments (loess) that was deposited on top of sediment from a glacier caused lake. The soils in the Skipopa series are moderately deep but “somewhat poorly drained.” Thus these will probably not be good sites for Mediterranean species as they would be prone to root rot. The soil survey should be field checked by digging holes in areas for different teaching gardens and observing how well water drains. By using the tables towards the back of the soil survey one can determine the capabilities of the various soil types in a very general sense.

## Geological Features

In technical terms, Quaternary glacial drift and alluvium characterize the geology of the peninsula the college occurs on. Roughly 14,000 years ago ice hundreds of feet thick covered The Evergreen State College campus. When the Vashon Glacier, the last of several glaciers, receded it left behind a medley of rocky jumble, called till by geologists, and a variety of other deposits including huge rocks called erratics. Runoff from the melting glaciers also left behind sediment and rocks big and small. Large erratic boulders existing on the Seminar II site were used in the Post Glacial Forest.

## Teaching Gardens

Our gardens educate about a variety of subjects including basket material access, evolution, geologic history, native plant ecology, water conservation, and wildlife enhancement. Reflected in the design of these gardens are the values of the institution:

fostering communication across significant difference, multiculturalism, social justice and of course a dedication to excellence in teaching. Students have been involved in all aspects of the arboretum's creation. Their involvement reflects one of our foci, linking theory and praxis. Refer to Figure 1 for a map of the teaching gardens.

### **Basket Garden**

In addition to designing a variety of interpretive panels, Teaching Gardens students installed the Basket Garden in fall 2004. Contract student Ben Helmes designed it and supervised its installation including the willow structure, which resembles an upside

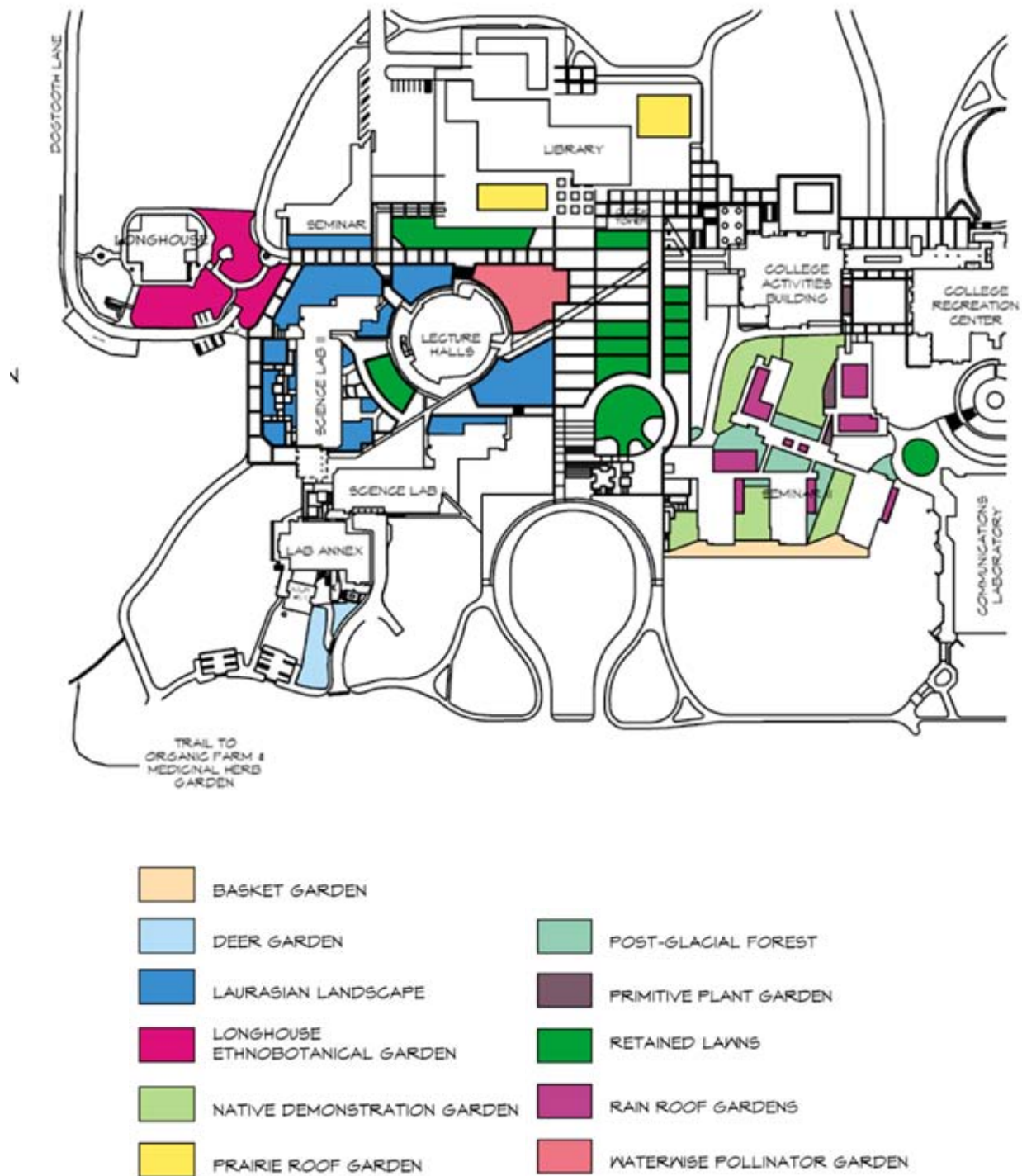


Figure 1. Map of Teaching Gardens

down basket. This garden includes plants used traditionally to make baskets by First Peoples from the Pacific Northwest as well as from other cultural traditions including western red cedar (*Thuja plicata*), red osier dogwood (*Cornus stolonifera*), sedge (*Carex* spp.), beargrass (*Xerophyllum tenax*), and willow (*Salix* spp.). Native activists advocate for botanic gardens to move away from their colonial and imperialist past and address social justice issues. Due to reduced land bases and access to gathering places, many basket makers find it difficult to gather the materials they need to keep traditional arts alive. This garden will eventually produce needed materials but also elevate awareness of the challenges faced by these artists.

Woven into this themed garden is the traditional use of coppice growth. Due to their annual pollarding treatment, the London plane trees in front of the library building produce copious amounts of coppice growth. As odd as it sounds, these poodle trees reflect an indigenous European management technique for making a useful product: straight pliable shoots. Medieval and Renaissance gardeners created wattle fences from the straight shoots (refer to Figures 2 and 3). By integrating the pollarded London Plane trees, the garden points out that European and Euroamerican peoples also have a cultural heritage that includes traditional, indigenous relations with plants.



Figure 2. Wattle fence with a Rammed Earth House (16<sup>th</sup> century)





Figure 3. Coppice Growth on Pollarded Trees (Italian, 15<sup>th</sup> century)

## Deer Garden

Once installed, this garden will demonstrate plants resistant to deer browse. For example many members of the mint family lack appeal to the deer palate. Plants in this family include sage (*Salvia* spp.), catmint (*Nepeta* spp.), mint (*Mentha* spp.), lemon balm (*Melissa officinalis*), lavender (*Lavendula* spp.). Note that some of these plants can be invasive and this needs to be considered in the design process. They might be contained with barriers. Members of the daisy family also tend to not taste good to deer, such as dahlias, aster, coreopsis, *Rudbeckia*, and *Echinacea*. Deer pass on a variety of poisonous plants such as foxglove, monkshood, and deadly nightshade.

deer garden. Thorny species, like barberry, *Eryngium*, and Oregon grape, prove formidable foe to a soft nuzzle. Deer turn their noses up to leathery rhododendron leaves and highly hairy plants like lamb's ears. They dislike daffodils too. Ornamental sedges, grasses, and ferns can be good choices for the garden visited by deer (see Brenzel, pp. 104-105). Lawns not sprayed with broad-leaf herbicides can be planted with clover to provide a diversion for deer. Given the high number of new homes on the rural-urban interface in Olympia, educating people about coexisting with deer has high educational value. It could reduce the amount of enclosures created to protect plantings. Such enclosures reduce habitat for deer, increasing their impact elsewhere. Local nursery people often have good local knowledge about planting in deer zones. The designers of this garden should avail themselves of such placed-based expertise. *Western Garden Book* lists plants resistant to deer (Brenzel, pp. 152-160). However, note that it doesn't mention that although deer don't browse the leaves of day lilies they relish the flower buds and blossoms. Resist is the operative word. The plants listed are not deer proof, nothing is. Particularly in June when the fawns are newly exploring the world there's a lot of testing going on. Also in winter when times are lean, deer will browse on plants they ordinarily avoid. It's not a perfect system but it does radically reduce damage when plants are selected with deer in mind. This garden could include an interpretive sign about deer including their life cycle and local ecology.

## **Laurasian Landscape**

This garden demonstrates that kinship exists among plants (and thus people) from the North American and Eurasian continents. The garden creates an opportunity to communicate across significant differences about relations between people and closely related plants. For example, indigenous peoples on both continents managed native hazelnuts for coppice growth and nut production. The theme of a Laurasian landscape emerged out of the original plant palette. In the late 1960s many Eurasian species were planted around The Evergreen State College lab buildings. A few natives such as vine maple were also planted. Through signage and additional plants, this garden is used to educate students and outside visitors of the impact of geologic history on plant life. Through geographic speciation, many new species evolved after the Laurasian continent broke apart. However, its two daughter continents, Eurasia and North America still share many genera, e.g. pines, maples, elderberries, hazelnuts, roses, oaks, birch, chestnut, dogwood, and sycamore. In this garden we pair species of the same genera from different continents. They may or may not be immediately adjacent, although proximity is helpful when doing plant walks. All of the plants are labeled with their scientific name along with their place of origin. Common names from their homeland will be provided where possible. A similar garden exists in the National Arboretum called the Friendship Garden. It does not emphasize the evolutionary links between the floras of North America and Eurasia. For linked academic materials see Kruckeberg 1983 and Wen 1999.

## **Lawns**

Our intention through this plan is to reduce the amount of lawns on campus to lower our water and energy use and to create more sustainable and wildlife friendly landscaping. That said, we are not proposing elimination of all lawns. Lawns that are used frequently will be kept. Additional seating in the core will also create alternatives to sitting on lawn. Bench locations will be identified in the planting plans for specific teaching gardens. Where feasible, lawns will be converted to more environmentally sound alternatives (Brenzel 2001, pp. 100-103).

Although most American lawns receive large amounts of pesticides and chemical fertilizers, none of Evergreen's lawns do. As a part of the arboretum we will educate visitors, staff, faculty, and students about our "green" lawns maintained through frequent mowing, leaving clippings, not cutting too short, and watering enough (not too much and not too infrequently). With an interpretive panel we will educate people about the risks pesticides pose. How their use endangers small children as well as pets, birds, frogs, snakes, salamanders, newts and other critters. We will also discuss the amount of labor required to maintain a lawn relative to other kinds of gardening options. For an American cultural history on lawns see Jenkins 1994.

## **Longhouse Ethnobotanical Garden**

In 1995 work on the Longhouse Ethnobotanical Garden began. Faculty member Marja Eloheimo collaborated with students, tribal members, and campus facilities staff to prepare the site and install species representing various habitat areas (e.g., prairie, riparian, mixed forest, middle and high elevation). Many students in a variety of ethnobotany programs have contributed to the creation and maintenance of the native garden in front of the Longhouse. Students installed plant identification signs, including a local Indian language name whenever possible. In conjunction with the garden, students developed a relational database, a small ethnobotanical library and a baseline GIS map. The project was made possible by salvaging plants from development sites and funding from the Sierra Club, the Elizabeth Wakeman Henderson Foundation, and many other donations. Future plans include installation of a student-generated design for construction on the north side of the Longhouse of a medicinal garden organized by body systems. The Longhouse Ethnobotanical Garden was named "s'ulex" by Upper Skagit elder, Vi Hilbert. This word refers to gathering and creating possibilities from what nature offers. It reflects the fact that members of the Indigenous community who utilize and care about the Longhouse support this garden. It also reflects the idea that the garden represents a collaboration between people and plants, and between communities and cultures, especially if we have the means and support to gather and create the possibilities it offers.

## Medicinal Herb Garden

Students in the program Christian Roots installed the Medicinal Herb Garden at the Organic Farm in winter 2004. This garden is based on the four square design of Persian origin and common in Europe during the Middle Ages and Renaissance. The Physick Garden at the University of British Columbia in Vancouver inspired the design. This garden is used to promote the medicinal use of easy to grow European plants like chamomile, oregano, lavender, lemon mint, and peppermint. This garden promotes increased self-reliance for treating common health problems like colds, indigestion, and stress. By integrating history into the design and associated interpretive panel, the garden elevates awareness of the significant influence of Christianity and Middle Eastern traditions on European herbology and styles of gardening.

## Native Plant Demonstration Gardens

Native plants were used to revegetate a large percentage of the ground disturbed to construct Seminar II. Increasingly, environmental educators promote native plant gardens as a way to reduce water use, eliminate the need for pesticides, provide wildlife habitat, and avoid introducing noxious, invasive weeds. Reference texts on native plants include Link, *Landscaping for Wildlife*; Hitchcock and Cronquist, *Flora of the Pacific Northwest*; and Kruckeberg, *Gardening with Native Plants in the Pacific Northwest*. Native plants are integrated into most of the other teaching gardens, comingled with the non-natives.

## Post Glacial Forest

The Post Glacial forest is a recreation of the vegetation that occurred in the region as the Vashon glacier receded from its Olympia terminus. The plant palette is based on palynology data from pollen core samples taken from wetlands in the Puget Sound area (Hansen 1947, Petersen et al. 1983, and Whitlock 1992). The late glacial period samples from which the plant palette was primarily derived range in age from 13,500 to 11,400 years old. We took some artistic license given design and availability limitations. Thus the result is to some degree a historical fiction. However, the Post Glacial Forest does contain species known from the pollen record by 8,000 years ago. During construction of Seminar Building II, the construction company saved erratic boulders left on site by the last retreating glacier. Additional erratics were brought in to complete the landscape as designed. Lodgepole pine dominate with a small grove of aspen. Sedges dominate the understory.

## Prairie Roof Garden

Modeling after our native prairies in South Puget Sound, this garden teaches about these cultural landscapes as important oases of species diversity including many threatened species (Leopold and Boyd 1999). This garden was installed in 2003 when

the library roof was renovated. In tandem with learning about this unique local ecosystem, students in the programs Natural History and Restoring Landscapes donated community service hours to this garden in 2006 and 2007. Rod Gilbert of the Washington Native Plant Society wrote the text for two interpretive panels. Contract student Randi Smith created original illustrations and did the graphic arts work for these panels. Greener grad Daeg Byrne of The Nature Conservancy has donated many hours, pounds of rare seed, and hundreds of native plants to this effort.

### **Primitive Plant Garden**

This garden supports the study of plant evolution from spore bearing species that appear earliest in the fossil record to the more recently evolved flowering plants. Modeled after a similar garden in Strybing Arboretum in San Francisco's Golden Gate Park, visitors can view spore bearing plants (moss, club moss, and ferns), gymnosperms (cycads and conifers), and primitive flowering plants (anemones and hellebores). Cycads are represented by a public art piece by Greener grad Deborah Mersky. Along with pollinators, the piece portrays the multiflagellate sperm of cycads, a primitive character. In the future we hope to establish a small grove of monkey puzzle trees to help students imagine the Jurassic and Triassic landscapes with dinosaurs cohabitating. Refer to Raven et al. 2005 and Stewart and Rothwell (1993), for more information on plant evolution.

### **Rain Roof Gardens**

On the top of the Seminar II building, roof top gardens reduce the impact of the buildings by mitigating the increase in impervious surface created by the new construction. They were planted with species designed to be low maintenance due to low water needs and, in some cases, the ability to self-propagate. Landscape architects designed these gardens using existing European prototypes. Although most of the gardens are not visible, several can be viewed easily.

### **Waterwise Pollinator Garden**

Students in the Picturing Plants program of 2002/2003 designed this garden. They removed ivy to prepare the site, propagated plants, installed signs, planted plants and illustrated the associated interpretive panel. They planted with species that attract butterflies, hummingbirds, and bees. Referencing one of their seminar texts, Buchmann and Nabhan's *Forgotten Pollinators*, they crafted the text for the interpretive panel, which educates about the excessive use of pesticides in backyard gardens and how that impacts pollinators. It also points out the ecological significance of reduced rates of pollination. Robert Michael Pyle's book *The Butterflies of Cascadia* provides useful information on nectar and caterpillar host plants. The *Western Garden Book* lists plants attractive to butterflies and hummingbirds (Brenzel, pp. 116-121).

Students designed a phase II of this garden which was approved by the CLUC in 2003. It is hoped that this can be installed in the future along with the public art trail through it that provides wheelchair access.

## Future Work

In the future we hope to finish several teaching gardens including the Bruce Miller Memorial Garden, the Deer Garden and phase II of the Waterwise Pollinator Garden. We plan to add interpretive panels for the Basket Garden, Deer Garden, Longhouse Ethnobotanical Garden, Native Plant Demonstration Gardens, Primitive Plant Garden and Lawns. We hope to remove a few of the underused lawns and more of the ivy in the core of campus. Edible landscaping in the core of campus would be a tasteful addition, such as fruit trees planted against south facing concrete walls. The Student Health Center has requested a small medicinal herb garden in the core of campus. Based on surveys, there is widespread interest in the creation of a low maintenance labyrinth. More comfortable seating and public art in the gardens would be lovely.

Students are currently working to link the arboretum to the existing trail system that extends beyond the campus core. Interpretive nature trails are being developed on the trail to the organic farm and on two of the beach trails. Community members seeking to add new gardens or garden features, such as benches or public art, are encouraged to discuss their plans with Facilities first to determine whether the addition can be maintained with existing resources. For final approval, plans must be drafted and presented to the Campus Land Use Committee. For additional resources and updates, visit [www.evergreen.edu/teachinggardens](http://www.evergreen.edu/teachinggardens).

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Since completion of the arboretum plan in 2002, many students have contributed to its successful implementation. Ben Helmes updated the basemap of the plantings, and he designed and supervised installation of the Basket Garden. Katie Day designed both a



teaching gardens brochure and the library kiosk directory sign. Megan Muhic designed the directory for the Organic Farm. The following students designed interpretive panels: Anna Baldy, Roussa Cassel, Abigail Groskopf, Rebecca Sheedy and Randi Smith. Rose (Sara) Swan developed detailed plans for a labyrinth and compiled an excellent PowerPoint presentation on it for the CLUC. EcoDesign students contributed bench and tool shed designs. Aaron Hartwell created our webpage. As facilities employees, students Ben Helmes and Karin Thorpe maintained the new gardens in the first couple of years. As the first Teaching Gardens Coordinator Katie Scherrer has organized multiple community service workdays. Heather Kropp is working on a Medicine Forest Trail proposal. A warm thanks goes to the many Evergreen students too numerous to name who completed community serve work on arboretum workdays.

Many community members and organizations have contributed as well. Tikva Breuer from the City of Olympia's Water Resources Program funded the Waterwise Pollinator Garden with a grant. Bob Findlay, retired Landscape Architecture professor from Iowa State University and local Master Gardener, volunteered many hours to work with the students in the Teaching Gardens program in fall 2004. Greener grad Daeg Byrne of The Nature Conservancy has donated hundreds of native prairie plants and many pounds of prairie seeds. Greener grad Erica Guttman of Native Plant Salvage has donated hundreds of rescued plants from development sites. Greener grad Nikki McClure donated a design for a fund raising T-shirt. The Washington Department of Transportation donated plants. Erica Baker and Breanna Trygg of Pacific Education Institute and Thomas De Boer and Apuroop Dasari of Capitol High School all donated hours and plants to the Prairie Roof Garden. Deborah Humphery donated funds for the Medicinal Herb Garden interpretive panel.

## References

- Bowcutt, Frederica. 2002. *Imagine a Greener Future: An Arboretum Draft Plan for the Evergreen State College*. Unpublished Report. The Evergreen State College. Olympia, WA.
- Brenzel, Kathleen Norris (ed.). 2001. *Western Garden Book*. Sunset Publishing Corporation. Menlo Park, CA.
- Buchmann, Stephen L. and Gary P. Nabhan, 1996. *Forgotten Pollinators*. Island Press. Washington D.C.
- Gunther, Erna. 1973. *Ethnobotany of Western Washington: The Knowledge and Use of Indigenous Plants by Native Americans*. University of Washington Press. Seattle.



- Hansen, Henry P. 1947. Climate Versus Fire and Soil as Factors in Postglacial Forest Succession in the Puget Lowland of Washington. *American Journal of Science* 245 (5): 265-286.
- Hitchcock, C. L. and A. Cronquist. 1973. *Flora of the Pacific Northwest: An Illustrated Manual*. University of Washington Press. Seattle, WA.
- Jenkins, Virginia Scott. 1994. *The Lawn: A History of an American Obsession*. Smithsonian Institution Press. Washington D.C.
- Kruckeberg, Arthur. 1995. *The Natural History of Puget Sound Country*. University Washington Press. Seattle, WA.
- Kruckeberg, Arthur. 1983. Temperate Floras: The North Pacific Connection. *Annals of Missouri Botanical Garden* 70: 591-596.
- Kruckeberg, Arthur. 1982. *Gardening with Native Plants of the Pacific Northwest : An Illustrated Guide*. University of Washington Press. Seattle, WA.
- Leopold, Estella and Robert Boyd. 1999. An Ecological History of Old Prairie Areas in Southwestern Washington. In Boyd, R. 1999. *Indians, Fire, and the Land in the Pacific Northwest*. Oregon State University Press. Corvallis, Oregon.
- Link, Russell. 1999. *Landscaping for Wildlife in the Pacific Northwest*. University of Washington Press. Seattle. Published in association with the Washington Department of Fish and Wildlife.
- Lohmann, Sam. 2006. *A Floristic Study of The Evergreen State College Campus*. Unpublished Report. The Evergreen State College. Olympia, WA. Available in Binder III of the 2008 Master Plan for The Evergreen State College. See also [www.evergreen.edu/teachinggardens](http://www.evergreen.edu/teachinggardens).
- Petersen, Kenneth; Peter J. Mehringer, Jr. and Carl E. Gustafson. 1983. Late-Glacial Vegetation and Climate at the Manis Mastodon Site, Olympic Peninsula, Washington. *Quaternary Research* 20: 215-231.
- Pojar, J. and A. MacKinnon (eds.). 1994. *Plants of the Pacific Northwest Coast*. British Columbia Ministry of Forests and Lone Pine Publishing.
- Pyle, Robert Michael. 2002. *The Butterflies of Cascadia*. Seattle Audubon Society.
- Raven, Peter; Ray Evert; and Susan Eichhorn. 2005. *Biology of Plants, Seventh Edition*. W.H. Freeman and Company. Worth Publishers. New York.

- Soil Conservation Service. 1982. Soil Survey of Thurston County, Washington. United States Department of Agriculture.
- Steward, Wilson N. and Gar W. Rothwell. 1993. Paleobotany and the Evolution of Plants. Cambridge University Press.
- Wen, Jun. 1999. Evolution of Eastern Asian and Eastern North American Disjunct Distributions in Flowering Plants. *Annual Review of Ecology and Systematics* 30:421-455.
- Whitlock, Cathy. 1992. Vegetational and Climatic History of the Pacific Northwest during the Last 20,000 Years: Implications for Understanding Present-day Biodiversity. *Northwest Environmental Journal* 8 (1): 5-28.
- Wiedemann, Alfred. 1987. An Introduction to the Natural History of The Evergreen State College Campus. Olympia, Washington, USA. First Edition. Unpublished Report. The Evergreen State College. Olympia, WA.

## Appendix A. Plant Species By Garden Including Suggested Additions

The following is a list of the plants currently in various teaching gardens. Species that would be nice to add are in bold. Note that the deer garden has not been installed so the listed plants for that garden are suggestions. The plants listed are appropriate for our climatic zone. However, selection of a plant should be customized to each planting site dependent on sun or shade and soil conditions. See Brenzel, Kathleen Norris (ed.). 2001. Western Garden Book. Sunset Publishing Corporation. Menlo Park, CA.

<i>Teaching Garden</i>	<i>Common Name</i>	<i>Scientific Name</i>
<b>Basket Garden</b>	vine maple	<i>Acer circinatum</i>
	<b>five-finger fern</b>	<b><i>Adiantum pedatum</i></b>
	slough sedge	<i>Carex obnupta</i>
	Alaska cedar	<i>Chamaecyparis nootkatensis</i>
	red-osier dogwood	<i>Cornus stolonifera</i>
	<b>beaked hazelnut</b>	<b><i>Corylus cornuta</i></b>
	ocean spray	<i>Holodiscus discolor</i>
	rush	<i>Juncus effusus</i>
	Oregon-grape	<i>Mahonia nervosa</i>
	Oregon-grape	<i>Mahonia repens</i>
	mock-orange	<i>Philadelphus lewisii</i>
	Pacific ninebark	<i>Physocarpus capitatus</i>
	Sitka spruce	<i>Picea sitchensis</i>
	bitter cherry	<i>Prunus emarginata</i>
	cascara sagrada	<i>Rhamnus purshiana</i>
	<b>Arctic willow</b>	<b><i>Salix arctica</i></b>
	Scouler's willow	<i>Salix scouleriana</i>
	cattail	<i>Typha latifolia</i>
	<b>bear-grass</b>	<b><i>Xerophyllum tenax</i></b>
<b>Deer Garden</b>	fir	<i>Abies</i>
<b>(possible choices)</b>	vine maple	<i>Acer circinatum</i>
	Japanese maple	<i>Acer palmatum</i>
	yarrow	<i>Achillea millefolium</i>
	woolly yarrow	<i>Achillea tomentosa</i>
	California buckeye	<i>Aesculus californica</i>
	lily-of-the-nile	<i>Agapanthus</i>
	agave	<i>Agave</i>
	carpet bugle	<i>Ajuga reptans</i>
	columbine	<i>Aquilegia</i>
	arctostaphylos	<i>Arctostaphylos</i>
	sea thrift	<i>Armeria maritima</i>
	artemisia	<i>Artemisia</i>
	aster	<i>Aster</i>
	astilbe	<i>Astilbe</i>
	barberry	<i>Berberis</i>
	spice bush	<i>Calycanthus occidentalis</i>

	sedge	<i>Carex</i>
<b>Teaching Garden</b>	<b>Common Name</b>	<b>Scientific Name</b>
<b>Deer Garden (continued)</b>	bush anemone	<i>Carpenteria californica</i>
	ceanothus	<i>Ceanothus</i>
	redbud	<i>Cercis occidentalis</i>
	flowering quince	<i>Chaenomeles</i>
	rock rose	<i>Cistus</i>
	cypress	<i>Cupressus</i>
	dahlia	<i>Dahlia</i>
	bleeding heart	<i>Dicentra</i>
	foxglove	<i>Digitalis</i>
	echinacea	<i>Echinacea purpurea</i>
	heather	<i>Erica</i>
	fleabane	<i>Erigeron</i>
	escallonia	<i>Escallonia</i>
	California poppy	<i>Eschscholzia californica</i>
	eucalyptus	<i>Eucalyptus</i>
	common blue fescue	<i>Festuca glauca</i>
	beach strawberry	<i>Fragaria chiloensis</i>
	salal	<i>Gaultheria shallon</i>
	hellebore	<i>Helleborus</i>
	toyon	<i>Heteromeles arbutifolia</i>
	juniper	<i>Juniperus</i>
	bay	<i>Laurus nobilis</i>
	lavender	<i>Lavandula</i>
	mahonia	<i>Mahonia</i>
	wax myrtle	<i>Myrica californica</i>
	heavenly bamboo	<i>Nandina domestica</i>
	daffodil	<i>Narcissus</i>
	poppy	<i>Papaver</i>
	black bamboo	<i>Phyllostachys nigra</i>
	spruce	<i>Picea</i>
	pine	<i>Pinus</i>
	cinquefoil	<i>Potentilla</i>
	rhododendron	<i>Rhododendron</i> spp. (except azaleas)
	currants, gooseberries	<i>Ribes</i>
	matilija poppy	<i>Romneya coulteri</i>
	rosemary	<i>Rosmarinus officinalis</i>
	sage	<i>Salvia</i>
	santolina	<i>Santolina</i>
	sweetbox	<i>Sarcococca</i>
	coast redwood	<i>Sequoia sempervirens</i>
	blue-eyed grass	<i>Sisyrinchium</i>
	spiraea	<i>Spiraea</i>
	lamb's ears	<i>Stachys byzantina</i>
	snowberry	<i>Symphoricarpos albus</i>

	lilac	<i>Syringa</i>
<b>Teaching Garden</b>	<b>Common Name</b>	<b>Scientific Name</b>
<b>Deer Garden (continued)</b>	rhododendron	<i>Rhododendron spp. (except azaleas)</i>
	rhododendron	<i>Rhododendron edgeworthii</i>
	rhododendron	<i>Rhododendron yakusimanum</i>
	thyme	<i>Thymus</i>
	clover	<i>Trifolium</i>
	California bay	<i>Umbellularia californica</i>
	evergreen huckleberry	<i>Vaccinium ovatum</i>
	ferns	various species
	iris	various species
	ornamental grasses	various species
	California fuchsia	<i>Zauschneria californica</i>
<b>Laurasian Landscape</b>	vine maple	<i>Acer circinatum</i>
	<b>Japanese maple</b>	<i>Acer palmatum</i>
	Norway maple	<i>Acer platanoides</i>
	red maple	<i>Acer rubrum</i>
	<b>sugar maple</b>	<i>Acer saccharinum</i>
	<b>kinnick kinnick</b>	<i>Arctostaphylos uva-ursi</i>
	<b>alder</b>	<i>Alnus alnobetula</i>
	madrone	<i>Arbutus menziesii</i>
	strawberry tree	<i>Arbutus unedo</i>
	<b>wild ginger</b>	<i>Asarum caudatum</i>
	<b>wild ginger</b>	<i>Asarum splendens</i>
	bunchberry	<i>Cornus canadensis</i>
	Eastern dogwood	<i>Cornus florida</i>
	kousa dogwood	<i>Cornus kousa</i>
	<b>conelian cherry</b>	<i>Cornus mas</i>
	Pacific dogwood	<i>Cornus nuttallii</i>
	<b>red-osier dogwood</b>	<i>Cornus stolonifera</i>
	fringed bleeding heart	<i>Dicentra eximia</i>
	western bleeding heart	<i>Dicentra formosa</i>
	<b>Japanese bleeding hearts</b>	<i>Dicentra spectabilis</i>
	giant fawn-lily	<i>Erythronium oregonum</i>
	woods strawberry	<i>Fragaria vesca</i>
	wintergreen	<i>Gaultheria procumbens</i>
	salal	<i>Gaultheria shallon</i>
	<b>Japanese witch hazel</b>	<i>Hamamelis japonica</i>
	<b>Chinese witch hazel</b>	<i>Hamamelis mollis</i>
	<b>common witch hazel</b>	<i>Hamamelis virginiana</i>
	creeping St. Johnswort	<i>Hypericum calycinum</i>
	<b>tanoak</b>	<i>Lithocarpus densiflorus</i>
	tall Oregon grape	<i>Mahonia aquifolium</i>
	<b>leatherleaf mahonia</b>	<i>Mahonia bealei</i>
	longleaf mahonia	<i>Mahonia nervosa</i>

	<b>Allegheny spurge</b>	<i>Pachysandra procumbens</i>
<b>Teaching Garden</b>	<b>Common Name</b>	<b>Scientific Name</b>
<b>Laurasian Landscape</b>	Japanese spurge	<i>Pachysandra terminalis</i>
<b>(continued)</b>	beach pine	<i>Pinus contorta</i>
	Japanese red pine	<i>Pinus densiflora</i>
	Swiss mountain pine	<i>Pinus mugo mughus</i>
	Austrain black pine	<i>Pinus nigra</i>
	sword fern	<i>Polystichum munitum</i>
	<b>Japanese lace fern</b>	<i>Polystichum polyblepharum</i>
	soft shield fern	<i>Polystichum setiferum</i>
	<b>Korean rock fern</b>	<i>Polystichum tsus-simense</i>
	flowering cherry	<i>Prunus cerasifera atropurpurea</i>
	bitter cherry	<i>Prunus emarginata</i>
	flowering cherry	<i>Prunus sargentii</i>
	flowering cherry	<i>Prunus serrulata 'Shirotae'</i>
	choke cherry	<i>Prunus virginiana</i>
	<b>big cone Douglas-fir</b>	<i>Pseudotsuga macrocarpa</i>
	Western white oak	<i>Quercus garryana</i>
	Western azalea	<i>Rhododendron occidentale</i>
	<b>rhododendron</b>	<i>Rhododendron edgeworthii</i>
	<b>rhododendron</b>	<i>Rhododendron yakusimanum</i>
	<b>blue elderberry</b>	<i>Sambucus cerulea</i>
	<b>black elderberry</b>	<i>Sambucus nigra</i>
	red elderberry	<i>Sambucus racemosa</i>
	wake robin	<i>Trillium grandiflorum</i>
	wake robin	<i>Trillium ovatum</i>
	wake robin	<i>Trillium sessile</i>
	red huckleberry	<i>Vaccinium parvifolium</i>
	<b>highbrush cranberry</b>	<i>Viburnum edule</i>
	<b>European cranberry bush</b>	<i>Viburnum opulus</i>
	<b>Japanese snowball</b>	<i>Viburnum plicatum</i>
	<b>viburnum</b>	<i>Viburnum X bodnantense</i>
	English violet	<i>Viola odorata</i>
	<b>evergreen violet</b>	<i>Viola sempervirens</i>
<b>Native Plant</b>	vine maple	<i>Acer circinatum</i>
<b>Demonstration Garden</b>	yarrow	<i>Achillea millefolium</i>
	Service berry	<i>Amelanchier alnifolia</i>
	Pearly everlasting	<i>Anaphalis margaritacea</i>
	Red columbine	<i>Aquilegia formosa</i>
	madrone	<i>Arbutus menziesii</i>
	kinnick kinnick	<i>Arctostaphylos uva-ursi</i>
	Goat's beard	<i>Aruncus dioicus</i>
	wild ginger	<i>Asarum caudatum</i>
	deer fern	<i>Blechnum spicant</i>
	camas	<i>Camassia quamash</i>

	slough sedge	<i>Carex obnupta</i>
<b>Teaching Garden</b>	<b>Common Name</b>	<b>Scientific Name</b>
<b>Native Plant</b>	Pacific dogwood	<i>Cornus nuttallii</i>
<b>Demonstration Garden</b>	red-osier dogwood	<i>Cornus stolonifera</i> 'Isanti'
<b>(continued)</b>	California hazelnut	<i>Corylus cornuta</i>
	Pacific bleeding hearts	<i>Dicentra formosa</i>
	Oregon sunshine	<i>Eriophyllum lanatum</i>
	<b>wild strawberry</b>	<b><i>Fragaria virginiana</i></b>
	Salal	<i>Gaultheria shallon</i>
	large-leaved avens	<i>Geum macrophyllum</i>
	ocean spray	<i>Holodiscus discolor</i>
	Oregon iris	<i>Iris tenax</i>
	rush	<i>Juncus effusus</i>
	twin berry	<i>Lonicera involucrata</i>
	Oregon-grape	<i>Mahonia nervosa</i>
	Oregon-grape	<i>Mahonia repens</i>
	<b>false lily of the valley</b>	<b><i>Maianthemum dilatatum</i></b>
	Indian-plum	<i>Oemleria cerasiformis</i>
	mock-orange	<i>Philadelphus lewisii</i>
	Pacific ninebark	<i>Physocarpus capitatus</i>
	Sword fern	<i>Polystichum munitum</i>
	Douglas-fir	<i>Pseudotsuga menziesii</i>
	cascara sagrada	<i>Rhamnus purshiana</i>
	Pacific rhododendron	<i>Rhododendron macrophyllum</i>
	pink flowering currant	<i>Ribes sanguineum</i>
	Bald-hip rose	<i>Rosa gymnocarpa</i>
	Cluster rose	<i>Rosa pisocarpa</i>
	thimbleberry	<i>Rubus parviflorus</i>
	Salmonberry	<i>Rubus spectabilis</i>
	trailing blackberry	<i>Rubus ursinus</i>
	false Solomon's seal	<i>Smilacina racemosa</i>
	Hardhack	<i>Spiraea douglasii</i>
	snowberry	<i>Symphoricarpos albus</i>
	fringe cups	<i>Tellima grandiflora</i>
	Western red cedar	<i>Thuja plicata</i>
	star flower	<i>Trientalis latifolia</i>
	Evergreen huckleberry	<i>Vaccinium ovatum</i>
	red huckleberry	<i>Vaccinium parvifolium</i>
	stream violet	<i>Viola glabella</i>
<b>Post-Glacial Forest</b>	silver fir	<i>Abies amabilis</i>
	red alder	<i>Alnus rubra</i>
	<b>avalanche alder</b>	<b><i>Alnus sinuata</i></b>
	paper birch	<i>Betula papyrifera</i>
	slough sedge	<i>Carex obnupta</i>
	Pacific dogwood	<i>Cornus nuttallii</i>

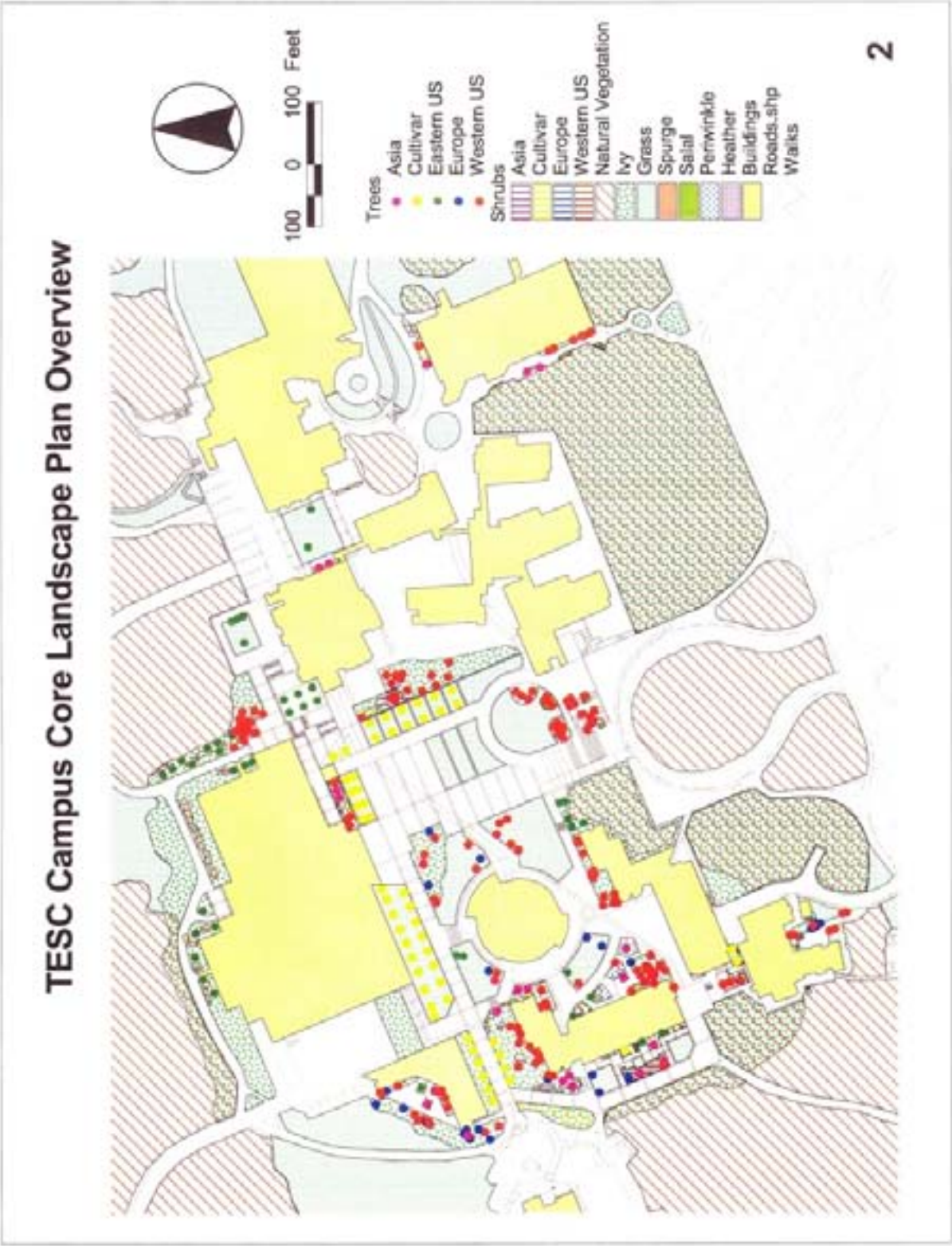


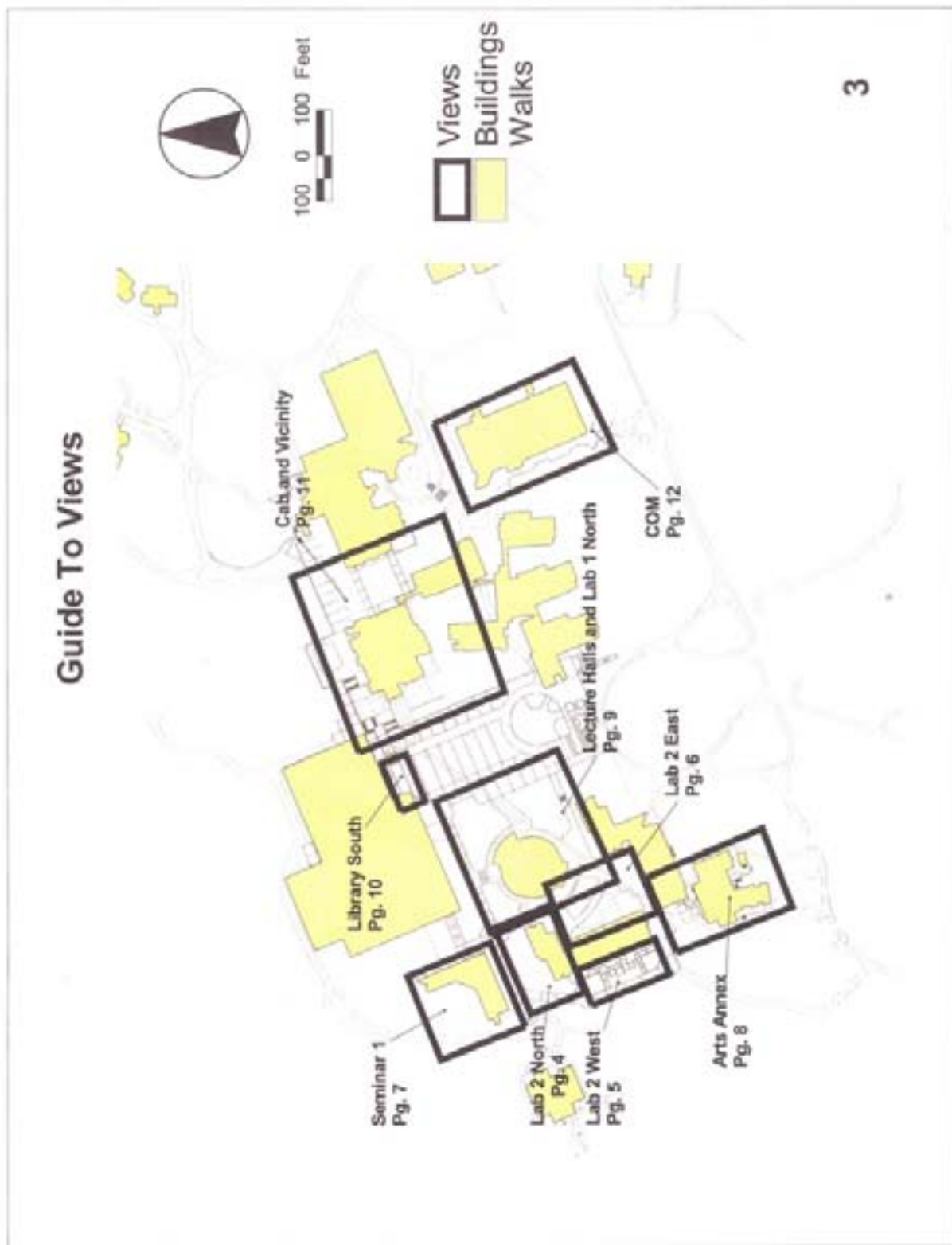
	red-osier dogwood	<i>Cornus stolonifera</i>
<b>Teaching Garden</b>	<b>Common Name</b>	<b>Scientific Name</b>
<b>Post-Glacial Forest</b>	Idaho fescue	<i>Festuca idahoensis</i>
<b>(continued)</b>	Rocky Mountain juniper	<i>Juniperus scopulorum</i>
	lodgepole pine	<i>Pinus contorta</i>
	Western white pine	<i>Pinus monticola</i>
	quaking aspen	<i>Populus tremuloides</i>
	<b>Gambel oak</b>	<b><i>Quercus gambelii</i></b>
	dwarf arctic willow	<i>Salix purpurea</i>
	snowberry	<i>Symphoricarpos albus</i>
	Western red cedar	<i>Thuja plicata</i>
	mountain hemlock	<i>Tsuga mertensiana</i>
<b>Prairie Roof Garden</b>	yarrow	<i>Achillea millefolium</i>
	kinnikinnick	<i>Arctostaphylos uva-ursi</i>
	sea-pink	<i>Armeria maritima</i>
	common camas	<i>Camassia quamash</i>
	bluebell	<i>Campanula rotundifolia</i>
	paintbrush	<i>Castilleja hispida</i>
	California oatgrass	<i>Danthonia californica</i>
	showy fleabane	<i>Erigeron speciosus</i>
	woolly sunflower	<i>Eriophyllum lanatum</i>
	Idaho fescue	<i>Festuca idahoensis</i>
	wild strawberry	<i>Fragaria vesca</i>
	broadpetal strawberry	<i>Fragaria virginiana</i>
	Oregon iris	<i>Iris tenax</i>
	nine-leaved lomatium, biscuitroot	<i>Lomatium triternatum</i>
	barestem lomatium	<i>Lomatium nudicaule</i>
	common lomatium	<i>Lomatium utriculatum</i>
	lupine	<i>Lupinus lepidus</i>
	lupine	<i>Lupinus rivularis</i>
	wood rush	<i>Luzula campestris</i>
	microseris	<i>Microseris laciniatus</i>
	plectritis	<i>Plectritis congesta</i>
	Western buttercup	<i>Ranunculus occidentalis</i>
	catchfly	<i>Silene douglassii</i>
	golden rod	<i>Solidago missouriensis</i>
	golden rod	<i>Solidago spathulatum</i>
	early blue violet	<i>Viola adunca</i> var. <i>adunca</i>
<b>Primitive Plant</b>	Japanese anemone	<i>Anemone X hybrida</i>
	<b>Oregon anemone</b>	<b><i>Anemone oregana</i></b>
	<b>Monkey puzzle tree</b>	<b><i>Araucaria araucana</i></b>
	wild ginger	<i>Asarum caudatum</i>
	lady fern	<i>Athyrium filix-femina</i>
	deer fern	<i>Blechnum spicant</i>

	spice bush	<i>Calycanthus occidentalis</i>
<b>Teaching Garden</b>	<b>Common Name</b>	<b>Scientific Name</b>
<b>Primitive Plant (continued)</b>	male fern	<i>Dryopteris filix-mas</i>
	ginkgo	<i>Ginkgo biloba</i>
	hellebore	<i>Helleborus foetidus</i>
	juniper	<i>Juniperus</i>
	sword fern	<i>Polystichum munitum</i>
	giant redwood	<i>Sequoiadendron giganteum</i>
	coast redwood	<i>Sequoia sempervirens</i>
	golden spikemoss	<i>Selaginella kraussiana</i> 'Aurea'
	rainbow spikemoss	<i>Selaginella uncinata</i>
	Pacific yew	<i>Taxus brevifolia</i>
	California yew	<i>Torreya californica</i>
	western hemlock	<i>Tsuga heterophylla</i>
	Western red cedar	<i>Thuja plicata</i>
<b>Rain Roof Garden</b>	carpet bugle	<i>Ajuga reptans</i>
	kinnikinnick	<i>Arctostaphylos uva-ursi</i>
	blue fescue	<i>Festuca glauca</i>
	beach strawberry	<i>Fragaria chiloensis</i>
	wintergreen	<i>Gaultheria procumbens</i>
	Oregon sorrel	<i>Oxalis oregana</i>
	sedum	<i>Sedum</i>
	thyme	<i>Thymus</i>
<b>Waterwise Pollinator Garden</b>	yarrow	<i>Achillea</i> 'Moonshine'
	Norway maple	<i>Acer platanoides</i>
	giant ornamental onion	<i>Allium giganteum</i>
	serviceberry	<i>Amelanchier alnifolia</i>
	wild columbine	<i>Aquilegia formosa</i>
	madrone	<i>Arbutus menziesii</i>
	kinnikinnick	<i>Arctostaphylos uva-ursi</i>
	sea thrift	<i>Armeria maritima</i>
	Douglas' aster	<i>Aster subspicatus</i>
	kale	<i>Brassica</i>
	Oregon grape	<i>Mahonia aquifolium</i>
	camas	<i>Camassia leichtlinii</i>
	wild lilac	<i>Ceanothus</i> .
	rock rose	<i>Cistus</i>
	Pacific bleeding heart	<i>Dicentra formosa</i>
	echinacea	<i>Echinacea purpurea</i>
	globe thistle	<i>Echinops sphaerocephalus</i> .
	giant fawn-lily	<i>Erythronium oregonum</i>
	sea holly	<i>Eryngium amethystinum</i>
	escallonia	<i>Escallonia langleyensis</i> 'Pride of Donard'
	California poppy	<i>Eschscholzia californica</i>

	coast strawberry	<i>Fragaria chiloensis</i>
<b>Teaching Garden</b>	<b>Common Name</b>	<b>Scientific Name</b>
<b>Waterwise Pollinator</b>	wood strawberry	<i>Fragaria vesca</i>
<b>Garden (continued)</b>	salal	<i>Gaultheria shallon</i>
	daylily	<i>Hemerocallis</i>
	bearded iris	<i>Iris</i>
	wild iris	<i>Iris tenax</i>
	lavender	<i>Lavendula angustifolia</i>
	<b>twinberry</b>	<b><i>Lonicera involucrata</i></b>
	lupine	<i>Lupinus polyphyllus</i>
	apple	<i>Malus</i>
	<b>false lily-of-the-valley</b>	<b><i>Maianthemum dilatatum</i></b>
	grape hyacinth	<i>Muscari comosum</i> 'Plumosum'
	Indian plum	<i>Oemleria cerasiformis</i>
	Oregon sorrel	<i>Oxalis oregana</i>
	penstemon	<i>Penstemon</i>
	<b>mock orange</b>	<b><i>Philadelphus lewisii</i></b>
	cinquefoil	<i>Potentilla fruticosa</i>
	Western rhododendron	<i>Rhododendron occidentale</i>
	golden currant	<i>Ribes aureum</i>
	pink flowering currant	<i>Ribes sanguineum</i> 'King Edward VII'
	baldhip rose	<i>Rosa gymnocarpa</i>
	wild rose	<i>Rosa woodsii</i>
	rosemary	<i>Rosmarinus officinalis</i>
	salmonberry	<i>Rubus spectabilis</i>
	gloriosa daisy	<i>Rudbeckia fulgida</i>
	<b>blue elderberry</b>	<b><i>Sambucus cerulea</i></b>
	red elderberry	<i>Sambucus racemosa</i>
	sedum Autumn Joy	<i>Sedum</i> 'Autumn Joy'
	hardhack	<i>Spiraea densiflora</i>
	snowberry	<i>Symphoricarpos albus</i>
	evergreen huckleberry	<i>Vaccinium ovatum</i>
	blue muffin arrowwood	<i>Viburnum dentatum</i> 'Blue muffin'
	viburnum	
	sweet violet	<i>Viola odorata</i>
	<b>evergreen violet</b>	<b><i>Viola sempervirens</i></b>
	weigela	<i>Weigela</i> 'Wine and Roses'

**Appendix B:**  
**Baseline Maps Compiled by Ben Helmes in 2002**

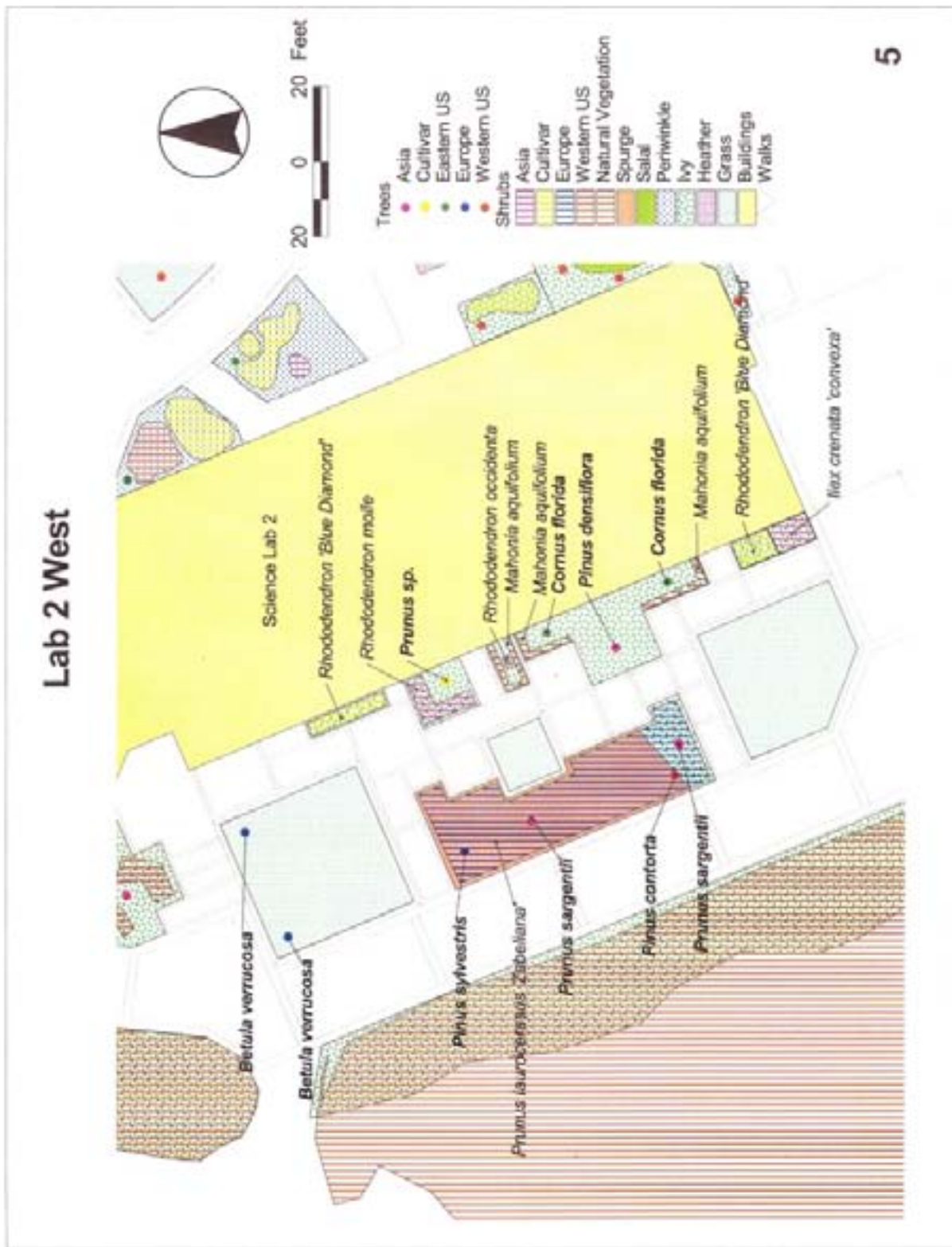






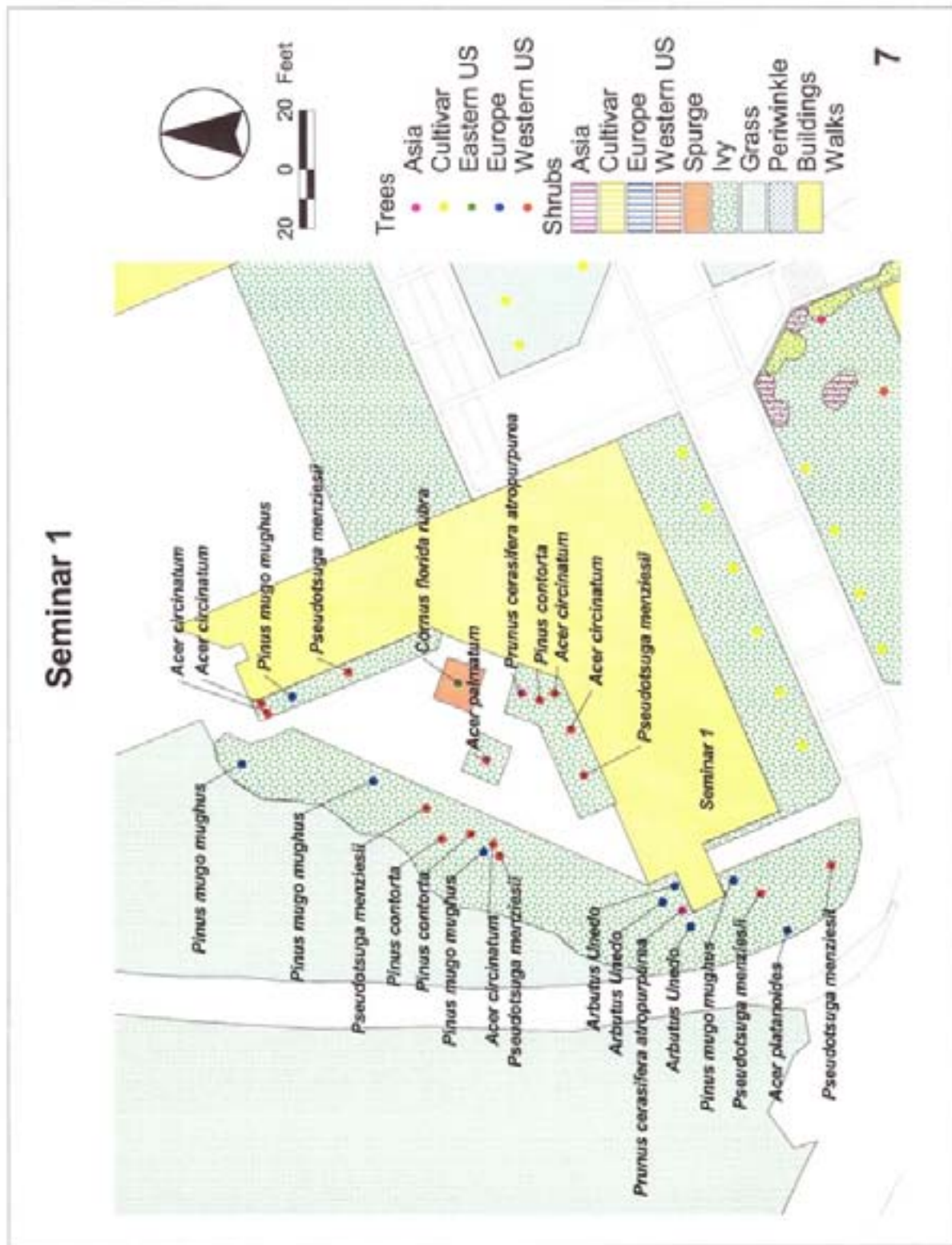


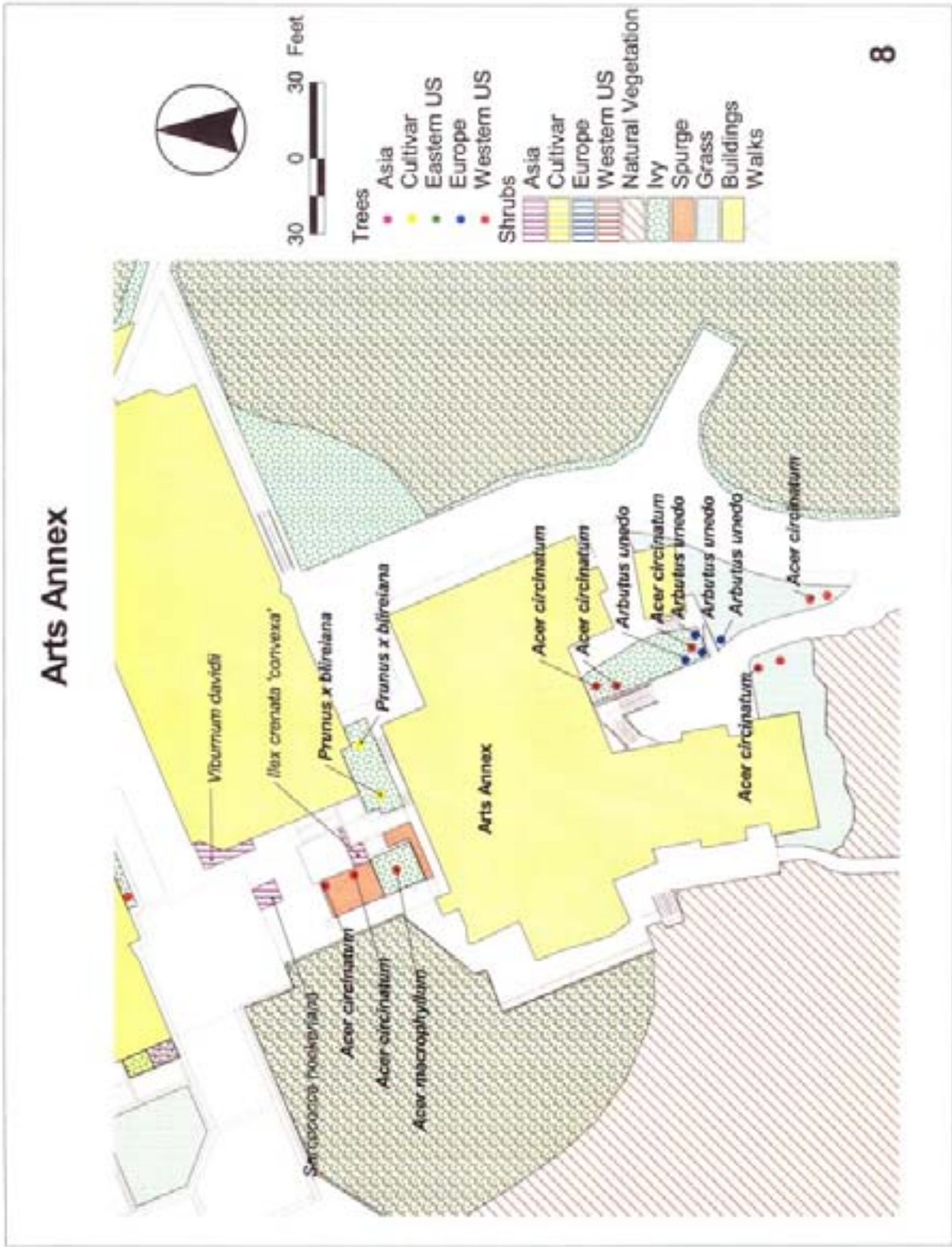


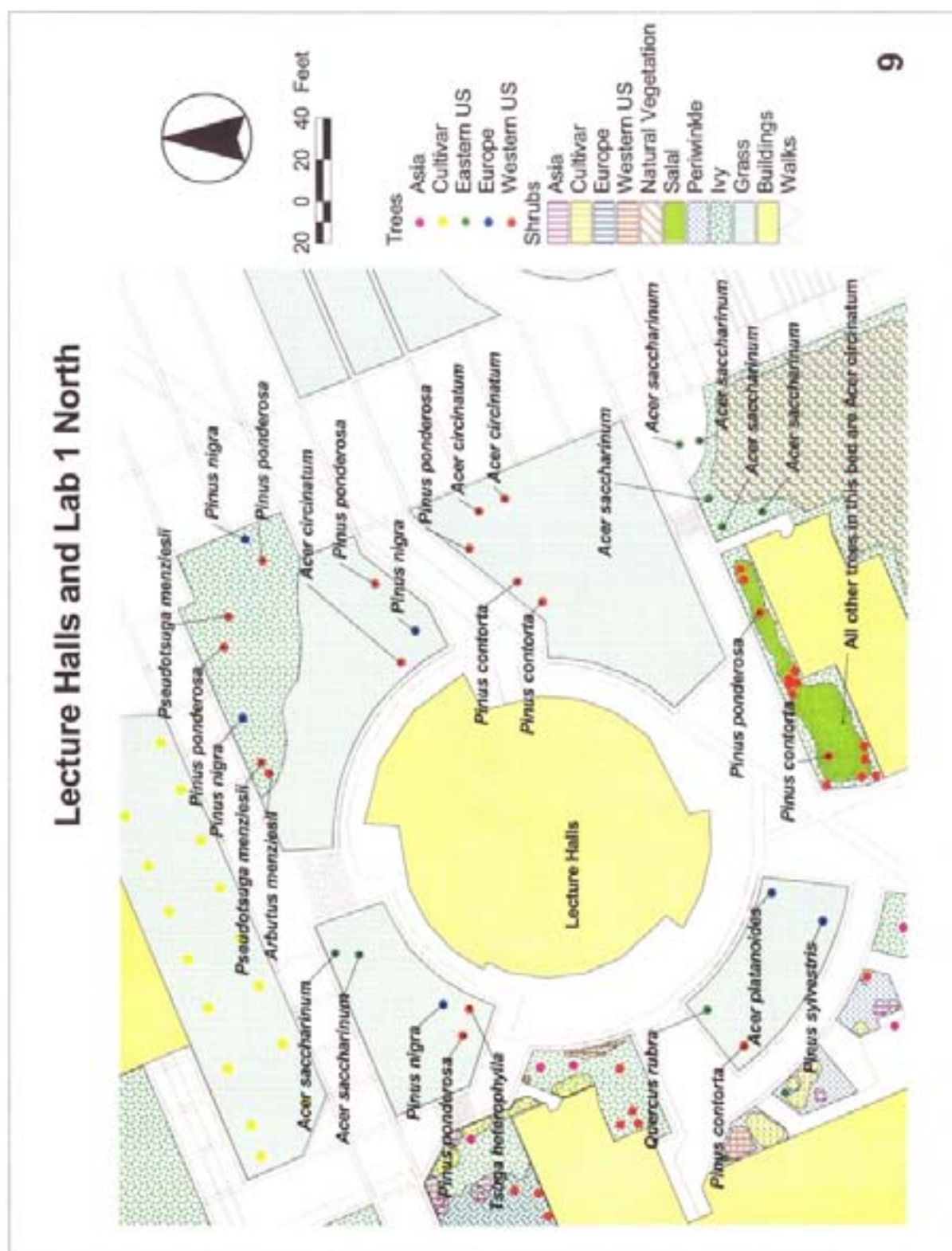




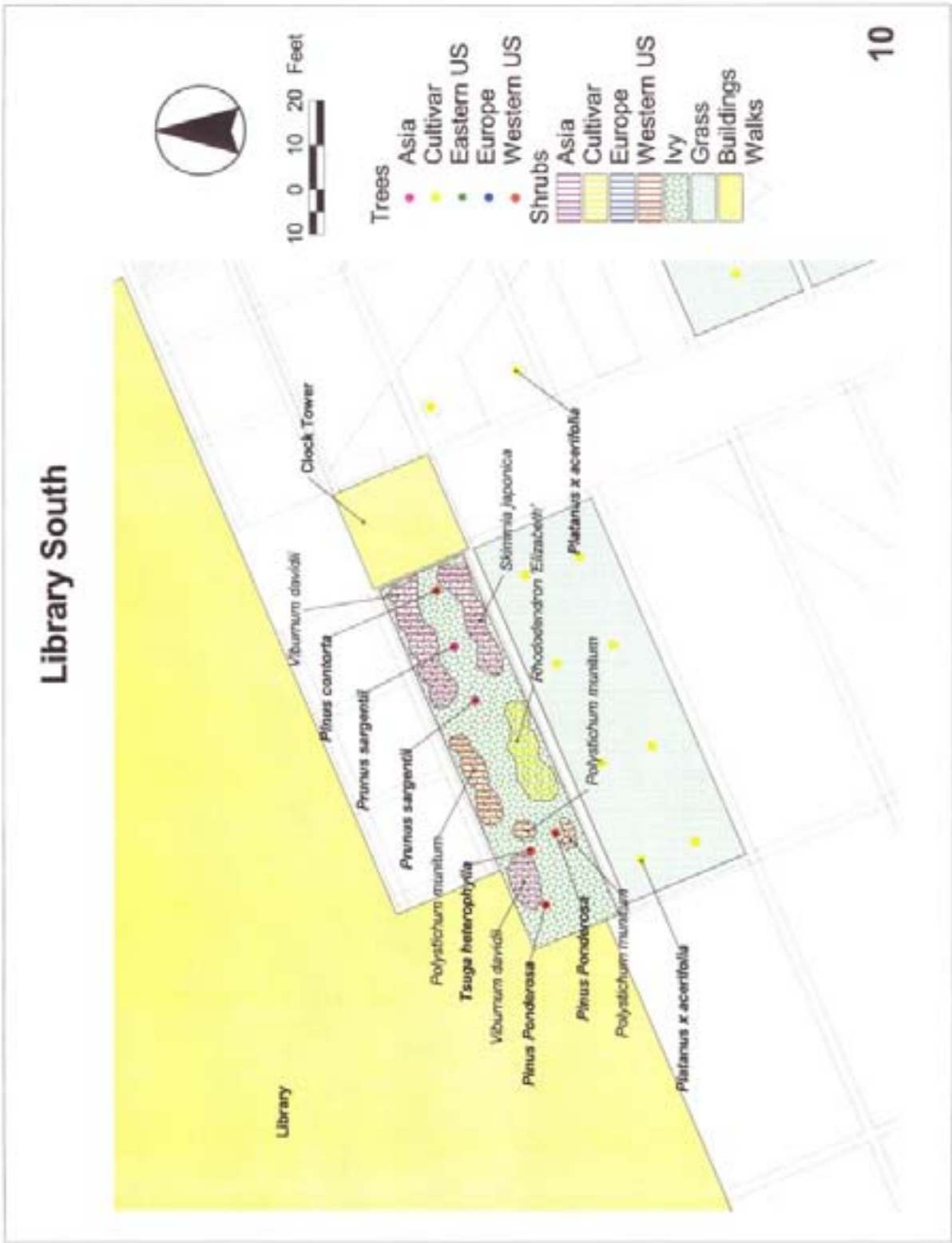


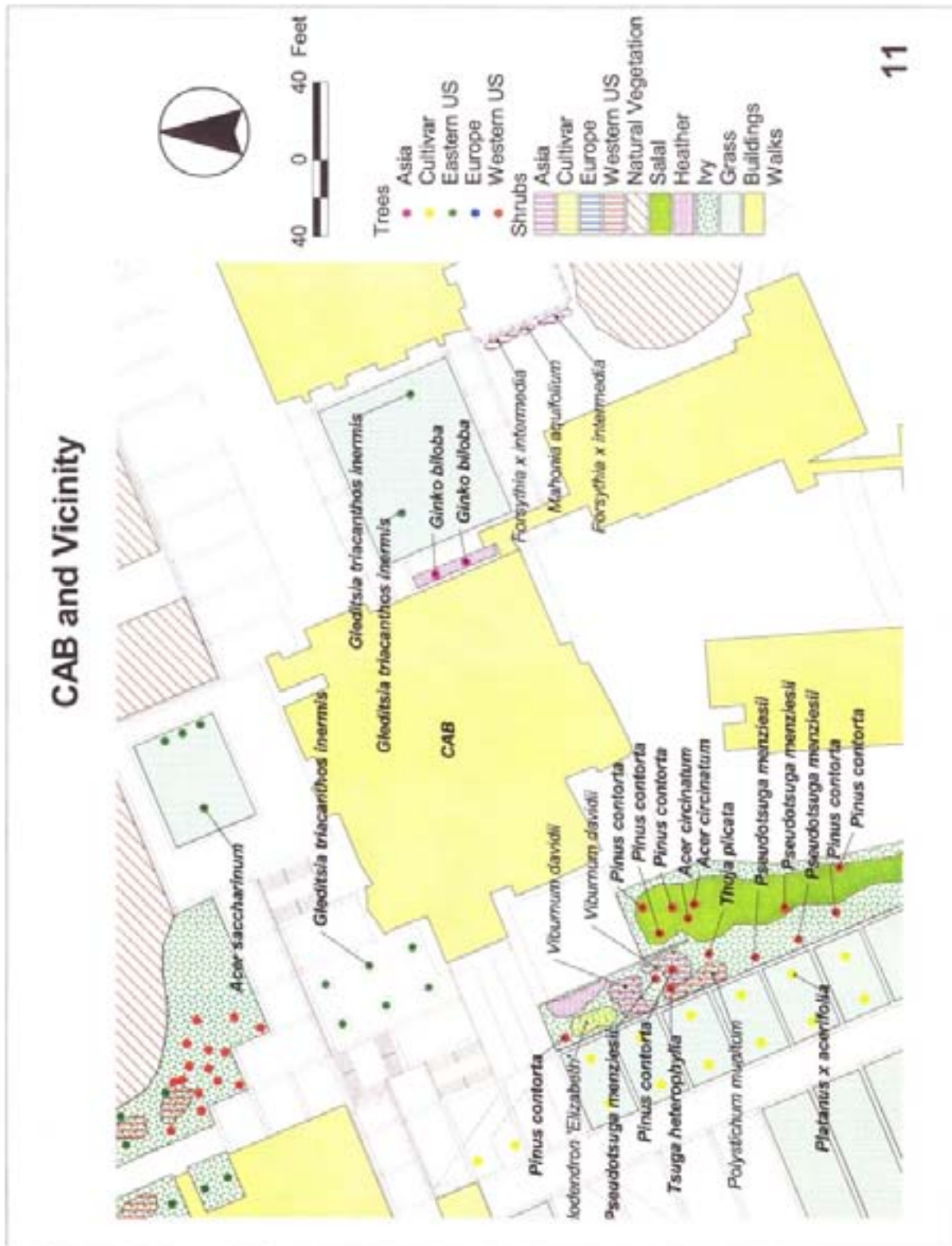




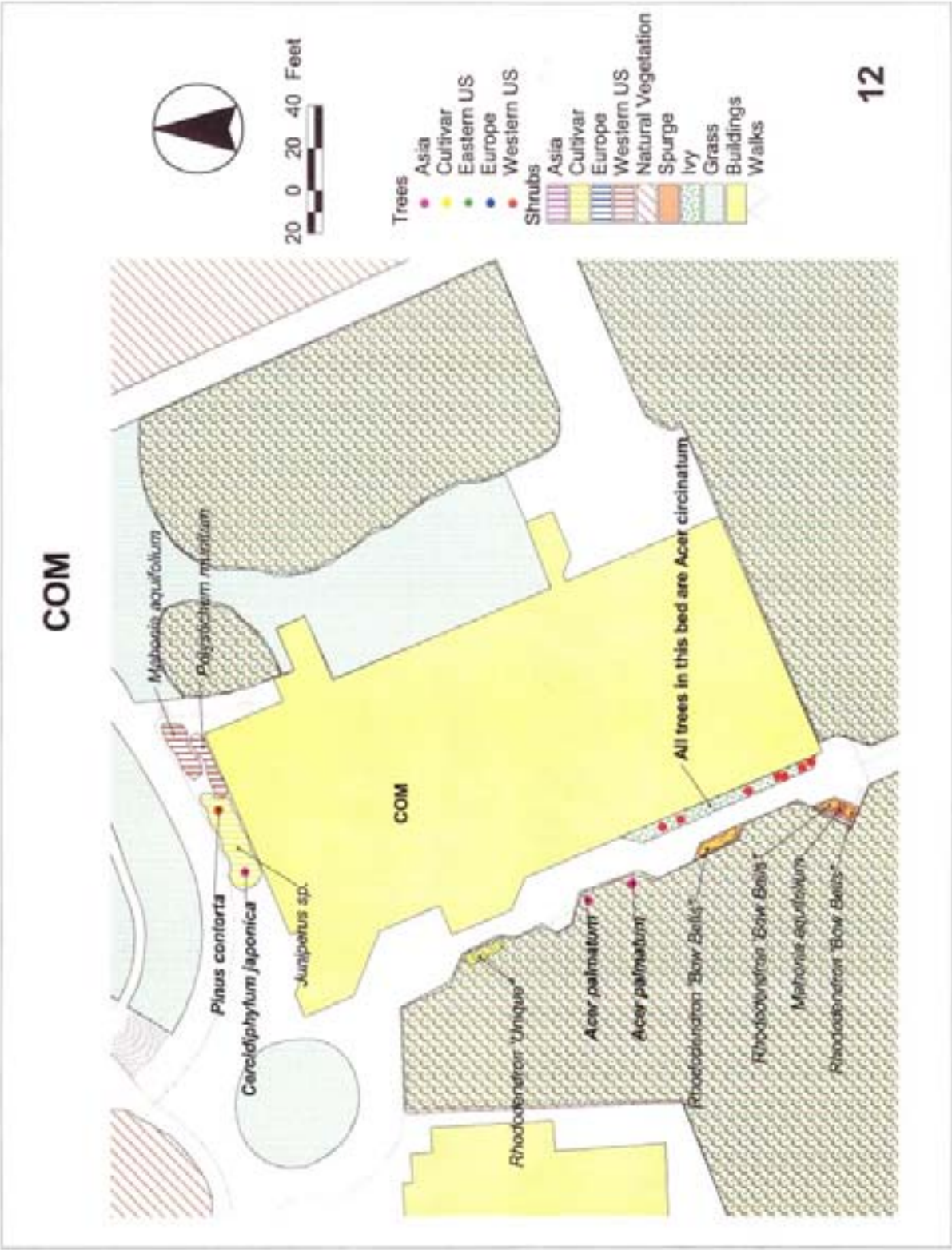














# CAMPUS MEETING NOTES

(February-October 2007)

A compilation of notes taken by project members during information gathering sessions, one-on-one meetings, eco-charrettes, open forums and workshops at the Evergreen State College.



**MEETING NOTES:** Meeting With the Following Individuals

**MEETING DATE:** February 26, 2007

**BY:** Paddy Tillett

<b>THOSE PRESENT:</b>	<u>TESC</u> Rob Knapp Crystal Passi (student representative) Bob Leverick Paul Smith	<u>ZGF</u> Don Miles Tim Williams Paddy Tillett
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1. The importance of place-making was raised this morning in the context of sustainability.
2. A full time study package called Sustainable Design Materials is a current program that ends in three weeks. A Community Design-Community Action program will begin in the spring. It is hoped that some of the students in that program will be actively involved in the master plan process. The purpose today is to identify the process, and how engagement might occur.
3. Sustainability is addressed in many different ways on this campus, buried in other things that go on.
4. Beginning today, the consultant team is focusing on draft goals and objectives, based on what we have just heard from senior Administration. The team will continue to listen carefully throughout the process, although the draft schedule suggests discrete tasks. The schedule has been timed to the academic year, and avoids evaluation week at the end of each term.
5. The initial campus workshops occur during a busy time, and there is concern about the probable level of participation. We have heard that more short sessions may be preferred. A number of subjects would be raised with the whole group or break-out groups in each workshop.

End of notes

*The content of these meeting notes represent, to the best of our knowledge, an accurate recording of the topics covered. Please forward corrections or additions to Tim Williams at [twilliams@zgf.com](mailto:twilliams@zgf.com) within 10 days of receipt of the notes.*

**MEETING NOTES:** Senior Administration

**MEETING DATE:** February 26, 2007

**BY:** Paddy Tillett

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1. It is important to be clear about the role of students: there must be a clear interpretation of issues to students. A promotional campaign to involve students at some stage would be important. As a first step, we would like to communicate the dates of meetings on the Intranet. We also want to identify credit involvement.
2. We must also connect formally with student government. There is interest in promoting this throughout the student body. The staff coordinator is Andy or Bill.
3. March 13<sup>th</sup> is a Board meeting in Tacoma. A one hour work session is scheduled; the purpose will be for the design team to listen to what board members concerns might be.
4. It should be made clear that there is a framework within which this master plan will fit. Looking at the 2005 update of the master plan, five land use goals have been extracted as a starting point. Are these goals and the 15 procedures the appropriate place for the master plan team to begin?
5. One thing that has changed is a much stronger emphasis on green design and sustainability, so the language needs to be updated in that respect.
6. Within the goals, there should be something that addresses the relative suitability for development of different parts of the campus. The emphasis has been around the footprints of existing buildings. In the future, we might look to acquisition of new land.
7. Is technology adequately captured by the goals? An aspect of this also affects the quality of student life on campus. This master plan should go further out than current conditions. Thinking about the campus in relation to nearby communities is important – the campus is less of an island than it was ten years ago.
8. Preservation of the ecological quality of the campus means many different things to different people.
9. Take the five goals and rephrase them in more current language. The old master plan dwelt on things not yet built; conditions have changed.
10. Several objectives and projections were stated in the 2005 master plan update, e.g. an increase of enrollment to 5,000. Are these numbers still valid? Yes, but in preparation for times to follow, consider what will be needed if a greater enrollment is eventually achieved.
11. The College will continue to have a presence in Tacoma – perhaps substantially larger than the 225 students there now.
12. What is the role of the sustainability task force in the process? They will be active participants. The purposes of being a teaching and learning institution require a constant reminder of the context of the campus and the connections between environment and learning.
13. Evolving demographics suggest that we may become more of a resident campus rather than the predominantly commuter campus. 950 of 4200 students now resident. There is also a growth in student housing off campus but nearby.
14. The sustainability group is quantifying the carbon contribution of the campus. The role of the campus in climate change will require immersion in this issue so that realistic objectives can be incorporated in the master plan.
15. Financial Futures investigation looked at nearby development, including a waterfront retreat community. Downtown opportunities were also examined. These resources will be available to the master plan team.
16. Imagining our thousand acres as becoming a special reserve within an urbanizing region. How

could we make this reserve a resource to nearby schools and other elements of the community? It may be decades before the value of this is generally recognized, but we need to define what it can be now.

17. Involvement of students in an entrepreneurial way in the relationship between the campus and its neighbors opens interesting possibilities. What is the best balance that you envisage between the campus and development around its periphery? A conference on campus would be one way to discover this.
18. There may be some competing values where students are concerned. A survey indicated that they lack services near campus. Access to alternative food, laundry and entertainment were all cited, underlining a sense of isolation from necessary services.
19. All of our questions will not be answered by the master plan, but we should understand what the County anticipates for land around the campus: residential and commercial development – how much and how soon? These will affect what we need to do on campus.
20. Community encroachment and the use of recreational facilities affect the quality of the environment for students.
21. There are specialist consultants on the team to deal with the technicalities of transportation planning, engineering etc.
22. Safety and security work has changed. How we think about these in the context of the College. Lighting, especially in the back of the campus, needs to be looked at.
23. Policies and Procedures for Land Use will be presented another time.
24. Student life should govern what we do and what we build, not the other way around.
25. The goal for on-campus living is stated as an expansion from 25% to 33% residency. Does that still seem the right range? We need to look at state demographics to understand likely growth. Currently, we are accepting more freshmen, there are shifts throughout the state from two-year to four-year schools. High school direct expectations remain high. A third of students on campus in addition to those living near the campus should be assumed. This provides something to plan towards, even if designated housing sites are not developed in the near term.
26. Modernization and replacement of buildings should be considered. Long term life-cycle costs should be part of the analysis of existing buildings and should influence the decision to remodel or replace a building.

End of notes

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**MEETING NOTES:** Campus Landscape

**MEETING DATE:** March 11, 2007

**BY:** David Grant/ZGF  
Crystal Passi/TESC Student

**THOSE PRESENT:** TESC ZGF  
Frederica Bowcutt, Faculty David Grant  
Crystal Passi, Student

**DISTRIBUTION:** Frederica Bowcutt  
Crystal Passi

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**Topics discussed included the following:**

1. Dave and Crystal met with Frederica to discuss the campus landscape and reserve and envision how they can be further developed to assist in teaching, reinforce the school's identity, and honor the original design vision for the campus. We also discussed the challenges of managing and maintaining such a landscape.
2. The following items were discussed:
  - Frederica authored the Arboretum Plan, which was adopted in September of 2002. The Plan is a 10 year plan (2002-2012) that creates teaching gardens around campus. The teaching gardens are used as teaching aids for classes and as interpretive gardens for the community at large. The plan has been very successful, and all but one of the recommended gardens have been installed. Only the Deer Garden has not been installed.
  - The Teaching Gardens have increased the demand on the landscape maintenance crews. The gardens were created in a span of only a few years, and Grounds has had difficulty responding. The addition of formal landscape to the campus creates additional maintenance work that is compounded by the fact that herbicides and pesticides cannot be used. Frederica is sympathetic to the overloaded Grounds team and would like to look at ways to utilize volunteers:
    - Master Gardeners – Master Gardeners are required to maintain their title by performing a certain amount of service hours every year. This may be a source of volunteer maintenance time.
    - Master Naturalists – At the national level there is also a Master Naturalist program. This program does not currently exist in Washington State, but an Evergreen student is trying to establish it here, and this may be another opportunity to bring outside volunteerism onto campus.
    - Student work study – A number of students are already employed on a part time basis by Grounds to perform maintenance in the landscape. Additional student involvement may be possible through a student work study program.
    - Prison labor - There may be an opportunity to utilize prison labor for maintenance tasks on parts of the campus.
  - One of the challenges in using volunteer labor for maintenance is that currently all of the landscape maintenance equipment is stored at the Facilities yard for use by the Grounds crews. In order for volunteer labor to be a practical tools will need to be available in the campus Core. Frederica proposes an equipment shed that will be used to house items such as tools, hoses, and carts. The shed could be located inconspicuously to the northwest of the Seminar I building at the base of the ivy-covered slope. A volunteer labor force will also need access to water, so quick couplers should be provided in beds where volunteers will be working.



- Frederica would like to broaden the exposure of the campus landscape so that it is used as an educational resource by local schools. Educational amenities include the Teaching Gardens, the Reserve, and the Organic Farm. Frederica would also like to develop a medicine trail that could be used for educational purposes.
- Landscape initiatives are often easy to fund through donor recognition programs.
- The establishment of an advisory committee (e.g. "Friends of Evergreen Reserve) may help to generate community interest and volunteerism.
- A number of people have expressed a desire to see more color on campus, and public art may help in that regard. Frederica advises that any discussion of locating art on campus should include faculty member Bob Leverich. We should also consider the appropriateness of art pieces in the reserve. Care should be taken to inventory students work and to retain pieces that may have value as public art on campus.
- Campus landscape standards need to be developed. Currently there is disagreement on campus over appropriate mulch type and depth.
- The campus currently does not have a water feature on it, but has several areas of grade-change that would accommodate one nicely, and a water feature might help to further animate the campus Core.
- We discussed the possible creation of a policy whereby any capital improvement project would be required to undergo a review process at key points in its inception and design to identify educational opportunities and advise on its landscape. Reviewers would include campus staff, faculty, and students.
- A number of practices exist on campus that are in conflict with the recommendations made in the existing master plan. A process needs to be established for enforcing the recommendations of documents such as the master plan so that individuals do not have to champion the recommendations.
- A policy addressing the number and appropriateness of memorials on campus needs to be established.
- A land use committee would be valuable so that different parties on campus are not working in isolation from each other. Any policy, practice, or physical improvement to the campus would need to go before this committee so that conflicting initiatives are not at play. An example was given where one party on campus had identified a small plot of land for an educational planting and another party then installed a memorial on this spot, as they were unaware of other plans for the area. Another example was given where a memorial bench was installed in the reserve without approval from anyone.
- We talked at length about using the landscape and reserve as a bridge to the surrounding community. Greater outreach could occur through several measures:
  - Greater web presence – the campus landscape and reserve could have online interpretation, photography, event listings, maps, discussion forums etc.
  - Reserve coordinator – a part time position could be established to coordinate events in the reserve such as school programs, interpretive walks where students and faculty share knowledge with community members, etc. The coordinator could also refer incoming questions about the reserve from the community to students and faculty.
  - Formalize the reserve as a public amenity – this can be done by referencing national forest/national park vernacular (e.g. trailhead stations and signage).
- Cold Canyon Reserve and Jepson Prairie at UC Davis are examples of a successful reserve system at a public academic institution, and should be referenced in our work with the Evergreen reserve.

End of notes

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**MEETING NOTES:** Board of Trustees

**MEETING DATE:** March 13, 2007

**BY:** Don Miles

**THOSE PRESENT:** TESC ZGF  
 President and Board of Trustees Don Miles  
 John Hurley, Vice President,  
 Finance and Administration  
 Paul Smith, Facilities Services  
 Ken Tabbutt, Academic Dean

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**Topics discussed included the following:**

1. John Hurley outlined the purpose, product and schedule for the Master Plan. Paul Smith introduced the Planning Committee and consultant team.
2. Don Miles reviewed the Mission and Goals for the Master Plan. These were based upon the 2005 Update of the 1998 Master Plan and the Strategic Plan with revisions suggested by Senior Administration. There was consensus that these provided a good foundation for the plan.
3. Don Miles reviewed the planning process and schedule emphasizing opportunities for the engagement of students, faculty, staff and community through a number of workshops and meetings. Don Miles described the initiatives being taken to provide student learning opportunities. Opportunities for engagement are planned around the Academic Calendar and standing meeting dates of committees and organizations to encourage participation.
4. The Master Plan will address on and off campus facilities and Don Miles mentioned the important information gathered from meetings earlier in the day with administrators of TESC Tacoma campus and the Reservation Based Program.
5. Comments from the Board of Trustees included the following:
  - The campus Core and Reserve should be a learning experience and open and inviting to the community and adjacent neighborhoods;
  - The campus should be planned to attract outside revenues and donors;
  - Opportunities should be explored for student, faculty and staff housing and neighborhood services on and/or adjacent to campus;
  - Given increasing Cooper Point development, the plan should address personal safety, transportation and sustainability.

End of notes

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**MEETING NOTES:** Reservation Based/Community Determined Program

**MEETING DATE:** March 13, 2007

**BY:** Don Miles

**THOSE PRESENT:** TESC ZGF  
 Jeff Antonelis-Lapp, Director Don Miles  
 and Member of the Faculty,  
 Reservation Based/Community  
 Determined Program  
 Paul Smith, Facilities Services  
 Ken Tabbutt, Academic Dean

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**Topics discussed included the following:**

1. The Reservation Based/Community Determined Program began in 1989. Classes are only for 3<sup>rd</sup> and 4<sup>th</sup> year students with Grays Harbor Community College Bridge program preparing the majority of the students.
2. Currently six tribes participate in the program (Makah, Muckleshoot, Nisqually, Port Gamble S'Kallam, Quinault and Skokomish). Classes are taught at the following locations: Quinault, Muckleshoot, Nisqually, Lower Elway, Port Gamble and Skokomish. Four Saturdays per quarter all the students in the program (TESC/Grays Harbor interface) attend classes in the Longhouse on TESC main campus. Four classrooms (20 students each) are used in the Longhouse at this time. The kitchen at the Longhouse is used extensively during Saturday classes and traditional tribal meals are served to students and faculty.
3. Currently there are 80 students in the program (35 Evergreen and 45 Grays Harbor)
4. In the future the program is expected to double in size. At that time, the Longhouse might be used 8 Saturdays per quarter.
5. The Tribal Councils are actively involved in overseeing the program and classes taught and have a "government to government" agreement with TESC on the respective responsibilities for the program.
6. The Longhouse and adjacent Ethnobotanical Garden on TESC main campus are central to the program. The design and construction timbers used in the Longhouse were donated by the tribes. There is a cleansing ceremony at the Longhouse at beginning of each Saturday program. A separate graduation ceremony for the program with active participation of alumni of the program occurs each year at the Longhouse.
7. A \$1.8 million expansion is planned for the Longhouse. The intent is to build a companion building at the site to provide additional classrooms, a studio for an artist-in-residence, and lodging accommodations ("bunk house") for the artist and students traveling long distances to Saturday classes.
8. The program has taken an active role in TESC Diversity Lecture Series.

End of notes

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**MEETING NOTES:** Facilities Staff Meeting

**MEETING DATE:** March 14, 2007

**BY:** Dan Edleson-Stien

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<b>DTF</b>	<i>Additional Housing?</i>
<b>(Wheelchair) Accessibility</b>	<i>Lack in Student Housing, Laundry, can't access 2 story building</i>
<b>Philosophical Plans, 1998, 2005</b>	<i>Underpinnings but this one is more concrete and physical. Moving beyond ADA access.</i>
<b>Dorms</b>	<i>Too expensive at \$7-800 for quarter, lack of accessibility, loss of independence</i>
<b>Off Campus</b>	<i>Older kids move off</i>
<b>Quiet &amp; Drug Free</b>	<i>Better taken care of by users</i>
<b>Housing Distribution</b>	<i>Change nature if housing more divided up, loss of community feel</i>
<b>Dorm, Apartment, House</b>	<i>ABCD, Soup, Mods (Mods can sometimes by 2 to a room however)</i>
<b>Housing Sem II Style?</b>	<i>Clustered multi-level housing that is divided yet physically connected</i>
<b>Wheelchair</b>	<i>Ramps are too steep to use for most</i>
<b>Dream Idea Food</b>	<i>Grocery Store/Co-Op- Real Food, Not Outrageously Priced. Location at HCC. Turning corner store into grocery store. Closed Off. Sandwich Shop closed. School sponsored shuttle to co-op? Support Local Farms</i>

Section for recycling not enough tucked in. Need more ordered recycling setup.

Kids are messy, take for granted year-end cleanup.

Kitchens in A building a Health Concern. Create a charge. Community Kitchens for the ABCD dorms.

Things falling apart/30 years of overflowing toilets. Everything Needs a general Update.

New stuff not as ugly as old stuff. D was renovated this summer.

Cynical about recycling, couldn't be more centralized.

No more composting in dorms. Health code, lack of funding.

Walk at night, no connection with residents. Disconnect can be refreshing. Performances but rarely, library.

Café late at night in dorm area. (Could money from CAB designated for student run café be transferred to location somewhere else on campus?) (Could this be done for the overall funds for CAB as it seems that it is too many activities located on just upper campus with lack of attention to lower campus?)

Lack of HCC as center. Field & Red Square. Even CAB. Frisbee Golf anyone?

Subterranean previously sandwich shop late night on campus.

Groceries- Widely Embraced, pricing structure, pre sale, Food Co-Op.

End of notes.

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**MEETING NOTES:** Sustainability Task Force

**MEETING DATE:** March 14, 2007

**BY:** Dan Edleson-Stien

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<b>The Best Group of People on Campus</b>	<i>Put together DTF for strategic plan, have a website w sustainability plan. Now non-disappearing-permanent committee.</i>
<b>John???</b>	<i>Grad Student, Head of Task Force</i>
<b>Original Plan</b>	<i>Eight chapters, curriculum of sustainability, most relevant surrounding facilities, land stewardship, facilitates bio-diversity, increases connection with nature.</i>
<b>Carbon Neutral</b>	<i>Neutral and Zero Waste Campus by 2020. Treat Land as an eco-system. More than just proactive design. Evergreen as leaders through actual practice and visual clues. Classroom as educational building. Didactic campus.</i>
<b>Manlo?, Sweden</b>	<i>Amenities are the garbage. Make everything transparent (so a seven year old can understand).</i>
<b>Going Back to the Architecture of the First Peoples County Zoning Issues</b>	<i>Speak with Ken Kramarz at Camp Tawonga. TESC: Island in Suburban Sprawl. Suburban Ghetto, Need link between city and campus.</i>
<b>Carbon Budget</b>	<i>Biggest Use is travel to and from campus, faculty travel – rethink transport. (City redo the dark stretch between campus and city for night bike riders or at least add night lighting?)</i>
<b>Central Plant</b>	<i>Replacement for boilers</i>
<b>Sense of Identity</b>	<i>Sense of Definition</i>
<b>Wildlife Habitat Corridors?</b>	

<b>Gateways</b>	<i>Defining Edge of Environmental Stewardship. Telling the story.</i>
<b>Learning the community better</b>	<i>Urbanized Campus</i>
<b>Long term ecological studies</b>	<i>Looking backward in time as well</i>
<b>Thinking about larger context</b>	<i>Sense of place is different in different quadrants around campus. Not every piece of land has the same significance.</i>
<b>Fundamental Tensions</b>	<i>Clean vs Natural</i>
<b>Sust Technologies</b>	<i>Photovoltaic, Groundwater Heating.</i>
<b>Food Visibility</b>	<i>Organic Farm as Teaching Tool Expanding Acreage Herb Gardens, Teaching Gardens Big Greenhouse on Red Square?</i>
<b>Red Square</b>	<i>Stage of Campus as defined by Native American Program</i>
<b>Goal of increasing number of students on campus</b>	<i>(The best way to do this is to create enjoyable housing on or nearby campus that does not feel like it is on-campus housing)</i>
<b>Faculty and Staff Housing</b>	<i>Affordable Housing, Co-Housing for Faculty &amp; Staff near campus</i>
<b>Maintenance</b>	<i>Facility Location. Modernizing facilities for what?</i>
<b>Increasing Health</b>	<i>Students, Teachers, IT'S A BIG GERM FEST.</i>
<b>Design Guidelines in Master plan</b>	<i>"TESC will be a laboratory for sustainability."</i>
<b>Campus Transportation</b>	<i>Will Terr at Boulder</i>
<b>ASHE</b>	<i>Looks at Campus Sustainability Nationwide</i>
<b>Charrette with planners from ZGF firms</b>	<i>I definitely want to be a part of this.</i>

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**MEETING NOTES:** Open Student Meeting

**MEETING DATE:** March 14, 2007

**BY:** Dan Edleson-Stien

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Architecture: More in the forest, woodwork, open space. Like Sem II.

Other Building's feel too clustered. Greater Openness. More Natural Vegetation.

(Could you create more architecture like Sem II through renovations that create open designs and plant trees in between?)

Charles Loosen – Member of the Student group “Take Back The CAB”. Working to get student control of the \$15 million being paid by students for CAB renovation, in past student funds have been misappropriated by administration. Legal right of students to have control. Control would allow them to hire architects and maintain control throughout entire process. [charlessloosen@msn.com](mailto:charlessloosen@msn.com), [geoduckunion@gmail.com](mailto:geoduckunion@gmail.com). Questions regarding state versus student fees as well.

More Hangout Space.

Sem II café great spot to get away.

HCC doesn't work.

CAB doesn't work.

More Couches.

Place to step out of the flow.

Scheduling. 8AM versus 10AM. Divided between specializations.

Campus Planned Anticipating 12,000 Students.

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**MEETING NOTES:** Community Meeting

**MEETING DATE:** March 14, 2007

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### Non-Care

*Laboratory for Natural Studies*

### Care

*Blending of Classes & Housing increase density of Mods*

### Does New Master Plan Replace Old One?

*Language Similar to Old Master Plan in regards to preserve/reserve. More tight/graphics. Architects create documents that translate for the state.*

### Gateways



*Central Park, NYC*



*this look is more rustic and in tune with forest than Evergreen's Current Plastic Signage on Trails.*

### Resistant to Taming The Forest

*Habitat corridors, maritime connections that extend beyond the boundaries. Not a general thinning of the forest to become a park.*

Eminent Domain vs. Board of Trustees

Interpretive Center In the Woods

Environmental Field Lab. April 4<sup>th</sup>, Robyn Herring.

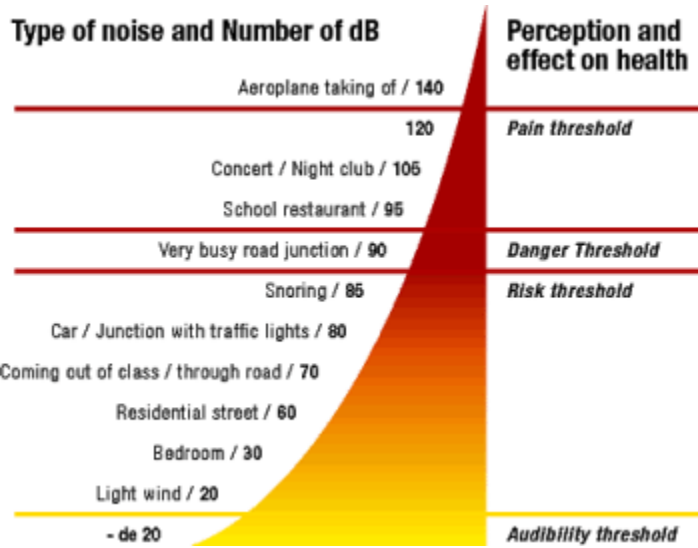
Faculty names

Everyone has their own names for forested parts of the Campus. (Use studies to design similar to Islandwood ala Designing with Nature by Ian McHarg)

Organic Farm vs Eco-Researchers

Facilities Substandard  
Housing Not Market Value. Treat on campus students as renters. Inefficient Maintenance. Shotty Construction Quality

Good to keep upper and lower separate as students come of age and party a lot, need the separation.  
Attracting students to continue to live on campus: Differences in lifestyles gradients.



(Some like it loud. Some not so much. How can you cater to all through overall design?)

Need Dining at Lower Campus (it seems like dinner would make sense on lower campus, lunch at upper, breakfast either or. Weekends lower) Eating is a social event.

Dealing with food, flexible food options. Scope, Flexibility, Adequate Kitchen Facilities.

Landscaping, Desired paths

Jose Gomez

Faculty have very little opportunity to interact outside their disciplines. Faculty lounge or Meeting Place. A place where faculty would go after class to unwind. All faculty can come together to have a social interaction. Comfortable. Similar concept to high school faculty lounge. Vital to get to know each other. Interdisciplinary place with interdisciplinary education needs this place. Mailboxes and coffee shop are different dynamic. Centrally located by SemII. CAB Renovation? Planning Units- Holding meetings in the place defeats the purpose; if things are scheduled people can't rely on being able to unwind there. Need this as transition from founding faculty to new hires.

(This campus is socially fragmented. Everyone wants a comfortable place to lounge. At every and all times.)

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**MEETING NOTES:** Campus Tour of Organic Farm

**MEETING DATE:** March 15, 2007

**BY:** Dan Edleson-Stien

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<b>Two Trails</b>	<i>24 acre farm</i>
<b>Vision</b>	<i>Shift Allotment</i>
<b>Commitment to Food System Is Essential</b>	<i>Megan Pardi (Aramark Sustainability Intern?)</i>
<b>Connection to Capital Forest</b>	
<b>Worms</b>	<i>2 70 ft long worm bins needed for food compost from campus</i>
<b>Chicken Barn</b>	<i>Needs Replacement</i>
<b>Balance Education vs. Production</b>	
<b>Warren Wilson</b>	<i>Excellent Case Study</i>
<b>Aramark wants wholesale</b>	<i>Economically more beneficial to sell from stand</i>
<b>Culinary Kitchen Needs</b>	<i>12 ranges needed for class</i>
<b>Farm Size</b>	<i>Currently not enough acreage to rotate. Clubroot is a problem. 3 acres. Need 24 acres.</i>
<b>Evergreen Brand Furniture (I know the perfect place to do a test run).</b>	<i>Milkao? wants to do a collaborative line.</i>



*Ideas Abound...*

**Permaculture Garden**

*Support from faculty. Issues comes from students working hard for two years, coming in, then leaving and new students coming in and changing everything. Melissa set to take over as guiding faculty.*

**Composting**

*Should be a facilities issue. Farm doesn't have the capabilities to process Aramark Food. Drifwood House sited as opportune location.*

**Ralph Nirone?**

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**MEETING NOTES:** Parking

**MEETING DATE:** March 15, 2007

**BY:** Dan Edleson-Stien

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- Redid Parking 2 years ago. 7,700 dollars per space for “green parking”. Still used asphalt.
- B lot has not been at capacity other than graduation & Super Saturday.
- Parking Booth is a shack, first thing people see on entry. (THIS IS A GATEWAY FOR PEOPLE COMING TO CAMPUS VIA CAR)
- Pay as you leave parking is very much hoped for.
- 16 spaces currently metered at 30 cents/hr. Short Term Parking Option. Expand over to C-Lot. No longer 1 hr passes.
- 2<sup>nd</sup> Cheapest Parking in Nation. Renting space, how can you give it away?
- Talk of raising rates, see document Chief Ed Sorger Has compiled on this. (raising rates as incentive for carpooling, problem of raising too much comes from people living in rural areas without public transport access).
- Cheap parking line paint has caused confusion as to where spots are.
- Dan Duncan [hakamadan@gmail.com](mailto:hakamadan@gmail.com) – Student working on incentives to carpool. Old carpool program paid for decals. No more incentive to not use car. Worked before.
- Mr. Duncan is looking into purchasing a Biodiesel Bus to provide continued service throughout the night to campus. (This is one way to make students living on campus feel like they are living off campus).
- All night Bus funding- has administration taken notice?
- Possibility of Working with Intercity transit. School already has good rapport. Possibility of one driver doing the 48 route and the 41 route alternatively every hour through out the night.
- (Adds revenue to business, etc. May encourage late night food places off campus to stay open longer.)
- Dirt farm was originally where longhouse was supposed to be. What is it good for? More parking.

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**MEETING NOTES:** Student Housing Tour

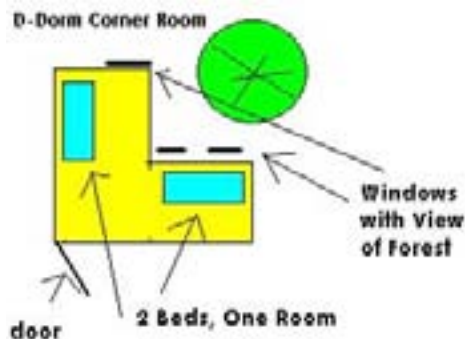
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### Dorms (Newly Renovated D Dorm)



*Good shape, hardwood floors are nice.*

### The Soup (Sustainability Housing, J Dorm?)

Students Like Size. Maybe More Kitchen Space for six people. Sustainable Housing, make it more sustainable in the built environment. Currently is architecturally the same as other Soup housing.



*Cheap and effective solutions to give a visual distinction to Sustainability Housing*

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**MEETING NOTES:** Community Meeting

**MEETING DATE:** March 15, 2007

**BY:** Dan Edleson-Stien

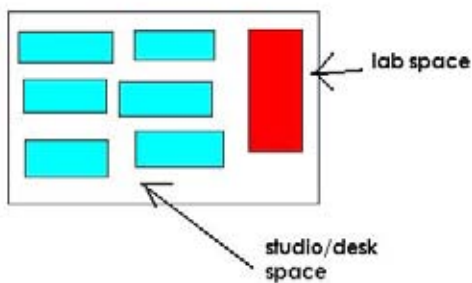
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IT- Data comes in on 20k system. Fiber in every building, floors vary from building to building. Goal is to get fiber on every floor. Main distribution frame- in library. IDF (Intermediate Distribution Frame) in every building.

Improve Air Conditioning. Redundant Cooling System. Running off new Sem I generator. 1 gig hertz rate w vs. 10 gig hertz speed. CAT6 vs CAT6A. 90 Meter distance from switch to outlet is very necessary.

Art Programs are competing for studio space. Part time vs full time.



The classroom lab: a unique space needed for classes in the Evergreen Style.

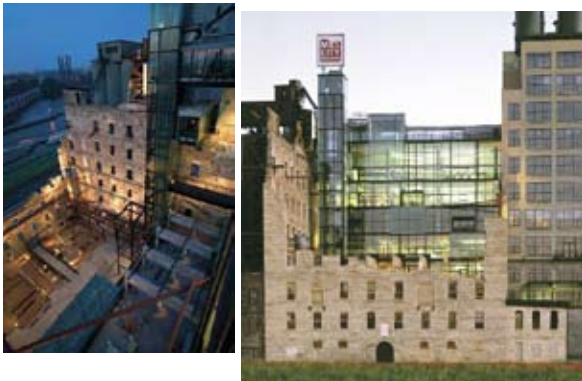
Lack of study space. Cozy nooks, range of options. Need a range of options.

Informal meeting spaces

Maintaining Flexibility.

CLUC & How it operates, is it effective?

Heritage Preservation – Historic Preservation. Keep the brutalism. Campus community is too close to architecture to recognize it's historical content.



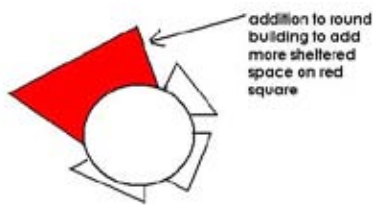
(Historic Renovation that is modern while paying homage to where it came from. The Mill Musuem in Minneapolis is an excellent example of this.)

Red square vacant – address space, intensify energy.

Idea – Open sheltered space on red square



Something for students to lounge on coming off the round building -



(realistically it's not enough. Students need something more in the central area and something to be dedicated strictly to sheltered lounging. Examples: Funny Farm in Sweden, or clubs/bars in Seattle with outdoor space)



(Funny Farm, Interlaken, Sweden)

On graduation red square is very filled.

(Challenging the outdoor/indoors. Play with it. A theme for Evergreen.)



Emilio Ambasz

A lot more freshman. Acceptance rate of 98%. Slowdown of transfers.  
Boom of freshman. Not expected.  
Maintaining Density of the Core. Connection to the past.

Co-Op tied into the neighborhood.  
Transit options. Mobility- There was not a Chapter on mobility in other Master plans.

Bus Stops are plain and unorganized.

Coffee Shop?

Immediate Stewardship of the land viewed from the outside.

(Already intensive green roofs. Utilize. Several acres of farm on campus. Could this minimize deforestation?  
10 acres of roof on upper campus. Have teachers become responsible.)

#### Russ Fox - Land Use Planner

Carolyn Dobbs – Other Land use Planner on Faculty.

Comprehensive Land Use Plan with Community Development.

1970?- 100 Acre Peace Development purposed. 20 acre commercial, 80 acre housing with 20 units per acre.

Chuck McKinney.

Meyer's corporation.

Long History. Everyone Being Involved in Land Use around the campus.

Supreme Court Hearings around development.

Growth Boundary used to be larger. Utility/water use that was originally connected for planned size of Evergreen gave way to sprawl growth due to lack of use by the college.

Intent of Growth, Land Use- Sustainability Community Center. Co-Housing for teachers. Current doesn't reflect values of school.

Cooper Point Association- Doesn't carry same stature as used to.

Focus on update of county plan coming up soon. Olympia growth area.

How to combat suburban sprawl encircling Evergreen.

(Need to inform architects about Glen & New Glen in relation to campus)

Original Cooper Point Plan was more environmentally integrated, a village.

Working similar values.

Original Campus Master Plan.

Green Design + Affordability = What Evergreen Should be all about

Other thoughts:

Create a distinct separation of upper and lower campus through the architectural aesthetic

Woodsy Home Feeling vs. Institutional Academic Feeling

Night Students as well as majority of other students unheard in the initial meetings. Work to get more student participation. A lot of Greener's are apathetic until after the fact.

Farm House is the aesthetic the HCC should have. Think Cozy Lodge.

The residential part of campus should be modeled after a summer camp, because that is essentially what it is. See Camp Tawonga, specifically their dining hall, as an excellent example of the type of space Greener's need on Campus.

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**MEETING NOTES:** Campus Meetings

**MEETING DATE:** April 11, 2007

**BY:** Jeff Dunn

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**C+C (8:30)**

- Existing fiber network includes both single mode fiber and multi-mode fiber. Would like to go to all single mode fiber. This will enable both data and media to be delivered through the same infrastructure. The change to single mode will require a gear change and more space. Many of the existing data closets are too small and poorly ventilated.
- Existing PBX (only MDF) is called the machine room which houses the servers and is located in the basement of the library building. This space is adequate for foreseeable growth. Subsequent distribution (IDF) is to data closets on each floor.
- Existing fiber and copper network is supplied through underground tunnel (approx. 8x10) with some conduit between tunnel and buildings. Some locations need to be audited for access and efficiency. An overall cable audit and clean out needs to occur.
- Existing “dark” fiber from PBX to housing is available for future use.
- Existing Comcast fiber supplied to two nodes; the “A” Residence Hall and the Housing Center.
- C+C infrastructure needs to be included in building programming early for all renovation and new construction. This will enable the necessary support system and flexibility as technology and teaching styles evolve.
- Emergency power and UPS need to be provided for infrastructure. Current emergency power in each building for life safety is not adequate to support additional load. Separate cut over switches for each system are required.
- There is an existing campus access control system called Millennium that connects all doors back to one location. There is a large demand for more access control which includes card access for internal doors and audited access on some internal doors.
- The existing video protection infrastructure is in need of an upgrade. This should include both improved video protection as well as motion detection.
- Exposed cable trays are undesirable especially in more secluded or private spaces. Cable delivery system needs to allow for flexibility and offer some level of protection. J-hooks are undesirable.
- Ideally each floor of a building will have a designated IDF room with fiber break outs from these rooms to data/media intensive areas. This room should separate but adjacent to a department or specialized “IDF” if needed for learning purposes. It is anticipated that the need for these specialized areas will continue to develop.

- Centralized as well as more remote locations on campus should be equal in terms of C+C access. This includes both indoor and outdoor areas. An integrated wireless network that allows for indoor repeating.
- The “mediation” of classrooms provides for and interactive / collaborative multi-media experience for both faculty and students. Media and data could be accessed and controlled through laptops with access to separate screens that small groups can gather around.
- Campus wide integration of infrastructure should emphasize informal spaces to allow for more spontaneous and interactive collaboration.
- Connection from the central machine room to off campus needs to be upgraded for future growth.

#### CRC (9:45)

- The existing track is in need of an upgrade with a rubberized surface. It will be used for both conditioning as well as the track program.
- Lighting the sports fields will increase their usage and enable their rentability.
- There is a desire to have additional parking and drop off access to the sports fields. This will improve access and safety for the arrival and departure of young players and campers as well as emergency access.
- Field 5 area is currently designated for future baseball / softball field(s).
- Fields 1 and 2 are flexible and can be laid out (painted) as needed for different uses.
- Sports camps are a source of revenue. Currently about 60% of the annual budget is provided through revenue with the remainder being provided by student fees and the State.
- Pavilion could be converted into an indoor “sport court” which would increase its usability and rentability.
- There is a need for adequate restroom facilities located near the sports fields.
- CRC would like to see the driftwood house used for alternative activities such as art and weaving.
- There is a desire for designated locker and team rooms near the sports fields. This could be incorporated into a field house.
- There is a need for an improved connection and access between the CRC, the Core campus, the housing community, and off campus users. These improved connections would increase the use of the facilities as well as create an on campus presence as a center for health.
- An increased number of flexible movement would increase use of the facility.



- Smoking shelter locations and effectiveness needs to be reviewed.

**Housing Staff (11:15)**

- Currently 20% (approximately 800) of students live on campus. With the future desired growth of 5,000 students on campus, the college would like to have 1/3 (approximately 1,700) of all students living on campus.
- As students get older they tend to move off campus. Current percentages of students living on campus include; 80% of 1<sup>st</sup> yr, 40% of 2<sup>nd</sup> yr, 20% of 3<sup>rd</sup> yr, and 10% of 4<sup>th</sup> yr. It is believed that this is because the core of student life doesn't exist on campus.
- The current ideal housing demographic distribution includes locating Freshman in the A,B,C and D residence halls, senior undergraduates in the "Soup", and students 25 and older in the modular housing.
- There is a current need for an increased amount of higher density housing for younger students (freshman and some sophomores). Ideally this would be in the form of towers like the "A" residence hall. Approximately 5-6 buildings with 90-100 beds each, double occupancy in suites.
- There is a desire to locate additional housing closer to the Core of the campus while maintaining relative proximity to existing housing.
- The existing "Soup" housing is in relatively fair condition and continues to incur maintenance costs in repairs and system upgrades.
- Current revenue sources on campus include a corner store in the HCC as well as conference housing. An improved housing stock and a grocery store would improve revenue for both respectively.
- Currently access to parking near housing is desirable for both the monitoring of vehicles and retrieval of groceries. Improved bus services could alleviate some of this need.
- It is believed that potential classroom space incorporated into and adjacent to housing would be greatly utilized.
- There is a need for a designated retreat center with adequate food service support. Ideally the center could support a banquet of 500 people at round tables. The Pavilion is a potential location for this.
- Housing would like to be more connected to recreational activities including the CRC building, and the natural recreation amenities.
- Current plan to pull housing support services out of the buildings and the central spaces to create new outdoor public space.
- Potential purchase or land trade acquisition of existing private housing Cooper's Glen would provide a good location for new housing.
- An increased amount (some within 2-4 mos.) of private sector housing is being built near campus and will create another draw for students to live off campus.

- Renovation of the modular housing is seen as a future need.
- It is desirable for future housing to include common space and separate study space on every floor with double loaded corridors.

#### **Open Campus Mtg (1:30)**

- There is a need for a retreat center (separate but close) for 250-300 faculty and some student programs, with flexible meeting spaces and housing. Locating facility near the water would improve its marketability.
- There is need for a large centralized and enclosed community space and meeting space.
- Allow space for and observatory to be located in an adequate location on campus. Should be designed for a telescope of some scale.
- Maintain connection to relocated OCS currently located in the Geoduck House. Philosophically similar and tied to teaching programs. Ideally would have space on the campus.
- Naming of buildings, fields, and forests is important for sense of identity and community.
- Shelters could be located in a variety of on campus locations for spontaneous individual study and class use. Spaces would be very open and connected to their natural surroundings but provide shelter from the elements.
- Plan should emphasize different senses of place and access between them. A habitable boundary of the campus perimeter is one example of such a place.
- Spaces need to be flexible.
- Integrate art as both object and community.

#### **PUC I (3:15)**

- Facilities should be compatible with curriculum
- There is a need for more media spaces with power point capability, film, web access, and document camera. Still want to be able to show slides.
- A faculty lounge is needed in a centralized location that will create community by providing for faculty interaction, planning, and relaxation. This should be separate from any cafeteria spaces but include a galley type kitchen. It should also be a place to bring potential faculty to showcase the university. Like a faculty club. Emeritus faculty could also be included.
- A designated language lab (community or center) would provide a place for the language community to practice and study as individuals and in conversation groups. The room should include about 8-10 computers and individual study carrels for listening and speaking activities. Ideally would be connected to the library (potential for pop-out bay library growth).

Satellite TV connection for international news sources.

- There is a desire to have a visual/physical presence for the humanities. Like language lab or designated classroom space so visual enrichment materials could be incorporated.
- Need more flexible viewing spaces for seminars which would enable viewing and subsequent interaction and discussion.
- A dance studio with a sprung floor and natural light is desirable. Existing space in CRC to be used for exercise machines. This space would also be used for yoga which is an increasing activity on campus.
- Need flexibility and opportunity for spontaneous gathering.
- More studio space needed. Book binding studio near library would be ideal. More display and lecture space as well.
- Reading room / library space to showcase student and faculty work.
- Existing lecture hall is highly undesirable space for teaching but is also currently the only space where large gatherings can occur.
- Provide structures for inhabiting the woods so trees and campus are integrated. Classroom on the beach.

#### PUC II (4:10)

- An Environmental Studies Field Station would house field equipment, dirty lab space, approximate to forest reserves, 50 person classes, greenhouse, food grade lab and food storage. It could also house marine equipment if it were near the water.
- A sustainability Center could house meeting space, be a demonstration project, be a place for interaction with community members. The existing farm provides some of these as it is intended to be both eco-agriculture and eco-design.
- There is a need for potluck spaces for both faculty and students.
- A ropes or challenge course in the forest would be desirable.
- Built space should be a vehicle for teaching.
- There is need for both additional farmland to fulfill teaching requirements as well as land capable of supporting the food consumption on campus. Acres required per person information needs to be gathered to determine the impact of this.

End of notes.

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**MEETING NOTES:** Scientific Inquiry PUC

**MEETING DATE:** April 11, 2007

**BY:** Don Miles

**THOSE PRESENT:** TESC ZGF  
 Rachel Hastings ([hastingr@evergreen.edu](mailto:hastingr@evergreen.edu)) Don Miles  
 Rob Knapp ([knappr@evergreen.edu](mailto:knappr@evergreen.edu))  
 Clarissa Dirks ([dirksc@evergreen.edu](mailto:dirksc@evergreen.edu))  
 Kevin Francis ([francisk@evergreen.edu](mailto:francisk@evergreen.edu))  
 Vauhn Foster Grahler ([fostergu@evergreen.edu](mailto:fostergu@evergreen.edu))  
 David McAvily ([mcavilyd@evergreen.edu](mailto:mcavilyd@evergreen.edu))  
 Donald Mrisato ([donalddm@evergreen.edu](mailto:donalddm@evergreen.edu))  
 Isaac Overcast ([overcasi@evergreen.edu](mailto:overcasi@evergreen.edu))  
 Ken Tabbutt, Dean, Planning Committee

**DISTRIBUTION:** Paul Smith for distribution to the College as deemed appropriate

**Topics discussed included the following:**

1. Ken Tabbutt introduced the master plan process and Don Miles of ZGF.
2. The Quasar Center needs to be accommodated, a math and science zone. Four bay extensions (2,000 sf) of the Library is a possibility.
3. There needs to be a permanent telescope installation for students interested in Astronomy.
4. Red Square should be repaved with '0' runoff (permeable) surface.
5. In the long term campus should be served by wells and off the City water system. This would allow for chlorine-free water. The organic farm would also appreciate having chlorine-free water.
6. Bicycling should be encouraged with bike lockers, bike trails, and equal-gender shower rooms.
7. Space is needed for large, heavy student projects such as the wall sections created for Rob Knapp's program. Security is not essential to project these items. The space could be covered, but open with a walkable surface (a covered outdoor exhibition space).
8. The workshop spaces in SEM II are ideal teaching spaces (like A1107). However, the ventilation system makes too much noise and the room should have been naturally ventilated.
9. The Lecture Halls in Red Square are not ideal teaching spaces. For sciences, their only redeeming quality is the large amount of black board space and the fact that the screen does not cover up the blackboard, as it does in SEM II, A1107.
10. In general, more whiteboard (or blackboard) and tack space is needed for the sciences.
11. Scheduling space is difficult on the spur of the moment (such as for guest lecturers). It sometimes requires 5 months to secure classroom space.
12. Loose fitting, flexible space is needed for teaching (movable tables and chairs). Trapezoidal tables should be considered.
13. There is growing interest in faculty/student research. These activities require state of the art facilities with back up generators for power outages.

Another lab building is needed with breakout spaces for student/faculty interaction. Fred Hutchinson Cancer Research Center, designed by ZGF, was talked about as a lab building the does a good job providing such spaces.

End of notes

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**MEETING NOTES:** Culture Text and Language PUC

**MEETING DATE:** April 11, 2007

**BY:** Don Miles

**THOSE PRESENT:** TESC ZGF  
 Stacey Davis, chair CTL PUC ([davisst@evergreen.edu](mailto:davisst@evergreen.edu); x6761) Don Miles  
 Stephanie Kozick ([kozicks@evergreen.edu](mailto:kozicks@evergreen.edu))  
 Sarah Pedersen ([pederses@evergreen.edu](mailto:pederses@evergreen.edu))  
 Steven Hendricks ([hendrics@evergreen.edu](mailto:hendrics@evergreen.edu))  
 Judith Gabriele ([gabrielj@evergreen.edu](mailto:gabrielj@evergreen.edu))  
 Ken Tabbutt, Dean, Planning Committee

**DISTRIBUTION:** Paul Smith for distribution to the College as deemed appropriate

**Topics discussed included the following:**

1. Ken Tabbutt introduced the master plan process and Don Miles and Sara Howell of ZGF.
2. Ken was asked: what teaching space would be added by the Phase 2 Library renovations? Answer: three (80 person) work rooms on the first floor; two seminar rooms on the second floor.
3. The PUC said additional media classrooms are needed. The PUC liked the SEM II classrooms as they are media classrooms and faculty does not need to provide laptops and web access is available.
4. A central faculty lounge is needed sized to serve the entire faculty. This will be a place to relax, recharge, discuss new programs and encourage informal faculty interaction. It was pointed out that the Faculty Club at the UW is also a center for readings, receptions and donor functions. This space should have natural light, views, comfortable furniture, coffee, plants and catered food service. The consensus was that the current CAB plans do not adequately address this need. It was emphasized that the lounge is not just providing a collegial atmosphere, it serves a central academic need by providing a place for faculty to explore potential programs as part of curriculum planning. This would also provide a place for Emeritus faculty to meet.
5. The SEM II workshop rooms are popular because the lounge areas in the corridor provide convenient space for breakout sessions.
6. The current language lab space in SEM II is too small. The lab space needs to be expanded and an adjacent space provided for foreign language conversation space.
7. There is a desire that foreign languages and international students have greater presence on campus.
8. Additional "pop out" space in the Library could be considered as a potential for the language spaces.
9. The dance space in the CRC is going to be used for additional fitness equipment. Dance is being offered larger space in the building without natural light. Originally one of the ground floor workshop spaces in SEM II was slated for the dance studio, but this was later changed. Dance would like a space with a special dance floor, natural light, mirrors and bars. Yoga is also not well accommodated currently in the CRC (noise, pool fumes, etc.).
10. Comm building needs breakout spaces.
11. LAB II building needs lecture space for print making.
12. A book binding studio/book arts is needed in the Library by Rare Books department.
13. Enrollment Services intends to expand to the north in the lower floor of the Library.
14. There needs to be a faculty reading room exhibiting books written by faculty or showcased in their programs.
15. The current Lecture Halls in Red Square are not popular classrooms (discourage interaction and are not ADA accessible). A "redeeming quality" is that the lecture halls accommodate slide projectors

and document cameras (art history).

The Reserve trails are considered unsafe (personal safety concerns). More use of the reserve should be made, such as, having classrooms at the beach and structures for reflection.

End of notes

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**MEETING NOTES:** Environmental Science Faculty Comment Session for the Preliminary Draft**MEETING DATE:** October, 8, 2007**BY:** Crystal Passi**THOSE PRESENT:**TESC:

Dean Rimerman, MPA Student  
 Rick Reichert, TESC Foundation  
 Trevor Kinahan, Board of Trustees liaison  
 To Geoduck Student Union, and coordinator of  
 General Maintenance Committee.  
 Peter Impara, Member of Faculty  
 Martha Henderson, Member of Faculty  
 Hirsh Diamant, Adjunct  
 Frederica Bowcutt, Member of Faculty  
 Bob Levrich, Member of Faculty  
 Steve Sheuerell  
 Paul Smith

EMAIL:

[deane@efn.org](mailto:deane@efn.org)  
[reicherr@evergreen.edu](mailto:reicherr@evergreen.edu)  
[trevorkinahan@gmail.com](mailto:trevorkinahan@gmail.com)

[imparap@evergreen.edu](mailto:imparap@evergreen.edu)  
[mhenders@evergreen.edu](mailto:mhenderson@evergreen.edu)  
[diamanth@evergreen.edu](mailto:diamanth@evergreen.edu)  
[bowcutt@evergreen.edu](mailto:bowcutt@evergreen.edu)  
[leverich@evergreen.edu](mailto:leverich@evergreen.edu)  
[scheuers@evergreen.edu](mailto:scheuers@evergreen.edu)

ZGF:

Don Miles  
 Crystal Passi  
 Tim Williams

EMAIL:

[dmiles@zgf.com](mailto:dmiles@zgf.com)  
[cpassi@zgf.com](mailto:cpassi@zgf.com)  
[twilliams@zgf.com](mailto:twilliams@zgf.com)

**DISTRIBUTION:** Paul Smith for distribution to the College as deemed appropriate**Comments:**

## 1. Carbon footprint of the campus.

- Limit development to already developed land, reducing carbon release into atmosphere.( Location of new arts building at lab controversial)
- Deforestation, transportation and energy use impact carbon footprint
- Carbon footprint article by MES student should be included in Master Plan
- Arts build/lab building is cutting into nice tree stand, why do they have to be located there?

## 2. Terrascope vs. Geoduck House

- ES faculty prepared proposal for site of the forest observation center with their vision:
  - Terrestrial and aquatic systems merge
  - Art and science form interdisciplinary study
  - Wild lands and human interaction
- 10,000 to 15,000 sq ft. Wet lab space, art classroom space.
- Geoduck house has problems in terms of site, sensitive because of closeness to water.
- If Terrascope replaces Geoduck Marine Science Center idea, that portion of beach could be more or less closed.
- Terrascope would have caretaker like Organic Farm.



-Dirty lab space here would be exclusively for EG material, dirty lab space at core would be for Mat from outside campus.

3. Comparison of Evergreen for Square footage per student needed?

4. Organic Farm issues.

-Greenhouse location.

-Portion of land across the street from farm that is owned by college has good soil and should be included into 25 acre allotment for farm.

-Could plan give a better estimate to farm folks of where these 2 acres are, add to maps while excluding wetland buffer zone.

5. Emphasizing interdisciplinary learning in design of infrastructure.

-Buildings the draft propose are too conventional and don't emphasize unique teaching experience at Evergreen.

-Maybe nomenclature should change to show this, making it more inclusive.

-Sustainability space for archives needed.

End of notes

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**MEETING NOTES:** Master Plan Review Meetings

**MEETING DATE:** October 10, 2007, 3:30pm

**BY:** Don Miles

**THOSE PRESENT:** TESC  
 Paul Smith, Facilities Services  
 Ariel Goldberger, Expressive Arts  
 ([arielg@evergreen.edu](mailto:arielg@evergreen.edu))  
 Walter Grodzik, Expressive Arts  
 (grodzikw)  
 Ruth Hayes, Animation (hayesr)  
 Bob Leverich, Visual Arts  
 (leverich)  
 Peter Randlette, Dir. Electronic  
 Media (pbr)

ZGF  
 Tim Williams  
 Don Miles

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### Presentation

Tim Williams presented summarized the current draft master plan with a PowerPoint presentation.

### Topics discussed included the following:

1. Concerns were expressed with the new building massing locations and configurations at the west edge of campus. Some felt this location would result in campus sprawl and preferred to keep the Core concentrated by developing the site north of the CAB for new academic uses.
2. Another suggestion was to redevelop the current Lecture Hall site for more intense (multi-story) academic uses.
3. Sem II was put forward as a model for the next generation of academic buildings on campus. Sem II has a variety of teaching spaces, including large, flexible studio spaces that reflect the unique teaching style of Evergreen.

End of notes

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**MEETING NOTES:** Master Plan Review Meetings

**MEETING DATE:** October 11, 2007, 1pm

**BY:** Don Miles

**THOSE PRESENT:**

<u>TESC</u>	<u>ZGF</u>
Paul Smith, Facilities Services	Tim Williams
Brittany Newhouse, Geoduck	Don Miles
Union (newbri31@evergreen.edu)	

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### **Presentation**

Tim Williams presented summarized the current draft master plan with a PowerPoint presentation.

### **Topics discussed included the following:**

1. Likes the concept of adding two new buildings on the west side of campus to create a hub and to balance campus activity.
2. Likes the community stewardship of trails and that students will be actively engaged in campus stewardship.
3. Likes the cottages/eco-village concept and notion of upgrading and expanding Quad housing. Questions any further investment in Soup housing (deemed in poor physical condition and an undesirable housing type—upper floors are not ADA accessible).
4. Likes proposed renovation and expansion of the CRC to accommodate expanded wellness and fitness facilities and a front door facing the housing areas of campus.
5. Likes the idea of retail (not franchises, but uses such as local branch of Olympia Food Coop).
6. Likes the idea of incorporating small seminar and social rooms in the ground floor of new residential development fronting pathways.
7. Favors improved maintenance of existing and proposed housing.
8. Does not support building north of the CAB because the renovations to the CAB will make it a greater social hub and close adjacency to academic uses is not desired.
9. Supports demolition of the Lecture Halls to create more flexible teaching spaces.

End of notes

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**MEETING NOTES:** Master Plan Review Meetings

**MEETING DATE:** October 11, 2007, 1pm

**BY:** Don Miles

**THOSE PRESENT:** TESC ZGF  
Bob Leverich, Visual Arts Don Miles

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**Topics discussed included the following:**

1. Liked the diagonal connection from Red Square to west campus and the siting of two buildings to form a new hub.
2. Supports the idea of a Sustainable Arts and Sciences facility in two buildings added west of Lab II and the Arts Annex.
3. These two new buildings should have 3D studio space similar to the 4<sup>th</sup> floor of SEM II.
4. Supports the idea of potential rearrangement of the shops in the Arts Annex as part of the renovation of that building.
5. Supports the idea of new academic space north of the CAB. This building might also focus on sustainability and include two large studio spaces and a small wood (model) shop. Building should accommodate 60 students and 2.5-3 faculty.
6. Okay to should potential development sites (dashed lines around sites), rather than specific building configurations. Would be desirable to include photographs illustrating the character and scale of proposed development.
7. Likes Art Walk on the revision to Overhulse Place. We need to consider a terminus at each end. A future community connection (roadway connecting to Driftwood?) would provide a terminus at the north. A green design and sculpture park should be located at the southern end. This area would act as a gateway to the art walk and a zone for student sculpture and design/build projects.

End of notes

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# PRELIMINARY DRAFT COMMENTS

(November, 2007)

These comments were submitted for the preliminary draft versions of the Campus Master Plan during the Summer and Fall of 2007. We apologize for any missing comments as we have done our best to include as many received comments as possible.



11/30/2007

Lee Lyttle

An important part of sustaining a viable sense of the Evergreen community is the planning of spaces, both covered and exposed, for community gatherings of varying types and sizes. Places that currently serve this function include Red Square, the Library Lobby, the Longhouse, the CRC, the CAB, Sem II's coffee shop, and the Soup Housing. There are other less formal ones. It would be helpful to have more discussion and design ideas on these areas included in the Campus Master Plan. The blue circles on page 47 seem to be a start at this. Areas such as these, with some identified interior spaces, should be the targets of performance criteria and suggested design elements.

10/30/2007

To VEA Colleagues and CLUC members, and ZGF folks,

I was asked by the Visual and Environmental Arts sub-area to report back to them on the Draft Campus Master Plan. I've attended the meetings this fall where the architects were present, and also met over lunch with Don Miles from Zimmer Gunsul Frasca to discuss the Draft Plan and VEA ideas and needs. To VEA folks I'd say that the Draft Plan is a thoughtful and carefully assembled document, intended as a supplement to the existing Master Plan, not a replacement. It addresses primarily the future of the built infrastructure of the campus. I'm not setting out to summarize it for you here. Rather, I've put down a list of comments, observations, ideas and suggestions that I've collected from meetings and conversations with faculty, staff and ZGF. Just to get them on paper for the architects to consider as they revise their draft plan.

#### VEA Remodeled and New Space Needs

As college enrollment grows, so does enrollment in our area. Visual and Environmental Arts are a key draw for students at Evergreen. We are increasingly strapped for teaching space due to enrollment growth, and due to studio spaces being taken "off line" for months and years as other buildings are remodeled on campus. The Draft Master Plan proposes a remodel for the Art Annex and new visual and environmental art space as part of a proposed building to the west of the Annex. VEA faculty feel that the proposed remodel date for the Art Annex (the 2015-2017 Biennium) is too far out. A remodel of the Annex needs to be carefully considered in conjunction with a plan for additional VEA space. We need that additional space for the VEA area to retain faculty and staff, maintain current student numbers and to expand those numbers.

Our most pressing needs include:

- Additional Sculpture/3D Studio teaching space with proximity to wood and metal shops
- Sculpture "Yard" space – an outdoor work area for sculpture (we use the Lab Loading dock now)
- Studio space for contract and senior thesis students working in 3D,
- Additional research studio space for faculty.

Other spaces that are on our list:

- A Sustainable Design Studio with proximity to wood and metal shops (or small "satellite" shops), environmental science labs, GIS and computer labs...
- Expanded ceramics studio space (Jim Blevins proposed a fire arts building a while back...)
- An above ground printmaking studio!
- Bench room spaces for the wood and metal shops
- A covered, outdoor forge area

#### Program Clusters

The architects and I discussed a design model I'd call "program space clusters," similar to Seminar II,



where seminar spaces, lecture spaces, large multi-purpose studio spaces, break-out spaces, critique and presentation space, and offices are grouped together to serve programs. This model works quite well for 2D arts programs and Sustainable Design in the Seminar II building. A new arts and sciences building could have lab and research spaces adjacent, as well, for interdisciplinary programs. The architects have recognized the need for several more multi-purpose, studio teaching spaces on campus.

#### Terrascope – Sciences, Arts and Sustainable Design

Nalini Nadkarni has proposed a building at the northern terminus of a Forest Canopy Walkway, adjacent to the Sound. This facility would serve for study of not only forest ecology, but also marine ecology, and 2D arts. Erik Thuesen, Lucia Harrison, and Susan Aurand have all expressed interest and support for this idea. There's concern about putting a new building at some distance from the "campus core." Still, this could be an interesting location for one of the multi-purpose studio teaching spaces mentioned above. It would be more problematic to address 3D work there because of the distance to the shops, unless smaller shops, that might serve both art and science needs, were included.

A sustainable design studio might quite justifiably be located at the Terrascope, or at the Organic Farm, or the Alternative Energy Center suggested in the plan, east of the COM Building. There is something to be said for putting a cluster of spaces to serve Sustainable Design programs in a more visible location in the campus core, in the remodeled Lecture Halls complex, perhaps, or in an "environmental inquiry center" east of the library along the main walking route to housing. People like to see students designing and building things. It generates interest and enthusiasm.

#### VEA and EE

The pairing of VEA and EE in a new building near the Art Annex at some future point seems arbitrary to us in VEA. It seems that locating EE away from central campus and close to parking was what prompted the idea in the designers' minds. Given that the financial viability of EE has yet to be established, and that approval of EE is supposed to come up for a faculty vote next year, giving it a half a building in the Plan seems hasty. Could we visualize ourselves sharing a building with EE? Yes, probably, but there are other pairings that seem more natural to us, notably with the Sciences.

Jean Mandenberg has been a key bridge builder between Evergreen and local and state arts organizations,. She suggests that if Extended Education is approved after next year, and if Extended Education focuses on teaching in studio spaces, that the EE program focus on working collaboratively with the City of Olympia to include appropriate studio space in an Arts Center downtown. Such a plan, she notes, would be a way to have a very visible Evergreen presence in downtown Olympia and provide studio space more suited to EE short-term workshops than the studio space we need for full-time programs on campus.

#### Environmental Art Outside

Don Miles and I discussed the possibility of having an outdoor area where students and faculty could develop short and long term, but generally temporary outdoor artwork and construction projects addressing site and environmental issues. A section of Overhulse Road is already slated to be abandoned as a roadway by the College. We discussed using it for this purpose.

#### Interdisciplinary & Interspersed

Peter Randlette noted that Arts are spread out on the east, west and north edges of the campus. Sciences are clustered in the southwest corner. What if a new science building were, say, north of the CAB? The argument is that sciences can't be spread out. Why? We discussed the possibility of a building that might house sustainability studies, including sciences and design in that spot north of the CAB or a more central spot on campus.

#### Gallery? Museum?

If we might build new arts spaces, and if we might remodel the Lecture Halls directly adjacent to Red

Square, might we not want to consider a more visible, more generous Gallery for the College?

Ken Tabbutt has mentioned that there is no place for scientific collections of materials from off campus. Could these collections be housed and displayed?

What about collections, of art, personal papers, and other study materials that the College owns or could own, if it had the space for them?

#### Downtown Outreach

The subject of exhibit space, lecture space, teaching space and studio space downtown in Olympia, repeatedly get raised. It would be good to unpack the idea some more, and see if it belongs in the Master Plan. It could be a useful strategy for bridge building as well as education. Many architectural programs have "Community Design Studios," often in storefront locations that heighten their day-to-day visibility. Other community-based programs could readily employ such teaching and learning space.

#### Tacoma Outreach

Not a lot of visual art gets offered at the Tacoma Campus, it seems. And not many VEA faculty have taught there. Not an issue for the Master Plan, perhaps, but wouldn't it be interesting if they had a studio space there... The Draft Plan does propose adding another floor of space to the building – no studio, though.

#### Outreach Building to Building and Beyond...

I've heard people suggest more covered walkways between buildings (maybe even on several levels?), and extending out to principle parking lots. Check out SPSCC.

#### Overnight Housing

Sarah Ryan suggested to me that the Master Plan address the need for overnight housing for students who commute from outlying communities for EWS programs.

Thanks for your attention-

Bob Leverich

10-18-2007

Hi Ken,

Now that you have been in Sem II a while and gotten a sense of the layout, you may have noticed that all the bike hook ups are exposed to the rain, wind, snow, etc. (clearly designed by a non-bike rider). Unlike other places on campus (the Lab I & II breezeway, the library, eg.) they are not covered. Although I generally park near my office, more and more my day is ending up in the Sem or Com bldg and it is much easier to go straight from there, esp. when I will be fighting the dark in a couple of weeks. At the end of a long day who wants to get on a soaking wet bike with rusting cogs. SO.....the point of all this, from one bike rider to another, is, can you suggest to whomever the right person is that the bike parking places around the sem II bldg. be COVERED.??? I know this is not the most pressing item on campus, but it would be nice if it could be attended to.

thanks,  
jeanne

From: Ransom, Bill M  
Sent: Monday, October 15, 2007 3:03 PM  
To: Smith, Paul  
Subject: Master plan

Hello, Paul—I had two thoughts regarding the master plan: 1) ventilated space for oil painting in the art area. 2) wider stairways for emergencies.

We have hoods and ventilation for labs but nothing that provides for removing fumes from working in oils, so we currently discourage students from pursuing oil painting. I was a firefighter/medic for 12 years and find the exterior stairways in Sem II too narrow for me to go up in full gear while people are escaping from above. Also a difficulty with patient transport on gurneys or backboards since we can't expect to have use of elevators. Some would say, "We have plenty of stairways, choose another one," but the nature of emergencies is that we don't know whether any, much less all, stairways will be available for escape and rescue. Best to consider that each stairwell may be the only one available. Anyway, that's my two bits' worth. Hope that ankle's healing up. Best wishes, Bill

Bill Ransom  
Academic Dean of Curriculum  
The Evergreen State College  
2700 Evergreen Parkway NW  
Seminar II, D4107  
Olympia WA 98505  
ransomb@evergreen.edu  
360-867-6880  
[www.sfwa.org/members/ransom](http://www.sfwa.org/members/ransom)

10/04/2007

Hi Ken,

Thanks for your remarks at today's faculty meeting. They prodded me to look over the master plan. I confess I didn't read it top to bottom, so forgive me if some of these remarks sound half informed. They are in no particular order of importance, and I hope the committee finds them of use.

My understanding is that when colleges face trouble with student recruitment and retention, the most effective strategy is to build a state of the art sports/rec center. I see there are plans to expand the CRC. I'd just emphasize that this is a curricular concern. If we don't attract the best students (best for Evergreen) nothing else on campus can happen. A great gym would be an ENORMOUS benefit. Plus, there are all kinds of programs that cross mind/body divisions, which should help everyone see that the CRC is a curriculum priority.

On the same note, attractive, comfortable student housing would help us so much with the attrition problem. So it is also a curricular concern.

Maybe restroom facilities are mentioned in the fine print, but I didn't see them in the plan. We have a significant number of people in our community who aren't comfortable with restrooms designated male/female with few other options. We do have a few gender neutral restrooms. But many of my students identify as transgender or gender queer or are in a place of transition with regard to their gender presentation. Forcing people of diverse gender identities and expressions to select either male or female restrooms is a burden that could be easily avoided if all future construction prioritized gender neutral restrooms.

Regarding transportation and getting more people to campus in fewer cars I saw mention of Lacey residents. Actually, our community is spread even wider. I always have students from Tacoma and Seattle in my classes. The master plan should address the entire I 5 corridor. For example, we should have a direct Lacey-campus bus, but we should also at a minimum have a direct bus to connect us to the Tacoma transit hub (light rail and Sounder Train). It would also be wise to connect to Seattle--perhaps to the SeaTac airport light rail station when it opens, or to some other transit hub. This could also help us with recruitment and retention. Many people want to attend Evergreen but transportation stands in their way.

I didn't see (excuse me if I read too quickly) mention of the considerable potential the campus has to expand its capacity to host arts events. I don't have figures at ready access, but I've been told that arts related events can generate lots of revenue for localities. Imagine an outdoor amphitheater if we could attract summer theater or concerts. Imagine a gallery--a building dedicated to exhibitions. We could make the campus an arts destination in a region that is already a tourist destination.

I saw mention of a conference center. This seems to be along the same lines a potential income generator with great potential. I'd like to emphasize that it could have tremendous benefit for curriculum as well. People like to travel to the Pacific Northwest. Imagine the kinds of academic conferences we could host if we had the facilities, and the kinds of tie-ins to student learning.

I didn't see whether there is specific mention made of our shoreline. I can imagine a small conference center built on the water. That would be great for income generation. Plus, why not locate the faculty club there? And a dock for our boats?

Here's an idea that many (perhaps most) of my colleagues won't like: I think we should develop a commercial strip on campus with businesses that support student life: cafes, restaurants, photocopy stores, grocery stores, etc. And I think it should be on the Parkway so that we capture all the Olympia commuters who use our campus to get to the freeway. The college could use the revenue, and the students need the services. Imagine if we just had a drive-through coffee stand in each direction on the parkway!

I'll end with an idea less controversial, and quite easy: covered walkways between all the buildings in the campus Core so that people can walk in the winter without getting wet.

If I think of anything else I'll send another note.

Thanks for your work on this, and for all your work.  
Greg

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Greg A Mullins, PhD  
English and Comparative Literature  
And American Studies  
Mailstop Sem II A2117  
The Evergreen State College  
Olympia, WA 98505

Personal page: <http://academic.evergreen.edu/m/mullinsg/home.htm>  
Book page: <http://www.wisc.edu/wisconsinpress/books/2107.htm>

Phone 360-867-6243  
Fax 360-867-6553  
Email [mullinsg@evergreen.edu](mailto:mullinsg@evergreen.edu)

Comments on the unique spaces and buildings at Evergreen

Submitted by Jenni Minner on Wed, 2007-09-12 13:26.

I think Red Square is an important symbolic and functional space. We use this space for graduation, perhaps the most important milestone for students. Parents and friends of graduates visit the campus at graduation and the community visits on Super Saturday and for other events. I hope that in any redesign, Red Square remains functional with adequate space for large events and retains the monumentality that was originally designed.

Other comments... Sustainability isn't just about building green buildings. It is also about preserving the buildings we have on campus. It is often easier for people to think of building a new green building and forget about restoring and reusing existing buildings and spaces. When we retrofit, remodel, and landscape will we take into account the environmental cost of new materials and their longevity? Also, let's not make the same mistake of putting seismic walls on building exteriors - The library building was really defaced when walls were placed on its exterior. I hope the CAB remodel is sensitive to the look and feel of the original building.

My favorite places on campus

Submitted by scoste05 on Thu, 2007-07-26 21:07.

My favorite places on campus is the woods behind F-lot and the Organic Farm, and when it's sunny out, the open fields by housing, mostly because they have so much COLOR. I feel like the college has done a great job with maintaining a core campus within the extensive campus property. I also like the buildings of Sem II with their sleek, modern look and also because they are highly efficient in using energy resources. I encourage more rooftop gardens, and also to make the other concrete structures look less forboding, including the clocktower. When it's winter in Washington and the buildings are the same color as the sky, it can get very dreary and depressing on campus. Add more color, make it feel less like a prison and more like a college.

I find that there is no good

Submitted by Anna S. on Fri, 2007-05-11 15:33.

I find that there is no good way for pedestrians to travel between red square and evergreen parkway. I jog down the road at times but either have to jog through the parking lot where there are no sidewalks either, or along the road past the information booth, which does not feel safe.

I believe it would benefit students and incorporate academics into the on-campus living community to have students design and upkeep some of the landscape around housing (specifically apartment style housing) by food gardening or specific habitat landscaping with native plants.

The first (bottom) floor lobby of the library is almost always unused. Maybe it should be converted into a study and meeting space.

Something for the neighboring community

Submitted by alfonsoa on Mon, 2007-04-09 12:31.

A permanent parking area near the soccer fields and tennis courts. A lot of our neighbors enjoy using the fields, trails and walkways, particularly on the weekends, for recreation and exercise. A while ago, one of my neighbors was parking off the street and was ticketed when he attempted to attend a soccer match. Unfortunately, the experience left him and his children not feeling welcomed at Evergreen. There is now a temporary lot which seems to be just the right size and fit for the use. Making it permanent somewhere in that vicinity would be nice. It could also be used for drop off and pick up of children attending the various athletic camps offered throughout the year.

10/25/2007

Hi Ken,

Thank you for your work to accommodate the faculty resolution to create more opportunities for input on the Campus Master Plan. After attending two meetings on Monday, October 8th, one on October 24th, and reading the draft master plan I have the following comments.

#### Reduce Carbon Footprint

I applaud the efforts ZGF made to identify ways to reduce our carbon footprint. Faculty and staff housing would help to meet this goal. However, locating it adjacent to Cooper's Glenn will make this unlivable for those needing more privacy in their down time. A more secluded, cottage development of eight to ten small homes near the Organic Farm would make it possible for faculty and staff living there to walk to work via the Organic Farm trail. Faculty housing could also be included in the higher density development near existing student housing. Excellent models of faculty housing exist from other campus communities including University of British Columbia at Vancouver, University of California Davis and University of California Los Angeles. At UCD homes are owned and maintained by individuals who enjoy limited equity opportunities. The University retains ownership of the land and retains the right to buy back homes when the owner is ready to sell. This is a faculty retention issue as well, particularly for new faculty and staff who may find it hard to afford a home near the campus given rapid appreciation of homes in the Olympia area. According to Windemere, the median price of an average three bedroom home is now nearly \$300,000 in Olympia. I support shorter-term faculty housing in the urban suite style at the Driftwood location with nearby retail and long-term limited equity homeownership near the Organic Farm in the form of cottage style housing.

Regarding transportation and getting more people to campus in fewer cars, I support the idea of adding a shuttle. Our community is spreading westward to the neighboring Griffin Peninsula and Mason County. I recommend that the western-most shuttle pick up location be near Island Market off of Highway 101. There's a park and ride near the Highway 101 overpass. Currently bicyclists from the Griffin Peninsula must ride their bikes on Madrona Road, which has no shoulder and poor visibility making it very dangerous.

#### Building Community

A state of the art recreation center/gym would go a long way to improve the quality of life at Evergreen for faculty, staff and students. I agree with Greg Mullins that this is a curricular concern because it would attract students and support programs that cross mind/body divisions. Given our unique location on the Puget Sound, we should transform the Geoduck House into a water recreation center with composting toilets, non-motorized boat storage and a dock. Some community members already use this location to commute via the water to campus. More secure boat storage would further encourage this use as well as recreational use. The crew team could also be centered at this location.

Development of a commercial strip on campus (at the side door location) with businesses such as a café and restaurant would make the campus more livable. Current food options are too limited. Place making hubs in the core of the campus would make the campus more inviting. Edible landscaping such as fruit trees against south facing walls of buildings to capture heat reflected off the concrete would complement this intension to create more human scale gathering places on campus. Organic Farm staff members have expressed interest in bringing food production into the core of campus at least on a small scale to make what they do more visible.

Expanding the Lecture Hall with garage doors opening to Red Square is a brilliant idea. Not only would such a renovation transform a structure that currently resembles a bomb shelter, if used for sustainability it would

put this important initiative front and center literally. Hopefully impacts to the existing Waterwise Pollinator Garden would be kept to a minimum.

Our Teaching Gardens and trails represent a golden opportunity to build political capital with our neighbors and entice future students by providing both recreational and educational opportunities. For example, both could serve as a destination for K-12 students in the area seeking an environmental education experience. I support ZGF's proposal for better signage and the creation of a loop trail. These would invite the greater Olympia community to our campus.

#### Land Base

I support the renaming of the reserves to help create a sense of place. The current names in the previous campus master plan are unimaginative and do not give a sense of what is in those reserves. Does it make sense to note that the wetland parcel to the south of the Evergreen Parkway should be purchased if the opportunity presented itself? Acquisition of that land would link our Grass Lake Wetland Reserve to the more extensive Grass Lake land owned by the city presenting an opportunity in the future to conduct field trips to a rich and large wetland system in public ownership within walking distance.

#### Three Binders

I appreciated clarification in ZGF's presentation that their work is an addition to the most recent Campus Master Plan. I like their idea to also add a third binder of appendix materials. The faculty and CLUC approved arboretum plan ("Imagine a Greener Future") should be added to Volume III. I would be happy to provide a digital copy of this report.

Thank you for the opportunity to comment on the draft Campus Master Plan. This is exciting work to help envision the future of our campus.

Frederica



9/26/2007

Hello Tim:

There is one broad fatal problem with the draft master plan. Many important parts of the current Master Plan have been discarded. This is clearly a case of throwing out the baby with the bath water. I understand that your group has been hired to produce a new master plan and that if you had just cut and pasted parts of the 1998 master plan into your first draft, it might look like you guys hadn't done any work. However, some sections of the 1998 plan need to be retained. Referring to the old plan is not sufficient. The way Evergreen works would mean that there would be an "old plan" and a "new plan". The old plan would be invalidated by the new one. The Environmental Studies planning unit depends on the master plan to protect and manage the campus lands that we need for our teaching.

For example, Chapter 4 in the 1998 plan entitled "The process for land use planning" needs some revision. That section is very very important for us and a revised version of that chapter must be included in the new plan.

Also, the sections in the plan that delineate the specific reserves and the rules surrounding the reserves also need to be included in our updated master plan.

When I used the word 'fatal' above, I am being accurate. Without incorporating the important sections of the 1998 master plan into the current master plan, faculty will protest to the President and Board of Trustees. This will result in a failure by the BoT to adopt the master plan. It would serve no one for that to happen.

Your group has done a fine job of tackling this so far. I hope you'll be able to retain large sections of the 1998 Master Plan within the one you are producing now.

What would be the most efficient way for us to help you choose which sections of the 1998 master plan be included in the new master plan?

Thanks,

Erik

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Erik V. Thuesen, Ph.D.  
Laboratory One  
2700 Evergreen Parkway Northwest  
The Evergreen State College  
Olympia, Washington 98505-0002

7/23/2007

Hi Crystal:

I don't see how it is possible to focus recreation on the beach. I think it is better to discourage all recreation on the beach itself.

It will be impossible to prevent it, but I think keeping all signs worded to discourage recreation is best. I think inviting any recreational use of the beach will result in an avalanche of use during peak use days. That being said, it might be worthwhile to try something like that out. The big problem here is the way that a trial period would work. The CLUC is dysfunctional regarding these types of issues. So, given our current administrative structure and lack of functional academic oversight of the CLUC, I could not support such a trial period.

Faculty have spoken about how to re-write the section of the Master Plan regarding the CLUC, and I expect that something will come up in this regard during the comment period. It definitely needs revision, now that we have given it a 10-year trial period and know where the weaknesses are located. If the director of facilities is going to be the chair of the CLUC, there must be some oversight. Using academic deans as a co-chair has proven useless; they are too busy to do a decent job. So, the present system is just the fox guarding the chicken coop. Minimally, there needs to be a mandatory comment period for anything regarding use of the reserve areas and veto power by the environmental studies faculty for things that are undertaken in reserve areas. Some faculty want to prevent the facilities director as chair, but I'm not sure that makes sense. I think that oversight would be better.

I think that the other things you mention below are all fine.

Regarding partnering on conservation issues, somebody at Capital Land Trust would be the right person to work with. I've only had limited contact with them. I think that faculty member Carolyn Dobbs would be the person to talk with about contacting somebody there.

The only thing that might be mentioned would be fish-bearing waters.

There are technical terms for these, I am not sure what the current usage is. I think the old I-5 scale has been modified since I last worked with it. The three main streams on campus are fish-bearing (or at least historically so).

Hope this helps,

Erik