

To: CSF Committee

From: Patrick Green, HSS

RE: Feasibility Report: Considerations for Stormwater Remediation Using the Campus Sustainability Fund – **Winter Quarter Draft**

Date: February 21, 2012

This report articulates the progression of the Campus Sustainability Fund bioswale project, Husky Sustainable Storms. This project will improve stormwater quality and educate the student population. This is a draft of the Feasibility Report that documents progress towards the bioswale after one quarter of implementation. A full feasibility report will be completed once the design of the bioswale has been completed.

This draft of the feasibility report includes a project description, chronology, significant events, site selection process, and an explanation of a “Gift in Place” contract.

Description of the Project

A project to develop a stormwater remediation project on the University of Washington Seattle campus. It mobilizes students, staff, and faculty in an effort to develop a bio-retention/bioswale facility adjacent to the N-5 parking lot.

Leadership

This is currently a multi-disciplinary effort, led by the following students:

- Patrick Green, Evans School of Public Affairs, College of Built Environments
- Stefanie Young, College of Built Environments
- Matthew McNair, College of Civil and Environmental Engineering
- Erica Bush, College of Built Environments
- Sunni Wissemmer, University of Washington undergraduate

In coordination with Facilities Services, of note:

- Kristine Kenney, Office of Planning and Budgeting
- Peter Dewey, Transportation Services
- Jim Morin, Engineering Services
- Howard Nakase, Grounds Shop

Given guidance by faculty members:

- Jan Whittington, College of Built Environments (Faculty Sponsor)

Chronology

Spring 2011: In Spring of 2011, Patrick Green solicits the help of several students in a course on science and policy in brainstorming opportunities for improving water quality infrastructure on the Seattle campus. They conduct research on best-management practices in stormwater treatment in the Puget Sound region as well as the University of Washington Comprehensive Plan. In June of that year, Patrick Green and Matthew McNair meet with Kristine Kenney and Jim Morin to talk about opportunities for a project. Potential sites are discussed. Matthew begins a multi-criteria analysis of potential sites. Analysis shows that the N-5 parking lot presents the

best opportunity to remediate stormwater. He conducts further research of City of Seattle best management practices in stormwater.

Fall 2011: Patrick Green, Stefanie Young, and Matthew McNair prepare an application to the Campus Sustainability Fund. They request sponsorship from Peter Dewey, which allows them to conduct further research. They meet Peter Dewey and Jim Morin at N-5 parking lot and discuss potential stormwater treatment concepts as well as the as-built infrastructure adjacent to the parking lot. N-5 meets the needs of the project in terms of holding a real potential to improve stormwater quality, as per the grant application submitted by Husky Storms. Peter Dewey approves the use of N-5 for the project. The students apply to CSF and request \$9,220 for to conduct a design study of a stormwater treatment project. The majority of that funding is reserved for paying for a potential engineering mentorship as well as navigating the University of Washington design-review process. Patrick meets with Megan Kogut, who manages the University of Washington NPDES permit. He receives her support in researching stormwater remediation alternatives. Stefanie Young and Sunni Wissemer research matching-fund opportunities.

Winter 2012: The students begin preparing materials and coordinating further approval processes. Patrick conducts outreach to Kristine Kenney, requesting guidance on UW approval processes. Erica Bush documents the landscape site plan. Matthew McNair acquires as-built drawings from Jim Morin as well as Campus Engineering Records. Matthew conducts further research into best management practices and generates several conceptual designs. Sunni Wissemer begins educational outreach to student community. Stefanie Young enters as-built drawings from the site N-5 into AutoCad. Stefanie and Matthew assemble case studies of design alternatives.

Patrick Green, Stefanie Young and Matthew McNair conduct outreach to engineering firms willing to donate services and assist the group in preparing appropriate documentation. They interview five firms, meeting four of them on the N-5 site. Due to the unique needs of a student group, interviewing firms is an imperative step to creating a mentorship opportunity. The students discuss the pros and cons of each firm.

All firms offer severely reduced cost or pro bono services. One firm submits a scope of work and documents the value of their proposed donation at \$15,000. Patrick works with Procurement Services, Peter Dewey, Jim Morin, and Kristine Kenney in reviewing the scope of work and the contract. All advisers state that the scope of work and contract are standard for the scale of a project.

Throughout winter quarter, students meet with Jan Whittington four hours per week to discuss their progress. Additionally, they work individually between 7 to 15 hours per week preparing the appropriate documents, conducting research, and meeting with stakeholders.

Key Events:

January 27: Patrick Green, Matthew McNair, and Stefanie Young meet with Howard Nakase at the N-5 site to discuss potential designs and listen to Howard's maintenance concerns. He recommends the students prepare several designs so he can give proper advice on the site alternatives.

January 31: Jan Whittington and Peter Dewey conference about the project, identifying ways the students can expedite the project. Peter suggests working with Design Services and Howard Nakase in identifying ways the students can work with in-house construction crews and thus avoid going to bid for the construction of the project.

February 3: Patrick connects with Howard regarding possible ways to use the Grounds and Maintenance construction team. Howard states that he will need more detail on the design alternatives.

February 8: Patrick receives clarification from Kristine Kenney regarding UW approval processes. She suggests minor changes to the scope of work as well as designing the project in a way that does not require a City of Seattle permit.

February 15: Patrick and Jan Whittington meet with Kristine Kenney about the site and the approval processes. Kristine Kenney assembles

February 23: Kristine Kenney informs student team members that the N-5 site fails to pass University review, citing issues with parking stall removal and disruption to trees/vegetation. She suggests a new site that would remediate runoff from the Burke Museum parking lot.

This site resides between William Gates Hall and the Burke Museum parking lot. Currently grass panels occupy the site. Stormwater pipes reside beneath the grass panels. Electronic drawings of the site are available through Facilities Services records, thus facilitating survey and construction document assembly. The current infrastructure, potential for education, and existing data make this a logical site for the bioswale.

March 1:

March 5: HSS visits new site that will remediate the N-1 parking lot. They find associated engineering documents and plan potential remediation alternatives.

March 10: HSS team tours green streets in North Seattle, identifying swale design alternatives and plant species.

March 17: HSS and members of its design approval committee (Kristine Kenney, Peter Dewey, Jim Morin, Howard Nakase). Notes from this meeting have been provided in Appendix A.

April 2: Contract with consulting engineers and begin assembly of engineering baselines and alternatives. Complete case studies of design alternatives. Begin supplemental site surveys.

April 18: Request additional funds from CSF for construction: \$60,000, plus another \$20,000 contingent on CSF's budget; requested that Phase One grant award be factored into Phase Two budget.

Key Components

- Site Selection

- Gift in Place Agreement
- Permit

Site Selection

A summary of the multi-criteria analysis of the sites is below, but a full analysis has been attached.

N-5 Parking Lot: N-5 features high visibility to students, and provides a high opportunity for stormwater remediation and a lower cost.

E-1 Parking Lot: This site features many opportunities for remediation, but it resides over a capped landfill and altering drainage to the site qualifies potential designs for cost-prohibitive permitting and design reviews.

University Avenue: Sites in this public area scored the highest for water quality improvements and visibility; however, HSS preferred the site be located on-campus. Additionally, the permitting and review process for this site would be constrained by budget and timeframe.

C-8 Parking Lot: Scored the lowest on visibility to students and potential remediation. The site is not visible to pedestrians and the parking lot area is small.

43rd Street Entrance: The multi-criteria analysis did not examine this site, but it was suggested by Kristine Kenney in a phone conversation with Patrick on February 8. In speaking with the student team on February 10, they reference that this site does not fall within the combined sewer drainage basin and would fail in reducing the chance of overflow.

The best site for the proposed project resides adjacent to the N-5 parking lot. N-5 provides the best opportunity for remediation of stormwater while educating the student-body in a limited timeframe. Moreover, the substantial pro-bono services are dependent on the current site. If the site were changed, the students and the University risk losing substantial funds.

Factors that influenced this decision are as follows:

Reduce Risk of Combined-Sewer Overflow (CSO): The N-5 site drains into the combined system via the sanitary sewer system, which increases the risk of a CSO event. While all separated stormwater collection systems on campus are designed for the City of Seattle's ten-year frequency storm,¹ storms that exceed the design storm will increase the risk of environmental degradation. Only 13% of the campus drains into this system. Improving the time-delay of stormwater into the combined system will reduce the chance of a CSO event. City of Seattle NPDES permit requires that CSOs do not exceed one overflow event per year. The attached "Drainage System Zone Map" demonstrates the type of system hosting the N-5 site as well as the zones of other potential sites.

Existence of Stormwater Infrastructure: Cost constrains the project's location and design. HSS collaborated with Jim Morin in identifying as-built drawings for the site, demonstrating location

¹ University of Washington Comprehensive Plan, Section III: Water: 63.

and access to inlets and stormwater pipes. Taking advantage of existing infrastructure will reduce the cost of materials in construction. Additionally, the site adjacent to the N-5 lot remains free of concrete, so building on the site will not require costly removal of hard surface.

Visibility to Students: The site provides high-visibility to students, particularly undergraduates in transit to and from dormitories, Paccar Hall, off-campus housing, the main entrance to campus on 45th St., and University Avenue.

Gift in Place Agreement

The following section describes the necessary steps to securing a “Gift in Place” agreement from the University of Washington. The steps described below reflect those followed by Husky Sustainable Storms (HSS) in 2012. HSS used a Gift in Place to secure donated services from Huitt-Zollars engineering firm to design a bioswale for stormwater remediation.

What is a Gift in Place?

A Gift in Place is a special contractual agreement between the University of Washington and a private firm that avoids a “bid process.” If an architectural, engineering, or construction firm wishes to donate services to UW, then UW can avoid the bid process and work with the firm directly. A Gift in Place is authored by the Attorney General’s office at UW.

Who is Involved?

Sponsoring Agent: A sponsoring agent supports the project and works closely with its stakeholders. The sponsor could be a department director or a college dean. This agent must have clout.

Office of Planning and Budgeting (OPB): OPB authorizes changes to campus infrastructure. Ultimately, OPB decides whether and when a project will proceed.

Attorney General’s Office: Reviews and drafts legal agreements. Determines whether contracts meet legal requirements set by regulatory and UW policies.

Steps towards Securing a Gift in Place

1. Sponsoring agent approves project.
2. Sponsoring agent solicits a donation from a firm.
3. Firm drafts a Scope of Work for the project which the sponsoring agent must review. The Scope of Work will inform the expectations outlined in the Gift in Place agreement.
4. Sponsoring agent submits project for approval of OPB. The result of this work is a memorandum of support from OPB for the particular project.
5. A plan for development and review is developed by project managers and University authorizing stakeholders. For projects processed outside of CPO (< \$90,000), OPB will advise project management and design review.
6. Scope of Work, letter from OPB, and the plan for development and review is submitted to Attorney General’s office. The best person or agency to submit is the sponsoring agent.
7. Attorney General’s office will process the agreement or they will request further information from the project stakeholders.

Permit

Permits exponentially increase the timing and cost of a project. With the help of UW design committee stakeholders, HSS identified potential permits as well as suggested methods to avoid cost prohibitive permits through design. A full explanation of permits will be included in the second draft of the feasibility report. This will give HSS the time to fully explore potential permits.