

UNIVERSITY OF WASHINGTON AQUATIC RESEARCH CENTER SITE STUDY + DESIGN VISIONS

SPRING 2018 LANDSCAPE ARCHITECTURE STUDIO
UNIVERSITY OF WASHINGTON . COLLEGE OF BUILT ENVIRONMENTS



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CONTENTS

FOREWORD

OVERVIEW

- UW Hatchery History
- Stakeholders' Vision
- Studio Goals + Process
- Mission Statement
- Program
- Site Selection

DESIGN VISIONS

- Former Hatchery Site
 - Site Description + Assessment
 - Team 1: Homing by Adam Carreau + Weicheng Li
 - Team 2: Confluence by Sophie Krause + Elijah Vantreese
- Union Bay Natural Area Site
 - Site Description + Assessment
 - Team 3: Immersion by Nina Mross
 - Team 4: Motion of Nature by Jingjing Bu + Jiyoung Park

RESOURCES

- Stakeholder Information Sheets
- Salmon Fact Sheets
- Campus Planning Reports
- Hatchery Case Studies
- Project Case Studies
- Course Assignments

The [University of Washington's Seattle] campus landscape is a living medium, growing and changing over time, but its materials and underlying meaning provide a continuity to the UW identity that is powerfully felt. The campus landscape is also the most accessible place for putting the values and lessons of the classroom into action: it is a working landscape where people learn, teach, observe, farm, garden, and conduct research, as well as a social landscape for meeting, gathering, play, and relaxation.

--Campus in Motion: UW's Campus Landscape Framework

FOREWORD

Every project needs a champion – someone with vision, persistence and determination. The UW Aquatic Research Center’s champion is Christian Grue, Professor Emeritus of the School of Aquatic and Fishery Sciences. As a former researcher who studied coho raised and released from UW’s salmon run, Chris recognized the absence and need for a research hatchery affiliated with UW. The need, however, goes beyond UW. Indeed, UW’s facility was the sole research hatchery within the State of Washington, despite the cultural and financial significance of salmon to Seattle and the Pacific NW and our reliance on hatcheries to sustain salmon populations. Additionally, Chris recognized that the number of feasible locations on campus for re-establishing a salmon run and hatchery were rapidly dwindling due to increasing demand for new buildings and open spaces at UW. In fact, SAFS will directly be affected when the development of the West Campus Green, identified in the *2018 UW Seattle Campus Master Plan*, forces the demolition of two SAFS buildings and relocation of faculty offices and labs to an as yet to be determined location. Acting on this sense of urgency, Chris approached the Department of Landscape Architecture with a proposal for the studio and worked with SAFS and potential stakeholders to raise sufficient funds to cover the cost of the studio. Chris has participated in every aspect of the studio course – recruiting salmon and hatchery experts to speak with the students, providing feedback and guidance as the students and I endeavored to understand the complexities of rearing salmon and aquatic research in a single quarter, overseeing the administration of funding for the course, and always bringing a contagious level of anticipation and excitement as our “client”.

Throughout the quarter, for what must have seemed like a countless number of times, Rebecca Barnes, Architect for the University; Kristine Kenney, Landscape Architect for the University; and Mark Johnson, Signal Architecture joined us in Gould Hall and at the two study sites. Their insightful comments brought an awareness of real-life challenges, illuminated exciting opportunities and potential solutions and heightened the students’ thinking and quality of their work. We are grateful for your generosity, thank you.

Many professionals and academics shared their time, knowledge, and expertise, by speaking with and reviewing the students’ work. Thank you to Julie Blakeslee, UW Capital Planning + Development; Carla Carson, Muckleshoot Indian Tribe; Darin Combs, Washington Dept. of Fish and Wildlife (WDFW); Danielle Devier, Natural Systems Design; David Graves, Seattle Parks and Recreation; Fred Hoyt, UW Botanic Gardens; Eric Kinne, WDFW; Tom Quinn, SAFS; Lara Rose, Walker Macy; Christian Runge, Mithun; Jim Seeb, SAFS; Lisa Seeb, SAFS; Jim Stoner, Hainline; Ken Warheit, WDFW; Eric Warner, Muckleshoot Indian Tribe; Jacques White, Long Live the Kings; and Jon Wittouck, SAFS.

The proposals are the work of the students as presented to the stakeholders on June 4, 2018.

This studio would not have been possible without the financial support of the Muckleshoot Indian Tribe, Washington Department of Fish and Wildlife, Puget Sound Anglers, and Northwest Marine Technology, Inc.



OVERVIEW

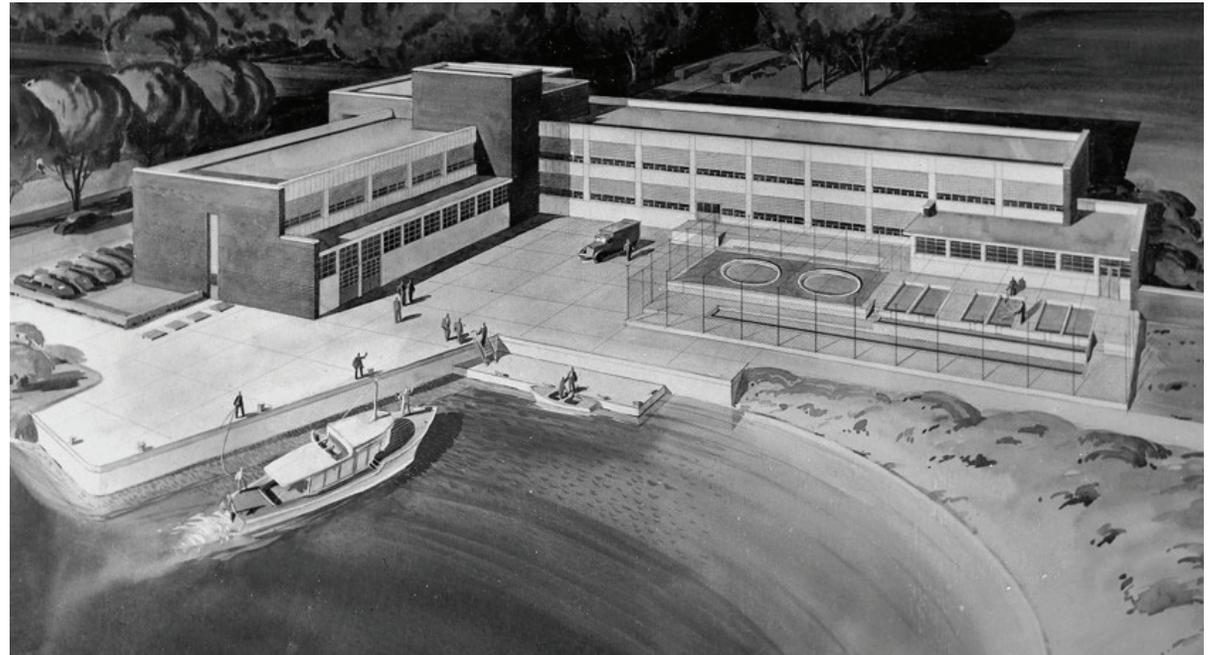
UW HATCHERY HISTORY

The UW School of Fisheries (now the School of Aquatic and Fishery Sciences), established in 1919, was the first academic fisheries program in the United States. The salmon run was started in 1949 to study the effect of radiation on Columbia River salmon. The hatchery was built in 1961. Historically, between 250,000 -400,000 coho and Chinook salmon were released with approximately 1% returning.

For over 60 years, the School of Aquatic and Fishery Sciences (SAFS) maintained a research salmon run and hatchery for Chinook and coho salmon on University of Washington's Seattle campus on the shoreline of Portage Bay. However, in 2010, SAFS faculty decided to discontinue rearing and releasing salmon due to new directions in faculty and fisheries research and decreasing funding. Now, almost a decade later, SAFS faculty are leading an effort to create an Aquatic Research Center on campus in cooperation with the Washington Dept. of Fish and Wildlife, Long Live the Kings, and the Muckleshoot Indian Tribe. The Aquatic Research Center will accommodate all types of aquatic research by providing flexible wet labs as well as reestablish a research run and hatchery facility for Chinook and coho salmon.

HATCHERIES IN WA STATE

Washington State has the largest hatchery complex nationally and internationally with 83 State (WDFW), 51 Tribal and 12 Federal (USFWS) hatcheries. The system is designed to compensate for human impacts to land use, and Tribal Treaty rights. Hatchery-born fish account for 75% of salmon caught in Puget Sound and 90% in the Columbia River, and contribute more than \$1 billion to our state's economy.



Rendering of the new Portage Bay Building and Hatchery, 1950.



UW Hatchery, ca. 2012.



UW Homing Pond, ca. 2012.

STAKEHOLDERS' VISION

Educational nexus tying together the fields of aquaculture, salmon and trout conservation, urban ecology, fishery management, fish health, pathology and aquatic therapeutants...

- Ken Warheit WDFW-MGL

STAKEHOLDERS

UW Aquatic Research Center stakeholders are:

- Muckleshoot Indian Tribe
- Washington Department of Fish and Wildlife
- Long Live the Kings
- University of Washington

A NEW SHARED VISION

The stakeholders have identified and ranked the priorities for the Center:

1) Research

- Salmon within Urban Environments
- Salmon in Lake Washington, Central and South Puget Sound Watersheds

2) Outreach and Education

- Undergraduate, Graduate and Certificate
- K-12 Education and Volunteer Programs
- Focal Point for Multicultural Exposure and Appreciation

3) Production (annual)

- 300,000 Chinook Salmon
- 100,000 Coho Salmon

CHALLENGES

- Campus development plans do not include an Aquatic Research Center or salmon hatchery
- Year-round access to cold water

OPPORTUNITIES

- Ensure SAFS aquatic research facilities
- Potential to integrate with UW Farm and other UW academic units/programs
- Connect with Puget Sound salmon management and stakeholders
- Serve as a focal point for research on freshwater ecosystems within an urban environment
- Connect the public to the research being conducted and our salmon heritage
- Serve as a focal point for educational outreach
- Provide flexibility in infrastructure and capability for research
- Opportunity to incorporate "State of the Art", "Green" hatchery and aquatic facility infrastructure
- Connect to UW Fishery legacy
- Catalyst for development of a "Hatchery Research Complex"



STUDIO GOALS + PROCESS

STUDIO GOALS

Over the course of the Spring 2018 quarter, students from the College of Built Environments explored how the strategic site selection, programming, and site development of a new Aquatic Research Center at UW might serve its primary function for research and learning while also activating campus life, enhancing connections to the natural world, and engaging off-campus collaborators. Students incorporated relevant goals and objectives from the *2018 University of Washington Seattle Campus Master Plan* and *Landscape in Motion: UW's Campus Landscape Framework* (2015) as they considered and evaluated potential locations for the facility.

As aspiring landscape and architecture designers, the students worked in teams to investigate landscape phenomena, relationships, processes and systems and develop designs visions which embody creativity and a sophisticated sense of space, process and form. The students were encouraged to develop strategies and craft places which focus on how the exterior components of the center accommodates research needs while fostering a vibrant campus and public life. The Aquatic Research Center must function as a hub for aquatic research but should also be experienced as a place of advocacy for our connection to the natural world in general and Pacific NW salmon in particular.

The student teams were tasked with

- developing a vision and program for the center,
- identifying and assessing appropriate campus sites, and
- developing concept designs which consider both the campus' current context and UW's future campus development plans.

SEMINARS + FIELD TRIPS

Through a series of seminars and field trips, the students heard directly from the stakeholders about their goals and priorities for the center, toured the former hatchery site on campus and the WDFW Issaquah Hatchery, and reviewed current needs and future plans for the Seattle campus with the Architect and Landscape Architect for the University. The students also heard from experts about Pacific NW salmon, natural design for restoration of salmon streams, environmental education and interpretative centers, and public space projects on Portage Bay.

Seminar 1: Salmon 101

Tom Quinn, School of Aquatic + Fishery Sciences (SAFS)

Seminar 2: Hearing from the Stakeholders

Chris Grue, SAFS

Ken Warheit, Washington Department of Fish and Wildlife (WDFW)

Eric Warner, Muckleshoot Indian Tribe

Jacques White, Long Live the Kings

Seminar 3: UW Campus Planning + Public Realm

Rebecca Barnes, Architect for the University

Seminar 4: Incorporating Environmental Education in Design

Mark Johnson, Signal Architecture

Lara Rose, Walker Macy

David Graves, Seattle Parks + Recreation

Seminar 5: Natural Systems Design for Restoring Salmon Streams

Danielle Devier, Natural Systems Design

Field Trip 1: WDFW Issaquah Hatchery

Darin Combs, WDFW

Field Trip 2: UW Former Hatchery

Jon Wittouck, SAFS and Former Hatchery Manager

Field Trip 3: East Campus, UBNA Area

Kristine Kenney, Landscape Architect for the University

Hatchery Case Studies

Oregon Hatchery Research Center

UC Davis Bodega Marine Labs

Yakima Nation Cle Elum Hatchery



Field trip to Issaquah Hatchery.

MISSION STATEMENT

written by Nina Mross

To be a hub and model of innovative urban aquatic research and hatchery science that catalyzes outreach, education and interdisciplinary collaboration, drives sustainable hatchery production, enhances the lives and outcomes of people and wildlife, and celebrates the past, present, and future of the Puget Sound.

PROGRAM

The proposed program incorporates elements to meet the stakeholders' goals for the project: research, outreach and production as well as elements related to creating a vibrant campus. The program varies slightly between the proposals based on the site's location and qualities.

Square footage for the program elements is based on the floor plan of the former hatchery and discussions with Jon Wittouck, former hatchery manager, and Chris Grue. In terms of interior spaces, the proposed program and square footage matches the former hatchery except for the lab spaces and outreach spaces. Rather than individual small wet labs, the proposed program includes a single large flexible research space that can be subdivided as needed. Additionally, the designs incorporate a meeting room and interpretation areas for visitors to the Center.

Similarly, the exterior program elements are based on the former hatchery except the proposed designs also include a mechanical crowder, spawning channels, and interpretation areas for visitors. All raceways and channels are assumed to be flexible by including removable gates and separation panels.

Additionally, the proposed designs incorporate optional program spaces such as relocated SAFS offices, cafes, and space for program that would dovetail well with aquatic research such as aquaponics. The two proposals for the Union Bay Natural Area include an auditorium rather than a meeting room as the Center for Urban Horticulture (CUH) suggested sharing facilities and CUH already has a meeting room.

PROGRAM COMPARISON

Former Hatchery (Interior)

Total square footage = 6,700 sf

- Research hatchery room – 3000 sf
- Lab 1 + 2 (Wet labs) – 2 x 350 sf
- Lab 3 – 750 sf
- Other labs – 1,000 sf
- Incubation room – 450 sf
- Office – 150 sf
- Storage – 350 sf
- Bathrooms – 300 sf

Former Hatchery (Exterior)

Total square footage approx. = 40,000 sf

- Homing pond + viewing area
- Fish ladder
- Pump house
- Rectangular raceways (4) (netted + fenced)
- Round tanks (2) (netted + fenced)
- Large rectangular raceway (1) (netted + fenced)
- Loading dock
- Parking spaces
- Trails/walkways

Proposed (Interior)

Total square footage = 8,000 sf (minimum)

- Research hatchery room – 3000 sf
- Flexible wet lab room – 3000 sf
- Incubation room – 450 sf
- Office – 150 sf
- Storage – 350 sf
- Meeting room – 500 sf OR Auditorium*
- Interpretative elements and spaces – 300 sf
- Bathrooms – 300 sf

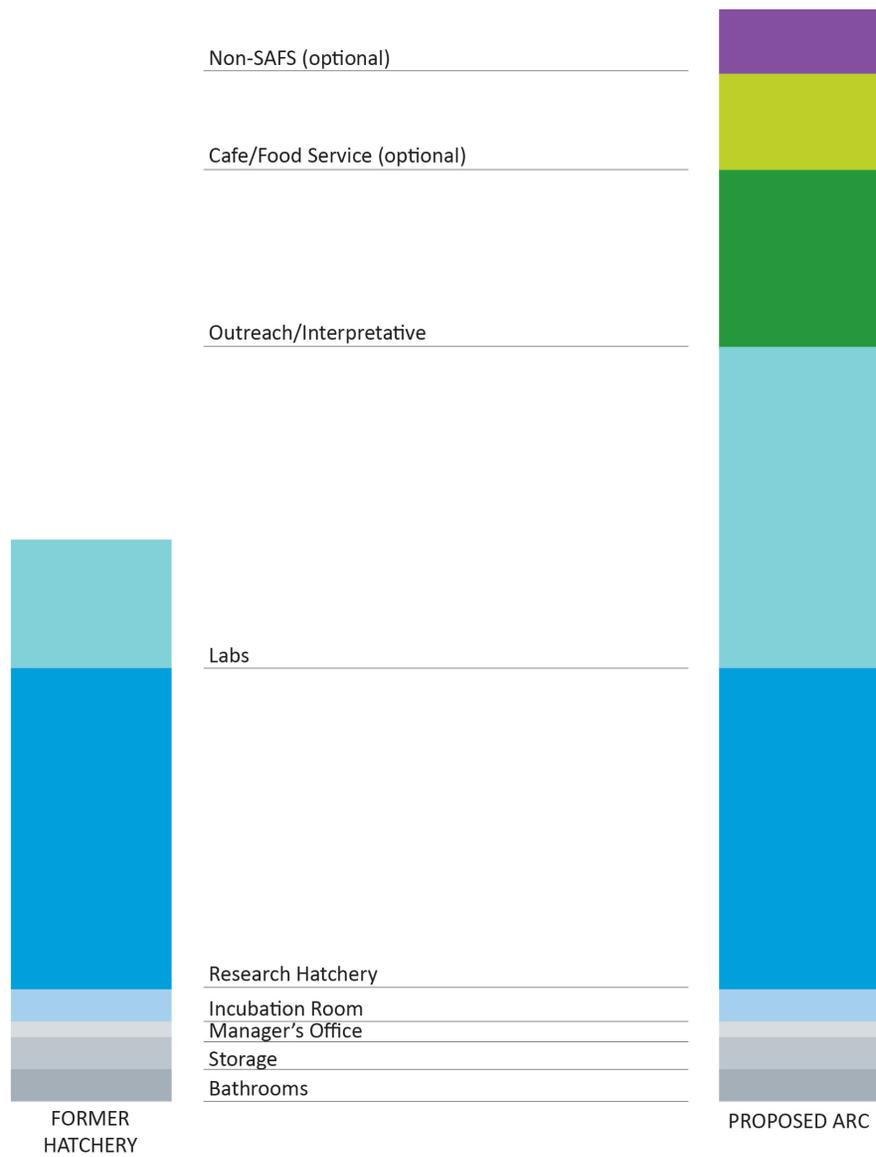
Proposed (Exterior)

Total square footage: varies

- Homing pond + viewing area (partial/temporary cover)
- Fish ladder
- Raceways + tanks (fully netted + fenced when in use)
- Spawning channels (optional) (fully netted + fenced when in use)
- Pump house
- Sedimentation pond (truck access required)
- Loading dock
- Interpretative elements and spaces
- Trails/walkways
- Waterfront trail

Proposed Optional (Interior + Exterior)

- SAFS offices to replace in part or whole SAFS offices currently located in the Fisheries Teaching Bldg and Marine Sciences Bldg (Both buildings will be demolished to accommodate the West Campus Green.)
- Offices, labs or classrooms for non-SAFS UW departments
- Spaces (interior and exterior) for use by non-UW organizations or partners
- Restaurant/café/other food service



Program Comparison Diagram: Former Hatchery vs Proposed Aquatic Research Center (ARC)

The proposed program increases flexible lab space, outreach/interpretative space and incorporates optional program based on site location and qualities.

SITE SELECTION

Seven sites were identified and assessed based on the Site Assessment Criteria, see map on next page for site locations. A chart of Strengths/Opportunities and Weaknesses/Issues for each site is on the following two pages.

Of the 7 sites, only 2 were assessed as reasonable sites for a new Aquatic Research Center - the site of the former hatchery in South Campus and Development Site E86 (as identified in the *2018 UW Seattle Campus Master Plan*) in the Union Bay Natural Area adjacent to the UW Botanic Gardens Center for Urban Horticulture.

SITE ASSESSMENT CRITERIA

Program + Stakeholder Wants

- Stakeholder Priorities: 1: Research 2: Outreach 3: Production
- Fish Access to Site
- Urban Ecosystem Research Opportunity
- Ability to Connect with Other UW Programs

Narrative + Experience

- Connection to the Salmon Story
- Site Histories
- Human Experience
- Positive Contribution (Multiple Scales)

Site Context

- Proximity To Safs / Labs
- Multi-Modal and Pedestrian Access
- Proximity of Amenities
- Visibility / Foot Traffic
- Compatibility of Adjacent Uses

Site + Infrastructure

- Cold Water Access
- Utilities
- Zoning + Permitting
- Environmental Impact
- Construction Feasibility

Planning + Development

- Development Feasibility
- Campus Master Plan / Campus Landscape Framework Compatibility
- Coupling Opportunities
- Operations + Maintenance Impacts

POTENTIAL CAMPUS SITES

West Campus

Development Site W36
Development Site W33

South Campus

Former Hatchery Site
Glade Site

East Campus

Development Site E58
UBNA Ravenna Creek Site
Development Site E86

SELECTED STUDY SITES

South Campus

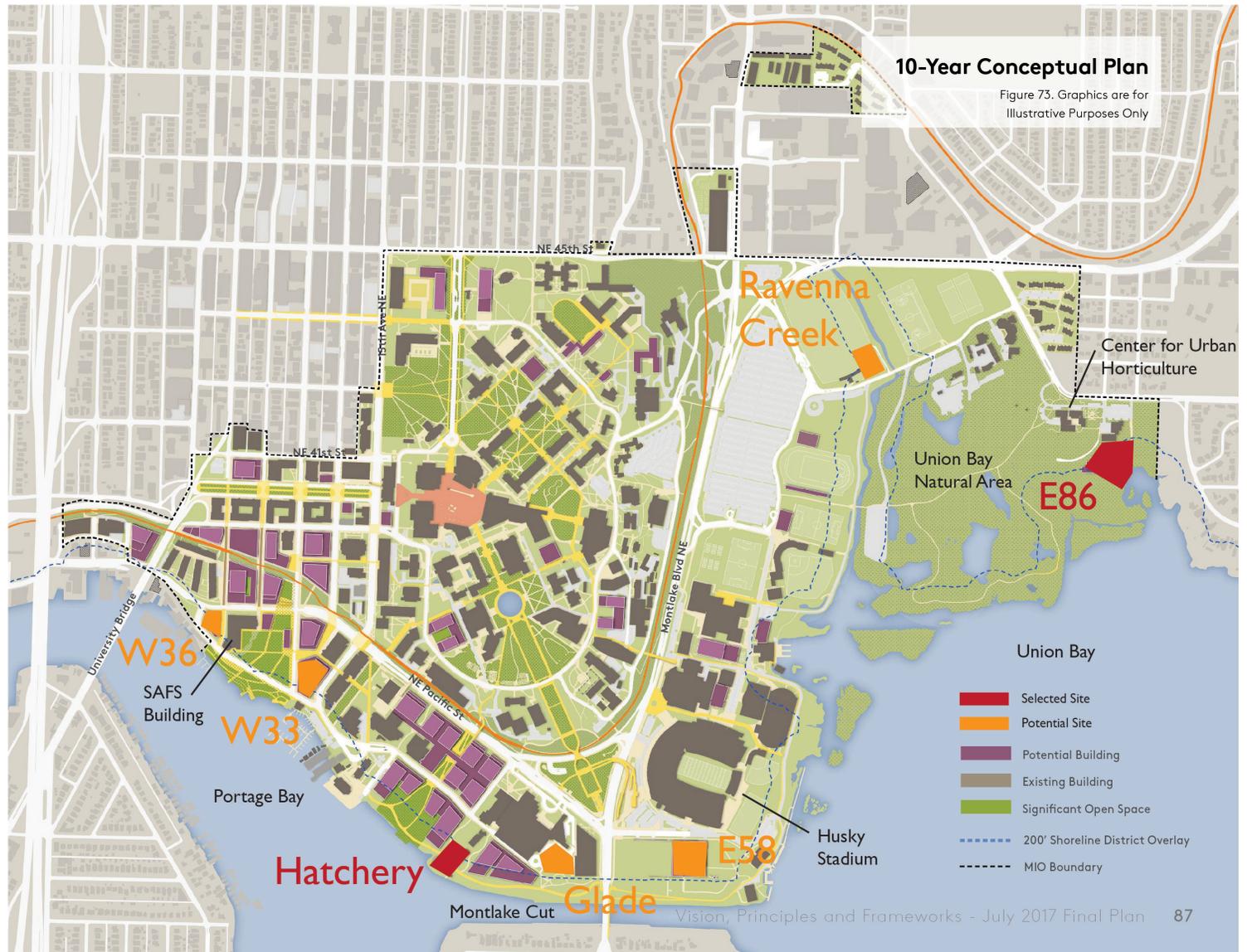
Former Hatchery Site

East Campus

Development Site E86

Map of Potential and Selected Sites

A total of 7 sites were identified and assessed as potential sites. Based on the site assessment, 2 sites were selected for design study.



	Strengths + Opportunities	Weaknesses + Issues
WEST CAMPUS		
Development Site W36	<p>Water + fish access to Portage Bay provides access to deep, cold water. Able to function as an urban hatchery pilot project. Adjacent to SAFS offices. Convenient access via car, bus, public transit, bicycle or pedestrian. Adjacent to Portage Bay Park. Close proximity to UW farms for fish waste re-use. Compatible with Campus Master Plan (CMP) and Campus Landscape Framework (CLF).</p>	<p>Getting fish ladder under Boat Street would be very difficult due to underground utilities in right-of-way. UW access to water limited to narrow easement which is adjacent to a marina and parking lot. Site is small limiting exterior fish rearing and research elements. UW is required to maintain public parking on site due to Street Vacation Public Benefit from vacation of 15th Ave NE. redevelopment (construction projects) over the next 10-30 years.</p>
Development Site W33	<p>Water + fish access to Portage Bay provides access to deep, cold water. Able to function as an urban hatchery pilot project. Sufficient size to accommodate all desired program. Program activator for West Campus Green. Close proximity to SAFS offices. Convenient access via car, bus, public transit, bicycle or pedestrian. Close proximity to UW farms for fish waste reuse.</p>	<p>Getting fish ladder under Boat Street would be very difficult due to underground utilities in right-of-way. UW intends to develop this site in conjunction with a non-UW partner which would make the project more complex and could significantly impact the project viability and schedule. redevelopment (construction projects) over the next 10-30 years.</p>
SOUTH CAMPUS		
Former Hatchery Site	<p>On shoreline, adjacent to deep/cold water. Proven history of successful salmon release and return site. Able to function as an urban hatchery pilot project. Allows for study of modifying and reusing existing hatchery infrastructure for research purposes. Connection to waterfront trail provides increased outreach opportunities. Sufficient size to accommodate all desired program. Historical connection of site to SAFS. Historical use of site as former hatchery. Site already known as fish rearing facility. Adjacent to new green space and pedestrian/view corridor from Pacific Place to Portage Bay. Some existing infrastructure could be re-used. Existing water rights intake pipe could be used. Little to no modifications required in water for fish or water access. Use is allowed within 200-ft setback due to current use of site. Compatible with CMP + CLF. Brick portion of Portage Bay Building identified in CMP to remain. Sufficient building space to accommodate some relocated SAFS offices.</p>	<p>Project would need to be phased or completed after demolition of portions of existing Portage Bay Building. Not adjacent to SAFS buildings. Site is within area expecting significant redevelopment (construction projects) over the next 10-30 years.</p>
Glade by UW Medical Center	<p>On shoreline, adjacent to deep/cold water. Water + fish access is Portage Bay. Connection to waterfront trail provides increased outreach opportunities. Able to function as an urban hatchery pilot project. Sufficient size to accommodate all desired program.</p>	<p>Less convenient access by SAFS faculty + staff. Difficult access by car and bus. Current use as Glade is not intended to change and would be negatively impacted by development of ARC. Not compatible with CMP or CLF.</p>

	Strengths + Opportunities	Weaknesses + Issues
EAST CAMPUS		
Development Site E58	<p>Near shoreline, adjacent to deep/cold water. Water + fish access is Montlake Cut. Connection to proposed waterfront trail and proximity to athletic facilities provides increased outreach opportunities. Fantastic views. Able to function as an urban hatchery pilot project. Convenient access by public transit, car, bus, bicycle and pedestrians with existing parking. Sufficient size to accommodate all desired program.</p>	<p>Highly sought-after site for hotel or other revenue-generating development. Access during sporting and other events would be difficult. Not near SAFS building. Not compatible with CMP or CLF.</p>
UBNA Ravenna Creek Site	<p>Able to function as an urban hatchery pilot project. Adjacent to slough (formerly Ravenna Creek) and Union Bay Natural Area. Sufficient size to accommodate all desired program. Close proximity to UW Farms for fish waste reuse. Convenient access by public transit, car, bus, bicycle and pedestrians with existing parking. Compatible with CMP + CLF.</p>	<p>Far from shoreline and access to deep/cold water. Fish access would be challenging. Site is entirely within 200-ft shoreline setback. Current use as Driving Range is not compatible with ARC.</p>
Development Site E86	<p>Able to function as an urban hatchery pilot project. On shoreline of Union Bay. Historical use of site by Salish tribes. Program is highly compatible with Union Bay Natural Area (UBNA) vision, research of Center for Urban Horticulture (CUH) and Yesler Swamp Natural Area. Adjacency to residential community encourages outreach potential. Close proximity to UW Farms for fish waster reuse. Beautiful, unique site. Convenient access by public transit, car, bus, bicycle and pedestrians with existing parking. Sufficient size to accommodate all desired program. Potential to share space and program/outreach with CUH including meeting room and auditorium. ARC could help protect and enhance UBNA. Compatible for use of Green Stormwater Infrastructure and Green technologies. Compatible with CMP and CLF. Including introduction of academic programming in East Campus.</p>	<p>Not adjacent to deep (cold) water. Site development is limited due to 200-ft shoreline setback and Conservancy Preservation designation. High occurrence of fish predators in Union Bay and UBNA. Returning fish access to site would be challenging. Not near SAFS building.</p>