INTERAGENCY AGREEMENT
DEPARTMENT OF NATURAL RESOURCES (DNR)

NO. 93-099870

PI: 39Q
Funding Source: State

This Agreement is made and entered into between the Washington State Department of Natural Resources, hereinafter referred to as DNR, and the below named firm, hereinafter referred to as TESC.

DNR and TESC enter into this agreement under Chapter 39.34, Interlocal Cooperation Act.

The Evergreen State College
2700 Evergreen Parkway NW
Olympia, WA 98505
Phone: (360)867-6000
Email: francisk@evergreen.edu

IT IS MUTUALLY AGREED THAT:

1.0 Purpose. The purpose of this Agreement is to provide TESC with $125,751 to design, develop and establish a live aquaria system, to sustainably culture eelgrass (*Zostera marina*) and bull kelp (*Nereocystis luetkeana*) in the aquaria and to investigate climate change impacts and restoration potential for eelgrass and bull kelp. This Agreement is for work and deliverables to be completed from time of execution through June 30, 2021.

2.0 Scope of Work. TESC shall furnish the necessary personnel, equipment, material and/or services and otherwise do all things necessary for or incidental to performing work set forth in the Attachment A – Scope of Work.

3.0 Period of Performance. The period of performance of this Agreement shall begin when final signatures are obtained for execution and end on June 30, 2021, unless terminated sooner as provided herein.

4.0 Payment. Pay for the work provided is established under RCW 39.34.130. The parties estimate that the cost of accomplishing the work will not exceed One Hundred and Twenty Five Thousand, Seven Hundred Fifty One dollars ($125,751). Payment for satisfactory performance of work shall not exceed this amount unless the parties mutually agree to a higher amount before beginning any work that could cause the maximum payment to be exceeded. Pay for services shall be based on the rates and terms described in Attachment B – Budget.

5.0 Billing Procedures. TESC shall submit invoices to DNR at the following address:

Cinde Donoghue, PhD
Aquatic Assessment and Monitoring Team
WA Department of Natural Resources
1111 Washington St. SE, 3rd Floor Aquatics
Olympia, WA 98504

Payment for approved goods and/or services will be made by check, warrant or account transfer within 30 days of receipt of the invoice. Upon expiration of the Agreement, invoices shall be paid, if received within 30 days after the expiration date. However, invoices for all work done within a fiscal year must be submitted within 30 days after the end of the fiscal year.

Each invoice submitted to DNR shall include information needed by DNR to determine the exact nature of all expenditures and completed work. At a minimum, each invoice shall specify the following:

- Agreement number. 93-099870
- The total number of hours worked for each student
- Tuition rate per quarter from September 2019-June 2021 for graduate student assigned to work under this contract
- The total amount of overhead costs
- Any other relevant information
- The total invoice charge

6.0 Records Maintenance. TESC shall maintain books, records, documents and other evidence, to sufficiently document all direct and indirect costs incurred by TESC in providing the services. These records shall be available for inspection, review, or audit by personnel of the DNR, other personnel authorized by the DNR, the Office of the State Auditor, and federal officials as authorized by law. TESC shall keep all books, records, documents, and other material relevant to this Agreement for six years after agreement expiration. The Office of the State Auditor, federal auditors, and any persons authorized by the parties shall have full access to and the right to examine any of these materials during this period.

Records and other documents in any medium furnished by one party to this agreement to the other party, will remain the property of the furnishing party, unless otherwise agreed. The receiving party will not disclose this material to any third parties without first notifying the furnishing party and giving it a reasonable opportunity to respond. Each party will use

reasonable security procedures and protections to assure that records and documents provided by the other party are not erroneously disclosed to third parties.

7.0 Rights to Data. Unless otherwise agreed, data originating from this Agreement shall be 'works for hire' as defined by as defined by Title 17 U.S.C., Section 101 and shall be owned equally by TESC and DNR. Data shall include, but not be limited to, reports, documents, pamphlets, advertisements, books, magazines, surveys, studies, computer programs, films, tapes, and/or sound reproductions. Ownership includes the right to use, copyright, patent, register and the ability to transfer these rights.

8.0 Independent Capacity. The employees or agents of each party who are engaged in performing this Agreement shall continue to be employees or agents of that party and shall not be considered for any purpose to be employees or agents of the other party.

9.0 Amendments. This Agreement may be amended by mutual agreement of the parties. Amendments shall be in writing and signed by personnel authorized to bind each of the parties.

10.0 Termination for Convenience. Either party may terminate this Agreement upon 30 calendar days' prior written notice to the other party. If this Agreement is terminated, the parties shall be liable only for performance rendered or costs incurred in accordance with the terms of this Agreement prior to the effective date of termination.

11.0 Termination for Cause. If for any cause either party does not fulfill in a timely and proper manner its obligations under this Agreement, or if either party violates any of the terms and conditions, the aggrieved party will give the other party written notice of the failure or violation. The aggrieved party will give the other party 15 working days to correct the violation or failure. If the failure or violation is not corrected within 15 days, the aggrieved party may immediately terminate this Agreement by notifying the other party in writing.

12.0 Disputes. If a dispute arises, each party will make a good faith effort to resolve issues at the lowest possible level in their respective agencies. If they cannot resolve an issue, they will elevate the issue within their respective chains of command to resolve it.

In the event that a dispute arises under this Agreement, it shall be determined by a Dispute Board in the following manner: Each party to this Agreement shall appoint one member to the Dispute Board. The members so appointed shall jointly appoint an additional member to the Dispute Board. The Dispute Board shall evaluate the facts, Agreement terms, applicable statutes and rules, and make a determination of the dispute. The determination of the Dispute Board shall be final and binding on both parties. The cost of resolution will be borne as allocated by the Dispute Board. Alternatively, the parties may pursue a third party dispute resolution as the parties mutually agree to in writing.

13.0 Governance. This contract is entered into the authority granted by the laws of the State of Washington and any applicable federal laws. The provisions of this agreement shall be construed to conform to those laws.

If there is an inconsistency in the terms of this Agreement, or between its terms and any applicable statute or rule, the inconsistency shall be resolved by giving precedence in the following order:

(1) Applicable state and federal statutes and rules;
(2) Scope of Work; and
(3) Any other provisions of the agreement, including materials incorporated by reference.

14.0 Assignment. The work to be provided under this Agreement and any claim arising from this Agreement cannot be assigned or delegated in whole or in part by either party, without the express prior written consent of the other party. Neither party shall unreasonably withhold consent.

15.0 Waiver. A party that fails to exercise its rights under this agreement is not precluded from subsequently exercising its rights. A party's rights may only be waived through a written amendment to this agreement.

16.0 Severability. The provisions of this agreement are severable. If any provision of this Agreement or any provision of any document incorporated by reference should be held invalid, the other provisions of this Agreement without the invalid provision remain valid.

17.0 Responsibilities of the Parties/Indemnification. Each party to this Agreement hereby assumes responsibility for claims and/or damages to person and/or property resulting from any act or omissions on the part of itself, its employees, its officers, and its agents. Neither party assumes any responsibility to the other party for the consequences of any claim, act or omission of any person, agency, firm or corporation not a party to this Agreement.

18.0 Insurances. The State of Washington, including all its agencies and departments, is self-insured for all exposures to tort liability, general liability, property damage liability and vehicle liability, as provided in statute, but only as respects the negligence of State.

19.0 Complete Agreement in Writing. This Agreement contains all the terms and conditions agreed upon by the parties. No other understanding, oral or otherwise, regarding the subject matter of this Agreement shall be deemed to exist or to bind any of the parties.

20.0 Contract Management. The Project Coordinator for each of the parties shall be the contact person for this agreement. All communications and billings will be sent to the project coordinator.

21.0 Project Coordinators.

(1) The Project Coordinator for the Agency is John Withey, Telephone Number 360-867-6675, email: witheyj@evergreen.edu

(2) The Project Manager for DNR is Cinde Donoghue. Telephone Number 360-902-1718, email: cinde.donoghue@dnr.wa.gov

By signature below, the Agencies certify that the individuals listed in this document, as representatives of the Agencies, are authorized to act in their respective areas for matters related to this instrument.

IN WITNESS WHEREOF, the parties have executed this Agreement.

TESC	**STATE OF WASHINGTON DEPARTMENT OF NATURAL RESOURCES**
Signature 11/14/19 Date	Signature Date
Kevin Francis	Kristin Swenddal
Name	Name
Director, Graduate Program on the Environment	Aquatics Division Manager
Title	Title
Lab 1, Evergreen State College 2700 Evergreen Pkwy NW Olympia, WA 98505	1111 Washington St SE, MS 47027, Olympia, WA 98504-7027
Address	Address
360-867-5831	360-902-1100
Telephone	Telephone

SCOPE OF WORK

Culturing submerged aquatic vegetation to investigate climate change impacts and restoration potential

Introduction

Seagrass and kelp are submerged aquatic vegetation that provide critical habitat for higher trophic species (Duarte et al., 2005 Bodkin, 1986), and ecosystem functions such as shoreline stability and carbon sequestration. Several species of seagrass, including eelgrass (*Zostera marina*), and more than 20 species of kelp, including bull kelp (*Nereocystis luetkeana*), live in the marine nearshore waters of Washington State. Both these native species are used as indicators of estuary health, with changes in their distribution and abundance reflecting changes in environmental conditions. In Puget Sound, local declines of eelgrass and bull kelp have been detected (Christiaen et al., 2019; Berry et al., 2019). Efforts have been underway to restore eelgrass and kelp through transplanting of mature plants as well as distribution of seeds, spores and reproductive tissue. Investigations to determine causal factors of the declines have been recommended.

Purpose

DNR Aquatic Assessment and Monitoring Team (AAMT) is updating its Marine Aquatic Vegetation Experimental Nursery (MAVEN) in order to 1) investigate stressors that may be driving kelp and eelgrass decline, 2) identify populations that demonstrate the greatest resilience to these stressors, and 3) provide plant and reproductive tissue for recovery and restoration projects. The tank aquaria system will be used to conduct controlled experiments to assess the impact of climate change stressors on different populations of eelgrass , and to culture plants from seed or reproductive tissue for use in recovery efforts.

Objectives and deliverables

Objective 1 Update tanks to functioning, remote controlled, real-time monitored aquaria system

a) Research best design for constructing marine aquaria tank systems that provide dual purpose facilities needed for culturing and storage of eelgrass and kelp, as well as allow for conducting controlled, replicated experiments.
b) Select most appropriate design and identify equipment at DNR's Marine Aquatic Vegetation Experimental Nursery (MAVEN) that must be adapted, or newly purchased for system installation.
c) Research water quality and flow sensor system that includes capacity for remotely control of environmental conditions and data retrieval application to provide real-time monitoring, download and logging of environmental data.

Objective 1 Deliverables
TESC will produce:

a) Functioning live aquaria tank system will be established
b) Real time, remote controlled monitoring sensor network will be installed and functioning.

Objective 2: Develop methods for collecting and culturing eelgrass from select populations throughout Washington

a) Identify sites for plan collection based
b) Establish tanks for explicit purpose (plant storage, stress experiments, seed production).
c) Develop database for logging monitored parameters of each unique tank
d) Collect plant tissue (shoots, seeds, reproductive tissue) using established sampling and transfer protocols from identified sites
e) Transfer plants to appropriate tanks.

Objective 2 Deliverables

TESC will produce:

a) Written summary describing the criteria applied for selecting identified sample sites
b) Written document describing plant collection and transfer protocol
c) Plants collected and transferred to tanks
d) Database containing tank identification and attributes populated

Objective 3: Evaluate environmental conditions influencing photosynthesis and plant morphology and from different eelgrass populations

a) Apply a range of potential climate change conditions to the eelgrass populations
b) Measure changes in photosynthetic rate, plant growth rate, and morphology.
c) Document characteristics of plant vibrancy(e.g. leaf browning).

Objective 3 Deliverables

TESC will produce:
a) Written document describing experimental design, environmental conditions tested, methods, analysis and results
b) Database with experimental input conditions and results

Objective 4: Evaluate environmental conditions influencing seed production and germination success

a) Induce seeding through applying documented protocols.

b) Apply a range of potential climate change conditions to subset of these eelgrass populations
c) Observe and document seed yield and seed germination success from the different populations

Objective 4 Deliverables

TESC will produce:

a) Written document describing experimental design, environmental conditions tested, methods, analysis and results
b) Database with experimental input conditions and results

Objective 5: Evaluate conditions necessary to sustainable grow bull kelp from reproductive tissue (sori)

a) Research facilities that sustainably maintain bull kelp populations
b) Collect bull kelp sori patches from mature kelp plants in the field
c) Expose sori to conditions conducive to gamete development, fertilization and plant growth

Objective 5 Deliverables

TESC will produce:

a) Written document summarizing available information on favorable conditions for aquaria culture of bull kelp
b) Database logging tank conditions, kelp survival and growth.

References

Duarte CM, Middelburg JJ, Caraco N (2005) Major role of marine vegetation on the oceanic carbon cycle. *Bio - geosciences* 2: 1–8.

Bodkin, J.L. 1986. Fish assemblages in Macrocystis and Nereocystis kelp forests off Central California. Fishery Bulletin 84:799–808.

ATTACHMENT B

BUDGET

	hourly rate or %	Weekly hours during academic session	Weekly hours during non-academic session	academic weeks (2 years)	off academic weeks (2 years)	wages during academic session	wages during non-academic session	cost
student research assistant	$13.50	20	40	70	34	$9,450	$9,180	$37,620.00
overhead	0.11							$4,098.60
L&I	0.021					206.388	200.4912	$392.35
Lab equipment								$12,000.00
MAVEN facilities upgrade: electrical contract, holding tank shade structure, intake plumbing, pump, and drainage system)								$50,000.00
Graduate student tuition (2 years)								$22,000.00
								$125,751