

1. Name of the project:

Marine Debris Solutions Oriented Learning Storylines Workshop

2. Lead organization and Contact: Name, email, phone, and address.

Pacific Education Institute 724 Columbia St. NW Ste. 255, Olympia, WA 98501
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3. Start and end dates for your project:

October 2021 – May 2023

4. Deliverables: List and identify their final date of submission (report and/or products) to include 5 quality project photos, an MRC newsletter article, and end of project presentation to the MRC.

- A writing workshop facilitated by PEI with support from OCNMS (August 2022)
- Four Climate storylines focused on plastics as marine debris for early elementary, upper elementary, middle school and high school grade bands (May 2023)
- Teachers will be encouraged to implement storylines with their students as a pilot (September 2022)
- Publication of storylines after revisions and final review (May 2023)
- , Newsletter article and end of project presentation to MRC (May 2023)

Project staff: List and describe their expertise for their role in the project. Resumes may be attached.

Julie Tennis has worked for the Pacific Education Institute since September 2014 and has been the Coastal FieldSTEM Coordinator since 2016. Her previous career was with Washington State Parks, first as a park ranger and then as the environmental education specialist at Cape Disappointment State Park. While employed with Washington State Parks, Julie also contracted with Portland State University to design and implement multiple marine science programs and develop other educational materials. She holds a B.A. in Recreation Management from Western Washington University.

Nicole Harris is the Education Specialist with the Olympic Coast National Marine Sanctuary. Nicole plans and implements education activities for classrooms, field investigations, teacher workshops, and presentations to local and regional organizations. She also assists in the coordination and implementation of volunteer coastal cleanups. With a background in Early Childhood Education, a B.A. in Environmental Policy, and a minor in Environmental Science from Western Washington University's Huxley College of the Environment, she worked as a nearshore biologist along the central coast of the Strait of Juan de Fuca before joining the sanctuary team.

Other members on the storyline writing team will include four PEI leads, one for each different grade band, and at least two teachers per grade band (a total of eight) and an Indigenous lead from the Quileute, Makah or Jamestown S’Klallam Tribe. These roles are not yet designated.

Partners: List and describe partners: include whether they are providing matching contribution(s) of cash, in-kind materials, supplies, equipment, labor, etc. Support letters may be attached.

Aside from PEI and OCNMS, the two community partners in this project will be Washington CoastSavers and Surf Rider. Washington CoastSavers is an alliance of partners and volunteers dedicated to keeping the state’s beaches clean of marine debris through coordinated beach cleanups, education, and prevention. Their team can provide valuable data about the amount of plastic pollution their volunteers are removing every year and its impact on marine life.

The Surfrider Foundation is dedicated to the protection and enjoyment of the world’s ocean, waves and beaches, for all people, through a powerful activist network. They conduct campaigns throughout the U.S. to eliminate plastic pollution at its source. Their knowledge and experience will serve as a valuable resource in creating these storylines. Both groups will be donating their time.

The writing team will also work with a lead tribal member from one of the Indigenous groups impacted by plastic pollution who will serve to ensure that Indigenous perspectives and cultural relevance are embedded in the work.

Geographic Area: Describe the geographic area for your project.

This storyline writing workshop will focus on K-12 teachers from Clallam and Grays Harbor Counties, focusing on districts near and adjacent to the Olympic Coast National Marine Sanctuary and surrounding coastline. Upon final publication, the storylines will be available as an Open Education Resource (OER) on PEI’s website.

Permits: List any associated permits and their status as well as landowner access letter as applicable. (Examples: JARPA, HPA, Marine Mammal, National Park, NEPA review, SEPA review).

N/A

Project Narrative

Abstract: Provide a 1-2 paragraph project summary in the form of a short description that highlights the narrative that follows.

In collaboration with OCNMS, PEI will facilitate a Solutions-Oriented Storyline writing workshop. As the title implies, the series takes a solutions-oriented approach to exploring marine debris. PEI has several storylines focused on climate science, this will be the first storyline focused on marine pollution, specifically plastics. A team comprised of PEI facilitators, K-12 teachers, content experts and Indigenous leads will develop four grade-band storylines for lower and upper elementary, middle school and high school, respectively.

When the storylines are complete, participating teachers will be encouraged to implement them with students and provide feedback on their experience. Based on this input, the team will revise the storylines before final review and publication. These storylines will serve as a powerful set of tools for educating students with developmentally appropriate lessons from early elementary to graduation about the causes and impacts of plastic pollution on coastal communities. The storylines also build in opportunities for students to participate in implementing solutions to the problem in their community.

Describe the background and context: project area, situation to be addressed, past work relevant to the project.

Of all pollution affecting marine life, between 60 and 90% is made up of plastics. Every year an estimated 8 million tons of plastic enters our oceans, posing a serious threat to whales, seals, turtles, salmon and all Puget Sound wildlife. Whales and seabirds can mistake plastic for food and ingest it, get entangled in bags, drown or die of suffocation. Seabirds may inadvertently feed small bits of plastic to their chicks, causing them to starve to death once their stomachs become filled with it. In one tragically memorable instance in 2010, a beached gray whale was found near West Seattle with over 20 plastic bags in its stomach among other forms of pollution. Because small pieces of plastic can absorb toxic pollutants like DDT and PCB, fish that ingest plastic concentrate these chemicals and pass them along the food chain to other marine creatures – and humans.

Coastal communities whose economies are largely reliant on maritime industries such as shipping, tourism and fishing are heavily impacted. Environmental damage to marine ecosystems has been estimated to cost \$13 billion per year worldwide, with related costs for clean-up operations, litter removal, reduced fishing catches and a decline in coastal tourism and impact on related industries. Local governments and communities also frequently bear high costs for clean-up operations, awareness-raising activities and education. Scientists have warned that plastics may never biodegrade.

As of October 1, 2021, a statewide ban on single-use plastic bags will go into effect but even before that, the issue has been top of mind for coastal communities. In 2018, Port Angeles City

Council enacted its own ban on grocery stores using thin, single-use bags. Among the voices advocating for the ban at the public hearing were two local school children.

Within Clallam County, Washington CoastSavers has a powerful network of volunteers and partners in place to address plastics pollution, including Clallam County Waste Management, Clallam County Marine Resources Committee, NOAA Marine Debris Program, Olympic National Park, Washington State Parks and Recreation Commission and the Olympic Coast National Marine Sanctuary Foundation, which serves as the organization's fiscal agent.

For the past six years, PEI and OCNMS have been offering Ocean Science workshops to North Pacific Coast teachers, which means that many K-12 educators in the region are already familiar with PEI's FieldSTEM model and NOAA's marine debris sampling protocols. This group will serve as a resource for both the storyline writing process and its implementation.

Explain why the project is appropriate for MRC funding or how it achieves one or more of the six benchmarks (See Appendix A attached).

The two benchmarks this project achieves are Education and Outreach and Coastal Communities.

Education and Outreach: By developing this solutions-oriented storyline for implementation in K-12 schools throughout Washington State, PEI and OCNMS are 'informing the public (i.e. teachers and their students) about threats to living resources and coastal communities and presenting them with practical measures they can take to prevent further harm.' Engaging community partners such as Washington CoastSavers and Surf Rider also fulfills the criteria of 'coordinating outreach and education programs with other organizations and evaluating their effectiveness.'

Further, all PEI Solutions-Oriented Learning Storyline workshops strongly center Indigenous culture and perspectives in the writing process and the educator workshops, and work to connect K-12 teachers and districts with local Tribal community partners to build authentic relationships. This meets the criteria of 'expanding partnerships with tribal governments and continuing to foster respect for tribal cultures and treaties.'

Coastal Communities: These storylines will include perspectives from local industry. By engaging teachers and through them, their students, in understanding the economic impact of plastics pollution, this project 'supports the cultural and economic integrity of coastal communities' and 'encourages citizen participation in local and governmental decisions regarding marine resources.'

List and describe the project objective(s).

This project's objectives include:

- Creating an effective and powerful tool to support educators in exploring marine plastics pollution through a solutions-oriented approach
- Connecting K-12 educators with community partners throughout Clallam County
- Adding another resource to PEI's free online library of Solutions-Oriented Learning Storylines

Provide a timeline for your project activities in relation to your stated objectives and the deliverables identified in #4 above.

October 2021: recruit guest advisors, create agenda

December 2021: create content

February 2022: recruit teachers to write storylines

August 2022: facilitate workshop

September 2022: possible implementation by workshop participants

December 2022: revise and finalize storylines for publication

May 2023: submit storylines and project report to NPC MRC

Describe the methods, procedures and equipment to be used, if any.

PEI and OCNMS will begin by recruiting community partners and teachers, designing the workshop, and hosting the writing workshop. Within that workshop, participants will follow PEI's storyline writing process. A storyline writing workshop consists of providing background information and experiences about the topic through our community partners, and ample time for teachers to research, deliberate, and review the storylines they have created.

When the initial writing is complete, selected teachers will be encouraged to implement the four grade-band level storylines with their students, then supply PEI and OCNMS with valuable feedback to modify the storylines as needed. In the latter stages, the writing team will create a final draft for publication.

Describe the extent or impact of the project (e.g., acres, miles, number of citizens).

In the 21-23 budget cycle this project will reach at least eight teachers and up to 400 students (if all eight teachers are able to implement in 2022).

Indicate if there are plans to continue the project into the future.

Once complete, the Plastics Marine Debris storyline will become part of PEI's permanent resource library and a regular SOLS workshop along with the other eight storylines. We conduct workshops with K-12 educators statewide throughout the year. PEI's Coastal FieldSTEM Coordinator will also be working closely with participating school districts to support continuing implementation of the storyline and integration across grade levels and subject areas.

APPENDIX C
Estimated Budget Template and Instructions

Category	Detail	MRC Request	Matching Contribution (not required)	Total
Salaries and Benefits or hourly wages	1 FieldSTEM Coord. Lead, 3 FieldSTEM Coord. writers	6,155.00		6,155.00
Supplies/Equipment				
Travel				
Contracted services Stipends/Honorarium	8 teachers to write and pilot material – 1 honorarium for Indigenous participation	6,900.00		6,900.00
Indirect expenses (<i>All such expenses should be itemized.</i>)	10% indirect administration fee	2,216.00		2,216.00
Other				
Totals		15,181		15,181

1. Personnel salaries and benefits (or hourly wages): Include the names of each individual to be supported by the project, anticipated numbers of hours, and hourly rate including benefits as applicable.
2. Supplies: Supplies are defined as those items purchased which are typically used up in the course of the project such as paper, staples, printer ink, etc.
3. Equipment: Equipment is defined as tangible property necessary to the project such as scientific equipment, electronic devices and sampling gear. All anticipated equipment purchases and costs must be included in the budget. Approved items may become the property of WDFW at the conclusion of the project depending on value and type.
4. Travel: All travel expenses will be reimbursed at standard WA State rates - <http://www.ofm.wa.gov/resources/travel.asp>. Please list destinations, number of trips and other details.
5. Contracted services: List any subcontractors and provide details of expenditures.
6. Itemized indirect expenses: No generalized "Indirect" "Overhead", "Administration" or similar categories of costs are allowable. Specific costs must be listed under this category or divided out among the other categories.
7. Other: Items such as entrance fees that don't fit well into the other budget categories.