

Chapter 3: Community Education and Engagement

Action Plan

Environmental education creates informed residents and partners that are an effective force in addressing watersheds' problems. Similarly, deliberate engagement ensures that residents, partners, and visitors play an active role in stewardship, spreading the responsibility of caring for our watersheds. The people of Tillamook County have a tradition of rising to meet challenges and working together to achieve common goals. The Community Education & Engagement Action Plan details how TEP and its partners will strengthen access to environmental education and foster a strong culture of environmental stewardship.

The Challenge

Education in the STEM (science, technology, engineering, and math) fields helps raise environmental awareness and gives residents effective tools to make decisions about watershed stewardship. In rural Tillamook County, however, community members often have limited access to STEM educational resources and other information specific to the Tillamook County watersheds. Education, outreach, and engagement programs for people of all ages must be strengthened in order to create successive generations of environmentally-literate residents who will care for the future vitality of Tillamook's estuaries and watersheds.



Existing Efforts in Community Education and Engagement

Settled within a temperate rain forest, encompassing six watersheds, flowing rivers and streams, and connecting with the Pacific Ocean, TEP's focal area beckons to be an extension of the classroom. Nature can be the most obvious or most subtle teacher and TEP appreciates the education, outreach, and engagement opportunities that exist just outside its door. Since its inception, TEP has been helping people of all ages connect to the natural world. TEP strives to develop life-long learners who continue to embrace education through recreation. Together TEP and its partners are developing a community with a greater sense of stewardship and connection to the environment.

Community Education and Engagement

During its early years, TEP devoted much of its public outreach efforts toward community education about environmental resources, science, and management issues. Included in these first steps were the development of a Citizen Action Committee (CAC) and a strategy for public involvement. Led by concerned citizens and TEP, the CAC designed and managed an extensive education and outreach program that included speaker programs, public events, signs, videos, and printed materials. Over time, TEP has expanded its messaging through its social media network and its partner relationships. By using a multi-media approach, TEP continues to educate residents and visitors about issues impacting the estuaries' watersheds and to involve the public and partners in solutions.

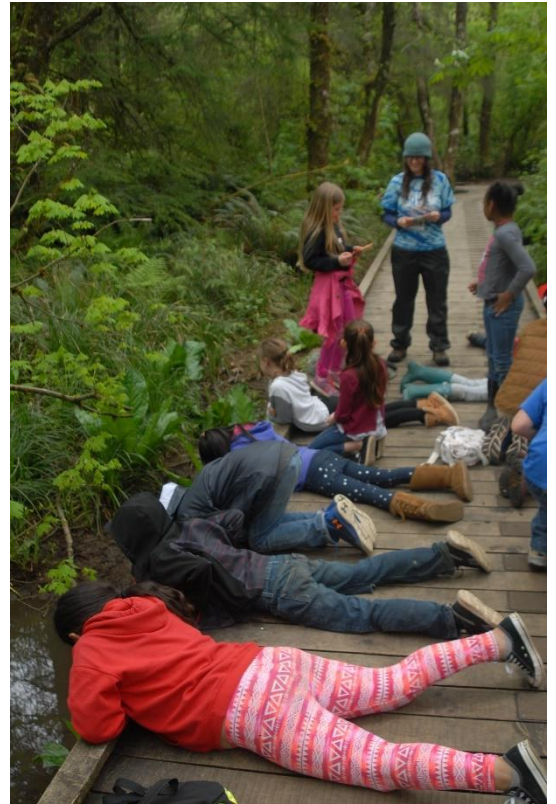
Several long-standing programs that were developed while implementing TEP's original CCMP are still in place today. These will serve as the foundation for the education, outreach, and engagement goals over the next decade.

Landmark Outdoor Learning Experiences

The annual Children's Clean Water Festival (CCWF) began in 2001, inspired by a similar festival in Portland. Every fourth grader from each of the three public school districts, all private schools, and home schools in Tillamook County are invited to this special day of learning. Science and art are mixed together to produce a series of hands-on activities related to clean water and healthy ecosystems.

The annual third grade event, referred to as either Down by the Riverside or Down by the Creekside (DBTC) depending on the venue, began in 2002. This event takes place over multiple days, with approximately 100 children attending each day. Students are introduced to the natural ecosystems through science, art, history, and stewardship.

In the first 17 years of TEP's CCWF and 16 years of the DBTC programs, approximately 10,200 Tillamook County grade school children and over 1,700 volunteers have participated in "learn by doing" activities. By giving students a chance to build a sense of place and increase environmental literacy, TEP and its partners hope to develop a strong stewardship ethic within Tillamook County's youngest residents. Designed to complement the Common Core, Next Generation Science Standards, and Ocean Literacy education standards, the CCWF and DBTC provide a unique opportunity for local grade schools to participate in field based environmental education that is not always possible in traditional classroom settings.



TEP provides reciprocal support to partner-led experiential learning programs such as Outdoor School (6th grade), SalmonWatch (7th grade), Tech Trek (8th grade), Science Tuesdays for home schooled children, and science fairs at local elementary schools. These education partnerships enable K-8 children within Tillamook County to attend at least one outdoor program at each grade level.

K-8 Education Kits

TEP offers outdoor education kits to augment classroom teachers' efforts to increase environmental literacy. These kits include curricula touching on water quality, watershed processes, exploring estuaries, wetland functions, macroinvertebrate communities, animal tracking, intertidal life, bird species of the estuary, and local geology. They contain numerous hands-on activities and are stocked with associated field equipment and supplies. These kits may be checked out by formal and informal educators at no cost. TEP has developed training videos for several of the kits to aid first-time users.

Tillamook County Water Trail Guides

A network of water trails flows through the quiet bays and peaceful rivers within Tillamook County. To encourage responsible recreation among the non-motorized watercraft community, TEP created a series of guidebooks, with inset maps, for the Tillamook County Water Trail (TCWT). Colorful and captivating, these guidebooks convey valuable information on water-safety, appropriate access points, invasive aquatic species, cultural history, stewardship, and etiquette for those who paddle the waterways. The TCWT has been



designated as a National Recreation Trail by the U.S. Department of the Interior. TEP's TCWT is a true success story, empowering people to live, learn, and experience their environment on their own terms, at their own pace.

An interactive map showing the water trails is available online on TEP's website (currently available at <https://www.tbnep.org/map.php>). The map allows the user to select overlays which show access points, restrooms, wildlife viewing spots, and other points of interest. TEP has added overlay options to highlight its restoration project locations and to share current water quality results (bacteria levels) with the public.

Explore Nature (Education through Recreation)

Activities such as hiking, biking, and kayaking are great platforms for learning about the environment. Since 2016, TEP and its partners have been offering opportunities that connect restoration efforts with the recreation that residents and visitors enjoy. Offerings include kayaking local estuaries, interpretive hikes focusing on local natural history topics, wildlife viewing and photography, and stewardship activities such as invasive species removals and coastal cleanups. This popular program has grown from 16 summer activities to over 60 events between March and November and has engaged participants from nearly 20 states across the country. In 2017, Visit Tillamook Coast presented TEP and its partners with the Shirley Kalkhoven Tourism Excellence Award for Explore Nature.



Community Outreach

TEP strives to be a familiar face at popular Tillamook County public events supporting the community and partners. These local venues provide opportunities for TEP to form lasting relationships and to promote its important message that healthy estuaries and watersheds make for happy, healthy people. Some of the many events that TEP attends include the Tillamook County Fair, Garibaldi Days, and local Farmers' Markets where TEP staff engage the public through interpretive displays and materials, fun hands-on activities, and conservation messaging.

TEP has commissioned a number of interpretive signs which highlight TEP and the importance of estuaries. These signs may be found around Tillamook Bay along coastal walking trails and scenic viewpoints. A series of new signs are being created to replace the aging originals in 2019:

- Where Freshwater & Saltwater Meet
- Hard at Work in the Bay (shellfish)
- A Fish of Two Waters (salmonids)
- Stream-side Security (native riparian plants)
- Stop the Invasions (invasive species)
- At the Bottom of the Bay (crabs)

TEP uses a multi-media messaging approach. A State of the bays report is published every five years. TEP issues electronic newsletters, maintains a dedicated website (<https://www.tbnep.org>), regularly posts to Facebook, and has burgeoning Instagram and YouTube accounts. Press releases are issued to local newspapers about TEP's landmark outdoor learning events and Explore Nature. TEP also promotes its community on local radio stations.

Volunteer Engagement

Volunteers have played a critical role in helping TEP implement its CCMP and will continue to do so. The following programs are currently the most active and will serve as best-in-class examples as TEP expands upon its community engagement:

Water Quality Monitoring – This group of volunteers collects water samples twice monthly from approximately 80 monitoring locations at rivers, creeks, and bays throughout Tillamook County. This program started in 1997 and some volunteers have been involved for more than 20 years. The data are used by TEP, DEQ, and other State and Federal agencies to make decisions and document trends that impact human health and wildlife such as salmon.

Education – TEP could not host its two landmark outdoor learning experiences, Children's Clean Water Festival and Down By The Creekside, without volunteers. Over 200 teachers, natural resource and education partners, and local citizens volunteer to be guides, activity leaders, exhibitors, and chaperones during these events.

Native Plant Nursery – Adult volunteers, along with youth labor, are vital to the operation of TEP's native plant nursery. The Master Gardeners, undergraduate classes from Tillamook Community College, participants in TEP's Explore Nature program, and local citizens assist with seed collection, sowing, transplanting, and other activities related to the propagation of approximately 75,000 plants used during restoration projects each year.

Capacity Building

TEP helps several of its partner organizations concentrate their efforts on conservation and education programs by providing operational services for which they may be understaffed or lack the expertise. Two examples include:

- Providing fiscal administration for local watershed councils and other non-profit organizations
- Managing marketing grants and contracts for Explore Nature on behalf of TEP and the other seven partners.

Opportunities to Expand Community Education and Engagement

Community Education and Engagement Gaps

- TEP hosts landmark outdoor learning experiences for third and fourth graders throughout Tillamook County. TEP supports several partners who conduct similar programs for elementary school children



including Tillamook School District and Friends of Netarts Bay – WEBS (G1-6), Neah Kah Nie School District (G7), Outdoor School (G6), and Salmonwatch (G7). Tillamook School District has a Teacher on Special Assignment (TOSA) who is responsible for G1-12 programming. However, the other two school districts do not have similar TOSA positions, leaving outdoor experiential learning gaps for many of the grade levels in the northern (Neah Kah Nie) and southern (Nestucca) parts of Tillamook County.

- TEP is actively involved in elementary and middle school outdoor learning but has less involvement at the high school level. TEP engages students from Tillamook and Neah Kah Nie high schools as guides and activity leaders during Children’s Clean Water Festival and Down By The Creekside; however, this engagement could be expanded into career technical education (CTE) through internships or for-credit programs.
- TEP is building its relationships with Tillamook Bay Community College and the OSU Extension Office to increase education and engagement opportunities for undergraduate students. TEP currently serves as guest speakers and host field trips to the native plant nursery. These partnerships could be expanded through CTE internships and for-credit field courses/labs.
- TEP’s goal is to educate and engage people of all ages. TEP is currently reaching active adults and families through its Explore Nature program, water trail guides, and community outreach. TEP plans to enhance program options for the senior citizen community.



GOAL

Foster awareness of Tillamook County's estuaries and watersheds, engage in problem solving, and take action to conserve and enhance our natural resources

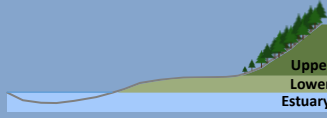
This goal will be achieved through the following five key actions:

- CEE-01** Strengthen STEM literacy for K-12
- CEE-02** Advance STEM-related career opportunities
- CEE-03** Foster lifelong learning and environmental awareness
- CEE-04** Cultivate community environmental stewardship
- CEE-05** Build capacity for partner organizations

Relationship to Other CCMP Actions

Community Education and Engagement actions support all other actions in the CCMP. Increasing awareness of environmental issues affecting the watersheds of Tillamook County and providing residents with tools to engage in habitat and water quality improvement will increase the energy directed toward stewardship. This in turn will create progress towards the goals outlined in Habitat Restoration and Water Quality.





Strengthen STEM literacy for K-12

What: Enrich STEM-based community education programs for K-12 students. Integrate Landmark Outdoor Learning Experiences (LOLEs) into classroom lesson plans. Engage in teacher professional development related to STEM, natural history, and resource management. Enhance organizational links between local schools, government agencies (e.g. Department of Education), watershed councils, institutes of higher learning, non-profit environmental organizations, and other entities.

Lead(s): TEP

Partners: School district administrators and teachers, STEM Hubs, Department of Education, Tillamook Bay Community College, state universities, watershed councils, private and home school educators, community organizations, governmental agencies, industry partners, museums, aquaria, and other learning centers.

How

Activity 1: Lead county-wide LOLEs (e.g. Children's Clean Water Festival, Down by the Creekside) and expand reach into private and home school sectors.

Anticipated Cost/Source: \$/E, S, O

Timing: Ongoing

Activity 2: Support experiential learning programs led by partner organizations (e.g. Outdoor School, SalmonWatch, Tech Trek, 4-H, science fairs) and expand reach throughout Tillamook County.

Anticipated Cost/Source: \$/E, P

Timing: Ongoing

Activity 3: Enhance suite of estuary-based experiential learning activities (e.g. education kits) available to schools and the community, ensure linkage to current STEM education standards (e.g. Common Core, NGSS, Ocean Literacy), and increase usage by educators.

Anticipated Cost/Source: \$/E, O

Timing: Ongoing

Activity 4: Develop and provide teacher training sessions with estuary/watershed focus during partner-led professional development workshops (e.g. Coastal Learning Symposium).

Anticipated Cost/Source: \$/E, P

Timing: Ongoing

Activity 5: Advance regional and national endeavors which promote STEM literacy and experiential learning (e.g. STEM Hubs, Oregon Environmental Literacy Program, ANROSP).

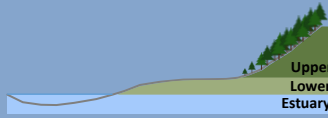
Anticipated Cost/Source: \$/E, P

Timing: Ongoing

Why: The children of today are the environmental ambassadors of tomorrow. Experiential learning strengthens comprehension and retention; thereby advancing STEM literacy in K-12. Providing teachers with resources and skills helps them to add more STEM-related activities and lessons into their curricula. Community-based organizations with education and outreach programs can supplement in-class learning.

Performance Measures:

- ✓ 600 students attend TEP's LOLEs for third and fourth graders annually.
- ✓ 3,000 hours of science instruction provided to K-12 students annually.



Advance STEM-related career opportunities

What: Develop career technical education (CTE) and service learning programs for high school, community college, and university students to prepare the next generation of resource managers and local workforce members for careers that may impact the estuaries and watersheds of Tillamook County.

Lead(s): TEP, TBCC, OSU Extension

Partners: School district administrators and high school teachers, Tillamook Bay Community College, OSU Extension, watershed councils, community organizations, governmental agencies, and industry partners.

How

Activity 1: Develop a summer internship program for Tillamook County G11-14 students with work assignments that support TEP's restoration efforts.

Anticipated Cost/Source: \$\$/E, F, S, O, P

Timing: Short term

Activity 2: Partner with TBCC and OSU Extension to develop and offer college-credit course(s) within the Agricultural and Natural Resources associate degree program.

Anticipated Cost/Source: \$/E, P

Timing: Mid-term

Why: Hands-on internship and service learning experiences promote estuary awareness and stewardship as well as support TEP with its program implementation (e.g. TEP's native plant nursery). These community members will use their educational backgrounds and work experiences in environmental conservation and sustainability to better embrace and advance healthy estuarine ecosystems in the focal area.

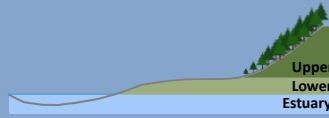
Performance Measures:

- ✓ Grade 11-14 summer intern program established by 2024.
- ✓ Undergraduate for-credit course offered at TBCC by 2024.



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Foster lifelong learning and environmental awareness

What: Elevate environmental awareness within the community. Encourage and enable Tillamook visitors and residents to enjoy ecologically responsible recreational activities. Showcase TEP's contributions to healthy estuaries and watersheds, clean water, and habitat restoration.

Lead(s): TEP

Partners: Watershed councils, community organizations, governmental agencies, industry partners, senior centers, donors, tourism sector, and public.

How

Activity 1: Engage community through outreach (e.g. social media, TEP's website, exhibits at community events).

Anticipated Cost/Source: \$/E, O, P

Timing: Ongoing

Activity 2: Develop and lead "Education through Recreation" programs (e.g. Explore Nature series).

Anticipated Cost/Source: \$\$/E, O, P

Timing: Ongoing

Activity 3: Generate and provide public with maps and information for responsible recreation (e.g. Water trail guidebooks, terrestrial trail guides, agro-tourism routes, interactive online water quality database).

Anticipated Cost/Source: \$\$/E, O, P

Timing: Ongoing

Activity 4: Develop and provide lifelong learning programs that promote estuary/watershed awareness within the senior citizen community (e.g. Elderhostel, senior centers).

Anticipated Cost/Source: \$/E, O, P

Timing: Mid-term

Activity 5: Conduct feasibility study to build estuary education center and, if viable, build center, create programs and exhibits, and engage public.

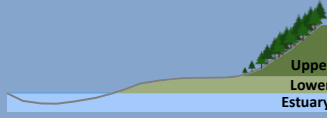
Anticipated Cost/Source: \$\$/E, F, S, O, P

Timing: Short term for feasibility study

Why: As the number of people living within and visiting Tillamook County increases, so will the stressors on the local environment and wildlife. Educating residents and tourists through recreational activities will nurture positive attitudes and behaviors toward natural resources; thereby garnering direct and indirect support for TEP's conservation, restoration, and education endeavors.

Performance Measures:

- ✓ 30% increase in social media followers, website viewers, and newsletter subscribers between 2019 and 2024.
- ✓ 750 people engaged in education through recreation activities annually.
- ✓ Lifelong learning programs developed and offered to seniors by 2027.
- ✓ Feasibility study for estuary education center completed by 2022.



Cultivate community environmental stewardship

What: Encourage and enable community members and visitors to participate in environmental stewardship opportunities that supplement TEP's conservation and restoration endeavors within Tillamook County.

Lead(s): TEP

Partners: Watershed councils, community organizations, governmental agencies, industry partners, volunteer organizations, and public.

How

Activity 1: Expand the network of volunteers who assist with TEP's programs (e.g. water quality sample collection, native plant nursery assistance, K-12 education, G11-14 internships, coastal and riparian cleanups, operations support).

Anticipated Cost/Source: \$/E, F, S, O, P

Timing: Ongoing

Activity 2: Develop and direct a citizen science program to assist the native plant nursery and habitat restoration projects (e.g. Earthwatch, Heroes on the Water).

Anticipated Cost/Source: \$\$/E, F, S, O, P

Timing: Mid-term

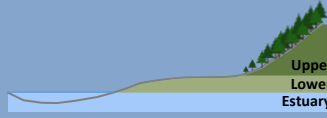
Why: Volunteers increase the capacity of TEP to accomplish its restoration, conservation, and education goals. Engaging volunteers builds goodwill and a strong sense of community that help keep Tillamook's estuaries vibrant and healthy.

Performance Measures:

- ✓ 150 volunteers engaged annually.
- ✓ 2,800 volunteer service hours annually.



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Build capacity for partner organizations

What: Provide technical expertise to local watershed councils and non-profit environmental organizations.

Lead(s): TEP

Partners: Watershed councils, non-profit organizations, governmental agencies, industry partners, formal and informal educators.

How

Activity 1: Provide professional scientific expertise to restoration and conservation projects.

Anticipated Cost/Source: \$\$/E, F, S, O, P

Timing: Ongoing

Activity 2: Share citizen science data with partner organizations (e.g. water quality monitoring, wildlife data).

Anticipated Cost/Source: \$/E, F, S, O, P

Timing: Ongoing

Activity 3: Enable partners to focus limited resources on the implementation of CCMP restoration and education programs by assisting with their organizations' managerial tasks (e.g. fiscal administration).

Anticipated Cost/Source: \$\$/F, S, O, P

Timing: Ongoing

Why: Partner organizations are frequently understaffed or may lack the equipment, materials, expertise, or data needed to implement programs that help TEP meet its goal to conserve and enhance natural resources in Tillamook County.

Performance Measures:

- ✓ 200 hours building capacity for partner organizations, enabling additional restoration in Tillamook County estuaries and watersheds annually.



Roger Ross