

# MIDDLE SCHOOL RESTORATION PROGRAM

## Program Summary - 2024 / 2025 -



Picture 1: Group of students in waders sampling for macroinvertebrates in a stream

### Prepared by

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### In Collaboration with

The Water Energy Learning Lab (WELL) Project  
<https://sites.google.com/springfield.k12.or.us/thewellproject/>

# PROGRAM OVERVIEW

In collaboration with the Middle Fork Willamette Watershed Council, the Water Energy Learning Lab (WELL) Project supported four teams of seventh-grade students from the Springfield middle schools (Hamlin, Agnes Stewart, Thurston, and Briggs) in hands-on learning and stewardship at local restoration sites. Each field trip included themed learning lessons and activities focused on: water quality and watershed health, plant biology and ecology, native plant identification, and stream ecology. Through interwoven crosscutting concepts, the lessons emphasized the interdependence of the natural world. In addition to learning about the physical features and functions of the landscape, the program centered on the importance of traditions, history, and people who are connected to the land. Through collective exercises and program standards, emphasis was placed on reciprocal learning and teaching between student groups, education staff, and the land itself.



Picture 2: Student from Briggs Middle School posing with a shovel during planting activity

## WATER QUALITY AND WATERSHED HEALTH



Picture 3: Students from Thurston Middle School and educator conducting water quality tests

Students kicked off the WELL Middle School Restoration Program with a field trip to the Springfield Utility Board's (SUB) Gorrie Creek Well Field. Guided by SUB representatives, the groups explored topics relating to watershed health, human impacts, and water quality monitoring. Introducing students to these concepts through the lens of drinking water sources granted the groups a deeper understanding of the vital connections between all parts of the watershed, both living and non-living. This approach highlighted how both rural and urban communities are integral and influential parts of the watershed.

To further support the on-site riparian area, students planted 200 native shrubs. Water samples were collected from Gorrie Creek and compared to samples from the nearby Middle Fork Willamette River. This experience enhanced their understanding of human impacts on the watershed and established a foundational grasp of the interconnected nature of the ecosystems they would study throughout the program.

# PLANT BIOLOGY, ECOLOGY, AND IDENTIFICATION

In two scaffolding field trip lessons, students learned, practiced, and applied plant biological and ecological principles to identify native plant species. These lessons balanced scientific descriptions and botanical vocabulary with Traditional Knowledge of native plants, including food, medicine, and material uses.

In the first lesson, students explored the complexity of plant ecology, species biology, life processes, seasonality, and ecosystem roles. Students then applied this foundational knowledge of plant biology, ecology, and Traditional Knowledge in a plant characteristic survey to build familiarity with the plants and their characteristics.

Students cemented their understanding of individual native plants through a group quiz based on traditional knowledge. This lesson laid the groundwork for identifying plants using a comprehensive, multi-layered approach

In the next lesson, students applied their understanding of plant biology and traditional uses by identifying ten native plants in a scavenger hunt using both scientific and Traditional Knowledge descriptions. Information on the ecological location of species was included in the descriptions, further reinforcing the concepts of habitat requirements for specific species.

## STREAM ECOLOGY

During the Stream Ecology lessons, students explored concepts of aquatic habitat function by sampling and identifying macroinvertebrates. This lesson built off of knowledge gained in previous field trip topics, such as the role of riparian areas in maintaining healthy watersheds and ecosystems, the importance of water quality, and the habitat needs of aquatic species. Using this foundational knowledge, students predicted where they would find the greatest diversity of macroinvertebrate species. The student groups collected samples of aquatic life while observing stream dynamics and habitat features.

After retrieving their samples, students were led in an identification activity focused on macroinvertebrates as water quality indicators and their key role in breaking down organic matter in the aquatic ecosystem. Students applied their knowledge of these various classification systems to make inferences about the health of the aquatic habitat.



Picture 4: Student from Hamlin Middle School identifying macroinvertebrates

# CONCEPT COMPREHENSION

As part of the reflection and program evaluation processes, student participants were asked to complete a pre and post-program assessment that gauged existing background knowledge and understanding of the covered environmental topics. The assessments included long form, short form, and multiple-choice questions about watersheds, native and invasive plants, riparian areas, macroinvertebrate functional feeding groups, water quality, plant identification, and other crosscutting concepts.

The majority of students answered long-form questions in the pre-program assessment with phrases such as “I don’t know”. Select multiple choice questions-had a less than half correct response rate. One of those questions being “How would you define a watershed?”

The post-assessment showed an increase in the understanding of and connection to the topics. Students answered short-form questions confidently, while including key terms and explanations of natural processes. Notably, all responding students were able to describe a connection between riparian areas and the aquatic ecosystems. Many students pointed to bank stability and diverse aquatic habitats as key reasons why riparian areas have a significant impact on an aquatic habitat’s ability to support target species.

In responding to multiple-choice answer questions, all but two of the 64 responding students selected the correct definition of watershed. In a multiple-choice style question, students were asked to identify the activity that would help protect and restore the health of the watershed for native species. The list included activities that may have negative impacts on the ecosystem, such as “Removing woody debris from the aquatic habitat, Removing the riparian area, and Introducing non-native invasive species”. All 64 responding students selected the appropriate answer option: “removing non-native invasives”. This shows that students not only drew meaning from the restoration activities that they were a part of, but it also reveals an in-depth understanding of watershed health and function.

“

I now know much more about the [living things] in the water. I used to think there wasn't much in the water, but now I know the creek is diverse and interesting.

-Briggs Middle School 7<sup>th</sup> grade student

”



Picture 5: Students from Thurston Middle School identifying macroinvertebrates

# LAND CENTERED APPROACH

As part of the MFWWC's education team's ongoing commitment to strengthening the presence of Traditional Knowledge and value systems, this year's WELL Middle School Restoration Program placed significant emphasis on individual relationships to the land.

Early trip discussions focused on how land encompasses more than just the physical landscape; it includes language, resources, traditions, protocols, history, emotions, and the people connected to a specific area. In the months spent returning to the site, working to remove invasive species, observing the transformative effects of the changing seasons, and learning in depth about many parts the ecosystem, the student participants saw themselves as

becoming part of the land's story.

Participating students shared that they came to understand themselves as being in community with living things around them. This value was introduced through building a relationship with a prominent western red cedar tree. After learning about the significance of this species to local Tribes and Native communities, each group of students affectionately named the tree. Every morning and afternoon, this cedar tree became the focal point for mindfulness exercises. These daily practices encouraged students to be present and attuned to their surroundings, fostering a deeper awareness of the natural world and their role within it.

Through this approach, a sense of community was nurtured, both individually and collectively. Throughout the season, students remained grounded in place and explored how to hold space for themselves, each other, and their relationship with the land.

## FUTURE RECOMMENDATIONS

Due to time constraints during the final field trip, students were not given enough time to complete their post-program assessments. As a result, many of the post-program assessments did not fully reflect the breadth of knowledge the students had acquired over the duration of the program. While the submitted assessments did include many thoughtful and significant expressions of understanding scientific concepts, connections to the land, and deep pride in participating in the restoration work, it is recommended to prioritize ample time for completing post-program assessments in the future. This will allow students to fully represent their knowledge, and the impacts can be quantifiably represented and reflected upon by the program.

Additional recommendations include incorporating more relationship-building and reflection activities to help students strengthen their ability to observe and identify the ways in which they connect to the land and each other. Developing the skills to identify those observations individually gives students the tools that they need to communicate those connections in written format and in group settings. Tools to be incorporated to achieve this include scaffolding written sharing, pair sharing, small group sharing, and then building up to whole group sharing.

# QUANTITATIVE IMPACT



Picture 7: Group of students identifying tree species

## Participating Schools:

Thurston Middle School  
Hamlin Middle School  
Briggs Middle School  
Agnes Stewart Middle School

**Number of participating students:** 64

**Number of Field Trips:** 17

**Program Hours:** 76.5

## Sites Visited:

Gorrie Creek Restoration Site  
Elijah Bristow State Park



Picture 6: Students from Briggs Middle School identifying native plants

“Plant life is more than it seems [and] more can happen in a tiny creek than you think!  
-BriggsMiddle School 7<sup>th</sup> grade student”

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Picture 8: Group of students and program educators from Agnes Stewart Middle School

## STUDENT VOICES

“

It gave me a good idea about what I want to be when I grow up  
-Agnes Stewart MS

”

“

I started thinking about the impacts of my actions and [how] that affects the ecosystem.  
- Hamlin MS

”

“

How did this experience impact the way you see your relationship with the natural world?  
“I know that taking time to focus on the little things is important.”  
- Thurston MS

”

“

What would you tell an incoming 7<sup>th</sup> grader about participating in the WELL program?

“This could be a great opportunity for them to learn about nature and to have fun experiences with people.”  
-Agnes Stewart MS

”

“

“I realized that rivers have so much wildlife.”  
-Hamlin MS

”

“

How did this experience impact the way you see your relationship with the natural world?

“We should be aware of the places we are in”  
-Thurston MS

”