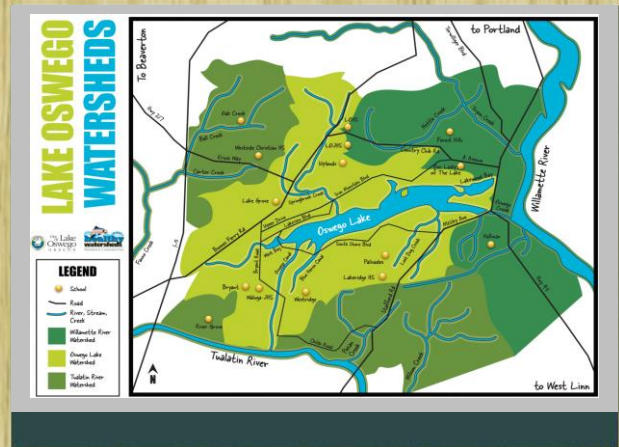


Oswego Lake Watershed 6th Grade Engineering Design Project Update

Welcome back to the second edition of the Oswego Lake Watershed Engineering Design Unit (OLWEDU) newsletter. In this current publication, we will be updating our progress and plans for the future.

If you have any suggestions for future issues, please contact Portland State University: Center for Science Education or Lecia Schall – Lecia@pdx.edu



Nestled between the Tryon Creek Watershed and the Tualatin Valley Watershed, the Oswego Lake Watershed joins them to flow into the regional Willamette River and Columbia Watersheds.

www.oswegowatershed.org



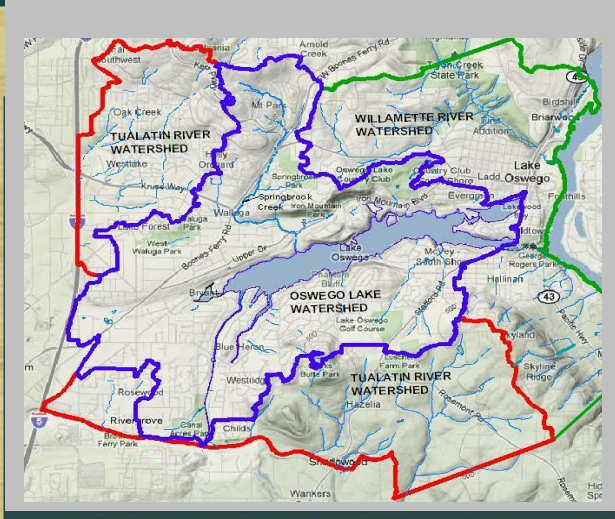
*Rain happens!
Keep only water
in your
watershed.
We all live
downstream...*

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Oswego Lake Watershed Engineering Design Unit

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Map of Oswego Lake Watershed coverage area.

History

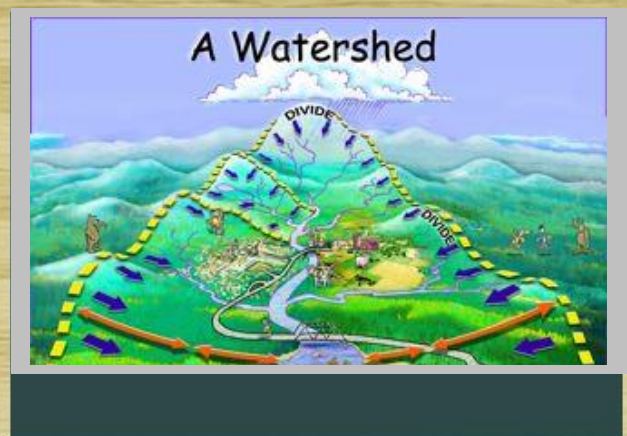
This Watershed Engineering Design Unit has been prepared for sixth grade Lake Oswego science classrooms, in partnership with the LO School District, Oswego Lake Watershed Council, Tryon Creek Watershed Council, City of Lake Oswego, and the Portland State University: Center for Science Education

Storyline

In this unit, students examine human impacts on the water cycle and watersheds, specifically those posed by stormwater runoff and impervious surfaces. After investigating the various surfaces on their school campus, students use Practices and other components from The Next Generation Science Standards (NGSS), including the engineering design process, to develop solutions to address the problem of runoff generated on their campus.

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Misconception: Watersheds are only up in the mountains. Illustrations only depict mountains as a way to show an extreme version of a watershed. Even the flattest of areas are part of a watershed.

Intern's Corner

Winter greetings from Lecia Schall, the current intern for the Oswego Lake Watershed Council. I am honored to have the opportunity to join in the commitment towards educating some of the younger members of the Lake Oswego community, on watershed issues. As both a teacher and a student, I realize how important it is to make learning relevant and rewarding to young people. Therefore, it is exciting to be allowed to continue the educational project that was initiated by my colleagues at The Center for Science Education at PSU in 2012.

Now in its second year of implementation, I hope to tailor the curriculum to the schools' and community's needs. The OLWEDU was also designed to introduce the students and teachers to the principles of The Next Generation Science Standards, which will be implemented in the near future. In my coursework towards a Masters of Science in Teaching General Science, I have been learning how to "unpack" the standards. Eventually the OLWEDU curriculum will be fully aligned with the NGSS. Until then the local students will be ahead of their peers in their knowledge of basic Engineering Design Processes, Stormwater management and mitigation, and broader watershed issues.

Continuing Education

In addition to my regular studies at PSU, I recently attended my own watershed council's educational forum on stormwater. This workshop was attended by a wide variety of private and professional individuals. We learned about the various methods employed to handle stormwater runoff depending on the geology of the area and current wastewater infrastructure. Each watershed has its own unique issues and management strategies. On a seasonal note, I found out that the Port of Portland has an **on-site anaerobic treatment facility** to handle all the de-icing residues at the airport. *So let it snow! Or rain...*



Stormwater 101 9 AM -1 PM



*When it rains,
where does all that
water go?*

This hands-on workshop explores the effect of urban runoff on local waterways. Join us and **learn about how stormwater management works in your area**. Staff from 6 regional organizations will share their expertise. Suitable for adults and teens 14+.

*Explore your
Watershed!*

Oswego Lake Watershed Council Information

The Oswego Lake watershed provides food, water, shelter, and many economic benefits and ecosystem services to the 21,550 people and diverse bird, fish, mammal and amphibian species that live there. The watershed contains 2,100 acres of single-family residential area, 123 acres of multi-family residential area, and 95 acres of commercial/industrial area. Impervious, or solid surfaces that generate stormwater runoff like rooftops, parking lots and streets, cover 1,235 acres, or 29%, of the watershed. Cited from: <http://www.oswegowatershed.org/explore-the-watershed/>

Oswego Lake Watershed Engineering Design Unit

NGSS CORRELATIONS

Cross-cutting Concepts

- **Patterns**
- **Cause and Effect**
- **Scale, proportion, and quantity**
- **Systems and system models**
- **Energy and matter: Flows, cycles, and conservation**
- **Structure and function**
- **Stability and change**

Practices

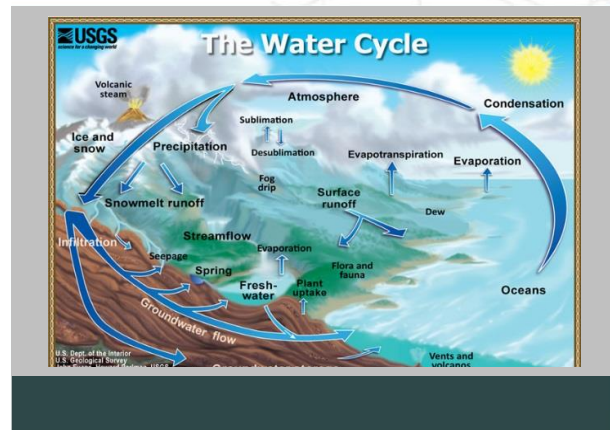
- **Asking Questions**
- **Developing and Using Models**
- **Planning and Carrying Out Investigations**
- **Analyzing and Interpreting Data**

Definitions

- **Water Cycle:** The continuous movement of water from ocean to air and land then back again. In this process water changes state and is moved through the cycle using energy from the sun and other forces such as gravity.
- **Infiltration:** the process of rain or runoff soaking into the soil.
- **Infiltration rate:** the rate at which water soaks into various soils, expressed as depth over time, such as inches per hour.

Goals

- Continued awareness of stormwater issues related to the Water Cycle and watersheds.
- Increased awareness of personal “watershed address” (knowing ones local and regional drainages)
- Enhanced school to community connections.



USGS summary of The Hydrologic Cycle. It may be a new year, but the water cycle is eternal.

Project Update

This fall, all four 6th grade teachers received the Pre/Post test results from spring of 2013. Now that they are more familiar with the OWLEDU, the Lake Oswego Middle School Science Teachers are gearing up for the 2014 implementation of the OLWEDU curriculum. They will be administering the Pretests earlier this year, so that particular areas of concentration can be addressed before proceeding with the Engineering Design Unit.

Next Steps

Reducing the length of the unit by integrating some of the background and introductory lessons into the Landforms and Weather Units will be one of the next steps for the teachers in 2014. Researchers from Portland State University’s Center for Science Education will compile the results of this school year’s Pretest in order to identify areas of strength and weakness. Supplemental curriculum resources will be made available to the teachers based on these results.

We are also looking for continued opportunities for field studies and speakers for the OLWEDU. Ideas...?