

# South Stevens County Education Project Project Report 2014



Teri Sardinia's Biotechnology and Research Class; Lakeside High School spring 2014

Completed under a WRIA 54 Interlocal Agreement  
between Stevens County Conservation District and  
Spokane County using funds provided by the Washington  
State Department of Ecology

## **Project Background**

Stevens County Conservation District (SCCD) established a working relationship with science teacher Teri Sardinia of Lakeside High School in Suncrest in 2012. This project funded the third year of this educational effort. The project objective was to provide both high school and middle school students with information on watersheds and get them to realize that what each of does individually can affect other watershed residents. This objective was met by using a series of local natural resource professionals as guest speakers to help provide a broad perspective to the students. Each speaker provided 5 questions about their presentation and students' written responses were evaluated to determine if the presentations were successful in reaching the class.

One class requirement was that each student prepares a project for submission to the Spokane STEM (Science, Technology, Engineering, and Math) conference. Presenters returned to the classroom to provide review and comments to the students for both oral presentations and poster sessions. Not all students were e for the conference but those that were expressed appreciation for the assistance provided by the reviewers.

An additional task under this project was to make people more aware of dealing with animal waste in a manner that reduces the potential to pollute surface water. Presentations on composting were made to the Lakeside class and to the general public. SCCD hoped to generate interest in this matter among horse related groups in Southern Stevens County and adjacent portions of Spokane County. This effort was not successful. Also, attempts to locate a horse trail system throughout the Suncrest area did not produce positive results. Finally, SCCD hoped to work with a local nursery/landscaping company to determine the feasibility of establishing a local composting site. This effort also yielded negative results when the business owner stated that he did not want to deal with horse manure and was in fact trying to sell the business.

## **Summary of South Stevens/Lake Spokane Education Project Activities**

July 2013

- At the July WRIA 54, meeting it became apparent that funds would be available for another year of this project. Ecology staff is working on how the different sources of funding will be allocated and so the funds for this project will not be available until September at the earliest. This will not be a problem because school will just be starting at that time.

August 2013

- Charlie Kessler of SCCD is working with Ecology on the continuation of funding for the project.

September 2013

- Charlie Kessler and Matt Schanz of NETCHD met Lakeside teacher Teri Sardinia and her advanced science class at the Dragoon Creek Campground on September 17th. Matt talked about aquatic insects and helped the students collect some samples. Charlie discussed water quality and helped the students measure dissolved oxygen and pH with meters that the school provided.

### October 2013

- District staff went to the boat launch area between the Spokane River and the Little Spokane River to set up for the sophomore science student field day to be held October 15<sup>th</sup>. Matt Scheidt and Charlie Kessler collected aquatic insects from Mill Creek for use during the field session. Teachers Teri Sardinia and Dean Field took care of the logistics from the school side of things.
- On October 15<sup>th</sup>, sophomore science students from Lakeside High School took to the field to learn about various aspects of our natural resources. District staff had organized a series of presenters to provide information to a morning session of 76 students and an afternoon session of another 75 students. Matt Schanz of Northeast Tri-County Health District had a display of live aquatic insects and talked of using such insects as indicators of watershed health. Steve DeCook of Washington DNR took students down a trail in the park and talked about different aspects of forestry. Amanda Parrish of the Lands Council talked about riparian areas and the role that beavers play in our ecosystem, and she instructed the students in measuring riparian vegetation. Beth Mort and Llyn Doremus of Ecology talked of air quality within the watershed and how it can affect both surface water and groundwater quality. Erik Erikson, a geologist who now drives a bus for the Nine Mile School District, started the morning and afternoon groups off by driving to a vantage point overlooking the lake and speaking of the geology of the region. Each student was given a series of questions for each presenter and the teachers planned to discuss the answers with the students when they returned to school the next day.
- Thank you letters were sent to all the presenters. A disk of pictures taken by District staff was sent to Teri Sardinia.

### November 2013

- District staff wrote a press release on the field day conducted by Matt Schanz, NETCHD, and Charlie Kessler for the Biotechnology Research class at Dragoon Creek, and for the sophomore field day held at Riverside Park. This article was sent to the Chewelah Independent and the Lake Spokane Outpost. While the articles submitted were the same, the one to the Independent had a picture of Matt Schanz teaching and the one to the Outpost had a picture of Beth Mort of Ecology teaching because she is a lakeside High School graduate. It was later learned that the Lake Spokane Outpost is no longer in business. This will severely hinder efforts to get information to the Suncrest and TumTum areas.
- District staff wrote a news article specifically on the participation of Ecology staff during the Lakeside sophomores' field day. This was sent to Brook Beeler, the communication and education coordinator for the Eastern Regional Office. Ecology significantly altered the article and so it was published as an internal Ecology press release and was not attributed to SCCD.

### January 2014

- District staff worked on developing a guest speaker schedule and a schedule for getting natural resource professionals together to review student projects. Presenters include: Mac Mikkelsen, Avista; Rusty Post, Beth Mort, and Llyn Doremus, Ecology; Jennifer Hickenbottom, USFS; Amanda Parrish, Lands Council; Matt Schanz, Northeast Tri

County Health District; and Bart Ausland, NRCS. There will be 6 class periods when some of the presenters will return to the classroom to hear student presentations and to provide constructive comments to help the students improve their projects. Also, each presenter will submit at least 5 questions that will be given to the students prior to the presentation. The answers to these questions will help SCCD determine if the education effort is functioning as it is intended and will allow staff to make the necessary changes if it is not working.

- District staff started the classroom presentations on January 30<sup>th</sup>. A PowerPoint presentation entitled “We all live in a watershed” was presented to the class. A watershed model on loan from Pend Oreille County Conservation District was used to illustrate what was presented. Sources of pollution and the effects of pollution were demonstrated. Best Management Practices to reduce pollution potential will be discussed and demonstrated at a later date.
- On January 22<sup>nd</sup>, District staff attended the Lake Spokane Association (LSA) annual meeting. Over 40 people were in attendance. The District shared a table with Avista and had a kiosk display featuring the optical brightener water quality monitoring conducted last year and the South Stevens Education Program. District efforts in helping Avista plant 2 sections along Lake Spokane are covered in the Avista Spokane River Project calendar that was made available to the public.

#### February 2014

- District staff was again active in the classroom at Lakeside High School. Presentations for the month included the following.
  - February 6<sup>th</sup>, Charlie Kessler of SCCD made a presentation on the benefits of composting animal waste and the benefits of lakeside buffers for controlling contamination that may affect the lake. Charlie combined a PowerPoint presentation with use of the watershed model. In January, Charlie used the model to show the students sources of pollution. During this class, Charlie let the students devise ways to control the pollution getting into the lake. The use of the model helps the students grasp what has been presented during the PowerPoint presentation.
  - February 14<sup>th</sup>, Mac Mikkelsen of Avista made a presentation on Lake Spokane as a reservoir used for power generation. Mac is a Lakeside graduate and is a current member of the Nine Mile School Board so he brings a local flavor to the presentation. Mac has a model that demonstrated how water is used to produce power.
  - February 20<sup>th</sup>, Llyn Doremus of Ecology made a presentation on groundwater and watershed management. Llyn and Charlie both provided groundwater models for use during the class. The students got to observe how groundwater moves and see the affect of leaking underground storage tanks.
  - February 27<sup>th</sup>, Rusty Post of Ecology made a presentation on watersheds. Rusty covered many channel forming processes and the affect of upstream activities on downstream residents. The class ended with Rusty and the students huddled over a series of maps outlining the Little Spokane River

Watershed. Teri Sardinia may try to have the students use topographic maps to outline the watershed in which they live.

- District staff met with Karin Baldwin Ecology Spokane River TMDL manager to discuss what the District is doing in the Lake Spokane area. Karin was given copies of the final reports for the South Stevens Education Projects for 2012 and 2013 and the final Optical Brightener Monitoring Project Report. Karin has just been given the task of being the TMDL manager and so this meeting was to help her become informed about what is happening in the watershed. Karin is trying to find funding for the Lake Spokane groundwater study that the District has talked with USGS and stakeholders about.

#### March 2014

- Beth Mort, Air Quality Education / Outreach specialist from Ecology's Eastern Regional Office was in the classroom on March 6<sup>th</sup>. She had sent a Hazardous Air Pollutants (HAP) information sheet and a HAPs scavenger Hunt form to the class prior to her presentation. Students were encouraged to look at common household and classroom product ingredients lists and see how many HAPs they could find. For her presentation, Beth divided the class into groups of 4 students and gave each group a different role to play in addressing a local air quality issue. Each group selected a spokesperson and presented their solution to the issue. The groups were a regulatory agency, an industry, and a concerned citizens group. The students did a good job of presenting their approach to the issue from these various points of view.
- On March 13<sup>th</sup>, Bart Ausland, NRCS forester for the northeast region, told the class of the important role healthy forests play in maintaining a healthy watershed. Bart spoke of resilient forests that are able to withstand periodic fires and insect and disease outbreaks. He spoke of diverse forests that have multiple land uses, abundant wildlife, and active management. He also spoke of economically beneficial forests that provide commodities and value added products that create local jobs and promote the local economy. Bart spoke of the effects of wildfire and how each homeowner in the wildland-urban interface (WUI) needs to have defensible space around their home. He used cross-sectional cuts from large trees to demonstrate to the students how trees grow and how changes in a stand can affect the rate of growth.
- Matt Schanz of Northeast Tri-County Health District was in the classroom on March 20<sup>th</sup> to talk of onsite septic systems and the potential to pollute the watershed. Matt defined wastewater as anything going down the drain. He pointed out that wastewater contains chemicals, nutrients, and disease causing organisms which all can affect a watershed's water quality. He spoke of the 2 methods of treating wastewater, centralize and onsite systems and pointed out that the Lake Spokane portion of Stevens County uses onsite systems exclusively. Matt covered the 2 parts of the onsite system, the tank and the drain field, and spoke of the need to regularly maintain these systems. The class then got to use the groundwater model to visually see how a failing system can affect wells in the area. This made it very apparent to the students that wastewater controls are necessary to protect groundwater, surface water, and public health.
- On March 27<sup>th</sup>, Llyn Doremus of Ecology, Meghan Lunney of Avista, and Charlie Kessler of SCCD listened to 3 students make presentations about their proposed projects for the May Spokane Youth Science Conference and reviewed 3 students' poster presentations. Each student was looking for input on their project design and asking if

the panel knew of anyone who could mentor them on their projects. On the projects involving water quality, all three presenters stated that they could provide information. One student was looking at things that affect how one sings and Llyn suggested that her sister could perhaps help via email. Meghan is willing to provide Avista data on Lake Spokane and the operation of Long Lake Dam. Overall, the interaction between the students and the panel proved beneficial. After hearing the first exchange between the panel and one of the students, a fellow student decided to change his project to one that focused more on water quality.

- A press release was published in the Chewelah Independent. A picture of the class accompanied the article.
- Thank you notes were sent to presenters with copies being sent to their supervisors to let them know of the good work that their people are doing. SCCD greatly appreciates the willingness of resource professionals to come into the classroom and support the District's education effort in this way. It seems as if the professionals gain something also as it puts them in touch with young people and helps them to see where we all need to expand our public education efforts.

#### April 2014

- On April 3<sup>rd</sup>, a panel of presenters returned to the classroom to review student projects. Three students made oral presentations of their projects and three presented their poster sessions. This was the second review session and so now all of the students have had the opportunity to have their initial project plans reviewed. Spring was scheduled for the next week and students were being encouraged to work on their projects over the break.
- The originally scheduled project review for April 17<sup>th</sup> was cancelled to allow students more time to incorporate the comments they had received during the in-class reviews.
- On April 24<sup>th</sup>, Amanda Parrish of the Lands Council made a presentation on riparian area management and the use of beavers to restore wetlands and retain water that can be slowly released to augment summertime low flows. As always, her presentation is well received because the students have not thought of beavers as efficient engineers that have a tremendous impact on a watershed.

#### May 2014

- District staff spent a great deal of time working with Dr. Caitlin Price Youngquist of WSU in planning the composting workshop to be held at Lakeside Middle School on May 8<sup>th</sup>. Press releases were submitted, a public service announcement sent to the Chewelah radio station, 4-H clubs notified by WSU, and flyers posted in the Suncrest area.
- The composting workshop was held on May 8<sup>th</sup> and only 6 people attended. Announcements of the workshop had been spread throughout the area and a press release appeared in the Chewelah Independent. One challenge to getting word to the public in southern Stevens County was the closing of the Lake Spokane Outpost newspaper. The Outpost covered events of the Lake Spokane area, but due to rising costs and not enough advertising income, the paper was forced to close. Dr. Youngquist gave an excellent presentation to the small group. There were several questions and SCCD staff was able to help provide local answers where needed.

- May was the time for review of student projects. Presenters returned to the classroom to hear students' oral presentations and to review posters developed by the students. Teri Sardinia developed a checklist of what should be covered in the presentations and the poster sessions to help the reviewers provide appropriate feedback to the students. During some of the classroom review, individual reviewers circulated to the various poster presentations and were able to provide comments directly to the students. Additional comments were supplied by email.
- On May 28<sup>th</sup>, District staff attended the STEM (Science, Technology, Engineering, and Math) Conference in Spokane. The purpose for attending was twofold; to support the students from Lakeside High School and to get a better idea of the types of projects presented at the conference. About half of Teri Sardinia's students' projects were accepted for presentation at the conference.
- On May 29<sup>th</sup>, District staff attended Lakeside High School's Career and Technical Education (CTE) Advisory Board meeting to support Teri Sardinia's presentation on Biotechnology-Research/Development at the high school. The school is working with mentors from businesses and other local entities to introduce students to various subjects and help prepare them for future studies or job opportunities after graduation.

#### June 2014

- On June 9<sup>th</sup>, District staff helped students prepare for presentations on various aspects of watersheds to 6<sup>th</sup> grade science students at Lakeside Middle School. The actual presentations were made on Tuesday June 10<sup>th</sup>. There were 4 different stations that the 6<sup>th</sup> graders visited. There were 2 to 3 students making presentations at each station. The stations were: wastewater, human effects on water quality, watershed concepts and BMPs, and the hydrologic cycle and its groundwater component. The watershed model and the groundwater model supplied by SCCD were used by the high school students.
- District staff attended two combined WRIA meetings, one in May and one in June. The new WRIA group includes representatives from WRIs 54, 55, 56, and 57. A new MOA has been developed and is awaiting signatures. Each one of these WRIs is a part of the larger Spokane River Watershed so coming together in this way will hopefully eliminate duplication of effort and help in procuring funding for future projects.
- District staff wrote thank you letters to all who had reviewed student projects. The letters included comments for the students about the overall course and specific comments about each professional who made presentations or reviewed projects. The comments were selected from student questionnaires developed by Teri Sardinia and Charlie Kessler. The questionnaires were designed to get student feedback on the class in order to see ways that the District's participation could be improved. General comments shared with the presenters included the following.
  - "Watersheds are important for the environment. Keeping the land pure and enriched in nutrients will keep the earth clean, safe, and happy."
  - "Be responsible!"
  - "Thank you all for coming. It helped me learn what to change and help to do."

- “The presentations helped explain how things happen and the models helped us to see how everything works together. I really enjoyed having you guys. Thank you for also coming in and helping us with our big project.”
- “The presenters that I saw all did very well. I personally think that everything they did worked well. It taught me stuff I needed to know and how to apply that to my science knowledge to do my research on what they taught me.”
- “The presenters were good. I really liked them. I always looked forward to Thursday because it was something different. Thank you.”
- “Overall, I thought every presentation was helpful and interesting. I found learning about the different watersheds was intriguing and the hands on models were useful.”
- SCCD staff worked on the final project report for submittal to Spokane County.

**Presenters and topics**

<b>Presentation</b>	<b>Speaker</b>
Watershed Concepts	Charlie Kessler - SCCD
Benefits of Composting & lakeside buffers	Charlie Kessler - SCCD
Lake Spokane as a reservoir	Mac Mikkelsen - Avista
Watershed management & groundwater	Llyn Doremus – Ecology
Watershed Planning	Rusty Post - Ecology
Air quality and the watershed	Beth Mort - Ecology
Healthy watersheds and resilient forests	Bart Ausland - NRCS
Septic systems and watershed health	Matt Schanz - NETCHD
Riparian areas and beavers	Amanda Parrish – The Lands Council

**Lakeside Middle School presentations and student presenters**

Human Effect on Water Quality: Watershed Model / Pollution Controls Wastewater	Mackenzie Matteson, Tucker Anderson Ty Lahue, Trystan Davila Jaden Henderson, Lexxy Lack, Samantha Powers
The Hydrologic Cycle & groundwater	Joan Hamlin, Tristan Reed

**Project reviewers**

Charlie Kessler – SCCD	Meghan Lunney – Avista
Llyn Doremus – Ecology	Martyn Quinn – Ecology
Bart Ausland – NRCS	Jennifer Hickenbottom – USFS
Matt Schanz – NETCHD	Amanda Parrish – The Lands Council
Paul Kessler – interested public	



## **Successes**

The presentations made to the class stressed taking personal responsibility for what is happening in your watershed. There were sections on the student questionnaire that concerned having a positive impact on watersheds and the sharing of the information the students learned during the class. The answers to these sections were encouraging. Several are listed below.

### ***Consider what people can do to have a positive impact on watersheds. What can you personally do and what have you already changed if anything?***

- People can do garbage clean ups and stop polluting. Maybe less people could go boating and be more aware of spilling gas and oils. I could take time with some friends and clean up the shore. I personally haven't done anything.
- Keep your yard trimmed. Keep fertilizers in your yard.
- Add buffer zones to conserve / preserve lake water quality. Utilize manure for crops and land and keep them away from water systems. Be responsible!
- Picking up dog waste, using phosphate free fertilizer, make sure your septic doesn't leak
- I can pick up dog manure and not use bad fertilizers that have phosphorus.
- Watch what I put in grass and pick up dog waste.
- Bow fishing for carp to limit the population of carp on Long Lake.
- Having vegetative buffers and using organic fertilizers.

### ***Describe things you might do to share information with others in the future***

- I could tell more family and friends about the stuff I have learned. I could also make signs and hang them up to get word out about cleaning up.
- I would spread the word about land preservation by bringing a group / town meeting together, and talk about the effects of pollution and irresponsibility in our area.
- Pick up dog waste every day would be good, use phosphate free fertilizers, and keep up with their lawns and forest.
- If they have a beaver problem I say paint their trees and put fences around them. Also always pick up dog waste to keep it from running into the water.
- We will be going to the middle school to talk to the 6<sup>th</sup> graders about the importance of water quality.
- I will tell them what I learned and if they pick up their waste it would turn into a better place.

### ***Describe ways that you have already shared this information with others.***

- I haven't done much but talk with my mom and dad and family of the stuff I have learned.
- I have shared my ideas with my parents and my family members.
- I personally have already shared some tips on beavers. How to save your trees and how to save water flows, as well as the importance of beavers to this community.

- Suggested to people to clean up property and suggested to pick up pet waste every day.
- My class has been challenged to tell someone about it so I told my dad.
- I did my research topic on the effect of acid rain which I presented at a science conference.

The middle school presentations are particularly rewarding because it involves the high school students teaching what they have learned to younger students. The high school students did a very good job of incorporating comments shared with them during review of their projects prior to going to the middle school. The 6<sup>th</sup> graders were divided into 4 groups and rotated among the presentations. It was encouraging to hear a group of 6<sup>th</sup> graders share with the presenters what they had heard in a previous session. It showed that the high school students were reaching their audience. It was rewarding for SCCD staff to see middle school teachers heartily welcome back their former students and be pleased and impressed with the presentations.

The opportunity to take over 150 sophomore science students to the field and introduce them to natural resource topics was very worthwhile. This is often the first time these students have been exposed to any of this information. As with the classroom work, it is the presenters that make this field day come alive. The enthusiasm of the presenters is what makes for a good learning environment. The adult chaperones that accompany the students have expressed how much they learned about their surroundings during the sessions.

Teri Sardinia's class has become a part of the Nine Mile School District's Career and Technical Education (CTE) Program. SCCD is pleased to be able to be a part of this program that brings professional people into the high school environment to expose students to different career paths and to help them develop skills that will assist them along their chosen path. The partnership which has been developed between Teri and SCCD is greatly aiding educational efforts in southern Stevens County.

### **Disappointments**

The composting portion of this project did not work as planned. First, with the closing of the Lake Spokane Outpost, it became very difficult to disseminate information in the Suncrest / TumTum area. Flyers were placed at stores, the schools, the library, and at the local fitness center but they did not seem to reach the intended audience. The Chewelah Independent did an excellent job of printing articles about the project but evidently it does not have a wide enough circulation in the southern part of the county. WSU Extension notified all 4-H clubs with interests in horses in Stevens and adjacent parts of Spokane County about the efforts to educate people on this method of dealing with horse manure but this too generated no interest.

The horse trails that were to be a focus of cleanup efforts could not be found. There appears to be no formal trail system in the Suncrest area so organized cleanup efforts were not a possibility.

The idea of establishing a composting site in Suncrest was dealt a severe blow when the nursery / landscaping business owner informed SCCD staff that he was trying to sell the business and was no longer interested in being a drop point for animal waste.

It appears that the people most interested in composting are gardeners and not keepers of large animals. The gardeners are more interested in composting household food waste and using it on their own gardens. SCCD hopes to continue providing information on animal waste composting throughout the county and will continue to try to generate interest in applying this technique.

### **The Future**

SCCD has received a grant from the Washington Department of Ecology that has a task focusing on the Lake Spokane area. Under this task, the educational efforts with Lakeside High School will be funded for 2 more years. In addition, SCCD has developed a good working relationship with Avista and will partner with the company on continued educational efforts along Lake Spokane.

# Lakeside High School 2013 - 2014



Bart Ausland, NRCS forester, explains how to analyze the growth rings on a tree

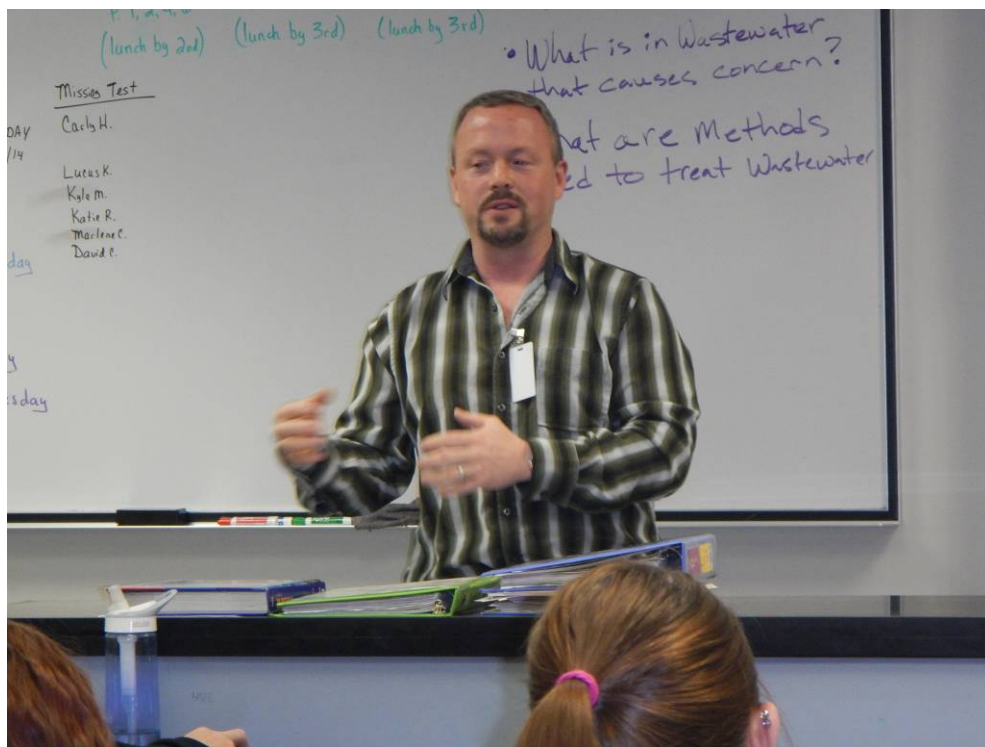


Beth Mort of Ecology explains some of the hazardous materials found in our air

# Lakeside High School 2013 - 2014



Rusty Post, Ecology, teaches students to locate their watershed on a map



Matt Schanz, Northeast Washington Tri County Health District, talks to class about dealing with wastewater

# Lakeside High School 2013 - 2014



Matt Schanz NETCHD and Charlie Kessler SCCD explain the relationship between water quality and the type of insects found in a creek at Dagoon Creek Campground



Amanda Parrish of the Lands Council explains how to measure riparian vegetation

# Lakeside High School 2013 - 2014



Llyn Doremus and Beth Mort of Ecology make use of a model to explain to sophomores the various aspects of having a healthy watershed



Matt Schanz NETCHD explains the importance of aquatic insects

# Lakeside High School 2013 - 2014



Steve DeCook of DNR tells sophomores of the importance of healthy forests



Teachers Teri Sardinia and Dean Field at sophomore field day October 2013



# Lakeside High School 2013 - 2014



Matt Schanz, Martyn Quinn, Amanda Parrish, Llyn Doremus, and Jennifer Hickenbottom, USFS, listen to student presentations

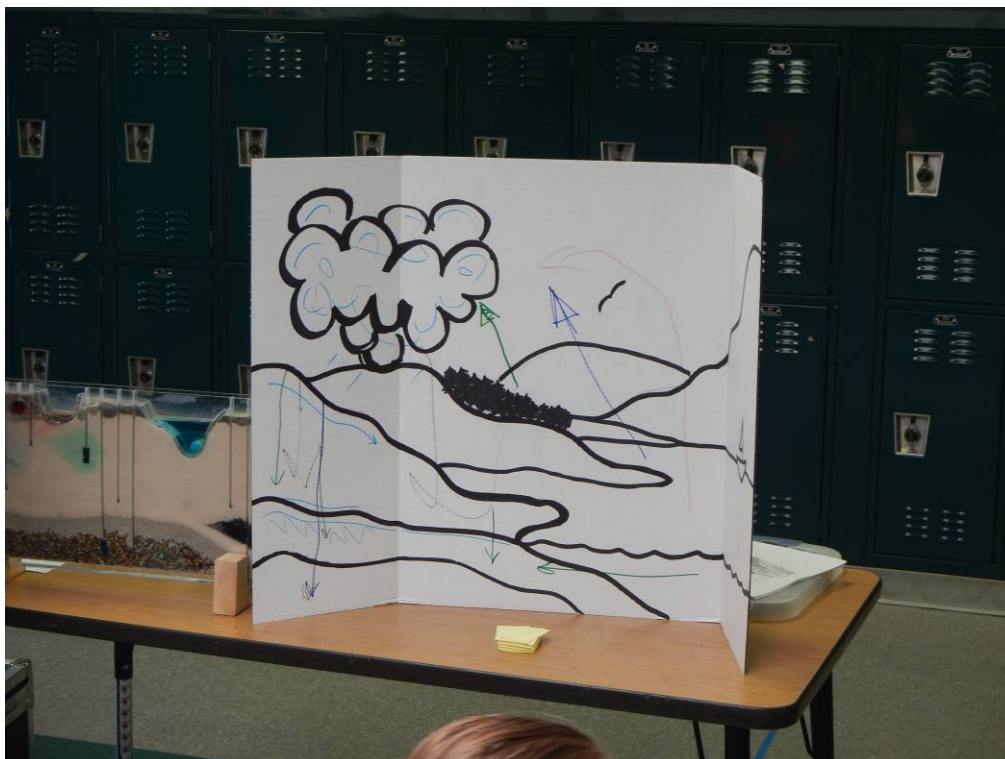


The watershed model used in the 6<sup>th</sup> grade presentations

# Lakeside High School 2013 - 2014



Ty Lahue, Trystan Davila, Mackenzie Matteson, and Tucker Anderson use model to teach 6<sup>th</sup> graders about watersheds and water quality

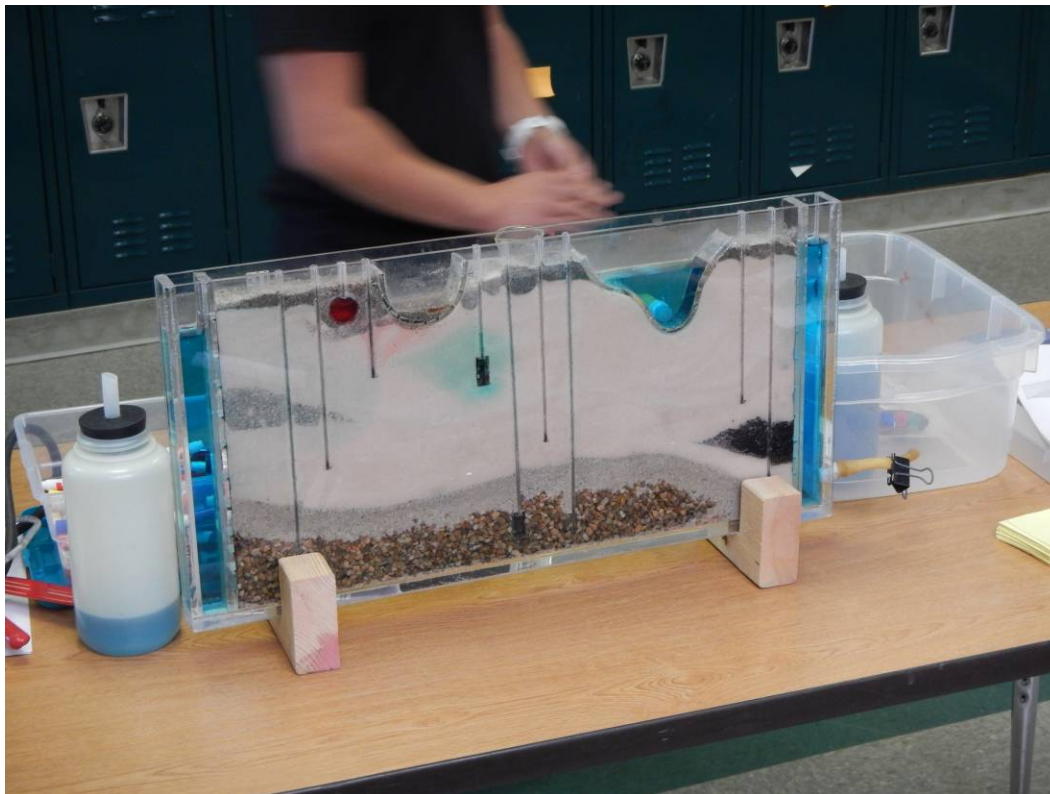


6<sup>th</sup> graders asked to identify and draw in parts of the hydrologic cycle

# Lakeside High School 2013 - 2014



Joan Hamlin, Tristan Red, Jaden Henderson, Samm Powers, and Lexxy Lack use a groundwater model to illustrate portions of the hydrologic cycle and wastewater contamination



Groundwater model used to illustrate how pollution spreads

# Lakeside High School 2013 - 2014



Teri Sardinia addresses one group of 6<sup>th</sup> graders while 6<sup>th</sup> grade teacher Jeana Simpson checks out the watershed model

## Conservation District Continues working with Lakeside High School

The Stevens County Conservation District started its third year of working with science teacher Teri Sardinia at Lakeside High School by holding two field sessions for students. The first involved the Biotechnology Research class on a trip to Dragoon Creek and the second involved sophomore science students of Mrs. Sardinia and Mr. Dean Field at the Riverside / Spokane House boat launch area.

On Dragoon Creek, Matt Schanz of Northeast Tri-County Health District instructed students in the importance of aquatic insects in determining watershed health and then got the students in the water to collect live insects to examine. Charlie Kessler of the Conservation District described the various instruments used to measure water temperature, dissolved oxygen, and pH and then had the students measure these parameters in the creek. The District had provided waders for most of the students, but several students just plunged in with knee high boots that were soon overtopped. The students admitted to having a different perspective of creeks after this session.

On October 15<sup>th</sup>, the Conservation District gathered a group of local resource professionals to instruct 150 Lakeside sophomores about their watershed and its natural resources. School bus driver Erik Erikson just happened to have a PhD in geology so he started the field trip off by telling the students about some of the features they see around the lake and how many were formed. Steve DeCook of Washington Department of Natural Resources took students down a trail explaining the forest environment, showing evidence of insect pests, determining the age of trees by boring, and presenting the idea of protecting their homes against wildfire. Matt Schanz again made a presentation on the importance of aquatic insects, this time using samples collected the day before and displayed in trays. Beth Mort and Llyn Doremus of the Washington Department of Ecology spoke to the students of how air quality affects the whole watershed and how what is deposited on the ground can be washed off into streams, rivers, and lakes. Amanda Parrish of The Lands Council told the students about riparian areas (streamside areas), about the role that beavers play in riparian areas, and then she had the students identify and measure riparian vegetation.

Student comments about the day included:

I finally understand how much our everyday life really does to pollute our air quality.

I learned there are many people with different jobs to maintain and keep our river healthy.

I learned how beavers are a positive impact on the riparian zone.

I never knew that the chemical PCB was in the fish I ate. I learned that fish can be contaminated.

At first riparian areas were confusing, but now I understand what they are and what they do.

I learned about our river and that it needs cold water and oxygen to be clean.

I wasn't sure about the Missoula Floods, but now I understand that it helped shape the land.

Thanks for all you do.

For information about the Stevens County Conservation District and its programs, call (509) 685-0937 extension 3.

## Ecology Teams with Conservation District to inform students

On October 15<sup>th</sup>, Beth Mort of the Air Quality Program and Llyn Doremus of the Water Quality Program assisted the Stevens County Conservation District in conducting a field day for sophomore science students from Lakeside High School. The Ecology duo joined other resource professionals from DNR, the Lands Council, and Northeast Tri County Health District and a PhD geologist who happened to be the bus driver for the day. The fact that Beth is a graduate of Lakeside High School made the Ecology station a little more special for the students.

Beth discussed how air quality affects people around the globe. She used maps and charts to show how what each of us is doing can have a detrimental effect on someone many miles away. She told the students that many things that we use every day, such as our cell phones, are made by processes that can be polluting our air.

Llyn brought a watershed model that allowed the students to better understand the concept of living in a watershed. She discussed the relationship between surface water and groundwater and how what we do on the surface can have a negative impact on the groundwater.

The two teamed up to use the model to show how atmospheric deposition affects both surface water and groundwater. Using cocoa as the pollutant, students sprinkled the model with this “deposition from the sky”. One student was then given a squirt bottle and allowed to rain on the landscape. Not only could the students see the runoff, but the base of the model is clear so they could see the “pollutant” get into the groundwater. The hands-on experience was enjoyed by each of the 10 groups that went through the daylong event. Over 150 students participated in the field day.

The day started cold, but Beth and Llyn kept the presentation moving and held all the students’ attention. Student comments about the day included the following:

- I finally understand how much our everyday life really does to pollute our air quality.
- I learned there are many people with different jobs to maintain and keep our river healthy.
- I learned how beavers are a positive impact on the riparian zone.
- I never knew that the chemical PCB was in the fish I ate. I learned that fish can be contaminated.
- At first riparian areas were confusing, but now I understand what they are and what they do.
- I learned about our river and that it needs cold water and oxygen to be clean.
- I wasn’t sure about the Missoula Floods, but now I understand that it helped shape the land.
- Thanks for all you do.

“Beth and Llyn did a great job. The use of the model and the cocoa was a huge hit. Being able to see how pollution from the air affects so much helped to give the students the big picture view” said Charlie Kessler who coordinated the day for the Conservation District. “Being able

to bring a diverse group of resource professionals together for a day like this helps the District reach the rising generation.”

## Lakeside students learn about their watershed

Lakeside High School students in Teri Sardinia’s Biotechnology Research class are learning about the Spokane River Watershed and Lake Spokane through the efforts of the Stevens County Conservation District (SCCD). District water quality coordinator Charlie Kessler is in the classroom weekly and has scheduled a series of guest lecturers to help the students better understand the watershed in which they live. This is the third year of funding for this educational outreach.

SCCD has made a few changes in the program this year. First, each presenter provides 5 questions that the students must answer after they have heard the presentation. The answers are reviewed weekly to see how well the students are grasping what has been presented. Second, presenters have been encouraged to have a hands-on portion of their presentation to get the students involved. Watershed, groundwater, and hydroelectric dam models have been used. Also maps for delineating watershed boundaries, tree cross sections for determining the age and rate of growth of forest trees, and a role playing scenario on dealing with potential air pollution have helped to achieve this goal. “The hands-on demonstrations have been very successful and help to give the students something that they will remember long after the class is over” said Kessler.

Guest lecturers come from diverse agencies and cover a variety of topics. From the Washington Department of Ecology, Llyn Doremus has covered groundwater, Rusty Post has spoken on watershed concepts, and Beth Mort showed the students how air quality affects the whole watershed. Nine Mile School Board member and Avista representative Mac Mikkelsen spoke of Lake Spokane as a reservoir used to generate electricity as well as providing recreation opportunities. Bart Ausland, Natural Resources Conservation Service forester, showed the students that good forest management contributes to overall watershed health. Matt Schanz of Northeast Tri County Health District discussed that while septic systems tend to be out of sight out of mind, a failing system can have a dramatic impact on water quality. Amanda Parish of the Lands Council will be talking about the importance of managing the areas along streams and how beavers can be a part of this. Jennifer Hickenbottom of the Colville National Forest will talk about how important it is to properly manage the land that is at the top of the watershed because what happens there can affect everything downstream.

“Being able to teach the rising generation about our natural resources has been a rewarding experience for all of our presenters” Kessler said. “Seeing students realize that their actions can make a difference makes our efforts worth it. Thankfully SCCD is about to receive additional funding from the Washington Department of Ecology to continue this program for two more years because I think it is money well spent.”

The Stevens County Conservation District is a non-regulatory subdivision of state government devoted to promoting the wise utilization of our natural resources. To learn more about the District and its programs, call (509) 685-0937 extension 3.



Mrs. Sardinia's Biotechnology class, Lakeside High School

## Conservation District to Hold Composting Workshop

The Stevens County Conservation District will be holding a composting workshop at Lakeside Middle School on Thursday May 8<sup>th</sup> at 7:00 p.m. The District is pleased to be able to have Dr. Caitlin Price Youngquist from WSU as the featured speaker. The workshop will cover the benefits of compost, composting techniques, uses of compost, and the challenges of using compost on food crops. Composting provides the opportunity to convert what once was considered a waste product and a liability into an asset.

Dr Youngquist has a M.S. and a PhD in soil science from WSU and a B.S. in animal science. She has also worked as a ranch manager and a farm planner for the Snohomish Conservation District so she knows the challenges facing those with livestock and those trying to raise food either for their family or for the market. Her research projects have included use of biosolids compost in specialty crop production, fate of antibiotics in compost, and livestock mortality composting. Dr. Youngquist's doctoral research involved using biosolids compost on land used to raise potatoes, wheat, barley, and spinach seed. She measured the impacts on soil quality, crop yield, and crop quality.

“The District feels this is a very timely workshop with summer coming on, horse owners preparing to clean out winter holding areas, and people thinking about using manure on their gardens” said Charlie Kessler, District water quality coordinator. “Dr. Youngquist will be providing information useful to animal owners and gardeners alike. Proper handling of manure



will help to protect water quality throughout the county while producing a valuable source of fertilizer for food production or growth of ornamental plants.”

The Stevens County Conservation District is a non-regulatory agency with the goal to develop and implement programs to protect and conserve soil, water, farmland, rangeland, forests, wildlife, and other renewable resources throughout the county. We provide technical and financial assistance to landowners within the District boundaries who have natural resource concerns or problems. We also provide educational assistance to schools and organizations within Stevens County. To learn more about this workshop or District programs, call (509) 685-0937 extension 3.



Dr. Caitlin Price Youngquist, WSU composting expert, to speak in Suncrest on Thursday May 8<sup>th</sup>

Flyer used to advertise workshop

# Horse Manure and Composting Workshop

When: Thursday May 8, 2014

7:00 to 9:00 pm

Where: Lakeside Middle School

Highway 291 Suncrest

Come Join Stevens County Conservation District and Washington State University and learn about how to put horse manure to work for you.

The workshop will cover:

Benefits of Compost

Composting techniques

Uses of compost

Challenges of compost – herbicide residue and bacteria from garden to table



Dr. Caitlin Price Youngquist will be our featured speaker. Dr. Youngquist has an M.S. and Ph.D. in soil science from WSU and a B.S. in animal science. Her research projects have included the use of biosolids compost in specialty crop production, fate of antibiotics in compost, and livestock mortality composting. She has also worked as a Farm Planner and compost specialist

with Snohomish Conservation District and helped many horse owners successfully turn manure from a liability into an asset. Come join us for an informative evening.

For Information call Stevens County Conservation District at (509) 685-0937 extension 3