

H₂O-Know

Fall 2013, V5 Issue 3– Special Edition Education Programs

The Newsletter of the Grand County Water Information Network

From the Director – Jane Tollett

Why do we do these programs? My Dad was an automotive engineer for Chrysler, and I grew up knowing I would have a career in science. I was lucky to have so much positive support at home, which gave me the confidence to overcome the difficulties inherent in being one of very few women in my chosen fields of Chemical and Environmental Engineering. Science, and the related STEM fields (Science, Technology, Engineering, Math), has given me a wonderful career. What do students do who don't have that kind of family mentoring? Schools and other programs need to fill in. What we are doing with our education programs in the 5th, 6th, 7th, 8th and 10th grades is to inspire and grow confidence in these students so they can begin to see that these kinds of careers are not only for others.

West Grand Watershed Week – 6th, 7th and 8th Grades



This year we welcomed a new Middle School science teacher, Lucas Taylor. The 6th grade toured the Climax Molybdenum Mill in Parshall, where they learned about mill operations, and how the mill works to protect the environment. The day ended with a tour of the Wolford Mountain Reservoir operations including an up-close look at some very, very big pumps. 7th graders started off the day with three different activities: electrofishing and fish population management, rangeland management, and wildlife habitat evaluation. They then transitioned to Reeder Creek and collected benthic macro invertebrates and analyzed their results. After lunch they travelled to the Grand River Ranch where they learned about

Kremmling water reservoir systems, how Parshall flumes work, and participated in a water game. The object of the game was to figure out how to transport water in buckets and pipes while conserving as much water as possible. 8th grade students started the day with a tour of the Kremmling Water Treatment Plant followed by performing water quality tests at the confluence of the Blue and Colorado Rivers. The afternoon was spent at the Blue Valley Ranch conducting river hydrology tests for flow, sinuosity and other measures with Bureau of Land Management (BLM) hydrologists.

East Grand Watershed Week – 6th, 7th and 8th Grades



After the beautiful weather enjoyed by the West Grand students, we woke up on the morning of the 6th grade field trip to sleet, rain and snow. The Town of Grand Lake came to our rescue and helped us find indoor facilities for most of our events. The 6th graders hiked to the Holzwarth Ranch in the Rocky Mountain National Park, then enjoyed an historical presentation of life here over a hundred years ago. They also saw how water flow impacts river beds and watersheds, thanks to the “Watershed Trailer” from the BLM, got a forestry lesson on trees and the beetle epidemic, and got to play the water game where we noticed that the cold weather did not lessen the fun of moving water around. Grand County students are tough! 7th grade students had a big hike up to the hut at Second Creek and learned about snowpack and what a stream looks like with minimal human impact and why that is important to benthic macro invertebrate populations. They spent the other half of the day collecting and analyzing benthic macro invertebrates and observing electrofishing. 8th graders toured the Granby Sanitation District’s wastewater treatment plant, performed seven water quality chemistry tests, did a habitat analysis on the Fraser River, and collected additional benthic macro invertebrates to learn

about food web and aquatic habitat issues.

Bug Week – Middle Park High School 10th Grade



The East Grand 10th grade class spent class time on basic watershed science, aquatic invertebrates as they relate to fisheries management, as well as detailed preparation for the field trip. During the field trip, students were split into eight groups and spent the day at one of eight locations along the Fraser River and Ranch Creek. Each group performed the following tests: Benthic macro invertebrate sampling, eleven different water quality tests, calculated the river flow, and performed a habitat analysis as well as an analysis of the river substrate (bottom). All the students created graphs and other pictorial representations of their work which will be displayed on our GCWIN website. Although the day ended in snow, thanks to many

different organizations between Winter Park and Granby we were able to have plenty of warm places for lunch and shelter when needed.

Making a difference

We plan to look at graduation exit interviews, to see if more students are planning to major in STEM subjects. For certain last year there were at least two graduating seniors declaring Environmental Science as a major. Tim Carlin, the new East Grand assistant principal, pointed out to me that this year at East Grand there is an AP Biology class – with 25 students enrolled! We may not change the world, but if we can change the world for a few students – or more – we'll consider that a big success.

Education Facts – think about it

According to recent rankings from the Paris-based [Organisation for Economic Co-operation and Development \(OECD\)](#), the US ranks 16th in Science, and 28th in Maths among the 65 OECD countries for 15-year olds. Both these ratings are below the world average. That's also why we do these field trips.

Thanks to all the following people and organizations:

Grants and Donations

1. Captain Planet
2. Grand Lake Rotary
3. Excel Education Grant (left over from 2012)
4. Climax Education (left over from 2012)
5. Headwaters Trout Unlimited
6. Wells Fargo Bank
7. InfiniteWest

Teachers

Lucas Taylor – West Grand Middle School Science Teacher

Marc Loberg, Alex Romanyshyn, Molly Jordan – 6th, 7th, 8th Science Teachers, East Grand Middle School

Carla Potts, Scott Hicks, Darci Kissler, Abby Loberg, Kathy Young, Tim Carlin, Missy Wengert, Becky Garrett,

Michelle Whalley – EGMS Teacher Chaperones

Zach Boor and Tiffany Gatesman – Middle Park High School Biology Teachers

Echo Zoyiopoulos, Martine Pearson, Peg Van de Voort, Corey Saines – MPHS Teacher Chaperones

Volunteers – where would we be without you?!

West Grand Watershed Week

Tim Haynes and staff at Climax Molybdenum Mill

Kem Davidson – Colorado River District/Wolford Mountain Reservoir

Dr. Barb Shaw – Western Regional STEM Specialist, CSU Extension Office

Caitlyn Taussig – Grand County 4H Coordinator, CSU Extension Office

Jon Ewert, Chris Hill, and Rachel Lenier – Colorado Parks & Wildlife

Cookie Landing and Annie Sperandio – Bureau of Land Management (BLM), Rangelands

Tom Clark – Mayor of Kremmling

Jeremy Bock – Kremmling Sanitation District

Randy Townsend – Town of Kremmling

Kelly Larkin-McKim – United States Forest Service

Paula Belcher – BLM Hydrologist, Kremmling Field Office
Marissa Lorenz – BLM, Denver
Melissa Dickard – BLM Fisheries Biologist, Denver
Jay Thompson – BLM, Denver
Nathan Redeker – BLM intern, Denver
Carol Dawson – BLM State Botanist, Denver
Katherine Wenzsell – BLM intern, Denver
Bob Lange – BLM Hydrologist, Meeker Field Office
James Thorneycroft and Staff – Blue Valley Ranch

East Grand Watershed Week

Paula Belcher – BLM, Kremmling Field Office
Elin Capps and Kathy Means – Grand Lake Area Historical Society
John Simmons – US Forest Service (presentations for both 6th and 7th grades)
Michele Simmons – Rocky Mountain National Park(RMNP), CO River District Interpreter
Rebecca Roland, Mandy Cluck, Mandy Oldham, Jean Cross, Mary Downey – RMNP
Jon Ewert and Chris Hill – Colorado Parks & Wildlife
Kirk Klancke – Winter Park Ranch Water & Sanitation District Manager
Caitlyn Taussig – Grand County 4H Coordinator, CSU Extension Office
Scott Linn – Winter Park Optical and Trout Unlimited
Thom Yoder – Granby Sanitation
Hopper Becker – Granby Sanitation
Dan Reynolds – Granby Sanitation
Sebastian Botas – Grand Environmental, Environmental Science intern from Romania
Katherine Morris, Toni Telander, Robert Cox, Scott Powers, Stacy Parker, Debbie Briggs, Catherine Trotter, Irena Frick, Ann Sanders, Amy Bausano – Parent chaperones

Bug Week

Jon Ewert – Colorado Parks & Wildlife
Tony Wasson – Red Tail Rafting, Field Trip and brought additional waders
Rob Firth, Darlene Carter – Trout Unlimited
Kirk Klancke – Winter Park Ranch Water and Sanitation District Manager
Marie Koepke, Lisa Burg, Brad McClain, Ivana Arnold, Carrie McManigal, Jenna Golnik – Parent chaperones

Other help we very much appreciated

Carol Culbreath – Grand River Ranch Manager, use of facilities
Paula Belcher and Kremmling BLM – donated the use of eighteen pairs of waders
Marti Lund and Bernie McGinn – Town of Grand Lake
Jennifer Baker, Reggie and Nancy Paulk – private land use
Mike Wageck – Winter Park Sanitation property and facilities use
Winter Park Visitor Center – facilities use on a very cold day
Highland Lumber – facilities use on a very cold day
Winter Park Ranch Water & Sanitation District – facilities use on a very cold day
Kristi Martens at Cozens Ranch – facilities use on a very cold day (also interesting lunch talk)
Kirk Klancke and Darlene Carter – use of house on a very cold day as well as one pair of dry pants
Thom Yoder at Granby Sanitation – use of facilities on a very cold day