

POWDER BASIN WATERSHED COUNCIL

presents

POWDER RIVER CLEANUP

GEISER-POLLMAN PARK - SATURDAY - SEPTEMBER 24, 2016

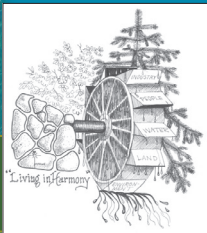
GEISER POLLMAN
PARK

Saturday
9-24-2016
10:00am-1:00pm

Snacks & water
provided! Raffle!

Pre-register
541-523-7288

Did you know volunteers
pulled over 700 pounds
of garbage from the
Powder over the past year?
Help us keep the
Powder River clean!



2034 AUBURN AVE., SUITE B, BAKER CITY, OR 97814
(541) 523-7288 WWW.POWDERBASINWATERSHEDCOUNCIL.ORG

Funding for this project was provided by the Oregon
Watershed Enhancement Board and
Myer Memorial Trust



PBWC would love to hear your feedback about *The Thalweg*,
8 email us: pbwcoutreach@qwestoffice.net

Powder Basin Watershed Council

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Dorothy Mason
Director at Large

Lukus Gray
Director at Large

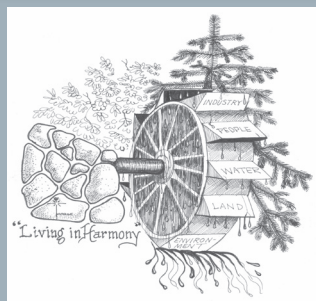
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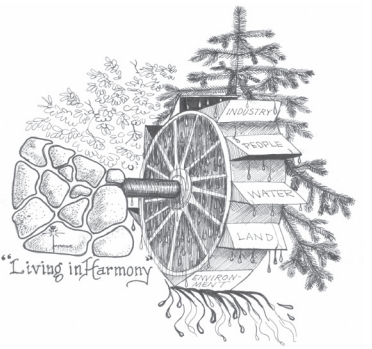


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THE THALWEG



SUMMER 2016

"A line drawn to join the lowest parts along the length of a stream, defining its deepest channel"

LIVING IN HARMONY • QUARTERLY NEWS FROM THE POWDER BASIN WATERSHED COUNCIL

What Has Your Watershed Done For You Lately?

How watersheds contribute to a healthy and prosperous community

By Christo Morris, Executive Director
Powder Basin Watershed Council

A watershed is generally defined as an area of land drained by a common waterway; however, there are a variety of other characteristics that are also used to describe watersheds and how they function. These are characteristics that can be measured and are known collectively as ecosystem goods and services. They include things like water storage, water distribution, flood control, and water quality (Table 1). As is often the case, we may not even realize how much we depend on some of these characteristics until something goes wrong. The challenge for any community is recognizing the different aspects of a watershed and deciding which ones to manage for based on its values.

The good news is that, in many cases, the components of a watershed support each other through direct and indirect effects, so there may be no need to choose one over the other. For

example, trees and shrubs (Figure 1) that grow along rivers and creeks help prevent pasture loss caused by bank erosion, especially during flood events (Figure 2). In addition, they help prevent downcutting, which can lower water tables and lead to sagebrush encroachment into pastures. They also provide shade, which helps lower water temperatures and benefits fish.

Watersheds are also described by the hydrologic cycle.

Many people know the basic components of this process: precipitation occurs,

water flows downhill until it reaches the ocean, evaporation occurs and then the cycle starts over again. However, there are many steps in between that can significantly affect how a watershed functions (Figure 2). For example, when precipitation falls, it doesn't always make



Fig.1 Photo depicts a healthy riparian environment on Rock Creek, Meghan Rorick, PBWC Monitoring Coordinator

it all the way to the ground. Sometimes it lands on plants and sticks to leaves or branches, without falling to the soil surface. If the sun comes out and warms the air, the water that was intercepted by vegetation can evaporate right back into the air, without contributing to soil moisture or streamflow. It's important to consider that if vegetation changes, such as when Juniper trees move into sagebrush shrublands, the amount of precipitation that reaches the soil can decrease even more. Another change that can occur when Juniper trees crowd out sagebrush is how much water soaks into the soil instead of flowing downhill on the soil surface. Juniper trees compete with other vegetation for water and as they increase their density, they reduce the amount of shrubs, grasses and herbs that can

Continued on page 2....

Table 1. Characteristics of watersheds valued by many communities.

Characteristics	Influenced By:
Storage	Snowpack, reservoirs, beaver dams
Distribution	Topography, canals/pipelines
Timing	Temperature, groundwater storage
Quality	Vegetation, land use
Flood Prevention	Floodplain access, land use, weather
Fish Habitat	Water quality, velocity, vegetation, connectivity
Erosion	Slope, vegetation, fire
Recreation	Water quality, quantity, access
Evaporation	Temperature, vegetation, depth
Velocity	Topography, channel shape, vegetation

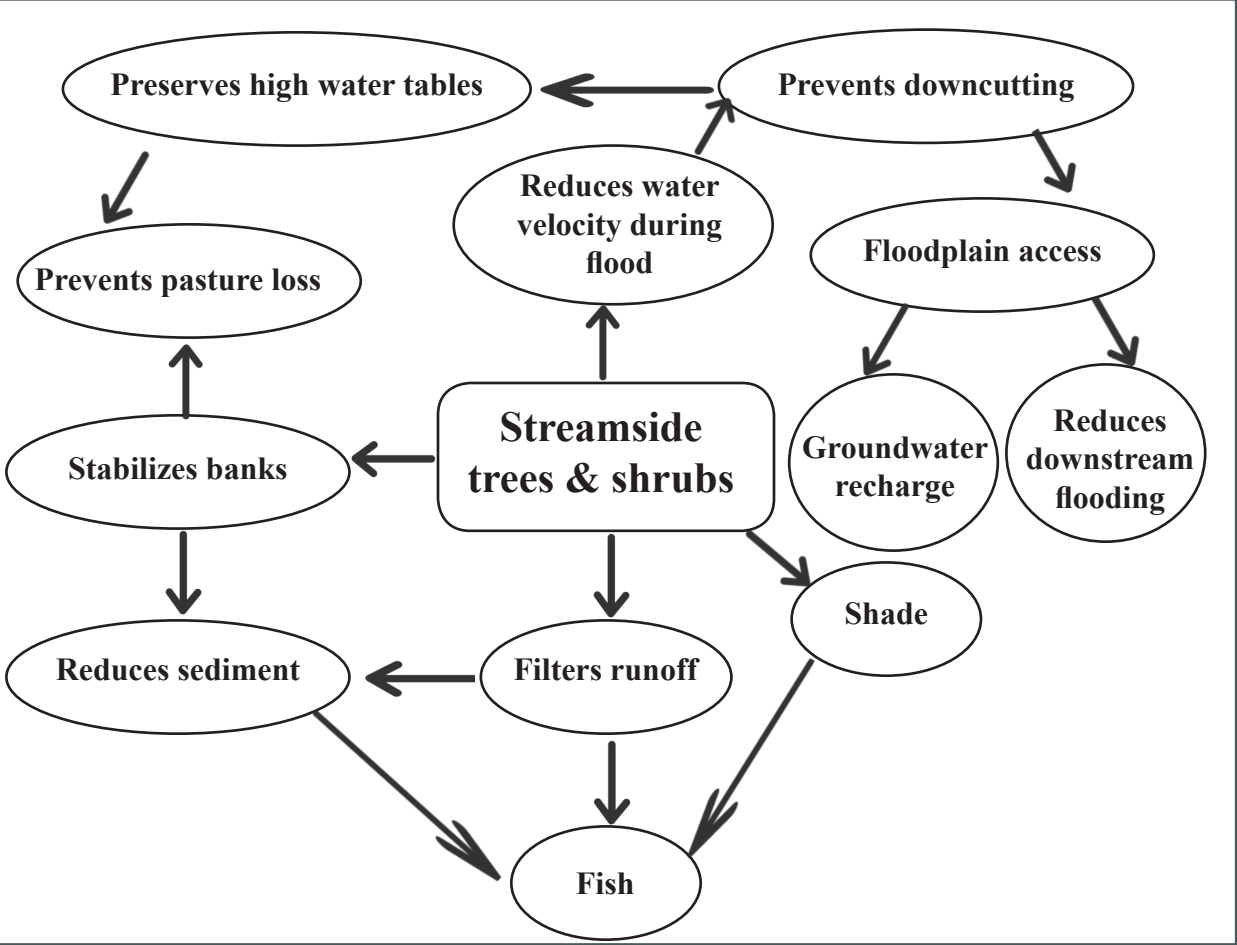
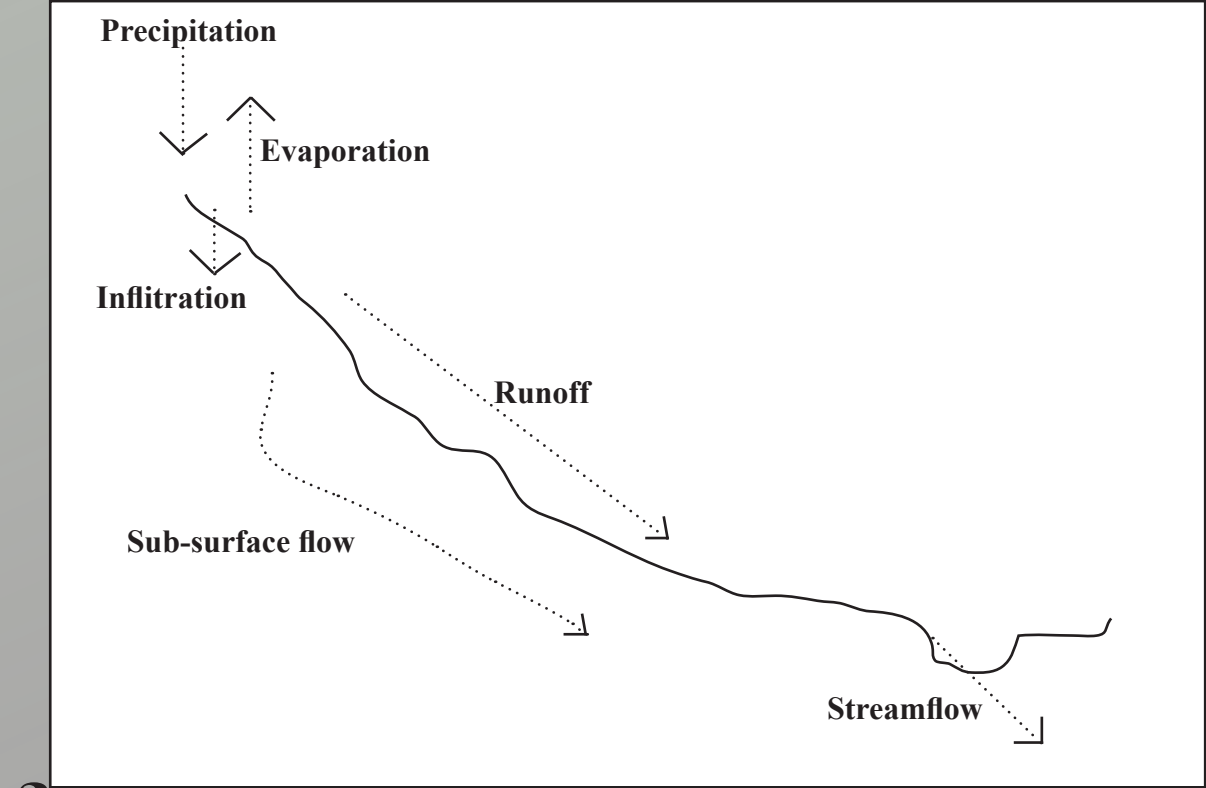


Figure 2. Direct and Indirect effects of shrubs and trees on streambanks.

survive around them. This results in bare ground between trees. As water collects on the soil surface it can run downhill without hitting any plant stems, which cause water to slow down and soak into the soil. This results in more water flowing over the soil surface, which increases erosion along with flood potential in streams and rivers.

As Illustrated by the examples here,

watersheds are complex systems and the connections between the various components are not always clear. The more we understand the many steps that water takes as it flows from the top of our watersheds to the bottom, the better we can manage watersheds for the characteristics that we value.



2 Figure 3. Some of the steps water takes as it flows through a watershed.

Project Spotlight — Clear Creek Restoration Design Flying to Completion

By Anna Morgan, Outreach Coordinator,
Powder Basin Watershed Council

On July 7, 2016 you may have noticed something odd flying through the sky in Pine Valley. Starting in the early hours, engineers and operators gathered in fields south-east of Halfway to fly not one, but two drones over a nearby creek.

Many people cringe at the mention of the word



Clear Creek, Halfway, Oregon. Photo by Anna Morgan

drone, being that it can be associated with military turmoil and invasion of privacy in our modern times. In reality, however, drones can be used for a wide variety of tasks, including data collection for the management of natural resources and disaster relief. Michael Toscano, president and CEO of Aerial Unmanned Vehicle Systems International (AUVSI) discusses the public perception of drones to the Senate Judiciary Committee on March 20, 2013:

“You have probably noticed that I do not use the term “drone.” The industry refers to the technology as unmanned aircraft systems, or UAS, because they are more than just a pilotless vehicle. A UAS also includes the technology on the ground, with a human at the controls. As I like to say, there is nothing unmanned about an unmanned system. The term “drone” also carries with it a hostile connotation and does not reflect how UAS are actually being used domestically. UAS are used to “Clear Creek” Continued on page 6...

"Clear Creek "continued from page 6....

the needs of landowners while providing resistance to future flood damage.

Since 2015, the Lower Clear Creek Restoration Project has encompassed six landowners with properties south of Highway 86. Engineer, Susan Firor reports that the goal of the project has been to develop low-impact restoration designs that increase aquatic habitat and function while addressing agricultural and ranching needs for each of the properties. In this sense, a balance will need to be created to address human and environmental needs of the creek. Although challenging, a successful implementation of the project can be accomplished through the cooperation of landowners and the Council that promotes health of the watershed and creates efficiency and protection for landowners.

More recently,

engineers met once again with landowners to discuss the final products of their survey reports. Using the data collected by the drones, the engineers were able to set out a detailed plan to stabilize banks and prevent further erosion and widening. Most of the plan relies heavily upon revegetation of bare banks and diversion upgrades. By doing these improvements, landowners will gain better control of their water intake, and riparian vegetation will stabilize banks and reduce pasture loss. Some other proposed alternatives included: weed and debris removal, temporary and permanent fencing, creating livestock access points or off-channel watering, and adding aquatic habitat structures, in addition to the maintenance alternatives required with most restoration projects. Many landowners, having owned their properties for decades, are eager to move on with the process and hope to begin implementation on a final restoration project soon.

The project arrived out of necessity for landowners, but there have also been gains in terms of fish habitat. According to prior surveys, the entire length of Clear Creek provides 7.2 miles of spawning and rearing habitat for threatened fish. In fact, it has been listed as critical bull trout habitat and maintains a resident population in the headwaters, although, many landowners would agree that it has been quite some time since they have seen bull trout coursing through their creeks. Researchers have identified that migration barriers, sediment load, loss of habitat complexity, and changes in water quality are threats to the recovery of this species.



Gulick Road Bridge, June 2010. Photo provided by Halfway resident, Jim Young.

The Council hopes to address these concerns by adding habitat structures along the creek which will create shaded pools necessary for fish. Additionally, diversion upgrades have the potential to address some of the sediment transportation issues in time and remove barriers to fish movement. Riparian plantings are also integral to healthy streams because they provide shade to prevent high water temperatures, as well as increase habitat complexity, and act as buffers both for flooding and runoff.

Once the project designs are finalized, the next step is to acquire funding for the construction of the designs. The Council will apply on behalf of the landowners for public funds from the Oregon Watershed Enhancement Board, as well as private foundations that support development of fish habitat. If all goes well, construction could begin as early as next summer.



Engineered bank stabilization log structures on the McMullen Slough Project, 2014.

Meet Our Board Members

By Anna Morgan, Outreach Coordinator,
Powder Basin Watershed Council

The Council's Board consists of community members with diverse backgrounds and interests, but who share a common goal in protecting the Powder Basin watershed. It is through their hard work, diversity, and experiences that the Council functions as a successful not-for-profit. Specifically, board members ensure the Council is operating within its bylaws and budget, and oversee staff and projects. Among the board members, our newest, but by no means new to helping their community, include: Andrew Umpleby, Dorothy Mason, and Lukus Gray.

Andrew Umpleby

Some may know Andrew as the District Manager of the Powder Valley Water Control District in North Powder, where he lives with his wife, Janelle, but to the Council, Andrew provides a perspective that is both thoughtful and unique. Water issues have been a part of Andrew's life since the very beginning, being raised on a farm in Eastern Oregon and throughout his career. After receiving



4 Board Member, Andrew Umpleby and his wife Janelle Umpleby

his degree from Oregon State University in Agricultural Sciences and a minor in Crop Production, Andrew took over the position as PVWCD District Manager from his brother, who had previously taken over the position from their father.

Recognizing a need to take care of the watershed and for agricultural representation within the Council, Andrew joined the PBWC Board of Directors in February 2016. Although he is very busy during irrigation season, he attends monthly meetings and offers the Council insight into a very important part of the agricultural community. He understands the necessity to find common solutions that work for everyone, stating "We live on a beautiful side of the state and we need to take care of it—we need to do it in a way that benefits everyone."

"We live on a beautiful side of the state and we need to take care of it—we need to do it in a way that benefits everyone."

When asked about the future of the watershed he explained that he hopes that one day he can provide for his family what his father provided for him: a little swath of land here in Eastern Oregon and the ability to grow up on a farm and learn how to work. For this, Andrew is grateful to his father "because now we have a fancy piece of paper, but also some common sense"- a goal any Eastern Oregonian can get behind. Recently, Andrew has announced to the Council of his resignation to seek big opportunities on the horizon.

During an interview Andrew expressed a deep satisfaction

with farming saying, "I love farming- I miss it. I just like watching crops grow." He is excited to return to it as an occupation in the near future. He hopes that the Council can continue to get projects on the ground and work with local landowners to develop stronger relationships with each other. He believes that if different interests can find common ground, everybody can find a way to be happy. "We all have to work together so we can keep what we have."The Council is sad to see him go, but wishes him and his wife well in their endeavors. We have no doubt they will be successful on their new journey.

Dorothy Mason

Dorothy is wonderful. She has hiked the Elkhorn Crest Trail from Marble Creek to Anthony Lakes twice, and climbed Elkhorn Peak five times. She has volunteered countless number of hours throughout her entire life to many organizations. She has been a member of the Philanthropic Education Organization and an Education Committee Chair for eighteen years. Somehow she also manages to find time to coordinate the Baker Outdoor School and Ladd Marsh Bird Festival youth activities while also serving as a board member for the Powder Basin Watershed Council. Dorothy is the epitome of a community servant.

After earning a degree from the University of Nevada Reno in Wildlife, Recreation, and Range Management, she has lived her life working to better the world. With her education in Natural Resources and a love of the outdoors, she worked for the Bureau of Land Management for 38 years as a manager, wildlife biologist, range conservationist, recreation planner, wild horse and burro specialist to name a few, and has lived just outside of Baker for 26 years with her husband Bob. After raising their two children through the public school programs, Dorothy retired and seized it as an opportunity to give back to her community.

It's no surprise that Dorothy provides a *Continued on pg. 5...*



Board Member, Dorothy Mason

perspective to the Board that is not only valuable, but also necessary. She's a mother, volunteer, educator, role model, conservationist, and professional; she is knowledgeable and she is always kind and friendly. Her attitude towards life embodies the deeper purpose of organizations like the Powder Basin Watershed Council-- when she reflects upon the vigorous hikes to the Elkhorn Peaks she explains, "I value the opportunity to do this whenever I can. I love looking forward as far as you can see at the land and the open space and hoping that future generations can enjoy this same peaceful feeling."

"I love looking forward as far as you can see and hoping the future generations can enjoy this same peaceful feeling."

Dorothy's goals for the Watershed Council include to become more involved in the School District. There have been many opportunities throughout the year to participate and lead school activities, such as the field trips for the Baker Summer School program. Dorothy hopes to continue these partnerships with educational institutions and further other natural resource programs in the area. Additionally, Dorothy says she would like to

the County business" because "Many people have outdoor activities in their life, for both business and pleasure. There are so many [people] that participate in public meetings. Education is an important part of this, and the PBWC greatly assist with this."

Lukus Gray

Agriculture runs deep for Lukus, being the majority of family business all the way back to his grandfather, he was born and raised in a family farming and ranching operation in North Powder. After earning a degree from OSU in Crop Production Science, Lukus returned to his family operation in North Powder with his wife, Lindsay, and their five children: Jaycee, Tycen, Graycee, Trysten, and

Treyce. Together, along with Jerry, Shelly and Justus Gray, the families manage the entire ranching and farming operation year round.

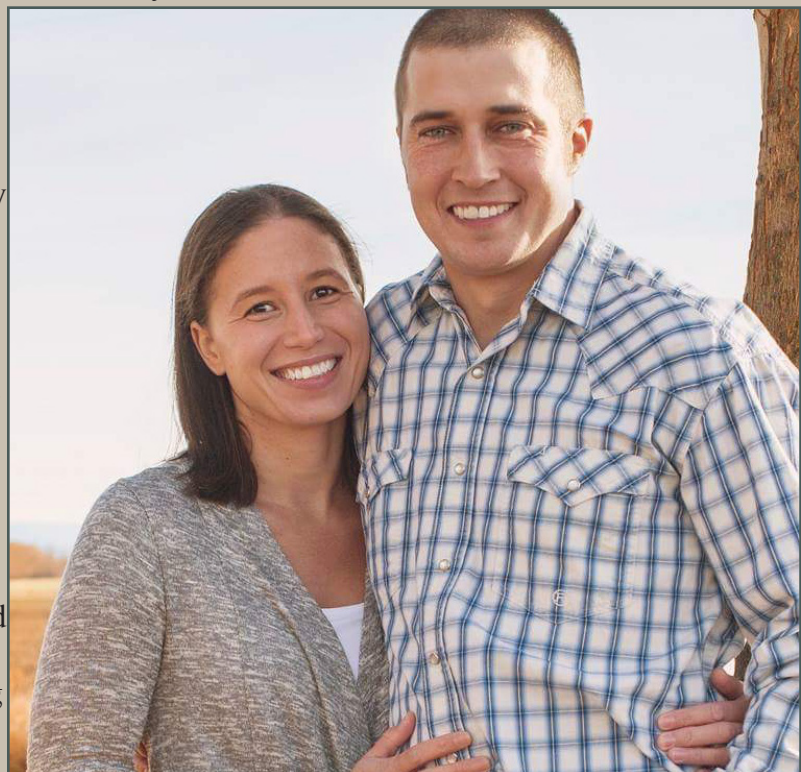
For Lukus, family farming in North Powder is an ideal way of life, exclaiming, "I love the mountains that surround where I live and the freedom of being my own boss. I'm involved in our family farming operation with my primary focus being on crop production and farm management. One of my biggest challenges that I face when it comes to work is finding a balance between work and family time. I don't always get to go on family camping trips in the summer because when the crops are ready I need to be on the farm ready too. However, one of the best aspect of my job is that I can take my kids with me to work.

Whether its riding in a tractor, truck, or on a hoarse- spending time with my family is very important no matter how we do it!"

As with many challenges families face in Northeast Oregon, Lukus and his family have had to overcome years of drought, making "managing water for crops very tricky and stressful." Lukus explains that,

"Water is vital to our operation- to conserve water and to apply it more efficiently to our ground we have converted many flood irrigated pastures to central pivot irrigation systems." These challenges however, only prove the adaptability and resilience of the Gray family. Lukus reflects upon the hard work required for running his family operation, saying, "Working long hours and sometimes seven days a week is all worth while when I know my children are being raised how I was. We are so blessed to live where we do and to be able to have my children raised around agriculture and in a small community. My wife is my biggest supporter and my best friend. She is able to be a stay at home mom which is very important to both of us, but will always help me whenever I need it. Her commitment to our future is as strong as mine, and I know she will always be there for me."

Recognizing the need for agricultural representation in the Council and more community involvement, Lukus became a board member in January 2016. He took over after his father, Jerry Gray, as the Board Treasurer/ Secretary. Although extremely busy, currently helping manage up to 10,000 acres of grazing lands, including 1,100 acres of irrigated crops and about 400 cattle, Lukus manages to provide helpful insight into Council business and has become a valuable addition to the Board. He feels that the Council is "a great tool to have when someone has questions about how to improve water use and quality and how to fund water enhancement projects." He would like to see the community recognize the full potential of the Council and hopes to see it grow in future years.



Board Member, Lukus Gray and his wife, Lindsay Gray

"Clear Creek" continued from page 2...

perform dangerous and difficult tasks safely and efficiently. They were used to assess the flooding of the Red River in the upper Midwest. They were used to help battle California wildfires. And they are being used to study everything from hurricanes in the Gulf of Mexico, tornadoes in the Great Plains, and volcanoes in Hawaii."

These particular drones in Halfway were special because they carried equipment that was used to create a 3-D drawing of Clear Creek. One of the drones, the DJIS1000, had a LiDAR Pod attached to it. LiDAR, also referred to as Light Detection and Ranging, is a surveying technology that measures distance by illuminating a target with a laser light. It is primarily used to make extremely accurate, high-resolution maps and aids in better understanding how water flows through a stream system. This particular LiDAR drone came all the way from a company in Scotland and required a team of three pilots from a Portland-based company, Aerial Inspection Resources. The LiDAR drone was surprisingly quiet, contained six propellers and weighed just under fifty pounds, but could take thousands upon thousands of data points from forty meters in the air.

The second drone, the DJIInspire, carried photographic equipment that took thousands of photos which were later digitally stitched together to make one large photo. The whole process took approximately two hours of flight time; however the drone batteries needed recharging about every fifteen minutes so the survey was spread out over two days. The data acquired from both drones was then used to create a plan for restoration designs on a portion of Clear Creek, near its confluence with Pine Creek.

The completion of this survey is an important milestone, both for the Council and for the landowners on Clear Creek. For several years they have worked together to establish funding and develop a plan to address their many concerns. This collaboration began when landowners along lower Clear Creek approached staff from the Council about their concerns over bank damage from the floods in 2007 and 2010. But first, to understand the necessity of the project you must also understand Clear Creek....



Drone pilots from Aerial Inspection Resources, with LiDar drone, July 7, 2016

Clear Creek, a tributary to Pine Creek in the Brownlee Subbasin flows from the Eagle Caps to its confluence with Pine Creek and is approximately 19 miles long. Landowners became concerned after massive flooding in 2008 and again in 2010 where large debris was forced downstream and banks were quickly eroded away causing fence and pasture loss. After these flooding events, landowners began to notice more and more sediment building up in the creek, often widening it in places and unable to control the path of the main channel. While any landowner knows that controlling the creek completely was out of the question, they sought a solution that would buffer the next big flood event.

Upon completion of the Point of Diversion Survey, landowners met with the Council to discuss the challenges they faced along the stream. Following this,

the Council began to seek funding for a design project to hire an engineering firm. In April of 2015, the Council was awarded the amount needed by the Oregon Watershed Enhancement Board. Shortly after, the Council hired TerraGraphics Environmental Engineering, Inc. and Quadrant Consulting, Inc. to collaborate on designs for landowners that met *"Clear Creek" continued on page 7...*



Up-close of drone with LiDar equipment, July 7, 2016

Fall 2016 Calendar of Events

September 2016

- **September 3-5th- Baker County Fair and Panhandle Rodeo**

Pine Valley Fairgrounds (all day events)

Fans will need to purchase a \$4.00 Baker County Fair and Panhandle Rodeo wristband to enter the grounds which will be good for the entire weekend. Tickets are \$8.00 for our evening Rodeo performances on Saturday, Sunday and Rodeo mid-day performance on Monday.

- **September 7th, Wednesday- Monthly Council Meeting**

5J School District Building, 6:00pm

Join us for our monthly Council meeting, coffee and snacks provided

- **September 9-10th- Pine Fest Music Festival**

Pine Valley Fairgrounds, Halfway, Oregon (all day event)

This will be the fourth annual music festival at the Pine Valley Fairgrounds in Halfway, Oregon, featuring great music from bands based in the Pacific Northwest. Local musicians will perform between the headliners, so there's something happening all the time. For more information visit: www.pinefest.org

- **September 24th, Saturday- PBWC Fall Cleanup Event**

Geiser-Pollman Park, Baker City, Oregon, 10am-1pm

We need your help cleaning up the beautiful Powder River at our annual Fall Cleanup Event! All families are welcome, snacks and water provided. Dress for the weather, all other materials will be provided. Please pre-register at pbwcoutreach@qwestoffice.net or 541-523-7288.



October 2016

- **October 5th, Wednesday-PBWC Annual Fall Tour**

Stay tuned for more information about this year's Fall Tour Event. For more information visit our website at www.powderbasinwatershedcouncil.org

- **October 30th, Sunday- Eagle Valley Fall Festival**

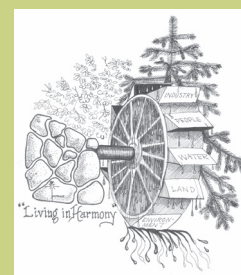
Eagle Valley Grange, Richland, Oregon (all day event)

Festive small town celebration of all things fall and halloween. Always the Sunday before Halloween this festive family friendly event includes kids games and activities for all ages, costume contests, bobbing for apples, games, and at the end of the evening locals host an annual "Trunk or Treat-ing". A great way to end a fall weekend in the Wallows along the Hells Canyon Scenic Byway

November 2016

- **There will be no Council meeting for the month of November**

All community members are welcome to attend our meetings, for more information please contact the Council at pbwcoutreach@qwestoffice.net or call 541-523-7288



We want to hear from you! Do you read
The Thalweg? Let us know your thoughts!

email us: pbwcoutreach@qwestoffice.net