Cool Things On Our Public Lands

As we head into Spring, some cool things are happening on our public lands as it wakes up from its long winter's nap!

Black bears will be emerging from winter dens during March and April. Mature females that were pregnant entered dens back in October, gave birth to their young while in the den. The new born cubs nursed while their mothers slept. They will emerge together and begin eating grass, roots and tubers from various plants, insects, and eventually deer fawns and elk calves when they whelp in May and June. Bears can often be seen foraging on open hillsides in canyonlands and openings in forested areas, rolling rocks in search of insects and digging for roots and tubers of plants such as wild onions. They will also "graze" on grasses, sedges, and forbes.

Photo courtesy of Mark Penninger

Beaver dams can still be seen on the North Fork Burnt River below Whitney Valley on County Road 529. Check them out and notice how much water they are storing behind their dams. Abundant beaver dams help store water during times of abundant runoff and slowly release it in the Summer and Fall to keep our rivers flowing, even during times of drought. As this past Winter's abundant snow melts, where there are beaver dams, look to see how wide the ponds are. As the water spreads out onto the land, some of that water is soaking into the ground, recharging the water table. This newly stored groundwater will help plants flourish in the summer months as well as add water back into the streams. Right now there aren't lots of beaver dams on public lands but when we finally get a lot, we will see huge improvements in wildlife habitat, fish habitat, stream temperatures and summer stream flows.

Photo courtesy of Suzanne Fouty

Do you have a question, comment, or concern related to watershed conditions on public lands? Please let us know so we can help!
http://www.powderbasinwatershedcouncil.org/get-involved

-Cool Things on Our Public Lands brought to you by:
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Hydrologist/Soils Specialist
Forest Service
Wallowa-Whitman National Forest,
Whitman Ranger District

Funding for this project was provided by Oregon Watershed Enhancement Board and Idaho Power Company

OWEB

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THE THALWEG

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

SPRING 2017

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

How can Off-Channel Watering Benefit you?

The facts about off-channel watering and how it can help improve livestock operations

By Anna Hayes
Powder Basin Watershed Council

Farmers and Ranchers, did you know that you can protect your land, demonstrate stewardship, and get financial and technical help to do so? That's right, you can stop erosion, improve your water quality, and improve the health of your livestock all at the same time.

How you might ask? Well, as many may have noticed, there have been more and more efforts to encourage livestock to move away from streams using off-channeling watering methods. This effort stems from the desire by many folks in the community to improve local stream conditions. Perhaps you have noticed that as decades have gone by where livestock have had unlimited access to riversides and waterways, land and water supplies have become worn down and degraded. In fact, repetitive access to riparian areas by livestock has shown to reduce vegetation on streamsides and/or damage banks, leading to an increased susceptibility to erosion, river widening, and eventually loss of pasture during flooding events.

Ranchers have also noticed that as cattle and other livestock enter streams they leave behind wastes that contain harmful bacteria that can cause illness in animals and humans. In addition to the effects on the livestock and land, allowing unrestricted access to creeks by livestock can cause a domino effect of negative consequences for water quality, fish, and wildlife. For example, the removal of vegetation in riparian areas can eliminate shade, resulting in higher water temperatures. Higher water temperatures can lead to reduced dissolved oxygen concentrations which can then lead to the "death" of a water body, meaning, that fish and plants can no longer live in that water body. Lower dissolved oxygen combined with more organic matter, like animal wastes, can result in what is referred to as eutrophic conditions, promoting the growth of parasites, bacteria, and invasive species. So, while allowing livestock to enter streams may have been convenient in the past, now farmers and ranchers are battling with even more complications!

Livestock access off-channel watering troughs Photo credit: NRCS February 2012

Regardless of these many realizations however, ranchers must face the facts: cows need water, and the easiest, most straightforward way to obtain it is by allowing them to access the nearest creek. Although some landowners acknowledge this truth, they still feel that the negative impacts created by livestock on creeks outweigh the convenience, and have opted for off-channel watering methods. In some cases, these landowners have already lost feet of pasture because of erosion and flooding, and in others, landowners have grown tired of treating livestock with expensive medicines because of parasites and broken legs due to muddy banks. Many of these landowners have been pleased with the success of their off-channel projects and now feel comfortable removing all their cattle from the creeks year-round. So now you might be asking yourself, what exactly is off-channel watering? How can you find out more about it? Where can you go for help?

What is Off-Channel Watering?

Simply put, off-channel watering is offering alternative sources of water for livestock from the main channel of creeks and irrigation ditches using pumps, wells, troughs or tanks, spring developments, ponds, rainwater catchment systems or pipes. With an increase in agricultural technology and conservation science, there are now many options to the type and range of

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"Off Channel" continued from page 1...

alternative watering projects.

Direct Benefits of Off-Channel Watering

Although the benefits of off-channel watering transcend economic and environmental reasons, there are several straight-forward, direct benefits which include:

- Provides more flexibility in managing grazing systems, manure distribution and pasture utilization
- Provides a year-round supply of disease-free, freeze- proof water for livestock that is warmer in the winter and cooler in the summer
- When used in conjunction with protected heavy-use areas, they provide a solid, mud-free watering area
- Decreases soil erosion and helps maintain stable stream banks as well as reduces damage to irrigation ditches, preventing leakage and improving efficiency
- Improves water quality in streams while reducing incidents of injury and illness in livestock (NRCS 2016)

Considerations

When choosing a livestock watering system that works for you there are many factors to consider, for example, site layout, water requirements, availability and cost of utility water and electricity, seasonal water use, size of the herd, and the location of the water source. Many livestock owners have found that some systems work better than others based on their individual needs and cattle requirements. Types of alternative watering systems can include: AC electrical pumping systems, gravity flow systems, improved cattle crossings, ram pumps, and solar DC pumping systems. Nosepumps (pictured below) are a great alternative to paying pumping costs and increase water efficiency. Cattle can access water at their own demand and are easily trained to use the pump.

Who Can Help Me?

Finding assistance at no cost to the landowners is easy too! The Baker County Soil and Water (comprised of Bakery Valley, Keating, Eagle Valley, and Burnt River SWCDS) have been involved in working with private landowners to improve natural resources while benefiting livestock and wildlife since the 1940's. Since that time, SWCD has been successfully implementing off-channel watering projects all over Baker County. Whitney Collins, District Manager of the SWCD, explains that "Our goal is to make it as clear and easy as possible for those interested to get started. The first step I tell landowners that are interested is to contact the SWCD office to set up an appointment to have a Technician visit the property." Additionally, the Powder Basin Watershed Council is working with Idaho Power to provide design services with an IPC Engineer to landowners in the Pine Valley area, where the landowner can discuss their individual needs and desires on a case by case basis. This service can be scheduled after initial consultation with the Powder Basin Watershed Council.

Cattle utilizing Frostfree Nosepumps © Copyright 2002-2017. Frostfree Nosepumps.

How Can I Afford It?

After a technician or engineer visits a property and a plan is developed that the landowner finds suitable, the next step would be to find funding options available. Collins explains that "There are numerous funding sources accessible through the four local SWCD's, various government agencies, and non profit organizations; therefore the extent of the available funds depends on the individual projects and circumstances." Some of the funding available to agricultural producers can be obtained through the 2014 Farm Bill Regional Conservation Partnership Program (RCPP) through the Natural Resource Conservation Service (NRCS), Idaho Power Company, or Oregon Watershed Enhancement Board (OWEB).

In the RCPP, NRCS "co-invests with partners in innovative, workable, and cost-effective approaches to benefit farming, ranching, and forest operations; local economies; and the communities and resources in a watershed or other geographic area." The application process has two parts, a "pre-proposal" and "full proposal" application. Although some programs are more geared to handle off-channel watering projects, the NRCS implements RCPP conservation program contracts and easement agreements through four existing NRCS programs:

- **Environmental Quality Incentives Program (EQIP)**

"EQIP is a voluntary program that provides financial and technical assistance to agricultural producers to plan and implement conservation practices that improve soil, water, plant, animal, air, and related natural resources on agricultural land and non-industrial private forestland. Those who submit an application and are accepted into EQIP may receive technical assistance to plan conservation measures. Through EQIP, NRCS provides or covers the cost of professional technical services to develop conservation measures. This includes: on-site assessments, site-specific practice and management plans, and engineering designs." Payments are made to participants after the implementation of the conservation practices, and can be used to cover the cost of: irrigation water management, forest stand improvements, fencing, livestock watering, waste management systems, vegetative buffers, and more.

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"Off Channel "continued from page 2....

- **Agricultural Conservation Easement Program (ACEP)**

"The Agricultural Conservation Easement Program provides financial and technical assistance to help conserve agricultural lands and wetlands and their related benefits. Under the Agricultural Land Easements component, NRCS helps Indian tribes, state and local governments and non-governmental organizations protect working agricultural lands and limit non-agricultural uses of the land. Under the Wetlands Reserve Easements component, NRCS helps to restore, protect and enhance enrolled wetlands.

- **Idaho Power Tributary Habitat Enhancement Plan (THEP)**

"IPC is currently relicensing the Hells Canyon Complex on the Snake River. As part of the process, IPC will develop mitigation programs to benefit fish populations and habitats, including those in the Pine Creek Basin. Upon receiving a license, IPC will implement a Tributary Habitat Enhancement Program (THEP) under the advisement of a technical advisory committee. This program will focus on improving habitat conditions for native trout in the Pine Creek Basin as well as the Indian Creek and Wildhorse River basins in Idaho." Under THEP there are programs which can help landowners cover the cost of off-channel watering projects in the Pine Valley area.

- **Oregon Watershed Enahncement Board Small Grants Program**

"The Small Grant Program is an easy-to-engage-in, competitive grant program that awards funds of up to $10,000 for on-the-ground restoration projects. The program enables landowners across the state to contribute to the Oregon Plan for Salmon and Watersheds and the Oregon Conservation Strategy by committing "small acts of kindness" on their properties for the benefit of water quality, water quantity, and fish and wildlife. From planting native plants along stream sides to reducing sedimentation and erosion from upland farms and ranches, citizens everywhere can make a difference." For more information visit OWEB online at Oregon.gov/OWEB

How Can I Get Started?

You can get started on an application today or you can work with a partner, such as agricultural associations, farmer cooperatives or other groups of producers, or state or local governments, American Indian tribes, water and irrigation districts, and nongovernmental organizations, to apply at any time throughout the year. The application deadlines vary depending on the program. For more information about the application types and deadlines in Oregon you can refernce the following resources:

Resources

If you are in the **Pine Valley area** and you would like to speak to a Project Planner:
Powder Basin Watershed Council
2034 Auburn Avenue, Suite B, Baker City OR 97814
(541) 523-7288 or pbwcoutreach@qwestoffice.net
www.powderbasinwatershedcouncil.org

To meet with an Agricultura Technician:
Baker Valley SWCD, Burnt River SWCD, Eagle Valley SWCD, and Keating SWCD
3990 Midway Lane, Baker City, Oregon 97814-1453
Phone: (541) 523-7121 X109
whitney.collins@bakercountyswcds.com

Questions about specific programs:
NRCS Baker City Service Center
3990 Midway Lane, Baker City, Oregon 97814-1453
Phone: (541) 523-7121
Fax: (855) 651-9094

Idaho Power Tributary Enhancement Plan
Steve Brink
208-388-2224 • sbrink@idahopower.com

EQIP Program Contact
Todd Peplin
503-414-3292
https://www.nrcs.usda.gov/wps/portal/nrcs/main/or/programs/financial/eqip/

For more information about Frostfree Nosepumps please contact:
Frostfree Nosepumps Ltd.
P.O. Box 675, Rimbey, AB, Canada T0C 2J0
Phone: 403-843-6740 Toll Free: 1-866-843-6744
Email: info@frostfreenosepumps.com

"Burnt River "continued from page 6....

phosphorus, E. Coli, Biological Oxygen Demand (BOD), and pH (ODEQ, 2015).

The Powder Basin Watershed Council also monitors water quality in several streams in the Burnt River subbasin, including many tributaries above and below Unity Dam. The Council monitors pH, water temperature, dissolved oxygen, conductivity, and turbidity on a monthly basis. In 2014, several water quality sites in the Burnt River subbasin exceeded the temperature standard of 20 degrees Celsius (Table 4). A few sites also did not meet the dissolved oxygen standard, primarily during the summer months. Only one sample in 2014 exceeded the pH standard. Conductivity and turbidity remained within water quality standards. For more information about the Powder Basin Watershed Council's water quality monitoring program, contact the Council office at 541-523-7288.

The Oregon Department of Environmental Quality is currently in the process of developing Total Maximum Daily Loads (TMDLs) for the streams on the 303(d) list. The agency will also continue to monitor the ambient water quality sites in the basin and update trend reports. For more information on the Oregon Water Quality Index, visit the ODEQ website at http://www.oregon.gov/deq/wq/Pages/WQI.aspx.

Site Name	Station	Land Use	Water Year	OWQI	Condition	Trend
Powder R at HWY 7 (Baker City)	11490	Range	2006-2015	86	Good	No Trend
Powder R at HWY 86	10724	Range	2005-2014	44	Very Poor	Decreasing
Burnt R ds Huntington	11494	Range	2005-2014	71	Poor	No Trend

Table 3. Ten-year status (condition) and trends for DEQ's ambient network sites, for 2006 - 2015 water years.

Site Name	Date Deployed	Number of days data collected	Max Temperature °C	# of days 7 day average above 20°C	# of days 7 day max above 20°C
Burnt River at Bridgeport	7/24/2014	109	25.4	17	35
Burnt River at Lime	8/12/2014	84	27.7	7	38
Burnt River at Huntington	8/12/2014	84	27.5	12	38
Burnt River below Unity Dam	7/18/2014	114	22.9	33	42
Dark Canyon	6/5/2014 & 9/12/2014	29	19.8	0	0
Pritchard SW-1	6/6/2014 & 9/12/2014	28	26.2	0	16
Lawrence SW-1 (above Pritchard)	6/5/2014 & 9/12/2014	29	27.5	0	16
Lawrence SW-2 (below Pritchard)	9/12/2014	54	22.3	0	6
Dixie North Fork SW-2	9/12/2014	54	21.8	0	6
Dixie South Fork SW-3	6/5/2014 & 9/12/2014	29	17.3	0	0
Dixie SW-1	6/4/2014	99	32	45	92
Sisley SW-1	7/20/2014	92	20.4	0	0

Table 4. Continuous temperature data for 12 sites in the Burnt River drainage below Unity Dam, 2014 (PBWC, 2016)

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The Dangers of Downcutting

By Christo Morris, Executive Director
Powder Basin Watershed Council

Although downcutting is a common sight in streams and creeks throughout the West (Fig .1), it is actually evidence of significant hydrologic, economic and biological damage. When a streambed erodes vertically, it can result in lowered water tables, loss of forage for livestock and wildlife, sagebrush encroachment, increased flooding downstream, reduced summer flows and loss of wetland habitats. The process can occur slowly over time without people noticing or all at once due to a flood event. Signs of downcutting include upland plant species (e.g. sagebrush) adjacent to waterways, instead of wetland species (e.g. willows, sedges or rushes) and vertical banks high enough to prevent flood waters from overtopping during typical high flow.

Vertical stream erosion can be caused several different ways. If a stream channel is artificially straightened, water will flow faster which increases its ability to dislodge sediment from the streambed. Streamside vegetation also slows the flow of water in addition to reinforcing the streambed with their roots. Loss of streamside vegetation is the most common cause of downcutting. Lastly, a sudden increase in water volume within the stream channel can also result in downcutting. This can occur after a fire, a clearcut or any event that quickly removes the vegetation from the hills above a stream. Once downcutting occurs, it is very expensive to repair, so prevention is the best course to follow.

Fig. 1. A stream that has downcut due to increased flow and loss of streamside trees and shrubs, resulting in high vertical banks and sagebrush encroachment.

The process of downcutting can be broken into several stages (Fig. 2). The first stage (A.) shows a healthy stream system with plenty of streamside vegetation and natural curves. The second stage (B.) illustrates a stream that has not yet begun to downcut, but is at risk of downcutting because of the loss of streamside vegetation. The third stage (C.) shows the effects of vertical erosion. Once the process has progressed to a point where flood waters are no longer able to overtop the banks, the increased volume of water within the stream channel during flood events causes even more vertical erosion. Since streams are the lowest point in a catchment and act as the drain, as the streambed drops the surrounding water table drops with it. Once a streambed and the accompanying water table drop about three feet, grasses are no longer able to access groundwater during the dry months.

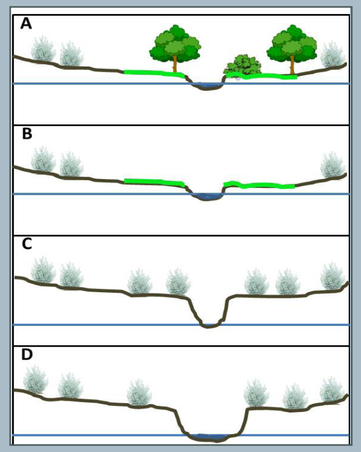

Fig. 2. The four stages of downcutting: (A.) healthy stream, (B.) stream at risk of downcutting due to loss of vegetation, (C.) a stream that has downcut far enough that floodwaters can no longer overtop the bank and grasses can longer reach groundwater with their roots, (D.) a streambed that has downcut all the way to bedrock will begin widening.

Sagebrush, which has a much deeper root system, is much more suited to the drier conditions and will colonize the areas adjacent to streams over time. Downcutting continues until something interrupts it such as bedrock or some form of grade control, such as a a bridge or flat area downstream (D.). At that point, the stream channel begins to widen until a new flood plain develops, which can take many hundreds of years in dry regions. Downcutting can occur evenly across a reach of streambed or can initiate at what is called a headcut (Fig. 3). A headcut is where the streambed drops dramatically because of a disturbance which results in turbulence in the flow of water that erodes the vertical face of the drop. This can cause the headcut to travel upstream overtime, including into tributaries, resulting in rapid downcutting throughout the stream system.

Hydrologic impacts from downcutting begin at the stage where floodwaters can no long spill over the banks onto the floodplain. In addition to contributing to more downcutting, this water, which would normally leave the

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"Downcutting" continued from page 4...

channel and soak into the surrounding soil, is sent directly downstream, contributing to flooding there. In addition, the water that would normally be stored in the soil is no longer present to be released during the dry summer months, thereby reducing summer streamflow. As the streambed continues to erode and the water table lowers with it, economic and biologic impacts begin to occur. Once grasses can no longer reach groundwater during summer months with their shallow roots, they disappear from the streamside, allowing for colonization by drought-resistant species such as sagebrush. What was once a productive and diverse wet meadow now resembles the dry slopes beyond the influence of the streambed. Depending on the width of the wet meadow, forage that once supported livestock and wildlife can be lost from many acres.

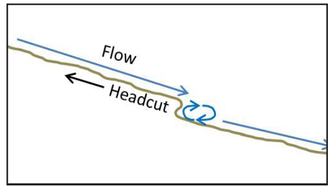

Fig. 3. Downcutting sometimes initiates at a point called a headcut that can migrate upstream, including into tributaries.

As mentioned above, the best approach to dealing with downcutting is to prevent it. Maintaining streamside vegetation is the most effective and least expensive way. Grade control structures can act similarly as bedrock and prevent the streambed from dropping, but are expensive to install. If a headcut is discovered, it can be armored with rocks or concrete to prevent it from migrating upstream, but the downstream damage will have already been done. In some cases, if downcutting is discovered early enough in the process, the planting of vegetation can actually reverse the process and cause sediment to accumulate and build up the streambed, raising the water table with it.

The most important thing is to understand the signs and consequences of downcutting, so that it doesn't progress to a point where resources are unrecoverable. If you suspect you have downcutting on your property and would like advice on what steps to take next, contact the Powder Basin Watershed Council for a free consultation.

Meet the Board Member

Lyle Umpleby

Board Member, Lyle Umpleby, his wife Sharon and son, Andrew

Lyle Umpleby, taking over for his son, former Board Member, Andrew Umpleby, continues the family tradition as the Powder Valley Water Control District Manager and Powder Basin Watershed Council's newest Board Member. Lyle is no stranger to the Council however, having been involved in 1997-2005 when he first managed PVWCD- in fact there have been two generations of Umplebys serving on the Board of the Council at one time or another. He has watched the organization change over time, and recognizes the need for community, agency, and agricultural representation and interworking relationships.

Lyle explains that his role in the Council "is a means for me to keep the PVWCD up to date on activities of the Council as well as keep them informed of opportunities for conservation and/or restoration projects." He also provides valuable input, as a former Anderson Perry Engineering firm employee and Agricultural Engineering Technology graduate from Oregon State University, on behalf of water-users and agriculturalists to the Board of Directors which helps guide the Council through projects which benefit the entire region.

Lyle's family moved to North Powder in 1958, where he was raised and graduated from High School. Now, Lyle spends his days managing a 245-acre farm, so needless to say, he doesn't have very much extra time, but he understands the value of water conservation and restoration opportunities as a holistic management solution, stating "Since I have always been in the irrigation and agriculture business, my interests would naturally be in water conservation/ management opportunities. This is not at the exclusion of habitat and restoration work that also needs to be done. There needs to be a balance as we are all called to be good stewards of the land." In between volunteering with Council and working for the Powder Valley Water Control District, as a hobby, Lyle finds time to ride his Honda Goldwing Motorcycle.

The State of the Burnt River

By Meghan Rorick
Powder Basin Watershed Council

History

The Burnt River subbasin is located mostly in Baker County, and is bordered by the Blue Mountains to the west and the Snake River to the east. Before the arrival of European settlers, several Native American tribes, including the Nez Perce, Shoshone, and Umatilla, used this area for its hunting and fishing grounds (NPCC, 2004; USBR, 1997). In the early 1840s, European settlers began to move through the valley along the Oregon Trail on their way to the Willamette Valley. In the 1860s, gold was discovered in Eastern Oregon, and the first settlers in the area were prospectors. Soon after, ranchers and farmers began to settle in the valley (USBR, 1997).

Ranching and farming are currently the most prominent land uses along the Burnt River (Figure 1). Many of the farm and ranching operations have been in the area for several generations. The earliest water rights date back to the early 1860s, when canals and ditches were constructed to bring water from the Burnt River to the region's mines, ranches, and farms (USBR, 1997). As the valley developed, however, river flows in the summer were often insufficient to support all the operations in the valley. In the 1930s, the US Bureau of Reclamation and the State of Oregon began proceedings to build a reservoir to supply the subbasin with a supplemental supply of water for irrigation. Unity Dam was completed in 1937, and Unity Reservoir has a maximum capacity of about 25,000 acre-feet. The dam and reservoir are operated and maintained by the Burnt River Irrigation District, which supplies irrigation water for about 15,000 acres in the Burnt River Valley (USBR, 1997).

Description of the Watershed

The North, South, Middle, and West Forks of the Burnt River flow out of the southern Blue Mountains and merge into Unity Reservoir. The mainstem Burnt River flows east out Unity Reservoir for approximately 100 miles before reaching the Snake River near the town of Huntington. Below Unity Dam, several other tributaries flow into Burnt River, including Camp Creek, Pritchard Creek, and Dixie Creek, before it reaches its confluence with the Snake River.

Land Cover/Use Burnt Subbasin	Public		Private		Totals	
	acres	%	acres	%		%
Forest	177,000	25%	54,500	8%	231,500	33%
Grain Crops	*	*	*	*	*	*
Conservation Reserve	*	*	*	*	*	*
Grass/Pasture/Hay	33,800	5%	65,800	9%	99,600	14%
Orchards/Vineyards	0	0	0	0	0	0
Row Crops	0	0	*	*	*	*
Shrub/Rangelands	141,200	20%	227,200	32%	368,400	52%
Water/Wetlands/ Developed/Barren	*	*	*	*	*	*
Subbasin Totals	**353,100**	**50%**	**352,600**	**50%**	**705,700**	**100%**

Table 1. Land Use in the Burnt Subbasin, taken from the Powder Basin SRAP, 2013

The subbasin is a little over 700,000 acres in size, with about 50% privately owned and 50% publically owned (Figure 2). In 2006, the NRCS developed a basin profile for the Burnt River Subbasin. According to this report, approximately 52% of the subbasin is rangeland, 33% forest, and 14% is hay and pastureland (Table 1). In addition, about 75% of forestland is grazed. Major resource concerns are listed as streambank and irrigation- induced erosion; invasive and noxious weeds; insufficient water to meet livestock, wildlife, and irrigation needs; impaired water quality; and loss of wildlife habitat (NRCS, 2006).

Surface Water Quality

The livelihoods of many residents in the Burnt River subbasin are dependent on natural resources, and clean water is important for the health of both the watershed and its residents. Section 303(d) of the Clean Water Act requires that states develop a list of waterbodies that do not meet water quality standards (ODEQ, 2013). The Oregon Department of Environmental Quality (ODEQ) has identified several stream segments in the Burnt River subbasin as water quality limited. The parameters of concern include water temperature, sedimentation, E. Coli, chlorophyll a, and dissolved oxygen. Many tributaries to the Burnt River are also on the 303(d) list. Right is a list of the 2012 303(d) list for the mainstem Burnt River (Table 2). The 303(d) lists are updated every two years.

ODEQ currently maintains over 100 ambient water quality monitoring sites throughout Oregon. These sites are sampled on a bi-monthly basis, and water quality results from these sites are used to calculate the Oregon Water Quality Index (OWQI) results for each site (ODEQ, 2013). There is one ambient water quality site in the Burnt River subbasin, which is located on the Burnt River near Huntington (river mile 1.5).

The water quality parameters used to develop the OWQI score are temperature, dissolved oxygen (concentration and percent saturation), biochemical oxygen demand, pH, total solids, ammonia and nitrate nitrogens, total phosphorus, and bacteria (ODEQ, 2013). The Burnt River site near Huntington has a WQI score of 71, and is rated as "Poor" water quality with no trend (Table 3). The parameters contributing to this score are

Continued on page 7....

Record ID	Waterbody Name	River Mile	Parameter	Season	Criteria	List Date	Listing Status
3849	Burnt River	45-77.3	Chlorophyll a	Summer	0.015 mg/l	1998	303(d) list
24357	Burnt River	0-77.9	Arsenic	Year round	Human Health Criteria for Toxic Pollutants	2010	303(d) list
20847	Burnt River	0-77.9	Dissolved Oxygen	Jan 1 – May 15	Spawning: Not less than 11.0 mg/L or 95% of saturation	2004	303(d) list
24356	Burnt River	0-45.1	E. Coli	Fall-Spring	126/406 org/100ml	2010	303(d) list
13675	Burnt River	0-45.1	E. Coli	Summer	126/406 org/100ml	2004	303(d) list
12550	Burnt River	0-77.9	Temp	Year round	20 °C	2004	303(d) list

Table 2. Water Quality Limited Streams in the Powder Basin (DEQ, 2012)

Spring 2017 Calendar of Events

March

PBWC Membership Meeting and PBWC Presents Denine Schmitz: Powder River Nutrient Monitoring
March 30, 2017 - 6:00pm to 8:00pm
Crossroads Carnegie Art Center, Baker City

Help us celebrate our partnerships and volunteers and plan for the year ahead. We will kick off the meeting at 6:00 pm with a welcome from our Board Chair and a Meet & Greet Group Trivia game with appetizers, coffee, and tea. Following the trivia game we will hold our board elections and listen to a presentation by Denine Schmitz about the Powder River Nutrient Monitoring Project. Local participation helps ensure that the projects and priorities the Council sets meet the needs of our community. No special knowledge is needed–just a desire to make our watershed a better place to live, work and play!

April

Earth Day Spring River Cleanup
April 22, 2017 - 10:00am to 1:00pm
Geiser-Pollman Park, Baker City

Bring your family and help us give the Powder River a good Spring cleaning on Earth Day! All tools, snacks, and water will be provided, however wear comfortable shoes and dress for the weather. Following the event there will be a free raffle! Please pre-register at 541-523-7288 or pbwcoutreach@qwestoffice.net

May

PBWC Presents Phil Howell (Retired USFS): Changes in Native Bull Trout and Nonnative Brook Trout Distribution in the Upper Powder Basin after 20 years, Relationships to Water Temperature and Climate Change
May 12, 2017 - 6:30pm to 8:00pm
Crossroads Carnegie Arts Center, Baker City

Join us for PBWC Speaker series presenting Phil Howell, retired Forest Service, to discuss the changes in native Bull trout and non-native Brook trout in the Upper Powder Basin. Snacks and refreshments are provided and the whole family is welcome to attend. For more information please call 541-523-7288.

June

Wallowa Watershed Festival
June 30, 2017-all day event
Wallowa County Fairgrounds, Enterprise, Oreogn

Alongside Wallowa Valley Music Alliance, we transform the Wallowa County Fairgrounds in Enterprise into an outdoor festival and concert every year. Come clebrate this amazing place with us! Over 25 booths have hands-on activities, many for children, to learn about our people, land, animals, plants, rocks, and water. This family-friendly event allows individuals of all ages to listen, celebrate, and learn about Wallowa County.

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