



The Explorer

The Official Newsletter of the Lewis & Clark Conservation District

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Spring 2018



Spokane Creek flooding

Landowners urged to plan ahead, acquire right permits for stream-modification projects

HELENA, Mont. – With this year’s high potential for spring flooding, the Montana Department of Natural Resources and Conservation (DNRC) is encouraging residents who live on or near a river or stream to familiarize themselves with the stream-permitting process, including the types of permits they may need before starting a stream project.

Stream-modification projects undertaken as an immediate response to flooding require an Emergency Form 275. Landowners must contact their local Conservation District within 15 days of taking the emergency action and submit the completed Emergency Form. This permit is not required before any project activity begins.

To qualify as an emergency action, Montana law states the project must be the result of an *“unforeseen event or combination of circumstances that calls for immediate action to safeguard life, including human or animal, or property, including growing crops, without giving time for the deliberate exercise of judgement or discretion ...”*

The 310 permit is needed for any non-emergency streambed or streambank modification project. The 310 Joint Application can take up to 60 days to complete; landowners planning a project for spring should contact their local Conservation District well in advance of the planned starting date to get the permitting process started.

For routine projects undertaken every year, such as cleaning out an irrigation diversion, landowners can apply for a Maintenance Permit through their local Conservation District. These permits are good for up to ten years.

For more information on stream permitting in Lewis and Clark County, contact the Lewis and Clark Conservation District at 449-5000 ext. 112, or the Montana Department of Natural Resources and Conservation at (406) 444-4340.



Flooding on Spokane Creek, east of Helena.

Hay There!

Jeff Ryan, Supervisor and Chris Evans, Administrator - Lewis and Clark Conservation District

No, the title isn't a typo - just part of this story. In mid-March we helped coordinate a willow cutting event with Valerie Stacey. Valerie is the Big Sky Watershed Corps person with the Lake Helena Watershed Group and had obtained a grant from the Montana Watershed Coordination Council to do stream enhancement in the Lake Helena Watershed. The enhancement work will be a coordinated effort between three landowners, staff from the Montana Department of Fish, Wildlife and Parks, Lewis and Clark Conservation District and the Water Quality Protection District. The work will involve riparian fencing, an off-stream watering installation and riparian planting. In future newsletters we will provide more details on this work as it is completed.



The riparian planting will involve various species of bare root stock and in addition to those plants, approximately 2000 willow cuttings will be used. The cuttings will be planted using breaker bars, a hydraulic stinger and possibly a portable trencher.

About 20 volunteers met at the Helena Regulating to cut the willow. As always it was amazing to see the diversity of volunteers and their enthusiasm to help with

stream enhancement work. In only four hours they had cut the 2000 willow and had them loaded on a flatbed trailer for transport to a storage site.



And now for the “hay” part - since much of the riparian planting is planned after high water to avoid washing out plants, a means of storing the dormant willow was needed. This time of the year the willow is still dormant, but if not stored at temperatures ranging from 28-38 degrees it will come out of dormancy in early spring. Non-dormant willow cuttings have a low rate of survival compared to dormant willow. Many thanks go to Karl Christians and his

family, for not only providing his truck and the flatbed trailer to haul the willow, but also a place to store them.

The storage enclosure involved using some of Karl’s round hay bales to form a perimeter around the stacked willow and then packing them with snow. Given the insulating qualities of the large bales we anticipate getting at least a few months of dormant storage. This storage technique is similar to one my grandmother told me about from pre-refrigeration days. In those day an enclosure was built out of logs and river or pond ice cut into blocks and stored in the enclosure covered with a thick blanket of sawdust. The blocks were used through the summer to cool the home “ice boxes”.



So, the next time you open that refrigerator door for a “cold one” remember the technique that used to provide the cooling and now provides vibrant willow for stream enhancement projects.

Wildflower Seed

The Conservation District has wildflower seed available to landowners. Fall is a great time to seed this mix! It is a mixture of native and non-native seed and costs \$27 per pound. This mix is put together by Treasure State Seed in Fairfield and the CD sells it at our cost. For more information, contact the District office at 449-5000 ext. 112.



Water Well Test Cost-Share



The Lewis & Clark Conservation District is helping to off-set the cost of well testing in Lewis and Clark County. Pick up your test kits at the Water Quality Protection District or County Extension and get your water tested. Then when you get your results, **mail or drop off a copy of the test results to the Conservation District at 790 Colleen Street, Helena MT 59601** or email them to lccd@mt.net and you will be reimbursed \$25 for at least the minimum test. We will reimburse the first 40 tests for which we receive results. Please be sure to include your mailing address for reimbursement.

District Report

Chris Evans, District Administrator

Here we are at the end of March already! When I got started on this newsletter, I realized that it's been over a year since I had space available in a newsletter to write up a District Report! It's been over a year of really full newsletters and I hope that you've enjoyed them.

In the past year or so, the Conservation District board has been really busy with projects, seminars, field days and 310 permits. Permits overall were down in 2017, but we did see a fair number of complaints (6) and emergencies (6) in 2017. In 2018 already, we've had six new applications come in.

In 2017, the Board approved submitting a request to Lewis and Clark County to have a Permissive Mill Levy for benefits for District employees. This is a very small levy that the board can request to cover health insurance costs and other related expenses.

In May, the board was asked to host the 2018 Winter Grazing Seminar. Administrator Chris Evans sat down with the Helena Field Office staff to brainstorm some pertinent topics for the seminar. It took place in February 2018 and was well-attended and people seemed to really enjoy the topics.

We once again sponsored teams from both Helena and Capital High and sent 4 teams to the Montana Envirothon. We had another winning team this year (Helena High) but they opted to not go to the national event.

The CD has sponsored a maintenance grant for a number of years for the Rolling Rivers Trailers. These educational wonders have taught thousands of hours' worth of stream function education over the years and we feel that it's important to keep them rolling (safely).

Also in 2017, the CD worked with NRCS, the Weed District and the Water Quality Protection District on a small acreage education series in effort to get the word out to smaller acreage landowners about the resources that are available to them.

The wheel of history turned around again and the Willow Creek Feeder Canal issue came up again. The board has opted to move ahead with trying to get some grant money to help do some further stabilization of the canal.

The CD has either hosted or co-hosted the following:

- Cheatgrass Management Workshop with around 100 attendees
- stream project with Meagher County CD
- Ag Day with the Farm Bureau
- Rangeland Day at the Capitol
- Flood Awareness Day at the East Valley Middle School in East Helena
- Ladies Day on the Range

- Continuing Education course for Realtors

Along with all of those activities, we continued on with the social networking on Facebook, the quarterly newsletter and education projects as we have been able to do so, as well as other daily business activities. The website has been updated again and we hope that people get what they need from all of these sources of information. We are looking at hosting a Riparian Grazing Workshop in June, and another Range Day in late August, as well as hosting another Flood Day in East Helena in May. Please give us a call if you need information or would like to chat about any issues you have on your land.

Partner News

DNRC

Please join us for the 2018 Range Forum. This event has a great line up of topics relevant to Montana rangelands. Topics include Elk and ranching in Montana, Fire and Drought, and information on new mediation program from Montana Department of Agriculture. The afternoon of the 1st day will have a facilitated Rangelands stakeholder session and Montana Rangelands Partnership discussion. The second day will open with Bob Budd, Executive Director for Wyoming Wildlife & Natural Resource Trust. Other speakers include research updates from Fort Keogh, MSU and U of M, as well as an opportunity to provide feedback to researchers for future needs. Land management agencies will be providing updates as well as a great networking opportunity. For more information contact Teresa at 406-566-2133 or by email at teresa.wilhelms@mt.usda.gov.

NRCS

NRCS Program deadlines are fast approaching! If you manage forested lands and are interested in reducing fuels and improving forest health give us a call. There are multiple opportunities for technical and financial assistance. We are gearing up for the second year of the Tri-County Fuels Reduction Project and have new opportunities under the umbrella of the Capital 360 Partnership Project. Applications for Forested Lands are due by May 18th.

Range, cropland or pasture? We still want to talk to you about conservation! Sign up deadline for the Environmental Quality Incentives Program (EQIP) is June 1st. If you are interested in applying or want to learn more, please call 406-449-5000 ext. 3.

Seeding Wildflowers and Pollinator Plots

Wildflowers are not only beautiful, they serve an important purpose. Birds, butterflies, moths, beetles, small mammals and most importantly bees are pollinators who eat nectar and pollen from flowers. Many pollinator populations are in decline due to loss of feeding and nesting habitat. About 80% of flowering plants depend on pollinators to reproduce. That translates to one out of every three bites of food we eat that could not be produced without pollinators. So, if you love food and flowers consider planting a wildflower plot this spring. Here are some tips to create a successful plot.

- Plan ahead and control weeds with herbicides or tillage prior to seeding. If the plot has an existing grass cover kill that too. You may have to delay planting a year until your weeds are taken care of.
- Prepare a firm, smooth seed bed. When you are ready to plant, an adult footprint on the soil should only be a quarter inch deep. If the soil is too soft the seeds may be buried too deep.

- Buy quality seed and use northern sources so that plants are adapted to the Montana climate. Pick a variety of species that will bloom throughout the season and produce lots of pollen and nectar. You can add up to 25% native bunch grass for cover and a more natural plant community.
- When broadcasting the seed, do multiple applications and from different directions to avoid skips. Harrow or rake the plot to bury the seed, then pack or roll the plot so that seeds are pressed firmly into the soil.
- You might get a flush of weeds after planting, so mow the plot early and several times if necessary for weed control. Don't mow after July 15th. Spot treat weeds if you need to after that.

FSA

Youth Loans Available for 4-H, FFA, and Other Projects

The Farm Service Agency (FSA) makes loans to youth to establish and operate agricultural income-producing projects in connection with 4-H clubs, FFA and other agricultural groups. Projects must be planned and operated with the help of the organization advisor, produce sufficient income to repay the loan and provide the youth with practical business and educational experience. The maximum loan amount is \$5,000 and the current interest rate is 3.25%.

Youth Loan Eligibility Requirements:

- Be a citizen of the United States (which includes Puerto Rico, the Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands) or a legal resident alien
- Be 10 years to 20 years of age
- Comply with FSA's general eligibility requirements
- Be unable to get a loan from other sources
- Conduct a modest income-producing project in a supervised program of work as outlined above
- Demonstrate capability of planning, managing and operating the project under guidance and assistance from a project advisor. The project advisor must recommend the youth loan applicant, along with providing adequate supervision.

Contact the Helena FSA office at (406) 449-5000 for further information. For online information, please visit: <https://www.fsa.usda.gov/programs-and-services/farm-loan-programs/index>.

Guaranteed Conservation Loans

Guaranteed Conservation Loans are available for applicants to install a conservation practice. These funds may be used for any conservation activities included in a conservation plan or Forest Stewardship Management plan. A copy of the conservation plan is required to complete the application. These loans are not limited to family farmers; In some cases, applicants can operate non-eligible enterprises. Loan funds are issued by a participating commercial lender and guaranteed up to 80 percent by Farm Service Agency (FSA) or up to 90 percent for beginning and historically underserved producers. Contact the FSA Office in Helena at (406) 449-5000 for additional information.

-USDA is an equal opportunity employer, provider and lender-

Save The Date

2018 RIVER RENDEZVOUS

July 11th & 12th . 2018
Great Falls, MT

Join us for a tour of waterside development, water treatment plant, Black Eagle Dam, & an aquatic invasive species education event

Hosted by the:

 Cascade Conservation District

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Groundwater Fluoride in the Helena Area

Prepared by: Valerie Stacey and James Swierc

Summary:

Fluoride in drinking water has been recognized for decades as an effective method of preventing tooth decay. To address the public health concern, many public water supplies (PWS) fluoridate drinking water, with an estimated 74% of the population in the United States served by community PWS receiving fluoridated water (CDC, 2014). Several major entities present information on health impacts with respect to recommended concentration of fluoride in drinking water relevant to this study. The primary entities include: the United States Public Health Service (PHS), the U.S. Environmental Protection Agency (EPA), and the U.S. National Research Council (NRC) for the United States, as well as the World Health Organization (WHO), taking a broader perspective for entire global population. However, the information from these entities present conflicting conclusions regarding recommended concentrations in drinking water. In 1984, the WHO published a guideline value of 1.5 mg/l at which dental fluorosis should be minimal, recognizing that national standards should be set on a case-by-case basis, depending on climatic factors and average volume of water consumed per person (Fawell et al., 2006). The current primary drinking water standard for fluoride in the U.S., established by the EPA in 1986, is a maximum contaminant level (MCL) of 4 mg/l. More recently, in 2007 the NRC concluded that both the MCL of 4 mg/l, and the secondary standard of 2 mg/l, do not protect against severe dental fluorosis (NRC, 2007). In response to the NRC publication, in 2015 the PHS recommended 0.7 mg/l as the optimal concentration of fluoride in drinking water to effectively prevent tooth decay, while minimizing risk for negative health impacts such as dental fluorosis (PHS, 2015).

While regulated PWS follow agency guidance for controlling fluoride concentrations in water delivered to consumers, intake of fluoride from private wells is unregulated. As a result, due to a lack of sampling for fluoride in private wells, the concentration of fluoride in drinking water is frequently unknown. This represents an unrecognized health risk to private landowners in areas where concentrations of naturally occurring fluoride in groundwater are relatively high compared to recommended levels. In the Helena Valley of southwest Montana, preliminary data revealed fluoride concentrations of more than twice the EPA MCL of 4 mg/l in one part of the valley, with

concentrations exceeding 0.7 mg/l and 1.5 mg/l in other areas. In response, a more comprehensive groundwater sampling and analysis program was conducted to identify areas where naturally occurring elevated concentrations of fluoride are present. For this study, all available ground water data on fluoride was compiled, and then supplemented with this project to increase the sampling density. We use the 0.7 mg/l recommendation as a relative benchmark to compare groundwater fluoride concentrations to.

We found that there is a potential source of fluoride from the geothermic water (near Broadwater Hot Springs) that feeds into Tenmile Creek and may make its way into groundwater sources of some areas. Further investigation is needed to test this hypothesis. Independent from the geothermic activity, some areas are more likely to see higher concentrations of fluoride based on the geology and aquifer source; certain minerals are more conducive to fluoride dissolution than others (Figure 1). Generally, wells within the “Quaternary Alluvium” are shallower and have lower concentrations of fluoride. We saw a greater percentage of samples with higher concentrations of fluoride in areas that likely draw from Tertiary and Pre-Tertiary bedrock aquifers (Table 1; Figure 2). See Figure 1 for a spatial reference of these three geologic/aquifer categories, derived from Thamke et al. 2000. However, overall, the majority (82%) of samples were at or below the recommended concentration of 0.7 mg/l.

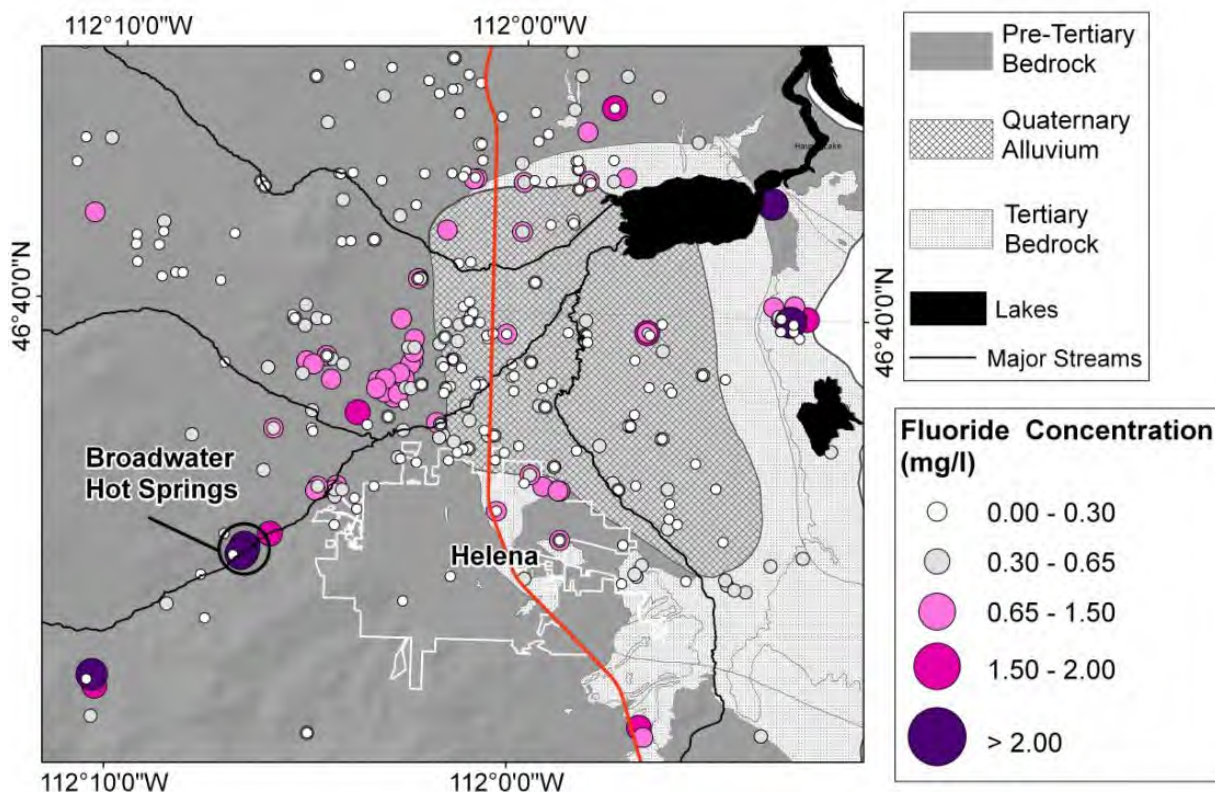


Figure 1. Fluoride concentrations in the Helena area. Each circle represents one sampling point. Larger circles correspond to higher concentrations of fluoride. The size of the circle only corresponds to the concentration at one sampling point and does not correspond with area. The vertical bold line represents Interstate-15.

Table 1. Number of samples (excluding those from Broadwater Hot Springs area¹) and the percentage of samples above 0.7 mg/l fluoride (*PHS recommendation) per geologic category.

Geology	# of Samples	Mean (mg/l)	Max (mg/l)	Min (mg/l)	*Percent Above 0.7
Pre-Tertiary Bedrock	299	0.44	2	0	18
Quaternary Alluvium	225	0.29	2.54	0	2.2
Tertiary Bedrock	73	0.50	2.2	0.07	19

Conclusions:

- We know that there is natural fluoride in groundwater sources in the Helena area.
- Some areas see higher concentrations than others based on the natural characteristics of the geology and chemistry of the water source.
- There is a potential source of natural groundwater fluoride coming from geothermal activity near the Broadwater Hot Springs area.
- 18% (110) of the 612 samples analyzed exceeded the U.S. Public Health Service’s recommended concentration of 0.7 mg/l, 82% (502) were at or fell below 0.7 mg/l.
- Homeowners with private wells may be exposed to adequate fluoride from the drinking water supply alone.
- Get your well water tested if you want to know the concentrations of fluoride that you are exposed to from your drinking water supply alone. If you live in Lewis and Clark County, there may be a discount available for you.

The Water Quality Protection District plans to release a more comprehensive and formalized report on the fluoride analysis within the 2018 year. In addition to what is presented here, we plan to take a closer look at the hydrochemistry of the water quality samples to investigate whether there are more specific chemical signatures that correlate with high or low fluoride concentrations. For more information regarding the research on fluoride and public health, please see the references listed below. You can also contact Valerie Stacey directly at: 406-457-8891 or: dstacey@lccountymt.gov for questions, comments, or concerns regarding this study.

For information regarding well water testing, contact the Lewis and Clark Water Quality Protection District at: 406-457-8584, or email Jennifer McBroom at: jmcbroom@lccountymt.gov

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- United States Department of Public Health and Human Services (PHS), Federal Panel on Community and Water Fluoridation, 2015. “U.S. Public Health Service Recommendation for Fluoride Concentration in Drinking Water for the Prevention of Dental Caries.” *Public Health Reports* 130: 318.

¹ Samples from the Broadwater Hot Springs wells were nearly twice as high as the EPA limit of 4 mg/l, have significantly different water chemistry than the rest of the samples, and thus do not represent general regional patterns. These samples were considered “outliers” and were not included in this analysis.



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