Gallatin Local Water Quality District
Fiscal Year 2019 Work Plan

Prepared
For

Gallatin Local Water Quality District
Board of Directors

By

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District Manager

May 2018

Approved by GLWQD Board June 7, 2018

Gallatin Local Water Quality District

MISSION

"*To protect, preserve, and improve the quality of surface water and groundwater within the District boundary."*

While the District's mission statement is focused on surface water and groundwater quality, water quantity issues are related to water quality issues and are also addressed.

VALUES

- We strive for competent, knowledgeable stewardship of our water resources.
- We practice transparent and accountable service.
- We maintain a culture of service and integrity.
- We collaborate with partners in our community to preserve, protect, and improve water quality.

Purpose

This document outlines the Gallatin Local Water Quality District's projects and activities for Fiscal Year 2019 (July 1, 2018 through June 30, 2019); many of which were identified through a prioritization process with the Board of Directors in March and April 2018. The work plan also aligns with the District's Five Year Strategic Plan (Fiscal Years 2015-2019) adopted by the Board of Directors June 4, 2015. The strategic plan is available on the District website at www.glwqd.org.

Program Approach

District Service

Staff operate under the general philosophy that the District is a place where citizens can receive satisfactory answers to questions related to water resource issues. The District strives to be a clearinghouse for information, and assist citizens with contacting other agencies and organizations as needed. This same level of service is extended to local organizations and governmental agencies. Recognizing that timely response is important, Staff strive to return phone calls, respond to emails, and inquiries/complaints in a timely manner.

Watershed Perspective

A watershed perspective is used to plan and carry out District activities. With a watershed perspective both groundwater and surface water resources are evaluated within the context of flow patterns, source areas, recharge areas, discharge areas, climate, geology, soils, and land use patterns. With the presence of shallow groundwater in many areas, an extensive network of surface water features, and hundreds of miles of irrigation ditches within the boundaries of the District, protecting and improving groundwater resources have a positive impact on surface water resources and vice-versa. **Figure 1** illustrates the area covered by the District, within Gallatin County and the Gallatin Watershed.

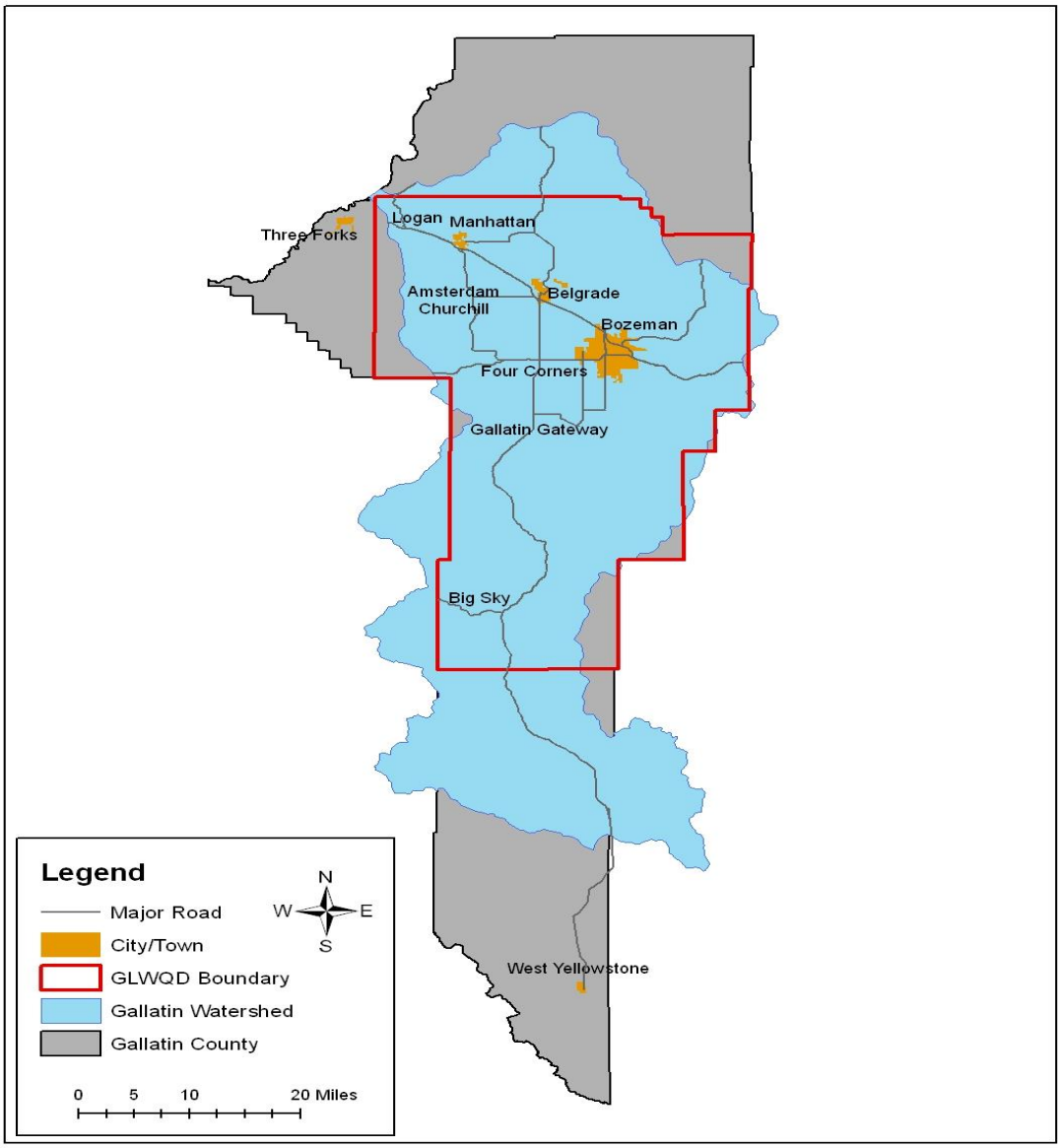

Figure 1. The Gallatin Local Water Quality District covers 1,299 square miles within Gallatin County. It includes the incorporated areas of Belgrade, Bozeman, and Manhattan; and the unincorporated communities of Amsterdam, Churchill, Four Corners, Gallatin Gateway, and the Gallatin County portion of Big Sky.

Non-Regulatory Focus

The District was created as a non-regulatory agency and does not administer or enforce any local governmental ordinances, rules, or regulations, pertaining to water quality and continues to function as a non-regulatory agency. According to the Administrative Rules of Montana (ARM), which govern the formation and operation of local water quality districts (ARM 17.30.1807), the Department of Environmental Quality (DEQ) may request a district enforce provisions of the Montana Water Quality Act (MCA 75-5-605), for particular violations. Alternatively, per ARM 17.30.1807, a district may request enforcement authority from DEQ in a particular case specified under this rule. In this instance, if a significant water quality issue warrants the action, the District Board of Directors, with concurrence from the Gallatin County Commission, could make

this request to DEQ. It should be noted that this statutory authority has never been pursued since the District was formed in 1997. There are no current plans to pursue this authority and direct District involvement in enforcement of regulations developed by federal, state, or local governmental agencies is not anticipated. The District may be indirectly involved in regulatory issues by providing information, data, technical assistance, or comments to other agencies or organizations, when the regulatory issue(s) pertain to water resources within the District; and the regulatory activities may have an impact on the District's mission to protect, preserve, and improve water quality. While District programs do not include development of local regulations, this does not preclude other agencies or interested organizations from developing regulations based on data or information collected by the District.

When local citizens reach out to District staff with valid complaints regarding water-related issues, staff will provide citizens with contact information for the appropriate local, state, or federal agencies responsible for enforcement of regulations designed to protect water resources. If data collected by the District indicates that water resources are threatened by activities that appear to be in violation of existing rules or regulations enforced by other agencies, the District will notify the enforcing agency of the concerns and provide any existing data requested by the enforcing agency. However, the District will not specifically collect data for an enforcement agency related to a specific potential violation.

Resolution of Water Quality Problems

With research and monitoring a main program area for the District, investigation into potential water quality problems does occur. If a problem is confirmed, the District will work to solve it. This may be accomplished in a variety of ways depending on the nature of the problem and the entities identified to resolve it.

For example, if project results confirm that fecal contamination in a local stream is human-sourced due to septic systems in a localized area, then the District would present the research findings to the health department. Another example is if a monitoring project reveals excess nutrients are negatively impacting water quality along a stream reach, the District could encourage landowners, a local watershed group, NRCS, and other appropriate partners to collaborate on stream restoration projects to improve water quality.

In areas of the District where high levels of naturally-occurring contaminants, like arsenic, impact groundwater quality; District staff work to educate well owners on the need to test their drinking water and seek out suitable treatment systems.

Solving water quality problems is not an easy task. In most situations, the only way for the District to determine if there even is a problem is to conduct regular monitoring, evaluate the data to look for trends, and share the results with local decision-makers and the community.

Fiscal Year 2019 Priorities and Ongoing Activities Overview

Fiscal Year 2019 projects are categorized based on priority from high to low. These projects have been identified and prioritized by the Board of Directors and District staff to coincide with strategies outlined in the current Five-Year Strategic Plan that will meet District goals and objectives.

Within the limits of time and budget, staff will focus first on completing high priority projects and activities followed by medium priority and, finally, low priority. The Fiscal Year 2019 Work Plan also contains a listing of activities that are of a long-term nature which require them to span multiple fiscal years. The prioritization of a project or activity provides guidance for completion of work during the fiscal year and does not necessarily reflect overall importance.

Fiscal Year 2019 Projects & Activities

Strategic Planning

Every five years, the District Board reviews and updates the GLWQD Strategic Plan. In fiscal year 2019, the Board will need to set-aside time to develop the next plan for fiscal years 2020-2024. The District Manager will coordinate with the Board on format and length of the planning session which should be scheduled for some time in January-February 2019.

HIGH PRIORITY

Surface Water Monitoring Network

A surface water monitoring network plan (SWMN Plan) was approved by the District Board of Directors in May 2018. The plan provides the framework for long-term status and trend monitoring of 16 surface water stations in the District. It also contains a general budget for network instrumentation costs associated with monitoring surface water discharge and annual water quality sampling. Understanding District budgetary limitations, the plan also contains adaptive management strategies to address this and ways to collaborate with local partner agencies to achieve shared outcomes. One established collaboration is the Gallatin Stream Teams Program with the Greater Gallatin Watershed Council. Fiscal Year 2019 monitoring will focus on supporting water quality sampling on the Bozeman urban streams through that program; four of those streams are part of the District network. Water quality sampling will be conducted by District staff at the remaining network monitoring stations outlined in the SWMN Plan in summer 2018. Aquatic macroinvertebrates will be collected by District staff and MSU students to begin establishing baseline conditions on overall stream health at all 16 network monitoring stations in summer 2018.

The District owns four TruTracks used to measure surface water stage height for calculating stream discharge. Additional TruTracks or similar water level measuring devices (outlined in the SWMN Plan) will need to be purchased to begin expanding the gaging network. The District will seek funding for additional stream and diel data instrumentation of the monitoring network.

Task(s):

- Prepare a Quality Assurance Program Plan for MT DEQ approval so SWMN data can be stored in the Montana (e-WQX) and national (EPA STORET) databases.
- Prepare Standard Operating Procedures for field monitoring protocols.
- Prepare a 2018 sampling work plan with budget.
- Provide Stream Teams oversight at sampling events via the District's Big Sky Watershed Corps Member.
- Provide training to MSU volunteers to assist with macroinvertebrate sampling.
- Conduct macroinvertebrate and water chemistry sampling as outlined in the SWMN Plan; submit data to MT-eWQX database.
- Maintain deployed TruTrack instrumentation for stream gaging.
- Purchase one TruTrack WT-HR1000 or Solinist water level logger.
- Seek funding for permanent stream gaging instrumentation through grants and local partnerships.

Nitrate Trends in Public Water Supplies: Investigate Relationship to Onsite Wastewater Treatment Systems in High Density Subdivisions

Recent review of long-term nitrate data from several public water supplies in the District appear to indicate an increasing trend in nitrate concentrations in groundwater. Isotope analysis is one tool for identifying the signature, or source of nitrate in groundwater. Understanding nitrate sources and whether or not high density subdivisions up-gradient of public water supplies may have a long-term impact on groundwater quality is needed to inform public water supply operators and decision-makers as development continues in the county. This is a multi-year project that will likely require outside funding to fully implement; with sampling, data analysis, and report writing occurring at a later date.

Task(s):

- Identify areas for groundwater nitrate sourcing using the District's GW Database, DEQ PWS database, and EHS Septic Permit database.
- Develop a work plan (including budget) for groundwater sampling utilizing a multi-tracer approach (isotopes, etc.) and present to Board for approval.
- Seek funding for project from outside sources; if needed.

Investigate Fecal Contamination Sources in Bozeman and Matthew Bird Creeks

Bozeman Creek is impaired for excess *E. coli* bacteria and is on the MT DEQ 303(d) List. Screening for fecal contamination sources at four locations on Bozeman Creek, where there is possible septic system influence, was conducted in 2014. Microbial Source Tracking/Bacterial Source Tracking (MST/BST) laboratory methods were used and results suggested the major contribution of fecal contamination along certain reaches in the stream may be human- vs. dog-sourced. In 2015, these same sites, and one site at the mouth of Matthew Bird Creek, were sampled synoptically. Results indicated *E. coli* concentrations continue to exceed MT DEQ water quality standards and MST/BST continued to indicate the presence of human fecal contamination. Additional efforts to differentiate septic system vs. municipal sewer influence using fluoride and chloride analysis, yielded inconclusive results.

Further study is needed to ultimately resolve the contamination source(s) and reduce *E. coli* bacteria loading to Bozeman Creek. Focusing sampling efforts during fall and spring/early summer may provide better insight on possible septic system contributions. Additional sites along the stream continuum will further efforts to isolate specific areas of incoming fecal pollution and better detect extremely low-volume wastewater sources. MST/BST methods are expensive. Literature review indicates using optical brighteners (fluorescent white dyes added to laundry detergents) as an indicator tracer for wastewater and confirmatory tracers, like caffeine, are a less expensive alternative to MST/BST. Given the District's limited budget, these sampling methods would be a valuable complement to previously collected data and will better enable the isolation and confirmation of wastewater source(s) to Bozeman and Matthew Bird Creeks. In collaboration with Dr. Mari Eggers and Dr. Ganesh Bala at MSU, students in Dr. Eggers environmental health fall 2018 class (additional students may also be available in spring 2019) will assist with this project in coordination with our BSWC Member. The *E. coli* and optical

brightener analysis will be performed through Dr. Egger's lab and caffeine analysis will be coordinated with the Mass Spec Lab through Dr. Bala.

Task(s):

- Refine existing Sampling and Analysis Plan to utilize indicator and confirmatory tracers and identify partnership with MSU; develop budget, and present to Board for approval (August 2018).
- Secure funding from outside sources to implement SAP; if needed.
- With secured funding, coordinate and conduct monitoring activities outlined in the SAP in collaboration with MSU partners.
- Complete project report.
- Present results and any recommendations to GLWQD Board and City-County Board of Health Environmental Subcommittee.

District Administration and Management

In order to maintain a culture of service and integrity, staff are continually striving for optimal performance and to produce quality work. This leads to providing a high-level of service to the community. Improving internal District operations and staff performance through accountability is a key element to success. In addition to regular management, budgetary, and administrative duties, the District Manager will be charged with the following in fiscal year 2019:

Task(s):

- Conduct regular all-staff meetings.
- Conduct regular one-on-one staff meetings.
- Develop individual work plans with staff, based on the board-approved annual work plan.
- Prepare a District Annual Report of Activities and Services; present to the Board.
- Coordinate with the Board to develop the FY2020-2024 Strategic Plan.

MEDIUM PRIORITY

Groundwater Monitoring Well Network

Staff maintain and monitor a network of wells throughout the District in cooperation with the Montana Bureau of Mines and Geology (MBMG) Statewide Groundwater Assessment Program (GWAP). The network was established so trends in groundwater quality and availability can be documented; especially in relation to land use changes. In spring 2018 two existing monitoring wells in the Big Sky Meadow Village were added to the network in consultation with MBMG and the Big Sky Water & Sewer District. The active network now consists of 66 wells that include 38 monitoring wells owned and/or maintained by the District and a mix of 28 monitoring and domestic wells that are part of the MBMG statewide network. Water-level probes (data loggers) are maintained by the District in 26 of the wells; measuring water level and temperature. With the addition of wells to the network and anticipated replacement needs of data loggers in the coming years, new loggers continue to be needed. These will likely be purchased incrementally over several fiscal years as funding allows.

The Long-Term Groundwater Monitoring Plan includes a schedule for periodic water chemistry sampling of the wells. The first round of sampling for inorganics and trace metals was completed in April 2017. The second round, which included water isotopes, was completed in May 2018. Sampling for volatile organic compounds (VOCs) is scheduled for select network wells in Fiscal Year 2019. A Big Sky Meadow Village Water Quality Sampling Plan was approved by the Board in April 2018 for ten years of annual inorganic and nutrient monitoring that will be conducted in cooperation with the Big Sky Water & Sewer District. All well logs, water level, and water chemistry data collected for network and special project monitoring are available to the public via the MBMG Groundwater Information Center website at http://mbmggwic.mtech.edu.

Task(s):

- Conduct quarterly static water level measurements and logger downloads; submit processed data to GWIC.
- Purchase one barologger and up to four water-level data loggers.
- Conduct VOC sampling outlined in the Long-Term Groundwater Monitoring Plan; submit the data to GWIC.
- Conduct sampling outlined in the Big Sky Meadow Village Water Quality Sampling Plan; submit data to GWIC and BSW&SD.
- Secure access and add the Yellowstone Plaza monitoring well in Belgrade to the network.
- Continue monthly static water level measurements on a subset of wells to gather more resolution of well hydrographs; submit data to GWIC.
- Explore adding monitoring well(s) in Amsterdam/Churchill/Madison Plateau area.

Well and Septic Care/Maintenance Program–Well Awareness Courses

With decreased participation in the District's well and septic maintenance workshops, a new approach was implemented in FY18 with the *Well Awareness Course*. The 2-hour course is designed to educate private well owners on best practices for protecting their drinking water. Homeowners learn how to conduct an assessment of their well's condition, identify potential contaminant sources, and discuss factors that can affect their water quality. Proper septic system maintenance and potential impacts to groundwater are also discussed. After the course, the homeowner completes a well assessment on their property using a form prepared by District staff. The form is returned to GLWQD and staff provide individual follow-up assistance and provide recommendations, as needed. The course was held in four locations (Belgrade, Big Sky, Bozeman, and Manhattan). Turnout this first year was exceptional with 43 participants and feedback on the course was overwhelmingly positive.

The District and Environmental Health Services (EHS) continue to partner on education efforts to well and septic owners; one example is working with the Midwest Assistance Program to provide Logan residents with information on well testing and septic maintenance.

Task(s):

- Prepare, advertise, and conduct the Well Awareness Course at 2-4 locations; provide individual follow-up assistance and recommendations to participants.
- Continue collaboration with EHS and Midwest Assistance Program to provide education and outreach to Logan and other areas in the District, as needed.

East Gallatin River Nutrient Monitoring

GLWQD worked with the City of Bozeman on data collection activities on the East Gallatin River and tributaries from 2014-2017. The goal for the City was to develop a model to understand nutrient cycling in the river in relationship to effluent inputs from a variety of sources. Preliminary modeling indicated a spike chlorophyll-*a* (related to algal growth) levels in the vicinity of the Dry Creek Canal diversion. The source of nutrients contributing to the spike in chlorophyll-*a* levels remains perplexing. Diel fluctuations in water chemistry and/or inputs from Trout Creek (upstream) may play a role in the modeled spike. The City of Bozeman has encouraged the District to investigate this issue and the Board determined it to be of importance. Trout Creek was not sampled during the project and may be the missing piece of information. Several attempts to gain access to Trout Creek have all been denied by the landowner; that will likely not change in the future. Therefore, prior to initiating any additional water quality monitoring, especially as it relates to Trout Creek, analysis will be completed on the existing data. A literature review of biogeochemical processes and the relationship to excess algal growth/nutrients in streams will be conducted and staff will reach out to colleagues at MT Tech, USGS, and others who are experts in biogeochemical processes in streams to gain their insight. Those discussions may lead to the development of a different monitoring strategy. Until then, District staff will focus on the following tasks in FY19:

Task(s):

- Conduct literature review.
- Engage in dialogue with colleagues with expertise in stream biogeochemical processes.
- Complete analysis of existing data.
- Prepare report that includes findings and recommendations.
- Present results to GLWQD Board and City of Bozeman.

District Community Engagement

Historically, the District has provided assistance to municipalities on the development of source water protection plans (Belgrade, Bozeman), served on the City of Bozeman's technical advisory committee for the development of their Integrated Water Resources Plan and Drought Management Plan, and served as a stakeholder on the Big Sky Sustainable Water Solutions Forum. To better assist the municipalities and communities in the District, it is important that staff engage in a proactive effort to become even more knowledgeable about unique growth and water-related issues in these areas. District board member updates at monthly meetings only provides a small snapshot into the activities occurring in these areas. In fiscal year 2019, staff will explore opportunities to expand District presence and assistance to those municipalities and communities. This could lead to expanded partnerships and collaborations focused on water quality improvement and protection.

Task(s):

- Attend city/town council meetings for Belgrade, Bozeman, and Manhattan on a quarterly basis; or more frequently if water-related issues are on the agendas.
- Attend Gallatin Conservation District meetings on a quarterly basis; or more frequently if requested to provide GLWQD updates.
- Request to regularly receive agendas for Four Corners Water & Sewer District and Big Sky Water & Sewer District meetings; attend meetings of specific GLWQD interest.

LOW PRIORITY

Groundwater Database Maintenance

Maintaining and updating the District's Groundwater Database is an integral activity to fulfill one of our program goals to compile, store, and disseminate water quality data information. Placing this in the Low Priority category in the annual work plan simply means the specific activities here are not overly time-consuming and are manageable regarding staff capacity. Now, after two years of intense evaluation and correction to errors, Well Educated Program data from 2010-14 has been added and regular database maintenance can resume. To ensure well location accuracy for data from the Well Educated Program, staff now assist the homeowner with confirming the latitude/longitude of the well on their property when they pick-up a test kit. This information is relayed to MSU Extension Water Quality (MSUEWQ) via the well information form in the kit and, ultimately, returns to the District when we receive data from MSUEWQ. While the database is not available for public viewing on our website, anyone requesting data from the District is provided that information minus homeowner name and any personal information per the District's Data Distribution Policy approved by the GLWQD Board in 2008.

Task(s):

- Obtain 2015-17 Well Educated data from MSUEWQ and upload to the database.
- Maintain data entry activities related to District sampling projects to ensure up-to-date information is available for assisting the public.

Public Education and District Outreach

Education and outreach to improve public awareness and understanding of local water quality, water resources, and the District is one of our main program focuses and is ongoing. Placing this in the annual work plan in the Low Priority category simply means that the specific activities listed here are not overly time-consuming and are manageable by staff capacity-wise in relation to other District priorities. Throughout the year, the District is called upon to give presentations at workshops, symposiums, conferences, and festivals. Our brochure racks and website are continually maintained with educational materials. It is likely that during the year unanticipated opportunities will arise to inform and educate the public about water resources within the District. The following list is considered a reasonable workload.

Task(s):

- Finalize and distribute *Water Treatment Options* fact sheet.
- Finalize and distribute *Iron Bacteria* fact sheet.
- Develop a *pharmaceutical/prescription drug disposal* fact sheet.
- Coordinate and staff the Water Booth at the Gallatin Valley Farm Fair; as requested.
- Participate in the Gallatin Realtor CE course on water resources coordinated by the Gallatin River Task Force, as requested.
- Participate in MT Outdoor Science School summer courses, as requested.

ONGOING ACTIVITIES

❖ **Cooperative Programs and Projects**
- Promote and distribute *Well Educated* Program water test kits via MSU Extension Water Quality
- Collaborate on shared education opportunities with the Gallatin Conservation District
- Maintain participation with the Association of Gallatin Agricultural Irrigators.
- Maintain participation with the Greater Gallatin Watershed Council.
- Maintain participation on the Montana Watershed Coordination Council.
- Work with local organizations and schools on water-related endeavors, as requested.
- Collaborate with MSU research colleagues on shared projects of interest, as requested.

❖ **Monitor and Encourage Remediation of Known Contamination Sites**
- Bozeman Solvent Site
- Idaho Pole Company Site

❖ **District Outreach and Personnel Development**
- Attend and present results of District projects at MT AWRA Conference.
- Attend Montana Annual Local Water Quality Districts Meeting.
- Participate in staff development opportunities as District funds and workload allow.

❖ **Pursue Grant Opportunities**
- Assess opportunities to secure funding for evaluating long-term impacts to water quality as a result of development in the District.
- As appropriate, prepare and submit grant proposals for projects of District interest.

❖ **Website Maintenance**
- Update information on District projects and activities.
- Upload final project reports and educational publications as they become available.
- Maintain website with relevant and accurate information for the public.

❖ **Subdivision/Preliminary Plat Application Reviews**
- Conduct reviews for County, Belgrade, and Manhattan Planning, as requested.

❖ **Phone Calls and Requests for Information/Assistance**
- Strive to respond to phone calls within 2 business days.
- Strive to respond to requests for information within 5 business days.