

Section I: General Information

Project Title Watershed Restoration Project Implementation in the Lower Gallatin Watershed

Project Sponsor Information

Sponsor Name Greater Gallatin Watershed Council (GGWC)

County Gallatin

Website www.greatergallatin.org

Tax Identification # 13-4293305

DUNS # 005541439

SAMs # 772K3

Primary Contact Sierra Harris

Signatory Brian Heaston

Title Watershed Coordinator

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E-mail Address info@greatergallatin.org

E-mail Address bheaston@bozeman.net

Signature _____

Signature _____

Project Location

Watershed Name or HUC # Lower Gallatin

TMDL Planning Area Lower Gallatin Planning Area

(1) Waterbody Name from 2014 List of Impaired Waters East Gallatin River

(1) Probable Cause(s) of Impairment Nutrients - Total Nitrogen (TN)

(2) Waterbody Name from 2014 List of Impaired Waters Sourdough Creek (Bozeman Creek)

(2) Probable Cause(s) of Impairment Sediment, streamside alteration, Total Nitrogen, Chlorophyll-a, and E. coli

(3) Waterbody Name from 2014 List of Impaired Waters Camp Creek

(3) Probable Cause(s) of Impairment Sediment, TP, TN, low flow alteration, and streamside and substrate alteration, and E. coli

Activity 1 Name Story Mill Restoration Project

Latitude (1) 45.690

Longitude (1) -111.0255

Activity 2 Name Camp Creek Restoration Project

Latitude (2) 45.660628

Longitude (2) -111.358509

Activity 3 Name _____

Latitude (3) _____

Longitude (3) _____

Nonpoint Source (NPS) Information

Which WRP does the project implement? Other

What is the WRP status? Under Development

Does the project implement recommendations in a TMDL? Yes

Waterbody Type River/Stream

Functional Category Watershed Management

1st Pollution Category Urban Runoff/Stormwater (Municipal)

Percent of Total (%) 40

2nd Pollution Category Agriculture (Grazing Related Sources)

Percent of Total (%) 20

3rd Pollution Category Hydromodification (Streambank or Shoreline Modification/Destabilization)

Percent of Total (%) 30

4th Pollution Category Hydromodification (Channel Erosion/Incision)

Percent of Total (%) 10

Project Funding

319 Funds Requested	<input type="text" value="\$152,500.00"/>	Does the project sponsor have any open 319 contracts?	<input type="text" value="Yes"/>
Matching Funds		Project Title	<input type="text" value="Lower Gallatin Watershed Restoration Plan"/>
State Cash Match	<input type="text"/>	DEQ Contract Number	<input type="text" value="213025"/>
Local Cash Match	<input type="text" value="\$43,350.00"/>	319 Award	<input type="text" value="\$30,000.00"/>
In-Kind Match	<input type="text" value="\$60,756.00"/>	Projected Closing Date	<input type="text" value="December 31, 2014"/>
Total Match	<input type="text" value="\$104,106.00"/>	Project Title	<input type="text"/>
Other Federal Funds	<input type="text" value="\$1,000.00"/>	DEQ Contract Number	<input type="text"/>
Total Project Budget	<input type="text" value="\$257,606.00"/>	319 Award	<input type="text"/>
Administrative Fee	<input type="text" value="\$15,200.00"/>	Projected Closing Date	<input type="text"/>

Project Description

Methods: Please describe the specific activities of this project.

A1: Restore and revegetate floodplain and wetlands along the East Gallatin River and revegetate Bozeman Creek Slough at Story Mill Park. Use park as demonstration site to educate public about water quality, wetlands and restoration.
A2: Improve streambank stability and water quality on a private ranch along Camp Creek through the addition of fencing and an off-stream water source for cattle and through bank revegetation. Both project tasks will involve monitoring for the effectiveness of restoration activities and modeling for nutrient and sediment reductions.

Objectives: Please describe the specific/measurable objectives that will ensure the achievement of the project goal(s).

A1: Reduce sediment and nutrient loads entering and conveyed by the East Gallatin River and Bozeman Creek by restoring 1.0 acre of East Gallatin River floodplain and planting 0.4 acres of native willow cuttings on Bozeman Creek Slough. Provide educational opportunities about water quality and restoration to community members, educators, and students.
A2: Reduce sediment, nutrient, and *E. coli* inputs to Camp Creek by installing fencing and off-site water as well as enhancing the riparian buffer zone as measured by woody plant recruitment, species composition, and productivity.

Overview: Please provide a brief summary of the proposed project.

The Greater Gallatin Watershed Council (GGWC) will complete the Lower Gallatin Watershed Restoration Plan by December 2014 --draft submitted with this proposal --and is applying for 319 funds to implement on-the-ground restoration projects beginning in summer 2015. The two selected projects reflect the diversity of restoration needs in the Lower Gallatin Watershed: one is a high-profile urban project that will provide community education, the other an agricultural project with the potential for outreach to other rural landowners.

GGWC is partnering with The Trust for Public Land (TPL) to transform the 54-acre Story Mill site into a premier community asset featuring opportunities for habitat restoration, water quality enhancement, community education, and recreation within an urban park setting. The future city park is located in northeast Bozeman; offers trail connections to downtown and substantial open space; and features unique wetland, stream, and riparian habitat. This property will be acquired by the City of Bozeman by December 2014. The city park will be in development through 2017 and then will be opened to the public. This project has the potential to educate hundreds of Gallatin Valley residents during the restoration process and thousands of recreationalists, students, and visitors over the long-term.

This proposal requests 319 funds for floodplain and wetland restoration and for the installation of a public access site on the East Gallatin River, revegetation of the Bozeman Creek Slough, and the delivery of educational opportunities to the community. The 319 funding will be one of several funding sources for the overall restoration of the site, but this proposal funds unique projects. For further information about other funding sources, see Section V-I, Additional Information.

The Camp Creek project is a collaboration between GGWC, the Natural Resources Conservation Service (NRCS), and a private landowner who grazes 40 pair of cattle on a 944-acre property. The landowner is enrolled in NRCS's Conservation Stewardship Program (CSP) and wants to improve water quality, bank stabilization, and soil and animal health on his property. Proposed restoration activities include riparian plantings, fencing, off-stream stock water, improved grazing practices, and riparian pasture management. This project offers an opportunity to raise awareness among rural landowners along Camp Creek and throughout the Gallatin Valley regarding riparian best management practices and the availability of assistance and funding for restoration projects through GGWC, NRCS, and 319 funding.

A: Statement of Need and Intent

A1: The Story Mill Park encompasses portions of two streams --a small stretch of Bozeman Creek and a half-mile of the East Gallatin River -- that share a floodplain and converge at the park's northwest boundary. As a result of roughly 150 years of agricultural and industrial disturbances, the property's wetlands and riparian areas have become degraded. These habitats require the removal of hydrologic modifications and debris, weed management, and revegetation to return to their full function.

Both streams are listed in the 2013 Lower Gallatin TMDL for nutrient impairments. Bozeman Creek is also listed for sediment and *E. coli* impairments. Reconnecting the East Gallatin River to its historic floodplain and restoring wetlands will improve water quality to address these impairments. Pollutant reductions resulting from the restoration activities will help achieve objectives outlined in the Lower Gallatin Watershed Restoration Plan and assist the City of Bozeman in enhancing water quality in urban waterways. Improvements in water quality will directly benefit the ecosystem and recreational and educational opportunities at Story Mill Park.

A2: Camp Creek is listed on the 2013 Lower Gallatin TMDL for sediment, nutrient, and *E. coli* impairments. The area has a long history of agricultural use and related degradation, particularly along streambanks and riparian areas. The stream has been channelized and banks are severely incised in several areas. Cattle also have unrestricted access to the stream, contributing to water quality issues and a lack of riparian vegetation. The proposed project will improve water quality while implementing a conservation plan that addresses both crop and cattle production. Improvements to Camp Creek will contribute to the goals of the Lower Gallatin Restoration Plan and meet NRCS goals of enhanced water quality and soil health.

B: Collaborative Effort

Partner	Role
Trust for Public Land	This organization currently owns the Story Mill site. Maddy Pope, Project Manager, will be coordinating and overseeing the on-going restoration projects at the site.
City of Bozeman	The City is on schedule to acquire ownership of the Story Mill site by December 2015 and will work with TPL to continue the restoration process through 2017.
Gallatin Local Water Quality District	Tammy Swinney (District Manager) and staff will assist with monitoring and project oversight.
Natural Resources Conservation Service (NRCS)	Chris Mahony, NRCS Soil Conservationist, will be assisting GGWC by coordinating with the landowner for the Camp Creek project.
Trout Unlimited (TU)	Pat Byorth of TU has participated in the stakeholder process to develop restoration project goals and review and advise throughout the development of the restoration plan. TU has also assisted in community outreach to articulate the benefits of the Story Mill restoration project to improving water quality and protecting fisheries in the watershed

Additional Information (Collaborative Effort)

Other Story Mill project collaborators: RESPEC Consulting and Services; Big Sky Watershed Corps; Montana Conservation Corps; National Park Service; Bozeman Creek Enhancement Project; Sacajawea Audubon Society; Montana Fish, Wildlife and Parks; Gallatin Valley Land Trust; Montana Outdoor Science School; Learning By Nature; Northeast Neighborhood Association; National Farm to School; Gallatin Valley Farm to School; Boys and Girls Club of Southwest Montana; Gallatin Valley YMCA; TerraQuatic; Broken Ground; Comma-Q Architecture; Design 5 Landscape Architects; Montana State University; and the Montana Department of Environmental Quality.

Other Camp Creek collaborators: Montana State University Extension - Natural Resources

C: Project Planning and Management

Funding Organization	Award Amount	Project Description	Project Status	Contact Information
Montana Department of Environmental Quality (DEQ)	\$75,900	Lower Gallatin Planning Area TMDL	Complete	Christian Schmidt Senior TMDL Planner Montana DEQ (406) 444-6777 cschmidt2@mt.gov
Gallatin Conservation District (GCD)	\$30,000 awarded over 3 years	The GCD awarded GGWC \$10,000 annually from 2009 to 2011. The funds were used for TMDL reporting, restoration projects, education events, volunteer water quality monitoring, watershed tours, and coordinator time.	Complete	Marcie Murnion District Administrator Gallatin Conservation District 406-282-4350 x1 marcie@gallatincd.org
Sonoran Institute	\$5,000	A Gallatin Area Planning grant was awarded to GGWC in 2010 to write a Stormwater Cost and Benefit Analysis report and to host a series of community meetings on Low Impact Development.	Complete	Randy Carpenter Sonoran Institute 201 S. Wallace Ave. Bozeman, MT 59715 406-587-7331 rcarpenter@sonoraninstitute.org
Cinnabar Foundation	\$13,000 awarded over 4 years	The Cinnabar Foundation awarded GGWC \$4,000 in 2005 and \$3,000 in 2011, 2012, and 2013. These funds were matched dollar-for-dollar by GGWC and were used to assist with education, outreach, and restoration projects.	Complete	Steve Thompson Executive Director Cinnabar Foundation Whitefish, MT (406) 250-9810 steve@cinnabarfoundation.org
Montana Department of Environmental Quality (DEQ)	\$30,000	Lower Gallatin Watershed Restoration Plan	In process. Due 12/31/14	Ann McCauley Water Quality Specialist Water Quality Planning Bureau, MT-DEQ (406) 444-9897 AMcCauley@mt.gov

Additional Information (Planning and Management)

Other entities who have given funds to GGWC:

- 1) This June, the Gilhousen Foundation awarded GGWC \$3,000 to support the Gallatin Stream Program. GGWC, GLWQD and the City of Bozeman are collaborating on an East Gallatin River Monitoring project that began in August 2014 and will continue over the next three years.
- 2) The City of Bozeman contributed \$3,000 to pay for the assistance of the GGWC Watershed Coordinator to assist the GLWQD staff with the monitoring project.
- 3) Over the past 5 years, Montana Import Group has donated over \$13,000 to support the Gallatin Stream Program and other education and outreach programs.
- 4) The Montana DEQ has awarded GGWC with additional funds over the past 5 years through their Mini-Grant program and their Lab Analysis Grants.

Section III: Project Components

A: Education and Outreach: Please briefly describe the education and outreach component of this proposal, the target audience, and the method of delivery.

A1: The Story Mill restoration project presents a unique opportunity in Montana to demonstrate wetland and riparian restoration with the added benefit of providing water quality improvements within an urban setting. GGWC and TPL are working with MSU, the City of Bozeman, and other organizations to create a Living Classroom Project at Story Mill Park. This will provide educational programs to K-12 students and community members as well as research opportunities for MSU students.

Activities of this restoration project will demonstrate to local residents and other Montana communities the benefits of restoring healthy ecosystems and addressing water quality problems. Information about restoration activities will be distributed through local newspapers and television, the internet and social media, and on-site educational kiosks. Tours will be held for project stakeholders as well as the general public. Aerial photographs will provide a visual record of restoration activities. Curriculum will be developed to reach 1,000 students over the short-term. Target audiences include the Gallatin Valley community, regional conservation and water quality professionals, educators, and local students.

A2: The Camp Creek project will include a collaborative effort between GGWC, NRCS, and the landowner to work with local youth volunteers to plant willow cuttings along stream banks. GGWC will also pursue the option of hosting a tour of the project site for local agricultural producers with the landowner's permission. An informational pamphlet about rural stream restoration may also be created by GGWC. These activities will provide an opportunity to use the project to educate community members about best management practices along a stream on agricultural property and the availability of support and funding for restoration projects through GGWC, NRCS, and DEQ.

C: Operation and Maintenance

A1: GGWC in collaboration with TPL will secure a landowner agreement with the City of Bozeman by June 2015 for the operation and maintenance of restoration and signage at Story Mill Park. TPL will continue oversight of the restoration work via a contract with the City during implementation of project activities. Plantings will receive water, browse protection, and weed control. Long-term operation and maintenance will be the responsibility of the City of Bozeman. The expected life of project activities will vary by practice, but overall is expected to be at least 10 years.

A2: GGWC will work with NRCS to secure a landowner agreement with the Camp Creek landowner by June 2015. The agreement will be based on NRCS recommended life of practices for the projects that will be implemented. NRCS and GGWC will oversee the installation and short-term maintenance of these projects, including any watering, browse protection, and weed control of newly planted areas. Long-term operation and maintenance will be the responsibility of the landowner.

D: Monitoring: Please briefly describe the monitoring component of this proposal.

Both real-time monitoring and load reduction modeling for nutrients and sediment will be used to estimate water quality improvements on the East Gallatin River, Bozeman Creek, and Camp Creek as a result of restoration activities.

At Story Mill Park, volunteers with the Gallatin Stream Team program will continue monitoring upstream and downstream of the restoration site on the East Gallatin River and Bozeman Creek to collect data pre-, during, and post-restoration in 2016 and 2017. GGWC will also oversee the ongoing collection of groundwater level measurements from shallow wells located within the Story Mill wetlands in 2016 and 2017 to monitor changes in the groundwater table resulting from wetland restoration activities. Vegetation surveys (canopy cover and willow stake survival) will be performed following revegetation of riparian areas and wetlands. Wetland monitoring will also be performed with the purpose of updating the wetland delineation in 2017. Annual photo documentation of the site will continue from established photopoints. Nutrient and sediment load reductions will be estimated in consultation with DEQ's Load Reduction Estimation Guide and DEQ staff.

In-stream monitoring is not planned for the Camp Creek project. Nutrient and sediment load reductions will be estimated using appropriate riparian and upland grazing modeling programs, including the NRCS Wind Erosion Prediction System (WEPS) and Revised Universal Soil Loss Equation, Version 2 (RUSLE2). The project will also be monitored using pre- and post-restoration photo surveys and vegetation surveys. In 2012, NRCS conducted a riparian assessment of the property on Camp Creek. This assessment will be used as baseline data and compared to a post-restoration assessment that will be conducted within five years of the completion of the project.

Section IV: Scope of Work

Task 1 Title Story Mill Restoration

Description

Surface water quality improvements are proposed for both the East Gallatin River on the North Parcel and for Bozeman Creek Slough on the South Parcel. On the North Parcel, the East Gallatin does not have adequate access to its floodplain. The proposed remedy will be to restore approximately one acre of floodplain to the predicted two-year flood elevation. Historically placed fill material will be removed from the floodplain and two gaps will be created in the existing bank between mature cottonwoods to re-connect the stream with its newly restored floodplain. This will attenuate smaller-magnitude flood flows as well as trap fine sediments and reduce nutrients by slowing water velocities and increasing opportunities for nutrient uptake in plants and infiltration through the soil. Any man-made debris removed from the excavated area --as well as debris previously removed from the channel under a Future Fisheries grant (see note in Section V-I, Additional Information) --will be hauled off-site for final disposal. Sediment wattles and biodegradable erosion control fabric will be placed on the new floodplain to prevent erosion and promote vegetation establishment. The floodplain will be seeded with a wetland mix and floodplain sideslopes will be vegetated with a native riparian seed mix of grasses, forbs, and shrubs. Locally sourced willow cuttings will be planted in the new floodplain area in clusters to mimic locally occurring willows. These clusters improve water quality by increasing surface roughness to slow floodwaters. A public access point on the East Gallatin River will be constructed using a geotextile grid filled with native material aimed at preventing bank erosion. In the Bozeman Creek Slough, clusters of willow cuttings will be planted to improve riparian habitat and water quality. Match will include partial costs of rubble removal and floodplain excavation, equipment mobilization and demobilization, and oversight of the project by TPL and RESPEC Consulting.

Deliverables

- 1) Draft and final design plans for DEQ review and approval.
- 2) Pre- and post-construction photos.
- 3) Receipts and other documentation for expenditures and services.
- 4) Final project report to be included in final grant report.

Task 1 Funding

319 Funds	\$67,600.00
Non-Federal Match	\$32,310.00
Other Federal Funds	
Total Cost	\$99,910.00
Is Match Secured?	Yes

Timeline 07/2015 to 06/2016

Match Source Private funds; in-kind services

Task 2 Title Camp Creek Restoration

Description

Restoration work on a private ranch along Camp Creek is intended to improve water quality, bank stability, and soil and animal health on the property. To remedy water quality impairments caused by cattle grazing in riparian areas and entering the channel, 1,500 feet of barbed/smooth wire fence will be installed along riparian areas. Additionally, an off-stream watering system with two shallow wells, two electric powered pumps, two 1,000-gallon watering facilities, and one automatic winter watering tank will be installed to eliminate the need for cattle to enter the stream. Suitable reaches along 3,150 linear feet of Camp Creek will be planted with native trees and willow cuttings to improve riparian habitat and increase bank stability. Additionally, NRCS will assist the landowner in establishing a prescribed grazing system to improve soil and vegetative health on 547.9 acres for 40 pair of cattle by allowing adequate recovery times between grazing events, varying season of use, and installing fences to facilitate even distribution of grazing.

Match will include design development and technical assistance from NRCS, landowner labor to install infrastructure and implement prescribed grazing practices, purchase of trees and shrubs, and volunteer labor for plantings.

Deliverables

- 1) Draft and final design plans for DEQ review and approval.
- 2) Pre- and post-construction photos.
- 3) Receipts for expenditures and services.
- 4) Final project report to be included in final grant report.

Task 2 Funding

319 Funds	\$22,000.00
Non-Federal Match	\$15,000.00
Other Federal Funds	
Total Cost	\$37,000.00
Is Match Secured?	Yes

Timeline 07/2015 to 07/2016

Match Source Private funds and in-kind services

Task 3 Title Project Monitoring

Description

Gallatin Stream Teams will monitor surface water at 5 sites on the East Gallatin River and Bozeman Creek along Story Mill Park in 2016 and 2017. Parameters measured will include total phosphorus, total nitrogen, total suspended solids, total dissolved solids, water temperature, dissolved oxygen, pH, and discharge. Nutrient and sediment load reductions achieved by this project will be estimated for the East Gallatin River and Bozeman Creek using the DEQ Load Reduction Estimation Guide and other appropriate guidance manuals. Additionally, water levels will be measured in 15 shallow groundwater wells at the Story Mill wetlands in 2016 and 2017 to track changes to the water table. The project will be monitored with pre- and post-restoration photo surveys, vegetation surveys in riparian areas and wetlands, and wetland assessment to update the wetland delineation.

Nutrient and sediment load reductions to Camp Creek will be estimated using appropriate riparian and upland models, including BEHI and NRCS WEPS and RUSLE2 modeling programs. The project will be monitored with vegetation and photo surveys and a post-restoration riparian assessment. Requested funds will cover two years of Stream Team volunteer training, field equipment, lab analysis fees, data entry, GGWC and GLWQD coordination as well as staff time for groundwater monitoring, load reduction modeling, riparian assessment, wetland monitoring, and photo and vegetation surveys. Match includes water quality monitoring by Stream Team volunteers, donated in-kind from RESPEC Consulting, and NRCS staff time for monitoring and modeling assistance on Camp Creek.

Deliverables

- 1) Draft and final versions of a Sampling and Analysis Plan for Story Mill project monitoring.
- 2) Draft and final versions of a Sampling and Analysis Plan for Camp Creek project monitoring.
- 3) Data from surface water monitoring at 5 sites on the E. Gallatin River and Bozeman Creek in 2016 and 2017 will be entered into the EQuS database.
- 4) Data from groundwater well measurements at Story Mill Park in 2016 and 2017.
- 5) Estimated load reductions for the Story Mill and Camp Creek projects.
- 6) Photo and vegetation surveys and wetlands monitoring surveys at Story Mill Park.
- 7) Photo and vegetation surveys and riparian assessment at Camp Creek.

Task 3 Funding

319 Funds	\$23,800.00
Non-Federal Match	\$16,590.00
Other Federal Funds	\$1,000.00
Total Cost	\$41,390.00
Is Match Secured?	Yes

Timeline 07/2015 to 10/2017

Match Source Private donations and in-kind services

Task 4 Title Education and Outreach

Description

Education and outreach activities at the Story Mill site will involve:

1) Temporary signs created to explain and interpret restoration activities to the general public during construction. Two kiosks will be installed to mount the signs. One kiosk will be adjoining the Story Mill Spur Trail, a popular community trail with hundreds of daily users, and the other on the North Parcel proximate to the floodplain restoration area. After the restoration is complete, the kiosks will be reused for permanent interpretive signs for which partners may seek future 319 funds. TPL will provide a portion of the cost of this activity as match. 2) The use of aerial photography to create a visual record of the restoration construction process and transformation of the site's wetlands and river complex. Photographs will be used along with written materials for media outreach, online newsletters and social media, public presentations, and community workshops during the restoration process. The photographer will provide in-kind hours as match. 3) Directly engaging students and the general public through site tours in 2015 and 2016, educational programs about the Story Mill restoration project, and a day-long seminar with a take-along curriculum for Gallatin Valley teachers and other educators. Targeted audiences are: the general public (100 attendees), project stakeholders (40 participants), Montana State University (50 students), and teachers and other educators from project partners at the YMCA, Boys & Girls Club of SW Montana and Montana Outdoor Science School (30 educators with potential to extend the curriculum to over 1,000 students). TPL will cover curriculum development as match. 4) Written materials developed through local and regional media and electronic outlets about the demonstration project and its benefits. These will reach thousands of people over the grant period and will create the opportunity for Gallatin Valley residents to learn about water quality topics and restoration.

Education and outreach activities for the Camp Creek project may include a volunteer opportunity for local youth to plant willows, a project tour for local landowners, and/or an informational pamphlet about best management practices and funding opportunities. Any Education and Outreach activity will be performed with permission of the landowner and coordinated by GGWC or NRCS.

Deliverables

- 1) Draft and final versions of kiosk layout and design.
- 2) Aerial photography from three flyovers.
- 3) Agendas for each tour given.
- 4) A copy of the final educator curriculum.
- 5) Press releases, articles, text for online posting, brochures, and other media releases.
- 6) Camp Creek tour or volunteer work day agendas or informational pamphlet.

Task 4 Funding

319 Funds	\$7,700.00
Non-Federal Match	\$5,120.00
Other Federal Funds	
Total Cost	\$12,820.00
Is Match Secured?	Yes

Timeline 07/2015 to 12/2017

Match Source Private funds and in-kind services

Task 5 Title Operations and Maintenance

Description

A1: By June 2015, GGWC in collaboration with TPL will secure a landowner agreement with the City of Bozeman for operation and maintenance of installed restoration activities and signage at Story Mill Park. Plantings will receive water, browse protection, and weed control. TPL will continue oversight of the restoration project via a contract with the city during implementation of project activities. Long-term operation and maintenance will be the responsibility of the City of Bozeman. Expected life of project activities will vary by practice, but overall expectancy is 10 years.

A2: GGWC will work with NRCS to secure a landowner agreement with the Camp Creek landowner by June 2015. The agreement will be based on NRCS recommended life of practices for projects that will be implemented. NRCS and GGWC will oversee installation and short-term maintenance of these projects, including watering, browse protection, and weed control of newly planted areas. Long-term operation and maintenance will be the responsibility of the landowner.

Deliverables

- 1) Draft and final versions of the landowner agreement between GGWC and the City of Bozeman.
- 2) Draft and final versions of the landowner agreement between GGWC and the Camp Creek landowner.

Task 5 Funding

319 Funds	<input type="text" value="\$1,000.00"/>
Non-Federal Match	<input type="text" value="\$1,000.00"/>
Other Federal Funds	<input type="text"/>
Total Cost	<input type="text" value="\$2,000.00"/>
Is Match Secured?	<input type="text" value="Yes"/>

Timeline 07/2015 - 12/2017

Match Source Private funds and in-kind services

Task 6 Title Project Coordination

Description

Requested funds will cover task-specific coordination and management duties for the GGWC Watershed Coordinator. These duties may include but are not limited to procuring contractors, managing sub-contracts, procuring applicable permits, conducting site visits, and coordinating with project partners and volunteers.

Deliverables

- 1) Meeting agendas and summaries of coordination events and site visits.

Task 6 Funding

319 Funds	<input type="text" value="\$15,200.00"/>
Non-Federal Match	<input type="text" value="\$10,133.00"/>
Other Federal Funds	<input type="text"/>
Total Cost	<input type="text" value="\$25,333.00"/>
Is Match Secured?	<input type="text"/>

Timeline 7/2015 to 12/2017

Match Source Private and public funds; in-kind services

Description

The GGWC Watershed Coordinator and Board Treasurer will be responsible for contract administration. The Coordinator will document hours, keep track of allowable costs, and provide necessary contract-related deliverables to Montana Department of Environmental Quality (DEQ). The Treasurer will work with the Coordinator and DEQ contract staff to provide detailed invoices and other financial deliverables to DEQ.

Deliverables

- 1) Quarterly reports, annual reports, and a final report.
- 2) Billing statements.

Task 7 Funding

319 Funds	\$15,200.00
Non-Federal Match	\$10,133.00
Other Federal Funds	
Total Cost	\$25,333.00
Is Match Secured?	Yes

Timeline 07/2015 to 12/2017

Match Source Private funds and in-kind services

Task 8 Title

Description

Deliverables

Task 8 Funding

319 Funds	
Non-Federal Match	
Other Federal Funds	
Total Cost	
Is Match Secured?	

Timeline

Match Source

Task 9 Title _____

Description

Deliverables

Task 9 Funding

319 Funds	<input type="text"/>
Non-Federal Match	<input type="text"/>
Other Federal Funds	<input type="text"/>
Total Cost	<input type="text"/>
Is Match Secured?	<input type="text"/>

Timeline _____ Match Source _____

Task 10 Title _____

Description

Deliverables

Task 10 Funding

319 Funds	<input type="text"/>
Non-Federal Match	<input type="text"/>
Other Federal Funds	<input type="text"/>
Total Cost	<input type="text"/>
Is Match Secured?	<input type="text"/>

Timeline _____ Match Source _____

Section V: Supporting Documents

A: Detailed Project Budget

Detailed Project Budget						
Task Number and Specific Action	319 Funds	State Cash Match	Local Cash Match	In-Kind Match	Federal Funds	Total Costs
1a) Strip and replace topsoil on N. Parcel	\$11,500	\$0	\$0	\$0	\$0	\$11,500
1b) Excavate floodplain on N. Parcel	\$14,800		\$14,350			\$29,150
1c) Revegetate N. Parcel and Bozeman Creek Slough	\$13,700					\$13,700
1d) Sediment and erosion control on N. Parcel	\$11,700					\$11,700
1e) N. Parcel public access for erosion control	\$4,100					\$4,100
1f) Off-site rubble disposable	\$11,800		\$10,550			\$22,350
1g) Oversight (TPL \$7,000) RESPEC (\$7,180)			\$7,180	\$7,000		\$14,180
1h) Equipment Mobilization and Demobilization			\$6,150			\$6,150
2a) Water wells (2)	\$10,400					\$10,400
2b1)Watering facility - auto water winter tank	\$1,240			\$1,500		\$2,740
2b2) Watering facility - summer (2)	\$5,600			\$1,500		\$7,100
2c) Fence - barbed/smooth wire	\$3,230			\$3,000		\$6,230
2d) Pumping plant (2)	\$1,530					\$1,530
2e) Tree and shrub establishment				\$6,000		\$6,000
2f) Prescribed grazing management				\$3,000		\$3,000
3a) Load reduction estimate modeling	\$2,500			\$1,000		\$3,500
3b) Surface and groundwater monitoring	\$10,000			\$10,350		\$20,350
3c) Development of Sampling and Analysis Plans (2)	\$1,000			\$1,000		\$2,000
3d) Pre- and post-project surveys	\$5,900			\$2,500	\$1,000	\$9,400
3e) Data Management	\$4,400			\$2,640		\$7,040
4a) Restoration signage	\$2,500		\$1,520			\$4,020
4b) Aerial photography	\$1,200		\$600			\$1,800
4c) Public and stakeholder tours	\$2,000		\$1,000			\$3,000
4d) Educator workshop	\$2,000		\$2,000			\$4,000
5) Story Mill and Camp Creek landowner agreements	\$1,000			\$1,000		\$2,000
6) Project Coordination	\$15,200			\$10,133		\$25,333
7) Grant Administration	\$15,200			\$10,133		\$25,333
TOTAL	\$152,500	\$0	\$43,350	\$60,756	\$1,000	\$257,606

B: Project Milestone Table: Please complete the following Project Milestone Table by entering task numbers and titles in the left hand column, then check the box(es) for the appropriate quarter(s) and year(s) in which the task will take place.

Milestone	Spring 2015	Summer 2015	Fall 2015	Winter 2016	Spring 2016	Summer 2016	Fall 2016	Winter 2017	Spring 2017	Summer 2017	Fall 2017
Task 1: Story Mill Restoration	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Task 2: Camp Creek Restoration	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Task 3: Project Monitoring	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Task 4: Education and Outreach	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Task 5: Operations and Maintenance	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Task 6: Project Coordination	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Task 7: Grant Administration	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
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	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please ensure that you submit a **project map(s)** and **letters of support (at least 3)** along with this Final Application form. If design drawings are available please provide those as well. For on-the-ground work please include copies of the applicable permits.

☒ **C: Project Map**

☒ **D: Letters of Support**

☒ **E: Design Drawings**

☒ **F: Applicable Permits**

☒ **G: Draft of amended WRP (if applicable)**

☒ **H: Photos**

I: Please use the space provided for any additional information that may not have been captured by this application form.

Please note that the draft Lower Gallatin Watershed Restoration Plan submitted with this proposal is currently in the review process by GGWC staff and board members, and any associated edits have not yet been incorporated. We look forward to working with stakeholders and DEQ staff in the coming weeks on improving the WRP to best meet GGWC's and DEQ's needs.

Over the past two years, GGWC, TPL, riparian consultants including RESPEC Consulting, and other stakeholders have developed an ambitious plan to address water quality issues through wetlands and riparian restoration at the future Story Mill Community Park. The Story Mill project presents an exceptional opportunity for 319 funds to be used in this highly visible, well-documented and partner-supported urban project. On a per capita basis, this proposal costs about \$1 per Gallatin Valley resident—a small investment for the recreation, enjoyment, and education the project will provide. Over time, this investment will likely pay dividends by reaching new students, residents, and visitors. Further, this project has the potential to encourage other Montana jurisdictions to implement restoration projects to address water quality issues for the benefit of people, the economy, and the environment.

TPL has secured additional funding for separate restoration activities occurring at the Story Mill Park. A 2014 Future Fisheries grant funded the following: removal of man-made debris from the channel (as opposed to the floodplain) along 0.5 mile of the East Gallatin River; bank stabilization on 180 feet of the east bank of the East Gallatin including riparian planting, soil treatments, and willow clusters for shade; and revegetation of 250 feet of the west bank of the East Gallatin. This work began in September 2014 and will be completed in May 2015. The Future Fisheries funding did not cover off-site hauling and disposal of debris removed from channel; this cost is included in the 319 request.

Section 319 Grant - Final Proposal Form

FY2015 Final Proposals are due Monday, September 29, 2014

Section I: General Information

Project Title Watershed Restoration Project Implementation in the Lower Gallatin Watershed

Project Sponsor Information

Sponsor Name Greater Gallatin Watershed Council (GGWC)

County Gallatin

Website www.greatergallatin.org

Tax Identification # 13-4293305

DUNS # 005541439

SAMs # 772K3

Primary Contact Sierra Harris

Signatory Brian Heaston

Title Watershed Coordinator

Title GGWC Board - Vice Chair

Address P.O. Box 751

Address P.O. Box 751

City Bozeman State Montana Zip Code 59771

City Bozeman State Montana Zip Code 59771

Phone Number (406) 551-0804

Phone Number (406) 582-2280

Fax Number N/A

Fax Number N/A

E-mail Address info@greatergallatin.org

E-mail Address bheaston@bozeman.net

Signature Sierra Harris

Signature Brian Heaston

Project Location

Watershed Name or HUC # Lower Gallatin

TMDL Planning Area Lower Gallatin Planning Area

(1) Waterbody Name from 2014 List of Impaired Waters East Gallatin River

(1) Probable Cause(s) of Impairment Nutrients - Total Nitrogen (TN)

(2) Waterbody Name from 2014 List of Impaired Waters Sourdough Creek (Bozeman Creek)

(2) Probable Cause(s) of Impairment Sediment, streamside alteration, Total Nitrogen, Chlorophyll-a, and E. coli

(3) Waterbody Name from 2014 List of Impaired Waters Camp Creek

(3) Probable Cause(s) of Impairment Sediment, TP, TN, low flow alteration, and streamside and substrate alteration, and E. coli

Activity 1 Name Story Mill Restoration Project

Latitude (1) 45.690

Longitude (1) -111.0255

Activity 2 Name Camp Creek Restoration Project

Latitude (2) 45.660628

Longitude (2) -111.358509

Activity 3 Name

Latitude (3)

Longitude (3)

Nonpoint Source (NPS) Information

Which WRP does the project implement? Other

What is the WRP status? Under Development

Does the project implement recommendations in a TMDL? Yes

Waterbody Type River/Stream

Functional Category Watershed Management

1st Pollution Category Urban Runoff/Stormwater (Municipal)

Percent of Total (%) 40

2nd Pollution Category Agriculture (Grazing Related Sources)

Percent of Total (%) 20

3rd Pollution Category Hydromodification (Streambank or Shoreline Modification/Destabilization)

Percent of Total (%) 30

4th Pollution Category Hydromodification (Channel Erosion/Incision)

Percent of Total (%) 10

Project Funding

319 Funds Requested	<input type="text" value="\$152,500.00"/>	Does the project sponsor have any open 319 contracts?	<input type="text" value="Yes"/>
Matching Funds		Project Title	<input type="text" value="Lower Gallatin Watershed Restoration Plan"/>
State Cash Match	<input type="text"/>	DEQ Contract Number	<input type="text" value="213025"/>
Local Cash Match	<input type="text" value="\$43,350.00"/>	319 Award	<input type="text" value="\$30,000.00"/>
In-Kind Match	<input type="text" value="\$60,756.00"/>	Projected Closing Date	<input type="text" value="December 31, 2014"/>
Total Match	<input type="text" value="\$104,106.00"/>	Project Title	<input type="text"/>
Other Federal Funds	<input type="text" value="\$1,000.00"/>	DEQ Contract Number	<input type="text"/>
Total Project Budget	<input type="text" value="\$257,606.00"/>	319 Award	<input type="text"/>
Administrative Fee	<input type="text" value="\$15,200.00"/>	Projected Closing Date	<input type="text"/>

Project Description

Methods: Please describe the specific activities of this project.

A1: Restore and revegetate floodplain and wetlands along the East Gallatin River and revegetate Bozeman Creek Slough at Story Mill Park. Use park as demonstration site to educate public about water quality, wetlands and restoration.
A2: Improve streambank stability and water quality on a private ranch along Camp Creek through the addition of fencing and an off-stream water source for cattle and through bank revegetation. Both project tasks will involve monitoring for the effectiveness of restoration activities and modeling for nutrient and sediment reductions.

Objectives: Please describe the specific/measurable objectives that will ensure the achievement of the project goal(s).

A1: Reduce sediment and nutrient loads entering and conveyed by the East Gallatin River and Bozeman Creek by restoring 1.0 acre of East Gallatin River floodplain and planting 0.4 acres of native willow cuttings on Bozeman Creek Slough. Provide educational opportunities about water quality and restoration to community members, educators, and students.
A2: Reduce sediment, nutrient, and *E. coli* inputs to Camp Creek by installing fencing and off-site water as well as enhancing the riparian buffer zone as measured by woody plant recruitment, species composition, and productivity.

Overview: Please provide a brief summary of the proposed project.

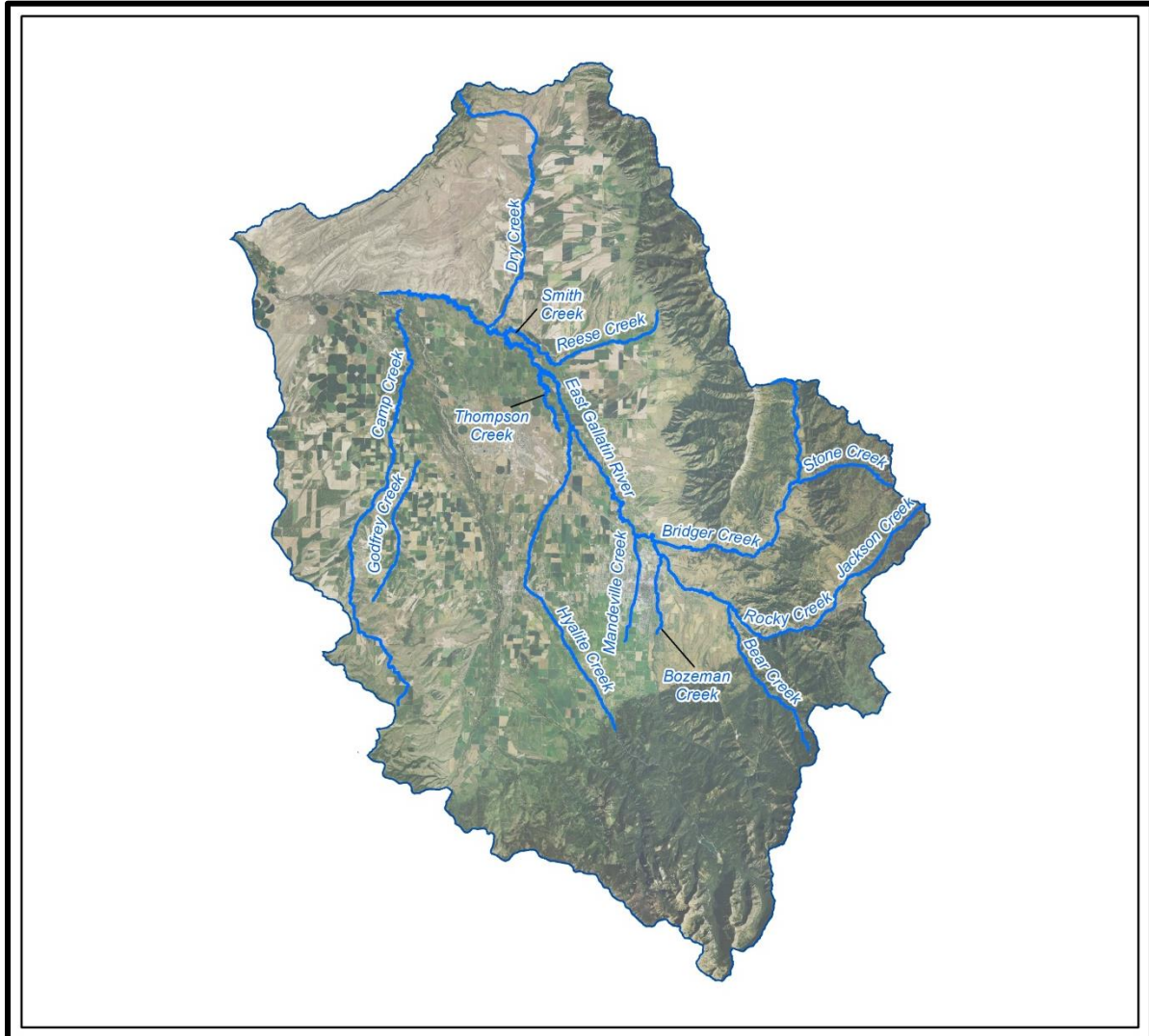
The Greater Gallatin Watershed Council (GGWC) will complete the Lower Gallatin Watershed Restoration Plan by December 2014 --draft submitted with this proposal --and is applying for 319 funds to implement on-the-ground restoration projects beginning in summer 2015. The two selected projects reflect the diversity of restoration needs in the Lower Gallatin Watershed: one is a high-profile urban project that will provide community education, the other an agricultural project with the potential for outreach to other rural landowners.

GGWC is partnering with The Trust for Public Land (TPL) to transform the 54-acre Story Mill site into a premier community asset featuring opportunities for habitat restoration, water quality enhancement, community education, and recreation within an urban park setting. The future city park is located in northeast Bozeman; offers trail connections to downtown and substantial open space; and features unique wetland, stream, and riparian habitat. This property will be acquired by the City of Bozeman by December 2014. The city park will be in development through 2017 and then will be opened to the public. This project has the potential to educate hundreds of Gallatin Valley residents during the restoration process and thousands of recreationalists, students, and visitors over the long-term.

This proposal requests 319 funds for floodplain and wetland restoration and for the installation of a public access site on the East Gallatin River, revegetation of the Bozeman Creek Slough, and the delivery of educational opportunities to the community. The 319 funding will be one of several funding sources for the overall restoration of the site, but this proposal funds unique projects. For further information about other funding sources, see Section V-I, Additional Information.

The Camp Creek project is a collaboration between GGWC, the Natural Resources Conservation Service (NRCS), and a private landowner who grazes 40 pair of cattle on a 944-acre property. The landowner is enrolled in NRCS's Conservation Stewardship Program (CSP) and wants to improve water quality, bank stabilization, and soil and animal health on his property. Proposed restoration activities include riparian plantings, fencing, off-stream stock water, improved grazing practices, and riparian pasture management. This project offers an opportunity to raise awareness among rural landowners along Camp Creek and throughout the Gallatin Valley regarding riparian best management practices and the availability of assistance and funding for restoration projects through GGWC, NRCS, and 319 funding.

Lower Gallatin Watershed Restoration Plan



LOWER GALLATIN WATERSHED RESTORATION PLAN

prepared by

Jeff Dunn, Watershed Hydrologist
Karen Filipovich, Outreach Consultant

RESPEC

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September 25, 2014



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ATTACHMENTS

- Attachment A Project Development Screening Tool
- Attachment B Community-Based Stream Improvement Meetings and Comments Summary

1.0 INTRODUCTION

The Greater Gallatin Watershed Council (GGWC) works with the local community in the Lower Gallatin watershed to develop and implement water quality improvement projects that address identified water quality impairments with the goal of improving stream conditions to the point where they are meeting Montana’s water quality standards and are no longer considered impaired by the Montana Department of Environmental Quality (DEQ). Between 2009 and 2012, GGWC provided assistance to DEQ as they worked to develop Total Maximum Daily Loads (TMDLs) for impaired stream segments in the Lower Gallatin TMDL Planning Area, which includes the entire East Gallatin River watershed, along with the mainstem of the Gallatin River downstream of Spanish Creek and tributaries that enter the Gallatin River downstream of Spanish Creek. Following the completion of the Lower Gallatin TMDL document in 2013, GGWC has been actively involved in the development of this Watershed Restoration Plan (WRP) for the Lower Gallatin watershed. Completion of the Lower Gallatin WRP will enable GGWC and other groups within the Lower Gallatin watershed to obtain funding through the 319 program for the implementation of water quality improvement projects on impaired stream segments identified in the *Lower Gallatin Planning Area TMDLs and Framework Water Quality Improvement Plan* (DEQ 2013).

The Lower Gallatin WRP provides a framework for implementing water-quality improvements for sediment, nutrient, and *E. coli* pollutants on 15 streams with water-quality impairments in the Lower Gallatin watershed, including:

- Bear Creek
- Bozeman Creek
- Bridger Creek
- Camp Creek
- Dry Creek
- Godfrey Creek
- Hyalite Creek
- Jackson Creek
- Mandeville Creek
- Reese Creek
- Rocky Creek
- Smith Creek
- Stone Creek
- Thompson Creek
- East Gallatin River

To help identify potential restoration projects, GGWC held a series of community meetings with the theme of “Community-Based Stream Improvements” in January and February of 2014. These WRP community meetings provided the opportunity for the public to provide input on potential areas for improvement on or near streams, wetlands, and in the watershed. On those stream or sub-watersheds that have been identified as impaired by DEQ, public input helped to identify potential stream and wetland restoration projects that would lead to improved water quality.

2.0 WATERSHED CHARACTERIZATION

A detailed characterization of the Lower Gallatin watershed was prepared during the TMDL development process and is presented in Section 2 of the *Lower Gallatin Planning Area TMDLs & Framework Water Quality Improvement Plan* (DEQ 2013). The Lower Gallatin watershed covers 997 square miles and includes both urban and agricultural stakeholders. To facilitate communication with the diverse stakeholders in the Lower Gallatin watershed during the WRP process, GGWC divided the Lower Gallatin watershed into four areas with distinct characteristics: North, East, West and Bozeman. GGWC conducted community meetings in Belgrade (North), Manhattan (West), Bridger Canyon (East) and Bozeman to provide stakeholders throughout the watershed the opportunity to present ideas on what types of restoration projects might lead to improved stream conditions. Varying land ownership and land use patterns, along with varying stream types and conditions, between these areas provide an opportunity for GGWC to implement a variety of restoration measures that specifically address the concerns of individual stakeholder groups, the unique stream conditions across the Lower Gallatin watershed, and the pollutants of concern identified by DEQ.

2.2.1 Lower Gallatin Watershed – Bozeman

The area in and around Bozeman is highly urbanized and includes impaired segments on Bozeman Creek, Bridger Creek, Mandeville Creek, and the East Gallatin River (**Figure 2-1**). Impairments include total nitrogen, nitrate+nitrite, total phosphorus, *E. coli* and sediment. Primary stakeholders in this area include the City of Bozeman and Montana State University, along with local residents, businesses and non-profit organizations. In the area around Bozeman, GGWC envisions taking a lead role in watershed restoration efforts in partnership with the City of Bozeman, Gallatin Local Water Quality District, Montana State University, Montana Department of Natural Resources and Conservation, and non-profit organizations.

2.2.2 Lower Gallatin Watershed – East

The eastern portion of the Lower Gallatin watershed includes impaired segments on Bear Creek, Bozeman Creek, Bridger Creek, Hyalite Creek, Jackson Creek, Mandeville Creek, Rocky Creek, Stone Creek, and the East Gallatin River (**Figure 2-2**). Impairments include total nitrogen, nitrate+nitrite, total phosphorus, *E. coli* and sediment. Primary stakeholders in this area include the City of Bozeman, Montana State University, United States Forest Service, agricultural producers, and private landowners, along with local residents, businesses and non-profit organizations. In the eastern portion of the Lower Gallatin watershed, GGWC envisions taking a lead role in watershed restoration efforts in partnership with the City of Bozeman, Gallatin Local Water Quality District, Montana State University, United States Forest Service, agricultural producers, irrigation ditch operators, other interested landowners and non-profit organizations.

2.2.3 Lower Gallatin Watershed – North

The northern portion of the Lower Gallatin watershed includes impaired segments on Dry Creek, Reese Creek, Smith Creek, Thompson Creek, and the East Gallatin River (**Figure 2-3**). Impairments include total nitrogen, nitrate+nitrite, total phosphorus, *E. coli* and sediment. Primary stakeholders in this area include the United States Forest Service, agricultural producers and private landowners. In the northern portion of the Lower Gallatin watershed, GGWC envisions taking a role in watershed restoration efforts by partnering with the Gallatin Conservation District, Natural Resources Conservation Service, United

States Forest Service, agricultural producers, irrigation ditch operators, other interested landowners and non-profit organizations.

2.2.4 Lower Gallatin Watershed – West

The western portion of the Lower Gallatin watershed includes impaired segments on Camp Creek and Godfrey Creek (**Figure 2-4**). Impairments include total nitrogen, total phosphorus, *E. coli* and sediment. Primary stakeholders in this area include agricultural producers and private landowners. In the western portion of the Lower Gallatin watershed, GGWC envisions taking a role in watershed restoration efforts by partnering with the Gallatin Conservation District, Natural Resources Conservation Service, agricultural producer, irrigation ditch operators, other interested landowners and non-profit organizations.

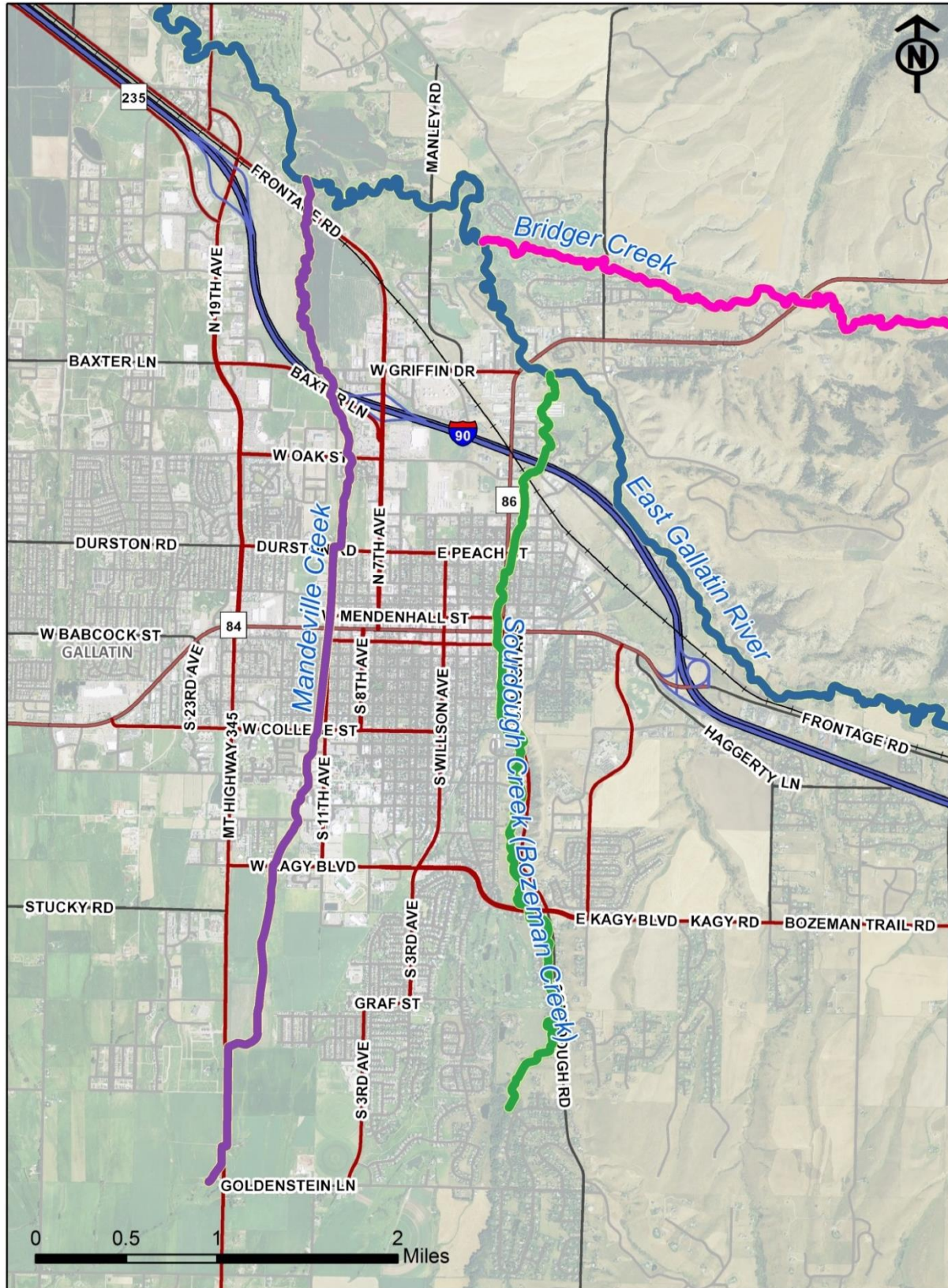


Figure 2-1. Lower Gallatin Watershed – Bozeman

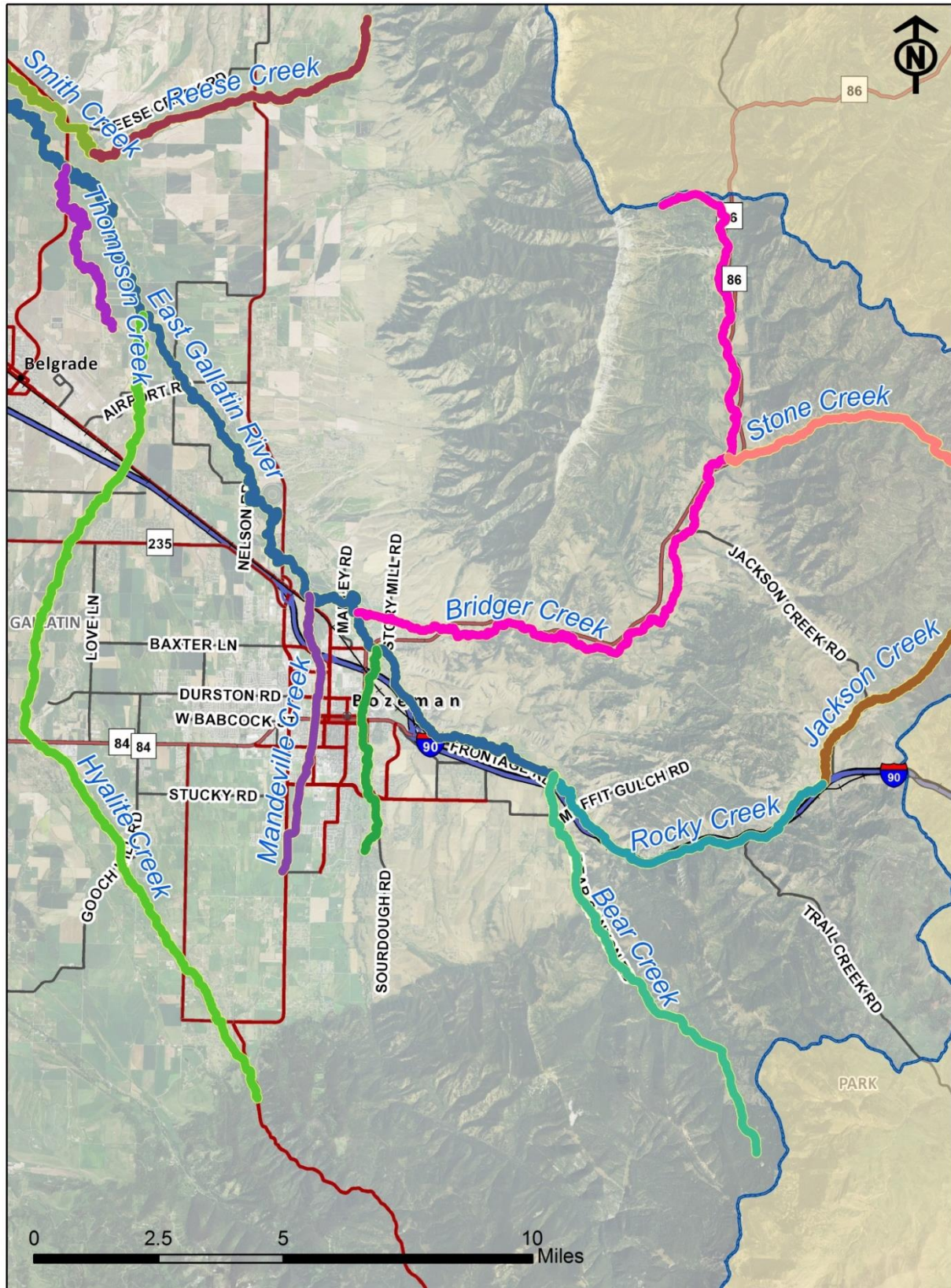


Figure 2-2. Lower Gallatin Watershed – East

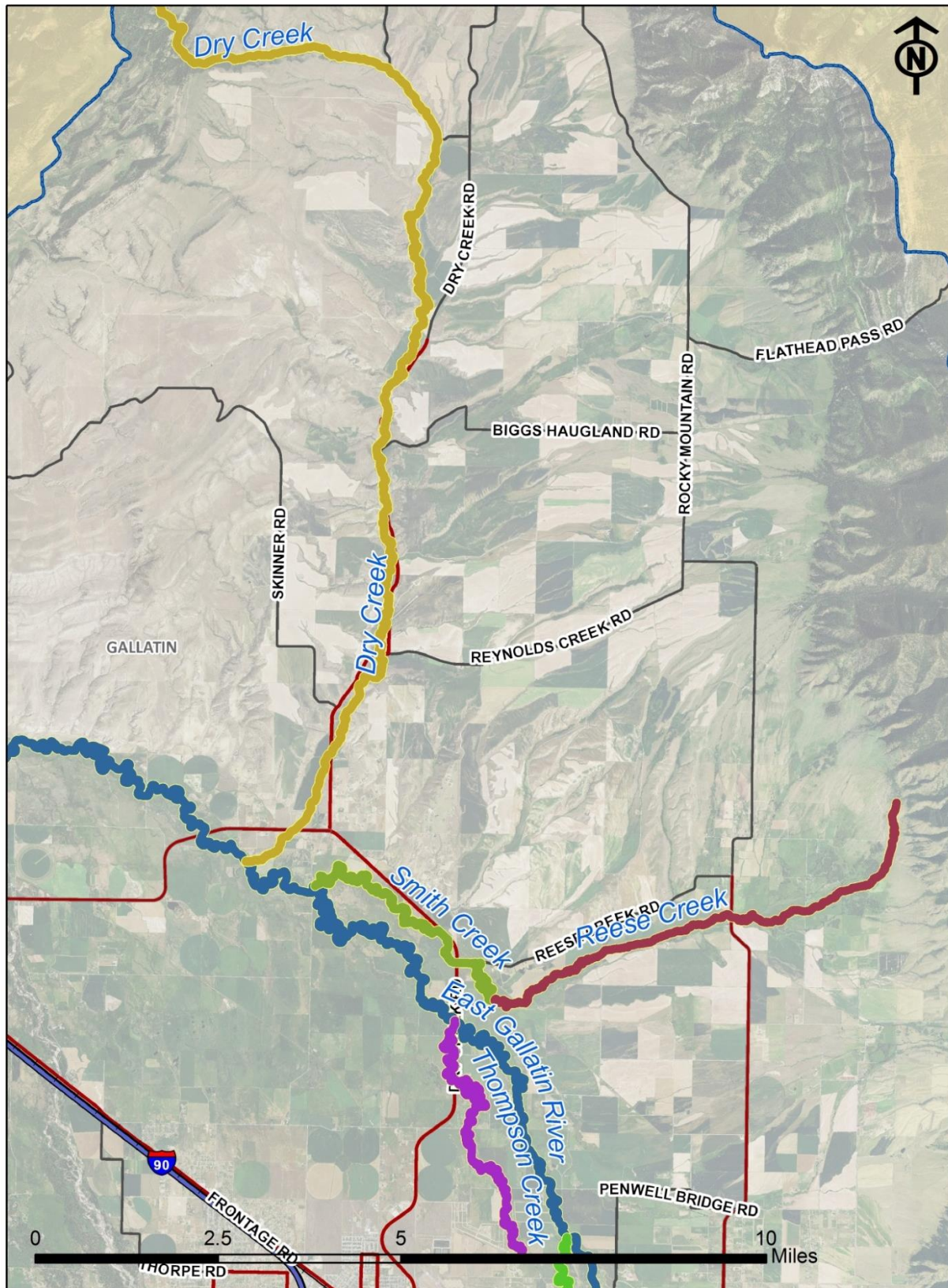


Figure 2-3. Lower Gallatin Watershed – North

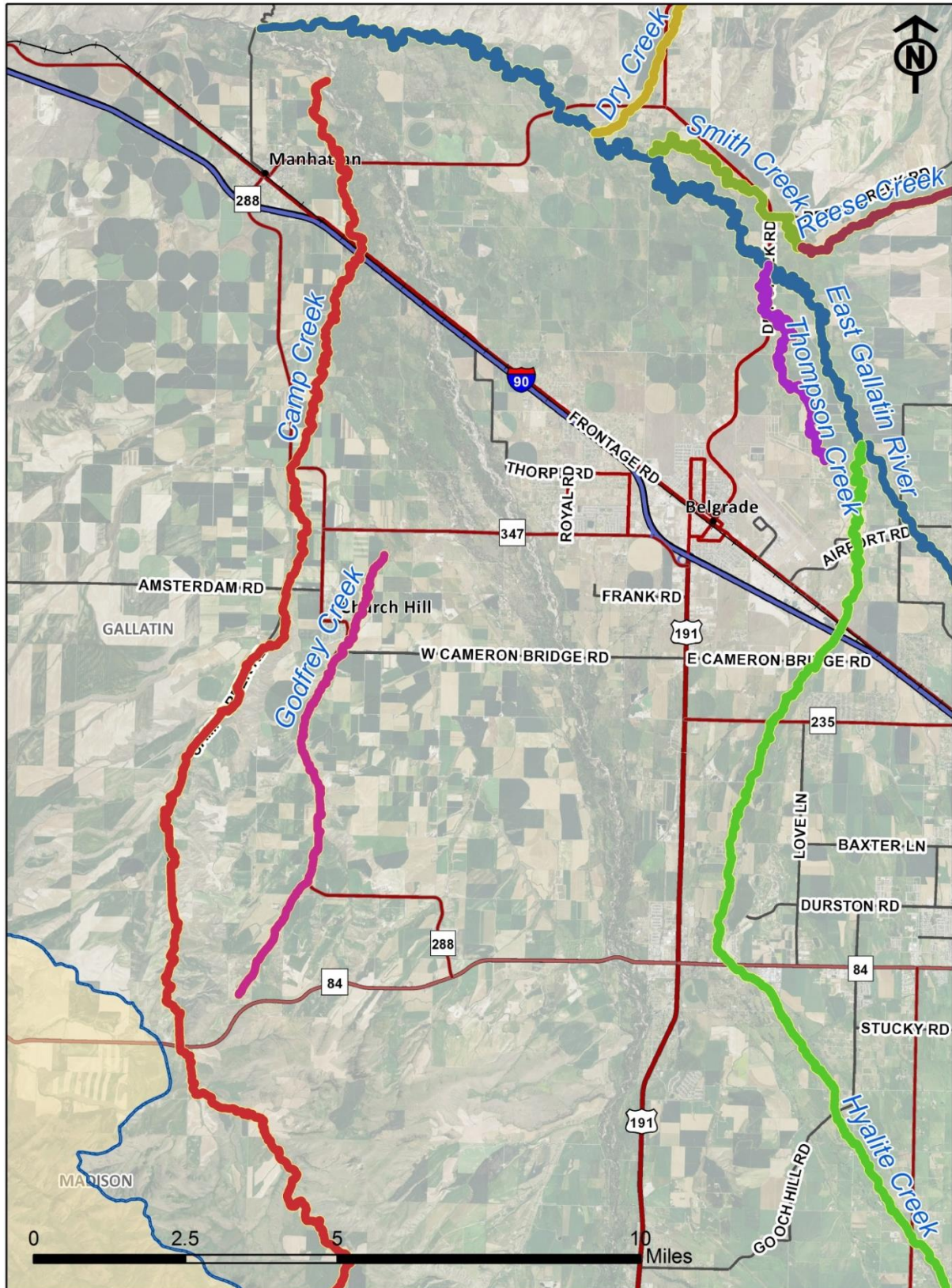


Figure 2-4. Lower Gallatin Watershed – West

3.0 RESTORATION ACTIVITIES AND BEST MANAGEMENT PRACTICES

For the impaired stream segments in the Lower Gallatin watershed, non-point source management measures, Best Management Practices (BMPs), and restoration projects geared toward reducing pollutant loads include: streambank stabilization and revegetation, riparian buffer enhancement, unpaved road improvements, traction sand management, residential and urban BMPs, forestry BMPs, agricultural BMPs, stormwater BMPs, and subsurface wastewater treatment upgrades.

3.1 STREAMBANK STABILIZATION AND REVEGETATION

Streambank bioengineering techniques restore natural channel migration rates through streambank revegetation. Bioengineered streambanks are designed to eliminate the sediment load from bank erosion in the short term. Over the long term, bioengineered streambanks are designed to erode naturally, allowing for natural rates of lateral channel migration and restoration of natural sediment transport processes. Streambank bioengineering techniques include the use of woody material, biodegradable coir fabric, gravel, cobbles, soil, and willows, which are layered to produce a stable bank that will quickly develop riparian vegetation. Streambank bioengineering is typically accompanied by the creation of a vegetated riparian buffer on the floodplain, which is intended to provide long term stability as the channel continues to migrate.

3.2 RIPARIAN BUFFER ENHANCEMENT

Riparian buffer enhancement involves the creation and widening of the riparian buffer, which helps naturally stabilize streambanks and provides a filter for the runoff of sediment and nutrients from upland areas, while also improving utilization of nutrients in groundwater. Riparian buffer enhancement can be achieved through actively replanting the floodplain or enacting grazing management strategies that limit the amount of time livestock have access to the riparian zone. Riparian plantings include willow stakes, willow transplants and containerized riparian vegetation. Grazing management strategies can include fencing, off-site water development, water gaps, and managing the timing of grazing. The enhancement of riparian buffers can greatly reduce the input of sediment and nutrients into impaired stream segments.

3.3 UNPAVED ROAD IMPROVEMENTS

Unpaved road improvements can include adding rolling dips or water bars, adding gravel or paving the road, enhancing vegetative filter strips, and culvert replacement. For culvert replacement projects, environmental considerations such as fish passage should be considered. New three sided culverts, where the bottom of the culvert is typically the natural channel bottom, allow better holding habitat and maintains a continuous stream channel bottom. The hydrology of the contributing area should also be considered when determining the necessary culvert size. Following these principals will help improve the stream system, increase fish habitat, and reduce potential sediment loads from failed culverts. Proper management of unpaved roads should virtually eliminate the sediment load from this source.

3.4 TRACTION SAND MANAGEMENT

Traction sand management involves cleaning up traction sand applied to icy roads during the winter before it is washed into a stream during snowmelt and rain events and should generally occur in March, April and early May prior to spring runoff. Sediment basins can also be constructed to capture traction sand before it enters the stream channel, while vegetated filter strips can help prevent the overland transport of traction sand into an adjacent stream channel. Proper management of traction sand should eliminate the sediment load from this source.

3.5 RESIDENTIAL AND URBAN BEST MANAGEMENT PRACTICES

Residential and urban BMPs can help reduce or eliminate the input of sediment, nutrients, and *E. coli* to impaired stream segments and include the following actions:

- Stormwater from impervious surfaces
- Pet waste management
- Lawn fertilizer and mowing
- Improved riparian buffers

3.6 AGRICULTURAL BEST MANAGEMENT PRACTICES

Agricultural BMPs can help reduce or eliminate the input of sediment, nutrients, and *E. coli* to impaired stream segments and include the following actions:

- Fencing
- Off-site water development
- Water gaps / hardened stream crossings
- Irrigation water management
- Improved riparian buffers
- Rotational grazing
- Effective manure management

3.7 FORESTRY BEST MANAGEMENT PRACTICES

Forestry BMPs can help reduce or eliminate the input of sediment and nutrients to impaired stream segments and include the following actions:

- Unpaved road improvements
- Proper culvert sizing
- Adherence to Streamside Management Zone (SMZ) regulations

3.8 STORMWATER BEST MANAGEMENT PRACTICES

Stormwater BMPs can help reduce or eliminate the input of sediment, nutrients, and *E. coli* to impaired stream segments and include the following actions:

- Retention ponds
- Bioretention
- Filter strips
- Wetland basins
- Media filters
- Wetland channels

3.9 SUBSURFACE WASTEWATER TREATMENT UPGRADES

Subsurface wastewater treatment upgrades can help reduce or eliminate the input of nutrients and *E. coli* to impaired stream segments and include the following actions:

- Upgrade aging septic systems
- Connect to centralized wastewater treatment system
- Type II systems for new developments
- Perform regular required maintenance

4.0 RESTORATION PROJECTS FOR IMPAIRED STREAM SEGMENTS

For each stream segment, the non-point source management measures and potential restoration projects that will address the causes of impairment are discussed in the following sections, with much of the information derived from the *Lower Gallatin Planning Area TMDLs & Framework Water Quality Improvement Plan* (DEQ 2013), which can be referred to for more detailed information on any of the discussed pollutant sources. Ideas for potential projects received from the public during the WRP community meetings are also included in this discussion. In addition, a previous study entitled *Gallatin Watershed Restoration Prioritization Planning* (DTM and AGI 2010) that was conducted in 2010 identified areas for improvements within the Lower Gallatin watershed. Specific projects identified on impaired stream segments during the 2010 assessment are also included in this assessment.

4.1 BEAR CREEK

Bear Creek has a TMDL for sediment and total phosphorus, though total phosphorus is currently achieving the TMDL during mid-summer baseflow conditions and no reduction is required (**Table 4-1**). In 2007 and 2008, the Forest Service decommissioned five miles of road in the Bear Creek watershed, which addressed a long-standing source of sediment to Bear Creek. The TMDL document indicates that total phosphorus is tied to sediment, so reducing the sediment load should reduce the total phosphorus load.

Table 4-1. Bear Creek Restoration Strategies

Stream Segment	Pollutant	Percent Reduction	Project Types / Treatments
Bear Creek - headwaters to mouth (Rocky Creek)	Sediment	48%	Streambank Stabilization and Revegetation
			Riparian Buffer Enhancement
			Unpaved Road Improvements
			Stormwater BMPs
			Traction Sand Management
	Total Phosphorus	0%	No Reduction Required

Focus areas for water quality improvements along Bear Creek identified during the WRP public meetings and in the TMDL document include:

- Unpaved road improvements on Bear Canyon Road, including culvert replacements on driveways crossing the creek
- Streambank stabilization and revegetation in the lower reaches
- Riparian buffer enhancement in the lower reaches
- Traction sand management on Interstate 90

4.2 BOZEMAN CREEK DOWNSTREAM OF LIMESTONE CREEK

Bozeman Creek has a TMDL for sediment, total nitrogen and *E. coli* (Table 4-2). Downstream of Limestone Creek, Bozeman Creek is an urban stream flowing through neighborhoods and the City of Bozeman. Sediment concerns for Bozeman Creek include channelization and channel entrenchment, along with a loss of channel complexity, including a reduction in the amount of pools and large woody debris. For Bozeman Creek, agriculture, development, and loading from subsurface wastewater disposal and treatment systems were cited as sources of nitrogen in the TMDL document. Total nitrogen reductions can be achieved through residential and urban BMPs, agricultural BMPs, forestry BMPs, and subsurface wastewater treatment upgrades. In addition, tributaries to Bozeman Creek, including Matthew Bird Creek and Nash Spring Creek, are cited as sources of total nitrogen to Bozeman Creek. *E. coli* sources appear to be primarily related to residential and recreational land uses within the developed lands of the city of Bozeman, with Nash Creek and Matthew Bird Creek also cited as sources of *E. coli* in the TMDL document. A major effort is currently underway to improve the conditions within Bozeman Creek through the Bozeman Creek Enhancement Project, which extends from Goldenstein Road downstream to the confluence with the East Gallatin River. In addition, the Story Mill Ecological Restoration project at the confluence of Bozeman Creek and the East Gallatin River includes the development of an overflow channel on Bozeman Creek. Wetland and riparian restoration at the Story Mill Ecological Restoration site is intended to filter sediment and increase nutrient uptake at the confluence of Bozeman Creek and the East Gallatin River.

Table 4-2. Bozeman Creek Restoration Strategies

Stream Segment	Pollutant	Percent Reduction	Project Types / Treatments
Bozeman Creek - confluence of Limestone Creek and Bozeman Creek to the mouth (East Gallatin River)	Sediment	37%	Streambank Stabilization and Revegetation
			Riparian Buffer Enhancement
			Unpaved Road Improvements
			Stormwater BMPs
	Total Nitrogen	63%	Residential and Urban BMPs
			Agricultural BMPs
			Forestry BMPs
			Subsurface Wastewater Treatment Upgrades
	<i>E. coli</i>	15%	Residential and Urban BMPs
			Agricultural BMPs

Focus areas for water quality improvements along Bozeman Creek identified during the WRP community meetings and in the TMDL document include:

- Bozeman Creek Enhancement Project
- Story Mill Ecological Restoration project at the Bozeman Creek and East Gallatin River confluence
- Habitat improvements: decreased channel entrenchment and increased pool frequency
- Removal of concrete, trash and debris, including in Tuckerman Park
- City of Bozeman stormwater discharges

- Traction sand management on city streets
- Mathew Bird Creek wetland and stream restoration on Montana State University property and along the urban trail system
- Riparian buffer enhancement along Bozeman Creek, Nash Creek and Mathew Bird Creek
- Outreach and education about proper management of yard waste and pet waste
- Outreach and education for riparian management along small acreage properties
- Irrigation water management, infrastructure improvements, and irrigation network mapping, including the Mill-Willow Irrigation Canal
- Upgrade aging septic systems and/or connect to centralized wastewater treatment system

4.3 BRIDGER CREEK

Bridger Creek has a TMDL for nitrate+nitrite, though it is currently achieving the TMDL during mid-summer baseflow conditions and no reduction is currently required for nitrate+nitrite (**Table 4-3**). Water quality data indicate that the nitrate+nitrite impairment is limited to the lower reaches of Bridger Creek below the mouth of the canyon and downstream of the confluence with Limestone Creek (DEQ 2013).

Table 4-3. Bridger Creek Restoration Strategies

Stream Segment	Pollutant	Percent Reduction	Project Types / Treatments
Bridger Creek - headwaters to mouth (East Gallatin River)	Nitrate+ Nitrite	0%	No Reduction Required

Focus areas for water quality improvements along Bridger Creek identified during the WRP community meetings and in the TMDL document include:

- Removal of car bodies from streambanks near the mouth of the canyon between Bridger Canyon Road and Story Mill Road and re-naturalize streambanks
- Streambank stabilization and riparian restoration in the Creekwood and Longwood subdivisions
- Address pollutant loading from ongoing development surrounding Bridger Bowl Ski Area
- Upgrade aging septic systems and/or connect to centralized wastewater treatment system

4.4 CAMP CREEK

Camp Creek has a TMDL for sediment, total nitrogen, total phosphorus, and *E. coli* (**Table 4-4**). The primary land use activities in the Camp Creek watershed include irrigated and dryland farming. The channel is also used for conveyance of irrigation water from the Gallatin River. Altered flow regimes, including high flows observed during field data collection in August 2009, are leading to accelerated streambank erosion and entrenched channel conditions along much of Camp Creek, particularly between the Highway 84/Norris Road crossing and Interstate 90. Thus, irrigation water management is a key component to reducing sediment loading to Camp Creek. Nitrogen in groundwater from irrigated agriculture and fertilizer transport are suggested in the TMDL document as the primary source of nitrogen to Camp Creek. *E. coli* loading to Camp Creek occurs from residential and agricultural sources, including irrigation canal inputs into Camp Creek from an un-named canal identified in the TMDL

document and from Valley Ditch. Agricultural and residential BMPs will also help reduce total phosphorus loads to Camp Creek.

Table 4-4. Camp Creek Restoration Strategies

Stream Segment	Pollutant	Percent Reduction	Project Types / Treatments
Camp Creek - headwaters to mouth (Gallatin River)	Sediment	63%	Streambank Stabilization and Revegetation
			Riparian Buffer Enhancement
			Unpaved Road Improvements
			Grazing Management
			Irrigation Water Management
	Total Nitrogen	77%	Residential and Urban BMPs
			Agricultural BMPs
	Total Phosphorus	71%	Residential and Urban BMPs
			Agricultural BMPs
	<i>E. coli</i>	65%	Residential and Urban BMPs
			Agricultural BMPs
			Irrigation Water Management

Focus areas for water quality improvements along Camp Creek identified during the WRP community meetings and in the TMDL document include:

- Fencing, off-site water development, water gaps, and grazing management to enhance the riparian buffer
- Streambank stabilization and restoration of entrenched channel conditions
- Irrigation water management, infrastructure improvements, and irrigation network mapping, including Valley Ditch and the Highline Canal
- Sediment inputs due to erosion in areas where irrigation water is transferred from the Highline Canal to Camp Creek
- Outreach and education regarding irrigation practices and ditch maintenance

In addition, the TMDL document indicates that Camp Creek appears to be a spring-fed system, augmented by irrigation return flows. Thus, a better understanding of surface water and groundwater interactions and the interplay between the stream and the irrigation network are imperative to developing strategies for reducing pollutant loads.

4.5 DRY CREEK

Dry Creek has a TMDL for sediment, total nitrogen and total phosphorus, though total phosphorus is currently achieving the TMDL during mid-summer baseflow conditions (**Table 4-5**). The TMDL document indicates that Dry Creek is in a state of recovery, but that areas lacking riparian vegetation remain prone to accelerated rates of streambank erosion. Irrigated agriculture in Pass Creek is identified in the TMDL document as the most significant source of total nitrogen in the watershed (DEQ 2013).

Table 4-5. Dry Creek Restoration Strategies

Stream Segment	Pollutant	Percent Reduction	Project Types / Treatments
Dry Creek - headwaters to mouth (East Gallatin River)	Sediment	53%	Streambank Stabilization and Revegetation
			Riparian Buffer Enhancement
			Unpaved Road Improvements
			Grazing Management
	Total Nitrogen	29%	Residential and Urban BMPs
			Agricultural BMPs
	Total Phosphorus	0%	No Reduction Required

Focus areas for water quality improvements along Dry Creek identified during the WRP community meetings and in the TMDL document include:

- Fencing, off-site water development, water gaps, and grazing management to enhance the riparian buffer
- Streambank stabilization and restoration of entrenched channel conditions
- Irrigation water management, infrastructure improvements, and irrigation network mapping
- Agricultural BMPs in Pass Creek watershed

4.6 EAST GALLATIN RIVER FROM THE CONFLUENCE OF ROCKY CREEK AND BEAR CREEK TO BRIDGER CREEK

The upper stream segment of the East Gallatin River extends from the confluence of Rocky Creek and Bear Creek downstream to the confluence with Bridger Creek. This segment is divided into two reaches in the TMDL document: Reach 1 – upstream of Bozeman Creek, and Reach 2 – downstream of Bozeman Creek.

4.6.1 East Gallatin River upstream of Bozeman Creek

The East Gallatin River upstream of Bozeman Creek has a TMDL for total nitrogen and total phosphorus, though it is currently achieving the TMDL during mid-summer baseflow conditions and no reduction is required for total nitrogen or total phosphorus upstream of Bozeman Creek (**Table 4-6**).

Table 4-6. East Gallatin River Restoration Strategies - Upstream of Bozeman Creek

Stream Segment	Pollutant	Percent Reduction	Project Types / Treatments
East Gallatin River - confluence of Rocky and Bear Creeks to Bridger Creek (Reach 1 - upstream of Bozeman Creek)	Total Nitrogen	0%	No Reduction Required
	Total Phosphorus	0%	No Reduction Required

Focus areas for water quality improvements along the East Gallatin River upstream of Bozeman Creek identified during the WRP community meetings and in the TMDL document include:

- Streambank stabilization on the East Gallatin River just downstream of the confluence with Rocky Creek
- Story Mill Ecological Restoration project, which includes streambank stabilization, floodplain re-connection and riparian restoration upstream of the confluence with Bozeman Creek

4.6.2 East Gallatin River between Bozeman Creek and Bridger Creek

The East Gallatin River between Bozeman Creek and Bridger Creek has a TMDL for total nitrogen and total phosphorus (**Table 4-7**). It is currently achieving the TMDL for total phosphorus during mid-summer baseflow conditions and no reduction is currently required for total phosphorus between Bozeman Creek and Bridger Creek. The TMDL document indicates that Bozeman Creek is the primary source of total nitrogen to this reach of the East Gallatin River and that reducing total nitrogen loads in Bozeman Creek will lead the East Gallatin River to meet its total nitrogen TMDL for the segment upstream of Bridger Creek.

Table 4-7. East Gallatin River Restoration Strategies - Bozeman Creek to Bridger Creek

Stream Segment	Pollutant	Percent Reduction	Project Types / Treatments
East Gallatin River - confluence of Rocky and Bear Creeks to Bridger Creek (Reach 2 - between Bozeman Creek and Bridger Creek)	Total Nitrogen	17%	Residential and Urban BMPs
			Agricultural BMPs
	Total Phosphorus	0%	No Reduction Required

Focus areas for water quality improvements along the East Gallatin River between Bozeman Creek and Bridger Creek identified during the WRP community meetings and in the TMDL document include:

- Addressing nitrogen loading from the Bozeman Creek watershed
- Riparian buffer enhancement
- Removal of debris (concrete blocks, old car bodies) from streambanks

4.7 EAST GALLATIN RIVER BETWEEN BRIDGER CREEK AND SMITH CREEK

The middle stream segment of the East Gallatin River extends from the confluence with Bridger Creek downstream to the confluence with Smith Creek. This segment is divided into two reaches in the TMDL document: Reach 1 – Bridger Creek to Hyalite Creek, and Reach 2 – Hyalite Creek to Smith Creek.

4.7.1 East Gallatin River between Bridger Creek and Hyalite Creek

The East Gallatin River between Bridger Creek and Hyalite Creek has a TMDL for total nitrogen and total phosphorus (**Table 4-8**). The City of Bozeman Water Reclamation Facility (WRF) is located on the East Gallatin River between Bridger Creek and Hyalite Creek and is the primary source of total nitrogen and total phosphorus loading to this reach of the East Gallatin River. Reductions in total nitrogen can be achieved through residential and urban BMPs, along with upgrades to the City of Bozeman WRF, while reductions in total phosphorus can be achieved primarily through upgrades to the City of Bozeman WRF according to the TMDL document.

Table 4-8. East Gallatin River Restoration Strategies - Bridger Creek to Hyalite Creek

Stream Segment	Pollutant	Percent Reduction	Project Types / Treatments
East Gallatin River - Bridger Creek to Smith Creek (Reach 1 - between Bridger Creek and Hyalite Creek)	Total Nitrogen	78%	Agricultural BMPs
			Residential and Urban BMPs
			City of Bozeman WRF Upgrades
	Total Phosphorus	76%	City of Bozeman WRF Upgrades

Focus areas for water quality improvements along the East Gallatin River between Bridger Creek and Hyalite Creek identified during the WRP community meetings and in the TMDL document include:

- Upgrades to the City of Bozeman Water Reclamation Facility
- Fencing, off-site water development, water gaps, and grazing management to enhance the riparian buffer
- Streambank stabilization and revegetation
- Removal of debris (concrete blocks, old car bodies) from streambanks
- Flow augmentation
- Irrigation water management, infrastructure improvements, and irrigation network mapping
- Outreach and education regarding irrigation practices and ditch maintenance
- Weed control

4.7.2 East Gallatin River between Hyalite Creek and Smith Creek

The East Gallatin River between Hyalite Creek and Smith Creek has a TMDL for total nitrogen and total phosphorus (**Table 4-9**). The City of Bozeman Water Reclamation Facility (WRF) is located on the East Gallatin River upstream of Hyalite Creek. Reductions to total nitrogen can be achieved through residential and urban BMPs, along with upgrades to the City of Bozeman WRF. Within this reach, the TMDL document indicates that Hyalite Creek is the primary source of nitrogen, with additional loading from irrigated agriculture, residential/developed areas, and subsurface wastewater disposal in areas with high septic density. Groundwater upwelling within this reach potentially adds nutrient loads from

medium and long distance groundwater flow paths (DEQ 2013). For total phosphorus, reductions can be achieved primarily through upgrades to the City of Bozeman WRF according to the TMDL document.

Table 4-9. East Gallatin River Restoration Strategies - Hyalite Creek to Smith Creek

Stream Segment	Pollutant	Percent Reduction	Project Types / Treatments
East Gallatin River - Bridger Creek to Smith Creek (Reach 2 - between Hyalite Creek and Smith Creek)	Total Nitrogen	75%	Agricultural BMPs
			Residential and Urban BMPs
			Subsurface Wastewater Treatment Upgrades
			City of Bozeman WRF Upgrades
	Total Phosphorus	27%	City of Bozeman WRF Upgrades

Focus areas for water quality improvements along the East Gallatin River between Hyalite Creek and Smith Creek identified during the WRP community meetings and in the TMDL document include:

- Upgrades to the City of Bozeman Water Reclamation Facility
- Fencing, off-site water development, water gaps, and grazing management to enhance the riparian buffer
- Streambank stabilization and revegetation
- Removal of debris (concrete blocks, old car bodies) from streambanks
- Increased streamflows in Hyalite Creek
- Addressing nitrogen inputs from the Hyalite Creek watershed
- Flow augmentation
- Irrigation water management, infrastructure improvements, and irrigation network mapping
- Outreach and education regarding irrigation practices and ditch maintenance
- Restoration of spring creek tributaries, including Trout Creek
- Upgrade aging septic systems and/or connect to centralized wastewater treatment system
- Weed control

In addition, the TMDL document highlights the need for additional study on the influence of groundwater nitrogen loading to Hyalite Creek and the East Gallatin River.

4.8 EAST GALLATIN RIVER DOWNSTREAM OF SMITH CREEK

The East Gallatin River downstream of Smith Creek has a TMDL for total nitrogen and total phosphorus (**Table 4-10**). It is currently achieving the TMDL for total phosphorus during mid-summer baseflow conditions and no reduction is currently required for total phosphorus downstream of Smith Creek. Reductions to the total nitrogen load can be achieved through residential and agricultural BMPs, along with upgrades to the City of Bozeman Water Reclamation Facility (WRF).

Table 4-10. East Gallatin River Restoration Strategies - Downstream of Smith Creek

Stream Segment	Pollutant	Percent Reduction	Project Types / Treatments
East Gallatin River - Smith Creek to mouth (Gallatin River)	Total Nitrogen	50%	Agricultural BMPs
			Residential and Urban BMPs
			City of Bozeman WRF Upgrades
	Total Phosphorus	0%	City of Bozeman WRF Upgrades

Focus areas for water quality improvements along the East Gallatin River downstream of Smith Creek identified during the WRP community meetings and in the TMDL document include:

- Upgrades to the City of Bozeman Water Reclamation Facility
- Fencing, off-site water development, water gaps, and grazing management to enhance the riparian buffer
- Streambank stabilization and revegetation
- Irrigation water management, infrastructure improvements, and irrigation network mapping
- Outreach and education regarding irrigation practices and ditch maintenance
- Restoration of spring creek tributaries, including Story Creek and Gibson Creek
- Weed control

4.9 GODFREY CREEK

Godfrey Creek has a TMDL for sediment, total nitrogen, total phosphorus and *E. coli* (**Table 4-11**). In the mid-1990's, a 319 project was undertaken in the Godfrey Creek watershed that included riparian fencing, grazing and manure management, and improved irrigation water management. The water quality data indicate that Godfrey Creek is currently most heavily impaired for nutrients in the upper portion of the watershed, with water quality improving downstream of Churchill. Sources of nutrients include agricultural land uses, irrigation return flows, and elevated nutrients in ground water. Sediment monitoring in 2009 indicated channel over-widening, a lack of riparian vegetation, and streambank erosion at the outsides of meander bends. For *E. coli*, significant loads were measured in a tributary in 2009 (site GD04), while the irrigation network also appears to contribute *E. coli* to Godfrey Creek.

Table 4-11. Godfrey Creek Restoration Strategies

Stream Segment	Pollutant	Percent Reduction	Project Types / Treatments
Godfrey Creek - headwaters to mouth (Moreland Ditch)	Sediment	68%	Streambank Stabilization and Revegetation
			Riparian Buffer Enhancement
			Unpaved Road Improvements
			Grazing Management
			Irrigation Water Management
	Total Nitrogen	79%	Residential and Urban BMPs
			Agricultural BMPs
	Total Phosphorus	44%	Residential and Urban BMPs
			Agricultural BMPs
	<i>E. coli</i>	84%	Residential and Urban BMPs
			Agricultural BMPs
			Irrigation Water Management

Focus areas for water quality improvements along Godfrey Creek identified during the WRP community meetings and in the TMDL document include:

- Fencing, off-site water development, water gaps, and grazing management to enhance the riparian buffer, particularly in a three mile section downstream of the confluence of the east and west forks
- Streambank stabilization and revegetation
- Reduce channel over-widening in the lower reaches
- Irrigation water management, infrastructure improvements, and irrigation network mapping, including three irrigation canals that cross the watershed
- Outreach and education regarding irrigation practices and ditch maintenance
- Address *E. coli* loading from tributary streams

In addition, the TMDL document indicates that Godfrey Creek appears to be a spring-fed system, augmented by irrigation return flows. Thus, a better understanding of surface water and groundwater interactions and the interplay between the stream and the irrigation network are imperative to developing strategies for reducing pollutant loads.

4.10 HYALITE CREEK DOWNSTREAM OF THE BOZEMAN WATER SUPPLY INTAKE

Hyalite Creek has a TMDL for total nitrogen (**Table 4-12**). Sources of nitrogen to Hyalite Creek include irrigated agriculture, residential/developed areas, and subsurface wastewater disposal from areas with high septic densities. Downstream of the forest boundary, Hyalite Creek is considered chronically dewatered by Montana Fish, Wildlife and Parks. Reduced stream flow downstream of the forest boundary decreases the dilution efficiency and exacerbates the effects of nonpoint source nutrient additions (DEQ 2013).

Table 4-12. Hyalite Creek Restoration Strategies

Stream Segment	Pollutant	Percent Reduction	Project Types / Treatments
Hyalite Creek - Bozeman water supply diversion dam to mouth (East Gallatin River)	Total Nitrogen	40%	Residential and Urban BMPs
			Agricultural BMPs

Focus areas for water quality improvements along Hyalite Creek identified during the WRP community meetings and in the TMDL document include:

- Increased streamflows in Hyalite Creek
- Irrigation water management, infrastructure improvements, and irrigation network mapping, including water transferred from the East Gallatin River via Buster Gulch
- Construction of syphon on Farmer's Canal where it crosses Hyalite Creek
- Fencing, off-site water development, water gaps, and grazing management to enhance the riparian buffer
- Outreach and education for riparian management along small acreage properties
- Upgrade aging septic systems and/or connect to centralized wastewater treatment system

In addition, the TMDL document highlights the need for additional study on the influence of groundwater nitrogen loading to Hyalite Creek and the East Gallatin River.

4.11 JACKSON CREEK

Jackson Creek has a TMDL for sediment and total phosphorus, though it is currently achieving the TMDL for total phosphorus during mid-summer baseflow conditions and no reduction is currently required for total phosphorus (**Table 4-13**). According to the TMDL document, this stream may still be recovering from increased sediment loads and water yields due to historic logging, while the forest road network remains a potential source of sediment.

Table 4-13. Jackson Creek Restoration Strategies

Stream Segment	Pollutant	Percent Reduction	Project Types / Treatments
Jackson Creek - headwaters to mouth (Rocky Creek)	Sediment	56%	Streambank Stabilization and Revegetation
			Riparian Buffer Enhancement
			Unpaved Road Improvements
			Grazing Management
	Total Phosphorus	0%	No Reduction Required

Focus areas for water quality improvements along Jackson Creek identified during the WRP community meetings and in the TMDL document include:

- Unpaved road improvements
- Maintenance of stock water improvements on Forest Service grazing allotments

4.12 MANDEVILLE CREEK

Mandeville Creek has a TMDL for total nitrogen and total phosphorus, though it is currently achieving the TMDL for total phosphorus during mid-summer baseflow conditions and no reduction is currently required for total phosphorus (**Table 4-14**). In the lower reaches, Mandeville Creek receives flow from the Farmers Canal where the canal terminates. Residential and Agricultural BMPs with an emphasis on irrigation water management are recommended for Mandeville Creek.

Table 4-14. Mandeville Creek Restoration Strategies

Stream Segment	Pollutant	Percent Reduction	Project Types / Treatments
Mandeville Creek - headwaters to the mouth (East Gallatin River)	Total Nitrogen	81%	Residential and Urban BMPs
			Agricultural BMPs
	Total Phosphorus	65%	Residential and Urban BMPs
			Agricultural BMPs

Focus areas for water quality improvements along Mandeville Creek identified during the WRP community meetings and in the TMDL document include:

- Riparian buffer enhancement
- Stream restoration and revegetation on Montana State University property
- Daylighting of Mandeville Creek on City of Bozeman property
- Stream restoration and revegetation along Bozeman High School
- Stream restoration and revegetation on DNRC State Lands near the mouth
- Irrigation water management, infrastructure improvements, and irrigation network mapping, including the Farmers Canal

In addition, the TMDL document indicates that Mandeville Creek appears to be a spring-fed system, augmented by irrigation return flows. Thus, a better understanding of surface water and groundwater interactions and the interplay between the stream and the irrigation network are imperative to developing strategies for reducing pollutant loads.

4.13 REESE CREEK

Reese Creek has a TMDL for sediment, total nitrogen, nitrate+nitrite, and *E. coli* (**Table 4-15**). The TMDL document identifies a large nitrogen load coming from forested land in the Bridger Mountains, along with agricultural lands in the foothills. Best management practices for forest lands, residential areas, and agricultural areas are recommended with an emphasis on irrigation water management. *E. coli* sources include agricultural and residential areas, with North Cottonwood Creek a potential source of *E. coli* to Reese Creek.

Table 4-15. Reese Creek Restoration Strategies

Stream Segment	Pollutant	Percent Reduction	Project Types / Treatments
Reese Creek - headwaters to mouth (Smith Creek)	Sediment	49%	Streambank Stabilization and Revegetation
			Riparian Buffer Enhancement
			Unpaved Road Improvements
	Total Nitrogen	60%	Residential and Urban BMPs
			Agricultural BMPs
			Forestry BMPs
	Nitrate+ Nitrite	83%	Residential and Urban BMPs
			Agricultural BMPs
	<i>E. coli</i>	3%	Residential and Urban BMPs
			Agricultural BMPs

Focus areas for water quality improvements along Reese Creek identified during the WRP community meetings and in the TMDL document include:

- Fencing, off-site water development, water gaps, and grazing management to enhance the riparian buffer
- Irrigation water management, infrastructure improvements, and irrigation network mapping
- Outreach and education regarding irrigation practices and ditch maintenance
- Address *E. coli* loading from the North Cottonwood Creek watershed
- Forestry BMPs

In addition, the TMDL document indicates that Reese Creek appears to be a spring-fed system, augmented by irrigation return flows. Thus, a better understanding of surface water and groundwater interactions and the interplay between the stream and the irrigation network are imperative to developing strategies for reducing pollutant loads.

4.14 ROCKY CREEK DOWNSTREAM OF JACKSON CREEK AND TIMBERLINE CREEK

Rocky Creek has a TMDL for sediment. Rocky Creek is partially confined by Interstate 90 and the railroad, which have led to channel straightening and streambank erosion (**Table 4-16**). In addition, the application of traction sand to Interstate 90 during the winter months leads to sediment inputs to Rocky Creek.

Table 4-16. Rocky Creek Restoration Strategies

Stream Segment	Pollutant	Percent Reduction	Project Types / Treatments
Rocky Creek - confluence of Jackson and Timberline Creeks to mouth (East Gallatin River)	Sediment	56%	Streambank Stabilization and Revegetation
			Riparian Buffer Enhancement
			Unpaved Road Improvements
			Grazing Management
			Stormwater BMPs
			Traction Sand Management

Focus areas for water quality improvements along Rocky Creek identified during the WRP community meetings and in the TMDL document include:

- Address channel entrenchment in reaches channelized by Interstate 90 and the railroad
- Traction sand management along Interstate 90
- Streambank stabilization and revegetation
- Fencing, off-site water development, water gaps, and grazing management to enhance the riparian buffer
- Address reduced baseflows due to reduced beaver populations upstream of the confluence with the East Gallatin River

4.15 SMITH CREEK DOWNSTREAM OF ROSS CREEK AND REESE CREEK

Smith Creek has a TMDL for sediment, total nitrogen, nitrate+nitrite, and *E. coli*, though no reduction is currently required for *E. coli* in Smith Creek (**Table 4-17**). Smith Creek starts at the confluence of Ross Creek and Reese Creek. Streambank erosion due to livestock grazing and lack of riparian buffer in places is an ongoing source of sediment to Smith Creek. Nutrient loading to Smith Creek comes from three primary sources: 1) the Smith Creek watershed downstream of the Ross and Reese creek confluences, 2) the Ross Creek watershed, and 3) the Dry Creek Irrigation Canal that diverts water from the East Gallatin River downstream of the City of Bozeman Water Reclamation Facility and the confluence of Hyalite Creek (DEQ 2013). The Dry Creek Irrigation Canal intercepts Ross Creek and Reese Creek and water intermixes between the Dry Creek Canal and Reese Creek before flowing downstream into Smith Creek. Thus, through the Dry Creek Irrigation Canal, Smith Creek receives nutrient contributions from the City of Bozeman Water Reclamation Facility and the Hyalite Creek watershed. In addition to irrigation return flows, groundwater upwelling is likely in this area. For *E. coli*, sources to Smith Creek are primarily livestock grazing along Smith Creek and in the Ross Creek watershed.

Table 4-17. Smith Creek Restoration Strategies

Stream Segment	Pollutant	Percent Reduction	Project Types / Treatments
Smith Creek - confluence of Ross and Reese Creeks to mouth (East Gallatin River)	Sediment	46%	Streambank Stabilization and Revegetation
			Riparian Buffer Enhancement
			Unpaved Road Improvements
			Grazing Management
			Irrigation Water Management
			Stormwater BMPs
	Total Nitrogen	33%	Forestry BMPs
			Agricultural BMPs
	Nitrate+ Nitrite	78%	Forestry BMPs
			Agricultural BMPs
	<i>E. coli</i>	0%	Residential and Urban BMPs
			Agricultural BMPs
			Irrigation Water Management

Focus areas for water quality improvements along Smith Creek identified during the WRP community meetings and in the TMDL document include:

- Fencing, off-site water development, water gaps, and grazing management to enhance the riparian buffer
- Streambank stabilization and revegetation
- Irrigation water management, infrastructure improvements, and irrigation network mapping, including the Dry Creek Irrigation Canal
- Outreach and education regarding irrigation practices and ditch maintenance
- Address *E. coli* loading from the Ross Creek watershed
- Forestry BMPs

4.16 STONE CREEK

Stone Creek has a TMDL for sediment (**Table 4-18**). The TMDL document indicates Stone Creek is recovering from historic land use activities including logging, roads, and grazing, all of which continue to occur within the watershed, but at reduced levels.

Table 4-18. Stone Creek Restoration Strategies

Stream Segment	Pollutant	Percent Reduction	Project Types / Treatments
Stone Creek - headwaters to mouth (Bridger Creek)	Sediment	46%	Streambank Stabilization and Revegetation
			Riparian Buffer Enhancement
			Unpaved Road Improvements
			Grazing Management

Focus areas for water quality improvements along Stone Creek identified during the WRP community meetings and in the TMDL document include:

- Unpaved road improvements
- Fencing, off-site water development, water gaps, and grazing management to enhance the riparian buffer
- Forestry BMPs

4.17 THOMPSON CREEK

Thompson Creek has a TMDL for sediment and total nitrogen (**Table 4-19**). Thompson Creek is a spring creek with an over-widened channel and substrate comprised of fine grained material. Livestock grazing and agricultural production are the primary sources of sediment to Thompson Creek. Portions of Thompson Creek have been enhanced and are managed as a “rod fee” fishery by the landowner. Due to the nature of this spring creek, active channel restoration is likely required in combination with grazing management to reduce channel over-widening. Agricultural and residential BMPs are recommended to reduce total nitrogen loads. Since this is an area of groundwater recharge, TMDL pollutant load reduction measures throughout the Lower Gallatin watershed should benefit Thompson Creek.

Table 4-19. Thompson Creek Restoration Strategies

Stream Segment	Pollutant	Percent Reduction	Project Types / Treatments
Thompson Creek (Thompson Spring) - headwaters to mouth (East Gallatin River)	Sediment	61%	Streambank Stabilization and Revegetation
			Riparian Buffer Enhancement
			Unpaved Road Improvements
			Grazing Management
	Total Nitrogen	72%	Residential and Urban BMPs
			Agricultural BMPs

Focus areas for water quality improvements along Thompson Creek identified during the WRP community meetings and in the TMDL document include:

- Fencing, off-site water development, water gaps, and grazing management to enhance the riparian buffer
- Reduce channel over-widening through active channel restoration
- Cultivate landowner buy-in for a stream restoration plan that has been developed for the entire length of the creek

Since Thompson Creek is a spring-fed system, a better understanding of surface water and groundwater interactions and the interplay between the stream and the irrigation network are imperative to developing strategies for reducing pollutant loads.

5.0 PROJECT PRIORITIZATION AND IMPLEMENTATION

During the Lower Gallatin WRP community meetings, a total of 41 potential projects and restoration activities were identified, along with several potential project partners, including landowners, Gallatin Conservation District (GCD), Natural Resource Conservation Service (NRCS), Montana State University (MSU), City of Bozeman, DNRC State Lands, Gallatin Valley Land Trust (GVLT), and Trust for Public Lands (TPL). GGWC plans to both take the lead on implementing 319 projects and also facilitate the development of projects with its partner organizations that are working toward the same goal of water quality improvement in the Lower Gallatin watershed and removal of impaired stream segments from the 303d list.

5.1 PRIORITIZING PROJECTS

GGWC has developed a project screening tool to evaluate the merits of each potential project relative to overall watershed improvements and addressing the sources of pollution to impaired streams. For each potential stream and watershed improvement project, successful implementation depends on: 1) stream and watershed improvement potential, 2) landowner and community support, and 3) availability of necessary resources, as depicted in **Figure 5-1**.

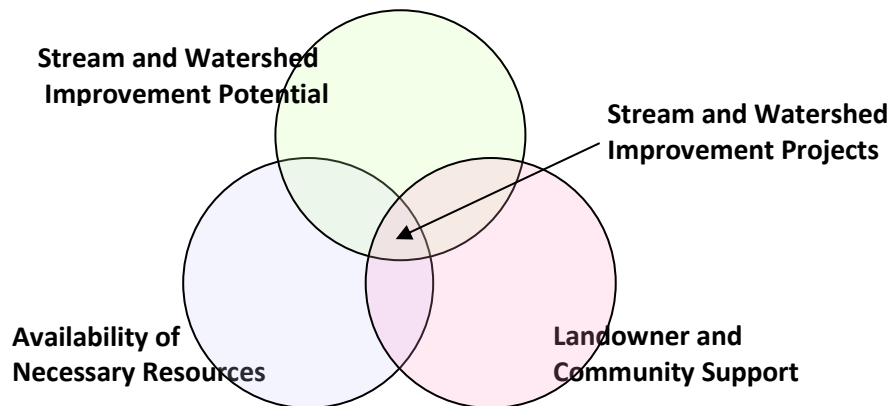


Figure 5-1. Watershed Restoration Project Implementation

Over 100 people offered input on community values for stream use, areas of concern, and ideas for stream and watershed improvement during the WRP community outreach effort conducted by GGWC in January and February of 2014. Many streams were mentioned as areas for further examination and potential improvement (**Figure 5-2**). All but two of the streams that do not meet water quality standards for one or more pollutants in the Lower Gallatin watershed were mentioned through community input. In addition, several streams that are tributaries to an impaired stream that does not meet water quality standards were identified as well. Though the impaired stream segments and their pollutants are a major concern in this watershed, listed pollutants were not the only area of concern. Community members cited many other impacts to streams and the watershed which impact agriculture, fisheries, recreation, aesthetics, and other uses of the streams and wetlands throughout the watershed. Participants also said that preventing future degradation and maintaining clean and healthy headwaters streams is important.

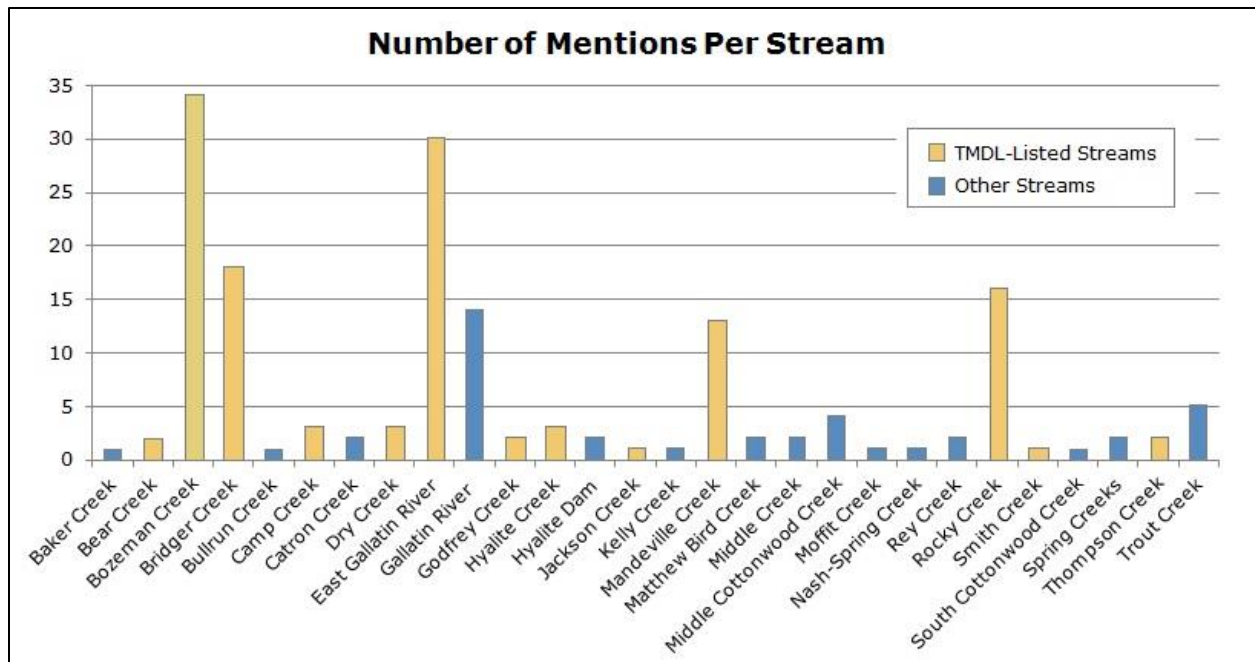


Figure 5-2. Number of Mentions per Stream during the WRP Community Outreach Effort

Based on the community input and the information in the recently completed TMDL for the Lower Gallatin watershed, it is clear that focusing on streams that do not meet water quality standards and those tributaries with impacts that affect those streams will have major short-term and long-term positive benefits. However, it would be shortsighted to pass up opportunities for projects with other significant stream and watershed improvement benefits. Given limited time and resources, GGWC has developed a prioritization process, with projects that provide stream and watershed improvement to help meet a state water quality standard given the highest priority (**Figure 5-3**).

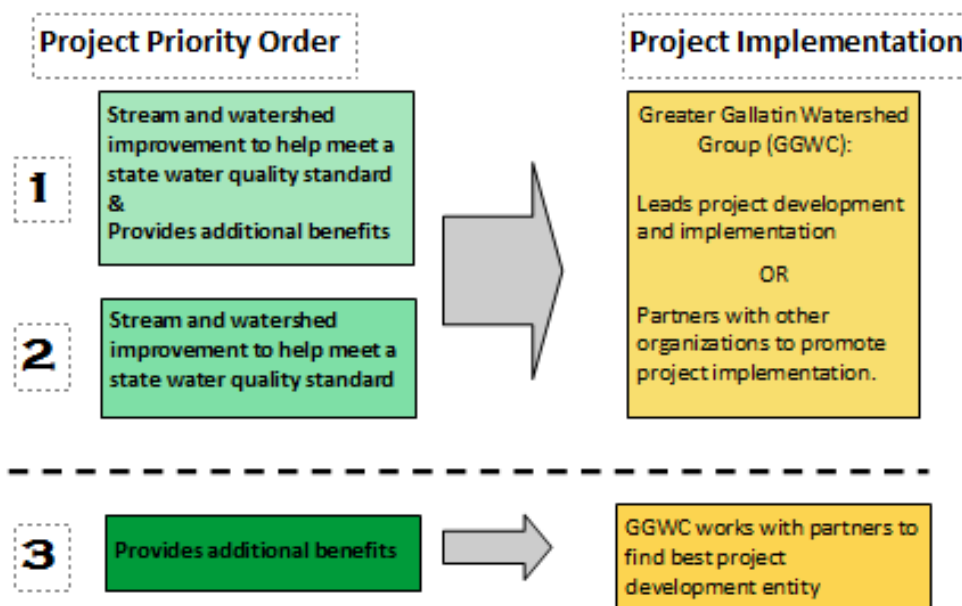


Figure 5-3. Watershed Prioritization and Implementation Process

Stream and watershed improvements that help meet a state water quality standard are those listed in the TMDL list. For instance, in the East Gallatin River, nutrients (nitrogen & phosphorus) are listed as impairments. In this prioritization, a high priority project might be a nutrient reduction project in a non-TMDL listed tributary to the East Gallatin River. In that same location or even on the East Gallatin River, a project with significant sediment reduction and fisheries improvement would be a lower priority project (priority #3) since the East Gallatin River is not considered impaired for sediment. Projects with **additional benefits** include:

- **Promote community values** for the streams and wetlands, as evidenced by the community input from interested participants (**Figure 5-4**).
- **Provides significant educational and outreach opportunities.** In the Lower Gallatin watershed, many landowners and potential projects exist. For some water quality issues, several thousand people will need to make changes to their behavior. Thus, projects that can help inform the community and have high positive community visibility confer additional benefits.
- **Can be replicated and maintained.** Projects that can be replicated along a stream, wetland or upland area or in other locations within the watershed are helpful because this can help make significant water quality improvements over time and has the potential to be more cost-effective. Projects that can be maintained easily and have strong, long-term management agreements in place also will help ensure the success and continuity of water quality improvement over time.

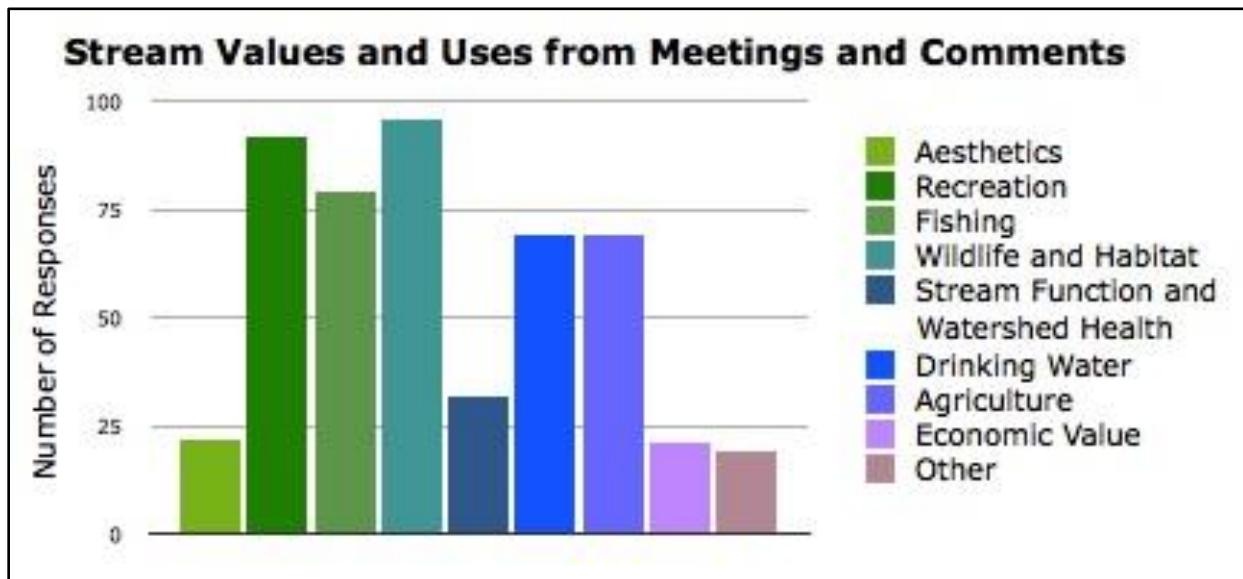


Figure 5-4. Stream Values and Uses Identified during the WRP Community Meetings

5.2 WATERSHED RESTORATION PLAN (WRP) COMMITTEE

GGWC has established a committee focused on watershed restoration. The WRP Committee is a sub-committee of the GGWC Board. The GGWC Board and WRP Committee will:

- **Develop and implement projects**, based on priorities identified through the community input process.
- **Assess progress in developing projects and then determine next steps.** A project development screening tool has been developed to ensure that all necessary components of the project are considered. This screening tool is included as **Attachment A**.
- **Work with partners** to gather the appropriate technical and financial resources needed to successfully complete projects.

5.3 TECHNICAL PARTNERS

GGWC has a wide range of different interests represented on its Board. Board members at the time of writing the Lower Gallatin WRP include:

- Agricultural community
- City government
- Citizen landowners from various locations
- Water and natural resource experts

The numbers and types of stakeholders in the Lower Gallatin watershed are diverse, so additional Board members could be brought on to represent even more of the community. In addition to those who serve on the Board, GGWC works with many partners. There are more than can be listed here, but major partners include:

- **Agricultural Community**
 - Association of Gallatin Agricultural Irrigators (AGAI)
 - Irrigation ditch operators
 - Agricultural producers
 - Farm Bureau
- **City and County Governments**
 - City of Bozeman
 - City of Belgrade
 - City of Manhattan
 - Churchill/Amsterdam
 - Gallatin County
 - Gallatin Local Water Quality District
- **Gallatin Conservation District**

- **State and Federal Governmental agencies**
 - Department of Environmental Quality
 - Department of Natural Resources and Conservation
 - Montana Fish, Wildlife and Parks
 - National Park Service – Rivers, Trails, and Conservation Assistance Program
 - Natural Resource Conservation Service
 - United States Forest Service
 - United States Bureau of Land Management
 - United States Bureau of Reclamation
- **Nonprofit groups focused on conservation and natural resources**
 - Big Sky Weed Association
 - Blue Water Task Force
 - Ducks Unlimited
 - Gallatin Valley Land Trust
 - Trout Unlimited
 - Trust for Public Lands
- **Natural resources experts and consultants**
 - Private wetland, water, and other natural resources consultants
 - Montana State University Extension Water Quality & local extension agents
 - Montana State University professors, researchers and graduate students
- **Urban and suburban interests**
 - Home Owner Associations
 - Developers and Building Associations

5.4 IMPLEMENTATION SCHEDULE

The Lower Gallatin watershed is a large area with a diverse population and pattern of land uses. **Table 5-1** presents a schedule for implementation of restoration projects that GGWC has identified as important for meeting the goal of improving water quality on impaired stream segments. The development of any individual project will depend on the three components identified in **Figure 5-1**, including stream and watershed improvement potential, landowner and community support, and availability of necessary resources. Thus, additional projects will certainly be added to this list and the timeframe of projects on the list will need to be adjusted using an adaptive management approach as projects with landowner and community support are identified and funding is secured. As a first step toward improving water quality in the Lower Gallatin watershed, GGWC plans to pursue projects on Bozeman Creek and the East Gallatin River with the Story Mill Ecological Restoration project, along with a project on Camp Creek geared towards enhancing riparian buffer conditions.

5.5 MILESTONES

The goal of the Lower Gallatin WRP is to provide a blueprint for the GGWC to identify and implement restoration projects that lead to improved water quality and the eventual removal of streams from DEQ's list of impaired streams. Milestones measuring implementation of nonpoint-source management projects include:

- GGWC will lead or facilitate the pursuit of 319 funded projects as priority projects are developed and project partners are identified
- GGWC will hold at least one outreach event each year to inform the community of recently completed projects, projects underway, and the availability of GGWC and 319 funding to assist with restoration projects in the Lower Gallatin watershed
- GGWC will perform effectiveness monitoring for each 319 funded project implemented

Since many potential projects were identified during the community input process, and it is expected that additional projects will be identified through continuing outreach efforts with landowners and other partners, GGWC has developed a prioritization and project development process to help identify, develop and implement the projects that will produce significant water quality and other benefits and are of highest priority to community members within the Lower Gallatin watershed. Due to limited capacity and resources, GGWC expects to implement a portion of these projects in the 2, 5, 10 and 20-year timeframe.

Table 5-1. Schedule for Implementation of Restoration Activities

2-Year Timeframe
Story Mill Ecological Restoration - Bozeman Creek and East Gallatin River
5-Year Timeframe
Bozeman Creek Enhancement Project - Bogart Park
Homeowners Association Education and Outreach
Irrigation Infrastructure Improvements - Buster Gulch
Irrigation Infrastructure Improvements - Camp Creek Irrigation Water Transfers
Irrigation Infrastructure Improvements - Dry Creek Irrigation Canal
Irrigation Infrastructure Improvements - Farmer's Canal
Irrigation Infrastructure Improvements - Highline Canal
Irrigation Infrastructure Improvements - Three ditches that cross Godfrey Creek
Irrigation Infrastructure Improvements - Valley Ditch
Irrigation Practices and Ditch Maintenance Education and Outreach
Traction Sand Management - Rocky Creek
Stream and Wetland Restoration - Mandeville Creek on MSU Property
Stream and Wetland Restoration - Matthew Bird Creek on MSU Property
Streambank Stabilization and Revegetation - Bridger Creek
Streambank Stabilization and Revegetation - Rocky Creek
Stormwater BMPs - Bozeman Creek
Groundwater and Surface Water Interaction Assessment and Modeling for Camp Creek, Godfrey Creek, Hyalite Creek, Mandeville Creek, Reese Creek, and Thompson Creek to Evaluate Nutrient Loading
10-Year Timeframe
Riparian Buffer Enhancement - Camp Creek
Riparian Buffer Enhancement - Dry Creek
Riparian Buffer Enhancement - East Gallatin River
Riparian Buffer Enhancement - Godfrey Creek
Stream and Wetland Restoration - Thompson Creek
Stream and Wetland Restoration - East Gallatin River Spring Creek Tributaries: Story Creek, Gibson Creek, and Trout Creek
Streambank Stabilization and Revegetation - East Gallatin River
Unpaved Road Improvements - Bear Creek
Unpaved Road Improvements - Jackson Creek
Unpaved Road Improvements - Stone Creek
20-Year Timeframe
Bozeman Creek Enhancement Project
City of Bozeman Water Reclamation Facility Nutrient Load Reduction
Restore Entrenched Channels - Camp Creek
Restore Entrenched Channels - Dry Creek
Subsurface Wastewater Treatment Upgrades throughout the Lower Gallatin Watershed
Streamflow Augmentation - East Gallatin River
Streamflow Augmentation - Hyalite Creek

6.0 MONITORING

The *Lower Gallatin Planning Area TMDLs & Framework Water Quality Improvement Plan* (DEQ 2013) outlines a monitoring strategy that includes a discussion on adaptive management and uncertainty, outlines the tracking and monitoring of restoration activities and effectiveness, and describes the ongoing need for baseline and impairment status monitoring for sediment, nutrient and *E. coli* impairments. GGWC partnered with DEQ to conduct impairment status monitoring during the development of the TMDL and has ongoing monitoring efforts through the Gallatin Stream Team Program to collect additional data on several of the impaired streams. In addition, GGWC is conducting monitoring at the Story Mill Ecological Restoration site to assess the effectiveness of floodplain and wetland restoration activities. For projects funding by the 319 program, GGWC will implement monitoring to assess the effectiveness of the restoration project and to help identify water quality improvements for TMDL impaired streams. Monitoring data will be used to estimate pollutant load reductions, which will help identify where substantial progress is being made toward attaining water-quality standards.

6.1 THE GALLATIN STREAM TEAM PROGRAM

The Gallatin Stream Team Program is a collaborative effort between GGWC and the Gallatin Local Water Quality District (GLWQD) to monitor local waterways. The Gallatin Stream Team Program is made up of staff from GLWQD and trained citizen scientist volunteers who collect data in July, August and September. The streams and sampling locations vary from year to year depending on stakeholder interest and funding sources, along with requests for specific data by DEQ, the City of Bozeman, and GLWQD. In 2014, there are four creeks being monitored, including Bozeman Creek, Mandeville Creek, Matthew Bird Creek and the East Gallatin River, with two sampling sites on each stream. The Sampling and Analysis Plan (SAP) for Gallatin Stream Team Program monitoring has been approved by DEQ and is updated annually to account for the addition and removal of sampling sites. In previous years, monitoring has also been conducted on Bridger Creek, Hyalite Creek and Thompson Creek. Data collected by the Gallatin Stream Team Program is used by DEQ for baseline and impairment status monitoring.

6.2 STORY MILL ECOLOGICAL RESTORATION SITE GROUND WATER MONITORING

At the Story Mill Ecological Restoration site, ground water monitoring has been a joint effort between GGWC, Big Sky Watershed Corps (BSWC), GLWQD and Montana State University. The summer of 2014 is the second year of sampling ground water wells, with sampling conducted on a weekly basis between May and June. In July, August and September the protocol is switched to every other year. Currently, there are 15 wells that are sampled at the site by GGWC staff with assistance from Montana State University students. Data collected at the Story Mill Ecological Restoration site will help document the effectiveness of restoration activities to remove nutrients from the groundwater, which has the potential to reduce nutrient loads in surface water in Bozeman Creek and the East Gallatin River. A formal Sampling and Analysis Plan for monitoring the Story Mill Ecological Restoration site is currently under development.

6.3 TOTAL PHOSPHORUS MONITORING

In the TMDL document, several streams are considered impaired for total phosphorus with the caveat that additional samples may lead to removal of these streams from the 303d list. Streams which could potentially be delisted for total phosphorus if additional samples remain below the water quality target include:

- Bear Creek
- Jackson Creek
- Dry Creek

Thus, GGWC intends to work with DEQ to collect additional total phosphorus samples on these three streams.

6.4 BOZEMAN CREEK *E. COLI* MONITORING

GGWC considers the Bozeman Creek *E. coli* Impairment a top priority since it directly relates to so many residents of the Lower Gallatin watershed. The GLWQD performed *E. coli* monitoring in 2013 that included one round of sample collection for microbial source tracking of *E. coli*. The GLWQD plans to conduct additional sampling for microbial source tracking analysis in the future to help identify specific sources and source areas. GGWC intends to work with GLWQD and the City of Bozeman to identify sources of *E. coli* to Bozeman Creek and help develop strategies to reduce the amount of *E. coli* in Bozeman Creek.

6.5 EFFECTIVENESS MONITORING FOR 319 FUNDED PROJECTS

For 319 funded projects, monitoring will be conducted along the project reach before and after implementation of the project to help evaluate the effectiveness of specific practices and projects. Monitoring will target the specific pollutants for which the project is intended to address. Monitoring criteria will be based on Montana's water quality standards and the water quality targets presented in *Lower Gallatin Planning Area TMDLs & Framework Water Quality Improvement Plan* (DEQ 2013). Monitoring techniques for the various pollutant types are presented in **Table 6-1**, with a more broad set of criteria to evaluate the effectiveness of various project types and restoration treatments presented in **Table 6-2**.

Table 6-1. Monitoring Techniques for Nutrients, Pathogens and Sediment

Pollutant Type	Monitoring Technique
Nutrients	Water samples and stream discharge measurements
Pathogens	Water samples and stream discharge measurements
Sediment	Riffle pebble counts, riffle and pool tail-out 49-point grid toss measurements, channel cross-sections, residual pool depths, pool and large woody debris frequency, streambank erosion assessments, riparian greenline assessments, macroinvertebrate indices

Table 6-2. Criteria to Evaluate the Effectiveness of Various Project Types and Restoration Treatments

Project Types / Treatments	Evaluation Criteria
Streambank Stabilization and Revegetation	Length of Eroding Bank Stabilized and Revegetated
Riparian Buffer Enhancement	Length of Channel with Improved Riparian Conditions, Increased Riparian Vegetation Densities
Unpaved Road Improvements	Documentation of Sites Addressed and the Techniques Applied
Traction Sand Management	Documentation of Sites Addressed and the Techniques Applied
Stormwater Management	Documentation of Sites Addressed and the Techniques Applied
Residential and Urban BMPs	Documentation of Sites Addressed and the Techniques Applied
Agricultural BMPs	Documentation of Sites Addressed and the Techniques Applied
Forestry BMPs	Documentation of Sites Addressed and the Techniques Applied
Subsurface Wastewater Treatment	Education and Outreach Conducted, Number of Residences added to the Sewer System
Irrigation Water Management	Education and Outreach Conducted, Documentation of Improved In-stream Flows

6.6 EVALUATING POLLUTANT LOAD REDUCTIONS

Pollutant load reductions will be evaluated using DEQ approved methodologies for the specific pollutant of concern, with the recently prepared *Load Reduction Estimate Guide – A Guide for Estimating Pollutant Load Reductions Achieved Through Implementation of Best Management Practices* (DEQ 2014) providing the foundation for calculating load reductions. When appropriate, the same methods and models will be used to evaluate progress toward to goal of improved water quality and achievement of the required percent reductions that were used during the development of *Lower Gallatin Planning Area TMDLs & Framework Water Quality Improvement Plan* (DEQ 2013). Pollutant load reduction calculations will help GGWC and DEQ determine whether or not load reductions are being achieved over time and document where substantial progress is being made toward attaining water-quality standards.

7.0 EDUCATION AND OUTREACH STRATEGY

GGWC works with the community to identify and prioritize projects that are the most appropriate for the Lower Gallatin watershed. The Lower Gallatin WRP has been developed with input from four community meetings and responses to an online survey. Over 100 people from diverse backgrounds and parts of the community participated. The *Community Meetings & Online Comments Summary* contains extensive information about community values, watershed concerns, and ideas for stream improvements. The summary is available on the GGWC web site at www.greatergallatin.org and as **Attachment B**.

7.1 BROAD COMMUNITY ENGAGEMENT

GGWC works to engage a broad spectrum of watershed citizens. The Lower Gallatin watershed is a rapidly developing area with a strong agricultural heritage. With over 70,000 residents, the Lower Gallatin watershed requires an approach to stream and watershed health that embraces this diversity. To engage a broad spectrum of stakeholders, GGWC's outreach activities include:

- Monthly board meetings open to the public
- Annual meeting in January focused on topics of importance to this watershed
- Workshops and meetings with individual stakeholder groups
- Educate children on water resource issues with projects such as storm drain stenciling, Farm Fair, classroom instruction, and tree planting
- Informational outreach at events, such as the Sustainability Fair/Bozeman Clean up and Watershed Festival
- Annual fall tour of projects or specific watershed topics
- Monthly electronic newsletter to diverse residents throughout the Gallatin Valley, local water-related professionals, other conservation professionals, GGWC volunteers, and MSU faculty and students
- Web site and Facebook
- Gallatin Stream Team Program volunteer training and data symposium with GLWQD

7.2 TARGETED EDUCATION STRATEGY

Input received during the community stream improvement meetings helped identify several opportunities for education and outreach. In order to have effective stream improvement projects, many different landowners must be involved. Working with partners to reach out to landowners is critical and GGWC will work to build an effective outreach approach for each group. Priorities for education include:

- Agricultural community members
- Urban landowners, particularly through home owner associations
- Landowners with small acreages in priority areas
- Ditch managers and landowners along ditches and stream areas
- Community engagement with all landowners within specific sub-watersheds

8.0 POTENTIAL FUNDING SOURCES

GGWC will continue to investigate funding options for specific projects, with several potential funding sources highlighted in **Table 8-1**. In addition, the DEQ non-point source management program has also prepared a list of Montana natural resources grant programs, which is available at:

<http://montananps319grants.pbworks.com/w/page/21640327/319%20Projects%20Home>

Table 8-1. Potential Funding Sources

Agency	Program Name	Assistance	Project Types	Maximum Financial Award							
				None	Under \$10,000	Under \$25,000	Under \$50,000	Under \$100,000	Over \$100,000	Varies widely	Match Required
LOCAL											
Gallatin Conservation District	N/A	Technical	Liaisons between landowners and government agencies, in-kind administrative and technical assistance, program coordination/partnering	X							
STATE											
Montana Department of Environmental Quality	Nonpoint Source Implementation Grants - 319 Program	Financial, technical	Non-point source pollution reduction							X	X
Montana Fish, Wildlife & Parks	Future Fisheries Improvement Program	Financial, technical	Restore rivers, streams, and lakes. Improve and restore wild fish habitats							X	X
Montana Department of Natural Resources and Conservation	Reclamation and Development Grants Program (RDG)	Financial	Serve the public interest and the State of Montana. Develop natural resources and promote and protect Montana's total environment and the general health, safety, welfare, and public resources of Montana's citizens and communities						X		
	Renewable Resource Grant and Loan Program (RRGL)	Financial	Fund conservation, management, development and preservation of Montana's renewable resources						X		

Table 8-1. Potential Funding Sources

Agency	Program Name	Assistance	Project Types	Maximum Financial Award							
				None	Under \$10,000	Under \$25,000	Under \$50,000	Under \$100,000	Over \$100,000	Varies widely	Match Required
FEDERAL											
Natural Resources Conservation Service	Agricultural Conservation Easement Program (ACEP)	Financial, technical	For Agricultural lands and wetland reserves							X	
	Environmental Quality Incentive Program (EQIP)	Financial, technical	Implement conservation practices or activities like conservation planning							X	
	Regional Conservation Partnership Program (RCPP)	Financial, technical	Promotes coordination between NRCS and its partners to deliver conservation assistance to producers and landowners							X	
U.S. Environmental Protection Agency	Targeted Watershed Grants Program	Financial	Aquatic, wetland, riparian and upland habitat improvement and protection							X	X
	Wetland Program Development Grants	Financial, technical	Promote research/studies to prevent/eliminate water pollution						X	X	X
	Urban Waters Grant	Financial	Support and build partnerships with a variety of federal, state, tribal, and local partners that foster increased connection, understanding, and stewardship of local waterways					X			
U.S. Fish and Wildlife Service	Partners for Fish and Wildlife	Financial, technical	Habitat restoration to benefit federal trust species, conservation programs, and various fish and wildlife restoration projects							X	X

Table 8-1. Potential Funding Sources

Agency	Program Name	Assistance	Project Types	Maximum Financial Award							
				None	Under \$10,000	Under \$25,000	Under \$50,000	Under \$100,000	Over \$100,000	Varies widely	Match Required
	North American Wetlands Conservation Act Program	Financial	Variety of wetland conservation projects					X		X	X
PRIVATE OR NON-PROFIT ORGANIZATIONS											
National Fish and Wildlife Foundation (NFWF)	Pulling Together Initiative (PTI)	Financial, technical	Long-term invasive species weed control							X	X
	Five-Star Restoration Program	Financial, technical	Wetland and wildlife habitat restoration							X	
	Bring Back the Natives Grant Program	Financial	Riverine habitat and aquatic species restoration projects				X				X
	National Plant Conservation Initiative (NPCI)	Financial	Restoration of native plant communities							X	
Trout Unlimited	Watershed Restoration	Financial	Erosion control, fish habitat, structures, willow and other riparian plantings							X	
	Habitat Protection and Enhancement Fund	Financial	Improve water quality, riparian protection, enhance stream flows and watershed health, protect important trout habitat							X	

9.0 PERMITTING REQUIREMENTS

GGWC will ensure that the appropriate permits will be obtained prior to the implementation of any project, including:

Montana Natural Streambed and Land Preservation Act (“The 310 Law”)

- Administered by local Conservation District with input from Montana Fish, Wildlife & Parks (FWP); SPA 124 Permit is required in lieu of a 310 permit for projects proposed by a public entity

County Floodplain Development Permit

- Required for projects within FEMA-designated floodplains/floodways

Short-term Water Quality Standard for Turbidity (318 Authorization)

- Administered by Montana Department of Environmental Quality; permit may be waived by FWP during their review of a project

Federal Clean Water Act (Section 404 Authorization)

- Administered by the U.S. Army Corps of Engineers; authorizes placement of fill material below the ordinary high water mark

Montana Stream Mitigation Procedure (U.S. Army Corps of Engineers)

- Compensatory mitigation to ensure minimal individual and cumulative adverse impacts to aquatic resources
- Part of an overall sequence in project evaluation that dictates avoidance of impacts first, followed by minimization of impacts, and then compensation for remaining impacts
- Mitigation for impacts typically consists of natural revegetation, bioengineered bank stabilization, natural buffers, aquatic habitat improvements, floodplain re-connection, weed removal/management, fencing, and allowing for natural channel migration
- Based on a system of debits and credits that are applied to each project to determine if, and to what extent, mitigation will be required
- *Magnitude*: Individual projects > 300 feet in length typically require mitigation; cumulative projects > 1,000 feet in length increases debit responsibility
- *Location*: Mitigation activities can occur on-site, off-site, or outside of watershed
- *Timing*: Mitigation activities can occur prior to the impacts, concurrent with the impacts, or after the impacts

Montana Department of Natural Resources and Conservation

- Water rights

10.0 REFERENCES

DTM Consulting and Applied Geomorphology, Inc. 2010. *Gallatin Watershed Restoration Prioritization Planning*. Prepared for Gallatin Conservation District and the Greater Gallatin Watershed Council.

Montana Department of Environmental Quality (DEQ 2013). *Lower Gallatin Planning Area TMDLs & Framework Water Quality Improvement Plan*. Water Quality Planning Bureau, Montana Department of Environmental Quality.

Montana Department of Environmental Quality (DEQ 2014). *Load Reduction Estimate Guide – A Guide for Estimating Pollutant Load Reductions Achieved Through Implementation of Best Management Practices*. Water Quality Planning Bureau, Montana Department of Environmental Quality.

Attachment A

Project Development Screening Tool

Greater Gallatin Watershed Council Project Development Screen

Projects require three elements: stream and watershed improvement potential, landowner and community support and the resources necessary to carry it out. This screen is designed as a tool to evaluate whether a project is ready for implementation, needs additional development, or is not suitable.

Project Summary and Stream Improvements

Project Name							
Project Location							
Landowner or Landowners						Sector (public or private)	
Project is or involves (check all that apply)	<input type="checkbox"/> In/on a stream <input type="checkbox"/> Wetland <input type="checkbox"/> Off stream <input type="checkbox"/> Ditch or Head gate <input type="checkbox"/> Targeted information/education Other (list):						
Proposed BMPs							
Expected Water Quality Improvements (TMDL)	<input type="checkbox"/> Sediment <input type="checkbox"/> Phosphorus <input type="checkbox"/> Nitrogen/Nitrates <input type="checkbox"/> E. coli		Which Water Quality Impairments exist on this Stream or a stream downstream?				
Stream & Wetland Degradation to be addressed (check all that apply)	<input type="checkbox"/> Channel over-widening <input type="checkbox"/> Channel entrenchment <input type="checkbox"/> Excessive stream bank erosion <input type="checkbox"/> Fine sediment accumulation in pools <input type="checkbox"/> Fine sediment accumulation in riffles <input type="checkbox"/> Lack of spawning sized substrate <input type="checkbox"/> Lack of pools <input type="checkbox"/> Lack of woody debris <input type="checkbox"/> Lack of riparian vegetation <input type="checkbox"/> Trash/debris in stream <input type="checkbox"/> Wetland degradation Other (list):						
Summary of Project Characteristics							

Project Support and Resources

Estimated Cost	<input type="checkbox"/> >\$2,000 <input type="checkbox"/> \$5,000-10,000 <input type="checkbox"/> \$10,000-25,000 <input type="checkbox"/> \$50,000-100,000 <input type="checkbox"/> >\$100,000								
State of Project Development (check all that apply)	<input type="checkbox"/> Idea stage only <input type="checkbox"/> Site Visit Completed <input type="checkbox"/> Feasibility Assessment or Formal Design completed <input type="checkbox"/> Permits in place <input type="checkbox"/> Funding secured <input type="checkbox"/> Contractor identified								
Partners					Are all needed partners supporting the project?				
Does this project qualify for 319 funding?					Is match secured? If so, what is it?				
Other funding sources									
Community Priorities Met (underline all that apply)	Aesthetics	Agriculture	Drinking Water	Economic Value	Fishery	Recreation	Stream Function & Watershed Health	Wildlife & Habitat	Other

Project Next Steps

State of Project Development (circle or underline answer)	Stream or Wetland Improvement: Yes No Not Determined		Landowner and Community Support: Yes No		Necessary Resources Secured: Yes No	
Next Steps for each area:						
Next Steps Assigned to:						
Proceed with Project?	Yes	No	If yes, Board Approval Date:			

Further Landowner Leads:

Stream and Watershed Improvement Potential

This project is likely to improve stream health in the following ways:					
Area of watershed	__ Bozeman	__ Subdivision/small acreage	__ Rural – E. Gallatin watershed	__ Rural – W. Gallatin watershed	__ Rural Gallatin below the confluence

Significant Improvement is expected in the following areas: (check all that apply)	
	Nitrogen/Nitrates
	Phosphorus
	Sediment reduction
	E. coli reduction
	In-stream habitat improvement
	Riparian and upland habitat improvement
	Thermal alteration
	Flow alteration
	Other Stream/Wetland Improvements

This project falls within a priority area or areas (check all that apply)	
	Stream does not meet water quality standards in the area that this project will improve
	Stream is a tributary to a stream that does not meet water quality standards for an impairment this project will improve.
	This is a wetland priority area identified in the DEQ wetland integration.
	This is a project identified in the 2010 prioritization. It was ranked at number ____.
	This project will likely improve this stream for one or more community values, as demonstrated in the community prioritization.
	This project falls within other priority (list – NRCS, FWP, etc.)
	This project will protect a rare or unique area/type (list).

Existing plans, assessments, or other design or historical materials	
Where are these materials?	
Monitoring Plan (idea, developed, or approved?)	
Project Details (phases, further site description, monitoring plan, etc.)	

Does this project have high value stream and/or wetland improvement potential?	__ Yes, addresses TMDL impairments	__ Yes, addresses non-TMDL stream and wetland improvements	__ No, not significant stream or wetland improvements	__ Need more information. Next steps:
---	------------------------------------	--	---	---------------------------------------

Landowner and Community Support

Project Landowner Characteristics

Landowner or Landowners		Sector (public or private)	
A willing landowner is on board <input type="checkbox"/> yes <input type="checkbox"/> no.			
Landowner Contact		Phone(s)	
		Email(s)	
If a landowner is not yet on board, what is the state of landowner interest?			
	Landowner interested, but the following conditions much be met:		
	Landowner interest, but needs more information to make a decision.		
	Landowner contacted, but not sure of interest yet.		
	Landowner identified, but no contact yet.		
	Landowner not interested.		
	Are there other active or potential landowners?		
This project or projects involves multiple landowners: <input type="checkbox"/> yes <input type="checkbox"/> no			
If the answer is "yes" describe the state of the landowners:			
	All landowners interested and on board.		
	Most landowners on board. Landowners that are not ready have the following reservations or conditions:		
	A landowner or few landowners on board. Rest are have the following conditions or reservations:		
	Landowners contacts, but not sure of interest		
	Landowners not identified yet.		
Are there other potential or interested landowners near this project? If so, describe.			

Other Community Project Characteristics

Potential for replication	None	Low	Medium	High
Community Partner(s) involved with project (list –CD, GVLT, etc.)				
Potential to influence other landowners (describe type of influence- landowner type, etc.)				
Education Potential				
Potential for long term security of project (easements, management agreements, etc.)				

Are all landowners and partners on board?	<input type="checkbox"/> Yes, landowner(s) on board.	<input type="checkbox"/> Yes, partner(s) on board.	<input type="checkbox"/> No, landowner(s) missing:	<input type="checkbox"/> No, partners missing:

Necessary Resources Available

Landowner accepts the following terms and conditions:				
Landowner can put in the following funds/in-kind into the project:				
Project characteristics are good to excellent for the following funding sources:			Ability to complete the project:	
	DEQ 319	Funding Status:		
	CD sponsored funding (list):	Funding Status:		
	DEQ/Wetland funding	Funding Status:		
	DNRC RGL grants	Funding Status:	Project cost details (phases, extent, total targeted stream improvement, etc.):	
	Future Fisheries (FWP)	Funding Status:		
	NRCS programs:	Funding Status:		
	City of Bozeman funding	Funding Status:		
	Corps In Lieu-Fee mitigation funds	Funding Status:		
	Ducks Unlimited	Funding Status:		
	Trout Unlimited	Funding Status:	Project cost, compared to other potential projects:	
	Private Funding Sources (list):	Funding Status:		
	Other Public Funding Sources (list):	Funding Status:		
Other funding notes or considerations:				
Further Notes on any other project leads, landowner leads or next steps:				
Are all resources secured?	<input type="checkbox"/> Yes, funding is secured.	<input type="checkbox"/> Yes, technical resources are available.	<input type="checkbox"/> No, funding is not secured. Next steps:	<input type="checkbox"/> No, technical resources missing. Next Steps:

Attachment B

**Community-Based Stream Improvement
Meetings and Comment Summary**

COMMUNITY-BASED STREAM IMPROVEMENT MEETINGS & COMMENTS SUMMARY

2014

OVERALL SUMMARY

The Greater Gallatin Watershed Council (GGWC) hosted a series of four community meetings and gathered comments through an online survey. The purpose of these meetings and comment surveys is to:

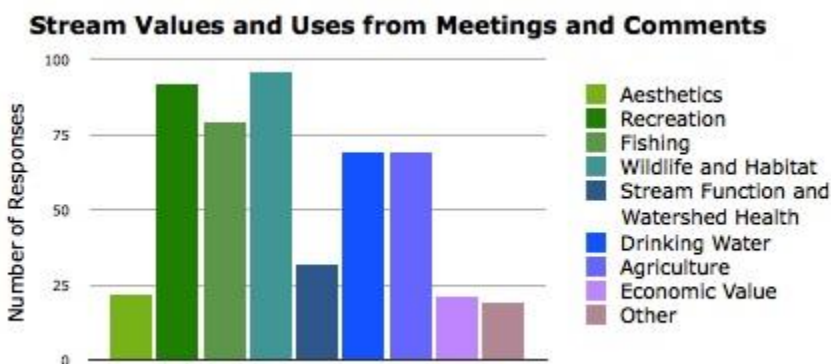
- Identify community priorities within the watershed
- Hear specific concerns and ideas about area streams
- Identify potential projects to improve stream and watershed health

This community input serves as the basis for GGWC's Watershed Restoration Plan (WRP) which will be completed by the end of 2014. The plan will guide watershed-wide restoration efforts based on community priorities over the next three to five years.

PARTICIPANTS

60 people participated in one of four community meetings in January and February 2014: 12 in Belgrade, 8 in Manhattan, 35 in Bozeman, and 5 in Bridger Canyon. 62 people participated in the comment survey from mid-January through February 25. This includes several individuals who submitted additional comments after attending a meeting. A wide variety of stakeholders attended the meetings and submitted comments, including agricultural producers, urban and suburban landowners, land managers, and representatives of governmental and nonprofit organizations.

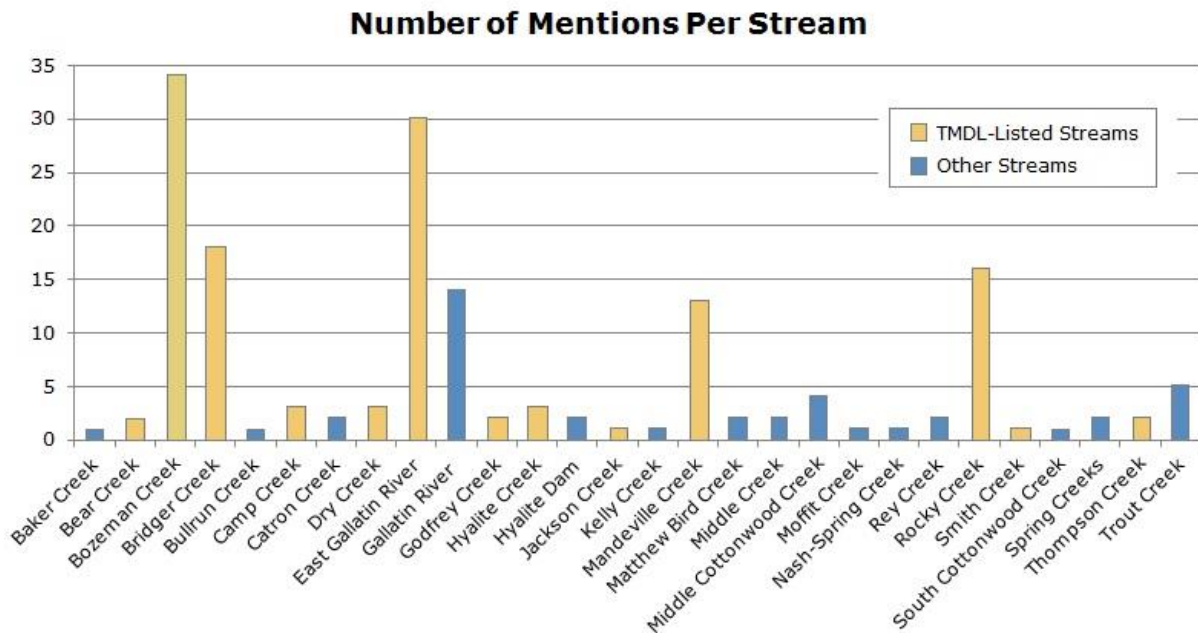
COMMUNITY STREAM VALUES



Participants were asked how they use and value streams within the watershed. The graph above shows the overall responses from the meetings and comment surveys. However, at each meeting, the relative importance of these values varied based on location and stakeholder interest.

STREAMS OF INTEREST IN THE LOWER GALLATIN WATERSHED

Many streams were mentioned in the meetings and comment surveys, as well as Hyalite Dam and several ditches within the Lower Gallatin Watershed.



In the above graph, the number of mentions per stream generally reflects the population near the stream. The streams that do not meet state water quality standards appear in yellow. Two of the fifteen streams that do not meet state water quality standards (TMDL-listed streams) were not mentioned: Reese Creek and Stone Creek. Most of the non-listed streams that were mentioned are tributaries to TMDL-listed streams.

POTENTIAL PROJECTS

Number of Potential Projects Identified	Area of Watershed
14	Bozeman
5	Eastern Region (Bridger Canyon, Bear Creek, Rocky Creek, East Gallatin down to Spring Hill, and areas east and south of Bozeman)
11	Northern Region (Belgrade and adjacent areas, plus area north and east of Belgrade, including: Spring Hill, Dry Creek and numerous spring and freestone creeks and ditch areas)
8	Western Region (Manhattan, Lower East Gallatin, Camp and Godfrey Creeks, north and west of Manhattan and the area below the confluence of the West and East Gallatin.
3	Southern Region (West Gallatin to the mouth of Gallatin Canyon, South Cottonwood, Middle Creek and the surrounding area)

In addition to many potential restoration projects and project leads, community members provided many ideas for improved best management practices, targeted education, and other ways to address stream and watershed improvement and community values in the Lower Gallatin Watershed. More detail on these ideas can be found in the individual community meeting and the comment survey summaries.

MAJOR THEMES

Stream and watershed values are similar across the watershed. In every community, streams were valued for many reasons. These include supporting recreation, agriculture, fisheries, habitat, and drinking water. The relative balance between different stream uses and values varied by community, but overall there is widespread interest in supporting multiple beneficial uses. As one participant said, “Nobody wants to be screwing up the creek.”

Individualized solutions to stream concerns are necessary based on land use, ownership, and stream type. Streams within the watershed vary greatly, from small spring creeks to freestone creeks to relatively large rivers. Urban streams and rural streams also differ in the types of impacts and the number and type of landowners. Private landowners vary in the way they use their land; their goals for their property; the resources they have available; their comfort with various funding sources; and their history of interaction with agencies, government, and other entities. Each improvement project will need to be tailored to fit all of these considerations.

Targeted education and outreach is essential to success. The need for education was discussed frequently, and participants suggested targeting a wide variety of stakeholders including new landowners, developers, and agricultural producers. More than ten different stakeholder types were mentioned. Participants felt that ongoing outreach to these groups, using information, education and even social events, is necessary for fostering project ideas and participation.

Community members are very aware of and interested in the Gallatin as a headwaters watershed. The Lower Gallatin Watershed’s status as the headwaters was frequently noted and valued. Participants appreciated the privilege of living upstream and of having clean water. Several participants commented that it is important to keep this, the upper reach of the Missouri Watershed clean.

Community interest is widespread in improving and protecting streams, wetlands and the watershed. Many participants identified maintaining stream, wetland and watershed health as a top priority. People value healthy streams and want to preserve stream health. Protecting all streams is considered as important as restoring streams of concern.

NEXT STEPS

The Greater Gallatin Watershed Council is using the information gathered from the community to help build an approach that reflects community values and priorities.

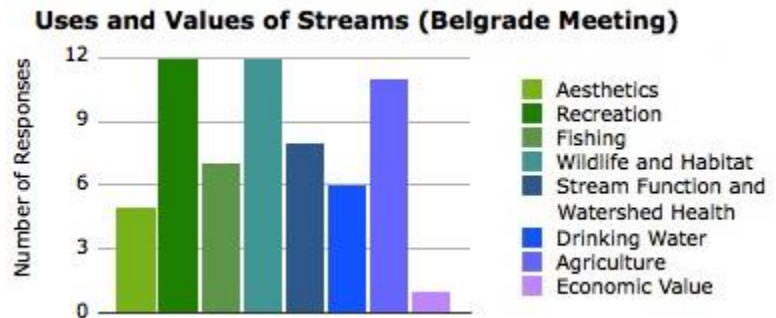
- A **prioritization process** is being developed to help identify voluntary projects that meet community values, improve watershed health, and have a strong likelihood of being funded through DEQ 319 grants or other funding sources.
- A few **projects will be selected** for DEQ 319 funding consideration this year and in the next 2-3 years.
- The **Watershed Restoration Plan** will be completed by the end of 2014. The plan will identify restoration projects and best management practices that align with community values, establish education and outreach approaches, and outline expected stream and watershed improvements.
- GGWC will **build further partnerships** with landowners and other stakeholders across the Lower Gallatin Watershed in order to foster support and develop projects that will result in improved stream and watershed health.

BELGRADE · JANUARY 22

Participants: 12

Rivers and Streams Mentioned:

- Bullrun Creek
- Middle Cottonwood Creek
- Dry Creek
- East Gallatin River
- West Gallatin River
- Gallatin River
- Hyalite Dam
- Middle Creek
- Smith Creek
- Thompson Creek
- Trout Creek



CONCERNS, IMPROVEMENT IDEAS, AND DISCUSSION

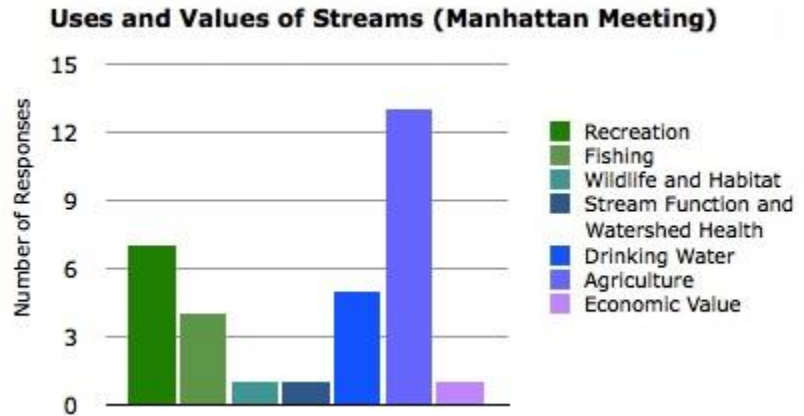
Concern	Improvement Ideas and Discussion
Agriculture	Ensure adequate water
Fisheries	Fish ladder on Trout Creek. Fish habitat improvement on Bullrun Creek.
Water flow	No specific ideas, but participants noted a need to maintain and increase flow for both agriculture and habitat. Irrigation timing and management was also noted as an opportunity for further discussion and investigation.
Development	Landowner education, especially improving understanding of effects of changes in land use and development.
Invasive weeds	Education on invasive weed management, especially for small acreage landowners. Targeted weed management.
Lack of riparian vegetation	Fencing. Streamside revegetation. Wetland restoration on Trout Creek.
Sediment	Fencing. Revegetation.
Pet waste	Pet waste stations and pet owner education.
Nutrients in the East Gallatin sub-watershed	Further investigation and discussion of water quality impacts and potential solutions throughout the East Gallatin River sub-watershed, including tributaries.
Lack of awareness	Education on water flow and water rights. Education on natural stream characteristics and dynamics. Further education and discussion along the East Gallatin on upstream effects. A Channel Migration Zone map was identified as a tool to increase understanding of stream dynamics on both the East and West Gallatin Rivers.

MANHATTAN · JANUARY 23

Participants: 8

Streams and Rivers Mentioned:

- Baker Creek
- Camp Creek
- Dry Creek
- East Gallatin
- Godfrey Creek
- Rey Creek
- Thompson Creek
- Story Creek
- Smith Creek



CONCERNS, IMPROVEMENT IDEAS, AND DISCUSSION

Concern	Improvement Ideas and Discussion
Implementing effective riparian projects	Ensure that proven stream and wetland restoration methods are used is important. Ensure that all funding conditions are known from the outset when working with landowners, since additional conditions late in the process have undone more than one local project.
Protecting property rights	Voluntary projects that do not interfere with land or water rights are important.
Lack of riparian vegetation and sediment	Fencing, riparian planting, and stream bank restoration were identified as possible improvements. However, some mixed history with projects in the past led participants to stress that proven practices are important.
Fisheries	Spawning areas on Rey, Thompson, and Baker Creek had identified sediment problems. Ideas with fencing, riparian replanting, or possible irrigation management.
Development	Find ways to education and work with developers early in process, so projects that are developed do not impact streams.
Water management & water rights	Water management is intensive and intricately connected. Any solution must take water rights into consideration.
Lack of knowledge	Education was considered one of the most important ways to work with many targeted audiences. Engagement with neighbors on individual streams and through community-based events to build understanding and trust over time was also important.

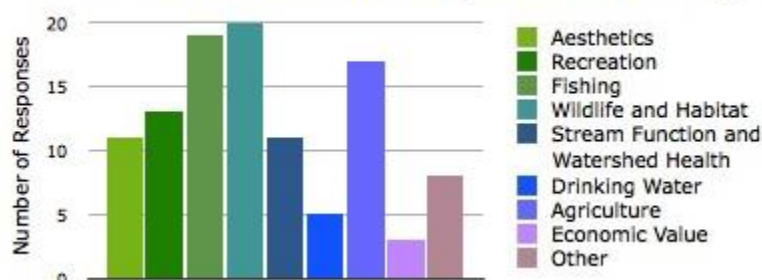
BOZEMAN · FEBRUARY 5

Participants: 35

Streams and Rivers Mentioned:

- Bear Creek
- Bozeman Creek
- Bridger Creek
- Catron Creek
- East Gallatin River
- Hyalite Creek
- Mandeville Creek
- Moffitt Creek
- Rocky Creek
- West Gallatin River

Uses and Values of Streams (Bozeman Meeting)



CONCERNS, IMPROVEMENT IDEAS, AND DISCUSSION

Concern	Improvement Ideas and Discussion
Renaturalizing streams	Naturalize straightened sections of Rocky and Bozeman Creeks. Add riparian vegetation.
Wetland loss	Wetland restoration within urban areas along Bozeman Creek and in surrounding stream areas.
Stormwater effluent	Pervious pavement, sediment filtration system or wetlands in urban areas. Maintenance and effectiveness of stormwater control measures.
E. coli	No specific ideas, but managing pathogens did come up as a concern.
Fisheries	Improving aquatic organism passage at Mill Ditch Diversion. Other practices to reduce sediment and nutrients would also be beneficial to fisheries.
Sediment	Riparian vegetation, storm water filtration and structures, grazing practices, no-mow zones and riparian buffer. Flushing sediments on Catron and Mandeville Creeks.
Invasive weeds	Weed management on Catron Creek.
Trash and debris in streams	Remove concrete debris in Bozeman Creek between Story and Peach streets and other areas. Remove trash and other debris.
Erosion and stream bank loss	Riparian planting, bank stabilization and channel work, grazing practices changes. Bank loss on a property on the East Gallatin has accelerated, perhaps due to changes upstream. Bear Creek, Bridger Creek, and the East Gallatin were mentioned.
Head gate improvements	Aquatic fisheries passage management, stabilizing erosion and other improvements on Spain and Ferris Ditch. Ditch access and management, as well as lack of awareness of ditch laws and management issues also were mentioned.
Nutrients	No mow zones, riparian revegetation, storm water infiltration, wetland infiltration, implement no-mow zones.
Lack of awareness	Target MSU students and Bozeman High School students as well as the larger community.

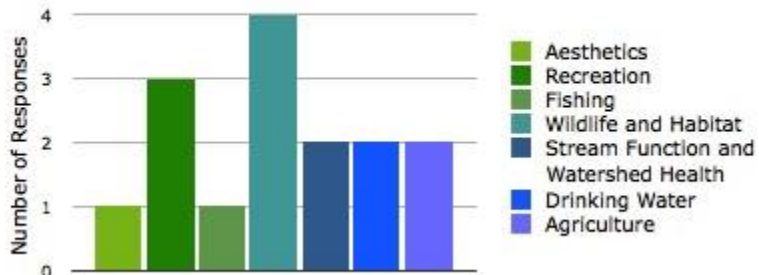
BRIDGER CANYON · FEBRUARY 6

Participants: 5

Streams and Rivers Mentioned:

- Bear Creek
- Bozeman Creek
- Bridger Creek
- East Gallatin River
- Jackson Creek
- Kelly Creek
- Mandeville Creek
- Matthew Bird Creek
- Rocky Creek
- Trout Creek

Uses and Values of Streams (Bridger Canyon Meeting)



CONCERNS, IMPROVEMENT IDEAS, AND DISCUSSION

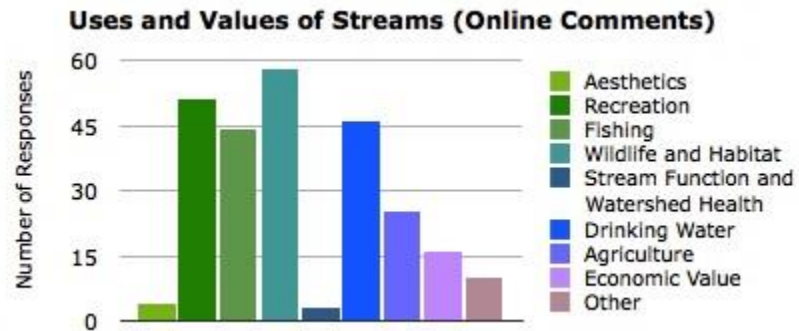
Concern	Improvement Ideas and Discussion
Effects of roads and trains on Rocky Creek	Dept. of Transportation has installed some sediment control measures. Further control structures, changes in road and rail management, and/or vegetative filters could be helpful.
Beavers	Using a “scare-beaver” to keep beavers from building in undesirable locations; beaver control (Both too many and too few were cited as concerns. Finding a balance is important.)
Development in Bridger Canyon	Educate public and contractors about stream concerns and best practices when building houses and installing roads. Change zoning laws and increase knowledge of existing zoning. Further investigation and discussion of effects of groundwater and septic systems on Bridger Creek. Promote conservation easements.
Bank erosion	Bank stabilization and revegetation. Slow water in straightened, high-velocity areas.
Septic systems	Sub-standard septic systems were identified as concern. However, it was thought that landowners avoid upgrading septic tanks until failure occurs because of the cost of upgrades to meet the current standards.
Flooding and channel velocity	Look for ways or places to slow water, possibly with beaver dams, changing stream structure or wetland restoration. Change floodplain codes.
Nutrients	Substandard septic systems, development, and lack of riparian vegetation were mentioned as potential contributors. Landowner education was thought to be useful.
Lack of knowledge	Provide on-site surveys for landowners to identify specific problems and suggest solutions. Educate public and contractors about stream concerns and best practices when building houses and installing roads. Share historical pictures and other history with decision-makers and landowners. Use the LIDAR map of Bridger Canyon that the Craighead Institute is developing could be used for stream and water purposes. Discuss potential effects of snow-making and ground water use on Bridger Creek.

COMMENTS SUMMARY

Participants: 62

Streams and Rivers Mentioned:

- Bozeman Creek
- Bridger Creek
- Camp Creek
- Dry Creek
- East Gallatin River
- West Gallatin River
- Gallatin River
- Godfrey Creek
- Hyalite Creek
- Mandeville Creek
- Matthew Bird Creek
- Middle Creek
- Nash Springs Creek
- Rocky Creek
- Thompson Creek



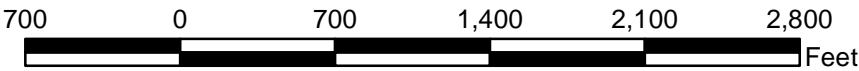
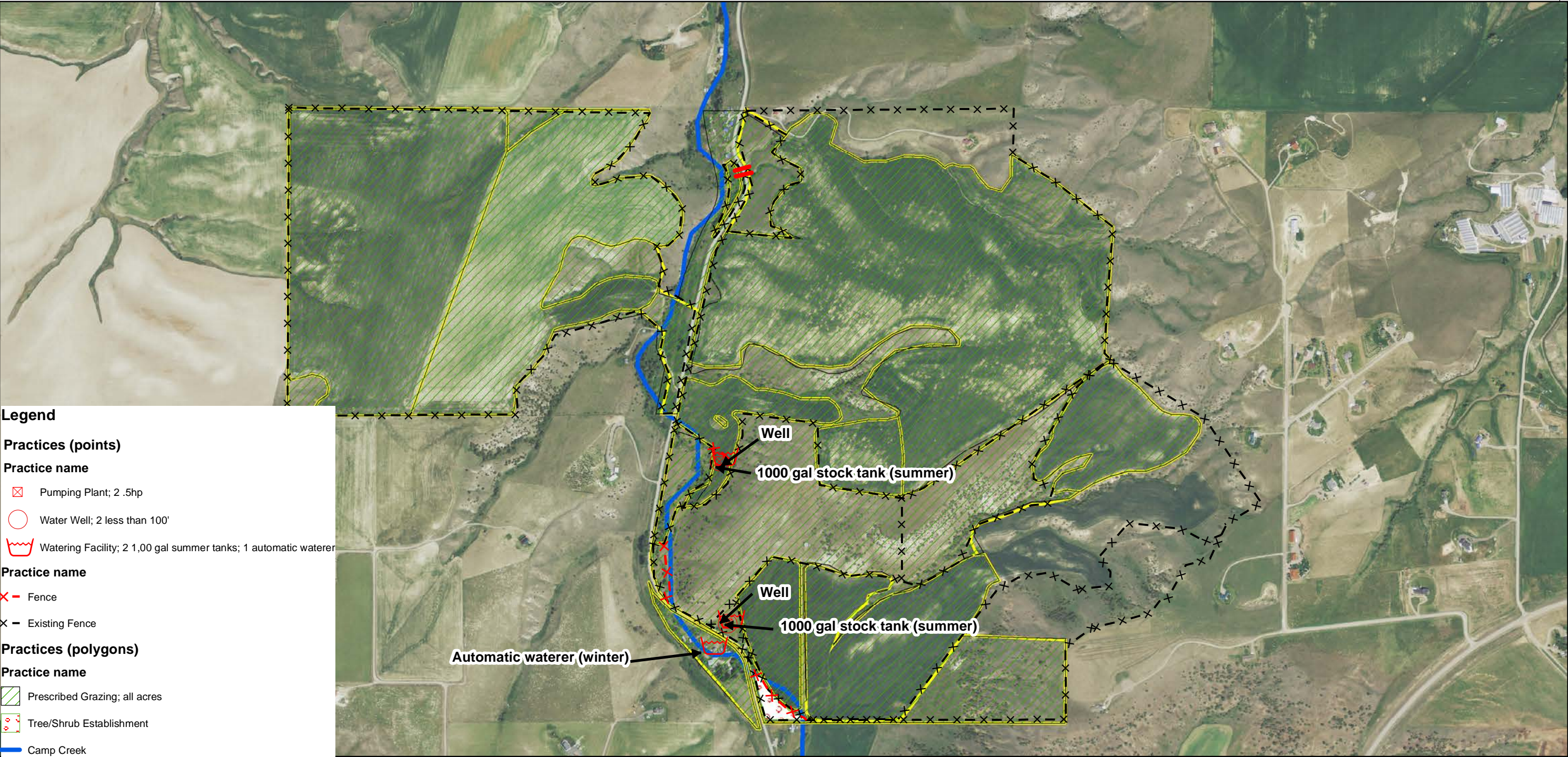
CONCERNS, IMPROVEMENT IDEAS, AND DISCUSSION

Concern	Improvement Ideas and Discussion
Development and Urban Impacts	Restrict growth and development in floodplains and stream corridors by enforcing existing setback regulations implementing new regulations, or voluntary methods. Management of impacts to stream corridors from pets, landscaping, trash and debris. Restore Bozeman and Mandeville Creeks.
Water Management	Enforce existing water rights, examine ditch/stream mixing and possible options, and educate landowners and leaders on ditch laws and management.
Nutrients	Fencing, livestock grazing and waste management, pet waste management, nutrient input reduction from both urban and agricultural sources, and vegetative buffers.
Sediment and Silt	Fencing, stream bank restoration, grazing management, riparian buffers.
Degradation of Public Access Points	Weed management, revegetation and stream bank improvement, signage and education about watershed issues.
Storm Water	Reduce run-off from streets and developed areas (specifically in Bozeman and Manhattan); use pervious pavement, landscaping and other means of enhancing infiltration; improve wetland restoration; educate on how to reduce debris, organic matter and sediment into the storm water and waste water; storm water treatment options.
Missing Connections to Streams	Education and signage on stream locations and type and education on stream dynamics. Improve and expand public access to streams.
Invasive Weeds	Control and management along all stream corridors. Public access sites seem particularly vulnerable.
Fisheries and Habitat	Riparian area and stream bank restoration. Thompson, Bridger, and Bozeman Creeks and East Gallatin River were mentioned.
Lack of Information	Water quality monitoring in several locations for sediment, nutrients, pathogens, chemicals and other pollutants. Concern about potential impacts of quicker snowmelt and climate change was also mentioned.
Lack of Awareness	Education on impacts of development and agriculture and on specific improvement practices. Improve opportunities for discussion between different stakeholders.

Customer(s): EVERT WIERDA

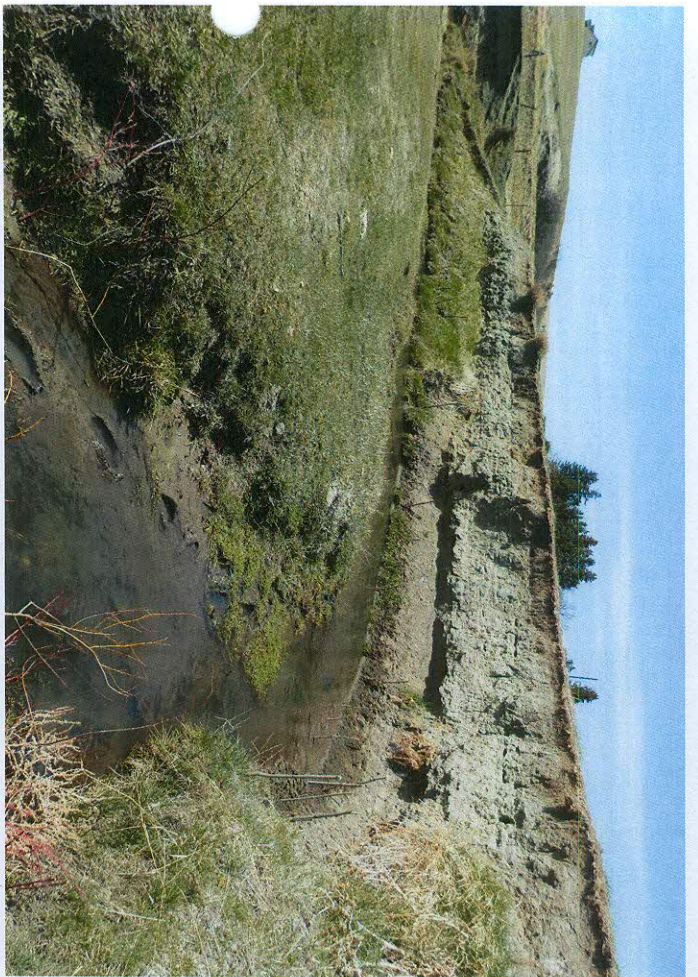
Agency: USDA/NRCS
Assisted By: CHRISTOPHER MAHONY

Legal Description: T 2S R 3E

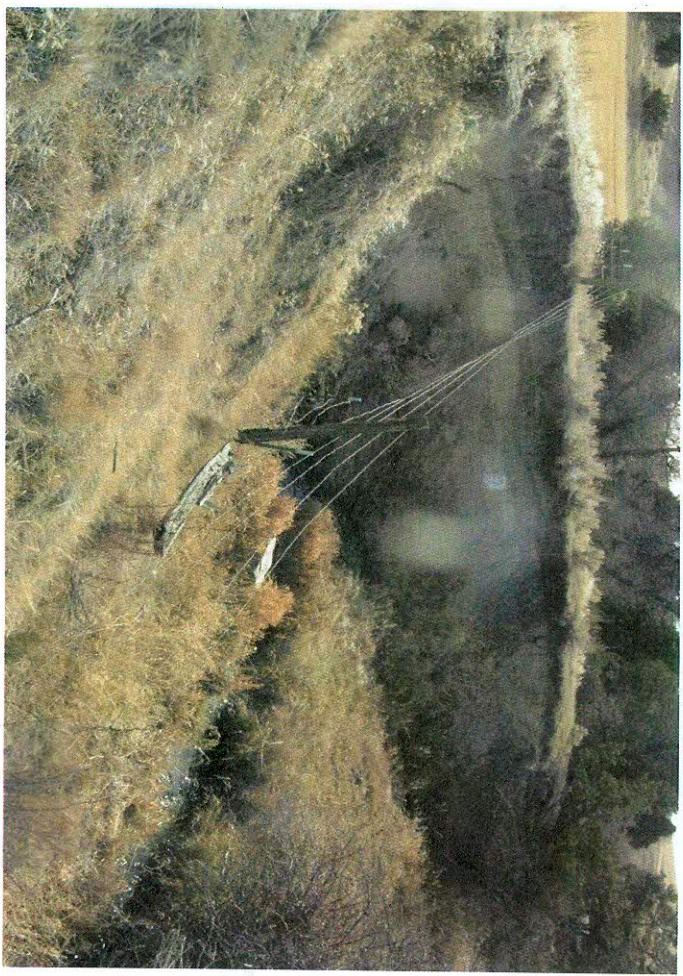
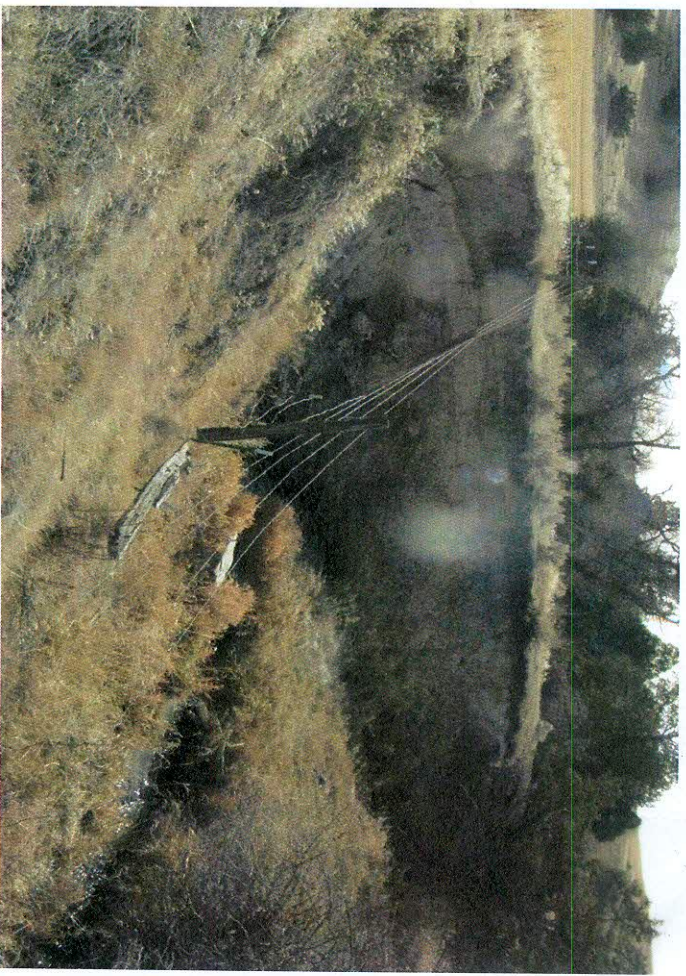


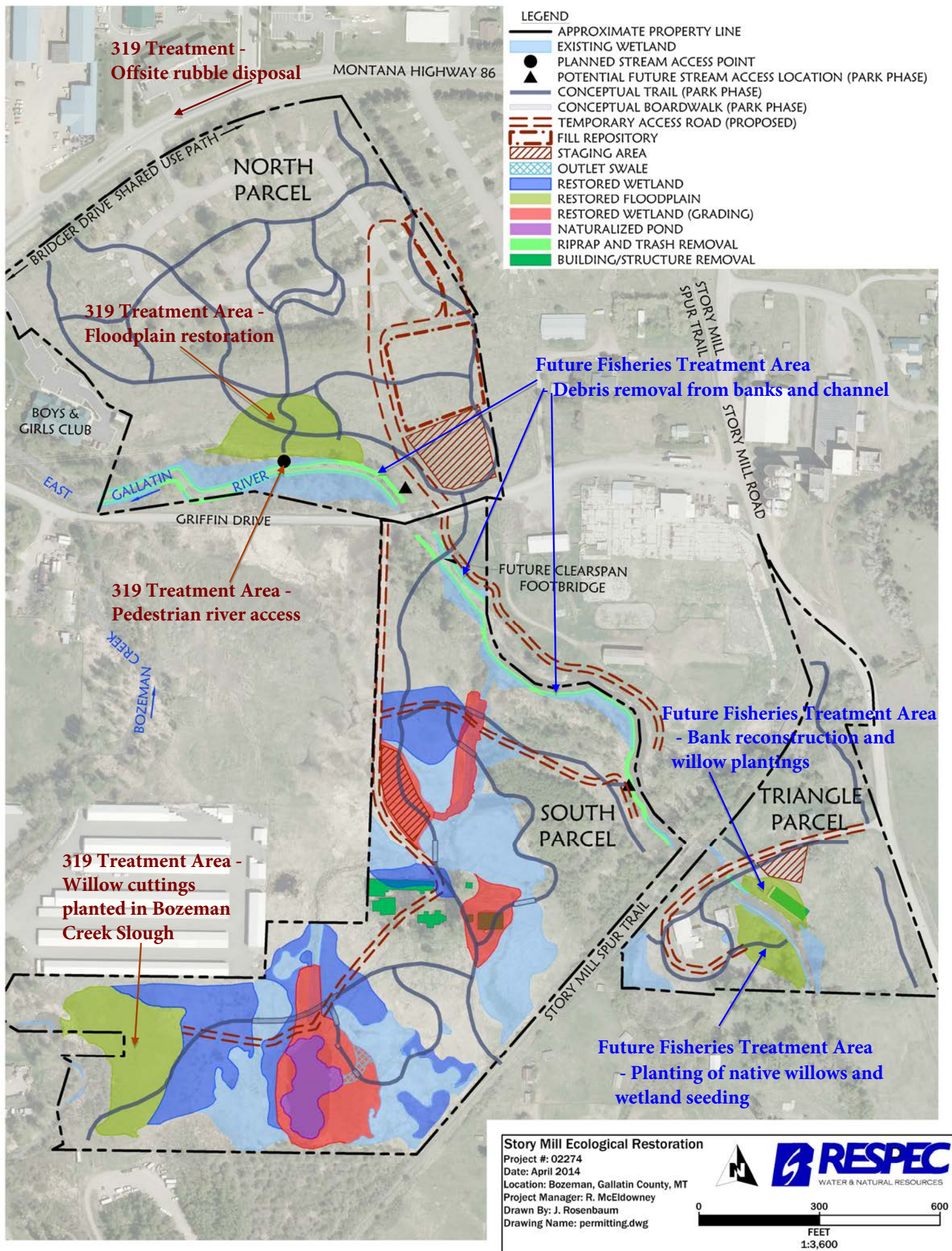
4/26/13. willow cuttings
Sweet woods
C. McHenry

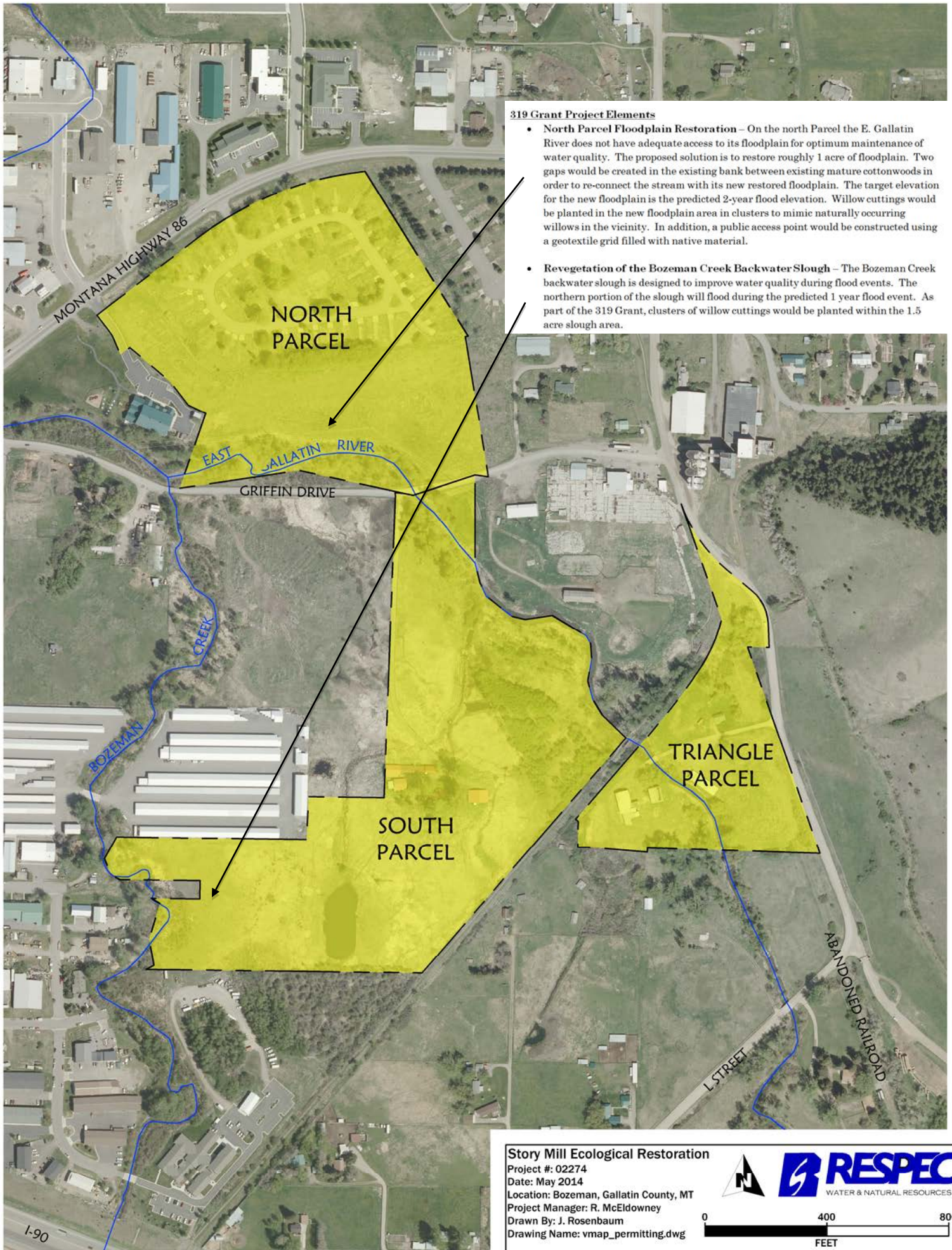




A. Ward 11/6/12
C. Mobley



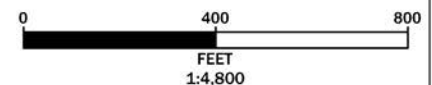


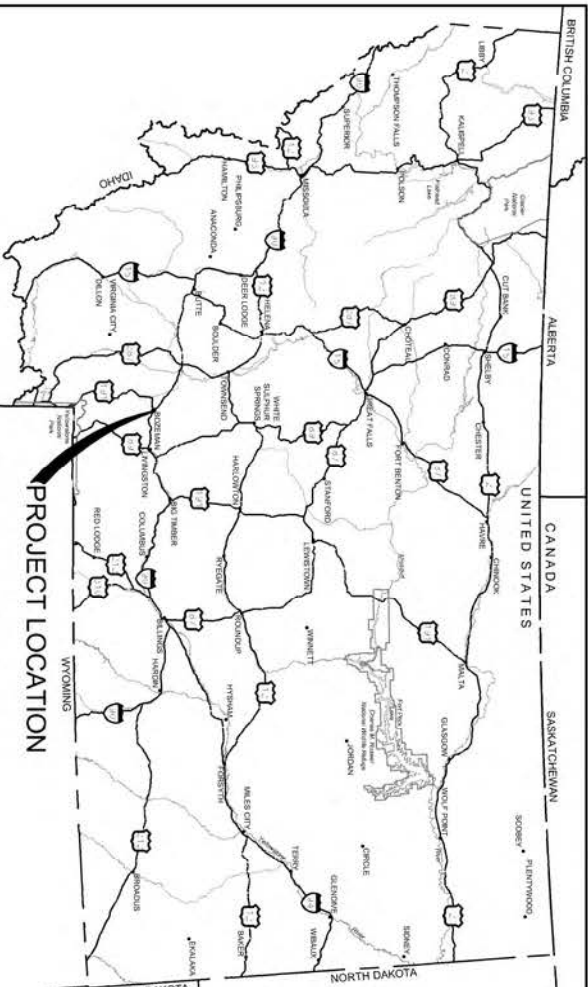


319 Grant Project Elements

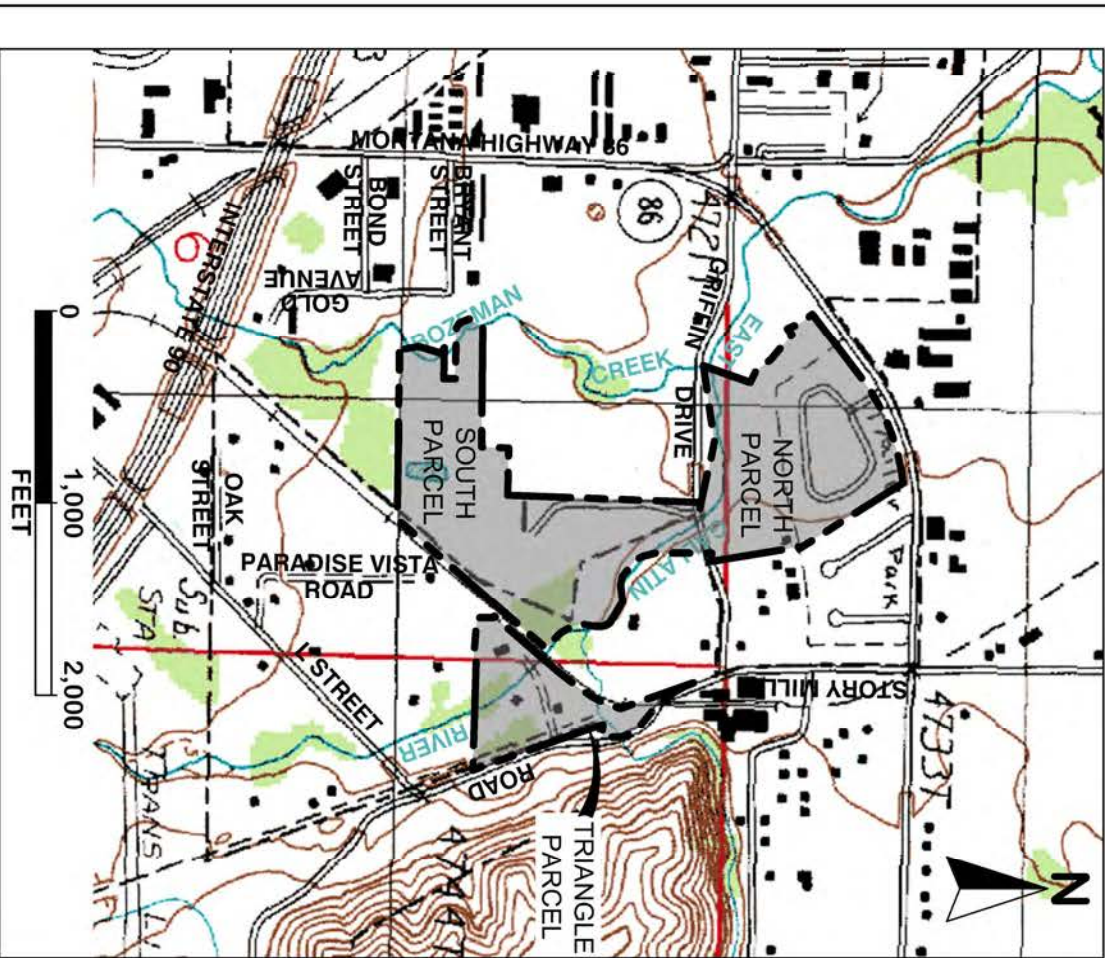
- **North Parcel Floodplain Restoration** – On the north Parcel the E. Gallatin River does not have adequate access to its floodplain for optimum maintenance of water quality. The proposed solution is to restore roughly 1 acre of floodplain. Two gaps would be created in the existing bank between existing mature cottonwoods in order to re-connect the stream with its new restored floodplain. The target elevation for the new floodplain is the predicted 2-year flood elevation. Willow cuttings would be planted in the new floodplain area in clusters to mimic naturally occurring willows in the vicinity. In addition, a public access point would be constructed using a geotextile grid filled with native material.
- **Revegetation of the Bozeman Creek Backwater Slough** – The Bozeman Creek backwater slough is designed to improve water quality during flood events. The northern portion of the slough will flood during the predicted 1 year flood event. As part of the 319 Grant, clusters of willow cuttings would be planted within the 1.5 acre slough area.

Story Mill Ecological Restoration
Project #: 02274
Date: May 2014
Location: Bozeman, Gallatin County, MT
Project Manager: R. McEldowney
Drawn By: J. Rosenbaum
Drawing Name: vmap_permitting.dwg





MONTANA LOCATION MAP



THE TRUST for PUBLIC LAND



STORY MILL ECOLOGICAL RESTORATION - 319 Grant Application

BOZEMAN,
GALLATIN COUNTY,
MONTANA

MAY 2014



MATCH LINE

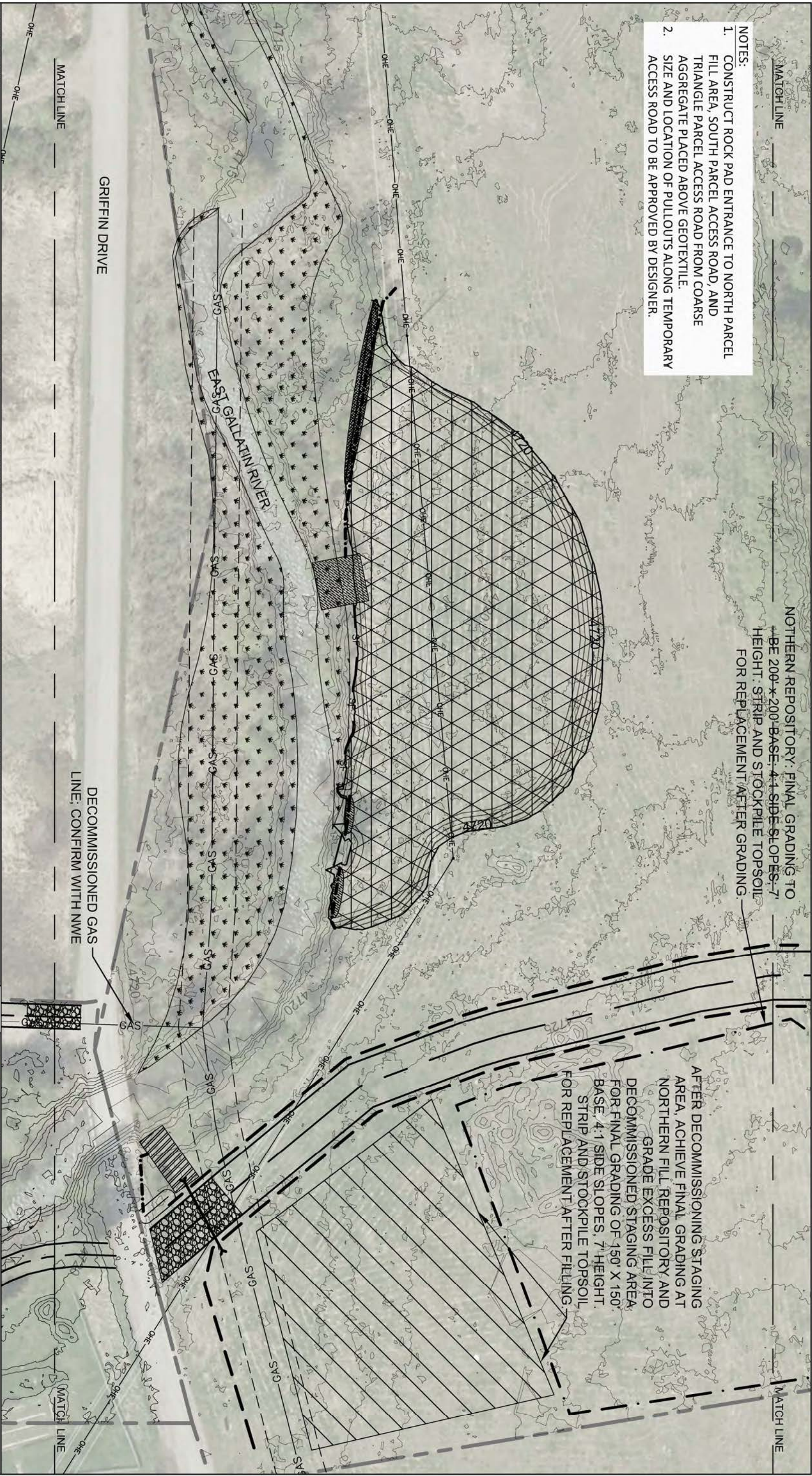
NOTES:

1. CONSTRUCT ROCK PAD ENTRANCE TO NORTH PARCEL FILL AREA, SOUTH PARCEL ACCESS ROAD, AND TRIANGLE PARCEL ACCESS ROAD FROM COARSE AGGREGATE PLACED ABOVE GEOTEXTILE.
2. SIZE AND LOCATION OF PULLOUTS ALONG TEMPORARY ACCESS ROAD TO BE APPROVED BY DESIGNER.

NORTHERN REPOSITORY: FINAL GRADING TO BE 200' x 200' BASE, 4:1 SIDE SLOPES, 7' HEIGHT. STRIP AND STOCKPILE TOPSOIL FOR REPLACEMENT AFTER GRADING.

AFTER DECOMMISSIONING STAGING AREA, ACHIEVE FINAL GRADING AT NORTHERN FILL REPOSITORY AND GRADE EXCESS FILL INTO DECOMMISSIONED STAGING AREA FOR FINAL GRADING OF 150' X 150' BASE, 4:1 SIDE SLOPES, 7' HEIGHT. STRIP AND STOCKPILE TOPSOIL FOR REPLACEMENT AFTER FILLING.

MATCH LINE



GRIFFIN DRIVE

DECOMMISSIONED GAS LINE: CONFIRM WITH NWE

MATCH LINE

NOTES: LEGEND

- APPROXIMATE PROPERTY LINE
- EXTENT OF GRADING FOOTPRINT
- EXISTING GROUND CONTOUR - MAJOR
- EXISTING GROUND CONTOUR - MINOR
- PROPOSED GROUND CONTOUR - MAJOR
- PROPOSED GROUND CONTOUR - MINOR

- HAUL ROAD
- DRAINAGE DITCH
- FIBER ROLL
- CULVERT
- SILT FENCE
- SOIL BERM
- ROCK PAD

- EROSION CONTROL FABRIC - S75BN
- BANK FABRIC - C125BN
- SEDIMENT BASIN/TRAP
- FILL REPOSITORY
- OVERHEAD ELECTRIC
- GAS (60' BUFFER)

- EXISTING WETLAND



0 60 120
FEET
CONTOUR INTERVAL = 1 FOOT



RESPEC
WATER & NATURAL RESOURCES
3810 VALLEY COMMONS DRIVE
SUITE 4
BOZEMAN, MT 59718
www.respec.com

NORTH PARCEL B

EXISTING CONDITIONS, STAGING, SPOIL AND EROSION & SEDIMENT CONTROL

DR:	JR	REFN: A08-02214	DATE:	05/2014	REV:
CH:	MR	SCALE: 1" = 60'	RSI DWG:	DES01.kay_100.dwg	--
AP:	RM	SHEET: C-02			

- NOTES:
1. ALONG ACCESS ROAD, PROTECT DESIGNATED WETLANDS AND OTHER AREAS THAT BECOME WET FROM COMPACTION WITH GEOTEXTILE FABRIC AND FILL MATERIAL. SEE DETAIL FOR PROTECTION OF WET AREAS.
 2. INSTALL TWO ROWS OF FIBER ROLLS FOR EROSION CONTROL AT CONNECTION TO BOZEMAN CREEK PER EROSION AND SEDIMENT CONTROL PLAN.
 3. INSTALL EROSION CONTROL FABRIC (S75BN) UPSLOPE FROM FIBER ROLLS PER EROSION AND SEDIMENT CONTROL PLAN.
 4. SIZE AND LOCATION OF PULLOUTS ALONG TEMPORARY ACCESS ROAD TO BE APPROVED BY DESIGNER.

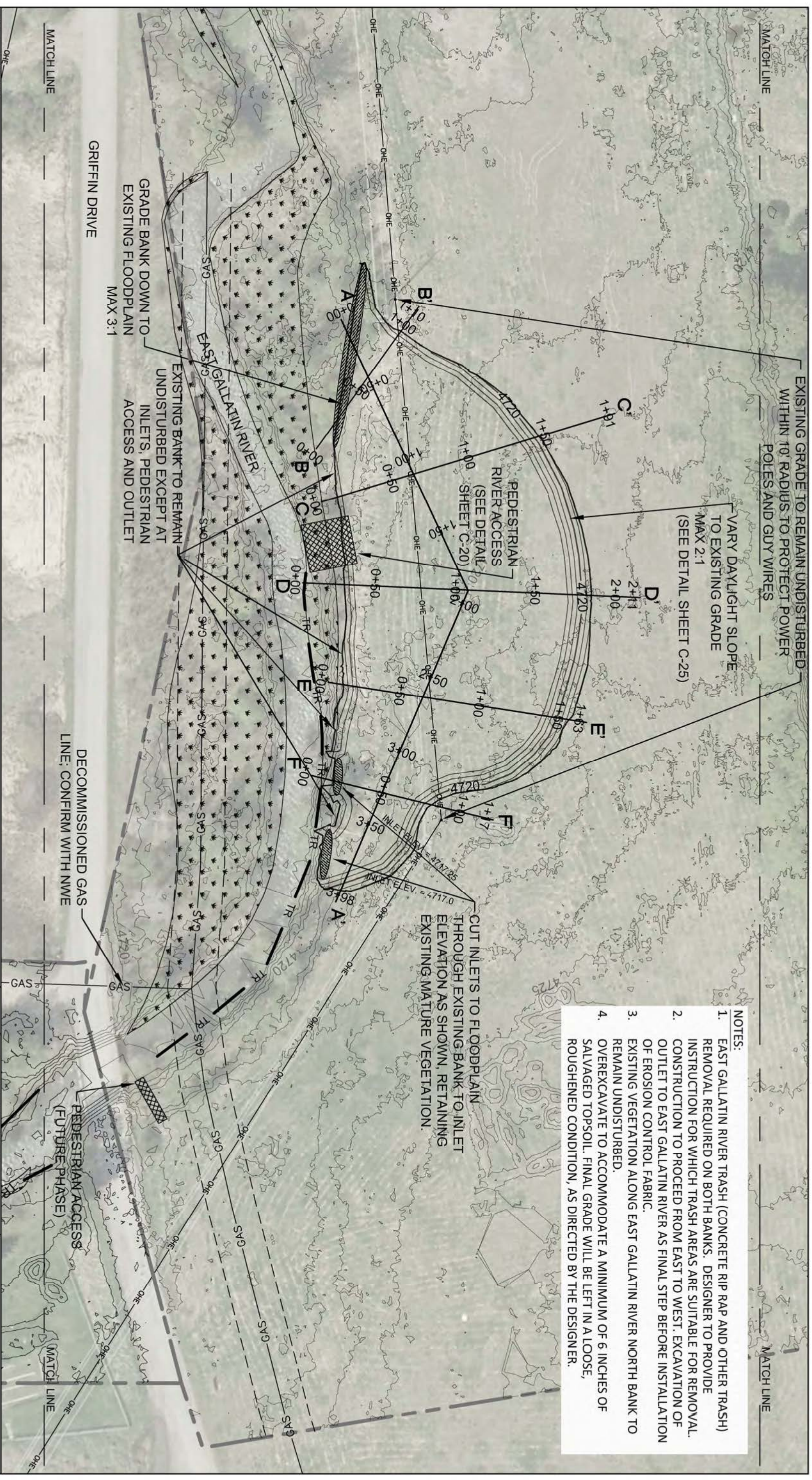


- NOTES: LEGEND
- APPROXIMATE PROPERTY LINE
 - EXTENT OF GRADING FOOTPRINT
 - EXISTING GROUND CONTOUR - MAJOR
 - EXISTING GROUND CONTOUR - MINOR
 - PROPOSED GROUND CONTOUR - MAJOR
 - PROPOSED GROUND CONTOUR - MINOR
 - HAUL ROAD
 - FIBER ROLL
 - SILT FENCE
 - EROSION CONTROL FABRIC - S75BN
 - WATER (10' BUFFER)
 - SANITARY SEWER (10' BUFFER)
 - EXISTING WETLAND




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BOZEMAN, MT 59718
www.respec.com

SOUTH PARCEL E			
EXISTING CONDITIONS, STAGING, SPOIL AND EROSION & SEDIMENT CONTROL			
DR: JR	REFN: A08-02214	DATE: 05/2014	REV: --
CH: MR	SCALE: 1" = 60'	RSJ DWG: DES01.kay_100.dwg	
AP: RM	SHEET: C-07		



1. EAST GALLATIN RIVER TRASH (CONCRETE RIP RAP AND OTHER TRASH) REMOVAL REQUIRED ON BOTH BANKS. DESIGNER TO PROVIDE INSTRUCTION FOR WHICH TRASH AREAS ARE SUITABLE FOR REMOVAL.
2. CONSTRUCTION TO PROCEED FROM EAST TO WEST. EXCAVATION OF OUTLET TO EAST GALLATIN RIVER AS FINAL STEP BEFORE INSTALLATION OF EROSION CONTROL FABRIC.
3. EXISTING VEGETATION ALONG EAST GALLATIN RIVER NORTH BANK TO REMAIN UNDISTURBED.
4. OVEREXCAVATE TO ACCOMMODATE A MINIMUM OF 6 INCHES OF SALVAGED TOPSOIL. FINAL GRADE WILL BE LEFT IN A LOOSE, ROUGHENED CONDITION, AS DIRECTED BY THE DESIGNER.

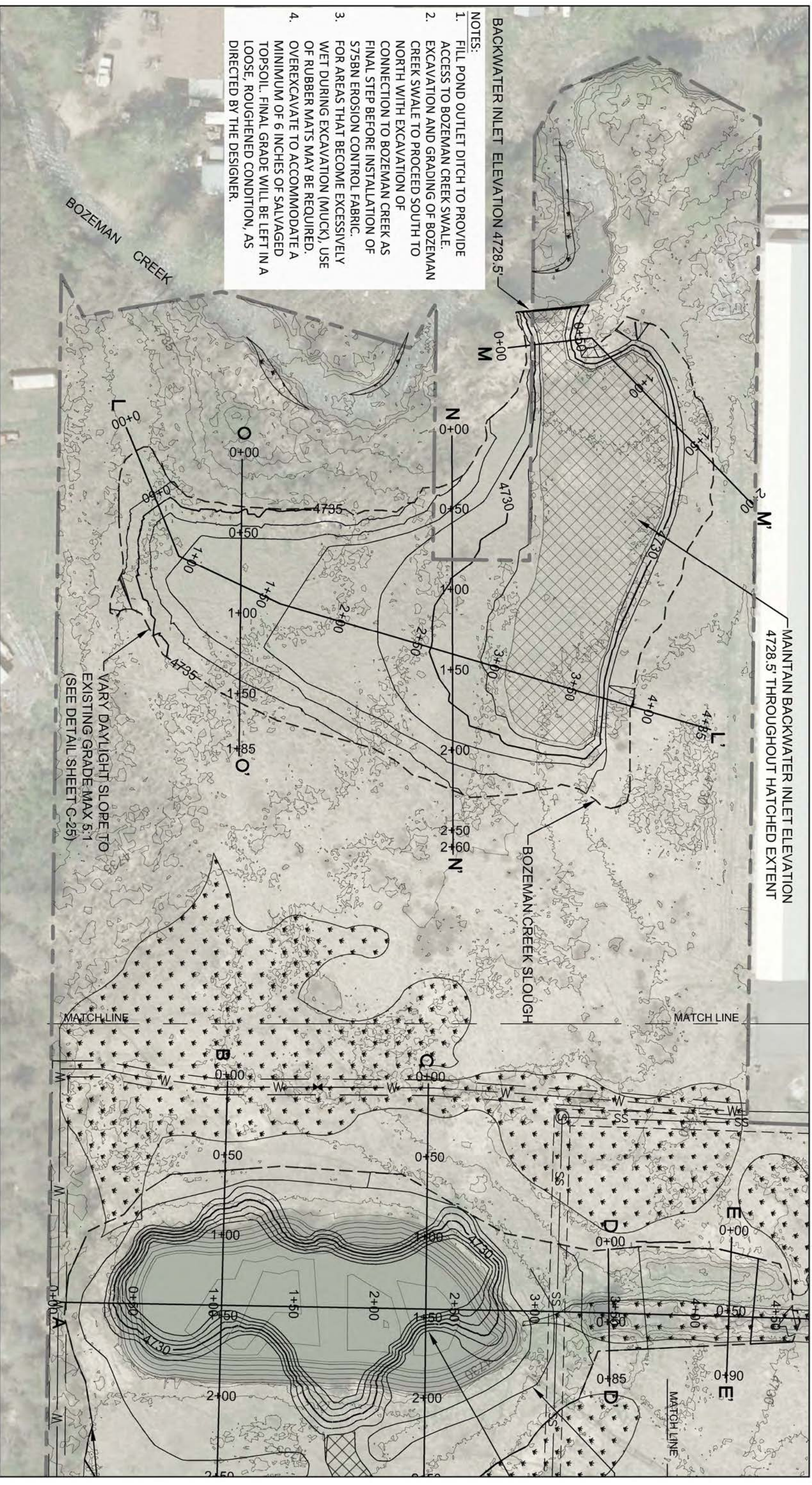
NOTES: LEGEND

---	APPROXIMATE PROPERTY LINE	— TR —	BANK TRASH REMOVAL
---	EXTENT OF GRADING FOOTPRINT	—	INLET
---	EXISTING GROUND CONTOUR - MAJOR		OUTLET
---	EXISTING GROUND CONTOUR - MINOR	— ONE —	OVERHEAD ELECTRIC
---	PROPOSED GROUND CONTOUR - MAJOR	— 50' —	GAS (50' BUFFER)
---	PROPOSED GROUND CONTOUR - MINOR	• • •	EXISTING WETLAND



 **RESPEC**
WATER & NATURAL RESOURCES
3810 VALLEY COMMONS DRIVE
SUITE 4
BOZEMAN, MT 59718
www.respec.com

NORTH PARCEL		DATE:	05/20/14
RESTORATION DESIGN			
DR: JR	REFN: J08/0224	R8 DWG:	REV/
CH: MR	SCALE: 1" = 60'	_DESOT_key: 100.dwg	
AP: RM	SHEET: C-09		



1. FILL POND OUTLET DITCH TO PROVIDE ACCESS TO BOZEMAN CREEK SWALE.
2. EXCAVATION AND GRADING OF BOZEMAN CREEK SWALE TO PROCEED SOUTH TO NORTH WITH EXCAVATION OF CONNECTION TO BOZEMAN CREEK AS FINAL STEP BEFORE INSTALLATION OF 575BN EROSION CONTROL FABRIC.
3. FOR AREAS THAT BECOME EXCESSIVELY WET DURING EXCAVATION (MUCK), USE OF RUBBER MATS MAY BE REQUIRED.
4. OVEREXCAVATE TO ACCOMMODATE A MINIMUM OF 6 INCHES OF SALVAGED TOPSOIL. FINAL GRADE WILL BE LEFT IN A LOOSE, ROUGHENED CONDITION, AS DIRECTED BY THE DESIGNER.

NOTES:

BACKWATER INLET ELEVATION 4728.5'-

NOTES: LEGEND

LEGEND

--- APPROXIMATE PROPERTY LINE
--- EXTENT OF GRADING FOOTPRINT

EXISTING GROUND CONTOUR - MAJOR

EXISTING GROUND CONTOUR - MINOR
PROPOSED GROUND CONTOUR - MAJOR

PROPOSED GROUND CONTOUR - MINOR

WATER (10' BUFFER)
SANITARY SEWER (10' BUFFER)

EXISTING WETLAND



0
60

CONTOUR INTERVAL = 1 FOOT



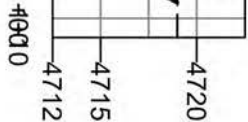
3810 VALLEY COMMONS DRIVE

SUITE 4

BOZEMAN, MT :
www.respec.com

SOUTH PARCEL RESTORATION DESIGN

DR: JR	REFN: JOB# 02274	DATE: 05/2014	REV:
CH: MR	SCALE: 1" = 60'	RSI DWG:	
AP: RM	SHEET: C-14	_DES01 _key_100.dwg	



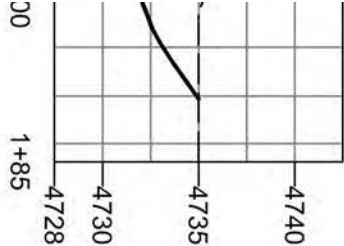
472

472

471

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470



200

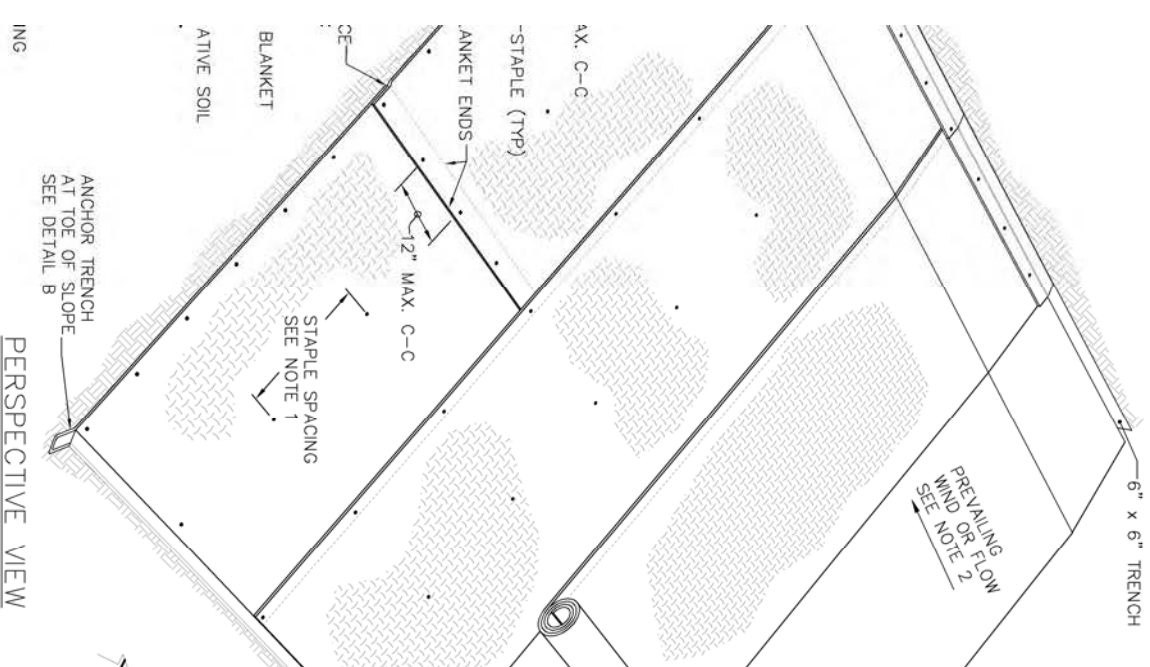




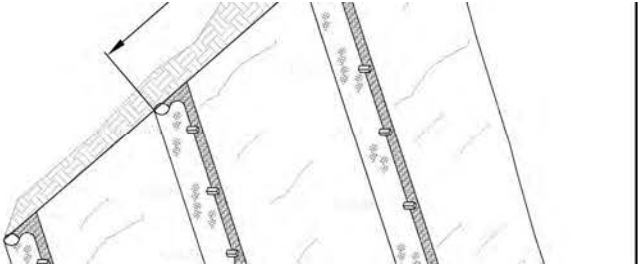
3810
SUITE
BOZE
WWW.

NOTE: FOR CHANNEL BANK APPLICATIONS, INCREASE TRENCH DIMENSIONS BY FACTOR OF 3.

OL BLANKET

DE
SHINC

STC	  WATER A NATURAL RESOURCE 3810 VALLEY COMMONS DRIVE SUITE 4 BOZEMAN, MT 59718 www.respec.com	
TYPICAL	DR: JR CH: MR AP: RM	



EXCAVATED MATERIAL
SIDE OF SEDIMENT

FILL OR
CUT SLOPE



WATTLE

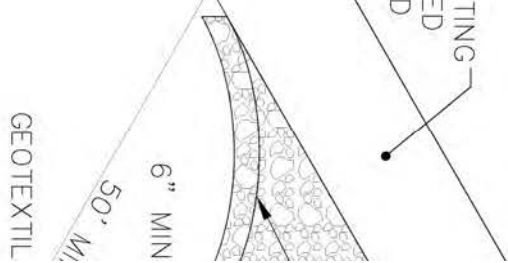
SEDIMENT WATTLE

FOR INSTALLATION,
FOLLOW THE SLOPE CONTOURS. FOR
THE SEDIMENT WATTLE

1" x 1" x 1" OR 1" x 1" x 1" WATTLE
SEDIMENT WATTLES AT
AT LEAST 12" DEEP.

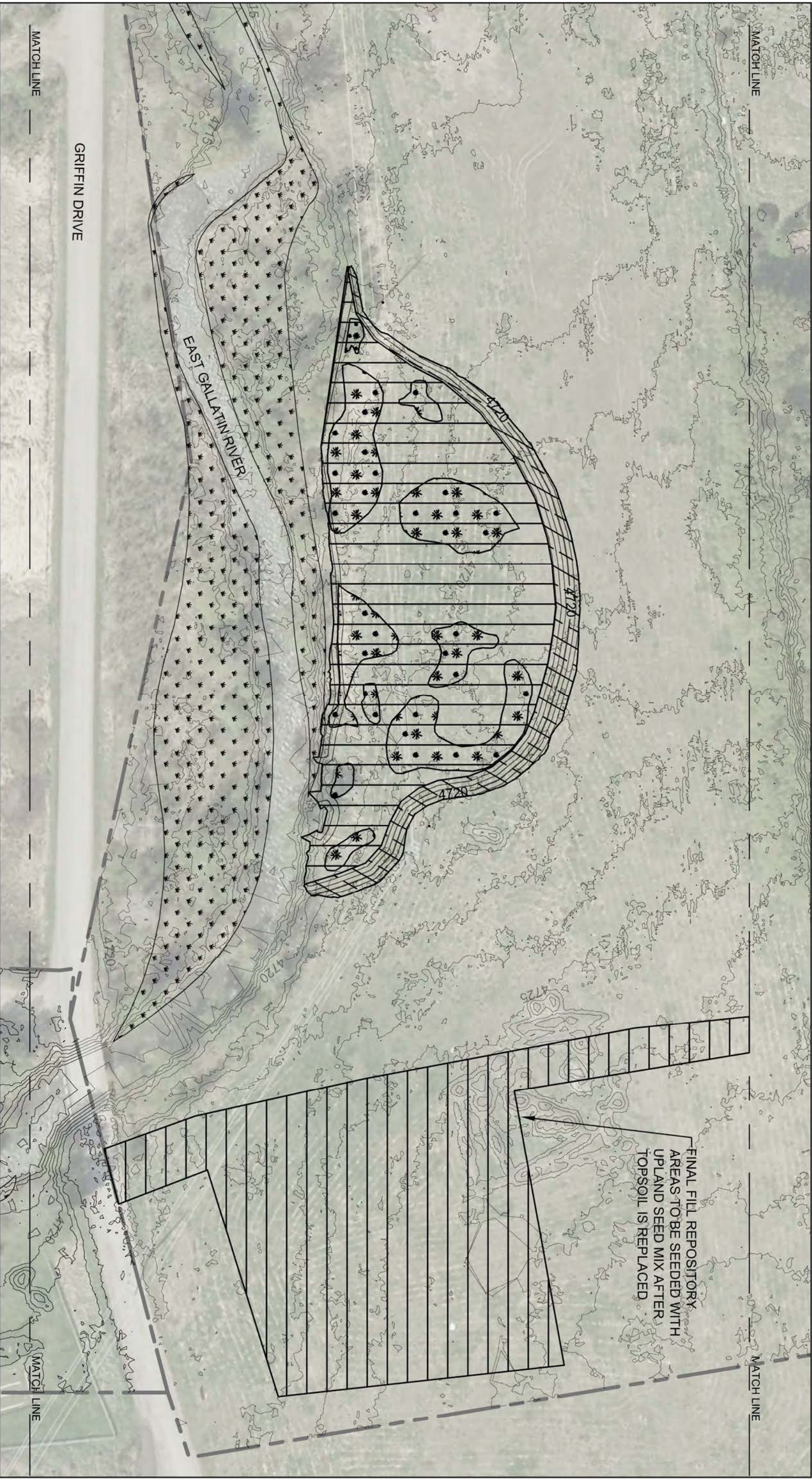
CONSTRUCT TRENCH
WATTLES IN CONTINUOUS
LINE BACKFILL AGAINST
IS FORCED TO FLOW

ED ACCORDING TO THE



STABILIZ

E.
CONSTRUCT DRAIN
ENTRANCE AS DIF
TEMPORARY DRAIN
CROSSES EXISTING
CONSTRUCT RADIL
MOVEMENT OF TY
REMOVE BUILD-UI
TO REDUCE TRAC



NOTES: **LEGEND**

- APPROXIMATE PROPERTY LINE
- EXTENT OF GRADING FOOTPRINT
- EXISTING GROUND CONTOUR - MAJOR
- EXISTING GROUND CONTOUR - MINOR
- PROPOSED GROUND CONTOUR - MAJOR
- PROPOSED GROUND CONTOUR - MINOR

- EXISTING WETLAND
- WILLOW PLANTING
- WETLAND SEEDING
- RIPARIAN SEEDING
- UPLAND SEEDING

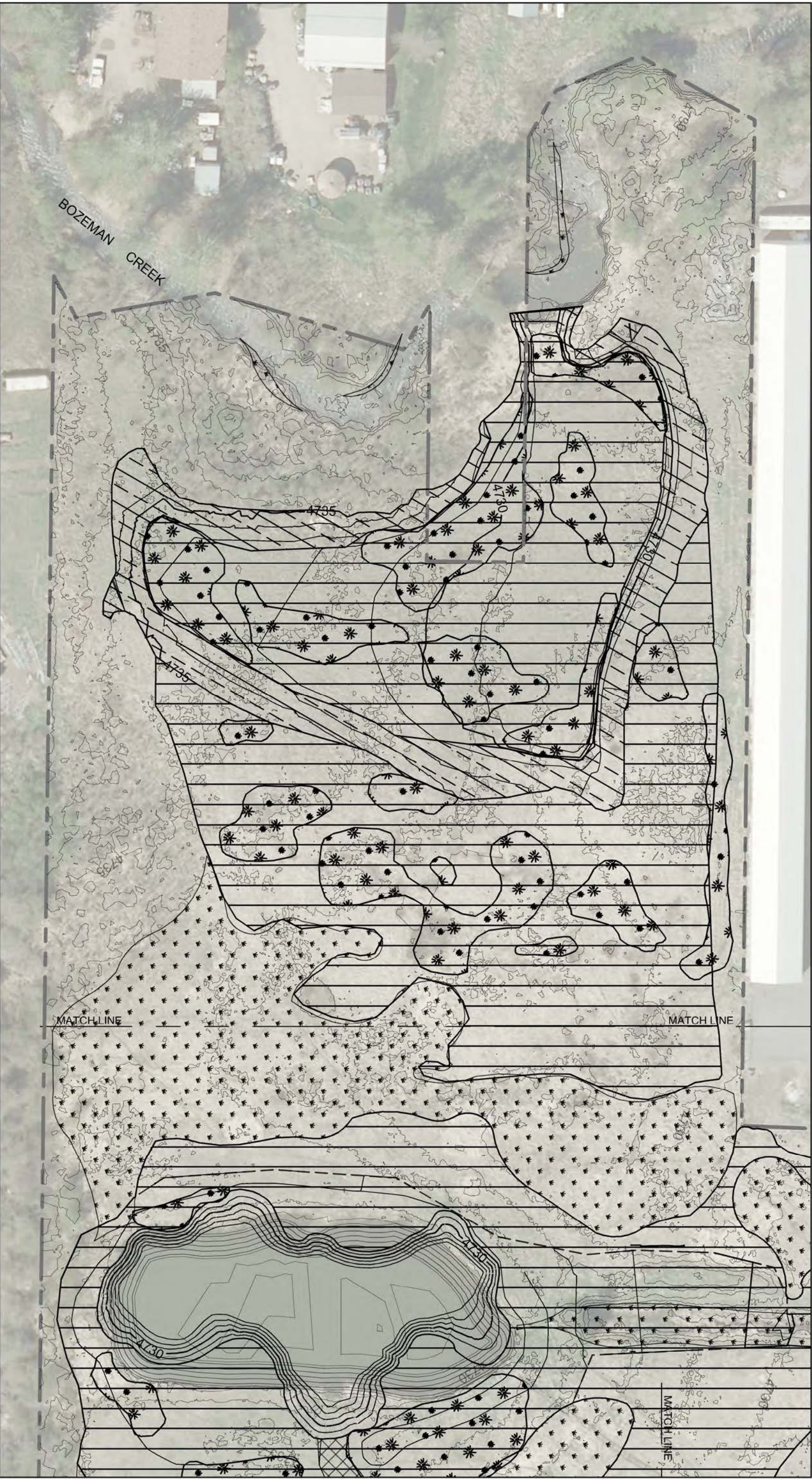
THE TRUST for PUBLIC LAND

RESPEC WATER & NATURAL RESOURCES

SUITE 4
3810 VALLEY COMMONS DRIVE
BOZEMAN, MT 59718
www.respec.com

NORTH PARCEL PLANTING PLAN

DR: JR	REF: A08-02214	DATE: 05/2014	REV: --
CH: MR	SCALE: 1" = 60'	RSI DWG NO: DES01.kay_100.dwg	
AP: RM	SHEET: P-01		



NOTES: LEGEND

- APPROXIMATE PROPERTY LINE
- EXTENT OF GRADING FOOTPRINT
- EXISTING GROUND CONTOUR - MAJOR
- EXISTING GROUND CONTOUR - MINOR
- PROPOSED GROUND CONTOUR - MAJOR
- PROPOSED GROUND CONTOUR - MINOR

- EXISTING WETLAND
- WILLOW PLANTINGS
- WETLAND SEEDING
- RIPARIAN SEEDING



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3810 VALLEY COMMONS DRIVE
SUITE 4
BOZEMAN, MT 59718
www.respec.com

**SOUTH PARCEL E
PLANTING PLAN**

DR:	JR	REFN: A08-02214	DATE:	05/2014	REV:
CH:	MR	RSI DWG NO.			
AP:	RM	SHEET: P-06			

STAKE GENTLY INTO
GROUND WITH RUBBER MAT
FROM TOP
ID TAMP SOIL AROUND
FIRMLY SECURE INTO
ATE A 1 FT DIAMETER
P DEPRESSION AROUND
CONTAIN SURFACE WATER

SH GRADE
WILLOW STAKE (SEE
GROUND WATER ELEVATION
TERMINED AT TIME OF
INSTALLATION AS DIRECTED
FROM BOTTOM

TO BOTTOM CUT DURING
WINTER. ORIENT STAKE
IN PASS DIRECTION AS FOR
HARVEST.

LONG SECTION

5 FT. THE WILLOW
AT A MINIMUM OF
STAKES INTO
PLANTING HOLE.

Species	% of Mix
Wheatgrass	27.78%
Bluegrass	27.78%
Timothy	13.89%
Orchardgrass	6.25%
Alfalfa	13.89%
Red clover	10.42%
Other	100%

Common Name	Scientific Name
American slough	<i>Phragmites australis</i>
Nebraska sedge	<i>Carex nebrascensis</i>
clustered field	<i>Eleocharis acicularis</i>
tufted hairgrass	<i>Deschampsia cespitosa</i>
common spike	<i>Echinochloa crusgalli</i>
reed mannagrass	<i>Glycerhiza hirsuta</i>
Baltic rush	<i>Juncus roemerianus</i>
hard-stem bulrush	<i>Scirpus americanus</i>
small-fruited bulrush	<i>Scirpus setaceus</i>

based on availability.

Common Name	Scientific Name
green needlegrass	<i>Stipa viridula</i>
needle-and-thread	<i>Lythrum hyssarifolium</i>
Canada wildrye	<i>Eriogonum canadense</i>
blue wildrye	<i>Lythrum hyssarifolium</i>
thickspike wheat	<i>Deschampsia cespitosa</i>
western wheat	<i>Echinochloa crusgalli</i>
slender wheatgrass	<i>Deschampsia cespitosa</i>
mountain broomrape	<i>Epipactis atrorubra</i>
Sandberg's blue	<i>Deschampsia cespitosa</i>
Indian ricegrass	<i>Deschampsia cespitosa</i>
Rimrock	<i>Deschampsia cespitosa</i>

based on availability.



THE TRUST
for
PUBLIC
LAND



BOZEMAN STATE
UNIVERSITY
3810
SOUTH
BOZEMAN
MONTANA
WWW.BSU.EDU



**CITY OF BOZEMAN
DEPARTMENT OF COMMUNITY DEVELOPMENT**

Alfred M. Stiff Professional Building
20 East Olive Street
P.O. Box 1230
Bozeman, Montana 59771-1230

phone 406-582-2260
fax 406-582-2263
planning@bozeman.net
www.bozeman.net

August 28, 2014

Trust for Public Lands
Maddy Pope
111 S. Grand Ave. Ste 203
Bozeman MT 59715

RE: Story Mill Wetland Restoration Final Site Plan Application; File Z14269

Dear Ms. Pope:

The above referenced Final Site Plan application was received by our office. As required by Section 38.19.090.A, BMC the application was reviewed for acceptability. The application was reviewed in accordance with the submittal checklists and Section 38.41 of the Bozeman Municipal Code and appears to meet the submittal requirements. The application was responsive to the conditions of approval and has been approved.

The Final Site Plan is valid for one calendar year from date of approval or on August 28, 2015. You need to begin construction of the project within that time. If you do not you may request an extension of the approval in writing from the Director of Community Development. If you have any questions, please don't hesitate to contact me at 582-2268 or csaunders@bozeman.net.

Regards,

Chris Saunders, AICP
Department of Community Development

c: Richard McEldowney, 3810 Valley Commons Drive, Ste 4, Bozeman, MT 59718

Story Mill On-the Ground Photos



Facing east toward the North Parcel floodplain restoration area. (August 2014)



Facing south toward the E Gallatin River floodplain on the North Parcel. (August 2014)



Facing west (downstream) along the streambank, showing the fill in the floodplain adjacent to the East Gallatin River. (April 2014)



Facing east toward the pedestrian river access location on the North Parcel. (April 2014)



Facing north before construction of the Bozeman Creek slough. (August 2014)



Facing northwest during excavation of Bozeman Creek slough. (September 2014)



Est. 1949
Conservation
Development
Self Government

7/25/2014

*** NOTICE OF APPROVAL FOR 310 PERMIT ***

Attn Maddy Pope
The Trust for Public Lands
111 South Grand Ave Ste 203
Bozeman, MT 59715

RE: 310 Application GD-027-14

PERENNIAL STREAM: East Gallatin River

Dear Ms Pope:

In the above-mentioned 310 Application you applied to do the following:

- o Other; wetland and stream restoration

The purpose for your 310 Application was: Improve natural fluvial processes by selectively removing man-made materials from roughly 2,460 ft of bank and channel of the E Gallatin. Fill drainage ditches and naturalize and existing groundwater fed pond through creating a more natural pond footprint. Create roughly 1.6 acres of new floodplain area along the E Gallatin River.

A Gallatin Conservation District representative and a representative from Montana Fish Wildlife & Parks inspected the project site on 7/16/2014. Inspection comments, if any: Rip rap and debris to be removed from stream bank should be supervised full-time by engineer to ensure bank stability is maintained.

The Gallatin Conservation District Board of Supervisors reviewed the above-mentioned 310 Application at their monthly board meeting on 7/24/2014.

Your project was: Approved as Proposed

Supervisor's comments: Request full-time supervision by qualified engineer throughout the project.

Waiver of 15-day waiting period granted? False

Please note that your permit will expire on 7/24/2015.

This permit is only for the work specified above. If the scope of the work changes a new permit must be applied for. It is required to have a copy of this permit on site. A 310 permit does not give an individual permission to do a project - only to do the project in a specific manner once all other permits are obtained. All individuals undertaking activities specified in a 310 permit are encouraged to obtain accurate cost estimates for projects before starting any work.

I have enclosed two copies of Form 273 (310 Permit) - **one copy is for your records** and **the second copy is for the job site; return bottom portion only - please mark the appropriate box, then sign, date, and return the form to this office within 15 days. At the completion of your project please fill out the bottom portion of the permit and return it to this office within 15 days of the completion of your project.**

If we have not received the signed permit within the 15-day time period you will be found in violation of the 310 law and your 310 permit will no longer be valid.

If you have any questions or comments please feel free to contact me at 282-4350 Ext 1.

Sincerely,

Marcie Murnion
District Administrator
Gallatin Conservation District

Enclosures

PO Box 569
Manhattan, MT 59741

406-282-4350
www.gallatincd.org

310 PERMIT

STREAMBED AND LAND PRESERVATION ACE (310 Law) Supervisors' Decision	Decision Date 7/24/2014	Application Number GD-027-14
---	-----------------------------------	--

Note: Landowner permission, easements or other federal, state, or local permits, licenses, special use permits, or authorizations may be required before construction of the project. It is the duty of the holder of this permit to determine which are necessary and obtain them prior to construction of the project.

Name of Applicant Attn Maddy Pope	Business Name The Trust for Public Lands	Address 111 South Grand Ave Ste 203	
City Bozeman	State MT	Zip 59715	Name of Perennial Stream East Gallatin River
Section 6	Township 1S	Range 6E	Supervisor's Decision Approved as Proposed

Proposed Activity

Other; wetland and stream restoration; Improve natural fluvial processes by selectively removing man-made materials from roughly 2,460 ft of bank and channel of the E Gallatin. Fill drainage ditches and naturalize and existing groundwater fed pond through creating a more natural pond footprint. Create roughly 1.6 acres of new floodplain area along the E Gallatin River.

Modifications

Request full-time supervision by qualified engineer throughout the project.

Work may not commence on a project for 15 days after receipt of this decision unless district has checked the waiver box.

False

Waiver of 15-day Waiting Period

False

Recurrent Permit

Permit Expiration Date

7/24/2015

Permit Transmittal Date

7/25/2014

SUPERVISORS' SIGNATURES:

John L. Verhagen
Bill W. J. A.

Sharon Deep

✂ (cut here)

Applicant must sign and return this portion of the permit within 15 days of completion of all the above approved work.

☐ The work approved by this permit GD-027-14 has been completed in accordance to the permit.

Signature of Applicant: _____ Date: _____

✂ (cut here)

The applicant must agree to abide by the conditions of this permit by checking the appropriate box, signing below, and returning this form to the district office within 15 days. GD-027-14

☐ I hereby agree to proceed with the project in accordance with the approved application and will allow follow-up inspection.

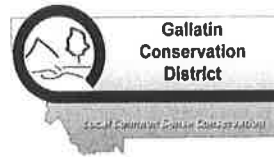
☐ I understand the project as proposed has been denied, and I may resubmit my application with modifications.

☐ I hereby agree to proceed with the project in accordance with the modifications contained herein, and will allow follow-up inspection.

If the applicant disagrees with the supervisors' decision and wishes to formally resolve the dispute, the applicant must check the box below, sign, and return this form to the district within 5 working days.

☐ I disagree with the supervisors' decision and hereby request arbitration.

Signature of Applicant: _____ Date: _____



Est. 1949
Conservation
Development
Self Government

7/25/2014

*** NOTICE OF APPROVAL FOR 310 PERMIT ***

Attn: Maddy Pope
The Trust for Public Lands
111 South Grand Ave Ste 203
Bozeman, MT 59715

RE: 310 Application GD-028-14

PERENNIAL STREAM: Bozeman Creek

Dear Ms. Pope:

In the above-mentioned 310 Application you applied to do the following:

- o Other; wetland and stream restoration

The purpose for your 310 Application was: This project is part of the larger Story Mill project. The purpose of this specific portion of the project is to create a backwater slough adjacent to Bozeman Creek that will help to improve the water quality and create additional wetland and riparian habitat.

A Gallatin Conservation District representative and a representative from Montana Fish Wildlife & Parks inspected the project site on 7/16/2014. Inspection comments, if any:

The Gallatin Conservation District Board of Supervisors reviewed the above-mentioned 310 Application at their monthly board meeting on 7/24/2014.

Your project was: Approved as Proposed

Waiver of 15-day waiting period granted? False

Please note that your permit will expire on 7/24/2015.

This permit is only for the work specified above. If the scope of the work changes a new permit must be applied for. It is required to have a copy of this permit on site. A 310 permit does not give an individual permission to do a project - only to do the project in a specific manner once all other permits are obtained. All individuals undertaking activities specified in a 310 permit are encouraged to obtain accurate cost estimates for projects before starting any work.

I have enclosed two copies of Form 273 (310 Permit) - one copy is for your records and **the second copy is for the job site; return bottom portion only - please mark the appropriate box, then sign, date, and return the form to this office within 15 days. At the completion of your project please fill out the bottom portion of the permit and return it to this office within 15 days of the completion of your project.**

If we have not received the signed permit within the 15-day time period you will be found in violation of the 310 law and your 310 permit will no longer be valid.

If you have any questions or comments please feel free to contact me at 282-4350 Ext 1.

Sincerely,

Marcie Murnion
District Administrator
Gallatin Conservation District

Enclosures

PO Box 569
Manhattan, MT 59741
406-282-4350
www.gallatind.org

310 PERMIT

Decision Date

Application Number

STREAMBED AND LAND PRESERVATION ACE (310 Law) Supervisors' Decision

7/24/2014

GD-028-14

Note: Landowner permission, easements or other federal, state, or local permits, licenses, special use permits, or authorizations may be required before construction of the project. It is the duty of the holder of this permit to determine which are necessary and obtain them prior to construction of the project

Name of Applicant Attn Maddy Pope	Business Name The Trust for Public Lands	Address 111 South Grand Ave Ste 203	
City Bozeman	State MT	Zip 59715	Name of Perennial Stream Bozeman Creek
Section 6	Township 1S	Range 6E	Supervisor's Decision Approved as Proposed

Proposed Activity

Other; wetland and stream restoration; This project is part of the larger Story Mill project. The purpose of this specific portion of the project is to create a backwater slough adjacent to Bozeman Creek that will help to improve the water quality and create additional wetland and riparian habitat.

Modifications

Work may not commence on a project for 15 days after receipt of this decision unless district has checked the waiver box.

False

Waiver of 15-day Waiting Period

False

Recurrent Permit

Permit Expiration Date

7/24/2015

Permit Transmittal Date

7/25/2014

SUPERVISORS' SIGNATURES:

John L. Vanhousen *Sharon Deep*
Bill W. J. A.

✂ (cut here)

Applicant must sign and return this portion of the permit within 15 days of completion of all the above approved work.

☐ The work approved by this permit **GD-028-14** has been completed in accordance to the permit.

Signature of Applicant: _____ Date: _____

✂ (cut here)

The applicant must agree to abide by the conditions of this permit by checking the appropriate box, signing below, and returning this form to the district office within 15 days. **GD-028-14**

☐ I hereby agree to proceed with the project in accordance with the approved application and will allow follow-up inspection.

☐ I understand the project as proposed has been denied, and I may resubmit my application with modifications.

☐ I hereby agree to proceed with the project in accordance with the modifications contained herein, and will allow follow-up inspection.

If the applicant disagrees with the supervisors' decision and wishes to formally resolve the dispute, the applicant must check the box below, sign, and return this form to the district within 5 working days.

☐ I disagree with the supervisors' decision and hereby request arbitration.

Signature of Applicant: _____ Date: _____



**SHORT-TERM WATER QUALITY STANDARD
FOR TURBIDITY RELATED TO
CONSTRUCTION ACTIVITY
(318 Authorization)**

Dear Applicant:

This 318 authorization is the result of your recent application for a 310 permit from your local Conservation District or a 124 permit from Montana Fish, Wildlife and Parks. This authorization is valid for the time frame noted on your permit.

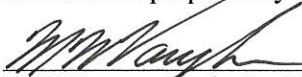
This is not your 310 or 124 permit and no construction activity should occur until you have received a valid 310 or 124 permit as well as any other permits that apply to this proposed construction activity.

This authorization is the result of an Operating Agreement between the Montana Department of Environmental Quality (DEQ), and Montana Fish, Wildlife and Parks (FWP).

The applicant agrees to comply with the conditions stated below, as well as other conditions listed in the 310 or 124 permit issued for this project. Signatures of the applicant and FWP are required to validate this authorization.

1. Construction activity in or near the watercourse are to be limited to the minimum area necessary, and conducted so as to minimize increases in suspended solids and turbidity that could degrade water quality and adversely affect aquatic life outside the immediate area of operation.
2. The use of machinery in the watercourse shall be avoided unless absolutely necessary.
3. All disturbed stream banks and adjacent areas created by the construction activity shall be protected with erosion control measures during construction. These areas shall be reclaimed with appropriate erosion control measures and revegetated to provide long-term erosion control.
4. Any excess material generated from this project must be disposed of above the ordinary high water mark, in an area not classified as a wetland, and in a position not to cause pollution of State waters.
5. Clearing of vegetation will be limited to that which is absolutely necessary for construction of the project.
6. This authorization does not authorize a point source surface water discharge. MPDES permit is required for said discharge.
7. Open cut creek crossings will not be allowed in flowing water. Stream water must be diverted around the open cut area (pump, flume etc.)
8. The applicant must conduct all activities in full and complete compliance with all terms and conditions of all permits required for this activity issued pursuant to the Montana Natural Streambed and Land Preservation Act (310 permit), the Stream Protection Act (124 permit) the Federal Clean Water Act (404 Permit), any MPDES permits for dewatering or storm water control in the construction area and any valid Memorandum of Agreement and Authorization (MAA) negotiated for this activity.

The FWP representative has determined that this project is within the scope of the programmatic Environmental Assessment prepared by DEQ and FWP for the issuance of narrative turbidity standards.

 Date: 7/24/14
FWP Representative's Signature

 Date: 7/24/14
Applicant's Signature

Name and location of project: GD-028-14 Bozeman Creek Stream Restoration



**SHORT-TERM WATER QUALITY STANDARD
FOR TURBIDITY RELATED TO
CONSTRUCTION ACTIVITY
(318 Authorization)**

Dear Applicant:

This 318 authorization is the result of your recent application for a 310 permit from your local Conservation District or a 124 permit from Montana Fish, Wildlife and Parks. This authorization is valid for the time frame noted on your permit.

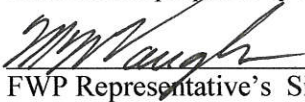
This is not your 310 or 124 permit and no construction activity should occur until you have received a valid 310 or 124 permit as well as any other permits that apply to this proposed construction activity.

This authorization is the result of an Operating Agreement between the Montana Department of Environmental Quality (DEQ), and Montana Fish, Wildlife and Parks (FWP).

The applicant agrees to the comply with the conditions stated below, as well as other conditions listed in the 310 or 124 permit issued for this project. Signatures of the applicant and FWP are required to validate this authorization.

1. Construction activity in or near the watercourse are to be limited to the minimum area necessary, and conducted so as to minimize increases in suspended solids and turbidity that could degrade water quality and adversely affect aquatic life outside the immediate area of operation.
2. The use of machinery in the watercourse shall be avoided unless absolutely necessary.
3. All disturbed stream banks and adjacent areas created by the construction activity shall be protected with erosion control measures during construction. These areas shall be reclaimed with appropriate erosion control measures and revegetated to provide long-term erosion control.
4. Any excess material generated from this project must be disposed of above the ordinary high water mark, in an area not classified as a wetland, and in a position not to cause pollution of State waters.
5. Clearing of vegetation will be limited to that which is absolutely necessary for construction of the project.
6. This authorization does not authorize a point source surface water discharge. MPDES permit is required for said discharge.
7. Open cut creek crossings will not be allowed in flowing water. Stream water must be diverted around the open cut area (pump, flume etc.)
8. The applicant must conduct all activities in full and complete compliance with all terms and conditions of all permits required for this activity issued pursuant to the Montana Natural Streambed and Land Preservation Act (310 permit), the Stream Protection Act (124 permit) the Federal Clean Water Act (404 Permit), any MPDES permits for dewatering or storm water control in the construction area and any valid Memorandum of Agreement and Authorization (MAA) negotiated for this activity.

The FWP representative has determined that this project is within the scope of the programmatic Environmental Assessment prepared by DEQ and FWP for the issuance of narrative turbidity standards.

 Date: 7/24/14
FWP Representative's Signature

 Date: 7/24/14
Applicant's Signature

Name and location of project: GD-027-14 East Gallatin River Stream Restoration



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
BILLINGS REGULATORY OFFICE
POST OFFICE BOX 2256
BILLINGS, MONTANA 59103-2256

August 18, 2014

Regulatory Branch
Montana State Program
Corps No. **NWO-2013-01531-MTB**

Subject: Story Mill Wetland and Riparian Restoration Project, Trail, and Pedestrian River Access

Ms. Maddy Pope
The Trust for Public Land
111 South Grand Avenue, Suite 203
Bozeman, Montana 59715

Dear Ms. Pope:

We have reviewed the Montana joint application submitted on your behalf by RESPEC for Department of the Army (DA) authorization to restore wetlands, floodplains, and riparian areas located in Section 6, Township 2 South, Range 6 East, in Gallatin County, Montana. The project also includes the development of trails and pedestrian East Gallatin River access points.

Specifically, you requested authorization for the following work:

Work Item	Description
a.	Add 7.3 acres of restored wetlands to the 6.6 acres of wetlands currently on site. This will be accomplished through the filling of drainage ditches and raising the bottom elevation of the existing pond to reduce the local drain effect. The total wetland restoration acreage excludes the area of proposed trails and river access points.
b.	Restore 2,460 feet of the East Gallatin River by removing sidewalk rubble, old machinery, and trash embedded in the channel and streambanks. This will allow the river to once again scour pools and create spawning and rearing habitat.
c.	Improve surface water quality through the creation of a new 1.5 acre backwash slough on Bozeman Creek and by creating 1.6 acres of new floodplain area on the East Gallatin River. Through the removal of fill material, these actions will reconnect these streams with their floodplains, improving flood attenuation, trapping fine sediment the fouls fish habitat, and improving water quality by holding and infiltrating nutrients.
d.	Vegetative diversity will be increased by the seeding and planting of native willow species.
e.	Approximately 0.3 acres of low quality wetlands will be impacted through the filling of drainage ditches and reconfiguration of the pond.
f.	Noxious weed management and control will occur on the site for three years following construction.

g.	The site will be monitored through visual inspection and annual photo documentation from fixed photo points.
h.	Develop gravel trails, including boardwalks in some areas, and two to three pedestrian East Gallatin River access points. Approximately 0.3 acres of wetland will be filled by 405 cubic yards of fill for trails, 3 culverts for hydraulic connectivity, 70 square feet for posts for the boardwalks, and 2,250 square feet of geogrid filled with 70 cubic yards of native fill material for the river access sites.
i.	The wetland restoration onsite will occur one year prior to the construction of the trails and river access points and will offset these impacts.

Under the authority of Section 404 of the Clean Water Act (CWA), DA permits are required for the discharge of fill material into waters of the U.S. Waters of the U.S. include the area below the ordinary high water mark of stream channels and lakes or ponds connected to the tributary system, and wetlands adjacent to these waters. Isolated waters and wetlands, as well as man-made channels and ditches, may be waters of the U.S. in certain circumstances, which must be determined on a case-by-case basis.

The Corps of Engineers (Corps) prepared the enclosed preliminary jurisdictional determination (JD) for the site. A preliminary JD is a written indication that waterways and wetlands within your project area may be waters of the U.S. These waters were treated as jurisdictional waters of the U.S. for the purposes of determining project impacts and compensatory mitigation requirements. Preliminary JDs may not be appealed.

If you believe the preliminary JD is inaccurate, you may request this office complete an approved JD **prior to your commencement of any work in a water of the U.S.** An approved JD is an appealable official determination regarding the presence or absence of waters of the U.S. Completion of an approved JD may require coordination with the U.S. Environmental Protection Agency.

If you believe the preliminary JD is accurate and do not want the Corps to complete an approved JD, please sign the preliminary JD and return it to the letterhead address within two weeks. If you agree with the preliminary JD, you may proceed with the proposed project in accordance with the terms and conditions of DA Nationwide Permits (NWP) **27** and **42** found in the February 21, 2012 Federal Register (76 FR 9174), Reissuance of Nationwide Permits.

Work Item	Permit Authorization
a - g	This work is authorized by NWP 27.
h & i	This work is authorized by NWP 42.

Enclosed are fact sheets that fully describe these NWPs and list the General and Regional Conditions that must be complied with. Please note that deviations from the original plans and specifications of your project could require additional authorization from this office.

In addition to conditions referenced above, the following **Special Conditions** apply:

Condition	Description
1.	The project must be built as shown on the construction plans and cross sections received by this office on June 18 and 23, 2014 and as described in the Application and all supporting documents also submitted to this office on those dates. Pre-construction notification is required if there are proposed changes that affect waters of the US, including wetlands.
2.	Monitoring reports shall be submitted on or before November 1 following project completion for a period of 5 years, or until the Corps determines the site to be successful.
3.	Prevent materials spilled or stored on site from washing into the waterway as a result of cleanup activities, natural runoff, or flooding. Retrieve any materials which are accidentally spilled into these areas.
4.	Completely remove all waste material generated by the project to an upland disposal site. Do not dispose of waste material within 50 feet of any existing or proposed wetland area, pond or lake, drainage channel, irrigation ditch, or stream.
5.	During construction, bear safety precautions must be followed. All food, refuse or other attractants must be acceptably stored or acceptably possessed during daytime hours. All food, refuse or other attractants must be acceptably stored during nighttime hours, unless it is being prepared for eating, being eaten, being transported, or being prepared for acceptable storage. For more information, see the food storage plan at http://www.fs.usda.gov/detail/gallatin/home/?cid=stelprdb5127768

Although an Individual DA permit involving a public interest review will not be required for the project, this does not eliminate the requirement that you obtain any other applicable Federal, state, tribal, and local permits as required.

The Montana Department of Environmental Quality waived CWA Section 401 water quality certification for this project (see General Condition 25 on the enclosed fact sheet). This does not eliminate the need to obtain other permits that may be required by that agency.

This verification will be valid until **March 18, 2017**. In accordance with the terms and conditions of the NWP, you are responsible for all work accomplished. If a contractor or other authorized representative will be accomplishing the work authorized by an NWP on your behalf, it is strongly recommended that they be provided a copy of this letter and the attached conditions so that they are aware of the limitations of the applicable NWP. Any activity that fails to comply with all of the terms and conditions of the NWP will be considered unauthorized and subject to appropriate enforcement action.

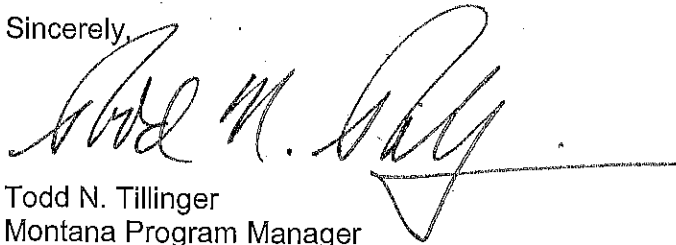
Should you at any time become aware that either an endangered or a threatened species, or their critical habitat, exists within the project area, you must immediately notify this office.

In compliance with General Condition 30, the enclosed Compliance Certification form must be signed and returned to the address listed upon completion of the authorized work and any required mitigation.

The Omaha District, Regulatory Branch is committed to providing quality and timely service to our customers. In an effort to improve customer service, please take a moment to complete our Customer Service Survey found on our website at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey. If you do not have Internet access, you may call and request a paper copy of the survey that you can complete and return to us by mail or fax.

Please contact Cathy Juhas at (406) 657-5910 if you have any questions and reference Corps File Number **NWO-2013-01531-MTB**.

Sincerely,



Todd N. Tillinger
Montana Program Manager

Enclosures:

Compliance Certification

Preliminary Jurisdictional Determination for NWO-2013-01531-MTB

NW 27 and 42 Fact Sheets with Regional Conditions

Copy Furnished, without enclosures:

Mr. Richard McEldowney

RESPEC

3810 Valley Commons Drive, Suite 4

Bozeman, Montana 59718



Steve Bullock, Governor
Tracy Stone-Manning, Director

P. O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • Website: www.deq.mt.gov

August 15, 2014

Kelly Rowe
Rowe Excavation Inc.
PO Box 1182
Dillon, MT 59725

RE: Authorization MTG070747 to discharge under the Construction Dewatering General Permit in Gallatin County, to the East Gallatin River
Story Mill Ecological Restoration project

Dear Mr. Rowe:

The Department of Environmental Quality (DEQ) has reviewed your application to discharge under the Montana Pollution Discharge Elimination System (MPDES) Construction Dewatering General Permit (CDGP). The application is for the discharge of uncontaminated construction dewatering water during the dewatering of ponds adjacent to the East Gallatin River in Bozeman, MT.

Outfall	Receiving Water	Location
001	East Gallatin River	Latitude 45.6968, Longitude -111.0240

Authorization MTG070747 is granted to discharge at the above receiving waters only, under the provisions of the CDGP. You are required to comply with the 2010 CDGP, which expires on August 31, 2015. The CDGP is valid only when accompanied by this authorization letter; both must be available on-site.

When measured after full treatment and prior to mixing with any state waters, discharge to the East Gallatin River is not allowed to exceed **90.5 Nephelometric Turbidity Units (NTU)**. The turbidity limit is protective of receiving waters classified as B-1 [Administrative Rules of Montana (ARM) 17.30.623(2) (d)].

Under this permit, you are subject to self-monitoring and reporting requirements, compliance inspections and all other provisions of the general discharge permit. Enclosed is a self-monitoring form ("Daily Monitoring Log") for recording discharge conditions which you must maintain on-site. A violation of, or noncompliance with, any provision of the permit is subject to enforcement action pursuant to the Montana Water Quality Act.

Also, please see the enclosed pamphlet outlining the new electronic submission method for Discharge Monitoring Reports (DMRs), called NetDMRs. DEQ encourages the electronic submission by NetDMRs; however, if you do not register for this system, a hard copy of the

Kelly Rowe, MTG070747
August 15, 2014
Page 2

preprinted DMR form is attached. Every month you will be required to submit a DMR for this facility, regardless of whether or not you had a discharge.

Authorization under this permit allows the applicant to discharge wastewater that contains suspended sediment only. If the discharge water contains non-sediment contamination (e.g. hydrocarbons, heavy metals, or other contaminants) the applicant is required to cease all discharges and report those findings to Water Protection Bureau staff at (406) 444-3080.

After the project is completed, the permittee is responsible for notifying DEQ in writing that the source of the discharge has been eliminated and the permit should be terminated (ARM 17.30.1365). **You will continue to receive, and be responsible for, annual invoice statements until DEQ receives your notice of termination.**

This permit authorization does not waive the permittee's obligation to obtain other required permits such as a Natural Streambed and Land Preservation Act (310) permit, U.S. Corps of Engineers 404 permit, or Floodplain Development permit (Department of Natural Resources and Conservation).

If you have any questions or comments, please contact Rich Morse of the Water Protection Bureau at (406) 444-7450 or rmorse@mt.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Jon Kenning', is written over the printed name.

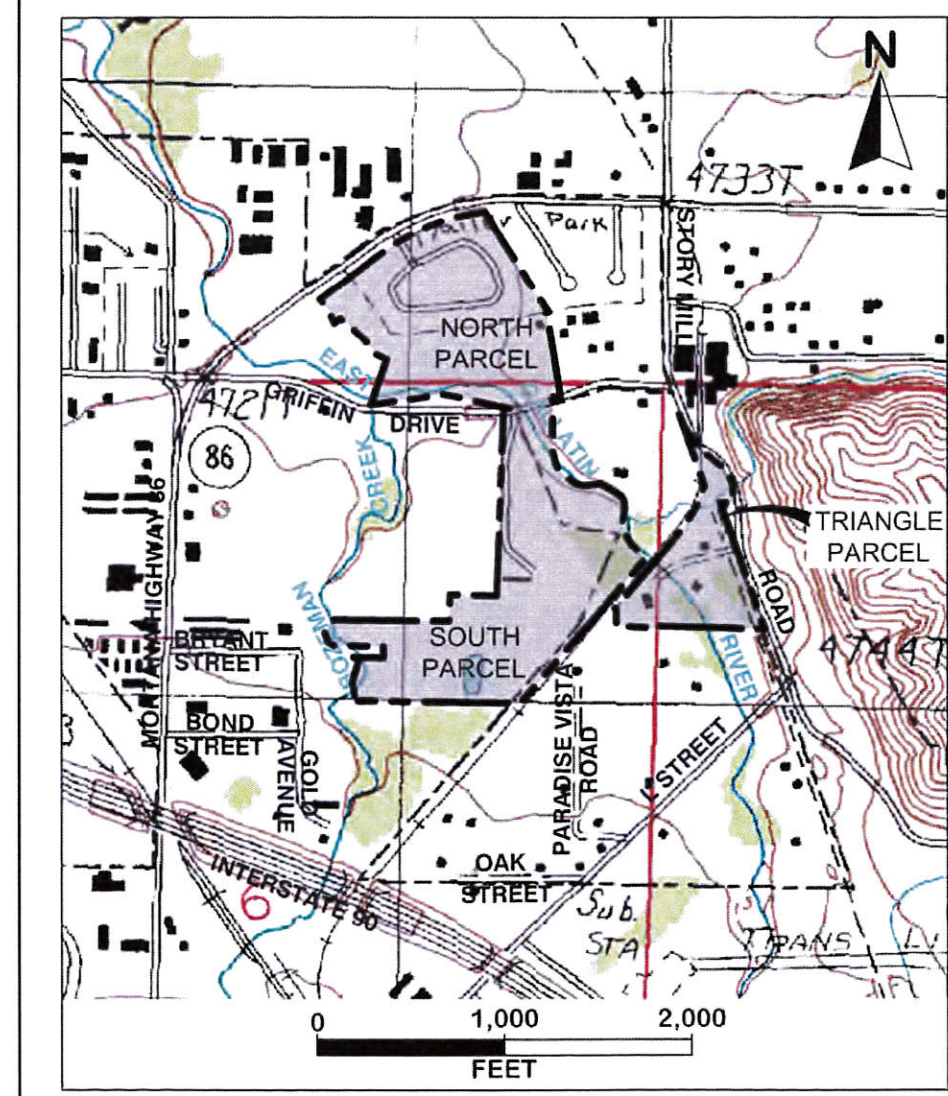
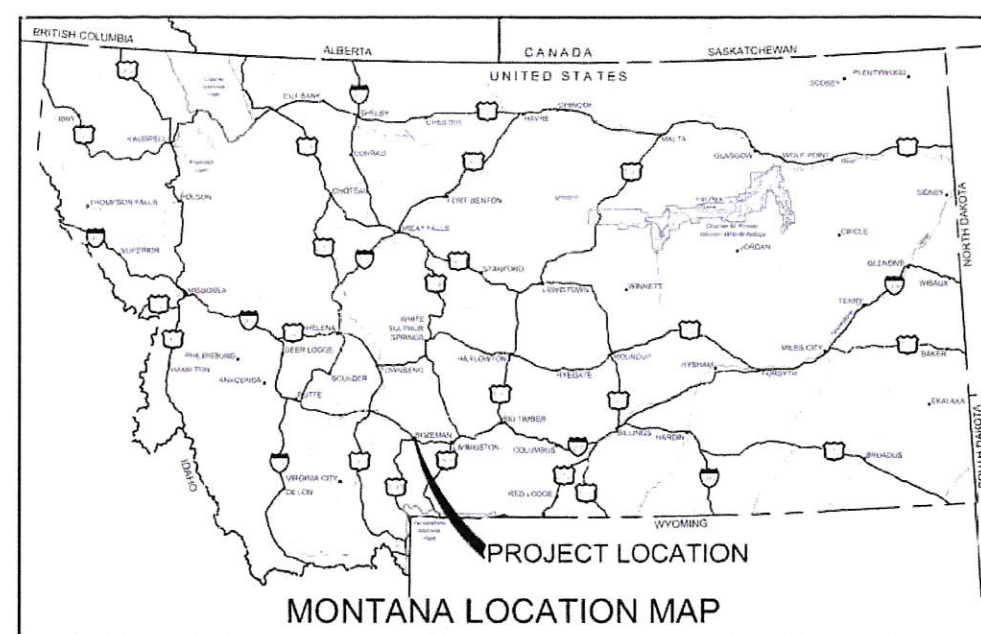
Jon Kenning, Chief
Water Protection Bureau
Permitting & Compliance Division

Enclosures: Construction Dewatering General Permit
Daily Monitoring Log
NetDMR Pamphlet

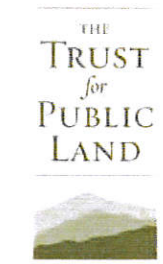
RECEIVED

STATE	PROJECT	SHT.
MT	STORY MILL RESTORATION	G-00

SEE INDEX TO SHEETS ON SHEET G-01



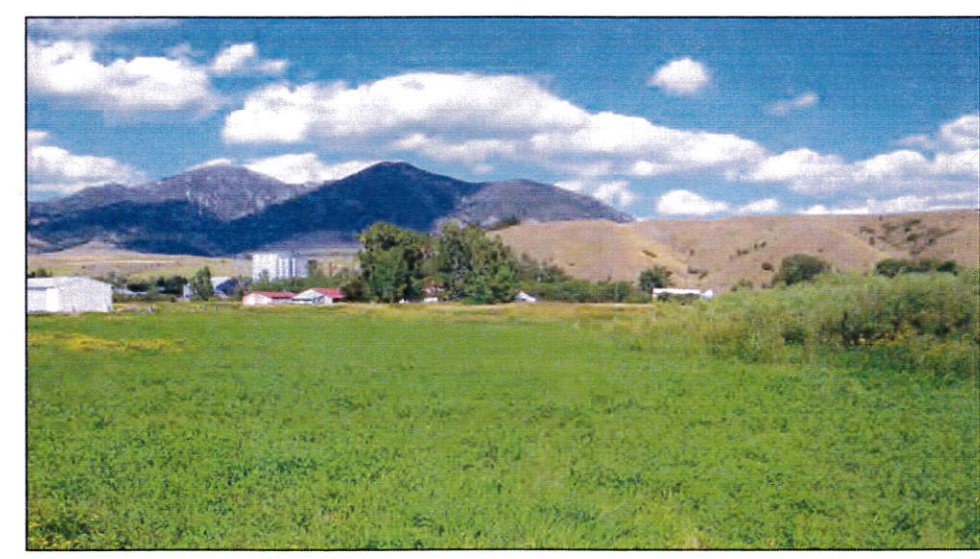
THE TRUST for PUBLIC LAND



STORY MILL ECOLOGICAL RESTORATION

BOZEMAN,
GALLATIN COUNTY,
MONTANA

MAY 2014



CITY OF BOZEMAN
APPROVED FOR ONE YEAR FROM THIS DATE
These plans and specifications have been reviewed by the City of Bozeman and are hereby approved. This approval does not imply any specific warranty of the project design by the City of Bozeman. All engineering design details and construction operations performance are the responsibility of the design engineer and the owner.
8/22/14 *Rei H. Hargreaves*
Date City Engineer

RESPEC
WATER & NATURAL RESOURCES
3810 VALLEY COMMONS DRIVE
SUITE 4
BOZEMAN, MT 59718
www.respec.com

RECEIVED
JUL 07 2014

Revised: 2/16/12 (310 form 270) Form may be downloaded from: www.dnrc.mt.gov/permits/default.asp	AGENCY USE ONLY: Application # _____		Date Received _____
	Date Accepted _____ / Initials _____	Date Forwarded to DFWP _____	
<i>This space is for all Department of Transportation and SPA 124 permits (government projects).</i>			
Project Name _____			
Control Number _____ Contract letting date _____			
MEPA/NEPA Compliance <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, #14 of this application does not apply.			

JOINT APPLICATION FOR PROPOSED WORK IN MONTANA'S STREAMS, WETLANDS, FLOODPLAINS, AND OTHER WATER BODIES

Use this form to apply for one or all local, state, or federal permits listed below. The applicant is the responsible party for the project and the point of contact unless otherwise designated. "Information for Applicant" includes agency contacts and instructions for completing this application. To avoid delays, submit all required information, including a project site map and drawings. Incomplete applications will result in the delay of the application process. Other laws may apply.

The applicant is responsible for obtaining all necessary permits and landowner permission before beginning work.

<input checked="" type="checkbox"/>	PERMIT	AGENCY	FEE
<input checked="" type="checkbox"/>	310 Permit	Local Conservation District	No fee
<input type="checkbox"/>	SPA 124 Permit	Department of Fish, Wildlife and Parks	No fee
<input checked="" type="checkbox"/>	Floodplain Permit	Local Floodplain Administrator	Varies by city/county (\$25 - \$500+)
<input checked="" type="checkbox"/>	Section 404 Permit, Section 10 Permit	U. S. Army Corps of Engineers	Varies (\$0 - \$100)
<input checked="" type="checkbox"/>	318 Authorization	Department of Environmental Quality	\$250 (318);
<input checked="" type="checkbox"/>	401 Certification		\$400 - \$20,000 (401)
<input type="checkbox"/>	Navigable Rivers Land Use License or Easement	Department of Natural Resources and Conservation, Trust Lands Management Division	License \$25; Easement \$50, plus annual fee

A. APPLICANT INFORMATION

NAME OF **APPLICANT** (person responsible for project): The Trust for Public Land, Attn: Maddy Pope
 Has the landowner consented to this project? ☒ Yes ☐ No
 Mailing Address: 111 South Grand Ave, Suite 203, Bozeman, MT 59715
 Physical Address: Same
 Day Phone: 406-522-7450, #4 Evening Phone: 406-539-8698 E-Mail: maddy.pope@tpl.org

NAME OF **LANDOWNER** (if different from applicant): Same
 Mailing Address: _____
 Physical Address: _____
 Day Phone: _____ Evening Phone: _____ E-Mail: _____

NAME OF **CONTRACTOR/AGENT** (if one is used): Richard McElDowney
 Mailing Address: RESPEC, 3810 Valley Commons Drive, Suite 4, Bozeman, MT 59718
 Physical Address: Same
 Day Phone: 406-599-2138 Evening Phone: 406-599-2138 E-Mail: rich.mceldowney@respec.com

B. PROJECT SITE INFORMATION

NAME OF **STREAM** or **WATER BODY** at project location East Gallatin Riv Nearest Town Bozeman, MT
 Address/Location: 980 East Griffin Drive Geocode (if available): 06-0799-06-1-01-55-0000
 1/4 1/4 NE 1/4, Section 6, Township 1 South, Range 6E County Gallatin
 Longitude -111.0240, Latitude 45.6968

The state owns the beds of certain state navigable waterways. Is this a state navigable waterway? Yes or No.
 If yes, send copy of this application to appropriate DNRC land office – see Information for Applicant. ☐ ☒



THE CITY OF BOZEMAN

20 E. OLIVE • P.O. BOX 1230
BOZEMAN, MONTANA 59711-1230

ENGINEERING DEPARTMENT

PHONE: (406) 582-2280 • FAX: (406) 582-2263

August 22, 2014

Ms. Maddy Pope
The Trust for Public Land
111 South Grand Ave., Suite 203
Bozeman, MT 59715

**RE: Floodplain Permit Approval
Story Mill Ecological Restoration**

Dear Maddy:

This letter serves as formal written approval of the application for a Floodplain Development Permit for the above referenced project. The issuance of this Floodplain Development Permit is approved subject to the following conditions:

The project work must conform to the approved project plans and specifications, including conditions of other approved stream permits required of the project. Any change in the approved plans and specifications shall be submitted to the City Engineer's Office for review and approval prior to construction.

The project engineer or architect shall provide adequate project construction inspection and within 90 days of completion of the permitted work shall certify to the City Engineer that the project was completed in accordance with the approved plans. If the project will be completed in Phases, certification of completion of each phase shall occur.

This approval is given with the understanding that the work within the 100-year floodplain will be initiated within 1 year of the date of this letter. If more than one year elapses before initiation of this project, it shall be necessary to resubmit the project plans for re-approval before beginning construction.

One set of plans bearing the city's approval is enclosed.

Please contact me if you have any questions.

Sincerely,

Richard S. Hixson, P.E.
Bozeman Floodplain Administrator

Attachments

cc: Traci Sears – DNRC Water Resources, Floodplain Management, PO Box 201601, Helena, MT 59620-1601
Rich McElDowney via email: rich.mceldowney@respec.com
Matt Johnson via email: matthew.johnson@respec.com
Project File
ERF



Montana Department of
ENVIRONMENTAL QUALITY

Steve Bullock, Governor
Tracy Stone-Manning, Director

P. O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • Website: www.deq.mt.gov

August 13, 2014

KELLY E ROWE
ROWE EXCAVATION INC
PO BOX 1182
DILLON MT 59725

RE: **Confirmation Letter, Notice of Intent (NOI) Number MTR105729
ROWE EXCAVATION - STORY MILL ECOLOGICAL RESTORATION PROJECT**

Dear KELLY E ROWE:

The Department of Environmental Quality (DEQ) is acknowledging receipt on 8/11/2014 of your complete Notice of Intent (NOI) for permit coverage under the January 1, 2013, *General Permit for Storm Water Discharges Associated with Construction Activity* (General Permit). For administrative purposes, you have been assigned permit number MTR105729. Please include this permit number on any future correspondence with DEQ regarding this site.

This letter acknowledges receipt of the complete NOI and does not provide a DEQ determination of the validity of the information you provided. Your eligibility for coverage under the General Permit is based on the validity of the certification you provided. Your signature on the NOI certifies that you have read, understood, and are implementing all of the applicable requirements.

The General Permit requires you to implement the Storm Water Pollution Prevention Plan (SWPPP) and defines inspection and record keeping requirements. Records defined in Part 2.5 are required to be maintained on-site with the designated SWPPP Administrator. An electronic copy of the Permit and additional guidance materials can be viewed and downloaded at <http://deq.mt.gov/wqinfo/mpdes/stormwaterconstruction.mcp.x>.

Coverage under the General Permit remains effective until you submit a complete Notice of Termination (NOT). Your signature on the NOT certifies that you have achieved final stabilization, removed your temporary Best Management Practices, and have paid all applicable fees. Failure to submit a complete NOT will result in the assessment of additional annual permit fees, which must be paid by the owner or operator.

Coverage under this General Permit does not waive your obligation to obtain coverage under other applicable permits.

Thank you for your cooperation in protecting Montana's waters. If you have any questions regarding the requirements of the General Permit, please contact the Water Protection Bureau at (406) 444-3080.

Sincerely,

Jamie Petaja
Data Control Tech
Water Protection Bureau
jpetaja@mt.gov

Attachments: General Permit

Sep. 29, 2014

Greater Gallatin Watershed Council

We are the land owners of the private ranch on Camp Creek located at 13707 Camp Creek Road.

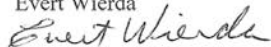
This letter is to inform you that we are in support of the stream bank stabilization and water quality improvement by means of fencing and off-site watering for livestock and revegetating stream banks. We would also allow GGWC to monitor for the effectiveness of restoration activities and allow the sites to be used for educational purposes.

We are currently enrolled in the CSP program with the NRCS and would like to improve water quality, bank stabilization, and soil and animal health on our property and we think this project would be a good fit for continued improvements to our property.

Thanks you for considering funding for this restoration project.

Sincerely;

Evert Wierda



Jamee D. Wierda





Natural Resources Conservation Service
3710 FALLON STREET, SUITE B
(406) 522-4016
BOZEMAN, MONTANA 59718

September 25, 2014

319 Review Committee
Montana Department of Environmental Quality
1520 E. Sixth Avenue
P.O. Box 200901
Helena, MT 59620-0901

RE: 319 Grant application

To Whom it May Concern:

This letter is an endorsement of the Greater Gallatin Watershed Council's (GGWC) 319 grant proposal for the Camp Creek Project. The Bozeman Field Office of the Natural Resources Conservation Service (NRCS) supports the efforts of GGWC to work with landowners in achieving conservation goals, specifically in regards to the Camp Creek Project. Water quality issues are a major resource concern for the NRCS and we will collaborate with stakeholders in various capacities in order to successfully implement effective conservation on the ground.

The Camp Creek project will allow the landowner to more effectively manage cattle and their access to an impaired stream while improving riparian habitat and the associated improvements to water quality. The landowner has been working with the local NRCS field office in developing a system that will allow for the natural and enhanced rehabilitation of riparian areas along Camp Creek. Working seamlessly with the GGWC, a conservation plan developed between the landowner and the NRCS, utilizing some passive (prescribed grazing) and active (tree planting) conservation practices and management strategies was identified as a viable project that meets the criteria of the 319 grant. I am confident that through the installation of practices and adoption of management plans developed between the landowner, GGWC and the NRCS that the riparian condition along the treated areas of Camp Creek and the overall water quality of Camp Creek will be improved.

The conservation plan that the landowner, GGWC and the NRCS have developed is a comprehensive system that will help address natural resource concerns along Camp Creek. The success of the system is dependent on the installation of some facilitating practices, such as the fencing and stock tanks, as well as a commitment to the management of livestock. A solid commitment from the landowner with the shared commitment of both the NRCS and GGWC to help and assist when necessary will lead to the successful execution and maintenance of this project, which will have direct benefits to the water quality of Camp Creek.

Finally, this project may help to mediate a greater understanding between various entities regarding water quality issues related to farming and livestock operations by finding methods that benefit all parties.

A handwritten signature in blue ink, appearing to read "Justin Meissner", is written over a horizontal line.

Justin Meissner
District Conservationist





Patrick Byorth

Director, Montana Water Project

Watershed Protection Section
Montana Department of Environment Quality
1520 E. Sixth Avenue
P.O. Box 200901
Helena, MT 59620-0901

September 22, 2014

RE: GGWC 319 Watershed Restoration Project Application

Dear 319 Review Committee,

Trout Unlimited's (TU) Montana Water Project is a collaborative conservation organization that works closely with landowners, watershed groups and communities to protect, restore, reconnect and sustain Montana's renowned coldwater fisheries. Our work often focuses on water rights, private lands and working landscapes. The Greater Gallatin Watershed Council's 319 application to fund the Story Mill Wetlands Restoration Project and to improve water quality in Camp Creek present opportunities to build synergy within the greater Gallatin community. TU is pleased to commit our support for the projects that blend values of the agriculture and conservation communities in fisheries and water quality restoration. The collective expertise and experience working on the restoration projects is extensive among its broad network of partners.

The Story Mill site is located just two miles from Bozeman's downtown. The Story Mill Project is designed to maximize the properties potential as a new city park, connecting members of the community through local events, urban agriculture, and expanding the town's Main Street to the Mountains trail system. Along with the direct social benefits, the project's wetlands restoration and stream restoration efforts will markedly improve water quality, stream function and fish habitats in the East Gallatin River and Bozeman Creek and improve public fishing prospects. In particular, removing in-channel debris and naturally revegetating eroding streambanks will reduce sedimentation and restore more natural stream function. In addition, restoring wetlands and floodplain function habitats will create more capacity to buffer sediment and nutrients affecting water quality.

Camp Creek has long been a source of water quality problems in the Gallatin Valley. Due to natural geology and land-use, water quality of Camp Creek has been

impaired but the sediment and nutrient loads also diminish water quality in the Gallatin River. This project is an expression of the shared values of a rancher, GGWC, and TU desiring to preserve our agricultural heritage while improving stewardship of our aquatic resources.

In addition to our strong support for GGWC's efforts, we are willing to offer staff time and in-kind resources in support of these projects. In closing, we fully support GGWC's proposal and urge you to fund these worthy projects. We appreciate your consideration.

Sincerely,

A handwritten signature in blue ink, reading "Patrick A. Byorth". The signature is written in a cursive, flowing style.

Patrick A. Byorth



Gallatin Local Water Quality District

215 W. Mendenhall, Suite 300 – Bozeman, MT 59715
(406) 582-3148 www.gallatin.mt.gov/GLWQD



September 9, 2014

Watershed Protection Section
Montana Department of Environmental Quality
1520 E. Sixth Avenue
P.O. Box 200901
Helena, MT 59620-0901

Dear 319 Review Committee:

I would like to express my support for the Greater Gallatin Watershed Council's 319 project proposal, "Watershed Restoration Project Implementation in the Lower Gallatin Watershed." The Council has been successfully working with stakeholders in the Lower Gallatin Watershed for several years to develop TMDL allocations for the Lower Gallatin and develop a watershed restoration plan (WRP). With the WRP nearing completion, the Council is now strategically poised to implement two shovel-ready projects identified by local stakeholders during the process.

The Gallatin Local Water Quality District (GLWQD) has a strong interest in protecting and improving water quality throughout the Gallatin watershed. GLWQD was integral to the creation of the citizen stream monitoring program in the Gallatin and continues to serve as a technical collaborator for the program, which will be used to document water quality conditions for these projects.

GGWC was a leader in integrating wetlands into watershed restoration planning and is now ready to implement a project at the Story Mill Community Park that takes a holistic approach to water quality and ecosystem health improvement.

I encourage the Review Committee to fully fund this proposal. If during the review process you have any questions for me regarding this application, please feel free to call me at 582-3145 or email me at tammy.swinney@gallatin.mt.gov.

Sincerely,

A handwritten signature in cursive script that reads "Tammy Swinney".

Tammy Swinney
District Manager



CITY OF BOZEMAN
Bozeman, Montana
Department of Public Works

September 17, 2014

Mr. Robert Ray, Watershed Protection Section Supervisor
Water Quality Planning Bureau
Department of Environmental Quality
PO Box 200901
Helena, MT 59620-0901

RE: Letter of Support for GGWC 319 Grant

Dear Mr. Ray:

The City of Bozeman Department of Public Works (DPW) offers its formal support of the proposed GGWC 319 Grant application to restore the floodplain of the East Gallatin River at the future Story Mill Park. The city is faced with significant challenges in not only protecting, but enhancing, water quality in its urban waters as set forth in the Lower Gallatin TMDL.

An incredible opportunity exists at the Story Mill Park to improve water quality in two 303(d) listed streams that course through the site: Bozeman Creek and the East Gallatin River. The DPW believes that the floodplain restoration activities proposed in GGWC's 319 Grant request will produce important water quality and ecological enhancements that serve to reduce the level of nutrient and sediment loading by increasing settling and nutrient uptake capacity. The DPW feels that the costs to construct the project are exceeded by the water quality enhancements that are sure to accrue. The project serves as an important incremental improvement to the watershed that helps achieve nutrient reduction goals outlined in the Lower Gallatin TMDL.

The DPW enjoys a healthy collaborative relationship with the Trust for Public Lands, the current owner of the future Story Mill Park lands, and its project partner GGWC. The City will take ownership of the site by year's end; and through a separate agreement presently being drafted, TPL and its partners will remain responsible for completing the floodplain restoration activities proposed in GGWC's 319 grant request.

The DPW encourages the DEQ to fund the floodplain restoration activities proposed in GGWC's 319 grant. Doing so will deliver an important enhancement to water quality in the East Gallatin River and all points downstream.

Sincerely,

Craig Woolard, PhD, PE
Director of Public Works