Yellowstone River
Conservation District Council

2009 Annual Report

(July 1, 2008, to June 30, 2009)
Yellowstone River Conservation District Council
Custer County Conservation District
Yellowstone River, Montana, North Dakota
YRCDC-2010-01

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Cover photos: Top Left – Right (clockwise). Armstrong Spring Creek (courtesy of Carol Watts), MWCC Stewardship Award Ceremony (courtesy MWCC), Custer County CMZ Workshop (courtesy of Nicole McClain), Yellowstone River (courtesy Karin Boyd), Livingston Depot and Montana Rail Link train (courtesy Carol Watts).

Greetings from the Yellowstone River,

Don Youngbauer, YRCDC Chairman, aboard the Montana Rail Link train on the Yellowstone River Rail Tour, 9/2008

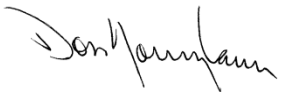
The Yellowstone River Conservation District Council (YRCDC) was formed in 1999 to address conservation issues on the Yellowstone River from Gardiner, Montana to the confluence of the Missouri River in North Dakota. In 2004, the YRCDC entered into a cost-share agreement with the Corps of Engineers to conduct the Yellowstone River Corridor Comprehensive Study, perhaps the largest and most comprehensive study ever done on the Yellowstone.

The corridor study, also known as the Cumulative Effects Study, was mandated by Congress in the Water Resources Development Act of 1999, and receives technical support from a ten-member Technical Advisory Committee (TAC). Project oversight for the study is provided by the 18-member Resource Advisory Committee (RAC). While the RAC continues to recruit new members to fill vacancies of this mostly volunteer committee, many of the original members still remain. In recognition of their dedication and commitment, a debt of gratitude is owed to our long standing Council and committee members. Thank you!

As we complete our 10th year, I am very happy to report that 2009 was a good year for the YRCDC. Progress was made on several new studies while many others were completed. Important state and federal funding made it possible to complete the avian study, develop Channel Migration Zone maps for the entire Yellowstone River corridor, embark on an economic pilot study, and develop a Cumulative Effects database – the first ever of its kind. The funding also allowed us to make significant progress toward completing a riparian vegetation characterization, a National Wetlands Inventory mapping project, and continue work on the hydrology and hydraulic scopes of work, all which contribute to the overarching Cumulative Effects Assessment.

In the following report you will see the names of the people who contributed to the significant progress we made over the past year. The willingness of our Council members, state and federal agency representatives, non-profit groups, industry, landowners, volunteers, and staff, to pull together to create and sustain a shared vision of the Yellowstone River is what made it all possible.

On behalf of the entire Yellowstone River Conservation District Council, I encourage you to read more about our efforts in the following report. Please contact me or any of our staff if you have questions or comments about the YRCDC, our mission and activities. The YRCDC web site is http://dnrc.mt.gov/cardd/yellowstonerivercouncil.



Don Youngbauer
Chairman, Yellowstone River Conservation District Council

ABOUT THE YRCDC

Founded in 1999 as a result of back-to-back 100-year floods on the Yellowstone River, the Yellowstone River Conservation District Council (YRCDC or Council) provides local leadership, assistance, and guidance for the wise use and conservation of the river system's natural resources to sustain and improve the social, environmental, and economic values.

Organization of the YRCDC

Through a resolution dated July 6, 1999, conservation districts and the Montana Association of Conservation Districts created the Council to collectively address natural resources on the Yellowstone River. The Council is composed of 13 voting members including representatives of the following conservation districts: Carbon, Custer County, Dawson County, McKenzie County (North Dakota), Park, Prairie County, Richland County, Rosebud, Stillwater, Sweet Grass, Treasure County, Yellowstone, and a representative of the Montana Association of Conservation Districts.

Highlights from FY 2009

The year 2009 was very productive for the YRCDC with more than two dozen meetings of the Council and its' committees. An influx of federal funding aided progress toward the completion of the Cumulative Effects study. The YRCDC also:

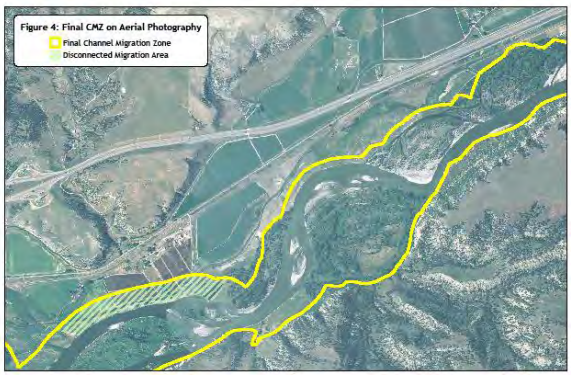
- Developed basinwide Channel Migration Zone maps that provide a consistent and documented product for use in a variety of purposes in the form of mapped erosion and flood hazard zone designations.
- Hosted the Yellowstone River Rail Tour. The purpose of the tour was to celebrate the success of conservation districts and their partners in cooperatively working together to do what many thought could not be done – to study the entire Yellowstone River, from its beginning to end – in order to develop a strategy for the wise use and conservation of the river's natural resources.
- Issued a draft position statement to support and encourage efforts within the basin to seek and develop mutually agreeable solutions in order to provide fish pass and prevent entrainment into water intake or diversions points while maintaining water supplies for irrigation.
- Issued a position paper on the Cooperative Watershed Management Act of 2008 (co-sponsored by Senator Jon Tester) that encouraged involvement with state conservation district associations, recommended broadening the scope of the CWMA, and encouraged recognition of existing organizational structures.
- Published a position paper of the Dornix Park Restoration Project which is aimed at restoring and developing Dornix Park in Big Timber, Montana for parkland, recreation, and wildlife habitat.
- Published a statement of intended use for the Channel Migration Zone maps, which are intended to provide a basic screening tool to help guide and support management decisions within the Yellowstone River corridor.
- Sponsored Channel Migration Zone (CMZ) workshops throughout the basin These workshops, designed primarily for local government officials, described the approach used to define the CMZ map boundaries, the general migration patterns of the Yellowstone River in each county, and identify potential CMZ map applications for local decision-making.
- Sponsored the Yellowstone River Roundtable designed to address section 3110 of the 2007 Water Resources Development Act, which specifically names the YRCDC in a 30-million-dollar authorization of appropriations for projects yielding immediate and substantial ecosystem restoration and recreation benefits on the Yellowstone River and tributaries in Montana and North Dakota.
- Traveled to Washington DC to meet with partners and discuss progress on the study, and the continued need for federal funding.
- The YRCDC was the proud recipient of the 2008 Northern Plains Region Collaborative Conservation Award and the 2009 Montana Watershed Stewardship Award.

Traci Bignell, Paul Gilbert, Nicole McClain, Don Youngbauer and Hal Harper, MWCC Stewardship Award & Montana Wetland Council Award Ceremony, Helena, May 2009

STATUS OF THE STUDIES

In 2004, the YRCDC and the Army Corps of Engineers entered into a cost-sharing agreement including a project management plan (PMP). The purpose of the PMP includes scheduling of work, internal and external coordination, to maintain teamwork, hold partners accountable, manage finances, maintain professional work quality, balance competing demands, meet milestones, and facilitate communication throughout the process for all interests. While executing the agreements, we are committed to being flexible and to utilizing efficient approaches consistent with law and policy, and to obtain results.

In fiscal year 2009, the YRCDC made significant progress on the many elements of the PMP, including the development of Channel Migration Zone (CMZ) maps for the entire Yellowstone River corridor. In September 2008, the YRCDC recognized the project with Montana Rail Link, and other partners including US Army Corps of Engineers and the Montana Department of Natural Resources and Conservation, by conducting a rail tour of the Yellowstone River



between Livingston and Columbus. This tour demonstrated the YRCDC's commitment to putting sound science to work on the ground. The CMZ maps are a tool developed by the Council for use in balancing the needs of the river and a variety of interests and uses.

This year you will also notice a change to the format of the annual report. The Status of the Component Studies will follow the same format of the Project Management Plan.

Project Management

Principal Managers:	Greg Johnson & Tiffany Vanosdall (USACE), Nicole McClain (YRCDC)
Other Participants:	Warren Kellogg (YRCDC TAC)
Goal:	The goal of project management is scheduling work, internal and external coordination, maintain teamwork, hold partners accountable, manage finances, maintain professional work quality, balance competing demands, meet milestones, and facilitate communication throughout the process for all interests.
Completion Date:	Ongoing

Public Participation

Principal Investigators:	Karin Boyd Tony Thatcher DTM Consulting/Applied Geomorphology
Other Participants:	YRCDC TAC, Conservation Districts
PMP Work Element:	PUBLIC PARTICIPATION
Goal:	Hold Channel Migration Zone (CMZ) workshops
Completion Date:	March 2009
Product:	A series of county-based Channel Migration Zone (CMZ) mapping workshops that were held in February and March of 2009 within the Yellowstone River corridor.
Comments:	Workshops were developed for all 12 counties that contain segments of the mainstem Yellowstone River. This effort stemmed from previous (2008) work that included the development of county-scale CMZ maps from Springdale to the Missouri River (Sweet Grass through McKenzie Counties). Subsequent to this initial effort, the maps were updated in early 2009 based on the incorporation of high resolution topographic (LIDAR) data, and Park County mapping was completed. The original 2008 work was sponsored by

	the Yellowstone River Conservation District Council (YRCDC) using 2005 Reclamation and Development Grant funds. This outreach effort was similarly funded by 2005 Reclamation and Development Grant funds with YRCDC support. The work was contracted through the Custer County Conservation District to DTM Consulting, Inc. through a GIS Services contract. Karin Boyd of Applied Geomorphology Inc. was subcontracted by DTM to develop and host the workshops. These workshops were developed to educate and inform decision makers at the county level about the Channel Migration Zone maps for the Yellowstone River basin, and the potential applications for these maps. A total of eight workshops were held in February and March 2009. The workshops were held in Big Timber (Sweet Grass County), Sydney (McKenzie and Richland Counties), Glendive (Dawson County), Billings (Yellowstone County), Forsyth (Rosebud County), Hysham (Treasure County), Miles City (Custer County), Columbus (Stillwater and Carbon Counties), and Livingston (Park County).

Tribal Consultation

Note: No work has been done on this Scope of Work.

Riparian Vegetation Characterization

Principal Investigators:	Warren Kellogg
Other Participants:	YRCDC, NGPJV, CDs, Yellowstone River corridor landowners.
Goal:	The primary purpose of the riparian characterization is to gain an understanding of the plant community composition, structure, and extent along the Yellowstone River riparian corridor, and to evaluate the interrelationships that the riparian plant community has with invasive plant species infestations, channel geomorphology, river hydrology, and land use.
Completion Date:	2011
Product:	GIS-based riparian mapping and associated populated geodatabase on the riparian corridor every 3 miles. The final product will be a report and maps.
Comments:	Fieldwork began in 2007 that involved 7 counties along the Yellowstone River. The study will require at least one more field season to collect pertinent data on all study reaches. It is anticipated that the field work will resume in 2010.

Riparian/Floodplain Analysis. Avian Communities

Principal Investigators:	Danielle Jones Andrew Hansen Montana State University Bozeman, Montana
Other Participants:	Nature Conservancy, US Army Corps of Engineers, Yellowstone River corridor landowners, YRCDC
Goal:	Provide a general description of breeding bird communities and to explore the factors influencing the distribution and abundance of bird species along the length of the river.
Completion Date:	Completed May 2009
Product:	Final Report: Factors Influencing Riparian Breeding Bird Communities along the Middle and Lower Yellowstone River

Comments:	In 2006 and 2007, the YRCDC, in partnership with USCOE sponsored an investigation conducted by faculty and staff at MSU, Bozeman to carry out a survey of birds in selected habitat types along the river. A final report was released in February 2009 which describes the factors influencing community characteristics and the distribution and abundance of breeding birds along a 450 mile section of the Yellowstone River in central and eastern Montana. Birds and vegetation were surveyed within riparian habitats along braided sections of the river in order to describe patterns of bird species richness, bird occurrence, and bird abundance, and to examine the factors influencing bird distribution. Surveys were conducted at over 300 locations in cooperation with 60 private landowners, as well as state and federal government entities. Sixty-four species of birds were recorded in seven different habitat types. Results from this study demonstrate that the riparian corridor provides breeding habitats and resources for many different types of native bird species. The knowledge acquired in this study will provide a more comprehensive understanding of the potential influences of habitat condition on riparian birds, and allow for an assessment of the consequences of management for all wildlife that are dependent upon the unique habitats and resources provided by the Yellowstone River.

Riparian/Floodplain Analysis. Fisheries

Principal Investigators:	YRCDC, YRCDC TAC, Montana State University – Bozeman, Montana Fish Wildlife & Parks,
Other Participants:	USACE
Goal:	The purpose of this study is to evaluate the potential effects of changes in river morphology on fish assemblage characteristics in the transition and warmwater fish assemblage zones of the Yellowstone River. We propose to evaluate these effects using three study components: 1) quantifying habitat use of Yellowstone River fishes, and linking this information to anthropogenic changes in habitats 2) assessing the importance of secondary channels as early summer fish habitat, and 3) comparing fish assemblages in reaches that have been modified by riprap and other bank stabilization structures (treatment reaches) to fish assemblages in unmodified reaches (control reaches).
Completion Date:	Field collections should be completed fall of 2011. Anticipated project completion 2012.
Product:	A final technical report along with annual updates to the Yellowstone River Conservation District Council.
Comments:	Montana and North Dakota sampling permits have been acquired. The first field season is completed.

Invasive Plant Species Inventory & Analysis

Principal Investigators:	Warren Kellogg
Other Participants:	YRCDC, NGPJV, CDs, Yellowstone River corridor landowners
Goal:	To clearly show the interrelationship between invasive species and native riparian plant community health.
Completion Date:	2011
Product:	GIS-based riparian mapping and associated populated geodatabase on the riparian corridor every 3 miles. The final product will be a report and maps.
Comments:	This component of the PMP will be incorporated into the riparian scope of work.

Water Quality

Principal Investigators:	To be determined.
Goal/Questions:	1) Are nutrient levels impacting aquatic life. 2) Are nuisance algae impacting contact recreation? 3) Are metals exceeding human health or aquatic life standards? 4) Is bacterial growth impacting the drinking water use? 5) Are fish communities being impacted by lack of suitable habitat, temperature change, recreation activities, etc?
Completion Date:	To be determined
Comments:	The water quality scope of work is in the process of revision. There are on-going discussions with MT DEQ, USGS, and the City of Billings to determine how their current and future activities will mesh with the goals outlined above.

River Aquatic Sites Study

Principal Investigators:	Linda Vance (MT National Heritage Program)
Other Participants:	Gray Sloan (MNHP)
Goal:	The purpose of this project is to map wetlands and develop associated data for 54 USGS 1:24,000 quads in the Lower Yellowstone River Corridor as part of a larger multi-partner effort to complete wetland mapping in the Yellowstone River Watershed. The 2008 MLIA Wetland Data Theme Plan lists securing funding partnerships for mapping in Southeast MT (which is essentially the Lower Yellowstone River Watershed) as a focus for this year's Plan activities. Wetland data is a priority MSDI framework layer. Unfortunately, Montana lags almost all other states; the National Wetland Inventory (NWI) was never completed here and large swathes of Montana have no wetland data available – even though wetlands are critical habitats of concern to economic development planners and resource managers. The Lower Yellowstone River Watershed is an area that almost completely lacks NWI data (<2% has NWI mapping). This project relates to several goals of the 2008 Land Information Plan, but specifically addresses the following goal and objective: • Goal 1 – A statewide set of MSDI framework layers that are consistently collected, accurately maintained, and made commonly available. o Objective 1.1 - Funding and administrative support for local, tribal, state and federal data collection efforts that will help develop and maintain multi-jurisdictional MSDI framework layers. The Governor and Directors of Montana DNRC, DFWP and DEQ endorsed the state's new wetland plan titled Priceless Resources: A Strategic Framework for Wetland and Riparian Area Conservation and Restoration in Montana 2008-2012. This Strategic Framework supports the MTNHP Wetland and Riparian Mapping Center as the standardized provider of wetland mapping in Montana, which provides consistency, accuracy and information availability to all citizens. All wetland data is approved and permanently maintained by the NWI with distribution available through the

	NWI or the MT Natural Resource Information Service. We are following the multi-partner approach advocated in the 2008 MLIA Wetland Data Theme Plan. We have financial commitments from the primary federal land management agencies in the area to finance their share of mapping in the watershed, and have other partners listed in Appendix 1, but we need additional funds to complete mapping along the Yellowstone River Corridor, which is mostly privately owned and likely contains over 80% of all the wetlands in the watershed.
Completion Date:	Not complete
Product:	Have received provisional data for 8 quads including; Intake, Savage, Savage SE, Savage SW, Knife River Mine, Crane, Piche and Sydney.
Comments:	Quads have not been submitted to NWI for review or ground-truthed.

Socioeconomic, Cultural and Recreational Resources

Task:	***Economic Scope of Work***
Principal Investigators:	Burt Williams Warren Kellogg
Other Participants:	YRCDC TAC
Goal:	To identify the current and future demand for river resources and management actions by all groups. This demand information, when paired with information on the ability of the river to supply resources, will lead to identification of problem areas where the river is unable to sustain the demand of these user groups. This supply-demand framework will lead to identification of the cumulative effects of natural events, market forces, and management actions (e.g. bank stabilization) on the ability of the river to sustain these socioeconomic activities.
Completion Date:	Ongoing
Comments:	2009 Summary The TAC has been without an Economist TAC member since MSU-B's economist withdrew from the TAC in 2008. TAC chair Warren Kellogg and TAC member Burt Williams have been seeking a new TAC member that could combine economics expertise with a focus on projecting economic outcomes produced by the influence of the river, rather than just general economic analysis on a county by county basis. The TAC did not have success in finding the economist sought for the TAC, but one of the people contacted as a potential member was Ray Rasker, the principal owner of a non-profit economics analysis company in Bozeman, Headwaters Economics. The TAC contacted Headwaters because the company's focus is on how economics interacts with natural resources and rural economies. After discussions with Rasker regarding the work of the Council and the Cumulative Effects Study with the Army Corps of Engineers (ACOE), TAC members reviewed several products that had been produced by Headwaters Economics. The TAC reacted favorably to the Headwaters economics analysis in that it identified economic trends based upon historical data, and presented this information in a graphical format that appeared easy to comprehend and utilized GIS technology to depict results in a mapped presentation. After Council approval and discussions with ACOE, ACOE contracted a pilot economic project at the end of the federal 2009 fiscal year, using Headwaters Economics and their graphical products to depict one economic sector, housing development, along the Yellowstone River. That product, which will be completed over the first part of 2010, will be evaluated by the Council for

	potential use in a wider economic study of all economic sectors affecting the Yellowstone River.

Basic Data Acquisition and Topographic Mapping

Task:	***Historical Aerial Photo Acquisition and Distribution***
Principal Investigators:	Jim Robinson (Montana DNRC)
Other Participants:	YRCDC TAC, US Army Corps of Engineers
Goal:	Acquire historic aerial photographs of the Yellowstone River corridor to support cumulative effects assessment, 310 and 404 permit review, and land use planning.
Completion Date:	2007
Product:	Countywide, historic orthophoto mosaics of the Yellowstone River Corridor from 1930s, early 1950s, 1976-77, and 2001.
Comments:	Since its inception in 1999, the YRCDC has collected and made available through the Montana State Library's Natural Resource Information System (NRIS) a variety of geographic datasets specific to the Yellowstone River corridor, including historic aerial photography, high accuracy digital elevation models, and digitized plan metric feature datasets, such as a physical features inventory and geomorphic classification of the entire river (http://nris.mt.gov/yellowstone). Currently, complete aerial photographic coverage exists of the river corridor from Yellowstone National Park Boundary to the Missouri River confluence near three points in time: 1950/1976/2001; and sporadic coverage dating back to the 1930s. The photography will be used by the technical components of the cumulative effects assessment to characterize and evaluate past response to influences such as climate, hydro modification, and flood and erosion control structures.

Information Management and GIS Development

Principal Investigators:	Tony Thatcher, DTM Consulting, Inc.; Jim Robinson, DNRC; Evan Hammer, Montana State Library, NRIS;
Other Participants:	Natural Resources Information Services (NRIS)
Goal:	Provide a means to communicate information and results of the CEA project to the public, the Council, and investigators working on the project.
Completion Date:	Ongoing
Product:	Current products: 1) Cumulative Effects Assessment Database; 2) Yellowstone River Internet Map Application; 3) Yellowstone River Website; 4) Data Archive and Distribution Services through Natural Resources Information System at Montana State Library. See Yellowstone River Resource web page at http://nris.mt.gov/yellowstone.
Comments:	Two primary information management needs have been identified for the project: distribution and data sharing needs of specialists working on the project (internal usage); and clearinghouse and query services necessary to transmit products and results to resource managers and the public (external usage).

Task:	***310 Web-Based Permit Database and Google Map interface***
Principal Investigators:	Warren Kellogg Tony Thatcher (DTM Consulting)
Other Participants:	YRCDC staff and participating CD's
Goal:	Develop a web-based database application for archiving and displaying 310 Permit information using Google Maps as a graphic interface. The interface will allow Conservation Districts internet access to their 310 permitting records, including both map and text interfaces.

Completion Date:	Ongoing development as additional Conservation Districts participate.
Comments:	The database contains 310-permit records beginning in 1976 that the Conservation Districts have entered into the database. Photos and descriptions accompany the Sites and Permits. Conservation Districts have the option of adding additional data layers such as, physical feature points and lines, bank lines, and floodplain boundaries from GIS format. The application is currently being used by 4 Conservation Districts, with additional CDs being added.

Task:	***Cumulative Effects Assessment Database***
Principal Investigators:	Tony Thatcher (DTM Consulting) Warren Kellogg
Other Participants:	YRCDC TAC
Goal:	Create a Microsoft Access database designed to store and display summarized results from individual scopes of work developed by CEA.
Completion Date:	Ongoing
Product:	Riparian and Cumulative Effects Databases
Comments:	The Riparian Scope of Work is expected to produce a large amount of information related to vegetative cover, land use, and conditions associated with the Yellowstone River. In order for this information to be useful for analysis, presentation, and integration with other work scopes, it will be stored in a structured format that preserves data integrity and serves as an archive of the information. A custom Microsoft Access database serves these functions and provides a flexible environment for data entry, archiving, analysis and integration. The riparian database has been completed. The cumulative effects database development is in-progress.

Channel and Flood Plain: Hydrology

Principal Investigators:	Doug Clemetson & Roger Kay (USACE)
Other Participants:	USGS
Goal:	The goal of this study is to develop the hydrologic data necessary to evaluate the water related problems in the Yellowstone River basin. The primary objective of the hydrology analysis is to establish the discharge frequency and flow duration relationships for the Yellowstone River from Park County to the confluence with the Missouri River near Williston, ND.
Completion Date:	To be determined
Product:	• Draft Upper Yellowstone Basin Hydrology Report – November 2009 • Draft Bighorn Hydrology Report – In Progress
Comments:	USGS has contracted to complete the remaining hydrologic studies.

Channel and Flood Plain: Hydraulics

Principal Investigators:	Laurel Hamilton (USACE)
Other Participants:	Kevin Adams (USACE)
Goal:	The goals of the hydraulic analyses are to provide hydraulic information required to define the current and historic extent of the Yellowstone River floodplain for the purpose of identifying opportunities to reduce flood damages, determine impacts from human development, and restore environmental features and functions. Secondary goal is to provide detailed hydraulic data including river stages, velocities, flow depths, and flooded areas that may be useful in the geomorphic and biologic analysis for the study.
Completion Date:	To be determined

Product:	• Yellowstone County open water profiles (10, 2, 1, 0.2% flows) and flood boundaries (1 & 0.2% flows) – November 2007 • Stillwater County open water profiles (10, 2, 1, 0.2% flows) and flood boundaries (1 & 0.2% flows) – March 2008 • Dawson County open water profiles (10, 2, 1, 0.2% flows) and flood boundaries (1 & 0.2% flows) – October 2008 • Dawson County ice cover profiles (10, 2, 1, 0.2% flows) and flood boundaries (1 & 0.2% flows) – June 2009 • Dawson County composite ice profiles (1% flows) and flood boundaries (1% flows) – November 2009 • Dawson County ice jam profiles (10, 2, 1, 0.2% flows) – July 2009 • Dawson County open water profiles (10, 2, 1, 0.2% flows) and flood boundaries (1 & 0.2% flows) – October 2008 • Dawson County bridge opening (100ft) profiles (1% flows) – July 2009 • Dawson County bridge opening (500ft) profiles (1% flows) – July 2009 • Sweet Grass County open water profiles and flood boundaries – In Progress

Channel and Flood Plain Mapping: Geomorphology

Principal Investigators:	Karin Boyd, Applied Geomorphology, Inc.; Tony Thatcher, DTM, Inc.; Jim Robinson, DNRC; YRCDC TAC
Other Participants:	US Army Corps of Engineers
Goal:	The overall goal of the geomorphology work plan is to assess the fluvial geomorphology of selected reaches of the Yellowstone River to determine how channel behavior is related to both natural processes and human impacts.
Completion Date:	Ongoing; in previous fiscal years completed river-wide GIS coverages and resultant result reconnaissance-level work products such as planform change analyses (6/30/2006 and 5/18/2007), 100-year inundation (5/18/2007) and channel migration zone (CMZ) maps (1/22/08), and Geomorphic Reconnaissance Report (3/5/2004).
Recent Product(s):	Completed education and outreach sessions on CMZ for all Yellowstone River Conservation Districts in fall of 2008; Final Reports for the Human Impacts Timeline (October 13, 2008) and Historic Occurrence Timeline (11/17/2008). See http://nris.mt.gov/yellowstone.
Comments:	Largely funded through the YRCDC 2003 and 2005 Reclamation and Development Grants, this PMP Work Element is aimed at cumulative effects assessment and best management practice development. Future efforts will include development of a statement of intent (BMP) for CMZ usage, integration of geomorphology results with the hydrology, hydraulic, riparian and fisheries scopes of work, and preparation of geomorphic reach narratives.

Cumulative Effects Analysis

Principal Managers:	Burt Williams (TNC)
Other Participants:	YRCDC TAC
Goal:	To develop an interdisciplinary scientific characterization of relationships between human activities and associated river system response, and to use that information to develop recommendations for management practices and actions that will provide sustainability to socioeconomic interests while maximizing the long-term biological/physical integrity of the river system.
Completion Date:	Ongoing
Comments:	2009 Summary The study of cumulative effects to the Yellowstone River system, utilizing all of the technical scopes of work, made limited progress in 2009.

	Early in the year a series of work sessions utilizing TAC members identified the basic building blocks of how they intend to guide the actual cumulative effects analysis. A river system like the Yellowstone is formed through the interaction of (1) hydrology (amount of precipitation available to the basin and how it courses through the Yellowstone and its tributaries during annual run-off) and hydraulics (water forces influenced by gradient, geological make-up of the basin, and location of man-made features like bridges;) (2) water quality; and (3) the aquatic and riparian biology of the river. Enough hydrology and hydraulics studies in similar rivers have been done to begin the identification of how these forces form and re-form the channel and its geomorphologic features. Geomorphology has been done in overview for the entire river as has topographic mapping and historical aerial photographic analysis of channel changes. However, hydrology and hydraulics have not been completed, and thus a comprehensive approach to cumulative analysis awaits those studies' final work. The other two major components of the river system—water quality and biology—are more specific to the geography and history of the region. Out of the study subcomponents of these two components—the water quality study, avian study, riparian analysis, and fisheries study, only the avian work has been completed. To a great extent, the details of cumulative effects analysis depend on these studies being closer to completion. Finally, the TAC has not begun work on teasing out how much of cumulative change in the system is due to the natural interaction of geological and biological processes, and what part is due to how people have managed and altered the river. This part of the analysis depends in part on identifying the engineered changes to the river: river bank modifications, bridges, dams, pollution, etc. That work has largely been done through the physical features study, human timeline, and bridge analyses. However, knowledge about trends towards the future extent of changes to the system awaits the completion of the economic study and projections based on the technical studies of engineered modifications. While waiting for the completion of some of these building blocks for cumulative effects analysis, the TAC reviewed one way of modeling changes to river systems. This model, developed by ACOE, identifies important parameters for biological viability of river dependent species like specific fish species and cottonwood and willow vegetation. It takes parameters like seed survival or spawning behavior, and measures that against variations in river flow. The model has proved effective in controlled river systems like the Bill Williams River in Arizona where dams can be used to precisely control water flows during certain seasonal intervals. The TAC has not yet come to a conclusion about how applicable the model can be on the Yellowstone where only one tributary is highly controlled.

Task:	***Best Management Practices & Position Papers***
Principal Investigators:	YRCDC, YRCDC TAC and RAC
Other Participants:	Weed Districts
Goal:	As resource information becomes available, BMPs and Position Papers pertinent to the Yellowstone River corridor will be developed.
Completion Date:	On-going
Product:	Russian Olive Management BMP; Intake Diversion/Fish Passage position paper; Glendive By-Pass Chute/Hydraulic Analysis position paper.
Comments:	BMPs and Position Papers are available at the YRCDC office in Billings.

One-Time Funding: Demonstration Projects

Principal Investigators:	Laurie Zeller (Montana DNRC)
Other Participants:	Bureau of Reclamation, Montana Fish, Wildlife & Parks, Gallatin National Forest, YRCDC, Landowners
PMP Work Element:	**PUBLIC INVOLVEMENT**

a) Pryor Creek Fish Passage

Principal Investigators:	Clayton Jordan, Bureau of Reclamation, Jim Robinson/Jennifer Wilson, DNRC
Other Participants:	Montana Fish Wildlife & Parks, Yellowstone Conservation District
Goal:	Complete an appraisal-level design for constructing an inverted siphon on the Huntley Canal under Pryor Creek. Monitor flows in the lower portion of Pryor Creek during the irrigation season to ascertain aquatic habitat potential.
Completion Date:	Initial design work complete. Hydrologic Report due December 2009.
Product:	Lower Pryor Creek Fish Passage Assessment Study Report (May 2007) and Pryor Creek Siphon and Fish Passage Report (July 2007). Lower Pryor Creek Hydrologic Assessment.
Comments:	The engineering reports assessed the feasibility of structural alternatives for providing fish passage over the Huntley Canal. Ongoing work in 2009 includes a hydrologic investigation to further determine the feasibility of the project in terms of water availability and seasonal flow variation. Such a project would provide fish passage by re-connecting lower Pryor Creek with the Yellowstone River mainstem. As currently proposed, the project involves installation of grade control and relocation of an inlet structure currently used to divert from Pryor Creek into the Canal.

b) Cottonwood Regeneration Project

Principal Investigators:	Carol Endicott (FW&P) Park County CD
Other Participants:	Gallatin National Forest, Upper Yellowstone Watershed Basin, community volunteers
Goal:	Demonstrate the different methods of reestablishing cottonwood stands and documenting the benefits associated with Cottonwood stand reestablishment in riparian areas experiencing high mortality along the upper stretches of the Yellowstone River.
Completion Date:	2009
Product:	Three copies of a written narrative in final report form (electronic and printed copies) with photo-documentation of task progression.
Comments:	In the second year of the project, project participants harvested 1,000 cottonwood sprigs for rooting at the state nursery, and planted nearly 1,000 cottonwoods collected the previous year. Preliminary evaluations of success of the 2007 plantings indicated browse pressure from wildlife (ungulates and beavers) was substantial on the planted stems, and resulted in considerable mortality. Crews installed browse protectors with each sprig planted in 2008, and applied a wildlife repellent as a means to reduce browse related mortality. Extended high flows on the Yellowstone River in 2008 was another likely cause of mortality of sprigs planted in 2007 and 2008. A brochure detailing the ecology and benefits of cottonwoods will be available through the Park CD.

c) Locke Creek Fish Passage

Principal Investigators:	Carol Endicott, Montana Fish, Wildlife & Parks - Landowner Incentive Program/Yellowstone cutthroat trout restoration biologist
Other Participants:	Montana Fish, Wildlife & Parks, Park County CD, Locke Creek landowners, Montana Rail Link, Burlington Northern and Santa Fe Railway
Goal:	Implement minor modifications to a concrete culvert on Locke Creek located under the railroad to facilitate passage of Yellowstone cutthroat trout while impeding passage of non-native rainbow trout.
Completion Date:	2010
Product:	Written report (electronic and printed copies) including photo-documentation of task progression.
Comments:	This project has been modified from its original conceptual approach, which entailed simple alterations to the inside of the culvert to promote fish passage. These design modifications reflect maintenance concerns from the railroad companies operating on the tracks, and biological considerations relating to preventing passage of rainbow trout into Locke Creek. Specifically, instead of modifying the inside of the culvert with baffles, fish will gain access up to and through the culvert by installation of a series of step pools downstream of the culvert, which will also back water flows through the culvert. In addition, conceptual designs call for an alternate outfall from the culvert, which will be impassable. Flows will be diverted to the impassable route during the rainbow trout spawning period, but restored to the passable approach during the later Yellowstone cutthroat trout spawning period.

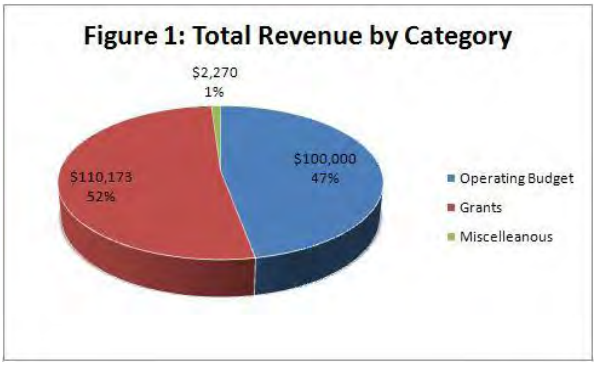
FINANCIAL Report

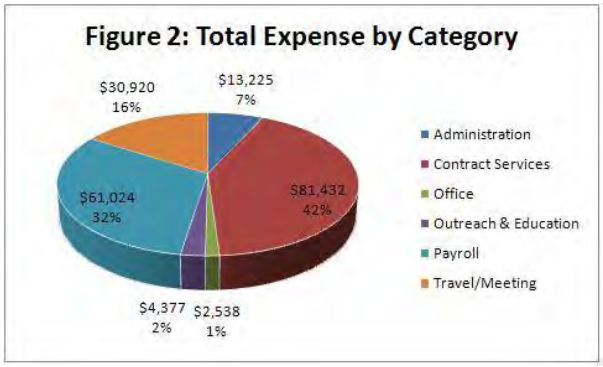
YRCDC Funding

The YRCDC is a grassroots, locally-led, effort to develop voluntary management recommendations to constituents of a huge watershed. Progress toward this work is only possible through the cooperation and collaboration of the many interests throughout the watershed and the ready sharing of resources and information.

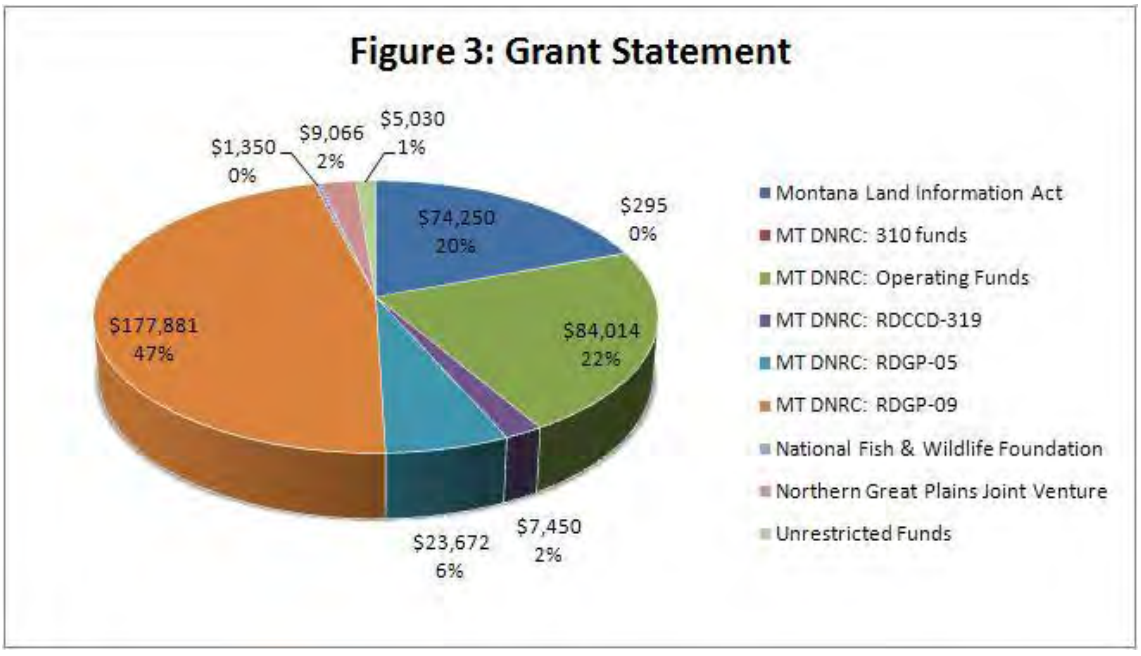
In fiscal year 2009, the YRCDC received $212,443 in total revenue; of that amount was $100,000 in operational funding from the Montana Legislature. This funding accounts for 47% of total revenue and was passed through the Department of Natural Resources and Conservation.

Figure 1 and 2 illustrate revenue and expense by category for the YRCDC in fiscal year 2009.





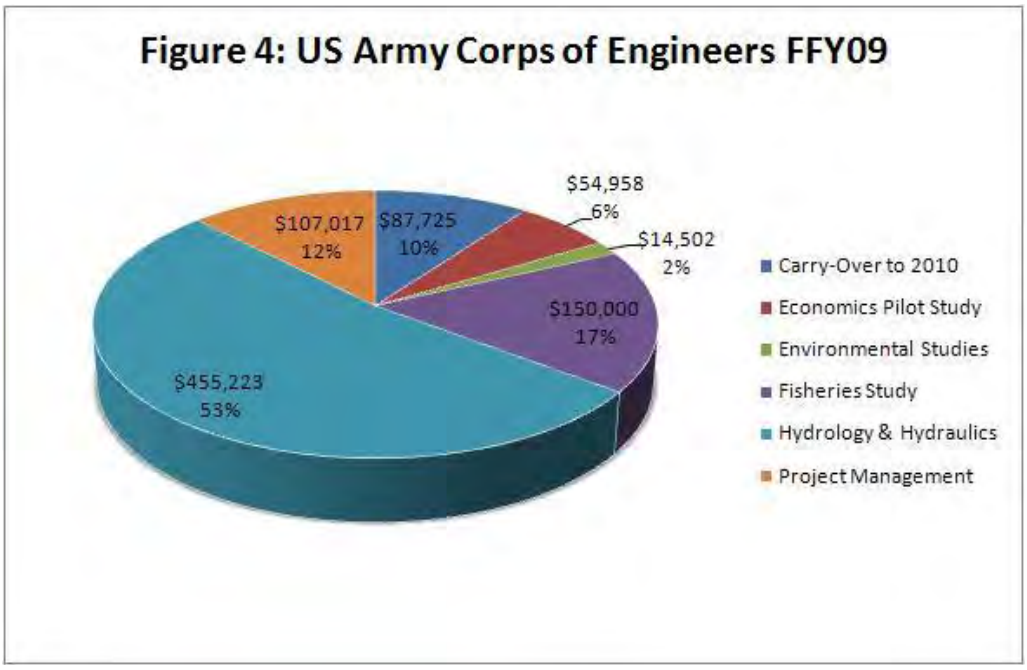
In fiscal year 2009, the YRCDC is administered $383,009 in funding from several different grant sources. The Yellowstone River Riparian Restoration Project, a DNRC Reclamation and Development Grants Program project, was funded during the 61st legislative session and accounts for nearly half of the total grant funding secured. Shown below is Figure 3, which is an accounting of each outstanding grant and funds remaining at the end of federal fiscal year.



USACE Funding

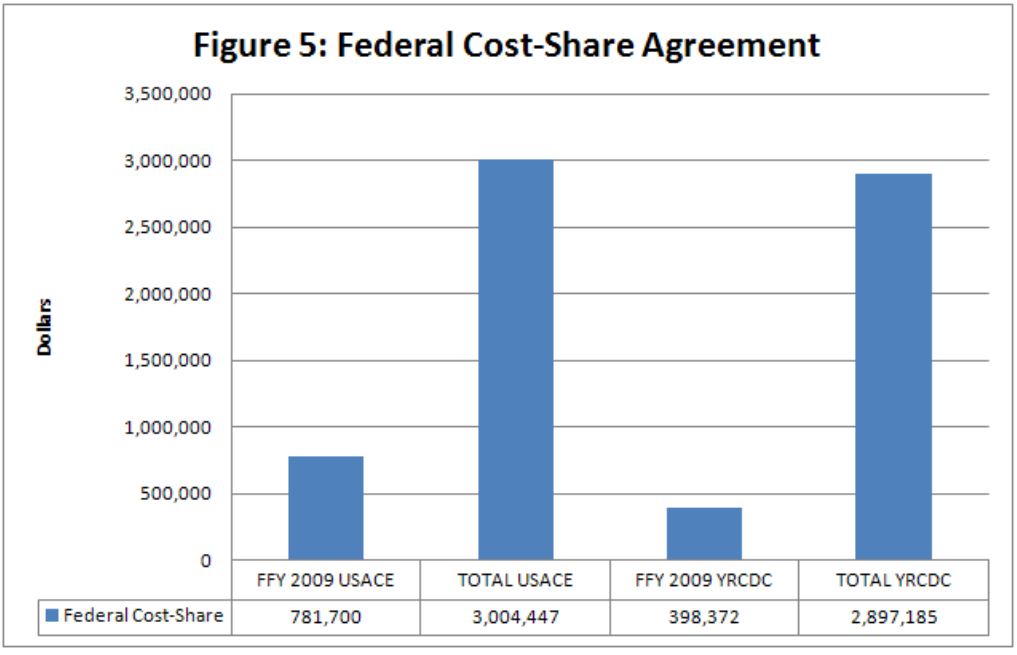
In federal fiscal year 2009, the US Army Corps of Engineers (USACE) received appropriations for the Cumulative Effects study totaling $869,425. Of that amount, nearly 50% ($435,000) was American Recovery Reinvestment Act, or stimulus, funding.

More than half of the total funding was put toward the Hydrology and Hydraulics scope of work. Figure 4 is a cost breakdown for the US Army Corps of Engineers for Federal Fiscal Year 2009 (ended September 30, 2009).



Federal Cost Share Agreement

Partnerships are diverse and include various agencies, organizations, industry and landowners, including ranchers and farmers, who have graciously given of their time and talents. Partner contributions are summarized in the following table.



KEY PERSONNEL

It's sometimes easy to get lost in the big picture and the small details of the work being done on the Yellowstone River. However, without the people listed below none of this work would be possible.

Yellowstone River Conservation District Council

- Don Youngbauer, Chairman, Rosebud CD/MACD
- Bob Hector, Vice Chair, Yellowstone CD
- Dave Schwarz, Prairie County CD
- Jerry O'Hair, Park CD
- John Moorhouse, RAC Chair
- Kenny Nemitz, Dawson County CD
- Orvin Finsaas, McKenzie County, ND CD
- Paul Gilbert, Sweet Grass County CD
- Phil Fox, Treasure County CD
- Steve Story, Stillwater County CD
- Tony Barone, Richland County CD/MACD
- Walter Rolf, Custer County CD
- Will Alexander, Carbon County CD

Orvin Finsaas and Tony Barone, 4/2009

YRCDC, TAC, staff and others breaking bread after 2-days of TAC meetings, 3/2009

Technical Advisory Committee (TAC)

- Warren Kellogg, Chairman, NRCS Burt Williams, The Nature Conservancy
- Clayton Jordan, Bureau of Reclamation
- Dave Schwarz, Prairie County CD
- George Jordan, U. S. Fish & Wildlife Service
- Jim Robinson, MT DNRC Water Resources
- John Kilpatrick, USGS
- Karin Boyd, Applied Geomorphology, Inc.
- Ken Fraser, MT FWP
- Susan Gilbertz, Professor of Geography, MSU-B

Resource Advisory Committee (RAC)

- John Moorhouse, Landowner, Chairman
- Art Gehnert, Landowner
- Bill Kennedy, Yellowstone County Commissioner
- Boris Krizek, City of Billings Water Treatment
- Carol Endicott, Biologist - MT Fish, Wildlife & Parks
- Craig Wagner, Walleyes Unlimited/landowner
- Diana Taylor, Mayor – City of Big Timber
- Jerry Hanson, Landowner
- Mack Cole, Landowner
- Richard Cayko, McKenzie County Commissioner
- Robert Lubbers, Yellowstone River Forum

YRCDC Staff

- Carol Watts, Custer County CD Administrator

Carol Watts and Laurie Kelley, 9/2008

- Kelly Norwood, Project Assistant
- Nicole McClain, Coordinator

Kelly Norwood and Nicole McClain, 4/2009

Eric Laux and Don Youngbauer, 9/2008

US Army Corps of Engineers Team

- Greg Johnson, Lead Planner
- Tiffany Vanosdall, Project Manager
- Eric Laux, Lead Biologist

Congressional Delegation Advisors

- Congressman Rehberg's office, Mary Heller, Regional Field Director
- Senator Baucus's office, Liz Ching, State Casework Manager
- Senator Tester's office, Rachel Court, Billings Field Representative

Other Agency Personnel/Advisors

- Laurie Zeller, Montana Department of Natural Resources and Conservation
- LaVerne Ivie, Yellowstone Conservation District
- Mike Volesky, Natural Resources Policy Advisor, Governor's Office
- Scott Bockness, Yellowstone County Weed Control District

Laurie Zeller, 9/2008

FISCAL YEAR 2010

Financial Forecast
The amount of work that can be accomplished in any given year is dependent upon the federal allocation by Congress. We continue to work closely with our congressional delegation including Senators Max Baucus and Jon Tester, and Congressman Denny Rehberg.

Operating Expenses

Once again, annual operating expenses, which are funded by the legislature and passed through DNRC, are estimated to exceed previous levels due to rising costs, and increased activity. At publication time, the YRCDC was beginning to develop a work plan and a projected budget that would allow future development of Best Management Practices and the continuation of the Cumulative Effects Study in fiscal year 2010 and beyond.

Increased Costs

Mileage reimbursement rates and postage costs have sharply increased over original budget estimates. Mileage reimbursement is a major expense for the YRCDC and the reimbursement rate has increased approximately 20 percent in the past two years. More frequent YRCDC and RAC meetings are expected to increase the amount of pre-meeting and post-meeting mailing expenses. However, we continue to investigate creative ways to maintain costs including carpooling when possible, and teleconferencing.

Yellowstone River east of Livingston, MT (photo courtesy, C. Watts)

Partner Commitments

Partnerships are essential to the success of the YRCDC. In unison with its RAC and TAC, we seek to continue the development of voluntary best management practices and implementation strategies for the Yellowstone River. This progress would not be possible without the commitment of our partners.

Continuing Efforts

In FY 2010, we expect to see significant progress on many scopes of work. Over the next two years progress is expected on the Environmental Studies scope of work, which includes the fisheries research study, the wetlands study, and he NRCS riparian vegetation study.

Depending on federal funding, the geomorphology, hydrology, and hydrologic modeling in the Bighorn Basin and hydraulic modeling in Stillwater & Dawson Counties should be completed, as well as the scopes of work for bridge surveys, socioeconomics, information management & GIS, riparian fieldwork & the cumulative effects databases will continue to progress. All of the plans hinge upon continuing the cumulative effects study in a logical manner.

The YRCDC is currently planning a boat tour of the Yellowstone-Missouri River confluence area in the fall of 2009. We're also in the early stages of planning the Yellowstone River Symposium designed to bring stakeholders on the river together to convey the state of the resource, what we've learned, unveil tools developed as byproducts of the study, and to identify the Council's role in updating the State's Water Plan as outline in SB303.

PARTNERSHIPS

The YRCDC acknowledges the importance of partnerships, which have been developed since its inception. The study area covered is immense with many diverse groups having interests in topics specific to certain portions of the river. This undertaking is truly a ground roots effort with representation from every county along the river and virtually every special interest group.

Early on, it was agreed that we could disagree. From that point, relationships have grown and the YRCDC is very concerned with representing all points of view on the river. These relationships not only include diverse groups, but many agencies (some of which are regulatory) and academics who have committed to the locally led effort.

When undertaking a study of this magnitude, it is necessary to understand the social relationships that determine how the efforts will be accepted. By having the conservation districts involved in each county, the effort takes on a local flavor with landowners being approached by other landowners and people in their community they have known for an extended period.

The feedback is honest and straightforward making the acceptance of the end product – voluntary management practices, a much more realistic goal. Without the cooperation of the landowners, very little could be accomplished, as 80 percent of the lands along the Yellowstone River are privately owned. Our partners include the following:

Carbon Conservation District
606 West Front Ave, PO Box 510
Joliet, MT 59041
Phone: (406) 962-3641

Custer County Conservation District
3120 Valley Drive East
Miles City, MT 59301
Phone: (406) 232-7905 ext. 3

Dawson County Conservation District
102 Fir Street FP
Glendive, MT 59330
Phone: (406) 377-5566

Park Conservation District
5242 Highway 89 South
Livingston, MT 59047
Phone: (406) 222-2899

Prairie County Conservation District
410 East Spring, PO Box 622
Terry, MT 59349
Phone: (406) 635-5381

Richland County Conservation District
HCR 89, Box 5165A
Sidney, MT 59270
Phone: (406) 433-2103

Rosebud Conservation District
270 South Prospect St, PO Box 1200
Forsyth, MT 59327
Phone: (406) 346-7479

Stillwater Conservation District
334 North 9th St, PO Box 48
Columbus, MT 59019
Phone: (406) 322-5359

Sweet Grass Conservation District
Hwy 10 East – PO Box 749
Big Timber, MT 59011
Phone: (406) 932-5160

Treasure County Conservation District
PO Box 288
Hysham, MT 59038
Phone: (406) 342-5510 ext. 3

Yellowstone Conservation District
1371 Rimtop Drive
Billings, MT 59105
Phone: (406) 247-4420

McKenzie County Conservation Dist.
109 5th Street SW, Box 583
Watford City, ND 58854-0583
Phone: (701) 842-3628

The United States Army Corps of Engineers (USACE) was thrust into the position of having to conduct a cumulative effects study as ordered by federal district court. Since the conservation districts also are responsible for administering the 310 permits in Montana (in addition to the ACOE's 404 permits), they felt the need to be involved. As a result, the YRCDC and the USACE signed a cost share agreement in 2004.

Greg Johnson serves as principal investigator, and represents the USACE on the TAC. Eric Laux, ACOE Lead Biologist, serves in an advisory capacity to the TAC. Tiffany Vanosdall is the newest member of the TAC, and is the USACE Project Manager for the corridor study. The majority of the federal funds for the cumulative effects study are channeled through the USACE budget.

Montana Department of Natural Resources & Conservation (DNRC), Conservation and Resource Development Division (CARDD) was instrumental in the formation of the YRCDC.

Ray Beck and Laurie Zeller played a vital role by providing support for the technical, financial, and staff support that was required to bring the council together. They continue to provide outstanding staff support and manage the pass-through funds for the YRCDC's operation expenses. CARDD also provides the majority of grant funding for executing the YRCDC's study plan.

Warren Kellogg, recent NRCS retiree and YRCDC TAC Chairman, continues to provide crucial support as a Watershed Specialist provided by funding through CARDD.

DNRC Water Resource Division (WRD) has also been very active providing a geo-hydrologist very early after the YRCDC was formed. Jim Robinson continues in that capacity and is a valued member of the TAC.

For more than sixty years, the Montana Association of Conservation Districts (MACD) has been contributing to the success of CDs all across Montana. Created in 1942, MACD is a private nonprofit association, governed by a statewide Board of Directors.
Area 4 Director, Don Youngbauer of Forsyth, Montana, and Area 2 Director Tony Barone of Sidney, Montana represent MACD on the YRCDC. Jeff Tiberi, Executive Director, works with the National Association of Conservation Districts (NACD) to influence the activities of federal agencies and Congress.

Montana Fish, Wildlife & Parks and YRCDC share a commitment to help sustain the Yellowstone River's diverse fish, wildlife and parks resources and the quality recreational opportunities that are essential to a high quality of life in Montana. Ken Fraser, Fisheries Biologist, is a member of our TAC and is actively engaged in the fisheries scope of work.

The support of the Nature Conservancy has been instrumental to the success of the YRCDC. Burt Williams played a vital role in developing the YRCDC's resource advisory council (RAC) and is currently a member of the TAC. The Nature Conservancy has also actively lobbied on behalf of the YRCDC for essential federal funding.

The United States Geological Survey (USGS) sits in an advisory capacity on the TAC. John Kilpatrick, USGS Hydrologist, is currently involved in conducting bridge surveys for the ACOE. This information is then used for hydraulic modeling by the ACOE.

The US Fish, Wildlife Service is another federal agency, which has been involved with the YRCDC since the very beginning. George Jordan, Yellowstone River Coordinator, is USFWS's current representative on the TAC and has been actively involved in matters concerning fish passage and other fish related issues.

The Yellowstone River Conservation Forum (Forum) is a network of 23 confirmed member conservation and recreation groups with ties to the Yellowstone River. Robert Lubbers represents the Forum on the RAC and is actively involved in the YRCDC's work.

Mike Penfold and the Yellowstone River Forum assisted the YRCDC early on, drafting the original standing rules, goals, and vision of the YRCDC. They have been a partner since the beginning and their input is greatly appreciated.

Yellowstone River
Conservation District Council

To help ensure the wise use and conservation of the Yellowstone River system's natural resources

YELLOWSTONE RIVER CONSERVATION DISTRICT COUNCIL
1371 Rimtop Drive
Billings, MT 59105
Telephone (406) 247-4412
Fax (888) 743-0190
http://dnrc.mt.gov/cardd/yellowstonerivercouncil/default.asp