# Recommendation Development Report

## Yellowstone Basin Advisory Council

### 2015 Montana Water Supply Initiative

Yellowstone Basin Advisory Council Meeting
Billings, Montana
December 13, 2013

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Red Lodge, Montana

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# EXECUTIVE SUMMARY

The Yellowstone Basin Advisory Council (YBAC) was formed in 2013 to advise the Montana Department of Natural Resources and Conservation on development of the Montana Water Plan (the Montana Water Supply Initiative) in the Yellowstone River Basin. The recommendations contained in this report are offered with full recognition of the prior appropriations doctrine afforded under the Montana Constitution and state law.

The YBAC was made up of 20 members spread across the reaches of the basin within Montana representing a diverse range of interests. The interests included agriculture, industry, tribal, and conservation. The YBAC also had ex-officio members from state and federal agencies with water management responsibilities.

The YBAC went through a three-phase process over an 18-month period to arrive at the recommendations contained in this report. The formation and work of the YBAC was organized under a set of Guidelines. With the exception of two recommendations, one each under Water Administration and Beneficial Use and Instream Flow Maintenance, the recommendations in this report have the consensus of the participating YBAC members. The process began with public scoping in the summer of 2013. After the scoping, YBAC members ranked the issues from scoping. In the fall of 2013, technical experts made presentations to the YBAC on the top ranked topics.

Following the information transfer, the YBAC developed preliminary recommendations for the state water plan. The process of developing recommendations within the Yellowstone River basin concluded in late April 2014. At that time, the YBAC held a three-week public comment period that included a series of meetings throughout the basin. Based upon the input received during the comment period, the YBAC finalized their recommendations on May 29. The YBAC's recommendations are documented in this Recommendation Development Report.

The council chose to make recommendations on nine issues.

- Drought readiness
- Water Information
- Integrated water quality and quantity management
- Water administration and beneficial use
- Watershed planning
- Ground water/surface water nexus
- Instream flow maintenance
- Water storage, and
- Funding.

The YBAC offers the recommendations contained in this report on these issues for inclusion in the state water plan (Montana Water Supply Initiative.)

# I. INTRODUCTION

*PURPOSE*

The purpose of this Recommendations Development Report (RDR) is to present the recommendations developed by the Yellowstone River Basin Advisory Council (YBAC) in support of the Montana Water Supply Initiative.

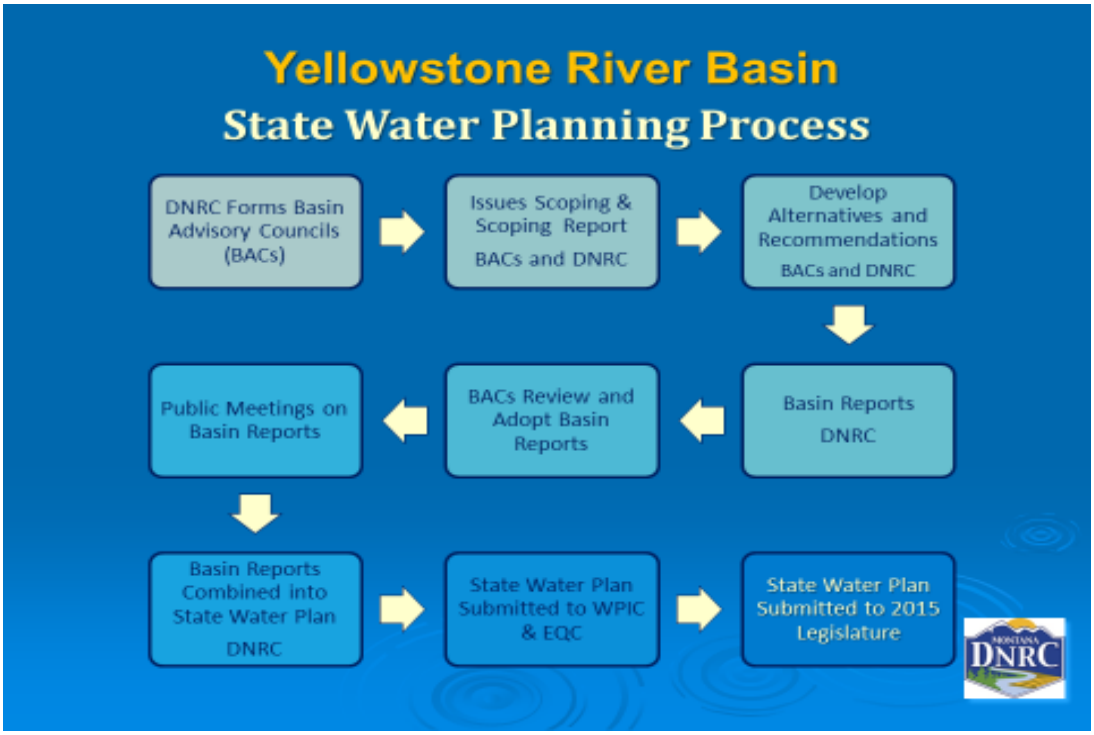
As directed by the 2013 Montana Legislature, the Water Resources Division of the Department of Natural Resources and Conservation (DNRC) launched an initiative to update the Montana State Water Plan (see Figure I.1). The 2015 Montana Water Supply Initiative (MWSI) has engaged a broad range of interests and citizens in a planning process to develop strategies and recommendations for meeting the future water needs of Montana. The YBAC operated at all times in full recognition of the prior appropriations doctrine, advancing only recommendations consistent with this framework.

The purposes of the MWSI are to: 1) provide up-to-date water resource information essential for planning and estimating future water demand, and 2) actively engage citizens in developing an adaptive State Water Plan that identifies options to meet future needs, satisfy existing beneficial uses, and protect the state's water resources. This report documents the results of the second purpose and serves as a companion document to the basin water plan which addresses the technical information requirements as set out by the Legislature in the water planning statute (85-1-203, MCA.)

The Yellowstone Basin Advisory Council (YBAC) was formed as a result of this legislative mandate and has been working for more than a year to develop recommendations to the State Water Plan that will reflect the issues and concerns of the Yellowstone River Basin. Basin Advisory Councils have also been formed to develop recommendations for the Lower Missouri, Upper Missouri, and Clarks Fork River basins. Each of the councils will produce its own basin plan. The recommendations in the individual basin plans are being used to develop the State Water Plan. The state water plan will be presented to the 2015 Montana Legislature.

The work of the YBAC to develop basin-wide recommendations was guided by The Yellowstone Basin Advisory Council Guidelines. The Guidelines were developed by the DNRC as a set of organizing principles. The Guidelines address the purpose of the YBAC, duties and responsibilities of YBAC members, member qualifications and selection, types of YBAC members, meeting procedures and meeting management, and communications. These Guidelines are posted on the Yellowstone Basin Advisory Council web page (www.dnrc.mt.gov/mwsi).

*Figure I.1 State Water Planning Process*




*REPORT ORGANIZATION*

The report is organized into five sections with appendices.

Section I. Introduction explains the purpose and contents of this report and lists the members of the Yellowstone Basin Advisory Council. The Introduction also explains the relationship of the Yellowstone River Basin Plan to the Montana State Water Plan.

Section II. Recommendation Development Process summarizes the process to develop recommendations--including the three phases of the process, how scoping was conducted, the results of the scoping effort, the meetings of the Council, the public review of the preliminary recommendations, and the process to finalize the recommendations.

Section III. Yellowstone River Basin Issues lists the issues identified during public scoping, describes the process used to prioritize and refine the issues, and provides the highlights from the Council's discussion of the issues.

Section IV. Public Comments provides an overview of comments received on the preliminary recommendations.

Section V. Final Recommendations provides the recommendations adopted by the YBAC following a three-week public comment period and consideration of the comments offered.

The RDR is a summary of the work of the YBAC. Additional documentation from all three phases of the planning process can be found on the DNRC website at www.dnrc.mt.gov/mwsi.

*Figure I.2 Phase 2 Technical Presentations to the YBAC, November 15, 2013*

### *MEMBERSHIP OF THE YBAC*

The following is an alphabetic list of the twenty members of the YBAC, the primary interests they represent, and their county of residence.

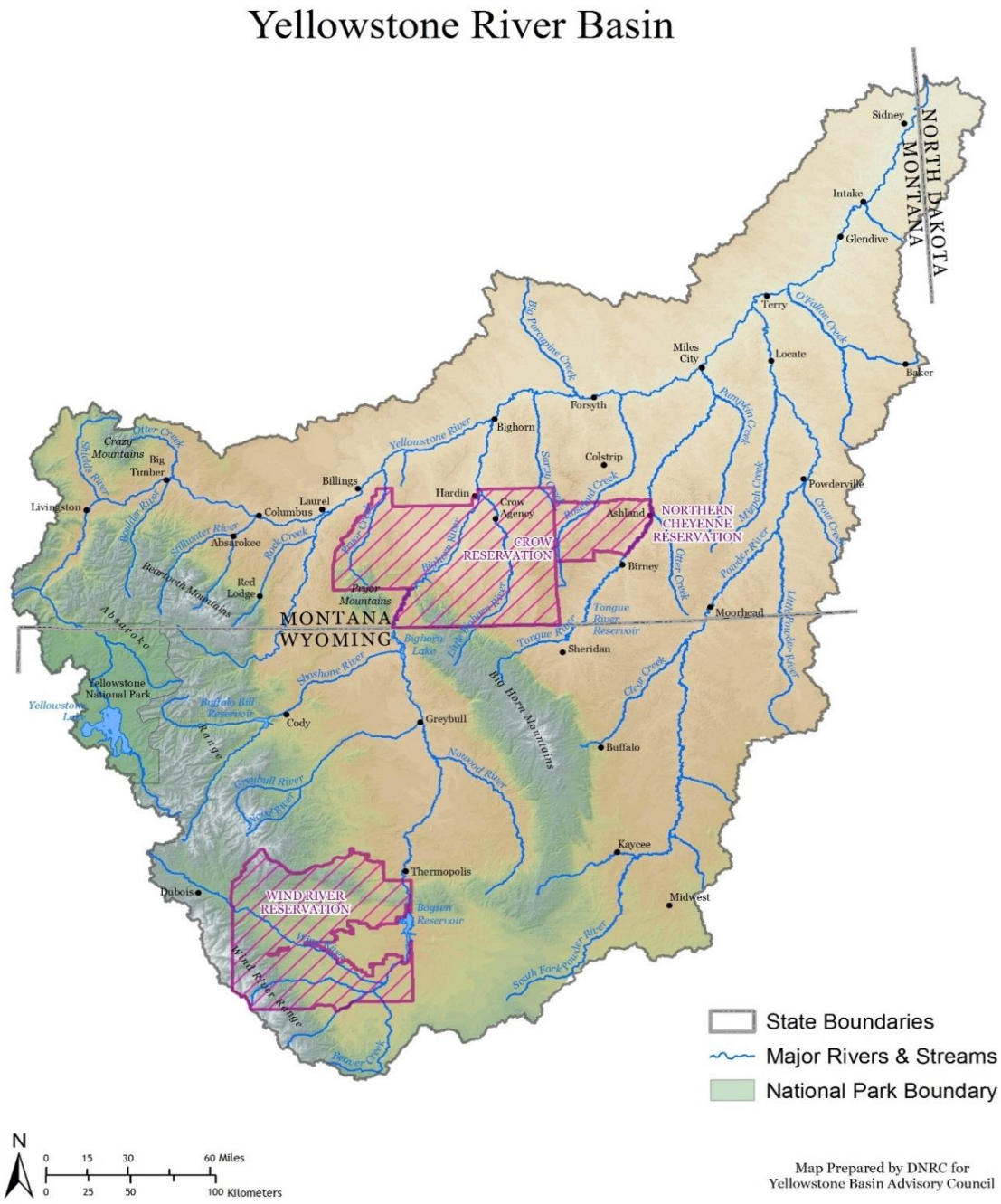
*Table I.1: Membership of the Yellowstone Basin Advisory Council*

| Council Member | County of Residence | Primary Affiliation |
|---|---|---|
| Beaudry, John | Stillwater | Industry-Stillwater Mining Co. |
| Cole, Mack (Chair) | Treasure | Agriculture-Montana Farm Bureau |
| Cumin, Cal | Yellowstone | Instream<br>Montana Wilderness Assoc.<br>Yellowstone River Parks Assoc. |
| Galt, David | Lewis and Clark | Industry-Montana Petroleum Assoc. |
| Gatzemeier, Paul | Yellowstone | Industry |
| Haidle, Lynn | Prairie | Agriculture-Conservation District |
| Lackman, Greg | Treasure | Agriculture-Conservation District |
| Lowe, Dan | Big Horn | Agriculture-Conservation District |
| Moorhouse, John (Vice-Chair) | Yellowstone | Instream<br>Yellowstone River Conservation District Council |
| Muggli, Roger | Custer | Agriculture-TY Irrigation Canal |
| Mumford, Dave | Yellowstone | Municipal Water Supply |
| O'Hair, Jerry | Park | Agriculture-Conservation District<br>Outfitter |
| Osborne, Tom | Stillwater | Industry-Hydrology Consultant |
| Penfold, Mike | Yellowstone | Instream<br>Our Montana |
| Petermann, Kay | Wibaux | Agriculture-Conservation District |
| Pulasky, John | Yellowstone | Agriculture and Economic Development |
| Pust, Steve | Richland | Agriculture-Conservation District |
| Rostad, Dan | Sweet Grass | Agriculture-Conservation District,<br>Boulder River Watershed Group |
| Sauer, Brad | Rosebud/Sweet Grass | Instream, Northern Plains Resource Council |
| Spang Gion, Shanny | Rosebud | Northern Cheyenne Nation |

YBAC Staff Support: Jim Robinson, Water Planner, DNRC; Chuck Dalby, Hydrologist, DNRC; Dr. Susan Gilbertz, Instructor Alyson Rode, Dr. Matthew Anderson, MSU-Billings; Dr. Luke Ward, Rocky Mountain College; Barb Beck, Coordinator, Beck Consulting. The YBAC also had a cadre of ex-officio members from supporting state and federal agencies. The list of ex-officio YBAC members can be found in Appendix B.

The following map depicts the entire Yellowstone River Basin. For purposes of the Yellowstone Basin Advisory Council's work the area under consideration was that which is situated within the State of Montana.

*Figure I.3: Yellowstone River Basin*



# II. Recommendation Development Process

The work of Yellowstone Basin Advisory Council culminating in the development of recommendations for the state water plan was organized into three phases. The phases are summarized below.

### *Phase 1: Public Scoping*

The Yellowstone Basin Advisory Council (YBAC) process began in the spring of 2013 with a three-step selection process for membership. During this first phase, 20 YBAC members were selected to represent a broad cross-section of interests and expertise, and to span the geography of the Yellowstone River Basin in Montana. The members and their primary affiliations are provided in Section I of this report. The YBAC was convened with the assistance of Montana State University-Billings (MSU-B.) Under contract to DNRC, MSU-B provided a coordinator, logistical support, and meeting documentation. Rocky Mountain College also assisted with meeting support. Students from both MSU-B and Rocky Mountain College helped with and observed the YBAC meetings as part of their studies.

The YBAC hosted scoping meetings to gather input from the public on water issues in the Yellowstone River basin. Additional information on the results of the public scoping is provided in this Recommendations Development Report, Section III Yellowstone River Basin Issues. A report titled *"Yellowstone River Basin Advisory Council Membership and Report of 2013 Public Scoping*" was produced documenting the establishment of the YBAC and public scoping process—the work of Phase 1. The report can be viewed at www.dnrc.mt.gov/mwsi.

### *Phase 2: Technical transfer*

During this phase, technical experts made presentations on a wide range of water-related topics during three days of YBAC meetings in November and December of 2013. The experts included staff from local, state, and federal agencies, non-profits, and organizations that directly manage water. DNRC staff identified and invited the experts based upon the issues raised during public scoping and then prioritized by the BAC. Presentations were diverse and ranged from highly scientific to day-to-day practical management and water allocation decision making. Some examples of the topics addressed included, but were not limited to: drought planning in the Blackfoot, the science of climate change, water distribution in the Musselshell drainage, federal reservoir operations, the Crow Water Compact, the water information system, instream flow tools, and water quality in the Yellowstone River basin.

The purpose of the technical transfer phase was to provide the YBAC members with information on the science and the status of on-going programs and projects. The YBAC also had the opportunity to ask questions of the experts and explore topics of interest related to the issues under consideration. The technical transfer established a foundation for subsequent recommendation development discussions by the YBAC. Many times during their deliberations, YBAC members cited knowledge they had gained from the presentations during Phase 2.

More information on the Technical Transfer, including a listing of all topics, presenters, and dates can be found in *Yellowstone Basin Advisory Council Montana Water Supply Initiative Summary*

*Report—Phase 2* at www.dnrc.mt.gov/mwsi. The website also contains the presenters' abstracts.

### *PHASE 3: RECOMMENDATION DEVELOPMENT*

The YBAC held three recommendation development meetings on February 25, March 12, and April 9 of 2014. During discussions, the YBAC recognized that they were operating within the prior appropriation legal framework. The fourth and fifth YBAC recommendation development meetings took place on April 25 and May 29. During the April 25 meeting, the YBAC reviewed the entire package of preliminary recommendations and prepared for the four public comment meetings held May 12, 13, 14, and 15 in Glendive, Forsyth, Billings and Big Timber, respectively. At their May 29 meeting, the YBAC reviewed the public comments and finalized their recommendations.

Prior to each meeting, the DNRC water planner and hydrologist developed staff papers for each issue. The staff papers contained relevant background information (existing policies, programs, statutory language, etc.) that staff thought would assist the YBAC in their discussions. The papers also contained suggestions on the types of recommendations the YBAC might wish to consider. The YBAC members stated that they found these staff papers useful in setting the stage for their deliberations and modified (edited, deleted, or added to) the staff suggestions as they deemed appropriate.

Several overarching themes surfaced as the YBAC developed and discussed the preliminary recommendations:

- The recommendations should not threaten the prior appropriation doctrine.
- The recommendations should be stated in simple, non-technical terms.
- There should not be redundancy of recommendations where issues overlap, for emphasis, or for any other reason.
- YBAC wanted to and did consider water issues within their charge regardless of which state agency has the lead for a particular issue. For example, water quality was important to the YBAC although the lead for this issue is the Montana DEQ rather than the DNRC.
- The YBAC believes that state agencies should work closely together to benefit water users and Montanans.
- The YBAC was conscious of the financial implications of recommending anything new or adding a level of effort to on-going work.

At their February 25 meeting, the YBAC members all worked together as one group on the issue statements and preliminary recommendations. The size of the group proved unwieldy. Progress was slow and YBAC members were frustrated. The facilitator recommended that the group be divided in two for subsequent discussions with the two groups reporting back to each other at the conclusion of each issue and recommendations discussion. Members of the public, ex-officio

YBAC, and others present were invited to join and observe whichever group they were most interested in.

This split group format was used for discussions to develop recommendations at the March 12 and April 9 meetings. Each group had a facilitator and recorder. YBAC members felt the discussions were more productive and allowed for better participation due to group size.

Assignments of individuals for the small group discussions were made by first asking YBAC members if they had a preference for issues they wished to work on. Any requests received were honored, and then the Chair, Vice-Chair, DNRC staff, and facilitator made the rest of the small group assignments to balance agriculture, industrial, conservation, and other interests in each of the two small groups.

*Figure II.1: Small group work on instream flow maintenance*

A high level of trust was exhibited between the YBAC members since each member was not involved in every discussion. Three things likely contributed to this trust; the appropriate balance of interests in each of the small groups, the debriefing of the small groups with the whole YBAC at the end of each discussion, and the fact that the preliminary recommendations for each issue would be revisited at one or more subsequent meetings so that additional edits could be made at that time. This also allowed members who missed a meeting to weigh in on topics discussed in their absence.

As per Section 6.1 of the YBAC Guidelines, the "*members agree to seek consensus within the Yellowstone BAC. Consensus means that even though a voting member may not agree that a given issue or recommendation warrants inclusion in the Yellowstone River Basin Plan, he/she does not disagree enough to warrant opposition to its inclusion."* The Guidelines go on to state that the members agree to participate fully and consistently in the process unless they withdraw; fully explore and understand all issues before the YBAC; and search for creative solutions to address the interests and concerns of all members. The Guidelines further state that each

member has the ability to disagree with any reasonable and/or legitimate proposal, but assume responsibility for providing constructive feedback.

Section 6.2.1 of the Guidelines addresses lack of consensus: "If consensus is not achieved on any issue/recommendation, the BAC shall report to DNRC on the issue/recommendation dividing the membership, along with a voting record. Under these circumstances a minority report will be included with any recommendation arising from a split vote."

The language in the Guidelines related to decision making and the desirability of achieving consensus for the YBAC's recommendations was visited and discussed at three of the meetings (December 13, 2013, February 25 and April 25, 2014) to ensure there was shared understanding of this goal and that members understood the options for their input should consensus not be reached for any particular recommendation.

Phase 2 and 3 YBAC Coordinator, Barb Beck, prepared a draft of this document, the Recommendation Development Report (RDR), once the YBAC had completed its work on the preliminary recommendations. The draft RDR was approved by the YBAC on April 25, 2014, for release to the public and was posted on the Yellowstone BAC web page (www.dnrc.mt.gov/mwsi) for the duration of the public comment period which ran from May 2 to May 23.

Following the close of the public comment period, the summary of public comments was provided to the YBAC via e-mail. This summary is available on the Montana Water Supply Initiative web page (www.dnrc.mt.gov/mwsi).

The YBAC held their final meeting on May 29, 2014 to consider the public comments. The comments were discussed at the meeting, public comment heard, and the preliminary recommendations were finalized.

Two recommendations did not have full consensus of the YBAC. One recommendation each under Water Administration and Beneficial Use, and Instream Flow Maintenance did not have consensus. The text of the two recommendations is as follows:

**Water Administration and Beneficial Use Issue**
**Preliminary Recommendation D.3.b**

*"Require all users to measure at or near the point of diversion from the river or stream."*

**Instream Flow Maintenance Issue**
**Preliminary Recommendation I: Channel Maintenance**

*"Recognizing lateral migration processes as important, efforts to maintain instream flows should include provisions for retaining or reestablishing alluvial channel form and function with associated biological communities."*

Those present at the May 29 meeting voted on the two recommendations and they were affirmed by the majority present. The coordinator was asked to poll those YBAC members not present so that the vote could include all YBAC members, not only those present at the meeting.

The coordinator polled the absent members via e-mail. Both recommendations were affirmed by the majority of the YBAC at the meeting and again once the polling was completed. A minority report was drafted by the coordinator and reviewed and approved by the minority voters in each case. The minority reports are presented as Appendix D of this document.

At the meeting on May 29, the YBAC worked systematically through the summary of public comments by issue and recommendation to finalize the language in the recommendations. They noted and specifically discussed comments provided by the public that were in opposition to their recommendations, new topics that they had not considered, and a variety of other suggestions from the public

To address recurring public concerns about perceived threats to the prior appropriations doctrine the YBAC directed staff to add language to both the Executive Summary and the Introduction. Language has been added explaining that the YBAC's work was conducted within the framework of the prior appropriations doctrine.

The YBAC did not make any changes to the preliminary issue statements, but did make a small number of wording changes to goal statements and recommendations in response to public comments--to better clarify their intent. The meeting notes from May 29 document the changes that were made between the preliminary and final recommendations. The YBAC did not delete any recommendations. One recommendation was added. Recommendation B.2 was added under the Ground Water/Surface Water Nexus Issue to encourage action by the legislature to optimize the use of surface and ground water resources.

The final recommendations as agreed to by the YBAC members are provided in Section V of this report.

*Table II.1: Summary of Phase 3 YBAC meetings*

| Meeting Date | Primary Agenda Topics | Products |
|---|---|---|
| Feb. 25, 2014 | • Summary report for Phase 2<br>• Status updates on all basins and MSWI<br>• Review and development of 8 issue statements<br>• Review of evaluation (screening criteria)<br>• Development of preliminary recommendations for 2 issues | • First draft issue statements for 8 issues<br>• Adoption of screening criteria<br>• Preliminary recommendations for the Water Information and Water Storage issues |
| March 12, 2014 | • Development of preliminary recommendations on 4 issues | • Preliminary recommendations for 4 issues—Water Administration and Beneficial Use, Watershed Planning, Drought Readiness, and Ground Water/Surface Water Nexus. Funding issue added |
| April 9, 2014 | • Discussion of draft fracking position paper<br>• Review of preliminary recommendations for first 7 issues, development of preliminary recommendations for final 2 issues<br>• Public comment meetings | • YBAC position on fracking for the RDR,<br>• Consensus on preliminary recommendations for the five March 12 Issues<br>• Preliminary recommendations for the Water Quality/Water Quantity and Instream Flow Maintenance issues |
| April 25, 2014 | • Review of preliminary recommendations on last two issues (from April 9 meeting)<br>• Review of the RDR draft for public comment<br>• Public comment meetings and process<br>• Evaluation of YBAC's work to develop recommendations for the MSWI | • RDR with final package of preliminary recommendations approved for public comment meetings<br>• YBAC commitments to attend public comment meetings<br>• Self- evaluation of YBAC and lessons learned |
| May 29, 2014 | • Review of public comments | • Finalize preliminary recommendations |

# III. YELLOWSTONE RIVER BASIN ISSUES

Issue development began during Phase 1 of this project. Four public scoping meetings—one each in Glendive, Forsyth, Billings, and Big Timber were advertised and held in March, April and May of 2013. There were a total of 150 participants at these four regional meetings.

Using a social science technique (during the Phase 1 Scoping process) called Q-Sort, five archetypal views emerged with respect to the Yellowstone River Basin. Simply put, an archetype is a pattern. Q-Sort documents the variety of legitimate perspectives held in the Yellowstone River Basin. The five views were:

- Pro Development,
- Pro Ecosystems,
- Pro Irrigation/Anti-Markets,
- Pro Irrigation/Pro Markets, and
- Pro Storage and Conservation.

Based on the information obtained (through a questionnaire at the Phase 1 Public Scoping meetings) the Q-Sort identified three statements that had strong positive agreement across the participants. The following three statements represent common and agreed-upon values among the people of the Yellowstone River Basin. The YBAC considered these statements in selecting issues for further discussion.

1. As we move into the next decades, water management will become more complex due to interstate demands, both upstream and downstream,
2. The lack of water information hinders water development,
3. The number one issue for water planning is to prepare for future severe droughts and precipitation events.

The public scoping meetings were organized as roundtables to provide the opportunity for participant discussion. Each discussion resulted in a list of concerns and an audio recording. The content was organized into themes and then distilled into a primary set of concerns. Twenty-eight primary concerns were voiced by the public during the roundtable discussions. This list of 28 concerns can be found in the *"Yellowstone River Basin Advisory Council Membership and Report of 2013 Public Scoping*" posted on the Montana Water Supply Initiative's webpage of DNRC's website.

Following the identification of the 28 primary concerns, each of the YBAC members was asked to rank his or her top seven issues in terms of importance. The YBAC's Ex-officio members also ranked their top seven issues separately. (The interests of the YBAC and Ex-officio members were closely aligned with each other.) The rankings were converted to numerical scores based on the number of YBAC members who had ranked an issue as their #1 priority and the number of YBAC members who had ranked an issue within their top 7 issues. At the December 13, 2013 YBAC meeting the group went through an exercise to look at the calculated rankings of the 28 issues and select those issues that they determined were the highest priority issues and for which they would discuss developing a recommendation for the Yellowstone River Basin plan.

The following issues—not prioritized against each other – were selected for further discussion and the possible development of recommendations; drought readiness, enforcement/senior rights, water quality, instream flows, irrigation technologies, storage capacities, gauges and monitoring, and beneficial use.

During this discussion it became apparent that many of the issues listed above were related to each other and to issues that had fallen lower on the overall 28-issue ranking list. And, it was determined that many, if not all of the issues, could be seen as falling under a general category of "water availability." For example, availability could encompass the issues of wildlife and fisheries, recreation, and tribal reserved rights.

Initially, there was a desire to address all of the issues that had arisen during scoping. However, a candid discussion about the time and resources available to the YBAC for development of recommendations resulted in a decision to set aside and/or remove the following issues from consideration at this time: future allocations/additional rights, reservations (protected Montana rights), planning, incentives and support for new technologies and conservation, current allocations, and hydro-fracturing a.k.a. fracking.

The YBAC discussed a number of issues surrounding the use and generation of water associated with petroleum extraction and deliberated use of water for fracking on several occasions during the course of their meetings. After considering both oral and written comments, the YBAC decided to develop a position paper on the issue. That paper was subsequently drafted and reviewed by the YBAC at their April 9 meeting. At that meeting the YBAC decided by consensus to explain their position with the following language:

*"As directed by the Montana Legislature, the Water Resources Division of the DNRC has launched an initiative to update the Montana State Water Plan. During discussions with citizens in the scoping process, oil and gas "fracking" was often mentioned in comments as an issue of concern. After discussion at several YBAC meetings, it is the position of YBAC to not include recommendations regarding issues surrounding "fracking" practices for oil & gas exploration in the Yellowstone River Basin. The YBAC recognizes that "fracking" for oil and gas is a beneficial use of water under Montana statute. The role of the YBAC does not include making specific recommendations regarding issues and concerns about any of the consumptive uses, including "fracking," in the Yellowstone Basin."*

Once the 28 issues had been distilled to eight issue topics through an iterative process with DNRC staff and YBAC input, the YBAC proceeded by first defining an issue, then describing the desired condition with respect to the issue. After doing this the YBAC members considered what they had learned about the issue during scoping and what they had learned from the technical experts in Phase 2. This formed the basis for developing the preliminary recommendations.

Drafts of the Issue Statements were initiated by DNRC and ex-officio staff and brought to the YBAC. The YBAC first reviewed and edited all of the original eight issue statements at the February 25, 2014 meeting. Staff took the language suggested by the YBAC and reworked the issue statements. The statements were then revisited and finalized by the YBAC members over

the course of the next two meetings (March and April), during the focused discussions for each of the issues when preliminary recommendations were developed.

The following are the issue statements as adopted by the YBAC for the original eight priority issues identified by the YBAC, plus a ninth issue that arose during the March 12 meeting discussion. The 9th issue was funding. The YBAC's rationale for the importance of these issues and their decision to select and discuss each issue is provided in these issue statements.

*DROUGHT READINESS:* Numerous extended dry periods are documented in the Yellowstone hydrologic record. Water availability and drought preparedness are motivating factors in any water resource sustainability strategy. Many tools and policies are available, including conservation, to assist with effective water allocation that maintains economic viability and preserves resource values during drought (see Water Information, Watershed Planning, and Water Administration).

*WATER INFORMATION:* The adequacy of existing water information, along with its availability, and ease of access to water users, water managers, and the public is an issue. Sufficient water data needs to be collected and made available so that all relevant water information pertaining to a water body can be readily accessed and used to make informed decisions.

*INTEGRATED WATER QUALITY AND QUANTITY MANAGEMENT:* Water use and water quality are linked. Every use of water affects its quality and as water consumption increases or the characteristics of the supply change, new and alternative uses can be affected. Water quality is an important issue in all areas of the Yellowstone River basin and influences beneficial uses.

*WATER ADMINISTRATION AND BENEFICIAL USE:* Enabling fairness under Montana's water law is a significant issue in the Yellowstone Basin. Uncertainty is created by the large number of unused claims in the DNRC water rights system and senior users are sometimes unable to meet their water right due to misappropriation by other users. Any strategy to meet future water demand and put water to beneficial use needs to include examination of Montana's water right system so as to identify opportunities to maximize administrative efficiency and ensure proper monitoring and enforcement of water rights.

*WATERSHED PLANNING:* Many water resource problems are watershed-specific and their solution requires a collaborative stakeholder approach within small- to medium-sized watersheds within the Yellowstone River basin, while other issues require a basin-wide approach. The need for planning and technical services, and access to information to develop and implement watershed plans, is expected to increase as demand for water increases. Existing funding mechanisms and personnel to support locally-led watershed planning are presently insufficient to meet current and projected demand.

*GROUND WATER/SURFACE WATER NEXUS:* Ground and surface water are linked, often in complex interactions that can only be characterized through site-specific long-term measurement and monitoring projects. Although ground water usage in relation to surface water is relatively minor in the Yellowstone River basin, localized problems exist, particularly in areas impacted by land use changes or conversion from flood to sprinkler irrigation.

*INSTREAM FLOW MAINTENANCE*: Despite the lack of on-stream main stem storage reservoirs, the natural hydrology of the Yellowstone River has been significantly altered by present-day levels of development. Instream flow maintenance pertains to maintenance of a stream's complete hydrologic regime. Maintenance of instream flows is a significant issue, not only on the main stem Yellowstone River and its larger tributaries, but also on smaller tributaries necessary for the functionality of the river system.

*WATER STORAGE:* Water storage is an important part of integrated water management in the Yellowstone River Basin. However, traditional storage projects (dams and reservoirs) are expensive to plan, construct, manage, and maintain. In addition to construction of new storage, alternatives such as the prioritization of uses for water stored within existing reservoirs, maintenance of storage facilities, and modification of existing projects are important tools to mitigate effects of water supply variability. Managing stream and wetland systems to enhance natural channel and floodplain storage can augment structural measures by reconnecting streams to their floodplain, protecting wetlands, and encouraging healthy riparian vegetation.

*FUNDING:* The legislature directed that DNRC update the MWSI. In order to implement the statewide water plan, funding is required.

*Figure III.1: YBAC members Cole and Spang Gion at the April 9 meeting*

*DECISION CRITERIA*

Early in the discussion about developing recommendations for the priority issues (December 2013), the YBAC addressed the need for screening or evaluation criteria. DNRC staff presented a list of possible decision criteria for the YBAC's consideration. Six possible criteria were suggested. Following discussion, the YBAC decided upon four questions they would use to evaluate potential recommendations.

1) Is it technically feasible?
2) Is it politically feasible?
3) Is it financially feasible?
4) Is it socially acceptable?

The YBAC chose not to eliminate or screen out potential recommendations that would require a change in statute or that did not apply to the whole basin. In other words, if a change in statute would be required to implement one of their recommendations or if one of their recommendations applied to an area within, but not to the whole basin, the YBAC wanted those recommendations to go forward.

These four screening questions (decision criteria) were recorded on a flip chart and consulted at subsequent meetings when preliminary recommendations were reviewed. Rather than taking each recommendation through the evaluation questions in a formal step-by-step process, the discussions typically considered the criteria when a YBAC member voiced concern that a recommendation would not pass one or more of the screening questions. Many of these were judgment calls on the part of the YBAC, but there was general consensus each time a member suggested that a recommendation under discussion would not pass one of screening questions. A number of ideas under discussion were eliminated based on application of the screening questions.

# IV. Public Comments

The YBAC held four public comment meetings on the preliminary recommendations. The meetings were advertised in two ways. First, they were advertised by a press release submitted to the newspapers throughout the river basin and secondly, an e-mail was sent to interested parties, conservation districts, and watershed groups. YBAC members at their discretion circulated the e-mail invitation to their own individual contacts. In addition, members of the MSU-Billings team made approximately 50 phone calls for each of the public comment meetings to persons who, in other circumstances, have demonstrated an interest in the water resources of the Yellowstone River basin. These calls were made approximately one week prior to the meeting dates.

*Table IV.1: Public Comment Meetings Summary*

| Date | Location | Number of public Attendees | YBAC members in attendance |
|---|---|---|---|
| May 12 | Dawson Community College<br>Glendive | 13 | Mack Cole<br>Kay Petermann<br>John Pulasky<br>Steve Pust<br>Dan Rostad |
| May 13 | Forsyth Public Library<br>Forsyth | 14 | Mack Cole<br>Greg Lackman<br>John Moorhouse<br>Roger Muggli<br>Shanny Spang Gion |
| May 14 | MSU-Billings Library<br>Billings | 38 | Mack Cole<br>John Beaudry<br>Cal Cumin<br>Paul Gatzemeier<br>John Moorhouse<br>Mike Penfold<br>Dan Rostad |
| May 15 | Big Timber Public Library<br>Big Timber | 31 | Mack Cole<br>Dave Galt<br>Jerry o'Hair<br>Tom Osborne<br>John Pulasky<br>Dan Rostad<br>Brad Sauer |

At least five YBAC members were present at each meeting to listen to comments and respond to questions. DNRC staff Jim Robinson and Chuck Dalby attended each meeting with local DNRC staff present at the Billings and Big Timber meetings. Facilitator, Barb Beck also attended the meetings. Drs. Matt Anderson and Alyson Rode from MSU-Billings, and Dr. Lucas Ward from

Rocky Mountain College, plus three students were present at all four meetings providing logistical support and documenting comments.

*Figure IV.1: Participants at the Forsyth public comment meeting. Photo Courtesy of Chuck Dalby*

All of the meetings followed the same agenda and format. First, YBAC Chair, Mack Cole welcomed the participants and thanked them for coming. DNRC Water Planner, Jim Robinson then made a brief presentation on the state water planning process. Facilitator, Barb Beck followed with a second presentation about the YBAC and the process the YBAC has used to develop the preliminary recommendations. Participants were offered the opportunity to ask questions.

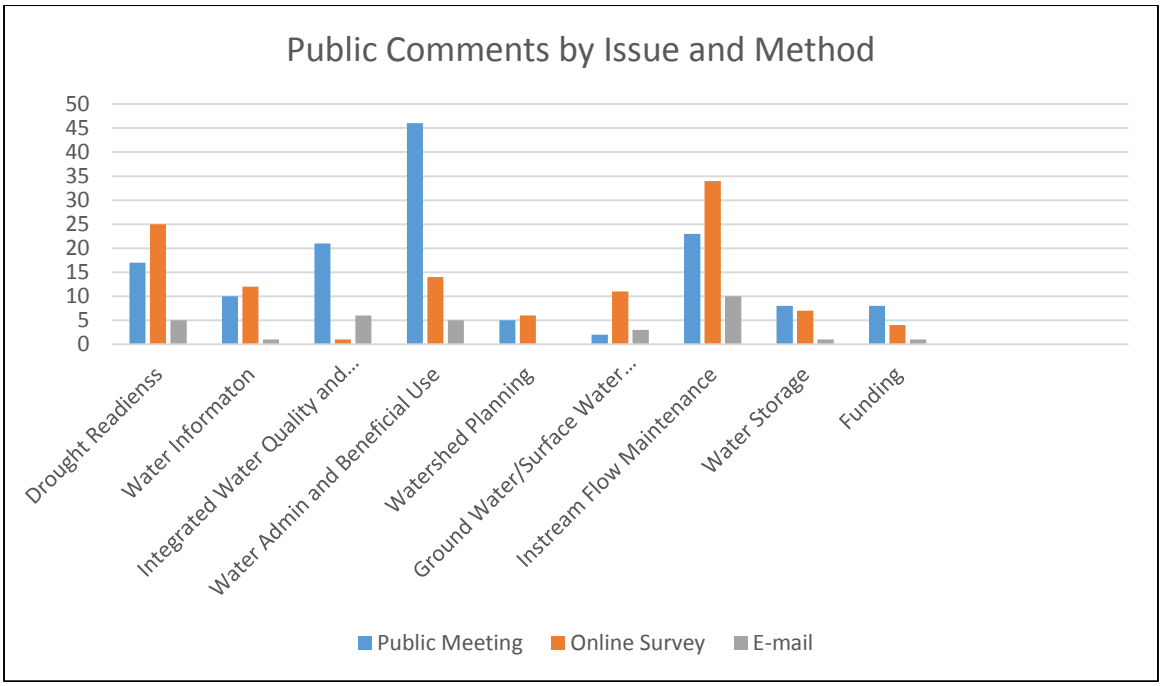
Following the presentations participants were encouraged to circulate around the meeting room. Large sheets containing the nine issue statements and preliminary recommendations were posted on the walls. One of the MSU-Billings/Rocky Mountain College staff members was available next to each set of issue charts with recommendations to record comments on a flip chart. The college staff visited one-on-one with the participants and recorded their comments on the charts during the discussions. YBAC members and DNRC staff circulated around the room informally. College staff was present to record comments and not as subject matter experts. When content questions arose they engaged either a member of the YBAC or DNRC staff for answers.

Comments were accepted in three ways—verbally at the meetings, through the DNRC's website, and on comment sheets available at the meetings. DNRC's mailing address was provided on the

comment sheets for individuals that wished to take the form and send it in at a later time. The comments were entered into spreadsheets by meeting location and by issue following the meetings.

The YBAC received 298 comments--124 comments through the online survey, 34 via e-mail, and 140 at the public meetings. No comment sheets were returned. The 124 comments from the online survey came from 46 respondents. Respondents were able to make more than one comment. The large majority of the online respondents characterized themselves as "individuals." Please see the figure below for the numbers of comments received by issue. Ninety-six individuals (not counting YBAC members, project staff, or other DNRC employees) attended the public meetings. Commenters who provided their e-mail addresses have been added to the interested parties e-mail list so that they can receive future updates on the Montana water planning process.

*Figure IV.2 Public Comments*




Following the close of the public comment period all comments were compiled into spread sheets and organized under one of the nine issues. The YBAC members asked that the comments be summarized by staff rather than forwarding all comments to the YBAC members. Comments were compiled by Water Planner, Jim Robinson, then summarized by YBAC Coordinator, Barb Beck, who then organized the comments into one of four categories by each major issue. The four categories are: 1) comments in support of YBAC recommendations, 2) new issues not considered by the YBAC, 3) comments in opposition to YBAC preliminary recommendations, and 4) other. New issues, comments in opposition to recommendations, and other comments potentially warranted additional YBAC consideration.

This summary looked at the content of every comment to identify substantive issues within the scope of the YBAC's work. Comments were not considered to be votes. A number of the comments were questions rather than comments and these were not included in the summary report unless they suggested a certain course of action for a recommendation. Each comment was treated individually without regard to whether it originated from one or more individuals. Therefore, the number of comments received does not equal the number of commenters. Most individuals commented selectively on one or more issues/recommendations, but not on all of the issues.

There were many comments in support of the YBAC's preliminary recommendations, several issues that received very few comments, and several issues that received a large number of comments. The Instream Flow Maintenance, Water Administration and Beneficial Use, and Drought Readiness issues in descending order together received approximately half of all comments. The Watershed Planning, Water Storage, Ground Water/Surface Water Nexus, and Funding issues each received a much smaller number of comments.

Concerns about protecting existing water rights and following the prior appropriations doctrine were expressed repeatedly, crosscut most of the issues, and were the most frequently expressed concerns. Commenters also criticized the YBAC under many of the issues for their decision not to make recommendations specific to oil and gas use of water, particularly with respect to fracking. Other general comments offered in response to many recommendations were the use of undefined, vague or technical terms, and the lack of specificity or detail in the recommendations. Some commenters wondered how certain recommendations would be implemented and how they would be paid for. Although there were relatively few comments entered under the Funding Issue section, concerns about where funds for implementation will be found were expressed under many of the other issues.

The two recommendations that generated the most disagreement in the comments were the recommendation to require measurement of water used for irrigation (Water Administration and Beneficial Use Recommendation D.3.b) and the recommendation for channel maintenance that recognizes lateral migration processes as important (Instream Flow Maintenance Recommendation I.) These are issues that the YBAC discussed at length in developing their preliminary recommendations and the issues remain of intense interest to the public. Comments were received both in support and opposition to these two recommendations. There was no consensus expressed by the public.

# V. Final Recommendations

These final recommendations are the result of discussion and deliberation by the YBAC over many months and in consideration of the comments submitted by the public.

**Drought Readiness Issue Statement:** Numerous extended dry periods are documented in the Yellowstone hydrologic record. Water availability and drought preparedness are motivating factors in any water resource sustainability strategy. Many tools and policies are available, including conservation, to assist with effective water allocation that maintains economic viability and preserves resource values during drought (see Water Information, Watershed Planning, and Water Administration).

Goal: *Provide sufficient information, and legal and administrative capacity to minimize adverse impacts during times of water scarcity.*

Objectives: (desired conditions)

## A. Support and expand Montana's existing drought readiness efforts at local levels.

1. Expand the capability of the Governor's Drought and Water Supply Committee through implementation of information systems to support drought monitoring and availability of water information to water users and watershed groups for purposes of watershed planning.

2. Strengthen support and funding for programs, including Montana university and college programs--including the Montana Climate Office--involved in drought monitoring and forecasting;

3. Establish a statewide task force to coordinate water and climate information in an effort to eliminate duplication.

4. Develop adequate funding sources and incentives for mitigation of drought impacts for all water users.

## B. Strengthen existing policies and statutes necessary for effective management of water resources.

1. Recommend changes, if necessary, to statutes and DNRC policies regarding water planning and management to improve the availability and distribution of water during droughts.

2. Recommend changes, if necessary, to statutes and DNRC policies that encourage conservation of water for all water uses and provide incentives for implementation of conservation measures.

C. **Provide tools (policies and legislation) for temporary water-supply management during extended droughts**. (The implementation items below would require assurances that the water-right holders' original entitlement and priority date remain unaffected, once the temporary use terminates):

1. Explore the feasibility of water banks.

2. During a declared drought emergency, develop water-use permits under an expedited process— drought permits would be limited to replacement of water not available under a permanent water right.

3. Develop temporary emergency water-use permits that include changes in type of use (including instream flow), place of use or point of diversion of an existing water right.

WATER INFORMATION ISSUE STATEMENT: The adequacy of existing water information, along with its availability, and ease of access to water users, water managers and the public is an issue. Sufficient water data needs to be collected and made available so that all relevant water information pertaining to a water body can be readily accessed and used to make informed decisions.

Goal: *Provide sufficient water information to efficiently and legally administer water rights, and promote an integrated approach to water resource management.*

Objective(s): (desired conditions)

A. **Education and Outreach**. Provide adequate education and outreach to ensure water user understanding of Montana water right law, hydrologic principles, water commissioner competency, and uniform enforcement of water right decrees.

1. Prepare an Education and Outreach Plan that examines the existing programs and curriculum offered by DNRC and the Montana Watercourse for water-related training and education to determine the need for and costs associated with expanding these programs.

B. **Water Information System**. Improve Montana's Water Information System to allow better access to water supply and availability information and promote an integrated approach to water resource management.

1. Upgrade the accuracy of Montana's Spatial Data Infrastructure (MSDI) Hydrography Framework Layer for purposes of organizing and distributing water information such as:

a. Dam and reservoir mapping,
b. Aquatic habitat information,
c. Water right diversions,
d. Water quality data and discharge permits,
e. Wetlands data,
f. Floodplains, Riparian Zones and Channel Migration Zones.

2. Invest in analytical tools that provide basic hydrologic information on which to base management decisions by:

   a. Conducting a Yellowstone River Basin Water Availability Assessment using a water availability model with updated software and inputs based on known factors such as decrees, compacts, the Yellowstone water reservations, historic stream gauge records, and updated water use estimates to determine the effect of increased water use and climate variability on Yellowstone water users, and

   b. Continuing development of StreamStats - an interactive, Web-based map application for providing streamflow statistics, such as the 100-year flood and the 7-day, 10-year low flow on streams and rivers with limited hydrologic information.

INTEGRATED WATER QUALITY AND QUANTITY MANAGEMENT ISSUE STATEMENT: Water use and water quality are linked. Every use of water affects its quality and as water consumption increases or the characteristics of the supply change, new and alternative uses can be affected. Water quality is an important issue in all areas of the Yellowstone River basin and influences beneficial uses.

Goal: *The desired condition is one in which current and future water use and water quality are balanced in the water administrative and regulatory framework*.

Objectives: (desired conditions)

A. State Management of Water Quality in Water Quantity Allocation. DNRC and DEQ should determine the best administrative and organizational procedures to assure coordination and carrying out current law and regulations related to:

   1. Changes in water quality that would adversely affect the ability of an existing appropriator to exercise his/her water right.

   2. Changes in water quality that would make a water body unfit for supporting beneficial uses.

   3. Changes in the wetland and riparian conditions necessary to sustain water quality.

   4. Changes in water quality or quantity that would inhibit the ability of existing discharge permit holders to satisfy effluent limitations.

5. Maintain consideration of current and future flow in authorizing point source discharges.

6. Continue assessment of state waters for flow-related, beneficial use impairments.

7. Provide financial and technical support for activities designed to restore water quality in waters that currently do not support their beneficial uses.

## B. Support Activities and Programs to Benefit Both Water Quantity and Water Quality.

1. Maintain funding for improving and protecting water quality using best management practices at all levels of implementation. Promote Integrated Water Resource Management by improving coordination among state and federal agencies, tribes, local watershed groups, and the public.

**WATER ADMINISTRATION AND BENEFICIAL USE ISSUE STATEMENT:** Enabling fairness under Montana's water law is a significant issue in the Yellowstone Basin. Uncertainty is created by the large number of unused claims in the DNRC water rights system and senior users are sometimes unable to meet their water right due to misappropriation by other users. Any strategy to meet future water demand and put water to beneficial use needs to include examination of Montana's water right system so as to identify opportunities to maximize administrative efficiency and ensure proper monitoring and enforcement of water rights.

Goal: *Improve the existing water right administrative system to ensure water allocation according to established priority and identify unallocated water to satisfy current and future claims.*

Objective: (desired conditions)

## A. Water Right Adjudication Process

1. Maintain necessary water right claims examination services provided by the DNRC in support of the Montana Water Court.

## B. Abandoned (Orphan) Water Rights

1. Provide clarity through legislation to the administrative and water court processes used to identify abandoned and overstated water rights.

## C. Water Right Enforcement. Ensure proper measurement and distribution of water under decree.

1. Enact legislation that allows water right holders to permanently establish enforcement projects through an administrative process, in addition to the legal process (filing suit in district court.)

2. Enact legislation that grants DNRC authority to directly enforce against illegal water use, including the imposition of penalties substantial enough to discourage such use.

3. Develop a method for disseminating information related to illegal water use complaints.

4. Maintain a water rights change process that requires applicants to accurately identify and describe historic use.

## D. Measurement, Monitoring and Assessment. Require measurement and increase monitoring so that it is sufficient to understand water supply and use, enforce water right decrees and compacts, and to better understand the relationship between water quality and quantity.

1. Maintain the existing stream gauge network operated by the USGS for key mainstem and tributary gauges via the USGS/DNRC Cooperative Agreement Program.

2. Institute a telemetered (real-time) stream gauge program operated by DNRC/MBMG.

3. Strengthen the capability to conduct an inventory of consumptive and non-consumptive uses.

    a. Develop the capability to measure agricultural water use using remote sensing, compare results of pilot studies to previous methods, and evaluate the overall cost-effectiveness of using remote sensing to measure water use.

    b. Require all users to measure at or near the point of diversion from the river or stream.

4. Provide assistance to water users to measure water at or near the point of diversion from a stream.

    a. Offer a tax credit for the cost of installation.

    b. Expand the DNRC Irrigation Development Program to provide grant dollars to pay costs.

    c. Facilitate the installation of measurement devices on development of Renewable Resource Grant applications for large volume ditches.

5. Knowing that these recommendations will incur costs, encourage multiple party collaborations and partnerships that yield creative funding mechanisms to pay for them.

WATERSHED PLANNING ISSUE STATEMENT: Many water resource problems are watershed-specific and their solution requires a collaborative stakeholder approach within small- to medium-sized watersheds within the Yellowstone River basin, while other issues require a basin-wide approach. The need for planning and technical services, and access to information to develop and implement watershed plans, is expected to increase as demand for water increases. Existing funding mechanisms and personnel to support locally-led watershed planning are presently insufficient to meet current and projected demand.

Goal: *Establish a collaborative problem-solving approach to watershed planning resource management.*

Objectives: (desired conditions)

A. **Resolve Basin-Wide Water Management Issues.** Increase interaction and communication between water users, watershed groups, technical specialists, policy-makers, and water management agencies at all levels of government.

   1. Continue to fund a basin-wide stakeholder group (such as the Yellowstone BAC) The purpose of the BAC would be to review progress on recommendations developed during the 2013/2014 biennium, advise DNRC on future water resource management priorities, and serve as a forum on basin-wide water-related issues.

   2. Expand the scope of this group to include water quality, instream flow, ground water, funding amounts and sources, and other related issues.

B. **Resolve Watershed-Scale Water Management Issues.** Increase interaction and communication between watershed stakeholders.

   1. Use existing and potential funding mechanisms to provide technical and financial support to collaborative watershed groups in order to support recommendations in this plan.

GROUND WATER/SURFACE WATER NEXUS ISSUE STATEMENT: Ground and surface water are linked, often in complex interactions that can only be characterized through site-specific long-term measurement and monitoring projects. Although ground water usage in relation to surface water is relatively minor in the Yellowstone River basin, localized problems exist, particularly in areas impacted by land use changes or conversion from flood to sprinkler irrigation.

Goal: *Better manage water resources (rivers, streams, lakes, aquifers, wetlands, riparian zones, etc.) in the Yellowstone River basin by obtaining information on surface water and groundwater sufficient to determine the potential effects of existing and future land use changes and drought, especially in aquifers and surface waters that are necessary to sustain beneficial uses.*

Objectives: (desired conditions)

A. **Ground Water Measurement, Monitoring and Assessment.** Obtain information sufficient to understand the potential consequences of land use change on ground and surface water resources.

1. Continue and, if necessary, expand the Montana Bureau of Mines and Geology groundwater monitoring and assessment programs.

B. **Ground Water/Surface Water Interaction.** Obtain information sufficient to understand the localized effects of ground water/surface water interaction.

1. Establish a surface water assessment program jointly operated by DNRC and MBMG to investigate the interaction between ground water and surface water at sub-basin scales.

2. The legislature should review and make any changes in statutes necessary to optimize use of surface water and ground water resources.

C. **Ground Water Conservation**. Conserve ground water resources in the Yellowstone River basin.

1. Encourage local jurisdictions (i.e. counties, cities and conservation districts) to identify the hydrologic effects of land use change.

2. Encourage landowners to reduce the amount of discharge from uncontrolled flowing wells in the lower Yellowstone and Powder River basins by proper winterization and installation of discharge control valves using a combination of DNRC-Conservation and Resource Development Division (CARDD), private grant funds, NRCS grant funds, and landowner in-kind services to install and operate.

INSTREAM FLOW MAINTENANCE ISSUE STATEMENT: Despite the lack of on-stream main stem storage reservoirs, the natural hydrology of the Yellowstone River has been significantly altered by present-day levels of development. Instream flow maintenance pertains to maintenance of a stream's complete hydrologic regime. Maintenance of instream flows is a significant issue, not only on the main stem Yellowstone River and its larger tributaries, but also on smaller tributaries necessary for the functionality of the river system.

Goal: *Provide sufficient protection for instream flows within the prior appropriation framework to maintain aquatic ecology and for other values, such as recreation and aesthetics.*

Objectives: (desired conditions):

A. **Provide specific "Change in Use" mechanisms that allow and incentivize users to assist in maintaining instream flows without compromising their ability to use water or fundamental water right.** Usage of existing tools, such as temporary

and permanent changes to instream flow, should be expanded and promoted to protect instream flows within the prior appropriation framework.

B. Improve recognition of the surface water/ground water nexus. Recognizing the hydrologic interconnectivity between ground water and surface water, and affirming the need to protect instream flows, the waters of the basin should be better managed as an interconnected system.

C. Impact of future water development. In the context of existing and future development demands, the ability of the existing water supply to meet instream flow rights must be considered in approving new water developments (see B.2.a - water availability assessment under Water Information.)

D. Yellowstone Water Reservation Review Process. The water reservation review process established by the Board of Natural Resources and Conservation (now DNRC) should be implemented for all Yellowstone Water Reservations to determine whether or not the objectives of the individual reservations are being met and, if necessary, whether individual reservants have prepared water conservation and drought contingency plans as required by the Order of the Board.

E. Maintain an intact hydrologic regime. Manage river and stream flows in ways that avoid threats to the long-term health or survival of native species and implement practices that maintain or restore indigenous ecological communities, processes and functions.

F. Reservoir Management. Procedures to maintain instream flows should be developed with attention to the effects of new and existing dams on sediment transport, water temperature and the hydrologic regime. Strategies for water releases and sediment management should minimize the negative effects to riverine processes below the dam.

G. Longitudinal Connectivity. Procedures to maintain instream flows should recognize and document the importance of connectivity within stream systems, and efforts should be made to restore connectivity where needed by modifying in-channel barriers.

H. Drought Planning. Drought planning efforts within the Yellowstone Basin must include the development of legal, physical, and management mechanisms or plans to implement water conservation during drought periods to protect essential instream flows.

I. Channel Maintenance. Recognizing lateral migration processes as important, efforts to maintain instream flows should include provisions for retaining or reestablishing alluvial channel form and function with associated biological communities.

J. Continued Study and Monitoring. As the science of instream flow advances and more field data is collected, evaluation of instream flow needs must be ongoing.

Monitoring riverine resource responses to instream flow prescriptions is a fundamental component of effective instream flow maintenance.

WATER STORAGE ISSUE STATEMENT: Water storage is an important part of integrated water management in the Yellowstone River Basin. However, traditional storage projects (dams and reservoirs) are expensive to plan, construct, manage, and maintain. In addition to construction of new storage, alternatives such as the prioritization of uses for water stored within existing reservoirs, maintenance of storage facilities, and modification of existing projects are important tools to mitigate effects of water supply variability. Managing stream and wetland systems to enhance natural channel and floodplain storage can augment structural measures by reconnecting streams to their floodplain, protecting wetlands, and encouraging healthy riparian vegetation.

Goal: *Maintain existing storage projects and with the exception of the main stem Yellowstone River, develop new storage, including non-structural alternatives such as enhanced groundwater recharge, to improve seasonal and year-to-year availability of water for new and existing uses of water.*

Objectives: (desired conditions)

A. Prioritize New Projects. Affirm the use of criteria contained in the Montana Water Storage Prioritization Policy (MCA §85-1-704 (2)(a) through (2)(j)) as applied to the prioritization of new storage projects. Enhancing alluvial aquifer recharge via wetland and riparian zone improvement projects should also be considered as a means for reducing flow variability and maintaining the natural hydrologic regime for streams and rivers in the Yellowstone basin.

B. Maintain Existing Storage Projects. Affirm the use of criteria contained in the Montana Water Storage Prioritization Policy (MCA §85-1-704 (3)(a) through (3)(c)) as applied to setting priorities among storage rehabilitation projects.

C. Allocation of State Funds for Storage Projects. Affirm the use of criteria contained in the Montana Water Storage Prioritization Policy (MCA §85-1-704 (4)(a) through (4)(c)) as applied to setting budget priorities among new storage construction and rehabilitation projects.

D. Water Storage Financing. The State of Montana should focus resources on understanding, coordinating, and improving funding programs for water storage development, operation, maintenance, and rehabilitation.

FUNDING ISSUE STATEMENT: The legislature directed that DNRC update the MWSI. In order to implement the statewide water plan, funding is required.

Goal: *Identify current and potential funding sources*.

Objective: (desired conditions)

## A. Revenue Sources: Look for revenue from new and existing sources.

1. Look for revenue sources from all those who benefit from access to state water resources (including recreationists, irrigators, municipalities, water-rights holders, etc.)
2. Look for revenue from existing funding sources (such as the Resource Indemnity Trust and other programs for example.)

# APPENDICES

## APPENDIX A: YBAC MEMBER MEETING ATTENDANCE, PHASES 2 AND 3

| Council Member | Primary Affiliation | 11/14-15/13 | 12/13/13 | 2/25/14 | 3/12/14 | 4/9/14 | 4/25/14 | 5/29/14 |
|---|---|---|---|---|---|---|---|---|
| Beaudry, John | Industry-Stillwater Mining Co. | X | X | X | | X | | |
| Cole, Mack (Chair) | Agriculture-Montana Farm Bureau | X | X | X | X | X | X | |
| Cumin, Cal | Instream, Montana Wilderness Assoc., Yellowstone River Parks Assoc. | X | X | X | X | X | X | X |
| Galt, David | Industry-Montana Petroleum Association | X | X | | | | X | X |
| Gatzemeier,Paul | Industry | X | | X | X | | | X |
| Haidle, Lynn | Agriculture-Conservation District | | | | | | | |
| Lackman, Greg | Agriculture-Conservation District | X | X | X | X | | X | X |
| Lowe, Dan | Agriculture-Conservation District | X | X | | X | X | X | X |
| Moorhouse, John (Vice-Chair) | Instream, Yellowstone River Conservation District Council | X | X | X | X | X | X | X |
| Muggli, Roger | Agriculture-TY Irrigation Canal | | | X | X | X | X | |
| Mumford, Dave | Municipal Water Supply | X | X | | X | X | X | |
| O'Hair, Jerry | Agriculture-Conservation District, Outfitter | X | X | X | | X | X | X |
| Osborne, Tom | Industry-Hydrology Consultant | X | | | X | | X | X |
| Penfold, Mike | Instream Our Montana | X | X | X | X | X | X | |

| Council Member | Primary Affiliation | 11/14-15/13 | 12/13/13 | 2/25/14 | 3/12/14 | 4/9/14 | 4/25/14 | 5/29/14 |
|---|---|---|---|---|---|---|---|---|
| Petermann, Kay | Agriculture-Conservation District | X | X | X | X | X | X | X |
| Pulasky, John | Agriculture and Economic Development | X | X | X | X | X | X | X |
| Pust, Steve | Agriculture-Conservation District | X | | X | X | X | | X |
| Rostad, Dan | Agriculture-Conservation District, Boulder River Watershed Group | X | X | X | X | X | | |
| Sauer, Brad (Golder, Fix) | Instream, Northern Plains Resource Council | X | X | X | X | X | | |
| Spang Gion, Shanny | Northern Cheyenne Nation | X | X | | X | X | X | |

# APPENDIX B: EX-OFFICIO YBAC MEMBERS

| Name | Agency |
|---|---|
| Benoch, Gerald | U.S. Bureau of Reclamation |
| Brummond, Andy | Montana Department of Fish, Wildlife and Parks |
| Duberstein, Lenny | U.S. Bureau of Reclamation |
| Frankfurter, Jill | U.S. Geological Survey |
| Frazer, Ken | Montana Department of Fish, Wildlife and Parks |
| LaFave, John | Montana Bureau of Mines and Geology |
| Ockey, Mark | Montana Department of Environmental Quality |
| Opitz, Scott | Montana Department of Fish, Wildlife and Parks |
| Philbin, Mark | U.S. Bureau of Land Management |

# APPENDIX C: ACRONYMS

BAC: Basin Advisory Council

BLM: Bureau of Land Management

CARDD: Conservation and Resource Development Division (a part of Montana DNRC)

DEQ: Montana Department of Environmental Quality

DNRC: Montana Department of Natural Resources

EQC: Environmental Quality Council

FWP: Montana Department of Fish, Wildlife and Parks

GWIC: Ground Water Information Center

GWAP: Ground Water Assessment and Monitoring Program

GWIP: Ground Water Investigation Program

MBMG: Montana Bureau of Mines and Geology

MCA: Montana Code Annotated

MGWPCS: Montana Ground Water Pollutant Control System

MSDI: Montana Spatial Data Infrastructure

MSU: Montana State University

MWSI: Montana Water Supply Initiative

NRCS: Natural Resources and Conservation Service

RDR: Recommendations Development Report

RRGL: Renewable Resources Grants and Loans

TMDL: Total Maximum Daily Load

USBR: United States Bureau of Reclamation

USGS: United States Geological Survey

WRD: Water Resources Division of DNRC

WPIC: Water Policy Interim Committee

## APPENDIX D: MINORITY REPORTS FOR TWO ISSUES LACKING YBAC CONSENSUS

The YBAC was unable to reach consensus on the following two recommendations. A vote was held and this minority report prepared for the DNRC as per the Guidelines. The report was drafted by the coordinator and approved by the minority voters for each recommendation. The public commented both in favor of and in opposition to the recommendations.

**Water Administration and Beneficial Use Issue**
**Preliminary Recommendation D.3.b**
*"Require all users to measure at or near the point of diversion from the river or stream."*

YBAC members that could not support this recommendation were opposed to it for the following reasons;

- Implementing this recommendation would create a cost burden for water users and the cost burden could be substantial,
- Implementation of this recommendation could require measurement of water used from very small streams which was seen as unreasonable,
- Implementing this recommendation could lead to inappropriate use of the information collected against irrigators, and
- Implementing this recommendation could pave the way for additional measuring requirements (such as measuring agricultural return flows) in the future.

This recommendation received 7 yes votes and 3 nay votes at the May 29, 2014 meeting. This recommendation received 7 additional yes votes and no nay votes when YBAC members absent from the May 29 meeting were polled.

**Instream Flow Maintenance Issue**
**Preliminary Recommendation I: Channel Maintenance**
*"Recognizing lateral migration processes as important, efforts to maintain instream flows should include provisions for retaining or reestablishing alluvial channel form and function with associated biological communities."*

YBAC members that could not support this recommendation were opposed to it for the following reasons;

- Implementing this recommendation could make it difficult or impossible to use riprap in the future,
- Maintaining existing channels (versus allowing channels to migrate)protects against soil and property loss, and
- Implementing this recommendation could threaten a property owner's ability to retain and protect their property.

This recommendation received 6 yes votes, 3 nay votes, and 1 "present" vote at the May 29, 2014 meeting. This recommendation received 7 additional yes votes and no nay votes when YBAC members absent from the May 29 meeting were polled.

## APPENDIX E: GLOSSARY OF TERMS

**7-day, 10-year low flow**: The 7-day 10-year low flow (Q7,10) is a statistical estimate of the lowest average flow that would be experienced during a consecutive 7-day period with an average recurrence interval of ten years. Because it is estimated to recur on average only once in 10 years it is usually an indicator of low flow conditions during drought.

**100-year flood:** A 100-year flood is a peak flow that generally occurs once in 100-years and has a one percent chance of occurring in any given year. It is possible, but unlikely, for more than one 100-year flood to occur in a 100-year period—or even occur in two consecutive years (as happened in the Upper Yellowstone basin in 1996 and 1997). When this happens, the largest flood becomes the 100-year flood and the lesser, becomes a "near-100 year flood".

**alluvial channel form**: the physical appearance of a river channel as viewed on a map or aerial photograph along with its channel width, depth and slope.

**alluvial channel function**: the primary functions of alluvial channels are sediment erosion, transport and deposition that create and maintain the primary channel, side channels and floodplain of rivers and streams.

**alluvial river channel**: a river channel that flows through sediments it is capable of transporting. Most of the Yellowstone River has an alluvial channel; however some segments in the Upper Yellowstone (for example Yankee Jim Canyon) are not and have a bedrock bed and banks.

**aquatic ecology**: The relationships among aquatic living organisms and between those organisms and their water environment.

**Channel Migration Zone**: Channel Migration Zone mapping is based on the understanding that rivers are dynamic and move laterally across their floodplains through time. As such, over a given time period, rivers occupy a corridor area whose width is dependent on rates of channel shift. The processes associated with channel movement include lateral channel migration and more rapid channel avulsion. The fundamental concept of CMZ mapping is to identify the corridor area that a stream channel or series of stream channels can be expected to occupy over a given timeframe. A 100-year CMZ is a typical timeframe.

**consumptive use**: a beneficial use of water that reduces supply, such as irrigation or household use.

**flowing well**: an oil or water well from which the product flows without pumping due to natural or artificially supplied subterranean pressure.

**hydrologic regime**: The distribution over time of water in a watershed, among precipitation, evaporation, soil moisture, groundwater storage, surface storage, and runoff.

**in-channel barriers**: dams or other flow obstructions that prevent upstream or downstream migration of fish and humans.

**indigenous ecological communities**: a species is defined as native (or indigenous) to a given region or ecosystem if its presence in that region is the result of only natural processes, with no human

intervention. Every natural organism (as opposed to a domesticated organism) has its own natural range of distribution in which it is regarded as native. Outside this native range, a species may be introduced by human activity; it is then referred to as an introduced species within the regions where it was introduced.

instream flow: water left in a stream for non-consumptive uses such as aquatic habitat, recreation, navigation, or hydropower.

interstate compact: a legal agreement between two states that divides (or apportions) water crossing the state's boundaries.

lateral channel migration: natural movement of river channels from side-to-side through the processes of erosion and deposition.

longitudinal connectivity: connectivity in rivers is measured in four ways: longitudinal, vertical, lateral, and over time. Longitudinal (along the stream) connectivity allows water and sediment to move downstream and aquatic organisms like fish to migrate upstream and downstream. It is also can refer to the transport of humans and the shipping of goods (navigation.)

natural hydrology: the pattern of streamflow (amount and seasonal timing) that occurs without human influences such as water storage and diversions for consumptive use.

non-consumptive use: a beneficial use of water that does not consume water.

**Prior Appropriation Doctrine**: a legal principle applied in Montana and other western states that holds that water rights are unconnected to land ownership, and can be sold like other property. The first person to use a quantity of water from a water source for a beneficial use has the right to continue to use that quantity of water for that purpose. Subsequent users can use the remaining water for their own beneficial purposes provided that they do not impinge on the rights of previous users. Often cited as "first in time, first in right".

Resource Indemnity Trust: Article IX of the Montana Constitution provides for the protection and improvement of the Montana environment and requires the existence of a resource indemnity trust (RIT) fund for that purpose, to be funded by taxes on the extraction of natural resources.

riparian: riparian means related to or situated on the banks of a river. A ***riparian*** zone or ***riparian*** area is the interface between land and a river or stream.

riverine processes: the processes of erosion, transport and deposition of sediment that shape a river's channel(s) and floodplain.

state compact: a legal agreement between Montana and a federal agency or an Indian tribe determining the quantification of federally or tribally claimed water rights.

stream gauge: a stream gauge measures the flow of water at a point along a stream. Because there are many types, the U.S. Geological Survey (who implements and oversees the nations water measurement program) defines a stream gauge as, "is an active, continuously functioning measuring device in the field for which a mean daily streamflow is computed or estimated and quality assured for at least 355 days of a

water year or a complete set of unit values are computed or estimated and quality assured for at least 355 days of a water year".

telemetered (real-time) stream gauge: a telemetered gauge has the electronic capability to transmit water elevation and streamflow data to a central location where it may be viewed (for example, on the internet) as the data is collected. USGS telemetered stream gauges provide updated observations every 15 minutes.

water bank: is an institutional mechanism used to facilitate the legal transfer and market exchange of various types of surface, groundwater, and storage entitlements. Water banks use the market to make water available for new uses.

Yellowstone Water Reservations: In December 1978, the Montana Board of Natural Resources and Conservation (now defunct), issued an order on the reservation of water in the Yellowstone River Basin. The order reserved, or set-aside, a block of water for future municipal and agricultural use, off-stream storage and instream flow.