

TECHNICAL MEMORANDUM

TO: *WWDC* DATE: *May 12, 2010*
FROM: *MWH* REFERENCE: *Wind-Bighorn Basin Plan*
SUBJECT: *Task 6E– WWDC Watershed Planning*

This memorandum discusses the watershed planning programs of the Wyoming Water Development Commission (WWDC) within the Wind-Bighorn Basin (Basin) and fulfills the reporting requirements for Task 6E of the consultant scope of work for the Wind-Bighorn Basin Plan Update (Basin Plan Update).

This technical memorandum contains the following sections.

Contents

Section 1 – Introduction 1
Section 2 – WWDC Watershed Planning Program..... 2
Section 3 – Future WWDC Watershed Plans..... 3
Section 4 – Summary..... 3
References 4

Section 1 – Introduction

Watershed planning is the process of addressing water related issues upon all areas of land that drain to a common body of water. The goal of watershed planning is to work toward an environmentally healthy watershed in a cost-effective manner that benefits all stakeholders. Since water doesn't recognize political boundaries, watershed planning often requires working across jurisdictional borders where coordination between federal, state agencies, local agencies, interested organizations, and citizens is essential in order to address watershed concerns and to resolve water quality issues.

As discussed in Technical Memorandum 6B - Water Quality, there are several ongoing watershed plans and water quality monitoring programs in the Basin, including those by the Bureau of Land Management, Natural Resources Conservation Service, Wyoming Department of Environmental Quality and several conservation districts. Currently, there are three watershed plans in the Basin managed and funded by the Wyoming Water Development Commission (WWDC) (see Section 3). A description of the WWDC water management program and the key aspects to developing effective watershed plans in the Basin are discussed below. These descriptions were based upon information provided by WWDC staff (Vore, 2009) and through review of previously developed watershed plans in the Basin. Information on the other federal, state and local watershed plans for the Basin is summarized in Technical Memorandum 6B.

Section 2 – WWDC Watershed Planning Program

The goal of the WWDC watershed planning program is to provide stakeholders in the Basin with fundamental information and data needed to develop practical economic solutions for future project planning. WWDC watershed plans are designed to document the interrelationship between water production and water use within a watershed, enabling managers to utilize an integrated approach to enhance water, land and vegetation resources in a production system that can sustain or improve functionality of the watershed.

The WWDC watershed planning program works with communities in the Basin to develop watershed plans to improve or manage water resources at a local level. Development of a watershed plan is a step-wise process that involves data collection, determining the focus and goals, identifying the benefits, and overcoming challenges of the watershed. A description of the importance and contribution of each step to the development of a WWDC watershed plan is outlined below.

Data Collection

A considerable amount of information pertaining to watersheds and their resources is collected as part of the watershed planning process. The information spans a wide variety of disciplines and includes information on the basin's surface water hydrology, groundwater hydrology, water quality, soils, geology, land use, land ownership, climate, geomorphology, ecology, irrigation systems and wetlands. For each resource, valuable information is obtained and used in the watershed plan. Although each resource area has its own issues and problems relating to growth and increased demands being placed on it, information for all resources is used collectively to identify the problem areas in the watershed.

Focus and Goals

The focus of the watershed plan may vary based on the problems associated with a watershed. There are often three prominent issues that are the focus of the watershed plan. The first is surface water storage. Surface water storage is often of significant interest to stakeholders in order to address water supply shortages and to augment late season stream flow. Storage can also benefit riparian habitat, benefit wildlife, address flood impacts, enhance recreation opportunities, improve water quality, and promote steam channel stability.

The second prominent issue is the evaluation of irrigation infrastructure and the information necessary to guide its rehabilitation. Local water users are often interested in ways to improve water delivery and on-farm irrigation application efficiencies to address annual or seasonal water supply shortages.

The third prominent issue is the enhancement of upland water resources, distribution for livestock and distribution for wildlife that allows for both grazing management adjustments and range resource improvements. Other issues and opportunities such as making beneficial use of produced water, removal of high water demand invasive species, and groundwater development can also be important to a watershed study.

Benefits

The benefits of a watershed plan are dependent on the overall goals of the watershed program. The benefits of increased surface water storage include reducing water supply shortages, riparian habitat enhancement, increased recreational opportunities, improved water quality, and improving steam channel stability.

The benefits of irrigation infrastructure improvements include increased irrigation water supply and improved irrigation water delivery. When implemented over a broad scale, enhancement of upland water resources for grazing management and range resource improvements benefit the watershed through plant community invigoration, decreasing erosion, and stabilizing stream channels.

Challenges

Since water doesn't recognize political boundaries, one of the biggest challenges in watershed planning is working across jurisdictional boundaries. Coordination between interested organizations, citizens, and government agencies is essential in order to address watershed concerns. For a watershed plan to be successful, a consensus with respect to the needs of the Basin's watershed must be reached among all stakeholders.

The long-term goals of the WWDC watershed management planning program are similar to other watershed planning programs in the Basin (those by the Bureau of Land Management, Natural Resources Conservation Service, and Wyoming Department of Environmental Quality – see Technical Memorandum 6B), in that they work with stakeholders to address watershed concerns and provide direction for future project planning. The biggest difference between the WWDC watershed planning program and other watershed programs is that the WWDC watershed plans are more localized and are developed based on the interests and needs of a community, whereas other state and federal watershed plans are more programmatic and are designed to address broader regulatory issues.

Section 3 – Future WWDC Watershed Plans

Currently there are two recently completed watershed plans and three ongoing watershed plans within the Wind-Bighorn Basin (Table 1). Each of these studies was completed as a Level I study by WWDC. In some cases, results of these studies were used to identify potential projects and pursue Level II studies with WWDC.

Table 1. Current and Recent Watershed Plans

Study Name	Counties	Completion Date
Cottonwood/Grass Creek Watershed Management Plan	Washakie, Hot Springs	2007
Kirby Creek Watershed Plan	Hot Springs	On-going
Nowood River Watershed Plan	Washakie, Big Horn	On-going, expected 2010
Popo Agie Watershed Management Plan	Fremont	2003
Shell Valley Watershed Plan	Big Horn	On-going, expected 2009

No potential locations of future watershed plans within the Basin were suggested by the Basin Advisory Group (BAG) or WWDC during the course of the Basin Plan Update. Although it is likely that there are additional areas in the Basin that would benefit from a WWDC watershed study, the potential for future watershed studies in these areas will be highly dependent on the level of interest of the local community and their willingness to pursue funding from WWDC for the planning effort.

Section 4 – Summary

The goal of the WWDC watershed planning program is to provide stakeholders in the Basin with fundamental information and data needed to develop practical economic solutions for future project planning. WWDC watershed plans are designed to document the interrelationship between water production and water use within a watershed. This will enable managers to utilize an integrated approach to enhance water, land and vegetation resources in a sustainable production system that can improve functionality of the watershed.

The WWDC watershed planning program works with communities in the Basin to develop watershed plans to improve or manage water resources at a local level. Development of a watershed plan is a step-wise process that involves data collection, determining goals, identifying the benefits, and overcoming challenges of the watershed.

Two WWDC watershed studies have recently been completed in the Basin and three others are currently in progress. Although it is likely that there are additional areas in the Basin that would benefit from a WWDC watershed study, the potential for future watershed studies in these areas will be highly dependent on the level of interest of the local community.

References

Vore, Ron. 2009. Write-up in e-mail from Jodie Pavlica to Jerry Gibbens, MWH, Subject: Watershed Study Write-up. Project Manager, Wyoming Water Development Office, Cheyenne. November 16.