

Stream Management Plan Grantee Project Summary

Crystal River Management Plan

Geographic Description:

Colorado River Basin:
Crystal River Watershed

Size:

35 river miles

Project Homepage:

<http://bit.ly/CrystalRMP>

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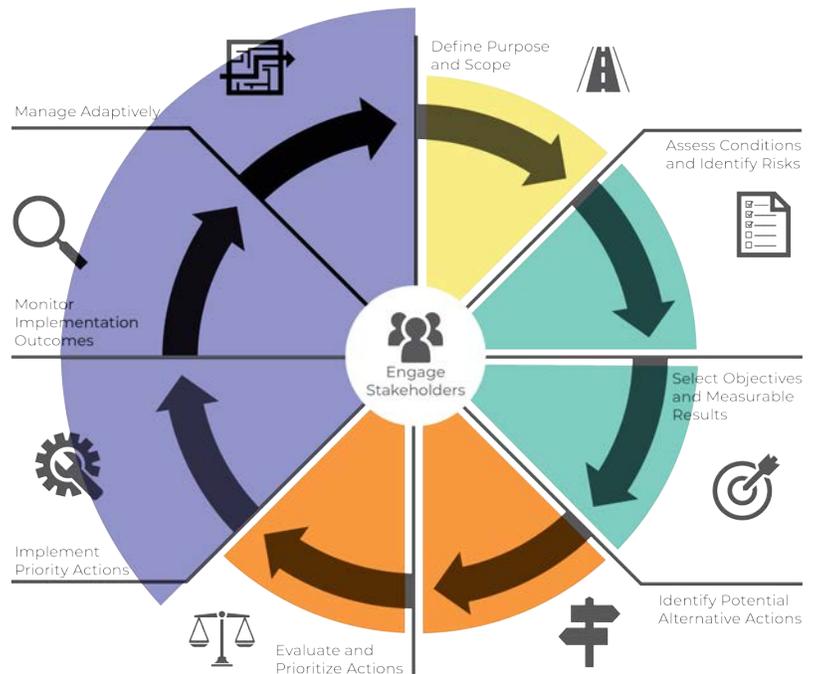
Project Timeline



Stakeholder Groups Involved in Planning Process

●	Agricultural producers
●	Riparian landowners
●	Aquatic and riparian science
●	Environmental advocacy
●	Utilities or other water management
●	Recreation & tourism
●	Local government & land use planners
●	State and federal agencies

Current Planning Phase



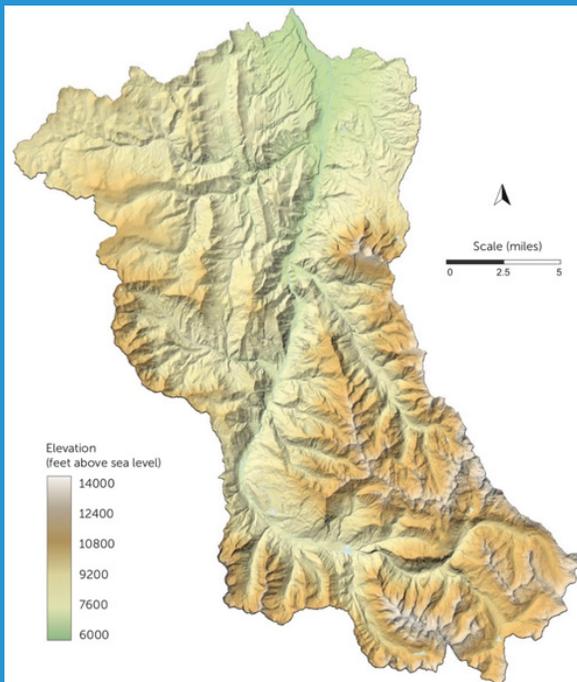
Project Goals

- Identify, prioritize and guide management actions that honor local agricultural production, preserve existing water uses, and enhance the ecological integrity of the Crystal River.
- Ensure that the local community is adequately equipped to deal with shifting community values, economic foundations, and climate realities in a way that minimizes conflict between user groups and achieves high levels of environmental resiliency.

Overview

Geography:

The Crystal River flows 35 miles from the Elk Mountains to the confluence with the Roaring Fork River, through the communities of Marble, Redstone, and Carbondale.



Users:

Carbondale is the largest of the three municipalities in the basin that rely on the Crystal River for drinking water. The population is approximately 6,000 and is expected to double by 2035. Growing

population and shifting demographics bring increasing attention to the recreational uses such as whitewater boating, scenic driving, biking, angling, and outdoor education. Agricultural production is a critical cornerstone of the area's culture and economy. Numerous hay and cattle operations, totaling 4,800 acres, account for two-thirds of the water use in the watershed.

Need for planning:

Previous studies of the Crystal River explored the effects of management decisions on watershed health. These studies illuminated unresolved questions about water use patterns, the impacts of prolonged drought and climate change, anticipated outcomes of proposed management actions, and the need to balance competing community values in management decisions. Junior water rights, including CWCB's In-Stream Flow right, are often not met from August to October when the strain is highest on the river. The Crystal River Management Plan was developed to identify, prioritize and guide management actions that honor agricultural land production, preserve existing uses and enhance the ecological integrity in the face of these water use challenges.

Approach

Prior river management planning efforts along the Crystal River had struggled to involve diverse stakeholders and representing a wide variety of water values in decision making. In response, the Crystal River Management Plan places a new emphasis on stakeholder involvement in developing goals and objectives, understanding results of previous studies, and evaluating management actions.



Roaring Fork Conservancy is the lead organization on this planning effort, partnering with Public Counsel of the Rockies for stakeholder engagement,

fundraising and strategic planning. Lotic Hydrological worked with a team of subcontractors to conduct watershed- and reach-level assessments and create planning tools. Colorado Water Trust engaged with individual water users to assess opportunities for voluntary, incentive-based transactions.

Lotic Hydrological produced three core technical components of the Crystal River Management Plan:

- **Ecological Decision Support System:** a series of computer models that show how the river will respond to channel modification and other management activities
- **Ecosystem Functional Assessment and Resource Management Evaluation:** an evaluation of conditions and trends along the river to supplement previous studies, as well as an evaluation of the potential for diversion and irrigation improvements.
- **Project Prioritization:** To set mid-level flow objectives and work collaboratively with consumptive and environmental/recreational users to prioritize restoration projects to achieve goals.

Outcomes

Each alternative action was associated with a unique set of environmental, capital, and social costs and benefits. After careful evaluation, two alternative actions emerged as the most viable strategies for managing local water needs:

- A market-based solution promoting bypass flows between Sweet Jessup Canal and Carbondale Ditch
- A combination of ditch-lining and short-term water leasing by the Town of Carbondale on the Carbondale Ditch and Weaver & Leonhardy Ditch

Additionally, project partners are evaluating and planning riparian restoration and invasive species removal projects on the Crystal. Stakeholders also continue to evaluate stand-alone water efficiency infrastructure projects, off-channel reservoir development, and channel modifications to benefit non-consumptive and consumptive water uses.

Variables and Inventory Assessment Level

Depending on the purpose and scope determined by local stakeholders, assessments employ different methodologies to evaluate a suite of specific parameters related to stream health and ecosystem goods and services. The comprehensiveness of the data is will vary depending on what is needed to answer core questions addressed by the SMP, ranging from less precise (general, often anecdotal or third-party information) to more precise (data-driven, quantitative metrics). The Crystal River Management Plan assessed the following variables to evaluate watershed health and delivery of ecosystem services.

	Variable	Assessment Level
Ecological Integrity:		
●	Existing Flow Regime	Moderate
●	Future Flow Regime	More Precise
●	Sediment Regime	More Precise
●	Water Quality	Moderate
●	Network Connectivity	Less Precise
●	Floodplain Hydrology	More Precise
●	Riparian Vegetation	More Precise
●	Stream Corridor Dynamics	More Precise
●	Structural Complexity	More Precise
●	Aquatic Biota	More Precise
Regulating and Maintenance:		
	Flood Regulation	
	Groundwater Recharge	
●	Erosion Control	Moderate
	Pest Regulation	
●	Regulatory Compliance	Moderate
Provisioning:		
●	Agricultural Production	Moderate
	Drinking Water Supply	
	Industrial Processing	
	Hydropower Production	
Cultural:		
●	Aesthetics and Intrinsic Values	Moderate
●	Symbolic/Emblematic Species	Less Precise
●	Boating Recreation	Less Precise
●	Angling Recreation	Less Precise

Budget

Contributing Entity	Amount and Form of Match
CWCB Watershed Restoration Fund	Unknown*
Colorado Basin Roundtable Water Supply Reserve Fund	Unknown*
Gates Family Foundation	Unknown*
Dornick Foundation	Unknown*
Environment Foundation of the Aspen Ski Company	Unknown*
In-kind- USFS	Unknown*
Pitkin County Healthy Rivers	Unknown*
Private Donations	Unknown*
West Divide Water Conservancy District	Unknown*
Watershed “check off” program	Unknown*
Total	Unknown*

*Note: The Crystal River Management Plan spurred off of a larger project and there is substantial overlap in the budget for this effort and the Coal Basin Restoration Project. If the whole project funding were included, the amounts would not reflect the true cost of the planning effort. If you would like more detail, please contact Heather Lewin: heather@roaringfork.org

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