6.6 ENVIRONMENTAL AND RECREATIONAL PROJECTS AND METHODS

GOAL

The policy of the State of Colorado is to identify and implement environmental and recreational projects and methods to achieve the following statewide long-term goals:

- Promote restoration, recovery, sustainability, and resiliency of endangered, threatened, and imperiled aquatic- and riparian-dependent species and plant communities.
- Protect and enhance economic values to local and statewide economies that rely on environmental and recreational water uses, such as fishing, boating, waterfowl hunting, wildlife watching, camping, and hiking.
- Support the development of multipurpose projects and methods that benefit environmental and recreational water needs as well as water needs for communities or agriculture.
- Understand, protect, maintain, and improve conditions of streams, lakes, wetlands, and riparian areas to promote self-sustaining fisheries and functional riparian and wetland habitat to promote long-term sustainability and resiliency.
- Maintain watershed health by protecting or restoring watersheds that could affect critical infrastructure and/or environmental and recreational areas.

One cannot overstate the importance of Colorado's natural environment and recreational opportunities to its quality of life and to its economy. Outdoor recreation—including hunting, fishing, biking, hiking, skiing, golfing, wildlife watching, and many other types of outdoor activities—significantly contributes to Colorado's economy, and nonconsumptive water-based recreation is an important part of that economy. Healthy watersheds, rivers and streams, and wildlife are vital to maintaining Colorado's quality of life and a robust economy. Section 5 of Colorado's Water Plan contains more information about the economic benefits recreational activities provide to the state.

This section details the projects and methods by which Colorado has protected nonconsumptive, river-based environmental and recreational water needs in the past, as well as how the State may maintain these values in the future. To that end, this section will describe the benefits of such projects and methods, and will illustrate existing examples. The section contains several subparts: 1) An overview of existing tools for assessing environmental and recreational needs; 2) an account of knowledge gaps; 3) an overview of environmental and recreational statutes and recent legislation; and 4) a description of projects and methods the eight BIPs contain.

While water is vital to many types of recreational activities, including skiing and sports that require grassy areas, such as soccer, golf, and baseball, this section focuses on recreational uses of water in Colorado's streams and rivers, which roundtables define as primarily nonconsumptive. Section 5 of Colorado's Water Plan addresses the importance of recreational water needs that involve consumptive uses of water that are primarily associated with municipal or SSI uses (for example, irrigation of parks and golf courses and snowmaking).

Overview

Water is a crucial element in the maintenance of environmental and recreational values that are important to Coloradans. Adequate streamflows support the outstanding fisheries in the upper Arkansas River, rafting activities in Glenwood Canyon, snowmaking at world-class ski areas, and habitat maintenance for the water-dependent natural environment. A healthy environment depends upon good water quality, connectivity of streams, and

robust instream and riparian habitats. Careful water management and dedication of significant resources have also led to progress toward recovering threatened and endangered species.[421]

Comprehensive water planning must include meeting environmental and recreational needs, in addition to meeting agricultural, municipal, and industrial needs. The IBCC's conceptual agreement supports this concept and states:

> "Colorado's Water Plan, BIPs, and stakeholder groups across the state should identify, secure funding for, and implement projects that help recover imperiled species and enhance ecological resiliency whether or not a new [TMD] is built. This could create conditions under which future projects may be possible…. These existing environmental and recreational gaps should be meaningfully addressed in the near term."[422]

Projects and methods that maintain or improve Colorado's environmental and recreational values, and that achieve long-term sustainability and environmental resiliency, are an important part of Colorado's water future. An ecosystem's resilience is a measure of its ability to absorb changes and return to similar levels after disturbance.[423] According to Principle 7 of the IBCC Draft Conceptual Agreement, resilience of a stream or watershed can be measured as an ecosystem's ability to recover functionality after an acute or chronic disturbance. Resilient river systems require seasonal flow fluctuations and provide complex and connected aquatic and riparian habitats in order to sustain stable, diverse, abundant, and reproducing populations of aquatic and riparian species.[424]

To determine resiliency levels, it is necessary to identify the baseline status of these characteristics and to monitor stream ecological functions and watershed processes on an ongoing basis.[425] o promote environmental resiliency, planned projects and methods should incorporate the potential stressors of drought and climate change, including decreased supply, changes in water temperature, and changes in runoff magnitude, duration, frequency, rate of change, and timing.[426]

The challenges environmental and recreational project proponents face in the future include learning how to make the most of limited funding opportunities.

JACKIE BROWN

YAMPA RIVER BASIN

Jackie is the Natural Resource Policy Advisor to Tri-State Generation and Transmission and has been a leader in environmental stewardship in the Yampa Valley and on the Yampa-White-Green Basin Roundtable. Jackie is pictured next to the Yampa River.

I am most proud of working on collaborations. Whether it is an improvement project, our Yampa White Green Basin Implementation Plan goals and measurable outcomes, or a slow compromise, collaboration is the key to our water future. My hope for the future is that we begin to realize how adaptable we actually are as humans and continue carefully researching our trade-offs. Long term, big picture planning is difficult in natural resources, but we cannot exhaust our supplies and resources prematurely nor can we pick every battle. Careful and thoughtful implementation is of the utmost importance. I commit to staying at the table,

CONTINUED AT END OF CHAPTER

PROFILE

There is a host of nongovernmental proponents of environmental and recreational needs; however, funding opportunities are scarce when one compares them with existing programs for municipal, industrial, or agricultural uses.[427] In addition to strengthening existing and exploring additional funding opportunities for environmental and recreational projects and methods, strategic partnerships will play an important role. Those seeking to fund additional storage or a new diversion may find that working with a diverse group of stakeholders from the beginning will make the process more successful.

In their BIPs, the roundtables have identified new multipurpose projects or methods as desirable, and by working to associate a project with an environmental or recreational use, project proponents will garner support from a wider range of stakeholders. For example, if the proponent can associate a new storage project with a potential recreational opportunity, such as boating or fishing, the proponent can count on a greater range of advocates to support the project through permitting and financing. As another example, a proponent can include a project component that focuses on habitat or flow restoration to address environmental and recreational needs. Proponents can leverage restoration projects and methods, and coordination of water uses among water users, to address the effects of traditional consumptive water uses on water quality and habitat degradation. Such balanced approaches to meeting future water needs could accomplish multiple objectives.

Strategic cooperation on environmental and recreational projects and methods has proven to be a successful mechanism in the past, as Section 9.3 will examine and discuss. In planning for multipurpose projects or methods, proponents should take into account the watershed nature of projects and methods, and the manner by which they influence more than one particular stream reach.[428] With an eye toward serving multiple purposes, proponents may also consider a project or method that meets multiple environmental and recreational purposes in a reach where the project or method leads to the most beneficial outcome.

With multipurpose projects and methods in mind, it is important to note that many environmental and recreational attributes benefit from more traditional existing consumptive uses. Although municipal or agricultural projects can affect environmental and recreational interests, these uses can also provide benefits. A reservoir provides wildlife and fish habitat as well as recreational opportunities for visitors, and provides a mechanism for beneficial management of streamflows. Agricultural water uses also provide these types of benefits. Crop cultivation around the state provides habitat and open space for many species, and the agricultural tourism sector has boomed in Colorado: wineries and orchards are bringing visitors and development to agriculturally centered communities. While these direct benefits are obvious, agricultural diversions also offer some indirect benefits. Diversions that occur in the irrigation season come back to the stream in the form of return flows. These late-season return flows that occur in early fall provide a boost to streamflows that would otherwise not be present. These re-timed flows benefit riparian health and provide instream habitat.

Existing Environmental and Recreational Projects & Methods

Recognizing the value of a robust recreational economy and the obvious benefits of healthy ecosystems, Colorado has implemented programs and invested in projects to protect and improve these attributes. Below are some examples.

Colorado's Instream Flow and Natural Lake Level Program

In 1973, the Colorado Legislature recognized the need to "correlate the activities of mankind with some reasonable preservation of the natural environment" and passed Senate Bill 73-097, leading to the creation of the CWCB's Instream Flow and Natural Lake Level Program.[429] This program, one of the nation's first, vested the CWCB with exclusive authority to protect streamflow through a reach of a stream, rather than just at a point, and to protect levels in natural lakes. Before Colorado passed this law, all appropriations of water in the state were required to divert water from its natural course in the stream.[430] Senate Bill 73-097 removed the diversion requirement for the CWCB and allowed it to appropriate water instream between specific points on a stream, and for levels on natural lakes.[431]

Any person or entity may recommend streams and lakes for appropriation in order to preserve the natural environment. The law also requires CWCB to request recommendations from CPW, the U.S. Department of Agriculture, and the U.S. Department of the Interior.[432]

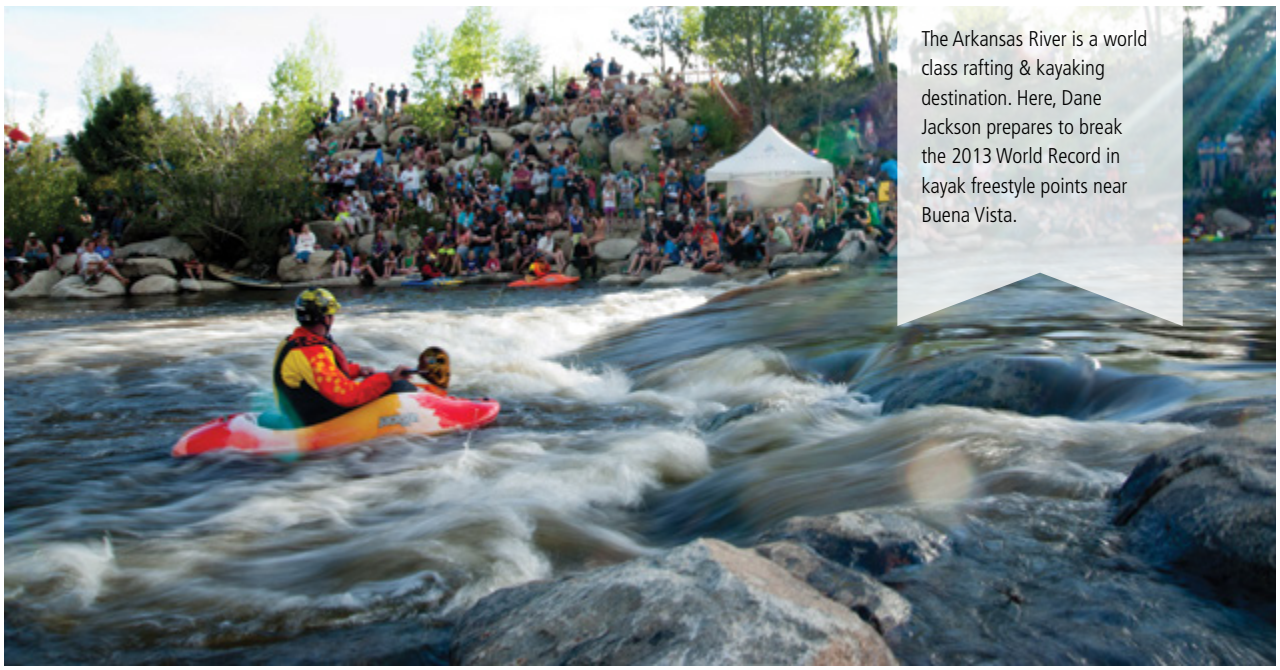
The CWCB uses a public notice and comment procedure to determine whether to appropriate instream flow water rights.[433] Before applying to water court for an instream flow water right, the CWCB must determine that: (1) There is a natural environment that can be preserved to a reasonable degree with the instream flow water right; (2) the natural environment will be preserved to a reasonable degree by the water available for the appropriation; and (3) such environment can exist without material injury to water rights.[434] Once the water court decrees instream flow water rights, the DWR administers those rights through the State's water rights priority system, like it does with any other water right in the state. The CWCB has legal standing in water court to protect instream flow water rights from injury at any point within an instream flow reach.

The CWCB can also acquire water, water rights, and interests in water to preserve and improve the natural environment, on a permanent or temporary basis, from willing water rights owners. The acquisition process involves a biological analysis by CPW, the CWCB's consideration of several factors related to the transaction, and opportunity for public input.[435]

Since 1973, Colorado has appropriated instream flow water rights covering more than 9,200 miles of stream, and natural lake-level water rights on 480 natural lakes.[436] This protection represents approximately 23 percent of the perennial stream miles in the state.

Instream flow water rights appropriations: (1) Protect healthy native- and sport-fish populations, aquatic insects, and rare and distinctive riparian-vegetation communities; (2) achieve federal agencies' resource protection goals through a state-held water right; (3) are a key element of a management plan a diverse stakeholder group developed as an alternative to suitability for Wild and Scenic designation for three reaches of the Colorado River; and (4) provide numerous other benefits to Colorado citizens. Appendix C contains specific examples of instream flow water right appropriations. The CWCB has encouraged entities that recommend instream flow appropriations to focus on streams that provide habitat for threatened, endangered, and imperiled native species.

In 2002, the General Assembly passed Senate Bill 156, authorizing the CWCB to use acquired water to improve the natural environment to a reasonable degree.[437] The CWCB has completed 26 water acquisition transactions. These include acquisitions to protect critical habitat for endangered species on the Yampa River; improve the natural environment of the Blue River downstream from Dillon Reservoir; restore native flows to a degraded stream system near Silverton, Colorado; and re-water a historically dried-up stream near Crested Butte, Colorado.[438] Appendix C contains specific examples of water acquisitions for instream flow use.



The Arkansas River is a world class rafting & kayaking destination. Here, Dane Jackson prepares to break the 2013 World Record in kayak freestyle points near Buena Vista.

RICDs

Colorado is one of several states that authorize the appropriation of water rights for recreational boating purposes within a natural stream. However, Colorado is the only state that allows for the appropriation of water rights for recreational boating uses associated with man-made whitewater parks—specifically requiring structures in the stream that create recreational experiences. These water rights are known in Colorado as RICDs, and the holders of such rights can call water for recreational boating purposes when in priority. Depending on their location, the size and the magnitude of river flows called by some RICD water rights potentially restrict future upstream development potential, and may reduce the flexibility Colorado has in managing its water resources. Colorado law limits RICDs to the minimum streamflow necessary for a reasonable recreational experience, and RICD water rights holders must divert this water through a control structure, often a whitewater park itself.[439] Section 37-92-103(10.1), C.R.S. (2015) defines "reasonable recreation experience" as "the use of a recreational in-channel diversion for, and limited to, nonmotorized boating." Only a local governmental entity may apply for an RICD.[440] The statutes require that the CWCB must consider any water court application for an RICD after deliberation takes place in a public meeting to determine whether the proposed RICD will:

1. Promote the maximum beneficial use of waters of the state;
2. Not impair Colorado's ability to fully develop and use its compact entitlements; and
3. Not cause material injury to the CWCB's instream flow water rights.[441]

To ensure that a proposed RICD adequately meets these requirements, the CWCB has encouraged applicants to include specific provisions within their proposed water court decrees. These specific provisions have included concepts such as "carve-outs" and "no-call provisions." Examples of specific provisions of the CWCB's past findings of facts are available here.[442]

The CWCB then provides its findings to the water court for consideration. The water courts must also consider whether:

1. The water right sought is the minimum necessary for a reasonable recreational experience;
2. The RICD is accessible to the public; and
3. The RICD includes only that stream reach that is appropriate for the intended use.[443]

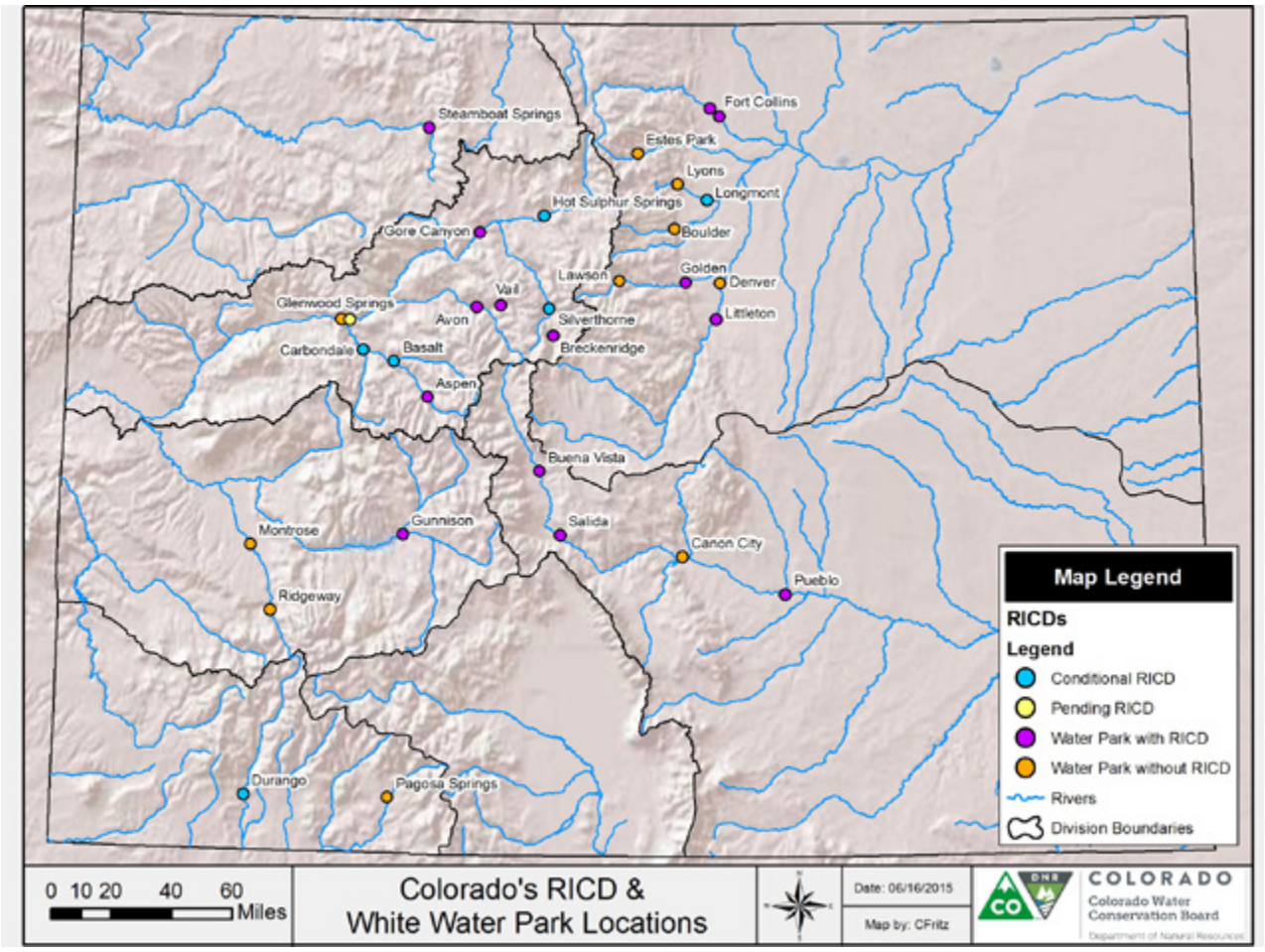
In Colorado, 15 existing whitewater parks have RICD water rights, and eight existing whitewater parks operate without an RICD water right. The map on the opposite page (Figure 6.6-1) illustrates Colorado's existing and planned whitewater parks.

Endangered Species Recovery Programs

Many of Colorado's water projects are likely to have what is known as a "federal nexus." A water project is considered to have a federal nexus if it involves federal funding, federal permitting or licensing, use of federal lands, or a federal program. The existence of a federal nexus often triggers the need for consultation under Section 7 of the ESA.[444] The result of a Section 7 consultation is a biological opinion that states whether a project is likely to jeopardize the continued existence of listed threatened or endangered species, or result in the destruction or adverse modification of critical habitat.

To mitigate these effects, Colorado participates in three cooperative programs designed to protect and recover stream-dependent species in various river basins. The Upper Colorado, San Juan, and Platte River Recovery Programs provide organized collaboration among states, federal agencies, local agencies, water users, water providers, power providers, and environmental organizations. These programs differ from the Three Species Agreement, as described below. These programs' goal is to recover the endangered species while allowing water use and development to continue in compliance with all applicable state and federal laws and interstate compacts.

FIGURE 6.6-1 COLORADO'S RECREATIONAL IN-CHANNEL DIVERSIONS & WHITEWATER PARK LOCATIONS



Funding and resources from participants are dedicated to activities that benefit the species.

Collaboration and a focus on recovery activities are intended to:

- Maximize benefit to the species and the environment by leveraging funding and resources expended.
- Minimize resources spent on adversarial activities, including litigation.
- Provide ESA compliance for water users.
- Streamline Section 7 consultations for water users and federal agencies.
- Reduce uncertainty and delays in planning and permitting processes.
- Reduce likelihood of jeopardy opinions.

Upper Colorado River Endangered-Fish Recovery Program

In 1988, various interests in Colorado, Wyoming, and Utah established the Upper Colorado River Endangered Fish Recovery Program. These interests formed the program as a unique partnership of groups working toward recovery of four endangered fish species: Humpback chub, bonytail, razorback sucker, and Colorado pikeminnow. These species are long-lived, warm-water fish and are endemic to the Colorado River Basin. Recovery efforts focus on creating self-sustaining populations of native fish through restoration and management of habitat, propagation and stocking of hatchery-raised fish, and management of certain deleterious non-native fish species throughout the mainstem Colorado, Gunnison, Yampa/White/Green River Basins.

Outdoor recreation, such as fishing and other water-related activities, highlight some of the quality experiences that tourists and Coloradans enjoy statewide.

The Upper Colorado Endangered Fish River Recovery Program provides ESA compliance for more than 2,050 water projects, encompassing more than 2.5 million acre-feet of existing water use and more than 300,000 acre-feet of new development. No entities have filed lawsuits regarding these projects' compliance with the ESA. The program has established procedures, projects, and agreements to provide streamflow protection, voluntary flow augmentation during critical spring peak and late summer time periods, habitat management and improved habitat access, genetic propagation, hatchery and stocking operations, non-native fish-control efforts, and research and monitoring. The cooperative nature of the program has led to multiple successes and cost efficiency, and the program has become a model for other endangered-species recovery programs.[445]

San Juan River Basin Recovery Implementation Program

A group of federal, state, and tribal agencies established the San Juan River Recovery Implementation Program in 1992 for the San Juan River Basin, a major tributary to the Colorado River. The Navajo Nation, Jicarilla Apache Nation, Southern Ute Indian Tribe, and Ute Mountain Ute Indian Tribe and other stakeholders are active partners in this collaborative effort to recover the razorback sucker and Colorado pikeminnow within the San Juan River Basin in Colorado and New Mexico.

The San Juan River Basin Recovery Implementation Program provides ESA compliance for more than 340 water projects using more than 880,000 acre-feet of water in the San Juan River Basin. Major accomplishments include extensive research in biology and geomorphology, and the establishment of procedures and agreements to provide streamflow augmentation and protection, habitat management and improvement, genetic propagation, hatchery and stocking operations, non-native fish control, and continued research and monitoring.[446]

Platte River Recovery Implementation Program

During the early 1990s, all ESA Section 7 consultations that were conducted on Platte River projects received jeopardy biological opinions, which meant that these water projects could not proceed. In response, Colorado, Nebraska, Wyoming, and the Department of the Interior entered into a collaborative conservation partnership with many other stakeholders. That partnership is now known as the Platte River Recovery Implementation Program.[447]

The Platte River Recovery Implementation Program is now working to recover four threatened and endangered species—the whooping crane, interior least tern, piping plover, and pallid sturgeon—in Nebraska. This allows water use and development to continue on the Platte River. With the current involvement of Wyoming, Nebraska, and Colorado; federal agencies; and many water, power, and environmental interests, the program provides ESA compliance for water projects and fully complies with the participating states' water law as well as existing interstate river compacts and decrees. The partnership is implementing the program in an incremental manner; the first incremental, programmatic biological opinion covers the 13-year period from 2007 through 2019.

Officially in place since 2007, the Platte River Recovery Implementation Program has provided 237 successful, streamlined Section 7 consultations using the programmatic biological opinion for every Colorado entity that has joined the South Platte Water-Related Activities Program. The preceding Cooperative Agreement, signed in 1997, resulted in bridge measures to allow for ESA compliance for approximately 120 Platte River Basin consultations while negotiations were underway.

Through 2019, South Platte water users will pay more than $13 million, and the State of Colorado will pay $24 million (based on 2005 inflation rates), for the Platte River Recovery Implementation Program. Water users and the public view the program to be well worth the cost in comparison to the untold costs water users would likely face without the program, including:

- Needing to undergo uncertain, individual Section 7 consultations, including bearing the risk of receiving jeopardy biological opinions.
- Potentially being required to replace past and future depletions on a one-to-one basis, which would likely add additional pressure to dry-up agriculture.
- Facing delays in the planning and permitting process.
- Risking court challenges to existing programmatic biological opinions.

Three Species Agreement

The CPW, five other Colorado River Basin state wildlife agencies, the USFS, the BLM, the BOR, and sovereign tribes are parties to a multi-state, multi-agency, range-wide conservation and strategy agreement that provides the framework for conservation actions designed to preserve three declining native fish species across their historic range. These species are the roundtail chub, bluehead sucker, and flannelmouth sucker.[448] Noting range-wide declines of these species, the Three Species Agreement addresses the species' potential for a USFWS listing as threatened or endangered under the ESA of 1973, as amended. The USFWS relies on implementation of the multi-state Three Species Agreement to protect and conserve these three native warm-water species.

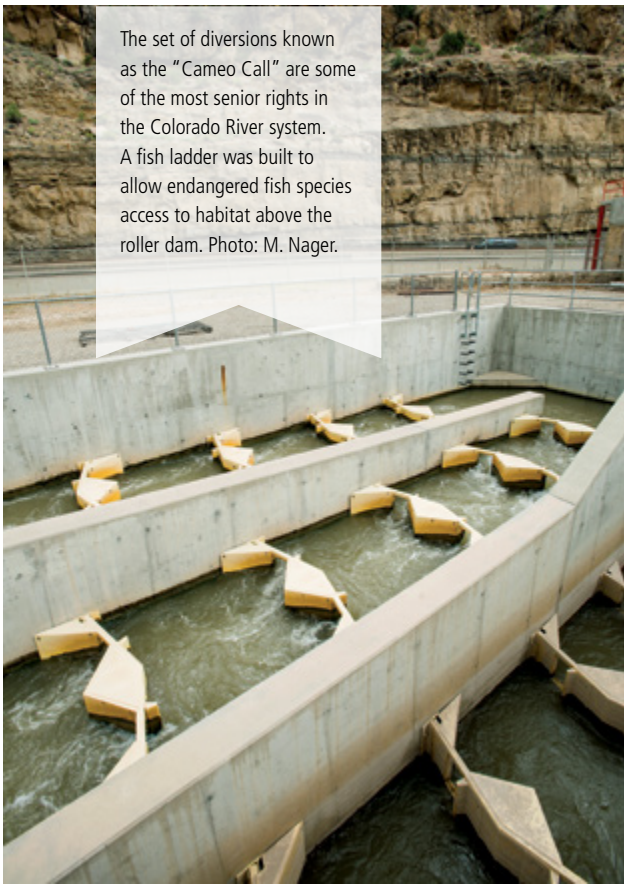
The Three Species Agreement provides that within their jurisdictional authorities, signatories are responsible for taking action to conserve native fish, coordinating status assessments, developing and maintaining data sets on occupancy and genetics, and documenting conservation measures taken on behalf of the three species. The agreement is predicated on the concept that collectively, local, state, and federal agencies, and other willing partners, can work together with communities that are most affected by a potential listing. It encourages all signatories to cooperate on science, research, education, and outreach to send a clear and consistent message about the conservation of these species. One of the agreement's goals is to develop and implement voluntary actions that pre-empt the need for federal listing of any of these species under the ESA. The agreement also prioritizes the establishment of instream flow protection for streams known to provide habitat for the three species. CPW and the BLM have recommended that the CWCB appropriate instream flow water rights to preserve the habitat of the three species. A recent example of such an appropriation is an instream flow water right on the San Miguel River from Calamity Draw to the confluence with the Dolores River. The water court decreed this water right in May 2013.

Colorado River Cutthroat Trout Conservation Strategy

Colorado River cutthroat trout (CRCT) is a state-listed species of special concern in Colorado, Wyoming, and Utah. Federal land management agencies—particularly the BLM and the USFS—that manage habitats where CRCT is present also characterize it as a sensitive species. CPW works closely with Utah, Wyoming, and federal land managers to manage the recovery and persistence of CRCT throughout their historic range. The Conservation Strategy for Colorado River cutthroat trout guides this work. It is a multi-pronged strategy that articulates steps that, if implemented, would be most likely to preserve CRCT in perpetuity.[449] Implementation of the CRCT Conservation Strategy, and an ability to show progress on measurable benchmarks, has allowed the USFWS to maintain its opinion that CRCT is "not warranted" for listing under the ESA of 1973, as amended.[450] This finding has been beneficial to state wildlife-management agencies to maintain state-management authority for this species. Based on this finding, Section 7 of the ESA does not require consultation with the USFWS for projects in CRCT-occupied waters, which is also critically important to water managers.

In general, the CRCT Conservation Strategy focuses on the following objectives:

- Identify populations of CRCT and characterize the level of genetic introgression;
- Secure "conservation" and "core conservation" populations from further genetic dilution (from non-CRCT salmonids) or inter-specific competition (e.g., barrier construction, reclamation, stocking restrictions);
- Maintain and enhance watershed conditions, including streamflow protection, riparian buffers, and habitat projects;
- Public outreach and education;
- Monitoring and data exchange among state fish managers and federal land management agencies; and
- Coordination of all CRCT activities among the same agencies and non-governmental organization partners.[451]



The set of diversions known as the "Cameo Call" are some of the most senior rights in the Colorado River system. A fish ladder was built to allow endangered fish species access to habitat above the roller dam. Photo: M. Nager.

As the CRCT Conservation Strategy outlines, the partnership is continually updating maps, regulations, and the list of CRCT conservation waters as new monitoring data and research unfold. Of current interest is the further delineation of historic, native cutthroat trout into two distinct lineages. These lineages reflect pre-settlement occupation endemic to the Yampa/White/Green River Basins ("blue" lineage) and the Colorado-Gunnison-Dolores River Basins ("green" lineage).[452] Regardless of the nomenclature for particular genotypes of native cutthroat trout, the CRCT Conservation Strategy partners will continue to evolve their management strategies to address new challenges, such as climate change, and research findings.

Wild and Scenic Rivers

The National Wild and Scenic Rivers Act requires federal land agencies—including the BLM, the National Park Service, the USFS, and the USFWS—to use their land and resource management planning processes to identify and evaluate rivers that may be "eligible" and "suitable" for designation as Wild and Scenic rivers.[453]

To be eligible, a river, stream, or segment must be free-flowing and must possess at least one Outstandingly Remarkable Value (ORV). ORVs include scenic, recreational, geologic, fish and wildlife, historic, cultural, or similar values. Once a federal agency establishes eligibility, it evaluates that river or river segment for its suitability for designation as a Wild and Scenic river.[454] Agencies consider many factors in the suitability evaluation, including whether nonfederal entities that may implement protective management demonstrate a commitment to protect the river and its ORVs.

Agencies that find a specific river segment suitable may recommend that segment for designation as a Wild and Scenic river. Only an act of the Secretary of the Interior (upon the governor's request) or an act of Congress may make the designation. The USFS, NPS, and the BLM have determined many river segments in Colorado to be suitable for designation since passage of the original Wild and Scenic Rivers Act in 1968.

If the Secretary of the Interior or an act of Congress designates a river as a Wild and Scenic river, that designation may include a federal reserved water right for a quantity of water necessary to achieve the Act's purposes—including protecting the ORVs for which a river is designated. However, the managing agency has discretion about whether to quantify, adjudicate, or request enforcement of the federal water right. In this context, Colorado can work with local managing agencies to protect flows that can support ORVs using Colorado's Instream Flow Program. Additionally, federal land management agencies may impose conditions on permits or other federal land management decisions to protect the free-flowing nature, water quality, and classification associated with ORVs for candidate (eligible and suitable) Wild and Scenic rivers. Federal land management agencies review proposed projects in, above, or below a designated reach to determine if "they would invade the area or unreasonably diminish the Outstandingly Remarkable Values."[455] If so, the agency may request that project proponents modify the project to avoid adverse effects. If proponents cannot modify the proposed project, the permitting agency may deny the request for a federal permit or assistance. While federal agencies have determined that several rivers in Colorado (for example, the Dolores and Arkansas Rivers) are suitable for designation, and manage them as suitable in the absence of congressional designation, water development and management have proceeded.

In 2009, Colorado's General Assembly established the CWCB Wild and Scenic Rivers Act Alternatives Fund to support cooperative and collaborative processes that are committed to exploring alternative avenues for resource protection.[456] These processes typically consist of stakeholder groups aimed at protecting the ORVs associated with rivers within Colorado, while protecting Colorado's ability to fully use its compact and decree entitlements. The goal of such processes is to find alternatives to Wild and Scenic designation that satisfy the federal agencies' requirements to protect the ORVs. Representatives of diverse interests—including state agencies, local governments, conservation groups, recreation groups, and individuals—participate in these stakeholder groups, and each brings a different perspective to the group's work.

The Cache la Poudre River is the only river in Colorado that is currently designated as a Wild and Scenic river.[457] However, the BLM and the USFS are currently evaluating several river segments in Colorado for Wild and Scenic eligibility and suitability as part of their current land and resource management planning processes. Some NPS units have evaluated their resources for Wild and Scenic eligibility; however, most of those units have not evaluated their resources for suitability. Currently, three active stakeholder groups are using the Wild and Scenic Fund to discuss the merits of suitability findings and, in most cases, to develop alternative ways of protecting the ORVs several federal agencies identified. Stakeholder groups include the Upper Colorado River Wild and Scenic Stakeholder Group, the River Protection Workgroup (working in southwest Colorado), and the Dolores River Dialogue's Lower Dolores Plan Working Group. Additionally, since 1997, the South Platte Enhancement Board has been actively implementing its alternative plan to a possible designation under the Wild and Scenic Rivers Act.[458]

A pied billed grebe feeds in Colorado wetlands.

State of Knowledge

As part of the process the Colorado Water for the 21st Century Act established in 2005, the nine basin roundtables and the CWCB have worked to identify Colorado's environmental and recreational water needs, also referred to as nonconsumptive needs. Below is a brief description of some resources the roundtables and the CWCB have developed so far. Still, it is apparent that these groups can do additional work to develop common metrics for environmental and recreational attributes and to develop focused, basin-specific knowledge of environmental and recreational needs.

SWSI Phase 1—Nonconsumptive Mapping (2010)

As part of the nonconsumptive needs assessments, each basin roundtable mapped out the locations of important nonconsumptive attributes. These reaches or watersheds are known as "focus areas." Each focus area is associated with one or more attributes, such as imperiled fish species, important boating and fishing areas, and important waterfowl hunting areas, among others.[459] Environmental attributes the roundtables identified include federal and state threatened, endangered, and imperiled species (e.g. piping plover, greenback cutthroat trout, boreal toad, bluehead sucker); significant riparian-wetland plant communities; and special-value waters (e.g. the CWCB's instream flow water rights, eligible Wild and Scenic rivers).[460] Recreational attributes the roundtables identified include whitewater and flatwater boating; cold- and warm-water fish species; Audubon important bird areas; waterfowl hunting; and wildlife viewing.

SWSI Phase 2—Nonconsumptive Projects and Methods (2010)

In Phase 2, basin roundtables determined the locations of planned and existing nonconsumptive projects and methods, also known as identified projects and processes, in relation to the focus areas they developed in Phase 1. This information can help determine where known, nonconsumptive identified projects and processes offer direct or indirect protection for a specific attribute. Equally important, it can help determine where there are no known protections for a given focus area. For example, important riparian and wetland areas cover 18,767 stream-miles statewide.[461] Of those miles, existing and planned projects and processes provide or will provide direct protection to 2 percent, a combination of direct and indirect protection to 2 percent, and indirect protection to 23 percent. Of those stream-miles, 73 percent currently have no known protection. The CWCB organized the survey information in a database with Phase 1 information, and summarized it in maps created using GIS.[462] The maps include a list of planned nonconsumptive projects and methods, and show: 1) Where planned and existing projects and methods overlap with the nonconsumptive focus areas, and 2) Where there are no known projects that support those reaches.

Watershed Flow Evaluation Tool

The CWCB partnered with The Nature Conservancy and CDM Smith to pilot a tool known as the Watershed Flow Evaluation Tool (WFET). The WFET provides a framework for examining the risk of ecological change as it relates to streamflow alteration at a watershed or regional level. By contrast, site-specific quantification applies standard techniques to develop reach-based flow quantification based on historic data collection efforts. The WFET can help identify reaches where the historical alteration of streamflow has either increased or decreased risk to a given attribute, such as a cold-water fishery, a warm-water fishery, and riparian vegetation. The WFET can also help project ecological responses to future streamflow scenarios that result from new water development projects, a compact call,

or climate change. To date, the Colorado and Yampa/White/Green Basin Roundtables have applied the WFET to their basins.

It is important to note that the WFET and site-specific flow-quantification techniques possess different capabilities and limitations, and therefore complement each other. For example, the WFET can help target areas that may need further site-specific studies to quantify flow needs, and site-specific quantification can help refine risk-level categories the WFET identifies.[4638]

Stream Management Plans

Stream management plans can play an important role in identifying both the needs of environmental attributes, and the projects and methods that will benefit those attributes. For example, the Grand County Stream Management Plan examined approximately 30 stream reaches in the Upper Colorado River Basin to "provide a framework for maintaining a healthy stream system in Grand County, Colorado, through the protection and enhancement of aquatic habitat while at the same time protecting local water uses, and retaining flexibility for future water operations."[464] or each stream reach, the plan includes a reach description, study methodology and results, recommendations for environmental target flows, review of existing temperature and water quality data, monitoring guidelines, unique features and issues, and supporting data.[465] Action items the plan identified include restoration opportunities and monitoring recommendations by stream reach, and the "Learning by Doing" process (similar to adaptive management). Learning by Doing includes monitoring, evaluation, and adjustment of restoration opportunities—including flow enhancements—for the purpose of meeting pre-established goals.[466]

Well-developed stream management plans should be grounded in the complex interplay of biology, hydrology, channel morphology, and alternative water use and management strategies. They should also consider the flow and other structural or management conditions needed to support both recreational uses and ecosystem function. A stream management plan should: (1) Involve stakeholders to ensure their acceptance of the plan; (2) assess existing biological, hydrological, and geomorphological conditions at a reach scale; (3) identify flows and other physical conditions needed to support environmental and recreational water uses; (4) incorporate environmental and recreational values and goals identified both locally and in a basin roundtable's BIP; and (5) identify and prioritize alternative management actions to achieve measurable progress toward maintaining or improving flow regimes and other physical conditions. For basin roundtables, local stakeholder groups, and decision makers, such plans can provide a framework for decision making and project implementation related to environmental and recreational water needs.[a]

The necessary steps for the development of a stream management plan include: (1) Gathering stakeholders to participate in plan development; (2) identifying the plan's objectives; (3) identifying and prioritizing ecological and recreational values; (4) establishing goals for flows and other physical conditions in order to protect or enhance environmental and recreational attributes on streams and rivers within a given watershed; (5) collecting and synthesizing existing data describing flows for river ecosystems, boating, or other needs in the watershed; (6) assessing existing physical conditions of stream reaches, including geomorphological and riparian conditions; (7) selecting quantitative measures that can be used to assess progress made toward articulated goals; (8) determining what new information is needed and the best methods for obtaining that information; (9) quantifying specific numeric flow recommendations (or ranges of flow) and physical conditions and assessing the potential for channel reconfiguration to support environmental and recreational values; (10) identifying temporal, geographical, legal, or administrative constraints and opportunities that may limit or assist in the basin's ability to meet environmental and recreational goals; and (11) implementing a stakeholder-driven process to identify and prioritize environmental and recreational projects and methods. Stream management plans should provide data-driven recommendations that have a high probability of protecting or enhancing environmental and recreational values on streams and rivers.[b]

[a] This summary of the elements of a stream management plan is based upon public comments that incorporated information the Colorado River basin roundtable compiled, and upon comments that the Northwest Colorado Council of Governments Water Quality/Quantity Committee submitted.

[b] This description of the steps to develop a stream management plan is based upon public comments that incorporated information from the Grand County Stream Management Plan and upon comments that the Northwest Colorado Council of Governments Water Quality/Quantity Committee submitted.

Section 7.1's recommendation for a collaborative approach to watershed planning is one that includes stakeholder involvement and management actions supported by sound science—and it applies equally to stream management plans. An inclusive stakeholder approach expedites cooperative and integrated project planning, which leads to successful implementation of measures that will meet the needs the stream management plan identified.

Additionally, while stakeholders can develop stream management plans independently of watershed master plans, a stronger stream management plan will result if the basin conducts it as part of, or in conjunction with, watershed master plans. Numerous watershed master plans incorporate important components of stream management plans. Future stream management plans should build off of existing watershed plans and other available studies.

Conclusion

While this body of work represents an increase in the understanding of Colorado's nonconsumptive needs, more work is required to understand and quantify recreational and environmental needs. Additionally, the roundtables need information about whether existing nonconsumptive identified projects and processes are sufficient to protect the environmental and recreational attributes the projects and processes target. Based upon the above-described information and information the basin roundtables, stakeholder groups, and others are developing, Colorado can develop a strategic approach to meeting its nonconsumptive needs and provide meaningful protection to environmental and recreational attributes.

Existing Environmental and Recreational Legislation

Instream Flow Legislation

Colorado's General Assembly established the Instream Flow and Natural Lake Level Program in 1973, recognizing "the need to correlate the activities of mankind with some reasonable preservation of the natural environment."[467] This legislation vested the CWCB with exclusive authority "on behalf of the people of the state of Colorado, to appropriate or acquire...such waters of natural streams and lakes as may be required to preserve the natural environment to a reasonable degree."[468] Over the years, the General Assembly has amended and clarified aspects of this legislation. Highlights of recent legislation are presented below.

In 2002, Senate Bill 02-156 authorized the CWCB to use acquired water rights to improve the natural environment to a reasonable degree.[469] In 2003 and 2005, the General Assembly responded to the 2002 drought conditions by allowing temporary changes of water rights to instream flow purposes, with DWR approval.[470] In 2007 and 2008, the General Assembly established protections for water rights owners that lease water to the CWCB for instream flow use. These protections provide that a lease to the CWCB will not reduce the historical consumptive use of a water right. It also eliminates the legal presumption of abandonment for water rights that the CWCB has used nonconsumptively.[471]

In 2008, the General Assembly authorized an annual appropriation of $1 million from the CWCB Construction Fund for costs of acquiring water for instream flow use.[472] That same year, the General Assembly authorized an annual appropriation of $500,000 from the Species Conservation Trust Fund for the costs of acquiring water for instream flow use to preserve or improve the natural environment of species that have been listed as threatened or endangered under state or federal law, or are candidate species, or are likely to become candidate species.[473] In 2009, the General Assembly established a tax credit that created a market-based incentive for voluntary donation of water rights to the CWCB for instream flow use.[474]

Recreational In-Channel Diversion Legislation

In 2001, the General Assembly established authority and procedures for local government entities to apply for and hold in-channel water rights for recreational uses, referred to as RICDs.[475] The legislation charged the CWCB with making findings of fact and submitting recommendations to the water court regarding RICD water court applications. It also authorized the CWCB to hold hearings on such applications if any party requested it. In 2006, the General Assembly updated the procedures for RICD water rights applications. It also clarified the role of the CWCB's administrative process as well as its determination of findings of fact to submit to the water court.[476]

BIP-Identified Environmental & Recreational Projects & Methods

As part of the BIP process, the basin roundtables identified projects and methods that could assist in meeting environmental and recreational needs within their basins. The process for identifying these projects and methods was unique to each basin; roundtables collected and organized information through public outreach, input solicitation, and review by committees or the full roundtable. As a result, because these processes were different in each basin, the manner in which the BIPs presented these projects and methods varied. Some basins identified reaches of concern, and others consolidated existing compilations of project information.

A lake near Boulder with views of the Flatirons.

This section examines and summarizes the work of the basin roundtables. It focuses on a brief description of the process each basin used, a general overview of projects and methods identified, and the path forward as basins move to meet their goals and measurable outcomes. More information on the BIP process and how each basin collected and organized its environmental and recreational projects is available in the individual BIPs, which are available on the Colorado's Water Plan website.[477]

Arkansas River Basin

The Arkansas Basin Roundtable undertook an ambitious public outreach process by hosting meetings around the basin to gather input and suggestions from residents. One of the hallmarks of this process was the input form the roundtable designed. The input form encouraged basin residents to submit ideas and projects for the roundtable's consideration. The roundtable also considered the list of IPPs from SWSI 2010, as well as focus areas or areas of concern the Nonconsumptive Needs Committee identified.[478]

ARKANSAS BASIN AT A GLANCE

135 projects identified on the IPP List that meet environmental or recreational needs

$345,230,000 in costs identified for **2** projects

382 stream-miles identified for protection by **15** projects

The roundtable has gathered project lists from several sources, including SWSI 2010, The Nature Conservancy, CPW, and others. The BIP also identifies projects the roundtable funded through the WSRA program, and projects or methods the public input process helped identify and the roundtable undertook. Through this inventory of potential projects, the roundtable seeks to prioritize available WSRA funding, and to demonstrate the types of projects it believes conform to the basin's goals and measurable outcomes.[479]

The BIP Project Database includes environmental and recreational projects, classifying them by definitions of Master Needs, Preliminary Needs, and IPPs. These projects line up with the basin's environmental and recreational goals of maintaining and improving key attributes. Many of the identified projects concentrate on the protection and restoration of key habitat through diversion replacement, wetland improvement, and reoperation of currently existing storage rights. Three of the identified projects are associated with some aspect of instream habitat restoration. Two projects identified by the Committee focus on recreational needs through activities such as boat chute improvement, campsite restoration, and reservoir renovation with recreational needs in mind.

Moving forward, the Arkansas Basin Roundtable plans to delve deeper into the public input it received through its outreach program. For projects that meet basin goals, proponents may be invited to a roundtable meeting to present on their projects, and to potentially work with the roundtable to meet funding needs. As it moves forward to maintain an updated inventory of activities within the basin, the roundtable plans to take a holistic view of projects and methods, exploring concepts such as watershed health. GIS mapping of needs and identifying areas of concern is a roundtable priority, and supports the BIP's efforts. The roundtable plans to complement this path forward with the pending revised edition of the SWSI, with specific identification of projects and methods that meet the definition of an IPP.

Colorado River Basin

The Colorado Basin Roundtable also began with an extensive public outreach campaign in which consultants interviewed water providers throughout the basin and hosted many town hall meetings and opportunities for gathering BIP input. This outreach process yielded a comprehensive list of projects, organized by basin themes and geographical location. Similar to the Arkansas Basin approach, the roundtable believed that a comprehensive inventory of projects and methods would serve the basin well as a suite of options for moving forward and for meeting its future water supply needs. The basin also compiled projects and methods from existing sources, such as SWSI 2010, into this inventory. Roundtable members took a closer look at the list of projects and methods. Then, in each basin sub-region, they identified representative

COLORADO BASIN AT A GLANCE

27 projects identified on the Top Projects list that meet environmental or recreational needs

$117,500,000 - $152,500,000 in costs identified for **13** projects

24,082 acre-feet of development for environmental or recreational needs identified by **3** top projects

projects that met basin themes and sub-region goals. These projects were designated "Top Projects" and represent important needs at both the basin-wide and sub-region levels.

The Colorado Basin Roundtable established several themes to sum up and organize the input it received from basin stakeholders. Theme #1 is: "Protect and Restore Healthy Streams, Rivers, Lakes, and Riparian Areas."[480] In its identification of Top Projects, the roundtable identified several projects that complement this basin-wide theme. Central to this theme is the roundtable's goal of establishing a basin-wide stream management plan. Data gaps for environmental and recreational needs are a key issue of concern for this basin. The roundtable would like to see more progress statewide in scientifically quantifying the amounts of water necessary to maintain or improve these attributes.

Many of the roundtable's identified Top Projects and methods have an environmental or recreational focus. Many include the acquisition of water rights to restore or protect streamflow, or flow-related recreational protection. The needs of endangered species in the Colorado Basin are highlighted in the BIP's goals and measurable outcomes; species recovery is a measurable outcome to be achieved through habitat improvement and addressing invasive species.

Moving forward, the roundtable plans to begin organizing the inventory of projects for potential implementation. To prioritize the projects and methods, the roundtable will examine each through the lens of the basin-wide themes, and will identify projects that may serve multiple purposes or meet basin goals. Many of the water management-related projects and methods may already be in the planning stages. Some of these may be associated with the CRCA, and some may be roundtable-funded projects that anticipate multiple phases.[481]

Gunnison River Basin

The Gunnison Basin Roundtable identified two basin goals that address environmental and recreational water needs, and then identified projects and methods within the basin that could assist in meeting those needs.[482] The roundtable compiled this inventory of projects and methods through outreach within the basin and through stakeholder participation in the BIP process. The roundtable also convened a group of environmental and recreational advocates, including staff from state and federal agencies, to provide input and assist in identifying focus reaches. As part of the BIP process, the roundtable approved the use of "project summary sheets," which help break down elements of projects and methods such as project proponent, project cost, and effectiveness in meeting basin goals.[483]

GUNNISON BASIN AT A GLANCE

30 projects identified that meet environmental or recreational needs

$427,848,100 in costs identified for **23** projects

21,472 acre-feet of development for environmental or recreational needs identified by **10** projects

In organizing its projects and methods inventory, the roundtable established three tiers of projects. The tiering criteria were the timeline and the effectiveness in meeting basin goals. The basin roundtable also identified 29 target stream reaches within the basin as areas where environmental and recreational projects and methods could be beneficial. While identifying potential projects and methods, the roundtable highlighted a series of ongoing efforts involving environmental protections and monitoring that help to maintain these attributes within the basin.

The Gunnison Basin Roundtable defined Tier 1 projects and methods as those whose implementation is likely feasible by 2025 and that do an excellent job of meeting basin goals.[48] Of the 49 projects classified as Tier 1, 18 are associated with Basin Goal #5: "quantify and protect environmental and recreational water uses."[485] These projects mostly focus on improving or restoring stream channels within the aforementioned target stream reaches, or on improving native trout

populations. Many projects identified as Tier 1 are multipurpose projects that include an environmental or recreational benefit. The roundtable also identified 22 projects as meeting Basin Goal #7: "Describe and encourage the beneficial relationship between agricultural and environmental and recreational water uses."[486] These projects are chiefly multipurpose projects for agricultural uses with environmental and recreational benefits identified, making them in-line with the basin goal.

For its environmental and recreational goals, the Gunnison Roundtable also established some measurable outcomes that are based in project implementation. Moving forward, the roundtable aspires to develop 10 projects from the list of recommended solutions by 2030. Additionally, the roundtable included a more comprehensive inventory of environmental and recreational projects as a method in the list of recommended solutions, and hopes to see completion of this "Identification and Inventory" by 2020.[487]

North Platte River Basin

The North Platte Basin also had two primary goals related to environmental and recreational uses and needs.[488] The public outreach and education process the roundtable had been doing up to that point informed the BIP process. The public outreach and education process engaged stakeholders within the basin and also included more technically oriented outreach to identify specific projects and methods. Similar to the Gunnison BIP, the North Platte Basin Roundtable identified one goal associated with the maintenance of healthy rivers and wetlands, and one goal geared toward the nexus with agricultural water use. For both of these goals, the BIP's measurable outcomes are based on project implementation, with an inventory of potential projects and methods that serve as "recommended solutions."[489]

NORTH PLATTE BASIN AT A GLANCE

55 projects identified that meet environmental or recreational needs

6,226 acre-feet of development for environmental or recreational needs identified by **3** projects

The projects and methods the BIP identified complement the roundtable's previous work, which prioritized environmental and recreational attributes within the basin. The roundtable applied the previous prioritization of attributes to the inventory of recommended solutions, and established a process for identifying locations where these needs are not being met, and for finding solutions. Measurably, the roundtable plans to develop three projects from the inventory of solutions by 2020.[490] Regarding the goal of supporting environmental and recreational benefits through agricultural projects, the roundtable plans to complete at least two multipurpose projects by 2025.[491]

In its inventory of recommended solutions, the roundtable identified 50 environmental and recreational projects.[492] Of these projects, 37 are classified as restoration of wetlands, riparian, or stream projects. These projects identify specific species for protection and habitat restoration, and many are also associated with water quality or watershed health. The North Platte Basin Roundtable particularly emphasizes wetlands protection and restoration, so it identified amphibians and waterfowl as direct beneficiaries of implementation projects. Ten of the basin projects are focused on habitat restoration through projects that will improve livestock-grazing management through fencing. The focus in this basin, as is evident by its goals and implementation-based outcomes, is on multipurpose projects and methods.

Through implementation of these projects and methods, the roundtable hopes to accomplish incremental increases in recreational activities within the basin. Specifically, the basin aspires to a 5 percent increase in waterfowl hunting and viewing days by 2020, as well as a 5 percent increase in fishing user-days in the same time period.[493] Moving forward, the basin will use its existing prioritization system to evaluate funding for projects and methods in this inventory of recommended solutions.

The Rio Grande River flows from high mountain peaks in southern Colorado.

Rio Grande River Basin

The Rio Grande Basin Roundtable, like others around the state, established a set of basin goals, and then examined potential projects and methods with these goals in mind. The roundtable compared its basin goals with basin needs, and developed a multipurpose focus, since all basin goals had a nexus with environmental and recreational needs.[494] The roundtable gathered and consolidated projects and methods through its public outreach process, and through the work of subcommittees the BIP Steering Committee led. To date, the roundtable has identified 29 projects and methods, which were preliminarily evaluated in accordance with basin goals. The "Project Fact Sheets" describe these in detail.[495]

The roundtable assessed the projects and methods the BIP identified as multipurpose projects. Of those, 28 identify some nexus with environmental and recreational needs.[496] Additionally, the basin compiled a list of additional projects and methods that may merit future consideration, but that the BIP did not consider in this iteration due to time constraints. This additional section identified 19 projects and methods that would meet an environmental or recreational need, often as part of a multipurpose project.[497]

RIO GRANDE BASIN AT A GLANCE

58 projects identified that meet environmental or recreational needs

$129,674,531 in costs identified for **24** projects

4 stream-miles of protection for environmental or recreational needs identified by **3** projects

In keeping with this roundtable's goals and measurable outcomes, many of the identified projects and methods focus on riparian restoration and watershed health. Projects that fall into these categories include those intended to improve fish habitat, restore headwaters, and result in comprehensive watershed planning. Identified storage projects are potential sites for wildlife habitat and recreational opportunities, such

as angling and boating. Other projects and methods fall into the category of water management, with plans to study hydrology within the basin, examine post-fire conditions, and potentially optimize streamflow.

Moving forward, the roundtable has estimated costs for 25 of the 29 projects the Project Fact Sheets examined. These 25 projects total an estimated financial need of more than $218 million through the year 2020.[498] As the roundtable moves forward with the basin planning effort, it will explore funding avenues, and may refine the list of identified projects and methods. The roundtable will do additional analysis of the supplementary list of projects and methods, and as it measures these potential recommendations against basin goals, may prioritize some of them. Similar to the Colorado Basin Roundtable, the Rio Grande Roundtable has identified the need to fill information gaps regarding environmental and recreational needs, and to find ways to better understand how water may be managed to maintain and protect these attributes. The BIP provides a list of projects and methods that would address these information gaps, and provides guidance to the roundtable as it moves forward on project funding and implementation.[499]

South Platte River Basin (Including Metro)

The joint BIP the South Platte Basin and Metro Roundtables prepared required a large amount of outreach throughout the basin, as these comprise the most populous areas in Colorado. The roundtables chose "Protect and enhance environmental and recreation attributes" as an area of focus when looking to future water needs in the basin. In addition, the roundtable identified a series of measurable outcomes to meet the basin's environmental and recreational goal: "Fully recognize the importance of, and support the development of environmental and recreational projects and multipurpose projects that support water availability for ecologically and economically important habitats and focus areas."[500]

SOUTH PLATTE/METRO BASIN AT A GLANCE

75 projects identified that meet environmental or recreational needs

The South Platte/Metro BIP highlights examples of projects throughout the basin that are consistent with the above environmental and recreational goal. It lists these examples by basin sub-region, and provides mapping and analysis that demonstrates key attributes in those areas. The South Platte/Metro team, similar to other basins, chose to create an inventory of projects and methods to serve as a suite of options for fulfilling these nonconsumptive measurable outcomes. A great deal of the projects listed for environmental and recreational projects came from the SWSI 2010 nonconsumptive needs assessment, and many of those projects have been completed. Beyond these identified projects, the roundtables also created an inventory of "Additional Identified Environmental and Recreational Projects."[501] The roundtables identified these projects through the public outreach process or through proponent submission, or identified them as active, in-progress projects the roundtables chose to identify as steps toward meeting the nonconsumptive measurable outcomes.

Beyond the inventory of SWSI and additional environmental and recreational projects, the roundtables identified specific examples of projects they believe meet their measurable outcomes, and would be good models to follow in the future. The roundtables specifically highlighted existing multipurpose projects throughout the basin that were in line with goals and measurable outcomes. These goals focus on endangered and threatened species, the economic value of environmental and recreational uses, and the sustainability of water-dependent areas. Following these goals, the roundtables categorized many projects that were identified beyond the SWSI needs assessment as wetlands restoration, riparian restoration, and stream habitat projects. Measurably, the roundtables identified the recovery of key species of trout and native plains fish as important. Serving as a snapshot of the current state of affairs in the basin, this list identified projects that are proposed, planned, completed, and ongoing.

The BIP also included an analysis of the benefits to environmental and recreational needs that multipurpose projects can provide. Examples include the potential for installation of environmentally friendly passages after flood events, coordinated reservoir operations, and recharge projects.[502] Moving forward, the roundtables will continue to identify projects and methods that match up with their identified measurable outcomes, and seek to identify projects that may meet multiple needs.

Southwest Basin

The Southwest Basin Roundtable completed an extensive public outreach process to provide a comprehensive update to the SWSI 2010 IPP list. Through a series of public meetings, newspaper articles, and conversations with water management entities within the basin, the roundtable created a complete inventory of new IPPs within the basin. Additionally, the roundtable identified "Conceptual IPPs," which have no active sponsor, but are ideas for projects and methods within the basin that may conform to basin goals and measurable outcomes.[503] The Southwest Basin Roundtable, similar to the Rio Grande, evaluates any project or method for potential multiple uses and benefits. Approximately 50 percent of the IPPs are primarily meeting potential environmental and recreational needs.[504]

SOUTHWEST BASIN AT A GLANCE

72 projects identified that meet environmental or recreational needs

$30,000 in costs identified for **1** project

202 stream-miles of protection for environmental or recreational needs identified by **9** projects

The goals the roundtable identified specifically recognized the benefit environmental and recreational values provide to statewide and local economies. The roundtable's measurable outcomes include the maintenance, protection, and enhancement of these uses, as well as species recovery and watershed health. The inventory of projects and methods listed 67 environmental and recreational projects.[505] The inventory identified projects that pertain to invasive species removal, native revegetation, hydroelectric projects, natural disaster mitigation, habitat protection and restoration for trout and warm-water fish, appropriation of instream flows, habitat assessments, and fish passage projects.

Within the text of the BIP, the roundtable identified representative environmental and recreational IPPs. These example projects provided a look at the type of implementation of environmental project and method implementation that is planned or ongoing within the multiple sub-basins of the southwest. In line with the basin's measurable outcomes relating to the "condition and natural function of streams, lakes, wetlands, and riparian areas," the basin plans riparian restoration projects for key reaches of the La Plata, Dolores, Navajo, and San Juan Rivers.[506] On the Florida River, the basin identified livestock fencing as a means to protect a riparian buffer zone.

Moving forward, the basin will continue to consider all proposed IPPs equally, and will evaluate each one for potential multiple uses and benefits. In the BIP text, the roundtable considered opportunities for funding availability. It also explored the concept of "bundling" a package of proposals, and ways in which such an approach may help make the most of limited funding.[507] The Southwest Basin Roundtable, similar to the Rio Grande and Colorado, identified the data gaps in environmental and recreational water needs as a priority moving forward. The roundtable discussed identification and evaluation of gaps in this body of knowledge, and believes that by addressing these gaps, it can accomplish more reliable planning for the water supply future of the basin, and can make project implementation more efficient.

Yampa/White/Green River Basin

The Yampa/White/Green Basin Roundtable drew from two different sources to compile an inventory of projects and methods within the basin. First, the roundtable conducted an extensive outreach process, including holding several public meetings, publishing information in local publications, and issuing surveys. Also, the roundtable had previously begun the Projects and Methods Study, which identified projects and methods within the basin, as well as compared certain IPPs against potential future hydrological scenarios.[508]

YAMPA/WHITE/GREEN BASIN AT A GLANCE

22 projects identified that meet environmental or recreational needs

$5,050,000 in costs identified for **4** projects

371 stream-miles of protection for environmental or recreational needs identified by **16** projects

The roundtable identified two main inventories of projects with an environmental and recreational nexus. Many of the projects and methods listed in the inventory of "Current M&I, SSI, Agriculture, and Multipurpose IPPs" have an identified or potential benefit for environmental and recreational needs, some of which were modeled.[509] Additionally, some of the identified projects are the subject of ongoing feasibility studies that could potentially identify environmental and recreational benefits that project implementation can help realize. Drawing from interviews and information basin stakeholders provided, the roundtable identified a collection of projects with primarily environmental and recreational benefits. Most of these projects and methods are located within focus areas the roundtable identified. This collection identifies 18 projects and methods. Several of these projects have a completion date before 2020, while others are classified as ongoing through 2020.[510]

The list of Environmental and Recreational Identified Projects and Processes focuses heavily on the improvement of existing river conditions to restore and improve environmental and recreational attributes. Several projects identified the modification of specific reaches for the benefit of endangered fish or for recreational access. Other projects seek to restore and preserve the natural state of the river for watershed health and erosion control. Other proposed methods would study potential solutions to identified challenges, such as flow regimes for endangered fish, or potential augmentation of instream flow shortages. However, the roundtable emphasized that the current inventory is not exhaustive, and that other projects and methods will be necessary to fully address the environmental and recreational needs located within focus segments or otherwise. As planning efforts continue within the basin, the roundtable will identify additional projects and methods to meet these needs.

Like other basin roundtables, the Yampa/White/Green BIP stressed the need for accurate information and analysis of data gaps for environmental and recreational needs. To that end, and to fully assess the

TABLE 6.6-1 COMPLETED, ONGOING, AND POTENTIAL FUTURE ACTIONS

COMPLETED AND ONGOING ACTIONS	POTENTIAL FUTURE ACTION
• Implement ESA recovery programs • Implement basin nonconsumptive projects • Develop draft Nonconsumptive Toolbox • Put Wild and Scenic alternatives in place • Implement the CWCB Instream Flow Program • Implement Colorado Watershed Restoration Program • Implement Species Conservation Trust Fund • Implement CPW Management Plans	1. Develop statewide goals and measurable outcomes to be considered for incorporation into BIPs a. Develop goals and measurable outcomes for federally listed endangered and threatened species b. Develop goals and measurable outcomes for imperiled species c. Develop goals and measurable outcomes for economically important nonconsumptive uses d. Develop goals and measurable outcomes for multipurpose projects and methods 2. Pursue projects and methods to meet nonconsumptive needs as part of the BIPs a. Develop basin-wide goals b. Develop measurable outcomes c. Identify needs and opportunities d. Use the decision process to determine projects and methods 3. Track nonconsumptive projects and methods a. Conduct nonconsumptive surveys and analysis b. Create web portal c. Use existing database d. Use the Basin Needs Decision Support System 4. Develop incentives, including funding for projects and methods in the nonconsumptive focus areas a. Assess funding needs b. Target existing funding sources and programs to provide enhanced levels of support for implementation of nonconsumptive needs c. Explore additional incentives, including funding options 5. Develop environmental metrics that can help evaluate future projects (to be considered in the new supply discussions) Manage and improve storage, infrastructure, and reservoir operations to benefit environmental and recreational values [Section 6.5]

effects of projects and methods, the roundtable plans to use studies and modeling efforts that are already completed or underway. The roundtable will use these analyses to determine which type of project or location would be the most beneficial regarding stream conditions and hydrologic impact.

IBCC Actions

In 2013, the IBCC developed the No-and-Low-Regrets Action Plan to implement environmental and recreational projects and methods. This strategy outlines what should be carried out in the near term statewide. The IBCC reached consensus on the need to implement the actions, regardless of the future scenario. Table 6.6-1 summarizes these actions.

ACTIONS

A strong Colorado environment is critical to the state's economy and way of life. Colorado's Water Plan sets a measurable objective to cover 80 percent of the locally prioritized lists of rivers with stream management plans, and 80 percent of critical watersheds with watershed protection plans, all by 2030.

To support a strong environment that includes healthy watersheds, rivers and streams, and wildlife, as well as a robust recreation and tourism industry, several actions are necessary:

1. **Technical work:** As part of the next version of SWSI, the CWCB, in consultation with the basin roundtables, will conduct additional technical work associated with the environmental and recreational focus areas to better determine the levels of existing protections, and where additional projects and methods should focus.
2. **Near-term projects and methods to address high-priority needs:** The CWCB will work with CPW, the basin roundtables, and other relevant agencies to establish and achieve measurable outcomes for (a) federally and state-listed endangered and threatened species, and imperiled species; and (b) economically important water-based recreational uses. It will accomplish this by developing a plan within the next three years that compiles and develops near-term projects and methods that address these high-priority needs, including projects the BIPs identified. This work will build on the work of the basin roundtables and the SWSI, including the work done in Action 1 above. At the same time, the CWCB will continue to provide technical and financial assistance to support the strategic implementation of currently identified projects.
3. **Common metrics:** In coordination with other state agencies, basin roundtables, and other stakeholders, the CWCB will develop common metrics for assessing the health and resiliency of watersheds, rivers, and streams.
4. **Watershed master plans:** As Section 7.1 indicates, the CWCB will work with watershed and other stakeholder groups toward a long-term goal of developing watershed master plans for every large watershed area to maintain watershed health. The CWCB will encourage and support capacity in areas that currently do not have watershed groups or other broad, local stakeholder groups.
5. **Stream management plans:** To promote healthy watersheds, rivers, streams, and wildlife, the CWCB encourages and will work with basin roundtables and other stakeholder groups to develop stream management plans for priority streams identified in a BIP, or otherwise identified as having environmental or recreational value. As part of this work, the CWCB will provide guidelines and templates for developing stream management plans, and will conduct ongoing analyses through the SWSI. To ensure continued planning and implementation in this context, the CWCB will explore additional funding sources, in addition to funding sources the 2015 CWCB Projects Bill provides.
6. **Incorporation of drought and climate change:** The basin roundtables and the CWCB will incorporate into the BIPs and the next update of the SWSI the potential effects of drought and climate change on environmental and recreational attributes.
7. **Multipurpose projects:** To support the develop-

ment of multipurpose projects and methods, the CWCB will work with the basin roundtables and other stakeholders on an integrated approach to understanding how environmental and recreational projects and methods can interact with municipal, agricultural, and industrial projects and methods to achieve multiple benefits. The CWCB will strategically support the implementation of BIP-identified multipurpose, projects, and methods that help meet environmental, recreational, agricultural and community water needs. It will accomplish this with state financial and technical resources, taking into consideration locally identified geographic and/or seasonal gaps. This will include establishing priorities in Colorado's grant and loan programs for multipurpose projects and methods. Working with the basin roundtables and BIPs, the CWCB will also coordinate with project sponsors to explore and support opportunities to increase benefits to environmental and recreational values associated with existing and planned storage and infrastructure.

8. **Proactive implementation of existing programs:** The CWCB, other state agencies, basin roundtables, and other interested stakeholders will continue to support and implement state programs that benefit environmental and recreational attributes, such as the Colorado Watershed Restoration Program, Instream Flow and Natural Lake Level Program, Wild and Scenic Rivers Act Alternatives Fund, and CPW's Wetlands for Wildlife Program. The DNR and its agencies will institute policies, criteria, and programmatic approaches to proactively developing projects and methods that strategically address important aquatic, riparian, and wetland habitats.

9. **Continued support of ESA activities:** The CWCB, CPW, and water users will continue to support and participate in collaborative approaches to ESA issues, including recovery programs, cooperative agreements, and other efforts to prevent listings and promote the sustainability of endangered, threatened, and imperiled aquatic- and riparian-dependent species and plant communities.

10. **Broadened support of recreational uses:** The CWCB will support local governments with water recreation opportunities through continued technical consultation and funding, where appropriate. To assist with water project planning, the CWCB will support the development of tools that can be used to better understand the relationship between stream flows and recreational water uses. Additionally, the DNR will explore opportunities to protect instream flows for recreational uses without the requirement of a control structure.

11. **Funding:** As Section 9.2 discusses, the CWCB will work with appropriate entities to strengthen funding opportunities for environmental and recreational projects, including funding for long-term monitoring and maintenance of such projects, by:

    a. Coordinating current funding

    b. Assessing funding needs

    c. Exploring additional funding opportunities

Sunrise reflection of Hallet Peak on Dream Lake, Rocky Mountain National Park.