

Stream Management Planning  
In Upper San Juan River Basin  
WRP Grant - POGGI PDAA 201800000886

Final Report  
April 2020

*PREPARED BY:*  
Mountain Studies Institute

*SUBMITTED TO:*  
Colorado Water Conservation Board  
Southwest Basin Roundtable

## **Background**

In 2017/2018, the Colorado Water Conservation Board (CWCB) and Southwest Basin Roundtable (SWBRT) generously awarded funding to support Mountain Studies Institute (MSI), Trout Unlimited (TU), and Western Wildscapes (WW) coordinate a steering committee and stakeholder group in order to facilitate a community-led process to assess water needs and develop a Stream Management Plan (SMP) for the San Juan River Basin. The SWBRT's Basin Implementation Plan (BIP) identified a significant gap in information necessary to understand and protect environmental and recreational (E&R) water needs. Phase I (May 2018-April 2020) of this project directly supported the BIP goals to address this gap by tackling the first critical steps in the process: establish community engagement, develop a steering committee and stakeholder group, review existing data and information, and determine next steps.

Envisioned as a three-phase process, **the ultimate purpose of the proposed project is to initiate, and ultimately implement, the SMP process to seek opportunities to conserve the San Juan Basin streams and their uses with wide-ranging community support and decisions based on local input and current, relevant science and assessments.**

The stated outcomes of Phase I included: (1) an organized stakeholder group led by a steering committee representing diverse water interests with structure, capacity, and collective interest in pursuing a coordinated SMP; (2) a review of current data and information; and (3) a work plan for moving forward with the project. By establishing the framework for a diverse steering committee and stakeholder group early in the development of a SMP, the project encourages community learning and balanced, ongoing stakeholder input throughout the process.

All outcomes of Phase I have now been achieved in thanks to the support of CWCB's Watershed Restoration Program and Water Supply Reserve Fund grant programs and local partners. This report describes Phase I accomplishments and next steps as the group transitions into Phase II. We greatly appreciate your support!

## **Summary**

After significant outreach within the community, a steering committee was organized to guide the SMP process and explore watershed issues and opportunities. Committee members include interested citizens and professional representatives from agriculture, municipal, recreation, environmental, and local government organizations. In Phase I, the Steering Committee held a total of 16 meetings, during which they developed the following: proposed goals and objectives, established boundaries (e.g., strictly a voluntary effort, respect for water rights and water law is paramount), educated themselves on other ongoing SMP efforts and lessons learned, began discussion of geographic scope, and in general began the process of organizing this effort. One of the first recommendations of the committee was to change the name of the effort from "Upper San Juan Stream Management Plan" to "Upper San Juan Watershed Enhancement Partnership", or WEP for short, to better represent the goals of the group to create voluntary opportunities to protect water supplies, not management regulation.

Two, well attended, public meetings to receive input from stakeholders in the community were held in January 2019 and September 2019. In addition, a survey to assess the community's water values, interests, needs and concerns was distributed, collecting 44 responses. Lastly, steering committee members regularly brought forward concerns and questions from their representative constituent groups to ensure issues were addressed, messaging clarified, and questions answered more immediately. Two key outcomes from the public process were: (1) the narrowing of the project area to exclude the Piedra River (which may be included in future efforts); and (2) the expansion of the scope from investigation of environmental and recreations (E&R) needs to include an assessment of agricultural irrigation structural needs as well when developing a stream management plan.

Along with this community input, resources and “lessons learned” from other SMP groups was gathered via guest speakers, the River Network, and representatives involved in regional efforts with the San Miguel and Mancos water planning groups to ensure the WEP prepared for project challenges. Collectively, this information and community values shaped the WEP’s evolution from a stream management plan process into what is now called an Integrated Water Management Plan (IWMP). This shift was based on feedback to consider agricultural and municipal water use and needs into an assessment of environmental and recreation water needs in order to create a comprehensive plan for the Upper San Juan Basin.

In addition, available, current data and information was gathered to prepare a report to guide Phase II’s assessment gaps. Finally, the steering committee mapped out proposed next steps, including a scope of work for Phase II of the project, which consists of an assessment of E&R water supply needs, agricultural irrigation structural needs, and beginning of exploration of opportunities to address multiple water needs. Thanks to CWCB’s approval of a grant extension, the WEP was able to continue refining assessment needs and schedule, as well as develop community outreach strategies to ensure the group had a smooth and prepared transition into Phase II in Spring of 2020.

## **Progress By Task**

### **Task 1 Deliverables: Create an organized stakeholder group, led by a steering committee, with structure, capacity and collective interest in pursuing a coordinated Stream Management Plan/Integrated Water Management Plan.**

- In 2018, MSI, TU, and WW identified potential partners, built a steering committee, identified common interests and goals, established a process for soliciting public input, and publicized the effort through radio shows, newspapers, board presentations and establishment of a website. Attachment 1 contains an example outreach poster.
- The Steering Committee is comprised of broad water interest representation and held 16 meetings, including one field trip visit, in 2018 and 2019. The Steering Committee has representatives from:
  - Banded Peak Ranch
  - Chama Peak Land Alliance
  - CSU Extension Office (Archuleta County)
  - Park Ditch Company
  - Pagosa Area Water and Sanitation District
  - Pagosa Outside (local recreation business)
  - Riverbend Engineering (local restoration firm)
  - Taylor Ranch
  - Town of Pagosa Springs planning dept.
  - Trout Unlimited
  - The Nature Conservancy
  - San Juan (Soil) Conservation District
  - Natural Resources Conservation Service
  - Colorado Division of Water Resources
  - Colorado Water Conservation Board
  - Colorado Parks and Wildlife
  - U.S. Forest Service
  - Mountain Studies Institute
- Steering Committee meetings accomplished the following:
  - Established operational ground rules, guidelines, and Code of Conduct
  - Described intent/goals of Stream Management Planning under the State Water Plan
  - Developed goals and objectives of WEP:
    - Voluntary effort
    - Emphasis on community involvement
    - Explore collaborative projects that benefit multiple water uses
  - Drafted proposed geographical subdivision based on hydrological boundaries
  - Emphasized need to follow Colorado water law
  - Emphasized the use of science in WEP development
  - Coordination with other local working groups dealing with water related issues:
    - San Juan Headwaters Forest Health Partnership
    - Resilient Archuleta

- Growing Water Smart
  - Initiated education of similar/related efforts within the watershed and elsewhere
  - Developed list of lessons learned from similar efforts
  - Developed survey to assess public's water related needs and issues (results still being collected)
  - Established website as a source of information related to this collective and collaborative effort
- The WEP has also brought speakers from other SMP-related efforts and technical experts to inform the Steering Committee of different project examples and considerations for planning. Guest speakers and topics included:
  - Frank Kugel (Upper Gunnison Basin): SMP processes and experiences
  - Brian Boughton (Division of Water Resources): stream gauge costs, benefits, implementation, operation and maintenance, and potential reestablishment of stream gauge locations in the Basin (see Attachment 5)
  - Nicole Seltzer (River Network): SMP resources, best practices, and examples across Colorado state;
  - Jerry Archuleta (National Resource Conservation Services): congruent agricultural infrastructure inventory of major ditch companies in Archuleta County
  - Seth Mason (Lotic Hydrological): watershed assessment options, scope, timeline, deliverables
  - Brent Newman (CWCB): Colorado Water Conservation Board resources, Colorado Water Plan, Drought Contingency Plan, and Demand Management updates
- Stakeholder group engagement occurred in Archuleta and Mineral counties, mainly around the Pagosa Springs area. Outreach and activities included:
  - WEP website created to share resources and updates on SMP/IWMP process at <http://www.mountainstudies.org/sanjuan/smp>
  - WEP is part of a larger online stream management plan database at [www.coloradosmp.org](http://www.coloradosmp.org) to share relevant information on current and past processes, lessons, budgets, and accomplishments along with other groups pursuing SMPs statewide
  - Two public meetings, held in January & September 2019, reached over 75 people. Public meetings sought to:
    - Facilitate public understanding of WEP's efforts and incorporate stakeholder involvement
    - Gather local feedback on project's geographic scope, water issues/concerns, information gaps, and opportunities to ensure this is a community-driven process
    - Provide education and outreach for WEP and other local initiatives (i.e. Resilient Archuleta, Growing WaterSmart, SJ Headwaters Forest Health), groups proactively planning and collaborating on solutions to benefit San Juan Basin water users
    - Discuss state water issues and developments (i.e. CO Water Plan, Drought Contingency Plan, Demand Management) and invite Southwestern Colorado water users to provide feedback to state decision-makers (see Attachment 3)
    - Share resources on stream management planning processes, project examples, and funding options
    - Discuss factors influencing water supplies to consider in plan and project development, such as climate changes, forest health, wildfire risk, population growth, economy, etc.
- During a field trip in May 2019, the Steering Committee visited four sites along the San Juan River, near Pagosa Springs, to visually inspect sites and explore project options, multiple water user groups involved, project benefits, challenges, and resources for each site. Results from this field trip were:
  - Engagement of local stakeholders to provide site background, voice their concerns/issues, and identify opportunities for improvement and collaboration



- Project Option Table (see Attachment 6) created to capture preliminary site analysis considerations of multiple water uses for each site
- One site chosen to develop a Concept Design Plan with a site assessment, mapping, and project identification with costs estimates and narratives to serve as a smaller demonstration project site to serve as an example of the types of opportunities possible through a SMP process. These tasks were funded by a separate WSRF grant, with designs and estimates completed in late winter/early spring 2020. WEP will continue outreach and gathering stakeholder input for this project in conjunction with the broader SMP/IWMP phases.
  - Goal is to evaluate environmental values (i.e. habitat, flows), recreation access, and agricultural infrastructure efficiencies at site.
  - Designs and project options information will be shared directly with involved stakeholders first for feedback before sharing details with the general public.
  - Currently, Riverbend Engineering and Hey Red Marketing are developing project narratives and marketing materials to provide easy-to-understand information and graphic visuals for multiple stakeholder groups (see Attachment 7).

**Task 2 Deliverables: Review existing data and information, to determine data gaps for subsequent assessment.**

- This task has been successfully completed and shared with appropriate partners to ensure relevant data and findings are captured (see Attachment 2). An assessment of historic and existing information has been developed to continue building off of local efforts, findings, and data. Initial data gaps identified include: a better understanding of who owns water rights on the San Juan River and where; comprehensive flow data; stream temperature data; completed restoration projects, and population growth projections.
- This report will be shared with consultants in the next phase to identify where resources and data are missing as well assist in prioritizing field surveys or modeling inquiries in Phase II.

**Task 3 Deliverables: Develop a scope of work to assess environmental and recreation water supply needs (Phase 2) and integrate other water supply needs as the next critical step toward a stream assessment and developing a SMP.**

- In September/October 2019, WEP completed a competitive hiring process to gather Request for Proposals (RFP) from consultants to outline a scope of work for Phase II of this project. Key outcomes from this process:
  - Lotic Hydrological was selected from submitted RFPs and in Phase II will review and compile data, conduct an analysis of environmental and recreation water needs in the Upper San Juan sub-basin, and create a model to help map/identify locations of water issues and opportunities.
  - WEP identified a collaboration opportunity to partner with San Juan Conservation District (SJCD) and National Resources Conservation Service (NRCS) by building off their current infrastructure assessment of larger agricultural ditches and include smaller diversions as well in the San Juan, Navajo and Blanco sub-basins.
  - Although Phase II tasks cannot be conducted until all funding is approved in Spring 2020, Lotic and SJCD are proactively aligning scopes of work to ensure Phase II tasks, deliverables, and schedules are complimentary in conducting a comprehensive watershed assessment of project area.
- The WEP, with input from Lotic and SJCD, has developed a scope of work for Phase II of the process. Phase II outcomes will be an assessment of E&R needs, evaluation of agricultural infrastructure and incorporation of existing information on municipal water supply needs to inform Phase III's development of an Integrated Water Resources Management Plan and possibly project implementation. WEP will present the proposed

Phase II scope of work to the community for input at as a public webinar and survey in May 2020, rather than an in-person meeting, in order to follow CDC COVID-19 guidelines and keep community members safe.

## **Challenges, Opportunities and Lessons Learned:**

### **➤ Balancing stakeholder interests with geography**

In developing the Steering Committee, there was extensive interest in representing the spectrum of water users within the watershed. The geography of interest has varied and evolved between Steering Committee representatives and stakeholders. Interestingly, the overall region includes several river drainages, not all immediately associated with the region identified in the grants for this Stream Management Plan effort. Subsequently, the watershed was divided into 3 sub-basins (Upper San Juan, Blanco/Navajo, and Piedra) and priorities assigned to the sub-basins. The prioritization order has now been revised to focus on the Upper San Juan and Blanco/Navajo sub-basins, with the possibility of expanding to the Piedra in the future (see Attachment 4).

For Phase II, the Blanco/Navajo sub-basins will be included in the agricultural infrastructure needs assessment, but the WEP Steering Committee and consultant partners determined modeling and project identification will be prioritized on the Upper San Juan in consideration of refinement capacity of models.

### **➤ Identifying and incorporating appropriate partners**

The WEP has had success in developing a comprehensive and engaged Steering Committee. We worked extensively with local community members and networks to identify appropriate representatives. However, not all of the community representatives identified were able to participate due to time constraints and interest in the process creating challenges. We have been warned that we need to be conscious of peoples work schedules and needs (particularly seasonal constraints associated with agricultural needs) and have taken these concerns into account as we have had our regular Steering Committee meetings. We continue to keep an open information exchange between Steering Committee members and their constituents, ensuring Steering Committee representatives have ample opportunities to share information with the communities and bring back those stakeholder concerns to the Committee's regular meetings.

### **➤ Maintaining clarity on process and outcomes**

The Steering Committee has had valuable conversations about needs, interests, and goals. Through those conversations we have ensured that we have consensus on achieving our end goal of developing a SMP/IWMP that has implementable projects with buy-in from all interests.

With community stakeholders/partners, the Steering Committee has applied both targeted and broad outreach approaches to ensure private information and concerns are respected with targeted communication, coupled with public events to keep the community abreast of the WEP process, updates, and invite public feedback. As this is a community-driven effort, the WEP strives to balance keeping public stakeholders informed of developments through educational events and outreach, while also maintaining privacy of individual projects and sites when requested.

### **➤ Trans-basin diversions**

The San Juan Basin includes a significant diversion from the San Juan into the Chama and Rio Grande River Systems. The existence of the diversion has influenced ideas around which stakeholders should be included and when in the conversation to include them. This diversion also reveals significant controversy and issues over water rights. Although these issues remain relevant to this process, the Steering Committee decided to approach these concerns in the future when assessments and projects involve this sub-basin directly.

➤ **Appropriate scale**

Scale is perhaps one of the most challenging components to the effort. The group ultimately wants to identify actionable opportunities in completion of a watershed/stream management plan. After concerns over the appropriate size of watershed were addressed, and recognition that the sub-drainages have different issues, impacts, influences, and interests, the group opted for a phased approach within the different sub-basins. This will allow direct conversations with residents of each of the sub-basins and thus offer the greatest opportunity to move things forward via consensus.

➤ **Balance between community building and demonstrating progress**

This group has been brought together to help inform a stream management planning process. Relationships have been established and trust has been developing amongst the participants. We are now challenged to balance the need for securing appropriate information and the need of participants to feel a sense of progress that can establish actions. Participants desire reassurance this process will result in more than conversation opportunities and lead to on-the-ground work to demonstrate to the community the types of activities and projects possible with designing and implementing a watershed/stream management plan. The group believes the Concept Design Plan and subsequent project implementation could serve as a demonstration project for the WEP achieving the goal of implementing a project that addresses agricultural, environmental, municipal, and recreational water needs.

## **Next Steps**

All Phase I tasks have been accomplished, leading to an engaged and committed steering committee to guide Phase II's watershed assessment, to ensure both scientific analysis and local expertise guide the process to develop an Integrated Water Management Plan in Phase III.

Due to public gathering restrictions with the COVID-19 pandemic, WEP and its partners, Resilient Archuleta (RA) and San Juan Headwaters Forest Health Partnership (SJFHP), have decided to postpone a joint public meeting in Pagosa Springs that was originally planned for April 2020. Instead, the WEP Steering Committee, Lotic Hydrological, and San Juan Conservation District will hold a public webinar and survey in late May/early June 2020 to share Phase II goals, objectives and steps with the intent to provide transparency of the Phase II process, gather feedback, and maintain engagement with the local community.

WEP hopes to continue building collaborative partnerships with existing groups like RA, SJFHP, Growing WaterSmart Workgroup as well as entities such as the US Forest Service and local businesses and schools. For example, the WEP hopes to explore ways RA and SJFHP share overlapping goals and support each other's projects through shared resources and coordination (i.e. how forest treatments may impact water resources). In addition, WEP has also contacted teachers and schools to invite local students to join these efforts by designing a logo for the WEP, connecting younger generations to surrounding ecosystems and groups working to protect their communities and resources.

Lastly, as the WEP transitions into Phase II, selected subcontractors, Lotic Hydrological and San Juan Conservation District staff, are primed to begin collecting necessary data and resources, conduct field survey work, and continued coordination with the WEP Steering Committee starting in May or June 2020.

## Budget Accounting

Through the Watershed Restoration Program grant, the CWCB generously contributed to components of this broader stream management planning effort (Tables 1-2). These project components were successful. We were able to establish an engaged steering committee of diverse water users, conduct a review of existing reports for data and gaps, and develop a scope of work for Phase II. The Upper San Juan Watershed Enhancement Partnership greatly appreciates the support of the CWCB and Southwest Basin Roundtable for helping the WEP to conduct these critical steps to understanding the San Juan Basin's current and future water needs.

**Table 1: Budget**

Task	Description	CWCB WRP Funds	CWCB WSRF Funds	SWCD Matching Funds	Other Funding Cash	Other Funding In-Kind	Total
1	Assemble & coordinate a steering committee	\$ 19,495	\$ 9,748	\$ 7,800	\$ 1,835	\$ 9,345	\$ 48,223
	Assemble & coordinate a stakeholder group	\$ 14,455	\$ 7,227	\$ 4,695	\$ 3,645	\$ 9,345	\$ 39,367
2	Review existing data & information	\$ 9,700	\$ 4,850	\$ 100	\$ 2,750		\$ 17,400
3	Development of work scope	\$ 1,440	\$ 720	\$ 1,350	\$ 370		\$ 3,880
	<b>TOTAL</b>	<b>\$ 45,090</b>	<b>\$ 22,545</b>	<b>\$ 13,945</b>	<b>\$ 8,600</b>	<b>\$ 18,690</b>	<b>\$ 108,870</b>

**Table 2: Cost Distribution of WSRF Funds**

Task	WRP Funds Available	WRP Funds utilized as of 4/30/2020			
		MSI staff + materials & mileage	Western Wildscapes	Lotic Hydrological	Total Funds
1	\$ 19,495	\$ 12,040	\$ 7,480		
	\$ 14,455	\$ 10,065	\$ 4,000		
2	\$ 9,700	\$ 6,724	\$ 3,200	\$ 4,000	
3	\$ 1,440	\$ 1,581			
<b>Total</b>	<b>\$ 45,090</b>	<b>\$30,410</b>	<b>\$14,680</b>	<b>\$4,000</b>	<b>\$49,090</b>

**Table 3: In-kind Matching Funds**

Year	Tracking	Amount	Total
2018	Meetings (\$25.96/hr)	122 hours	\$ 3,167
	Mileage (0.535/mile)	755 miles	\$ 404
2019	Meetings (\$25.96/hr)	212 hours	\$ 5,504
	Mileage (0.535/mile)	2874 miles	\$ 1,538
	Public Meetings (\$25.96/hr)	160 hours	\$ 4,154
	Meeting Supply Donation	Public meeting refreshments-Pagosa Brewing	\$ 50
2020	Meetings (\$28.02/hr)	74 hours	\$ 2,073
	Mileage (0.535/mile)	331 miles	\$ 177
<b>2018-2020</b>		<b>Total In-kind Matching Funds</b>	<b>\$ 17,067</b>

\*Colorado hourly volunteer rated based on independentsector.org \*\*Although tracked in-kind match is lower than amount listed in grant contract, this total does meet the CWCB's requirement for combined total of 25% cash and in-kind matching funds. Cash matching funds did not change.

## **ATTACHMENT 1**

Watershed Enhancement Partnership flyer for Southwest Basin Roundtable presentation July 10, 2019.

# **UPPER SAN JUAN WATERSHED ENHANCEMENT PARTNERSHIP**

In the summer of 2018, the Upper San Juan Watershed Enhancement Partnership (WEP) formed as a community-led, voluntary process to understand local water supply needs in the San Juan River Basin and to identify opportunities to engage in collaborative projects that benefit all water uses, including environmental, agricultural, municipal, and recreation.

### **Goals:**

1. Incorporate all values, voices, and interests
2. Foster community support, include public into the conversation and planning
3. Build from local knowledge and incorporate into decision-making process
4. Advance a culture of stewardship
5. Respect history, current uses, and water law
6. Optimize water resources for all uses in accordance with Colorado water law
7. Build strategies around science-based adaptive management

### **Stakeholder representatives from:**

Banded Peak Ranch, Chama Peak Land Alliance, Colorado Division of Water Resources, Colorado Parks and Wildlife, Colorado Water Conservation Board, CSU Extension Office, National Resources Conservation Service, Pagosa Area Water and Sanitation District, outdoor recreation business owners, public citizens, the Nature Conservancy, Town of Pagosa Springs Planning Department, Trout Unlimited, and the US Forest Service.



## Phase I Objectives:

1. Mobilize a stakeholder group, organized by a steering committee of diverse water users, with the structure, capacity and collective interest in pursuing a coordinated watershed plan.
2. Review existing data and information to build off local efforts and findings.
3. Develop a work plan for future watershed assessments and project planning.



## Accomplishments:

- Established local partnership of steering committee members and stakeholders from multiple water interests.
- Identified collective values on geographic scope/scale, issues, opportunities, and information needs (see highlights, right).
- To date, 12 stakeholder meetings have encouraged community learning and regular input throughout process.
- Compiled existing reports and strategies from local efforts as first step towards watershed assessment and priorities.
- Provided variety of outreach opportunities through surveys, public meetings, and site field trips.
- Currently exploring several potential sites for improvements, including a multi-purpose project on the San Juan River that would benefit all uses.



## STAKEHOLDER GROUP HIGHLIGHTS

Community Values, Interests, & Concerns

### SCOPE/SCALE

Focus on Upper San Juan, Navajo and Blaine watersheds, but potential to expand in future.



### ISSUES



- Balancing all water uses and users on private & public lands
- Lack of education/communication on CO water law, water rights, access
- Forest & river systems health—human & biological impacts
- Drought & subsequent restrictions/priorities
- Water conservation/regulation—inefficient infrastructure, monitoring

### OPPORTUNITIES

- Funding for collaborative, multiple-use projects
- Education on water rights/laws, diversion & dam operations, conservation, access
- Improve Collaboration/Communication
- Needs Assessment/Priority Identification
- Drought Planning



### INFORMATION NEEDS



- Balancing all water uses and users on private & public lands
- Lack of education/communication on CO water law, water rights, access
- Forest & river systems health—human & biological impacts
- Drought & subsequent restrictions/priorities
- Water conservation/regulation—inefficient infrastructure, monitoring

## ATTACHMENT 2

Example from Watershed Enhancement Partnership's completed Existing Information Report to compile data and information from local and state efforts related to project area.

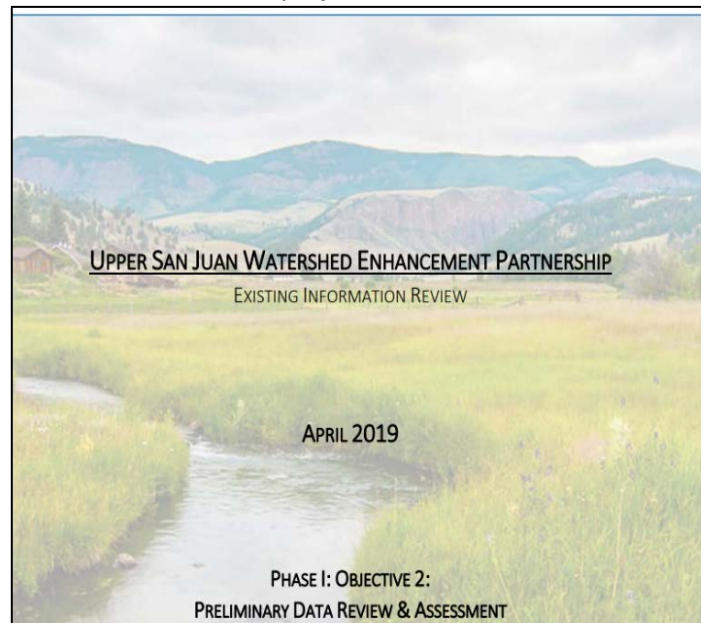


TABLE OF CONTENTS																
Report #	Report Title												Year	Page		
1	Conservation Strategy for Colorado River Cutthroat Trout												2006	3		
2	Colorado's 2015 State Wildlife Action Plan												2015	3		
3	Conservation Agreement & Strategy for Roundtail Chub, Bluehead and Flannelmouth Suckers												2006	3		
4	East Fork of the San Juan Restoration												2019	3		
5	Fire Risk to Water Supplies Assessment												2015	3		
6	Lower Blanco River Restoration Project												2010	3		
7	Navajo River In-Stream, Riparian & Wetland Improvement Project												2015	4		
8	San Juan Planning for Biodiversity Model Project, Phase II												2006	4		
9	San Juan River Historical Ecology Assessment												2015	4		
10	San Juan River Workgroup Final Report												2011	5		
11	Southwest Basin Roundtable Basin Implementation Plan (BIP)												2015	5		
12	State Water Supply Inventory (SWSI)												2010	6		
13	Stollsteimer Creek Watershed Master Plan												2006	6		
14	Survey of Critical Wetlands and Riparian Areas in Archuleta County												2006	7		
15	Town of Pagosa Springs San Juan River Improvement Project												2020	7		
16	Water & Soil Resource Management Considerations												2011	7		
Data Type & Report Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Agricultural Water Supply						X				X	X	X	X			
Biology/Ecology	X	X	X			X	X	X	X	X			X	X		
Conservation/Restoration	X	X	X	X			X			X	X	X	X	X	X	
Development								X		X	X	X	X			
Fire Risk					X					X						X
Geology/Geomorphology				X		X			X	X			X	X		
Hydrology						X	X		X	X	X	X	X	X		X
Protections/Regulations										X	X	X	X	X		
Modeling/Mapping									X				X	X		
Municipal Water Supply					X					X	X	X	X		X	X
Soils				X					X				X			X
Treatment Infrastructure				X						X			X	X		X
Vegetation							X	X	X	X			X	X		X
Water Rights						X				X	X	X	X	X		
Water Storage										X			X			X
Wildlife/Fish	X	X	X			X		X		X			X	X		
Workgroup Process										X						



### **ATTACHMENT 3**

Flyer and photo from second public meeting (Sept. 4, 2019) co-hosted by Resilient Archuleta and the Watershed Enhancement Partnership.

**RESILIENT ARCHULETA  
PRESENTS**

**Watershed Enhancement Partnership**

**Sept. 4th @ 6pm**

**JOIN**

**BRENT NEWMAN  
OF THE  
COLORADO WATER CONSERVATION BOARD**

Learn about the  
**COLORADO RIVER DROUGHT CONTINGENCY PLAN**  
and local planning efforts

**IF YOU USE WATER, YOU SHOULD BE HERE!**

**CSU EXTENSION OFFICE  
344 HIGHWAY 84  
PAGOSA SPRINGS, CO  
970-264-5931**

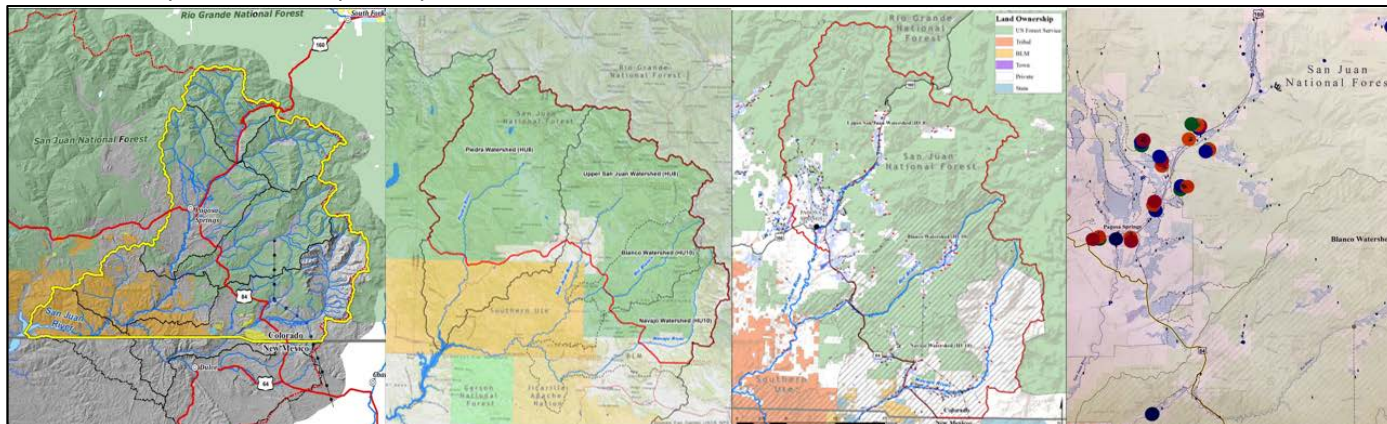
**THIS IS A PUBLIC MEETING. JOIN THE CONVERSATION!**





## **ATTACHMENT 4**

Examples of mapping and refinement for the Watershed Enhancement Partnership geographic scope. The last photo illustrates priority sites identified by Steering Committee members to explore project opportunities, which led to the May 2019 field trip to explore some of these sites.



## **ATTACHMENT 5**

Example slide from Colorado Division of Water Resource guest speaker, Brian Boughton's, presentation on stream gauge considerations, processes, and options. After discussion, the group decided to place stream gauge replacement as a lower priority for implementation at this time but remains an option to consider with the broader watershed assessment in Phase II.

# Stream gauge

- Most important questions.
  - What is the purpose of the stream gauge?
  - What to I wish to accomplish with this stream gauge?



**COLORADO**  
Division of Water Resources  
Department of Natural Resources

## **ATTACHMENT 6**

Project Option Table and photos from the Watershed Enhancement Partnership's (WEP) field trip to sites along the San Juan River near Pagosa Springs. This field trip and discussions led to WEP pursuing a grant for a Concept Design Plan to explore multi-beneficial projects to serve as an example for the types of opportunities possible with stream management planning process.

Location	Project Options	Values	Benefits	Challenges	Resources
1	Infrastructure: headgate automation/ telemetry, ditch piping	Agriculture, Environmental, Recreation, Municipal	Create more user-friendly structure/decrease labor, accurate & precise diversion/tailwater, increase efficiency. Increase flow capacity, possibly pipe portions of ditch to prevent leaks/property damage.	Operation & maintenance cost, fear of regulation/loss of water rights with changes, log jams blocking channel and intake. Rusting of headgate after wildfire debris, ash, sediment.	Examples from ditches on Pine & Florida using telemetry.
	Bank Stabilization (upstream of headgate)		Prevent headgate and coffer dam damage with slope and channel work to stabilize upstream and upland of headgate.	Active geology	
	Coffer Dam		"Lower hanging fruit" project with no regulatory risk, easy to improve via debris removal, protects recreational user equipment & passage, lower cost	Structure in place and functioning currently.	Alternative designs than gabian structure, jersey barriers, deadman cabling.
2	In-channel restoration (bank stabilization, narrowing or low flow channel, fish habitat)	Environmental, Recreation, Agriculture, Municipal	Plans already designed by government agency to improve habitat, flows, recreation opportunities (fishing), enhance property values. Bank stabilization and low flow or channel narrowing to help with flooding, flows, temperature, aquatic habitats and water supply reduce rationing property owners dealt with last year. Site has access points for equipment for construction/restoration.	Landowner buy-in, spending public money on private land—justify w/package of multiple use benefits. Agency plans complete, but property line issues preventing work on ground.	Utilize existing plan designs
	Public access		Provides rec access/exit since no boating access 15 miles above town, extends recreation river segments with easy/family-friendly stretch. Prevents trespassing or property damage, utilizes current easement & roads. Potential land swap agreement to benefit private land owner and gain property access.	Private landowners not wanting public traffic, construction costs & maintenance for roads, boat ramp, parking, bathrooms.	
	Diversion structure improvements		Improve efficiency & accuracy, decrease labor & maintenance cost.	Construction costs & maintenance. Ditch leaking, flooding—perhaps piping (above or underground) reduce property damage & improve ditch delivery & reduce maintenance costs/time.	
3	Public access (boating, fishing, etc.)	Environmental, Recreation, Agriculture, Municipal	Provides rec access/exit extending recreation river segments with easy/family-friendly stretch. Economic revenue from day use & fishing permit fees. Property owners open to access & restoration.	Which entity responsible/has capacity for management of site, no permanent sale reassurance possible, only use of property, due to commitments	
	In channel restoration		Agency interest in restoring instream habitat & possibly managing. Could open door to in-channel restoration between site and town sections.	Property lease	
	Headgate infrastructure		Diversion relocation: ontential move back to property line & improve ag water use.		
4	Public access	Municipal, Recreation			Discussed in Town Master Plan?
	Potential municipal park/river center		Tourism, public access & education on San Juan River		



## **ATTACHMENT 7**

The WEP contracted Riverbend Engineering, through a separate WSRF grant, to develop concept design plans with project maps, design narratives, and cost estimates to offer options for a potential demonstration project along the San Juan River. Hey Red Marketing is drafting outreach materials to showcase these design options and gather feedback from involved stakeholders. Project narratives from Riverbend and draft flyer designs from Hey Red Marketing are shown below.



## **Upper San Juan River Improvement Project Design Narrative**

Riverbend Engineering, LLC (Riverbend) was contracted by the San Juan Watershed Enhancement Partnership (SJWEP) for to develop a concept level plan and cost estimate for a multi-faceted river improvement project located near San Juan River Village on the upper San Juan River. This location was identified to address water needs for a variety of user groups including agricultural, recreational, environmental, and municipal. The key components of the project include:

- Landslide Bank Stabilization and Park Ditch Diversion Improvements
- Flood Conveyance Improvements and Habitat Improvements @ San Juan River Village
- River Access and Parking Improvements @ South Property Boundary

### **Park Ditch Diversion Improvements**

The existing diversion structure at the Park Ditch diversion consists of a combination of imported large rock, concrete rubble, wire mesh, and native river rock. Large annual flows can move portions of the diversion material requiring large machinery to enter the river and rebuild the structure. The existing configuration of material can create a significant hazard for boaters, fisherman, and swimmers, and in addition, the existing diversion may be a barrier to migration of native and nonnative fish species. Recent landslide events upstream of the structure could also contribute to changes in the main river channel alignment which would lead to difficulty in maintaining water delivery to the Park Ditch headgate.

The major goals of the proposed design are:

- 1) Remove all dangerous steel and concrete rubble from the river bottom;
- 2) Minimize the future required maintenance in the river channel by creating a stable diversion structure
- 3) Create interstitial space at the appropriate slope between large rocks adequate for fish passage;
- 4) Stabilize and revegetate the river banks near the diversion to maintain the bank integrity; and
- 5) Create a safe low flow channel for boater passage sediment transport through the diversion structure.

The existing diversion structure will be removed and a large rock and grout diversion structure will be installed at the diversion location. Adequate existing native material and imported large rocks will be used in the construction of the new diversion structure and the newly vegetated bench on the sides of the river bank. Non-native and potentially hazardous material excavated from the existing structure will be hauled away and disposed of properly.

As a result of saturated soils from a wetter than average winter in 2019, a significant soil failure occurred in the spring just upstream of the diversion on the southside of the river. As opposed to trying to remove the recently deposited soil and reestablish the previous river alignment the concept design advocates stabilizing the new land slide depositions in place, and make adjustments to the river's alignment and width, so that the system can be more self-sustaining over time. Rock sills and deflectors would be utilized to stabilize the new banks and to protect bankful bench floodplain areas from erosion.

### **San Juan River Village River Flood Conveyance and Habitat Improvements**

The proposed design approach is focused on two primary goals for restoration of this section of the San Juan River. The first is to restore the flood capacity that was significantly reduced during recent large sediment deposition events within the active channel. The second is to enhance the habitat component of the low flow channels. The foundation for success in aquatic and riparian restoration work is a functioning river system. This means transporting pulses of sediment, accommodating overbank floods, sustaining vigorous populations of fish, aquatic insects, and riparian vegetation. Riverbend's design encourages the river to maintain a stable condition, and we try to do this with limited amounts of obvious man-made structure. Our goal is to leave behind a naturally aesthetic and functioning riverine ecosystem, where natural channel evolution can proceed. In this location, where there is significant infrastructure near the river, we must balance the natural systems with protection of property and structures. The associated cost estimate for this portion is broken into two phases. The first phase would be focused on restoring flood conveyance and channel efficiency and the second phase would be directed at enhanced fish habitat.

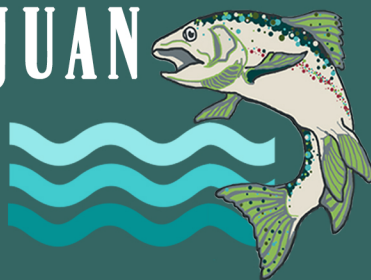
### **River Access Improvements**

The proposed new access portion of the project involves construction of approximately 1000 feet of a new two-lane gravel access road, 10,000 square foot parking area, and new boat ramp into the San Juan River. The access road would be entirely located on existing San Juan River Village Metro District property and would be constructed in accordance with Archuleta County Road and Bridge Design Standards. The overall road slope would be 8% or less and would be design to try and balance the amount of soil cut and fill required. The access road would also create an additional ingress/egress for the over 50 properties located in the valley bottom.

The parking area would be a gravel surface directly connected to the boat ramp. The boat ramp would be orientated to the river to allow ease of use at a variety of river flows. The ramp would be defined by large boulders extending into the river with a compacted crushed rock surface.

# IMPROVEMENTS TO THE UPPER SAN JUAN

## A COLLABORATIVE RIVER PROJECT



The Upper San Juan Watershed Enhancement Partnership (WEP) is developing ideas for a multi-beneficial river improvement project located on the San Juan River. WEP is a community-led group exploring cooperative projects that benefit agricultural, environmental, recreational, and municipal water use in the upper San Juan River Basin.



## INFRASTRUCTURE

- Improving agricultural irrigation efficiency
- Increasing safety with removal of riverbed debris
- Mitigating flooded roads from compromised ditches
- Developing a two-lane gravel access road for emergency egress



## ENVIRONMENT

- Supporting healthy fisheries and wildlife habitat through stream channel improvements
- Fostering a thriving ecosystem
- Stabilizing streambanks to maintain and restore river function



## RECREATION

- Directing recreational access for boating and fishing downstream and away from homes
- Creating a boat ramp for safe and easy access to river
- Adding a small seasonal parking area for users

FOR MORE INFORMATION ON THIS PROJECT, CONTACT WATERSHED ENHANCEMENT PARTNERSHIP

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