

County Courthouse Conf. Rm #1, Meeker, CO

Technical Committee Members:
Alden Vanden Brink - RBWCD
Bailey Franklin – CPW
Brian Hodge – Trout Unlimited
Callie Hendrickson – Facilitator
Clay Ramey – USFS
Dave Kanzer – CO River District
Jocelyn Mullen – Town of Rangely
Keith Sauter – BLM
Kurt Nielsen – Meeker Sanitation Dist.
Mindi May – CPW
Si Woodruff – County
Tiffany Jehorek – NRCS
Travis Day – Town of Meeker
Wade Cox – DCCD
Cory Williams - USGS
Ken Leib – USGS
Mike Stevens – USGS

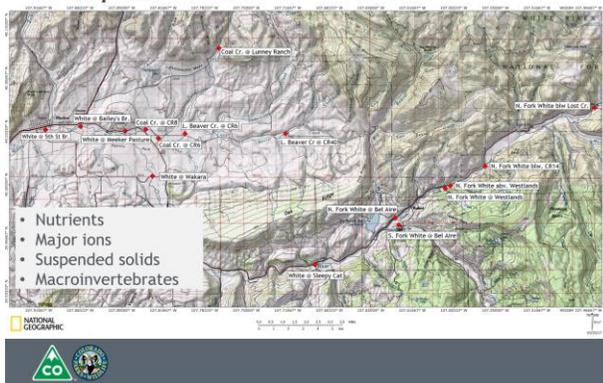
Public Attendees:
Aaron True – TU
Ben Rodgers – Landowner/Rancher/Self
Bob Dorset – River Watch/Private
Bob Ragolski – Sleepy Cat Ranch
Colton Brown – Elk Creek Ranch
David Graf – CPW
Holly Knowles – RBC Public Health
Kaitlyn Vaux – Trout Unlimited
Patrick Krouse – Westlands Ranch
Steve Loshbaugh – self
Tory Eyre – CPW
Tom Knowles – CPW
Luke Osborne – Hydro Solutions/ECR
Andrew Skibo – Westlands Ranch

After opening remarks and introductions, public comments were provided:

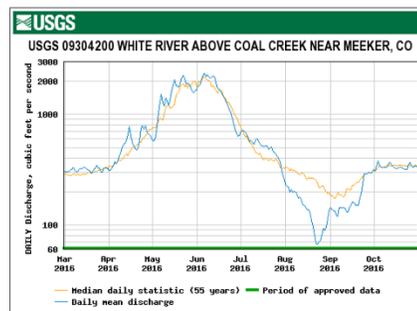
- Bob Regulski – concern that there had been some dredging done in the river several years ago that could have caused the algae issue and that we need to notify people that there is an algae problem before they come to the County to go fishing.
- Pat Krause – expressed desire for the group to broaden the parameters in which they are considering and concern that we need to be looking at new information rather than same information that has already been studied.
- Andrew Skibo – expressed concern over the cost of the project
- Bob Dorset - Diatoms are good at trapping Phosphorous, Algae has longer growing season, macroinvertebrates are not necessarily a control, and cladophore is quite efficient at capturing N & P so water samples may not necessarily reflect the true N& P values.
- Steve Loshbaugh – noted an out-of-town visitor believes that the switch in the past from application of granular dry form of fertilizer to chemical liquid form of fertilizer was the main cause of the algae bloom.

Mindi May presented a brief overview of CPW research. Below are a couple key slides and summary information from presentation. See full slide presentation on White River and Douglas Creek Conservation Districts’ website (www.whiterivercd.com)

Sample Locations - 2016



Hydrograph



CPW Presentation Summary by Mindi May:

- The filamentous alga impacting angling in the White River is *Cladophora glomerata*.
- Fast-moving current during high flows may temporarily reduce algae by scouring growths from rocks.
 - Re-growth will begin when flows subside
 - Scouring flows occur naturally during spring runoff, not during the peak algal growth in the summer (June-August)
- There is no practical way to increase flows during peak algal growth in the summer
- Relying on flows does not address the underlying cause of the excessive algal growth, which is nutrients
- Algal growth is limited by nitrogen.
 - Reduction of phosphorus alone is unlikely to reduce algal growth, unless the reductions are significant.
 - *Cladophora* can store excess phosphorus, concentrations must be kept low at all times to effectively control growth. Phosphorus concentrations in the White River watershed are highest during high flows.
 - Any additional nitrogen inputs will likely stimulate additional algal growth
 - Reducing nitrogen inputs, particularly in summer, will likely reduce algal growth
- Nutrient availability is sufficient to support nuisance blooms of algae in the North Fork from County Road 14 (aka Herrell Rd) to the confluence of the South Fork of the White River, and in the mainstem of the White River down to Meeker.

July Periphyton on Rock Photos



Mindi May's Recommendations for on-going Study:

- Measure peak algal biomass so we can track changes (hopefully reduction) over time.
- What makes algae grow? Nutrients
 - Measure nutrients in algae and water
 - Use isotopes or other measure to identify nutrient sources

- What removes algae?
 - Flows - Identify flows that would scour algae
 - Macroinvertebrate grazers – study macroinvertebrates and pesticides

Luke Osborne Hydro Solutions Elk Creek Ranch Research Report Overview

Summary of Recommendations

- ▶ Watershed management approach
 - ▶ Lead by board or council of stakeholders
 - ▶ Define goals and objectives
- ▶ Comprehensive water quality monitoring program to inform sound decisions
- ▶ Implement nutrient source management strategies
- ▶ Focus on nitrogen reductions followed by phosphorus
- ▶ Others detailed in report



Data Gaps

- ▶ SAP and QAPP for data collection, validation, and management
- ▶ Adequate laboratory method detection resolution and reporting limits
- ▶ Synoptic monitoring program and spatial coverage of monitoring sites throughout the watershed to assess nutrient source contributions and loads
- ▶ Diurnal monitoring of field parameters DO and pH during peak algal growth
- ▶ Collection of algal/periphyton samples co-located water-quality (nutrient) monitoring
- ▶ Collection of total and dissolved forms of N and P
- ▶ Suspended solids and PAR monitoring
- ▶ Characterization of bed substrate and river transects to form a better understanding of river hydraulic conditions
- ▶ Re-establishment of USGS gaging activities in the North and South Fork White River



Summary of Findings

- ▶ No DO impairment
- ▶ No change in water temp
- ▶ pH within min-max criteria (5th St. Bridge had excursions)
- ▶ Chlorophyll-a data exceeds Colorado standard
- ▶ Total and dissolved N decreasing, P increasing
- ▶ Nitrogen limitation
- ▶ Distinct day-night cycle of pH and DO
- ▶ Multiple hydrologic factors likely affecting blooms
- ▶ Many factors (climate, streamflow, water temp, light) affecting algal growth are beyond control or management
- ▶ Primary tool is nutrient control, few readily controllable nutrient sources in watershed



USGS Proposal Update:

Ken Leib provided a brief summary of the updated USGS proposal referring to the handout that had been provided to the committee the previous day and to attendees earlier (see attached). The updated proposal added data collection sites to Green Bridge in Rangely and a second year of data collection as requested by the group from the November meeting.

There is a change to focus more on the stream hydraulics and channel characteristics which is covered in Task #3 of the new proposal. This would address what flow would be needed to have the necessary scouring, so we would know what to expect on the various years.

The Task #1, Characterization of algal occurrence in the main stem of the White, has added a Hyperspectral imaging by flight or drone to quantify the algal mass. This would be followed by field verification. Another change is from three (seasonal) reconnaissance trips per year for research to one per year (annual) and there is no nutrient probe included on this proposal. It does include 20 locations to study nitrates.

The group was asked if they thought this whole proposal was doable and if they had to choose portions of it, what their priorities were. Statements included:

Priority #1 – Investigate the Cause not focus on how to control – focus on the isotopes to determine cause

Priority #2 – Scouring effect – what has changed over the past few years. Some concern that scouring velocity may need to be done later but we need to understand it's impacts

The following questions and input was provided by each member of the group:

Dave Kanzer (Colorado River Water Conservation District):

- Can we manage our agreement from year to year so that we can adjust based on the annual data summary and data analysis (adaptive Management)?
- Existing program integrated – can we incorporate the current data (from the research and reports already completed) into this proposal
- Would like to see the continuous DO research done at 10 sites

Kurt Nielsen (Meeker Sanitation District)

- Spreadsheet for visual of what USGS has happening each year (can CPW info be incorporated?)
- Show what is already happening in regard to research and findings associate that with the why/how additional studies are being proposed. (are we looking for anything new?)

Keith Sauter (BLM)

- Agree with Dave and Kurt - Data gap analysis between current and proposed sampling is needed (for the group to make a decision on what they want to fund)
- Task #3 in USGS proposal is important to understanding the factors contributing to the algae issue.

Clay Ramey (USFS)

- #3 important - contributes to causal but we can also do something about it

Gary Moyer (White River Conservation District)

- History of the flow – is it the lack of high water or is there something in the river that changed
- Recognize the info already gathered (utilize it)

Alden Vanden Brink (Rio Blanco Water Conservancy District)

- The Basin Round Table's recently completed a White River Hydrologic (water rights allocation) Model (1975 – 2016) from headwaters to the confluence is available and suggested as a resource
- Current reports haven't covered pesticides – is this a priority?
- Primary focus area – not entire WR drainage – refine
- Drone – physical inspection of the river- use drone to locate then boots on the ground

Tiffany Jehorek (NRCS)

- Identifying #3 isotopes for nitrogen and oxygen
- Flow regime - runoff, form of the river (width) is important to understand

- In response to public comment, Tiffany noted dry fertilizer needs to be incorporated into the soil but in grass fields like in the Meeker area, this is not an option. Liquid fertilizer is the best option for this area because it does not run off like the dry could when not incorporated.

Mindi May (CPW)

- Confused on tasks and what questions they answer – she volunteers to help refine
- Others from CPW (i.e., Bailey following the meeting) concerned that revised USGS scope of work is too large, too expensive, and priorities may need to be refined such that only sites from Meeker upstream are included and focus is on monitoring of algae biomass and continuous nutrient concentrations and seasonal nutrient loads and specifically with isotope monitoring of various sites to determine where the nutrients are coming from in upper White River drainage so we can have a legitimate chance of reducing nutrient loads and resolving the algae issue rather than just studying it and ending up back where we are already at currently.

Travis Day (Meeker)

- Agrees with Mindi and others
- Suggest considering the Irrigation ditches in flow monitoring
- Utilizing other agencies monitoring and equipment to help reduce costs
- Identify the Rangely algae to see if same
- Funding is multiyear and concern what happens with research if it dries up

Si Woodruff (County)

- Prefers to be thorough so include Rangely in the study
- Round Table meeting last night indicated 1977 was the lowest water flow and 80's where the highest
- What is the price to include Pesticides?

Brian Hodge (TU)

- What is the cause and how do we make it go away?
- Scope – Building blocks are here
- Water quality is the issue, algae is the response – collect data in a way that we can relate
- Multiyear is most import, 2 year could be sufficient if there is enough difference in the years but it could take many more to get significant difference
- Refine so we can articulate what we have
- Offered to sit on subcommittee

Jocelyn Mullen (Rangely)

- Hard to compare with the last one (Rangely isn't the total additional cost)
- Is the downriver sampling worth the tradeoff of the seasonal variability study?
- Suggests sampling of river below Meeker if the algae is the same species as above
- The reservoir complicates Rangely

Ken Leib (USGS)

- Would like to see the nutrient probe incorporated into the quarterly but is not in the current proposal cost

Discussion on how to determine if the Algae around Rangely is the same as up river determined that Al would try to gather a sample (dead or living) and send to Mindi for determination. If that is not successful, scratch algae off rocks and send it off to the lab Mindi suggested to see if they can determine this time of the year. We need to know this to help make final decision about including research below Meeker. There could be a cost of up to \$400 and CPW doesn't pay for that.

Summary: There is a lack of understanding by some/all of the group members regarding how the proposed research incorporates the completed research by others and how it builds upon what we already know. There is concern by some over the cost without understanding how each component helps us find the result (what is causing the algae) we are looking for. Our goal is to find the cause but without better detail on how each item and task is answering that question, it feels like research for the sake of research.

Path Forward:

1. Al will send a sample of Rangely algae to Mindi
2. The following sub-committee will meet with USGS within the next two weeks
 - Mindi
 - Brian
 - Dave
 - Jocelyn
 - Callie
3. There was a request to consider samples all the way to Rangely
4. The sub-committee and USGS will flush out details and send to full group for consideration with a request of a one-week turnaround for responses from larger group
5. Need for a full group meeting mid Feb

Survey and BMP Committees will work via email and plan to meet at the next meeting. Time not permitting them to meet this month.

Funding Status Below:

Agency/Entity	Cash Contribution	In-kind	Notes
BLM		x	Water quality monitoring equipment, field support for USGS, bug sample processing at Utah State University Bug Lab
CPW- Meeker		x	Previous research. May be able to continue some research.
CRWCD - River District	\$ 20,000		maybe higher
DCCD - Douglas Creek CD		x	A portion of the WRCD Contribution
Meeker Sanitation	\$ 3,500		
NRCS			Targeted Conservation Proposal (2019)
RBC County	\$ 6,000		Covering the Administration cost of this agreement. (currently considered \$6,000 for 2018 based on original proposal.)
RBWCD	\$ 2,000		
Town of Meeker	\$ 8,000		
Town of Rangely	?		\$7,000 budgeted, not committed
Trout Unlimited	\$ 5,000		Bug work
USFS		x	Tributary Bug data
USGS		\$ 54,800	
WRCD - White River CD	\$ 2,000	x	
Other		\$ 100,000	FYI: Ongoing WR Water Quality Monitoring is a part of this study and is covered by a variety of partners. Because some of the monitoring stations in this project will also be used for the Algae project we may be able to shown this as a match. However, this is not a contribution to the Algae project itself. (energy, blm, many partners identified)
The Rob and Melani Walton Foundation (Miller Creek and K/K Ranches)	\$ 20,000		
Other			
Total Contributions as of 11/22/17	\$ 66,500		Original estimate for first year for external cooperators was \$60,000. USGS is revising their proposal based on input from 11/22 meeting.