White River Algae Technical Advisory Group (TAG) Meeting Notes **3/21/18**

Fairfield Community Center, Meeker, CO

Technical Advisory Committee Members
Tiffany Jehorek- NRCS
Ben Rogers- WRCD
Jocelyn Mullen- Town of Rangely
Alden Vanden Brink- RBWCD
Si Woodruff- RBC Commissioner
Brian Hodge- TU
Travis Day- Town of Meeker
Keith Sauter- BLM
R Clay Ramey- USFS
Dave Kanzer- CRWCD
Kurt Nielsen- Meeker Sanitation District
Mindi May- CPW
Other:
Ken Leib- USGS
Cory Williams- USGS
Steve Anders- USGS
Callie Hendrickson- Facilitator- WRCD/DCCD
Tristan Nielsen- WRCD/DCCD
Hunter Causey- CRWCD

Public Attendees
Arlene Fritzlan
Shawn Welder
Fayanna Flick
Bailey Franklin
Ross McGee
Bill Lake
Aaron True
Brett Harvey
Colton Brown
Bob Ragolski
Tory Eyre
David Graf
Steve Loshbaugh
Reed Kelley
Chris Harris
Leonard Thompson
Bill deVergie
Kelsi Antonelli
Patrick Krause – via computer
Luke Osborne – via computer
Andrew Skibo – via computer

Meeting Structure and Agenda Review: Facilitator, Callie Hendrickson, reviewed the mission of the group; "To ascertain what is driving the algae growth in the White River to improve the overall health of the watershed" and the goals of the meeting which included: 1) Finalizing the recommended Scope of Work (SOW) to be used to study what is driving the algae growth in the White River; 2) Finalize funding contributions from the TAG members; 3) allow time for Survey Development and Best Management Practices Committees to meet.

Work Group Report and Recommendation: Callie reviewed where the TAG has been and the process to get to this point which included the TAG selecting a smaller "Workgroup" in January to meet and work with USGS in refining the proposed SOW. The Workgroup members include Alden Venden Brink (RBWCD), Jocelyn Mullen (Town of Rangely), Dave Kanzer (CRWCD), Mindi May (CPW), and Brian Hodge (TU). Callie and the Work-group explained the process the group has gone through to narrow down and prioritize tasks in the SOW. Callie recognized the time and thought put into the final recommendation. **Note**: Workgroup recommendations are available on the Algae Tab of the White River and Douglas Creek Conservation Districts' Website at www.whiterivercd.com.

USGS Presentation: Ken Leib (USGS) presented the preliminary SOW that was drafted in collaboration with the White River Technical Advisory Group's sub-committee referred to as the "Workgroup" focusing on the investigation of benthic algae and steam conditions in the upper White River watershed in Rio Blanco County. **See attached PowerPoint Presentation (Attachment A)**.

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Q&A with Technical Committee (TC):

Good discussion of the SOW was had with the following highlights:

- Discussion regarding how to test fish food/fish waste led to offers from some landowners attending the meeting to supply samples of fish food they have used/are using. Samples may be delivered to Conservation District Office or to Bailey (CPW). Mindi (CPW) plans to feed the fish in a lab setting in Fort Collins where she can get an isotopic signature for the fish food.
- Discussion was also had regarding samples/information on fertilizers being used. It was noted that the offer has been made by a local applicator to provide information. Individuals may provide this information to the District office.
- The Landowner Survey Committee is working on a survey to gather information about what practices landowners may or may not be doing. Using information from this meeting will help them finalize the survey. It was noted that a phone call in addition to the survey being distributed, may be very beneficial to both the committee and the landowners.
- Question about the effects of stocking fish by both private landowners and CPW. CPW said they didn't think stocking practices had changed much. This should be included in the survey.
- It was noted that Troy Bauder, with CSU Extension, has done some site-specific studies on Agriculture Practices and that this type of research may be helpful.
- Shawn Welder noted that Bob Tobin has done extensive research concerning channel characteristics that may be valuable in addressing questions about the effects of the engineering/contouring in certain reaches of the river.
- There was consideration for reaching out to the Army Corps to get additional historical information on plans they have done. CPW noted that Grand Junction Army Corps has been informed of the algae issue and expressed interest in engaging on the issue as needed.

Public Input:

- Shawn Welder, chair of the White River Alliance presented a letter (**attachment B**) discussing the formation of their group, perspectives on river health and what they see best suited, and their goals to help re-establish and maintain a healthy White River. They have found a strong correlation between insecticides and the River and the algae.
- Request to keep history in mind and use the resources available that already have similar information to learn more and save money
- Consider more open/public forums
- Shawn Welder reminded the group to utilize Bob Tobin's Sediment Transport Research
- Reed Kelley noted how un-informed he felt the large group/ public was and how little local representation there was on the TAG. (this was addressed at end of meeting)
- Shawn Welder noted that the White River Alliance group is made up of concerned landowners who all have a voice in the issue.
- Shawn Welder noted that he hopes the White River Alliance will be a positive proponent to the group and wants to bring positive energy to the group for the ultimate health of the White River and could be a beneficial "spoke in the wheel".

Technical Committee discussion (including finances): The group discussed and confirmed where they are at with funding contributions from each entity (**see Attachment C**). Considering these funds, there is currently a "funding gap" of $25,000 to allow the group to move forward with the 2018 SOW. The District plans to seek funding opportunities from stakeholders and via Yampa, White, Green Basin Round Table. It was noted that there is an IRS tax code that allows donations directly to the Conservation Districts with the same tax benefits as donating to 501(c)(3).

Technical Committee final discussion and approval of SOW: Understanding that there are still funds needed to meet 2018 SOW requirements, Jocelyn moved to approve for the CD to sign the Agreement with USGS on the SOW. If full funding is available, USGS can move forward as planned. If there is a lack of funds, USGS should exclude the isotope analysis. Ben Seconded the motion. After discussion concerning the previous motion, Jocelyn rescinded her motion with Ben's approval. USGS explained billing options. The group came to a consensus that White River Conservation District (WRCD) move forward with the agreement on USGS's SOW as is. If funding is unavailable, they should come back to the TC for discussion.

Other:

Callie asked for discussion on the public comments regarding the direction and purpose of this Technical Advisory Group (also known as the Technical Committee). All comments from the Group and remaining public indicated that this group is on track with its original purpose and mission. Now that the TAG has completed its first primary task of developing and recommending the Scope of Work, it is now an appropriate time to host a public meeting. Up until now, there wasn't enough information to report to make it worth peoples' time.

Attachment A

Investigation of benthic algae and stream conditions in the upper White River watershed, Rio Blanco County, Colorado, 2018-2021

Preliminary Statement of Work – Drafted in collaboration with White River Technical Team

Presented March 21, 2018
U.S. Geological Survey
Western Colorado Office
Grand Junction, Colorado

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Current data collection activities in the Upper White River Basin

- Long-term streamflow and water-quality monitoring by USGS at 5 sites in the Upper White River Basin (UWRB)
  - Located along the White River upstream of Meeker
  - Water quality is collected quarterly for nutrients
    - This data serves as the primary source of nutrient information in the basin for trends and loads
    - Period of record varies by data type, but the majority of sites have several years of record
  - Monitoring sponsored by various local entities and USGS

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Current data collection activities in the Upper White River Basin (continued)

- Data also collected by Colorado Parks and Wildlife at several additional site over the past 4 years
  - Sixteen sites sampled throughout algal growing season (May through November) Winter sampling was done in 2018 (January and March)
    - Water quality, Macro-invertebrates, Chlorophyll a, Ash Free Dry Mass, Algae ID at selected sites
    - CPW plans to wind down sampling program in 2018
    - This data is the primary source of water quality, macro-invertebrate, and algae data at many sites in the UWRB
- River Watch data collected AT 5TH Street Bridge in Meeker since 1995
  - Primarily nutrients
  - Continued data collection into the foreseeable future

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SOW objectives

The objective of the study is to document and understand benthic algal occurrence, characteristics, and controls at multiple locations within the White River area of interest

Specific objectives include:

1) Conduct data mining and historical synthesis of information relevant to the timing and occurrence of nuisance algal blooms in the Upper White River Basin

2) Develop a better understanding of physical and chemical properties controlling algal growth in the mainstem of the White River

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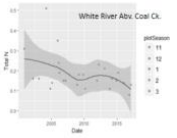
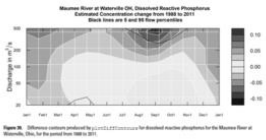
Objective 1 – Data mining and historical synthesis

- Present locally relevant information regarding algae issues in the Western United States
  - What was done? What are the results of these studies?
- Trend analysis
  - Evaluate seasonal trends at stations in the UWRB where data exists
  - Some annual trends are not revealed because of offsets from month to month. It is important to fully understand the data you have in hand to prevent unnecessary study duplications.





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Objective 2 – Develop a better understanding of physical and chemical properties controlling algal growth in the mainstem of the White River

Site selection

- Data from 20 sites will be collected and used for both physical and chemical characterization
- A semi-random sampling design is needed to establish a representative sample population for statistical purposes
- Some site will be selected to leverage historical data to aid analysis

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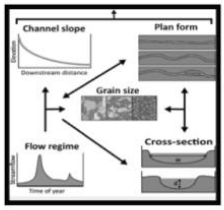
Objective 2 – Physical properties controlling algae

Stream hydraulics and channel characteristics
- Streamflow during snowmelt-runoff increases the forces acting on the streambed, and when sufficiently strong, scour algal attachment points (algae buds)
- Influences physical setting and aquatic communities
- Control light penetrations
- Control fine-sediment deposition

Measuring characteristics to determine scour thresholds
- Annual high flow measurements
  - Conditions during peak streamflow (flow regime)
    - Stream depth - Channel slope - Water velocity
- August 2018
  - Channel plan form and cross-section
  - Qualities of bed sediments (grain size)



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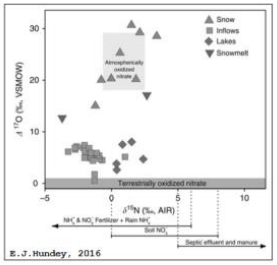
Objective 2 – Chemical properties controlling algae

- Nutrient Isotopes – a chemical property within algae food sources
  - Isotopes can indicate sources of nutrients in a river system
  - Isotopes samples will be collected in 2018 from different sources and tested to determine a unique signature
  - Isotopes will be sampled to determine if there are similarities to any of the source signatures at a subset of the established 20 sampling sites in the North Fork, South Fork, and mainstem White River



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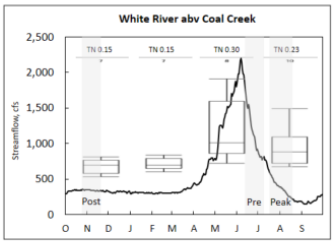
Attachment A (cont.)

Objective 2 – Chemical properties controlling algae (continued)

Water-quality characterization and source analysis

- 5 water-quality sampling events (2019-2021)
  - 2 will be done "pre" algal growth
  - 2 will be done during "peak" algal growth, and;
  - 1 will be done "post" algal growth
- Algal biomass is sampled during "peak" sampling events



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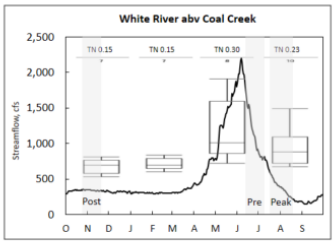
Objective 2 – Chemical properties controlling algae (continued)

- Peak-algal growth sampling events will be most intensive
  - Two sampling events in late July early Aug
  - Biomass, nutrients, TDS, field parameters, and streamflow
- Pre-algal growth sampling events are intended to assess nutrient concentrations prior to the onset of algal growth. This sampling will help determine the range of nutrient concentrations spatially.
- Post-algal growth sampling event is intended to assess nutrient loads when river is nearest a steady state condition. Variations in nutrient abundance can be masked if streamflow dilution is not accounted for. Steady state condition is best for comparing loads spatially.



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Objective 2 – Chemical properties controlling algae (continued)

Continuous water-quality monitoring and analysis

- Continuous monitoring at 20 sites during "Peak" algal growth period
  - Assistance from BLM with equipment and deployment
  - 2018 might be a good year to look at DO extremes (low snowpack and subsequent runoff)
- Analysis of dissolved oxygen and temperature (stream metabolism)
  - Are DO levels exceeding standard thresholds for aquatic health?
  - How different are DO levels among sites and does DO vary with algal biomass?
  - Does temperature vary with algal biomass?

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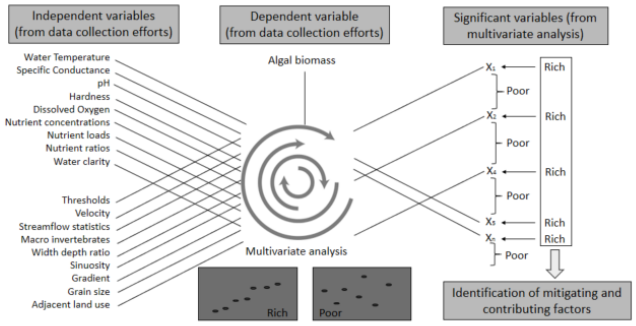
Statistical analysis



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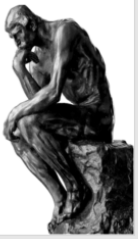
Anticipated findings

- Identify changes in historical water quality or streamflow likely to have influenced algal growth
- Determine algal abundance and location
- Identify scouring flows and their effect on algal levels
- Identification of nutrient sources with the UWRB
- Provide estimates of changes to algal biomass from scenario-based adjustments to identified mitigating and contributing factors (rich independent variables)



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Products

- Annual progress reports/presentations of preliminary data
  - Technical discussions regarding progress to date and next steps
- Final report – 2021
  - A peer-reviewed technical document containing the methods and interpretive findings as a USGS Scientific Investigations Report (SIR)
- Fact sheet – 2021
  - A 4-6 page document with the main findings of the report presented for a general audience

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Cost

	FY- 2018	FY- 2019	FY- 2020	FY- 2021
Funding Source	(all values in gross dollars)			
External Cooperator(s)	$ 90,423	$ 112,777	$ 134,524	$ 55,319
USGS	$ 38,992	$ 51,029	$ 62,739	$ 29,787
Totals	$ 129,415	$ 163,807	$ 197,264	$ 85,107

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Attachment B

Mr. Si Woodruff and the County Algae Task Force
County Courthouse
Meeker, CO

Dear Si and All -

In order to continue to maintain involvement and participation in the White River algae issue and the overall health of the White River, we have initiated an alliance of stakeholders, landowners, and other concerned individuals. This is an inclusive group welcoming everybody concerned about the river. The group includes a deep field of qualitative and quantitative resources that can offer a great deal of insight to the White River and access to solutions.

There are two perspectives at the moment we want to share with the group.

One, we are continuing to bring together a compilation of historic information, observations, and river sampling we think provides important insight to changes in the river. Although green algae in bloom is the first thing to jump out visually, a closer look at the river reveals some other, perhaps equally significant, changes occurring. We hope that the Task Force and Technical Advisory Group demonstrate an interest in what we have to share.

Two, we are taking a proactive approach for the health of the White River. In the spirit of cooperation and good relationships with most or all the landowners on the White River between Meeker and Trappers Lake, we are proposing that all insecticide spraying from aircraft along the river be discontinued for at least 2018. We have found strong correlations between insecticide applications and the river environment, including algae. This initiative may not eliminate the total cause of the algae bloom but it will remove a known culprit and show that we can work together. We are especially pleased to report that we are getting commitment to curtail spraying from significant river managers.

Our goal is to be a viable part of the process and a spoke of the wheel in the overall efforts to re-establish and maintain a healthy White River. And we're free!

Shawn Welder, Chair
White River Alliance
% 28972 CR 8
Meeker, CO
970-314-5923

Attachment C

Agency/Entity	Cash Contribution	In-kind	Notes
BLM		x	Equipment, macro invertebrate sampling, bugs sampling
CPW- Meeker		x	Previous research. May be able to continue some additional research.
CRWCD - River District	$ 25,000	x	quarterly sampling project
DCCD - Douglas Creek CD		x	10% of the WRCD cash and in-kind in partnership with WRCD & RBC
Meeker Sanitation	$ 3,500		
NRCS			Targeted Conservation Proposal (2019)
RBC County		$ 9,000	Covering the Administration cost of this agreement. (based on 3/21/18 proposal) Update: 150+ hours of staff time has been dedicated to Algae between 10/1/17 and 3/16/18 which is in addition to the $9,000
RBWCD	$ 2,000	x	
Town of Meeker	$ 8,000		
Town of Rangely	?	x	$7,000 budgeted, not committed
Trout Unlimited	$ 5,000	x	Plus Bug work
USFS		x	Tributary Bug data
USGS	$ 39,000		
WRCD - White River CD	$ 2,000	x	Six months of project administration via partnership with RBC & DCCD (Oct – Mar cost as noted under RBC)
The Rob and Melani Walton Foundation (Miller Creek and K/K Ranches)	$ 20,000		
Other		$100,000	FYI: Ongoing WR Water Quality Monitoring is a part of this study and is covered by a variety of partners. Because some of the monitoring stations in this project will also be used for the Algae project we may be able to show this as a match. **However, this is not a contribution to the Algae project itself. (energy, blm, many partners identified)**
Total Stated Contributions as of 3/21/18	**$ 104,500** **($25,000 gap)**		**FY-18 = $129,415** FY-19 = $163,807 FY-20 = $197,264 FY-21 = $85,107
YWG Basin Roundtable Application to be submitted for May meeting.			On-going discussion re: 2018 funding or 4 yr grant request YWG WSRF Grant - 25% match Statewide WSRF Grant - 50% match