White River Algae
Technical Advisory Group (TAG)
Update: October 9, 2018

A group of concerned citizens and agencies have convened to address the excessive amount of algae in the White River from the headwaters to the Utah state line.

Problem Statement: Benthic algae (attached to the stream bottom), a component of stream food webs, can reach uncharacteristic and nuisance levels on substrates when water chemistry and physical factors are out of balance with biological and physical removal mechanisms. Local observations and work done by Colorado Parks and Wildlife (2016) have highlighted nuisance benthic algal productivity in the upper reaches of the White River. The high levels of benthic algae in the stream has been reported to have developed recently (the last few years) and has caused problems for water users along the White River.

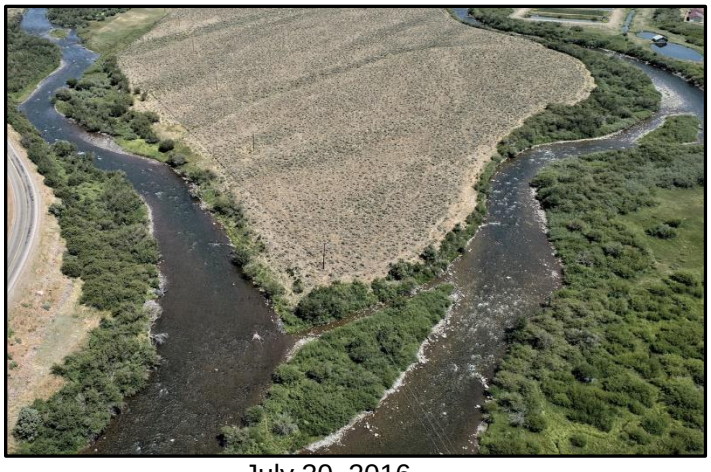
The group has convened a Technical Advisory Group (TAG) to guide the data collection and research into potential causes. The TAG will meet on an as needed basis with the public invited to participate during public comment periods. Additional public meetings will be held as needed and/or information becomes available to report. Meetings are open to the public and will be posted on the White River and Douglas Creek Conservation Districts' website.

Technical Advisory Group Mission: To ascertain what is driving the algae growth in the White River to improve the overall health of the watershed.

Technical Advisory Group Members

Rio Blanco Water Conservancy District
Colorado River Water Conservation District
Town of Meeker
Meeker Sanitation District
Douglas Creek Conservation District
US Forest Service
US Geological Survey
Colorado Parks and Wildlife
Rio Blanco County
Town of Rangely
White River Conservation District
Natural Resource Conservation Service
Bureau of Land Management
Trout Unlimited

July 30 2018



July 30, 2016

Confluence of North and South Fork

White River Algae Study

USGS Update
October 9, 2018

The work on the White River being done by the USGS Grand Junction Area Office is on schedule and budget for the 3rd and 4th quarter of Federal fiscal year 2018. The following field work has been completed or is currently underway as of 10-9-2018 (blue text is updated info for this month):

<u>High Flow Measurements:</u>

- The USGS has completed the high flow measurements for snowmelt runoff for 2018. Streamflow rate, water depth, embeddedness, water surface elevation, velocity profiles, water temperature, and hydrophone monitoring are complete at the 20 sites selected for sampling. This information will apply to our streamflow threshold analysis intended to identify streamflow rates critical to channel remobilization and subsequent scouring potential of algae. Runoff was moderate this year, so this data set will likely define the low end of what is needed to entrain particles. This data is valuable for defining the lower end of the streamflow scour potential in the White River. However, a high flow year is needed to fully define the range of streamflow needed to scour algae in the White River.

- The USGS flagged and surveyed most high-water marks and cross sections in July but has a few more sites to do in August.

- All surveying was completed the week of August 27th. No more field work is scheduled for Calendar year 2018. Isotope sampling notwithstanding.

- Natalie Day has begun her historical data analysis and literature compilation. This effort is scheduled for completion in December.

- An in-depth analysis of water-quality trends at the North and South Forks of the White River, White River above Coal Creek, and White River below Meeker are complete. Trends were run for total nitrogen, nitrate, total phosphorus, orthophosphate, specific conductance, and streamflow. Trends were observed in various forms for all constituents at all sites. Some constituents were analyzed for trends during different portions of the year such as during baseflow or for a monthly time step. Some constituent trends were increasing, and some were decreasing depending on the period analyzed. The data record for each constituent generally spans the period from the early 1990's to present. Also completed was a literature search of relevant articles/reports to the White River algae situation. A presentation of the trend analysis and the literature search to the TAG is scheduled for this fall. Also included in the presentation will be data related to algae sampling and physical conditions. Discussion of next steps based on preliminary results is scheduled to take place at this TAG meeting also.

Nitrate Samples:

- The USGS collected nitrate samples at 6 locations on the mainstem of the White River as part of the initial preparation for isotope sampling. Sites were strategically located downstream of areas where different sources of nitrogen might be occurring (fish feeding, fertilizing, septic systems). Sites were also chosen that were upstream of the aforementioned potential sources and were thought to represent a more natural or background condition. Sample results indicated that there was not enough nitrate in the water (at all sample sites) to effectively run the isotope analysis. All sites were below detection and a minimum of 0.03 ug/l are needed to run isotope analysis. As a result, the USGS has not sent in any isotope samples for testing. The remaining funding can be reallocated to another task (more samples or measurements for other tasks), or the USGS can discuss trying the isotope samples later in the year if nitrogen levels increase.

- USGS met with the TAG to discuss the next steps in this effort. The TAG would like USGS to continue trying to get samples of isotopes in the mainstem of the White River. USGS is currently working with TAG to have them sample the White River at selected locations to provide preliminary information regarding nitrate levels. This information is intended to help the USGS better understand when conditions are best for isotope sampling.

- The TAG organized a local effort to collect and analyze nitrate levels at two locations on the mainstem of the White River (above Coal Creek and NF at Buford). The effort started September 20th and no detection's have been reported yet. The Meeker Sanitation District will be relaying results to USGS on a weekly basis as results are found. If nitrate at the appropriate levels is detected, the USGS will request another sample and mobilize if that sample result is at an appropriate level. Sampling can continue as needed until the river is iced over or conditions become unsafe or impractical. Thanks are extended to the Meeker Water and Sanitation District and the White River Conservation District for their contributions to this effort.

- The Meeker Water and Sanitation District and the White River Conservation District have collected and processed several samples since the last update. Values ranged between .1-.3 mg/l nitrate. These levels are not ideal for isotope analysis. Sampling is scheduled to continue until it is not feasible or not safe to collect samples heading into winter. Sampling was suspended in the past few weeks due to rain and availability of volunteers to collect and analyze the samples. Funds for the analysis are still being reserved for the effort.

Water Quality Sondes

- The USGS is currently deploying water quality sondes (DO, pH, Water temp) at the 20 sites on the White River. Each sonde will run continuously for one week. This task is an assessment of selected habitat conditions and will also provide data for the final statistical analysis. 2018 is shaping up to be a dry year with low runoff and could be a period where fish vitality is compromised due to low streamflow, high water temperatures, and low dissolved oxygen. The sonde deployment will provide data that can ultimately help wildlife managers and stakeholders better understand if these field parameters are at critical levels.

- Sondes have been deployed at all sites (19) and data was successfully collected. Data includes continuous DO and temperature collected at 15-minute intervals for 7 days. Biomass data at all sites was also successfully collected and has been sent to the lab for analysis. The biomass data will be used to assess where algae is most abundant and will be compared to other datasets to assess correlation in the final report. Both Chlorophyll a and ash free dry mass will be analyzed. This tandem analysis provides insight regarding the life stage of the algae at the time of sampling.

- USGS will process a subset of these records to view at a future planning meeting. All records are scheduled for completion in December 2018. Final records will be uploaded to NWISweb for the public to view once the data is given final approval.

- Data processing is ongoing. Some of this data will be presented individually or in summary to the TAG this fall for discussion regarding next steps.

Pebble Counts:

- Assessment of channel substrate size, orientation, and Embeddedness (Pebble counts) is complete. A subset of data will be processed to view at future planning meetings.

- Data processing is ongoing. Some of this data will be presented individually or in summary to the TAG this fall for discussion regarding next steps.

For more information contact:

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