

**Little Calfpasture Water Quality Improvement Plan
Lake Management Working Group Meeting
September 20, 2016**

Attendees

John Pancake (landowner)	Don Kain (VADEQ)
Robert Foresman (Rockbridge County)	Karen Kline (VATech)
Gene Yagow (VATech)	Nesha McRae (VADEQ)
Paul Low (RACC)	Sandra Stuart (RACC)
Jay Gilliam (landowner, NBSWCD)	Ron Sprouse (landowner)
Pat Calvert (Riverkeeper)	Buster Lewis (Rockbridge County BOS)
Mike Jolly (CA Boy Scouts)	Philip Barbash (CA Boy Scouts)

Meeting Summary

Nesha McRae (VADEQ) began the meeting with a review of the Little Calfpasture Total Maximum Daily Load study, along with some of the past history of regulatory actions pertaining to the dam dating back to the early 90's. It was explained that while DEQ previously had a consent order and associated amendment in place that included specific requirements regarding daily operation of the dam, these orders were terminated in September of 2014. DEQ staff explained that the approach that will be taken during development and implementation of the water quality improvement plan will be a voluntary one. The role of the lake management working group will be to explore and identify strategies to address sediment coming in to the Little Calfpasture River from Lake Merriweather. A participant asked why the consent orders were terminated in 2014. DEQ staff explained that the conditions of the initial consent order were met by the Boy Scouts. In addition, conditions of the amendment no longer applied following the water quality standards change that occurred during the 2008 water quality assessment for the DEQ monitoring station immediately downstream of the dam. A participant asked how DEQ was allowed to change this standard, and whether or not there was any expectation that conditions at the site would improve over time and the statewide VSCI scoring criteria could be reapplied to this site. DEQ staff explained that there is a provision in the Clean Water Act that allows states to change standards due to impacts from impoundments and that there was not an expectation that the previous standard could eventually be met at this site. A participant asked whether DEQ was monitoring downstream on the Maury River below the confluence with the Little Calfpasture River. DEQ staff said that they did have a site on the Maury, but could not recall the river mile at which it is located.

Gene Yagow (VATech) shared a presentation with the group on water quality trends in the river and recent changes that have taken place in the watershed that could impact water quality. Gene described how sediment concentrations typically change in the river when the lake is drawn down versus when it is maintained at full pool (turbidity in the river is typically higher when the lake is lowered). This could be due to the fact that water in the lake has more residence time when it is at full pool, allowing sediment to settle out. In addition, when the lake is lowered, large mudflats are exposed allowing for erosion of compacted sediment, which is then discharged from the dam. Material may also be resuspended from the lake bottom and from the plunge pool below the dam, both resulting in more turbid water downstream. Gene noted recent changes in land use in the watershed including some

logging below the dam. In addition, the Boy Scouts received a grant to complete a dredging project from the Army Corps of Engineers in 2015. The ACOE supervised the project and contracted out dredging to a company out of PA (Hammond). Gene asked the representatives from the Boy Scouts where the dredged material had been placed. Mike Jolly explained that the material had been placed in a low area on the Boy Scouts property where it could not run off into a waterbody. It has been stabilized with vegetation and ACOE staff performed an inspection of the disposal site and found it to be in compliance with associated regulations. Mike noted that there was quite a bit of debris in the material removed during dredging, and that a fence has been installed around the disposal site. He also noted that there has been poor communication between the ACOE and DEQ regarding this project and associated permit requirements. DEQ staff is working on getting an estimate of the amount of material removed from the lake from staff at the ACOE. One participant asked if the scouts could share contact information for the person they worked with on this effort at the ACOE. Mike could not recall a name but said that he could follow up with contact information.

The group moved on to discuss current management of the lake and the schedule for drawing it down in the fall. Typically the lake is lowered from a depth of 26 feet to 17 feet beginning in September. The lake may not be drawn down faster than 6" in 24 hours in accordance with the Department of Conservation and Recreation's Dam Safety regulations. The Boy Scouts only open two gates at a time during this process and perform releases in the evenings when people aren't out on the river. The cold water discharge remains in operation until you get down below 22 feet. One participant asked if the lake was always drawn down to 17 feet. Mike explained that this is not always the case. The purpose of the draw down is to clean debris out of the lake, so if they reach 20 feet and it looks like that will be sufficient in order to reach deposited debris, they stop there. It was also noted that much of the sediment in the lake is deposited on the left side of the bend at the top (on the western side of the upper end of the lake), which can be seen from aerial imagery. One participant asked whether there are any sort of state or federal criteria in place with respect to the timing and duration of releases from the lake. It was noted that DCR's Division of Dam Safety does not have any such criteria in place beyond the 6" max draw down/24 hour criteria. They are charged with regulating dam safety and do not address water quality impacts. Mike noted that the Boy Scouts recently received an award from the VA Association of Lakes and Watersheds for operating the safest dam in Virginia. It was suggested that stream ecology and biology (e.g. spawning seasons for aquatic life) could be considered with respect to determination of the best time to draw down the lake and when it needed to be returned to full pool. Another participant asked about the purpose of lowering the lake each year. Mike explained that they lower it in order to clean debris out that has accumulated over the past year. They must leave the lake lowered long enough for the mud flats to dry out so that equipment can be brought out to help clear material. They typically wait until January when the ground is frozen to complete the clean up. The lake is then brought up to 24 feet in April and returned to full pool by Memorial Day.

The group moved on to discuss potential management strategies to be included in the plan. Gene shared a series of options including additional dredging, altering the drawdown schedule for the lake, establishing vegetation on the mudflats, and addressing the debris that is washing in to the lake from upstream. Gene also noted some new research regarding the practice of bypassing the rising limb of

storm surges into lakes. He explained that lakes often trap coarse sediment and allow fine materials to move downstream. This is problematic since it is the fine material that typically fills in downstream habitat for aquatic insects. If you bypass the rising limb of a storm surge, you may be able to avoid trapping some of this material and pass along a coarser distribution of sediment, more conducive to aquatic habitat. This option could be explored for Lake Merriweather.

Mike asked what is involved in dredging the lake and how to determine how much material should be removed. It was noted that this is something an engineer would calculate based on certain conditions in the lake. A participant stated that he thought more data is needed in order to determine exactly where the sediment is coming from within the lake. He suggested completing a sediment fingerprinting study. Gene commented that he didn't think this would be very informative since much of the sediment from the shoreline and mudflats is deposited in the lake bottom and that the process of resuspension and deposition is constant. This would make it difficult to discern the origin of sediment discharged downstream using fingerprinting methods (sediment from the mudflats and the lake bottom would likely have the same signature).

One participant suggested looking in to ways to catch some of the debris that is washing in to the lake at the top, which would allow for a shorter draw down time and lower draw down level for future cleanouts. Mike explained that the lake receives a lot of debris during flash floods including large, round hay bales. Another participant noted that flash flooding has become more intense and frequent in the watershed in recent years. Mike noted that the Scouts had talked with the ACOE about diverting and filtering water immediately downstream of their footbridge at the top of the lake some time ago. Ultimately, plans for such a project did not move forward though. The group agreed that this is something that could still be explored. Mike stated that based on his observations made from the bridge at the top of the lake, it takes about 4 hours for flood waters to travel from Craigsville down to the lake, and that they are typically carrying quite a bit of sediment and other debris with them. DEQ staff asked the group whether they thought it would be helpful to prioritize a series of dredging projects for the lake, targeting areas contributing the greatest amount of sediment to the lake when it is lowered. The group agreed that this could be an effective way to address part of the problem.

One participant stated that the Natural Bridge Soil and Water Conservation District administers large amounts of cost share every year to help farmers in the watershed to install BMPs. He further stated that if the lake were kept at full pool year round, the Boy scouts could then do their part as well to help keep the river healthy. Another participant asked whether there was room for negotiation on the draw down process for the lake (keeping the water level higher and leaving the lake below full pool for a shorter period of time). Phil Barbash (Boy Scouts) responded that they were willing to consider adjusting this process to help reduce sediment coming out of the lake. He also noted that the scouts must consider their own liability though in terms of campers swimming and boating in the lake and getting injured due to debris etc. The group discussed the issues with disposal of large items such as sofas, refrigerators and tires in Rockbridge and Augusta Counties, both of which are struggling with illegal dumping. Many local residents do not have any disposal facilities nearby that will accept this sort of refuse, thus they end up dumping it in the woods. We will need to get both counties involved in this

issue whether it be through increasing accessibility of legal disposal sites, monitoring illegal dump sites, or organizing local clean ups for the materials. One participant asked what the Boy Scouts do with the material that they pull out of the lake. Some of it is burned and other items are taken to appropriate disposal sites.

One participant asked if there are lakes similar to Lake Merriweather in Virginia with respect to downstream sediment issues. It was noted that College Lake located in Lynchburg has similar issues, and that they have not yet succeeded in identifying appropriate management solutions. One participant suggested that the exposed mudflats and eroding shoreline around the lake could be revegetated with cypress trees. The Native Plant Society has had some success with these kinds of plantings and might be willing to provide some assistance. Another participant asked the Scouts whether they had ever consulted with an engineer about the rate at which the lake is filling in and what needed to be done to preserve it. He suggested that this could be cost prohibitive due to the extent of dredging that would be required and recommended removing the dam. Phil responded that this is not an option, and that without the lake, they would not have a camp.

The group discussed the next meeting date and location. Nesha offered to follow up on some of the suggestions made during the meeting and see if the scout camp would be available to host the next meeting. Two dates that will be considered are October 25 and November 1st at 2:00 p.m. Nesha will provide the next meeting date when she distributes the notes to participants. The meeting was then adjourned.