

April 22, 2014

## Maryland Power Plant Research Program Response to “Recommendations from the Deep Creek Lake Watershed Management Plan Lake Levels Subcommittee”, dated April 5, 2014

The following response to proposed recommendations from the Lake Level Subcommittee (LLS) was developed by Versar under contract to MDNR’s Power Plant Research Program as technical representatives to the LLS. Fisheries Service technical representatives have reviewed and concur with the statements made. While a more recent set of draft recommendations have been distributed by the LLS co-chairs those addressed in this document have not changed. The technical representatives strongly urges the LLS to consider these comments when developing their final set of recommendations.

### 1. Recommendation: Deep Creek Lake Water Budget

This is a recommendation for a water budget for the lake, with guidelines listed for each water user category. A water budget would normally provide a water allocation (in terms of volume, such as cubic feet of water per year or season). Here, the committee is using units in feet of lake level, which corresponds to a volume if there is no inflow (from groundwater, streamflow, and/or rainfall) or outflow (including leakage, evaporation and releases through the power plant). However, inflows and outflows vary greatly over the year and over the months of interest (May-September), thus it is difficult to define a water budget in terms of lake level alone. Since inflows and outflows cannot be predicted beforehand with much certainty, creating a water budget in this way is not possible. Thus, the lake rule bands effectively dictate the water budget for the lake, such that the lake level is to be managed within the band as inflows and outflows vary during the season. Below is our response to guideline recommendations by user group, keeping in mind that Deep Creek Lake is owned and the Brookfield water appropriations permit is issued by the State of Maryland for the benefit of all of its citizens. (Note, the subcommittee water budget report No. 4 ,dated 19 March 2014 was not available at the time of this review.)

#### a. DNR Fisheries

This guideline suggests revision of the temperature enhancement protocol to use a 40 cfs bypass release to keep Youghiogheny River temperatures below 25C (77F). This amount of a bypass release is definitely not sufficient to maintain temperatures less than 25C in the river reach between Hoyes and Sang Run; mixing a 40 cfs release from the bypass with the upstream baseflow will maintain the required temperature for only a short distance downstream before natural heating processes will overcome the cooling provided by the bypass water. Previous studies clearly showed (as presented to the committee on March 12, 2014) that at least 10 hours of 100 cfs of a bypass flow starting at 0700 and continuing for 10 hours would be required to keep river temperatures below 25C on hot summer days. Such a release

would require installation of a large and expensive bypass system, would not generate electric power and would not be suitable for whitewater recreation (although it would be more beneficial from a fishery habitat perspective, if that were the only consideration.) In addition, such a release would not save water over the current method of implementing it with incrementally specified generation releases, because a decision to make this release would have to be made early each day so the release could be maintained for the required number of hours. The current protocol was developed specifically to make releases tailored to the expected intensity of warm river temperatures. It does this by making two-hour releases earlier on each day when temperatures are predicted to be highest; one-hour releases are made later in the day when temperatures are still predicted to exceed 25C but by a lesser amount. Six prediction times are built into the current protocol with a gradually decreasing uncertainty threshold, to account for greater reliability in making a release as each day progresses. It is for all these reasons that a bypass method of maintaining river temperature less than 25C was not implemented when the permit was first issued in 1994. Results from the past 19 years of operating with the current protocol indicate good success in minimizing unnecessary releases when they would not have been needed (less than 3 hours per year on average). Although there have been an average of 12 days per year when temperatures exceeded 25C at Sang Run, the majority of these exceedances have been less than 1C over the limit. Additional improvements are being investigated as more local data has become available, as indicated in recommendation 2.

#### b. Whitewater Releases

No recommendation was made by the committee here. However, the statement is made that 2.7 feet of water from the lake is required for the boating season. This could be misleading, as that does not mean the lake would drop 2.7 feet; that is the amount of net lake level, exclusive of inflow and other outflows and assumes no cancellation of WW releases when the lake level drops below the Lower Rule Band.

#### c. Lower Rule Band (LRB)

The committee states the LRB levels as required in the current permit. They recommend “special WWR should not be allowed to take the lake level below the LRB nor should releases in support of the TER protocol.” Assuming that ‘special’ WWR are the normally scheduled WWR, this statement is contrary to the current permit requirements for both WWR and TER, which were developed considering all users of the lake resources for the citizens of Maryland.

#### d. Discretionary Releases

No recommendation was made.

#### e. Other Permit Holders

No recommendation was made.

Final recommendations in this section: Changes in the TER as recommended by the Subcommittee will not save water for other uses and will not provide the power company more freedom to make releases.

Recommendation 2-5 (with nothing stated under 4) are lists of recommendations by others. Improvements to the TER using more local data are continuing to be evaluated. Recommendations by Alan Klotz and Jess Whittemore will be evaluated by others.