

Sediment Issues for the White Oak Project

Based on information in the First Stage Consultation Report (FSCR), the Technical Leadership Team (TLT) recommended developing a sediment management plan for the White Oak development. The present plan contains information about sediment in the reservoir and plans for maintaining the facility. The White Oak development does not generate electricity, it only serves as a flow diversion structure to direct water into the Nantahala penstocks.

Trash Rack Maintenance

Based on a review of operations at White Oak, it was determined that the main operational problems were related to debris accumulation on the trash racks. Sediment accumulation in the reservoirs had little direct effect on operation. The trash racks are designed to keep debris from blocking or entering the intake. The racks also accumulate small debris, such as leaves. This small debris is periodically removed using an electric leaf rake. Most of the limited amount of sediment associated with routine debris removal is carried down the tunnel with the White Oak Creek flow (approximately 25 to 50 cfs) and mixes with the main Nantahala plant flow (approximately 500 to 600 cfs), with the remaining flow going over the White Oak Creek Dam. The routine cleaning may not keep the racks clean, in which case the debris and sediment obstruction must be removed to maintain sufficient flow.

Historical Review of Maintenance Activities

The review of operational maintenance activities indicates that, in general, major cleaning of the trash racks is done about every ten years. This cleaning of the racks is done with large equipment that is capable of removing the accumulated debris.

Proposed debris/sediment management plan

Major cleaning using heavy equipment will be done when operations become affected by debris build-up. The major debris removal can be done at any time of year and under low flow conditions since most of the flow will be directed through the tunnel and mix with

the main Nantahala flow through the penstock, with the remaining flow going over the top of the White Oak Creek Dam. There are no permit requirements for trash rack maintenance and Duke Power plans to continue routine maintenance program.

Major debris removal process

Present plans call for cleaning the racks under a wide range of flow conditions. The debris is removed using large equipment and disposed of properly. In the area affected by debris removal, the majority of sediments that became suspended will either settle out or be transported into the tunnel to mix with the main Nantahala flow through the penstock. A small amount of sediment may be transported in flow going over the White Oak Creek Dam. The entire operation may take two to three days.

Required Drawdowns for Planned or Emergency Work

The Licensee shall notify the North Carolina Department of Environment and Natural Resources (NCDENR), the North Carolina Wildlife Resources Commission (NCWRC), and the United States Fish and Wildlife Service (USF&WS) at least 15 days prior to planned major debris removal activities or planned drawdowns for maintenance or inspection purposes that will require a temporary modification of the reservoir elevation limits. The licensee shall notify the NCDENR, the NCWRC, and the USF&WS as soon as practical, but no later than ten days after any temporary modification of the reservoir elevation limits required by an operating emergency beyond the control of the Licensee.

Drawdown Procedure

The manually operated sediment gate located in the bottom of the dam will be used to drain the reservoir. A section of flashboard, located on the left side of the dam, facing downstream, can be used to lower the reservoir elevation. The reservoir can not be completely drained by lowering the section of flashboard. The primary purpose of the removable section of flashboard is for release of water in periods of high inflow to prevent the collapsible section of the dam from failing.

Timing of Drawdown

Considering local weather patterns and inflow levels, summer and fall are the preferred times of year for planned drawdowns. However, the reservoir can be drawn down at any time when there is sufficient flow to carry the sediments into the tunnel (except for some minor spillage over the flashboards) and mix with the water entering the Nantahala penstock. The NCWRC and Duke fisheries biologists will be consulted as to the spawning periods for species that inhabit the White Oak Creek. Drawdowns during the spawning period will be avoided whenever possible to ensure that spawning beds will not be impacted.

Rate of Drawdown

The proposed drawdown procedure for scheduled maintenance is to gradually drain the reservoir over a 24-hour period. Since there are no biological resources that will be affected in the reservoir this slower drawdown rate is designed to minimize any flow or sediment related downstream impacts. To address the drawdown rate, a cooperative field study with representatives from North Carolina resource agencies and the USFWS will be conducted to develop project-specific guidelines for the White Oak Project.

Rate of Refilling

Refilling would proceed as flow becomes available but there will always be sufficient flow downstream of the project to prevent dewatering of the streambed. This rate will be determined from the cooperative field study with resource agencies.

Agency Notification

The Licensee shall notify the NCDENR, the WRC, and the USF&WS at least 15 days prior to commencing planned drawdowns for maintenance or inspection purposes that will require a temporary modification of the reservoir elevation limits or planned major debris removal activities. The licensee shall notify the DENR and the WRC of any temporary modification of the reservoir elevation limits required by an operating emergency beyond the control of the Licensee as soon as practical, either before, during,

or immediately following such emergency, but no later than ten days after each such incident.