BEFORE THE
PUBLIC SERVICE COMMISSION
OF MARYLAND

In the Matter of the	)	
Application of Catoctin Power, LLC	)	
for a Certificate of Public Convenience and	)	Case No. 8997
Necessity To Construct a 600 MW Generating	)	
Facility in Frederick County, Maryland	)	

DIRECT TESTIMONY OF STEPHEN P. SCHREINER

Q. PLEASE STATE YOUR NAME, OCCUPATION, AND CURRENT POSITION.

A. My name is Stephen Schreiner. I am a Senior Scientist and Program Manager with Versar, Inc., the Biology Integrator contractor to the Maryland Department of Natural Resources' Power Plant Research Program (PPRP). My expertise is in the assessment of potential impacts to freshwater and terrestrial species and their environments. A statement of my educational background, occupational history, and professional qualifications is provided as Appendix A to this testimony.

Q. HAVE YOU PARTICIPATED IN OTHER PROCEEDINGS TO DETERMINE ENVIRONMENTAL IMPACT? IF SO, WHAT WAS THE NATURE OF YOUR ROLE?

A. Yes. I have managed and provided technical analysis for many environmental impact assessments involving power plants and other facilities. I have evaluated potential impacts to Maryland natural resources for PPRP since 1989. These include preparing direct testimony for the CPCN licensing of the Dickerson Expansion Project (PSC Case No. 8888) and the Perryman Project (PSC Case No. 8241). I have also been heavily involved in licensing of the Deep Creek Hydrostation and Dams 4 and 5 Hydroelectric Projects. I have provided technical analyses on NPDES permit renewals for Maryland power plants and reviewed other power plant or related license applications including Calvert Cliffs and Peach Bottom nuclear stations and the Cove Point LNG facility. I have provided technical comments on behalf of PPRP regarding EPA's Phase I and Phase II rules under Section 316(b) of the Clean Water Act which deals with

cooling water intake structures. In addition, I have conducted analyses under the National Environmental Policy Act (NEPA) since 1986 for the Federal Energy Regulatory Commission and the U.S. Army Corps of Engineers.

Q. WHAT WERE YOUR RESPONSIBILITIES WITH RESPECT TO PPRP's REVIEW OF THE PROPOSED CATOCTIN POWER FACILITY?

A. My duties were to review application materials and to conduct an independent assessment of the potential impacts of the proposed project on both aquatic and terrestrial resources. Specifically, I was responsible for assessing the potential ecological impacts of power plant construction and operation on the Potomac River, local streams, and the terrestrial habitat within the region of influence of the project. More detailed information on these subjects is contained in the PPRP report titled *Environmental Review of the Proposed Catoctin Power Project* (DNR Exhibit __ (DHB-2A)), of which I am sponsoring Sections 3.2, 3.4, 5.1, 5.3, 6.3.3.3, 6.3.4, 7.2, 7.2, and 7.4.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to summarize the results of my assessment of potential aquatic and terrestrial impacts due to the construction and operation of the Catoctin facility.

Q. PLEASE DESCRIBE THE SCOPE OF YOUR DIRECT TESTIMONY CONCERNING THE REVIEW OF CATOCTIN'S APPLICATION.

A. I will describe potential impacts to aquatic and terrestrial resources on the proposed Catoctin Power combined cycle facility site and linear facilities, including potential impacts to listed threatened and endangered species and other species of concern.

Q. PLEASE DESCRIBE ANY POTENTIAL IMPACTS TO TERRESTRIAL RESOURCES ON THE PROPOSED COMBINED CYCLE SITE.

A. The facility would occupy approximately 20 acres of land, the majority of which has been affected by previous activities at the Eastalco site. This area of on-site grasslands would be used for the plant site, including cooling towers and construction laydown area; no wetlands would be affected except for a small grassy swale that currently serves to drain the existing site. No forested land will be impacted by the proposed development.

The majority of impacts to the terrestrial habitat resulting from site clearing and construction would occur in already disturbed ruderal grassland habitats. Given the previous disturbances and the absence of ecologically unique vegetative communities, no significant ecological impacts resulting from facility construction are expected.

Q. WHAT ARE THE POTENTIAL IMPACTS OF THE LINEAR FACILITIES?

A. Catoctin Power's primary water supply/discharge alternative would likely use existing effluent supply and discharge pipelines to and from the facility site and therefore no offsite terrestrial impacts are expected. However, Catoctin Power has not reached agreement with Frederick County on this alternative so we cannot make a final determination of likely effect of other pipeline locations that may be used for this alternative.

Catoctin Power's two preferred alternative routes (A and B) for the secondary water supply would withdraw water from the Potomac River, requiring construction of new intake and discharge structures and pipelines. Each of the pipeline routes consist of several pipeline segments, some of which are common to both alternatives. Total acreage of forested habitat along Route A is approximately 2.7 acres and this route has 39 small wetland areas which would be impacted. Total acreage of forested habitat along Route B is approximately 0.53 acres and this route has 23 small wetland areas which would be impacted. Exact acreages of wetlands impacted are not yet available for analysis. No impacts to threatened or endangered species are expected along either route. These and additional routes may be considered as part of an Environmental Assessment which may be conducted by the National Park Service for utility construction through the C&O Canal National Historical Park. Although we cannot make a final determination of likely effect of other pipeline locations, they are likely to be similar to these two routes.

Q. PLEASE DESCRIBE ANY POTENTIAL IMPACTS TO AQUATIC RESOURCES ON THE PROPOSED COMBINED CYCLE SITE AND LINEAR FACILITIES.

A. There will be no direct discharges of wastewater from the site to any surface waters in the vicinity of the Catoctin site during the construction phase of the project. Stormwater runoff from the facility will be collected in ponds on the

property. The stormwater management system will be designed in accordance with State and Frederick County requirements to ensure that any discharges occurring after the completion of construction are equal to or less than that of the pre-development discharge area. Therefore, the stormwater impacts to surface waters in the vicinity of the plant are likely negligible. Because there will be no encroachment by the proposed project upon any surface waters on the site, there will be no impact to aquatic biota in any of the surface waters on or in the vicinity of the Catoctin facility due to stormwater runoff.

For the secondary water supply option, there are potential impacts associated with construction of the intake and discharge structures and associated dredging to accommodate these activities, primarily increased turbidity during dredging. Standard dredging procedures and protective measures would be required to support the installation activities and would have to be conducted in compliance with applicable state and federal dredge-and-fill and waterway construction regulations and permit conditions. However, no long-term effects on the water quality of the Potomac River are expected. The exact locations of the intake and discharge structures have not been selected at this time, so a site-specific impact evaluation is not yet possible.

If Catoctin Power withdraws water from the Potomac River to provide cooling water, there is a potential to injure or kill fish and other aquatic organisms by drawing them into intake pipes along with cooling water (entrainment) or because they may become trapped at the intake site (impingement). To minimize these impacts, Catoctin will install intake screens which will exclude all but the smallest organisms from the intake and reduce the water velocity at the intake screen so larger organisms will not become stuck on the screens. Catoctin Power plans to use an intake structure such as wedgewire screens to minimize entrainment and impingement of organisms. These screens use a large surface area which results in a low through-slot velocity and they have a cylindrical configuration which allows organisms to escape from the vicinity of the intake

The slight increase in consumptive water use is not expected to significantly change the amount of aquatic habitat or biota dependent on that habitat even during low flow conditions. Under State consumptive use regulations, Catoctin Power must provide flow augmentation to the Potomac River or reduce consumptive use to no more than 1 million gallons per day during low flow

conditions, virtually eliminating the chance of adverse aquatic impacts to the river.

Cooling tower make-up water for Catoctin Power will be from the Ballenger Creek WWTP or will be withdrawn from the Potomac River. Evaporative losses in the cooling towers will result in a concentration of constituents in the cooling tower circulation water. To prevent any undesirable constituents from exceeding acceptable concentration limits, chemicals will be added to control water chemistry and a stream of water (blowdown) will be removed from the tower and discharged back to the existing discharge canal. Because of evaporative losses in the cooling towers, water quality constituent concentrations in the discharge, as measured by Total Dissolved Solids, will increase by about 7-fold. However, total water quality loadings will not increase and cooling tower blowdown constituents are not expected to significantly impact the Potomac River.

Q. PLEASE DESCRIBE ANY POTENTIAL IMPACTS TO LISTED THREATENED AND ENDANGERED SPECIES AND OTHER SPECIES OF CONCERN.

A. No threatened or endangered species were discovered during vegetative and wildlife surveys conducted in 2002 and there are no records of listed species occurring on the site. None of the habitats inhabited by any of these species will be impacted during project construction or operation and there are large areas of similar habitat of higher quality in the vicinity of the project. Therefore no impacts to these species are expected.

Q. HAVE YOU EVALUATED POTENTIAL CUMULATIVE IMPACTS OF MULTIPLE POWER PLANTS IN THE CENTRAL MARYLAND REGION?

A. Yes, I evaluated potential cumulative ecological impacts on terrestrial and aquatic resources in the region from one additional new power plant in the central Maryland region in addition to the Catoctin Power and Mirant Dickerson Expansion facilities.

For the purposes of assessing the maximum potential aquatic impacts, I assumed that the Catoctin and one new additional facility would consume a combined maximum total of about 9.7 million gallons per day (MGD) of cooling water and

that the cooling tower blowdown would be discharged back to the Potomac River. The Mirant facility was assumed to consume a maximum of 8.3 MGD but to withdraw from the Dickerson discharge, thus not creating any additional withdrawal impacts. I assumed the new Mirant facility would discharge back to the Dickerson discharge canal rather than having a new direct Potomac River discharge. Based on these assumptions, I came to the following conclusions regarding cumulative impacts:

(1) The addition of two new intakes on the Potomac River would not significantly increase entrainment and impingement impacts, since the designs for the new plants would incorporate intake technologies that will reduce entrainment and impingement to rates much lower than those occurring at the existing plants. The use of these improved intake technologies are required under EPA's 316(b) regulations recently issued for new facilities and thus no cumulative impacts on river biota are expected.

(2) The total thermal load would be expected to increase only slightly, and the 2°C thermal limit for each plume would be reached within very short distances. Therefore, no cumulative effect is expected from thermal discharges.

(3) Water quality constituents could have slightly elevated concentrations due to evaporative losses in the cooling towers but there would be no increase in constituent loadings and thus no potential cumulative water quality impacts.

(4) The maximum consumptive water use from three additional closed-cycle power plants (up to 18 mgd) would result in a maximum change in river stage of less than two-tenths of an inch (about 5 mm) at Point of Rocks and slightly more than one-tenth of an inch (about 3 mm) at Little Falls, during drought conditions, under the assumption that withdrawals would not be curtailed during low-flow periods. Reduction in habitat resulting from this worst-case potential additional water consumption from the Potomac River was calculated to be less than 0.6 percent of the total habitat area in the Great Falls reach, where any reduction in river flow would have the greatest impact, due to local water supply withdrawals in that area.

Cumulative terrestrial/watershed impacts would generally occur only for facilities located within the same or adjacent watersheds. Cumulative impacts were considered for up to two potential power plants in the Adamstown Region of Frederick County, which could create the potential for direct or indirect cumulative impact to terrestrial resources and watershed ecosystems. Since the new Mirant facility is in a watershed geographically removed from the Adamstown Region of Frederick County, there is no potential for cumulative watershed impacts. Although habitat fragmentation can cross watershed ridgelines, no significant fragmentation of forest is expected by either the Mirant facility or the Catoctin facility along with other potential plants in the Adamstown Region.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does

Appendix A

Statement of Qualifications

APPENDIX A
STATEMENT OF QUALIFICATIONS FOR
STEPHEN P. SCHREINER

Experience and Employment

Twenty-one years post-doctoral experience in water quality modeling, hydrology and aquatic impact assessment. Experience in these key areas: Aquatic chemistry, data analysis and interpretation, environmental licensing of energy facilities, reservoirs and regulated flows (instream flow models, riverine ecology, lacustrine ecology/limnology), and sampling and chemical analysis (water quality).

For the Power Plant Research Program (PPRP), Dr. Schreiner reviews study plans and applications for power plant licenses in Maryland as related to aquatic impacts, specifically the BGE Perryman, Conectiv Harford, Duke Energy Frederick, Mirant Dickerson and Sempra-Catoctin projects. He provides technical expertise on small-scale hydroelectric project relicensing and permitting issues in Maryland, including Deep Creek and Potomac Dams 4 and 5. He participates in the Susquehanna River Basin workgroup on the water use model being developed for operation of Conowingo Hydroelectric Project and he prepares the biennial aquatic impact section of the Cumulative Environmental Impact Report on power plants in Maryland. He conducted a validation study of EPA's mixing zone model CORMIX using historical thermal plume data from four power plants in Maryland in riverine and estuarine ecosystems. He consulted in development of Winters Run temperature model to evaluate change in water withdrawal permit and conducted an IFIM study of optimal flow for trout in the Savage River, Maryland. He developed the Youghiogheny River temperature model,

designed to assist in operational modification of a hydroelectric facility to enhance cool water habitat for a trout fishery and to create a model for use in implementing Deep Creek hydroelectric project operations to enhance temperature habitat in river for trout. He also developed technical permit conditions for operation of the project in conjunction with MDE and the permittee and reviewed suggested modifications to permit conditions from the American Whitewater Affiliation. He also provides support to Maryland DNR in evaluating the adequacy of the Potomac River flow-by to protect aquatic resources.

Education

Ph.D., Zoology, Clemson University, 1983; M.S., Zoology, University of Georgia, 1978; B.A., Biology, Windham College, 1974

Selected Publications and Reports

S. P. Schreiner, et al. 2004. Overview of CWA Section 316(a) Evaluations of Power Plants with Thermal Discharges in Maryland. EPRI workshop on technical and regulatory issues and considerations concerning Section 316(a). In press.

Schreiner, S.P. 2003. Habitat Assessment of the Potomac River from Little Falls to Seneca Pool. Prepared for Maryland Department of Natural Resources Power Plant Research Program, Report No. PPAD-03-1.

R.I. McLean, W.A. Richkus, S.P. Schreiner, and D. Fluke. Maryland Power Plant Cooling Water Intake Regulations and Their Application in Evaluation

of Adverse Environmental Impact. Prepared for Maryland Department of Natural Resources Power Plant Research Program, Report No. PPRP-127.

Schreiner, S.P. 2002. Chapter 5. Analysis of Other Environmental Impacts. (Includes Cooling Water Intake and Discharge Impacts). IN: Environmental Review of the Proposed Frederick Energy Facility, Draft March 2002. Prepared for the Maryland DNR Power Plant Research Program.

Schreiner, S.P., T.A. Krebs, D.E. Strebel, and A. Brindley. 2002. Testing of the CORMIX model using thermal plume data from four Maryland power plants. Environ. Modelling and Software 17:321-331.