

regulatory options; and (3) estimating the reductions in drinking water treatment costs.

a. Identification of Public Drinking Water Systems

Information regarding public water systems is contained in the Safe Drinking Water Information System (SDWIS)⁴ Database. There are 11,403 Community Water Systems (CWSs supply water to the same population year-round) that rely on surface water to serve 178.1 million people. The water supplies of a small number of these CWSs may be impacted by the discharge from MPP facilities. The first step in the approach that EPA is considering is identifying the subset relevant to the MPP rule of CWSs and their associated streams, the populations served, and operating status. This will be performed using two EPA databases: (1) Water Supply Database (WSDB)⁵ and (2) SDWIS. Hydrologic locational information will be obtained from WSDB, and populations served by the drinking water systems, as well as operating status, will be obtained from SDWIS.

b. Application of TSS Concentrations and Water System Data

To estimate reduced drinking water treatment costs associated with TSS reductions, EPA will link the site-specific water system data from WSDB and SDWIS with NWPCAM predicted TSS concentration reductions at baseline and the various regulatory options (see Section VII.A. for discussion of water quality modeling). The median concentrations of TSS predicted by NWPCAM will be applied to each of the public water utilities located within the watershed. EPA may consider using site-specific TSS concentrations (*i.e.*, the concentration at the drinking water intake) for the final rule. EPA is currently working to determine if the appropriate data are available. EPA solicits comment on the use of site-specific TSS concentrations for estimating reduced drinking water treatment costs.

c. Estimation of Drinking Water Treatment Costs

EPA is considering employing the Water Treatment Estimation Routine

(WaTER),⁶ developed in a cooperative effort between the U.S. Department of the Interior, Bureau of Reclamation, and the National Institute of Standards and Technology, to estimate reduced drinking water treatment costs based on projected reductions in TSS stream concentrations. Using minimal information such as production capacity and raw water composition, WaTER calculates dose rates and cost estimates (construction and annual O&M) for 15 standard water treatment processes, based on default design values. These default design values can be modified, based on the users specific requirements. WaTER employs cost indices and the Producer Price Index and derives cost data from Estimating Water Treatment Costs (EPA-600/2-79-162a-d, 1979).⁷ Cost estimates are derived independently for each selected process.

EPA is considering using WaTER to estimate reduced O&M costs for the standard water treatment process of gravity filtration, based on the capacities of drinking water treatment utilities and the estimated TSS stream concentration reductions. There are two components to gravity filtration: the backwashing system and the gravity filter structure. O&M costs are based on the area of the filter bed (applicable range 13–2600m²) as determined by the system flow rate (production capacity) and TSS concentration. Major O&M costs include materials, energy, and labor. Off-site disposal costs and pretreatment costs, as well as construction costs, will not be included in EPA's estimates. Cost saving estimates will be derived based on the change in O&M costs predicted at baseline and the regulatory options.

EPA solicits comment on this approach to estimating monetized benefits associated with reduced TSS concentrations predicted by NWPCAM at drinking water intakes.

2. Fish Kills

Episodic fish kills resulting from nutrients, animal waste spills and other discharges from MPP facilities have been documented in the Mid-West, and South as well as along the East Coast. Causes for the fish kills included increase in the pH, toxic amounts of ammonia and chlorine, nutrients and fecal coliforms (see Section 20.4.2, DCN 145010). In the case of excessive

nitrogen and phosphorous discharges, these pollutants can trigger increases in algae growth that reduce the concentration of dissolved oxygen in water and can eventually cause fish to die.

In addition to killing and harming fish directly, pollution from MPP facilities can affect other aquatic organisms that in turn harm fish. In particular, the Eastern Shore of the United States has been plagued with problems related to *Pfiesteria*, a dinoflagellate algae that, under certain circumstances, can transform into a toxic form that stuns fish, making them lethargic. Other toxins are believed to break down their fish skin tissue and leave lesions or large gaping holes that often result in death. One reason for the transformation of *Pfiesteria* to its toxic form is believed to be high levels of nutrients in water (Morrison, 1997).⁸ EPA is gathering evidence on documented fish kills resulting from discharges from MPP facilities. EPA may either use this estimate of fish kills in its non-quantified benefits assessment, or use it to derive a lower bound quantified estimate of fish kills attributed to MPP facilities as part of the benefits analysis for the final rule. EPA requests information on documented fish kills resulting from MPP discharges and comment on the use of this information in its benefits assessment.

3. Regional Vulnerability Assessment

The Office of Research and Development within EPA is developing the Regional Vulnerability Assessment (ReVA) program to evaluate environmental conditions and known pollutants/stressors within a geographic region. Detailed information about ReVA can be found at <http://www.epa.gov/rev/about.htm>. ReVA's purpose is to identify those ecosystems most vulnerable to being lost or permanently harmed in the next 5 to 25 years and to determine which pollutants/stressors are likely to cause the greatest risk. The goal of ReVA is not exact predictions, but identification of the types of undesirable environmental changes most likely to occur over the coming years. The ReVA program will improve environmental assessments for a region by using integrative technologies to predict future environmental risk and support informed, proactive decision-making and prioritization of issues for risk management. Detailed information on

⁴ U.S. EPA (U.S. Environmental Protection Agency). 2000a. Safe Drinking Water Information System (SDWIS). Office of Groundwater and Drinking Water. Accessed September 2002. www.epa.gov/safewater/pws/factoids.html.

⁵ U.S. EPA (U.S. Environmental Protection Agency). 2000b. Water Supply Database. Office of Water. Downloaded February 2000.

⁶ U.S. Bureau of Reclamation. 1999. Water Treatment Estimation Routine (WaTER). Denver, Colorado. U.S. Department of the Interior. August 1999. Accessed September 2002. <http://www.usbr.gov/water/desal.html>.

⁷ U.S. EPA (U.S. Environmental Protection Agency). 1979. Estimating Water Treatment Costs. EPA-600/2-79-162a-d. August 1979.

⁸ Morrison, C. 1997. "The Cell from Hell and Poultry Farmers: Do They Have Anything in Common?" The Shore Journal. August 31.