



NONPOINT SOURCE SUCCESS STORY

Delaware

Controlling Nonpoint Sources from Agricultural and Residential Runoff Restores Records Pond

Waterbody Improved

Runoff from agricultural and residential areas caused high bacteria levels in Delaware's Records Pond. As a result, the Delaware Department of Natural Resources and Environmental Control (DNREC) added the pond to the 1996 Clean Water Act (CWA) section 303(d) list of impaired waters for bacteria. Watershed stakeholders provided technical assistance and installed agricultural best management practices (BMPs) in the pond's watershed, causing bacteria levels to decline. As a result, DNREC removed Records Pond from the state's 2008 list of impaired waters for bacteria.

Problem

Records Pond is near the town of Laurel in southern Delaware. It was created in 1900 with the completion of the Records Pond Dam. Records Pond, also known as Laurel Lake, is an impoundment of Broad Creek (Figure 1). Although Records Pond is just over 90 acres, it is one of the larger lakes in Delaware. Almost at sea level and with a maximum depth of 10 feet, the pond is relatively shallow. It is owned and managed by DNREC Division of Fish and Wildlife. The James Branch flows from Trap Pond and feeds the headwaters of Records Pond. It travels through a dedicated Nature Preserve past native bald cypress, including a champion tree that is 127 feet tall and almost 25 feet around. Records Pond provides abundant fish, wildlife and recreation opportunities. Primary sources of nonpoint source pollution in the watershed likely include runoff from agricultural activities (e.g., fertilizer and manure application), concentrated areas of animal production, and failing septic systems.

Monitoring data collected in the late 1990s indicated that Records Pond failed to meet the state's enterococcus bacteria numeric criterion, which requires that the annual geometric mean be less than 100 colony-forming units (cfu) per 100 milliliters (mL). The pond did not support its freshwater primary contact designated use, prompting the state to add the pond to Delaware's 1998 CWA section 303(d) list of impaired waters for bacteria. In 2006 the U.S. Environmental Protection Agency developed a total maximum daily load (TMDL) to address the nutrients and bacteria loading throughout the Broad Creek watershed, which includes Records Pond. To achieve TMDL targets and

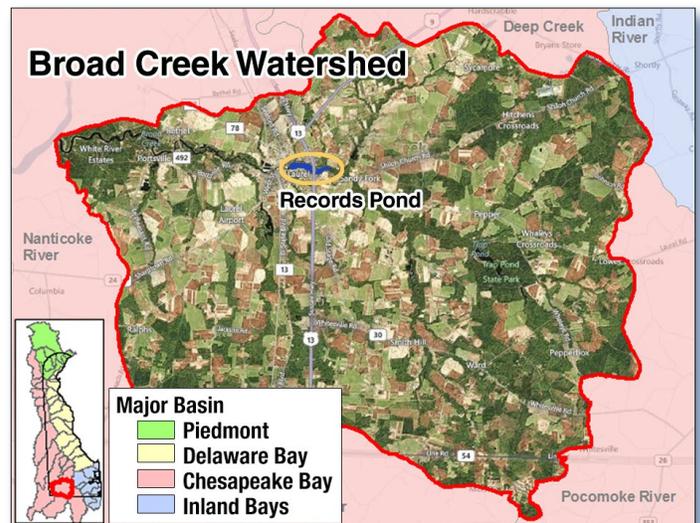


Figure 1. Records Pond is in the Broad Creek watershed in southern Delaware.

meet water quality standards in the pond, the TMDL required a 30 percent reduction in nitrogen and a 50 percent reduction in phosphorus loadings.

Project Highlights

The Sussex Conservation District (SCD) offered technical assistance to the farming community by providing nutrient management planning and cost-share funding for agricultural BMPs. The SCD and Kent Conservation District (KCD) also partnered with the U.S. Department of Agriculture's (USDA's) Natural Resources Conservation Service (NRCS) to develop conservation plans and Environmental Quality Incentive Program (EQIP) contracts. Watershed partners worked with

landowners to enroll 3,750 acres of cover crops over 5 years and implement nutrient management plans on approximately 85 percent of available lands. In addition, several BMPs were installed on poultry operations within the watershed, including 48 manure storage structures, 44 poultry carcass composters, one dairy animal waste facility, and one dead bird incinerator.

The SCD nutrient management planners continue to work with farmers throughout the watershed, providing ongoing technical assistance to ensure improved water quality. Delaware's USDA Conservation Reserve Enhancement Program (CREP) was established in 1999 to protect and enhance environmentally sensitive land and waters in the coastal plain geographic areas of the Delaware Bay, Chesapeake Bay and Inland Bay watersheds by establishing voluntary land retirement agreements with agricultural producers. To assist in CREP program development and implementation, in 1999 Delaware's Nonpoint Source Program committed CWA section 319 funds to create a full-time Delaware CREP Program Coordinator position. The CREP Program Coordinator helped install 127 acres of riparian forest buffers and 10 acres of hardwood trees in the Records Pond watershed. The installation of numerous urban practices between 2003 and 2012 has also contributed to the delisting of Records Pond (Table 1).

Table 1. Urban BMPs installed in the Records Pond watershed (2003–2012)

Urban BMPs	Acres treated
Bioretention areas	20
Bioswales	52
Dry detention ponds	42
Dry extended detention ponds	186
Erosion and sediment control	75
Filter strips	4
Septic tank advanced treatment systems	1
Septic tank pump-outs	7
Urban infiltration practices	14
Wet ponds and wetlands	710



Figure 2. Canoeing is a popular recreational activity on Records Pond.

Results

Bacteria levels in the pond have decreased in response to the more than 10 years of water quality protection and restoration efforts in the Records Pond watershed (Figure 2). DNREC collected monitoring data at STORET Station 307011 in Records Pond between September 2002 and August 2007. The geometric mean of the 28 samples collected over the 5-year period was 27.2 cfu/100 mL. This was well below Delaware's fresh water bacteria water quality standard, 100 cfu/100 mL, so DNREC removed the 91.9-acre segment of Records Pond (DE-050-L04) from the state's list of impaired waters in 2008 per its Assessment and Listing Methodology. The Draft 2016 Integrated Report shows the pond continues to meet the applicable water quality standards for bacteria due to continued restoration efforts in the watershed. Records Pond remains a popular recreation destination (Figure 2).

Partners and Funding

Key partners included SCD, USDA Farm Service Agency, NRCS and the Delaware Nonpoint Source Program. Approximately \$1.1 million in federal CWA section 319 funds supported the costs of the Records Pond restoration effort. Additional funding came from the USDA (through EQIP and CREP) and Delaware's Conservation Cost Share Program (which was provided through KCD and SCD). Because of the nature of the funding and enrollment procedures, much of the funding provided by watershed partners has been immeasurable.



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