



Section 319

NONPOINT SOURCE PROGRAM SUCCESS STORY

Alaska

Reducing Animal Sources of Fecal Coliform Restores Water Quality

Waterbody Improved

After water quality monitoring data showed that Anchorage's Cheney Lake consistently failed to meet Alaska's fecal coliform (FC) bacteria standard during the early 1990s, Alaska's Department of Environmental Conservation (ADEC) added the waterbody to the state's 1994 Clean Water Act (CWA) section 303(d) list of impaired waters. ADEC believed that excrement from a large Canada goose population and from people's pets contributed to the pollution problem. The Municipality of Anchorage (MOA) and several partners implemented programs in the late 1990s to reduce the wild goose population and address pet waste. Both efforts helped reduce the FC entering the lake. Using monitoring data collected in 2006, ADEC determined that the lake meets water quality standards. As a result, in 2008 ADEC removed Cheney Lake from the section 303(d) list for FC.

Problem

Cheney Lake is in a residential area of Anchorage in south-central Alaska. The lake covers approximately 22 acres and has a mean depth of 5.8 feet and a maximum depth of 14 feet. The lake formed in the late 1960s when a large gravel extraction pit filled with water (Figure 1). Cheney Lake is hydrologically isolated; it is fed by springs, precipitation, and stormwater runoff but has no natural inlet or outlet. The area surrounding the lake is mostly residential with parkland immediately along the shoreline.

Water quality data collected by MOA from 1991 through 1994 show that Cheney Lake exceeded the FC standard almost every month. ADEC added the waterbody to Alaska's 1994 CWA section 303(d) list of impaired waters. The state's stringent bacteria standards for Cheney Lake require that in a 30-day period, the geometric mean may not exceed 20 FC/100 milliliters (mL) and not more than 10 percent of the samples may exceed 40 FC/100 mL. ADEC attributed the FC pollution to nearby or in-lake sources, including excrement from the Canada geese that loitered on and around the lake, as well as stormwater runoff carrying pet waste from the area immediately around the lake.

Project Highlights

After an aircraft collided with a flock of geese in 1995 near Anchorage, killing 24 people, a task force began working to reduce wild goose populations throughout the city. MOA worked with the



Figure 1. Alaska's Cheney Lake formed when an abandoned gravel pit filled with water.

U.S. Fish and Wildlife Service (USFWS), the Alaska Department of Fish and Game, and the Alaska Native and American Indian Elders who live in the Anchorage area to reduce the number of eggs available for hatching. The Migratory Bird Treaty Act ordinarily prohibits people from collecting wild bird eggs; however, the USFWS granted special permits to volunteers from the Elders Program of the Southcentral Foundation. These volunteers collected and donated the eggs to Alaska Natives so they could eat them as their ancestors once did. Other methods to reduce the number of geese included relocating goslings, harassing adult geese, altering habitat and, when necessary, killing them (e.g., near the airport). To discourage geese from gathering

near waterbodies, MOA posted signs requesting that people not feed the birds (Figure 2).

MOA, the Anchorage Waterways Council (AWC) and several partners implemented a *Scoop the Poop* program throughout the city in 2003 to address problems with unmanaged pet waste. The campaign educated pet owners about simple ways to reduce the amount of FC that enter local waters by picking up after pets and properly disposing of the waste. Program elements included developing posters featuring local celebrities, creating public service announcements for local television stations and installing more than 50 pet waste stations throughout Anchorage's park system, trail heads and neighborhoods, including one by Cheney Lake (see Figure 3). These stations include signs, waste bags and trash receptacles.



Figure 2. A sign at Cheney Lake discourages people from feeding waterfowl.



Figure 3. A pet waste station at Cheney Lake encourages people to pick up after their pets.

Results

FC levels in Cheney Lake have declined. Historical data shows that the FC levels in Cheney Lake have decreased by an order of magnitude since the early 1990s when ADEC originally placed it on the list of impaired waters. Even with the substantial populations of waterfowl still contributing FC to the lake, the majority of recent water quality data are below 20 FC/100 mL with numerous samples measuring 0 FC/100 mL.

From April to November 2006 ADEC monitored water quality at eight stations (five in-lake stations and three shoreline stations) in Cheney Lake. All but one data point at the five in-lake stations meet the geometric mean standard of 20 FC/100mL, the one exception being a station reported at 21 FC/100mL (skewed because of one sample of 85 FC/mL in July). The combined data for the three shoreline stations include six instances of FC levels (out of 85 data points) above the not-to-exceed standard of 40 FC/100mL. Twenty-eight percent of the 2006 combined shoreline data are 0 FC/100 mL. Thirty-four percent of the combined data have reported values of 0 FC/100mL. Seventy-two percent of the values are less than 10 FC/100mL, while 84 percent are less than 20 FC/100mL. The majority of samples showing FC levels are consistent with data representing background levels.

Because Cheney Lake is not hydrologically connected to any other waterbodies, bacteria levels in the lake are dominated by direct inputs and runoff from immediately surrounding areas, rather than by runoff from a larger watershed. Therefore, ADEC believes that reducing the Canada goose population likely led to most of the water quality improvement. A secondary contributor to improved water quality was the effort by pet owners to better manage pet waste in the parkland immediately around the lake. On the basis of the data, ADEC and the U.S. Environmental Protection Agency agree that occasional violations of the water quality standards are likely caused by direct inputs from natural sources such as waterfowl. Therefore, ADEC removed Cheney Lake from Alaska's CWA section 303(d) list of impaired waters for FC in 2008.

Partners and Funding

MOA worked with the USFWS and the Elders Program of the Southcentral Foundation to reduce Anchorage's Canada goose population by allowing an annual egg hunt. In 2006 AWC received \$23,953 from the Alaska Clean Water Actions Program (which includes CWA section 319 funds) to support developing the *Scoop the Poop* campaign. Numerous partners participated in the campaign, including ADEC; University of Alaska, Fairbanks Cooperative Extension Service; U.S. Bureau of Land Management; Anchorage Animal Care and Control; Alaska Department of Fish and Game; Anchorage Unleashed; and MOA's Watershed Services and Parks and Recreation departments.



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