



# NONPOINT SOURCE SUCCESS STORY

## Washington

### Kitsap County's Pollution Identification and Correction Program Improves Water Quality in Dogfish Creek

#### Waterbody Improved

Fecal coliform (FC) bacteria from nonpoint sources caused the main stem and east and west forks of Dogfish Creek to violate water quality standards (WQS), prompting the Washington Department of Ecology (Ecology) to add the segments to the state's Clean Water Act (CWA) section 303(d) list in 1996. The Kitsap County Public Health District (Health District) developed a Pollution Identification and Correction (PIC) program to identify pollution sources and work with landowners to eliminate them. The PIC program and on-the-ground cleanup activities are reducing FC levels across the Dogfish Creek watershed. Data show that the three segments have been improving; they are on an exponentially decreasing trend and have often met WQ standards. Downstream commercial shellfishing beds are also becoming cleaner as a result.

#### Problem

Dogfish Creek is within the Liberty Bay watershed in Kitsap County. It includes the city of Poulsboro and is just west of the greater Seattle area (Figure 1). Kitsap County's waters have been regularly monitored by the Health District for FC bacteria since 1996. This extensive monitoring program has resulted in the listing of many Kitsap County waterbodies for FC pollution on the CWA section 303(d) list of impaired waters beginning in 1996, including the main stem of Dogfish Creek (#7637), East Fork Dogfish Creek (#7640), and West Fork Dogfish Creek (#7636). FC bacteria in the watershed are from sources in both urban and rural areas. Additionally, FC pollution or the threat of pollution has caused the closure and restricted use of commercial shellfish beds in many marine waters. In response, Ecology completed a FC total maximum daily load (TMDL) study for Liberty Bay watershed in 2013.

#### Story Highlights

The Health District has been working to improve water quality through their [PIC program](#) since 1995. It has become a model for other counties in Washington. The program's five key elements include:

**1. Proactive approach:** The Health District investigates streams and marine shorelines to find sources of pollution; when a source is located, they work with the property owners to eliminate it.

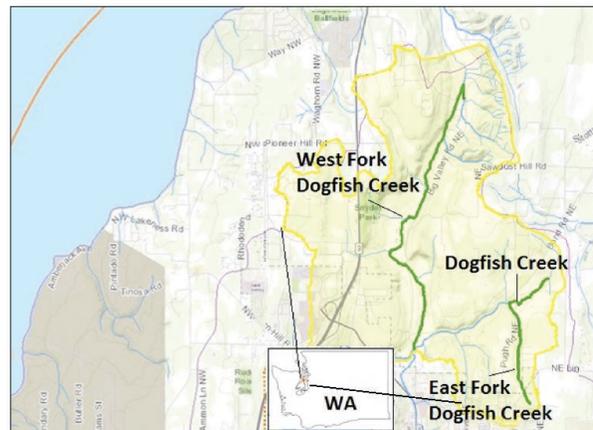


Figure 1. Dogfish Creek is in western Washington.

- 2. Stable funding source:** A county assessment provides stable funding for the program.
- 3. Enforcement authority:** The Health District uses existing local regulations and authorities to address pollution sources and enforce corrective actions when necessary.
- 4. Countywide program:** The PIC program creates a work plan for each impaired stream based on investigatory sampling data. A prioritization system is used to track down bacterial pollution sources near stream segments with elevated bacteria levels.
- 5. Effectiveness monitoring:** The countywide water quality trend monitoring program collects annual data at 106 stations in 65 streams and 71 stations in 10 marine embayments.

Each year, the Health District PIC team uses their monitoring data to prioritize a list of the most-polluted waterbodies, and then assesses each for potential pollution sources. Door-to-door PIC inspections are conducted. PIC inspectors provide free technical assistance to guide property owners through the process of correcting identified pollution sources (e.g., failing onsite septic systems [OSS]), livestock and agricultural animal manure). The Health District is actively engaged in OSS system education, dye testing of suspect systems, and enforcement of county OSS regulations.

The Health District coordinated with the Kitsap Conservation District (KCD) to implement a PIC project in the Dogfish Creek watershed (1999–2004). The Health District surveyed 145 properties. Six failing OSS were identified and repaired. Landowners installed 46 agricultural best management practices (BMPs) on 17 properties, including 8,776 feet of fencing and four waste storage structures.

The Health District led a larger-scale PIC project in 2009–2014 throughout the entire the Liberty Bay Watershed. The Health District held eight public meetings and educational workshops, which were attended by 224 people. The Health District inspected 867 OSS between 2009 and 2013; repairs were made to 47 of 50 (97 percent) failing systems. In partnership with the Health District, KCD inspected 47 high-priority farms, provided free technical assistance, and helped landowners apply for and receive cost-share funding to implement 98 BMPs at 41 locations.

## Results

The surface waters in the project area are currently designated as Extraordinary Primary Contact Recreational Waters. Applicable WQS for FC bacteria has two parts: (1) samples must be less than or equal to 50 colonies/100 milliliters (mL) geometric mean value (GMV), and (2) not more than 10 percent of all samples obtained for calculating a GMV may be greater than 100 colonies/100 mL. Data collected show that FC levels in the main stem of Dogfish Creek (Figure 2), West Fork Dogfish Creek, and East Fork Dogfish Creek have declined between 1996 and 2017;

however, these will remain listed as impaired until they meet WQS for at least two consecutive years. Since PIC efforts began approximately 22 years ago, the Kitsap County’s shellfish growing areas that are approved for harvest have increased by 4,224 acres.

## Partners and Funding

The Health District’s PIC program receives baseline annual funding from a stormwater utility fee assessed on properties in the unincorporated area of Kitsap County. The Health District received Centennial Clean Water Fund grants from Ecology in 1999 for the Dogfish Creek Restoration Project and in 2009 for the Liberty Bay Watershed Restoration Project. Using some of these funds, KCD provided cost-share assistance for BMPs. Some landowners also received U.S. Department of Agriculture (Environmental Quality Incentives Program) incentive payments to implement farm conservation plans. KCD provided in-kind matching funds.

Kitsap Health District conducted monthly trend monitoring in the project area. KCD developed educational materials in partnership with the Washington State University Extension and Puget Soundkeeper Alliance. Grant funding and program support has also been provided from the Washington State Department of Health and the U.S. Environmental Protection Agency. In 2013 the City of Poulsbo Public Works Department received \$198,700 in CWA section 319 matching funds to support development of the Liberty Bay/Dogfish Creek FC TMDL implementation plan.

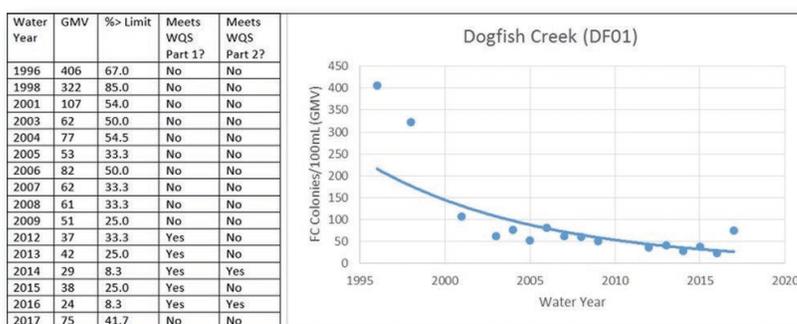


Figure 2. Dogfish Creek bacteria levels have declined over time but do not yet meet both parts of the WQS.



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