

MARYLAND DEPARTMENT OF THE ENVIRONMENT



FURNACE CREEK SEPTIC SYSTEMS ANALYSIS FEBRUARY 2010

SUBMITTED TO:
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Furnace Creek Study

Furnace Creek is located in northern Anne Arundel County and drains densely populated urban/suburban communities, commercial properties, and two major thoroughfares (Fig 1). Most of the properties in the watershed are serviced by a public sewer system. The creek has been determined to be impaired by bacteria and an attempt was made to identify the source of the impairment through Bacteria Source Tracking (BST) using antibiotic resistance analysis. The BST study occurred between December 2007 and November 2008 and was a joint effort between Salisbury University and MDE. During the study period, bacterial isolates from water samples collected monthly were tested for resistance to antibiotics and the results compared to the resistance of bacterial isolates from known sources. The data generated from this effort concluded that a predicted source distribution analysis attributed 33% to human, 29% to pets, and 38% to wildlife. The focus of the present study was to address the human component of the BST analysis by identifying and documenting potential sources that might explain the data.

This human pollution source investigation concentrated on the public sewer system including the infrastructure and pumping stations, the onsite waste disposal systems, and residential population.

Findings:

A review of the sewer system overflow history for the period defined by the study identified two overflow events from the Hammerlee pumping station (Fig 2). One overflow occurred on the same day the BST water sample was being collected. Both incidents may have contributed to the human signature that was identified in the bacteria population of these samples, but are not likely to be the primary or ongoing source. During the previous year, two structural failures occurred releasing approximately 83,000 gallons of sewage into a ravine draining into Furnace Creek (Fig 2).

The monitoring station for the BST analysis was established at the base of 7th street. Approximately 300 feet from this site, a vessel docked behind a house was observed being serviced by a satellite dish and electric cable (Fig 3). The vessel was suspected of being used as a live-aboard residence. Although the field team was unable to inspect the vessel, the homeowners confirmed it was being occupied. A neighbor stated it does not appear to get pumped. If this vessel discharges directly to the waters of Furnace Creek (which is highly likely), it would be a perpetual human signature source.

The county board of public works and environmental health supplied MDE with a listing of properties that were not connected to the public sewer and had (to some degree) an onsite waste disposal system. The field teams attempted to inspect 40 identified properties. Of those 25 were residential, 12 commercial, 2 government and the previously mentioned houseboat. Tracer dye tests were performed on 28 properties. Two residential (in addition to the houseboat) refused access while 9 others were not

home (including Saturday attempts). Two of the residential properties had sanitary violations (a failing septic system and a grey water violation). Failures at either of these properties would not have had an impact on the water quality of Furnace Creek.

Some of the commercial properties located along Stahl Point Road (just outside the mouth of Furnace Creek) were found to have major sanitary violations including failing septic holding tanks. On one of the properties, an office trailer was observed with sanitary piping going into the ground. The field team was asked to make an appointment to inspect at a later date. Upon their return it was noted the piping was removed and the water shut off. A violation sheet will be filed for this property. Due to the distance from Stahl Point Road to Furnace Creek, it is questionable whether the human signature observed in the water samples from the monitoring station could be attributable to these sources.

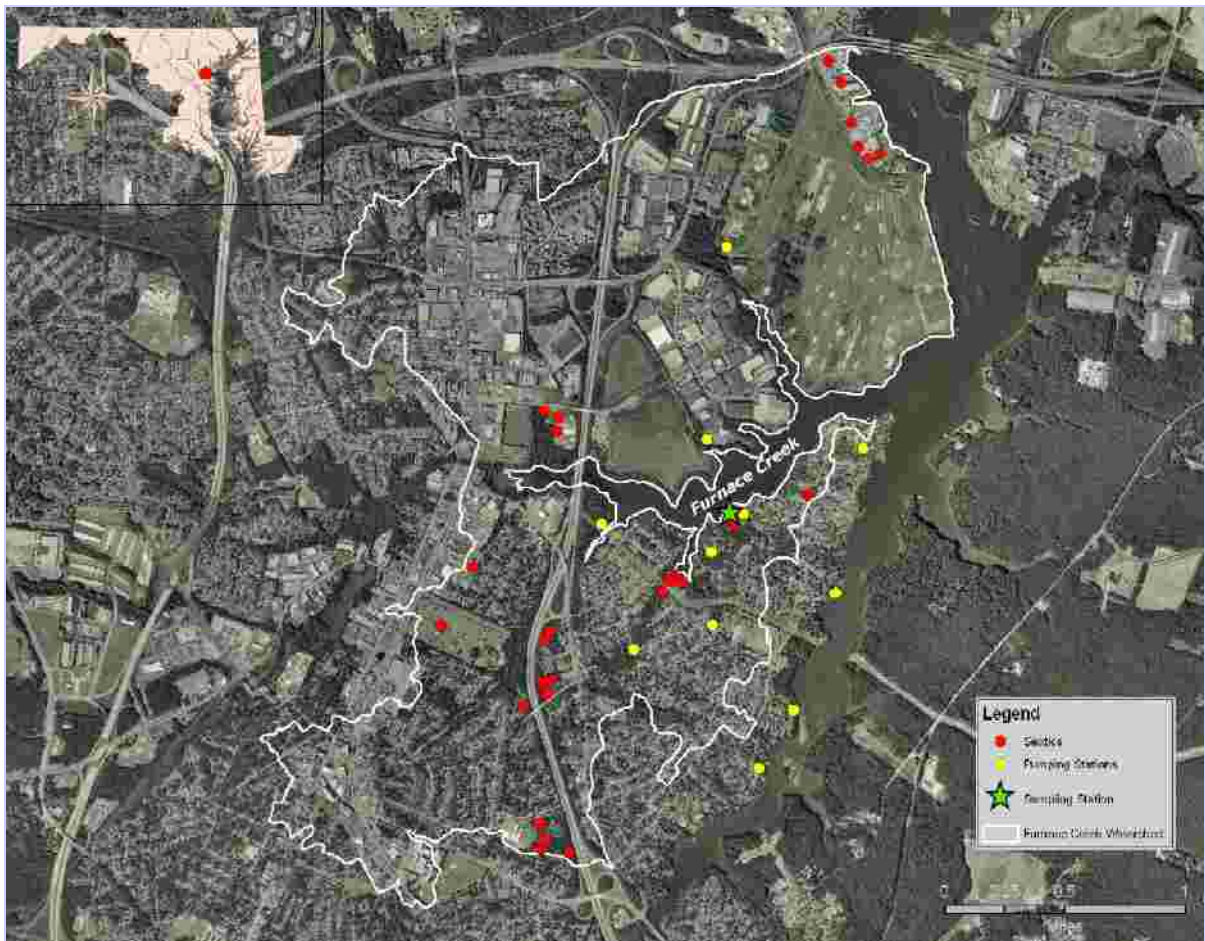


Figure 1. Properties of interest and pumping stations identified by Anne Arundel County within the Furnace Creek drainage basin.



Figure 2. Location of pumping station and relative proximity to the BST monitoring station.



Figure 3. Aerial view of houseboat and relative proximity to the BST monitoring station.

Table 1. List of sanitary violations.

Name	Address	Impact	Violation
Whiting-Turner Contracting Co. Inc.	23 Stahl Point Road, Baltimore, MD 21226	Direct	Holding tank leaks, effluent surfaces
Universal Engineering & Construction	95 Stahl Point Road, Baltimore, MD 21226	Indirect	Failing septic system
Hilda Dorsey	7319 Dotson Street, Glen Burnie, MD 21060	Environmental	Grey water violation
Chesapeake Area Builders Tenant - unknown	805 Marigold Street, Glen Burnie, MD 21060	Environmental	Failing septic system
Stahl Point LLC	33 Stahl Point Road, Baltimore, MD 21226	Indirect	Raw sewage
Delta Trash Removal- Ben Poe	125 Stahl Point Road, Baltimore, MD 21226	Possible	Field staff observed illegal septic connection
James Corin Houseboat	994-B, 7th Street, Glen Burnie, MD 21060	Possible/ Direct	Possible discharge – unable to inspect. Per neighbor, tank is not pumped

Table 2. Work days dedicated to Furnace Creek study.

Employee	Days
Forrest	8.5
McManus	9.5
Santana	10.5
Potter	5.3
Beatty	6.5
Total Days	40.3