

## Northeast Creek and Newport River Tributaries Site descriptions

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This information is provided as a supplement to the Northeast Creek and Newport Tributaries Summary of Special Study Results, May 22, 2008. For an overview of numerical results, please refer to that report. This document provides descriptions and photos of individual monitoring sites and conditions during sampling in January and March 2008 that may be helpful in interpreting those results.

### Newport R. tributaries

#### **NPT01: Eastman Creek at NC 101**

This appears to be a fairly typical stream surrounded by salt marsh. Conditions appeared similar during both sampling events, with samples being taken on an outgoing tide and an approximate maximum depth of 0.1 m. January sample may have been taken closer to ebb than the late winter samples in March.



Eastman Cr, upstream, Jan. 2008



Eastman Cr, downstream, Mar. 2008

#### **NPT02: Bell Creek at NC 101**

Bell Creek seemed to be fairly similar to Eastman Creek, in that it appeared to be a typical tidal coastal stream surrounded by salt marsh. It appeared that the culvert had been recently replaced at the downstream road crossing. Conditions appeared similar during both sampling events, with samples being taken on an outgoing tide with an approximate maximum depth of 0.1 m. High turbidity was noted on both sampling visits.



Bell Cr, upstream, Jan. 2008



Bell Cr, downstream, Mar. 2008

### **NPT03: N Ware Creek at NC 101**

This site, along with S Ware Creek, was distinctly different from the other Newport tributaries. N. Ware Cr. appears to be more of an agricultural ditch and drains active fields. It is connected to the roadside drainage ditches, and with no riparian buffers.

During the low flow sampling in January, there was no flow in the stream or roadside ditches. Heavy cattail growth was noted in the channel of N Ware Cr, and heavy filamentous algal growth was noted in the connected roadside ditches.

When re-sampled in March, it was obvious that the roadside ditches had been very recently cleared/dredged, with marks from the backhoe still very visible on the banks. It appears that some clearing of the creek itself had been done, as the thick cattail growth was no longer present. Though there was good flow (and numerous small fish) in the roadside ditches at this time, N Ware Cr itself was still stagnant and shallow (<0.1m). Extremely heavy filamentous algal growth was also present.



N Ware Cr, downstream, Jan. 2008



N Ware Cr, downstream, Mar. 2008

**NPT04: S Ware Creek at NC 101**

The conditions at S Ware Cr were nearly identical as those found at N Ware Cr, which is not surprising given their very close proximity. They both drain the same agricultural fields.

During the low flow sampling in January, there was no flow in the stream. This site lacked the heavy cattail growth noted at N Ware Cr, but still showed heavy filamentous algal growth. In March, only the roadside drainage ditches upstream of the road had been cleared. Some flow was noted in the channel proper upstream of the road, but it was stagnant downstream. Maximum width and depth were slightly greater than seen previously, though still <0.1m, and moderate amounts of filamentous algae were present.



S Ware Cr, downstream, Jan. 2008



S Ware Cr, below road, Mar. 2008

**NPT05: Russell Creek at NC 101**

Russell Creek was another typical tidal creek, similar to Eastman and Bell Creeks. Both sampling events occurred on an outgoing tide. The low flow sampling in January was taken at near ebb and the creek was very shallow with low velocity. The March sampling occurred sooner after flood, with higher flows and high turbidity noted, but maximum depth was only about 0.1m.



Russell Cr, upstream, Jan. 2008



Russell Cr, downstream, Mar. 2008

Northeast Cr. watershed

Many of the sites in the Northeast Cr. watershed exhibited no or very minimal flow during January sampling visits, as they had during site reconnaissance in December 2007. Field indicators of algae blooms (high dissolved oxygen saturation and pH, discolored water) were present at several locations in January. Flow was improved at the majority of sites in March.

**NE01: Northeast Cr. at SR 1327**

Minimal flow was seen during the sampling visit. The stream is fairly narrow (~1.5m) and shallow. The channel is incised and water is very tannic. This site appears to be a dumping ground for road kill, as numerous relatively intact deer carcasses in varying states of decay were noted in the stream and along its banks. A small utility line crosses the stream above the road.



Northeast Cr at SR 1327, upstream, Jan. 2008



Northeast Cr at SR 1327, downstream, Mar. 2008

**NE02: UT to Northeast Cr.**

No flow was present in January, and only very slight flow was noted in March. Water was relatively clear and only slightly tannic. Stream was ~1.5m wide and shallow (0.15m). The substrate appeared to be more organic (mucky) than the nearby Northeast Cr. site (NE01).



UT to Northeast Cr at SR 1327, downstream, Jan. 2008



UT to Northeast Cr at SR 1327, upstream, Mar. 2008

**NE03: Northeast Cr. at NC 17**

Conditions were fairly comparable during the two sampling visits. Low flows were noted, even when good flow was noted at the upstream site at SR 1327 (NE01). The creek was very tannic and about 5m wide with a maximum depth was about 0.4m. Banks were deeply incised and nearly 2m in height. Lots of periphyton and some filamentous green algae were present during the December reconnaissance visit though not noted during the January and March sampling visits. A trunk line crosses the stream.



Northeast Cr at NC 17, upstream, Mar. 2008

**NE04: Northeast Cr. below confluence with Wolf Swamp**

This site was accessed off the end of Thomas Humphrey Rd. (SR1409). As compared to other study sites, flow was generally good here, though stage appeared to be very low, particularly in January. The creek was about 4m wide and 0.5m deep during the March visit. Water was very tannic during the March visit.



Northeast Cr below Wolf Sw, downstream,  
Jan. 2008



Northeast Cr below Wolf Sw, downstream,  
Mar. 2008

**NE05: Wolf Sw. at US 17**

The stream is fairly wide (4-5m) with an average depth of about 0.5m. The stream was not flowing at the time of sampling in January. Very slight flow may have been present at the March sampling, though it may have been merely wind-driven. However, good flow had been noted during initial watershed reconnaissance in December 2007.



Wolf Sw. at US 17, upstream, Mar. 2008

**NE06: Northeast Cr. at SR 1406**

The creek had a much sandier substrate than at upstream sites. There is a NPDES discharge (Regalwood WWTP) located upstream of this location. The creek was 4m wide but shallow (0.1-0.3m deep) during the January visit. Depth had increased to near 1m in March. The stream exhibited very slight flow during all sampling visits. It appears that a tributary (possibly an old ditch) had been impounded by a series of earthen dams. It appeared to be, possibly, a wetland restoration or creation project, though no record of such a project could be found in the DWQ Basin Information System (BIMS).



Northeast Cr. at SR 1406, downstream, Jan. 2008



Earthen impoundment at mouth of UT to Northeast Cr. (near site NE06), Dec 2007

**NE07: Unnamed tributary to Poplar Cr. at SR 1411**

The reaches upstream and downstream of the road have no connection due to a severely perched culvert. The corrugated metal culvert is also showing severe corrosion and appears to be in poor condition. The downstream reach was sampled for this study, as the upstream reach was not deep enough to submerge a sample bottle. Below the road, the stream was ~2m wide with a substrate that appears to be a mix of sand, muck and clay.

During the January sampling, the water was visibly turbid with a green-blue color, indicating an algal bloom, and there was absolutely no flow; the stream was stagnant and ponded. It is likely

that a significant portion of the nutrients in the stream were actually tied up in the algae. This portion would not be represented in the analytical results from this study since water samples were filtered before analysis.

In March, flow conditions were still poor but water clarity had improved. A small trickle was coming from the culvert, though this was likely just groundwater infiltration as the upstream end of the culvert was still perched. Field notes indicate that there was significant coverage of the stream bottom by heavy periphyton and filamentous algae growth.



UT to Poplar Cr showing perched culvert and discolored water due to algae bloom, Jan. 2008



UT to Poplar Cr, downstream, Mar. 2008

#### **NE08: Poplar Cr. at SR 1411**

A strong smell of horse manure was noted during all site visits, and a horse stable and pasture were located on one bank. A mix of manure and straw (likely sweepings from the stable) are apparently land applied by the stable owner along the road as well as the area between the pasture fence and the creek. It is likely that run-off from these applications enters the creek during rain events. The stream appeared unusual in that there was a significant amount of clay (marl) in the substrate and banks. It was 2.5m wide and 0.5m deep and there was no generally no or poor flow.

In January, no flow at all was noted. A bacterial oil sheen was present across much of the surface of the ponded creek. A dead deer was noted in the creek. Enrichment was indicated, as the roadside ditches that feed into the creek contained large, dry, brown-green mats of what appeared to be die-off from filamentous algal growth.

In March a short reach just below the road showed good flow, though quickly became stagnant about 10m downstream. Water clarity was excellent. A thick stand of what appeared to be *Sparganium* spp. was present in this flowing reach.



Poplar Cr, downstream, Jan. 2008



Poplar Cr, SAV bed, Mar. 2008

**NE09: Little Northeast Cr. at SR 1406**

The stream is 7-8m wide, tidal and likely brackish, suggested by the presence of crab pots at this location, though all salinity readings at this site were well below 0.5 ppt. Land use in the upstream portion is fairly undisturbed, but downstream of the road the entire left bank is bulkheaded, an apartment complex is present, and grassed yards extend completely to the bulkhead. Additionally, there are two minor NPDES discharges upstream of SR 1406 and two more downstream; impacts from all of these sites are likely due to the tidal influence here. During January sampling, flow direction could not be positively determined due to the wind, though it appeared to be near flood/high tide. In March, no flow was noted and the creek appeared to be at flood.



L Northeast Cr, upstream, Jan. 2008



L Northeast Cr., downstream, Jan. 2008

**NE10: Confluence of Northeast Cr. and L. Northeast Cr.**

Though it was initially intended that this site be accessed via boat, time and logistical constraints required that this location be accessed by land via a dock at the Northeast Creek Park. Though all of Northeast Cr. from its source to NC 24 carry the stream classification of “SC”, this was the most upstream brackish/salt site sampled. This location is tidal. There is also a NPDES discharge approximately 0.5 miles upstream on Northeast Cr.



Confluence of Northeast Cr. and L. Northeast Cr.,  
Jan. 2008

During the January sampling, the tide was coming in. There was a likely algal bloom, based on high pH and DO readings. Samples were difficult to filter, as the filters became quickly clogged, attributable to high algal density. As with the UT to Poplar site, nutrient results from this site may not truly represent total nitrogen and total phosphorus levels as nutrients may be tied up in the algal biomass.

In March, the bloom indicators were not seen. Samples were taken near high tide/flood, though salinity was much lower (8.2 ppt) than during the January sample (16.8 ppt).

**NE11: Northeast Cr. at NC 24**

The creek is very large and tidal at this location. In January, the same indicators of an algal bloom seen upstream at NE10 were also noted here. Samples were collected on an incoming tide. In March, samples were collected near high tide/flood, and field indicators of an algal bloom were not present.



Northeast Cr. at NC 24, Jan. 2008

**NE12: Northeast Cr. near Paradise Point**

This saltwater site was accessed by boat on an incoming tide during the January sampling. This location also exhibited the bloom indicators seen upstream at NE10 and NE11. Due to unavailability of boat access, this site was not re-sampled in March.