

UT to Turkey Creek
Stream Mitigation Plan
WBS No. 46794 Division 4
Phase 1- Middlesex Corporate Center
November 2009

The North Carolina Department of Transportation will perform on-site mitigation for stream impacts associated with Phase I of the Middlesex Corporate Center (MCC) located in Middlesex NC. The mitigation site contains approximately 4000 feet of stream and occurs on the Nash Heath Care System's (NHCS) property.

NCDOT proposes to restore 20 feet of stream, relocate 145 feet using natural stream design, and preserve 3900 feet of stream on two unnamed tributaries to Turkey Creek within NHCS property. Within the conservation easement area, 100 feet will be reserved from the onsite mitigation to account for a fifty foot utility crossing of both unnamed tributaries for future needs of the MCC. An additional 1.5 acres of stream buffer will be reserved from the onsite mitigation to account for required stormwater management devices within the conservation easement area. This includes the required diffuse flow structures as shown on the designs and the BMP overflow or discharge structures as shown on the conceptual stormwater management plan.

This site is proposed to offset 260 feet of stream impacts associated with MCC by debiting 20 feet of stream restoration at 1:1 ratio, 2400 feet of stream preservation at a 10:1 ratio, and 41,894 sq. feet of buffer from the onsite mitigation. An additional 65,340 sq. feet of buffer is reserved from the onsite mitigation to account for the stormwater management devices. This leaves approximately 1500 feet of stream preservation and 42,766 sq. feet of buffer on-site.

Existing Conditions

This project is located in the southern region of Nash County where Highway 264 and Highway 231 intersect, about 2 miles east of Middlesex NC. UT-1 begins at a reinforced concrete pipe (RCP) under a driveway near Hwy 231 and continues for approximately 2500 feet easterly through the NHCS property. UT-1 is altered by beaver activity along the lower portion of the stream just before joining UT-2. UT-2 is located in the southern region of the NHCS property and flows northeasterly through the property. UT-1 and UT-2 converge east of the NHCS property before crossing under Highway 264. A third unnamed tributary flows from the US-264 ramp for approximately 300 ft to its confluence with UT-1 in the northern section of the property. UT-1 and UT-2 are slightly incised and there is some undercutting in the outer bends of the meanders. However, both tributaries have mature woody vegetation along the banks and have a stable riffle-pool structure. The floodplains of both UT's are comprised of a mature oak-hickory forest community.

$\begin{array}{r} 260 \\ -20 \\ \hline 240 \end{array}$	$\begin{array}{r} 20 \text{ rest} \\ 3900 \text{ pres.} \\ -2400 \\ \hline 1500 \\ \times 100 \\ \hline 150,000 \\ 107,234 \\ \hline 42,766 \end{array}$	$\begin{array}{r} 1460 \\ \times 100 \\ \hline 146,000 \\ 107,234 \end{array}$	$\begin{array}{r} 3900 \\ -41,894 \\ \hline 24,894 \end{array}$ <p style="font-size: small; text-align: right;">3900 24,894 -41,894 24,894</p>
$\begin{array}{r} 41,894 \text{ impact} \\ 65,340 \text{ BMP} \\ \hline 107,234 \end{array}$			

3900
24,894
-41,894
24,894

Proposed Conditions

NCDOT will construct Phase 1 of the MCC which consists of an access road from Highway 231 to Highway 264A. The access road will intersect UT-1 (Station 12+00) and UT-2 (Station 34+50) within the NHCS property. NCDOT will restore approximately 20 feet of UT-1 by removing the RCP pipe and driveway crossing near Highway 231. Approximately 100 feet of channel of UT-1 will be relocated using natural stream design to align the restored channel with the culvert outlet. The channel will be reestablished with a 3 foot base and 2 foot banks on a 1.0% slope. Approximately 40 feet of channel of UT- 2 will be relocated using natural stream design to align the existing channel with the culvert outlet. The channel will be reestablished with a 4 foot base and 2 foot banks. The relocated sections of both channels will be graded to proper contours to match the adjacent topography, matted with coir fiber, and replanted with the appropriate woody species.

NHCS will grant a conservation easement to NCDOT to include approximately 2500 feet of UT-1, approximately 1500 feet of UT-2, and 100 foot buffers along both banks of the streams. By placing these streams in a conservation easement, this will ensure that the vegetation will remain intact and the streams will be protected in perpetuity.

Monitoring

The restored and relocated sections will be visually monitored and documented with photo points for channel stability and vegetation survival. The conservation easement will be held in perpetuity and recorded on the NHCS deed. The mitigation site and conservation easement boundary will also be placed on the Natural Environment Unit's Mitigation Geodatabase for long time stewardship.