

ANNUAL REPORT FOR 2005



Crescent Road Mitigation Site

Lenoir County

Project No. 8.2200101

TIP No. R-2719BA



Prepared By:
Natural Environment Unit & Roadside Environmental Unit
North Carolina Department of Transportation
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SUMMARY

The following report summarizes the monitoring activities that have occurred in 2005 at the Crescent Road Mitigation Site. The 2005-year concludes the third year of hydrology and vegetation monitoring following construction of the site. The site must be monitored for five consecutive years or until the site is deemed successful.

Site hydrology is monitored with three groundwater gauges, three surface water gauges, and one onsite rain gauge. All three groundwater-monitoring gauges met the jurisdictional criteria for wetland hydrology (>12.5% of the growing season). All three surface water gauges showed periods of inundation during the 2005 monitoring year.

Three vegetation-monitoring plots were established to monitor the trees planted in the 3.71-acre site. The 2005 vegetation monitoring of the site revealed an average tree density of 451 trees per acre. This average is well above the minimum success criteria of 320 trees per acre for year three.

NCDOT will continue to monitor the hydrology and vegetation at the Crescent Road Mitigation Site.

1.0 INTRODUCTION

1.1 Project Description

The Crescent Road Mitigation Site is situated adjacent to C.F. Harvey Road (Crescent Road) both to the north and south, in the western portion of Lenoir County (Figure 1). It is approximately 2 miles (3.2 kilometers) northwest of Kinston. The U.S. Corps of Engineers permit for R-2719BA dated June 12, 2001 states that the Crescent Road onsite mitigation site is to provide 0.58 acres of riverine restoration and 1,706 linear feet of stream restoration to offset unavoidable impacts. According to the as-built drawings of the site, the site actually restored 3.71-acre of riverine restoration, 2,291 linear feet of stream restoration, and 7.6 acres of Neuse River buffer restoration. These additional credits may be used to offset future mitigation needs.

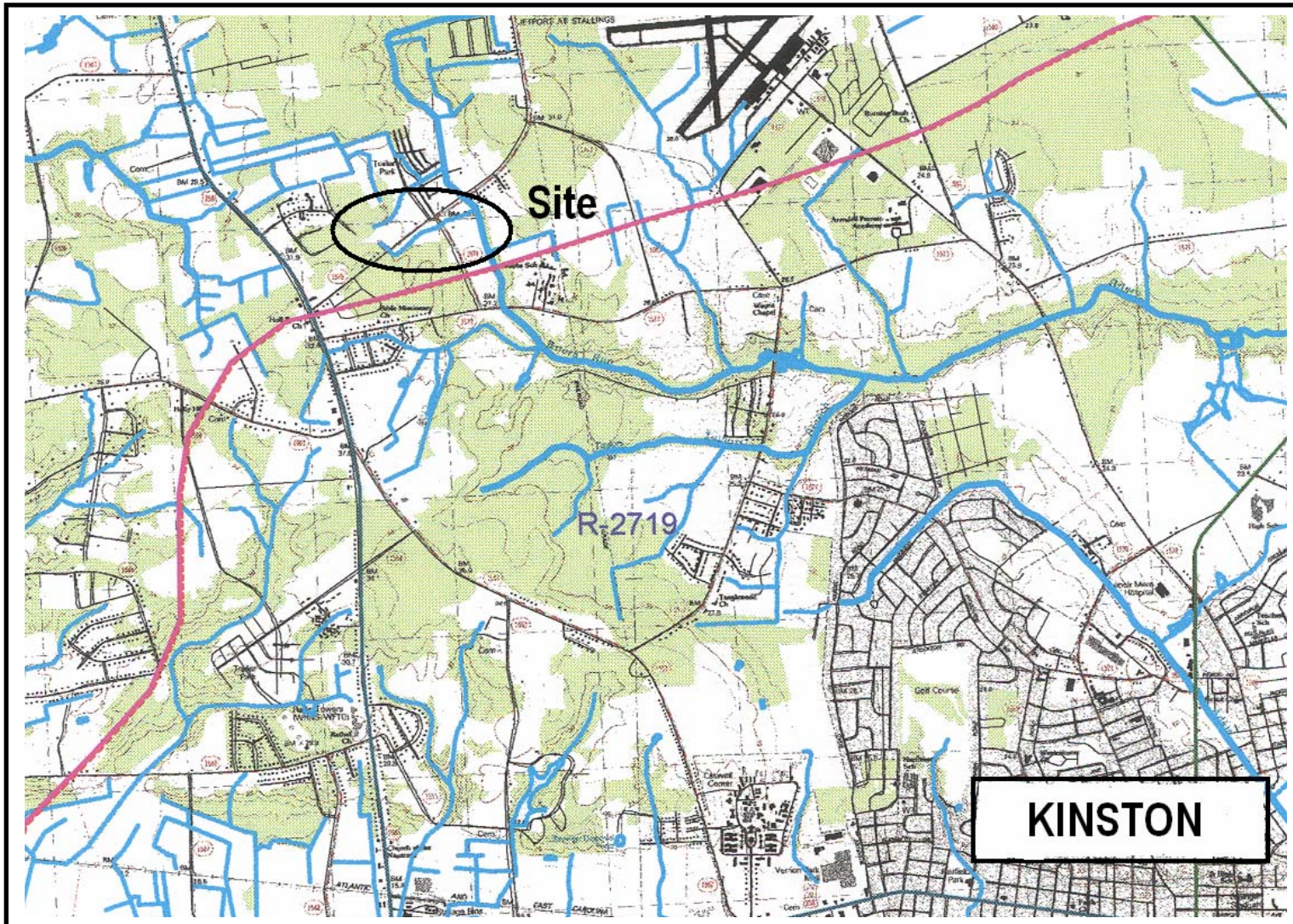
1.2 Purpose

In order to demonstrate successful mitigation, the site must be monitored for a minimum of five years or until success criteria are achieved. Success criteria are based on federal guidelines for wetland mitigation. Criteria for hydrologic conditions and vegetation survival are included in these documents. The following report describes the results of the hydrologic and vegetation monitoring during the 2005-growing season at the Crescent Road Mitigation Site.

1.3 Project History

Spring 2002	Site Construction
May 2002	Hydrologic Monitoring Gauges Installed
March 2002	Site Planted
May- November 2002	Hydrologic Monitoring (Incomplete Year)
March- November 2003	Hydrologic Monitoring (Year 1)
June 2003	Vegetation Monitoring (Year 1)
March- November 2004	Hydrologic Monitoring (Year 2)
August 2004	Vegetation Monitoring (Year 2)
March - November 2005	Hydrologic Monitoring (Year 3)
August 2005	Vegetation Monitoring (Year 3)

Figure 1. Site Location Map



2.0 HYDROLOGY

2.1 Success Criteria

In accordance with federal guidelines for wetland mitigation, the success criteria for hydrology state that the area must be inundated or saturated (within 12 inches of the surface) by surface or groundwater for at least a consecutive 12.5% of the growing season. Areas inundated less than 5% of the growing season are always classified as non-wetlands. Areas inundated between 5% and 12.5% of the growing season can be classified as wetlands depending upon factors such as the presence of hydrophytic vegetation and hydric soils.

According to the Soil Conservation Service, the growing season in Lenoir County extends from March 17-November 15 (approximately 244 days). A consecutive 12.5% of the growing season for Crescent Road would equal 31 days; a consecutive 8% would be equivalent to 20 days. Local climate must represent average conditions for the area in order for the hydrologic data to be valid.

2.2 Hydrologic Description

Three groundwater and three surface water-monitoring gauges are used to record site hydrologic data. The groundwater gauges are set to record daily water levels, while the surface water gauges are set to record at 3-hour intervals. A rain gauge is also located on the site in order to get accurate site rainfall measurements. The hydrologic response (groundwater) to rainfall events is evaluated using this data.

Appendix A contains a plot of the water depth for each of the groundwater and surface water monitoring gauges for 2005. Precipitation events, measured by the onsite rain gauge, are included on each groundwater gauge graph as bars.

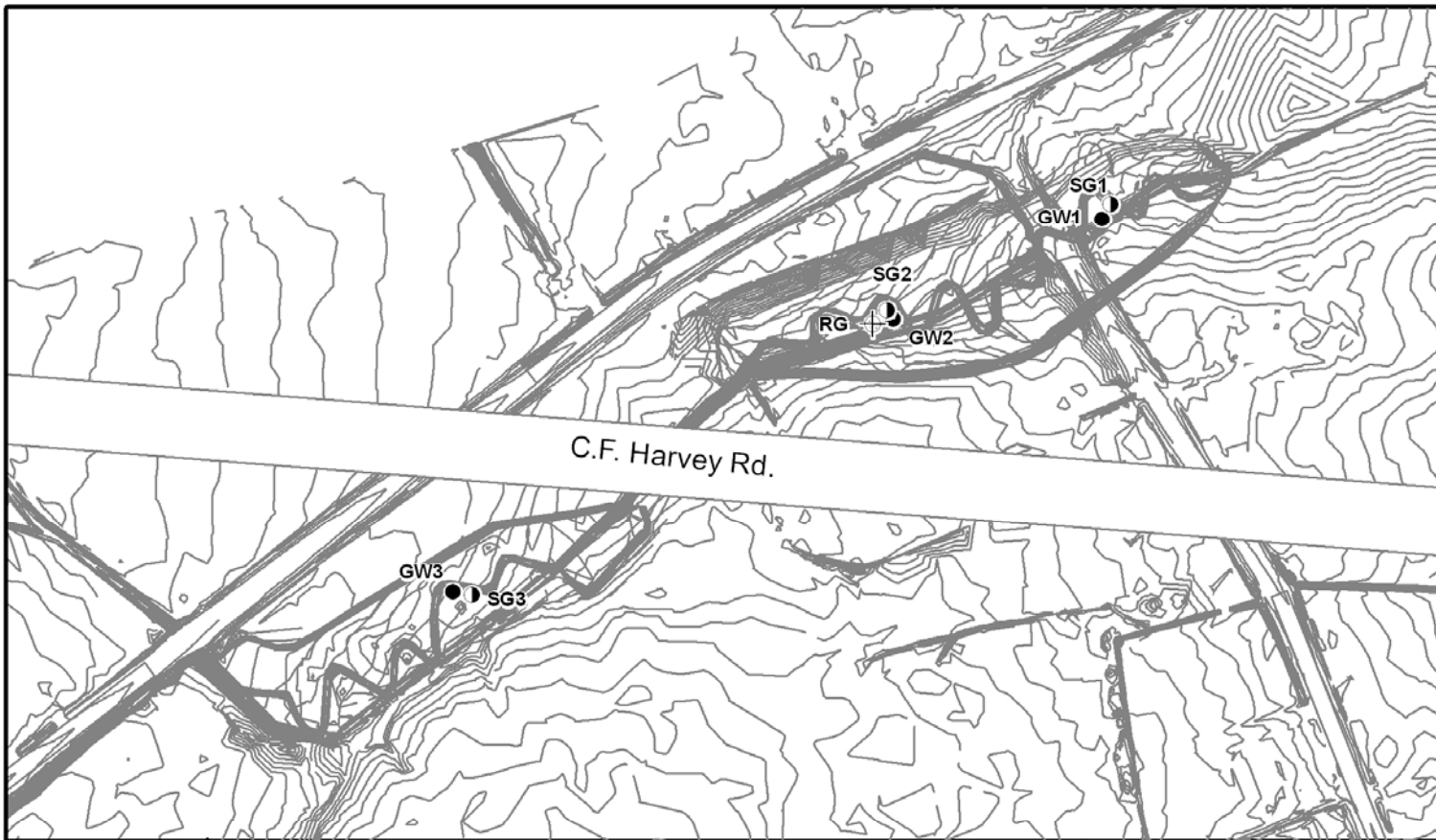
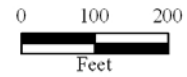


Figure 2. Monitoring Gauge Location Map



- Ground Water Gauge
- ⊕ Rain Gauge
- ⊙ Surface Gauge



2.3 Results of Hydrologic Monitoring

2.3.1 Site Data

The total number of consecutive days that the groundwater was within twelve inches of the surface was determined for each groundwater-monitoring gauge. This number was converted into a percentage of the growing season. Table 1 presents the hydrologic results for 2005. Figure 3 is a graphical representation of the hydrologic monitoring results for 2005.

Table 1. 2004 Hydrologic Monitoring Results

Monitoring Gauge	< 5%	5-12.5%	>12.5%	Actual %	Dates of Saturation ^a
CRGW-1			×	16.0	Mar 17-April 24
CRGW-2			×	17.6	Mar 17-April 20 Oct 4-Nov 15
CRGW-3			×	19.3	Mar 17-May 2 Oct 7-Nov 15

a-dates of saturation include only the intervals when the gauge meets 12.5% of the growing season (at least 31 days)

2.3.2 Climatic Data

Figure 4 is a comparison of monthly rainfall for the period of January through November 2005 to historical precipitation (collected between 1974 and 2005) for Kinston, North Carolina. This comparison gives an indication of how 2005 relates to historical data in terms of climate conditions. The NC State Climate Office provided all of the local rainfall information.

For the 2005-year, the months July and October experienced above normal rainfall. The months of January and June recorded below normal rainfall for the site. February, March, April, May, August, September, and November experienced average rainfall. Overall, 2005 experienced a normal rainfall year.

2.4 Conclusions

The 2005-year represents the third full growing season that hydrologic data has been collected on the Crescent Road Mitigation Site. All three groundwater-monitoring gauges met the jurisdictional criteria for wetland hydrology (>12.5% of the growing season). All three surface water gauges showed periods of inundation during the 2005 monitoring year.

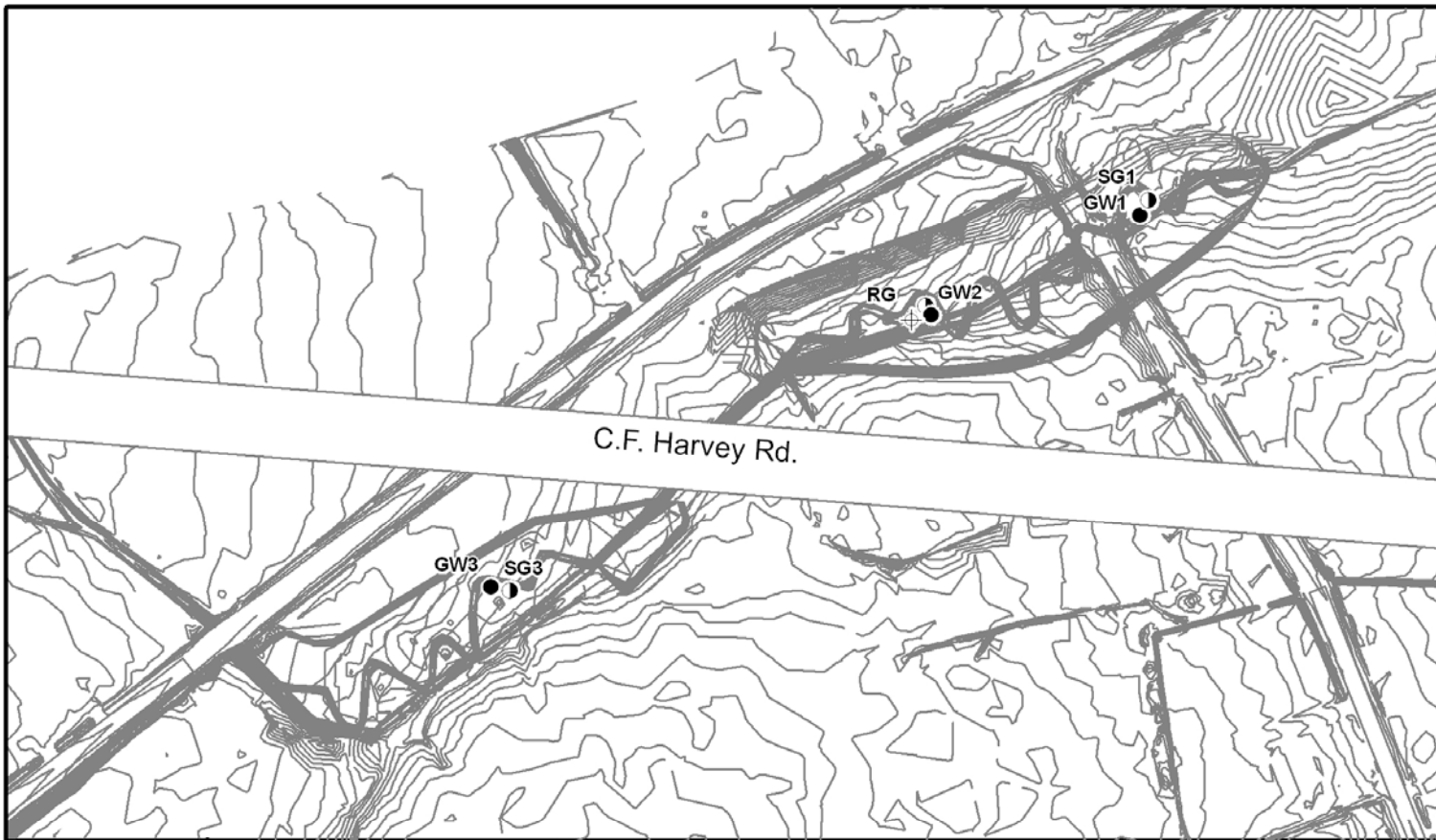


Figure 3. 2005 Monitoring Gauge Results



Hydrology Results

- >12.5%
- ⊕ Rain Gauge
- Surface Gauge

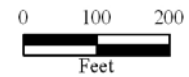
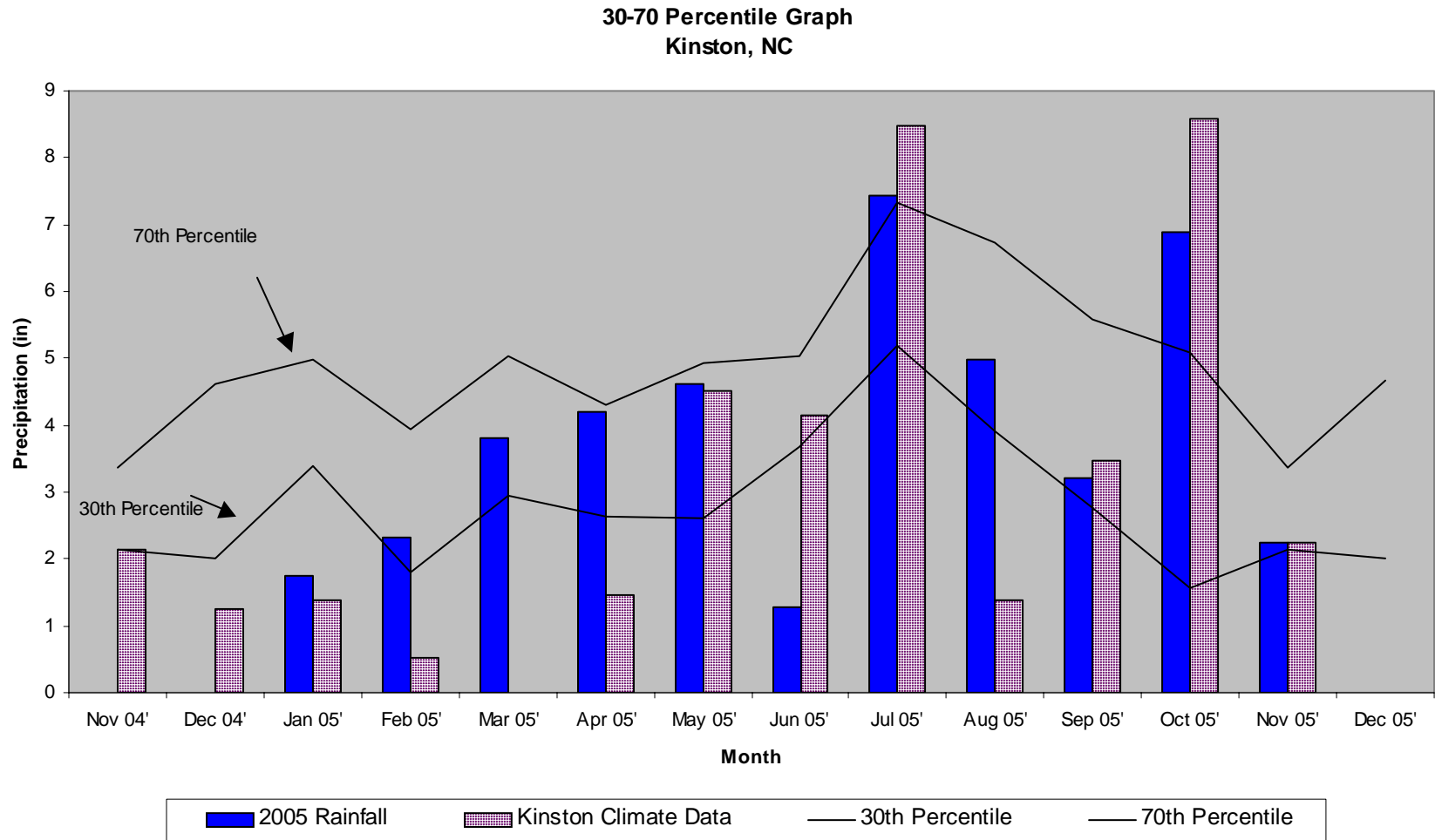


Figure 4. 30-70 Percentile Graph, Kinston, NC



3.0 VEGETATION: CRESCENT ROAD MITIGATION SITE (Year 3 monitoring)

3.1 SUCCESS CRITERIA

Success Criteria states that at least 320 stems per acre must survive after the completion of the third growing season and 260 stems per acre after the fifth growing season. If desired vegetation has not been established, NCDOT will notify the appropriate agencies and will implement corrective measures.

3.2 DESCRIPTION OF SPECIES

The following tree species were planted in the Wetland Restoration Area:

Fraxinus pennsylvanica, Green Ash
Betula nigra, River Birch
Nyssa sylvatica var. *biflora*, Swamp Blackgum
Quercus phellos, Willow Oak

3.3 RESULTS OF VEGETATION MONITORING

Table 2. Vegetation Monitoring Statistics

Plot #	Green Ash	River Birch	Swamp Blackgum	Willow Oak	Total (3 year)	Total (at planting)	Density (Trees/Acre)
1	15	10	1	5	31	47	449
2	12	14		4	30	42	486
3	10	8		3	21	34	420
Average Density (Trees/Acre)							451

Site Notes:

Other species noted: woolgrass, rush, broomsedge, elderberry, fennel, black willow, tag alder, cattails, silky dogwood, nutsedge, wax myrtle, lespedeza, and goldenrod.

3.4 CONCLUSIONS

There were 3 vegetation monitoring plots established throughout the 3.71-acre planting area. The 2005 vegetation monitoring of the site revealed an average tree density of 451 trees per acre. This average is well above the minimum success criteria of 320 trees per acre.

NCDOT will continue vegetation monitoring at the Crescent Road Mitigation Site.

4.0 OVERALL CONCLUSIONS/RECOMMENDATIONS

The 2005-year represents the third full growing season that hydrologic and vegetation data has been collected on the Crescent Road Mitigation Site. All three groundwater-monitoring gauges met the jurisdictional criteria for wetland hydrology (>12.5% of the growing season). All three surface water gauges showed periods of inundation during the 2005 monitoring year.

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APPENDIX A
GAUGE DATA GRAPHS

APPENDIX B

SITE PHOTOS AND

PHOTO AND PLOT LOCATIONS MAP

Crescent Road



Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6

August 2005

CRESCENT ROAD MITIGATION SITE

