

ANNUAL REPORT FOR 2004



White's Store Mitigation Site
Dare County
Project No. 8.T051401
TIP No. R-2551WM



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GAUGE MAP

SUMMARY

The following report summarizes the monitoring activities that have occurred in the past year on the White's Store Mitigation Site. The site was constructed and originally planted in May 2001 and was designed as saw grass marsh restoration. The entire site serves as mitigation for impacts associated with construction of US 64-264.

Two groundwater-monitoring gauges were installed on the site in March 2002. At the request of the resource agencies, these two gauges were reset in May 2003 as surface water gauges that record data in 3-hour intervals. The site is a wind driven tidal system; therefore, success will be measured by the occurrence of inundation (occasional flooding is required for success). For the 2004-year, the two surface gauges exhibited frequent flooding on the site. Therefore, the White's Store Mitigation Site fulfilled the hydrology success requirement.

An on-site meeting with agency personnel was held on July 28, 2004, to review the site's current elevation. The agencies and NCDOT agreed that the on-site elevations were similar to those at the reference site. It also appears that the wind driven tidal system is inundating the site occasionally.

Soil samples were taken at the reference and mitigation sites on April 12, 2004 for soil condition comparison pertaining to previous lack of vegetation survival. The sample results did not determine why the planted vegetation was not surviving. The 2004 monitoring has shown a scale value of 4.6, which is on track for success. Small areas of phragmites have been noted on the site. NCDOT has treated the site to control phragmites in 2002 and 2003. During the on-site agency meeting (July 2004), it was agreed that NCDOT could propose to discontinue vegetation monitoring during the 2004-monitoring year.

Based on the successful monitoring results for the 2004 growing season, NCDOT proposes to discontinue hydrologic and vegetation monitoring at White's Store Mitigation Site.

1.0 INTRODUCTION

1.1 Project Description

The White's Store Wetland Mitigation Site is located west of Manns Harbor in Dare County (Figure 1). Built in early 2001, the site serves as mitigation for impacts associated with US 64-264 construction (USACE Action ID No. 199502334). The site was designed to provide 0.21 acres of saw grass marsh mitigation.

1.2 Purpose

In order to demonstrate successful mitigation, hydrologic and vegetative monitoring must be conducted for a minimum of five years or until the site is deemed successful. The site is a wind driven tidal system; therefore it will be deemed successful when the site demonstrates occasional inundation. The following report details the results of hydrologic and vegetative monitoring during 2004 at the White's Store Mitigation Site.

Included in this report are analyses of both hydrologic and vegetative monitoring results, as well as local climate conditions throughout the growing season.

1.3 Project History

May 2001	Site Constructed
May 2001	Site Planted
August 2001	Vegetation Monitoring (1 yr.)
March 2002	Monitoring Gauges Installed
March - November 2002	Hydrologic Monitoring (1 yr.)
May 2002	Site Replanted
August 2002	Vegetation Monitoring (1 yr. Restart)
November 2002	Site Treated for Phragmites
April 2003	Site Tilled
April 2003	Site Replanted
May 2003	Monitoring Gauges Reset as Surface Gauges
September 2003	Vegetation Monitoring (1 yr. Restart)
October 2003	Site Treated for Phragmites
March - November 2003	Hydrologic Monitoring (2 yr.)
July 2004	Vegetation Monitoring (2 yr.)
March - November 2004	Hydrologic Monitoring (3 yr.)



Figure 1. Site Location Map

2.0 HYDROLOGY

2.1 Success Criteria

There are not written success criteria for the White's Store Mitigation Site. The hydrologic monitoring aspect involves the use of surface water gauges. The site is a wind driven tidal system; therefore, it will be deemed successful when the site demonstrates occasional flooding. Groundwater monitoring is not required on this site (tidal system).

2.2 Hydrologic Description

The site was constructed by grading to a natural wetland elevation in order to replicate the hydrology of adjacent emergent communities that were also used as reference ecosystems. Two groundwater-monitoring gauges were installed on the site in March 2002. At the request of the resource agencies, these two gauges were reset in May 2003 as surface water gauges that record data in 3-hour intervals (Figure 2).

2.3 Results of Hydrologic Monitoring

2.3.1 Site Data

The resource agencies in conjunction with NCDOT decided that the federal wetland success criteria guidelines did not pertain to the White's Store Mitigation Site, since it is a wind driven tidal system. It was determined that in order for the site to achieve hydrologic success, it must exhibit occasional surface flooding.

2.3.2 Climatic Data

Figure 3 represents an examination of the local climate in comparison with historical data in order to determine whether 2004 was "average" in terms of climate conditions. The two lines represent the 30th and 70th percentiles of monthly precipitation for Manteo, NC. The bars are monthly rainfall totals for 2003 and 2004. The historical data was collected from the State Climate Office of North Carolina.

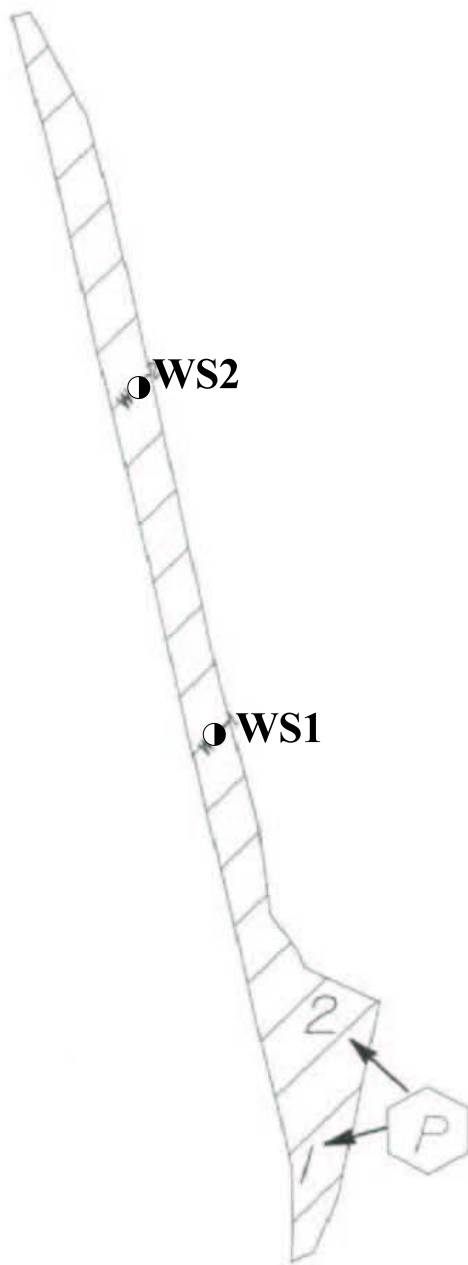


Figure 2. Gauge Location Map



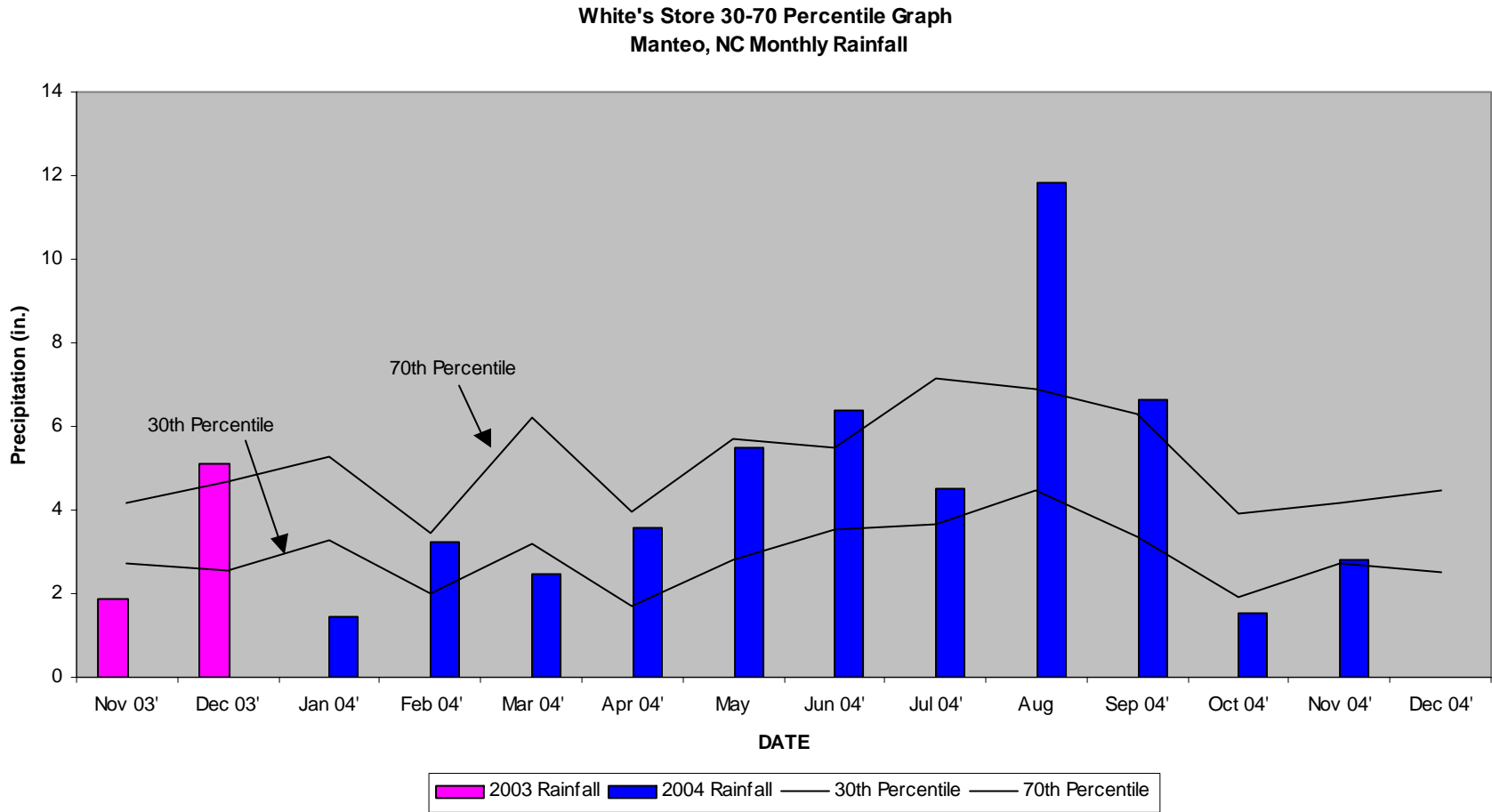
Not to Scale

For the 2004-year, November (03'), January, March, and October experienced below average rainfall. The months of February, April, May, July, and November all recorded average rainfall for the site. December (03'), June, August, and September experienced above average rainfall. The rainfall data from the onsite rain gauge was used for the months of September-November. Overall, 2004 experienced an average rainfall year.

2.4 Conclusions

The 2004 hydrologic monitoring indicated that both surface gauges met the success criteria showing frequent flooding throughout the growing season. The White's Store Mitigation Site has fulfilled the hydrology success requirement. NCDOT proposes to discontinue hydrologic monitoring at White's Store Mitigation Site.

Figure 3. 30-70 Percentile Graph



3.0 VEGETATION: WHITE STORE MITIGATION SITE (YEAR 2 MONITORING)

3.1 Success Criteria

The success of marsh vegetation will be determined in accordance with NMFS Guidelines. Monitoring plots found to be located within the open water channel will not be evaluated, and will not count in the final count of plots. The vegetation component of the wetland site will be deemed successful if the following criteria are met.

1. At year five, the average of all plots should have a scale value of 5 (75% vegetative cover) consisting of wetland herbaceous species, not including any invasive species.
2. A minimum of 70% of the plots shall contain the target (planted) species.

3.2 Description of Species

The following species was planted in the Wetland Restoration Area:

Cladium jamaicense, Sawgrass

3.3 Results of Vegetation Monitoring

Plot #	Scale Factor	<i>Cladium jamaicense</i>	Frequency
1	5.0		
2	5.0		
3	5.0		
4	4.0	■	■
5	5.0	■	■
6	5.0	■	■
7	5.0		
8	4.0		
9	5.0		
10	4.0		
11	4.0		
12	5.0		
13	4.0		
14	5.0		
15	5.0	■	■
16	5.0	■	■
17	5.0	■	■
18	5.0	■	■
19	5.0	■	■
20	4.0	■	■
21	1.0		
22	4.0		
23	5.0	■	■
24	5.0		
25	5.0	■	■
26	5.0		
27	5.0		
28	5.0		
29	4.0	■	■
30	5.0	■	■
Frequency (Percentage of Plots with Desired Species)			43.3%
Sum Scale Value			138.0
Total Number of Plots			30
Vegetative Cover (Scale Value)			4.6

Site Notes: The following species were also noted in the monitoring plots. The percentage of plots the species was found in is following the species in parentheses (i.e. 14% of the plots contain *Spartina patens*)

Spartina patens (14), cattails (14), *Baccharis* sp. (1), wire grass (2), *Scirpus* sp. (20), pennywort (1), phragmites (3), morning glory (1), and water grass (2)

3.4 Conclusions

In May 2001, the White's Store Mitigation Site was planted with approximately 6,000 sawgrass plants. Only three-fourths of the site was planted due to the sawgrass availability at that time. In May 2002, the entire site was replanted with approximately 9,000 sawgrass plants. In April 2003, the entire site was tilled and replanted with approximately 9,700 sawgrass plants. The 2004 monitoring has shown a scale value of 4.6, which is on track for success. Several other marsh species are present on the site.

During the on-site agency meeting (July 2004), it was agreed that NCDOT could propose to discontinue vegetation monitoring during the 2004-monitoring year. NCDOT proposes to discontinue vegetation monitoring at the White's Store Mitigation Site.

4.0 OVERALL CONCLUSIONS/ RECOMMENDATIONS

An on-site meeting with agency personnel was held on July 28, 2004, to review the site's current elevation. The agencies and NCDOT agreed that the on-site elevations were similar to those at the reference site. It appears that the wind driven tidal system is inundating the site occasionally. For the 2004-year, the two surface gauges met the success criteria by exhibiting frequent flooding on the site.

Soil samples were taken at the reference and mitigation sites on April 12, 2004 for soil condition comparison pertaining to previous lack of vegetation survival. The sample results did not determine why the planted vegetation was not surviving. The 2004 monitoring has shown a scale value of 4.6, which is on track for success.

During the on-site agency meeting (July 2004), it was agreed that NCDOT could propose to discontinue vegetation monitoring during the 2004-monitoring year. Based on the successful monitoring results for the 2004 growing season, NCDOT proposes to discontinue hydrologic and vegetation monitoring at White's Store Mitigation Site.

APPENDIX A
GAUGE DATA GRAPHS

APPENDIX B

SITE PHOTOS AND VEGETATION PLOT/ MONITORING GAUGE MAP

White's Store



Photo 1



Photo 2

WHITE STORE MITIGATION SITE
Photo and Random Plot Locations

