

COLONIAL FARMS WETLAND MITIGATION SITE ANNUAL MONITORING REPORT – YEAR 2

Edgecombe County, NC

NCDEQ Contract No. 200207-01

NCDMS ID No. 100191

NCDWR Project No. 2021-0399v1

USACE Action ID: SAW-2021-00346

RFP No. 16-20200207



Tar-Pamlico River Basin

HUC 03020103

January 2024

Prepared For:

NC Department of Environmental Quality

Division of Mitigation Services

1652 Mail Service Center, Raleigh, NC 27699-1652



Mitigation Services
ENVIRONMENTAL QUALITY



January 8, 2024

Danielle Mir
NCDMS

MY2 Report
Colonial Farms Wetland Mitigation Site
Project ID #100191, DMS Contract 200207-01

Report:

1. Please change MY1 to MY2 throughout the report where necessary.
Eco Terra: Report has been updated to show this is MY2.
2. Section 3.1 – Please document the month and year of supplemental planting and include a planting list with stem counts.
ET: Date, planting list, and stem counts have been added to Section 3.1.
3. Section 3.2 – Is there a plan to have a working rain gauge on site? With the USGS rain gauge 13 miles away, I believe this will introduce inconsistent rainfall amounts at the site. Spring and summer rainfall events can be very isolated, and amounts can differ within 5-mile radius.
ET: Gaps have occurred in onsite rain gauge recording owed to bad battery, tipping bucket malfunction, etc. Plans are being made to replace the original gauge and better maintain it throughout the growing season to ensure that more localized precipitation data is obtained and presented for subsequent monitoring years. See language in Section 3.2 of the report.
4. Section 3.4 – Please check the percentage of wells within credited area calculation for meeting hydrologic success criteria. Groundwater wells for credit are allowed to be counted, omit GW 3 and GW13 from calculations or result description.
ET: The number of wells meeting success criteria has been updated in Section 3.4 and throughout the report. GW3 and GW13 have been excluded from this total.
5. CCVP – a) Please differentiate the symbology for groundwater gauges that did not meet success criteria. b) Add layer showing where supplemental planting occurred. c) Remove rain gauge point from map if onsite collection will not occur.
ET: CCPV figure has been revised. Groundwater gauges that met criteria are shown in green and gauges that did not meet criteria are shown in red. A hatched area where supplemental planting occurred has been added.



6. Table 10: Project Activity and Reporting History – Please include row for supplemental planting. See “Monitoring Report Tables” linked on the DMS website. A “remediation items” row is required for things such as supplemental planting, repairs, beaver removal, etc.

ET: Table 10 has been updated.

7. Please continue to treat Privet primarily in the “invasive area” marked on the CCPV and several near the western and eastern boundaries of project.

ET: Noted.

Digital Comments:

- a) The tables and labels in the digital submission are incorrectly labeled year 1; the data appears to be MY2 2023 data. Please correct and resubmit corrected tables and graphs.

ET: This error has been fixed.

- b) The vegetation data summary table appears to be the output of the Shiny based application. The vegetation data submitted is in the form of the no longer supported EEP CVS access database. If the data is available in Shiny output excel format, please submit to DMS.

ET: While veg data is not readily available in Shiny format, the same data is present in what has already been submitted.

- c) The report indicates 10 fixed vegetation plots and 4 random plots; no random vegetation plots were submitted for MY2.

ET: This has been rectified.

ADDITIONAL REPORT EDITS

All well data has been reprocessed for the Site. This has adjusted the total number of days passing hydrologic success criteria for multiple wells. Between March 20 – April 14, 2023 (29 days) a single groundwater measurement fell below 12” from the soil surface by 0.05” on March 26 for GW6. The data adjustment resulted in GW6 not passing hydrologic success criteria (22 days). GW6 is the only monitoring well that did not pass criteria as a result of the reprocessing within this submittal. The report has been updated to reflect these changes.

Additional drought analysis was done at the Site to determine potential effects of this year’s climate on the Site’s hydrology. See section 5.0 and Appendix D for this assessment.

Sincerely,

Jordan Burbage
Eco Terra

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January 2024

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1.0 Project Overview

The Site is a 21.818-acre wetland mitigation project located in Edgecombe County, North Carolina. The Site is approximately 2.5 miles south of the City of Tarboro, on the east side of Colonial Road and is accessed via a dirt farm road. The Site is within the Tar-Pamlico 8-digit HUC 03020103, Town Creek watershed, more specifically in the 14-digit HUC 03020103010020. The 21.818-acre Site includes 14.381 acres of wetland re-establishment (REE) and 0.623 acres of wetland rehabilitation (RH) to provide a total of 15.004 acres of riparian wetland credits for the Tar-Pamlico 03020103 subbasin.

1.1 Project Mitigation Quantities and Credits

Site restoration activities included filling on-Site agricultural ditches, planting of native woody wetland vegetation, and establishment of a conservation easement to protect the site in perpetuity. Table 1a and 1b give the as-built quantities and credits for the Site.

Table 1a – Project Mitigation Quantities and Credits

Project Segment	Original Mitigation Plan ac	As-Built ac	Original Mitigation Category	Original Restoration Level	Original Mitigation Ratio (X:1)	Credits
Wetland						
Wetland 1	0.032	0.032	R	RH	1.000	0.032
Wetland 2	0.389	0.389	R	RH	1.000	0.389
Wetland 3	0.202	0.202	R	RH	1.000	0.202
Wetland 4	14.381	14.381	R	REE	1.000	14.381
					Total:	15.004

Table 1b – Project Credit Summary

Restoration Level	Stream			Riparian Wetland	Non-Rip Wetland	Coastal Marsh
	Warm	Cool	Cold			
Restoration						
Re-establishment				14.381		
Rehabilitation				0.623		
Enhancement						
Enhancement I						
Enhancement II						
Creation						
Preservation						
Total:	0.000	0.000	0.000	15.004	0.000	0.000



1.2 Project Goals and Objectives

The Site was chosen due to the proximity of adjacent forested corridors servicing the Tar River, filtering overland runoff leaving agricultural fields within the greater sub-watershed, as well as the ability to restore and protect a riparian system and support overarching goals for the 2018 Tar-Pamlico River Basin Restoration Priorities (RBRP). Restoration of the Site will directly and indirectly address specific goals and stressors related to the goals identified in the RBRP. Table 2 lists the goals and objectives of the project.

Table 2 – Site Goals and Performance Standards

Goal	Objective	Expected Outcome	Performance Standard	Measurement	Cumulative Monitoring Results
Reduce Nutrients and Sediment in Agricultural Areas	Remove fertilizer and agricultural byproducts applied to wetland. Establish native woody wetland vegetation, securing soil in place, and reducing wind and runoff erosion.	Improve water quality through nutrient & sediment reduction.	N/A	Vegetation Plots ¹ -10 fixed -4 Random Visual assessment of the Site ^{3,4}	14 vegetation plots exceed MY3 success criteria (MY2 - 2023)
Restore Wetland Hydrology	Fill drainage ditches to restore Site hydrology.	Increase hydrology and shallow water table during the early growing season (12%), reduce nutrients and sediment in agricultural areas, and increase wetland habitats. Increase flood storage in restored wetlands.	Shallow groundwater within 12 inches of the soil surface for a minimum of 10% (24 consecutive growing season days, MY1-MY2) and 12% (28 consecutive growing season days, MY3-MY7).	13 Groundwater Gauges ²	6 groundwater wells achieved hydroperiod performance standard (MY2 - 2023)
Improve Habitat and Connectivity	Establish native woody wetland vegetation. Promote connectivity to existing Tar River Corridor Natural Heritage Area.	Increase native wetland tree species diversity and habitats. Increase habitat connectivity from riparian forest wetland to UT to Tar River riparian corridor.	N/A	Visual assessment of the Site ^{3,4}	Visual assessment indicates high survivorship of planted stems across the Site (MY2 - 2023)

Goal	Objective	Expected Outcome	Performance Standard	Measurement	Cumulative Monitoring Results
Restore Wetland Vegetation	Establish native woody wetland vegetation in proposed wetland re-establishment areas.	Increase native wetland tree species quantity and diversity. Increase nutrient cycling and sequestering sediment, and riparian wetland water storage, decreasing peak runoff volumes in stream and reducing flooding.	Survival of 210 planted stems/ac (MY7). Interim survival of at least 320 planted stems/ac (MY3) and at least 260 stems/ac (MY5). Planted stems must average 7 ft in height (MY5) and 10 feet in height (MY7).	Vegetation Plots ¹ -10 fixed -4 Random	14 vegetation plots exceed MY3 success criteria (MY2 - 2023)
Protect the Site in Perpetuity	Record permanent Conservation Easement to protect the Site in perpetuity.	Protect Site from future impacts and encroachment and direct impacts to wetlands. Support all wetland functions in perpetuity.	Record Conservation Easement	Visual assessment for easement encroachment and Site integrity ⁵	No signs of Site encroachment have been noticed (MY2 - 2023)

¹ 14 vegetation plots were located at the Site per comments received from the IRT during Final Mitigation Plan development.

² Groundwater gauges 1-3 were installed pre-construction to establish baseline conditions for the Site. Groundwater data will be presented in annual monitoring reports.

³ The Site will be visually inspected twice a year minimum. All Site data will be included in the Annual Monitoring Report. If necessary, the Adaptive Management Plan will be implemented to address issues jeopardizing project success.

⁴ Exotic and nuisance vegetation will be noted and documented as necessary in Annual Reports.

⁵ Project encroachments will be noted and documented as necessary in Annual Reports.



1.3 Project Attributes

The Site is situated on a 309-acre parcel used for row crop production and is approximately 3000 feet west of the Tar River. Land uses in the vicinity of the Site largely consists of managed agricultural fields with interspersed shrub / scrub lands. A mature forest exists along most of the Site's southern boundary and serves as a forested habitat corridor connecting the Site to the Tar River. Site hydrology generally drains to the northeast and then to the Tar River (28-(80)) via a series of jurisdictional agricultural ditches. The Tar River is classified as Class C (C); nutrient sensitive waters (NSW). The river's 100-year floodplain borders the western boundary of the Site, and the entire Site is within the 500-year floodplain. Table 3 gives the project attributes.

Table 3: Project Attributes

Project Information				
Project Name	Colonial Farms Wetland Mitigation Site			
County	Edgecombe			
Project Area [Planted Area] (acres)	21.82 [20.74]			
Project Coordinates (latitude and longitude decimal degrees)	35.853767, -77.549397			
Project Watershed Summary Information				
Physiographic Province	Coastal Plain			
River Basin	Tar-Pamlico			
USGS Hydrologic Unit 8-digit; 14-digit	03020103; 03020103010020			
DWR Sub-basin	03-03-04			
Project Drainage Area (acres)	64.0			
Project Drainage Area Percentage of Impervious Area	0%			
Land Use Classification	Agriculture			
Wetland Summary Information				
Parameters	Wetland 1	Wetland 2	Wetland 3	Wetland 4
Pre-project (acres)	0.032	0.389	0.202	14.381
Post-project (acres)	0.032	0.389	0.202	14.381
Wetland Type (non-riparian, riparian)	Riparian	Riparian	Riparian	Riparian
Mapped Soil Series	Portsmouth	Portsmouth	Portsmouth	Portsmouth
Soil Hydric Status	Hydric (100%)	Hydric (100%)	Hydric (100%)	Hydric (100%)
Regulatory Considerations				
Parameters	Applicable?	Resolved?	Supporting Docs?	
Water of the United States - Section 404	Yes	Yes	Nationwide Permit	
Water of the United States - Section 401	Yes	Yes	401 Water Quality Certification	
Endangered Species Act	Yes	Yes	Cat. Ex.	
Historic Preservation Act	Yes	Yes	Cat. Ex.	
Coastal Zone Management Act (CZMA or CAMA)	No	Yes	Cat. Ex.	
Essential Fisheries Habitat	No	Yes	Cat. Ex.	

2.0 As-Built Condition (Baseline)

2.1 Site Planting

Carya aquatica (Water Hickory) was incorrectly listed in the MY0 report as *Carya ovata*. Eco Terra has revised and included Table 4 in this report at the request of the IRT.

Table 4: Site Planted Stems

Scientific Name	Common Name	Vegetative Strata	Planting Zone	Wetland Indicator Status	%	Quantity
<i>Quercus michauxii</i>	Swamp chestnut oak	Canopy	1	FACW	20%	3000
<i>Gordonia lasianthus</i>	Loblolly bay	Understory	2	FACW	--	--
<i>Quercus lyrata</i>	Overcup oak	Canopy	2	OBL	7%	1000
<i>Betula nigra</i>	River birch	Canopy	1	FACW	3%	500
<i>Cephalanthus occidentalis</i>	Buttonbush	Understory	2	OBL	5%	800
<i>Fraxinus pennsylvanica</i>	Green ash	Canopy	1	FACW	4%	600
<i>Liriodendron tulipifera</i>	Yellow poplar	Canopy	1	FACU	6%	900
<i>Quercus shumardii</i>	Shumard oak	Canopy	1	FAC	7%	1100
<i>Quercus pagoda</i>	Cherrybark oak	Canopy	1	FACW	--	--
<i>Carpinus caroliniana</i>	Ironwood	Understory	1	FACW	--	--
<i>Quercus phellos</i>	Willow oak	Canopy	2	FACW	7%	1000
<i>Quercus laurifolia</i>	Laurel oak	Canopy	1	FACW	--	--
<i>Quercus nigra</i>	Water oak	Canopy	1	FAC	7%	1000
<i>Nyssa biflora</i>	Swamp blackgum	Canopy	2	OBL	--	--
<i>Magnolia virginiana</i>	Sweetbay magnolia	Understory	2	FACW	--	--
<i>Ulmus americana</i>	American elm	Canopy	1	FAC	1%	200
<i>Persea palustris</i>	Swamp bay	Understory	2	FACW	--	--
<i>Platanus occidentalis</i>	Sycamore	Overstory	2	FACW	3%	500
<i>Taxodium distichum</i>	Bald-cypress	Overstory	2	OBL	10%	1500
<i>Nyssa aquatica</i>	Swamp tupelo	Overstory	2	FACW	8%	1200
<i>Carya aquatica</i>^{1,2}	Water hickory	Overstory	2	OBL	1%	200
<i>Celtis laevigata</i>¹	Sugarberry	Overstory	1	FACW	3%	500
<i>Cornus amomum</i>¹	Silky dogwood	Understory	2	FACW	<1%	50
<i>Diospyros virginiana</i>^{1,2}	Persimmon	Understory	1	FAC	5%	700

Total: 100% 14750

¹ Species not included in the conceptual planting plan in the approved Final Mitigation Plan dated February 2022.

² Species planted in the non-credit area.

Species listed in Table 4 with strike-through marks were included in the conceptual planting plan in the Final Mitigation Plan but were not planted at the Site.

3.0 Monitoring Year 2 Data Assessment

While monitoring activities were performed during 2022, the IRT denied a delayed planting request which did not permit 2022 monitoring success criteria to qualify for release of MY1 credits for the Site. Site monitoring for MY2 took place from January – November 2023. Collected data for MY2 was analyzed and is summarized the following sections. MY2 data is presented in the appropriate appendices of this report.

3.1 Vegetation Assessment

- Vegetation assessment for MY2 was conducted in September 2023. Vegetation surveys of the 10 fixed and 4 random vegetation plots resulted in calculated stem densities ranging from 323-971 stems per acre and an 105% overall survival rate (see note on supplemental planting below) of planted stems from the as-built (baseline) condition. The calculated average stem density for the Site was 679 stems per acre, well above the interim success criteria of 320 stems per acres in MY3. All 14 vegetation plots exceeded the MY3 interim success criteria. Vegetation plot photographs are included in Appendix A and vegetation plot data is included in Appendix B.
- Supplemental planting occurred during March 2023 (MY2). To supplement the Site, four species (2000 total stems) were chosen from the approved planting plan included in the Final Mitigation Plan. The species planted were: *Quercus michauxii* (500 stems), *Quercus lyrata* (500 stems), *Platanus occidentalis* (500 stems), and *Taxodium distichum* (500 stems). The supplementally planted area was 3.865 acres and is shown in Figure 1. The increased stem counts presented in VP1, VP5, R3, and R4 can be attributed to the supplemental planting.
- In the MY0 report, Eco Terra requested variance from the approved planting species included in the Final Mitigation Plan. *Carya aquatica*, *Celtis laevigata*, *Cornus amomum*, and *Diospyros virginiana* were planted at the site to supplement the approved woody species in the Final Mitigation Plan due to lack of sufficient quantity of approved species. During the as-built IRT site walk on October 17, 2022, members of the IRT expressed concern with inclusion of *C. aquatica* and *D. virginiana* in the Site planting plan. *C. aquatica* is a species found in coastal plain settings in the Southeast, and occurrences of the species were observed at the Site both prior to construction and in the reference forest community to the east of the Site. *D. virginiana* occurs in the reference forest community and on Site prior to disturbance during construction. *D. virginiana* were observed on spoil piles adjacent to the central ditch which ran through the Site. During Site planting *D. virginiana* was strategically planted in higher landscape positions, mirroring observation of its natural occurrences, and volunteers can be found resprouting across the Site. At the time of the Final Mitigation Plan, Eco Terra was unaware of the availability for *C. aquatica* and *D. virginiana* and therefore they were not included in the proposed species list. Eco Terra believes all four species are appropriately planted at the Site and requests formal approval to count these species toward the stem count and overall success criteria of the Site.

- During the as-built IRT site walk members of the IRT requested that the approximately 0.40-acre of dense *Ligustrum sinense* (Chinese privet) in the southeast corner of the site be treated. Herbicide treatment for *L. sinense* was performed during fall of 2022. Photo documentation of the invasive species treatments is included in Appendix A.
- There are currently no areas of concern with respect to Site vegetation. The Site will continue to be monitored for invasive and aggressive pioneer species. Any future vegetation treatments will be conducted in accordance with the approved adaptive management plan and will be discussed in the annual monitoring reports.

3.2 Wetland Assessment

- Performance standard for wetlands at the Site during MY2 is groundwater elevation within 12 inches of the ground surface for 24 consecutive days (10% of the growing season). The estimated growing season for the Site, as determined by NRCS WETS tables for Edgecombe County, is March 20 to November 11. Groundwater wells (GW) 1-3 were installed pre-construction and remained in the ground during Site grading and planting. GW 4-12 and the reference well were installed on May 26, 2022, and GW13 was installed on August 2, 2022. Eight of the GW achieved the MY2 performance standard and three additional GW were within 3 days of meeting the MY2 performance standard. GW4 and GW10 did not meet performance criteria. Summary of MY2 groundwater hydrology is included in Appendix C.
- Assessment of data collected by the reference groundwater well located in a forested wetland to the east of the Site indicates that groundwater within 12 inches of the ground surface had a maximum hydroperiod of 17 days (7% of the growing season) during the MY2 growing season.
- The Site rainfall gauge experienced equipment malfunction. Therefore, rainfall data was obtained from USGS gauge station 02082585 (Tar River at NC97), located approximately 15 miles northwest of the Site in Rocky Mount, NC and presented for the entire monitoring year. The Site's rainfall gauge will be replaced and maintained throughout the subsequent monitoring years to ensure that accurate precipitation data is obtained and presented for monitoring periods.
- The area received less than average rainfall during 2023. Rainfall data analysis indicates that five of the first ten months in 2023 (January – October) experienced cumulative rainfall less than the 30th percentile value for the month. April 2023 was the only month that did exceed the 70th percentile value for the month. As shown in graphs in Appendix C, 44% of the 30-day rainfall within the growing season was below the 30th percentile, and 75% was below the average rainfall. A large percentage of the 30-day rainfall within the growing season was also below the 30th percentile daily normals as compiled using the Antecedent Precipitation Tool (APT) presented in Appendix C.
- GW13 was placed outside of the proposed credit area to assess potential future credit area. The 0.856-acre area located on the western side of the property (Figure 1) was not included in the proposed credit area discussed in the Final Mitigation Plan but is being considered as a potential future credit generating area. During Site construction invasive Chinese privet was

removed from this area and the area was graded, seeded, and planted the same as the remainder of the Site. Eco Terra will monitor groundwater (and vegetation) in this area and may request in future monitoring years that the area be included as part of the Site's credit generating area. GW13 exceeded MY2 performance standard.

3.3 Visual Assessment

- Visual assessment of the Site indicates that the Site is stable and planted vegetation is in good health. The constructed ditch plug at the northeast corner of the Site shows no sign of deterioration from overland runoff or scour beneath the perched culvert passing beneath the farm road. No signs of erosion or excessive sediment deposition were observed at the Site.
- The Site boundary has been well marked with signage and there is no evidence of encroachment. During the as-built IRT site walk, members of the IRT requested that a more substantial site boundary marker and photo point be added at the northeast corner of the Site. A photo point (PP4a) and easement corner marker were established in the location (Figure 1). Photographs taken from the 12 established photo points are presented in Appendix A.

3.4 MY2 Assessment Summary

- Overall, the Site is meeting vegetative success criteria and 66% of the monitoring wells have met hydrologic success criteria.
- Planted stems appear to be in good health and herbaceous ground cover is establishing across the Site. Stem density in the 14 vegetation plots ranged between 323-971 stems per acre, above the MY3 performance standard of 320 stems per acre. Average stem height and vigor for the Site is 1.8 feet (55 cm) and 3.9/4.0 respectively.
- Six of the 11 credit bearing groundwater wells on site achieved the MY2 performance standard and three additional wells were within three days of achieving the minimum hydroperiod. Additionally, between March 20-April 14 2023 (29 days, 12% of the growing season), GW6 had a single groundwater measurement fall below 12" from the soil surface by 0.05' on March 26, 2023. The 2023 growing season had three months below the 30th percentile of typical rainfall in the respective month. Hydrologic performance of the Site significantly improved from 2022 and is expected to continue improvement in MY2 as soil structure and organic material accumulation increases in the upper soil horizons and the water table in the vicinity of the Site continues to adjust to current land management practices.
- There have been no noticed signs of encroachment within the conservation easement.

Summary information of the Site for MY2 can be found in the report appendices. Raw data for the Site supporting the observations and conclusions in this report will be made available to DMS upon request.

4.0 Methodology

Hydrologic monitoring and instrument installation followed guidance put forth by the USACE (2003) and the USACE and NCIRT Stream and Wetland Compensatory Mitigation Update (2016). Vegetation monitoring followed the Carolina Vegetation Survey – EEP Level II Protocol (Lee et al., 2008). Visual assessment followed most recent guidance put forth by the USACE and NCIRT (USACE, 2016).

5.0 Climate Assessment

5.1 Methodology

- To further assess the climatic conditions of the monitoring year, the Palmer Drought Severity Index (PDSI) was examined for the Site. PDSI data was obtained from the Gridded Surface Meteorological (gridMET) Dataset provided through the National Integrated Drought Information System (NIDIS). The gridMET dataset is a dataset of daily high-spatial resolution (~4-km, 1/24th degree) surface meteorological data covering the contiguous U.S. from 1979-present day. A PDSI rating is estimated for every 5-days of the dataset which indicates the severity of the departure from normal conditions based on simplified soil water balances and estimates of relative soil moisture conditions.

5.2 PDSI Assessment

- According to the PDSI data, the Site experienced moderate drought for 53% of the year and severe drought for 47% of the year. According to PDSI ratings for the Site's climate division (NC Northern Coastal Plain), the division spent 53% of the year in mild drought and 48% in moderate drought. A summary of the PDSI ratings for the Site and climate division is attached in Appendix D.

5.3 Climate Assessment Summary

- Drought conditions persisted throughout the Northern Coastal Plain climate division for 2023, and more locally, the Site and adjacent areas underwent intensified drought conditions when compared to the region's climate division.

Analysis of drought conditions, in addition the Site's rainfall and wetland hydrology data, indicates that the environmental conditions of 2023 do not reflect a typical year for the Site. Therefore, success criteria not being met by 5 of the credit bearing wells is a result of the abnormally low rainfall that the Site received and the persistence of drought conditions in 2023.

6.0 References

Eco Terra, LLC. 2022. Final Mitigation Plan – Colonial Farms Wetland Mitigation Site.















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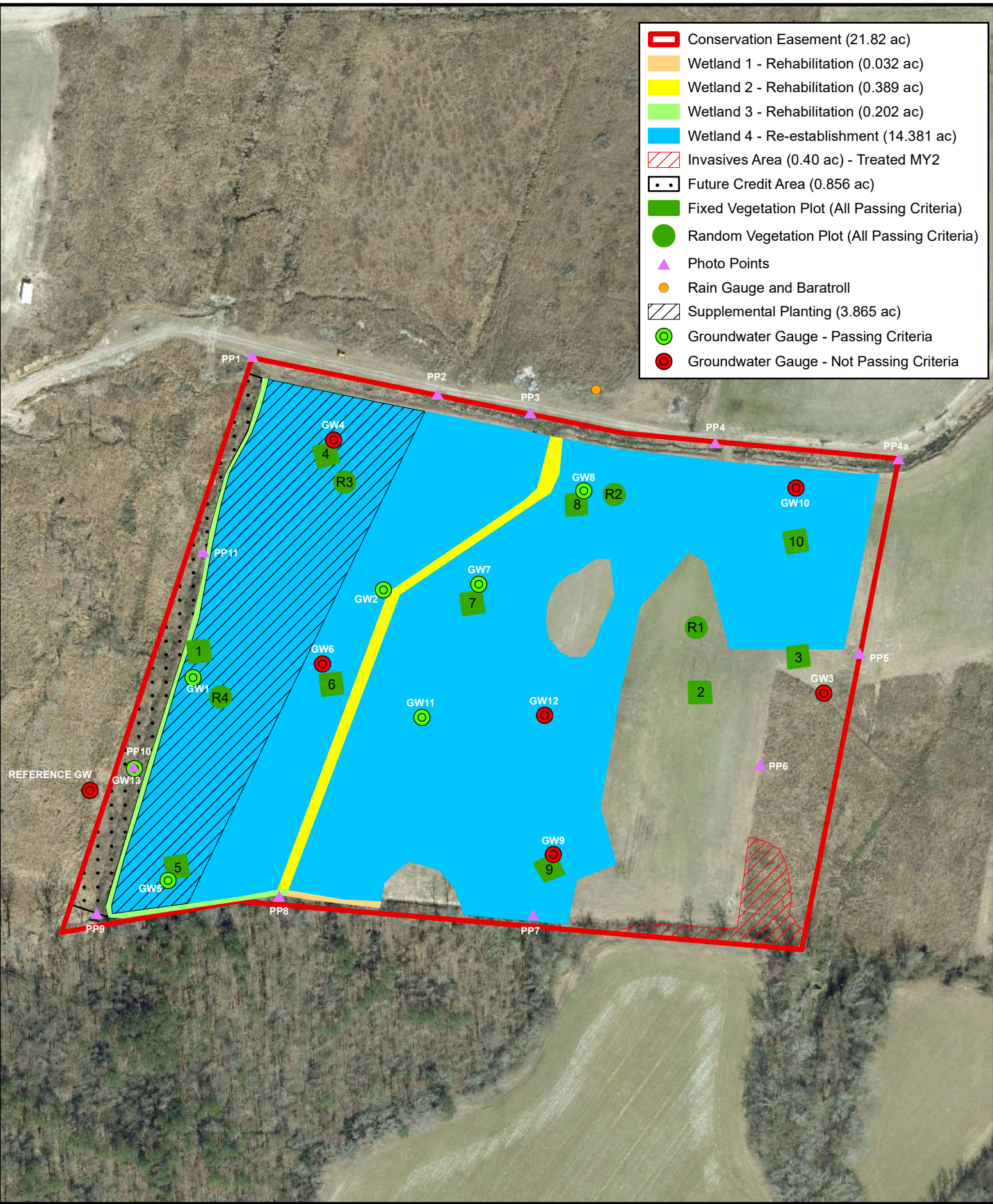
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US Army Corps of Engineers (USACE) and North Carolina Interagency Review team (NCIRT). 2016. Wilmington District Stream and Wetland Compensatory Mitigation Update. North Carolina Interagency Review Team – October 24, 2016. Available: <http://saw-reg.usace.army.mil/PN/2016/Wilmington-District-Mitigation-Update.pdf>

-  Conservation Easement (21.82 ac)
-  Wetland 1 - Rehabilitation (0.032 ac)
-  Wetland 2 - Rehabilitation (0.389 ac)
-  Wetland 3 - Rehabilitation (0.202 ac)
-  Wetland 4 - Re-establishment (14.381 ac)
-  Invasives Area (0.40 ac) - Treated MY2
-  Future Credit Area (0.856 ac)
-  Fixed Vegetation Plot (All Passing Criteria)
-  Random Vegetation Plot (All Passing Criteria)
-  Photo Points
-  Rain Gauge and Barotroll
-  Supplemental Planting (3.865 ac)
-  Groundwater Gauge - Passing Criteria
-  Groundwater Gauge - Not Passing Criteria



COLONIAL WETLAND MITIGATION SITE
MONITORING YEAR 2 - CURRENT CONDITIONS SITE MAP
 Tar-Pamlico 03020103
 Edgecombe County, North Carolina

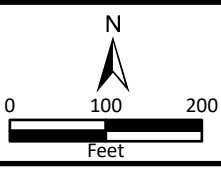


FIGURE
1

APPENDIX A

Visual Assessment Data

Table 5: Visual Vegetation Assessment

Colonial Farms Wetland Mitigation Site

DMS ID No. 100191

Monitoring Year 2 – 2023

Planted Acreage = 20.74 ac

Vegetation Category	Definitions	Mapping Threshold	Combined Acreage	% of Planted Acreage
Bare Areas	Very limited cover of both woody and herbaceous material.	0.10 acres	0.00	0.0%
Low Stem Density Areas	Woody stem densities clearly below target levels based on current MY stem count criteria.	0.10 acres	0.00	0.0%
Total			0.00	0.0%
Areas of Poor Growth Rates	Planted areas where average height is not meeting current MY Performance Standard.	0.10 acres	0.00	0.0%
Cumulative Total			0.00	0.0%

Easement Acreage = 21.82 ac

Vegetation Category	Definitions	Mapping Threshold	Combined Acreage	% of Easement Acreage
Invasive Areas of Concern 1. Chinese Privet - <i>Ligustrum sinense</i>	Invasives may occur outside of planted areas and within the easement and will therefore be calculated against the total easement acreage. Include species with the potential to directly outcompete native, young, woody stems in the short-term or community structure for existing communities. Species included in summation above should be identified in report summary.	0.10 acres	0.00	0.0%
Easement Encroachment Areas	Encroachment may be point, line, or polygon. Encroachment to be mapped consists of any violation of restrictions specified in the conservation easement. Common encroachments are mowing, cattle access, vehicular access. Encroachment has no threshold value as will need to be addressed regardless of impact area.	None	0 Encroachments Noted	

Vegetation Plot Photographs

MONITORING PLOT PHOTOS

MY 2 [2023]	MY 01 [2022]
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Photo #1 Date: 09/20/2023 Feature: Plot 1 Direction: East		
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Photo #2 Date: 09/20/2023 Feature: Plot 2 Direction: East		
---	--	--

Photo #3 Date: 09/20/2023 Feature: Plot 3 Direction: East		
---	--	--

MONITORING PLOT PHOTOS

MY 2 [2023]	MY 01 [2022]
-------------	--------------

Photo #4
 Date: 09/20/2023
 Feature: Plot 4
 Direction: Northeast



Photo #5
 Date: 09/20/2023
 Feature: Plot 5
 Direction: East



Photo #6
 Date: 09/20/2023
 Feature: Plot 6
 Direction: East



MONITORING PLOT PHOTOS

MY 2 [2023]	MY 01 [2022]
-------------	--------------

Photo #7
 Date: 09/20/2023
 Feature: Plot 7
 Direction: East



Photo #8
 Date: 09/20/2023
 Feature: Plot 8
 Direction: East



Photo #9
 Date: 09/20/2023
 Feature: Plot 9
 Direction: East



MONITORING PLOT PHOTOS

MY 2 [2023]	MY 01 [2022]
-------------	--------------

Photo #10
 Date: 09/20/2023
 Feature: Plot 10
 Direction: East



Photo #11
 Date: 09/20/2023
 Feature: Random Plot 1
 Direction: Northeast



Photo #12
 Date: 09/20/2023
 Feature: Random Plot 2
 Direction: East



MONITORING PLOT PHOTOS

MY 2 [2023]	MY 01 [2022]
-------------	--------------

Photo #13
Date: 09/20/2023
Feature: Random Plot 3
Direction: Northeast



Photo #14
Date: 09/20/2023
Feature: Random Plot 4
Direction: Northeast



Photo Point Photographs

PHOTO STATION PHOTOS

MY 2 [2023]	MY 1 [2022]
-------------	-------------

Photo #1
Date: 09/20/2023
Feature: Photo Station 1
Direction: East



Photo #2
Date: 09/20/2023
Feature: Photo Station 2
Direction: East



Photo #3
Date: 09/20/2023
Feature: Photo Station 3
Direction: South



PHOTO STATION PHOTOS

MY 2 [2023]	MY 1 [2022]
-------------	-------------

Photo #4 Date: 09/20/2023 Feature: Photo Station 4 Direction: East	  <p style="font-size: small; margin-top: 5px;">PP 4 Colonial Tarboro NC 27886, United States © 20-Sep-23 08:30:48</p>	
--	--	---

Photo #5 Date: 09/20/2023 Feature: Photo Station 5 Direction: East	  <p style="font-size: small; margin-top: 5px;">PP 5 Colonial Tarboro NC 27886, United States © 20-Sep-23 10:17:32</p>	
--	---	--

Photo #6 Date: 09/20/2023 Feature: Photo Station 6 Direction: East	  <p style="font-size: small; margin-top: 5px;">PP 6 Colonial Tarboro NC 27886, United States © 20-Sep-23 10:10:14</p>	
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PHOTO STATION PHOTOS

MY 2 [2023]	MY 1 [2022]
-------------	-------------

Photo #7
Date: 09/20/2023
Feature: Photo Station 7
Direction: East



Photo #8
Date: 09/20/2023
Feature: Photo Station 8
Direction: East



Photo #9
Date: 09/20/2023
Feature: Photo Station 9
Direction: East

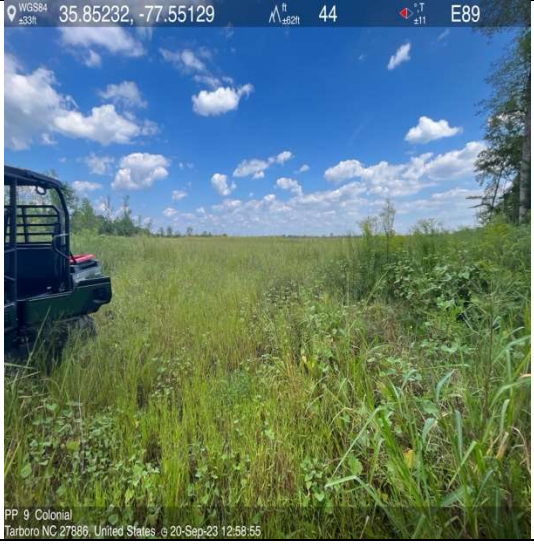


PHOTO STATION PHOTOS

MY 2 [2023]	MY 1 [2022]
-------------	-------------

Photo #10
Date: 09/20/2023
Feature: Photo Station 10
Direction: East

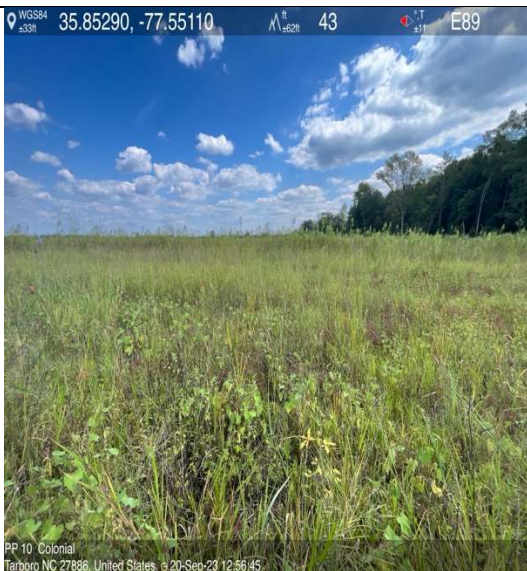


Photo #11
Date: 09/20/2023
Feature: Photo Station 11
Direction: East



Additional Photographs

MY2 2023 ADDITIONAL PHOTOS

Photo # 1	
Date: 09/20/2023	
Feature: Treatment Area	
Direction: East	
Description: Representative photo showing exotic control area.	

Photo # 2	
Date: 09/20/2023	
Feature: Treatment Area	
Direction: East	
Description: Representative photo showing exotic control area.	

MY2 2023 ADDITIONAL PHOTOS

Photo # 3	
Date: 09/20/2023	
Feature: Ditch Plug	
Direction: Northwest	
Description: Representative photo showing ditch plug.	

Random Plot # 4	
Date: 09/20/2023	
Feature: Ditch Plug	
Direction: East	
Description: Representative photo showing Ditch plug.	

APPENDIX B

Vegetation Plot Data

Table 6a: Vegetation Plot Data

Colonial Farms Wetland Mitigation Site
DMS ID No. 100191
Monitoring Year 2 – 2023

	Scientific Name	Common Name	Tree / Shrub	Indicator Status	Veg Plot 1 F		Veg Plot 2 F		Veg Plot 3 F		Veg Plot 4 F	
					Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	<i>Betula nigra</i>	River Birch, Red Birch	Tree	FACW			1	1				
	<i>Cephalanthus occidentalis</i>	Buttonbush	Shrub Tree	OBL	3	3						
	<i>Fraxinus pennsylvanica</i>	Green Ash	Tree	FACW								
	<i>Liriodendron tulipifera</i>	Yellow Poplar	Tree	FACU	2	2						
	<i>Nyssa aquatica</i>	Water Tupelo	Tree	FACW	6	6			1	1	5	5
	<i>Platanus occidentalis</i>	Sycamore	Tree	FACW								
	<i>Quercus lyrata</i>	Overcup Oak	Tree	OBL	1	1			1	1	2	2
	<i>Quercus michauxii</i>	Swamp Chestnut Oak	Tree	FACW	2	2	3	3	3	3	2	2
	<i>Quercus nigra</i>	Water oak	Tree	FAC								
	<i>Quercus phellos</i>	Willow Oak	Tree	FACW								
	<i>Quercus shumardii</i>	Shumard Oak	Shrub Tree	FAC			1	1			2	2
	<i>Taxodium distichum</i>	Bald-cypress	Tree	OBL	4	4			3	3	6	6
Sum	Performance Standard				18	18	5	5	8	8	17	17
Post Mitigation Plan Species	<i>Carya aquatica</i>	Water Hickory	Tree	OBL								
	<i>Celtis laevigata</i>	Sugarberry	Shrub Tree	FACW			7	7				
	<i>Cornus amomum</i>	Silky Dogwood	Shrub Tree	FACW								
	<i>Diospyros virginiana</i>	Persimmon	Shrub Tree	FAC								
Sum	Proposed Standard				18	18	12	12	8	8	17	17
Mitigation Plan Performance Standard	Current Year Stem Count					18		5		8		17
	Stems/Acre					728		202		323		688
	Species Count					6		3		4		5
	Dominant Species Composition (%)					33%		60%		38%		35%
	Average Plot Height (ft)					1.8		1.5		1.6		1.9
	% Invasives					0%		0%		0%		0%
Post Mitigation Plan Performance Standard	Current Year Stem Count					18		12		8		17
	Stems/Acre					728		485		323		688
	Species Count					6		4		4		5
	Dominant Species Composition (%)					33%		58%		38%		35%
	Average Plot Height (ft)					1.8		1.5		1.6		1.9
	% Invasives					0%		0%		0%		0%

1). Bolded species are proposed for the current monitoring year, italicized species are not approved, and a regular font indicates that the species has been approved.

2). The "Species Included in Approved Mitigation Plan" section contains only those species that were included in the original approved mitigation plan. The "Post Mitigation Plan Species" section includes species that are being proposed through a mitigation plan addendum for the current monitoring year (bolded), species that have been approved in prior monitoring years through a mitigation plan addendum (regular font), and species that are not approved (italicized).

3). The "Mitigation Plan Performance Standard" section is derived only from stems included in the original mitigation plan, whereas the "Post Mitigation Plan Performance Standard" includes data from mitigation plan approved, post mitigation plan approved, and proposed stems.

Table 6b: Vegetation Plot Data

Colonial Farms Wetland Mitigation Site
 DMS ID No. 100191
 Monitoring Year 2 – 2023

	Scientific Name	Common Name	Tree / Shrub	Indicator Status	Veg Plot 5 F		Veg Plot 6 F		Veg Plot 7 F		Veg Plot 8 F	
					Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	<i>Betula nigra</i>	River Birch, Red Birch	Tree	FACW								
	<i>Cephalanthus occidentalis</i>	Buttonbush	Shrub Tree	OBL			1	1	1	1	4	4
	<i>Fraxinus pennsylvanica</i>	Green Ash	Tree	FACW			2	2	4	4		
	<i>Liriodendron tulipifera</i>	Yellow Poplar	Tree	FACU								
	<i>Nyssa aquatica</i>	Water Tupelo	Tree	FACW	1	1	4	4			6	6
	<i>Platanus occidentalis</i>	Sycamore	Tree	FACW								
	<i>Quercus lyrata</i>	Overcup Oak	Tree	OBL			1	1	4	4		
	<i>Quercus michauxii</i>	Swamp Chestnut Oak	Tree	FACW	7	7			4	4	3	3
	<i>Quercus nigra</i>	Water oak	Tree	FAC								
	<i>Quercus phellos</i>	Willow Oak	Tree	FACW	9	9						
<i>Quercus shumardii</i>	Shumard Oak	Shrub Tree	FAC	3	3			1	1			
<i>Taxodium distichum</i>	Bald-cypress	Tree	OBL			7	7	2	2	2	2	
Sum	Performance Standard				20	20	15	15	16	16	15	15
Post Mitigation Plan Species	<i>Carya aquatica</i>	Water Hickory	Tree	OBL								
	<i>Celtis laevigata</i>	Sugarberry	Shrub Tree	FACW								
	<i>Cornus amomum</i>	Silky Dogwood	Shrub Tree	FACW								
	<i>Diospyros virginiana</i>	Persimmon	Shrub Tree	FAC								
Sum	Proposed Standard				20	20	15	15	16	16	15	15
Mitigation Plan Performance Standard	Current Year Stem Count					20		15		16		15
	Stems/Acre					809		607		647		607
	Species Count					4		5		6		4
	Dominant Species Composition (%)					45%		47%		25%		40%
	Average Plot Height (ft)					1.7		1.9		2.1		1.7
	% Invasives					0%		0%		0%		0%
Post Mitigation Plan Performance Standard	Current Year Stem Count					20		15		16		15
	Stems/Acre					809		607		647		607
	Species Count					4		5		6		4
	Dominant Species Composition (%)					45%		47%		25%		40%
	Average Plot Height (ft)					1.7		1.9		2.1		1.7
	% Invasives					0%		0%		0%		0%

- 1). Bolded species are proposed for the current monitoring year, italicized species are not approved, and a regular font indicates that the species has been approved.
- 2). The "Species Included in Approved Mitigation Plan" section contains only those species that were included in the original approved mitigation plan. The "Post Mitigation Plan Species" section includes species that are being proposed through a mitigation plan addendum for the current monitoring year (bolded), species that have been approved in prior monitoring years through a mitigation plan addendum (regular font), and species that are not approved (italicized).
- 3). The "Mitigation Plan Performance Standard" section is derived only from stems included in the original mitigation plan, whereas the "Post Mitigation Plan Performance Standard" includes data from mitigation plan approved, post mitigation plan approved, and proposed stems.

Table 6c: Vegetation Plot Data

Colonial Farms Wetland Mitigation Site
 DMS ID No. 100191
 Monitoring Year 2 – 2023

	Scientific Name	Common Name	Tree / Shrub	Indicator Status	Veg Plot 9 F		Veg Plot 10 F	
					Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	<i>Betula nigra</i>	River Birch, Red Birch	Tree	FACW				
	<i>Cephalanthus occidentalis</i>	Buttonbush	Shrub Tree	OBL	11	11		
	<i>Fraxinus pennsylvanica</i>	Green Ash	Tree	FACW				
	<i>Liriodendron tulipifera</i>	Yellow Poplar	Tree	FACU				
	<i>Nyssa aquatica</i>	Water Tupelo	Tree	FACW	1	1		
	<i>Platanus occidentalis</i>	Sycamore	Tree	FACW				
	<i>Quercus lyrata</i>	Overcup Oak	Tree	OBL				
	<i>Quercus michauxii</i>	Swamp Chestnut Oak	Tree	FACW	2	2	3	3
	<i>Quercus nigra</i>	Water oak	Tree	FAC				
	<i>Quercus phellos</i>	Willow Oak	Tree	FACW				
	<i>Quercus shumardii</i>	Shumard Oak	Shrub Tree	FAC	3	3	8	8
	<i>Taxodium distichum</i>	Bald-cypress	Tree	OBL	3	3		
Sum	Performance Standard				20	20	11	11
Post Mitigation Plan Species	<i>Carya aquatica</i>	Water Hickory	Tree	OBL				
	<i>Celtis laevigata</i>	Sugarberry	Shrub Tree	FACW			3	3
	<i>Cornus amomum</i>	Silky Dogwood	Shrub Tree	FACW				
	<i>Diospyros virginiana</i>	Persimmon	Shrub Tree	FAC				
Sum	Proposed Standard				20	20	14	14
Mitigation Plan Performance Standard	Current Year Stem Count					20		11
	Stems/Acre					809		445
	Species Count					5		2
	Dominant Species Composition (%)					55%		73%
	Average Plot Height (ft)					1.6		1.6
	% Invasives					0%		0%
Post Mitigation Plan Performance Standard	Current Year Stem Count					20		14
	Stems/Acre					809		566
	Species Count					5		3
	Dominant Species Composition (%)					55%		57%
	Average Plot Height (ft)					1.6		1.6
	% Invasives					0%		0%

- 1). Bolded species are proposed for the current monitoring year, italicized species are not approved, and a regular font indicates that the species has been approved.
- 2). The "Species Included in Approved Mitigation Plan" section contains only those species that were included in the original approved mitigation plan. The "Post Mitigation Plan Species" section includes species that are being proposed through a mitigation plan addendum for the current monitoring year (bolded), species that have been approved in prior monitoring years through a mitigation plan addendum (regular font), and species that are not approved (italicized).
- 3). The "Mitigation Plan Performance Standard" section is derived only from stems included in the original mitigation plan, whereas the "Post Mitigation Plan Performance Standard" includes data from mitigation plan approved, post mitigation plan approved, and proposed stems.

Table 6d: Vegetation Plot Data

Colonial Farms Wetland Mitigation Site
 DMS ID No. 100191
 Monitoring Year 2 – 2023

	Scientific Name	Common Name	Tree / Shrub	Indicator Status	Veg Plot R1	Veg Plot R2	Veg Plot R3	Veg Plot R4
					Total	Total	Total	Total
Species Included in Approved Mitigation Plan	<i>Betula nigra</i>	River Birch, Red Birch	Tree	FACW				
	<i>Cephalanthus occidentalis</i>	Buttonbush	Shrub Tree	OBL				
	<i>Fraxinus pennsylvanica</i>	Green Ash	Tree	FACW			7	8
	<i>Liriodendron tulipifera</i>	Yellow Poplar	Tree	FACU	2		1	1
	<i>Nyssa aquatica</i>	Water Tupelo	Tree	FACW	2	5		
	<i>Platanus occidentalis</i>	Sycamore	Tree	FACW	2			5
	<i>Quercus lyrata</i>	Overcup Oak	Tree	OBL			4	
	<i>Quercus michauxii</i>	Swamp Chestnut Oak	Tree	FACW	5	10	5	2
	<i>Quercus nigra</i>	Water oak	Tree	FAC		1		1
	<i>Quercus phellos</i>	Willow Oak	Tree	FACW			1	1
	<i>Quercus shumardii</i>	Shumard Oak	Shrub Tree	FAC	1	2	4	3
	<i>Taxodium distichum</i>	Bald-cypress	Tree	OBL		1	2	1
Sum	Performance Standard				12	19	24	22
Post Mitigation Plan Species	<i>Carya aquatica</i>	Water Hickory	Tree	OBL				1
	<i>Celtis laevigata</i>	Sugarberry	Shrub Tree	FACW				
	<i>Cornus amomum</i>	Silky Dogwood	Shrub Tree	FACW				
	<i>Diospyros virginiana</i>	Persimmon	Shrub Tree	FAC	2			
Sum	Proposed Standard				14	19	24	23
Mitigation Plan Performance Standard	Current Year Stem Count				12	19	24	22
	Stems/Acre				485	769	971	890
	Species Count				5	5	7	8
	Dominant Species Composition (%)				42%	53%	29%	36%
	Average Plot Height (ft)				1.5	1.5	2.1	2.1
	% Invasives				0%	0%	0%	0%
Post Mitigation Plan Performance Standard	Current Year Stem Count				14	19	24	23
	Stems/Acre				566	769	971	931
	Species Count				6	5	7	9
	Dominant Species Composition (%)				36%	53%	29%	35%
	Average Plot Height (ft)				1.5	1.5	2.1	2.1
	% Invasives				0%	0%	0%	0%

- 1). Bolded species are proposed for the current monitoring year, italicized species are not approved, and a regular font indicates that the species has been approved.
- 2). The "Species Included in Approved Mitigation Plan" section contains only those species that were included in the original approved mitigation plan. The "Post Mitigation Plan Species" section includes species that are being proposed through a mitigation plan addendum for the current monitoring year (bolded) , species that have been approved in prior monitoring years through a mitigation plan addendum (regular font), and species that are not approved (italicized).
- 3). The "Mitigation Plan Performance Standard" section is derived only from stems included in the original mitigation plan, whereas the "Post Mitigation Plan Performance Standard" includes data from mitigation plan approved, post mitigation plan approved, and proposed stems.

Table 7: Vegetation Performance Standards Summary

Colonial Farms Wetland Mitigation Site

DMS ID No. 100191

Monitoring Year 2 – 2023

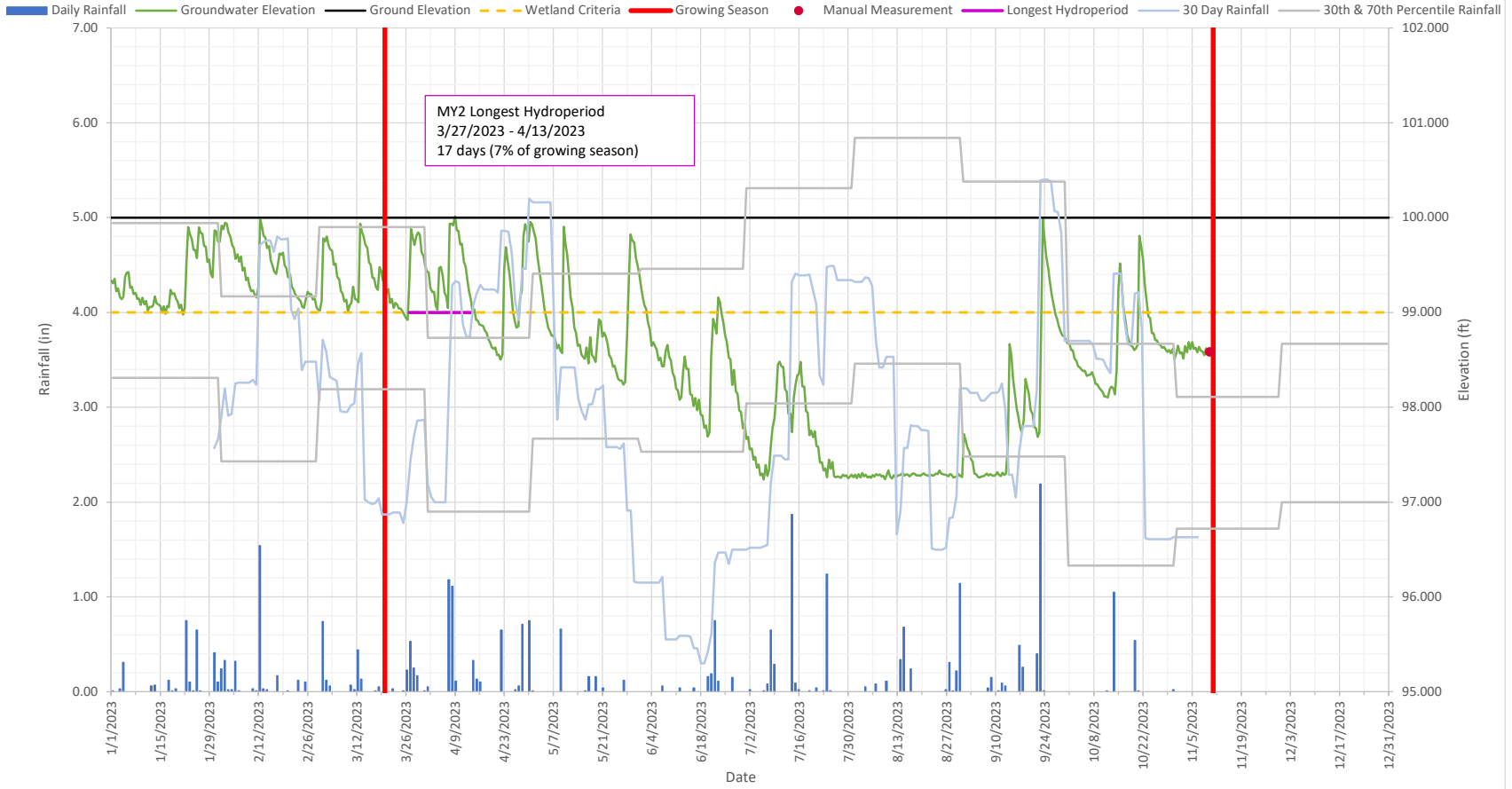
	Veg Plot 1 F				Veg Plot 2 F				Veg Plot 3 F			
	Stems/Acre	Avg Ht (ft)	# Species	% Invasive	Stems/Acre	Avg Ht (ft)	# Species	% Invasive	Stems/Acre	Avg Ht (ft)	# Species	% Invasive
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2	728	1.8	6	0%	485	1.5	4	0%	323	1.6	4	0%
Monitoring Year 1	688	1.8	6	0	769	1.6	5	0	526	1.7	5	0
Monitoring Year 0	688	1.8	6	0	323	1.5	4	0	566	1.6	5	0
	Veg Plot 4 F				Veg Plot 5 F				Veg Plot 6 F			
	Stems/Acre	Avg Ht (ft)	# Species	% Invasive	Stems/Acre	Avg Ht (ft)	# Species	% Invasive	Stems/Acre	Avg Ht (ft)	# Species	% Invasive
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2	688	1.9	5	0%	809	1.7	4	0%	607	1.9	5	0%
Monitoring Year 1	728	1.7	5	0	769	1.5	4	0	728	1.9	5	0
Monitoring Year 0	728	1.7	4	0	769	1.5	4	0	769	1.6	5	0
	Veg Plot 7 F				Veg Plot 8 F				Veg Plot 9 F			
	Stems/Acre	Avg Ht (ft)	# Species	% Invasive	Stems/Acre	Avg Ht (ft)	# Species	% Invasive	Stems/Acre	Avg Ht (ft)	# Species	% Invasive
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2	647	2.1	6	0%	607	1.7	4	0%	809	1.6	5	0%
Monitoring Year 1	769	1.7	7	0	688	1.7	5	0	809	1.5	6	0
Monitoring Year 0	769	1.6	7	0	728	1.7	5	0	809	1.3	5	0
	Veg Plot 10 F				Veg Plot R1				Veg Plot R2			
	Stems/Acre	Avg Ht (ft)	# Species	% Invasive	Stems/Acre	Avg Ht (ft)	# Species	% Invasive	Stems/Acre	Avg Ht (ft)	# Species	% Invasive
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2	566	1.6	3	0%	566	1.5	6	0%	769	1.5	5	0%
Monitoring Year 1	647	1.7	3	0	607	1.6	3	0	850	1.7	7	0
Monitoring Year 0	526	1.6	2	0	688	1.8	5	0	607	1.5	5	0
	Veg Plot R3				Veg Plot R4							
	Stems/Acre	Avg Ht (ft)	# Species	% Invasive	Stems/Acre	Avg Ht (ft)	# Species	% Invasive				
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2	971	2.1	7	0%	931	2.1	9	0%				
Monitoring Year 1	769	1.9	5	0	850	1.6	8	0				
Monitoring Year 0	526	1.4	5	0	485	1.6	3	0				

*Each monitoring year represents a different plot for the random vegetation plot "groups". Random plots are denoted with an R, and fixed plots with an F.

APPENDIX C

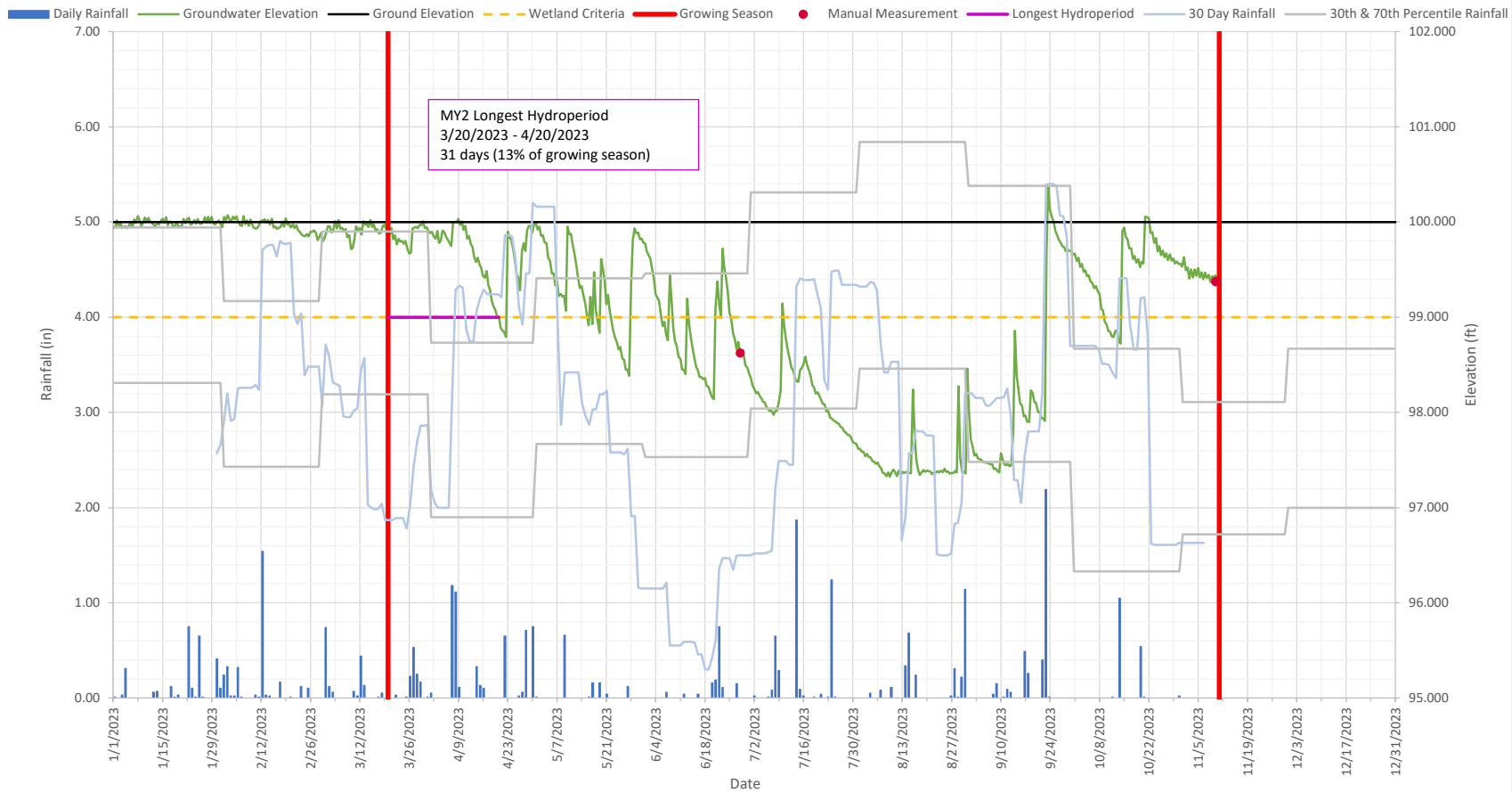
Hydrologic Data and Rainfall

Colonial Farms Wetland Mitigation Site - MY2 2023 Reference Groundwater Well

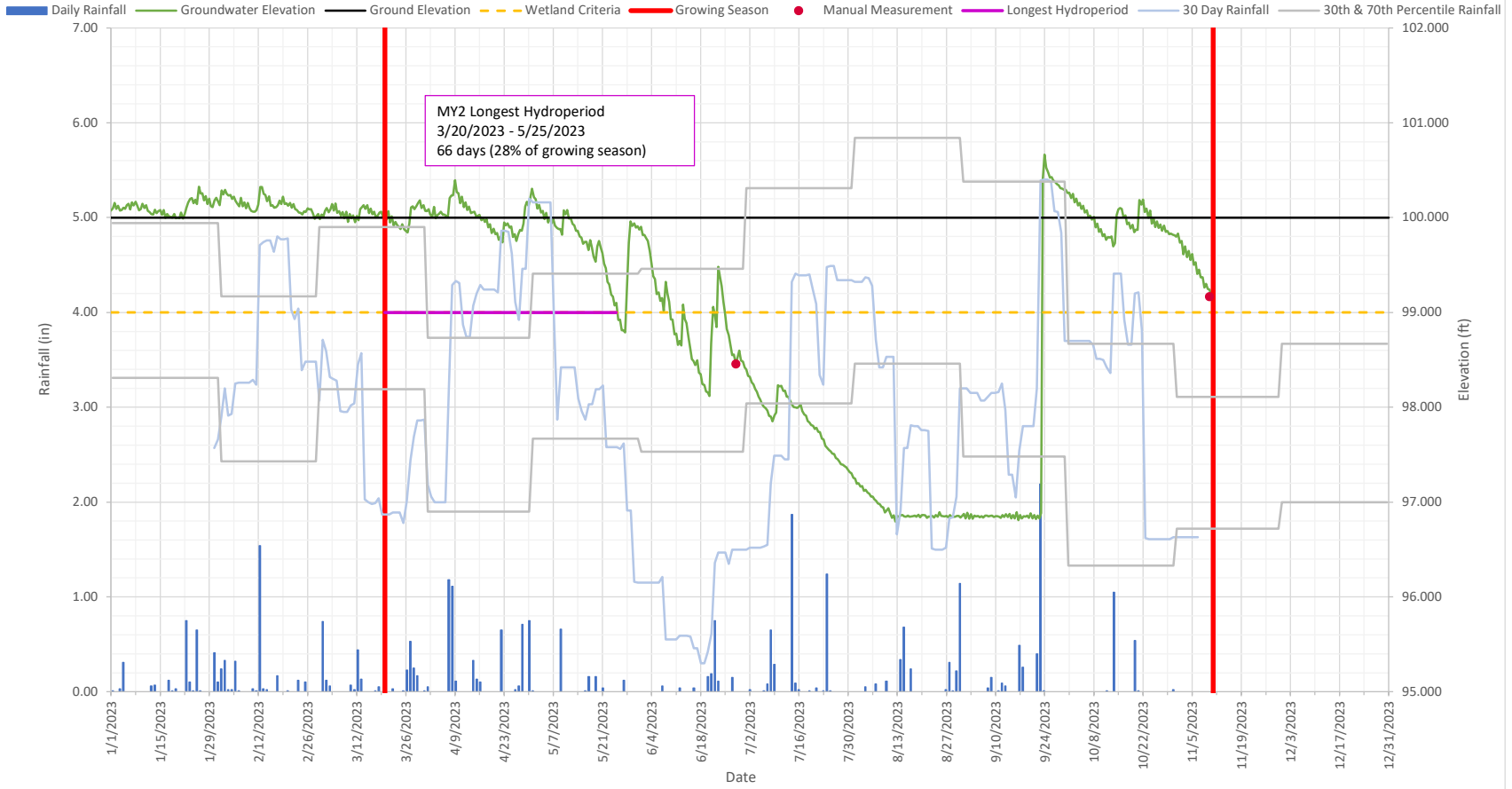


Colonial Farms Wetland Mitigation Site - MY2 2023

Groundwater Well 1

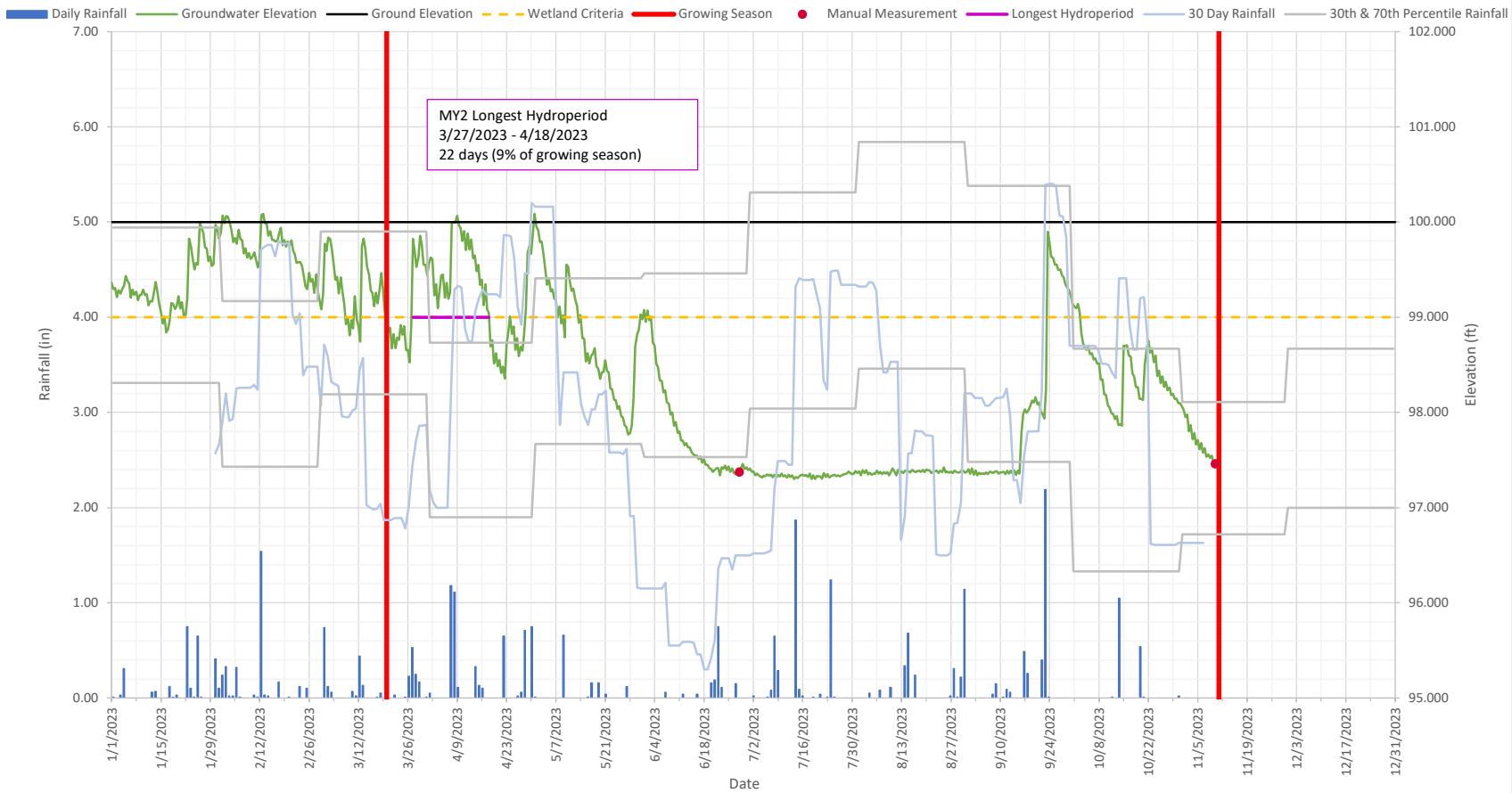


Colonial Farms Wetland Mitigation Site - MY2 2023 Groundwater Well 2



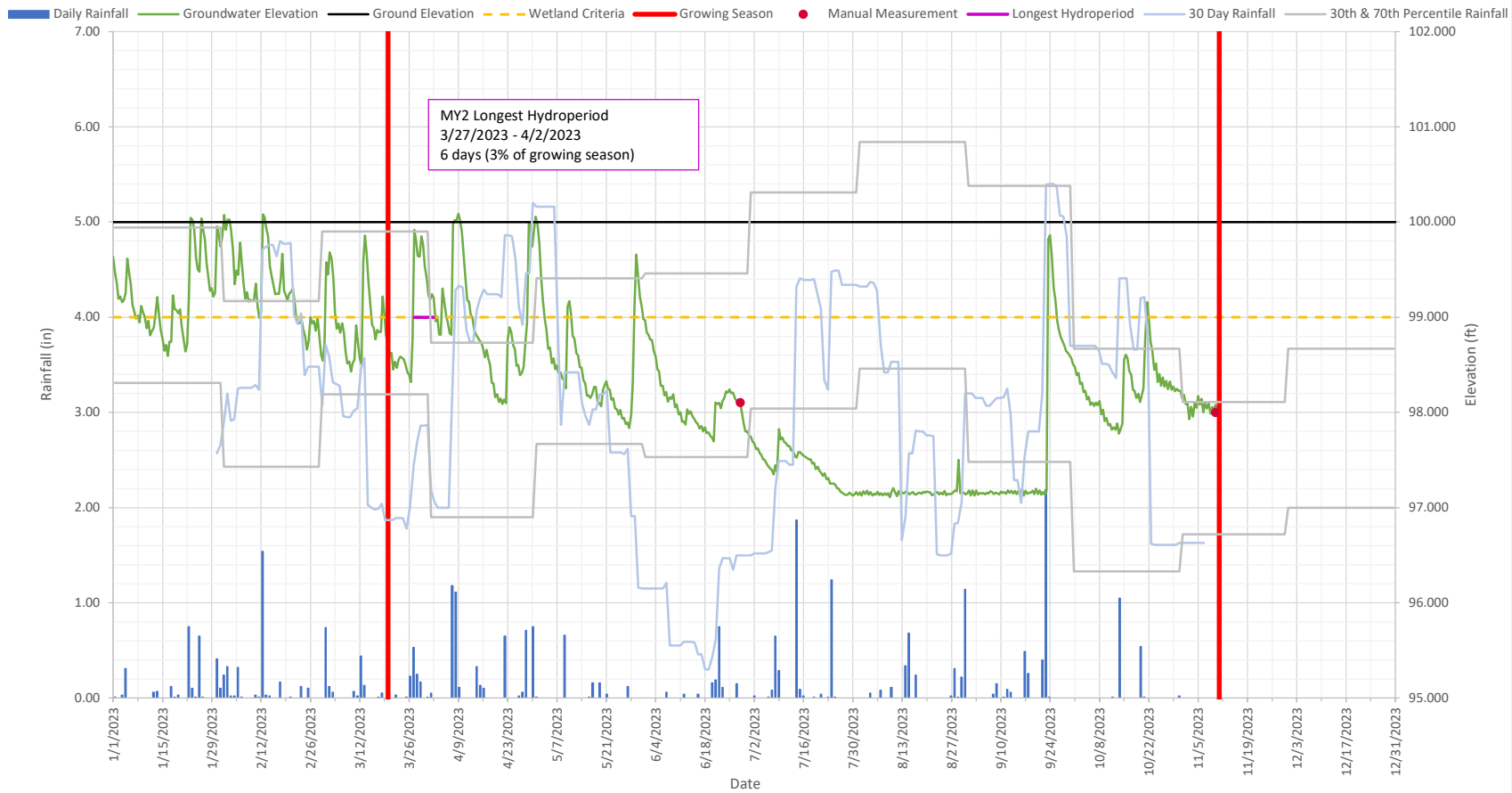
Colonial Farms Wetland Mitigation Site - MY2 2023

Groundwater Well 3

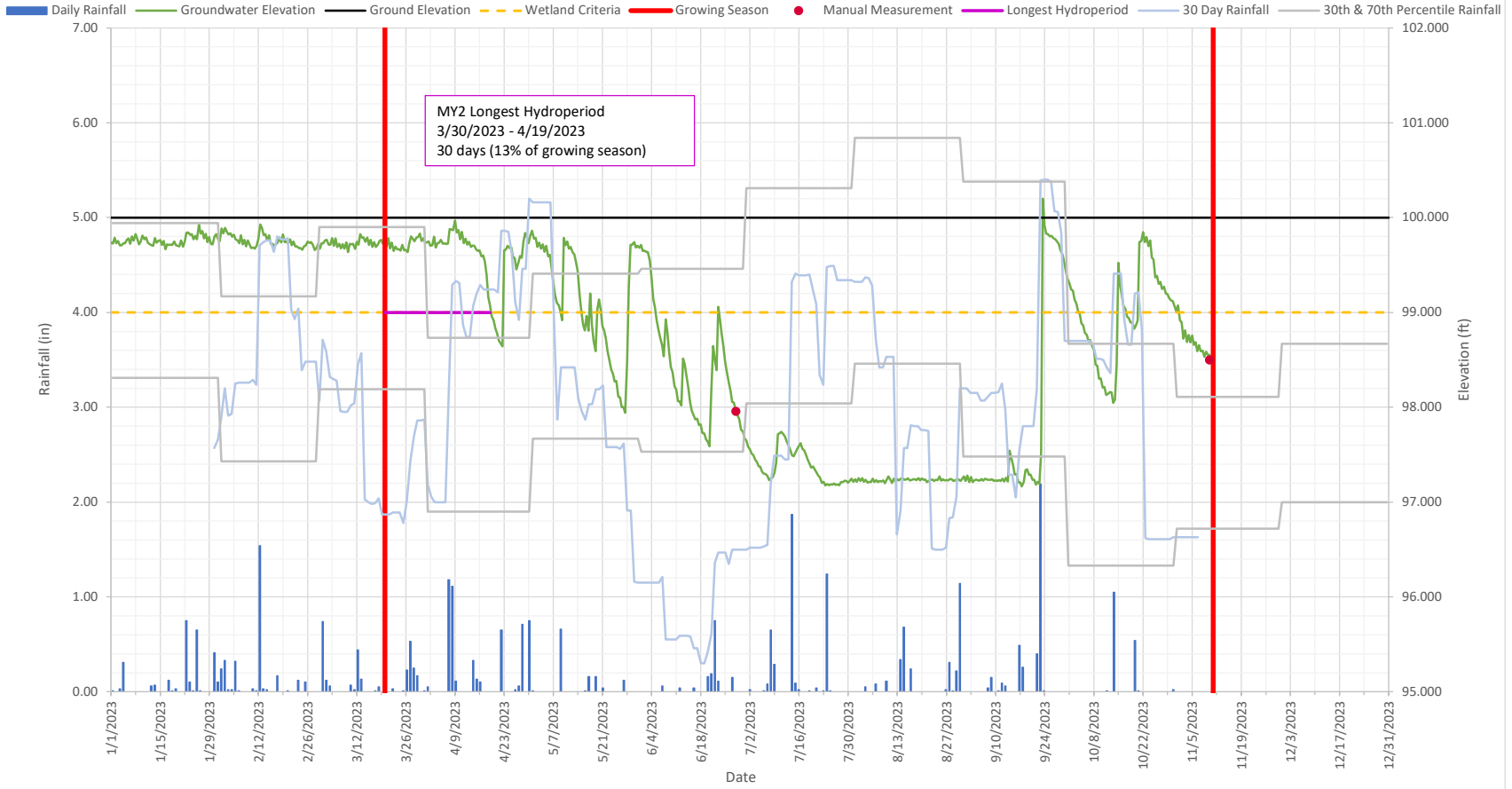


Colonial Farms Wetland Mitigation Site - MY2 2023

Groundwater Well 4

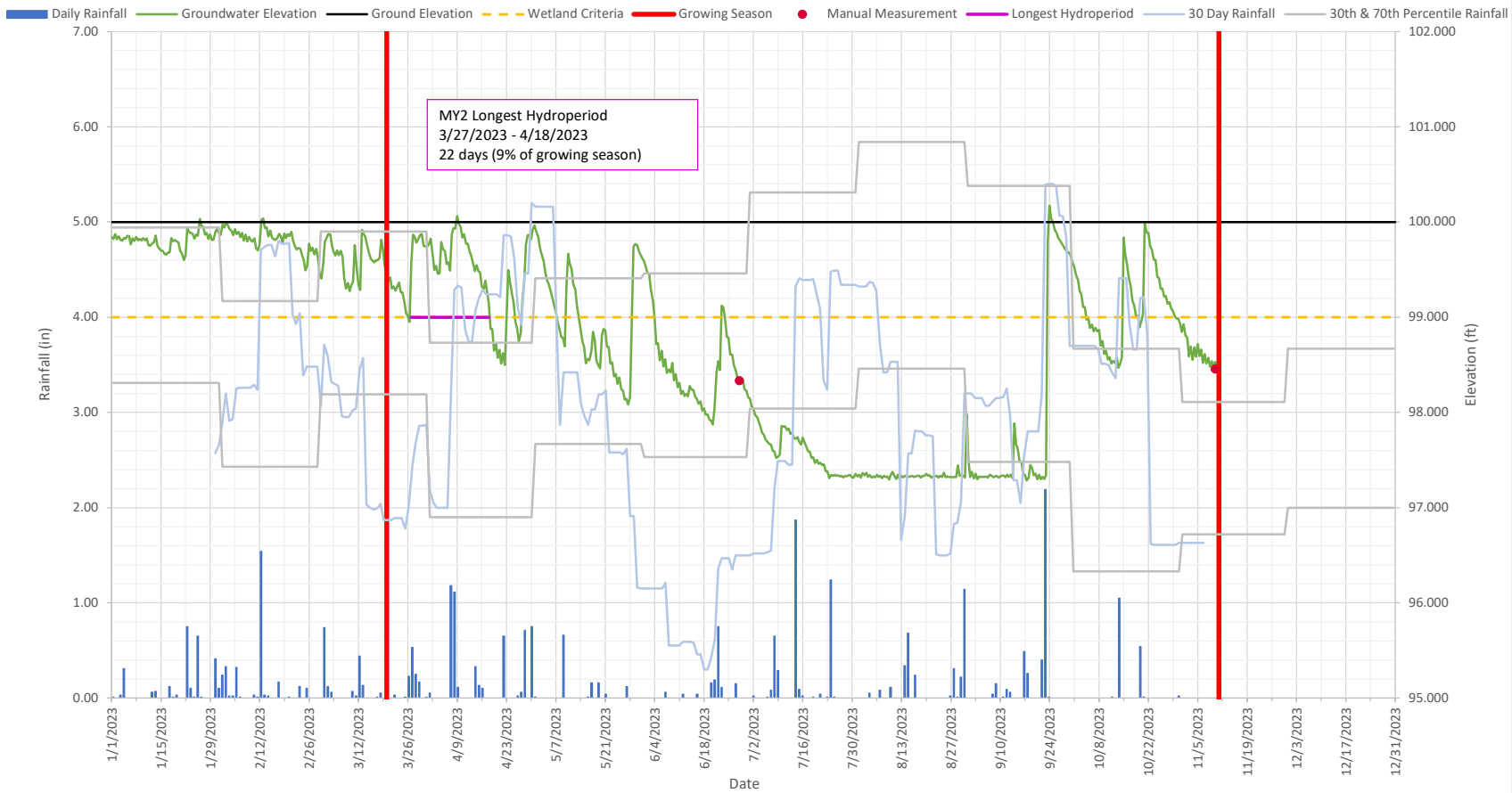


Colonial Farms Wetland Mitigation Site - MY2 2023 Groundwater Well 5

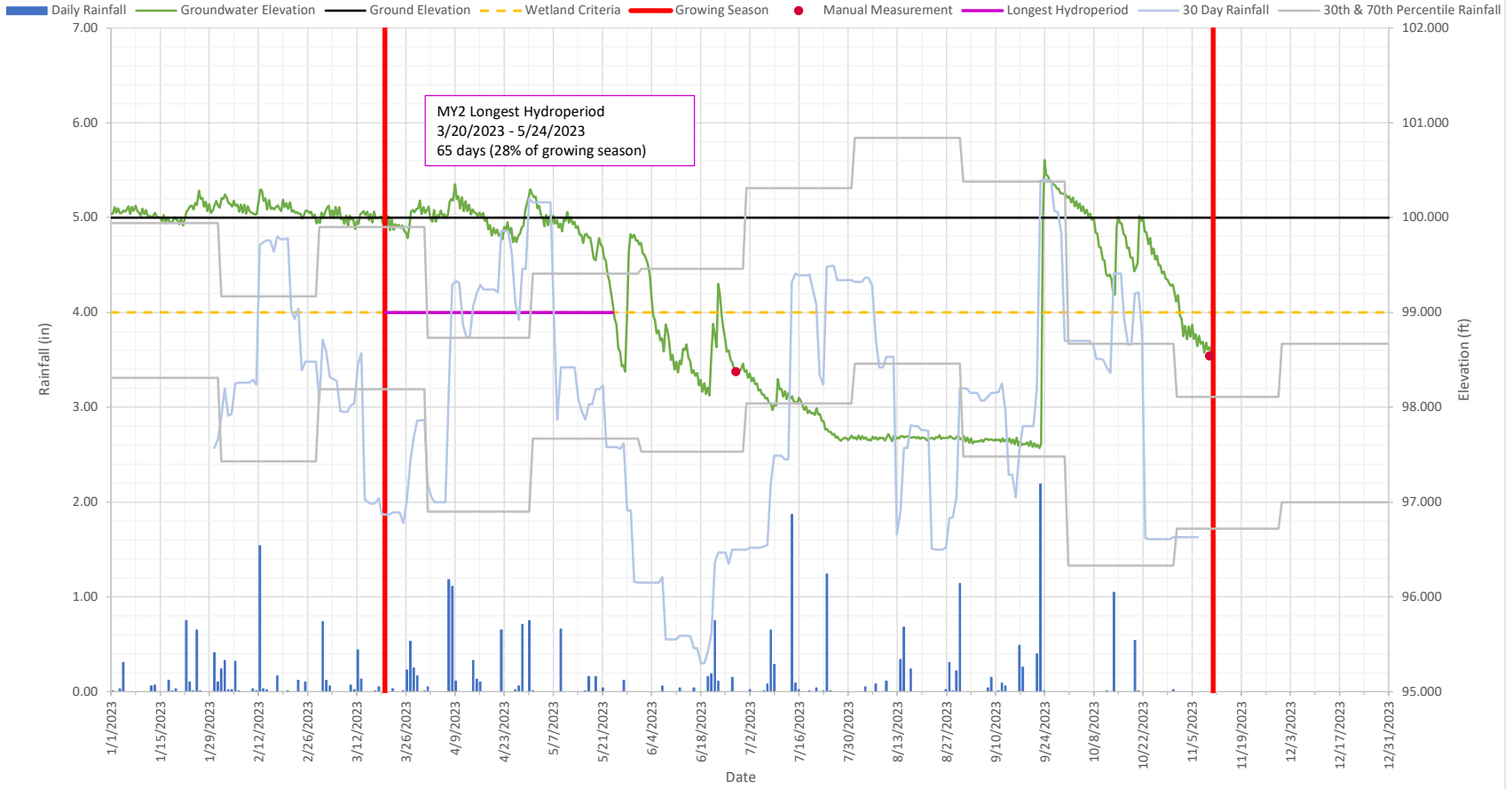


Colonial Farms Wetland Mitigation Site - MY2 2023

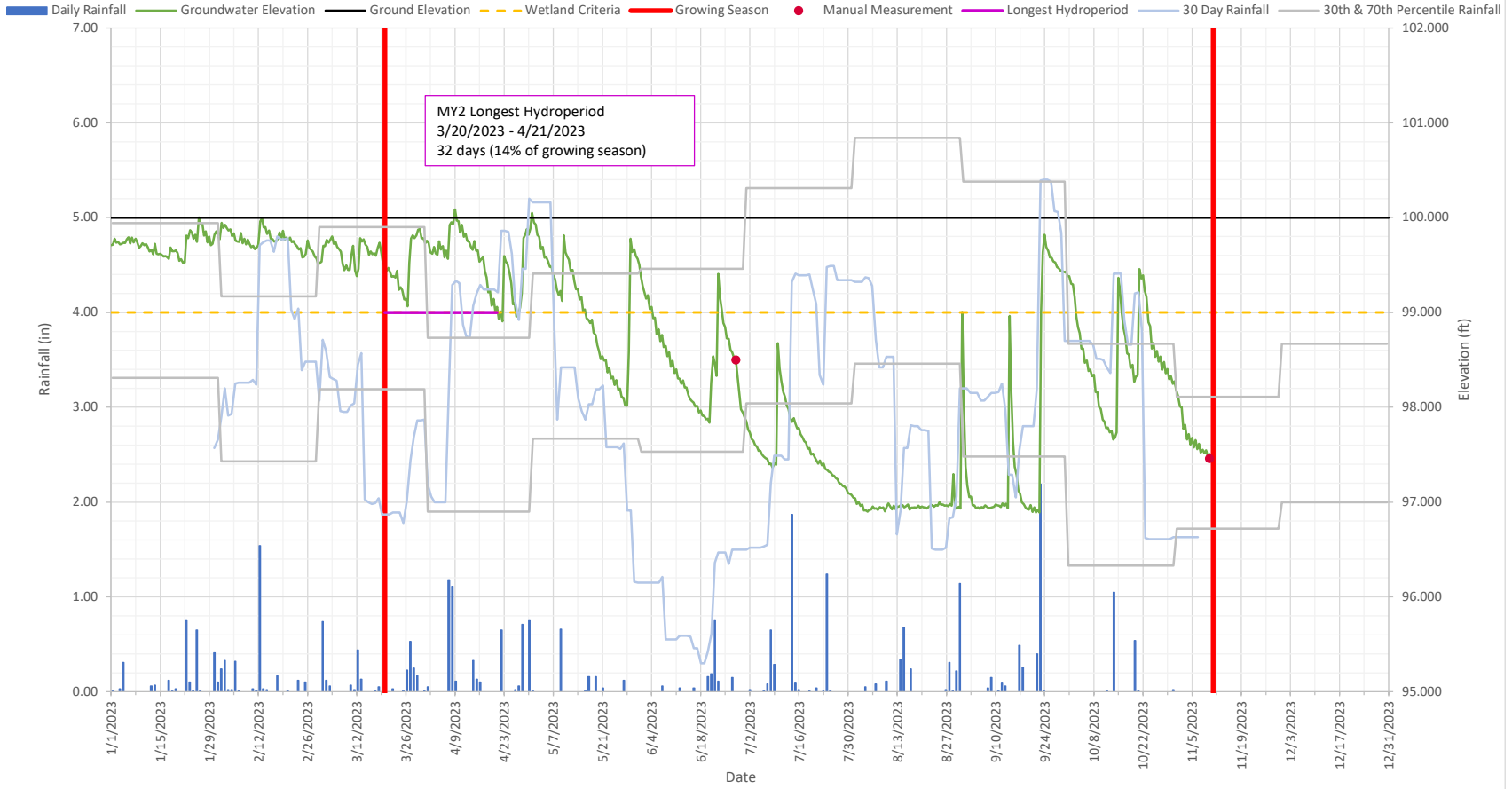
Groundwater Well 6



Colonial Farms Wetland Mitigation Site - MY2 2023 Groundwater Well 7

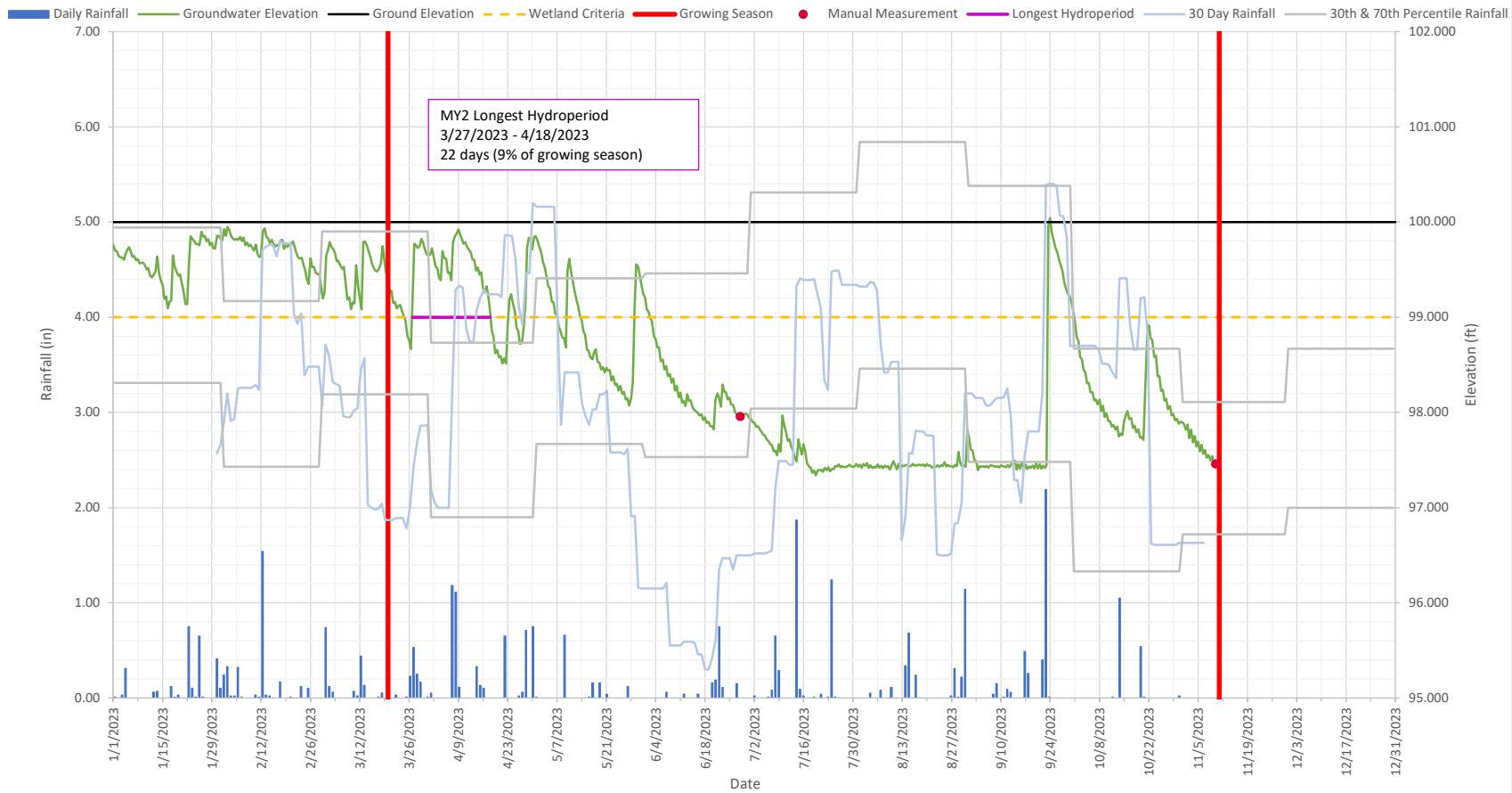


Colonial Farms Wetland Mitigation Site - MY2 2023 Groundwater Well 8

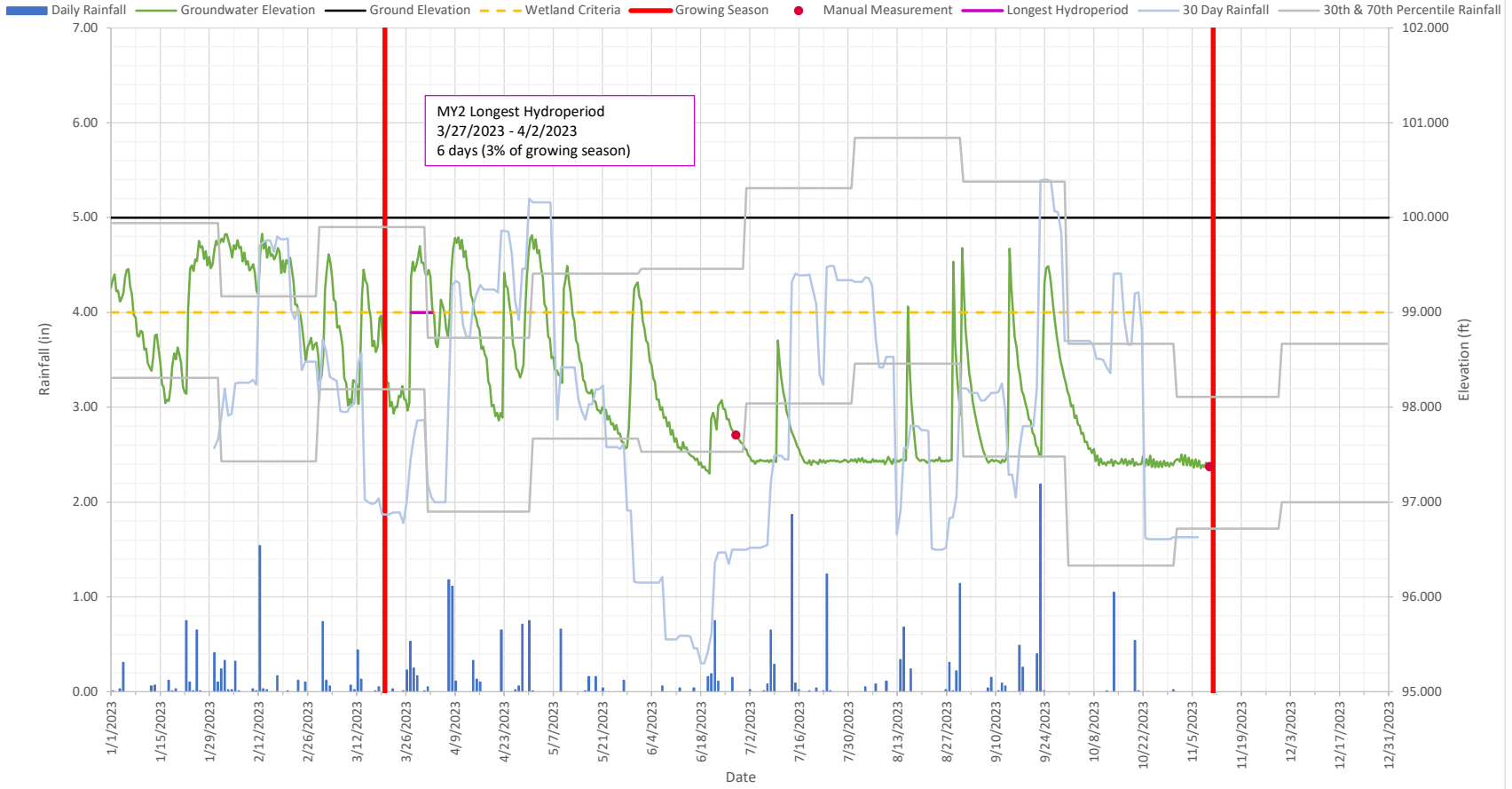


Colonial Farms Wetland Mitigation Site - MY2 2023

Groundwater Well 9

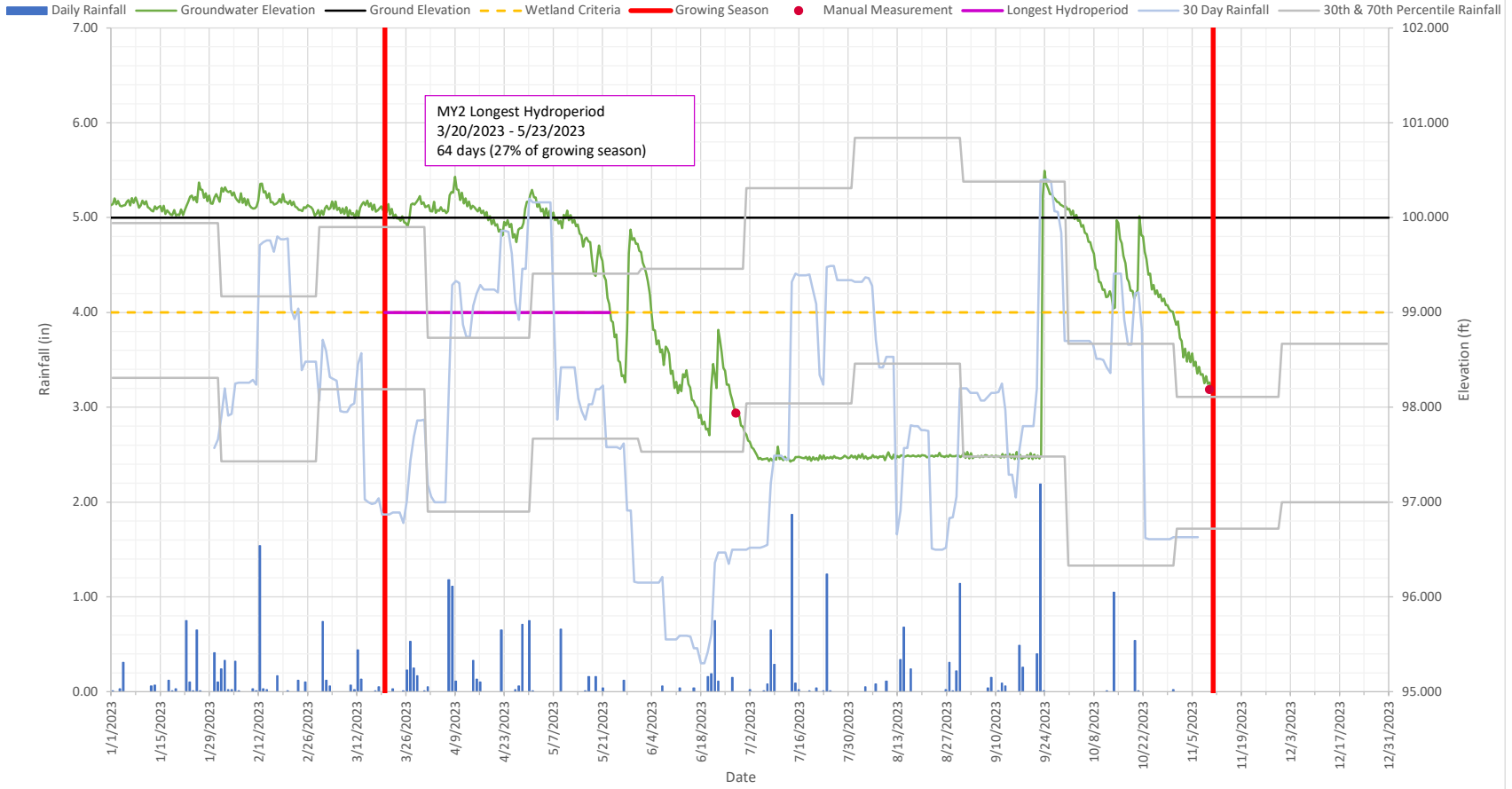


Colonial Farms Wetland Mitigation Site - MY2 2023 Groundwater Well 10

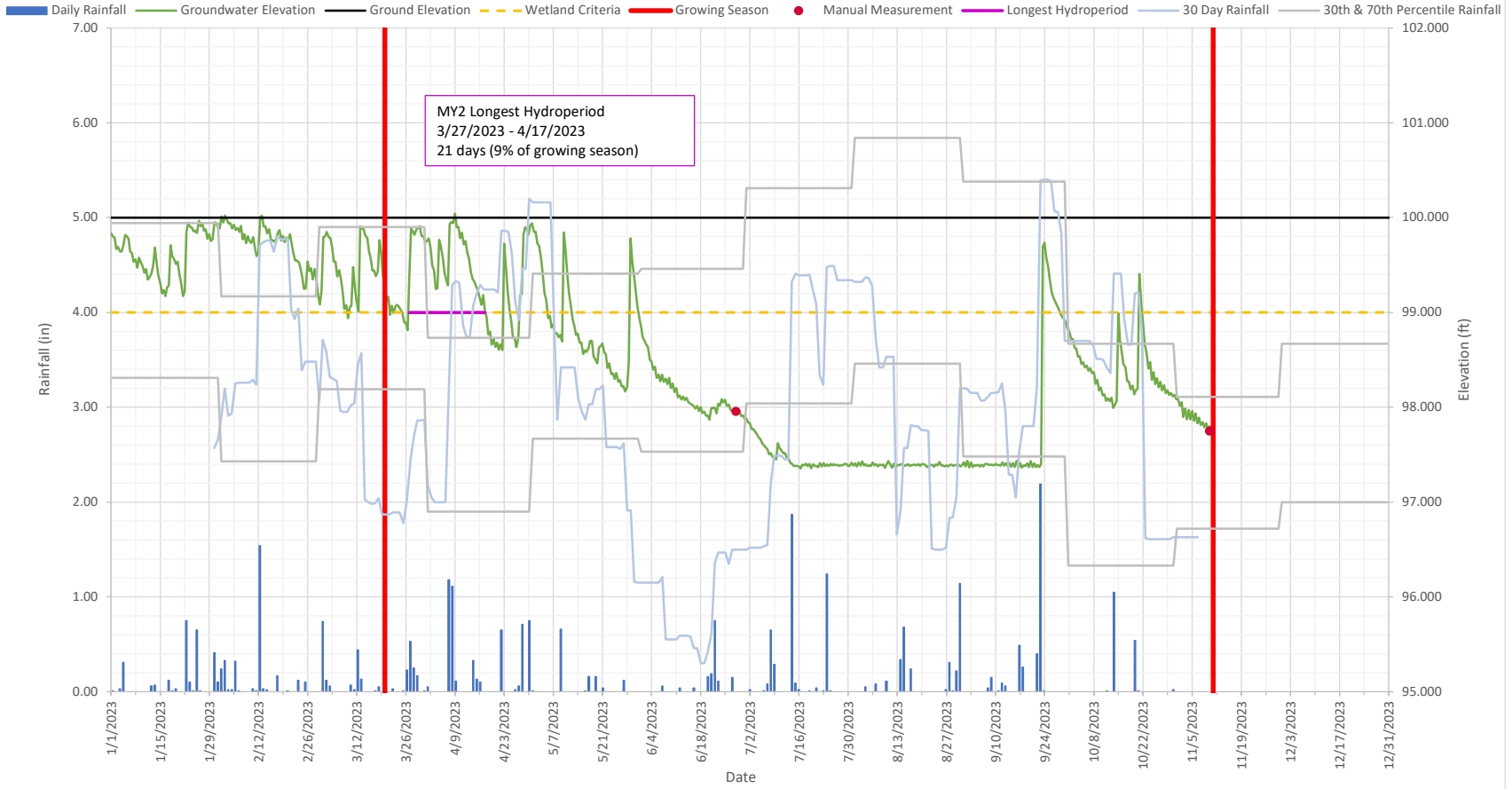


Colonial Farms Wetland Mitigation Site - MY2 2023

Groundwater Well 11



Colonial Farms Wetland Mitigation Site - MY2 2023 Groundwater Well 12



Colonial Farms Wetland Mitigation Site - MY2 2023

Groundwater Well 13

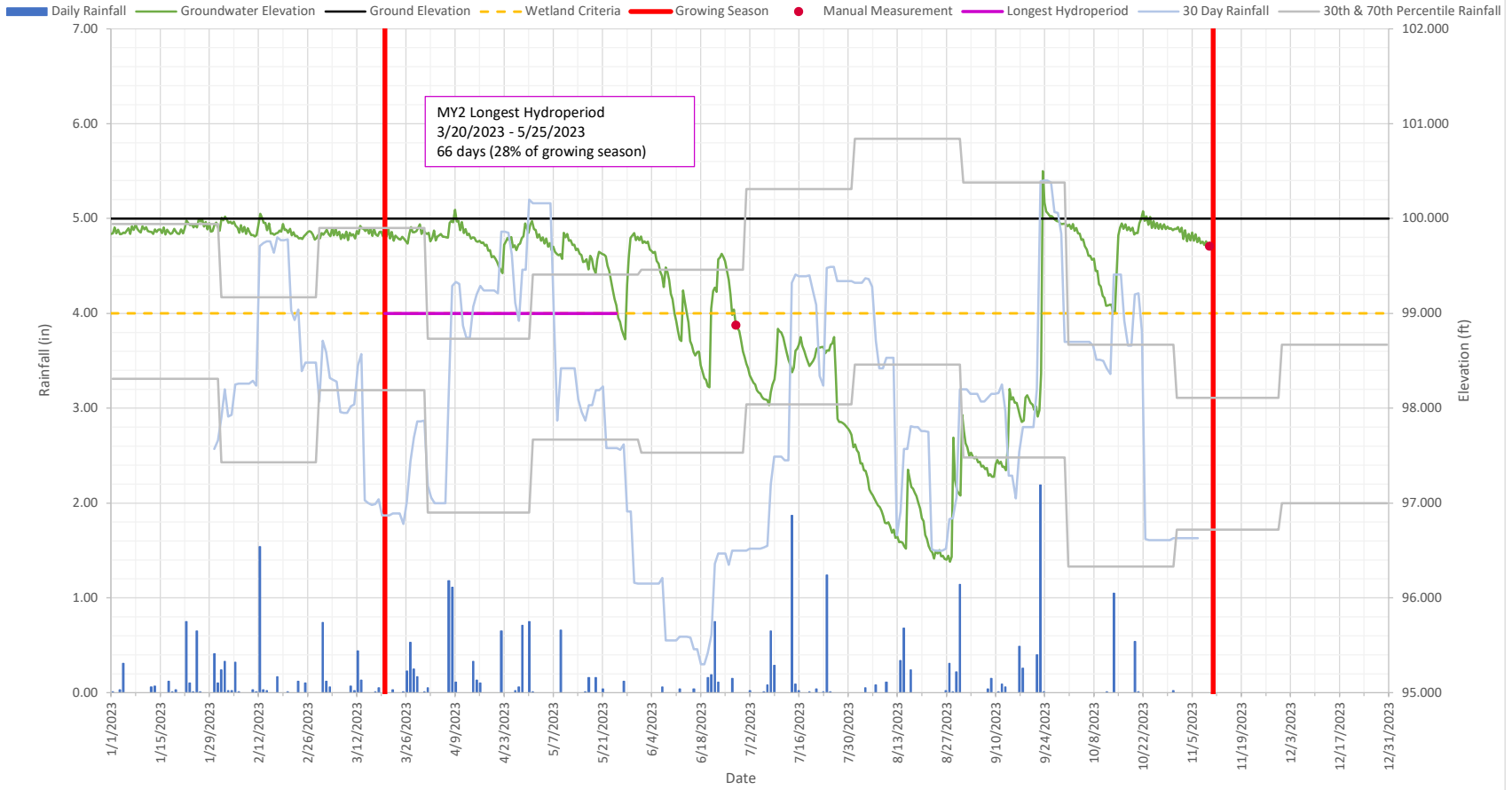


Table 8: Rainfall Summary

Colonial Farms Wetland Mitigation Site
 DMS ID No. 100191
 Monitoring Year 2 – 2023

Month	Cumulative Rainfall (in)							
	30th / 70th Percentile	MY1 2022	MY2 2023	MY3 2024	MY4 2025	MY5 2026	MY6 2027	MY7 2028
January	3.31 / 4.94	1.76	2.68					
February	2.43 / 4.17	1.75	2.97					
March	3.19 / 4.90	2.26	2.87					
April	1.90 / 3.73	2.21	5.20					
May	2.67 / 4.41	2.84	1.16					
June	2.53 / 4.46	2.36	1.50					
July	3.04 / 5.31	4.14	4.34					
August	3.46 / 5.94	3.18	3.20					
September	2.48 / 5.38	4.63	3.70					
October	1.33 / 3.67	0.69	1.63					
November	1.72 / 3.11							
December	2.00 / 3.67							

Red values indicate recorded rainfall less than the 30th percentile value.
 Blue values indicate recorded rainfall greater than the 70th percentile value.

30th and 70th percentile rainfall values based on NRCS WETS station Tarboro 1 S, NC
 Rainfall data obtained from USGS 02082585 (Tar River at NC97)

Table 9: Groundwater Gauge Summary

Colonial Farms Wetland Mitigation Site
 DMS ID No. 100191
 Monitoring Year 2 – 2023

Soil Series: Portsmouth

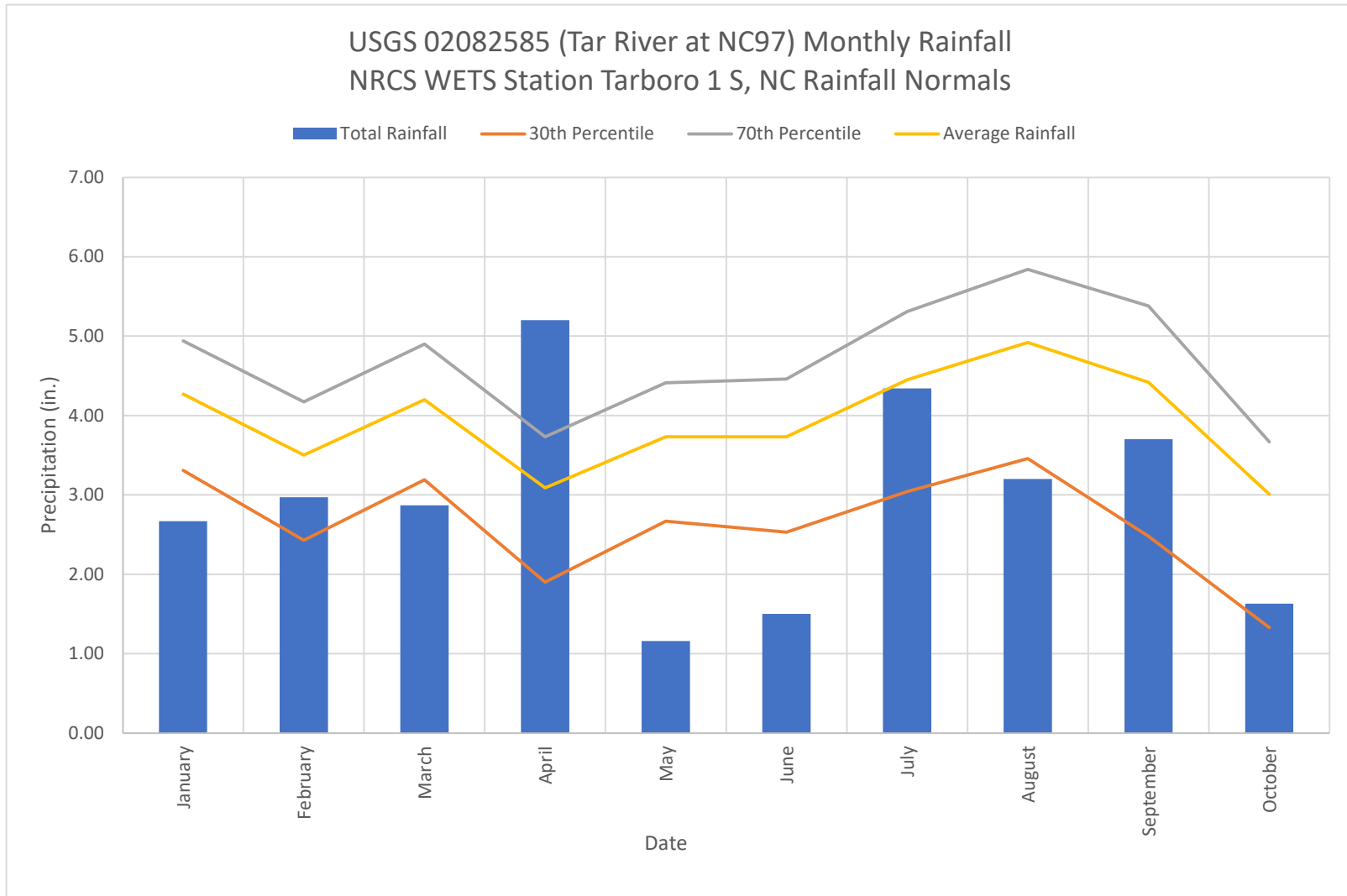
Growing Season 3/20 - 11/11 236 days	Performance Standard	Longest Hydroperiod												
		GW1	GW2	GW3*	GW4	GW5	GW6	GW7	GW8	GW9	GW10	GW11	GW12	GW13*
MY1 - 2022	24 days 10%	19 days 8%	35 days 15%	6 days 3%	2 days 1%	8 days 3%	18 days 8%	18 days 8%	9 days 4%	0 days 0%	2 days 1%	0 days 0%	1 day <1%	19 days 8%
MY2 - 2023		31 days 13%	66 days 18%	22 days 9%	6 days 3%	30 days 13%	22 days 9%	65 days 28%	32 days 14%	22 days 9%	6 days 3%	64 days 27%	21 days 9%	66 days 28%
MY3 - 2024	28 days 12%													
MY4 - 2025														
MY5 - 2026														
MY6 - 2027														
MY7 - 2028														

WETS Station: Tarboro 1 S, NC

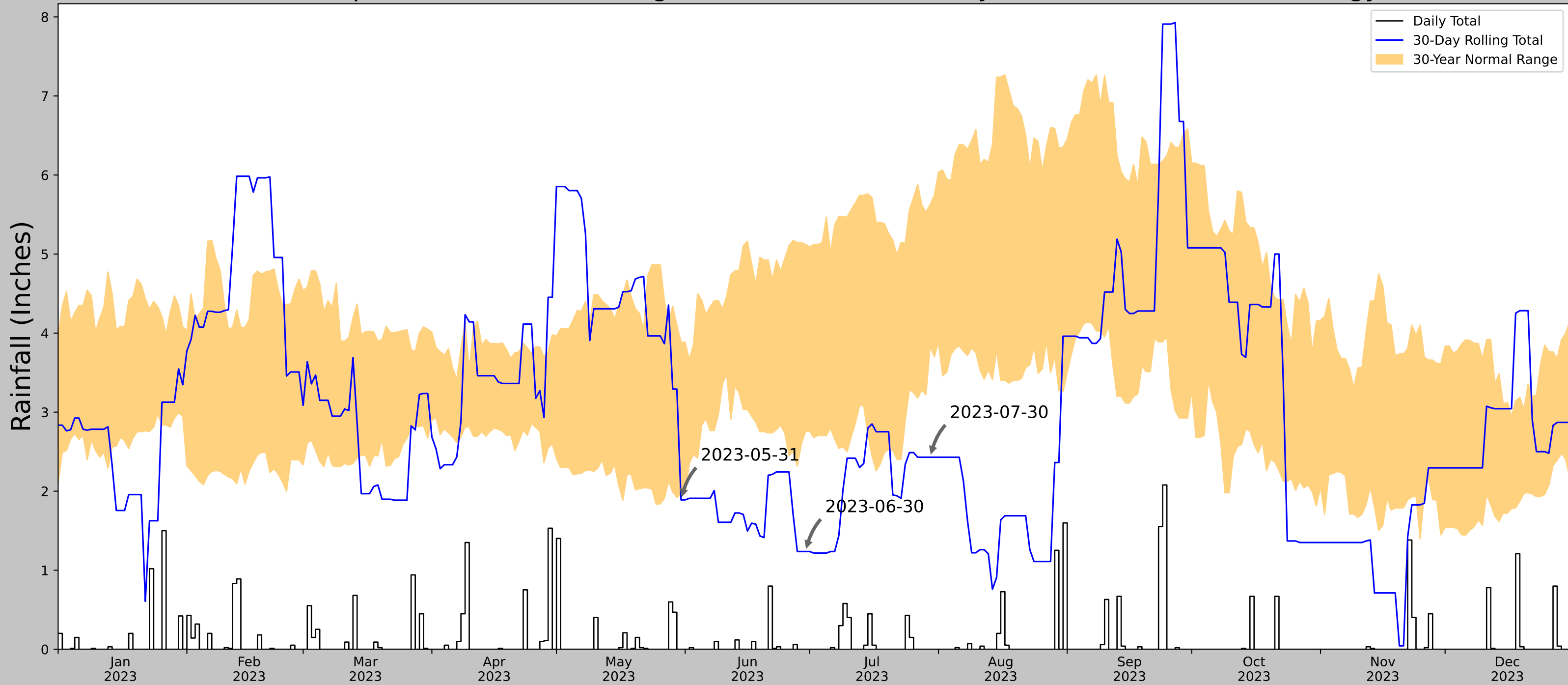
MY2 Monitoring dates: 3/20/2023 - 11/11/2023

*Denotes non-credit bearing groundwater wells

Cumulative Monthly Rainfall Summary
Colonial Farms Wetland Mitigation Site
DMS ID No. 100191
DWR Project No. 2021-0399v2
Monitoring Year 2 – 2023




Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network




Coordinates	35.853767, -77.549397
Observation Date	2023-07-30
Elevation (ft)	43.315
Drought Index (PDSI)	Moderate drought
WebWIMP H ₂ O Balance	Dry Season

30 Days Ending	30 th %ile (in)	70 th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-07-30	3.83937	5.627953	2.429134	Dry	1	3	3
2023-06-30	2.75748	5.122047	1.236221	Dry	1	2	2
2023-05-31	1.966535	3.885827	1.889764	Dry	1	1	1
Result							Drier than Normal - 6



Figures and tables made by the
Antecedent Precipitation Tool
Version 2.0

Developed by:
U.S. Army Corps of Engineers and
U.S. Army Engineer Research and
Development Center

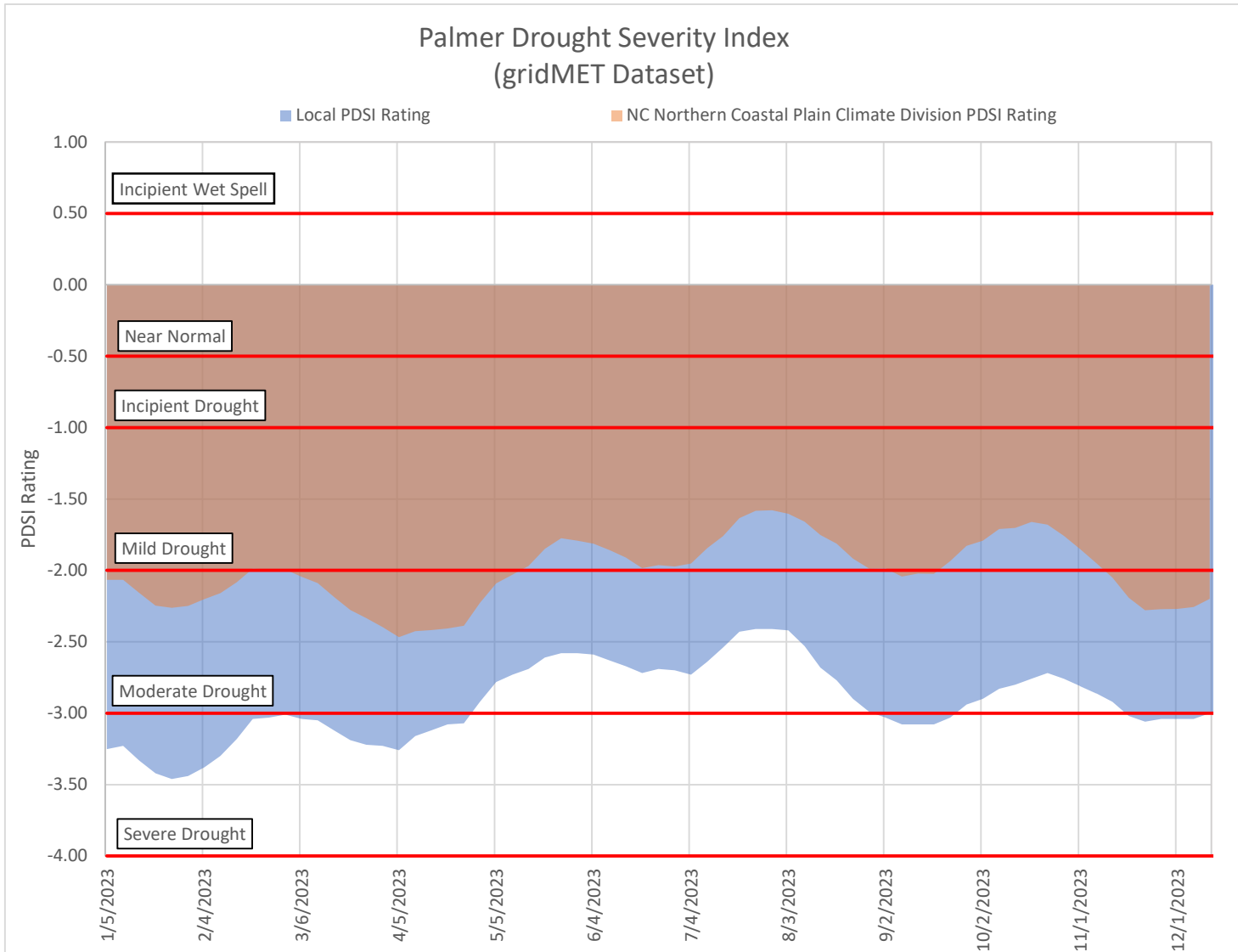


Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
TARBORO 1 S	35.8842, -77.5386	35.105	2.188	8.21	1.003	10754	89
TARBORO 0.7 S	35.8984, -77.5544	66.929	1.321	31.824	0.636	70	0
TARBORO 5.9 SE	35.8391, -77.495	43.963	3.959	8.858	1.817	155	1
CONETOE 3.0 ENE	35.8391, -77.4105	50.853	7.821	15.748	3.643	9	0
ROCKY MT 8 ESE	35.8936, -77.6805	109.908	7.97	74.803	4.183	241	0
GREENVILLE	35.64, -77.3983	32.152	18.616	2.953	8.432	124	0

APPENDIX D

Palmer Drought Severity Index (PDSI) Summary

Palmer Drought Severity Index (PDSI)
Colonial Farms Wetland Mitigation Site
DMS ID No. 100191
DWR Project No. 2021-0399v2
Monitoring Year 2 – 2023



APPENDIX E

Project Timeline and Contacts Info

Table 10: Project Activity and Reporting History

Colonial Farms Wetland Mitigation Site

DMS ID No. 100191

Monitoring Year 2 – 2023

Activity or Report	Data Collection Complete	Completion or Scheduled Delivery
Project Instituted	N/A	February 11, 2021
Mitigation Plan Approved	N/A	February 24, 2022
Construction (Grading) Completed	N/A	May 6, 2022
As-Built Survey Completed	May 2022	May 2022
Planting Completed	N/A	April 28, 2022
Baseline Monitoring Document (Year 0) - Vegetation Survey	March 2022	August 2022
Year 1 Monitoring - Vegetation Survey	October 2022	November 2022
Year 2 Monitoring - Supplemental Planting	March 2023	
Year 2 Monitoring - Vegetation Survey	September 2023	November 2023
Year 3 Monitoring - Vegetation Survey	2024	November 2024
Year 4 Monitoring - Vegetation Survey	2025	November 2025
Year 5 Monitoring - Vegetation Survey	2026	November 2026
Year 6 Monitoring - Vegetation Survey	2027	November 2027
Year 7 Monitoring - Vegetation Survey	2028	November 2028

Table 11: Project Contacts

Colonial Farms Wetland Mitigation Site

DMS ID No. 100190

Monitoring Year 2 – 2023

<p align="center"><u>Manager</u> Eco Terra - Jordan Burbage</p>	<p align="center">Eco Terra, LLC 117 Centrewest Ct Cary, NC 27513 919.922.9508</p>
<p align="center"><u>Engineer</u> McAdams - Rebecca Stubbs, PE</p>	<p align="center">McAdams 621 Hillsborough Street, Suite 500 Raleigh, NC 27603 919.361.5000</p>
<p align="center"><u>Construction Contractor</u> WVM, Inc</p>	<p align="center">WVM, Inc 3018 Church St. Ext Winterville, NC 28590 252.439.8588</p>
<p align="center"><u>Monitoring</u> Eco Terra - Jordan Burbage</p>	<p align="center">Eco Terra, LLC 117 Centrewest Ct Cary, NC 27513 919.922.9508</p>