

MY1 MONITORING REPORT

PIERCE TERRACE WETLAND MITIGATION SITE

Gates County, North Carolina
Chowan River Basin
Cataloging Unit 03010203 & 03010204

DMS Project No. 100139
Full Delivery Contract No. 7907-01
DMS RFP No. 16-007907 (issued 5/6/2019)
USACE Action ID No. SAW-2020-00046
DWR Project No. 2020-~~00034~~ 0034

Data Collection: March 2023–November 2023
Submission: February 2024



Prepared for:

NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF MITIGATION SERVICES
1652 MAIL SERVICE CENTER
RALEIGH, NORTH CAROLINA 27699-1652





Response to Monitoring Year 1 (2023) DMS Comments

Pierce Terrace (DMS #100139)
Chowan River Basin 03010203 & 03010204, Gates County
Contract No. 7907-01

Comments Received (Black Text) & Responses (Blue Text)

Report & Field Visit:

1. Section 3.2 – Second paragraph, third sentence says, “an oversight occurred during monitoring and random vegetation transects within these areas did not occur in year 1 (2023)”. Referring to the wetland creation and ditch filled areas. Please depict these random transects in the tables and CCPV, or correct sentence. Table 6. Planted Vegetation Totals, appear to have all random transects represented with data for MY1.
[Response: The inclusion of this sentence and the sentence after it was an error. These sentences have been deleted.](#)

Digital Comments:

1. No comments.
[Response: Noted.](#)

Pierce Terrace Year 1, 2023 Monitoring Summary

Wetlands

- Three of the 63 groundwater gauges met success criteria during the Year 1 (2023) monitoring period (Appendix C). A detailed analysis is provided in Section 3.1.

Vegetation

- Year 1 (2023) measurements of all 81 plots (61 permanent plots and 20 temporary transects) resulted in an average of 582 planted stems/acre. Additionally, all individual plots met the success criteria except transect 6 which was two stems shy of meeting target goals and is not representative of a stem density area of concern (Tables 6-7, Appendix B).

Visual

- An encroachment area was identified in Year 1 (2023) along the western easement boundary from adjacent farming operation.
- No evidence of nuisance animal activity (i.e., heavy deer browsing) was observed.

Site Permitting/Monitoring Activity and Reporting History

Activity or Deliverable	Data Collection Complete	Completion or Delivery
Project Instituted (NCDMS Contract No. 7907-01)	NA	May 6, 2019
Mitigation Plan Approved	NA	May 2022
Construction Completed	NA	August 29, 2022
Planting Completed	NA	March 3, 2023
As-built Survey Completed	NA	March 2023
MY-0 Vegetation Data Collection	March 6-7, 2023	NA
MY-0 Baseline Report	March 2023	March 2023
MY-1 Vegetation Data Collection	September 6-14, 2023	NA
MY-1 Monitoring Report	November 2023	December 2023
MY-2+ Monitoring Reports	--	--

Site Maintenance Report (2023)

Invasive Species Work	Maintenance work
9/26/2023 Cattail treatment	11/20/2023 Ditch filled areas and wetland creation areas seeded with clover

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Data Collection: January 2023–November 2023
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Prepared for:

NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY
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1652 MAIL SERVICE CENTER
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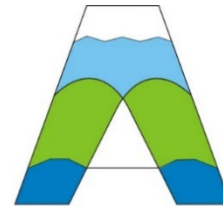


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1 PROJECT SUMMARY

Restoration Systems, LLC has established the North Carolina Division of Mitigation Services (NCDMS) Pierce Terrace Wetland Mitigation Site (Site). Located in the Chowan River Basin, cataloguing unit **03010203 & 03010204**, the Site is in Targeted Local Watershed (TLW) **03010203040040** of the South Atlantic/Gulf Region (NCDWQ sub-basin number 03-01-01). The Site is not located in a Local Watershed Plan (LWP), Regional Watershed Plan (RWP), or Targeted Resource Area (TRA); however, project activities address priorities associated with the 2009 *Chowan River Basin Restoration Priorities* report.

1.1 Project Background, Components, and Structure

The Site is located approximately 2 miles west of Sunbury, 5 miles northeast of Gatesville, and immediately south and east of Merchant Millpond State Park (MMSP). Mitigation work within the Site included 1) wetland creation totaling 3.792 acres, and 2) wetland reestablishment totaling 108.016 acres. The site is expected to provide 109.280 wetland credits by closeout (Table 1, Page 2). A conservation easement was granted to the State of North Carolina and recorded at the Gates County Register of Deeds on November 17, 2020.

Before construction, the Site was characterized by agriculture row crop production for over 80 years. Typical crop rotation for the last decade has been a winter wheat with cotton, soybeans, and/or corn. Adjacent land management activities include silviculture and agriculture practices. Site design was completed in June 2022. Construction started on July 19, 2022 and ended with final walkthrough on August 29, 2022. The Site was planted March 1-3, 2023. Completed project activities, reporting history, completion dates, and project contacts are summarized in Tables 8–9 (Appendix D).

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Table 1. Pierce Terrace Mitigation Site (ID-100139) Project Mitigation Quantities and Credits

Project Segment	Original Mitigation Plan Ft/Ac	As-Built Ft/Ac	Original Mitigation Category	Original Restoration Level	Original Mitigation Ratio (X:1)	Credits	Comments
Wetland							
Non-riparian Re-establishment I	86.706	87.868	NR	REE	1.00000	87.868	
Non-riparian Re-establishment II	19.805	20.148	NR	REE	1.00000	20.148	
Non-riparian Creation	5.670	3.792	NR	C	3.00000	1.264	
					Total:	109.280	

Project Credits

Restoration Level	Stream			Riparian	Non-Rip	Coastal
	Warm	Cool	Cold	Wetland	Wetland	Marsh
Restoration				0.000	0.000	0.000
Re-establishment				0.000	108.016	0.000
Rehabilitation				0.000	0.000	0.000
Enhancement				0.000	0.000	0.000
Enhancement I						
Enhancement II						
Creation				0.000	1.264	0.000
Preservation				0.000	0.000	
Totals	0.000	0.000	0.000	0.000	109.280	0.000
Total Wetland Credit	109.280					

Wetland Mitigation Category

CM Coastal Marsh
R Riparian
NR Non-Riparian

Restoration Level

P Preservation
E Wetland Enhancement - Veg and Hydro
EII Stream Enhancement II
EI Stream Enhancement I
C Wetland Creation
RH Wetland Rehabilitation - Veg and Hydro
REE Wetland Re-establishment Veg and Hydro
R Restoration

Table 2. Summary: Goals, Performance, and Results

Goals	Objectives	Success Criteria
(1) HYDROLOGY		
<ul style="list-style-type: none"> - Minimize downstream flooding to the maximum extent possible. 	<ul style="list-style-type: none"> - Fill and plug agriculture ditches to restore jurisdictional hydrology - Cease row crop production within the easement - Shallow disking (~4") of soils within the entire Site to reduce compaction and increase surface roughness - Plant native woody vegetation - Protect the Site with a perpetual conservation easement 	<ul style="list-style-type: none"> - Row crop production ceased within the easement - Monitoring wells will be successful if the water table is within 12 inches of the soil surface for 10-12% of the growing season - Vegetation plots will be successful if the plant density is 210 stems per acre with an average plant height of 10 feet at 7 years following planting - Conservation Easement recorded
(1) WATER QUALITY		
<ul style="list-style-type: none"> - Remove direct nutrient and pollutant inputs from the Site 	<ul style="list-style-type: none"> - Reduce agricultural land/inputs - Fill and plug the ditch network to restore ground and surface hydrology within the Site - Plant woody vegetation - Restore jurisdictional wetlands 	<ul style="list-style-type: none"> - Row crop production ceased within the easement - Monitoring wells will be successful if the water table is within 12 inches of the soil surface for 10-12% of the growing season - Vegetation plots will be successful if the plant density is 210 stems per acre with an average plant height of 10 feet at 7 years following planting
(1) HABITAT		
<ul style="list-style-type: none"> - Improve wildlife habitat within and adjacent to the Site 	<ul style="list-style-type: none"> - Plant woody native vegetation to provide organic matter and shade - Fill and plug ditches to provide groundwater hydrology - Add woody debris material throughout Site for habitat - Protect the Site with perpetual conservation easement - Restore jurisdictional wetlands 	<ul style="list-style-type: none"> - Monitoring wells will be successful if the water table is within 12 inches of the soil surface for 10-12% of the growing season - Vegetation plots will be successful if the plant density is stems per acre with an average plant height of 10 feet at 7 years following planting - Conservation Easement recorded

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Table 3. Project Attribute Table

Project Information			
Project Name	Pierce Terrace Wetland Restoration Site		
Project County	Gates County, North Carolina		
Project Area (acres)	125.74		
Project Coordinates (latitude & longitude)	36.431500°N, 76.649894°W		
Planted Area (acres)	125.74		
Project Watershed Summary Information			
Physiographic Province	Middle Atlantic Coastal Plain		
Project River Basin	Chowan		
USGS HUC for Project (14-digit)	03010203040040		
NCDWR Sub-basin for Project	03-01-01		
Project Drainage Area (acres)	NA		
Percentage of Project Drainage Area that is Impervious	NA		
CGIA Land Use Classification	Cultivated		
Wetland Summary Information			
Parameters	Wetland 1	Wetland 2	Wetland 3
Pre-project (acres)	0	0	0
Post-project (acres)	87.868	20.148	3.792
Wetland Type	Non-riparian		
Mapped Soil Series	Bladen, Craven, Goldsboro, Lenoir, Pantego		
Drainage Class	Poorly drained, Moderately well drained Poorly drained, Somewhat poorly drained, Very poorly drained		
Hydric Soil Status	Hydric, Non-hydric with inclusions, Non-hydric with inclusions, Non-hydric with inclusions, Hydric		
Source of Hydrology	Precipitation, surface water run-on		
Hydrologic Impairment	Ditched and drained		
Native Vegetation Community	Non-riverine Wet Hardwood & Swamp Forest		
% Composition of Exotic Invasive Vegetation	0%		
Restoration Method	Hydrologic, vegetative		
Regulatory Considerations			
Regulation	Applicable?	Resolved?	Supporting Documentation
Waters of the United States-Section 401	Yes	Yes	PJD package (Mitigation Plan App D)
Waters of the United States-Section 404	Yes	Yes	PJD package (Mitigation Plan App D)
Endangered Species Act	Yes	Yes	CE Document (Mitigation Plan App E)
Historic Preservation Act	No	--	CE Document (Mitigation Plan App E)
Coastal Zone Management Act	No	--	CE Document (Mitigation Plan App E)
FEMA Floodplain Compliance	No	--	CE Document (Mitigation Plan App E)
Essential Fisheries Habitat	No	--	NA

1.2 Success Criteria

Criteria for monitoring and success of stream restoration should relate to project goals and objectives identified from on-site NC WAM data collection. From a mitigation perspective, several of the goals and objectives are assumed to be functionally elevated by restoration activities without direct measurement. Other goals and objectives will be considered successful upon achieving success criteria. The following table summarizes Site success criteria.

Table A. Success Criteria

Wetland Hydrology
<ul style="list-style-type: none"> • Non-riverine Wet Hardwood Forest – Saturation or inundation within the upper 12 inches of the soil surface for, at a minimum, 10 percent of the growing season, during average climatic conditions based on the <i>Wilmington District Stream and Wetland Compensatory Mitigation Update</i> (USACE 2016), Table 1, for a <i>Typic Albaquilt</i> (Bladen). • Non-riverine Swamp Forest – Saturation or inundation within the upper 12 inches of the soil surface for, at a minimum, 12 percent of the growing season, during average climatic conditions based on the <i>Wilmington District Stream and Wetland Compensatory Mitigation Update</i> (USACE 2016), Table 1, for a <i>Umbric Paleaquilt</i> (Pantego).
Vegetation
<ul style="list-style-type: none"> • Within planted portions of the Site, a minimum of 320 stems per acre must be present at year 3; a minimum of 260 stems per acre must be present at year 5; and a minimum of 210 stems per acre must be present at year 7. • Trees must average 7 feet in height at year 5, and 10 feet in height at year 7 in each plot¹. • Planted and volunteer stems are counted, provided they are included in the approved planting list for the Site; natural recruits not on the planting list may be considered by the IRT on a case-by-case basis. • Any single species can only account for 50% of the required stems within any vegetation plot.

¹Understory/shrub species will be exempt from the vigor performance standard.

2 PROJECT MONITORING – METHODS

Monitoring will be conducted, in accordance with 2016 NCIRT Guidelines, by Axiom Environmental, Inc. based on the schedule in the following Table B. A summary of monitoring is outlined in Table C on page 7. Annual monitoring reports will be submitted to the NCDMS by Restoration Systems no later than December 1 of each monitoring year data is collected.

Table B. Monitoring Schedule

Resource	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Wetlands	x	x	x	x	x	x	x
Vegetation	x	x	x		x		x
Visual Assessment	x	x	x	x	x	x	x
Report Submittal	x	x	x	x	x	x	x

2.1 Monitoring

The monitoring parameters are summarized in the following table.

Table C. Monitoring Summary

Hydrology Parameters				
Parameter	Method	Schedule/Frequency	Number/Extent	Data Collected/Reported
Wetland Re-establishment and Creation	Groundwater gauges	Years 1–7 throughout the year with the growing season defined as March 26–November 12	56 gauges spread throughout restored wetlands and 6 gauges spread throughout created wetlands	Groundwater/rain data for each monitoring period will be collected and reported for the growing season ¹ (March 26–November 12).
	Soil profile descriptions	As-built and Years 3, 5, 7	61 profile descriptions, one at each groundwater gauge	Soil profile descriptions completed to assess the development of hydric soil morphologic features
Vegetation Parameters				
Parameter	Method	Schedule/Frequency	Number/Extent	Data Collected/Reported
Vegetation establishment and vigor	Permanent vegetation plots 0.0247 acre (100 square meters) in size; <i>CVS-EEP Protocol for Recording Vegetation, Version 4.2</i> (Lee et al. 2008)	As-built, Years 1, 2, 3, 5, and 7	61 plots spread across the Site	Species, height, planted vs. volunteer, stems/acre
	Annual random vegetation plots, 0.0247 acre (100 square meters) in size		20 random transects spread across the Site	Species and height
Visual Parameters				
Parameter	Method	Schedule/Frequency	Number/Extent	Data Collected/Reported
Encroachment, stabilized outfalls	Visual	Years 1–7	23 fixed photo points and Site boundary walking	Documented conditions in yearly monitoring report narrative, current condition figures, and reporting tables

¹The growing season will begin on March 26 and end on November 12 (231 days), which is the WETS growing season based on the most recent (1991–2020) 30-year historical temperature data from the WETS weather station closest to Site (Murfreesboro, NC).

²During Vegetation monitoring years, three of the random transects will be located in the non-credit generating upland buffers with the remaining 17 random transects to be located in credit generating wetland assets. Of the 17 remaining random transects in credit generating areas two random transects will be placed in the wetland creation areas (one in each area), and three ransom transects will be placed in the non-riverine swamp forest planting zone.

3 MONITORING YEAR 1 – DATA ASSESSMENT

Annual monitoring and site visits were conducted in March - November 2023 to assess the condition of the project. Wetland and vegetation criteria for the Site follow the approved success criteria presented in the Mitigation Plan and summarized in Section 1.2; monitoring methods are detailed in Section 2.1.

3.1 Hydrology Summary

Year	Monitoring Period Used for Determining Success	10 Percent of Monitoring Period	12 Percent of Monitoring Period
2023 (Year 1)	March 26 – November 12 (231 days)	23 days	28 days

Fifty-six groundwater gauges were installed in areas of non-riverine wet hardwood forest and 6 groundwater gauges were installed in non-riverine swamp forest areas. One gauge was installed in a non-credit-generating area that was initially proposed for wetland creation, for a total of 63 total gauges. Three of the 63 groundwater gauges met success criteria during the Year 1 (2023) monitoring period (Appendix C). Rainfall data indicate dry conditions leading up to the start of the 2023 growing season: on-site precipitation was near or below the 30th percentile in February, March, and April, according to WETS data (Figure C1, Appendix C), and rainfall remained relatively low through the remainder of the year as annual rainfall is below the 30th percentile of normal precipitation. Across the Site, however, the development of herbaceous hydrophytic species is abundant, and with proper rainfall, the wetland hydroperiods are expected to meet or exceed success criteria in coming years.

A reference gauge has been installed within a Bladen soil map unit associated with a non-riverine wet hardwood forest at MMSP (Figure 2, Appendix A). The reference gauge location was identified and utilized as a reference for the Hofler Mitigation Site (DMS Project ID #: 95355). The old gauge was located but was no longer operable. As a result, a new gauge was installed in a new auger hole boring on November 13, 2023 with a soil profile description (Appendix C).

3.2 Vegetative Assessment

The Year 1 (2023) vegetative survey was completed September 6-14, 2023. Vegetation monitoring resulted in a sitewide stem density average of 582 planted stems per acre, above the interim requirement of 320 stems per acre required at MY3. All 61 fixed vegetation plots and 19 of the 20 random transects met the interim success criteria. Please refer to Appendix A for Vegetation Plot Photographs and the Vegetation Condition Assessment Table, and Appendix B for Vegetation Plot Data. No vegetation areas of concern were identified during MY1.

Herbaceous vegetation establishment continues to improve within ditch filled areas along with wetland creation areas. These areas were seeded with clover on November 20, 2023 to facilitate establishment of herbaceous vegetation.

3.3 Visual Assessment

Visual assessments of the easement boundary and stabilized outfalls were conducted throughout the Year 1 (2023) monitoring period. A small area (0.02-acres) of encroachment was observed along the western boundary where ~5-rows of crops scalloped the edge of the easement boundary. The farmer was notified and treated wooden post with markings are scheduled to be installed once the crops are harvested. In addition, damaged witness and online markings noted in the as-built report have been repaired and/or

replaced. The three stabilized outlets have experienced surface water flow and remain stable without any issues. Please refer to Appendix A for Visual Assessment Photographs.

3.4 Monitoring Year Summary

Site vegetation is thriving; all plots are on track to exceed the Year 3 interim requirement of 320 planted stems per acre. Site wetlands have not developed expected wetland hydrology during Year 1 (2023). In coming years, assuming average to above-average rainfall, especially prior to and early in the growing season, wetland hydrology is expected to meet the 10-12% hydroperiod performance standards.

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4 REFERENCES

Lee, M.T., R.K. Peet, S.D. Roberts, and T.R. Wentworth. 2008. CVS-EEP Protocol for Recording Vegetation. Version 4.2. North Carolina Department of Environment and Natural Resources, Ecosystem Enhancement Program. Raleigh, North Carolina.

North Carolina Division of Mitigation Services (NCDMS). 2014. Stream and Wetland Mitigation Monitoring Guidelines. North Carolina Department of Environmental Quality, Raleigh, North Carolina.

North Carolina Ecosystem Enhancement Program (NCEEP 2007). Lower Catawba River Basin Restoration Priorities 2007 (online). Available:
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North Carolina Stream Functional Assessment Team. (NC SFAT 2015). N.C. Stream Assessment Method (NC SAM) User Manual. Version 2.1.

North Carolina Wetland Functional Assessment Team. (NC WFAT 2010). N.C. Wetland Assessment Method (NC WAM) User Manual. Version 4.1.

Appendix A: Visual Assessment Data

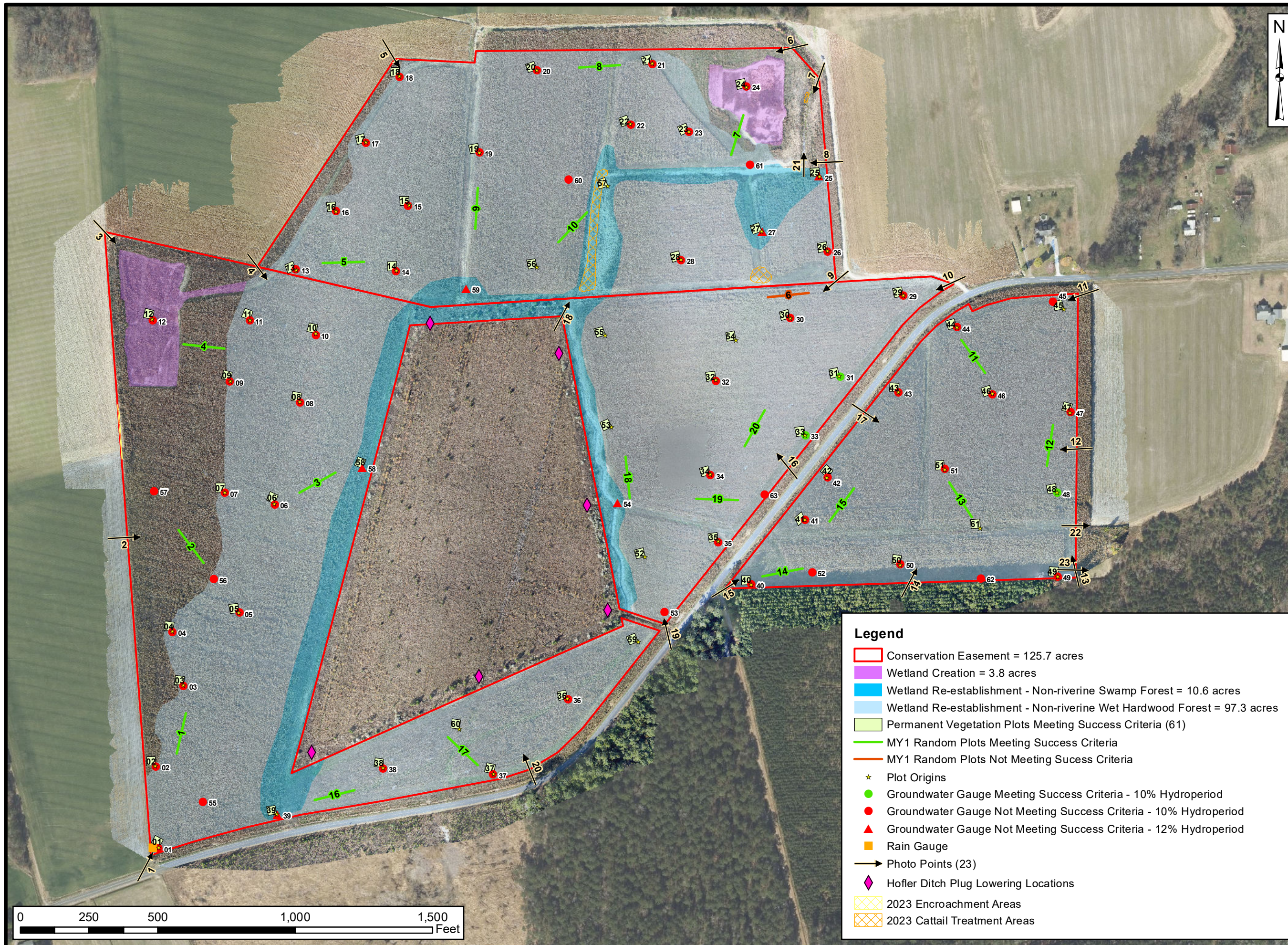
Figure 1. Current Conditions Plan View

Figure 2A-B. Reference Gauge Location

Table 4. Visual Vegetation Condition Assessment Table

Vegetation Plot Photographs

Photo Log



Prepared for:



Project:

**PIERCE TERRACE
WETLAND
MITIGATION
SITE**

Gates County, NC

Title:

**CURRENT
CONDITIONS
PLAN VIEW**

Drawn by:

KRJ

Date:

NOV 2023

Scale:

1:4000

Project No.:

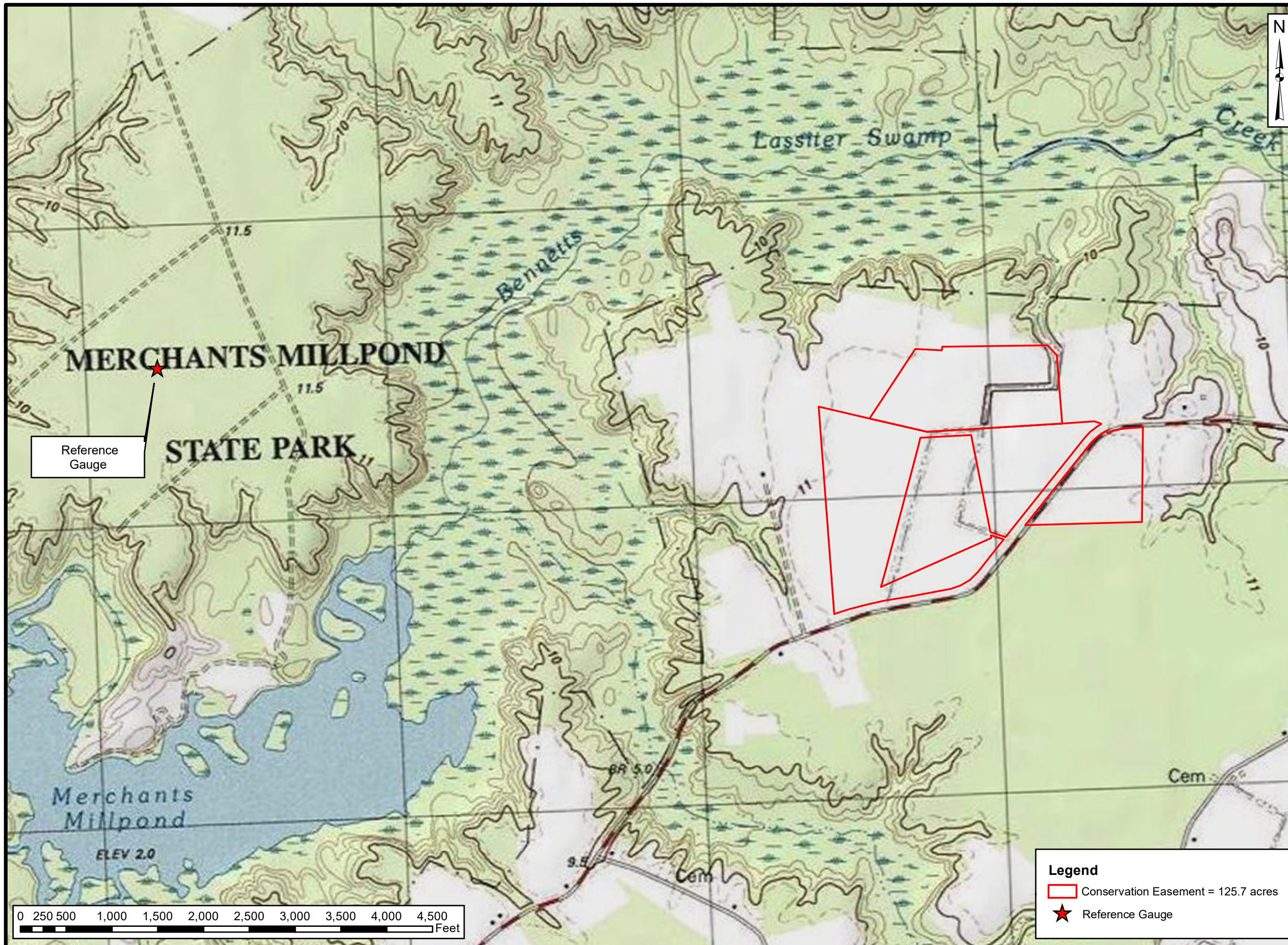
22-037

FIGURE

1

Legend

- Conservation Easement = 125.7 acres
- Wetland Creation = 3.8 acres
- Wetland Re-establishment - Non-riverine Swamp Forest = 10.6 acres
- Wetland Re-establishment - Non-riverine Wet Hardwood Forest = 97.3 acres
- Permanent Vegetation Plots Meeting Success Criteria (61)
- MY1 Random Plots Meeting Success Criteria
- MY1 Random Plots Not Meeting Success Criteria
- ★ Plot Origins
- Groundwater Gauge Meeting Success Criteria - 10% Hydroperiod
- Groundwater Gauge Not Meeting Success Criteria - 10% Hydroperiod
- ▲ Groundwater Gauge Not Meeting Success Criteria - 12% Hydroperiod
- Rain Gauge
- Photo Points (23)
- ◆ Hoffer Ditch Plug Lowering Locations
- 2023 Encroachment Areas
- 2023 Cattail Treatment Areas



Prepared for:



Project:

**PIERCE TERRACE
WETLAND
MITIGATION
SITE**

Gates County, NC

Title:

**REFERENCE
GAUGE
LOCATION**

Drawn by:

BEF

Date:

JUNE 2023

Scale:

1:12,000

Project No.:

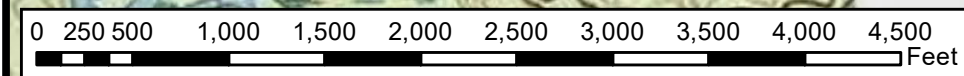
22-037

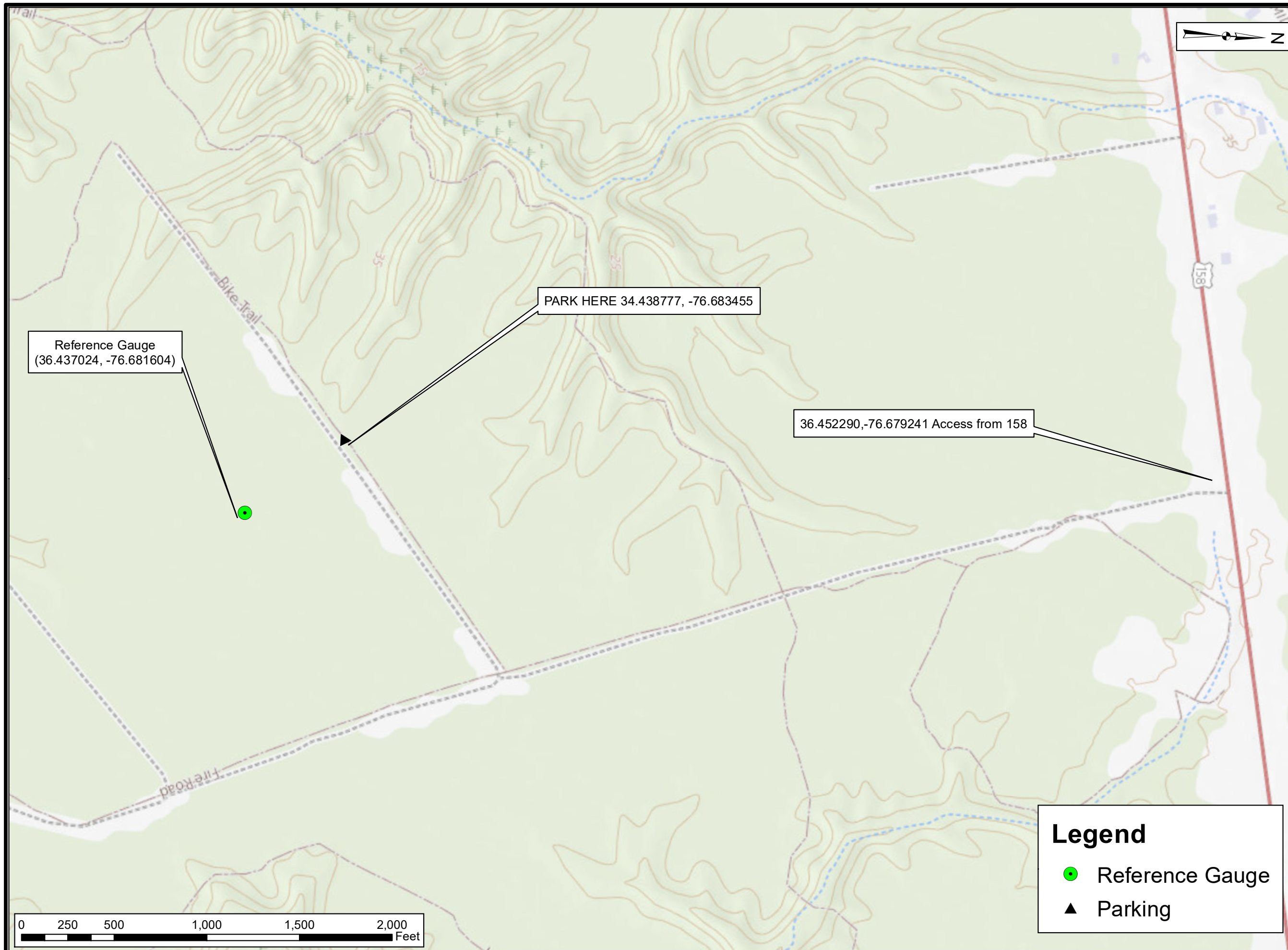
FIGURE

2A

Legend

- Conservation Easement = 125.7 acres
- ★ Reference Gauge





Reference Gauge
(36.437024, -76.681604)

PARK HERE 34.438777, -76.683455

36.452290,-76.679241 Access from 158

Legend

- Reference Gauge
- ▲ Parking



Prepared for:



Project:

**PIERCE TERRACE
WETLAND
MITIGATION
SITE**

Gates County, NC

Title:

**REFERENCE
GAUGE
LOCATION**

Drawn by: MLA

Date: NOV 2023

Scale: 1:12,000

Project No.: 22-037

FIGURE

2B

Table 4. Visual Vegetation Assessment

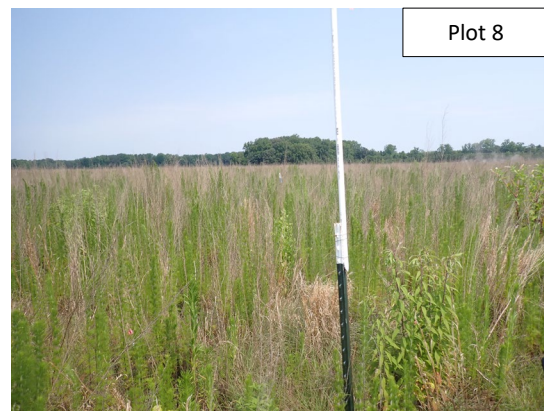
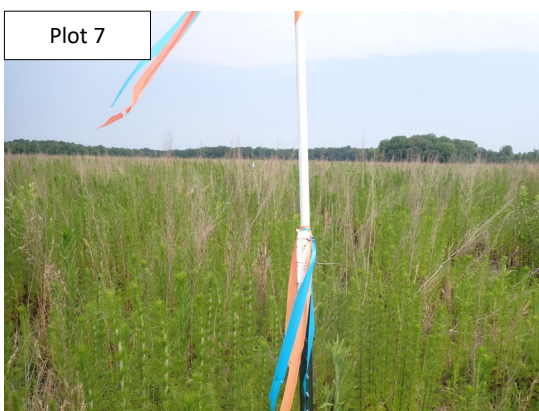
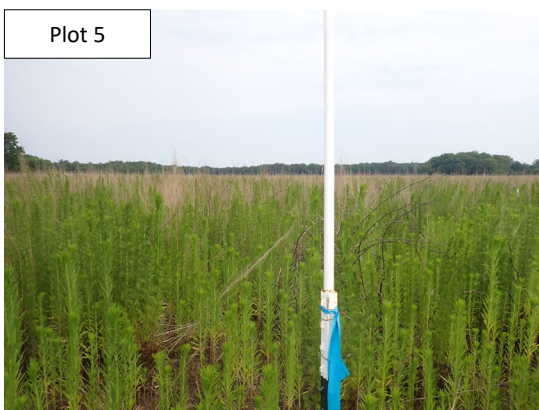
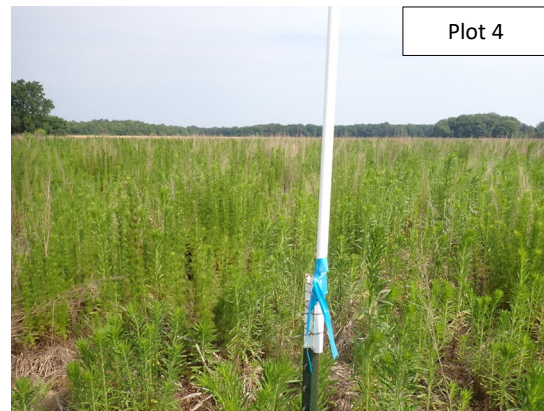
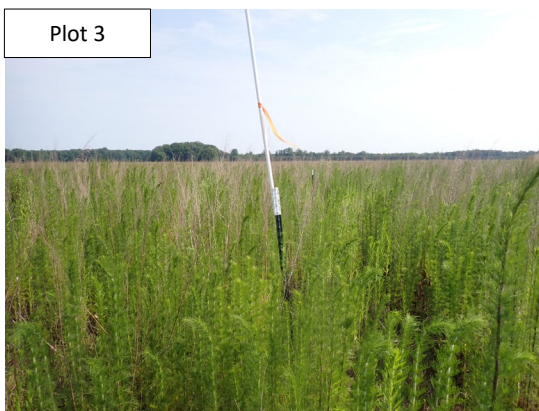
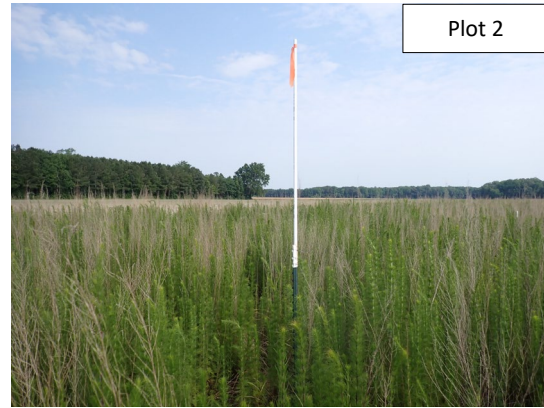
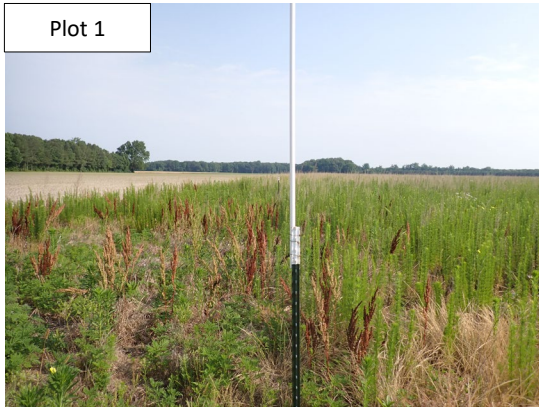
Planted acreage 125.74

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.	0.10acres	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%

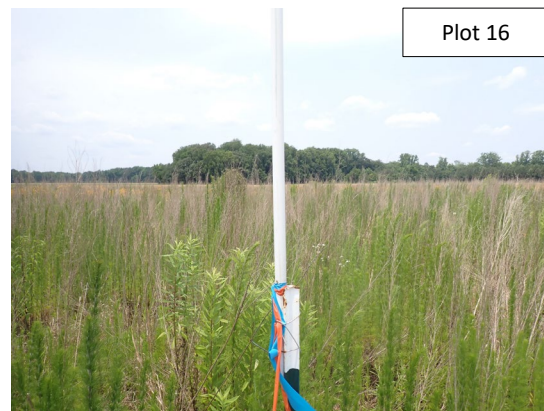
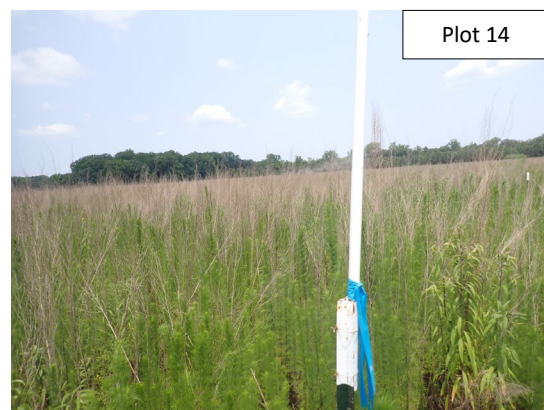
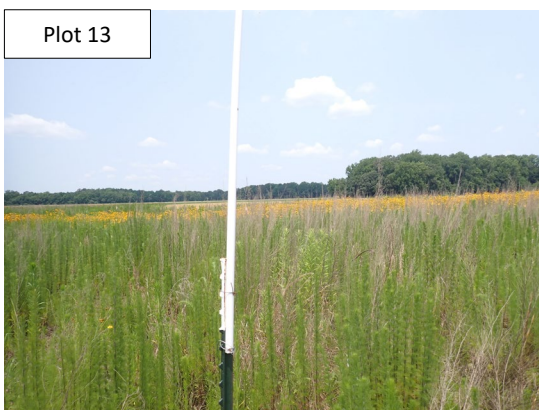
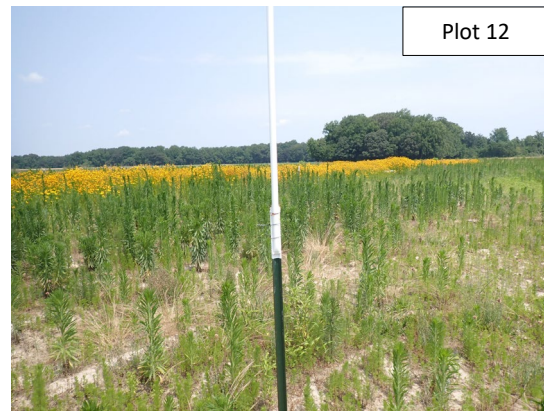
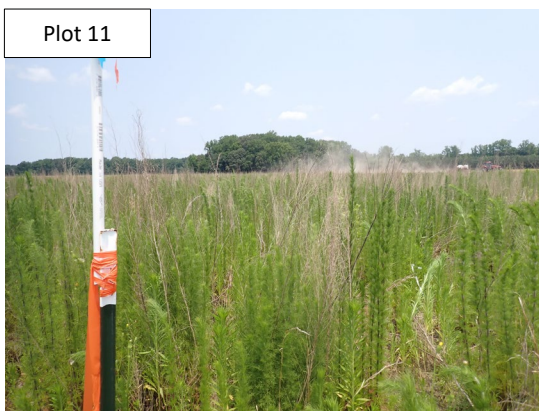
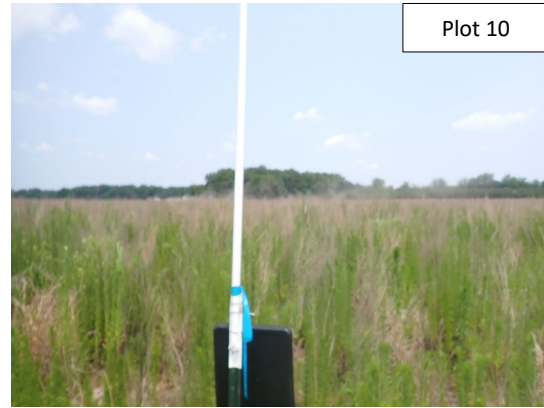
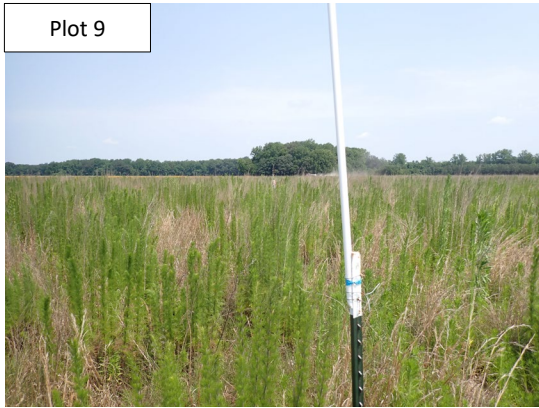
Easement Acreage 125.74

Vegetation Category	Definitions	Mapping Threshold	Combined Acreage	% of Easement Acreage
Invasive Areas of Concern	Areas where cattail was observed and treated.	0.10 acres	0.41	0.3%
Easement Encroachment Areas	Area of encroachment along the western easement boundary from adjacent farming operation.	none	0.02 ac	

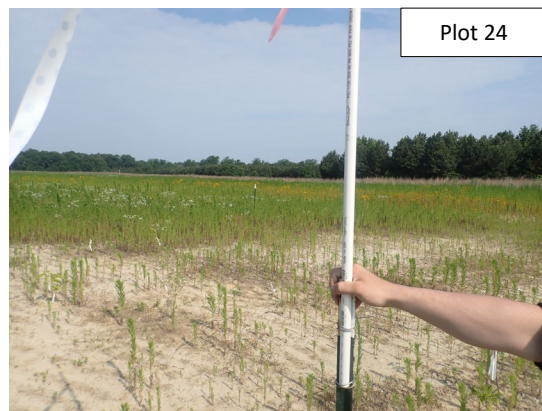
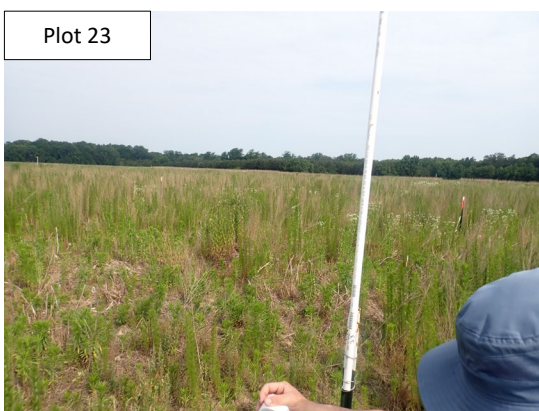
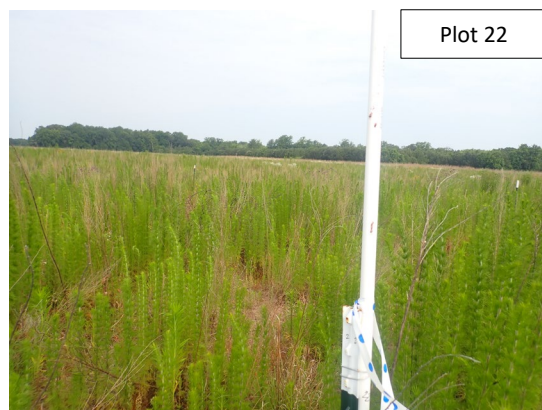
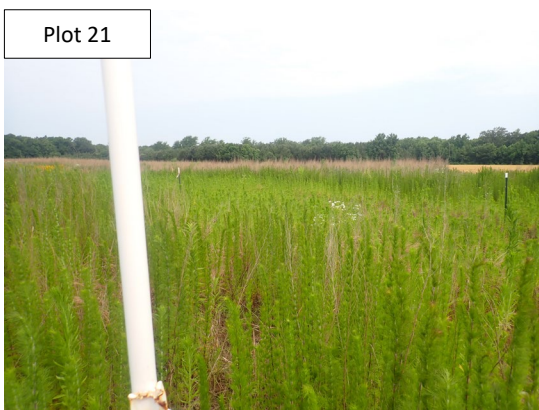
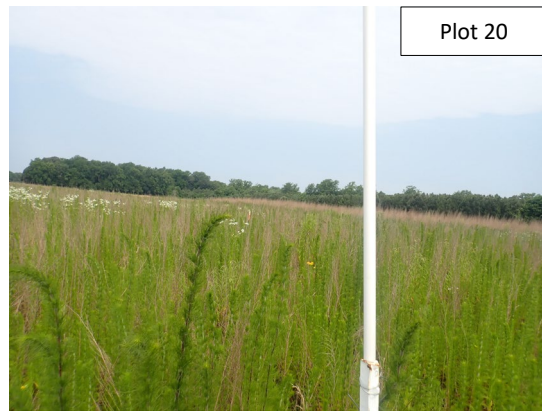
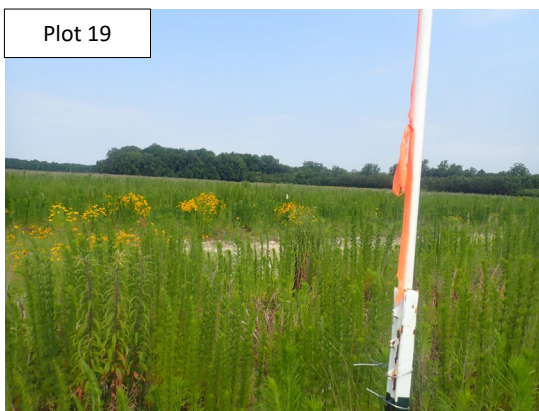
Pierce Terrace Site
MY1 (2023) Vegetation Monitoring Photographs



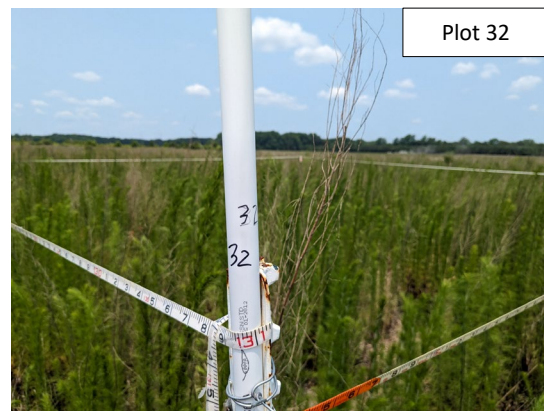
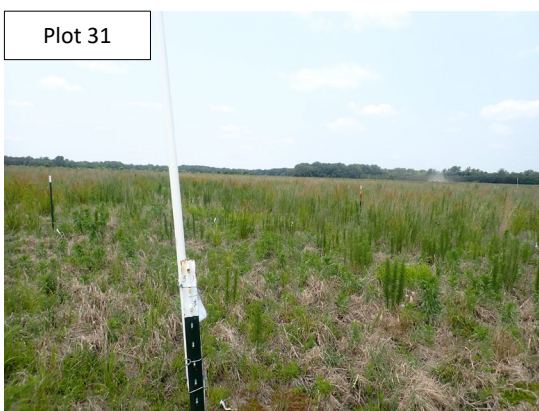
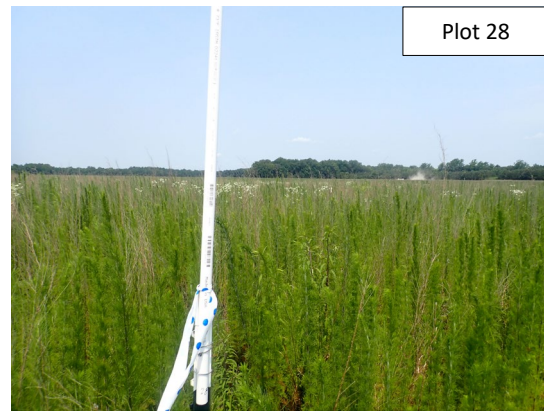
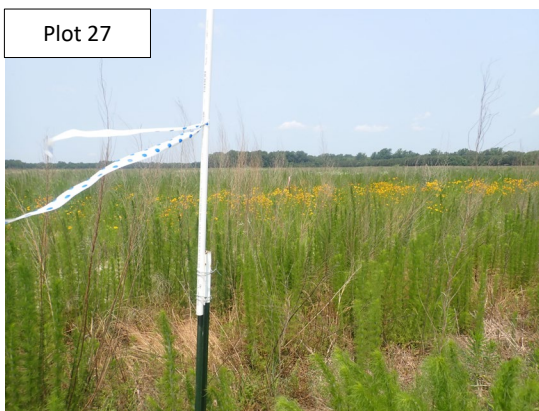
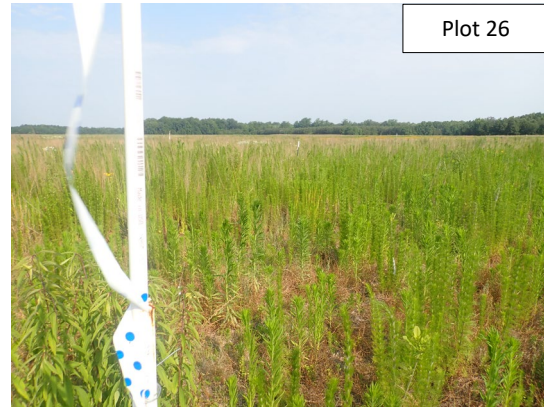
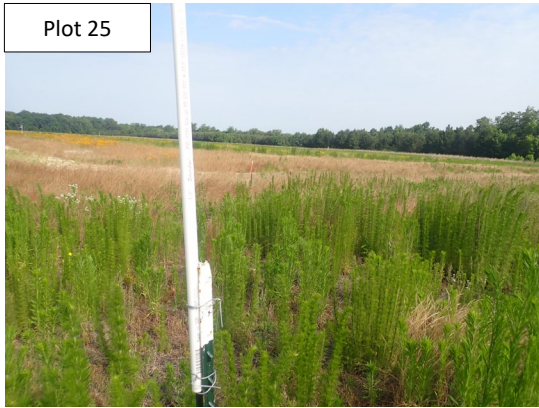
Pierce Terrace Site
MY1 (2023) Vegetation Monitoring Photographs



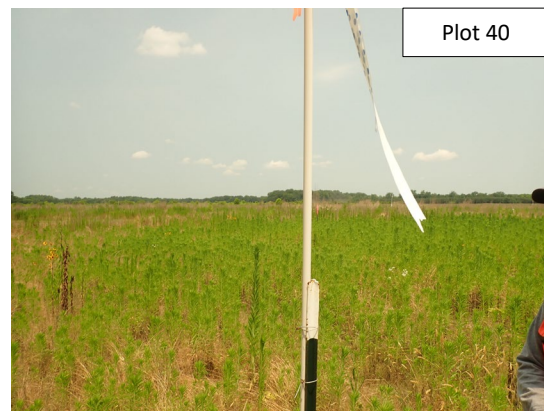
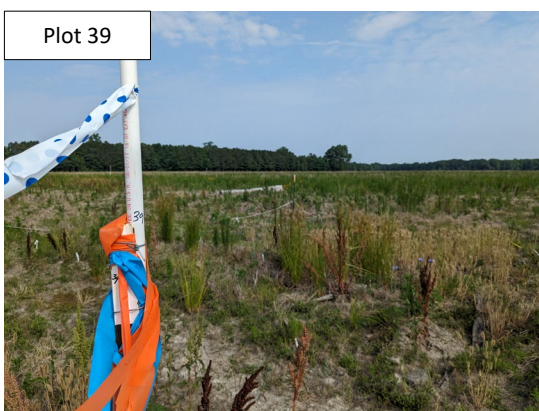
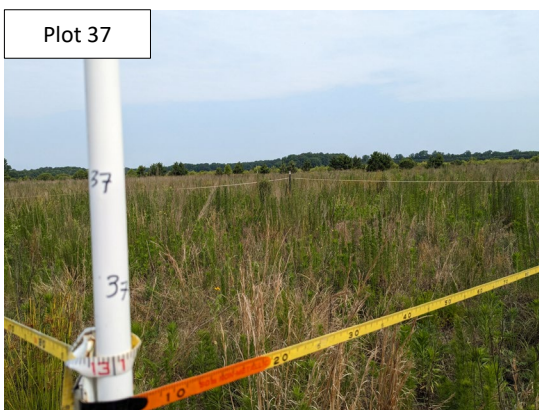
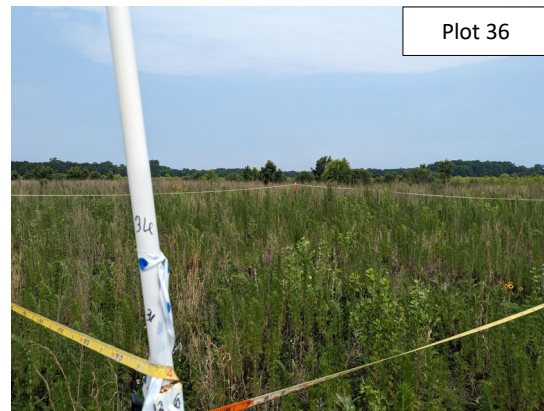
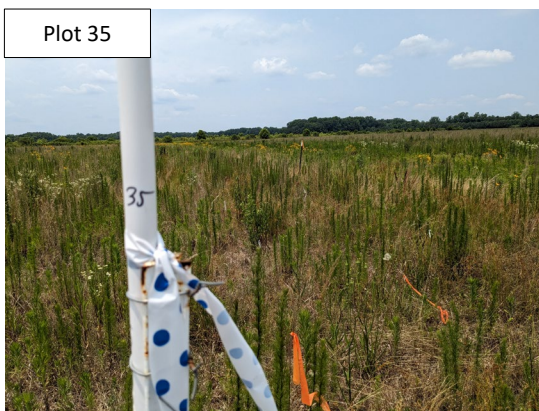
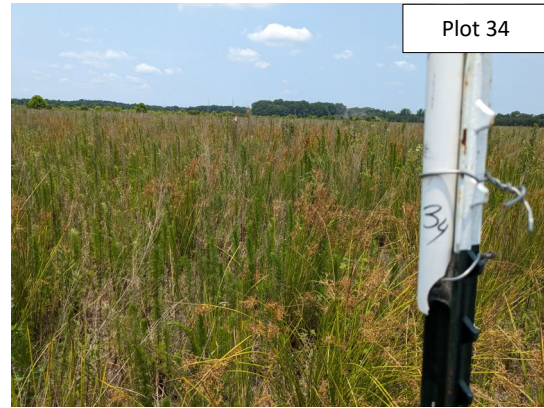
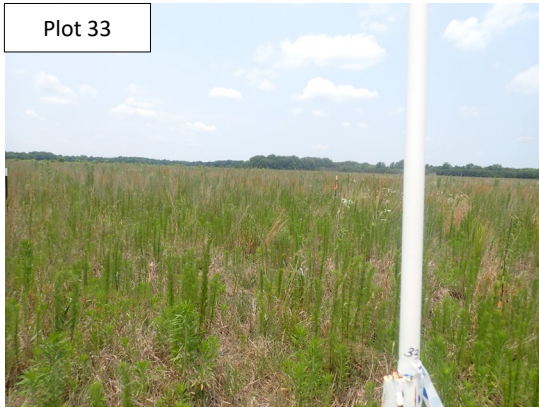
Pierce Terrace Site
MY1 (2023) Vegetation Monitoring Photographs



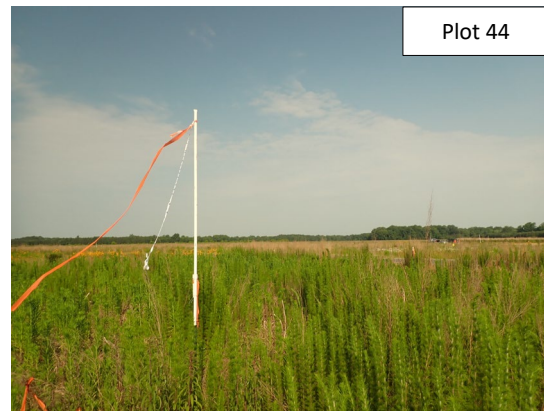
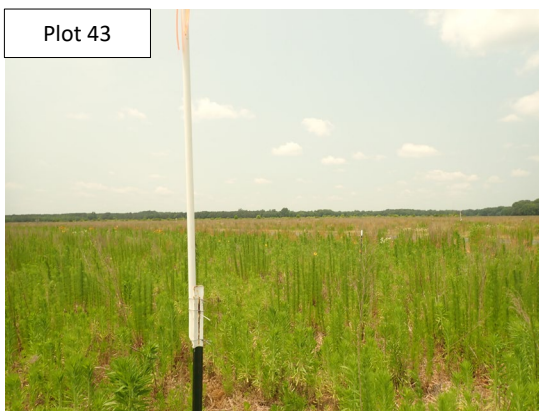
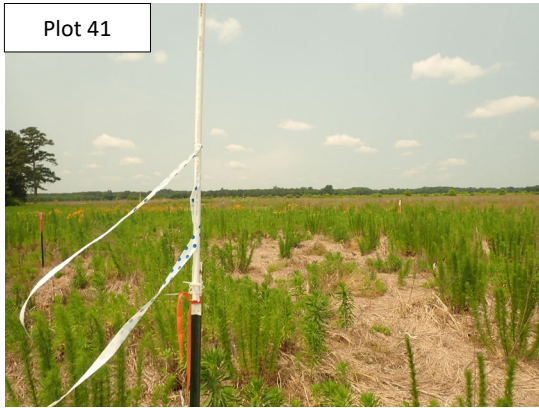
Pierce Terrace Site
MY1 (2023) Vegetation Monitoring Photographs



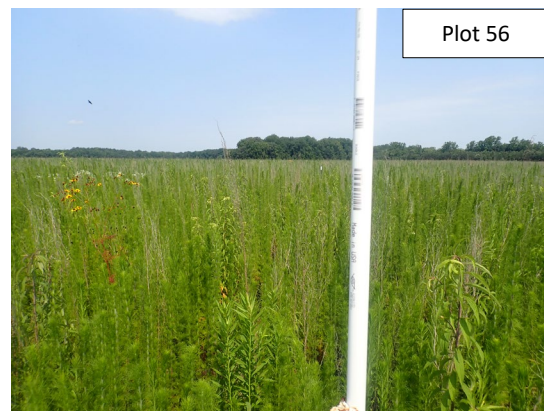
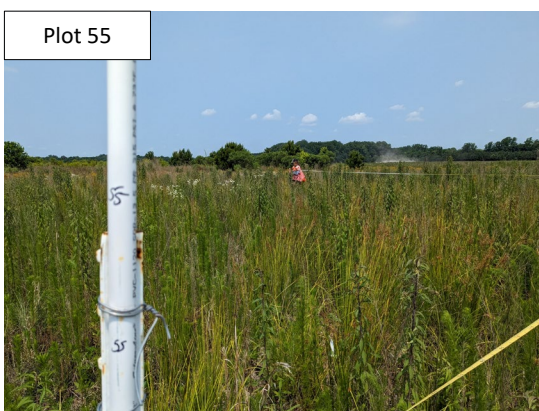
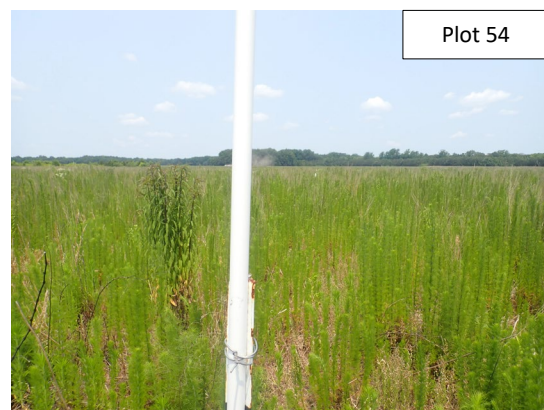
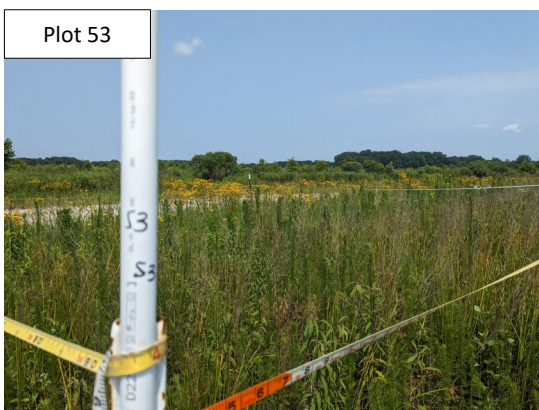
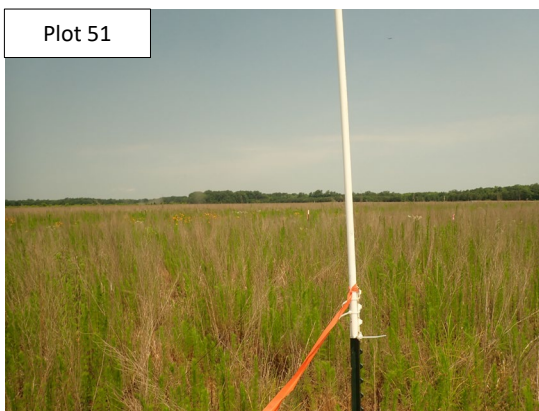
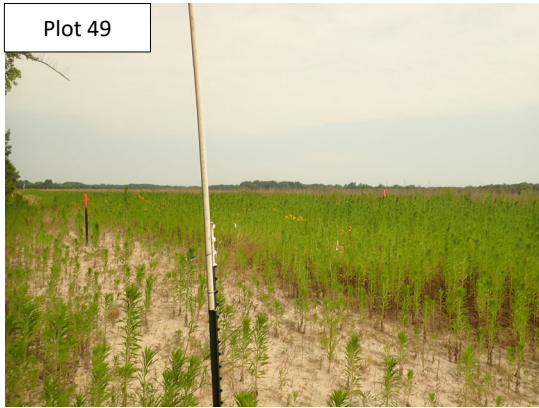
Pierce Terrace Site
MY1 (2023) Vegetation Monitoring Photographs



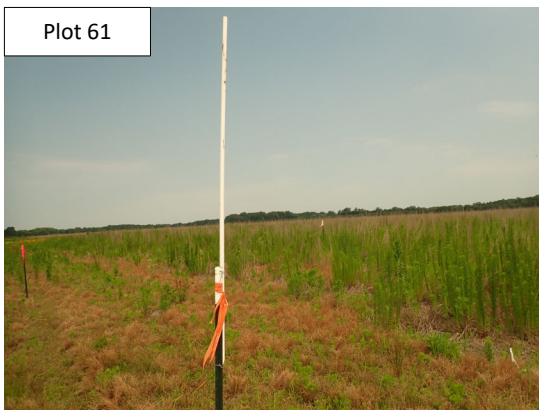
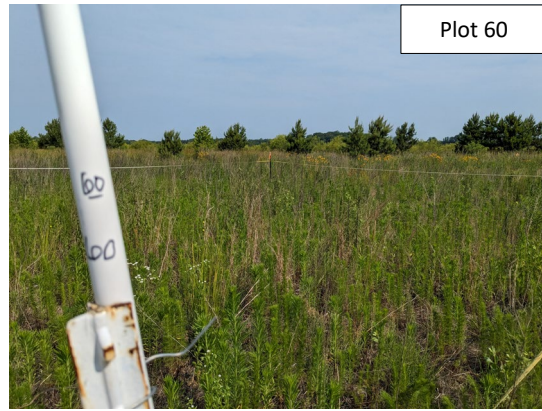
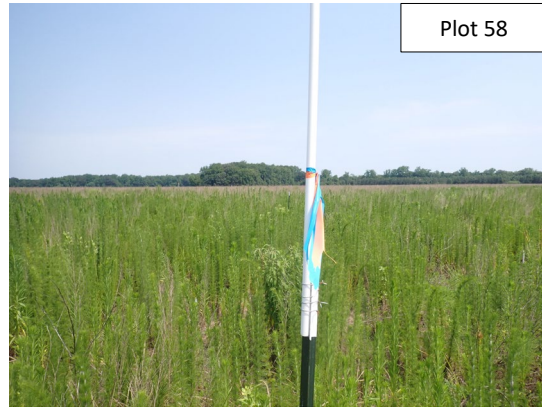
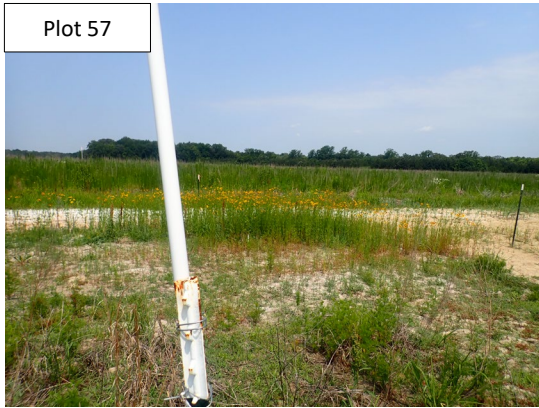
Pierce Terrace Site
MY1 (2023) Vegetation Monitoring Photographs



Pierce Terrace Site
MY1 (2023) Vegetation Monitoring Photographs



Pierce Terrace Site
MY1 (2023) Vegetation Monitoring Photographs



Pierce Terrace Site
MY1 (2023) Vegetation Monitoring Photographs

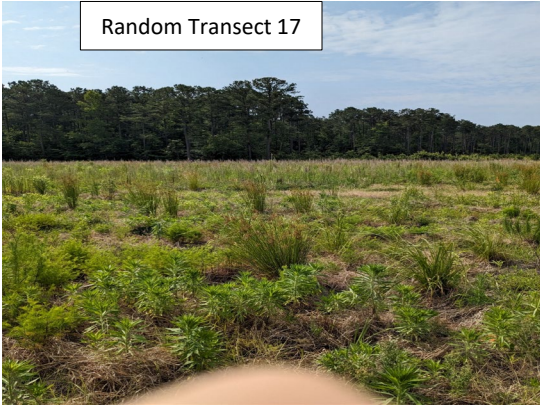


Pierce Terrace Site
MY1 (2023) Vegetation Monitoring Photographs



Pierce Terrace Site
MY1 (2023) Vegetation Monitoring Photographs

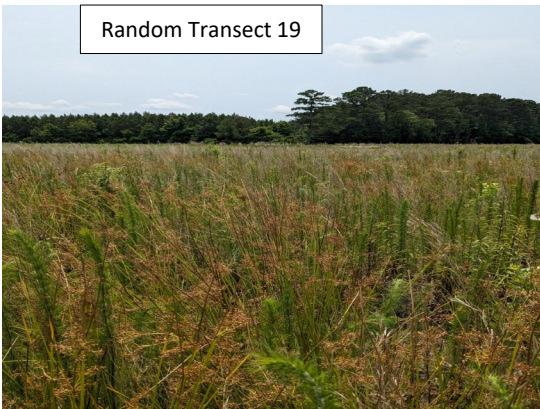
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Random Transect 18



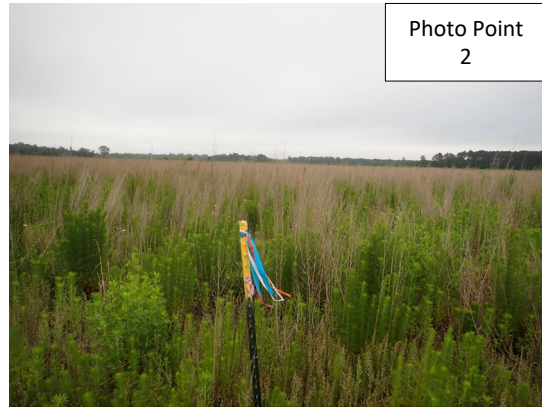
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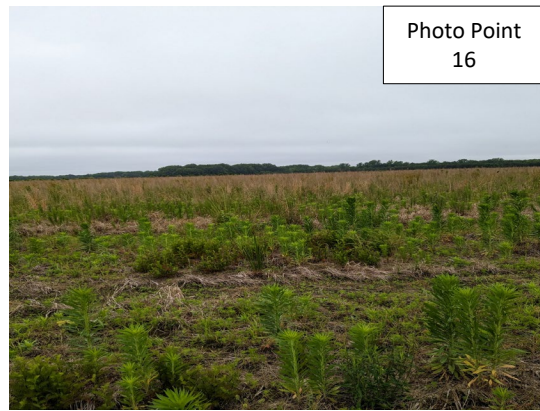
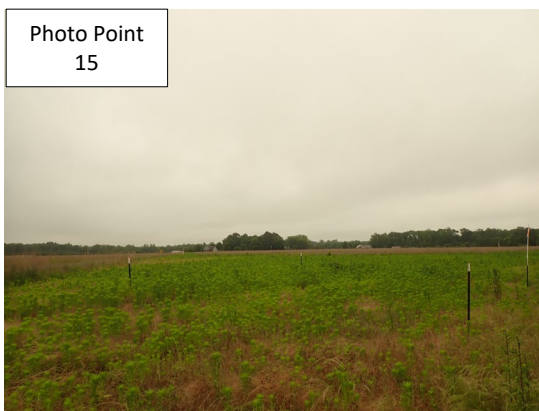
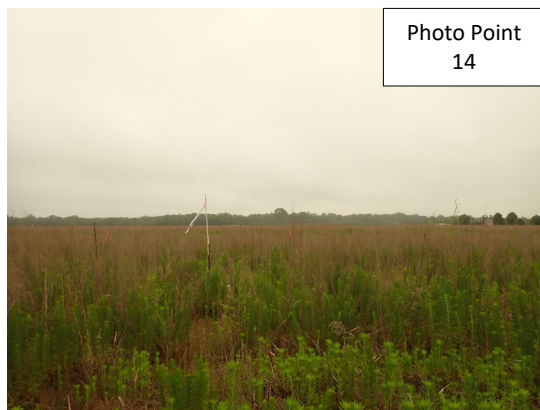
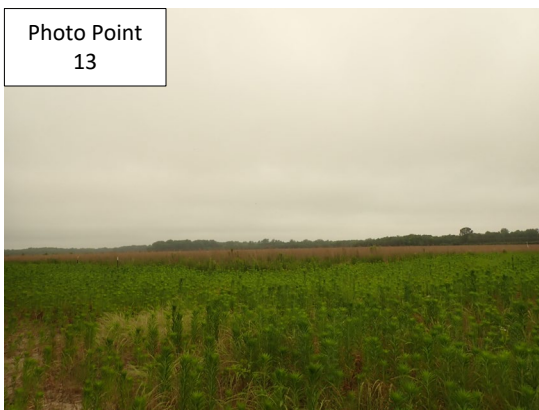
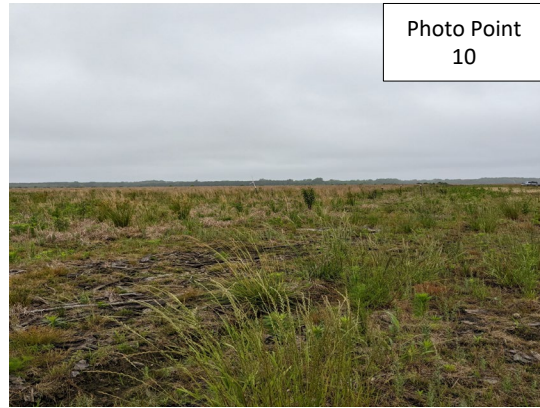
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Pierce Terrace Site
MY1 (2023) Photo Points



Pierce Terrace Site
MY1 (2023) Photo Points



Pierce Terrace Site
MY1 (2023) Photo Points



Pierce Terrace Site
MY1 (2023) Boundary Photographs



Appendix B: Vegetation Data

Table 5A. Planted Bare-Root Woody Vegetation

Table 5B. Permanent Seed Mixes

Table 6. Vegetation Plot Counts and Densities

Table 7. Vegetation Plot Data Table from Vegetation Data Entry Tool

**Table 5A. Planted Bare Root Woody Vegetation
Pierce Terrace Site**

Vegetation Association	Non-riverine Wet Hardwood Forest		
Canopy Species (125.73 acres)	Facultative Rating	# planted	% of total
		(680 stems/acre)	
River birch (<i>Betula nigra</i>)	FACW	2,200	2.42%
Persimmon (<i>Diospyros virginiana</i>)	FAC	2,500	2.76%
Green ash (<i>Fraxinus pennsylvanica</i>)	FACW	3,460	3.81%
Tulip poplar (<i>Liriodendron tulipifera</i>)	FACU	6,500	7.17%
Swamp tupelo (<i>Nyssa biflora</i>)	OBL	2,500	2.76%
Black gum (<i>Nyssa sylvatica</i>)	FAC	7,700	8.49%
Sycamore (<i>Platanus occidentalis</i>)	FACW	5,000	5.51%
Laurel oak (<i>Quercus laurifolia</i>)	FACW	8,635	9.52%
Overcup oak (<i>Quercus lyrata</i>)	OBL	5,000	5.51%
Swamp chestnut oak (<i>Quercus michauxii</i>)	FACW	6,735	7.43%
Water oak (<i>Quercus nigra</i>)	FAC	7,000	7.72%
Cherrybark oak (<i>Quercus pagoda</i>)	FACW	8,635	9.52%
Willow oak (<i>Quercus phellos</i>)	FACW	9,135	10.07%
Bald cypress (<i>Taxodium distichum</i>)	OBL	3,000	3.31%
Understory Species (125.73 acres)		# planted	% of total
		(680 stems/acre)	
Hornbeam (<i>Carpinus caroliniana</i>)	FAC	2,500	2.76%
Sweetbay magnolia (<i>Magnolia virginiana</i>)	FACW	2,500	2.76%
Swamp bay (<i>Persea palustris</i>)	FACW	2,500	2.76%
Vegetation Association	Non-riverine Swamp Forest		
Canopy Species (15.49 acres) – in addition to Site-wide planting		# planted	% of total
		(335 stems/acre)	
Water tupelo (<i>Nyssa aquatica</i>)	OBL	1,300	1.43%
Swamp tupelo (<i>Nyssa biflora</i>)	OBL	1,300	1.43%
Pond cypress (<i>Taxodium ascendens</i>)	OBL	1,300	1.43%
Bald cypress (<i>Taxodium distichum</i>)	OBL	1,300	1.43%
TOTAL		90,700	100.0%

**Table 5B. Permanent Seed Mix
Pierce Terrace Site – Sitewide Seed Mix**

Species	Wetland Indicator	Species	Wetland Indicator	Species	Wetland Indicator
<i>Carex albolutescens</i>	FACW	<i>Eupatorium fistulosum</i>	FACW	<i>Panicum anceps</i>	FAC
<i>Carex lupulina</i>	OBL	<i>Eupatorium perfoliatum</i>	FACW	<i>Panicum clandestinum</i>	FACW
<i>Chamaecrista fasciculata</i>	FACU	<i>Helenium flexuosum</i>	FACW	<i>Panicum rigidulum</i>	FACW
<i>Chamaecrista nictitans</i>	FACU	<i>Helianthus angustifolius</i>	FACW	<i>Pycnanthemum tenuifolium</i>	FACW
<i>Coreopsis lanceolata</i>	UPL	<i>Heliopsis helianthoides</i>	UPL	<i>Rhynchospora globularis</i>	FACW
<i>Coreopsis tinctoria</i>	FAC	<i>Hibiscus moscheutos</i>	OBL	<i>Rudbeckia hirta</i>	FACU
<i>Desmodium canadense</i>	FAC	<i>Juncus effusus</i>	OBL	<i>Scirpus cyperinus</i>	OBL
<i>Echinacea purpurea</i>	FACU	<i>Juncus tenuis</i>	FAC	<i>Tridens flavus</i>	FACU
<i>Elymus riparius</i>	FACW	<i>Liatris spicata</i>	FAC	<i>Verbena hastata</i>	FAC
<i>Elymus virginicus</i>	FAC	<i>Monarda fistulosa</i>	FACU	<i>Vernonia noveboracensis</i>	FACW

**Table 6. Planted Vegetation Totals
Pierce Terrace Site**

Plot #	Planted Stems/Acre	Success Criteria Met?
1	688	Yes
2	810	Yes
3	648	Yes
4	567	Yes
5	445	Yes
6	445	Yes
7	607	Yes
8	810	Yes
9	688	Yes
10	607	Yes
11	688	Yes
12	729	Yes
13	769	Yes
14	567	Yes
15	769	Yes
16	688	Yes
17	729	Yes
18	567	Yes
19	729	Yes
20	648	Yes
21	688	Yes
22	486	Yes
23	445	Yes
24	648	Yes
25	445	Yes
26	486	Yes
27	526	Yes
28	567	Yes
29	526	Yes
30	486	Yes
31	445	Yes
32	648	Yes
33	526	Yes
34	688	Yes

Table 6. Planted Vegetation Totals (Cont.)

Pierce Terrace Site

Plot #	Planted Stems/Acre	Success Criteria Met?
35	729	Yes
36	648	Yes
37	486	Yes
38	405	Yes
39	688	Yes
40	607	Yes
41	607	Yes
42	648	Yes
43	607	Yes
44	526	Yes
45	567	Yes
46	486	Yes
47	445	Yes
48	769	Yes
49	648	Yes
50	607	Yes
51	526	Yes
52	486	Yes
53	1052	Yes
54	607	Yes
55	810	Yes
56	972	Yes
57	405	Yes
58	729	Yes
59	607	Yes
60	567	Yes
61	526	Yes
R-1	648	Yes
R-2	648	Yes
R-3	526	Yes
R-4	607	Yes
R-5	324	Yes
R-6	243	No
R-7	445	Yes

Table 6. Planted Vegetation Totals (Cont.)
Pierce Terrace Site

Plot #	Planted Stems/Acre	Success Criteria Met?
R-8	526	Yes
R-9	526	Yes
R-10	364	Yes
R-11	405	Yes
R-12	486	Yes
R-13	445	Yes
R-14	405	Yes
R-15	526	Yes
R-16	567	Yes
R-17	364	Yes
R-18	445	Yes
R-19	405	Yes
R-20	688	Yes
Average Planted Stems/Acre	582	Yes

Table 7. Vegetation Plot Data Table from Vegetation Data Entry Tool

Planted Acreage	125.74
Date of Initial Plant	2023-03-03
Date(s) of Supplemental Plant(s)	NA
Date(s) Mowing	NA
Date of Current Survey	2023-09-07
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Tree/Shrub	Indicator Status	Veg Plot 1 F		Veg Plot 2 F		Veg Plot 3 F		Veg Plot 4 F		Veg Plot 5 F		Veg Plot 6 F		Veg Plot 7 F		Veg Plot 8 F		Veg Plot 9 F		Veg Plot 10 F		
					Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted
Species Included in Approved Mitigation Plan	<i>Betula nigra</i>	river birch	Tree	FACW														1	1	2	2				
	<i>Carpinus caroliniana</i>	American hornbeam	Tree	FAC														1	1	1	1				
	<i>Fraxinus pennsylvanica</i>	green ash	Tree	FACW							4	4						1	1	2	2	4	4		
	<i>Liriodendron tulipifera</i>	tuliptree	Tree	FACU	2	2	1	1										8	8						
	<i>Magnolia virginiana</i>	sweetbay	Tree	FACW			1	1	1	1										1	1	1	1		
	<i>Nyssa aquatica</i>	water tupelo	Tree	OBL					1	1	2	2	1	1					1	1					
	<i>Nyssa biflora</i>	swamp tupelo	Tree	OBL			1	1			2	2	1	1	1	1									
	<i>Nyssa sp.</i>																								
	<i>Nyssa sylvatica</i>	blackgum	Tree	FAC	2	2	1	1	2	2	3	3	2	2	2	2	1	1					2	2	
	<i>Persea palustris</i>	swamp bay	Shrub	FACW							1	1									1	1			
	<i>Platanus occidentalis</i>	American sycamore	Tree	FACW							1	1	1	1			4	4	1	1					
	<i>Quercus alba</i>	white oak	Tree	FACU																					
	<i>Quercus bicolor</i>	swamp white oak	Tree	FACW																					
	<i>Quercus laurifolia</i>	laurel oak	Tree	FACW	3	3	1	1	3	3	1	1	1	1	1	1	1	1			4	4	3	3	
	<i>Quercus lyrata</i>	overcup oak	Tree	OBL			1	1	3	3					1	1	3	3			2	2	1	1	
	<i>Quercus michauxii</i>	swamp chestnut oak	Tree	FACW	1	1	2	2	3	3					3	3	3	3	3	3					
	<i>Quercus nigra</i>	water oak	Tree	FAC			2	2					2	2	1	1			3	3					
	<i>Quercus pagoda</i>	cherrybark oak	Tree	FACW	3	3	4	4	2	2									2	2	3	3			
	<i>Quercus phellos</i>	willow oak	Tree	FACW	6	6	6	6	1	1			3	3	1	1	1	1			1	1	3	3	
	<i>Quercus rubra</i>	northern red oak	Tree	FACU															1	1					
<i>Quercus sp.</i>																									
	<i>Taxodium ascendens</i>	pond cypress	Tree	OBL													1	1							
	<i>Taxodium distichum</i>	bald cypress	Tree	OBL																		1	1		
Sum	Performance Standard				17	17	20	20	16	16	14	14	11	11	11	11	15	15	20	20	17	17	15	15	
Mitigation Plan Performance Standard	Current Year Stem Count				17	20	16	14	11	11	11	11	15	15	20	17	15								
	Stems/Acre				688	810	648	567	445	445	607	810	688	607											
	Species Count				6	10	8	7	7	8	8	8	9	7											
	Dominant Species Composition (%)				35	30	19	29	27	27	27	40	24	27											
	Average Plot Height (ft.)				1	1	1	1	1	1	1	1	1	1											
% Invasives				0	0	0	0	0	0	0	0	0	0												
Post Mitigation Plan Performance Standard	Current Year Stem Count				17	20	16	14	11	11	15	20	17	15											
	Stems/Acre				688	810	648	567	445	445	607	810	688	607											
	Species Count				6	10	8	7	7	8	8	8	9	7											
	Dominant Species Composition (%)				35	30	19	29	27	27	27	40	24	27											
	Average Plot Height (ft.)				1	1	1	1	1	1	1	1	1	1											
% Invasives				0	0	0	0	0	0	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 Plot Data Table from Vegetation Data Entry Tool (continued)

Planted Acreage	125.74
Date of Initial Plant	2023-03-03
Date(s) of Supplemental Plant(s)	NA
Date(s) Mowing	NA
Date of Current Survey	2023-09-07
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Tree/Shrub	Indicator Status	Veg Plot 11 F		Veg Plot 12 F		Veg Plot 13 F		Veg Plot 14 F		Veg Plot 15 F		Veg Plot 16 F		Veg Plot 17 F		Veg Plot 18 F		Veg Plot 19 F		Veg Plot 20 F		
					Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted
Species Included in Approved Mitigation Plan	<i>Betula nigra</i>	river birch	Tree	FACW					5	5			1	1							1	1			
	<i>Carpinus caroliniana</i>	American hornbeam	Tree	FAC									1	1											
	<i>Fraxinus pennsylvanica</i>	green ash	Tree	FACW									4	4									1	1	
	<i>Liriodendron tulipifera</i>	tuliptree	Tree	FACU			1	1	1	1			4	4	3	3	3	3	1	1	8	8			
	<i>Magnolia virginiana</i>	sweetbay	Tree	FACW																					
	<i>Nyssa aquatica</i>	water tupelo	Tree	OBL			2	2				1	1												
	<i>Nyssa biflora</i>	swamp tupelo	Tree	OBL	2	2	1	1				1	1												
	<i>Nyssa sp.</i>																								
	<i>Nyssa sylvatica</i>	blackgum	Tree	FAC	2	2	1	1	2	2					2	2						1	1		
	<i>Persea palustris</i>	swamp bay	Shrub	FACW					3	3					2	2									
	<i>Platanus occidentalis</i>	American sycamore	Tree	FACW			2	2									2	2							
	<i>Quercus alba</i>	white oak	Tree	FACU																					
	<i>Quercus bicolor</i>	swamp white oak	Tree	FACW																					
	<i>Quercus laurifolia</i>	laurel oak	Tree	FACW	1	1	1	1	2	2									2	2			1	1	
	<i>Quercus lyrata</i>	overcup oak	Tree	OBL	5	5	1	1			4	4	7	7	1	1	1	1	1	1	1	1	5	5	
	<i>Quercus michauxii</i>	swamp chestnut oak	Tree	FACW	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	3	1	1			
	<i>Quercus nigra</i>	water oak	Tree	FAC			1	1	1	1	2	2	1	1	1	1	3	3	3	3			2	2	
	<i>Quercus pagoda</i>	cherrybark oak	Tree	FACW	1	1	5	5	1	1	2	2	2	2	6	6	6	6	2	2	3	3	4	4	
	<i>Quercus phellos</i>	willow oak	Tree	FACW	4	4	1	1	1	1	2	2			2	2	2	2	2	2	1	1	3	3	
	<i>Quercus rubra</i>	northern red oak	Tree	FACU																					
<i>Quercus sp.</i>						1	1																		
<i>Taxodium ascendens</i>	pond cypress	Tree	OBL																						
<i>Taxodium distichum</i>	bald cypress	Tree	OBL	1	1			2	2												3	3			
Sum	Performance Standard				17	17	18	18	19	19	14	14	19	19	17	17	18	18	14	14	18	18	16	16	
Mitigation Plan Performance Standard	Current Year Stem Count				17	18	19	14	19	17	18	14	19	17	18	14	18	14	18	16					
	Stems/Acre				688	729	769	567	769	688	729	567	769	688	729	567	729	567	729	648					
	Species Count				8	12	10	8	6	7	7	7	6	7	7	7	7	7	6						
	Dominant Species Composition (%)				29	28	26	29	37	35	33	21	44	31											
	Average Plot Height (ft.)				1	1	1	1	1	1	1	1	1												
% Invasives				0	0	0	0	0	0	0	0	0													
Post Mitigation Plan Performance Standard	Current Year Stem Count				17	18	19	14	19	17	18	14	19	17	18	14	18	14	18	16					
	Stems/Acre				688	729	769	567	769	688	729	567	769	688	729	567	729	567	729	648					
	Species Count				8	12	10	8	6	7	7	7	6	7	7	7	7	7	6						
	Dominant Species Composition (%)				29	28	26	29	37	35	33	21	44	31											
	Average Plot Height (ft.)				1	1	1	1	1	1	1	1	1												
% Invasives				0	0	0	0	0	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 Plot Data Table from Vegetation Data Entry Tool (continued)

Planted Acreage	125.74
Date of Initial Plant	2023-03-03
Date(s) of Supplemental Plant(s)	NA
Date(s) Mowing	NA
Date of Current Survey	2023-09-07
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Tree/Shrub	Indicator Status	Veg Plot 21 F		Veg Plot 22 F		Veg Plot 23 F		Veg Plot 24 F		Veg Plot 25 F		Veg Plot 26 F		Veg Plot 27 F		Veg Plot 28 F		Veg Plot 29 F		Veg Plot 30 F		
					Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted
Species Included in Approved Mitigation Plan	<i>Betula nigra</i>	river birch	Tree	FACW			3	3																	
	<i>Carpinus caroliniana</i>	American hornbeam	Tree	FAC	1	1					2	2													
	<i>Fraxinus pennsylvanica</i>	green ash	Tree	FACW	1	1					1	1			4	4							2	2	
	<i>Liriodendron tulipifera</i>	tuliptree	Tree	FACU	2	2				2	2			1	1					2	2				
	<i>Magnolia virginiana</i>	sweetbay	Tree	FACW	3	3													1	1					
	<i>Nyssa aquatica</i>	water tupelo	Tree	OBL										1	1										
	<i>Nyssa biflora</i>	swamp tupelo	Tree	OBL								3	3									1	1		
	<i>Nyssa sp.</i>																								
	<i>Nyssa sylvatica</i>	blackgum	Tree	FAC			1	1			2	2			2	2			1	1	2	2			
	<i>Persea palustris</i>	swamp bay	Shrub	FACW																					
	<i>Platanus occidentalis</i>	American sycamore	Tree	FACW										3	3	2	2	4	4						
	<i>Quercus alba</i>	white oak	Tree	FACU																					
	<i>Quercus bicolor</i>	swamp white oak	Tree	FACW																					
	<i>Quercus laurifolia</i>	laurel oak	Tree	FACW	1	1			2	2	1	1	1	1	2	2			2	2	2	2	2	2	
	<i>Quercus lyrata</i>	overcup oak	Tree	OBL	3	3	1	1	1	1	2	2					2	2	6	6	2	2	5	5	
	<i>Quercus michauxii</i>	swamp chestnut oak	Tree	FACW	1	1	2	2	4	4	3	3	1	1			4	4					4	4	
	<i>Quercus nigra</i>	water oak	Tree	FAC	1	1																4	4	2	2
	<i>Quercus pagoda</i>	cherrybark oak	Tree	FACW	4	4	2	2	2	2							2	2	2	2	1	1	1	1	
	<i>Quercus phellos</i>	willow oak	Tree	FACW			2	2					1	1	3	3	2	2	1	1					
	<i>Quercus rubra</i>	northern red oak	Tree	FACU																					
<i>Quercus sp.</i>																									
	<i>Taxodium ascendens</i>	pond cypress	Tree	OBL			1	1																	
	<i>Taxodium distichum</i>	bald cypress	Tree	OBL							1	1	1	1							1	1			
Sum	Performance Standard				17	17	12	12	11	11	16	16	11	11	12	12	13	13	14	14	13	13	12	12	
Mitigation Plan Performance Standard	Current Year Stem Count				17	17	12	12	11	11	16	16	11	11	12	12	13	13	14	14	13	13	12	12	
	Stems/Acre				688	688	486	486	445	445	648	648	445	445	486	486	526	526	567	567	526	526	486	486	
	Species Count				9	9	7	7	5	5	9	9	7	7	5	5	5	5	6	6	7	7	5	5	
	Dominant Species Composition (%)				24	24	25	25	36	36	19	19	27	27	33	33	31	31	43	43	31	31	42	42	
	Average Plot Height (ft.)				1	1	2	2	1	1	2	2	2	2	2	2	2	2	2	2	1	1	2	2	
% Invasives				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Post Mitigation Plan Performance Standard	Current Year Stem Count				17	17	12	12	11	11	16	16	11	11	12	12	13	13	14	14	13	13	12	12	
	Stems/Acre				688	688	486	486	445	445	648	648	445	445	486	486	526	526	567	567	526	526	486	486	
	Species Count				9	9	7	7	5	5	9	9	7	7	5	5	5	5	6	6	7	7	5	5	
	Dominant Species Composition (%)				24	24	25	25	36	36	19	19	27	27	33	33	31	31	43	43	31	31	42	42	
	Average Plot Height (ft.)				1	1	2	2	1	1	2	2	2	2	2	2	2	2	2	2	1	1	2	2	
% Invasives				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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 Plot Data Table from Vegetation Data Entry Tool (continued)

Planted Acreage	125.74
Date of Initial Plant	2023-03-03
Date(s) of Supplemental Plant(s)	NA
Date(s) Mowing	NA
Date of Current Survey	2023-09-07
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Tree/Shrub	Indicator Status	Veg Plot 31 F		Veg Plot 32 F		Veg Plot 33 F		Veg Plot 34 F		Veg Plot 35 F		Veg Plot 36 F		Veg Plot 37 F		Veg Plot 38 F		Veg Plot 39 F		Veg Plot 40 F		
					Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted
Species Included in Approved Mitigation Plan	<i>Betula nigra</i>	river birch	Tree	FACW					1	1					2	2	2	2							
	<i>Carpinus caroliniana</i>	American hornbeam	Tree	FAC			1	1																	
	<i>Fraxinus pennsylvanica</i>	green ash	Tree	FACW					3	3			2	2							1	1			
	<i>Liriodendron tulipifera</i>	tuliptree	Tree	FACU					1	1	3	3	1	1					7	7	1	1	4	4	
	<i>Magnolia virginiana</i>	sweetbay	Tree	FACW														3	3						
	<i>Nyssa aquatica</i>	water tupelo	Tree	OBL																					
	<i>Nyssa biflora</i>	swamp tupelo	Tree	OBL											2	2									
	<i>Nyssa sp.</i>																								
	<i>Nyssa sylvatica</i>	blackgum	Tree	FAC		2	2						1	1						2	2				
	<i>Persea palustris</i>	swamp bay	Shrub	FACW														1	1						
	<i>Platanus occidentalis</i>	American sycamore	Tree	FACW					1	1			2	2	3	3				3	3				
	<i>Quercus alba</i>	white oak	Tree	FACU																					
	<i>Quercus bicolor</i>	swamp white oak	Tree	FACW																					
	<i>Quercus laurifolia</i>	laurel oak	Tree	FACW			1	1			1	1			1	1				1	1	1	1		
	<i>Quercus lyrata</i>	overcup oak	Tree	OBL		3	3	3	3	2	2	2	2	1	1	3	3			1	1				
	<i>Quercus michauxii</i>	swamp chestnut oak	Tree	FACW		1	1	2	2			1	1	4	4	1	1			1	1	3	3	2	2
	<i>Quercus nigra</i>	water oak	Tree	FAC					2	2			1	1								4	4	2	2
	<i>Quercus pagoda</i>	cherrybark oak	Tree	FACW		2	2	5	5			5	5	3	3							2	2	3	3
<i>Quercus phellos</i>	willow oak	Tree	FACW		3	3	1	1	5	5	4	4	4	4	2	2					2	2			
<i>Quercus rubra</i>	northern red oak	Tree	FACU																						
<i>Quercus sp.</i>																							1	1	
<i>Taxodium ascendens</i>	pond cypress	Tree	OBL																						
<i>Taxodium distichum</i>	bald cypress	Tree	OBL				1	1																	
Sum	Performance Standard				11	11	16	16	13	13	17	17	18	18	16	16	13	13	10	10	17	17	15	15	
Mitigation Plan Performance Standard	Current Year Stem Count				11	11	16	16	13	13	17	17	18	18	16	16	13	13	10	10	17	17	15	15	
	Stems/Acre				445	445	648	648	526	526	688	688	729	729	648	648	486	486	405	405	688	688	607	607	
	Species Count				5	5	8	8	6	6	7	7	8	8	9	9	4	4	7	7	7	7	5	5	
	Dominant Species Composition (%)				27	27	31	31	38	38	29	29	22	22	19	19	54	54	30	30	24	24	47	47	
	Average Plot Height (ft.)				2	2	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
% Invasives				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Post Mitigation Plan Performance Standard	Current Year Stem Count				11	11	16	16	13	13	17	17	18	18	16	16	13	13	10	10	17	17	15	15	
	Stems/Acre				445	445	648	648	526	526	688	688	729	729	648	648	486	486	405	405	688	688	607	607	
	Species Count				5	5	8	8	6	6	7	7	8	8	9	9	4	4	7	7	7	7	5	5	
	Dominant Species Composition (%)				27	27	31	31	38	38	29	29	22	22	19	19	54	54	30	30	24	24	47	47	
	Average Plot Height (ft.)				2	2	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
% Invasives				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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 Plot Data Table from Vegetation Data Entry Tool (continued)

Planted Acreage	125.74
Date of Initial Plant	2023-03-03
Date(s) of Supplemental Plant(s)	NA
Date(s) Mowing	NA
Date of Current Survey	2023-09-07
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Tree/Shrub	Indicator Status	Veg Plot 41 F		Veg Plot 42 F		Veg Plot 43 F		Veg Plot 44 F		Veg Plot 45 F		Veg Plot 46 F		Veg Plot 47 F		Veg Plot 48 F		Veg Plot 49 F		Veg Plot 50 F		
					Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted
Species Included in Approved Mitigation Plan	<i>Betula nigra</i>	river birch	Tree	FACW					1	1										1	1				
	<i>Carpinus caroliniana</i>	American hornbeam	Tree	FAC													1	1							
	<i>Fraxinus pennsylvanica</i>	green ash	Tree	FACW					1	1	2	2							1	1					
	<i>Liriodendron tulipifera</i>	tuliptree	Tree	FACU	4	4			2	2	1	1					1	1			2	2			
	<i>Magnolia virginiana</i>	sweetbay	Tree	FACW					1	1									1	1					
	<i>Nyssa aquatica</i>	water tupelo	Tree	OBL																					
	<i>Nyssa biflora</i>	swamp tupelo	Tree	OBL																					
	<i>Nyssa sp.</i>																								
	<i>Nyssa sylvatica</i>	blackgum	Tree	FAC					1	1	2	2	3	3											
	<i>Persea palustris</i>	swamp bay	Shrub	FACW							1	1	3	3							1	1			
	<i>Platanus occidentalis</i>	American sycamore	Tree	FACW					1	1	3	3							2	2	1	1			
	<i>Quercus alba</i>	white oak	Tree	FACU																					
	<i>Quercus bicolor</i>	swamp white oak	Tree	FACW					1	1											2	2			
	<i>Quercus laurifolia</i>	laurel oak	Tree	FACW															2	2					
	<i>Quercus lyrata</i>	overcup oak	Tree	OBL	4	4	7	7	4	4	1	1	4	4	4	4	1	1			1	1	7	7	
	<i>Quercus michauxii</i>	swamp chestnut oak	Tree	FACW	1	1	1	1			2	2	1	1					4	4	1	1	3	3	
	<i>Quercus nigra</i>	water oak	Tree	FAC	1	1	4	4					1	1					1	1	3	3	1	1	
	<i>Quercus pagoda</i>	cherrybark oak	Tree	FACW	5	5	1	1			1	1			1	1	3	3	2	2	2	2	4	4	
	<i>Quercus phellos</i>	willow oak	Tree	FACW			3	3	3	3			2	2	6	6	1	1	7	7					
	<i>Quercus rubra</i>	northern red oak	Tree	FACU													1	1							
<i>Quercus sp.</i>														1	1			1	1	3	3				
<i>Taxodium ascendens</i>	pond cypress	Tree	OBL																						
<i>Taxodium distichum</i>	bald cypress	Tree	OBL																						
Sum	Performance Standard				15	15	16	16	15	15	13	13	14	14	12	12	11	11	19	19	16	16	15	15	
Mitigation Plan Performance Standard	Current Year Stem Count				15	16	15	13	14	12	11	19	16	15											
	Stems/Acre				607	648	607	526	567	486	445	769	648	607											
	Species Count				5	5	9	8	6	4	8	8	9	4											
	Dominant Species Composition (%)				33	44	27	23	29	50	27	37	19	47											
	Average Plot Height (ft.)				2	2	1	2	1	1	2	1	2	1											
% Invasives				0	0	0	0	0	0	0	0	0	0												
Post Mitigation Plan Performance Standard	Current Year Stem Count				15	16	15	13	14	12	11	19	16	15											
	Stems/Acre				607	648	607	526	567	486	445	769	648	607											
	Species Count				5	5	9	8	6	4	8	8	9	4											
	Dominant Species Composition (%)				33	44	27	23	29	50	27	37	19	47											
	Average Plot Height (ft.)				2	2	1	2	1	1	2	1	2	1											
% Invasives				0	0	0	0	0	0	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.
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Table 7. Vegetation Plot Data Table from Vegetation Data Entry Tool (continued)

Planted Acreage	125.74
Date of Initial Plant	2023-03-03
Date(s) of Supplemental Plant(s)	NA
Date(s) Mowing	NA
Date of Current Survey	2023-09-07
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Tree/Shrub	Indicator Status	Veg Plot 51 F		Veg Plot 52 F		Veg Plot 53 F		Veg Plot 54 F		Veg Plot 55 F		Veg Plot 56 F		Veg Plot 57 F		Veg Plot 58 F		Veg Plot 59 F		Veg Plot 60 F		Veg Plot 61 F				
					Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	
Species Included in Approved Mitigation Plan	<i>Betula nigra</i>	river birch	Tree	FACW										1	1			1	1										
	<i>Carpinus caroliniana</i>	American hornbeam	Tree	FAC																									
	<i>Fraxinus pennsylvanica</i>	green ash	Tree	FACW																	4	4			1	1			
	<i>Liriodendron tulipifera</i>	tuliptree	Tree	FACU	5	5	1	1													2	2	3	3	2	2	4	4	
	<i>Magnolia virginiana</i>	sweetbay	Tree	FACW									1	1												1	1		
	<i>Nyssa aquatica</i>	water tupelo	Tree	OBL														2	2	1	1								
	<i>Nyssa biflora</i>	swamp tupelo	Tree	OBL							1	1														1	1		
	<i>Nyssa sp.</i>																							2	2				
	<i>Nyssa sylvatica</i>	blackgum	Tree	FAC							2	2						3	3					3	3			1	1
	<i>Persea palustris</i>	swamp bay	Shrub	FACW									1	1															
	<i>Platanus occidentalis</i>	American sycamore	Tree	FACW	1	1			5	5			1	1	2	2					3	3	3	3	1	1	1	1	
	<i>Quercus alba</i>	white oak	Tree	FACU																									
	<i>Quercus bicolor</i>	swamp white oak	Tree	FACW																									
	<i>Quercus laurifolia</i>	laurel oak	Tree	FACW					3	3			3	3															
	<i>Quercus lyrata</i>	overcup oak	Tree	OBL			1	1	6	6	1	1	4	4	1	1						1	1						
	<i>Quercus michauxii</i>	swamp chestnut oak	Tree	FACW			3	3					4	4	1	1					1	1	1	1	1	1			
	<i>Quercus nigra</i>	water oak	Tree	FAC	1	1	1	1	2	2	3	3			1	1					1	1			4	4			
	<i>Quercus pagoda</i>	cherrybark oak	Tree	FACW	2	2	2	2	4	4	2	2	2	2	12	12											2	2	
	<i>Quercus phellos</i>	willow oak	Tree	FACW	2	2	2	2	4	4	3	3	3	3	2	2					9	9					1	1	
	<i>Quercus rubra</i>	northern red oak	Tree	FACU																									
<i>Quercus sp.</i>				2	2																					1	1		
<i>Taxodium ascendens</i>	pond cypress	Tree	OBL			2	2	2	2								2	2											
<i>Taxodium distichum</i>	bald cypress	Tree	OBL							3	3	1	1					3	3					4	4				
Sum	Performance Standard				13	13	12	12	26	26	15	15	20	20	24	24	10	10	18	18	15	15	14	14	13	13			
Mitigation Plan Performance Standard	Current Year Stem Count				13	13	12	12	26	26	15	15	20	20	24	24	10	10	18	18	15	15	14	14	13	13			
	Stems/Acre				526	526	486	486	1052	1052	607	607	810	810	972	972	405	405	729	729	607	607	567	567	526	526			
	Species Count				6	6	7	7	7	7	7	7	9	9	8	8	4	4	7	7	6	6	6	6	9	9			
	Dominant Species Composition (%)				38	38	25	25	23	23	20	20	20	20	50	50	30	30	50	50	27	27	29	29	31	31			
	Average Plot Height (ft.)				1	1	1	1	1	1	1	1	1	1	2	2	2	2	1	1	1	1	1	1	1	1			
% Invasives				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Post Mitigation Plan Performance Standard	Current Year Stem Count				13	13	12	12	26	26	15	15	20	20	24	24	10	10	18	18	15	15	14	14	13	13			
	Stems/Acre				526	526	486	486	1052	1052	607	607	810	810	972	972	405	405	729	729	607	607	567	567	526	526			
	Species Count				6	6	7	7	7	7	7	7	9	9	8	8	4	4	7	7	6	6	6	6	9	9			
	Dominant Species Composition (%)				38	38	25	25	23	23	20	20	20	20	50	50	30	30	50	50	27	27	29	29	31	31			
	Average Plot Height (ft.)				1	1	1	1	1	1	1	1	1	1	2	2	2	2	1	1	1	1	1	1	1	1			
% Invasives				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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 Plot Data Table from Vegetation Data Entry Tool (continued)

Planted Acreage	125.74
Date of Initial Plant	2023-03-03
Date(s) of Supplemental Plant(s)	NA
Date(s) Mowing	NA
Date of Current Survey	2023-09-07
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Tree/Shrub	Indicator Status	Veg Plot 1 R	Veg Plot 2 R	Veg Plot 3 R	Veg Plot 4 R	Veg Plot 5 R	Veg Plot 6 R	Veg Plot 7 R	Veg Plot 8 R	Veg Plot 9 R	Veg Plot 10 R	Veg Plot 11 R	Veg Plot 12 R	Veg Plot 13 R	Veg Plot 14 R	Veg Plot 15 R	Veg Plot 16 R	Veg Plot 17 R	Veg Plot 18 R	Veg Plot 19 R	Veg Plot 20 R	
					Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Species Included in Approved Mitigation Plan	<i>Betula nigra</i>	river birch	Tree	FACW									1												
	<i>Carpinus caroliniana</i>	American hornbeam	Tree	FAC	2																1			1	
	<i>Fraxinus pennsylvanica</i>	green ash	Tree	FACW		2				1			2				2		4		1	1	2	3	
	<i>Liriodendron tulipifera</i>	tuliptree	Tree	FACU				1		1	2		6	1			1	3	1	2	1				
	<i>Magnolia virginiana</i>	sweetbay	Tree	FACW		2					1										1				
	<i>Nyssa aquatica</i>	water tupelo	Tree	OBL																					
	<i>Nyssa biflora</i>	swamp tupelo	Tree	OBL										1											
	<i>Nyssa sp.</i>																								
	<i>Nyssa sylvatica</i>	blackgum	Tree	FAC	3	1		1			2				1									2	
	<i>Persea palustris</i>	swamp bay	Shrub	FACW												3					1				
	<i>Platanus occidentalis</i>	American sycamore	Tree	FACW			1								1							1	1		
	<i>Quercus alba</i>	white oak	Tree	FACU																	2	1			
	<i>Quercus bicolor</i>	swamp white oak	Tree	FACW											1			1	2						
	<i>Quercus laurifolia</i>	laurel oak	Tree	FACW				3		3	1	1		1							3				
	<i>Quercus lyrata</i>	overcup oak	Tree	OBL		3		3	3					2	2	2	1	3	2	4		2	3	4	
	<i>Quercus michauxii</i>	swamp chestnut oak	Tree	FACW	4	2	4	3			1	5		1								4	1	2	
	<i>Quercus nigra</i>	water oak	Tree	FAC		1	3		1	1	1			1			3		2	1			2		
	<i>Quercus pagoda</i>	cherrybark oak	Tree	FACW		3		1	3		1	3	4	1			1	2			1			2	3
	<i>Quercus phellos</i>	willow oak	Tree	FACW		2		3					4		1	3	1				2		1		4
	<i>Quercus rubra</i>	northern red oak	Tree	FACU			1																		
<i>Quercus sp.</i>						2								2	1	2	3	2			2				
<i>Taxodium ascendens</i>	pond cypress	Tree	OBL																						
<i>Taxodium distichum</i>	bald cypress	Tree	OBL	7		2		1		2											2				
Sum	Performance Standard				16	16	13	15	8	6	11	13	13	9	10	12	11	10	13	14	9	11	10	17	
Mitigation Plan Performance Standard	Current Year Stem Count				16	16	13	15	8	6	11	13	13	9	10	12	11	10	13	14	9	11	10	17	
	Stems/Acre				648	648	526	607	324	243	445	526	526	364	405	486	445	405	526	567	364	445	405	688	
	Species Count				4	8	6	7	4	4	8	4	4	8	6	7	6	5	6	7	7	6	5	6	
	Dominant Species Composition (%)				44	19	31	20	38	50	18	38	46	22	30	25	27	30	31	29	22	36	30	24	
	Average Plot Height (ft.)				2	1	2	1	2	2	2	2	1	1	2	2	1	23	1	1	1	1	2	2	
% Invasives				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Post Mitigation Plan Performance Standard	Current Year Stem Count				16	16	13	15	8	6	11	13	13	9	10	12	11	10	13	14	9	11	10	17	
	Stems/Acre				648	648	526	607	324	243	445	526	526	364	405	486	445	405	526	567	364	445	405	688	
	Species Count				4	8	6	7	4	4	8	4	4	8	6	7	6	5	6	7	7	6	5	6	
	Dominant Species Composition (%)				44	19	31	20	38	50	18	38	46	22	30	25	27	30	31	29	22	36	30	24	
	Average Plot Height (ft.)				2	1	2	1	2	2	2	2	1	1	2	2	1	23	1	1	1	1	2	2	
% Invasives				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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.

Appendix C: Hydrologic Data

Table 8. Groundwater Hydrology Data
Groundwater Gauge Graphs
Figure C1. 30-70th Percentile Graph for Rainfall

Table 8. Groundwater Hydrology Data

Gauge	Success Criteria Achieved/Max Consecutive Days During Growing Season (Percentage)						
	Year 1 (2023)	Year 2 (2024)	Year 3 (2025)	Year 4 (2026)	Year 5 (2027)	Year 6 (2028)	Year 7 (2029)
1	No – 4 days (1.7%)						
2	No – 1 day (0.4%)						
3	No – 5 days (2.2%)						
4	No – 2 days (0.9%)						
5	No – 6 days (2.6%)						
6	No – 2 days (0.9%)						
7	No – 1 day (0.4%)						
8	No – 0 days (0.0%)						
9	No – 2 days (0.9%)						
10	No – 2 days (0.9%)						
11	No – 2 days (0.9%)						
12	No – 15 days (6.5%)						
13	No – 0 days (0.0%)						
14	No – 0 days (0.0%)						
15	No – 0 days (0.0%)						
16	No – 0 days (0.0%)						
17	No – 2 days (0.9%)						
18	No – 0 days (0.0%)						
19	No – 0 days (0.0%)						

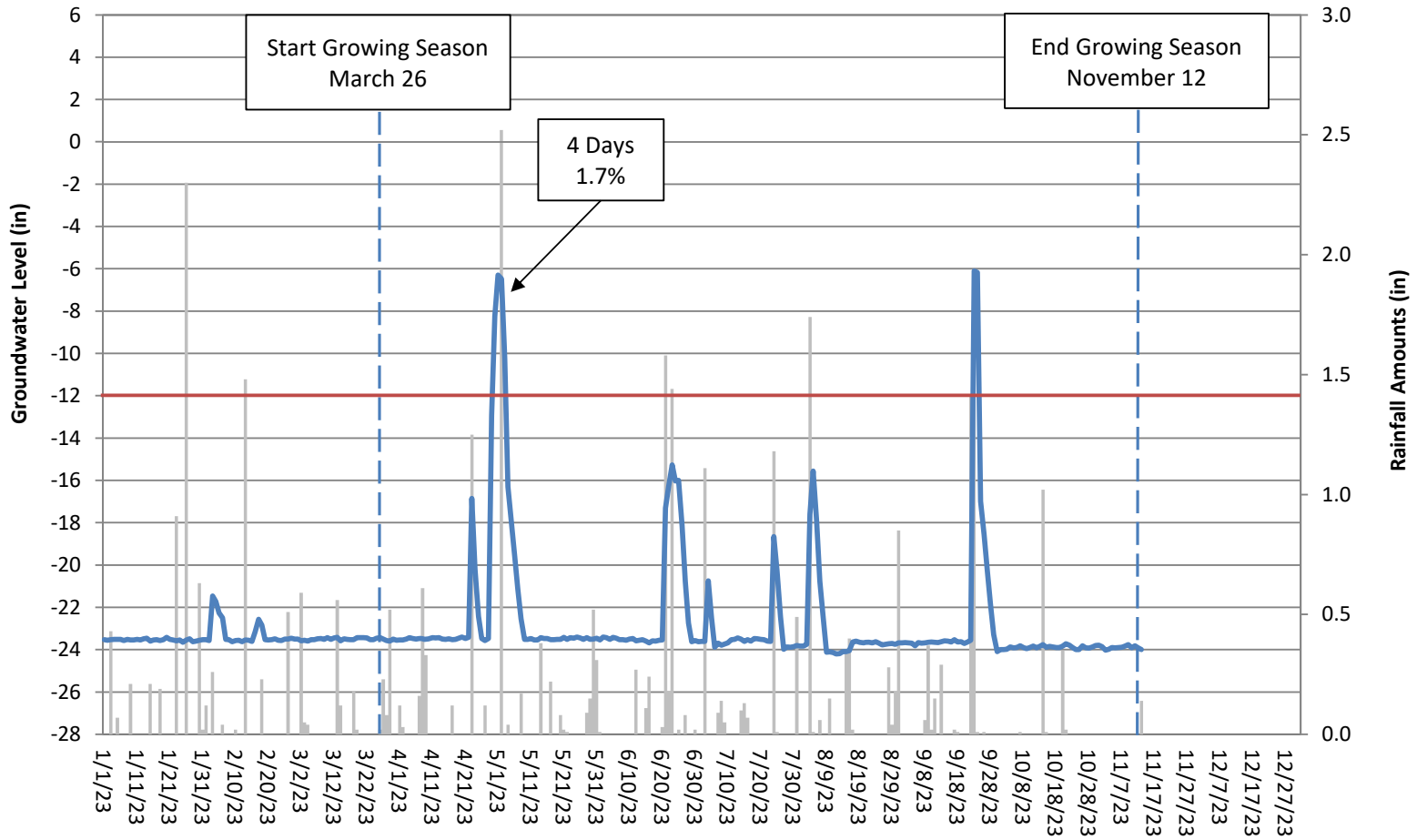
Gauge	Success Criteria Achieved/Max Consecutive Days During Growing Season (Percentage)						
	Year 1 (2023)	Year 2 (2024)	Year 3 (2025)	Year 4 (2026)	Year 5 (2027)	Year 6 (2028)	Year 7 (2029)
20	No – 1 day (0.4%)						
21	No – 5 days (2.2%)						
22	No - 3 days (1.3%)						
23	No – 8 days (3.4%)						
24	No – 5 days (2.2%)						
25*	No – 2 days (0.9%)						
26	No – 5 days (2.2%)						
27*	No – 10 days (4.3%)						
28	No – 0 days (0.0%)						
29	No – 3 days (1.3%)						
30	No – 13 days (5.6%)						
31	Yes – 26 days (11.2%)						
32	No – 10 days (4.3%)						
33	Yes – 25 days (10.8%)						
34	No – 14 days (6.0%)						
35	No – 5 days (2.2%)						
36	No – 4 days (1.7%)						
37	No – 3 days (1.3%)						
38	No – 7 days (3.0%)						

Gauge	Success Criteria Achieved/Max Consecutive Days During Growing Season (Percentage)						
	Year 1 (2023)	Year 2 (2024)	Year 3 (2025)	Year 4 (2026)	Year 5 (2027)	Year 6 (2028)	Year 7 (2029)
39*	No – 12 days (5.2%)						
40	No – 5 days (2.2%)						
41	No – 14 days (6.0%)						
42	No - 13 days (5.6%)						
43	No – 7 days (3.0%)						
44	No – 6 days (2.6%)						
45	No – 6 days (2.6%)						
46	No – 14 days (6.0%)						
47	No – 16 days (6.9%)						
48	Yes – 24 days (10.3%)						
49	No – 4 days (1.7%)						
50	No – 7 days (3.0%)						
51	No - 13 days (5.6%)						
52	No – 7 days (3.0%)						
53	No – 17 days (7.3%)						
54*	No – 25 days (10.8%)						
55	No – 8 days (3.4%)						
56	No – 5 days (2.2%)						
57	No – 2 days (0.9%)						

Gauge	Success Criteria Achieved/Max Consecutive Days During Growing Season (Percentage)						
	Year 1 (2023)	Year 2 (2024)	Year 3 (2025)	Year 4 (2026)	Year 5 (2027)	Year 6 (2028)	Year 7 (2029)
58*	No – 8 days (3.4%)						
59*	No – 12 days (5.2%)						
60	No – 0 days (0.0%)						
61	No – 0 days (0.0%)						
62	No – 12 days (5.2%)						
63	No – 9 days (3.9%)						

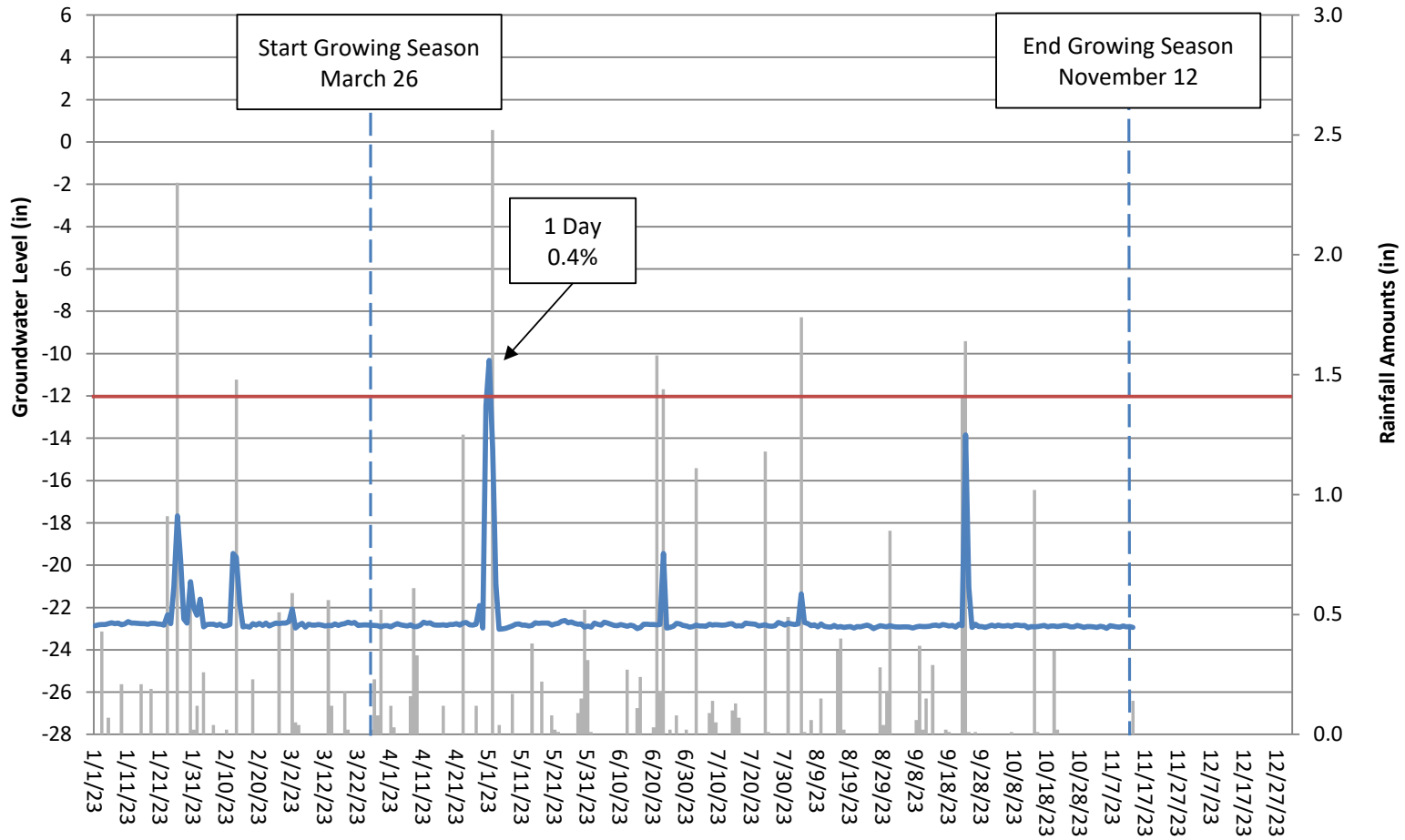
* These gauges are located in the non-riverine swamp forest and have a hydroperiod performance standard of 12%. All other gauges are located in non-riverine wet hardwood forest and have a hydroperiod performance standard of 10%.

Pierce Terrace Groundwater Gauge 1 Year 1 (2023 Data)



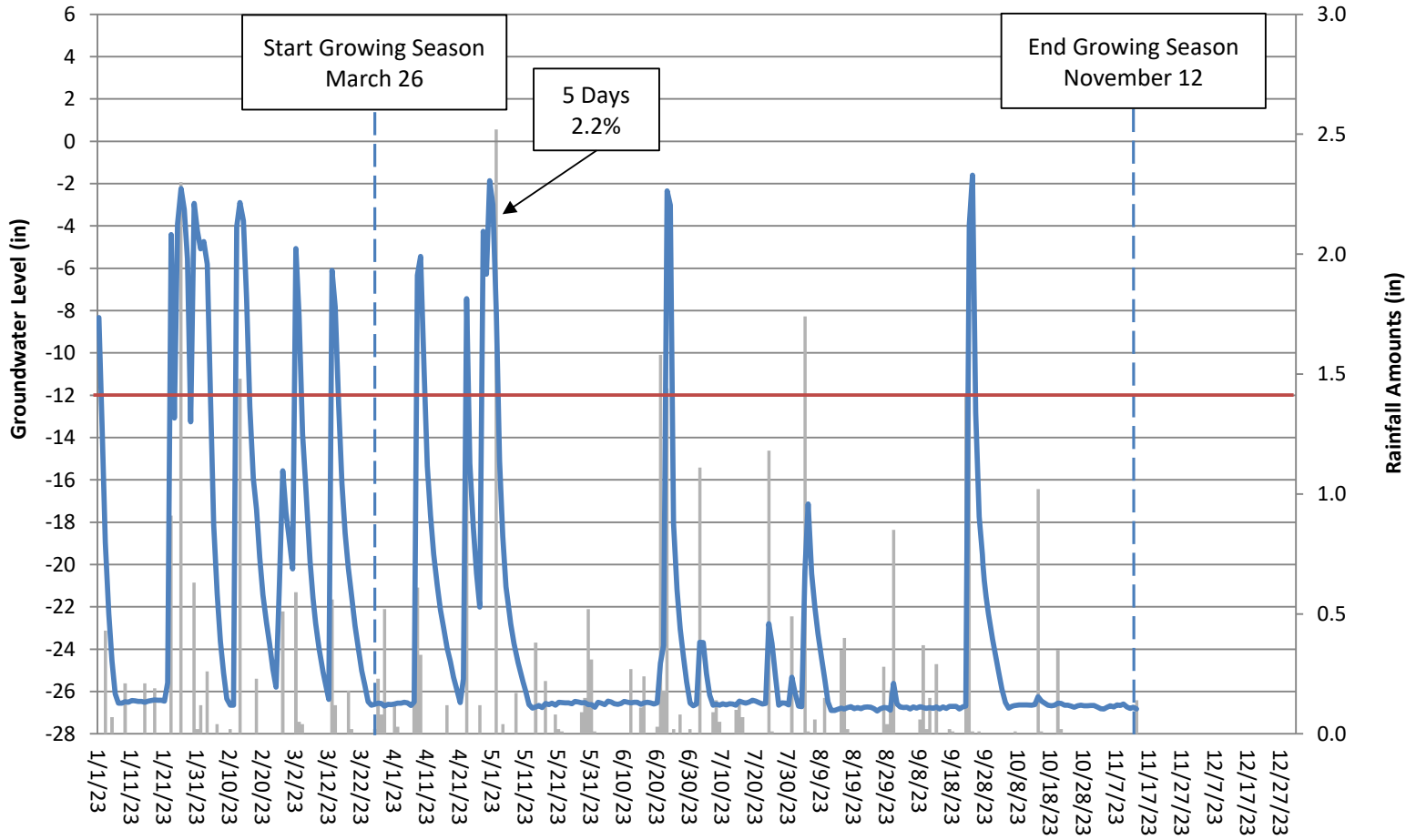
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 2 Year 1 (2023 Data)



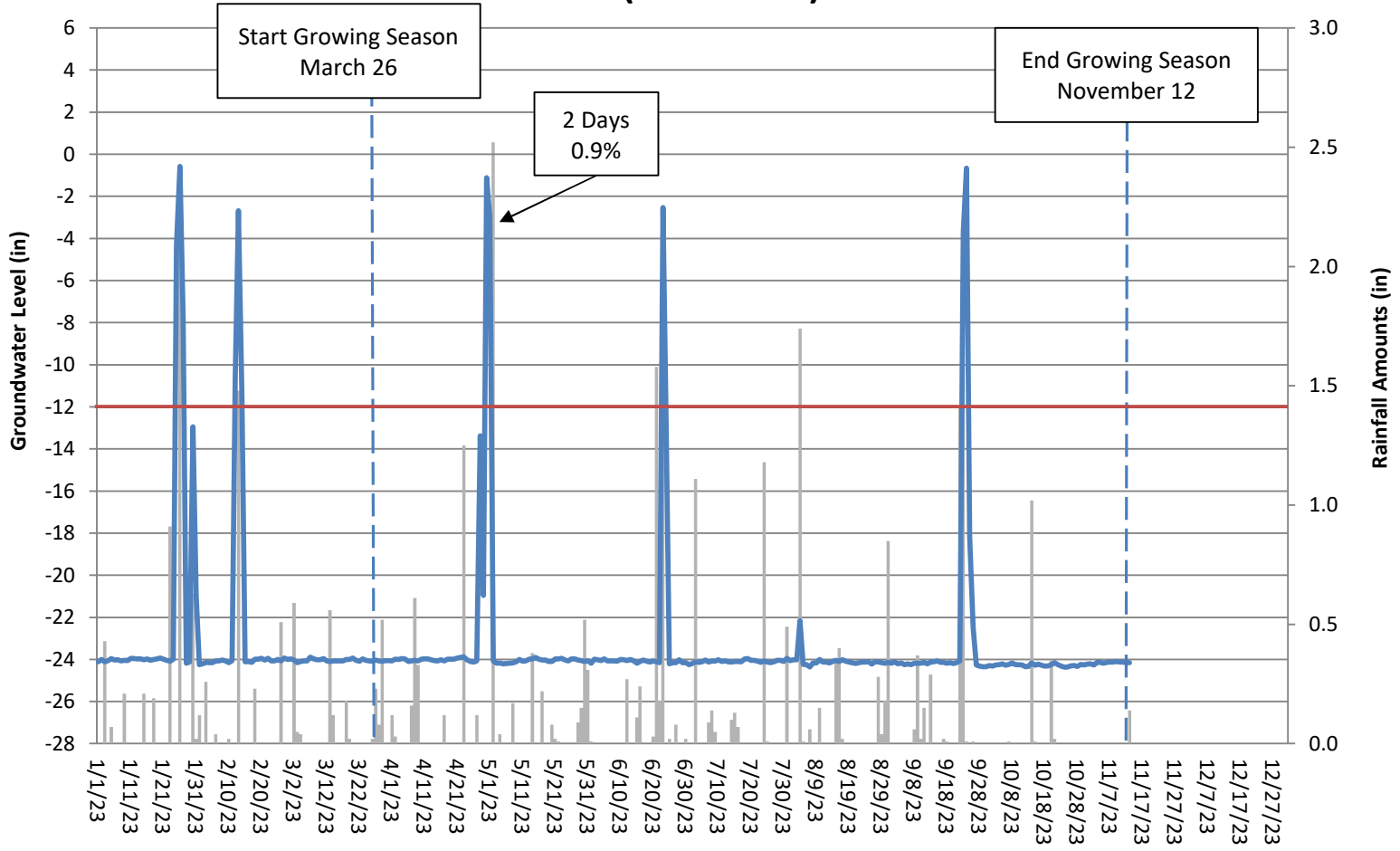
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 3 Year 1 (2023 Data)



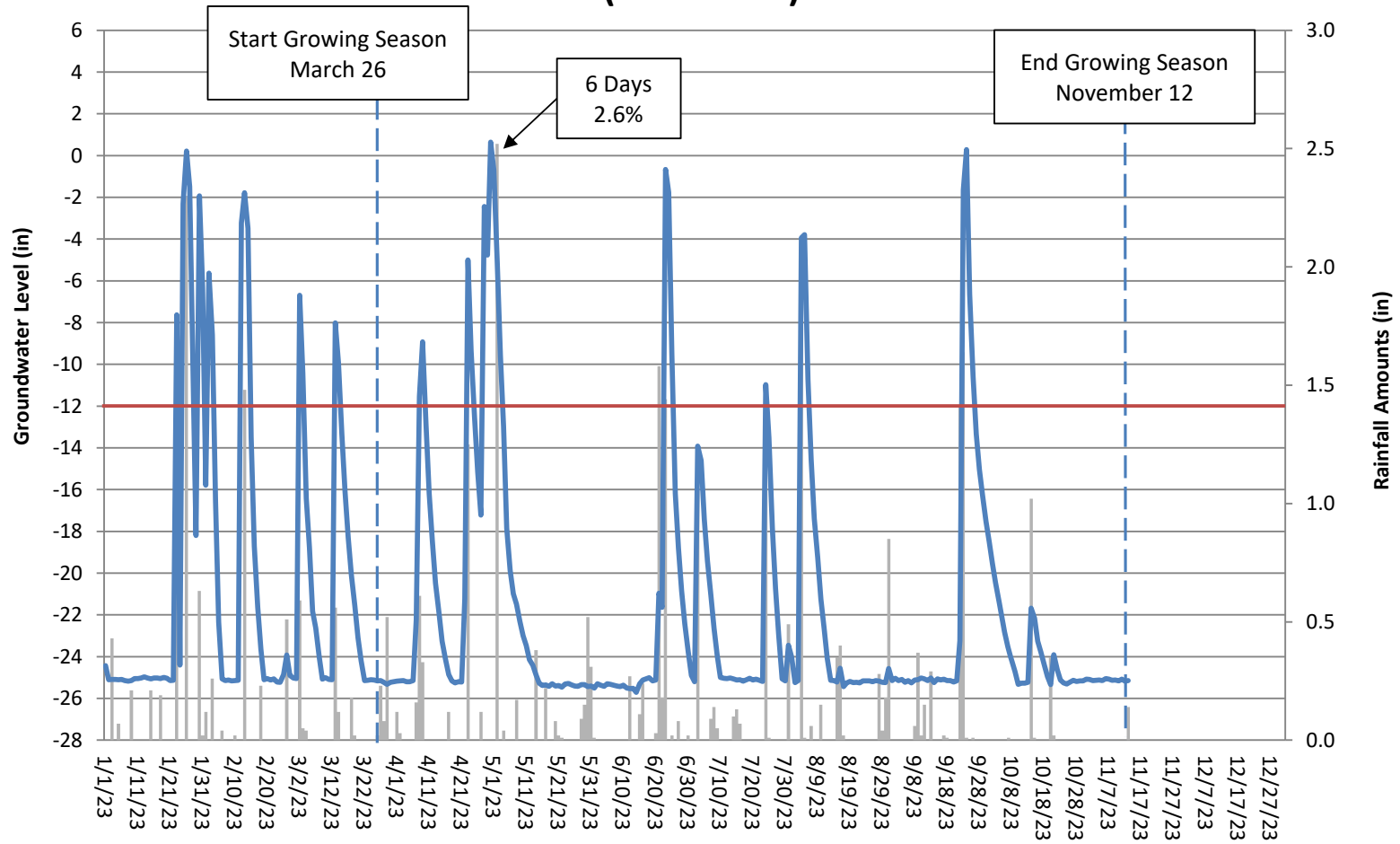
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 4 Year 1 (2023 Data)



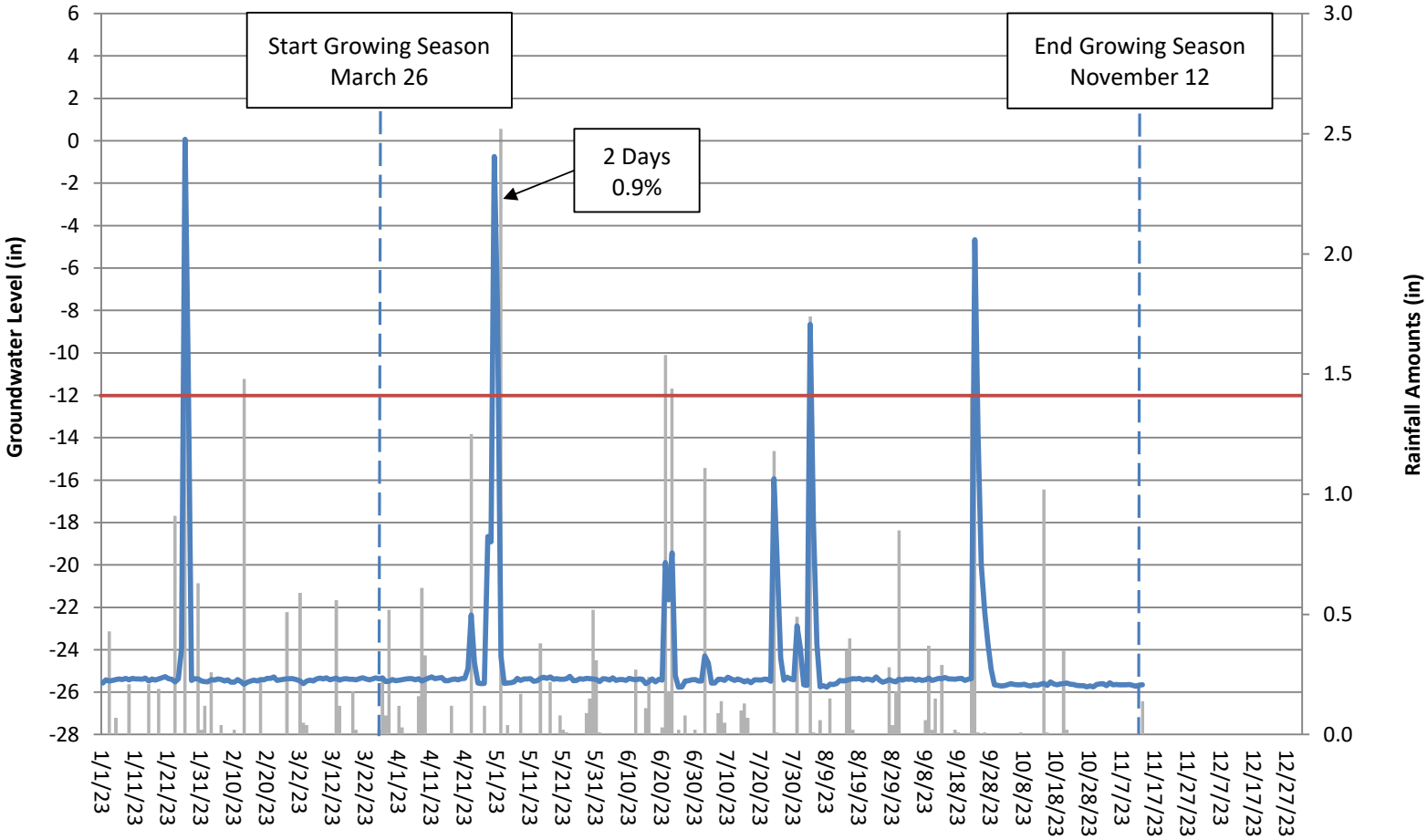
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 5 Year 1 (2023 Data)



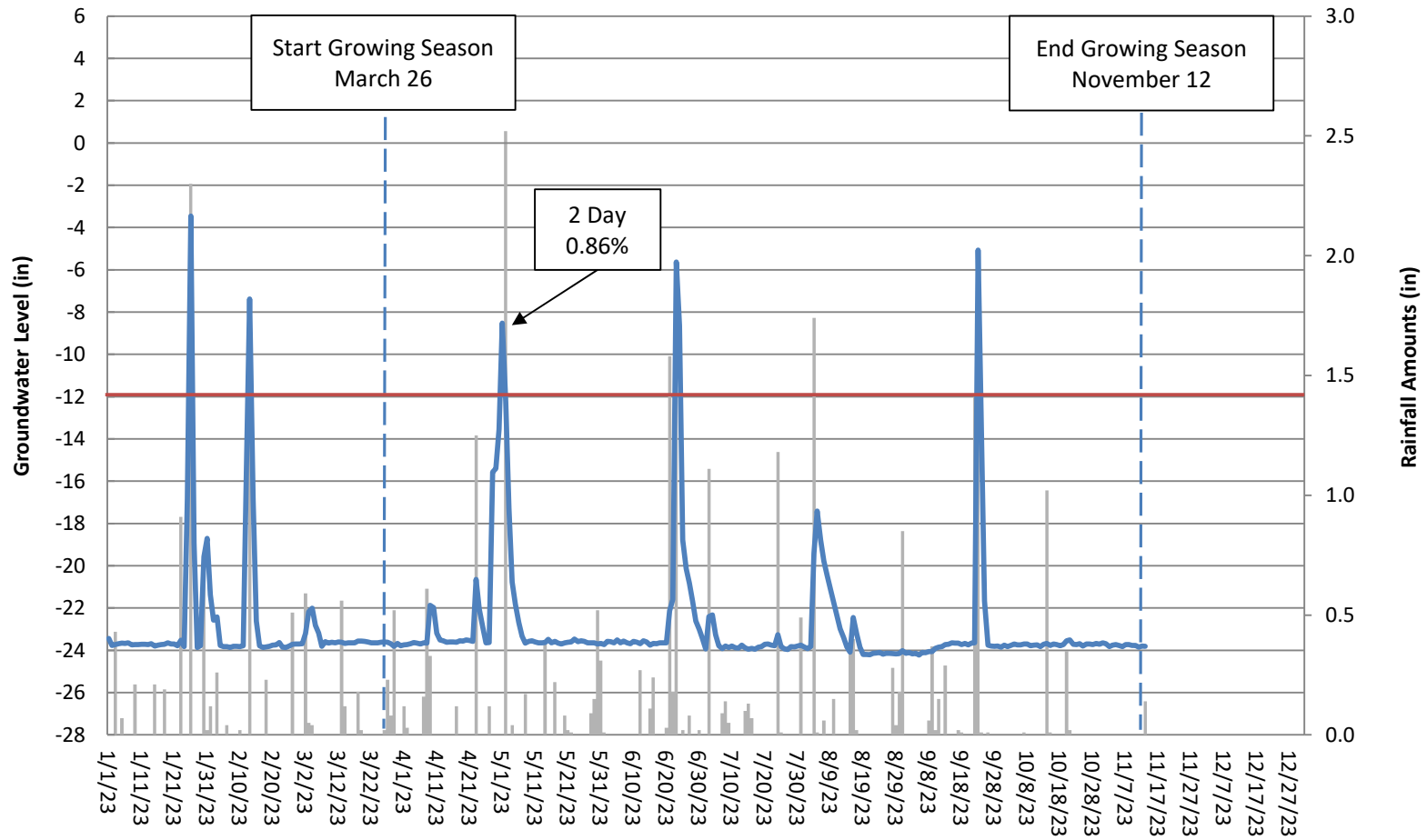
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 6 Year 1 (2023 Data)



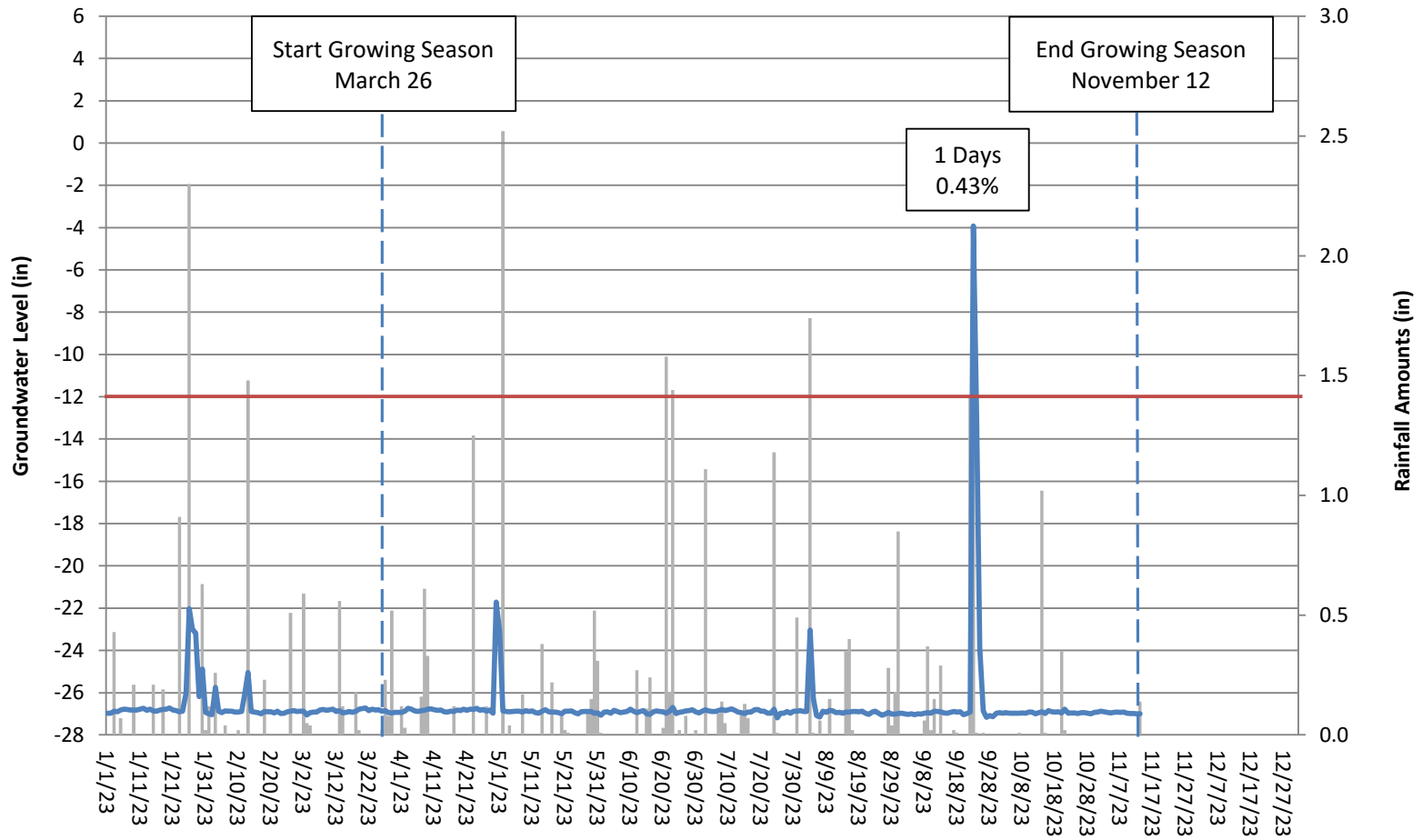
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 7 Year 1 (2023 Data)



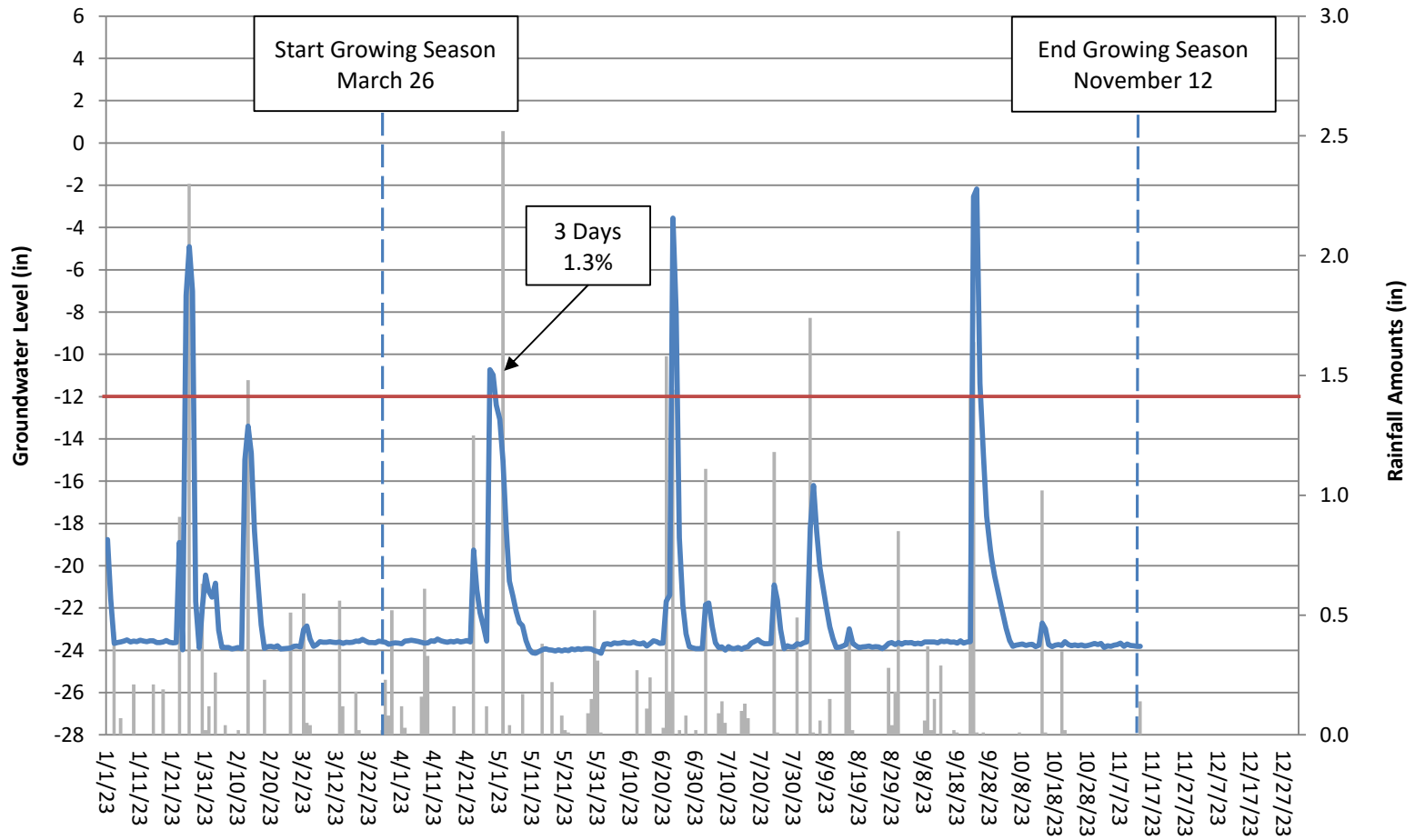
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 8 Year 1 (2023 Data)



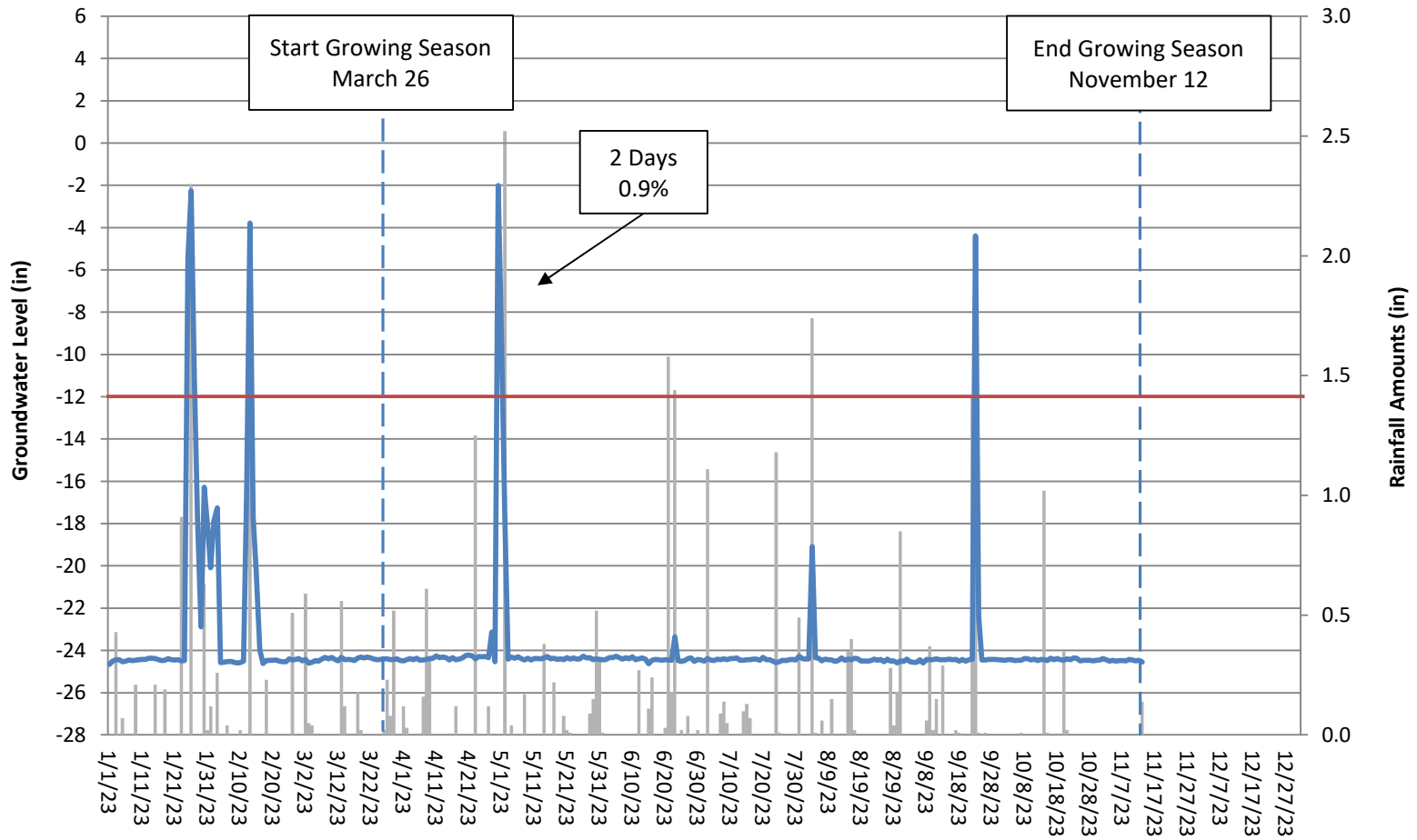
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 9 Year 1 (2023 Data)



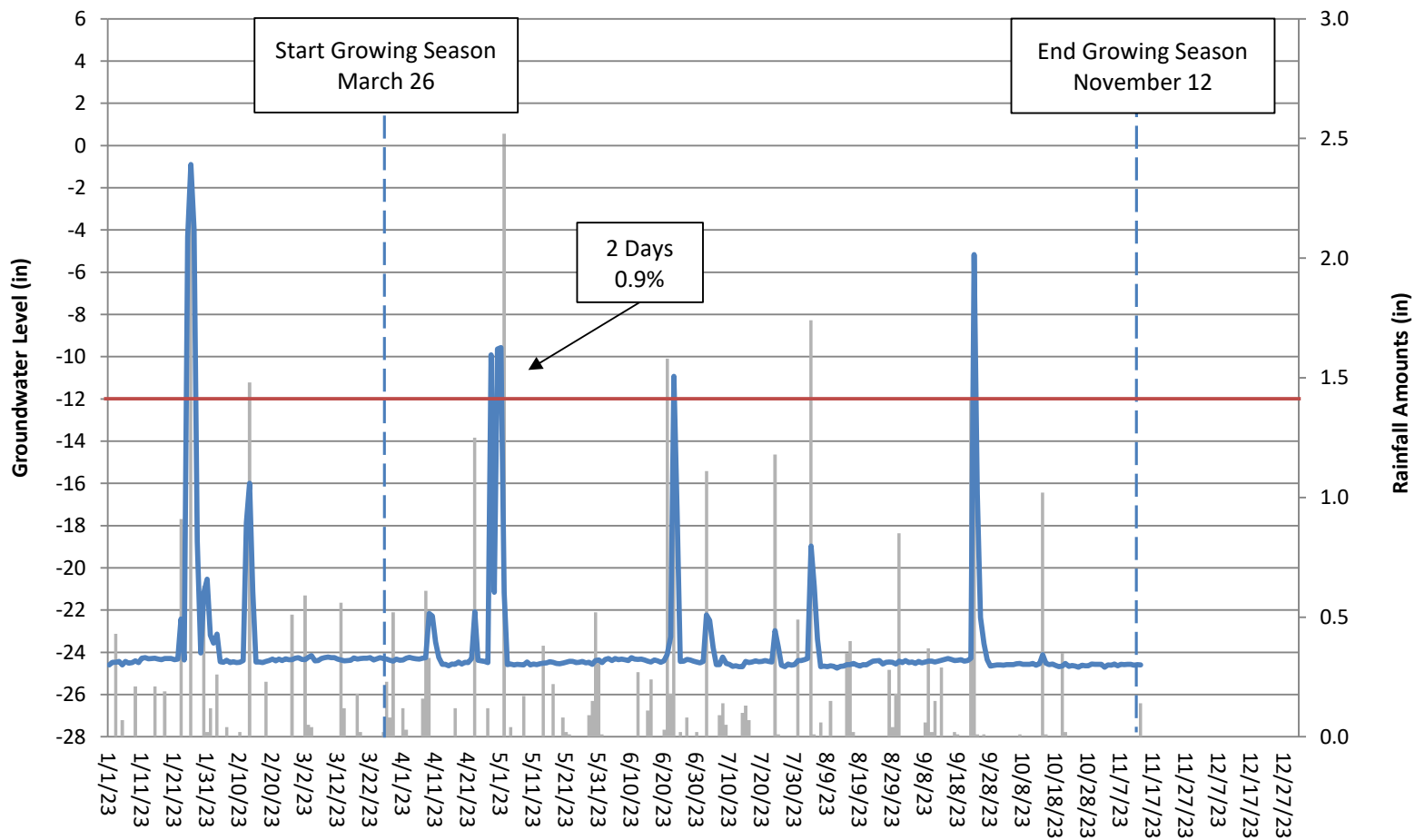
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 10 Year 1 (2023 Data)



Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

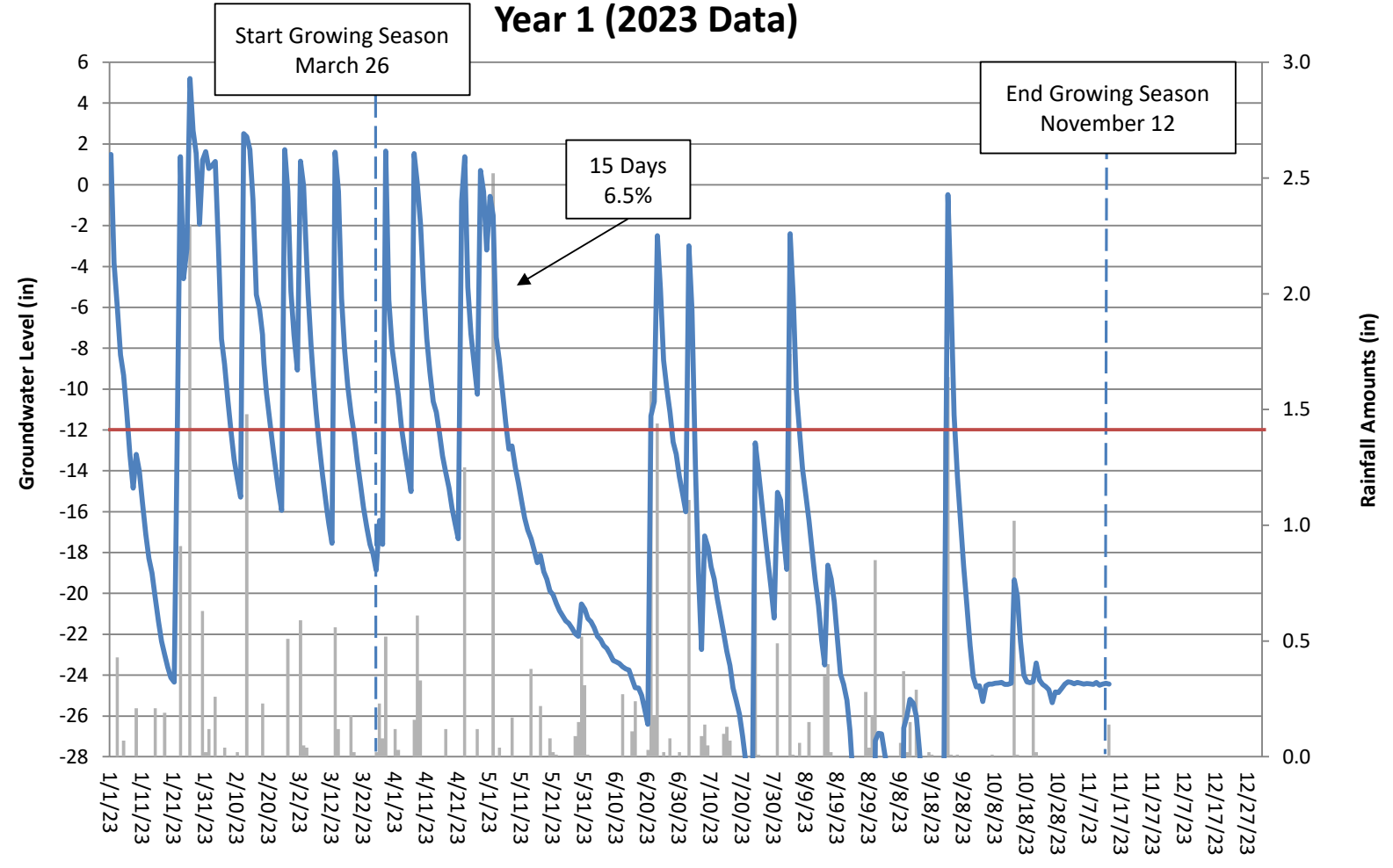
Pierce Terrace Groundwater Gauge 11 Year 1 (2023 Data)



Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

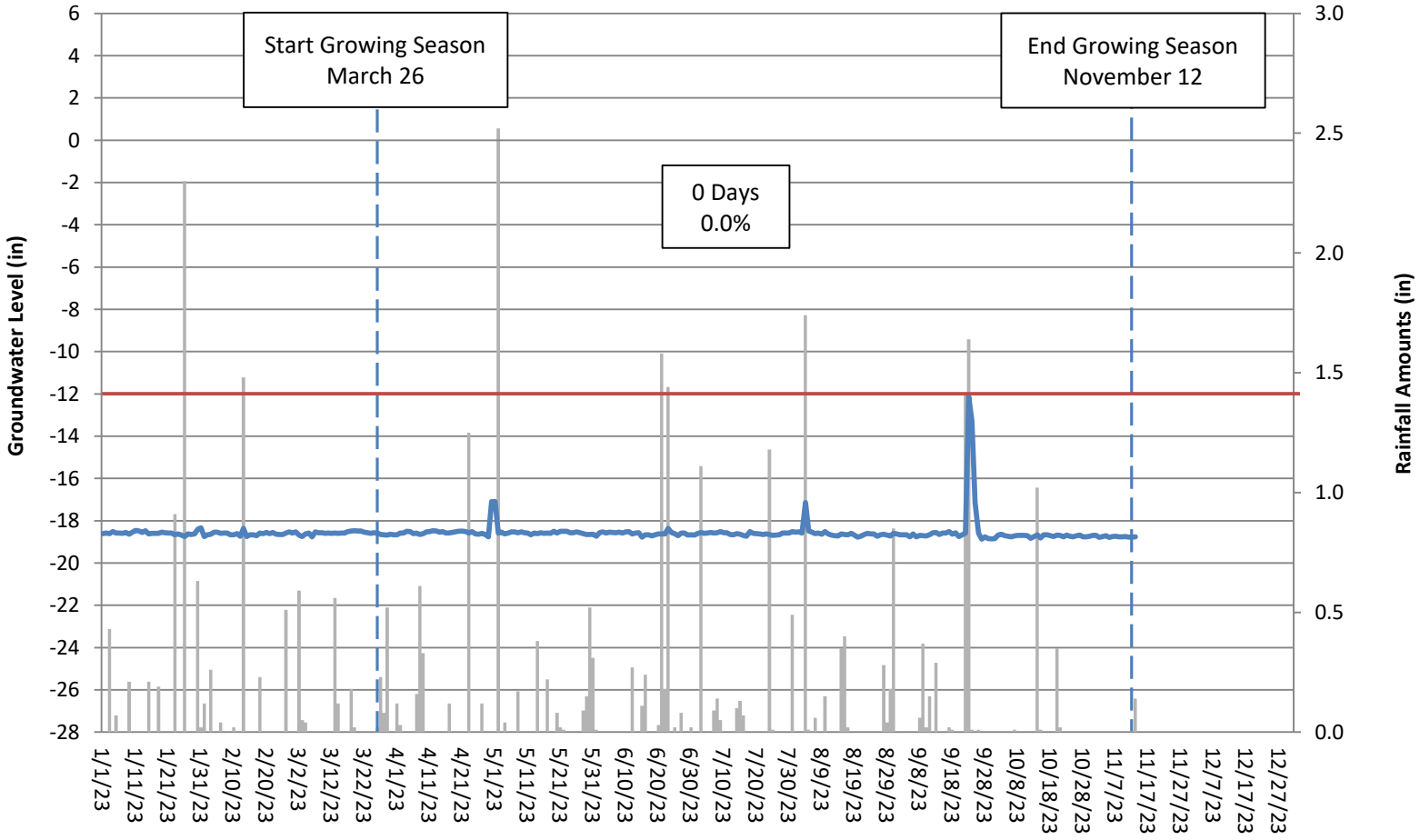
Pierce Terrace Groundwater Gauge 12

Year 1 (2023 Data)



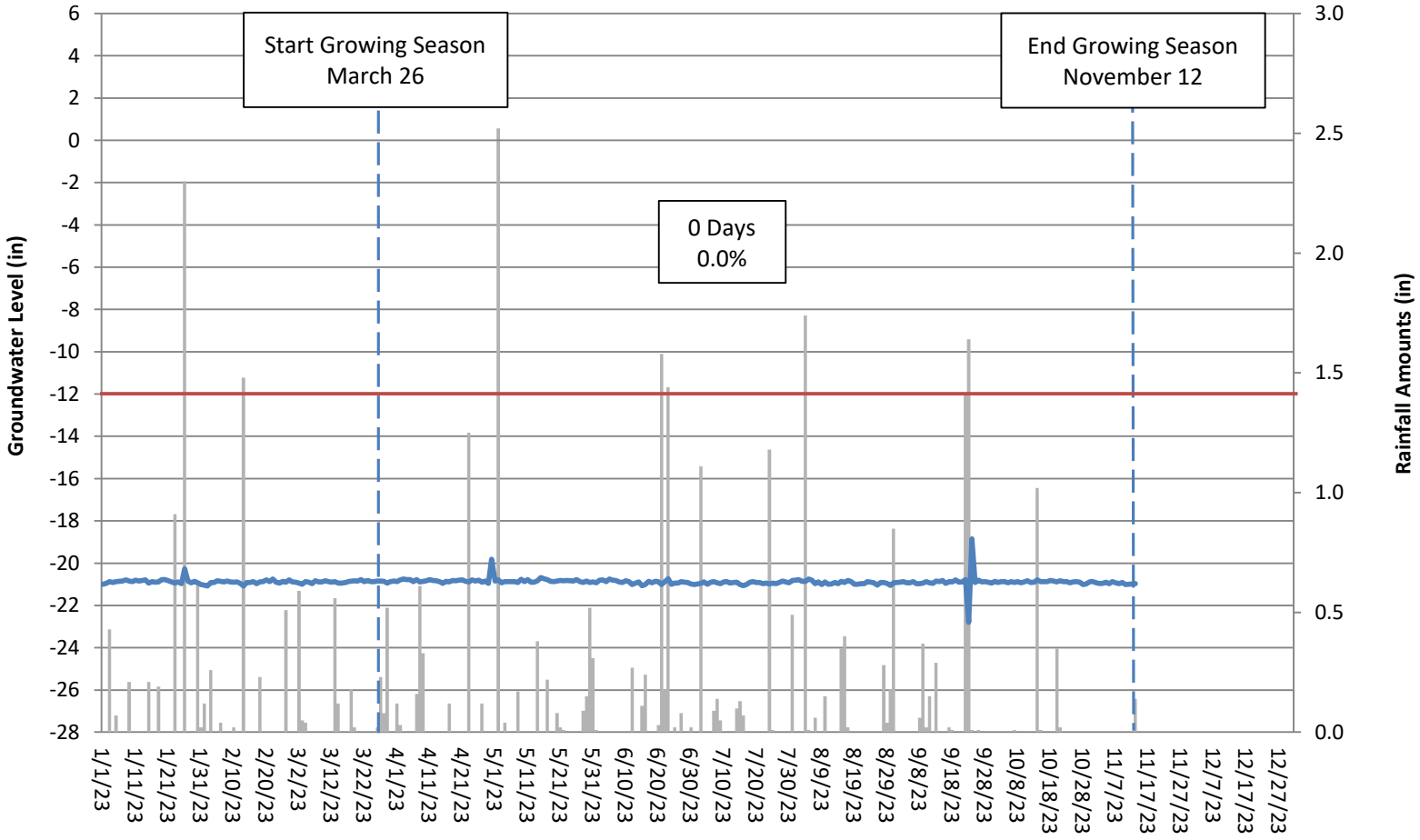
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 13 Year 1 (2023 Data)



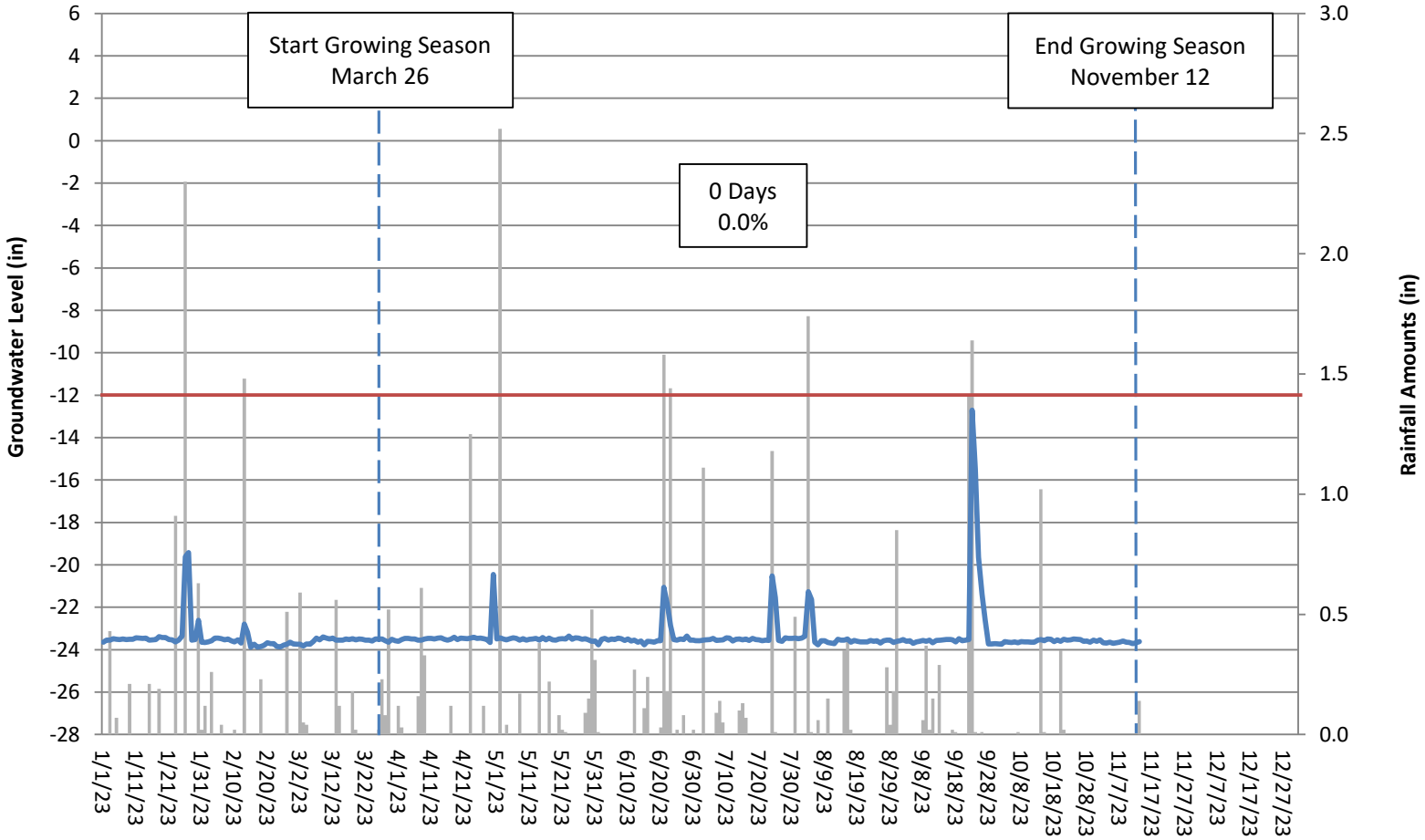
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 14 Year 1 (2023 Data)



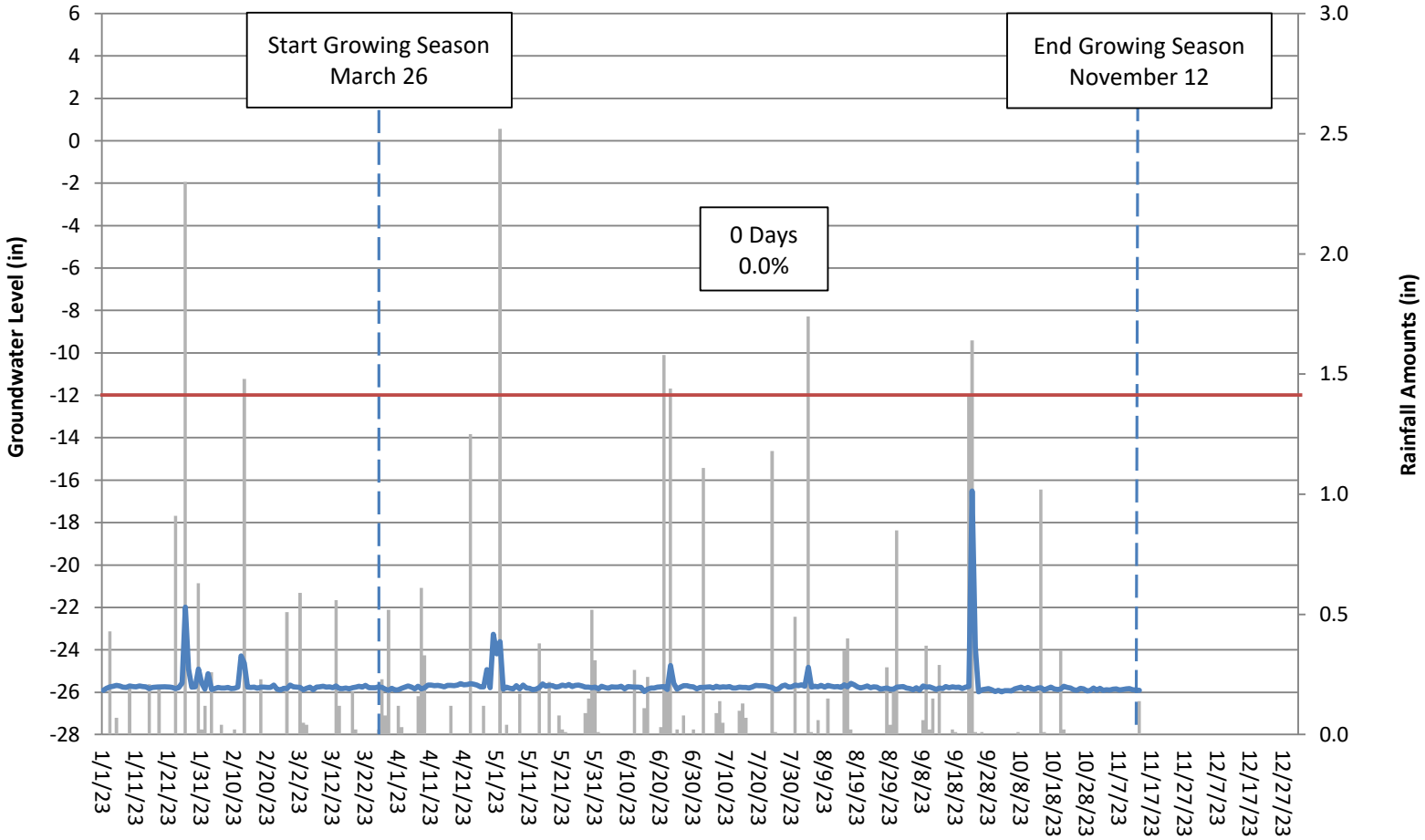
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 15 Year 1 (2023 Data)



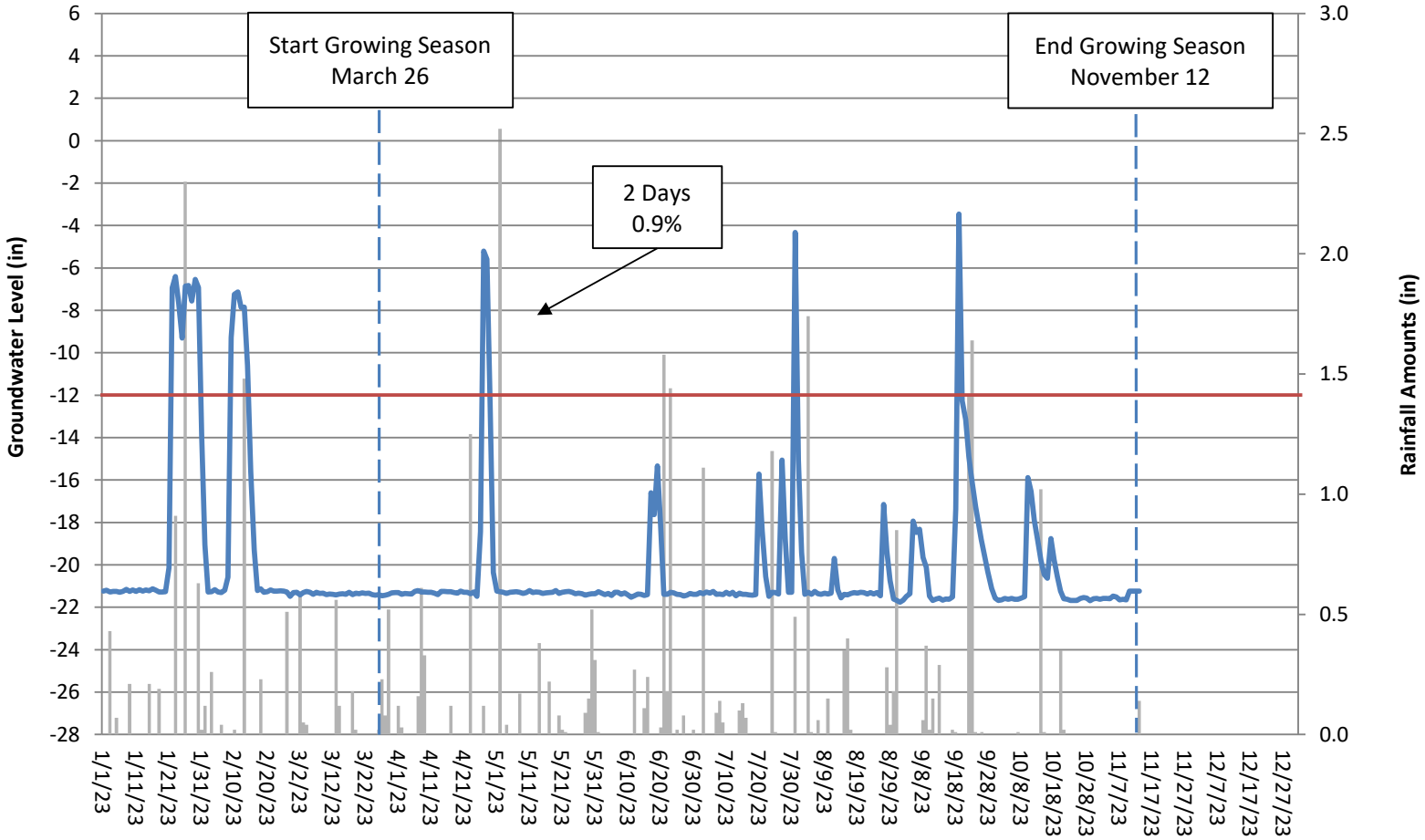
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 16 Year 1 (2023 Data)



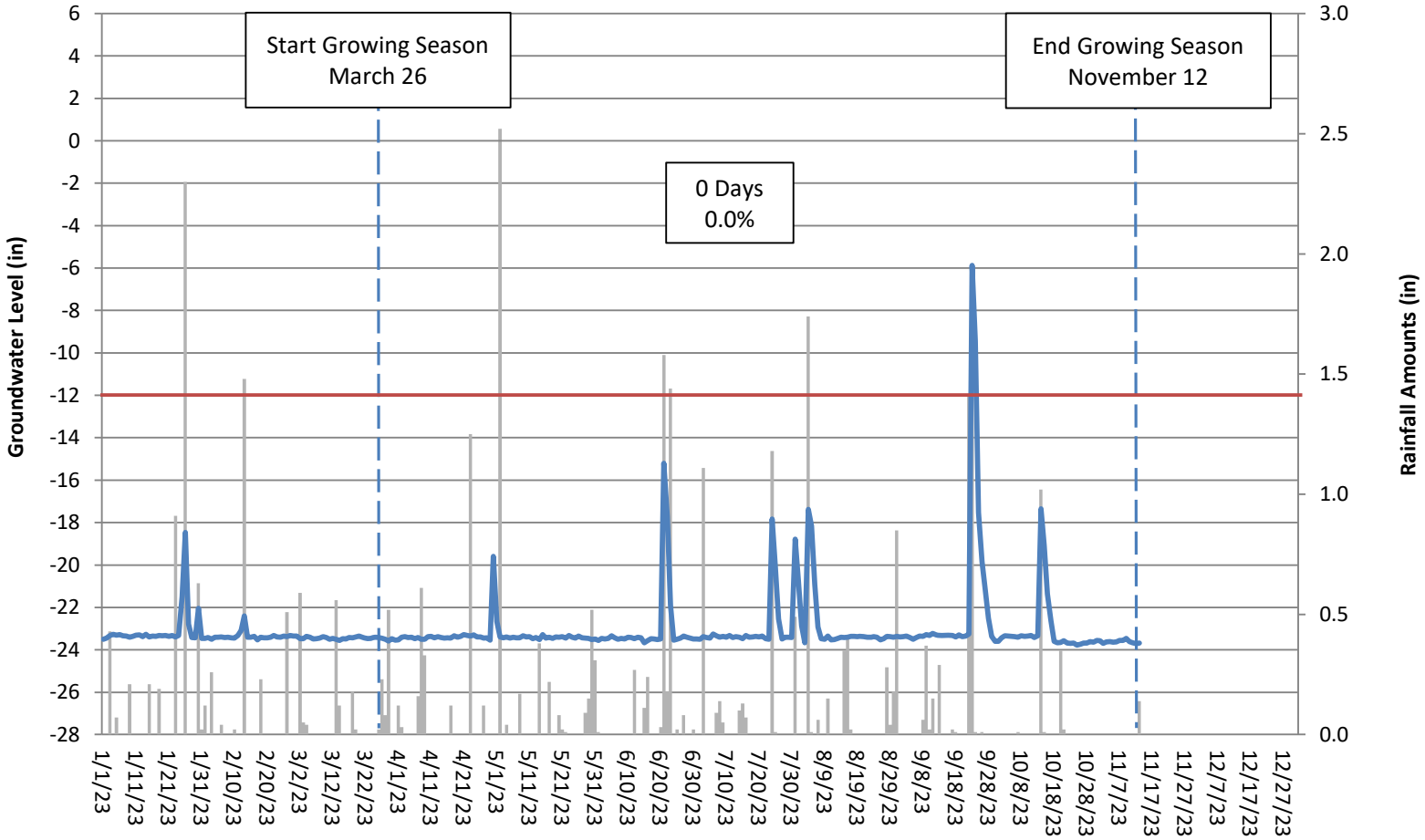
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 17 Year 1 (2023 Data)



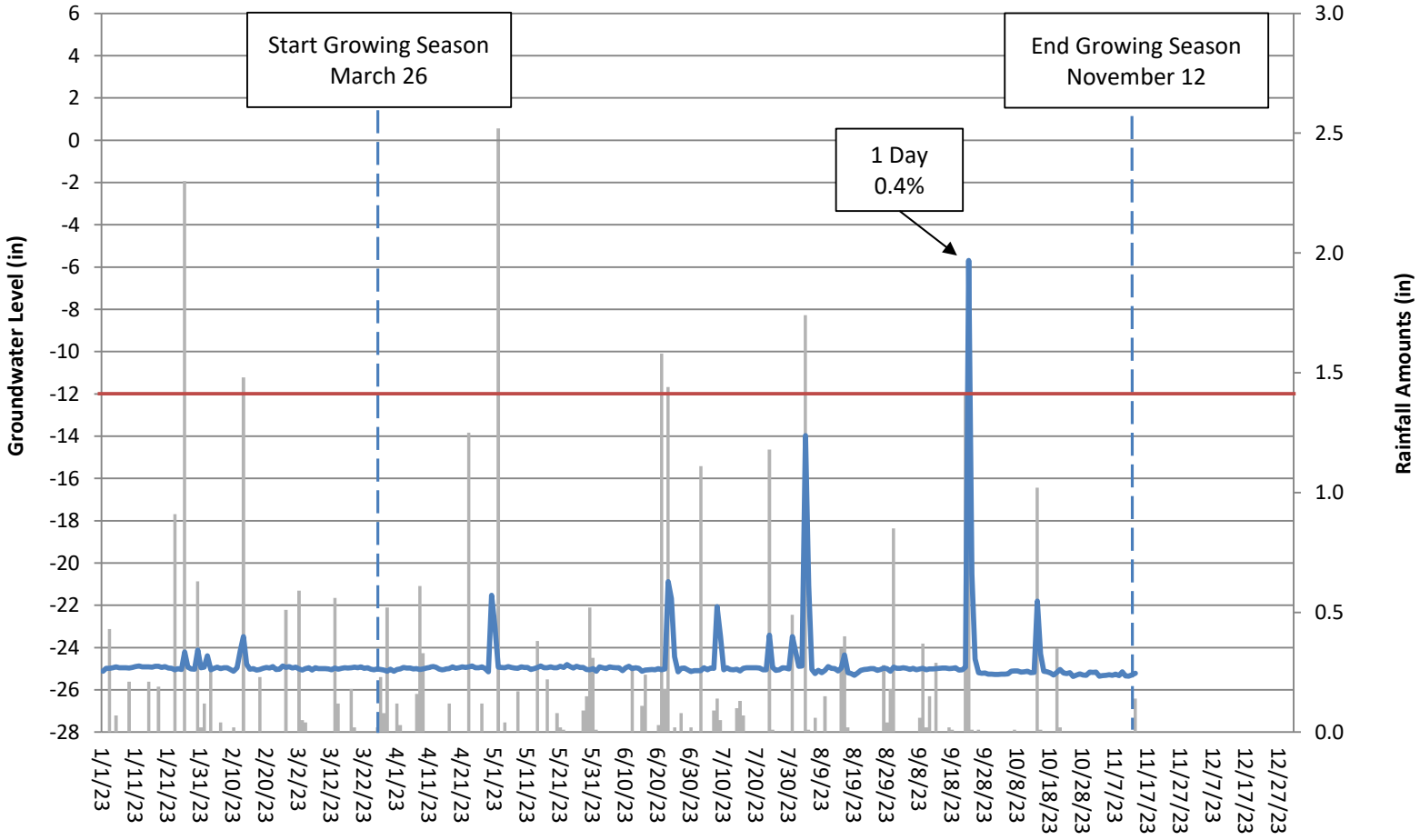
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 18 Year 1 (2023 Data)



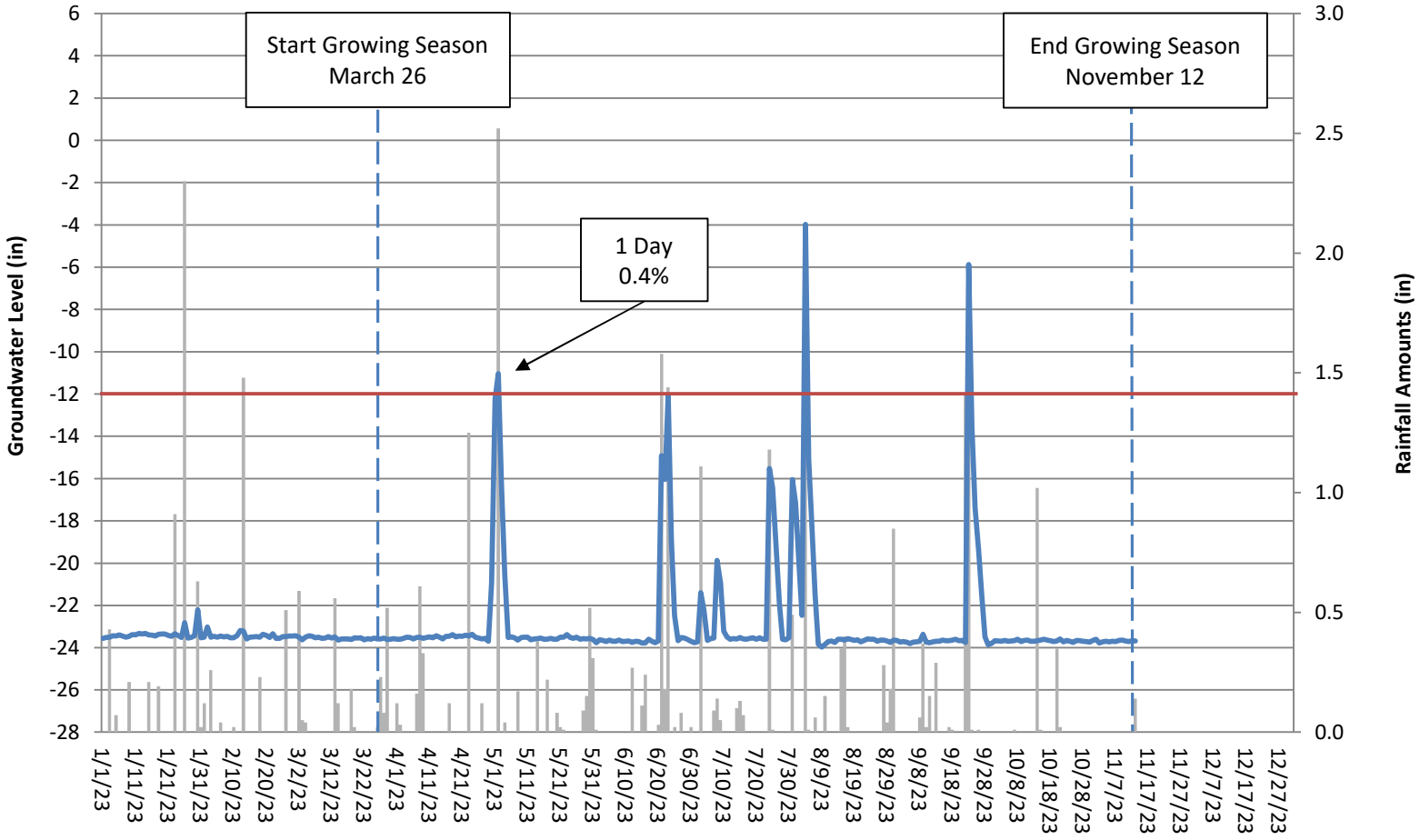
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 19 Year 1 (2023 Data)



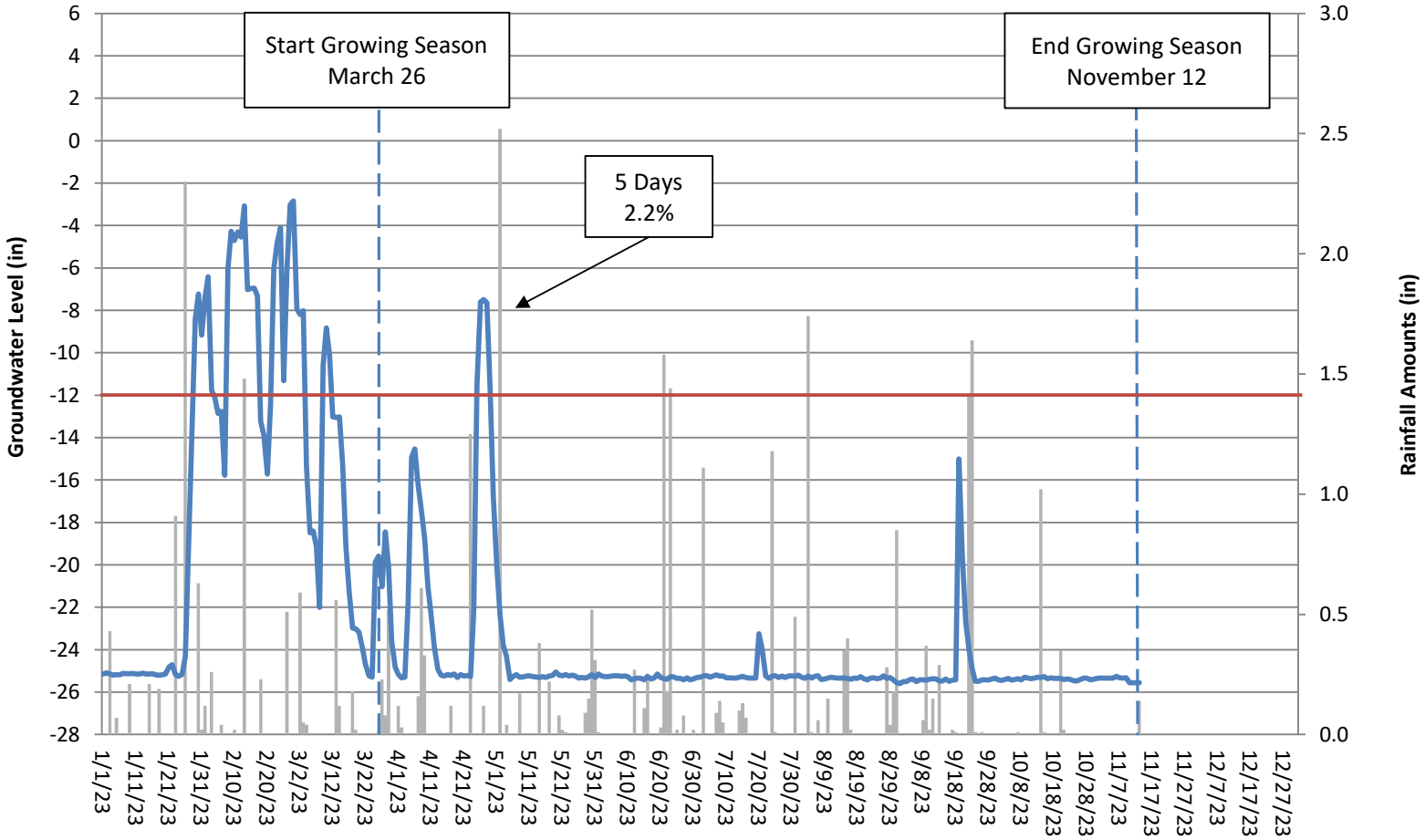
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 20 Year 1 (2023 Data)



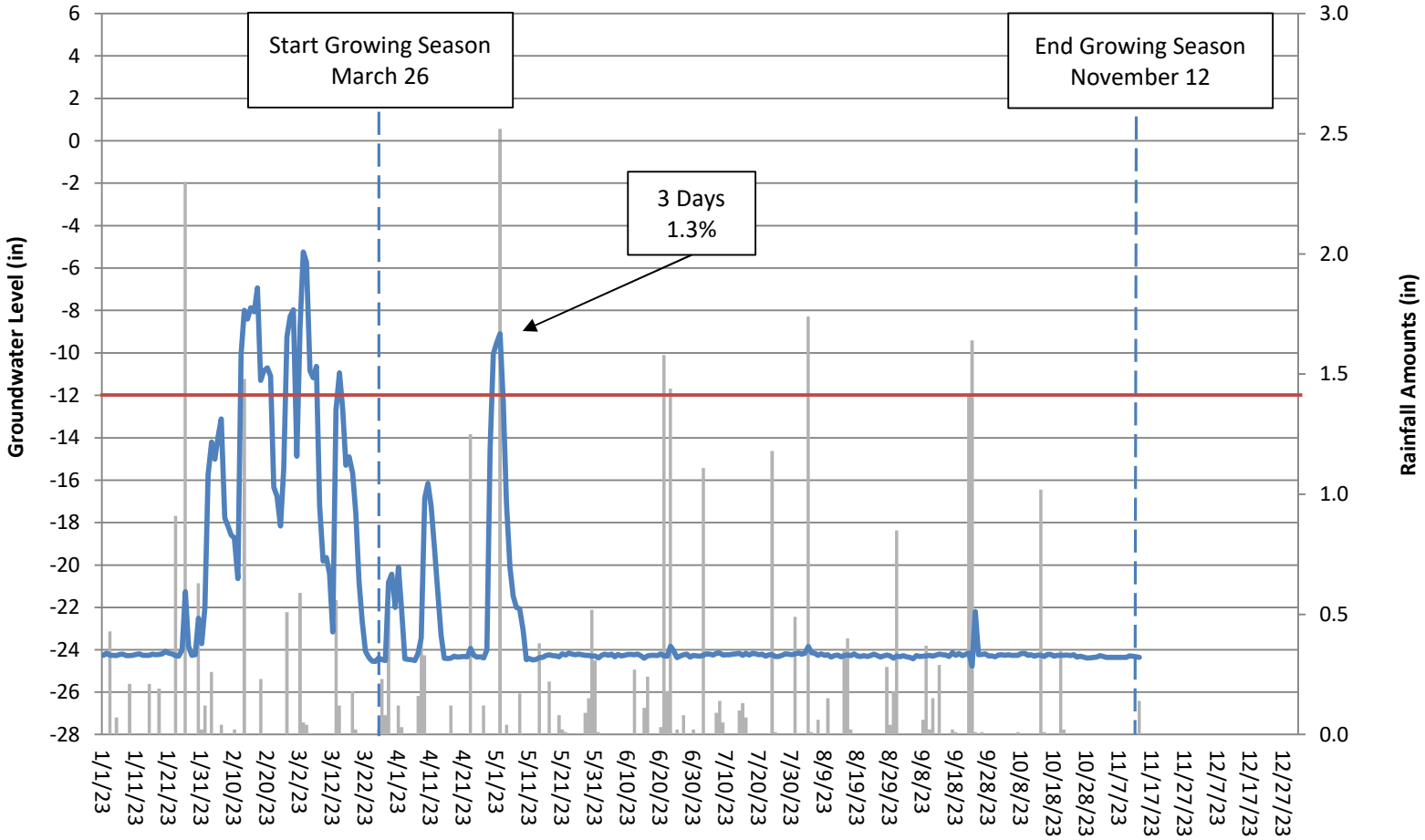
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 21 Year 1 (2023 Data)



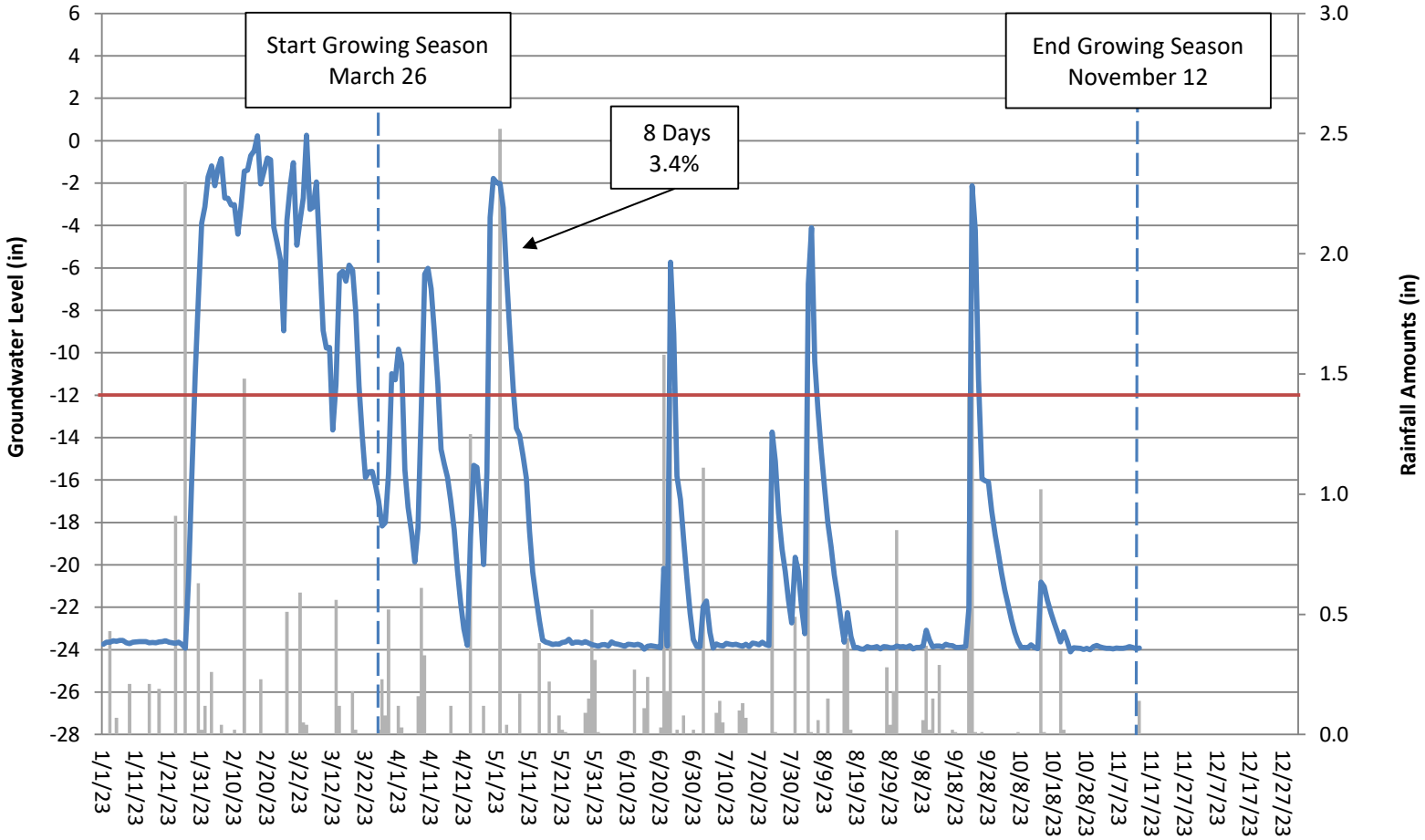
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 22 Year 1 (2023 Data)



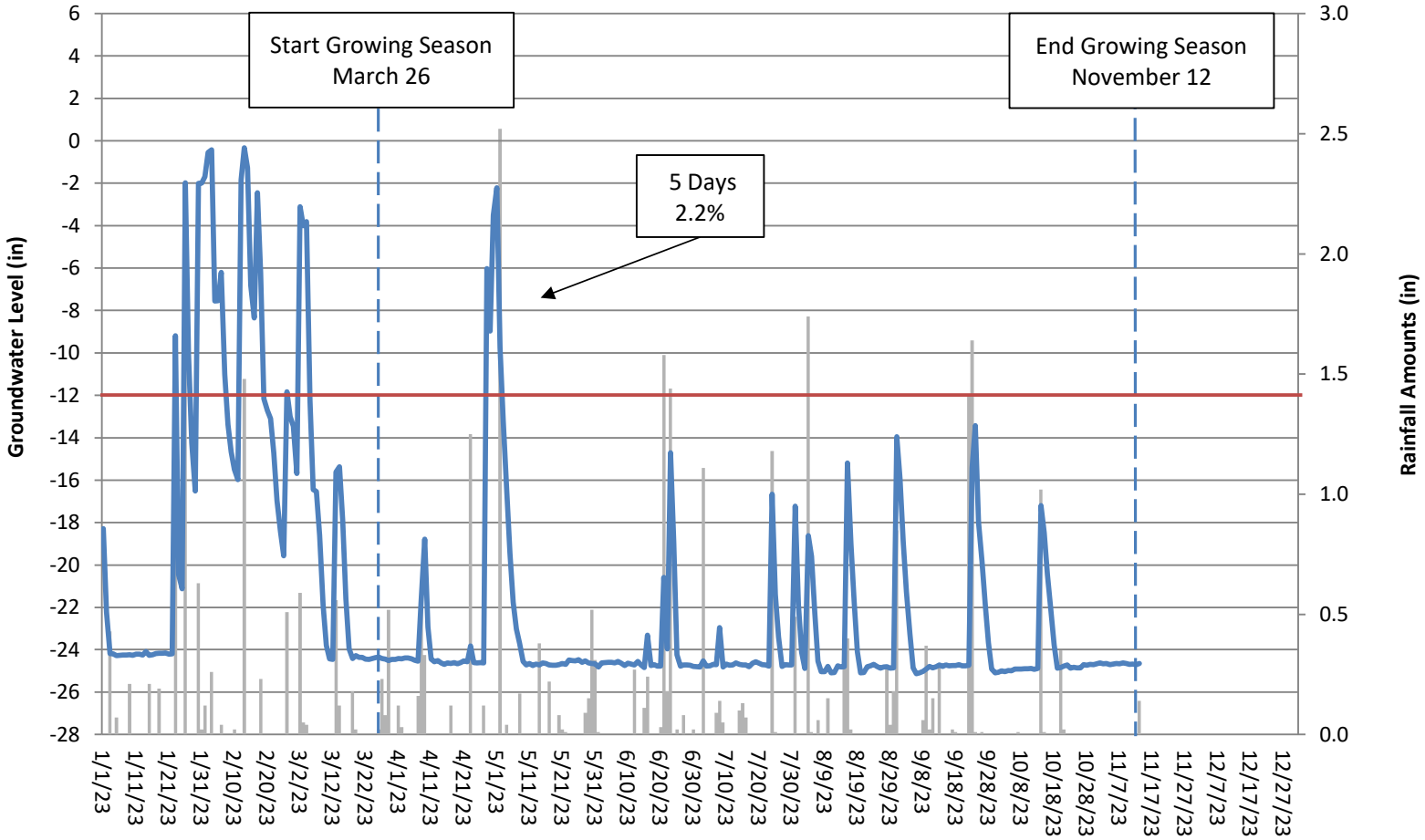
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 23 Year 1 (2023 Data)



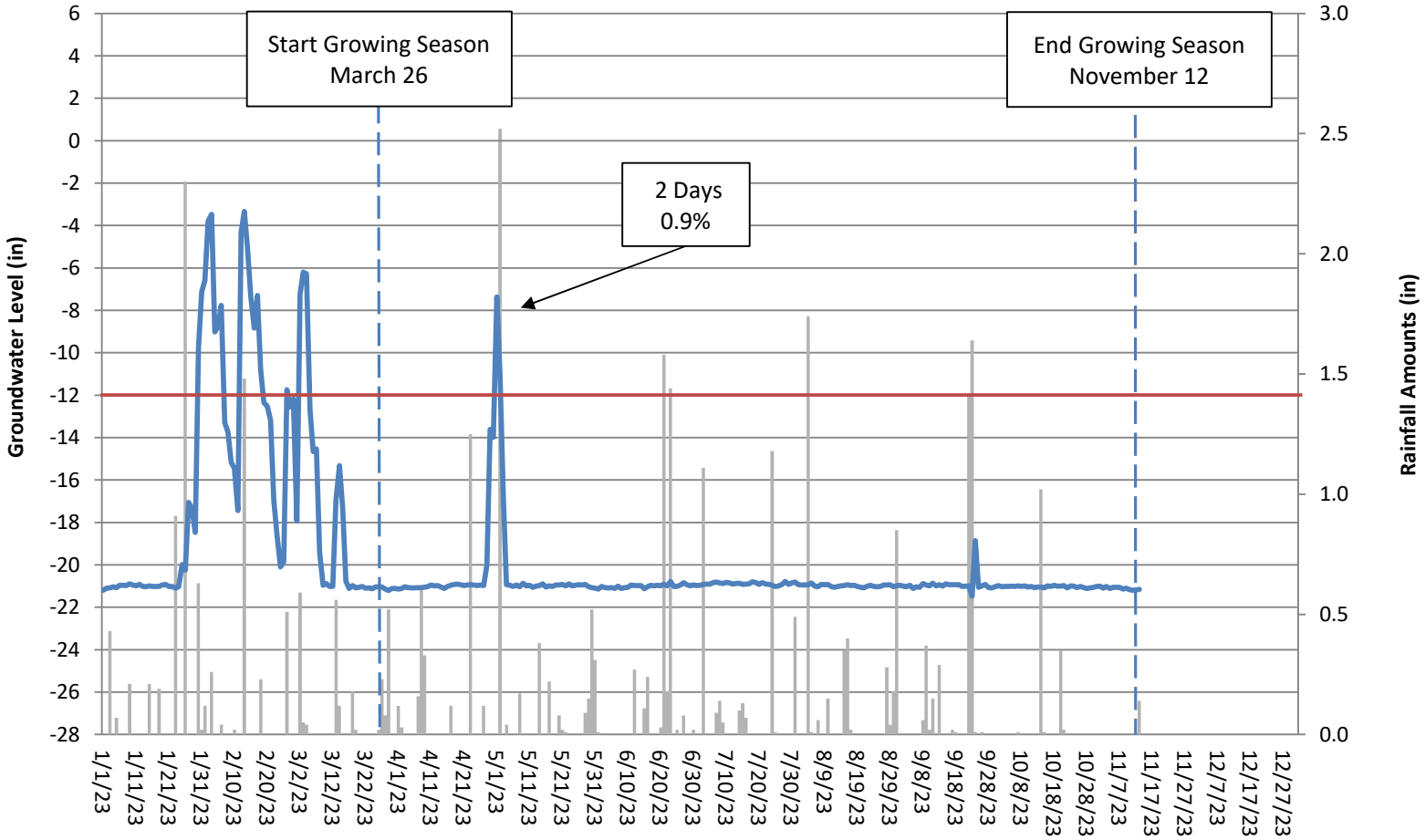
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 24 Year 1 (2023 Data)



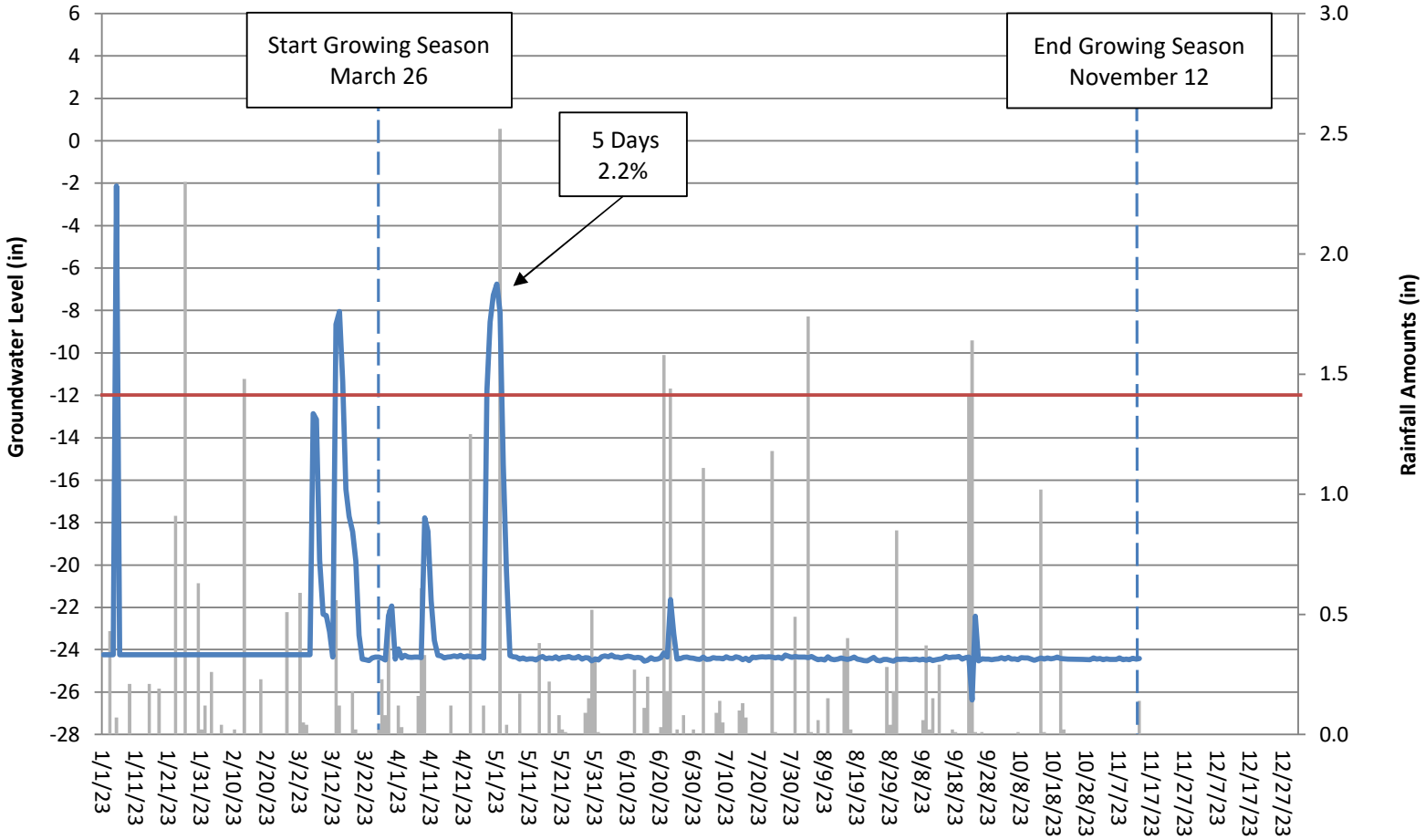
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 25 Year 1 (2023 Data)



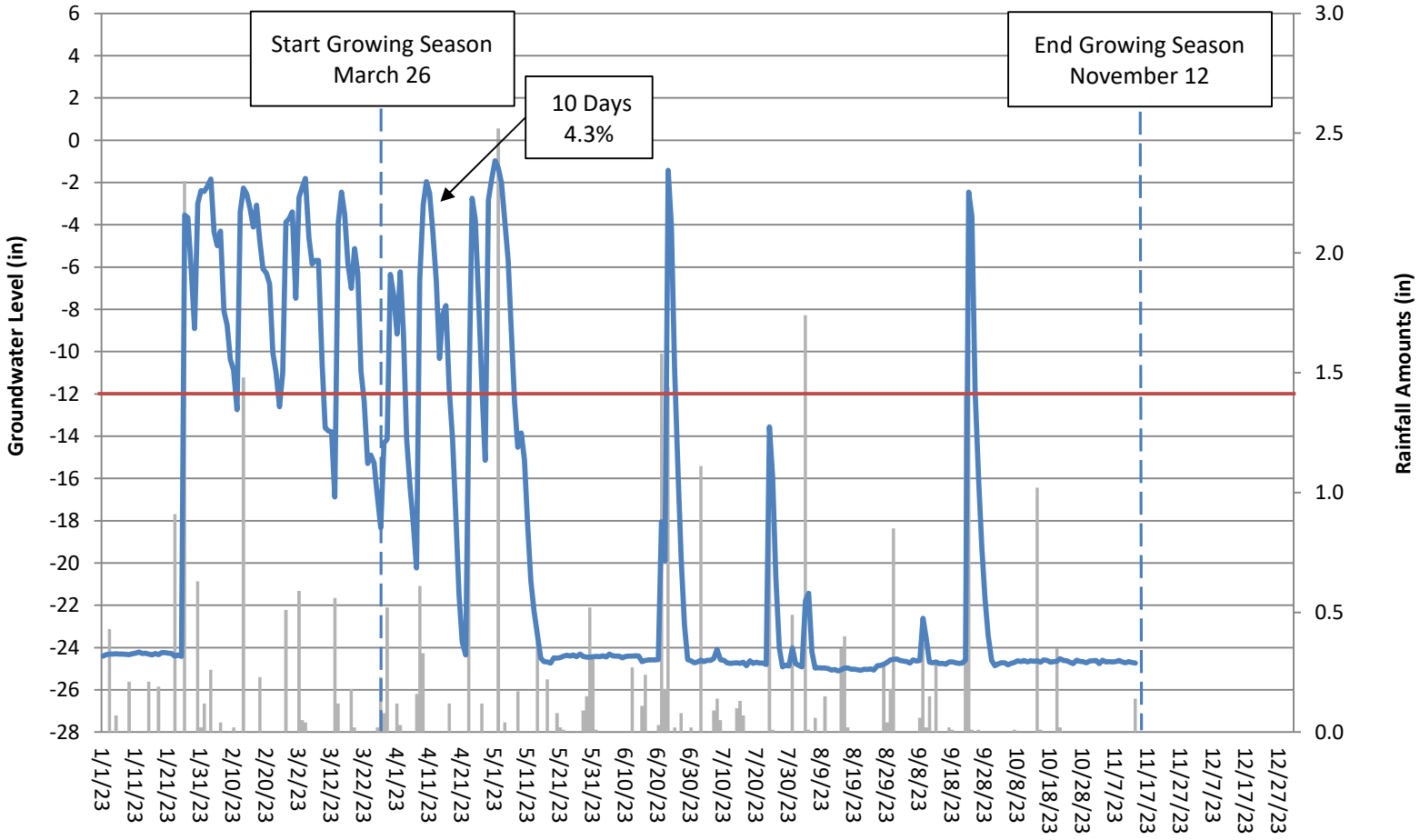
Non-riverine Swamp Forest - Wetland Hydroperiod Success Criteria is 12% of Growing Season

Pierce Terrace Groundwater Gauge 26 Year 1 (2023 Data)



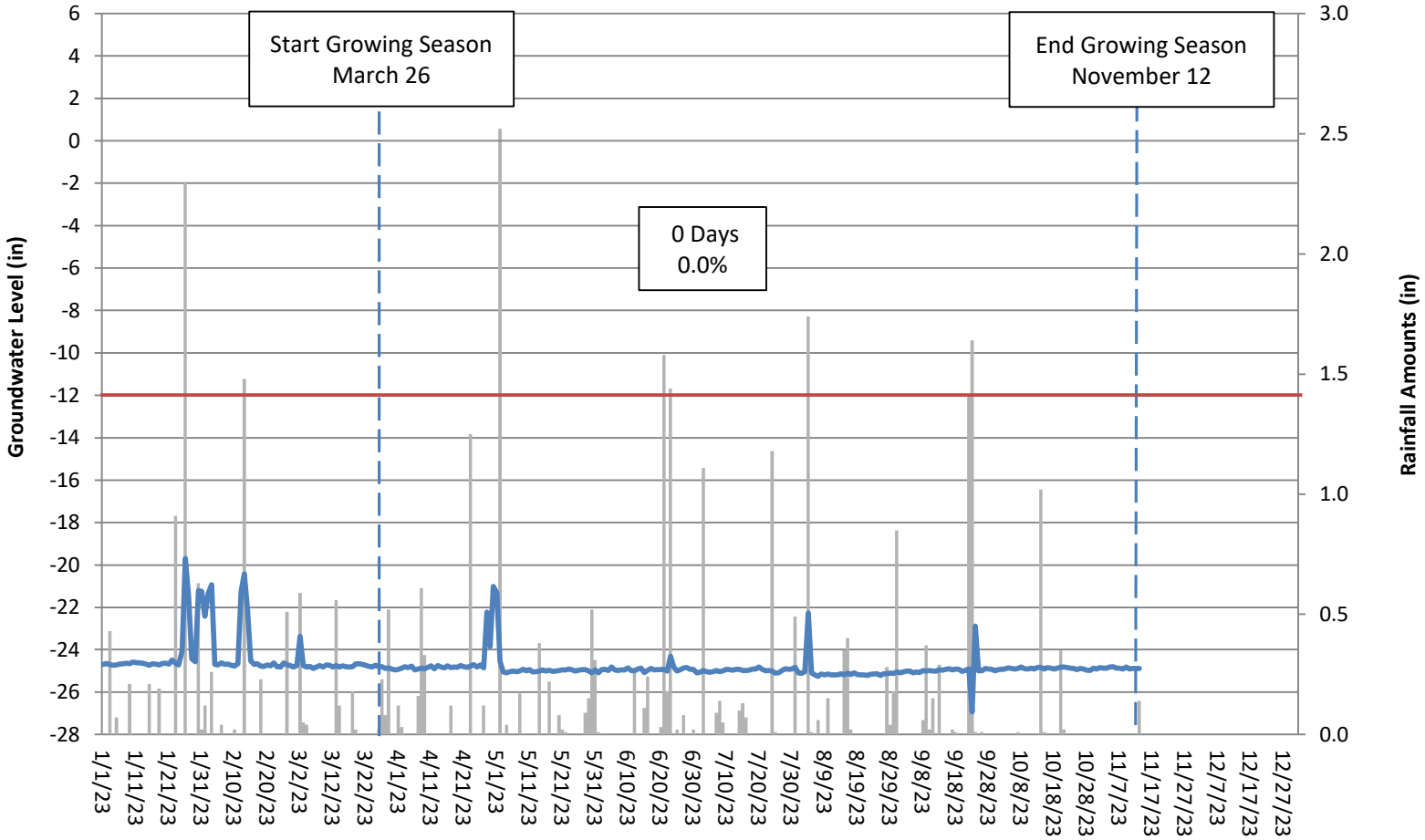
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 27 Year 1 (2023 Data)



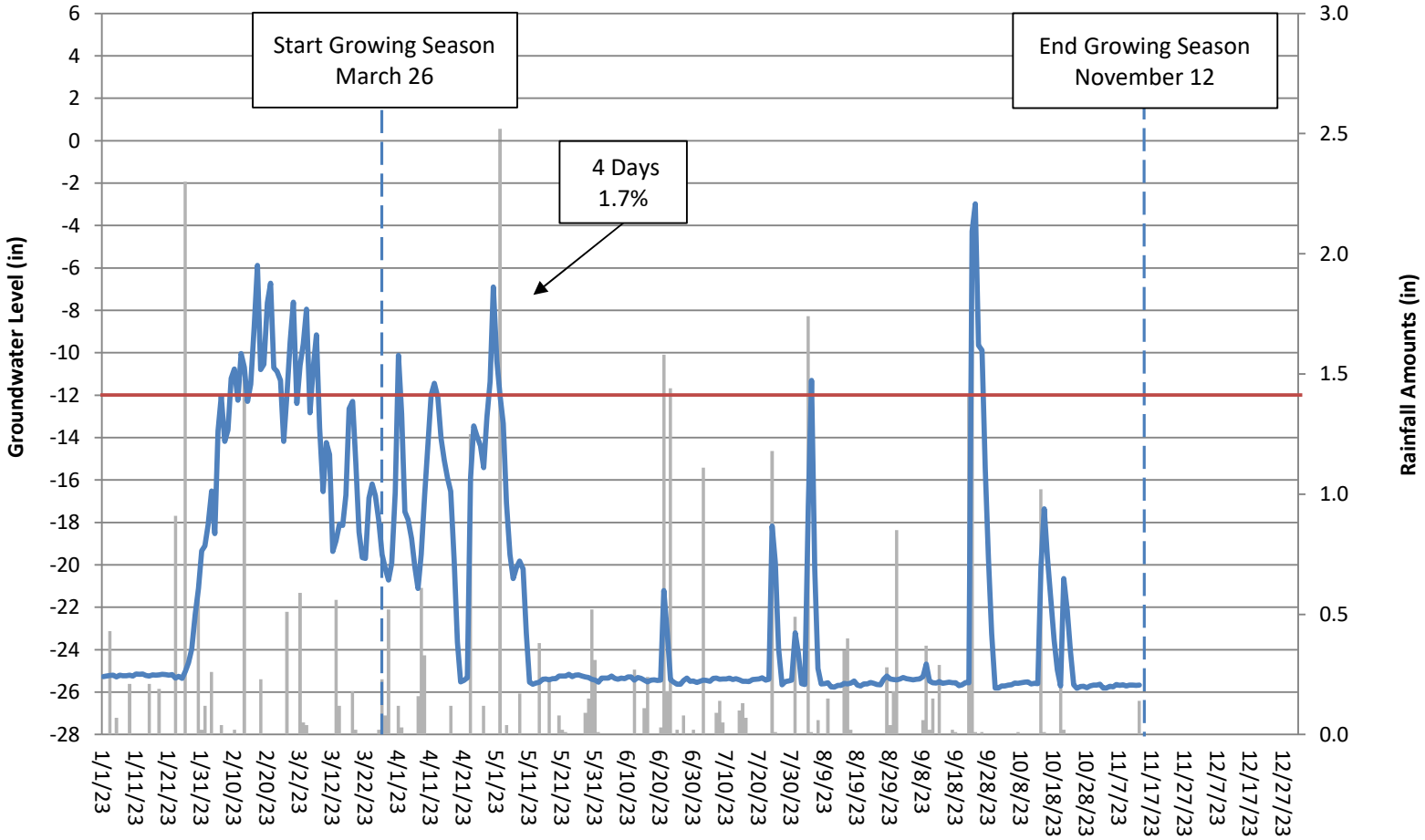
Non-riverine Swamp Forest - Wetland Hydroperiod Success Criteria is 12% of Growing Season

Pierce Terrace Groundwater Gauge 28 Year 1 (2023 Data)



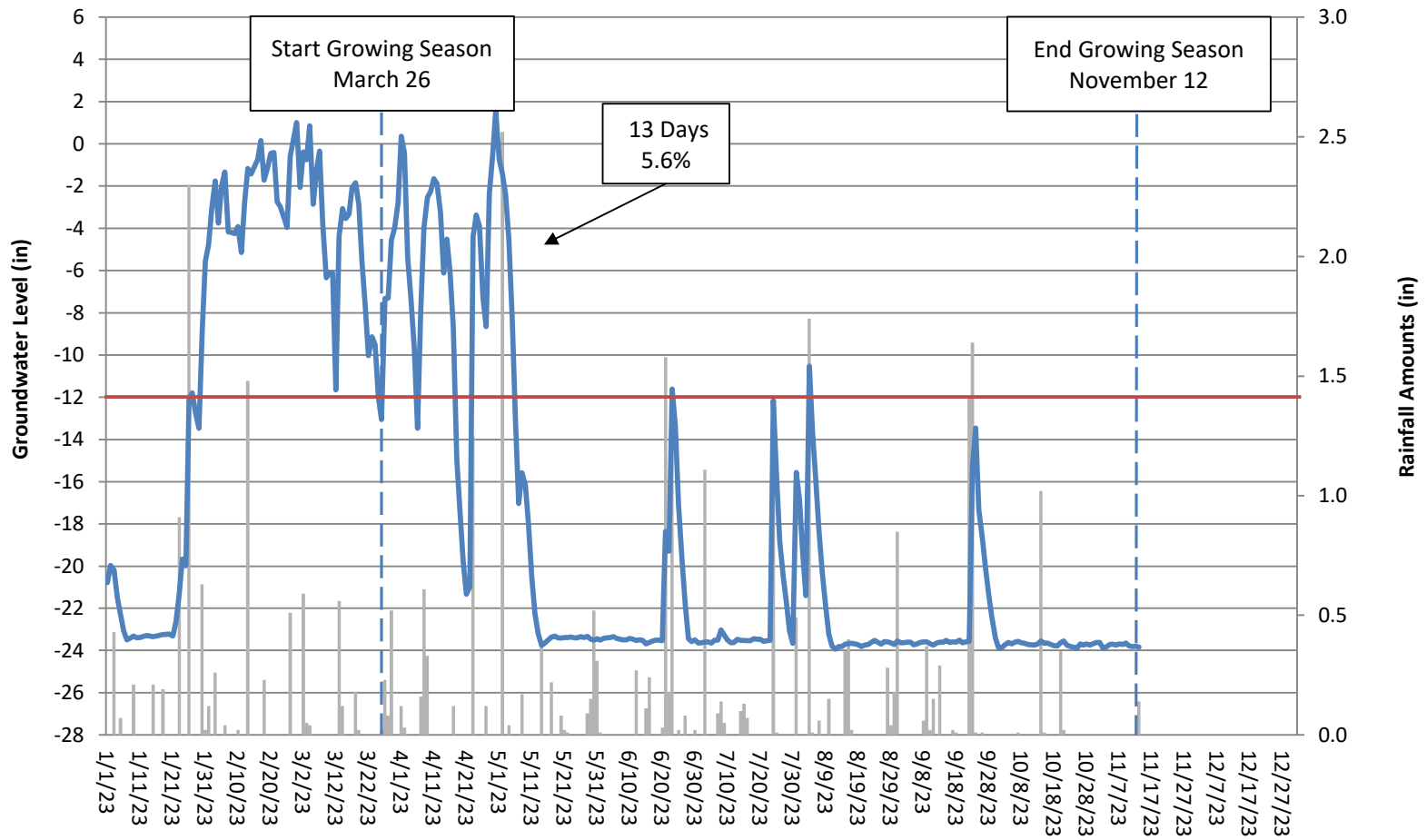
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 29 Year 1 (2023 Data)



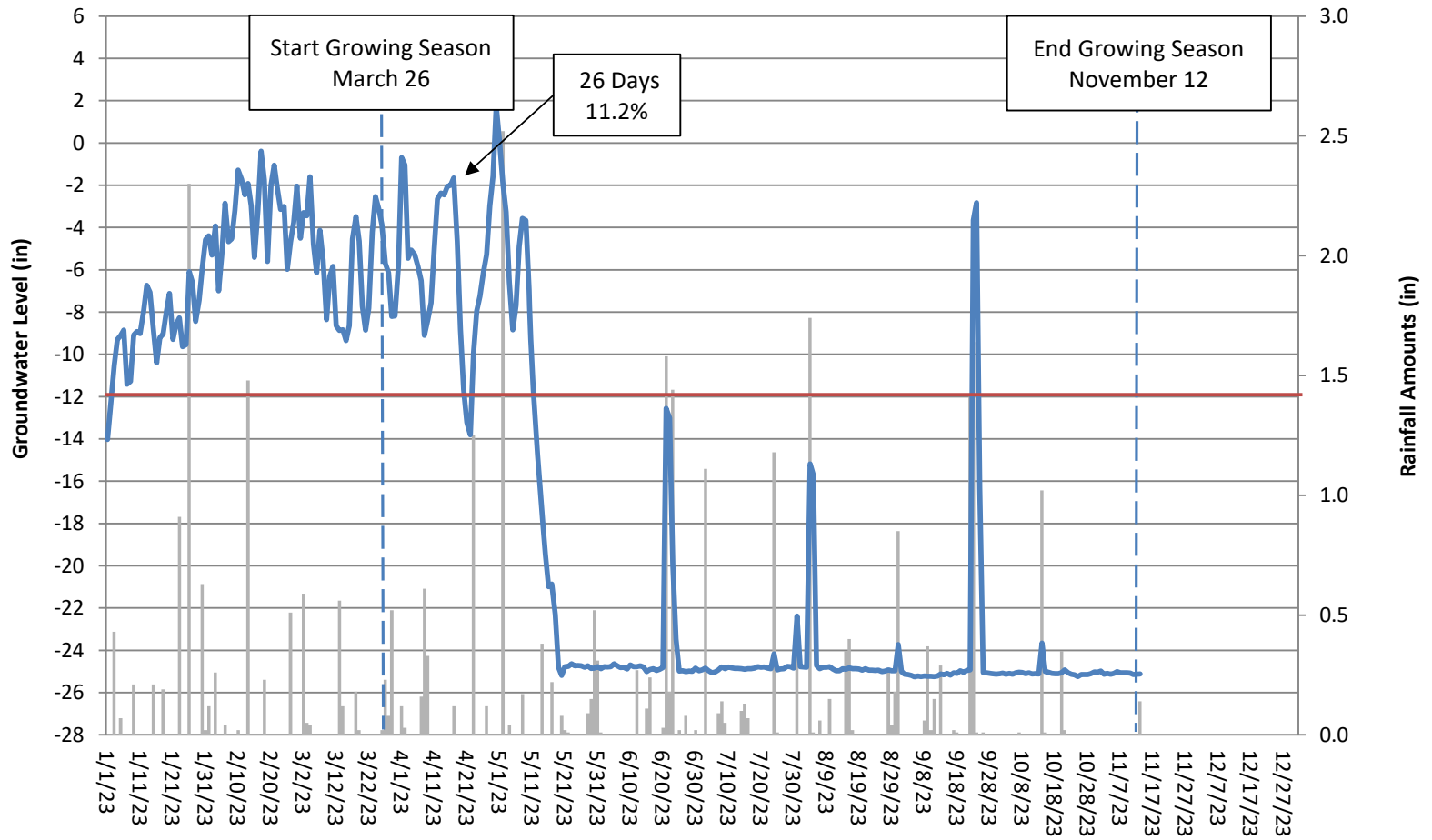
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 30 Year 1 (2023 Data)



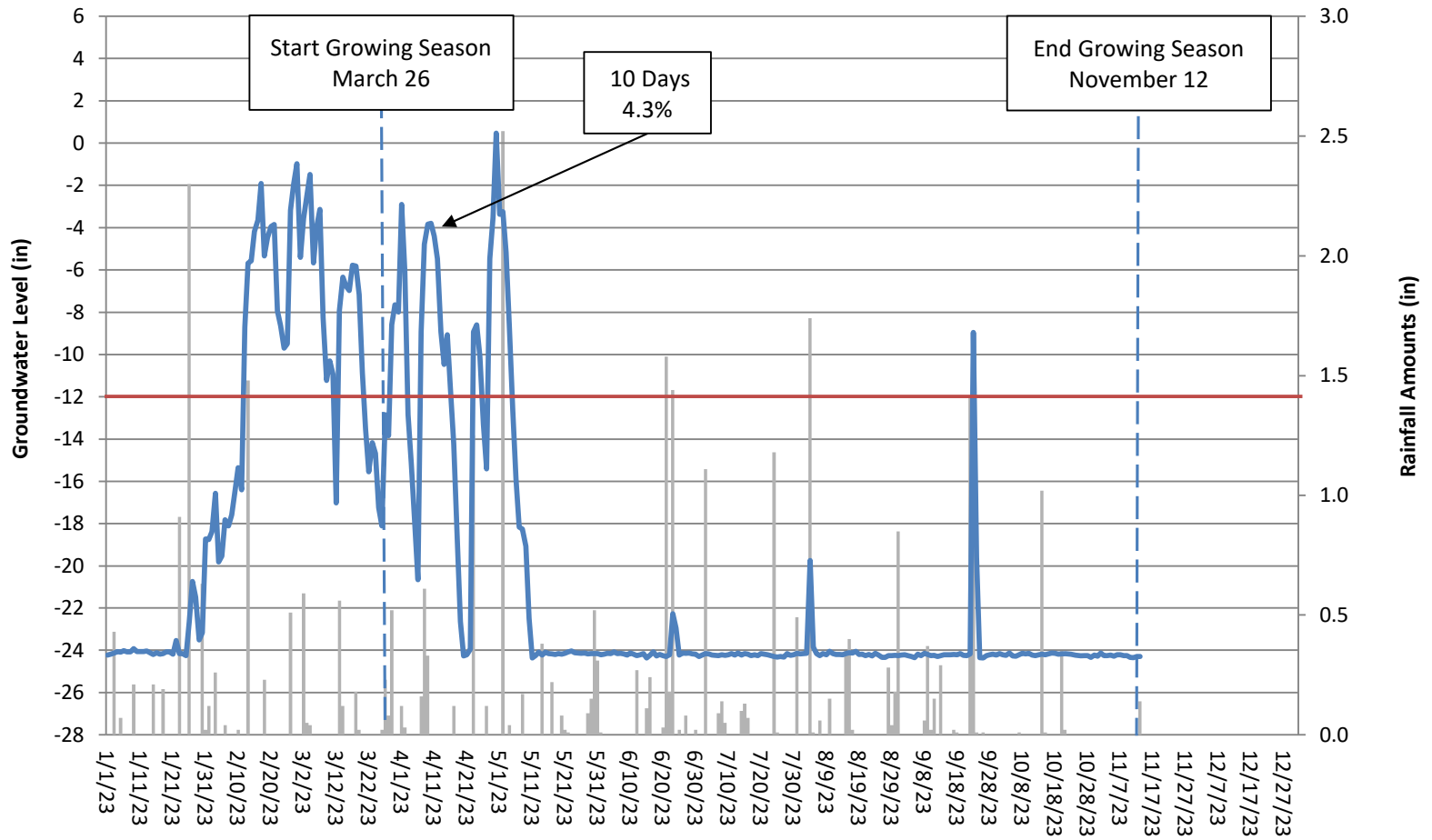
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 31 Year 1 (2023 Data)



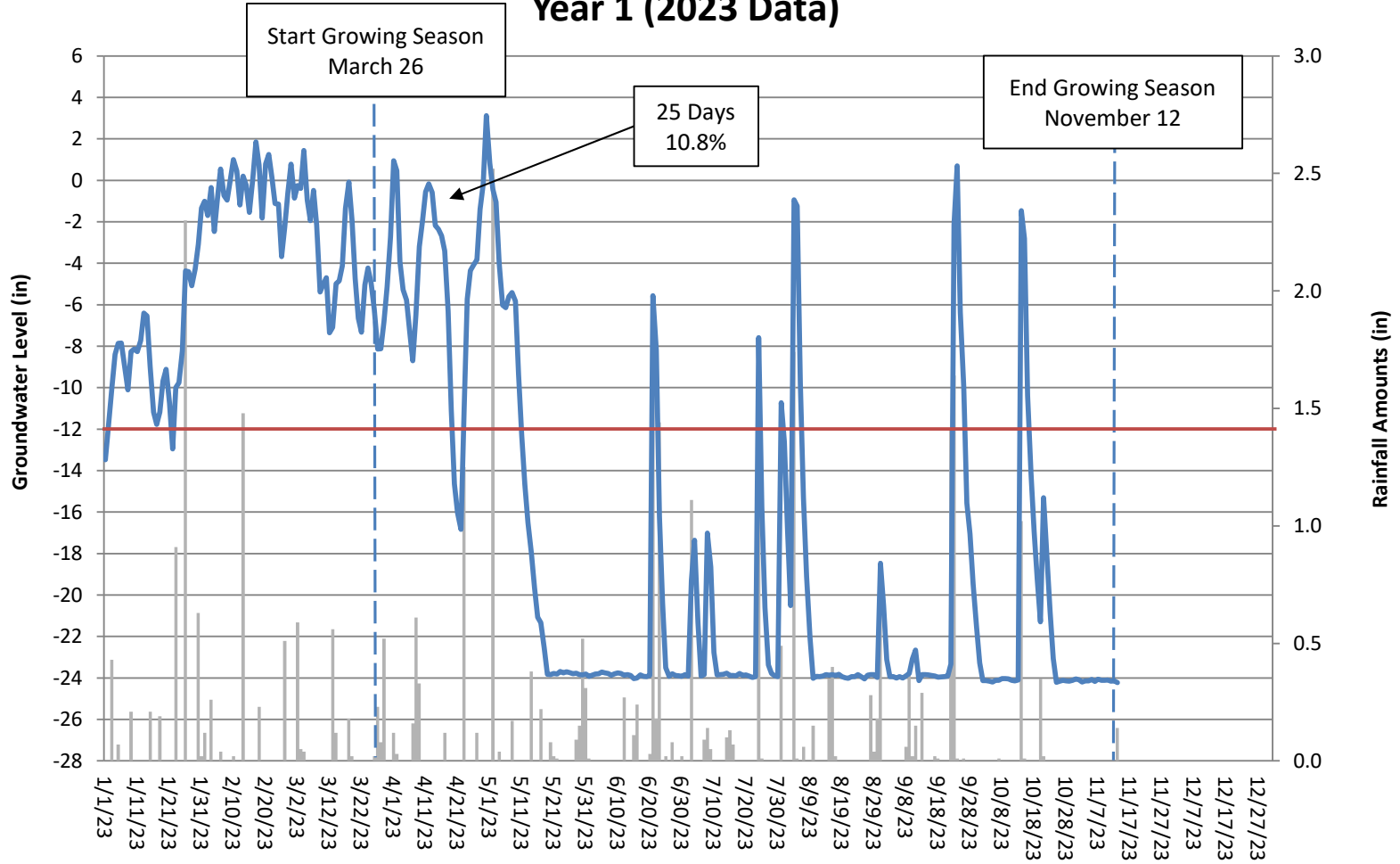
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 32 Year 1 (2023 Data)



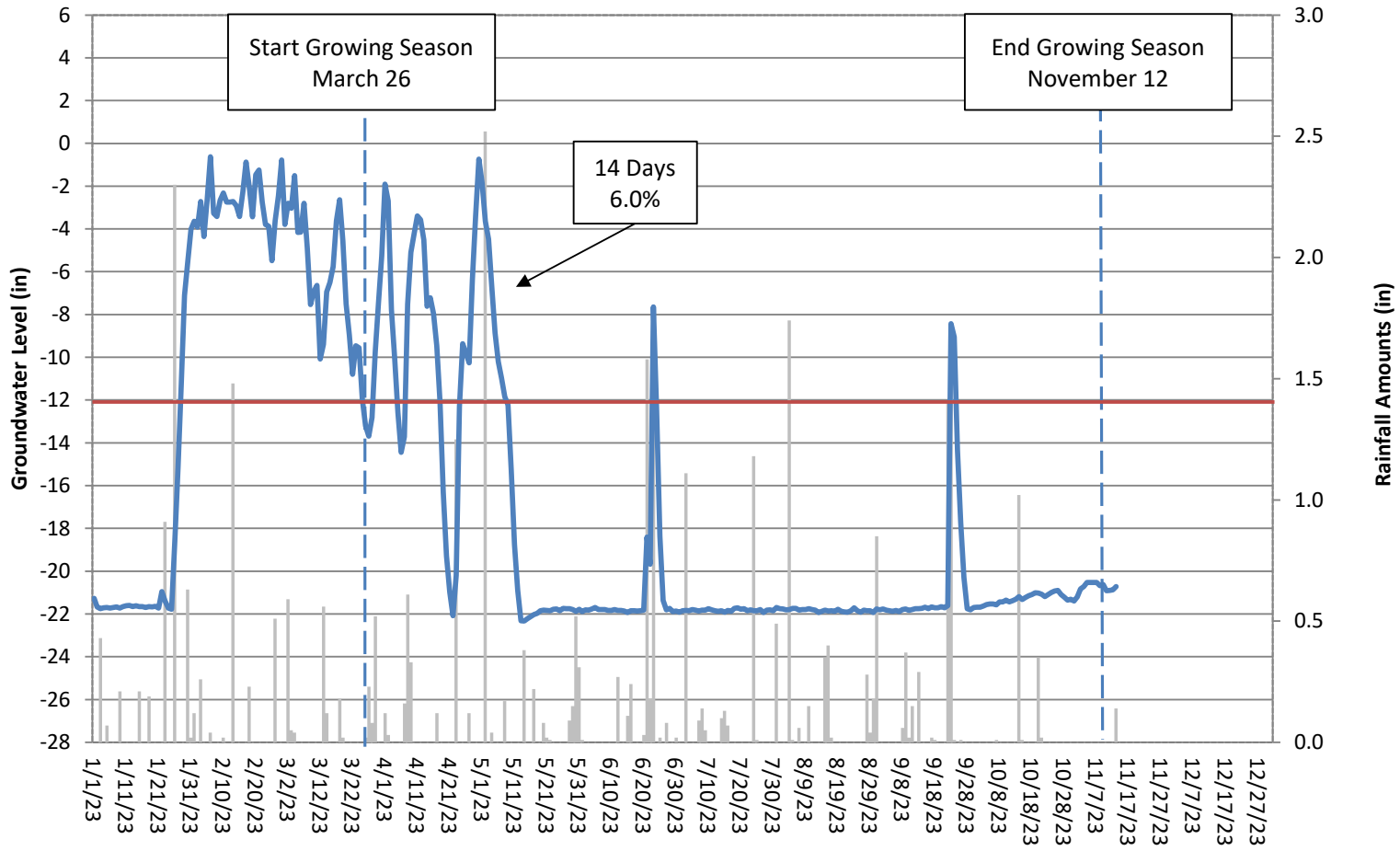
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 33 Year 1 (2023 Data)



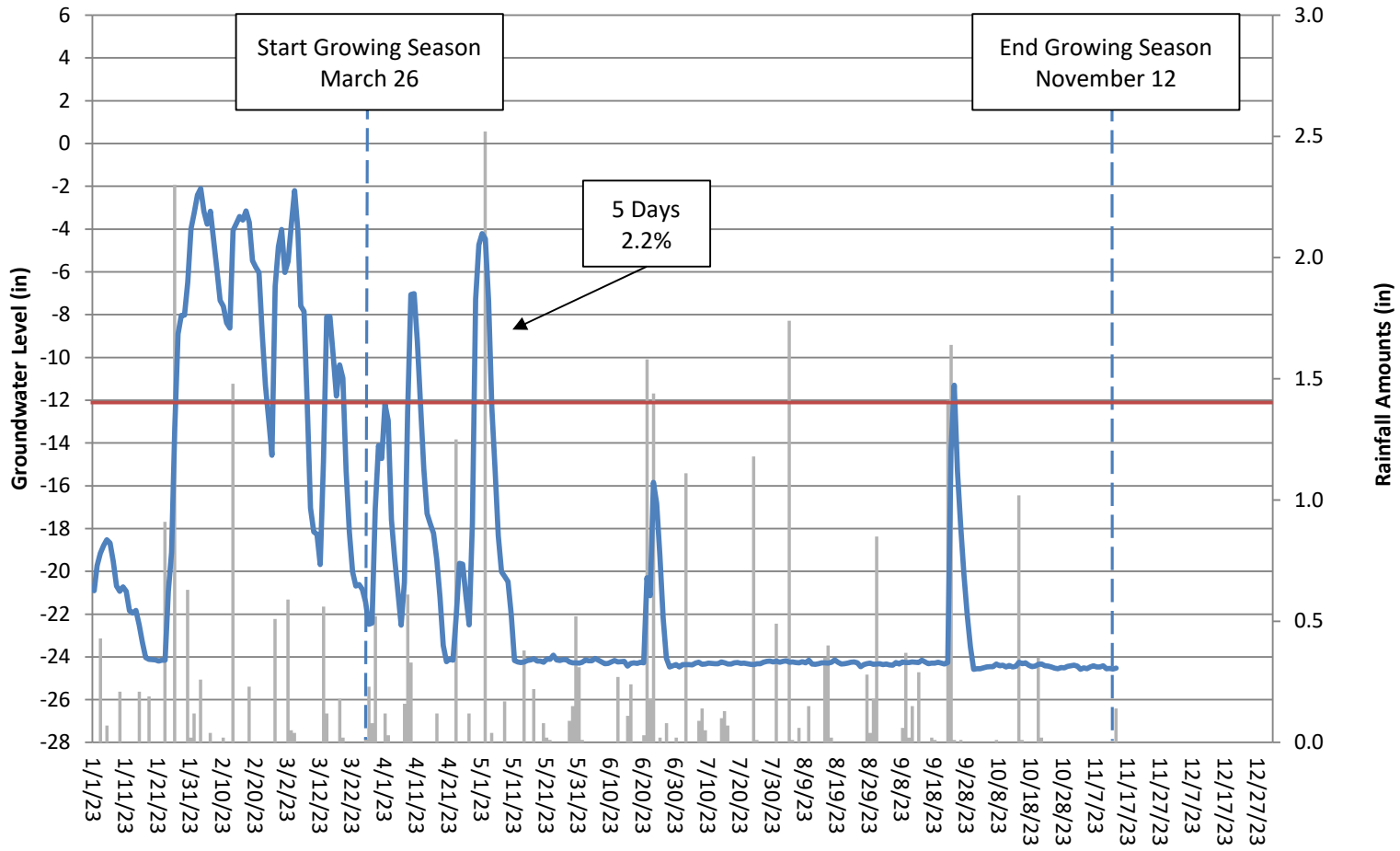
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 34 Year 1 (2023 Data)



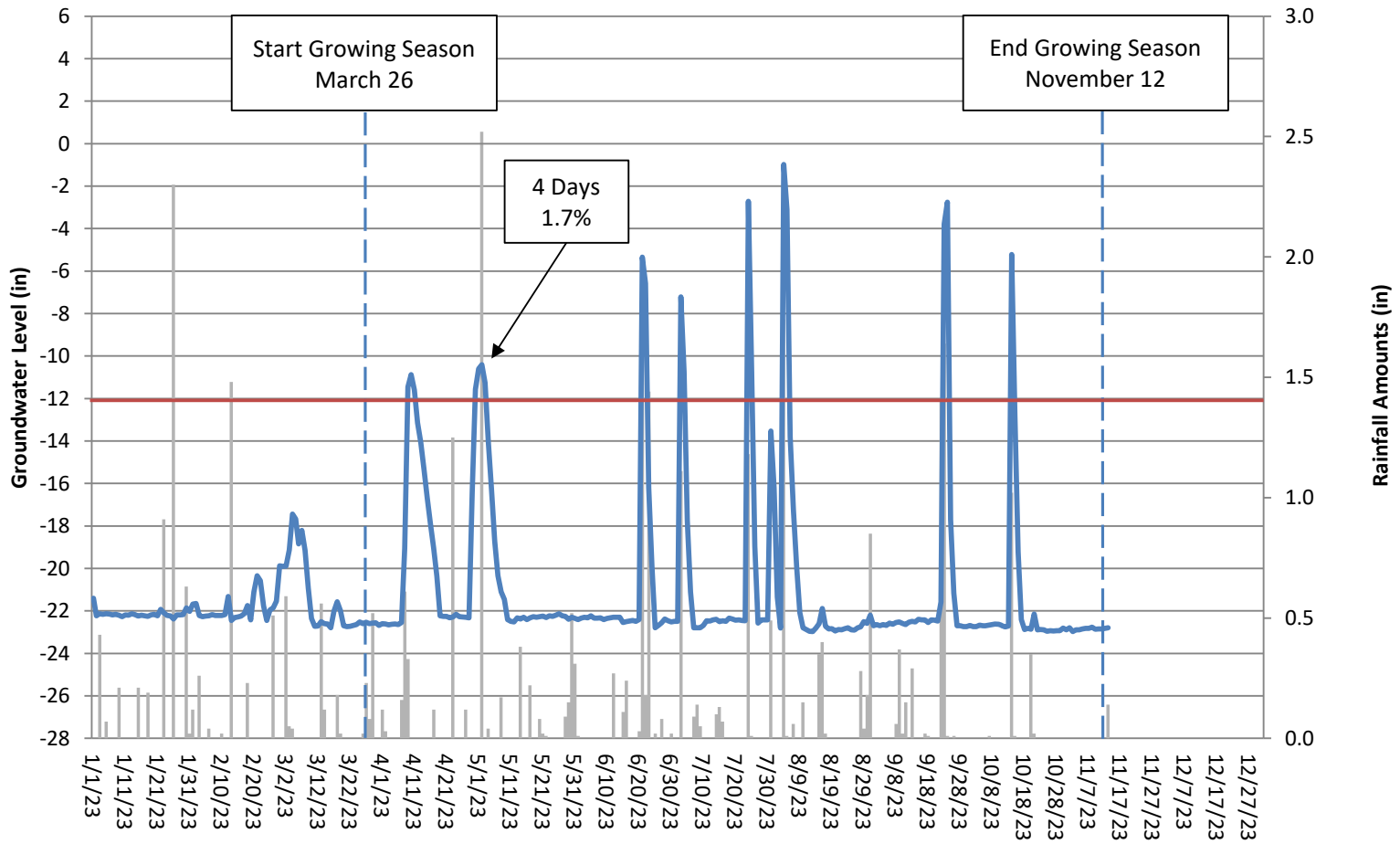
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 35 Year 1 (2023 Data)



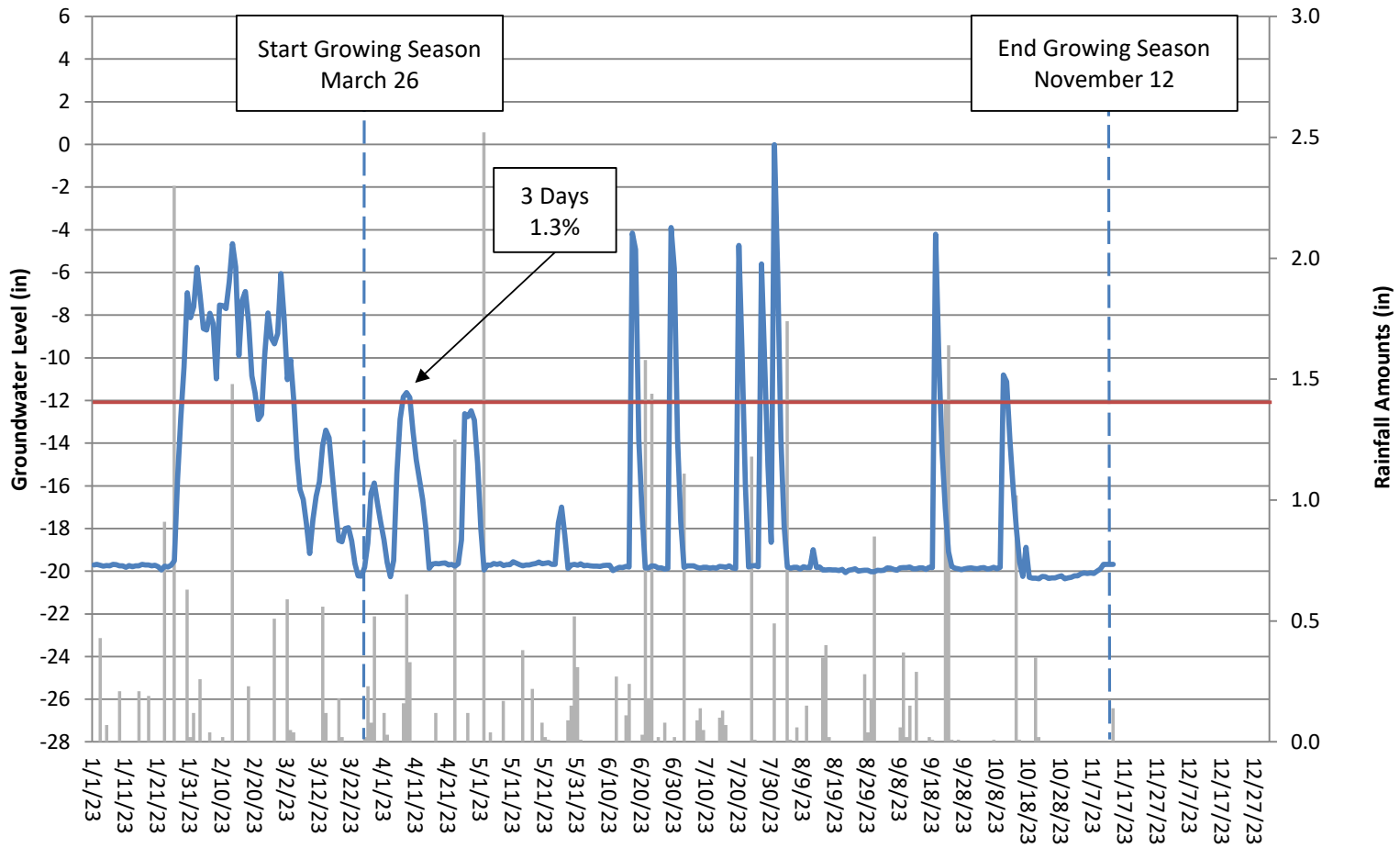
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 36 Year 1 (2023 Data)



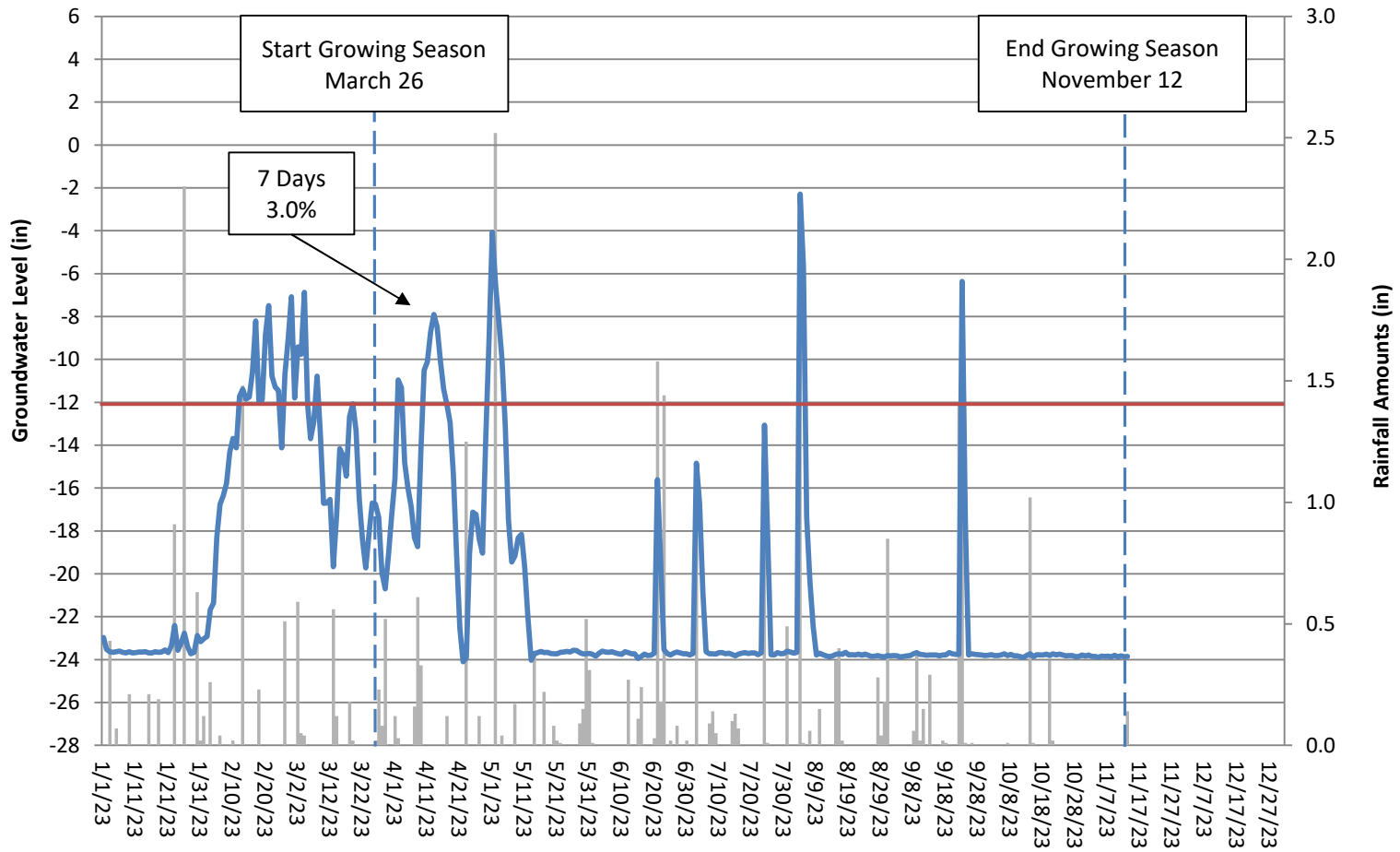
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 37 Year 1 (2023 Data)



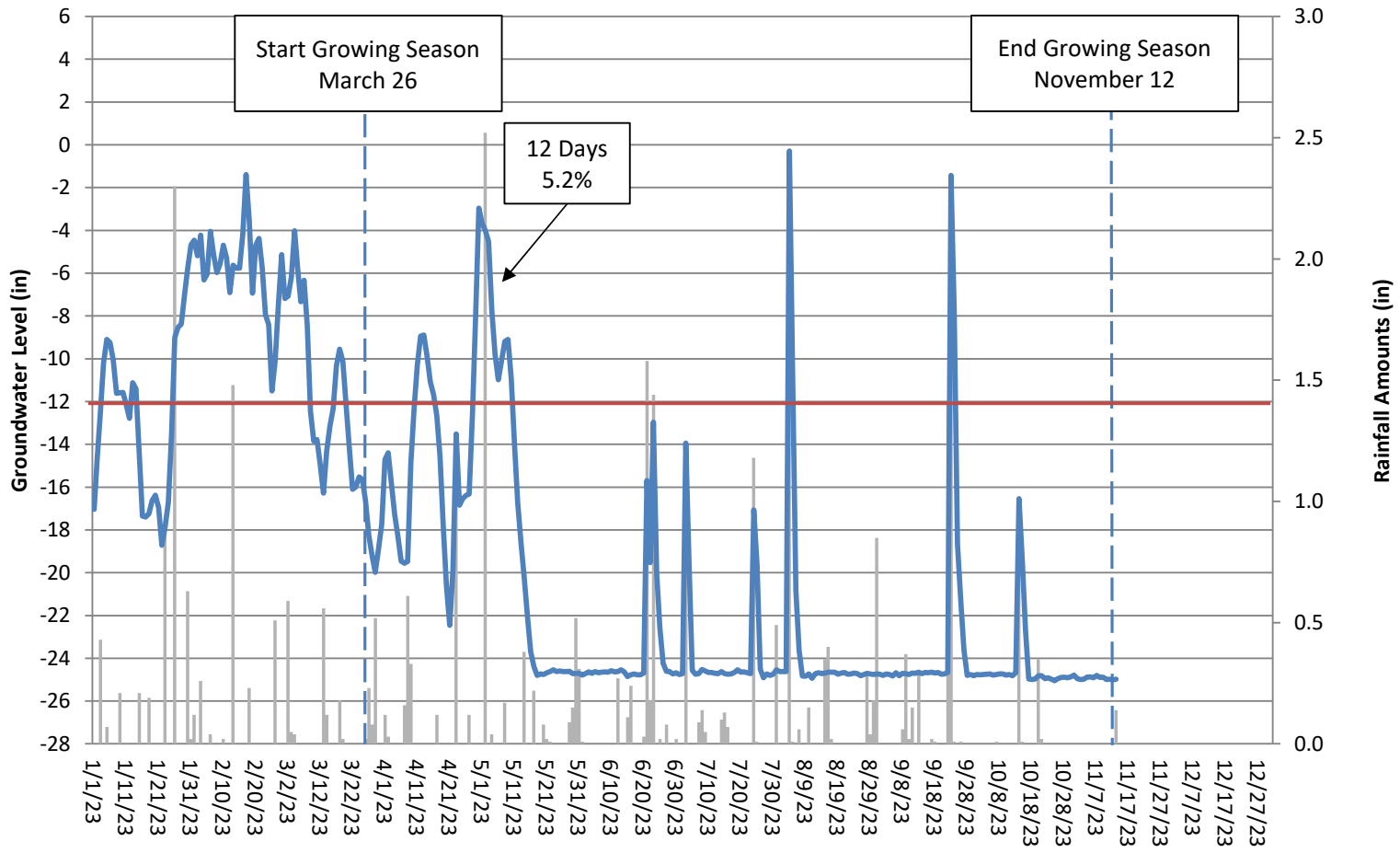
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 38 Year 1 (2023 Data)



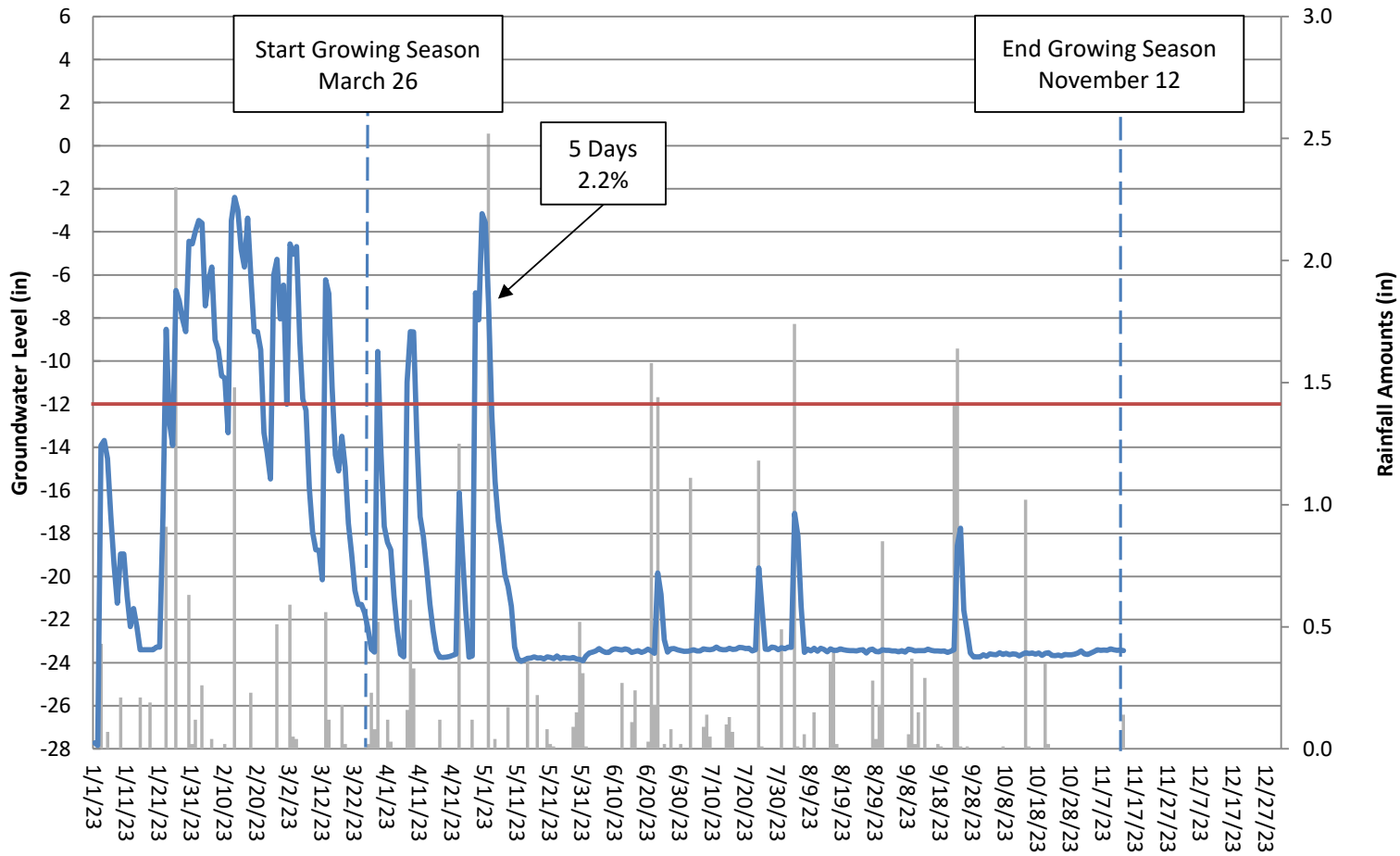
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 39 Year 1 (2023 Data)



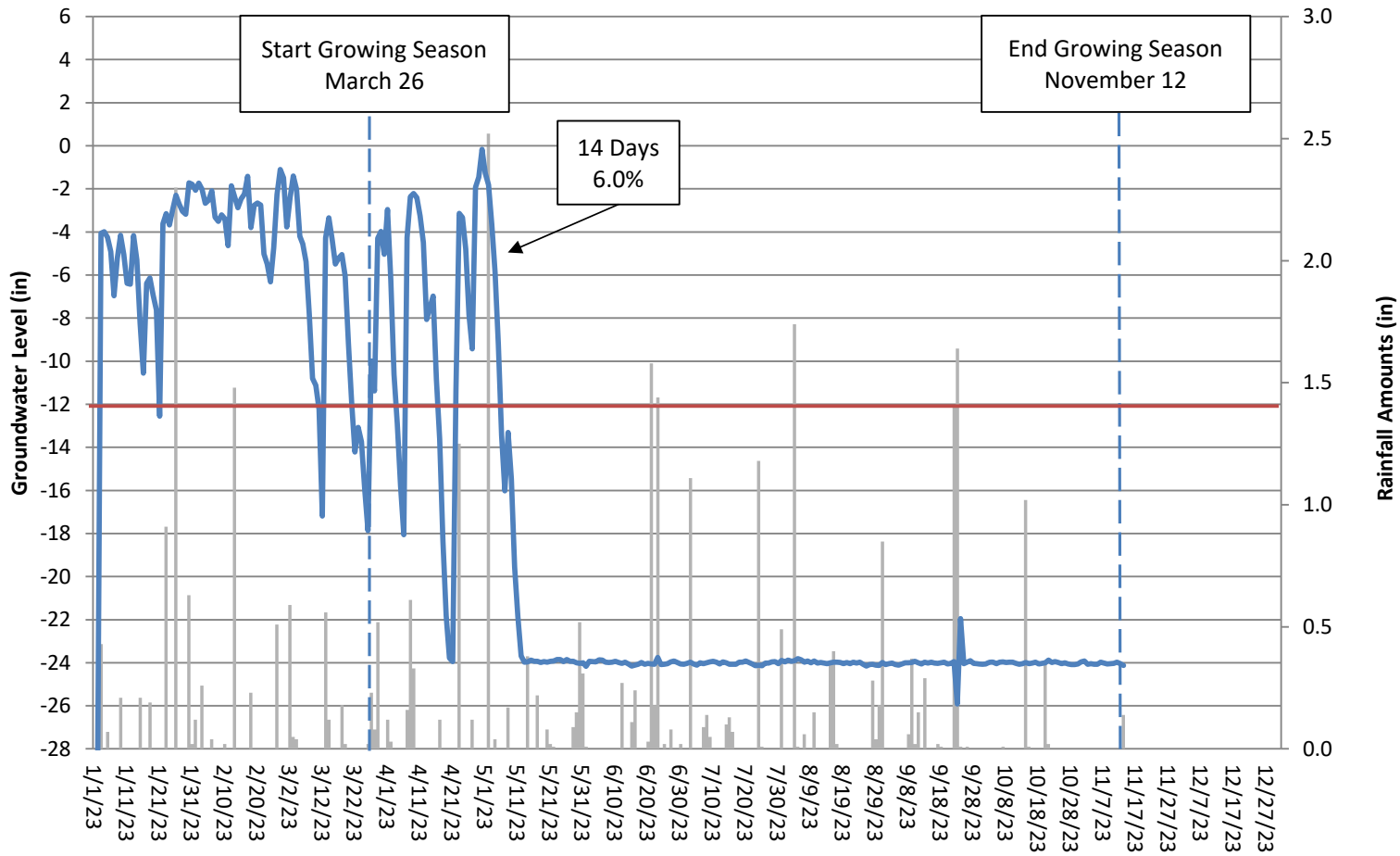
Non-riverine Swamp Forest - Wetland Hydroperiod Success Criteria is 12% of Growing Season

Pierce Terrace Groundwater Gauge 40 Year 1 (2023 Data)



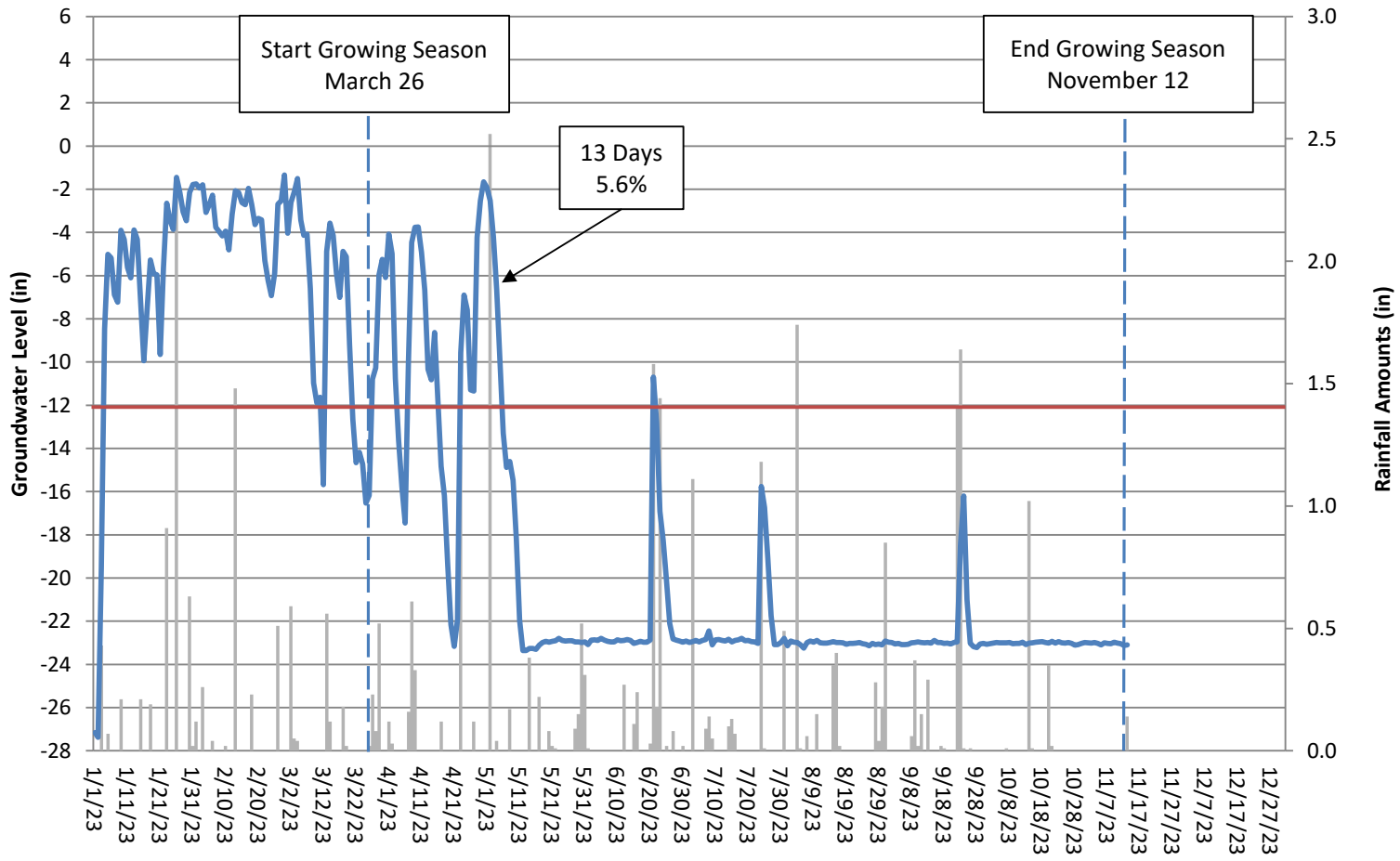
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 41 Year 1 (2023 Data)



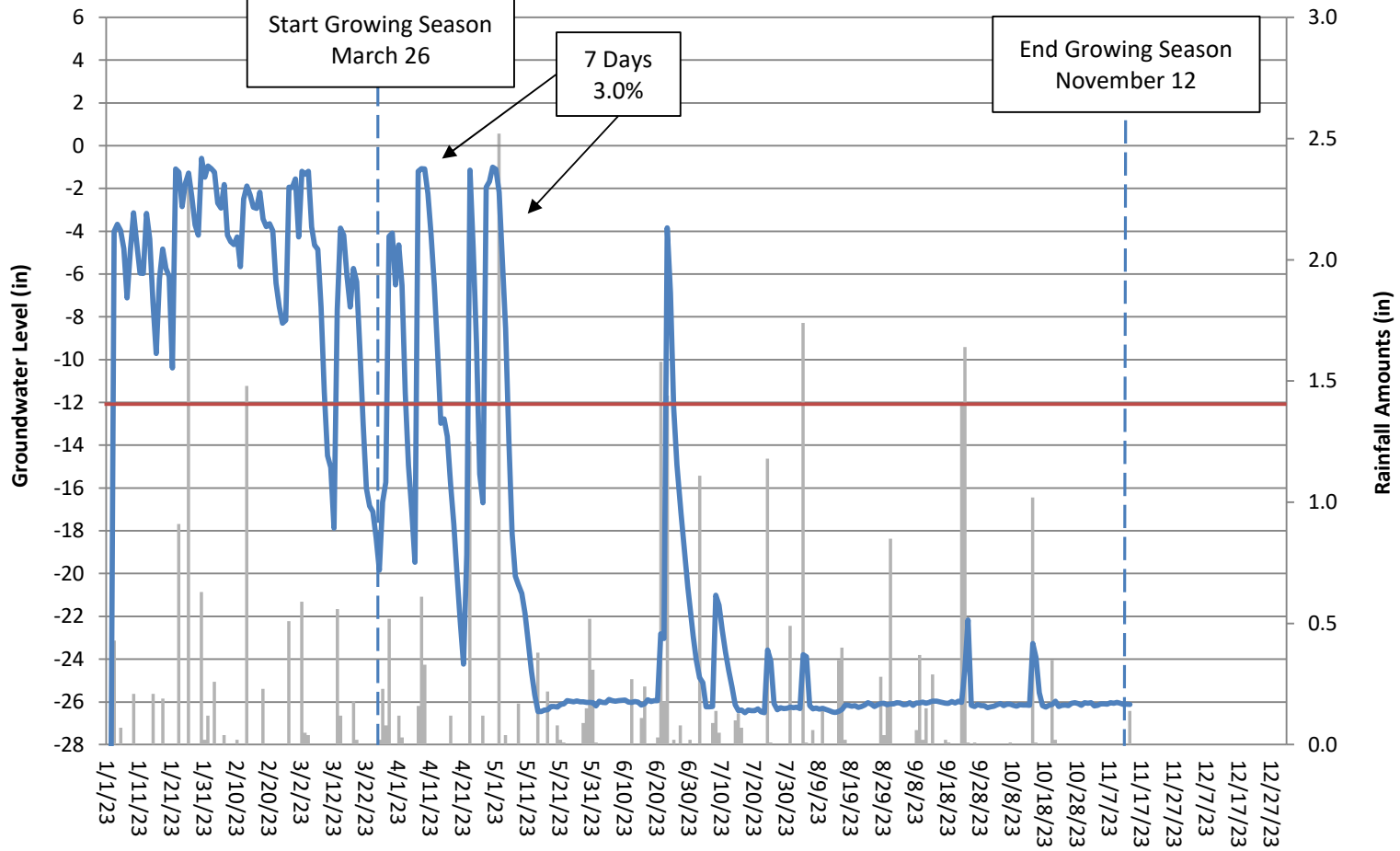
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 42 Year 1 (2023 Data)



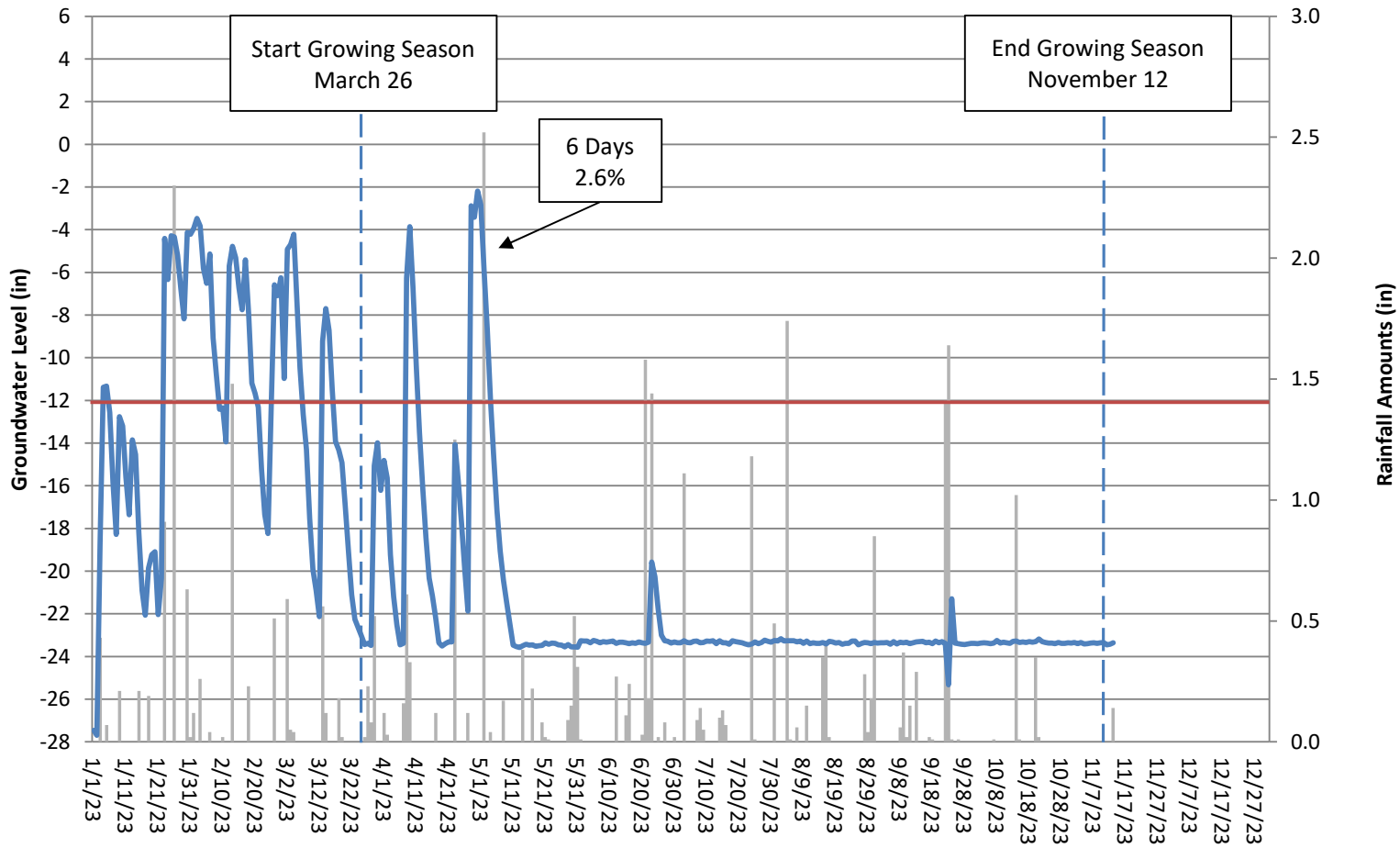
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 43 Year 1 (2023 Data)



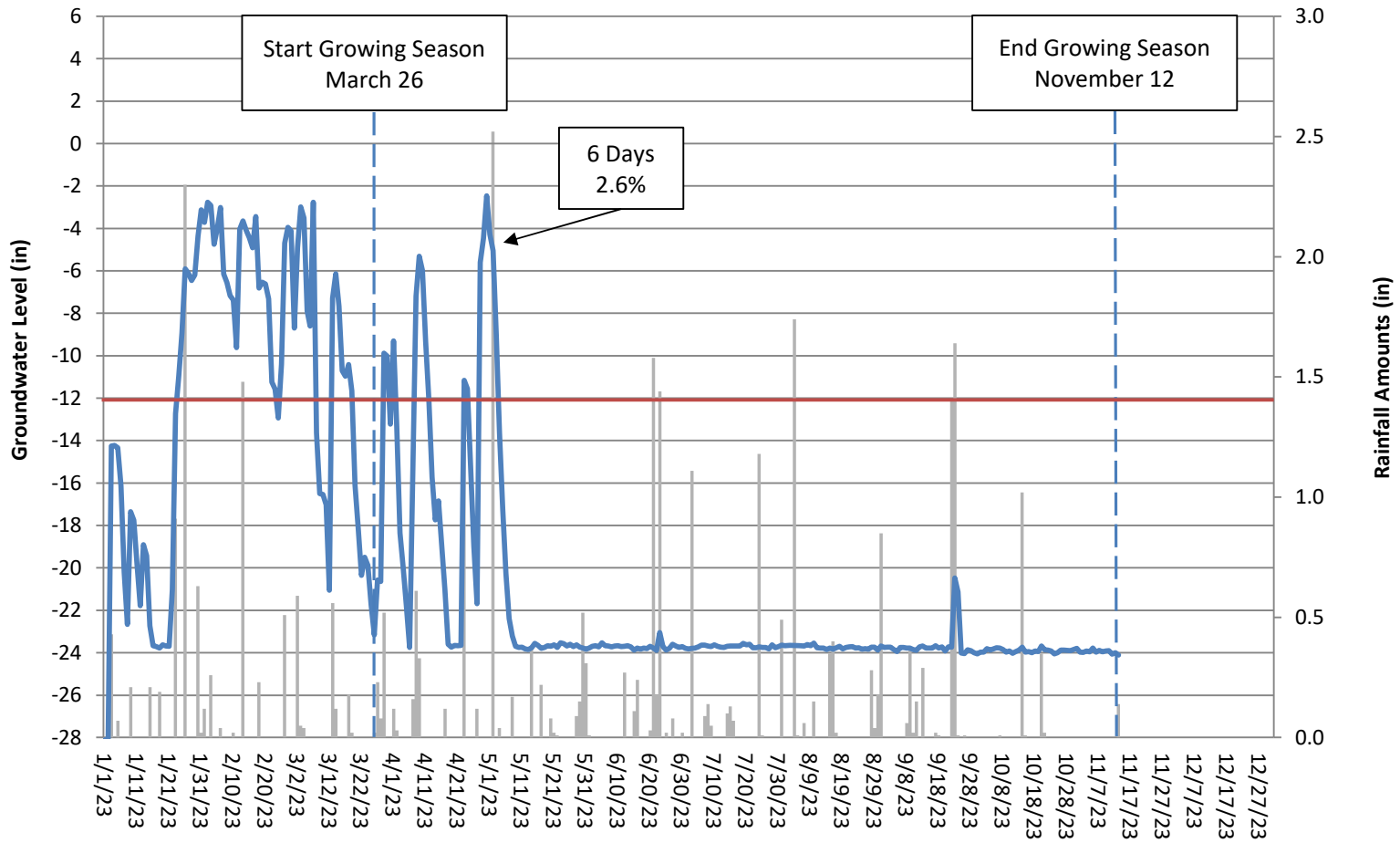
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 44 Year 1 (2023 Data)



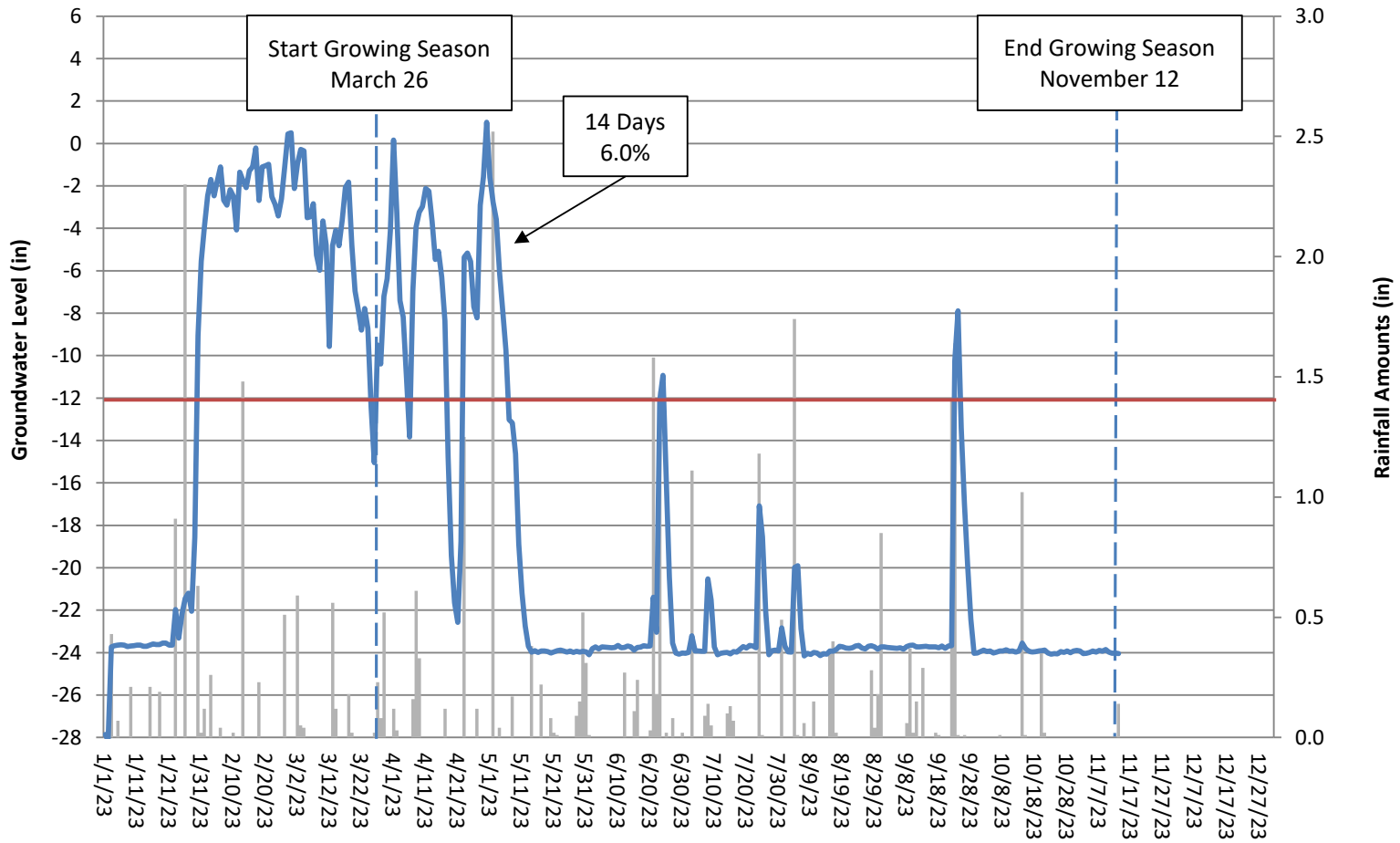
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 45 Year 1 (2023 Data)

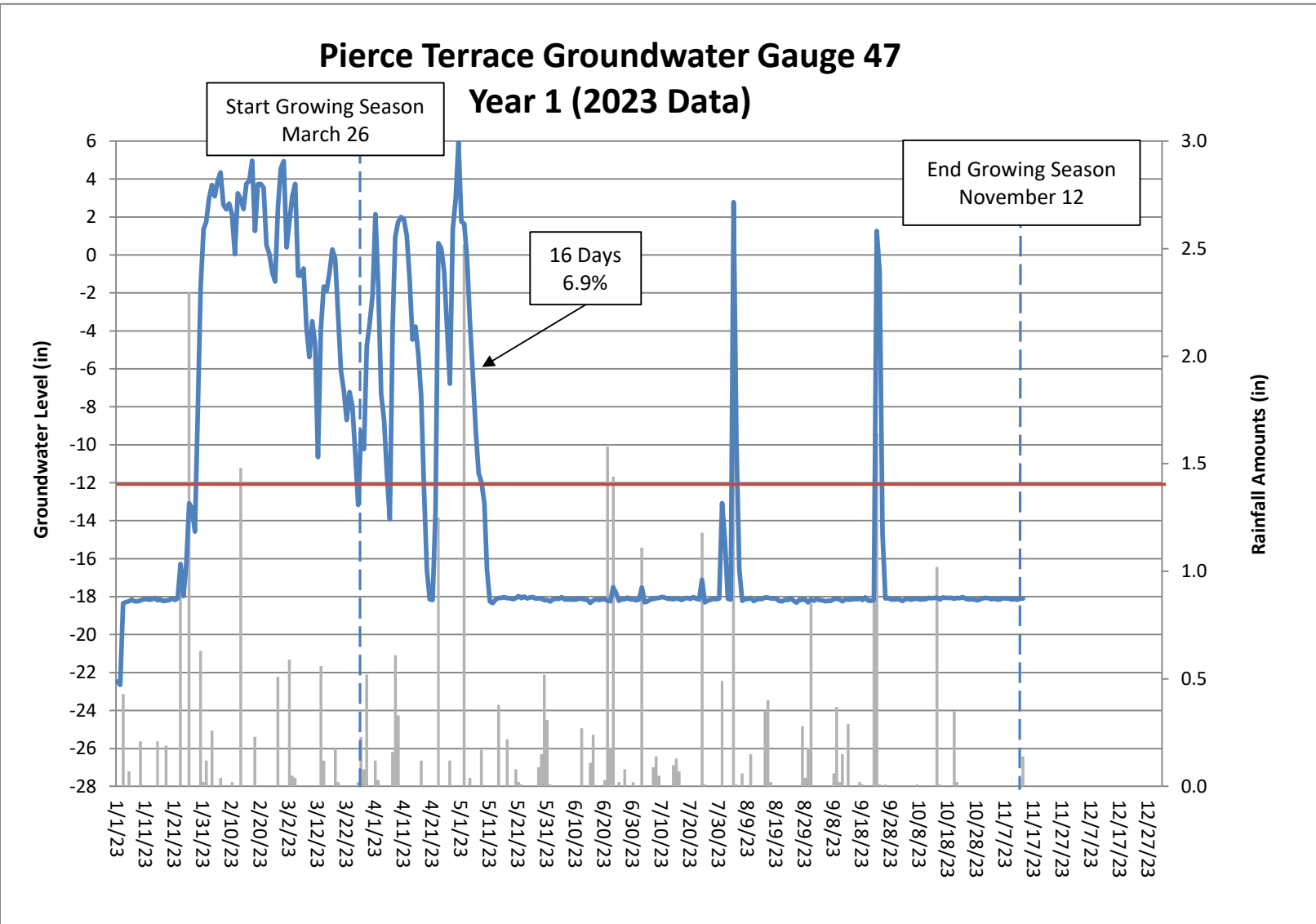


Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 46 Year 1 (2023 Data)

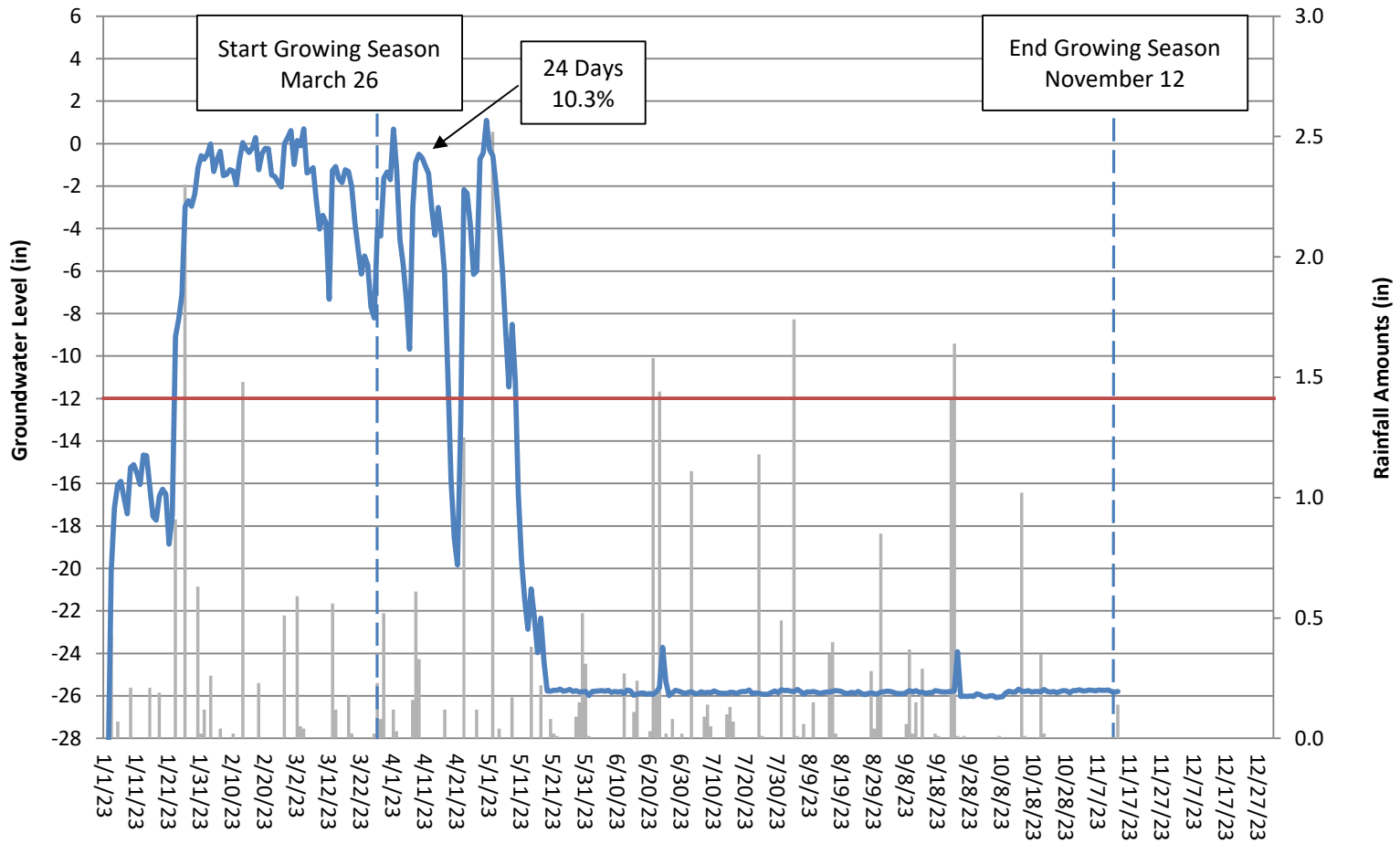


Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season



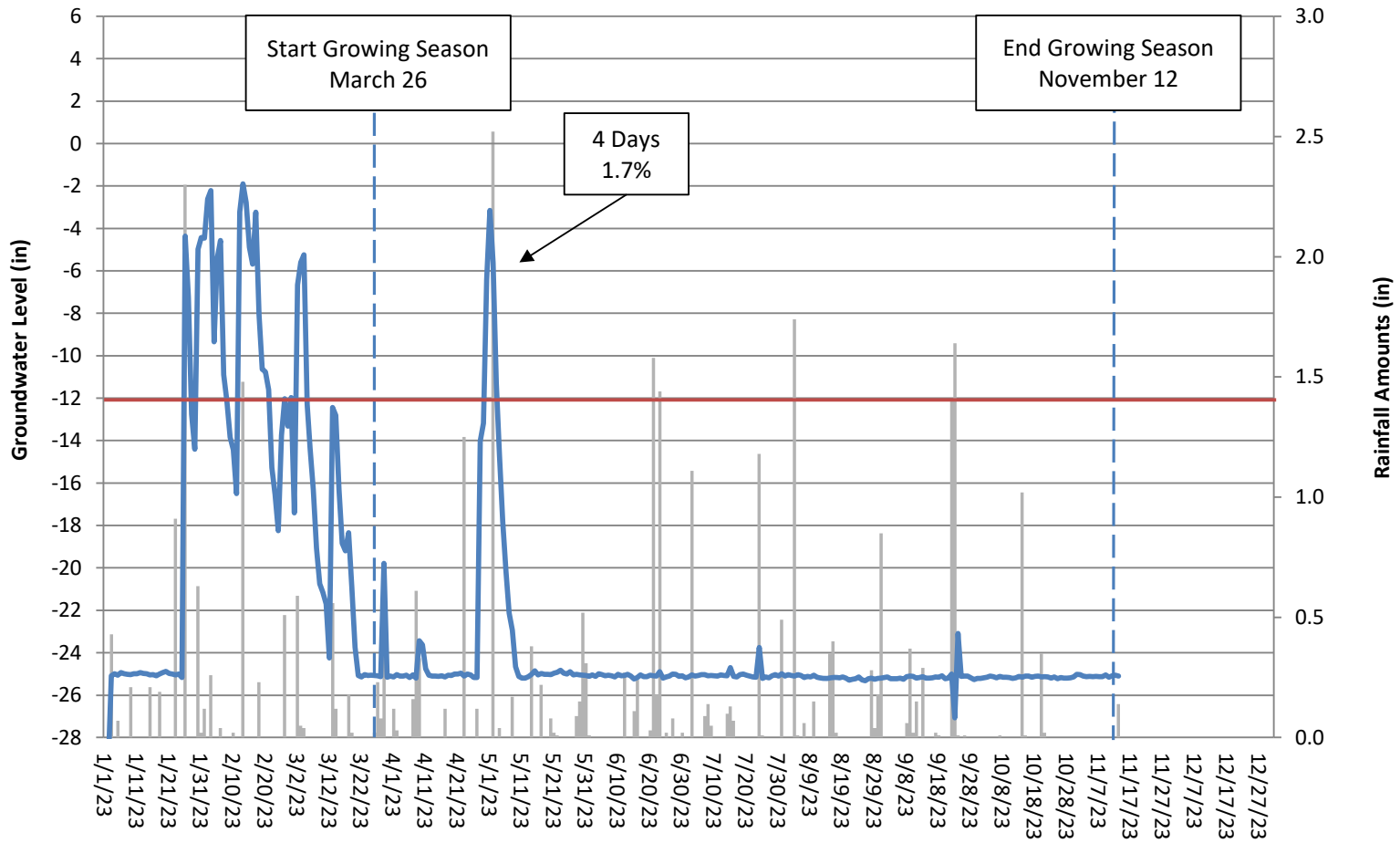
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 48 Year 1 (2023 Data)



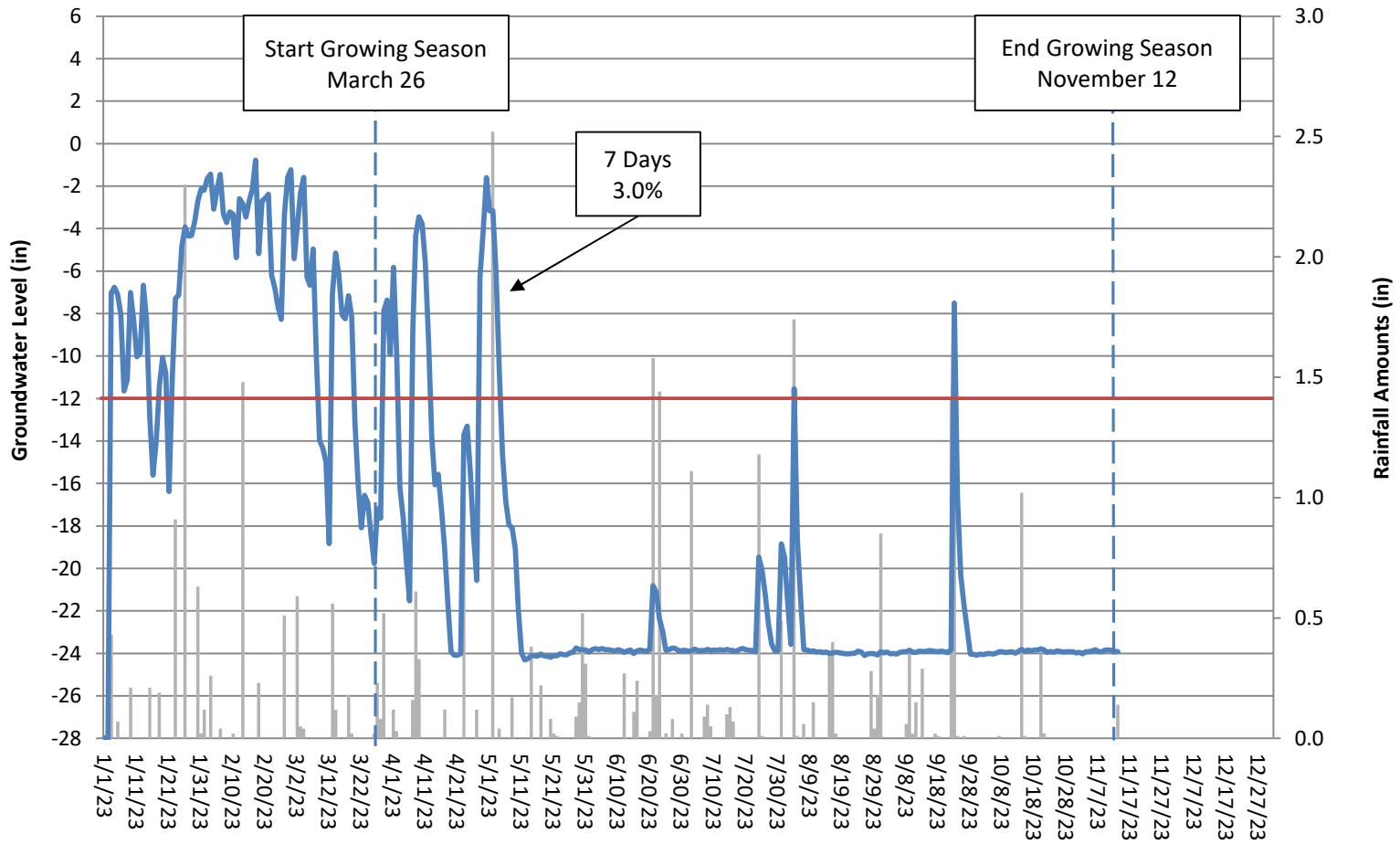
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 49 Year 1 (2023 Data)



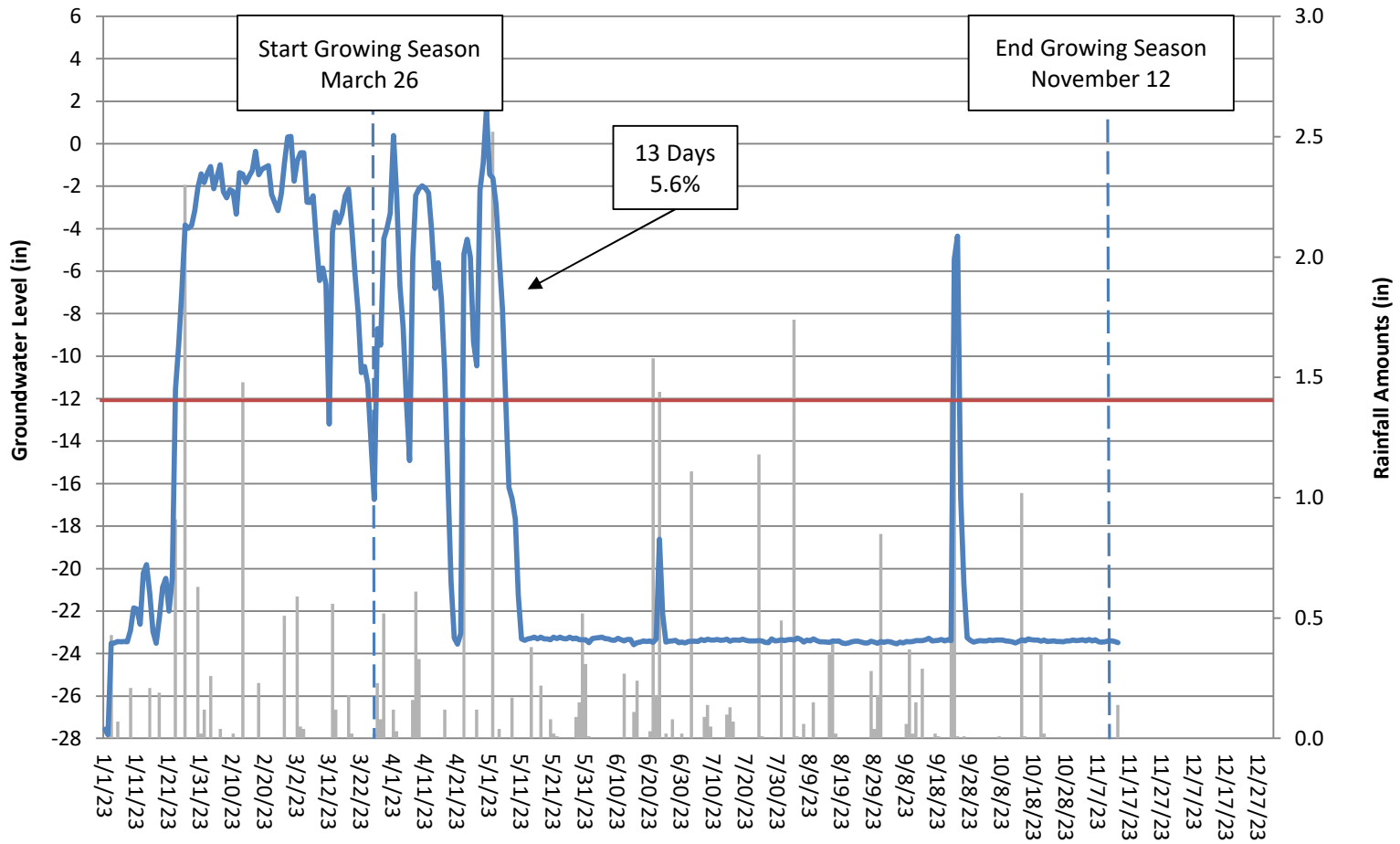
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 50 Year 1 (2023 Data)



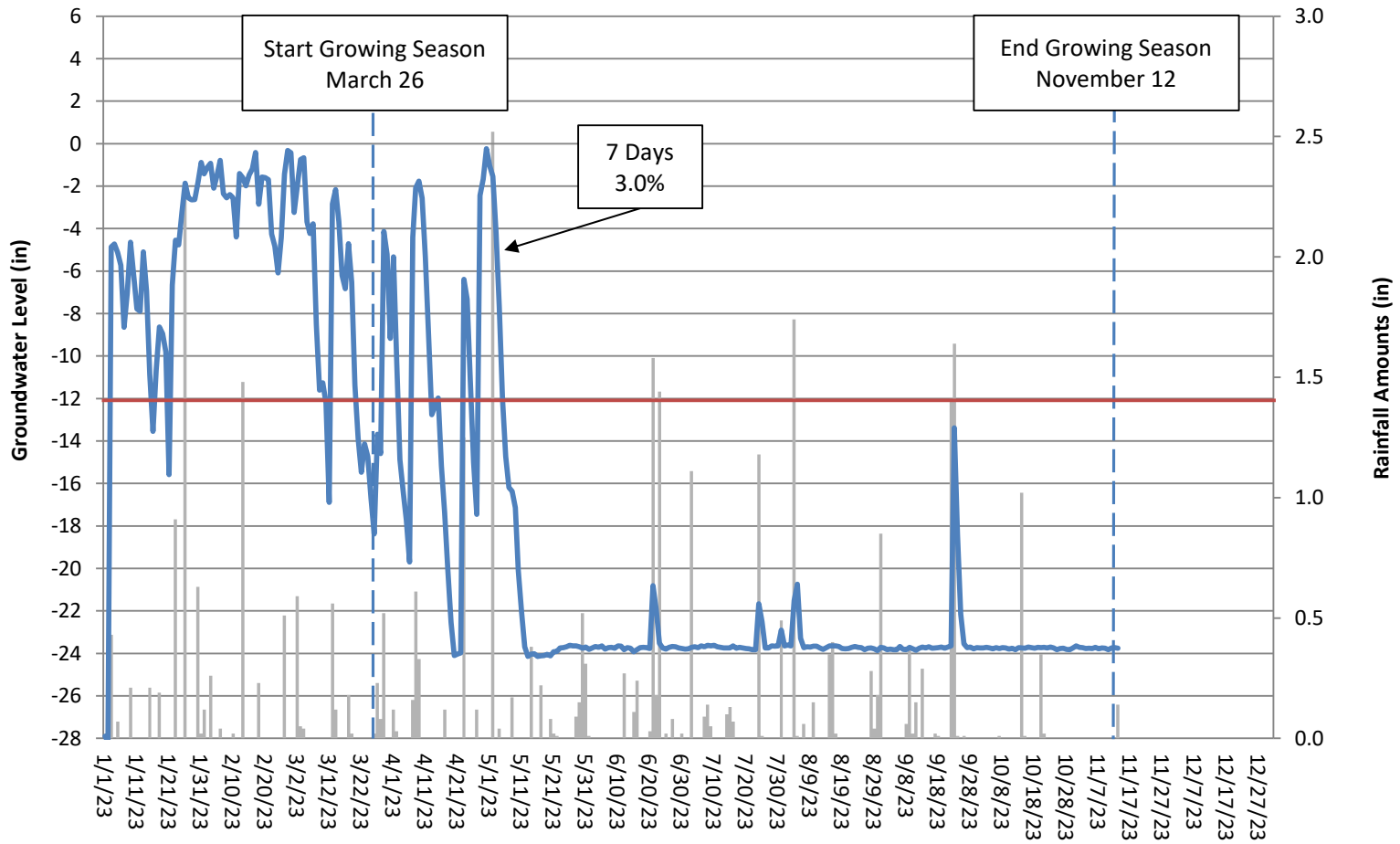
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 51 Year 1 (2023 Data)



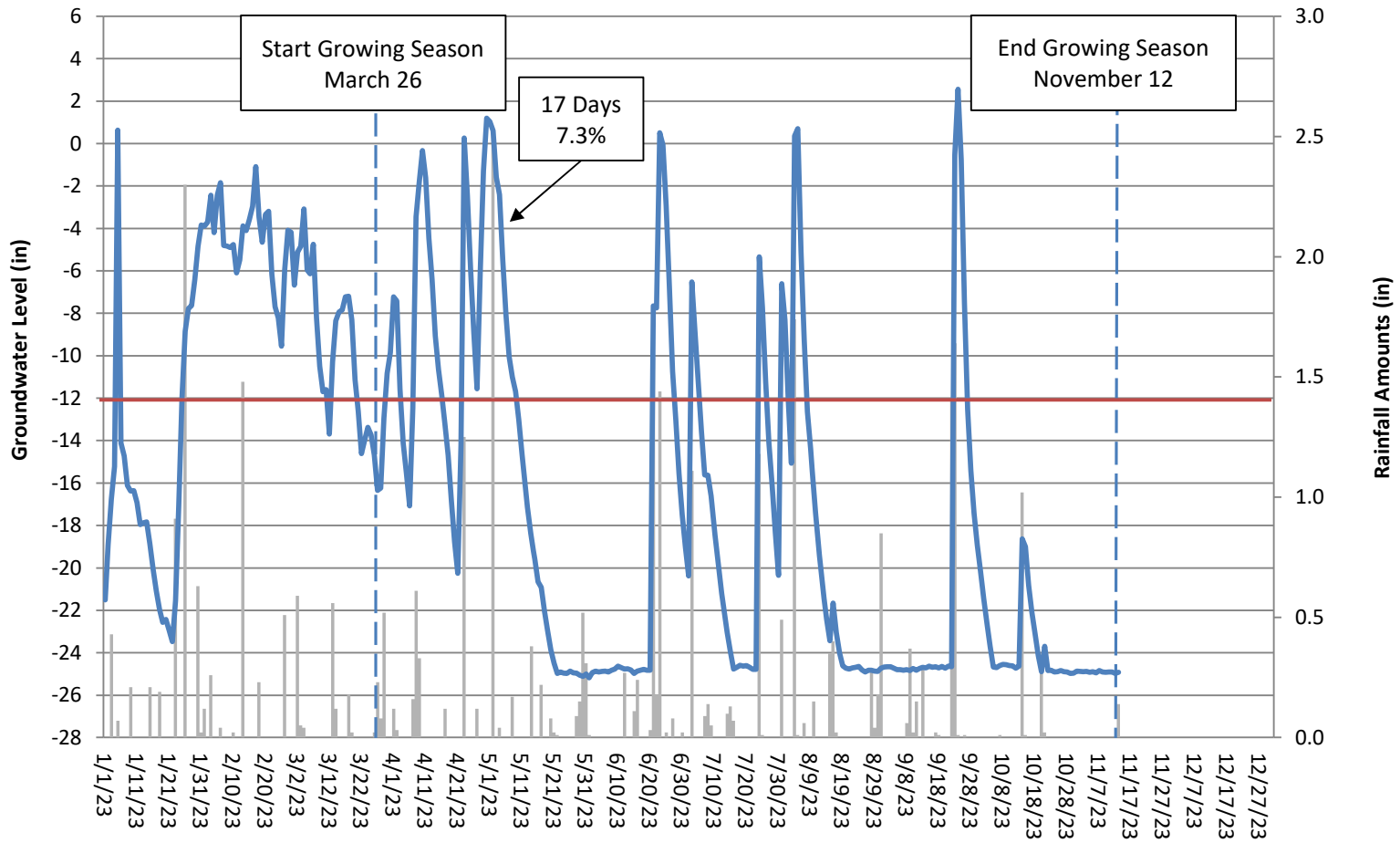
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 52 Year 1 (2023 Data)



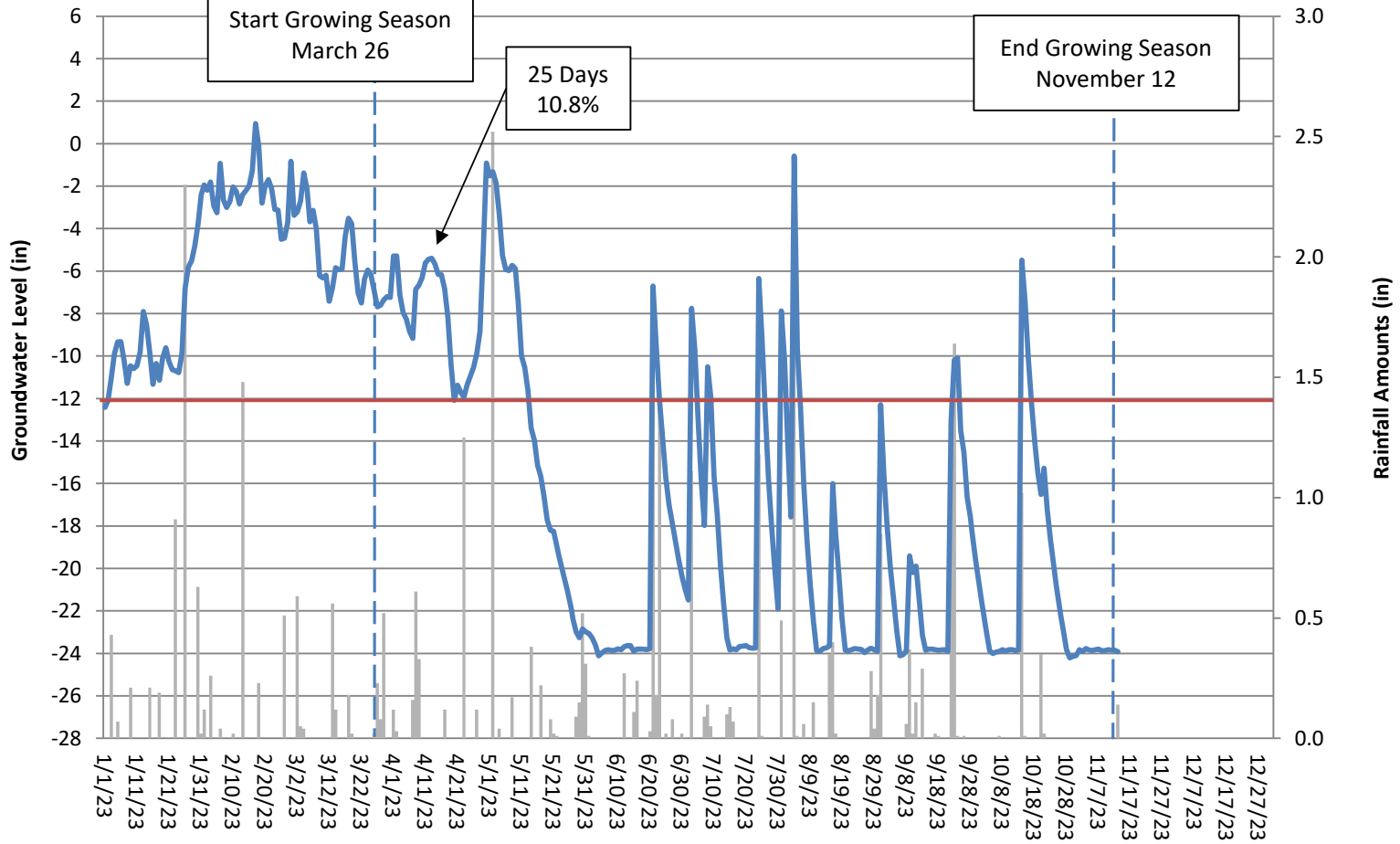
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 53 Year 1 (2023 Data)



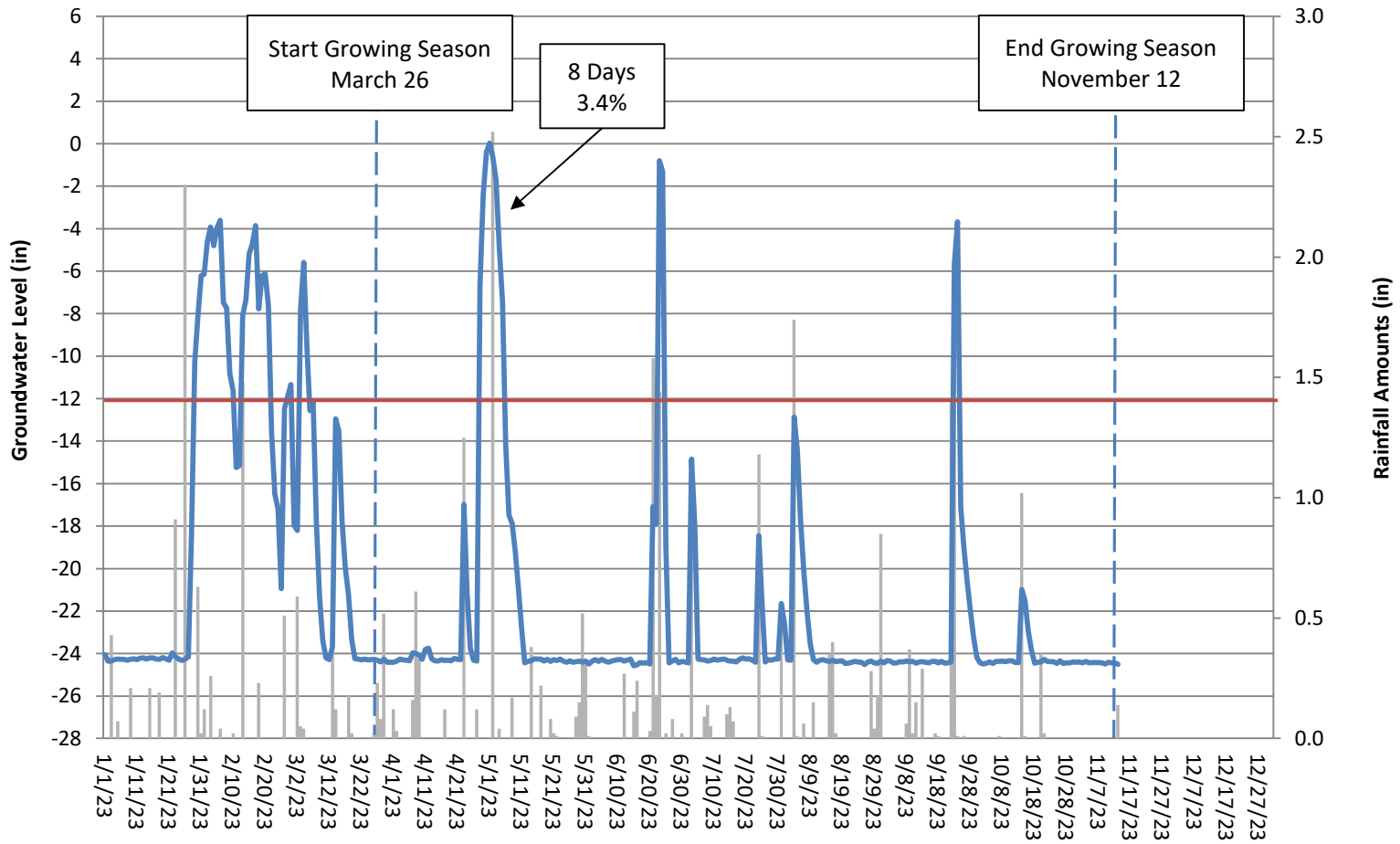
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 54 Year 1 (2023 Data)



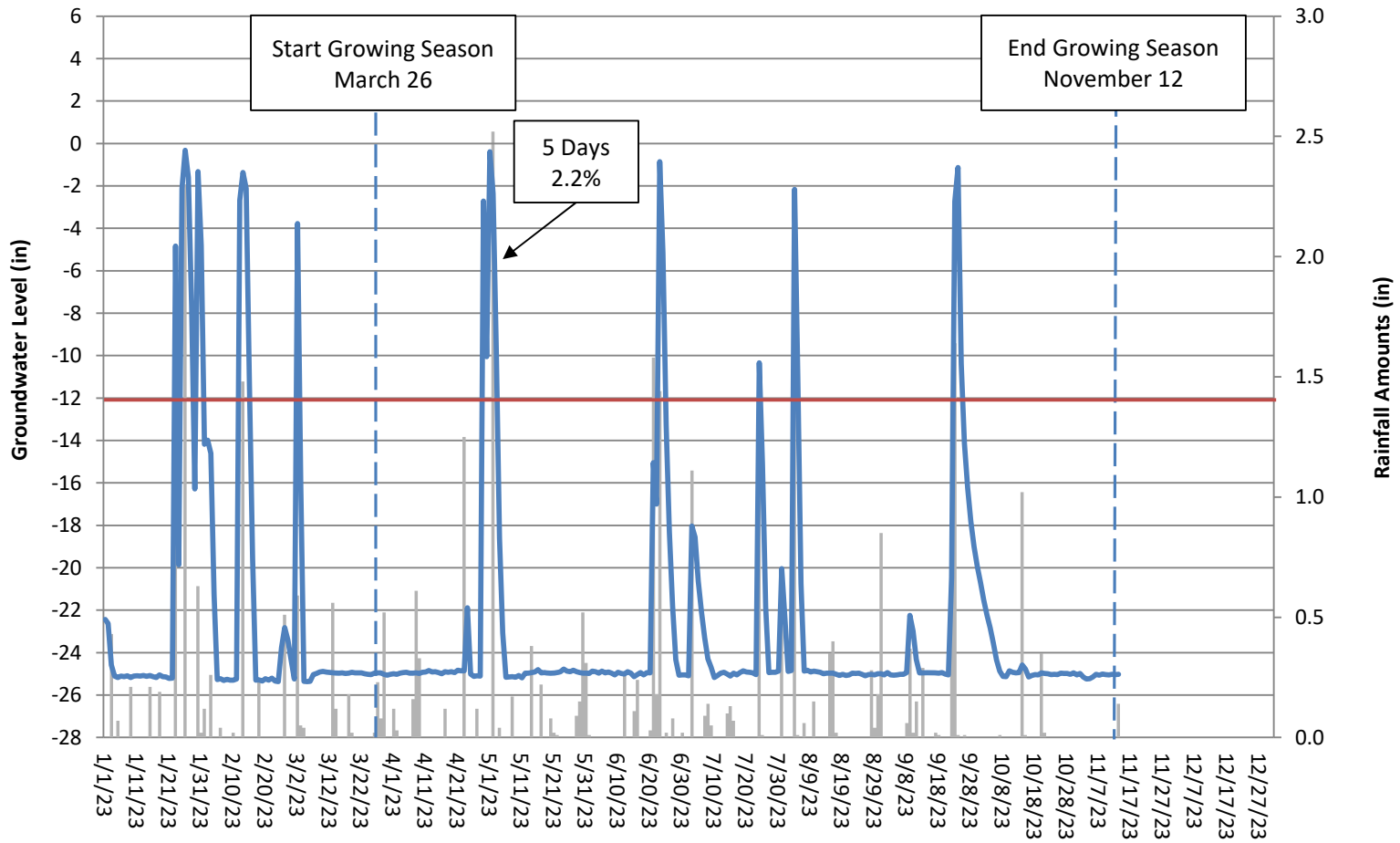
Non-riverine Swamp Forest - Wetland Hydroperiod Success Criteria is 12% of Growing Season

Pierce Terrace Groundwater Gauge 55 Year 1 (2023 Data)



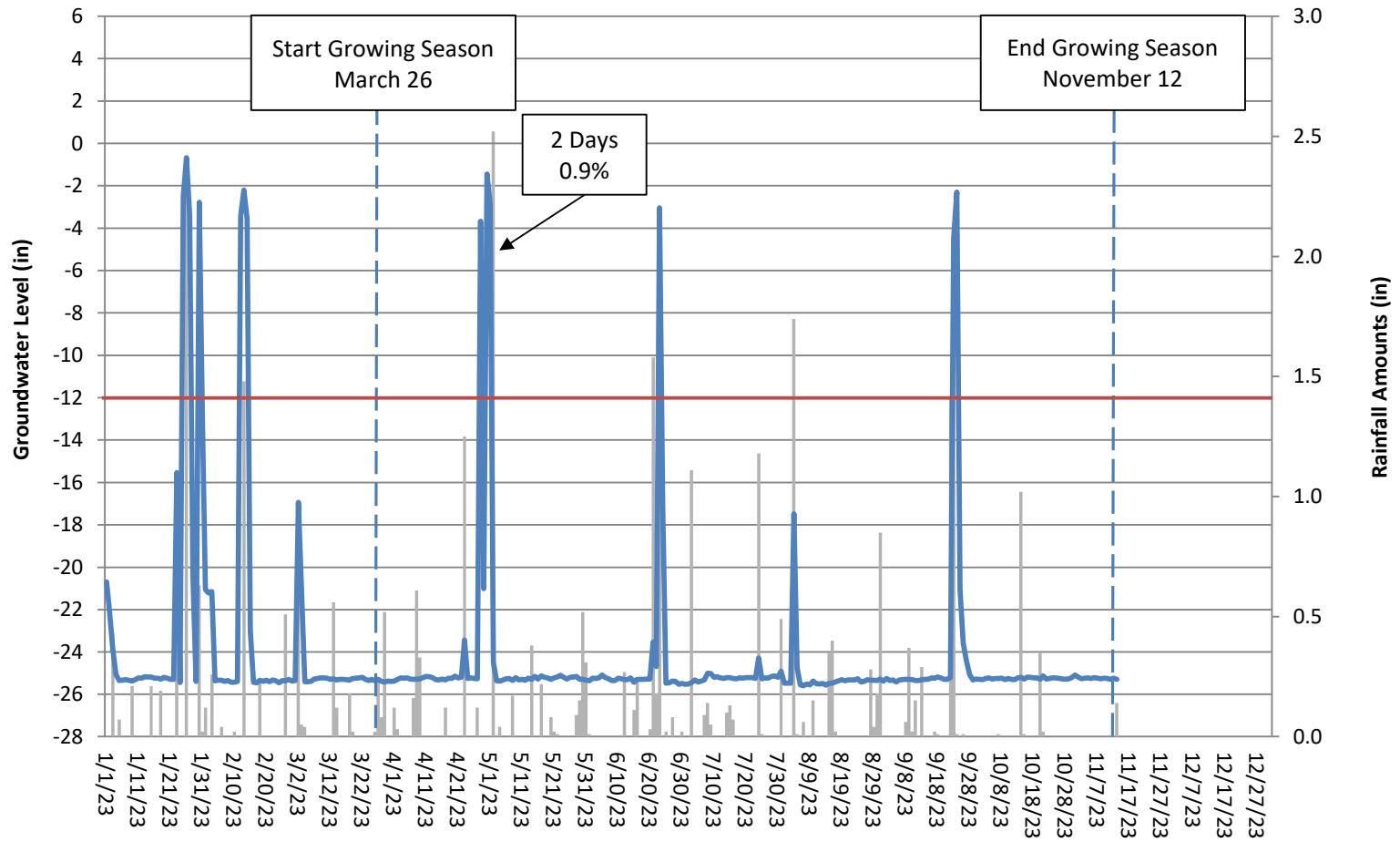
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 56 Year 1 (2023 Data)



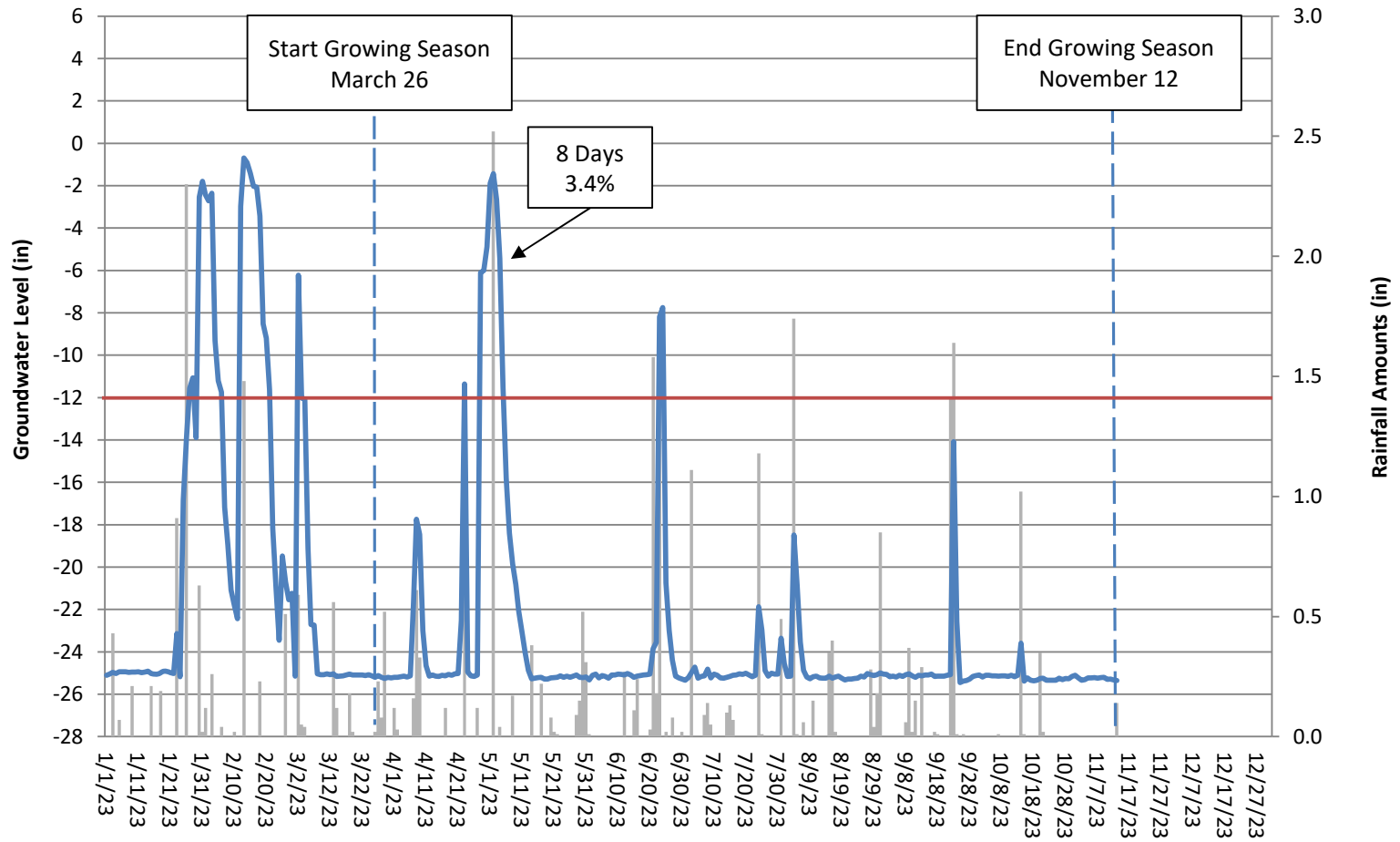
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 57 Year 1 (2023 Data)



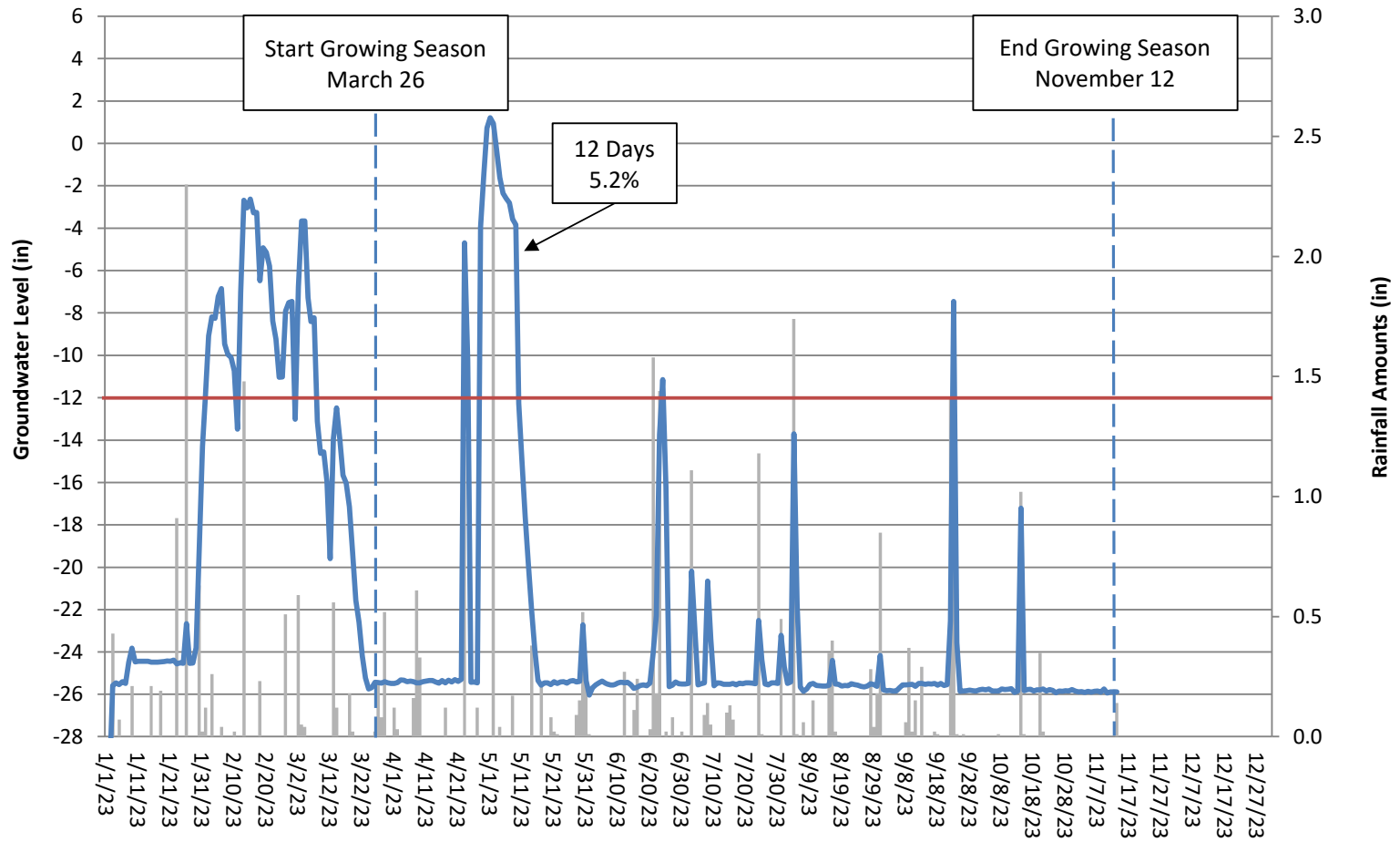
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 58 Year 1 (2023 Data)



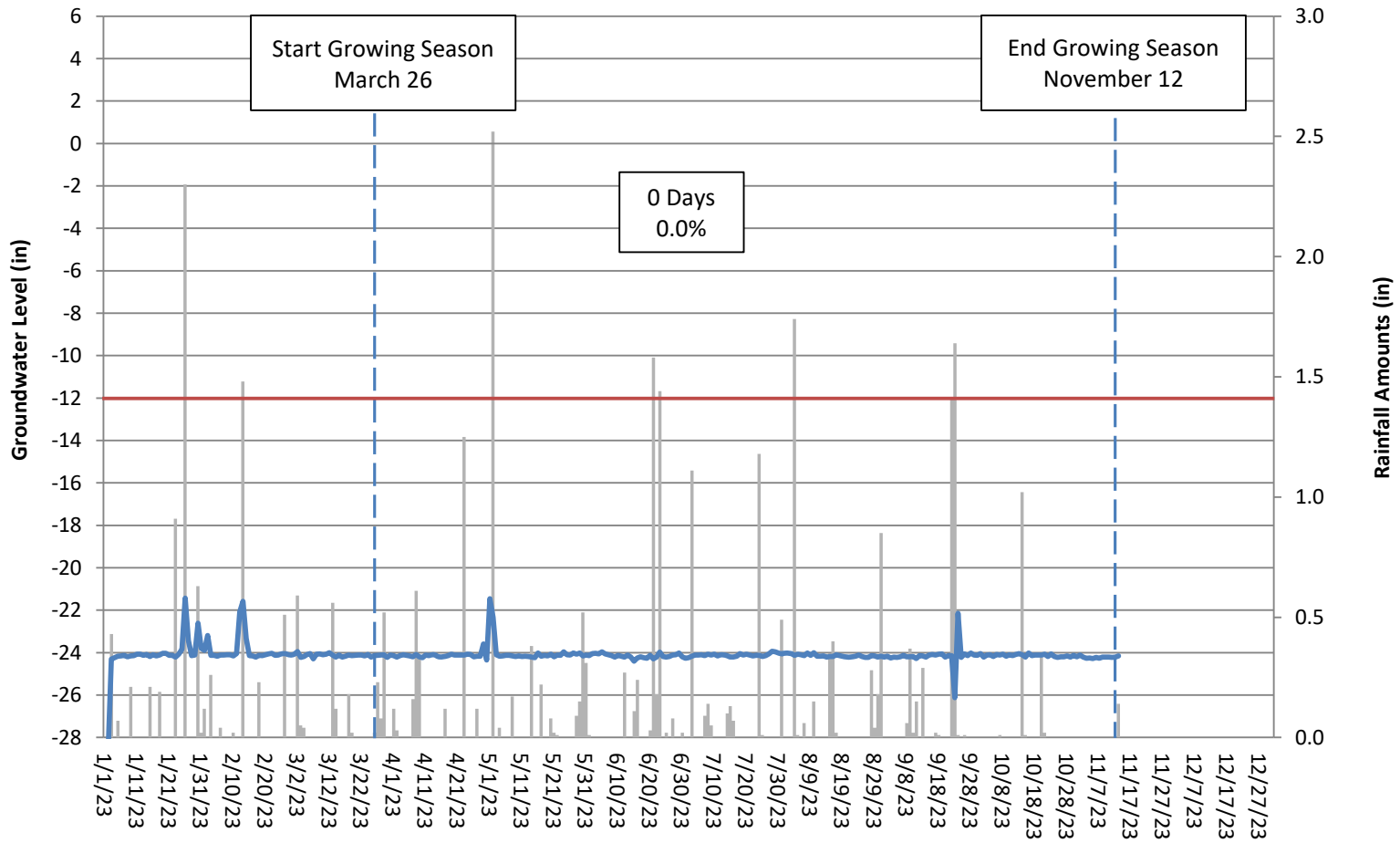
Non-riverine Swamp Forest - Wetland Hydroperiod Success Criteria is 12% of Growing Season

Pierce Terrace Groundwater Gauge 59 Year 1 (2023 Data)



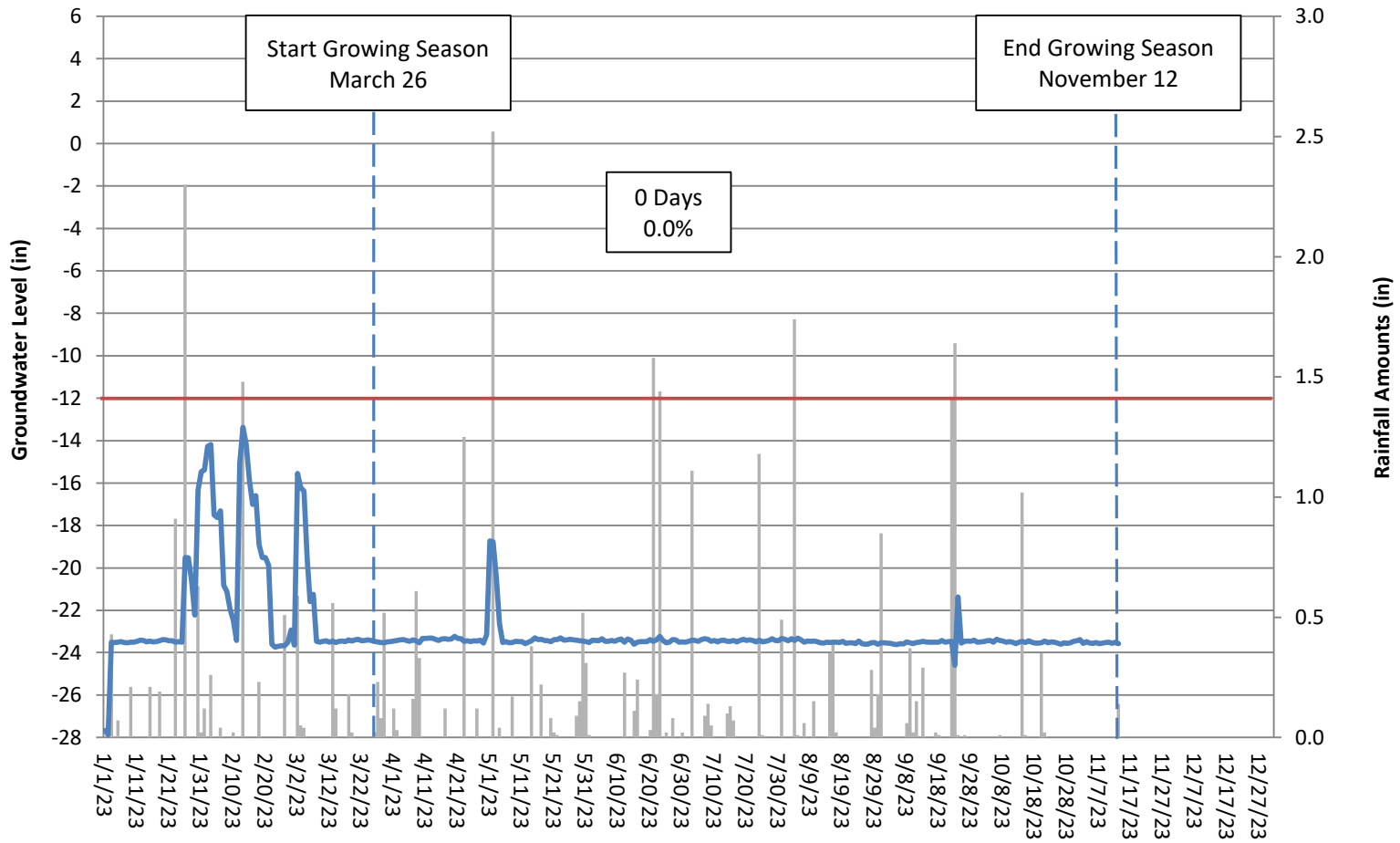
Non-riverine Swamp Forest - Wetland Hydroperiod Success Criteria is 12% of Growing Season

Pierce Terrace Groundwater Gauge 60 Year 1 (2023 Data)



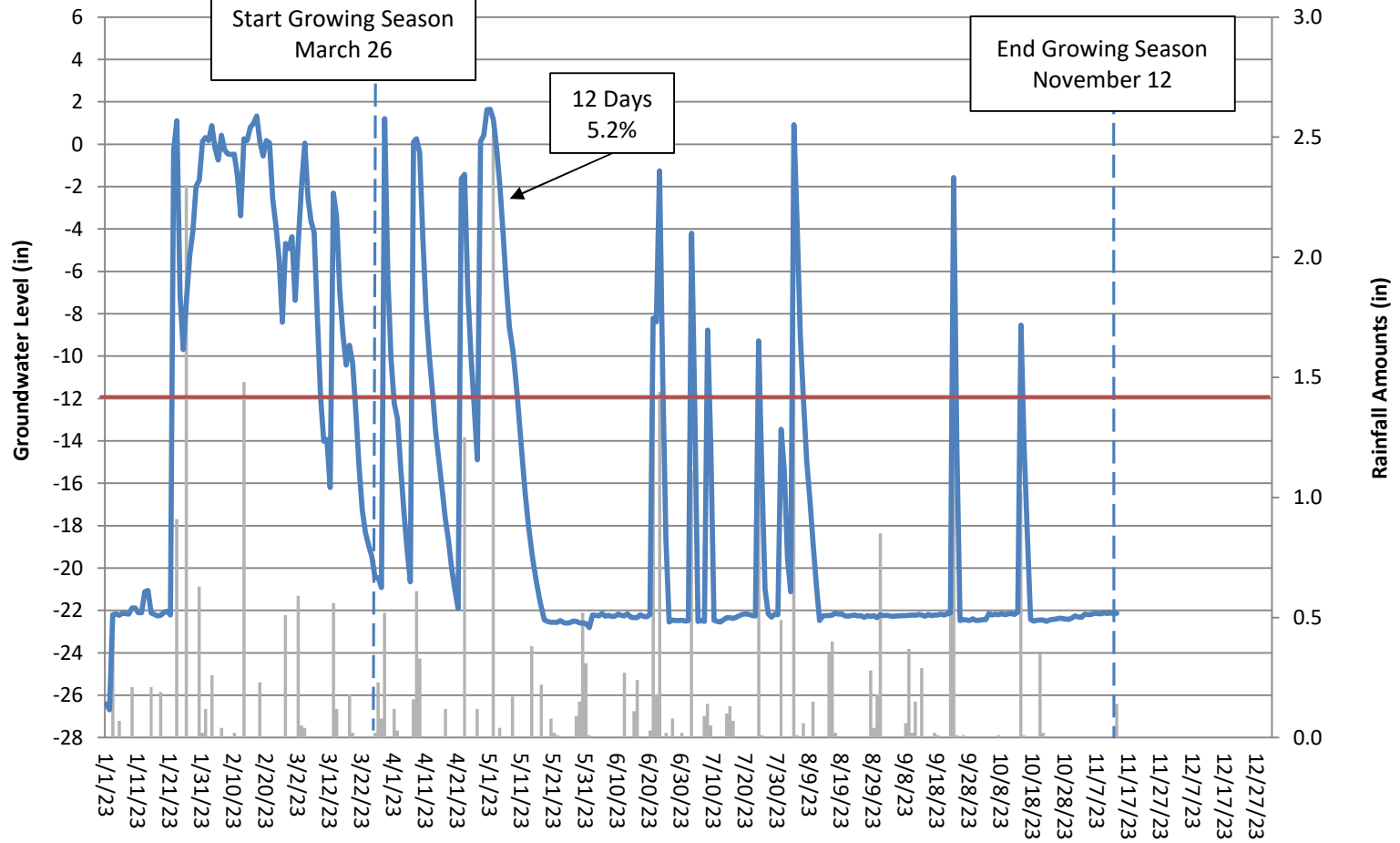
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 61 Year 1 (2023 Data)



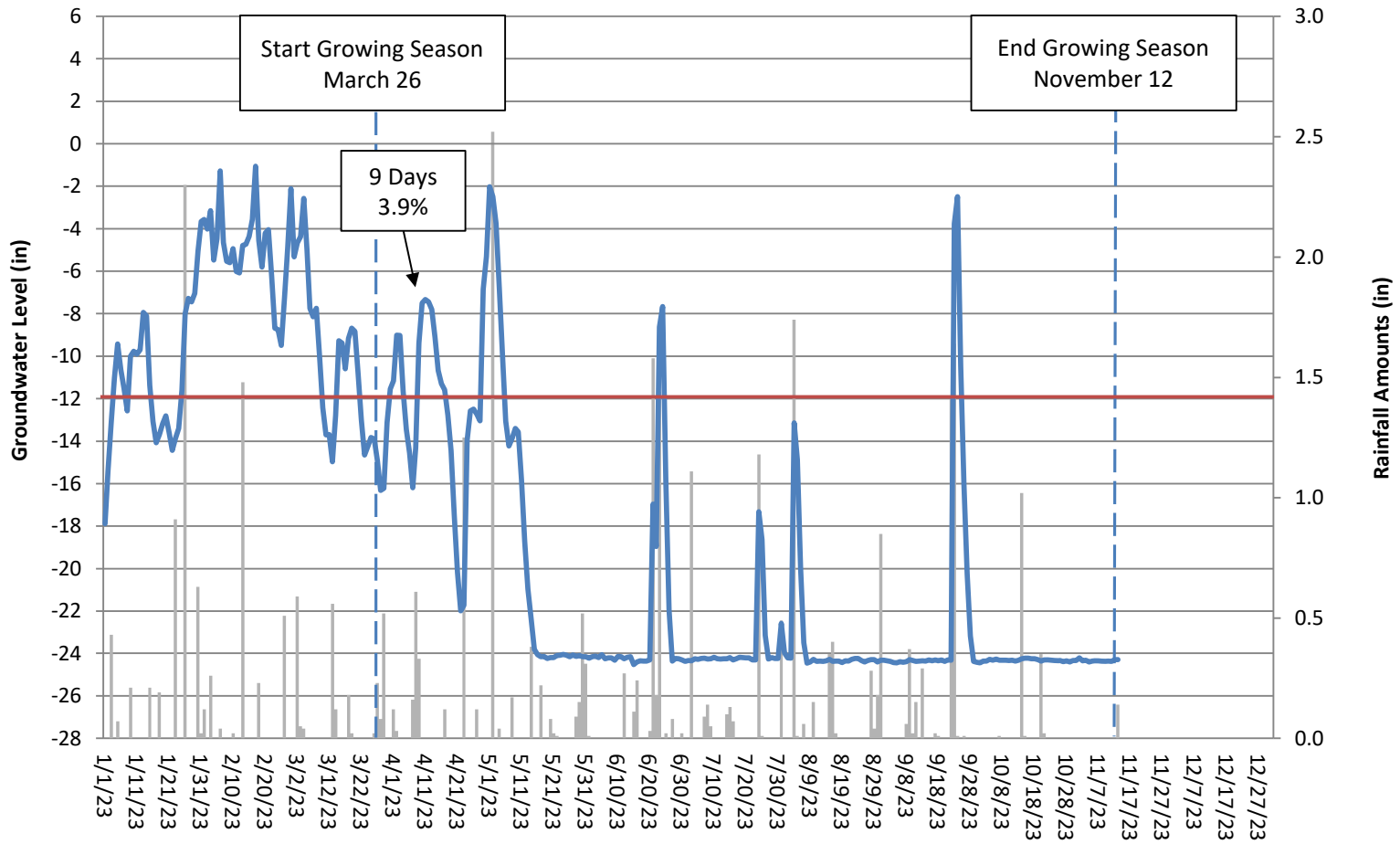
Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Pierce Terrace Groundwater Gauge 62 Year 1 (2023 Data)



Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

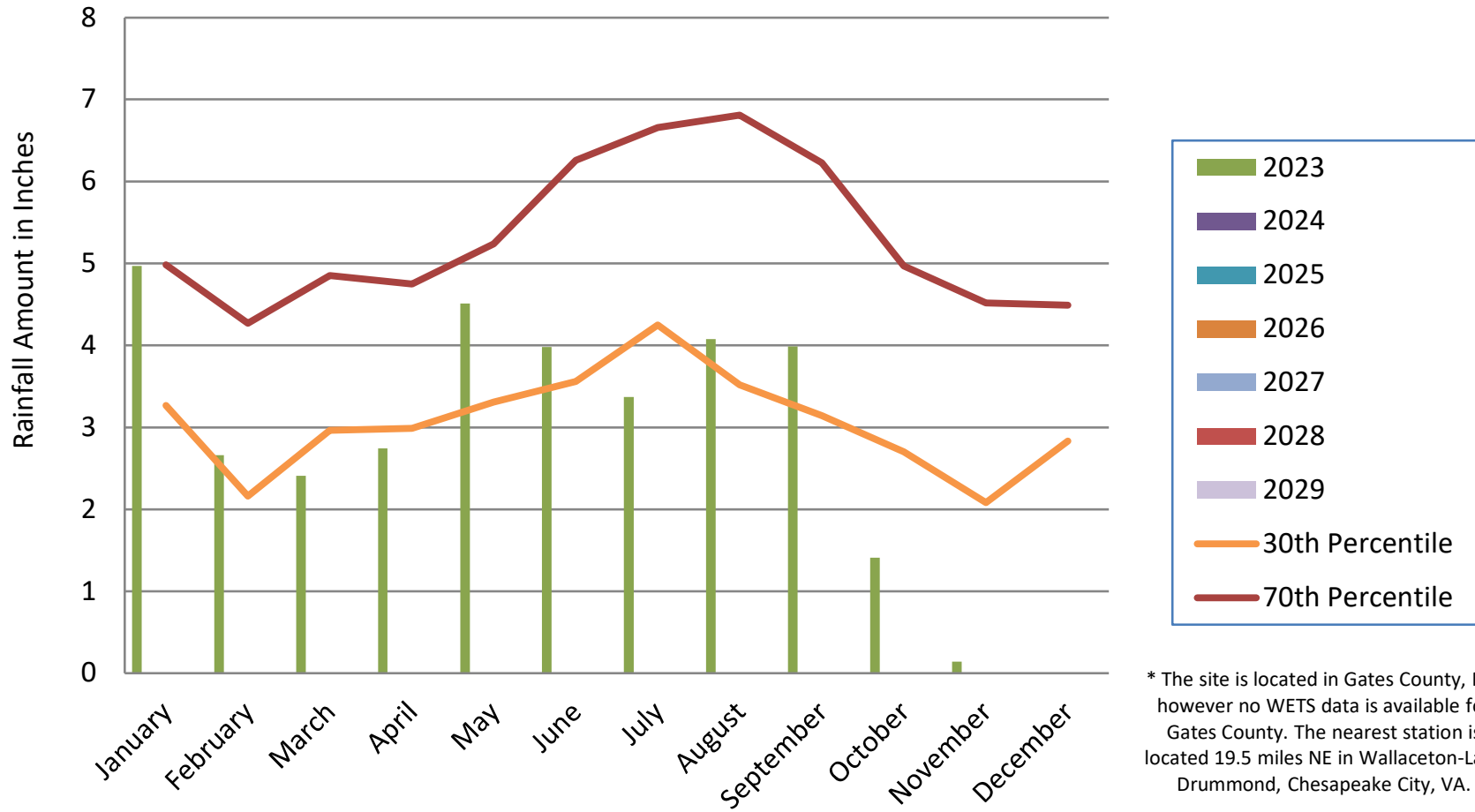
Pierce Terrace Groundwater Gauge 63 Year 1 (2023 Data)



Non-riverine Wet Hardwood Forest - Wetland Hydroperiod Success Criteria is 10% of Growing Season

Figure C1: Pierce Terrace 30-70 Percentile Graph for Rainfall

30-70th percentile data from WETS Station: Wallaceton-Lake Drummond, VA*



* The site is located in Gates County, NC, however no WETS data is available for Gates County. The nearest station is located 19.5 miles NE in Wallaceton-Lake Drummond, Chesapeake City, VA.

Appendix D: Project Timeline and Contact Info

Table 9. Project Timeline

Table 10. Project Contacts

Table 9. Project Timeline

Activity or Deliverable	Data Collection Complete	Completion or Delivery
Project Instituted (NCDMS Contract No. 7907-01)	NA	May 6, 2019
Mitigation Plan Approved	NA	May 2022
Construction Completed	NA	August 29, 2022
Planting Completed	NA	March 3, 2023
As-built Survey Completed	NA	March 2023
MY-0 Vegetation Data Collection	March 6-7, 2023	NA
MY-0 Baseline Report	March 2023	March 2023
MY-1 Vegetation Data Collection	September 6-14, 2023	NA
MY-1 Monitoring Report	November 2023	December 2023
MY-2+ Monitoring Reports		

Table 10. Project Contacts

Pierce Terrace Wetland Mitigation Site/100139	
Full Delivery Provider	Restoration Systems, LLC 1101 Haynes Street, Suite 211 Raleigh, NC 27604
Mitigation Provider POC	Raymond Holz 919-755-9490
Designer	Sungate Design Group, P.A. 905 Jones Franklin Rd Raleigh, NC 27606
Primary project design POC	Josh Dalton 919-710-8333
Monitoring	Axiom Environmental, Inc. 218 Snow Ave Raleigh, NC 27603
Primary project monitoring POC	Grant Lewis 919-215-1693
Surveyor & Land Quality Permit	k2 Design Group 5688 U.S. Hwy 70 East Goldsboro, NC 27534
Surveyor POC	John Rudolph (L-4194) 919-755-9490
Planting Contractor	Restoration Systems, LLC 1101 Haynes Street, Suite 211 Raleigh, NC 27604
Primary planting POC	Josh Merritt 919-755-9490
Construction Contractor	Land Mechanic Design 126 Circle G Lane Willow Spring, NC 27592
Primary project construction POC	Charles Hill 919-639-6132
General Contractor	Restoration Systems, LLC 1101 Haynes Street, Suite 211 Raleigh, NC 27604
General Contractor POC	Worth Creech (GC #64807) 919-755-9490