Year 1 Monitoring Report

FINAL

BAREFOOT SITE

NCDMS Project # 100044 (Contract # 7418)
USACE Action ID: SAW-2018-00433
DWR Project # 2018-0235

Sampson County, North Carolina
Neuse River Basin
HUC 03020201

Provided by:

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For Environmental Banc & Exchange, LLC
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January 2021

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January 6, 2021

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RE: Barefoot Site: Year 1 Monitoring Report (NCDMS ID 100044)

Listed below are comments provided by DMS on December 18, 2020 regarding the Barefoot Site: Year 1 Monitoring Report and RES' responses.

1. Include IRT comment / question response to As-built as appendix
An IRT comment response document has been added to Appendix E.

2. Please include vegetation plot photos as JPEGs.
Done.

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1.0 Project Summary

1.1 Project Location and Description

The Barefoot Project ("Project") is located within a rural watershed in Sampson County, North Carolina approximately two miles west of Newton Grove and six miles southeast of Peacocks Crossroads. The Project lies within the Neuse River Basin, North Carolina Division of Water Resources (NCDWR) sub-basin 03-04-04 and United States Geological Survey (USGS) 8-digit hydrologic unit code (HUC) 03020201. The Project proposes to re-establish 23.23 acres of non-riparian wetlands within a 123-acre drainage area. The Project is located in the Rolling Coastal Plain level IV ecoregion within the Southeastern Plains level III ecoregion.

The Project area is comprised of a 33.29-acre easement involving a drained mineral flat wetland area, which eventually drains into Mill Creek and later the Neuse River. The wetland mitigation components are summarized in **Table 1**. The Project is located west of Warren Mill Road (SR 1647) and north of Harnett Dunn Highway (Hwy 55) and is accessible from Warren Mill Road. Coordinates for the Project areas are as follows: 35.253742, -78.392667.

The Project area is comprised of one contiguous non-riparian wetland area, that drains to Mill Creek and ultimately to the Neuse River. The total drainage area for the Project is 123 acres (0.19 mi^2). Primary land use within the drainage area consists of approximately 73 percent forest and 27 percent agricultural land. Impervious area is not present in the drainage area of the Project. Within the agricultural land use, row crops make up 100 percent of the area. Although the project watershed is primarily forested, the majority of the agricultural areas within the watershed are in close proximity to the Project and are drained via ditches and drain tiles, which plays a significant role in the past degradation of the Project wetlands. Historic land use within the immediate project area was primarily crop production and silviculture. These activities negatively impacted both water quality and habitat within the project area.

The primary wetland re-establishment activities included:

- The plugging and backfilling of ditches in and around the cultivated field,
- Removing/plugging all of the drain tiles within the agricultural field,
- Plugging and backfilling the ditches on two sides of the cut-over,
- Removal of spoil berms to reconnect the Project to its historical watershed,
- Creation of shallow depressional features typical of the community type, and
- Regraded areas of cut and fill along interior ditches to create a continuous wetland flat system.

The Site is to be monitored on a regular basis throughout the seven-year post-construction monitoring period, or until performance standards are met. Upon approval for closeout by the Interagency Review Team (IRT), the Site will be transferred to the NCDEQ Stewardship Program. The NCDEQ Stewardship Program will be responsible for periodic inspection of the Site to ensure that restrictions required in the Conservation Easement or the deed restriction document(s) are upheld.

1.2 Project Goals and Objectives

The Barefoot Wetland Restoration Project was identified as a wetland restoration opportunity to improve water quality, habitat, and hydrology within the Neuse 01 River Basin. Specific, attainable goals and objectives were realized by the Project. These goals clearly address the degraded water quality and nutrient input from farming that were identified as major watershed stressors in the 2010 Neuse River RBRP (amended in 2018). The Project addresses outlined RBRP Goal 2.

The project goals are:

- Reduce sediment and nutrient input into downslope receiving streams by limited runoff and sediment into connecting ditches,
- Improve filtration of runoff in project drainage area,
- Re-establish a historical aquatic resource into a functioning non-riparian wetland, and
- Improve aquatic and terrestrial habitat.

The project goals were addressed through the following project objectives:

- Convert active row crop land to a nonriverine hardwood forest,
- Plug, fill, and stabilize existing ditches and drainage tiles,
- Treat exotic invasive species,
- Provide habitat and hydrologic connectivity to a larger wetland community, and
- Establish a permanent conservation easement on the Project.

The Project brings functional uplift, benefits, and improvements to the project area and adjacent forests. Restoration of wetland hydrology and reconnection with the supplying watershed has re-established wetlands lost to past agricultural practices, and conversion of agricultural lands has reduced sediment and nutrients contributed to downstream systems. Planting of native species and control of invasives has restored terrestrial habitat, and reconnection of the project area with the adjacent forested wetlands has provided a source of native flora and fauna for the project area.

1.3 Project Success Criteria

The success criteria for the Project follows the 2016 USACE Wilmington District Stream and Wetland Compensatory Mitigation Update and subsequent agency guidance. Vegetation plot data will be reported in Monitoring Years 0, 1, 2, 3, 5, and 7. Wetland hydrology and visual monitoring will be reported annually. Specific success criteria components are presented below.

Wetland Restoration Success Criteria

Wetland Hydrology

The NRCS provides a current WETS table for Sampson County upon which to base a normal rainfall amount and average growing season. The closest comparable data station was determined to be WETS station Clinton 2 NE in Clinton NC (NRCS, n.d.). This station is located off Faison Highway near the Timberlake Golf Club approximately 17 miles south-southeast of the proposed mitigation project. The growing season for Sampson County is 254 days long, extending from March 13 to November 22, and is based on a daily minimum temperature greater than 28 degrees Fahrenheit occurring in five of ten years.

Because of the surface roughing and shallow depressions, a range of hydroperiods with areas of seasonal inundation is expected. The target hydroperiod is ten percent (approximately 26 days) for the duration of the monitoring period.

Digital Image Stations

The visual assessments include vegetation density, vigor, invasive species, and easement encroachments. Visual assessments of wetland success include an area walkthrough and structure and gauge inspection. Digital images will be taken at fixed representative locations to record each monitoring event, as well as any noted problem areas or areas of concern. Results of visual monitoring will be presented in a plan view exhibit with a brief description of problem areas and digital images. A series of images over time should

indicate successional maturation of wetland vegetation.

Vegetation Success Criteria

Specific and measurable success criteria for plant density within the wetland areas on the Project will follow IRT Guidance. The interim measures of vegetative success for the Project will be the survival of at least 320 planted three-year old trees per acre at the end of Year 3, five-year old trees at seven feet in height at the end of Year 5, and the final vegetative success criteria will be 210 trees per acre with an average height of ten feet at the end of Year 7. Volunteer trees will be counted, identified to species, and included in the yearly monitoring reports, and may be counted towards the success criteria of total planted stems if appropriate for the community type. Moreover, any single species can only account for up to 50 percent of the required number of stems within any vegetation plot. Any stems in excess of 50 percent will be shown in the monitoring table but will not be used to demonstrate success.

1.4 Project Components

The Project presents 23.238 acres of proposed non-riparian wetland re-establishment, generating 19.942 Wetland Mitigation Units (WMU) (**Table 1**). This is derived from the mitigation plan which was consistent with the February 22, 2018 Post Contract IRT Meeting Minutes and IRT response emails.

Wetland ID	Mitigation Approach	Acres	Ratio	Non-Riparian Wetland Mitigation Units
Wetland 1	Re-establishment	16.645	1:1	16.645
Wetland 2	Re-establishment	6.593	2:1	3.297
	Total	**23.238**		**19.942**

1.5 Wetland Design/Approach

The Barefoot Mitigation Project provides 19.94 wetland mitigation units through wetland re-establishment. The existing agricultural fields and clear-cut on the Project were re-established by restoring the hydrology, restoring vegetation in the agricultural field, and providing long-term protection. Wetland restoration design activities included: plugging the interior ditches and all ditches surrounding the agricultural fields, removing/plugging the drain tiles, removing spoil along the ditches, and limited grading of the area to reconstruct historical contours that include shallow depressions in the nearly level topography. Additionally, the ditch to the north of W1 was designed to be relocated approximately 95 feet north of the present location to allow continued use of the agricultural fields north of the Project, but to also limit drainage effect on the restored area. The field was planted with trees and a permanent seed mix. No additional plantings within the clear-cut were anticipated to be necessary. A ratio of 1:1 is used within re-established area of W1, which totals 16.64 acres. Within W2, wetland re-establishment at a ratio of 2:1 is used as hydrology is being re-established through the plugging of ditches, but existing vegetation is being left undisturbed. An additional buffer of 50 feet around the area of wetland re-establishment may achieve wetland hydrology at a lower hydroperiod. The remaining area between that and the easement edge is not expected to achieve wetland hydrology but will act as additional buffer between the wetland area and agricultural practices outside the easement. Plan views are provided in **Figure 2** and in **Appendix D**.

1.6 Construction and As-Built Conditions

Wetland construction and planting was completed in January 2020. Overall, the Barefoot Site was built to design plans and guidelines. A few minor adjustments, however, were made to the plans during construction. The ditch directly north of the easement was constructed about 45 feet closer to the easement

than proposed, to ensure appropriate farm access. This makes the new ditch about 100 feet from the wetland area. A berm was added in the upland area inside the northwest corner of the easement to limit surface draining from the wetland into the new ditch. Also, the ditch directly to the east (outside of the easement) was not filled as proposed due to the discovery of drain tiles draining from the east into it and due to landowner negotiations. If there are any hydrologic effects to the wetland area it will be evident in the hydroperiods of the groundwater wells on the northern and eastern edges. Lastly, a path of forest was cleared in the southwestern portion of the easement. This was done to allow access for plugging the ditch on the southern edge of W2. This area was planted the same as W1. RES does not anticipate any changes to wetland crediting despite these minor field adjustments. As for the planting plan, a few minor adjustments were made due to tree availability. Laurel oak, sweetbay, and Atlantic white cedar were not planted, and water oak, green ash, silky dogwood, buttonbush, yellow poplar, southern crabapple, and sugarberry were planted instead. The rest of the planting plan was carried out as proposed. A redline version of the as-built survey and as-built condition drone photos included in the As-Built Report.

1.7 Baseline Monitoring Performance (MY1)

The Barefoot Year 1 Monitoring activities were performed in August and November 2020. All Baseline Monitoring data is present below and in the appendices. The Site is on track to meeting vegetation and wetland interim success criteria.

Vegetation

Monitoring of the 10 permanent vegetation plots and six random vegetation plots was completed during August 2020. Vegetation data are in **Appendix C**, associated photos are in **Appendix B,** and plot locations are in **Appendix B**. MY1 monitoring data indicates that all plots are exceeding the interim success criteria of 320 planted stems per acre. Planted stem densities ranged from 688 to 1,619 planted stems per acre with a mean of 1,024 planted stems per acre across the permanent plots. A total of 12 native species were documented within the plots. Volunteer species were not noted at Year 1 monitoring but are expected to establish in upcoming years. The average stem height in the permanent vegetation plots was 1.8 feet. Five of the six random plots were located in planted stem areas and one was located in the wooded section of W2 (as requested by the IRT). The stem densities in the random plots located in planted areas ranged from 405 to 1,012 with an average height of 2 feet. The stem density of the random plot in the wooded section of W2 was 2,428 with an average height of 14.7 feet.

Visual assessment of vegetation outside of the monitoring plots indicates that the herbaceous vegetation is becoming well established throughout the project where standing water is not present. Cattails were documented throughout the southern half of the site in MY1. RES removed cattail seed heads in October 2020 to discourage further spreading of the cattails. RES believes that the woody vegetation will eventually shade out the cattails but plans to cut cattails during low water conditions late next summer. Cutting cattails in the late summer should prevent them from going to seed. Also, when the groundwater levels rise again in the fall/winter, water can overtop the cut cattail stems and kill them.

Wetland Hydrology

There are 17 groundwater wells at the Barefoot Site to monitor wetland hydrology. Eleven of the wells are located in W1, four are in W2, and two are outside of the wetland crediting area. In MY1, 10 of the 11 wells in W1, four of the four wells in W2, and one of the two wells outside of the wetland crediting area met success criteria. Well hydroperiods ranged from three to 54 percent. Groundwater Wells 1 and 17 fell short of the success criteria with nine and three percent hydroperiods, respectively. Pre-construction data is included in **Table 12** for Groundwater Wells 3, 4, 5, 12, 14, 16 and 17. Pre-construction well hydroperiods

ranged from zero to five percent. Exact well locations can be found on **Figure 2** and associated data is in **Appendix D**.

2.0 Methods

Vegetation success is being monitored at 10 permanent monitoring plots and six random monitoring plots. Vegetation plot monitoring follows the CVS-EEP Level 2 Protocol for Recording Vegetation, version 4.2 (Lee et al. 2008) and includes analysis of species composition and density of planted species. Data are processed using the CVS data entry tool. In the field, the four corners of each plot were permanently marked with PVC at the origin and metal conduit at the other corners. Photos of each plot are to be taken from the origin during vegetation monitoring. Additionally, the six random monitoring plots are to be surveyed, in different locations, during each vegetation monitoring event. One of the six random plots is to be in the wooded section of W2 to document the change in community after the hydrologic uplift. The random plots will be 100 square meters with varying dimensions. The species and height of the trees as well as the location of the plot will be recorded during each monitoring event.

Wetland hydrology is monitored to document groundwater levels in the wetland restoration areas (Groundwater Wells 16 and 17 are located outside of the crediting areas). This is accomplished with 17 automatic pressure transducer gauges (located in groundwater wells) that record daily groundwater levels. One automatic pressure transducer is installed above ground for use as a barometric reference. Gauges are downloaded quarterly and wetland hydroperiods are calculated during the growing season. Gauge installation followed current regulatory guidance. Visual observations of primary and secondary wetland hydrology indicators are also recorded during quarterly site visits.

3.0 References

Griffith, G.E., J.M.Omernik, J.A. Comstock, M.P. Schafale, W.H.McNab, D.R.Lenat, T.F.MacPherson, J.B. Glover, and V.B. Shelburne. (2002). Ecoregions of North Carolina and South Carolina, (color Poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey (map scale 1:1,500,000).

Lee Michael T., Peet Robert K., Roberts Steven D., and Wentworth Thomas R., 2008. *CVS-EEP Protocol for Recording Vegetation Level*. Version 4.2

Peet, R.K., Wentworth, T.S., and White, P.S. (1998), *A flexible, multipurpose method for recording vegetation composition and structure*. Castanea 63:262-274

Resource Environmental Solutions (2019). Barefoot Site Final Mitigation Plan.

Schafale, M.P. 2012. Classification of the Natural Communities of North Carolina, Third Approximation. North Carolina Natural Heritage Program, Division of Parks and Recreation, NCDENR, Raleigh, NC.

USACE. (2016). Wilmington District Stream and Wetland Compensatory Mitigation Update. NC: Interagency Review Team (IRT).

Appendix A

Background Tables

Table 1. Barefoot (ID-100044) - Mitigation Assets and Components

Project Segment	Existing Footage or Acreage	Mitigation Plan Footage or Acreage	Mitigation Category	Restoration Level	Priority Level	Mitigation Ratio (X:1)	Mitigation Plan Credits		As-Built Footage or Acreage	Comments
No Stream Mitigation										
Wetland W1	0	16.645	NR	Re-establishment		1.000	16.645		16.645	Hydrologic restoration via plugging ditches and drainage tiles, planting
Wetland W2	0	6.593	NR	Re-establishment		2.000	3.297		3.297	Hydrologic restoration via plugging ditches

Project Credits

Restoration Level	Stream			Riparian Wetland		Non-Rip Wetland	Coastal Marsh
	Warm	Cool	Cold	Riverine	Non-Riv		
Restoration							
Re-establishment						19.942	
Rehabilitation							
Enhancement							
Enhancement I							
Enhancement II							
Creation							
Preservation							
TOTAL						**19.942**	

Table 2. Project Activity and Reporting History
Barefoot Site (ID-100044)

Elapsed Time Since grading complete: 11 months
Elapsed Time Since planting complete: 11 months
Number of reporting Years[1]: 1

Activity or Deliverable	Data Collection Complete	Completion or Delivery
Restoration Plan	NA	Jul-19
Final Design – Construction Plans	NA	Nov-19
Wetland Construction	NA	Jan-20
Site Planting	NA	Jan-20
As-built (Year 0 Monitoring – baseline)	Jan-20	Apr-20
Cattail Seed Head Removal	NA	Oct-20
Year 1 Monitoring	Nov-20	Dec-20
Year 2 Monitoring		
Year 3 Monitoring		
Year 4 Monitoring		
Year 5 Monitoring		
Year 6 Monitoring		
Year 7 Monitoring		

1 = The number of reports or data points produced excluding the baseline

Table 3. Project Contacts Table Barefoot (ID-100044)	
Designer Primary project design POC	RES / 3600 Glenwood Ave., Suite 100, Raleigh, NC 27612 Sam Fasking
Construction Contractor Construction contractor POC	RES / 3600 Glenwood Ave., Suite 100, Raleigh, NC 27612 Paul Dunn
Survey Contractor Survey contractor POC	Matrix East, PLLC / 906 N. Queen St., Suite A, Kinston, NC 28501 Chris Paderick, PLS
Planting Contractor Planting contractor POC	H&J Forestry Matt Hitch
Seeding Contractor Contractor point of contact	RES / 3600 Glenwood Ave., Suite 100, Raleigh, NC 27612 Paul Dunn
Seed Mix Sources	Green Resource
Nursery Stock Suppliers	Arborgen
Monitoring Performers	RES / 3600 Glenwood Ave., Suite 100, Raleigh, NC 27612
Wetland Monitoring POC	Ryan Medric (919) 741-6268
Vegetation Monitoring POC	

Table 4. Project Background Information				
Project Name		Barefoot		
County		Sampson		
Project Area (acres)		32.29		
Project Coordinates (latitude and longitude)		Latitude: 35.4754 N Longitude: -78.3117 W		
Planted Acreage (Acres of Woody Stems Planted)		22.94		
Project Watershed Summary Information				
Physiographic Province		Coastal Plain		
River Basin		Neuse		
USGS Hydrologic Unit 8-digit	03020201	USGS Hydrologic Unit 14-digit	03020201150040	
DWR Sub-basin		03-04-04		
Project Drainage Area (Acres and Square Miles)		123 ac (0.19 sqmi)		
Project Drainage Area Percentage of Impervious Area		0%		
CGIA Land Use Classification		Forest (73%) Agriculture (27%)		
Wetland Summary Information				
Parameters		**Wetland 1**	**Wetland 2**	
Size of Wetland (acres)		16.64	6.59	
Wetland Type (non-riparian, riparian riverine or riparian non-riverine)		non-riparian	non-riparian	
Mapped Soil Series		Rains/Foreston	Rains	
Drainage class		Poor	Poor	
Soil Hydric Status		Hydric/Nonhydric	Hydric	
Source of Hydrology		Groundwater	Groundwater	
Restoration or enhancement method (hydrologic, vegetative etc.)		Hydrologic & vegetative restoration	Hydrologic restoration	
Regulatory Considerations				
Parameters		**Applicable?**	**Resolved?**	**Supporting Docs?**
Water of the United States - Section 404		Yes	Yes	SAW-2018-00433
Water of the United States - Section 401		No	N/A	N/A
Endangered Species Act		Yes	Yes	USFWS (Corr. Letter)
Historic Preservation Act		Yes	Yes	SHPO (Corr. Letter)
Coastal Zone Management Act (CZMA or CAMA)		No	N/A	N/A
FEMA Floodplain Compliance		No	N/A	N/A
Essential Fisheries Habitat		No	N/A	N/A

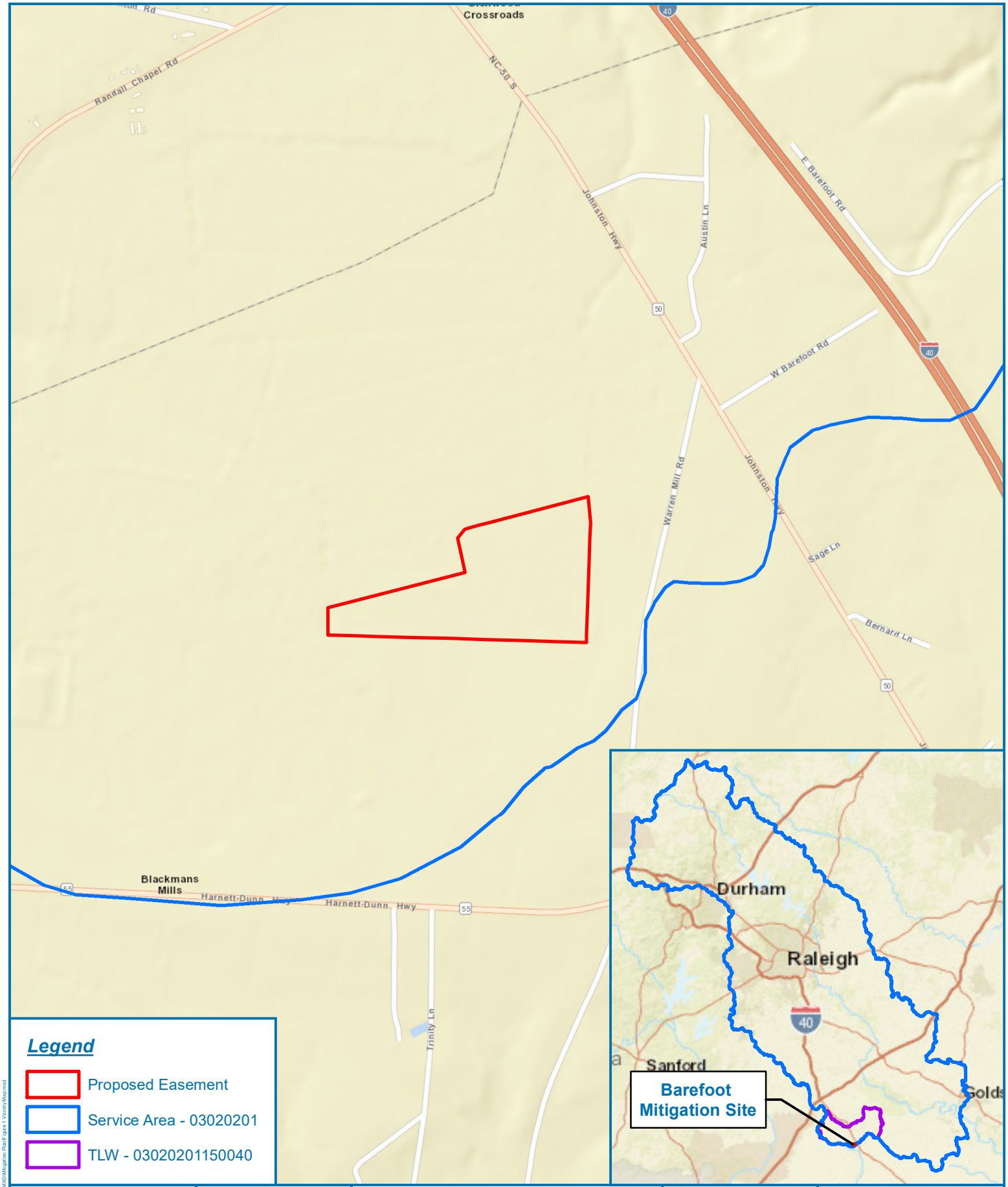


Figure 1 - Vicinity Map

Barefoot Mitigation Site

Sampson County, North Carolina

Date: 2/27/2019

Drawn by: SCF

Checked by: JRM

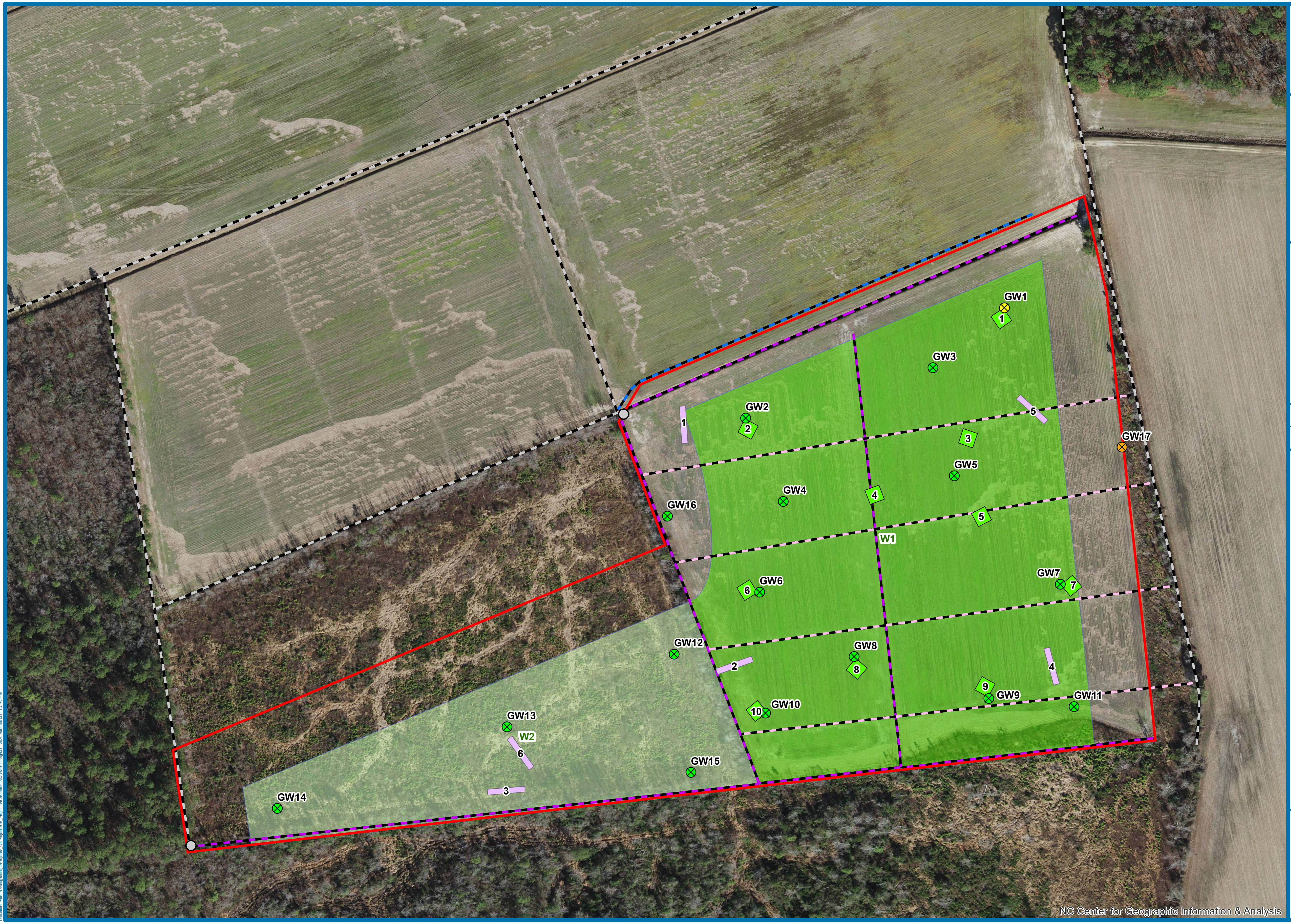
1 inch = 1,000 feet

res

Document Path: S:\@RES GIS\Projects\NC\Barefoot\MXD\Mitigation Plan\Figure 1 VicinityMap.mxd

Appendix B

Visual Assessment Data



N
W E
S
0 100 200
Feet

Figure 2

Current Conditions
Plan View

MY1 2020

Barefoot
Mitigation Site

Sampson County, NC

Date: 11/17/2020	Drawn by: RTM
Lat: 35.255825	Long: -78.390648

LEGEND

- Conservation Easement
- Fixed Vegetation Plot
- MY1 Random Veg Plot

Wetland Treatment

- Re-establishment (1:1)
- Re-establishment (2:1)
- Constructed Ditch
- Filled Ditch
- Plugged Drain Tile
- No Treatment
- Flow Attenuation Structure

MY1 Well Hydroperiod

- >10%
- 5-9%
- <5%

Vegetation Condition Assessment

Invasive Species	Target Community: Present	Marginal	Absent
Absent	No Fill		
Present			

Table 5 Vegetation Condition Assessment

Planted Acreage[1] **22.94**

Vegetation Category	Definitions	Mapping Threshold	CCPV Depiction	Number of Polygons	Combined Acreage	% of Planted Acreage
1. Bare Areas		0.1 acres	Red Simple Hatch	0	0.00	0.0%
2. Low Stem Density Areas	Woody stem densities clearly below target levels based on MY3, 4, or 5 stem count criteria.	0.1 acres	Orange Simple Hatch	0	0.00	0.0%
			Total			0.0%
3. Areas of Poor Growth Rates or Vigor	Areas with woody stems of a size class that are obviously small given the monitoring year.	0.25 acres	Orange Simple Hatch	0	0.00	0.0%
			Cumulative Total			0.0%

Easement Acreage[2] **14**

Vegetation Category	Definitions	Mapping Threshold	CCPV Depiction	Number of Polygons	Combined Acreage	% of Easement Acreage
4. Invasive Areas of Concern[4]	Areas or points (if too small to render as polygons at map scale).	1000 SF	Yellow Crosshatch	0	0.00	0.0%
5. Easement Encroachment Areas[3]	Areas or points (if too small to render as polygons at map scale).	none	Red Simple Hatch	0	0.00	0.0%

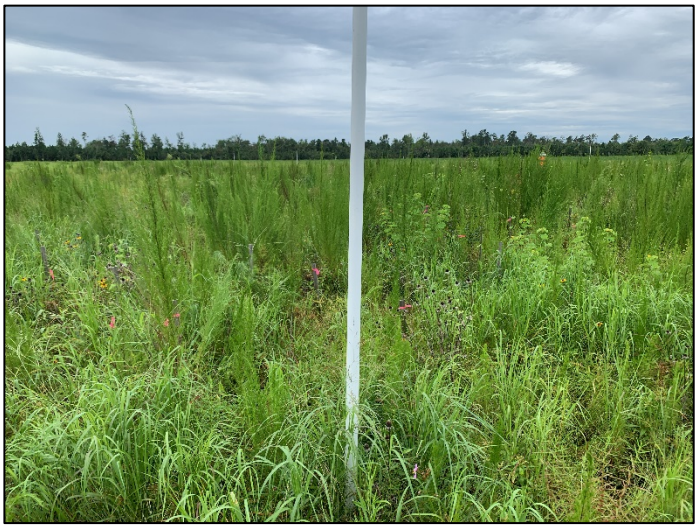
1 = Enter the planted acreage within the easement. This number is calculated as the easement acreage minus any existing mature tree stands that were not subject to supplemental planting of the understory, the channel acreage, crossings or any other elements not directly planted as part of the project effort.

2 = The acreage within the easement boundaries.

3 = Encroachment may occur within or outside of planted areas and will therefore be calculated against the overall easement acreage. In the event a polygon is cataloged into items 1, 2 or 3 in the table and is the result of encroachment, the associated acreage should be tallied in the relevant item (i.e., item 1,2 or 3) as well as a parallel tally in item 5.

4 = Invasives may occur in or out of planted areas, but still within the easement and will therefore be calculated against the overall easement acreage. Invasives of concern/interest are listed below. The list of high concern spcies are those with the potential to directly outcompete native, young, woody stems in the short-term (e.g. monitoring period or shortly thereafter) or affect the community structure for existing, more established tree/shrub stands over timeframes that are slightly longer (e.g. 1-2 decades). The low/moderate concern group are those species that generally do not have this capacity over the timeframes discussed and therefore are not expected to be mapped with regularity, but can be mapped, if in the judgement of the observer their coverage, density or distribution is suppressing the viability, density, or growth of planted woody stems. Decisions as to whether remediation will be needed are based on the integration of risk factors by EEP such as species present, their coverage, distribution relative to native biomass, and the practicality of treatment. For example, even modest amounts of Kudzu or Japanese Knotweed early in the projects history will warrant control, but potentially large coverages of Microstegium in the herb layer will not likley trigger control because of the limited capacities to impact tree/shrub layers within the timeframes discussed and the potential impacts of treating extensive amounts of ground cover. Those species with the "watch list" designator in gray shade are of interest as well, but have yet to be observed across the state with any frequency. Those in *red italics* are of particular interest given their extreme risk/threat level for mapping as points where isolated specimens are found, particularly ealry in a projects monitoring history. However, areas of discreet, dense patches will of course be mapped as polygons. The symbology scheme below was one that was found to be helpful for symbolzing invasives polygons, particulalry for situations where the conditon for an area is somewhere between isolated specimens and dense, discreet patches. In any case, the point or polygon/area feature can be symbolized to describe things like high or low concern and species can be listed as a map inset, in legend items if the number of species are limited or in the narrative section of the executive summary.

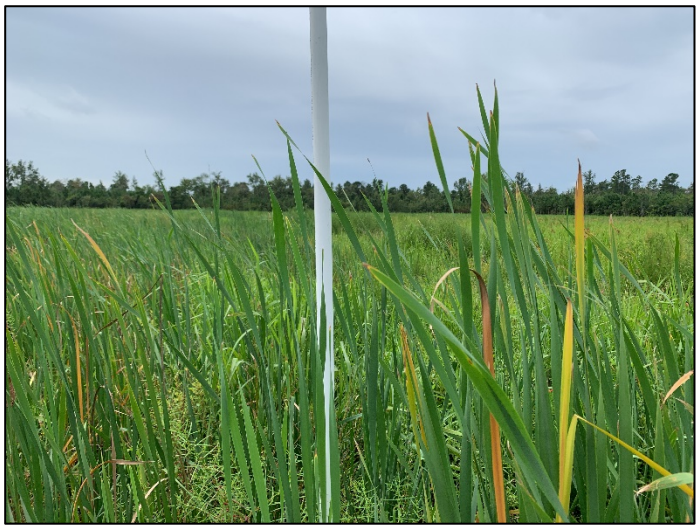
Barefoot MY1 Permanent Vegetation Monitoring Plot Photos



Vegetation Plot 1 (08/25/20)

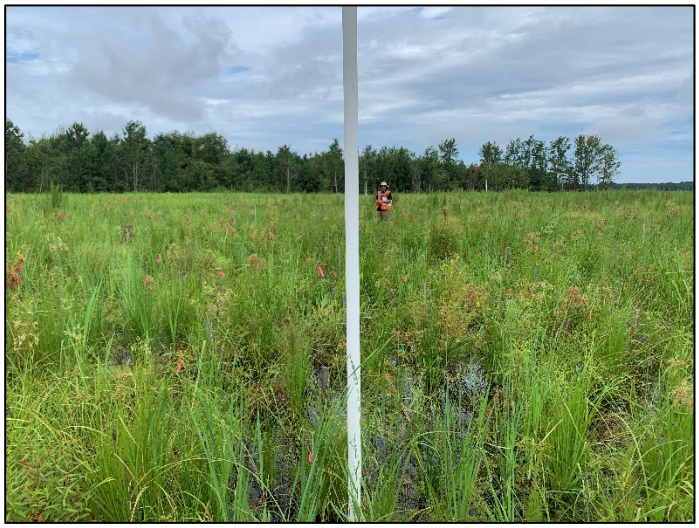
Vegetation Plot 2 (08/25/20)

Vegetation Plot 3 (08/25/20)

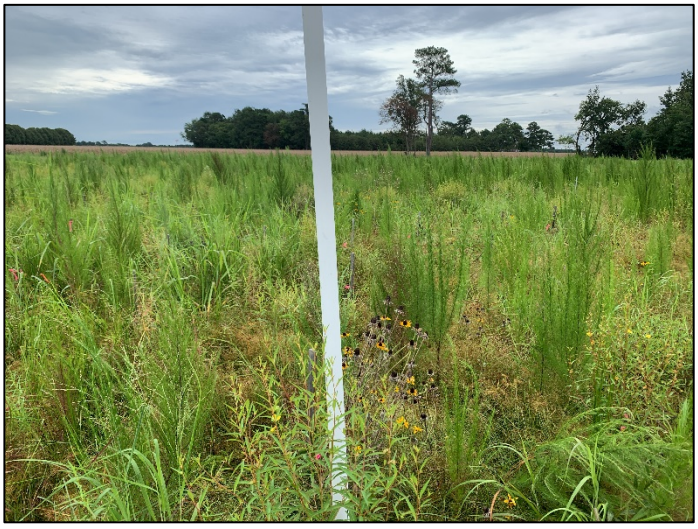


Vegetation Plot 4 (08/25/20)

Vegetation Plot 5 (08/25/20)

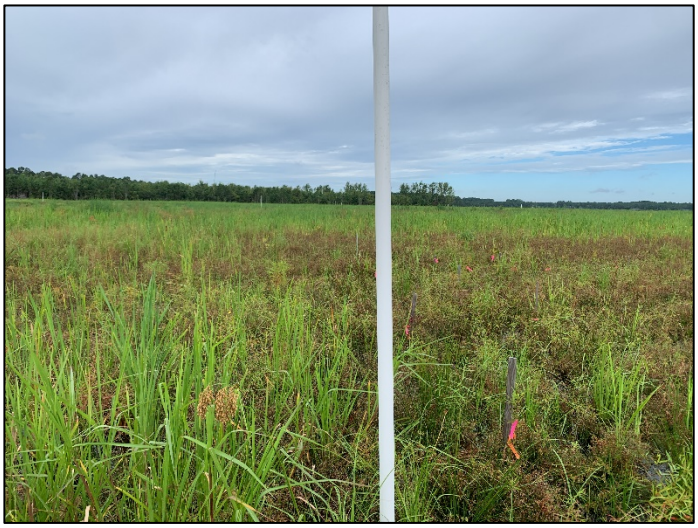


Vegetation Plot 6 (08/25/20)



Vegetation Plot 7 (08/25/20)

Vegetation Plot 8 (08/25/20)



Vegetation Plot 9 (08/25/20)

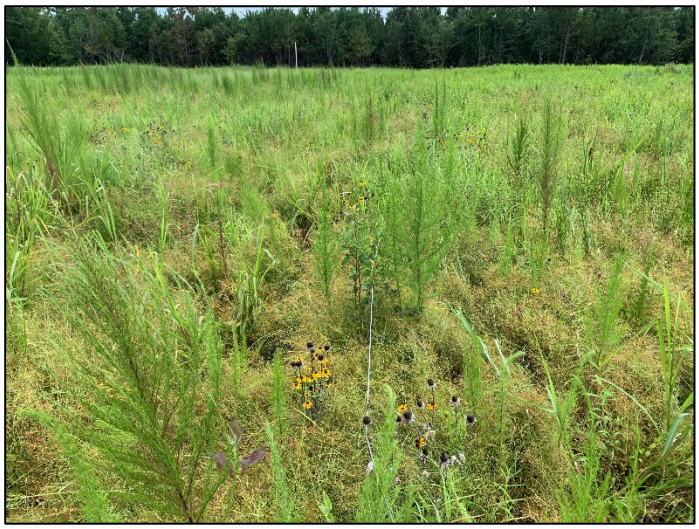
Vegetation Plot 10 (08/25/20)

Barefoot MY1 Random Vegetation Monitoring Plot Photos

Random Vegetation Plot 1 (08/25/20)

Random Vegetation Plot 2 (08/25/20)

Random Vegetation Plot 3 (08/25/20)



Random Vegetation Plot 4 (08/25/20)

Random Vegetation Plot 5 (08/25/20)

Random Vegetation Plot 6 (08/25/20)

Appendix C

Vegetation Plot Data

Table 6. Planted Species Summary

Common Name	Scientific Name	Total Stems Planted
Swamp Chestnut Oak	*Quercus michauxii*	6,000
Baldcypress	*Taxodium distichum*	5,000
Wax Myrtle	*Morella cerifera*	4,320
Willow Oak	*Quercus phellos*	4,000
Cherrybark Oak	*Quercus pagoda*	3,000
Water Oak	*Quercus nigra*	2,500
Green Ash	*Fraxinus pennsylvanica*	2,400
Silky Dogwood	*Cornus amomum*	2,000
Buttonbush	*Cephalanthus occidentalis*	2,000
Yellow Poplar	*Liriodendron tulipifera*	1,000
Southern Crab Apple	*Malus angustifolia*	800
Sugarberry	*Celtis laevigata*	350
Blackgum	*Nyssa sylvatica*	40
	Total	33,410
	Planted Area	22.94
	As-built Planted Stems/Acre	1,456

Table 7. Vegetation Plot Mitigation Success Summary

Plot #	Planted Stems/Acre	Volunteer Stems/Acre	Total Stems/Acre	Success Criteria Met?	Average Planted Stem Height (ft)
1	1335	0	1335	Yes	1.7
2	809	0	809	Yes	2.4
3	1012	0	1012	Yes	2.1
4	971	0	971	Yes	1.7
5	688	0	688	Yes	1.4
6	1619	0	1619	Yes	1.6
7	1497	0	1497	Yes	1.5
8	688	0	688	Yes	2
9	850	0	850	Yes	1.8
10	769	0	769	Yes	2.2
R1	1012	0	1012	Yes	1.6
R2	647	0	647	Yes	2.5
R3	567	0	567	Yes	1.6
R4	405	0	405	Yes	1.9
R5	567	0	567	Yes	2.2
R6*	2428	0	2428	Yes	14.7
Project Avg	**869**	**0**	**1024**	**Yes**	**1.9**
*Random Plot 6 is forested and is not included in the Project Average					

Table 8. Stem Count Total and Planted by Plot Species

Barefoot			Current Plot Data (MY1 2020)																														
			100044-01-0001			100044-01-0002			100044-01-0003			100044-01-0004			100044-01-0005			100044-01-0006			100044-01-0007			100044-01-0008			100044-01-0009			100044-01-0010		
Scientific Name	Common Name	Species Type	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
Celtis laevigata	sugarberry	Tree	7	7	7																												
Cephalanthus occidentalis	common buttonbush	Shrub							5	5	5				1	1	1	2	2	2				5	5	5				1	1	1
Cornus amomum	silky dogwood	Shrub				5	5	5										3	3	3				1	1	1	6	6	6			
Fraxinus pennsylvanica	green ash	Tree				2	2	2	5	5	5	12	12	12	7	7	7				1	1	1									
Liriodendron tulipifera	tuliptree	Tree										1	1	1							12	12	12									
Malus angustifolia	southern crabapple	Tree	2	2	2																											
Morella cerifera	wax myrtle	shrub	1	1	1				2	2	2	1	1	1	5	5	5	2	2	2				1	1	1						
Quercus	oak	Tree																														
Quercus michauxii	swamp chestnut oak	Tree	10	10	10	1	1	1										17	17	17	9	9	9									
Quercus nigra	water oak	Tree	1	1	1	1	1	1				1	1	1	1	1	1	1	1	1												
Quercus pagoda	cherrybark oak	Tree	1	1	1							1	1	1				2	2	2	4	4	4									
Quercus phellos	willow oak	Tree	11	11	11													13	13	13	11	11	11									
Taxodium distichum	bald cypress	Tree				11	11	11	13	13	13	8	8	8	3	3	3							10	10	10	15	15	15	18	18	18
		Stem count	33	33	33	20	20	20	25	25	25	24	24	24	17	17	17	40	40	40	37	37	37	17	17	17	21	21	21	19	19	19
		size (ares)	1			1			1			1			1			1			1			1			1			1		
		size (ACRES)	0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02		
		Species count	7	7	7	5	5	5	4	4	4	6	6	6	5	5	5	7	7	7	5	5	5	4	4	4	2	2	2	2	2	2
		Stems per ACRE	1335	1335	1335	809	809	809	1012	1012	1012	971	971	971	688	688	688	1619	1619	1619	1497	1497	1497	688	688	688	850	850	850	769	769	769

Barefoot			Random Plot Data (MY1 2020)															Annual Means					
			RVP 1			RVP 2			RVP 3			RVP 4			RVP 5			MY1 (2020)			MY0 (2020)		
Scientific Name	Common Name	Species Type	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
Celtis laevigata	sugarberry	Tree																7	7	7			
Cephalanthus occidentalis	common buttonbush	Shrub				2	2	2										16	16	16	8	8	8
Cornus amomum	silky dogwood	Shrub																15	15	15	24	24	24
Fraxinus pennsylvanica	green ash	Tree	2	2	2													29	29	29	33	33	33
Liriodendron tulipifera	tuliptree	Tree																13	13	13	15	15	15
Malus angustifolia	southern crabapple	Tree										3	3	3	1	1	1	6	6	6	10	10	10
Morella cerifera	wax myrtle	shrub				2	2	2	4	4	4	2	2	2				20	20	20	36	36	36
Quercus	oak	Tree																			20	20	20
Quercus michauxii	swamp chestnut oak	Tree	8	8	8										8	8	8	53	53	53	29	29	29
Quercus nigra	water oak	Tree	1	1	1													6	6	6	3	3	3
Quercus pagoda	cherrybark oak	Tree	9	9	9							5	5	5	3	3	3	25	25	25	4	4	4
Quercus phellos	willow oak	Tree	5	5	5				1	1	1				2	2	2	43	43	43	41	41	41
Taxodium distichum	bald cypress	Tree				12	12	12	9	9	9							99	99	99	76	76	76
		Stem count	25	25	25	16	16	16	14	14	14	10	10	10	14	14	14	332	332	332	299	299	299
		size (ares)	1			1			1			1			1			15			10		
		size (ACRES)	0.02			0.02			0.02			0.02			0.02			0.37			0.25		
		Species count	5	5	5	3	3	3	3	3	3	3	3	3	4	4	4	12	12	12	12	12	12
		Stems per ACRE	1012	1012	1012	648	648	648	567	567	567	405	405	405	567	567	567	896	896	896	1210	1210	1210

Table 9. Random Vegetation Monitoring Plot Data (W1)

Random Plot 1		
#	**Species**	**Height (cm)**
1	*Quercus michauxii*	60
2	*Quercus michauxii*	32
3	*Quercus michauxii*	31
4	*Quercus pagoda*	48
5	*Quercus phellos*	50
6	*Quercus phellos*	48
7	*Quercus pagoda*	46
8	*Quercus nigra*	58
9	*Quercus pagoda*	55
10	*Quercus pagoda*	60
11	*Quercus phellos*	52
12	*Quercus pagoda*	47
13	*Quercus pagoda*	60
14	*Quercus pagoda*	51
15	*Quercus phellos*	45
16	*Quercus michauxii*	5
17	*Quercus michauxii*	76
18	*Fraxinus pennsylvanica*	16
19	*Quercus phellos*	35
20	*Quercus michauxii*	37
21	*Quercus pagoda*	54
22	*Quercus michauxii*	45
23	*Quercus pagoda*	57
24	*Fraxinus pennsylvanica*	75
25	*Quercus michauxii*	55
Stems/Acre	1012	
Average Height (cm)	48	
Average Height (ft)	1.6	
Plot Size (m)	25 x 4	

Random Plot 2		
#	**Species**	**Height (cm)**
1	*Taxodium distichum*	62
2	*Taxodium distichum*	66
3	*Cephalanthus occidentalis*	53
4	*Taxodium distichum*	70
5	*Taxodium distichum*	65
6	*Morella cerifera*	48
7	*Taxodium distichum*	90
8	*Taxodium distichum*	81
9	*Taxodium distichum*	70
10	*Taxodium distichum*	95
11	*Taxodium distichum*	81
12	*Taxodium distichum*	105
13	*Morella cerifera*	56
14	*Cephalanthus occidentalis*	46
15	*Taxodium distichum*	115
16	*Taxodium distichum*	110
Stems/Acre	647	
Average Height (cm)	76	
Average Height (ft)	2.5	
Plot Size (m)	25 x 4	

Random Plot 3		
#	**Species**	**Height (cm)**
1	*Taxodium distichum*	57
2	*Taxodium distichum*	21
3	*Taxodium distichum*	44
4	*Taxodium distichum*	32
5	*Taxodium distichum*	60
6	*Taxodium distichum*	50
7	*Quercus phellos*	50
8	*Taxodium distichum*	66
9	*Taxodium distichum*	78
10	*Taxodium distichum*	62
11	*Morella cerifera*	42
12	*Morella cerifera*	53
13	*Morella cerifera*	42
14	*Morella cerifera*	40
Stems/Acre	567	
Average Height (cm)	50	
Average Height (ft)	1.6	
Plot Size (m)	25 x 4	

Random Plot 4		
#	**Species**	**Height (cm)**
1	*Malus angustifolia*	60
2	*Malus angustifolia*	59
3	*Quercus pagoda*	55
4	*Quercus pagoda*	40
5	*Morella cerifera*	30
6	*Quercus pagoda*	50
7	*Quercus pagoda*	56
8	*Morella cerifera*	80
9	*Quercus pagoda*	57
10	*Malus angustifolia*	81
Stems/Acre	405	
Average Height (cm)	57	
Average Height (ft)	1.9	
Plot Size (m)	25 x 4	

Random Plot 5		
#	**Species**	**Height (cm)**
1	*Quercus michauxii*	54
2	*Quercus phellos*	30
3	*Quercus michauxii*	50
4	*Quercus pagoda*	51
5	*Quercus pagoda*	60
6	*Quercus michauxii*	51
7	*Quercus michauxii*	60
8	*Quercus michauxii*	55
9	*Quercus pagoda*	49
10	*Quercus michauxii*	55
11	*Malus angustifolia*	76
12	*Quercus phellos*	58
13	*Quercus michauxii*	60
14	*Quercus michauxii*	55
Stems/Acre	567	
Average Height (cm)	55	
Average Height (ft)	1.8	
Plot Size (m)	25 x 4	

Table 9. Random Vegetation Monitoring Plot Data (W2)

Random Plot 6		
#	Species	Height (cm)
1	*Cyrilla racemiflora*	400
2	*Cyrilla racemiflora*	250
3	*Cyrilla racemiflora*	200
4	*Acer rubrum*	600
5	*Acer rubrum*	600
6	*Acer rubrum*	500
7	*Acer rubrum*	550
8	*Pinus taeda*	120
9	*Persea borbonia*	135
10	*Acer rubrum*	200
11	*Acer rubrum*	250
12	*Acer rubrum*	200
13	*Persea borbonia*	450
14	*Pinus taeda*	500
15	*Pinus taeda*	500
16	*Ilex opaca*	100
17	*Ilex opaca*	300
18	*Ilex opaca*	250
19	*Pinus taeda*	650
20	*Pinus taeda*	650
21	*Pinus taeda*	600
22	*Pinus taeda*	500
23	*Liquidambar styraciflua*	200
24	*Acer rubrum*	350
25	*Pinus taeda*	500
26	*Pinus taeda*	400
27	*Pinus taeda*	500
28	*Quercus phellos*	70
29	*Pinus taeda*	700
30	*Pinus taeda*	600

Random Plot 6		
#	Species	Height (cm)
31	*Acer rubrum*	75
32	*Quercus nigra*	150
33	*Acer rubrum*	300
34	*Ilex opaca*	32
35	*Pinus taeda*	800
36	*Pinus taeda*	700
37	*Pinus taeda*	300
38	*Pinus taeda*	350
39	*Pinus taeda*	350
40	*Pinus taeda*	300
41	*Liquidambar styraciflua*	500
42	*Quercus nigra*	220
43	*Pinus taeda*	1000
44	*Pinus taeda*	900
45	*Pinus taeda*	1000
46	*Pinus taeda*	850
47	*Quercus nigra*	250
48	*Pinus taeda*	600
49	*Pinus taeda*	100
50	*Persea borbonia*	500
51	*Liquidambar styraciflua*	50
52	*Pinus taeda*	500
53	*Pinus taeda*	1000
54	*Pinus taeda*	900
55	*Ilex opaca*	800
56	*Ilex opaca*	700
57	*Ilex opaca*	700
58	*Acer rubrum*	700
59	*Cyrilla racemiflora*	800
60	*Clethra alnifolia*	170
61	*Clethra alnifolia*	180
62	*Clethra alnifolia*	150
Stems/Acre	2428	
Average Height (cm)	457	
Average Height (ft)	15.0	
Plot Size (m)	25 x 4	

Appendix D

Hydrology Data

Table 10.

Month	Average	Normal Limits		Goldsboro Station Precipitation
		30 Percent	70 Percent	
January	4.34	3.38	5.01	3.86
February	3.23	2.19	3.85	4.44
March	4.50	3.30	5.29	2.80
April	3.16	1.77	3.85	4.40
May	3.69	2.73	4.33	5.22
June	4.49	3.18	5.31	5.37
July	6.06	4.26	7.19	3.81
August	5.42	3.27	6.57	5.67
September	4.99	2.17	6.09	7.36
October	3.21	1.70	3.91	2.14
November	2.89	1.88	3.47	5.61
December	3.24	2.20	3.87	---
Total	49.22	32.03	58.74	50.68

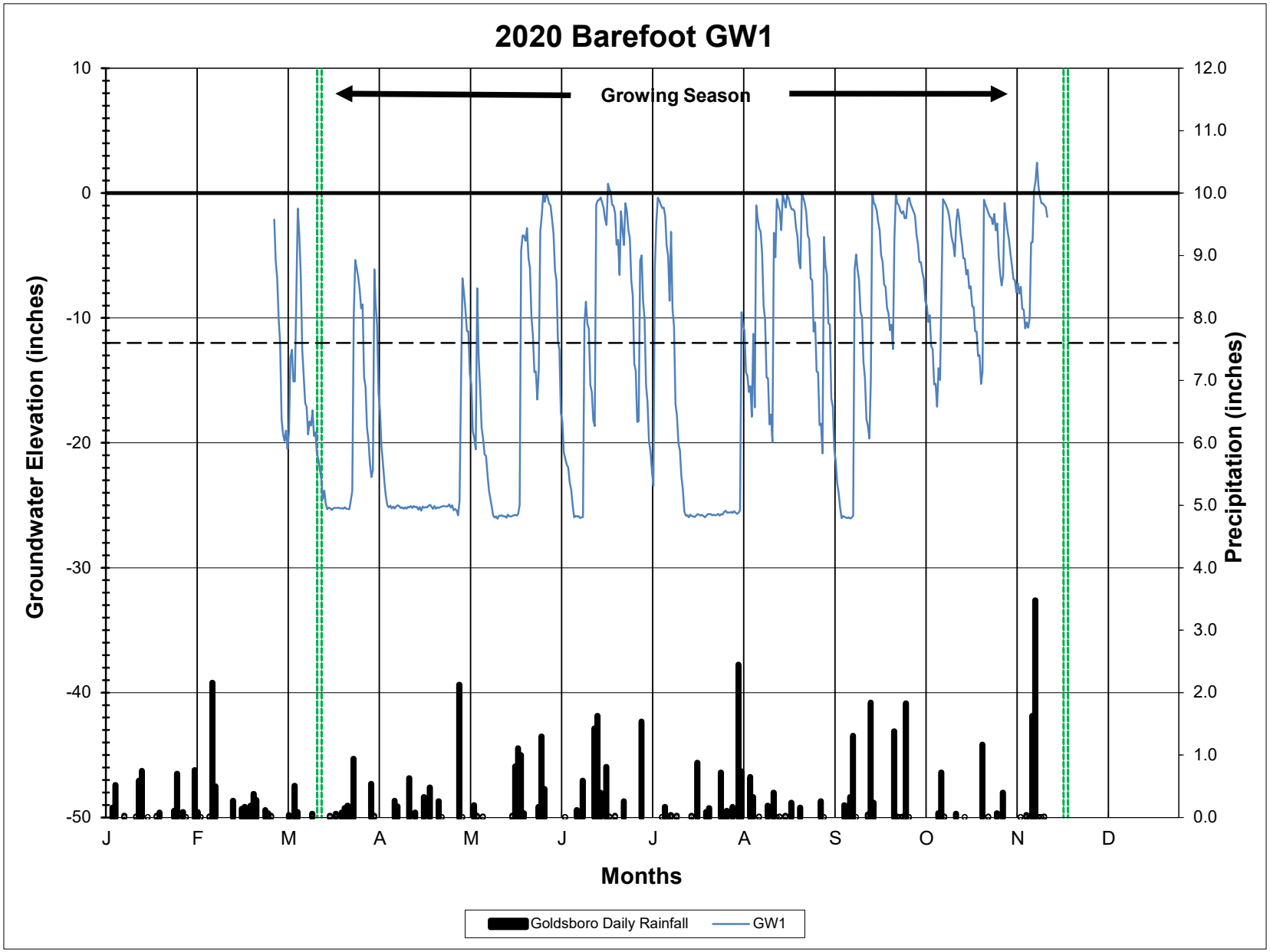
Table 11.

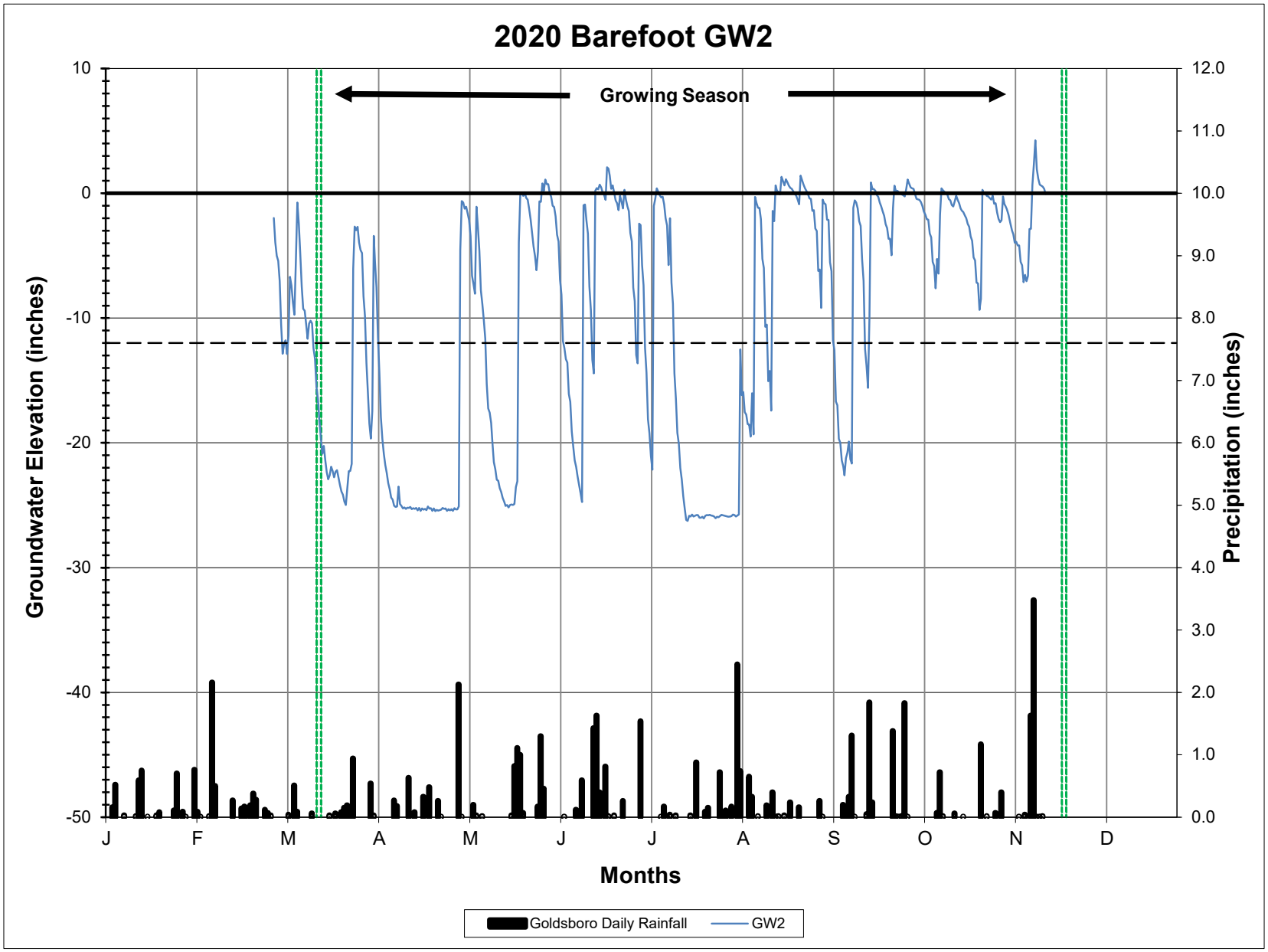
2020 Max Hydroperiod (Growing Season 13-Mar through 22-Nov, 254 days) Success Criterion 10%							
Well ID	Wetland ID	Elevation (ft)	Consecutive		Cumulative		Occurrences
			Days	Hydroperiod (%)	Days	Hydroperiod (%)	
GW1	**W1**	193.62	22	9	124	53	18
GW2	**W1**	193.36	61	24	147	63	12
GW3	**W1**	193.50	105	41	206	88	4
GW4	**W1**	193.35	66	26	168	72	10
GW5	**W1**	193.25	105	41	195	84	7
GW6	**W1**	193.25	105	41	209	89	7
GW7	**W1**	193.40	66	26	175	75	11
GW8	**W1**	192.80	137	54	247	106	2
GW9	**W1**	193.16	105	41	216	92	8
GW10	**W1**	192.85	136	54	246	106	2
GW11	**W1**	193.42	105	41	188	80	11
GW12	**W2**	194.22	25	10	157	67	15
GW13	**W2**	193.82	100	39	227	97	4
GW14	**W2**	193.32	128	50	233	100	3
GW15	**W2**	193.61	66	26	210	90	9
GW16	**N/A**	193.73	66	26	173	74	8
GW17	**N/A**	193.82	7	3	38	16	19

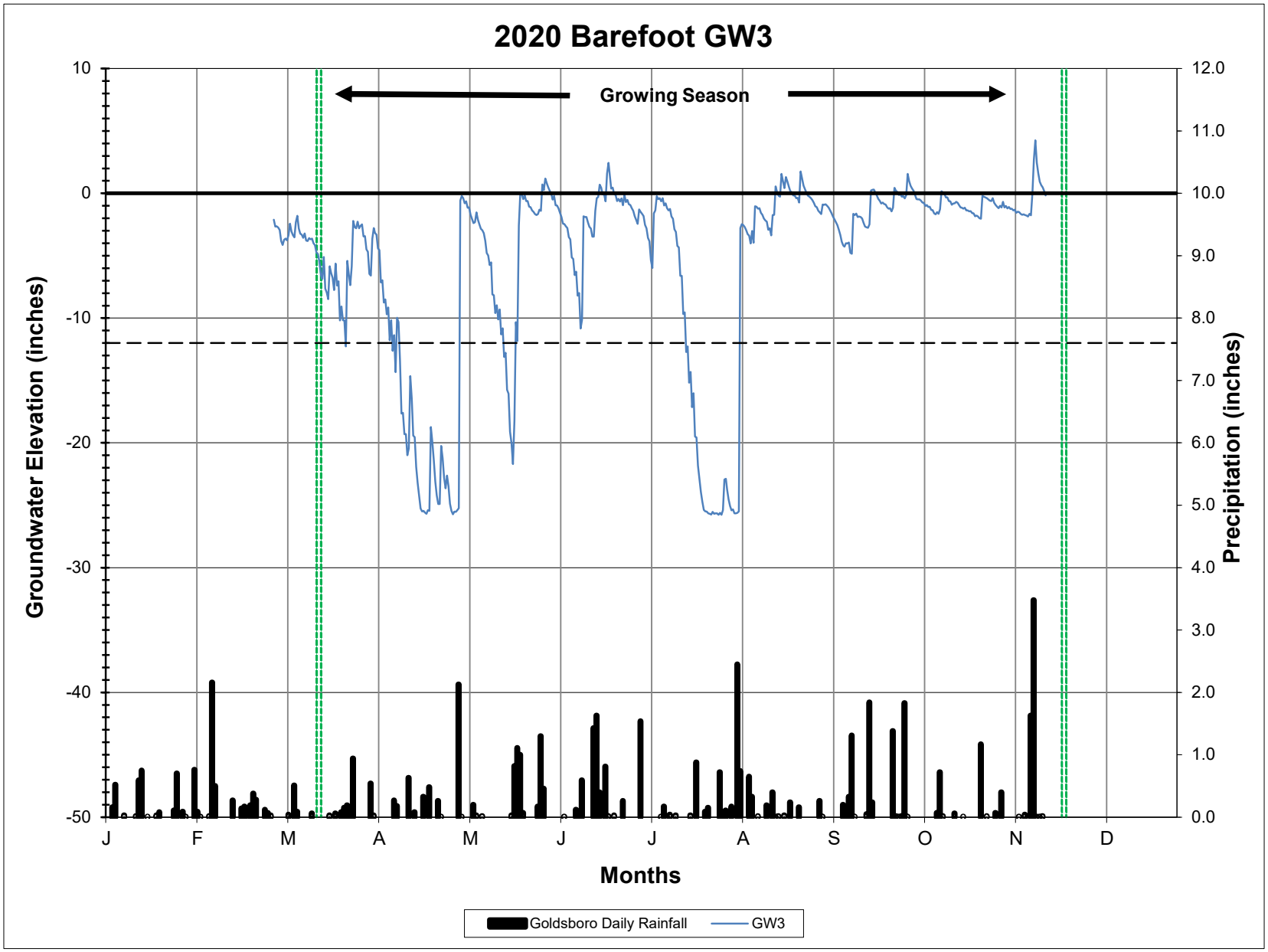
<5%	5-9%	≥10%

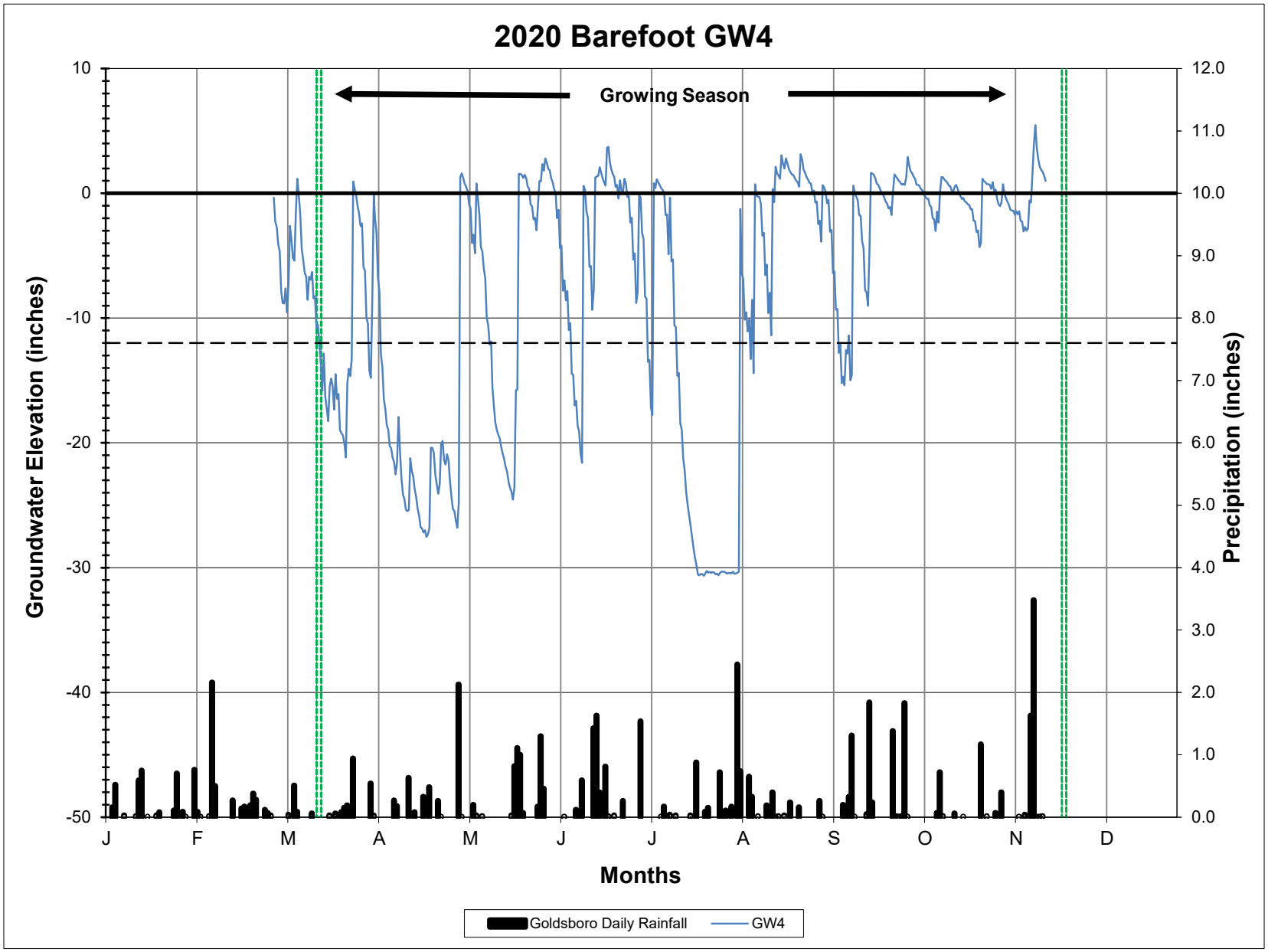
Table 12.

Summary of Groundwater Monitoring Results Barefoot											
Well ID	Wetland ID	Elevation (ft)	Hydroperiod (%); Success Criteron 10%								
			Pre-Con (2018)	Pre-Con (2019)	Year 1 (2020)	Year 2 (2021)	Year 3 (2022)	Year 4 (2023)	Year 5 (2024)	Year 6 (2025)	Year 7 (2026)
GW1	W1	193.62	---	---	9						
GW2	W1	193.36	---	---	24						
GW3	W1	193.50	3	1	41						
GW4	W1	193.35	2	0	26						
GW5	W1	193.25	2	1	41						
GW6	W1	193.25	---	---	41						
GW7	W1	193.40	---	---	26						
GW8	W1	192.80	---	---	54						
GW9	W1	193.16	---	---	41						
GW10	W1	192.85	---	---	54						
GW11	W1	193.42	---	---	41						
GW12	W2	194.22	---	5	10						
GW13	W2	193.82	---	---	39						
GW14	W2	193.32	---	0	50						
GW15	W2	193.61	---	---	26						
GW16	N/A	193.73	1	0	26						
GW17	N/A	193.82	3	1	3						


2020 Barefoot GW1
Growing Season
Groundwater Elevation (inches)
Precipitation (inches)
10
0
-10
-20
-30
-40
-50
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
J
F
M
A
M
J
J
A
S
O
N
D
Months
Goldsboro Daily Rainfall
GW1


2020 Barefoot GW2
Growing Season
Groundwater Elevation (inches)
Precipitation (inches)
10
0
-10
-20
-30
-40
-50
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
J
F
M
A
M
J
J
A
S
O
N
D
Months
Goldsboro Daily Rainfall
GW2


2020 Barefoot GW3
Growing Season
Groundwater Elevation (inches)
Precipitation (inches)
10
0
-10
-20
-30
-40
-50
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
J
F
M
A
M
J
J
A
S
O
N
D
Months
Goldsboro Daily Rainfall
GW3


2020 Barefoot GW4
Growing Season
Groundwater Elevation (inches)
Precipitation (inches)
10
0
-10
-20
-30
-40
-50
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
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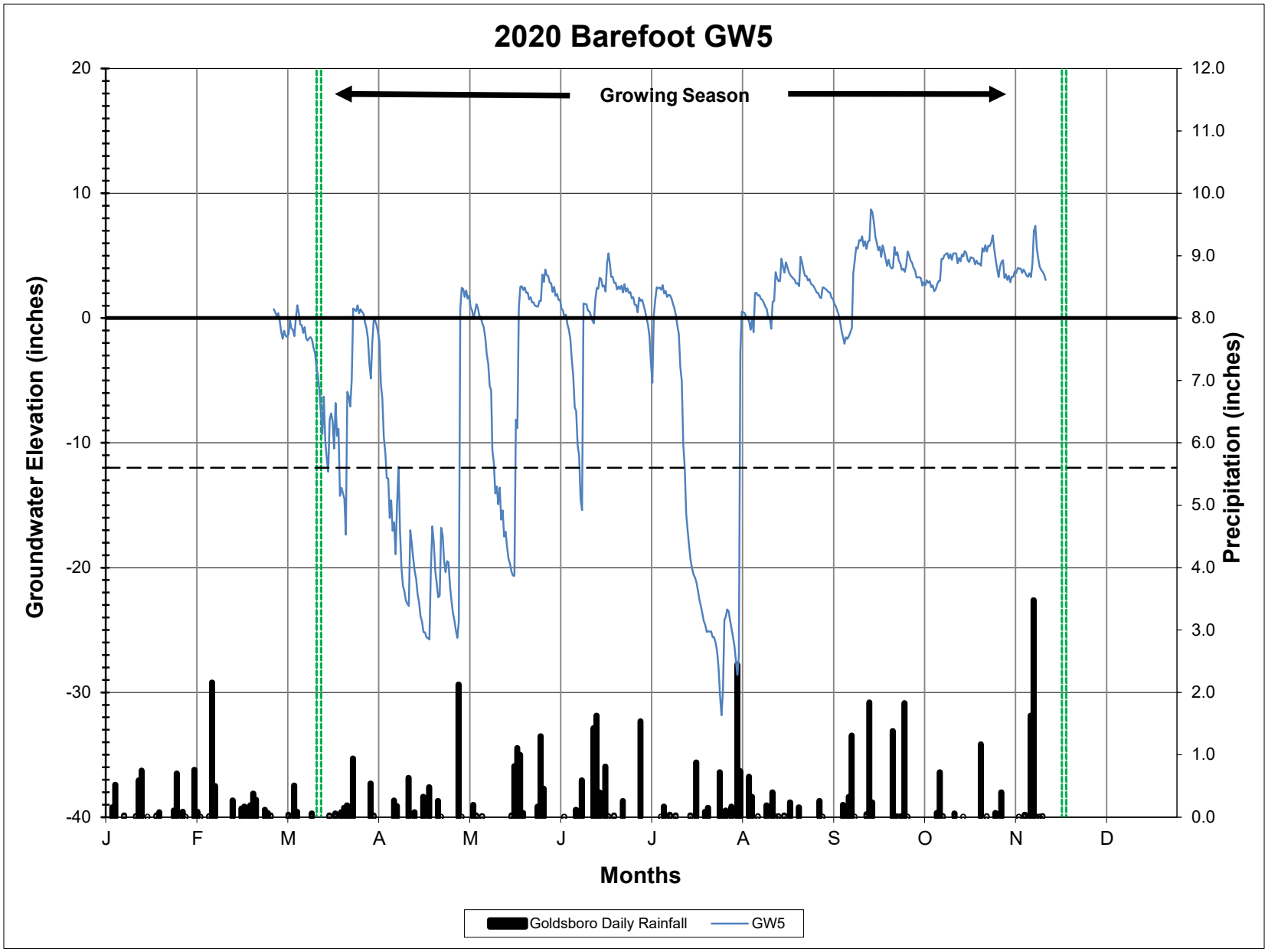
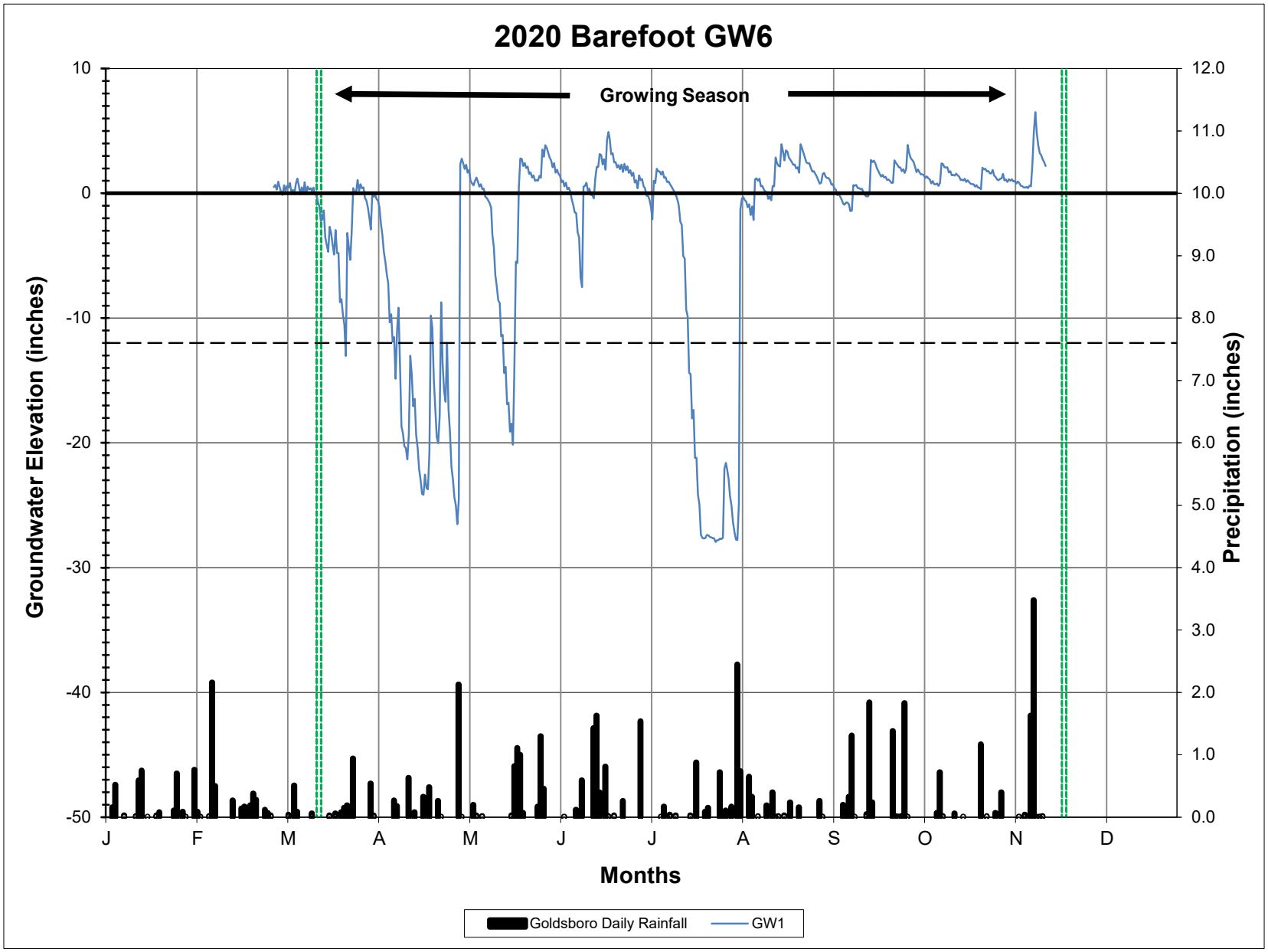
A
S
O
N
D
Months
Goldsboro Daily Rainfall
GW4


2020 Barefoot GW5
Growing Season
Groundwater Elevation (inches)
Precipitation (inches)
20
10
0
-10
-20
-30
-40
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
J
F
M
A
M
J
J
A
S
O
N
D
Months
Goldsboro Daily Rainfall
GW5


2020 Barefoot GW6
Growing Season
Groundwater Elevation (inches)
Precipitation (inches)
10
0
-10
-20
-30
-40
-50
12.0
11.0
10.0
9.0
8.0
7.0
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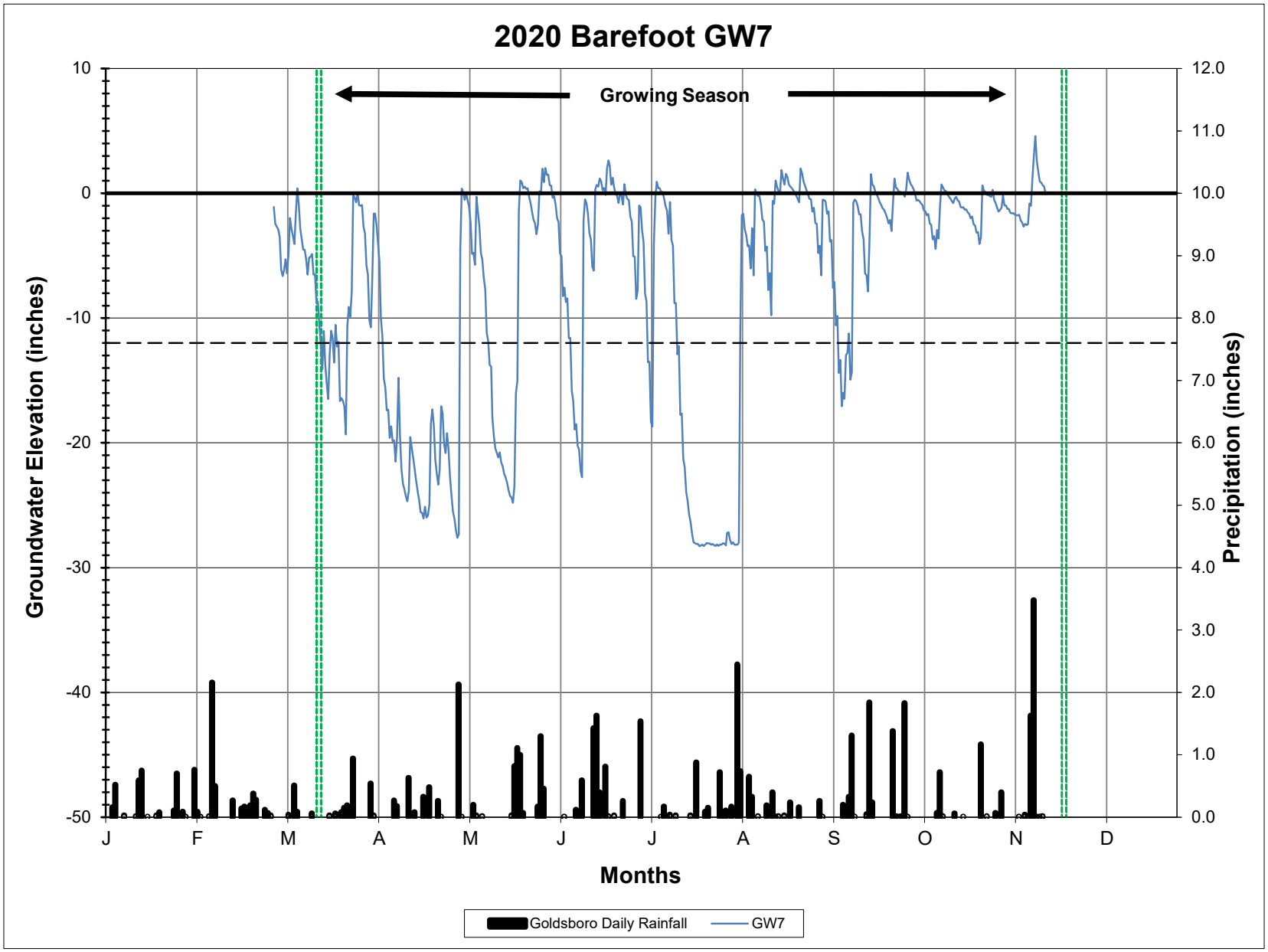
Months
Goldsboro Daily Rainfall
GW1


2020 Barefoot GW7
Growing Season
Groundwater Elevation (inches)
Precipitation (inches)
10
0
-10
-20
-30
-40
-50
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
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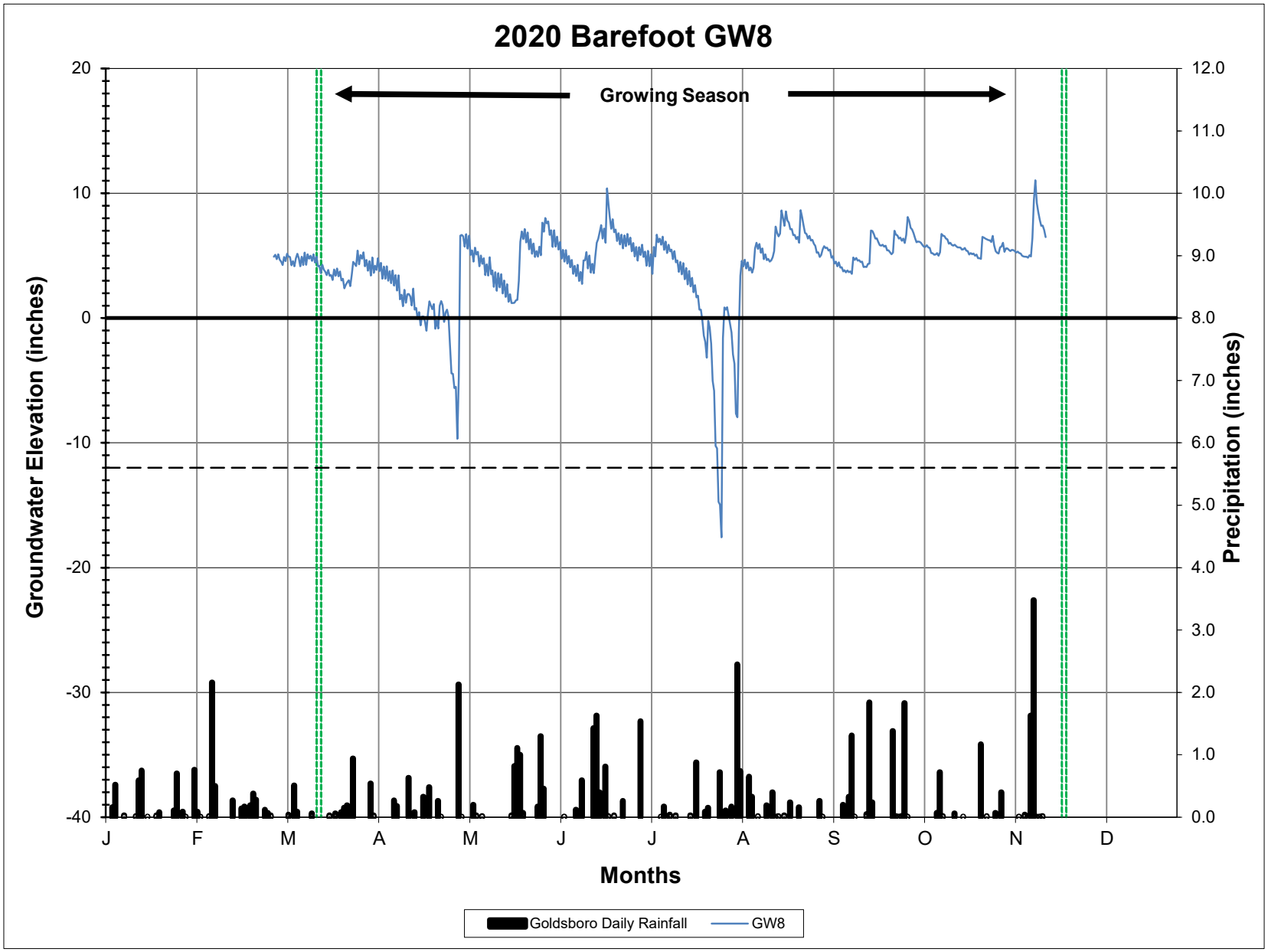
Months
Goldsboro Daily Rainfall
GW7


2020 Barefoot GW8
Growing Season
Groundwater Elevation (inches)
Precipitation (inches)
20
10
0
-10
-20
-30
-40
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
J
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M
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A
S
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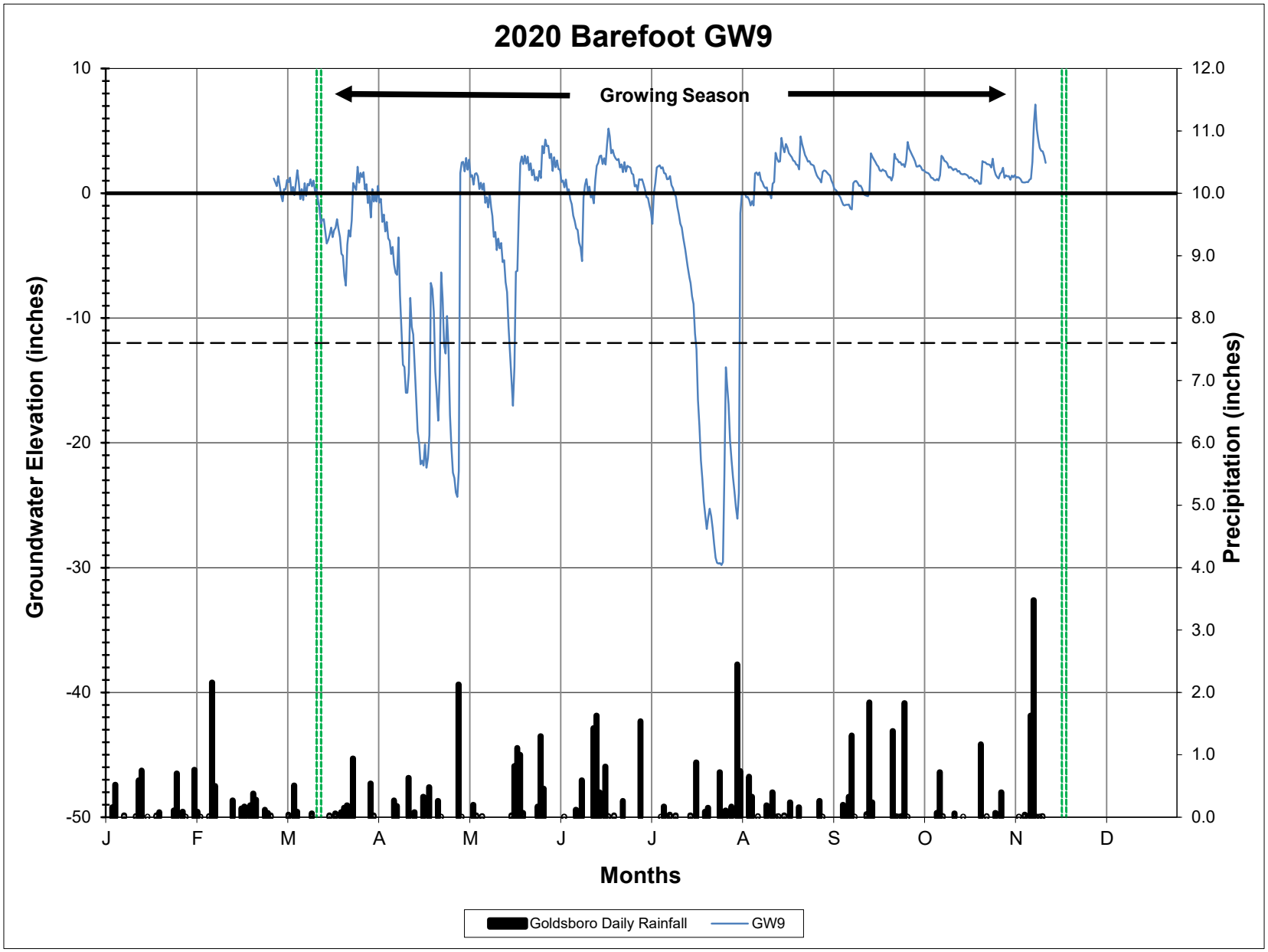
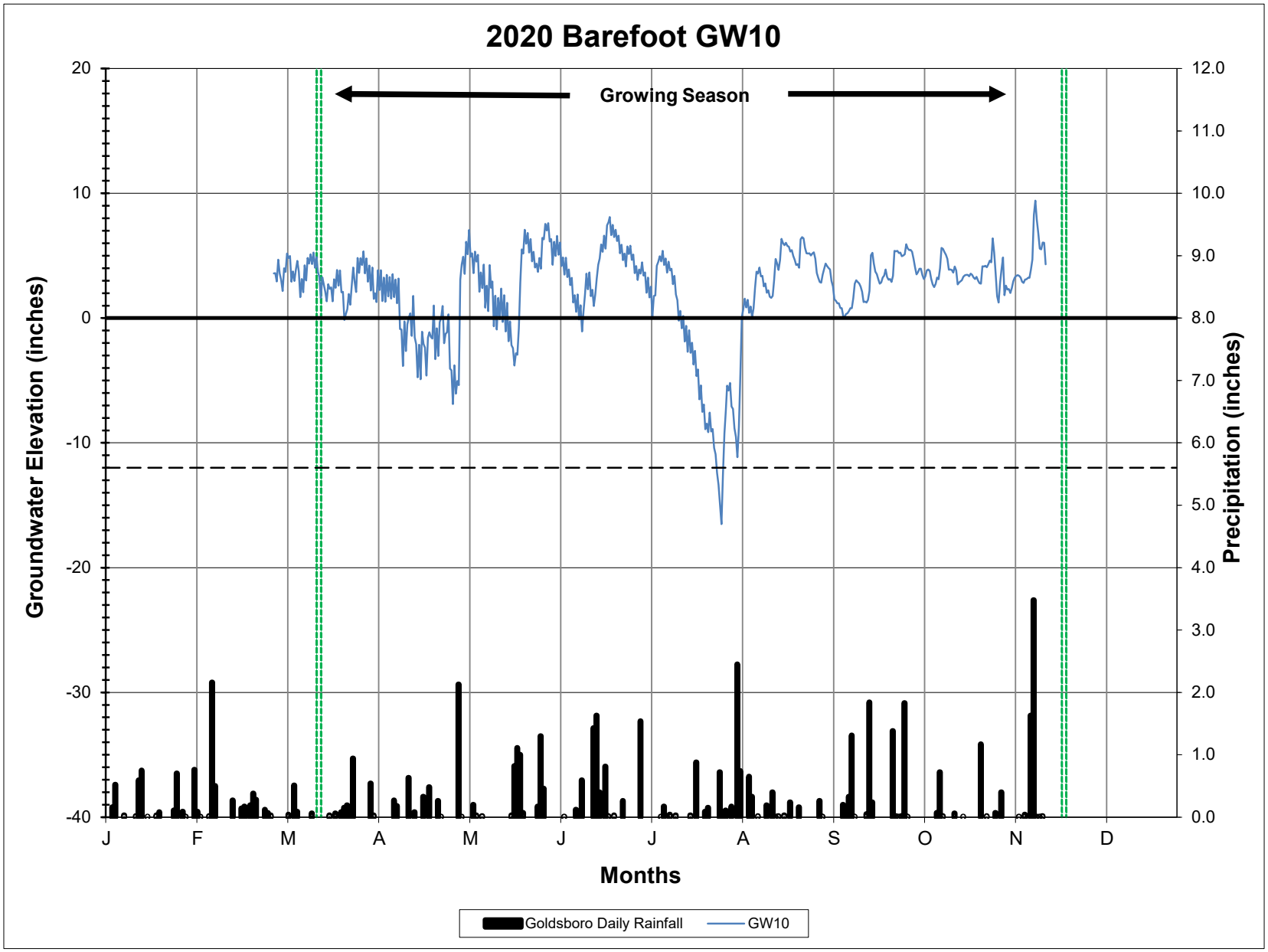
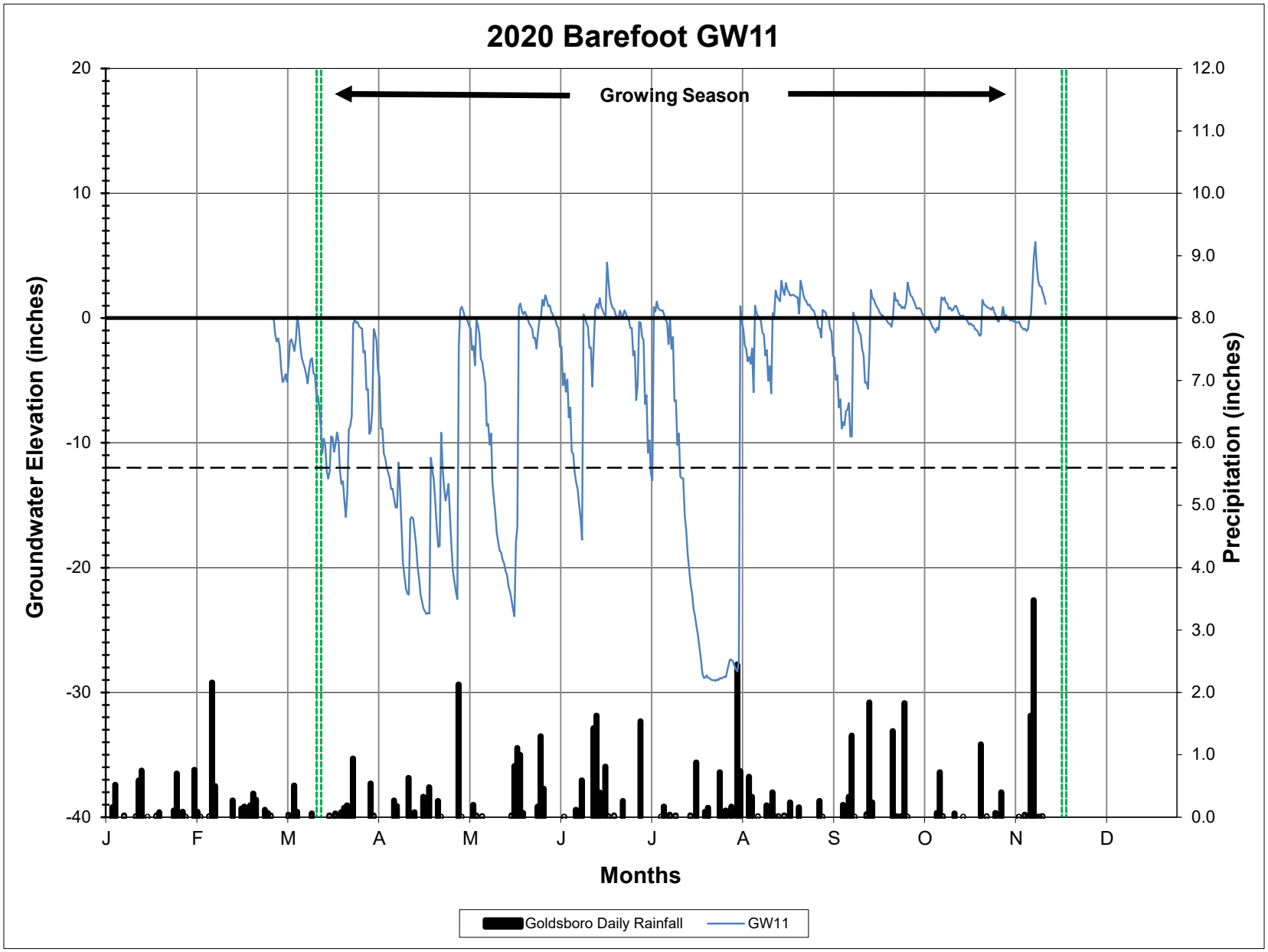
N
D
Months
Goldsboro Daily Rainfall
GW8


2020 Barefoot GW9
Growing Season
Groundwater Elevation (inches)
Precipitation (inches)
10
0
-10
-20
-30
-40
-50
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
J
F
M
A
M
J
J
A
S
O
N
D
Months
Goldsboro Daily Rainfall
GW9


2020 Barefoot GW10
Growing Season
Groundwater Elevation (inches)
Precipitation (inches)
20
10
0
-10
-20
-30
-40
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
J
F
M
A
M
J
J
A
S
O
N
D
Months
Goldsboro Daily Rainfall
GW10


2020 Barefoot GW11
Growing Season
Groundwater Elevation (inches)
Precipitation (inches)
20
10
0
-10
-20
-30
-40
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
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M
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J
A
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N
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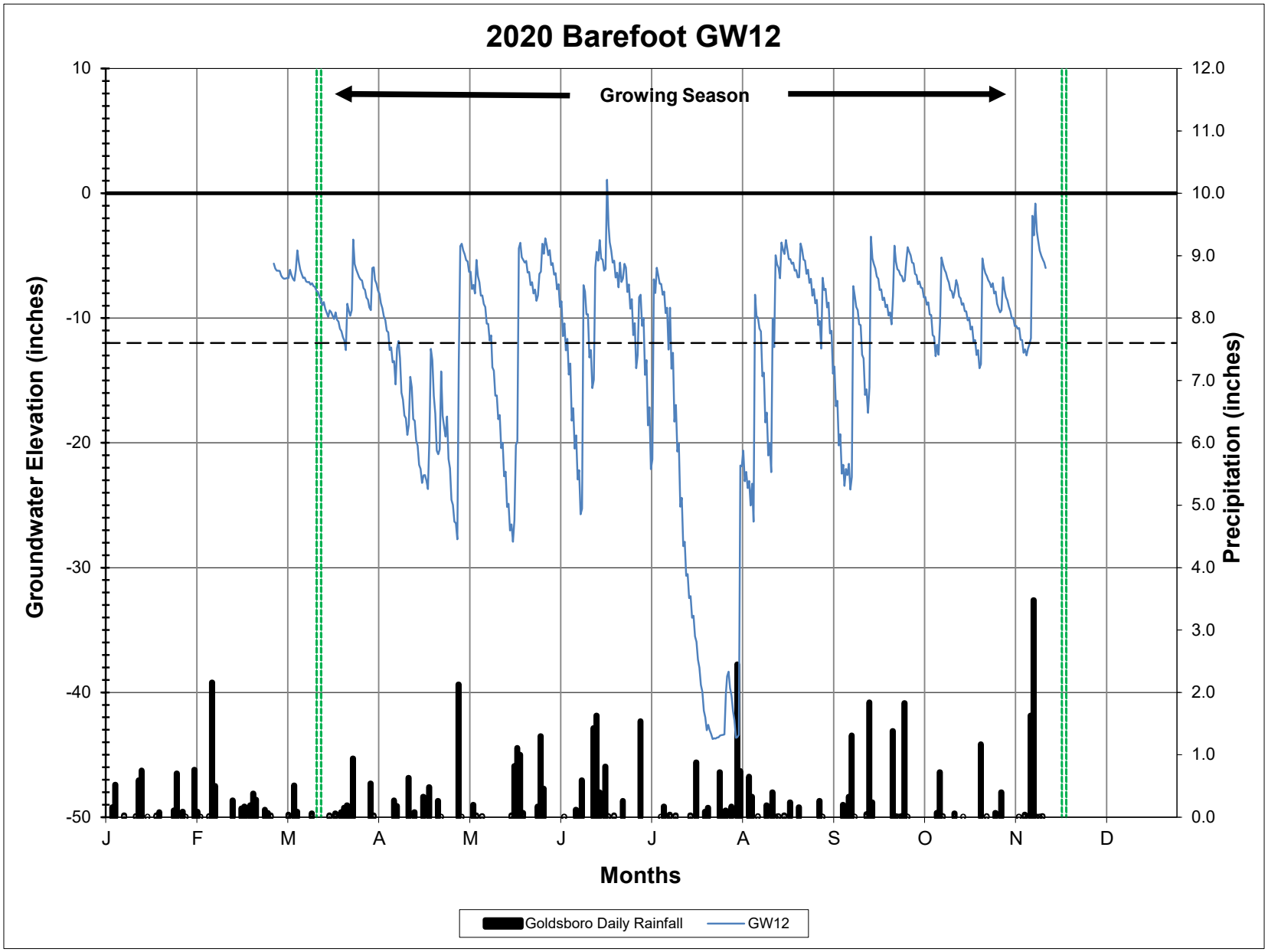
Months
Goldsboro Daily Rainfall
GW11


2020 Barefoot GW12
Growing Season
Groundwater Elevation (inches)
Precipitation (inches)
10
0
-10
-20
-30
-40
-50
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
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J
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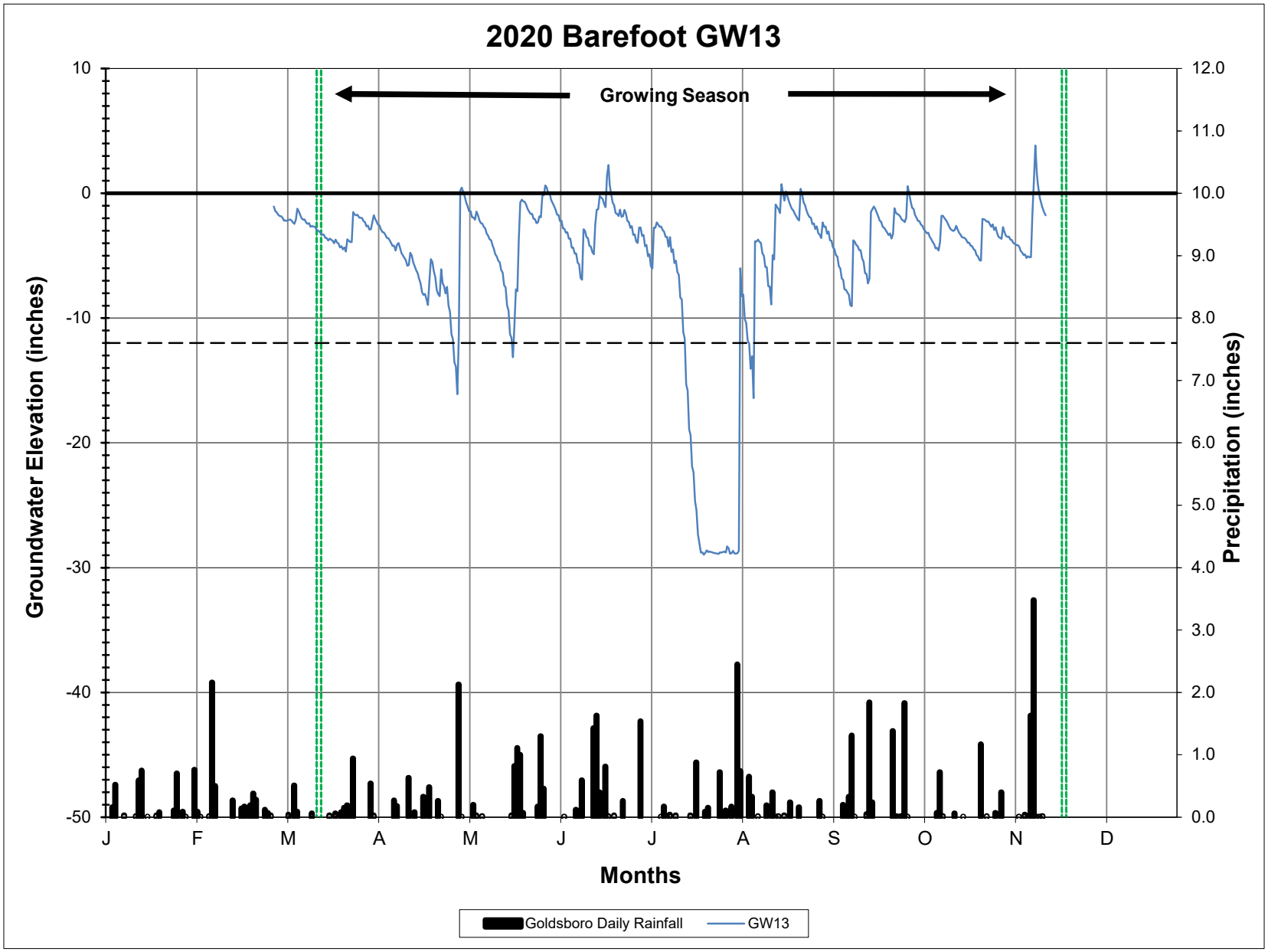
M
J
J
A
S
O
N
D
Months
Goldsboro Daily Rainfall
GW12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Growing Season
Groundwater Elevation (inches)
Precipitation (inches)
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0
-10
-20
-30
-40
-50
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
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J
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J
A
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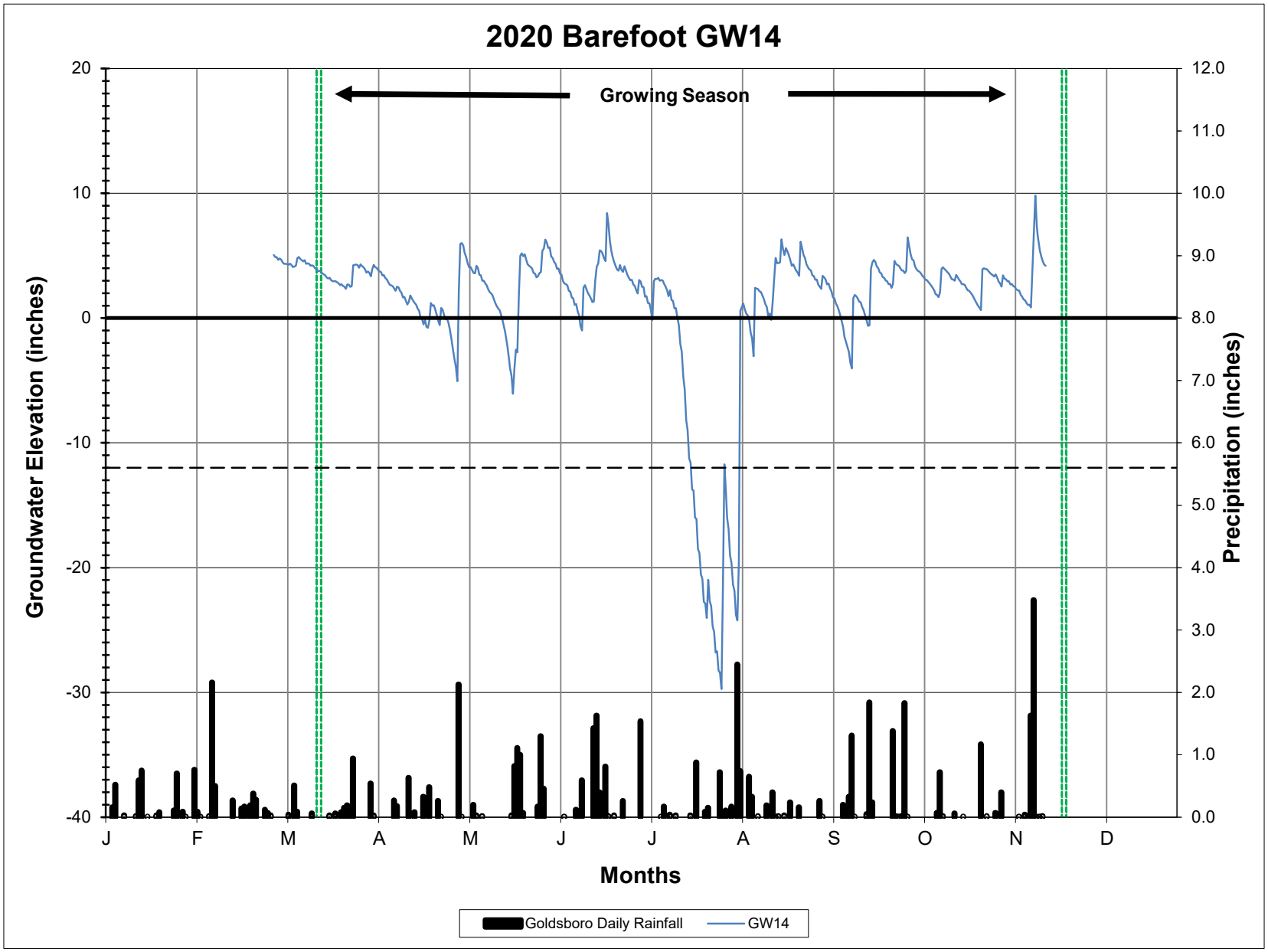
D
Months
Goldsboro Daily Rainfall
GW13


2020 Barefoot GW14
Growing Season
Groundwater Elevation (inches)
Precipitation (inches)
20
10
0
-10
-20
-30
-40
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
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J
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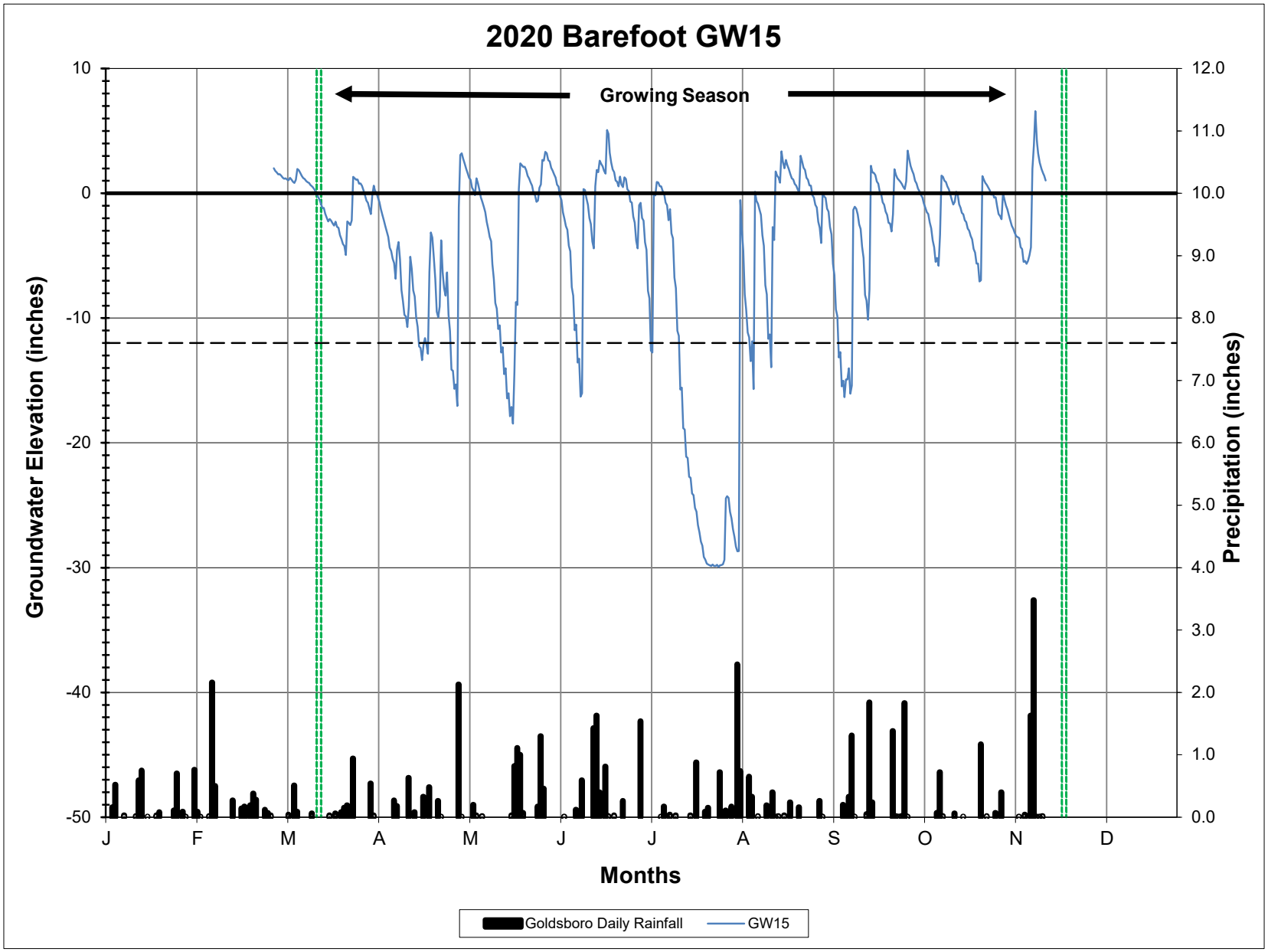
N
D
Months
Goldsboro Daily Rainfall
GW14


2020 Barefoot GW15
Growing Season
Groundwater Elevation (inches)
Precipitation (inches)
10
0
-10
-20
-30
-40
-50
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
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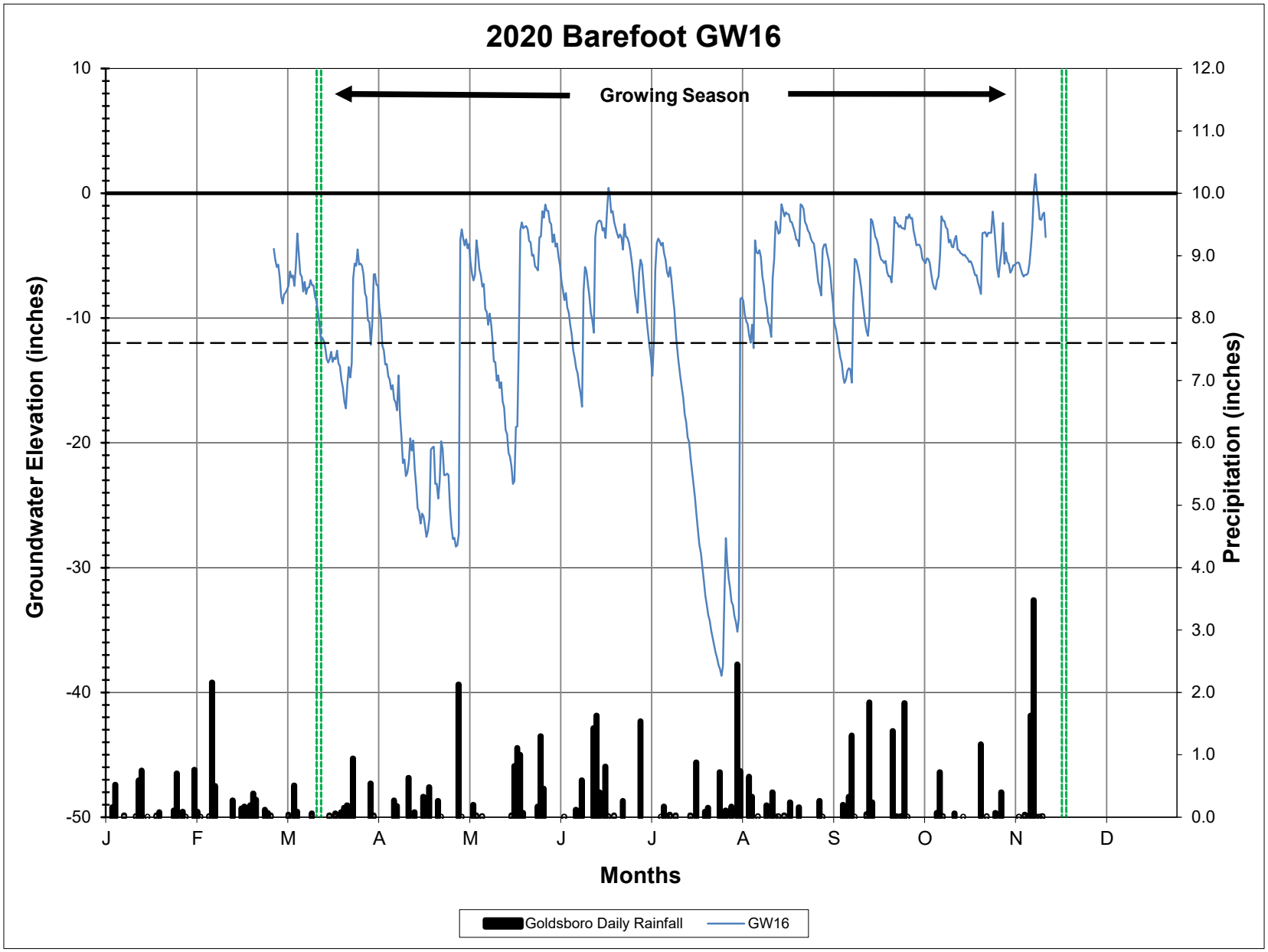
Months
Goldsboro Daily Rainfall
GW15


2020 Barefoot GW16
Growing Season
Groundwater Elevation (inches)
Precipitation (inches)
Months
10
0
-10
-20
-30
-40
-50
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
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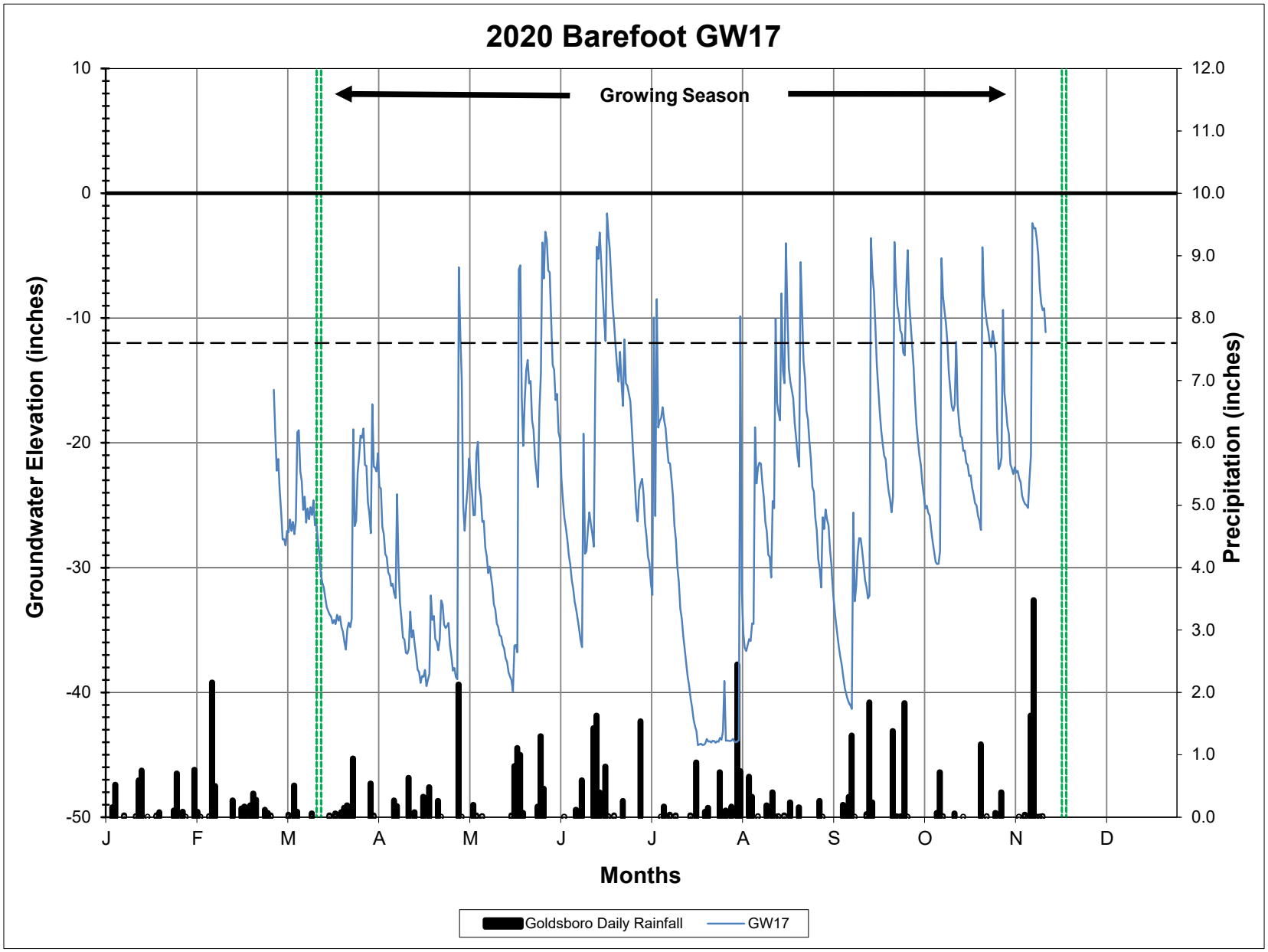
Goldsboro Daily Rainfall
GW16


2020 Barefoot GW17
Growing Season
Groundwater Elevation (inches)
Precipitation (inches)
10
0
-10
-20
-30
-40
-50
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
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Months
Goldsboro Daily Rainfall
GW17

Appendix E

As-Built IRT Comments

3600 Glenwood Avenue, Suite 100
Raleigh, NC 27612

Corporate Headquarters
6575 W Loop S #300
Bellaire, TX 77401
Main: 713.520.5400

January 6, 2021

RE: Barefoot Site: As-Built and Baseline Monitoring Report (NCDMS ID 100044)

Listed below are comments provided by IRT on May 14, 2020 regarding the Barefoot Site: As-Built and Baseline Monitoring Report and RES' responses.

EPA Comments, Todd Bowers:

1. The as-built location of the constructed northern ditch is 45 feet closer to the conservation easement than the proposed location. The new ditch is now 100 feet from the wetland area. I agree with RES that the effect, if any, will be evident in nearby wells. Also noted that the ditch on the east side of the project was not partially filled as planned. Some baseline well data would have been helpful to see if any effects are immediately apparent however it seems that the W1 wells were only just installed in January.
Pre-construction well data (2018 and 2019) for Groundwater Wells 3, 4, 5, 12, 14, 16, and 17 is included in Table 12 of the Year 1 Report. Pre-construction well hydroperiods ranged from 0 to 5 percent.

2. I am a bit concerned with the lack of hydrology data, even for a site that was just constructed, since so much of the credit is based on hydroperiod performance. RES has stated that site-wide hydrology data, including the baseline W2 data, is forthcoming. Understandably the site has yet to enter the growing season (for the report) so performance over the summer is still unknown but I was hoping to see any immediate effects of ditch plugging and tile removal. The photos of a saturated site with large patches of standing water are helpful in lieu of data.
Pre-construction well data (2018 and 2019) for Groundwater Wells 3, 4, 5, 12, 14, 16, and 17 is included in Table 12 of the Year 1 Report. Pre-construction well hydroperiods ranged from 0 to 5 percent.

3. Noted the change in planting plan as Atlanta white cedar, laurel oak and sweetbay were replaced with a variety of suitable woody wetland species.

4. Photos are fantastic. The drone photos are very helpful and the ground level shot of random veg plot 6 really reinforce the site characteristics along with the data.

DWR Comments, Erin Davis:

1. What are the approximate depths of the relocated ditch to the north and the ditch that remained open to the east?
The northern ditch is approximately 2.5-3 feet deep. The eastern ditch decreases to the north from 6 to 2.5 feet deep.

2. Were the W1 pre-construction gauges monitored in 2019? If so, please include the data in the MY1 Report.
Pre-construction well data (2018 and 2019) for Groundwater Wells 3, 4, 5, 12, 14, 16, and 17 is included in Table 12 of the Year 1 Report. Pre-construction well hydroperiods ranged from 0 to 5 percent.

3. DWR requests that green ash not be used in future supplemental planting, if needed. And that an effort be made to include approved planting plan species sweet bay and laurel oak in supplemental planting to enhance diversity, if appropriate based on planting zone.
Noted.

4. In the future, please include final planted stems and seed mix tables on the as-built survey/record drawing.
Noted.

5. Good construction photos. The drone images offered a helpful perspective of the site.