Jacksonville Country Club
Stream Restoration and Enhancement Project

SCO No. 070715501
DEQ Contract No. D08049S
DMS Project No. 194
Action ID# 2006-40325-067
Onslow County, North Carolina

Year 3 of 5 Monitoring Report
Data Collection: January through December 2016
Submission Date: February 9, 2017

Prepared for:

North Carolina Department of Environmental Quality
Division of Mitigation Services
2728 Capital Boulevard, Suite 1H-103 Raleigh, NC 27606

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Prepared by:

Land Management Group, Inc.
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3.0 EXECUTIVE SUMMARY/PROJECT ABSTRACT

3.1 Goals and Objectives

The overall goal of the Jacksonville Country Club project is to facilitate the development of a natural system which will exhibit desired functions appropriate to the geomorphic setting of the site (EEP, 2006). Specific goals include: 1) water quality improvement; and 2) natural community improvement. To achieve these specific goals, the following objectives have been pursued:

- Form and/or reform stream dimension, pattern, and profile for a stable system
- Generate aquatic and terrestrial habitat elements
- Implement pollutant removal features

3.2 Project Success Criteria

The final vegetative success criterion is the survival of 320 planted woody stems per acre at the end of the Year 3 monitoring period and 260 planted woody stems per acre at the end of the Year 5 monitoring period, which is based on the US Army Corps of Engineers Stream Mitigation Guidelines (COE 2003). In order for the stream mitigation to be successful, the overall cross section geometry of the reaches should remain consistent without significant sediment aggradation or degradation. The hydrologic success criterion will be the documentation of two bankfull flow events over the five year monitoring period. The bankfull events must occur during separate monitoring years (USACE, 2003). Observations of wrack and deposition may serve to augment gauge observations when necessary.

3.3 Site Location and History

The Jacksonville Country Club Stream Restoration and Enhancement Site is located northwest of the intersection of Country Club Road and Country Club Drive in Jacksonville, Onslow County, North Carolina within the White Oak River Basin #03030001 Cataloging Unit (Figure 1). It is located within an active country club and a golf course traverses either side of the stream channel project area. The stream network within the project area consists of a main channel with four tributaries (Figure 2). Prior to mitigation, the channels were characterized by sparse woody vegetation and by steep eroding banks.

3.4 Project Components

The project includes 3,109 linear feet (LF) of stream restoration and 376 LF of stream enhancement. Reach 1A is the main channel through the project area and begins at the upstream end of the channel restoration. The reach crosses through the golf course as a priority 1 restoration. Reach 2A is priority 1 in most sections and priority 2 when necessary to tie into the existing channel. Reach B is priority 1 restoration. Reach C is approximately half priority 1 restoration and half priority 2 restoration. Refer to Table 1 and Figure 2 in Appendix A for a table and detailed plan view of the project components.

3.5 Project Design/Approach

To accomplish the above-stated goals, the dimension, pattern and profile of the channel was restored and enhanced. Where possible, fifty-foot vegetative buffers have been added to each side of the channel. The provision of a wider floodplain, the retrofitting of an existing stormwater wetland and the addition of stormwater BMPs (best management practice) helps to maintain the integrity of the designed project. In addition, the project replaces habitat to a system relatively void in plant community diversity. Refer to Tables 2-4 in Appendix A for additional project and contact details.

3.6 Project Performance

Vegetation monitoring is conducted on an annual basis using nine (9) permanent vegetation plots (Figure 2). Monitoring Year 3 (MY3 2016) observed a mean stem density of 404 planted stems per acre in the plots, which is well above the Year 3 vegetative success criterion of 320 planted woody stems per acre. When volunteer stems were included, the site had an overall mean stem density of 1,799 stems per acre. As in previous years, Plots #2, #6, and #8 did not meet the vegetation success criterion in MY3 2016. Plots #2 and #6 appeared to have been mowed in 2014 and very few planted stems remain within these plots. During the vegetation monitoring, herbaceous vegetation had volunteered into these areas.

Stream monitoring in MY3 (2016) consisted of both visual and morphological (i.e. survey) assessment of the channels. A visual inspection of the restored and enhanced stream channels and the BMP areas was conducted in September and November of 2016. Please see Appendix B for stream morphology assessment tables and photos. The BMP areas were stable. However, the BMP along the north side of 2A is actively managed because of the playover and trees are kept to a minimum height.

As observed in the baseline and annual monitoring evaluations, many problem areas were identified along the four restored stream reaches (1A, 2A, B & C) and the enhancement reach during the visual inspection. Appendix B contains photographs of the problem areas and Figure 2 depicts the GPS location of specific points noted below.

Reach 1A

A total of 28 problem areas were noted within Reach 1A (compared to 24 areas in MY2). These included one undercut, 14 areas of degradation, 11 scour holes (compared to 3 in MY2), one area of mass wasting, and one area of aggradation. Note that several areas considered to be undercuts last year have progressed into scour holes this year. As in MY2, an area of aggradation is causing a new channel to form at the very top of the reach, which appears to be longer this year.

Reach 2A

Twenty-four problem areas were noted within this reach during the visual inspection (compared to 26 areas in MY2). These included 2 bank undercuts, 5 areas of degradation, 15 scour holes, and 4 areas of mass wasting. Grade control structures were observed. Most appeared to be functioning properly, but areas of scour were noted downstream at several locations.

Reach B

As observed during the baseline, MY1, and MY2 monitoring, some water was bypassing the constructed channel and forming another, more direct route to the main channel (Pt 51). This was again classified as aggradation. Additionally, one bank undercut, two areas of degradation, one scour hole, and two areas of mass wasting were noted within this reach. As in previous years, most of the grade controls features were not observed and it was assumed that they have been buried by sediment. However, the stream appeared to be functioning properly in these areas.

Reach C

As in MY2, gravel from the road at the top of this reach is washing down into the stream channel. This was classified as aggradation. Several grade controls features were not observed and it was assumed that they have been buried by sediment. However, the stream appeared to be functioning properly in these areas.

Enhancement Reach

The enhancement reach is a small channel and it contains a great deal of vegetative debris. Three areas of aggradation and two scour holes were noted within this channel.

A longitudinal profile and cross sectional survey (nine cross sections) was performed by Paramounte Engineering in November of 2016. Please see Appendix D for summary tables and plots of longitudinal profiles and cross sections for each reach. Based on the MY3 survey data, reaches remain fairly consistent with MY2, MY1 and baseline data. While many problem areas were noted along the reaches during the visual inspection, there was no significant channel aggradation or degradation.

The on-site occurrence of bankfull events is documented using two stream gauges (Figure 2). Both stream gauges documented many occurrences of overbank flooding in 2016 (Table 16; Appendix E).

It should also be noted that several survey markers were missing or were unstable. At Plot 5, the origin plot marker was missing. Three plot markers were missing at Plot 6. At Plot 7, two markers were missing. One of these was the northeast plot marker, which likely eroded into the channel (mass wasting area).

4.0 METHODOLOGY

Nine (9) permanent vegetation plots are used for vegetation monitoring. All vegetation monitoring was completed in September 2016 utilizing the Carolina Vegetation Survey (CVS) – EEP protocol Level 2 (version 4.2)

Stream morphological monitoring will occur annually. Elevation data will be collected at nine permanent cross section stations located along each channel. Width/depth ratio, entrenchment ratio, and low bank height ratio is measured and compared with the constructed stream geomorphology (the as-builts) for dimension and profile. Longitudinal profile data will be collected and analyzed to identify bankfull slope, pool-to-pool spacing, pool length, riffle length, max-pool depth and other parameters. Plan views will be evaluated for sinuosity, meander width ratio, radius of curvature and compared with the post construction as-builts.

The on-site occurrence of bankfull events is monitored with two stream gauges (Figure 2). Gauges were downloaded monthly utilizing Remote Data Systems data loggers and software.

Photo monitoring was conducted by walking the entire site. A digital camera was used to take photos at each predetermined photo point location.

Summary information/data related to the occurrence of items such as beaver or encroachment and statistics related to performance of various project and monitoring elements can be found in the tables and figures in the report appendices. Narrative background and supporting information formerly found in these reports can be found in the mitigation and restoration plan documents available on DMS's website. All raw data supporting the tables and figures in the appendices are available from DMS upon request.

5.0 REFERENCES

NCDMS. 2016. Jacksonville Country Club Stream Restoration and Enhancement Project Year Two Monitoring Report. North Carolina Department of Environmental Quality, Division of Mitigation Services. Raleigh, NC. April, 2016.

NCEEP. 2015. Jacksonville Country Club Stream Restoration and Enhancement Project Year One Monitoring Report. North Carolina Department of Environment and Natural Resources, Ecosystem Enhancement Program. Raleigh, NC. March, 2015.

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US Army Corps Of Engineers. 2005. U.S. Army Corps. of Engineers. Information Regarding Stream Restoration in the Outer Coastal Plain of NC, Wilmington Regulatory Field Office.

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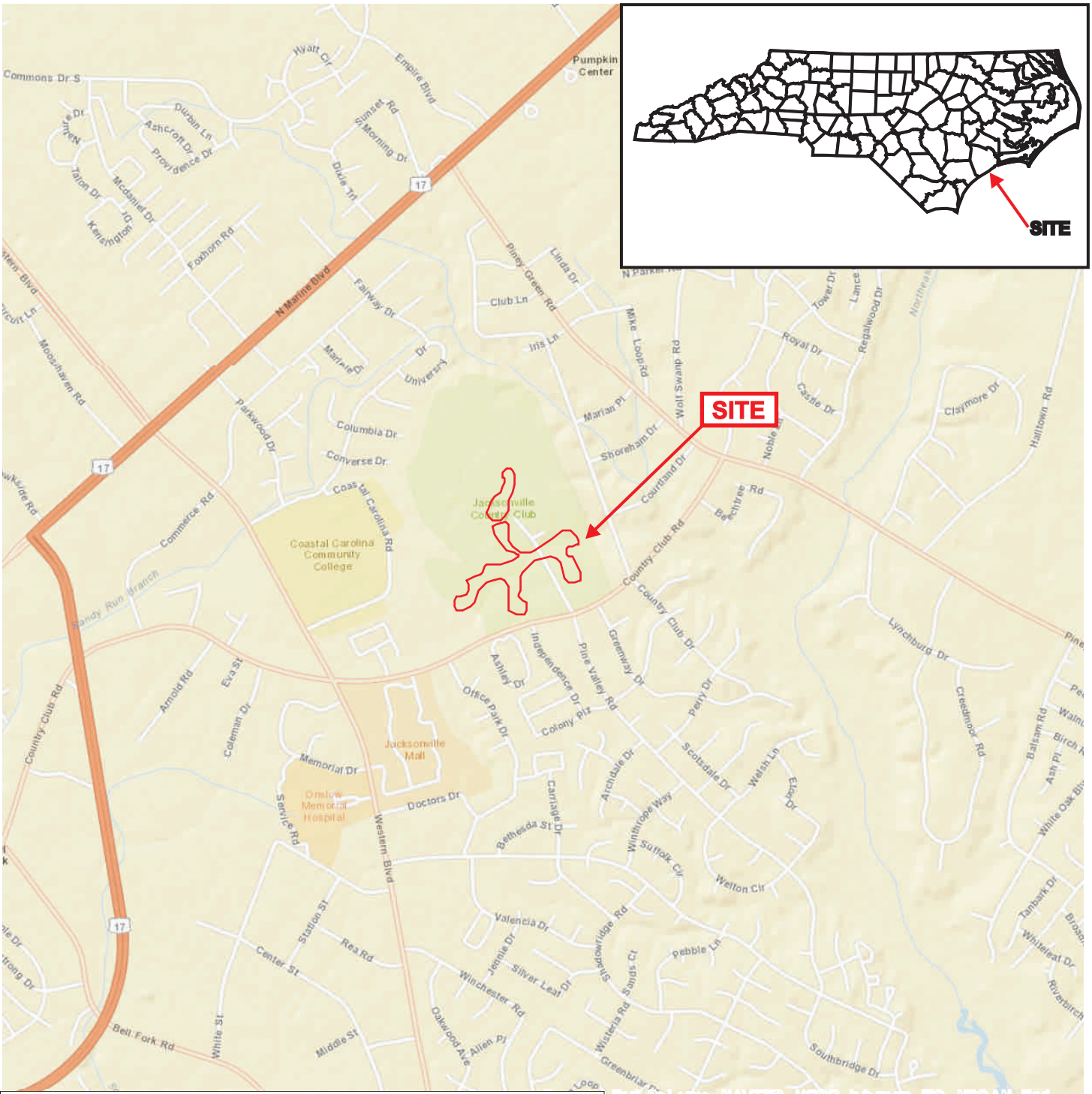
US Army Corps Of Engineers. 1987. U.S. Army Corps. of Engineers. Tech Report Y-87-1, 1987 Wetland Delineation Manual, Washington, DC. AD/A176.

6.0 PROJECT CONDITION AND MONITORING DATA APPENDICES

Appendix A.
Project Background Data and Maps



Directions to Site: Directions to Site: From Wilmington, take US 17 North toward Jacksonville. Turn right on Western Blvd. Turn left on Country Club Drive. Turn left on Pine Valley Rd. This will take you into the Jacksonville Country Club. Project site is located within the country club.

The subject project site is an environmental restoration site of the NCDENR Ecosystem Enhancement Program (EEP) and is encompassed by a recorded conservation easement, but is bordered by land under private ownership. Accessing the site may require traversing areas near or along the easement boundary and therefore access by the general public is not permitted. Access by authorized personnel of state and federal agencies or their designees/contractors involved in the development, oversight, and stewardship of the restoration site is permitted within the terms and timeframes of their defined roles. Any intended site visitation or activity by any person outside of these previously sanctioned roles and activities requires prior coordination with EEP.

*Boundaries are approximate and are not meant to be absolute.

Map Source: ArcGIS World Street Map

N

SCALE 1" = 2,000'

Jacksonville Country Club
Stream Restoration & Enhancement Project
Onslow County, NC

LMG Project No. 40-08-189
DMS Project No. 194

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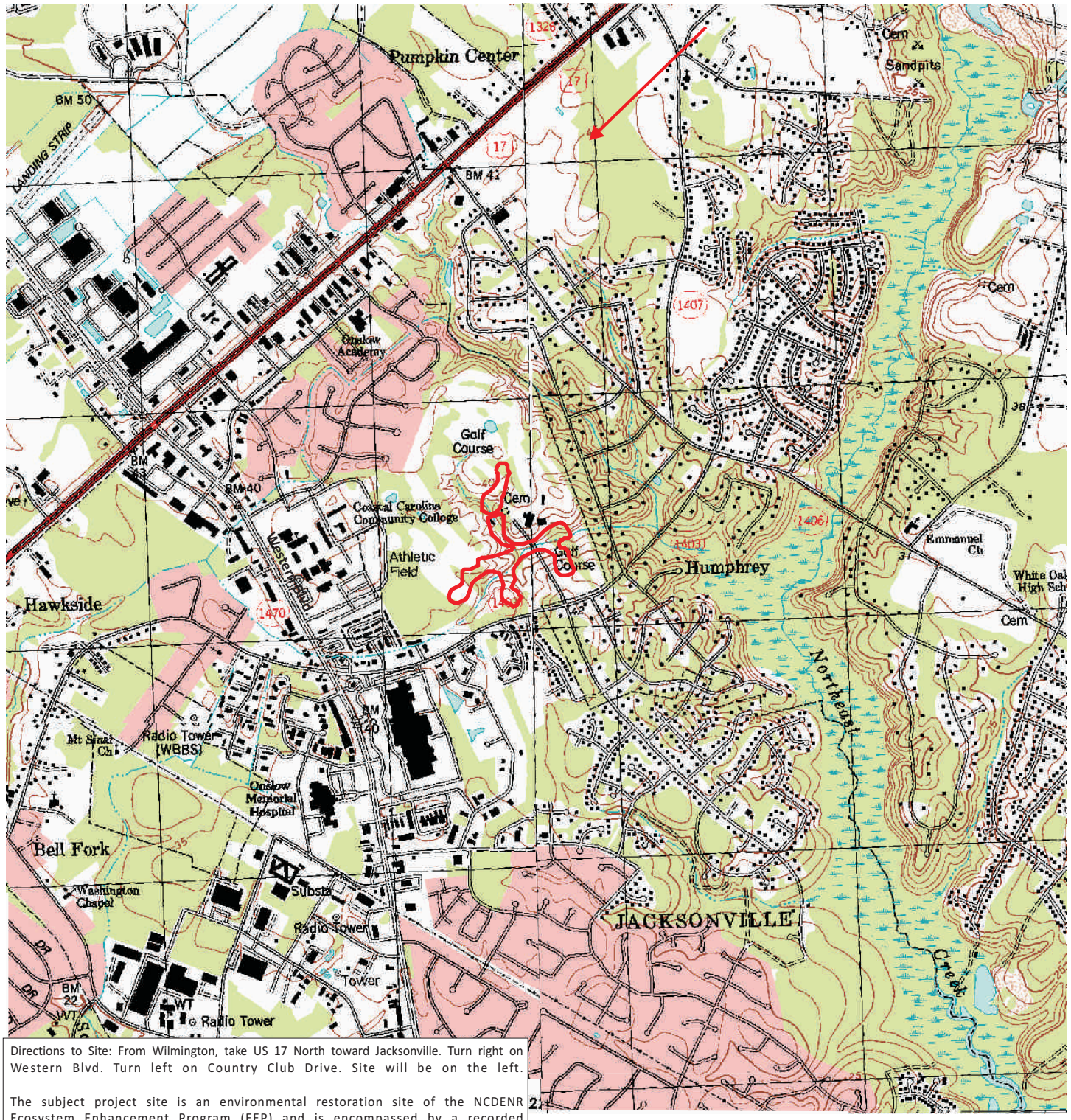
Figure 1a
Site Vicinity Map



Directions to Site: From Wilmington, take US 17 North toward Jacksonville. Turn right on Western Blvd. Turn left on Country Club Drive. Site will be on the left.

The subject project site is an environmental restoration site of the NCDENR Ecosystem Enhancement Program (EEP) and is encompassed by a recorded conservation easement, but is bordered by land under private ownership. Accessing the site may require traversing areas near or along the easement boundary and therefore access by the general public is not permitted. Access by authorized personnel of state and federal agencies or their designees/contractors involved in the development, oversight, and stewardship of the restoration site is permitted within the terms and timeframes of their defined roles. Any intended site visitation or activity by any person outside of these previously sanctioned roles and activities requires prior coordination with EEP.

*Boundaries are approximate and are not meant to be absolute.

Map Source: USGS Kellum/Jacksonville NorthQuadrangle 7.5 minute

N

SCALE 1" = 2,000'

Jacksonville Country Club
Stream Restoration & Enhancement Project
Onslow County, NC

LMG Project No. 40-08-189
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Figure 1b
Topographic Map

Table 1. Project Components and Mitigation Credits

Jacksonville Country Club Stream Restoration & Enhancement Project, DMS No. 194

Mitigation Credits

	Stream		Riparian Wetland		Non-Riparian Wetland		Buffer	Nitrogen Nutrient Offset	Phosphorus Nutrient Offset
Type	R	RE	R	RE	R	RE			
Totals	3,109	376							

Project Components

Project Component	Stationing/ Location	Existing Footage/ Acreage	Priority Approach	Restoration or Restoration Equivalent	Restoration Footage or Acreage	Mitigation Ratio
Stream Restoration	1A	1,388	P1	Restoration	1307 LF	1:1
Stream Restoration	2A	772	P1 and P2	Restoration	711 LF	1:1
Stream Restoration	B	403	P1 and P2	Restoration	478 LF	1:1
Stream Restoration	C	556	P1	Restoration	613 LF	1:1
Stream Enhancement	E	376	Enhancement	Enhancement (RE)	376	2:1

Component Summation

Restoration Level	Stream (lf)	Riparian Wetland (ac)	Non-Riparian Wetland (ac)	Buffer (sq ft)	Upland (ac)
Restoration	3,109				
Enhancement					
Enhancement I					
Enhancement II	376				
Creation					
Preservation					
HQ Preservation					

BMP Elements*

Element	Location	Purpose/Function	Notes
BR	North Side of Reach 2A	Collect and treat runoff before entering stream system	See Figure 2
SW	North Side of Reach 2A	Collect and treat runoff before entering stream system	See Figure 2
SW	South Side of Reach 2A	Collect and treat runoff before entering stream system	See Figure 2
SW	Near Fairway #11	Collect and treat runoff before entering stream system	See Figure 2
SW	Upper end of Reach C	Collect and treat runoff before entering stream system	See Figure 2

Table 2. Project Activity and Reporting History Jacksonville Country Club Stream Restoration and Enhancement Project -DMS Project No. 194		
Activity or Report	**Data Collection Complete**	**Actual Completion or Delivery**
Restoration Plan	NA	Jun-07
Final Design – Construction Plans	NA	
Construction	NA	Aug-10
Temporary S&E mix applied to entire project area	NA	Aug-10
Containerized and B&B plantings	NA	Apr-10 & Apr-11
Temporary repairs to site	NA	Jan-11
Permanent repairs to stream & culvert/headwall	NA	Jun-13
Invasives Treatment (Chinese tallow tree)	NA	2013
Invasives Treatment (Chinese tallow tree)	NA	2014
Invasives Treatment (Chinese tallow tree)	NA	2015
Baseline Monitoring Document (Year 0 Monitoring - baseline)	November-13	June-14
Year 1 Monitoring	December-14	March-15
Year 2 Monitoring	December-15	April-16
Year 3 Monitoring	December-16	December-16
Year 4 Monitoring		
Year 5 Monitoring		

Table 3. Project Contacts Table Jacksonville Country Club Stream Restoration & Enhancement Project	
DMS Project No. 194	
Designer Primary project design POC	BLWI; 295 Becky Branch Rd; Southern Pines, NC Stantec; 801 Jones Franklin Rd #300; Raleigh, NC (919) 851-6866
Construction Contractor Construction contractor POC	Charles Hughes Construction; 4675 Ben Dail Rd, La Grange, NC (252) 566-5040
Live Staking & Seeding Contractor	Charles Hughes Construction; 4675 Ben Dail Rd, La Grange, NC
Seeding Contractor POC	(252) 566-5040
Planting Contractor	Backwater Environmental; 119 Ilex Ct, Pittsboro, NC
Planting Contractor POC	(919) 523-4375
Seed Mix Sources	Unknown
Nursery Stock Suppliers	Unknown
Construction Contractor (Repairs) Construction contractor POC	NorthState Environmental; 2889 Lowery Street, Winston-Salem, NC (336) 725-2010
Baseline Monitoring Performers (MY0) Stream Monitoring POC Vegetation Monitoring POC Wetland Monitoring POC	Land Management Group, Inc. 3805 Wrightsville Avenue, Suite 15; Wilmington, NC 28403 Kim Williams (910) 452-0001 Kim Williams (910) 452-0001 N/A
Monitoring Performers (MY1 - MY5) Stream Monitoring POC Vegetation Monitoring POC	Land Management Group, Inc. 3805 Wrightsville Avenue, Suite 15; Wilmington, NC 28403 Kim Williams (910) 452-0001 Kim Williams (910) 452-0001

Table 4. Project Baseline Information and Attributes
Jacksonville Country Club Stream Restoration & Enhancement Project
DMS Project No. 194

Project Information				
Project Name	Jacksonville Country Club Stream Restoration & Enhancement Project			
Project County	Onslow			
Project Area	9.34 acres			
Project Coordinates (Lat and Long)	34° 46', -77° 22'			
Project Watershed Summary Information				
Physiographic Region	Coastal Plain			
River Basin	White Oak			
USGS HUC 8 Digit 03030001	USGS HUC 14 Digit 03030001020010			
NCDWQ Subbasin	03-05-02			
Project Drainage Area	253 ac			
Project Drainage impervious cover estimate (%)	< 5%			
CGIA Land Use Classification				
Reach Summary Information				
Parameters	**Reach 1A**	**Reach 2A**	**Reach B**	**Reach C**
Length of Reach	1429 LF	743 LF	512 LF	558 LF
Valley Classification	unknown	unknown	unknown	unknown
Drainage Area	99 ac	253 ac	55 ac	79 ac
NCDWQ Stream Identification Score	N/A	N/A	N/A	N/A
NCDWQ Water Quality Classification	SC NSW	SC NSW	SC NSW	SC NSW
Morphological Description (stream type)	C5/E5	C5/E5	C5/E5	C5/E5
Evolutionary Trend	N/A	N/A	N/A	N/A
Underlying Mapped Soils	Craven	Craven	Craven	Craven
Drainage Class	Moderately Well Drained	Moderately Well Drained	Moderately Well Drained	Moderately Well Drained
Soil Hydric Status	Hydric B	Hydric B	Hydric B	Hydric B
Slope	0-1%	0-1%	0-1%	0-1%
FEMA Classification	Zone X	Zone X	Zone X	Zone X
Native Vegetation Community	N/A	N/A	N/A	N/A
Percent Composition Exotic Invasive Vegetation	< 1%	< 1%	< 1%	< 1%
Regulatory Considerations				
Regulation		**Applicable?**	**Resolved?**	**Supporting Documentation**
Waters of the US – Section 404		Yes	Yes	Upon Request
Waters of the US – Section 401		Yes	Yes	Upon Request
Endangered Species Act		Yes	Yes	Upon Request
Historic Preservation Act		Yes	Yes	Upon Request
Coastal Zone Management Act (CZMA) Coastal Area Management Act (CAMA)		Yes	Yes	Upon Request
FEMA Floodplain Compliance		Yes	Yes	Upon Request
Essential Fisheries Habitat		No	N/A	N/A

Appendix B.
Visual Assessment Data

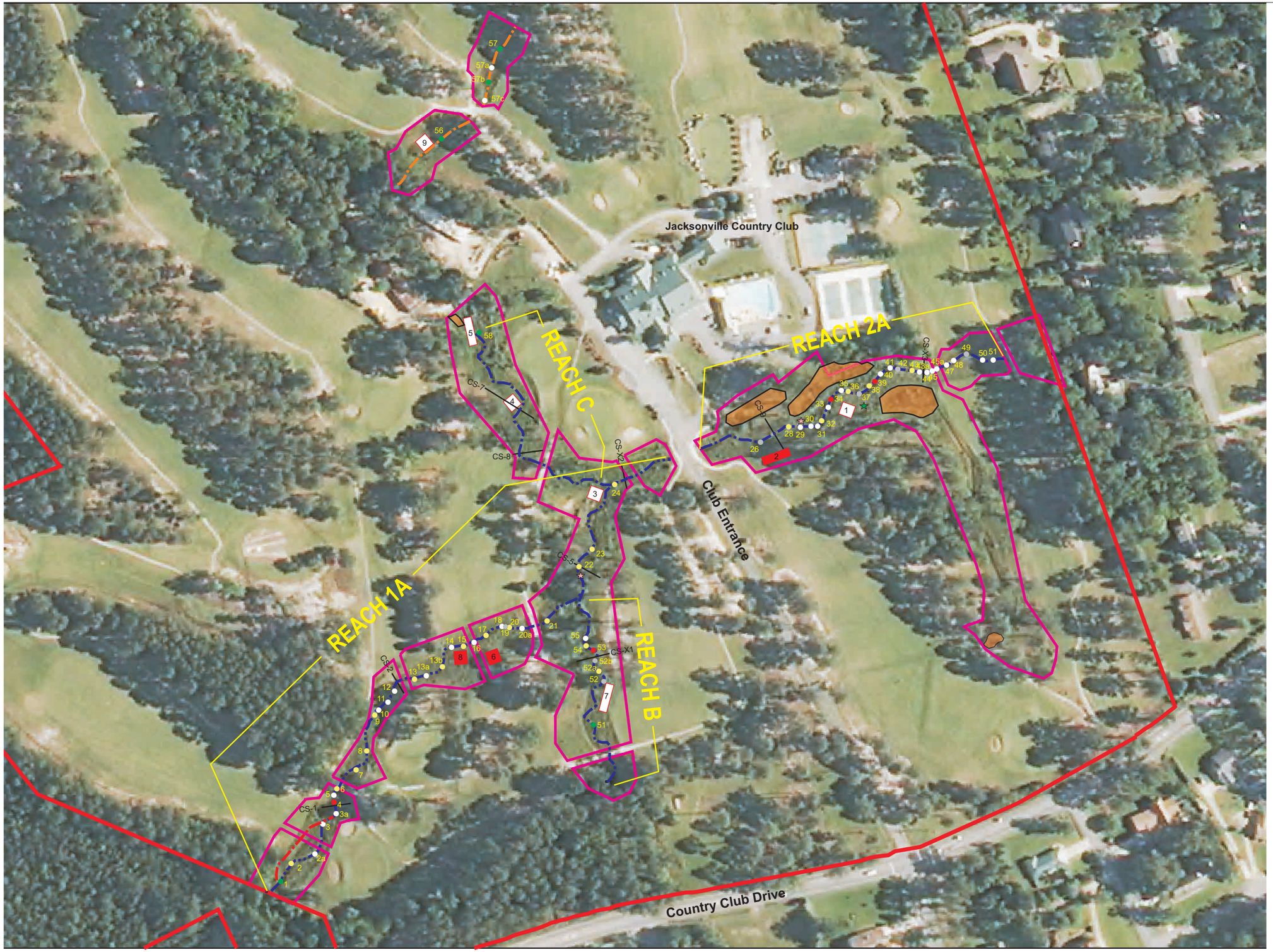

FIGURE 2.

Current Conditions Plan View

Jacksonville Country Club
Stream Restoration
and Enhancement Site

Project No: D08049S
DMS No. 194
Onslow County, NC

LEGEND

- Stream Restoration (3109 LF) (taken from 2010 as-built survey)
- Stream Enhancement (376 LF) (approximated on map)
- Easement Boundary
- Property Boundary
- Stream Cross Section (9)
- Vegetation Monitoring Plot (9)
- Plot that did not meet success criterion
- Stream Gauge (2)
- Rain Gauge (1)
- BMP (approximated on map)

Bed/Bank Problem Areas

- Undercut
- Degradation
- Scour
- Mass Wasting
- Aggradation
- New Channel Formation

N

SCALE 1" = 200'

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December 2016

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Table 5a **Visual Stream Morphology Stability Assessment**
Reach ID **Reach 1A**
Assessed Length **1307**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjusted % for Stabilizing Woody Vegetation
1. Bed	1. **Vertical Stability** (Riffle and Run units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			1	80	94%			
		2. Degradation - Evidence of downcutting			14	300	77%			
	2. Riffle Condition	1. Texture/Substrate - Riffle maintains coarser substrate	34	34			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth> 1.6)	34	34			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	34	34			100%			
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	34	34			100%			
		2. Thalweg centering at downstream of meander (Glide)	34	34			100%			
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			11	95	96%	0	0	96%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			1	6	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			1	10	100%			100%
				Totals	13	111	96%	0	0	96%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	14	14			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	13	14			93%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	14	14			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence doesnot exceed 15%. (See guidance for this table in EEP monitoring guidance document)	11	14			79%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio > 1.6 Rootwads/logs providing some cover at base-flow.	14	14			100%			

Table 5b **Visual Stream Morphology Stability Assessment**
Reach ID **Reach 2A**
Assessed Length **711**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjusted % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			0	0	100%			
		2. Degradation - Evidence of downcutting			5	135	81%			
	2. Riffle Condition	1. Texture/Substrate - Riffle maintains coarser substrate	12	12			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth > 1.6)	11	11			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	11	11			100%			
	4.Thalweg Position	1. Thalweg centering at upstream of meander bend (Run)	11	11			100%			
		2. Thalweg centering at downstream of meander (Glide)	11	11			100%			
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			13	132	91%	0	0	91%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			2	40	97%	0	0	97%
	3. Mass Wasting	Bank slumping, calving, or collapse			4	57	96%	0	0	96%
				Totals	19	229	84%	0	0	84%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	13	14			93%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	12	14			86%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	13	14			93%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	11	14			79%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio > 1.6 Rootwads/logs providing some cover at base-flow.	14	14			100%			

Table 5c **Visual Stream Morphology Stability Assessment**
Reach ID **Reach B**
Assessed Length **478**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjusted % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			1	15	97%			
		2. Degradation - Evidence of downcutting			2	33	93%			
	2. Riffle Condition	1. Texture/Substrate - Riffle maintains coarser substrate	11	11			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth > 1.6)	10	10			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	10	10			100%			
	4.Thalweg Position	1. Thalweg centering at upstream of meander bend (Run)	10	10			100%			
		2. Thalweg centering at downstream of meander (Glide)	10	10			100%			
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			1	12	99%			99%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			1	9	99%			99%
	3. Mass Wasting	Bank slumping, calving, or collapse			2	10	99%			99%
				Totals	4	31	97%	0	0	97%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	7	7			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	7	7			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	7	7			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	7	7			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio > 1.6 Rootwads/logs providing some cover at base-flow.	7	7			100%			

Table 5d **Visual Stream Morphology Stability Assessment**
Reach ID **Reach C**
Assessed Length **613**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjusted % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			1	27	96%			
		2. Degradation - Evidence of downcutting			0	0	100%			
	2. Riffle Condition	1. Texture/Substrate - Riffle maintains coarser substrate	12	12			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth > 1.6)	11	11			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	11	11			100%			
	4.Thalweg Position	1. Thalweg centering at upstream of meander bend (Run)	11	11			100%			
		2. Thalweg centering at downstream of meander (Glide)	11	11			100%			
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			0	0	100%			100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%			100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%			100%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	8	8			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	8	8			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	8	8			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	8	8			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio > 1.6 Rootwads/logs providing some cover at base-flow.	8	8			100%			

Table 5e **Visual Stream Morphology Stability Assessment**
Reach ID **Enhancement**
Assessed Length **376**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjusted % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			3	80	79%			
		2. Degradation - Evidence of downcutting			0	0	100%			
	2. Riffle Condition	1. Texture/Substrate - Riffle maintains coarser substrate	10	N/A			N/A			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth > 1.6)	10	N/A			N/A			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	10	N/A			N/A			
	4.Thalweg Position	1. Thalweg centering at upstream of meander bend (Run)	N/A	N/A			N/A			
		2. Thalweg centering at downstream of meander (Glide)	N/A	N/A			N/A			
2. Bank	1. Scoured/Eroding	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			2	25	100%	0	0	100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	N/A	N/A			N/A			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	N/A	N/A			N/A			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	N/A	N/A			N/A			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	N/A	N/A			N/A			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio > 1.6 Rootwads/logs providing some cover at base-flow.	N/A	N/A			N/A			

Table 6 Vegetation Condition Assessment

Planted Acreage[1] **8.1**

Vegetation Category	Definitions	Mapping Threshold	CCPV Depiction	Number of Polygons	Combined Acreage	% of Planted Acreage
1. Bare Areas	Very limited cover of both woody and herbaceous material.	N/A	N/A	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	Red Square	3	0.10	1.2%
			Total	3	0.10	1.2%
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	N/A	0	0.00	0.0%
			Cumulative Total	3	0.10	1.2%

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	N/A	0	0.00	0.0%
5. Easement Encroachment Areas[3]	Areas or points (if too small to render as polygons at map scale).	none	Blue Dotted	1	0.18	2.2%

Vegetation Plot Photos (recorded on 9/27/2016)

Vegetation Plot 1 - X-axis

Vegetation Plot 1 - diagonal

Photos recorded on Sept. 27, 2016

Vegetation Plot 2 - X-axis

Vegetation Plot 2 - diagonal

Photos recorded on Sept. 27, 2016

Vegetation Plot 3 - X-axis

Vegetation Plot 3 - diagonal

Photos recorded on Sept. 27, 2016

Vegetation Plot 4 - X-axis

Vegetation Plot 4 - diagonal

Photos recorded on Sept. 27, 2016

Vegetation Plot 5 - X-axis

Vegetation Plot 5 - diagonal

Photos recorded on Sept. 27, 2016

Vegetation Plot 6 - X-axis

Vegetation Plot 6 - diagonal

Photos recorded on Sept. 27, 2016

Vegetation Plot 7 - X-axis

Vegetation Plot 7 - diagonal

Photos recorded on Sept. 27, 2016

Vegetation Plot 8 - X-axis

Vegetation Plot 8 - diagonal

Photos recorded on Sept. 27, 2016

Vegetation Plot 9 - X-axis

Vegetation Plot 9 - diagonal

Photos recorded on Sept. 27, 2016

BMP: Top of Reach B

BMP: Top of Reach C

Photos recorded on Nov. 28, 2016

BMP: Reach 2A (northwest)

BMP: Middle of Reach 2A

Photos recorded on Sept. 27, 2016

BMP: South of Reach 2A

Reach 1A: Cross Section #1

Photos recorded on Sept. 27 & Nov. 29, 2016

Reach 1A: Cross Section #2

Reach 1A: Cross Section #5

Photos recorded on Nov. 29, 2016

Reach 1A: Cross Section #X2

Reach 2A: Cross Section #9

Photos recorded on Nov. 29, 2016

Reach 2A: Cross Section #X3

Reach B: Cross Section #X1

Photos recorded on Nov. 29, 2016

Reach C: Cross Section #7

Reach C: Cross Section #8

Photos recorded on Nov. 29, 2016

Stream Enhancement Reach - Looking South Along Channel

Photos recorded on Nov. 28, 2016

Stream Problem Area Photos

Reach 1A - Stream Problem Area 1; Aggradation; New Channel Continues to Form

Reach 1A - Stream Problem Area 2; Degradation

Photos recorded on Nov. 28, 2016

Stream Problem Area Photos

Reach 1A - Stream Problem Area #2a; scour along bank near log vane structure.

Reach 1A - Stream Problem Area #3; bank undercut

Photos recorded on Nov. 28, 2016

Reach 1A - Stream Problem Area #3a; scour

Reach 1A - Stream Problem Area #4; bank undercut

Photos recorded on Nov. 28, 2016

Reach 1A - Stream Problem Area #5; bank undercut becoming scour

Reach 1A - Stream Problem Area #6; degradation

Photos recorded on Nov. 28, 2016

Reach 1A - Stream Problem Area #7; degradation

Reach 1A - Stream Problem Area #8; degradation

Photos recorded on Nov. 28, 2016

Reach 1A - Stream Problem Area #9; Degradation

Reach 1A - Stream Problem Area #10; Log Vane Undercut becoming scour

Photos recorded on Nov. 28, 2016

Reach 1A - Stream Problem Area #11; Log Vane Undercut becoming scour

Reach 1A - Stream Problem Area #12; Scour

Photos recorded on Nov. 28, 2016

Reach 1A - Stream Problem Area #13; Degradation

Reach 1A - Stream Problem Area #13a; Scour

Photos recorded on Nov. 28, 2016

Reach 1A - Stream Problem Area #13b; Degradation

Reach 1A - Stream Problem Area #14; Scour

Photos recorded on Nov. 28, 2016

Reach 1A - Stream Problem Area #15; Degradation

Reach 1A - Stream Problem Area #16; Bank Undercut becoming Scour

Photos recorded on Nov. 28, 2016

Reach 1A - Stream Problem Area #17; Degradation

Reach 1A - Stream Problem Areas #18 & 19; Scour & Mass Wasting

Photos recorded on Nov. 28, 2016

Reach 1A - Stream Problem Area #20; Degradation

Reach 1A - Stream Problem Area #20a; Scour

Photos recorded on Nov. 28, 2016

Reach 1A - Stream Problem Area #21; Degradation

Reach 1A - Stream Problem Area #22; Degradation

Photos recorded on Nov. 28, 2016

Reach 1A - Stream Problem Area #23; Degradation

Reach 1A - Stream Problem Area #24; Degradation

Photos recorded on Nov. 28, 2016

Reach 2A - Stream Problem Area #26; Mass Wasting

Reach 2A - Stream Problem Area #28; Degradation

Photos recorded on Nov. 28, 2016

Reach 2A - Stream Problem Area #29; Scour

Reach 2A - Stream Problem Area #30; Log Vane Scour

Photos recorded on Nov. 28, 2016

Reach 2A - Stream Problem Area #31; Scour

Reach 2A - Stream Problem Area #32; Degradation

Photos recorded on Nov. 28, 2016

Reach 2A - Stream Problem Area #33; Scour

Reach 2A - Stream Problem Area #34; Log Vane Undercut

Photos recorded on Nov. 28, 2016

Reach 2A - Stream Problem Area #35; Log Vane Mass Wasting

Reach 2A - Stream Problem Area #35a; Log Vane Scour

Photos recorded on Nov. 28, 2016

Reach 2A - Stream Problem Area #36; Degradation

Reach 2A - Stream Problem Area #37; Undercut turning into Mass Wasting

Photos recorded on Nov. 28, 2016

Reach 2A - Stream Problem Areas #38 & 39; Long Degradation and Undercut

Reach 2A - Stream Problem Area #40; Log Vane Scour

Photos recorded on Nov. 28, 2016

Reach 2A - Stream Problem Area #41; Scour

Reach 2A - Stream Problem Area #42; Mass Wasting

Photos recorded on Nov. 28, 2016

Reach 2A - Stream Problem Area #43; Degradation

Reach 2A - Stream Problem Area #43a; Scour

Photos recorded on Nov. 28, 2016

Reach 2A - Stream Problem Area #44; Scour

Reach 2A - Stream Problem Area #45; Scour

Photos recorded on Nov. 28, 2016

Reach 2A - Stream Problem Area #45a; Log Vane Scour

Reach 2A - Stream Problem Areas #47-48; Scour

Photos recorded on Nov. 28, 2016

Reach 2A - Stream Problem Area #49; Mass Wasting

Reach 2A - Stream Problem Area #50; Undercut becoming Scour

Photos recorded on Nov. 28, 2016

Reach 2A - Stream Problem Area #50a; Scour below Log Vanes

Photos recorded on Nov. 28, 2016

Reach B - Stream Problem Area #51; Aggradation

Reach B - Stream Problem Area #52; Mass Wasting

Photos recorded on Nov. 28, 2016

Reach B - Stream Problem Area #52a; Degradation

Reach B - Stream Problem Area #52b; Mass Wasting

Photos recorded on Nov. 28, 2016

Reach B - Stream Problem Area #53; Undercut

Reach B - Stream Problem Area #54; Degradation

Photos recorded on Nov. 28, 2016

Reach B - Stream Problem Area #55; Undercut becoming Scour

Enhancement Reach - Stream Problem Area #56; Aggradation

Photos recorded on Nov. 28, 2016

Enhancement Reach - Stream Problem Area #57; Aggradation

Enhancement Reach - Stream Problem Area #57a; Scour

Photos recorded on Nov. 28, 2016

Enhancement Reach - Stream Problem Area #57b; Aggradation

Enhancement Reach - Stream Problem Area #57c; Scour

Photos recorded on Nov. 28, 2016

Appendix C.
Vegetation Plot Data

Table 7. Vegetation data by plot

			Current Plot Data (MY3 2016)																				
			194-01-0001			194-01-0002			194-01-0003			194-01-0004			194-01-0005			194-01-0006			194-01-0007		
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
Acer rubrum	red maple	Tree																					
Baccharis halimifolia	eastern baccharis	Shrub			3			22			31			3			1						5
Betula nigra	river birch	Tree	3	3	3				2	2	2				1	1	1				3	3	3
Cephalanthus occidentalis	common buttonbush	Shrub							1	1	1	6	6	6	2	2	2						1
Clethra alnifolia	coastal sweetpepperbu	Shrub																					
Diospyros virginiana	common persimmon	Tree															1						
Fraxinus pennsylvanica	green ash	Tree							1	1	1										2	2	2
Hamamelis virginiana	American witchhazel	Tree																					
Ilex glabra	inkberry	Shrub				3	3	3										3	3	3			
Itea virginica	Virginia sweetspire	Shrub							3	3	3	5	5	5							3	3	3
Juniperus virginiana	eastern redcedar	Tree									1						1						
Ligustrum sinense	Chinese privet	Exotic															6						
Liquidambar styraciflua	sweetgum	Tree			20			5						9			21						1
Liriodendron tulipifera	tuliptree	Tree																					
Magnolia virginiana	sweetbay	Tree													1	1	1						
Malus angustifolia	southern crabapple	Tree	1	1	1										1	1	2						
Morella cerifera	wax myrtle	shrub	8	8	8			5	1	1	1			3	8	8	10				5	5	5
Nyssa sylvatica	blackgum	Tree															1				1	1	1
Pinus	pine	Tree			21			12			22						1			2			
Pinus taeda	loblolly pine	Tree																					
Platanus occidentalis	American sycamore	Tree							2	2	2				5	5	5						
Prunus serotina	black cherry	Tree															1						
Quercus michauxii	swamp chestnut oak	Tree													1	1	1						
Quercus pagoda	cherrybark oak	Tree																					
Quercus phellos	willow oak	Tree							1	1	1				1	1	1						
Salix nigra	black willow	Tree															1				2	2	17
		Stem count	12	12	56	3	3	47	11	11	65	11	11	26	20	20	57	3	3	5	16	16	38
		size (ares)	1			1			1			1			1			1			1		
		size (ACRES)	0.02			0.02			0.02			0.02			0.02			0.02			0.02		
		Species count	3	3	6	1	1	5	7	7	10	2	2	5	8	8	17	1	1	2	6	6	9
		Stems per ACRE	485.6	485.6	2266	121.4	121.4	1902	445.2	445.2	2630	445.2	445.2	1052	809.4	809.4	2307	121.4	121.4	202.3	647.5	647.5	1538

Exceeds requirements by at least 10%
Exceeds requirements, but by less than 10%
Fails to meet requirements, by less than 10%
Fails to meet requirements by more than 10%

Table 7 contd. Vegetation data by plot

			Current Plot Data (MY3)						Annual Means											
			194-01-0008			194-01-0009			MY3 (2016)			MY2 (2015)			MY1 (2014)			MY0 (2013)		
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
Acer rubrum	red maple	Tree			2						2			5			1			16
Baccharis halimifolia	eastern baccharis	Shrub			5			1			71			97			47			41
Betula nigra	river birch	Tree	1	1	1				10	10	10	11	11	12	12	12	12	11	11	11
Cephalanthus occidentalis	common buttonbush	Shrub		2	2				9	11	12	10	12	13	9	11	11	9	11	11
Clethra alnifolia	coastal sweetpepperbu	Shrub																2	2	2
Diospyros virginiana	common persimmon	Tree									1									
Fraxinus pennsylvanica	green ash	Tree							3	3	3	3	3	3	3	3	3	3	3	3
Hamamelis virginiana	American witchhazel	Tree																2	2	2
Ilex glabra	inkberry	Shrub							6	6	6	4	4	7	6	6	6	9	9	9
Itea virginica	Virginia sweetspire	Shrub	3	3	3	10	10	10	24	24	24	26	26	26	27	27	27	51	51	51
Juniperus virginiana	eastern redcedar	Tree									2			1			1			
Ligustrum sinense	Chinese privet	Exotic			2						8			4						
Liquidambar styraciflua	sweetgum	Tree						4			60			81			38			274
Liriodendron tulipifera	tuliptree	Tree																		2
Magnolia virginiana	sweetbay	Tree							1	1	1	1	1	1	1	1	1	1	1	1
Malus angustifolia	southern crabapple	Tree							2	2	3	2	2	3	2	2	2			1
Morella cerifera	wax myrtle	shrub			1			15	22	22	48	22	22	42	22	22	38	22	22	41
Nyssa sylvatica	blackgum	Tree							1	1	2			4	1	1	1	1	1	16
Pinus	pine	Tree			14			45			117									
Pinus taeda	loblolly pine	Tree												218			464			1346
Platanus occidentalis	American sycamore	Tree							7	7	7	7	7	7	7	7	7	7	7	7
Prunus serotina	black cherry	Tree									1									
Quercus michauxii	swamp chestnut oak	Tree							1	1	1	1	1	1	1	1	1	1	1	1
Quercus pagoda	cherrybark oak	Tree												1	1	1	1	1	1	1
Quercus phellos	willow oak	Tree							2	2	2	2	2	2	2	2	2	2	2	2
Salix nigra	black willow	Tree						1	2	2	19	2	2	16			24			
		Stem count	4	6	30	10	10	76	90	92	400	91	93	544	94	96	687	122	124	1838
		size (ares)	1			1			9			9			9			9		
		size (ACRES)	0.02			0.02			0.22			0.22			0.22			0.22		
		Species count	2	3	8	1	1	6	13	13	21	12	12	20	13	13	19	14	14	20
		Stems per ACRE	161.9	242.8	1214	404.7	404.7	3076	404.7	413.7	1799	409.2	418.2	2446	422.7	431.7	3089	548.6	557.6	8265

Exceeds requirements by at least 10%
Exceeds requirements, but by less than 10%
Fails to meet requirements, by less than 10%
Fails to meet requirements by more than 10%

Table 8. CVS Vegetation Plot Metadata
Jacksonville Country Club Project DMS No. 194

Report Prepared By	Kim Williams
Date Prepared	2/9/2017 13:00
Database Name	JacksonvilleCountryClub_194_MY32016.mdb
Database Location	L:\Wetlands\2008\Jacksonville Country Club/Annual Monitoring Report\Year 3
Computer Name	KWILLIAMS
Description Worksheets in This Document	
Metadata	Description of database file, the report worksheets, and a summary of project and project data.
Proj Planted	Each project is listed with its PLANTED stems per acre, for each year. This includes live stakes, all planted stems, and all natural/volunteer stems.
Proj Total Stems	Each project is listed with its TOTAL stems per acre, for each year. This includes live stakes, all planted stems, and all natural/volunteer stems.
Plots	List of plots surveyed with location and summary data (live stems, dead stems, missing, etc)
Vigor	Frequency distribution of vigor classes for stems for all plots.
Vigor by Spp	Frequency distribution of vigor classes listed by species.
Damage	List of most frequent damage classes with number of occurrences and percent of total stems impacted by each.
Damage by Spp	Damage values tallied by type for each species.
Damage by Plot	Damage values tallied by type for each plot.
Planted Stems by Plot and Spp	A matrix of the count of PLANTED living stems of each species for each plot; dead and missing stems are excluded.
Project Summary	
Project Code	194
Project Name	Jacksonville Country Club
Description	Stream Restoration and Enhancement Project
River Basin	White Oak
Length (ft)	3485
Stream-to-Edge Width (ft)	
Area (sq m)	
Required Plots (calculated)	9

Table 9. CVS Vegetation Vigor by Species

	Species	CommonName	4	3	2	1	0	Missing	Unknown
	Betula nigra	river birch	4	6		1	1		
	Cephalanthus occidentalis	common buttonbush	1	6	4	1			
	Fraxinus pennsylvanica	green ash	2			1			
	Ilex glabra	inkberry	4					2	
	Itea virginica	Virginia sweetspire	6	19	1				
	Nyssa sylvatica	blackgum							
	Quercus michauxii	swamp chestnut oak	1						
	Quercus pagoda	cherrybark oak					1		
	Quercus phellos	willow oak	2						
	Salix nigra	black willow	2						
	Morella cerifera	wax myrtle	22						
	Malus angustifolia	southern crabapple	2						
	Magnolia virginiana	sweetbay		1					
	Platanus occidentalis	American sycamore	6	1					
TOT:	**14**	**14**	**52**	**33**	**5**	**3**	**2**	**2**	

Table 10. CVS Vegetation Damage by Species

	Species	CommonName	Count of Damage Categories	(no damage)	_Enter other damage_	Insects	Mowing	Vine Strangulation
	Betula nigra	river birch	8	4	2	3	1	2
	Cephalanthus occidentali	common but	11	1	2	7		2
	Fraxinus pennsylvanica	green ash	2	1	1		1	
	Ilex glabra	inkberry	6				6	
	Itea virginica	Virginia swee	6	20	3	3		
	Magnolia virginiana	sweetbay	1		1			
	Malus angustifolia	southern cra	0	2				
	Morella cerifera	wax myrtle	0	22				
	Nyssa sylvatica	blackgum	1		1			
	Platanus occidentalis	American syc	1	6		1		
	Quercus michauxii	swamp chest	1		1			
	Quercus pagoda	cherrybark oa	0	1				
	Quercus phellos	willow oak	0	2				
	Salix nigra	black willow	0	2				
TOT:	**14**	**14**	**37**	**61**	**11**	**14**	**8**	**4**

Table 11. CVS Vegetation Damage by Plot

	plot	Count of Damage Categories	(no damage)	_Enter other damage_	Insects	Mowing	Vine Strangulation
	194-01-0001-year:2	3	9		3		
	194-01-0002-year:2	3				3	
	194-01-0003-year:2	3	10	1	2		
	194-01-0004-year:2	8	4	3	5		
	194-01-0005-year:2	5	17	3			2
	194-01-0006-year:2	3				3	
	194-01-0007-year:2	7	10	2	1	2	2
	194-01-0008-year:2	3	3	1	2		
	194-01-0009-year:2	2	8	1	1		
TOT:	**9**	**37**	**61**	**11**	**14**	**8**	**4**

Table 12. CVS Vegetation Planted Stems by Plot and Species

	Comment	Species	SpType	CommonName	Total Planted Stems	# plots	avg# stems	plot 194-01-0001-year:2	plot 194-01-0002-year:2	plot 194-01-0003-year:2	plot 194-01-0004-year:2	plot 194-01-0005-year:2	plot 194-01-0006-year:2	plot 194-01-0007-year:2	plot 194-01-0008-year:2	plot 194-01-0009-year:2
		Betula nigra	Tree	river birch	11	5	2.2	3		2		2		3	1	
		Cephalanthus occidentalis	Tree	common buttonbush	12	4	3			1	6	3			2	
		Fraxinus pennsylvanica	Tree	green ash	3	2	1.5			1				2		
		Ilex glabra	Shrub	inkberry	4	2	2		1				3			
		Itea virginica	Shrub	Virginia sweetspire	26	5	5.2			4	6			3	3	10
		Magnolia virginiana	Shrub	sweetbay	1	1	1					1				
		Malus angustifolia	Shrub	southern crabapple	2	2	1	1				1				
		Morella cerifera	Shrub	wax myrtle	22	4	5.5	8		1		8		5		
		Platanus occidentalis	Tree	American sycamore	7	2	3.5			2		5				
		Quercus michauxii	Tree	swamp chestnut oak	1	1	1					1				
		Quercus phellos	Tree	willow oak	2	2	1			1		1				
		Salix nigra	Tree	black willow	2	1	2							2		
TOT:	**0**	**12**	**12**	**12**	**93**	**12**		**12**	**1**	**12**	**12**	**22**	**3**	**15**	**6**	**10**

Appendix D.
Stream Geomorphology Data

Table 13a. Baseline Stream Data Summary
Jacksonville Country Club (DMS# 194) Segment/Reach: 1A (1307 feet)

Parameter	Gauge[2]	Regional Curve			Pre-Existing Condition						Reference Reach(es) Data						Design			Monitoring Baseline					
		LL	UL	Eq.	Min	Mean	Med	Max	SD[5]	n	Min	Mean	Med	Max	SD[5]	n	Min	Med	Max	Min	Mean	Med	Max	SD[5]	n
Dimension and Substrate - Riffle Only																									
Bankfull Width (ft)				4.1								15.5						10		3.8	4.3		4.8		
Floodprone Width (ft)												200						n/a		20.3	36.5		52.8		
Bankfull Mean Depth (ft)				1.7								1.54						0.83		0.3	0.5		0.7		
[1]Bankfull Max Depth (ft)												n/a						1.2		0.8	0.9		1		
Bankfull Cross Sectional Area (ft^2)				16.2								23.9						8.33		1.5	2		2.5		
Width/Depth Ratio												10.05						12		5.8	10.7		15.5		
Entrenchment Ratio												12.9						n/a		4.2	9		13.8		
[1]Bank Height Ratio												**n/a**						**n/a**		**1.3**	**1.45**		**1.6**		
Profile																									
Riffle Length (ft)												30						33		2.6	8		40.5		
Riffle Slope (ft/ft)												0.002						n/a		0	1		6.9		
Pool Length (ft)											22.5	26.3		30				24		4	16.8		54.8		
Pool Max depth (ft)												3						2.1		1.2	1.2		1.3		
Pool Spacing (ft)											26.4	43.4		60.5				52.5		9.5	33.3		143.4		
Pattern																									
Channel Beltwidth (ft)											45	57.4		69.8			20	35	50	8	22		34		
Radius of Curvature (ft)											10.9	25.6		40.3			20	27.5	35	8.3	22.7		32.4		
Rc:Bankfull width (ft/ft)											**0.7**	**1.7**		**2.6**			**2**	**2.8**	**3.5**	**2.2**	**5.3**		**6.8**		
Meander Wavelength (ft)											63.6	84.5		105.4			70	105	140	64	108		140		
Meander Width Ratio											2.9	3.7		4.5			2	3.5	5	2.1	5.1		7.1		
Transport parameters																									
Reach Shear Stress (competency) lb/f^2																		0.01			0.207				
Max part size (mm) mobilized at bankfull																					10.2				
Stream Power (transport capacity) W/m^2																					24.6				
Additional Reach Parameters																									
Rosgen Classification	C5/E5											E5						C5			E5				
Bankfull Velocity (fps)																									
Bankfull Discharge (cfs)				23																					
Valley length (ft)																									
Channel Thalweg length (ft)																									
Sinuosity (ft)						1.1						1.2						1.2			1.2				
Water Surface Slope (Channel) (ft/ft)												0.0012						n/a							
BF slope (ft/ft)																									
[3]Bankfull Floodplain Area (acres)																									
[4]% of Reach with Eroding Banks																									
Channel Stability or Habitat Metric																									
Biological or Other																									

Table 13b. Baseline Stream Data Summary
Jacksonville Country Club (DMS# 194) Segment/Reach: 2A (711 feet)

Parameter	Gauge[2]	Regional Curve			Pre-Existing Condition						Reference Reach(es) Data						Design			Monitoring Baseline					
Dimension and Substrate - Riffle Only		LL	UL	Eq.	Min	Mean	Med	Max	SD[5]	n	Min	Mean	Med	Max	SD[5]	n	Min	Med	Max	Min	Mean	Med	Max	SD[5]	n
Bankfull Width (ft)				4.1								15.5						12.9			5.7				
Floodprone Width (ft)												200						n/a			34.3				
Bankfull Mean Depth (ft)				1.7								1.54						0.89			0.4				
[1]Bankfull Max Depth (ft)												n/a						1.3			0.9				
Bankfull Cross Sectional Area (ft^2)				16.2								23.9						11.5			2.4				
Width/Depth Ratio												10.05						14.47			13.8				
Entrenchment Ratio												12.9						n/a			6				
[1]Bank Height Ratio												**n/a**						**n/a**			**1.2**				
Profile																									
Riffle Length (ft)												30						38		6.2	20.8		42.7		
Riffle Slope (ft/ft)												0.002						n/a		0	1		3.5		
Pool Length (ft)											22.5	26.3		30				22		13.1	20		29.8		
Pool Max depth (ft)												3						2.4		2.9	2.9		2.9		
Pool Spacing (ft)											26.4	43.4		60.5			40	60	80	18.6	56.3		103		
Pattern																									
Channel Beltwidth (ft)											45	57.4		69.8			25	40	55	11	23.5		33		
Radius of Curvature (ft)											10.9	25.6		40.3			25	30	35	20.7	24.7		29.5		
Rc:Bankfull width (ft/ft)											**0.7**	**1.7**		**2.6**			**1.9**	**2.3**	**2.7**	**3.6**	**4.3**		**5.2**		
Meander Wavelength (ft)											63.6	84.5		105.4			80	120	160	59	116		140		
Meander Width Ratio											2.9	3.7		4.5			1.9	3.1	4.3	1.9	4.1		5.8		
Transport parameters																									
Reach Shear Stress (competency) lb/f^2																				0.25					
Max part size (mm) mobilized at bankfull																				12.3					
Stream Power (transport capacity) W/m^2																				22.3					
Additional Reach Parameters																									
Rosgen Classification												E5 and C5						C5			C5				
Bankfull Velocity (fps)																		n/a							
Bankfull Discharge (cfs)				23																					
Valley length (ft)																									
Channel Thalweg length (ft)																									
Sinuosity (ft)																		1.2			1.2				
Water Surface Slope (Channel) (ft/ft)												0.0037						n/a							
BF slope (ft/ft)																									
[3]Bankfull Floodplain Area (acres)																									
[4]% of Reach with Eroding Banks																									
Channel Stability or Habitat Metric																									
Biological or Other																									

Table 13c. Baseline Stream Data Summary
Jacksonville Country Club (DMS# 194) Segment/Reach: B (478 feet)

Parameter	Gauge[2]	Regional Curve			Pre-Existing Condition						Reference Reach(es) Data						Design			Monitoring Baseline					
Dimension and Substrate - Riffle Only		LL	UL	Eq.	Min	Mean	Med	Max	SD[5]	n	Min	Mean	Med	Max	SD[5]	n	Min	Med	Max	Min	Mean	Med	Max	SD[5]	n
Bankfull Width (ft)				2.3	3.32	3.65		3.97			10.4	10.95		11.5				6			4				
Floodprone Width (ft)					45	68.5		92			199.7	199.9		200				n/a			46.8				
Bankfull Mean Depth (ft)				1.1	1.17	1.21		1.25			0.83	1.19		1.56				0.5			0.68				
[1]Bankfull Max Depth (ft)					1.8	1.96		2.11			n/a	n/a		n/a				0.7			1.4				
Bankfull Cross Sectional Area (ft^2)				5.5	3.88	4.42		4.95			8.6	13.2		17.9				3			2.7				
Width/Depth Ratio					2.84	3.01		3.18			7.39	10		12.58				12			5.9				
Entrenchment Ratio					13.55	18.36		23.17			17.39	18.3		19.2				n/a			11.7				
[1]Bank Height Ratio					**1.66**	**1.7**		**1.74**													**1.1**				
Profile																									
Riffle Length (ft)											13.4	17.7		22				14		6.3	12.5		22		
Riffle Slope (ft/ft)											0.004	0.005		0.006				n/a		0	1.6		4.5		
Pool Length (ft)											10.6	15.4		20.2				18		6.3	10.7		14.5		
Pool Max depth (ft)											1.7	2.1		2.5				1.3							
Pool Spacing (ft)											13.75	33.1		52.5			25	35	45	24.7	31.9		36.8		
Pattern																									
Channel Beltwidth (ft)					6.25	7.32		8.38			17.7	45.2		72.9			18	24	30	9	16.4		23		
Radius of Curvature (ft)					12.68	15.52		18.36			7.6	14.1		20.6			12	15	18	8.1	11.8		12.5		
Rc:Bankfull width (ft/ft)					**3.82**	**4.22**		**4.62**			**0.47**	**1.3**		**1.9**			**2**	**2.5**	**3**	**2.0**	**3.0**		**3.1**		
Meander Wavelength (ft)					14.02	15.61		17.2			23.1	51		78.8			50	70	90	46	54		80		
Meander Width Ratio					1.88	2		2.11			2.1	4.6		7.1			1.2	3	5	2.3	4.1		5.8		
Transport parameters																									
Reach Shear Stress (competency) lb/f^2																				0.3					
Max part size (mm) mobilized at bankfull																				14.7					
Stream Power (transport capacity) W/m^2																				48.1					
Additional Reach Parameters																									
Rosgen Classification																				E5					
Bankfull Velocity (fps)																				8.2					
Bankfull Discharge (cfs)				7.1																					
Valley length (ft)																									
Channel Thalweg length (ft)																									
Sinuosity (ft)							1.15													1.3					
Water Surface Slope (Channel) (ft/ft)							1.7																		
BF slope (ft/ft)																									
[3]Bankfull Floodplain Area (acres)																									
[4]% of Reach with Eroding Banks																									
Channel Stability or Habitat Metric																									
Biological or Other																									

Table 13d. Baseline Stream Data Summary
Jacksonville Country Club (DMS# 194) Segment/Reach: C (613 feet)

Parameter	Gauge[2]	Regional Curve			Pre-Existing Condition						Reference Reach(es) Data						Design			Monitoring Baseline					
Dimension and Substrate - Riffle Only		LL	UL	Eq.	Min	Mean	Med	Max	SD[5]	n	Min	Mean	Med	Max	SD[5]	n	Min	Med	Max	Min	Mean	Med	Max	SD[5]	n
Bankfull Width (ft)				2.3							1.01	1.1		1.18				7			4				
Floodprone Width (ft)											199.7	199.9		200				n/a			7.8				
Bankfull Mean Depth (ft)				1.1							0.83	1.19		1.56				0.7			0.2				
[1]Bankfull Max Depth (ft)											n/a	n/a		n/a				1.1			0.4				
Bankfull Cross Sectional Area (ft^2)				5.5							8.6	13.2		17.9				4.9			0.6				
Width/Depth Ratio											7.39	10		12.58				10			25.4				
Entrenchment Ratio											17.39	18.3		19.2				n/a			2				
[1]Bank Height Ratio																		**n/a**			**2.1**				
Profile																									
Riffle Length (ft)											13.4	17.7		22				20		4.6	10.5		20		
Riffle Slope (ft/ft)											0.004	0.005		0.006				n/a		0	0.7		3.4		
Pool Length (ft)											10.6	15.4		20.2				12		0	9.9		14.8		
Pool Max depth (ft)											1.7	2.1		2.5				1.8		1.1	1.1		1.1		
Pool Spacing (ft)											13.75	33.1		52.5			25	33.75	42.5	4.5	32.3		71.9		
Pattern																									
Channel Beltwidth (ft)											17.7	45.2		72.9			14	19.5	25	8	14.8		32		
Radius of Curvature (ft)											7.6	14.1		20.6			9	11.5	14	6.1	8.5		11.4		
Rc:Bankfull width (ft/ft)											**0.47**	**1.3**		**1.9**			**1.3**	**1.6**	**2**	**1.5**	**2.1**		**2.9**		
Meander Wavelength (ft)											23.1	51		78.8			50	67.5	85	43	65.7		89		
Meander Width Ratio											2.1	4.6		7.1			2	2.8	3.6	2	3.7		8		
Transport parameters																									
Reach Shear Stress (competency) lb/f^2																				0.041					
Max part size (mm) mobilized at bankfull																				2					
Stream Power (transport capacity) W/m^2																				2.96					
Additional Reach Parameters																									
Rosgen Classification																				B5c					
Bankfull Velocity (fps)																									
Bankfull Discharge (cfs)				7.1																					
Valley length (ft)																									
Channel Thalweg length (ft)																									
Sinuosity (ft)																				1.3					
Water Surface Slope (Channel) (ft/ft)																									
BF slope (ft/ft)																									
[3]Bankfull Floodplain Area (acres)																									
[4]% of Reach with Eroding Banks																									
Channel Stability or Habitat Metric																									
Biological or Other																									

Table 14a. Monitoring Data - Dimensional Morphology Summary (Dimensional Parameters – Cross Sections)
Jacksonville Country Club (DMS# 194) Segment/Reach: 1A (1307 feet)

	Cross Section 1 (Riffle)							Cross Section 2 (Pool)							Cross Section 5 (Riffle)							Cross Section X2 (Pool)													
Based on fixed baseline bankfull elevation [1]	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+
Record elevation (datum) used																																			
Bankfull Width (ft)	4.8	5.4	6.2	6.1				6.4	6	7.4	7.8				3.8	5.3	6.5	5.6				3.2	3.2	6.9	4.8										
Floodprone Width (ft)	20.3	34.3	37.1	42.7											52.8	65.6	76.4	73.4																	
Bankfull Mean Depth (ft)	0.3	0.4	0.6	0.8				0.7	1	1.3	1.3				0.7	0.9	1.2	0.9				0.7	0.7	1	1.4										
Bankfull Max Depth (ft)	0.8	0.8	1	1.5				1.3	1.5	2	2.2				1	1.5	2.1	2				1.2	1.2	2.3	2.3										
Bankfull Cross Sectional Area (ft^2)	1.5	2.3	3.7	4.8				4.5	5.9	9.6	9.8				2.5	4.6	7.6	5.3				2.4	2.4	6.6	6.5										
Bankfull Width/Depth Ratio	15.5	12.5	10.4	7.9				9.3	6.2	5.8	6.2				5.8	6	5.5	6.1				4.4	4.4	7.2	3.6										
Bankfull Entrenchment Ratio	4.2	6.4	5.9	7											13.8	12.4	11.8	13																	
Bankfull Bank Height Ratio	1.6	1	1	1				1.3	1.2	1	1				1.3	1.2	1	1				1.1	1.1	1	1										
Based on current/developing bankfull feature [2]																																			
Record elevation (datum) used																																			
Bankfull Width (ft)																																			
Floodprone Width (ft)																																			
Bankfull Mean Depth (ft)																																			
Bankfull Max Depth (ft)																																			
Bankfull Cross Sectional Area (ft^2)																																			
Bankfull Width/Depth Ratio																																			
Bankfull Entrenchment Ratio																																			
Bankfull Bank Height Ratio																																			
Cross Sectional Area between end pins (ft^2)																																			
d50 (mm)																																			

These cells may or may not require population in any given year. See footnote 2 below

	Cross Section 6 (Riffle)							Cross Section 7 (Pool)							Cross Section 8 (Riffle)							Cross Section 9 (Riffle)							Cross Section 10 (Pool)						
Based on fixed baseline bankfull elevation [1]	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+
Record elevation (datum) used																																			
Bankfull Width (ft)																																			
Floodprone Width (ft)																																			
Bankfull Mean Depth (ft)																																			
Bankfull Max Depth (ft)																																			
Bankfull Cross Sectional Area (ft^2)																																			
Bankfull Width/Depth Ratio																																			
Bankfull Entrenchment Ratio																																			
Bankfull Bank Height Ratio																																			
Based on current/developing bankfull feature [2]																																			
Record elevation (datum) used																																			
Bankfull Width (ft)																																			
Floodprone Width (ft)																																			
Bankfull Mean Depth (ft)																																			
Bankfull Max Depth (ft)																																			
Bankfull Cross Sectional Area (ft^2)																																			
Bankfull Width/Depth Ratio																																			
Bankfull Entrenchment Ratio																																			
Bankfull Bank Height Ratio																																			
Cross Sectional Area between end pins (ft^2)																																			
d50 (mm)																																			

1 = Widths and depths for monitoring resurvey will be based on the baseline bankfull datum regardless of dimensional/depositional development. Input the elevation used as the datum, which should be consistent and based on the baseline datum established. If the performer has inherited the project and cannot acquire the datum u
for prior years this must be discussed with EEP. If this cannot be resolved in time for a given years report submission a footnote in this should be included that states: "It is uncertain if the monitoring datum has been consistent over the monitoring history, which may influence calculated values. Additional data from a pr
performer is being acquired to provide confirmation. Values will be recalculated in a future submission based on a consistent datum if determined to be necessary."
2 = Based on the elevation of any dominant depositional feature that develops and is observed at the time of survey. If the baseline datum remains the only significant depositional featu
then these two sets of dimensional parameters will be equal, however, if another depositional feature of significance develops above or below the baseline bankfull datum then this should be tracked and quantified in these cells

Table 14b. Monitoring Data - Dimensional Morphology Summary (Dimensional Parameters – Cross Sections)

Jacksonville Country Club (DMS# 194) Segment/Reach: 2A (711 feet)

	Cross Section 9 (Riffle)							Cross Section X3 (Pool)																		Cross Section 5 (Riffle)						
Based on fixed baseline bankfull elevation[1]	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+
Record elevation (datum) used																																		
Bankfull Width (ft)	5.7	6.7	12.3	10.9				8.4	8.1	11.4	10.1																							
Floodprone Width (ft)	34.3	65.2	78.4	73.3																														
Bankfull Mean Depth (ft)	0.4	0.5	1	0.8				1.7	2.2	2.4	2.3																							
Bankfull Max Depth (ft)	0.9	1.1	2	1.8				2.9	3.3	4.4	3.9																							
Bankfull Cross Sectional Area (ft^2)	2.4	3.1	12.5	8.4				14.5	17.9	27.2	23.1																							
Bankfull Width/Depth Ratio	13.8	14.4	12.1	14.2				4.8	3.6	4.7	4.5																							
Bankfull Entrenchment Ratio	6	9.7	6.4	6.7																														
Bankfull Bank Height Ratio	1.2	1.3	1	1				1.3	1.1	1	1.2																							
Based on current/developing bankfull feature[2]																																		
Record elevation (datum) used																																		
Bankfull Width (ft)																																		
Floodprone Width (ft)																																		
Bankfull Mean Depth (ft)																																		
Bankfull Max Depth (ft)																																		
Bankfull Cross Sectional Area (ft^2)																																		
Bankfull Width/Depth Ratio																																		
Bankfull Entrenchment Ratio																																		
Bankfull Bank Height Ratio																																		
Cross Sectional Area between end pins (ft^2)																																		
d50 (mm)																																		

These cells may or may not require population in any given year. See footnote 2 below

	Cross Section 6 (Riffle)							Cross Section 7 (Pool)							Cross Section 8 (Riffle)							Cross Section 9 (Riffle)							Cross Section 10 (Pool)						
Based on fixed baseline bankfull elevation[1]	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+
Record elevation (datum) used																																		
Bankfull Width (ft)																																		
Floodprone Width (ft)																																		
Bankfull Mean Depth (ft)																																		
Bankfull Max Depth (ft)																																		
Bankfull Cross Sectional Area (ft^2)																																		
Bankfull Width/Depth Ratio																																		
Bankfull Entrenchment Ratio																																		
Bankfull Bank Height Ratio																																		
Based on current/developing bankfull feature[2]																																		
Record elevation (datum) used																																		
Bankfull Width (ft)																																		
Floodprone Width (ft)																																		
Bankfull Mean Depth (ft)																																		
Bankfull Max Depth (ft)																																		
Bankfull Cross Sectional Area (ft^2)																																		
Bankfull Width/Depth Ratio																																		
Bankfull Entrenchment Ratio																																		
Bankfull Bank Height Ratio																																		
Cross Sectional Area between end pins (ft^2)																																		
d50 (mm)																																		

1 = Widths and depths for monitoring resurvey will be based on the baseline bankfull datum regardless of dimensional/depositional development. Input the elevation used as the datum, which should be consistent and based on the baseline datum established. If the performer has inherited the project and cannot acquire the datum used for prior years this must be discussed with EEP. If this cannot be resolved in time for a given years report submission a footnote in this should be included that states: "It is uncertain if the monitoring datum has been consistent over the monitoring history, which may influence calculated values. Additional data from a prior performer is being acquired to provide confirmation. Values will be recalculated in a future submission based on a consistent datum if determined to be necessary."

2 = Based on the elevation of any dominant depositional feature that develops and is observed at the time of survey. If the baseline datum remains the only significant depositional feature then these two sets of dimensional parameters will be equal, however, if another depositional feature of significance develops above or below the baseline bankfull datum then this should be tracked and quantified in these cells.

Table 14c. Monitoring Data - Dimensional Morphology Summary (Dimensional Parameters – Cross Sections)

Jacksonville Country Club (DMS# 194) Segment/Reach: B (478 feet)

	Cross Section X1 (Riffle)							Cross Section (Riffle)							Cross Section (Riffle)							Cross Section (Pool)							Cross Section 5 (Riffle)						
Based on fixed baseline bankfull elevation[1]	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+
Record elevation (datum) used																																				
Bankfull Width (ft)	4	5	6.9	6.1																																
Floodprone Width (ft)	46.8	53.8	56.3	>59.7																																
Bankfull Mean Depth (ft)	0.68	0.8	1.1	1.4																																
Bankfull Max Depth (ft)	1.4	1.6	1.7	2.2																																
Bankfull Cross Sectional Area (ft^2)	2.7	3.8	7.2	8.7																																
Bankfull Width/Depth Ratio	5.9	6.6	6.5	4.3																																
Bankfull Entrenchment Ratio	11.7	10.8	8.2	9.7																																
Bankfull Bank Height Ratio	**1.1**	1	1	1																																
Based on current/developing bankfull feature[2]																																				
Record elevation (datum) used																																				
Bankfull Width (ft)																																				
Floodprone Width (ft)																																				
Bankfull Mean Depth (ft)																																				
Bankfull Max Depth (ft)																																				
Bankfull Cross Sectional Area (ft^2)																																				
Bankfull Width/Depth Ratio																																				
Bankfull Entrenchment Ratio																																				
Bankfull Bank Height Ratio																																				
Cross Sectional Area between end pins (ft^2)																																				
d50 (mm)																																				

These cells may or may not require population in any given year. See footnote 2 below

	Cross Section 6 (Riffle)							Cross Section 7 (Pool)							Cross Section 8 (Riffle)							Cross Section 9 (Riffle)							Cross Section 10 (Pool)						
Based on fixed baseline bankfull elevation[1]	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+
Record elevation (datum) used																																				
Bankfull Width (ft)																																				
Floodprone Width (ft)																																				
Bankfull Mean Depth (ft)																																				
Bankfull Max Depth (ft)																																				
Bankfull Cross Sectional Area (ft^2)																																				
Bankfull Width/Depth Ratio																																				
Bankfull Entrenchment Ratio																																				
Bankfull Bank Height Ratio																																				
Based on current/developing bankfull feature[2]																																				
Record elevation (datum) used																																				
Bankfull Width (ft)																																				
Floodprone Width (ft)																																				
Bankfull Mean Depth (ft)																																				
Bankfull Max Depth (ft)																																				
Bankfull Cross Sectional Area (ft^2)																																				
d50 (mm)																																				

1 = Widths and depths for monitoring resurvey will be based on the baseline bankfull datum regardless of dimensional/depositional development. Input the elevation used as the datum, which should be consistent and based on the baseline datum established. If the performer has inherited the project and cannot acquire the datum used for prior years this must be discussed with EEP. If this cannot be resolved in time for a given years report submission a footnote in this should be included that states: "It is uncertain if the monitoring datum has been consistent over the monitoring history, which may influence calculated values. Additional data from a prior performer is being acquired to provide confirmation. Values will be recalculated in a future submission based on a consistent datum if determined to be necessary."

2 = Based on the elevation of any dominant depositional feature that develops and is observed at the time of survey. If the baseline datum remains the only significant depositional feature then these two sets of dimensional parameters will be equal, however, if another depositional feature of significance develops above or below the baseline bankfull datum then this should be tracked and quantified in these cells.

Table 14d. Monitoring Data - Dimensional Morphology Summary (Dimensional Parameters – Cross Sections)

Jacksonville Country Club (DMS# 194) Segment/Reach: C (613 feet)

	Cross Section 7 (Riffle)							Cross Section 8 (Pool)							Cross Section (Riffle)							Cross Section (Pool)							Cross Section 5 (Riffle)						
Based on fixed baseline bankfull elevation[1]	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+
Record elevation (datum) used																																			
Bankfull Width (ft)	4	3.9	5.6	6.6				4.1	4.8	6.3	6.7																								
Floodprone Width (ft)	7.8	17.4	94.8	132																															
Bankfull Mean Depth (ft)	0.2	0.2	0.5	0.7				0.4	0.5	0.7	0.8																								
Bankfull Max Depth (ft)	0.4	0.7	1.2	1.8				1.1	1	1.2	1.4																								
Bankfull Cross Sectional Area (ft^2)	0.6	0.9	2.8	4.6				1.8	2.4	4.1	5.1																								
Bankfull Width/Depth Ratio	25.4	16	11.1	9.5				9.6	9.7	9.5	8.8																								
Bankfull Entrenchment Ratio	2	4.5	16.9	20																															
Bankfull Bank Height Ratio	2.1	1.6	1	1				1.4	1.3	1	0.8																								
Based on current/developing bankfull feature[2]																																			
Record elevation (datum) used																																			
Bankfull Width (ft)																																			
Floodprone Width (ft)																																			
Bankfull Mean Depth (ft)																																			
Bankfull Max Depth (ft)																																			
Bankfull Cross Sectional Area (ft^2)																																			
Bankfull Width/Depth Ratio																																			
Bankfull Entrenchment Ratio																																			
Bankfull Bank Height Ratio																																			
Cross Sectional Area between end pins (ft^2)																																			
d50 (mm)																																			

These cells may or may not require population in any given year. See footnote 2 below

	Cross Section 6 (Riffle)							Cross Section 7 (Pool)							Cross Section 8 (Riffle)							Cross Section 9 (Riffle)							Cross Section 10 (Pool)						
Based on fixed baseline bankfull elevation[1]	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+
Record elevation (datum) used																																			
Bankfull Width (ft)																																			
Floodprone Width (ft)																																			
Bankfull Mean Depth (ft)																																			
Bankfull Max Depth (ft)																																			
Bankfull Cross Sectional Area (ft^2)																																			
Bankfull Width/Depth Ratio																																			
Bankfull Entrenchment Ratio																																			
Bankfull Bank Height Ratio																																			
Based on current/developing bankfull feature[2]																																			
Record elevation (datum) used																																			
Bankfull Width (ft)																																			
Floodprone Width (ft)																																			
Bankfull Mean Depth (ft)																																			
Bankfull Max Depth (ft)																																			
Bankfull Cross Sectional Area (ft^2)																																			
Bankfull Width/Depth Ratio																																			
Bankfull Entrenchment Ratio																																			
Bankfull Bank Height Ratio																																			
Cross Sectional Area between end pins (ft^2)																																			
d50 (mm)																																			

1 = Widths and depths for monitoring resurvey will be based on the baseline bankfull datum regardless of dimensional/depositional development. Input the elevation used as the datum, which should be consistent and based on the baseline datum established. If the performer has inherited the project and cannot acquire the datum used for prior years this must be discussed with EEP. If this cannot be resolved in time for a given years report submission a footnote in this should be included that states: "It is uncertain if the monitoring datum has been consistent over the monitoring history, which may influence calculated values. Additional data from a prior performer is being acquired to provide confirmation. Values will be recalculated in a future submission based on a consistent datum if determined to be necessary."

2 = Based on the elevation of any dominant depositional feature that develops and is observed at the time of survey. If the baseline datum remains the only significant depositional feature then these two sets of dimensional parameters will be equal, however, if another depositional feature of significance develops above or below the baseline bankfull datum then this should be tracked and quantified in these cells.

Table 15a. Monitoring Data - Stream Reach Data Summary
Jacksonville Country Club (DMS# 194) Segment/Reach: 1A (1307 feet)

Parameter	Baseline						MY-1						MY-2						MY- 3						MY- 4						MY- 5					
only	Min	n	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n
Bankfull Width (ft)	3.8	4.3		4.8			5.3	5.4		5.4		2	6.2	6.4		6.5			5.6	5.9		6.1														
Floodprone Width (ft)	20.3	36.5		52.8			34.3	50		65.6		2	37.1	56.7		76.4			42.7	58.1		73.4														
Bankfull Mean Depth (ft)	0.3	0.5		0.7			0.4	0.7		0.9		2	0.6	0.89		1.2			0.8	0.85		0.9														
[1]Bankfull Max Depth (ft)	0.8	0.9		1			0.8	1.2		1.5		2	1	1.6		2.1			1.5	1.7		2														
Bankfull Cross Sectional Area (ft^2)	1.5	2		2.5			2.3	3.5		4.6		2	3.7	5.7		7.6			4.8	5		5.3														
Width/Depth Ratio	5.8	10.7		15.5			6	9.3		12.5		2	5.5	7.1		10.4			6.1	6.9		7.9														
Entrenchment Ratio	4.2	9		13.8			6.4	9.4		12.4		2	5.8	8.9		12			7.2	9.8		12.5														
[1]Bank Height Ratio	**1.3**	**1.45**		**1.6**			**1**	**1.1**		**1.2**		**2**	**0.6**	**1**		**1.4**			**0.9**	**1**		**1.1**														
Profile																																				
Riffle Length (ft)	2.6	8		40.5			3.7	16.6		50.6			6.6	27.9		78.9			7.6	29.2		76.5														
Riffle Slope (ft/ft)	0	1		6.9			0	1.7		7.5			0	1.1		9.2			0	1.4		5.9														
Pool Length (ft)	4	16.8		54.8			4.7	15.7		31.9			7.1	13.7		33.1			4.3	11.2		22.3														
Pool Max depth (ft)	1.2	1.2		1.3			1.12	2.08		3.3			0.9	2.77		4.36			1.25	2.83		4.17														
Pool Spacing (ft)	9.5	33.3		143			8	29.4		67.2			11.1	44.1		103			8	39		111														
Pattern																																				
Channel Beltwidth (ft)	8	22		34																																
Radius of Curvature (ft)	8.3	22.7		32.4																																
Rc:Bankfull width (ft/ft)	**2.2**	**5.3**		**6.8**																																
Meander Wavelength (ft)	64	108		140																																
Meander Width Ratio	2.1	5.1		7.1																																

Pattern data will not typically be collected unless visual data, dimensional data or profile data indicate significant shifts from baseline

Additional Reach Parameters																																				
Rosgen Classification	E5						E5						E5						E5																	
Channel Thalweg length (ft)							1403						1424						1423																	
Sinuosity (ft)	1.2						1.2						1.2						1.2																	
Water Surface Slope (Channel) (ft/ft)																																				
BF slope (ft/ft)																																				
[3]Ri% / Ru% / P% / G% / S%	0.21	0.08	0.5	0.21																																
[3]SC% / Sa% / G% / C% / B% / Be%																																				
[3]d16 / d35 / d50 / d84 / d95 /																																				
[2]% of Reach with Eroding Banks																																				
Channel Stability or Habitat Metric																																				
Biological or Other																																				

Shaded cells indicate that these will typically not be filled in.
1 = The distributions for these parameters can include information from both the cross-section surveys and the longitudinal profile. 2 = Proportion of reach exhibiting banks that are eroding based on the visual survey from visual assessment table
3 = Riffle, Run, Pool, Glide, Step; Silt/Clay, Sand, Gravel, Cobble, Boulder, Bedrock; dip = max pave, disp = max subpave; 4. = Of value/needed only if the n exceeds 3

Table 15b. Monitoring Data - Stream Reach Data Summary
Jacksonville Country Club (DMS# 194) Segment/Reach: 2A (711 feet)

Parameter	Baseline						MY-1						MY-2						MY- 3						MY- 4						MY- 5					
Dimension and Substrate - Riffle only	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n
Bankfull Width (ft)		5.7						6.7						12.3						10.9																
Floodprone Width (ft)		34.3						65.2						78.4						73.3																
Bankfull Mean Depth (ft)		0.4						0.5						1.02						0.8																
[1]Bankfull Max Depth (ft)		0.9						1.1						2						1.8																
Bankfull Cross Sectional Area (ft^2)		2.4						3.1						12.5						8.4																
Width/Depth Ratio		13.8						14.4						12.1						14.2																
Entrenchment Ratio		6						1.3						6.4						6.7																
[1]Bank Height Ratio		**1.2**						**1.2**						**1**						**1**																
Profile																																				
Riffle Length (ft)	6.2	20.8		42.7			4.1	19		37.4			10.7	25.5		43.9			4.7	19.8		30.1														
Riffle Slope (ft/ft)	0	1		3.5			0	1.4		5.5			0	1.4		3.7			0	1.8		7.8														
Pool Length (ft)	13.1	20		29.8			3.5	15		41.8			2.5	14.3		32.1			4.1	15.5		25.3														
Pool Max depth (ft)	1.4	2.09		3.39			1.56	2.7		4.43			2.68	3.8		5.75			2.55	3.91		5.88														
Pool Spacing (ft)	18.6	56.3		103			6.8	30.9		73.5			9.8	39.8		72.9			8.9	44.8		82.9														
Pattern																																				
Channel Beltwidth (ft)	11	23.5		33																																
Radius of Curvature (ft)	20.7	24.7		29.5																																
Rc:Bankfull width (ft/ft)	**3.63**	**4.33**		**5.18**																																
Meander Wavelength (ft)	59	116		140																																
Meander Width Ratio	1.93	4.12		5.79																																

Pattern data will not typically be collected unless visual data, dimensional data or profile data indicate significant shifts from baseline

Additional Reach Parameters																																				
Rosgen Classification	C5						C5						C5						C5																	
Channel Thalweg length (ft)																																				
Sinuosity (ft)	1.1						1.1						1.1						1.1																	
Water Surface Slope (Channel) (ft/ft)																																				
BF slope (ft/ft)																																				
[3]Ri% / Ru% / P% / G% / S%	0.33	0.08	0.29	0.3																																
[3]SC% / Sa% / G% / C% / B% / Be%																																				
[3]d16 / d35 / d50 / d84 / d95 /																																				
[2]% of Reach with Eroding Banks																																				
Channel Stability or Habitat Metric																																				
Biological or Other																																				

Shaded cells indicate that these will typically not be filled in.
1 = The distributions for these parameters can include information from both the cross-section surveys and the longitudinal profile.
2 = Proportion of reach exhibiting banks that are eroding based on the visual survey from visual assessment table
3 = Riffle, Run, Pool, Glide, Step; Silt/Clay, Sand, Gravel, Cobble, Boulder, Bedrock; dip = max pave, disp = max subpave
4. = Of value/needed only if the n exceeds 3

Table 15c. Monitoring Data - Stream Reach Data Summary
Jacksonville Country Club (DMS# 194) Segment/Reach: B (478 feet)

Parameter	Baseline						MY-1						MY-2						MY- 3						MY- 4						MY- 5					
Dimension and Substrate - Riffle only	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n
Bankfull Width (ft)		4						5						6.9						6.1																
Floodprone Width (ft)		46.8						53.8						56.3						>59.7																
Bankfull Mean Depth (ft)		0.68						0.8						1.05						1.4																
[1]Bankfull Max Depth (ft)		1.4						1.6						1.7						2.2																
Bankfull Cross Sectional Area (ft^2)		2.7						3.8						7.2						8.7																
Width/Depth Ratio		5.9						6.6						6.5						4.3																
Entrenchment Ratio		11.7						10.8						8.2						9.7																
[1]Bank Height Ratio		**1.1**						1						**1**						**1**																
Profile																																				
Riffle Length (ft)	6.3	12.5		22			6.5	20.5		52.5			8	17.9		55.2			9	17.7		24.2														
Riffle Slope (ft/ft)	0	1.6		4.5			0	0.25		1.8			0	1.8		5			0	2.3		5.3														
Pool Length (ft)	6.3	10.7		14.5			10.5	20.4		46.4			5	14.5		26.5			5.8	12.8		23														
Pool Max depth (ft)	0.85	1.51		2.41			0.86	1.61		2.46			1.31	2.08		3.14			1.58	2.4		3.42														
Pool Spacing (ft)	24.7	31.9		36.8			20.3	39.6		64			17.3	37.1		70.2			18.7	36.8		63.9														
Pattern																																				
Channel Beltwidth (ft)	9	16.4		23																																
Radius of Curvature (ft)	8.1	11.8		12.5																																
Rc:Bankfull width (ft/ft)	**2.03**	**2.95**		**3.13**																																
Meander Wavelength (ft)	46	54		80																																
Meander Width Ratio	2.25	4.1		5.75																																

Pattern data will not typically be collected unless visual data, dimensional data or profile data indicate significant shifts from baseline

Additional Reach Parameters																																				
Rosgen Classification	E5						E5						E5						E5																	
Channel Thalweg length (ft)																																				
Sinuosity (ft)	1.1						1.3						1.3						1.3																	
Water Surface Slope (Channel) (ft/ft)																																				
BF slope (ft/ft)																																				
[3]Ri% / Ru% / P% / G% / S%																																				
[3]SC% / Sa% / G% / C% / B% / Be%																																				
[3]d16 / d35 / d50 / d84 / d95 /																																				
[2]% of Reach with Eroding Banks																																				
Channel Stability or Habitat Metric																																				
Biological or Other																																				

Shaded cells indicate that these will typically not be filled in.
1 = The distributions for these parameters can include information from both the cross-section surveys and the longitudinal profile.
2 = Proportion of reach exhibiting banks that are eroding based on the visual survey from visual assessment table
3 = Riffle, Run, Pool, Glide, Step; Silt/Clay, Sand, Gravel, Cobble, Boulder, Bedrock; dip = max pave, disp = max subpave
4. = Of value/needed only if the n exceeds 3

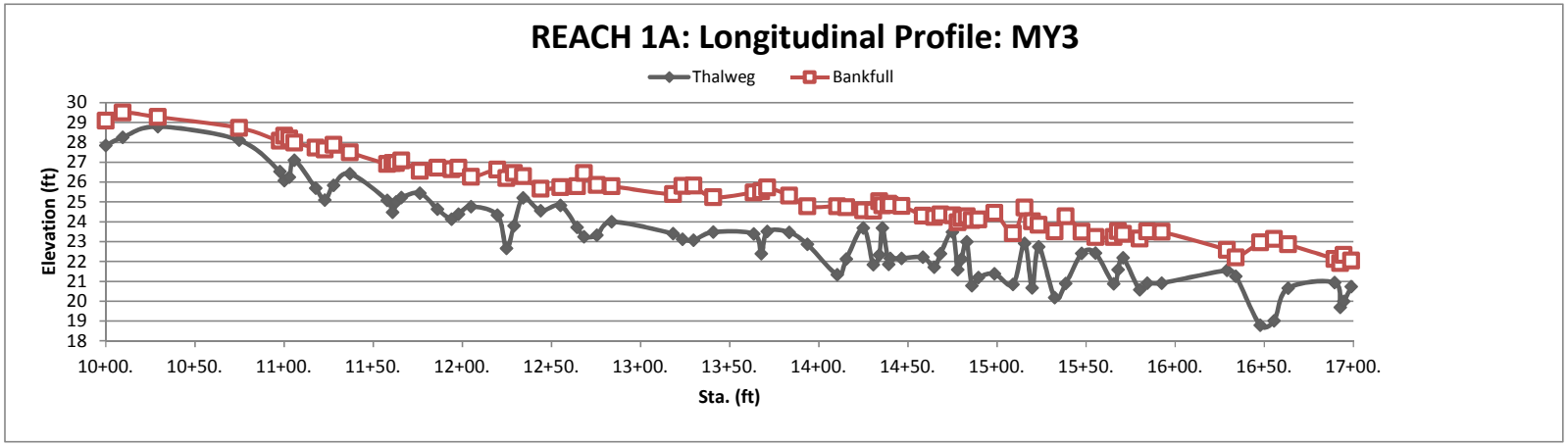
Table 15d. Monitoring Data - Stream Reach Data Summary
Jacksonville Country Club (DMS# 194) Segment/Reach: C (613 feet)

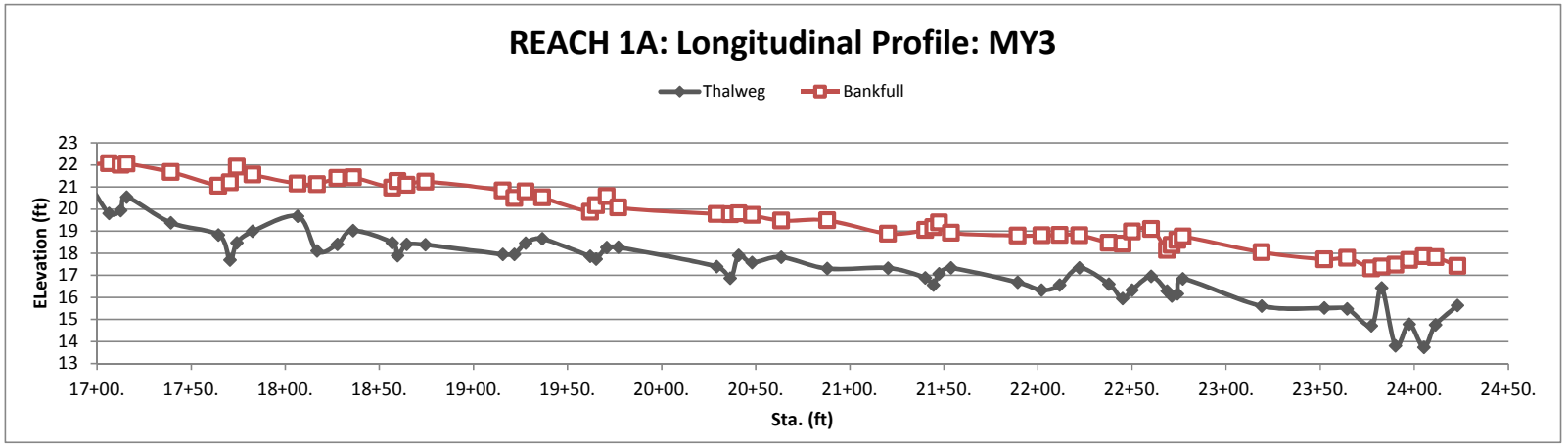
Parameter	Baseline						MY-1						MY-2						MY- 3						MY- 4						MY- 5					
Dimension and Substrate - Riffle only	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n
Bankfull Width (ft)		4						3.9						5.6						6.6																
Floodprone Width (ft)		7.8						17.4						94.8						132																
Bankfull Mean Depth (ft)		0.2						0.2						0.51						0.7																
[1]Bankfull Max Depth (ft)		0.4						0.7						1.2						1.8																
Bankfull Cross Sectional Area (ft^2)		0.6						0.9						2.8						4.6																
Width/Depth Ratio		25.4						16						11.1						9.5																
Entrenchment Ratio		2						4.5						16.9						20																
[1]Bank Height Ratio		**2.1**						**1.6**						**1**						**1**																
Profile																																				
Riffle Length (ft)	4.6	10.5		20			3.4	21.8		52.8			2.7	15.8		48.9			4	11.5		25.3														
Riffle Slope (ft/ft)	0	0.71		3.4			0	0.92		2.9			0	1.4		4.5			0	2.2		6.8														
Pool Length (ft)	6.3	10.7		14.5			10.6	17		23.4			4	11.7		35.7			5.8	10.2		18														
Pool Max depth (ft)	0.46	1.29		2.11			0.56	1.32		1.73			0.92	1.61		2.38			0.9	1.76		2.32														
Pool Spacing (ft)	13.4	34.1		71.9			15.2	38.8		73.3			19.4	34.1		68.3			15.9	35.5		72.9														
Pattern																																				
Channel Beltwidth (ft)	8	14.8		32																																
Radius of Curvature (ft)	6.1	8.5		11.4																																
Rc:Bankfull width (ft/ft)	**1.53**	**2.13**		**2.85**																																
Meander Wavelength (ft)	43	65.7		89																																
Meander Width Ratio	2	3.7		8																																

Pattern data will not typically be collected unless visual data, dimensional data or profile data indicate significant shifts from baseline

Additional Reach Parameters																																				
Rosgen Classification	B5c						C5						E5						E5																	
Channel Thalweg length (ft)																																				
Sinuosity (ft)	1.1						1.3						1.3						1.3																	
Water Surface Slope (Channel) (ft/ft)																																				
BF slope (ft/ft)																																				
[3]Ri% / Ru% / P% / G% / S%																																				
[3]SC% / Sa% / G% / C% / B% / Be%																																				
[3]d16 / d35 / d50 / d84 / d95 /																																				
[2]% of Reach with Eroding Banks																																				
Channel Stability or Habitat Metric																																				
Biological or Other																																				

Shaded cells indicate that these will typically not be filled in.
1 = The distributions for these parameters can include information from both the cross-section surveys and the longitudinal profile.
2 = Proportion of reach exhibiting banks that are eroding based on the visual survey from visual assessment table
3 = Riffle, Run, Pool, Glide, Step; Silt/Clay, Sand, Gravel, Cobble, Boulder, Bedrock; dip = max pave, disp = max subpave
4. = Of value/needed only if the n exceeds 3





	Minimum	Mean	Max
Bankfull Slope		0.008	
Pool-Pool Spacing (ft)	8	39	110.8
Pool Length (ft)	4.3	11.2	22.3
Riffle Length (ft)	7.6	29.2	76.5
Dmax Riffle (ft)	0.49	1.81	3.06
Dmax Pool (ft)	1.25	2.83	4.17

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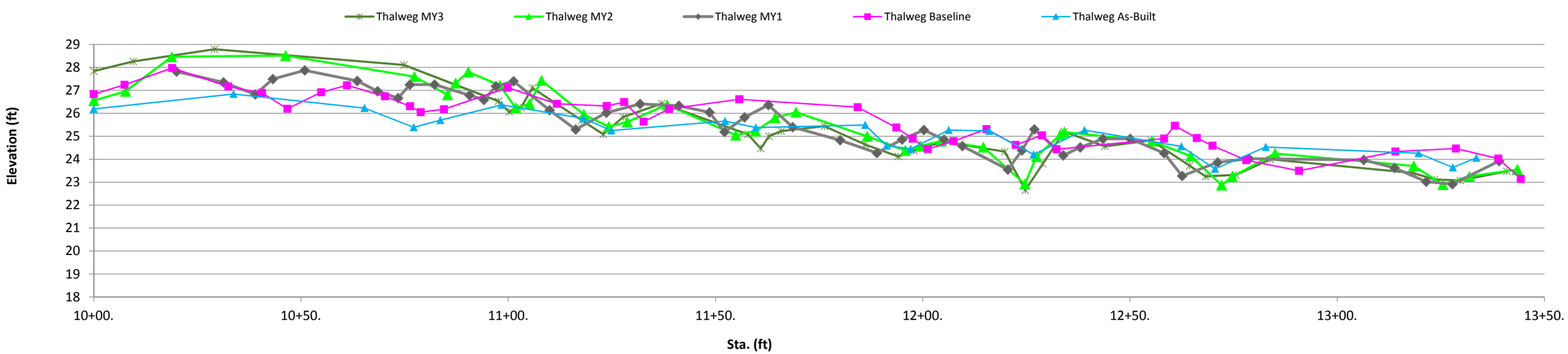
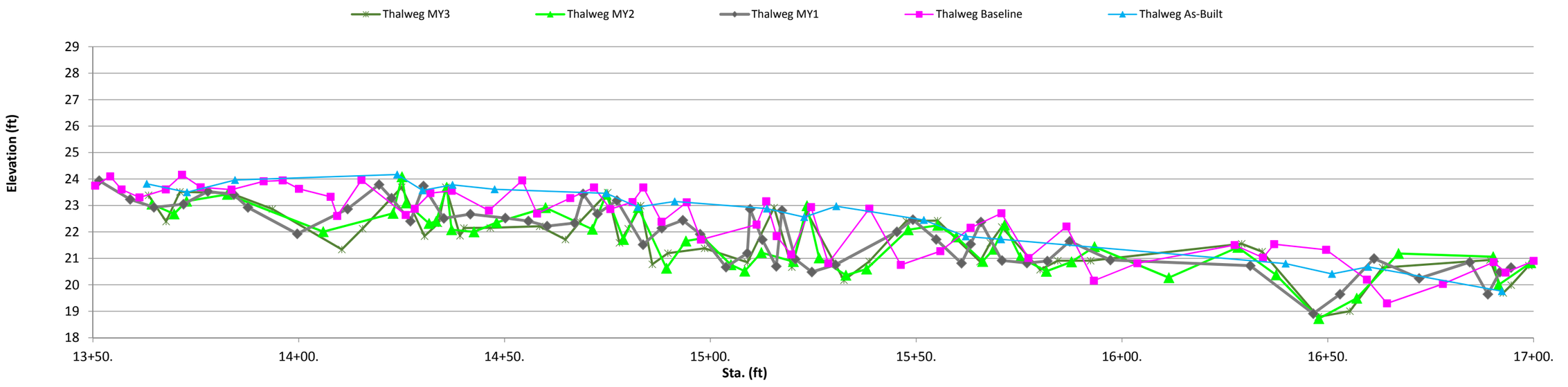
REACH 1A: Longitudinal Profile: MY3, MY2, MY1, Baseline, and As-Built

Station 10+00 - 13+50



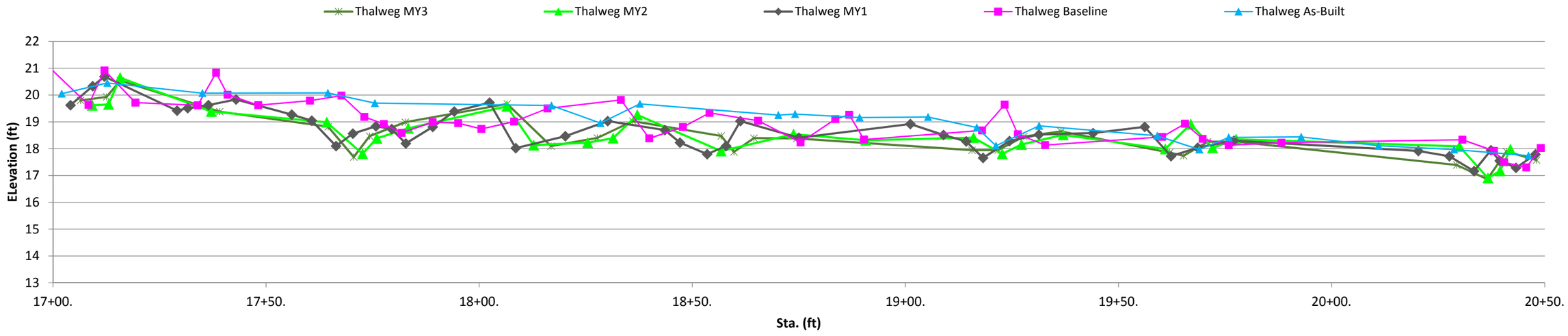
REACH 1A: Longitudinal Profile: MY3, MY2, MY1, Baseline, and As-Built

Station 13+50 - 17+00



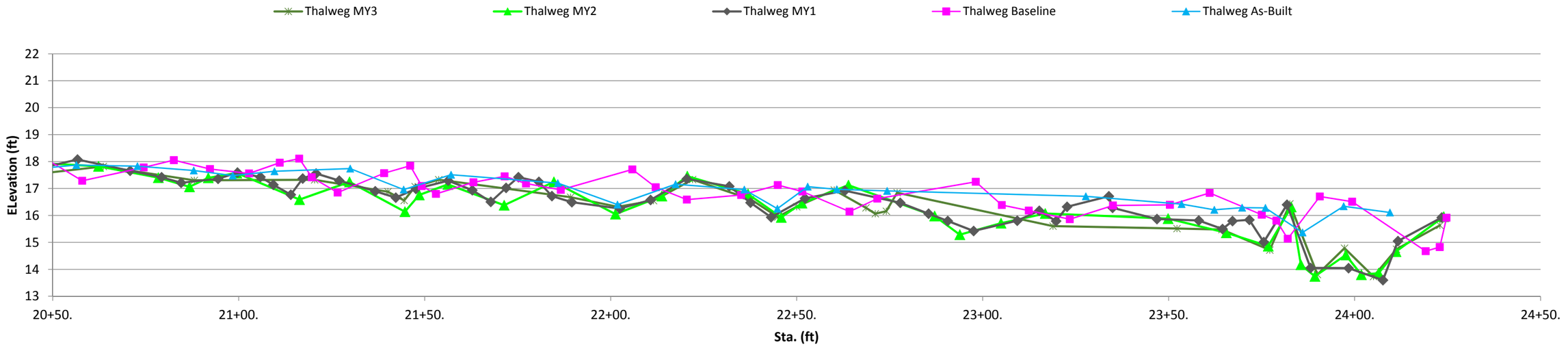
REACH 1A: Longitudinal Profile: MY3, MY2, MY1, Baseline, and As-Built

Station 17+00 - 20+50



REACH 1A: Longitudinal Profile: MY3, MY2, MY1, Baseline, and As-Built

Station 20+50 - 24+50

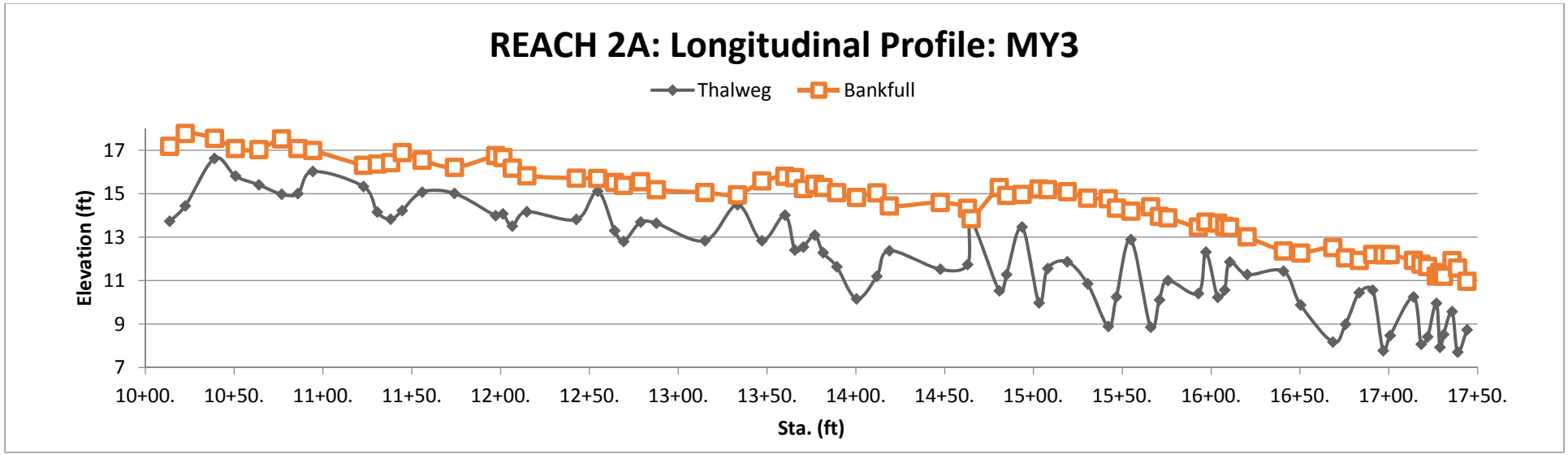


REACH 1A: MY3 LONGITUDINAL PROFILE DATA - UPSTREAM REACH

Sta.	Distance	ELEV-TW	BKF	Sta.	Distance	ELEV-TW	BKF
10+00.	0	27.8394	29.0936	14+25.01	425.0138	23.6886	24.5778
10+09.51	9.508149	28.2591	29.4968	14+30.55	430.5521	21.838	24.5568
10+29.15	29.148071	28.7938	29.279	14+33.93	433.9304	22.3255	25.024
10+74.82	74.823450	28.1071	28.7333	14+35.71	435.7069	23.6892	24.8218
10+97.63	97.628671	26.5289	28.0766	14+39.18	439.1763	21.8542	24.9063
11+00.22	100.224664	26.0654	28.3371	14+40.11	440.109	22.1467	24.8431
11+03.05	103.051429	26.2475	28.1887	14+46.53	446.5268	22.152	24.7972
11+05.83	105.827261	27.105	27.9845	14+58.52	458.5151	22.2122	24.3097
11+17.72	117.717866	25.6952	27.7309	14+64.78	464.7777	21.7143	24.238
11+22.9	122.902656	25.0869	27.6298	14+68.34	468.3351	22.3891	24.3632
11+27.75	127.747359	25.8417	27.8798	14+75.06	475.0602	23.4846	24.3213
11+37.01	137.010598	26.4219	27.4888	14+77.92	477.919	21.588	23.9687
11+57.84	157.838276	25.0814	26.9148	14+80.03	480.0262	22.1187	24.1855
11+60.93	160.926437	24.4685	26.956	14+83.06	483.0585	22.9943	24.2703
11+62.9	162.899254	24.9985	26.9626	14+85.89	485.8869	20.7757	24.0766
11+65.84	165.843247	25.2257	27.0857	14+89.67	489.6677	21.1949	24.105
11+76.31	176.311688	25.4398	26.5576	14+98.6	498.5981	21.3807	24.4389
11+86.08	186.079878	24.6408	26.7199	15+09.01	509.0144	20.8499	23.4159
11+94.09	194.090327	24.1208	26.6354	15+15.48	515.4815	22.9155	24.7121
11+97.84	197.839013	24.3738	26.715	15+19.79	519.786	20.6688	24.0215
12+04.94	204.942834	24.7641	26.261	15+23.46	523.461	22.7404	23.8477
12+19.79	219.786834	24.3281	26.6241	15+32.44	532.4392	20.1728	23.5059
12+24.75	224.749198	22.6536	26.1956	15+38.58	538.5827	20.8841	24.2648
12+28.98	228.975111	23.8025	26.4467	15+47.59	547.5904	22.4073	23.4963
12+34.1	234.100004	25.2027	26.2968	15+55.22	555.2186	22.4248	23.231
12+43.98	243.978235	24.5627	25.6538	15+65.51	565.509	20.8774	23.2279
12+55.14	255.144047	24.8217	25.7435	15+68.02	568.0169	21.5896	23.5261
12+64.4	264.397535	23.7155	25.7931	15+70.79	570.7862	22.1855	23.3803
12+68.24	268.241914	23.2504	26.4494	15+80.11	580.1061	20.57	23.1521
12+75.54	275.538349	23.3181	25.8444	15+84.4	584.3996	20.9098	23.5106
12+83.84	283.840269	23.9966	25.7862	15+92.38	592.3817	20.9114	23.4936
13+18.31	318.306237	23.4001	25.3889	16+29.08	629.0798	21.5518	22.5757
13+23.51	323.511218	23.1108	25.8035	16+34.04	634.0448	21.2558	22.1967
13+29.7	329.698379	23.0756	25.8135	16+47.67	647.6714	18.7871	22.9537
13+40.89	340.885254	23.4755	25.2331	16+55.36	655.3618	19.0043	23.1352
13+63.51	363.514606	23.3876	25.4721	16+63.28	663.283	20.6504	22.8601
13+67.77	367.771856	22.3952	25.528	16+89.39	689.3879	20.9418	22.1249
13+71.14	371.136243	23.5142	25.7194	16+92.61	692.6098	19.6926	21.9198
13+83.37	383.366746	23.465	25.318	16+94.54	694.5441	19.9867	22.3307
13+93.57	393.567741	22.8682	24.7684	16+98.83	698.8275	20.7244	22.0375
14+10.46	410.455539	21.3379	24.7836	17+06.47	706.4652	19.7977	22.0683
14+15.5	415.504704	22.1237	24.7236	17+12.58	712.5822	19.9326	22.0029
				17+15.79	715.7941	20.5364	22.0507

REACH 1A: MY3 LONGITUDINAL PROFILE DATA - UPSTREAM REACH

Sta.	Distance	ELEV-TW	BKF
17+39.13	739.127128	19.3805	21.674
17+64.56	764.564627	18.8191	21.0504
17+70.57	770.569101	17.6876	21.1982
17+74.29	774.29132	18.4667	21.916
17+82.64	782.637792	18.9872	21.5645
18+06.57	806.570104	19.6715	21.1449
18+16.86	816.857109	18.0965	21.1246
18+27.71	827.706249	18.4011	21.3975
18+36.05	836.045652	19.0252	21.4292
18+56.79	856.791223	18.474	20.9636
18+59.76	859.764186	17.879	21.2625
18+64.44	864.444007	18.3955	21.0906
18+74.49	874.489369	18.382	21.2368
19+15.62	915.621213	17.9437	20.8339
19+21.72	921.724298	17.9474	20.4898
19+27.8	927.797517	18.4523	20.7978
19+36.51	936.505518	18.646	20.5185
19+61.99	961.988023	17.8538	19.8693
19+65.27	965.26929	17.7355	20.1647
19+70.86	970.86149	18.256	20.5854
19+76.98	976.983801	18.2668	20.0633
20+29.35	1029.350573	17.392	19.7738
20+36.51	1036.505958	16.8603	19.7504
20+40.99	1040.988912	17.896	19.8011
20+48.06	1048.063209	17.5743	19.7269
20+63.61	1063.614461	17.8204	19.4712
20+88.08	1088.076572	17.3021	19.4809
21+20.42	1120.416062	17.3229	18.8837
21+40.12	1140.123416	16.8798	19.0526
21+44.48	1144.481394	16.5564	19.1734
21+47.42	1147.419528	17.0675	19.3882
21+53.77	1153.766775	17.33	18.9223
21+89.22	1189.22042	16.6768	18.7927
22+01.91	1201.906585	16.322	18.8022
22+11.51	1211.511577	16.549	18.8201
22+22.02	1222.018641	17.3306	18.8111
22+37.61	1237.61268	16.5989	18.4711
22+44.93	1244.932055	15.9425	18.4226
22+50.01	1250.014108	16.3248	18.9796
22+60.1	1260.102819	16.9435	19.098
22+68.63	1268.628899	16.2812	18.146
22+71.14	1271.141416	16.0632	18.3667
22+74.12	1274.116145	16.158	18.5943
22+77.	1277.004543	16.843	18.7569
23+18.91	1318.913535	15.6042	18.0369
23+52.24	1352.243	15.5114	17.7205
23+64.34	1364.336	15.4746	17.7806
23+77.2	1377.201	14.7148	17.3042
23+82.59	1382.588	16.43	17.393
23+89.98	1389.984	13.807	17.4802
23+97.28	1397.276	14.7862	17.6885
24+05.08	1405.079	13.7338	17.8607
24+11.26	1411.258	14.7475	17.8172
24+22.94	1422.936	15.6314	17.4221



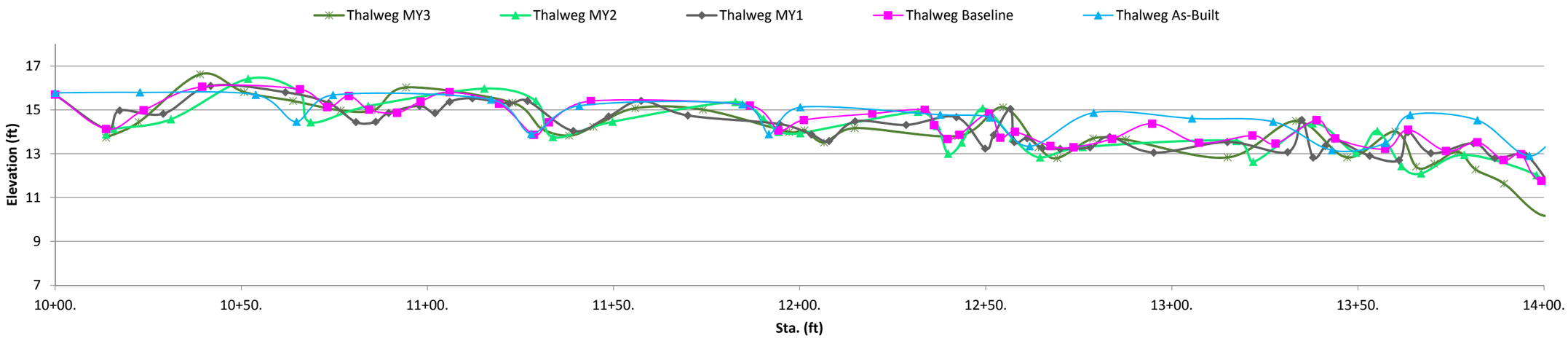
	Minimum	Mean	Max
Bankfull Slope		0.0078	
Pool-Pool Spacing (ft)	8.9	44.8	82.9
Pool Length (ft)	4.1	15.5	25.3
Riffle Length (ft)	4.7	19.8	30.1
Dmax Riffle	0.92	1.95	3.23
Dmax Pool (ft)	2.55	3.91	5.88

REACH 2A: MY 3 LONGITUDINAL PROFILE DATA - DOWNSTREAM REACH

Sta.	Distance	ELEV-TW	BKF		Sta.	Distance	ELEV-TW	BKF
10+00.	0	13.7344	17.1834		14+89.44	489.4377	9.9736	15.2198
10+08.79	8.788555	14.4403	17.7796		14+94.32	494.316	11.5577	15.1901
10+25.25	25.24903	16.626	17.5505		15+05.34	505.3387	11.8661	15.0943
10+37.07	37.07357	15.8152	17.083		15+16.78	516.7763	10.8521	14.7966
10+50.23	50.23172	15.4094	17.0367		15+28.42	528.4162	8.8876	14.7708
10+63.01	63.00757	14.979	17.5256		15+32.97	532.9727	10.2461	14.34
10+72.22	72.2174	15.0084	17.0854		15+41.12	541.122	12.8889	14.1984
10+80.59	80.59385	16.0271	16.9922		15+52.23	552.2334	8.8537	14.3989
11+09.15	109.1466	15.3326	16.3124		15+57.2	557.2038	10.1115	13.9585
11+16.9	116.9008	14.1559	16.3681		15+61.97	561.9686	11.0018	13.8888
11+24.41	124.4138	13.8285	16.4307		15+79.11	579.1114	10.4016	13.4686
11+30.94	130.9434	14.2258	16.8952		15+83.35	583.3505	12.3168	13.6963
11+42.14	142.1446	15.0765	16.5441		15+89.98	589.9766	10.2311	13.6477
11+60.34	160.3427	15.0154	16.2164		15+93.89	593.8862	10.5648	13.4906
11+83.53	183.5306	13.9921	16.7567		15+96.78	596.7848	11.8575	13.4528
11+87.61	187.6092	14.0714	16.6624		16+06.59	606.5895	11.2792	13.0151
11+92.88	192.8822	13.5129	16.1771		16+27.01	627.0077	11.4346	12.364
12+01.08	201.0813	14.1696	15.8271		16+36.68	636.681	9.8773	12.2664
12+28.93	228.9339	13.8157	15.7153		16+54.83	654.8342	8.1716	12.5231
12+40.99	240.9875	15.1183	15.7082		16+61.99	661.9923	8.9927	12.0466
12+50.5	250.4953	13.2947	15.5204		16+69.68	669.6751	10.4487	11.9285
12+55.53	255.5321	12.8	15.3856		16+77.22	677.2247	10.5608	12.2028
12+65.16	265.1629	13.6998	15.558		16+83.15	683.1518	7.7704	12.1921
12+74.	274.0021	13.6423	15.1869		16+87.09	687.0871	8.4684	12.1972
13+01.31	301.3148	12.8325	15.0597		17+00.21	700.2114	10.2488	11.9331
13+19.67	319.666	14.4918	14.953		17+04.51	704.5104	8.0707	11.7557
13+33.42	333.4207	12.8321	15.5899		17+08.18	708.1762	8.4112	11.6479
13+46.35	346.351	14.0124	15.8089		17+13.07	713.0723	9.9544	11.2107
13+51.92	351.9247	12.4121	15.7395		17+15.09	715.0919	7.9239	11.3684
13+56.79	356.7887	12.5469	15.2374		17+17.17	717.1743	8.5182	11.2061
13+63.16	363.1579	13.0939	15.4382		17+21.94	721.942	9.5732	11.924
13+67.9	367.9021	12.2834	15.2841		17+25.06	725.0578	7.7028	11.5792
13+75.55	375.5536	11.6376	15.0542		17+30.33	730.3271	8.7325	10.9684
13+86.69	386.6873	10.1606	14.8342					
13+98.1	398.099	11.1968	15.0395					
14+05.17	405.1668	12.3764	14.4394					
14+33.82	433.8211	11.5223	14.5982					
14+49.2	449.2037	11.742	14.3299					
14+51.23	451.2285	13.7527	13.8495					
14+67.07	467.0747	10.527	15.2874					
14+71.16	471.1551	11.2807	14.9206					
14+79.86	479.8585	13.4714	14.9699					

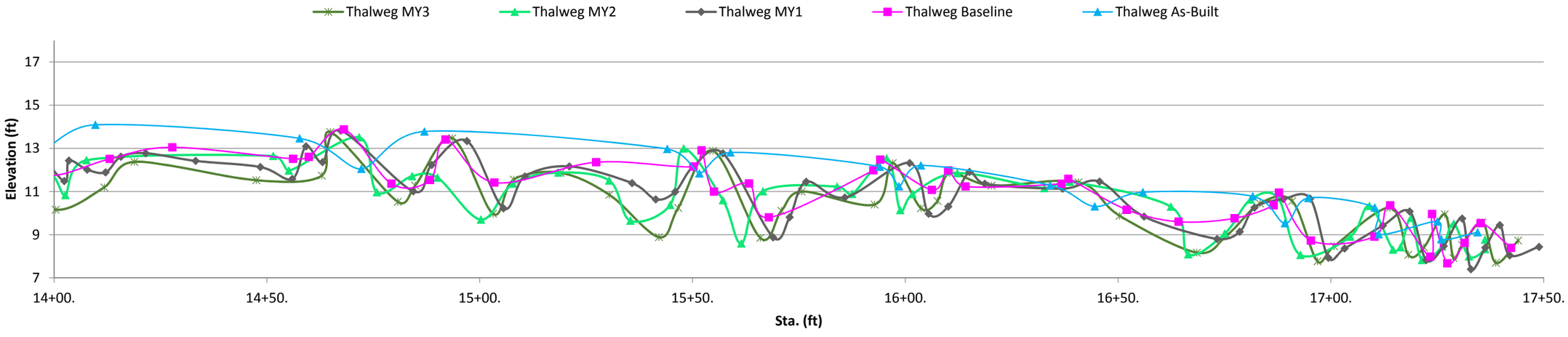
REACH 2A: Longitudinal Profile: MY3, MY2, MY1, Baseline, and As-Built

Station 10+00 - 14+00



REACH 2A: Longitudinal Profile: MY3, MY2, MY1, Baseline, and As-Built

Station 14+00 - 17+50



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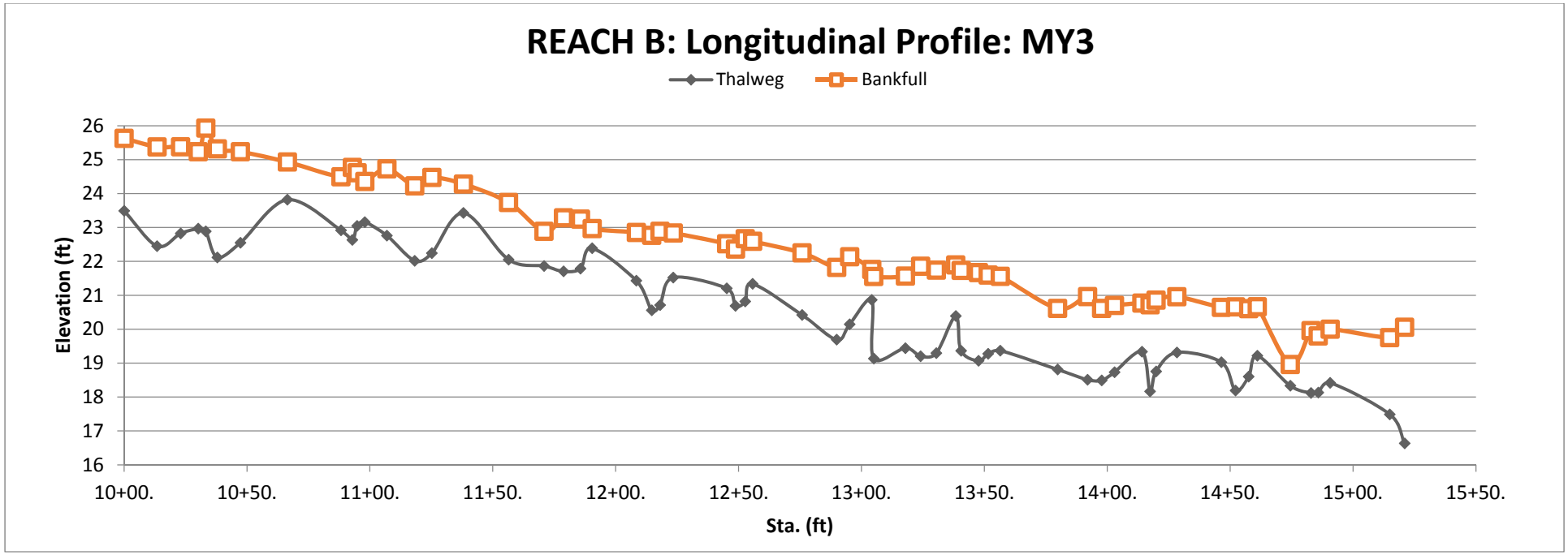


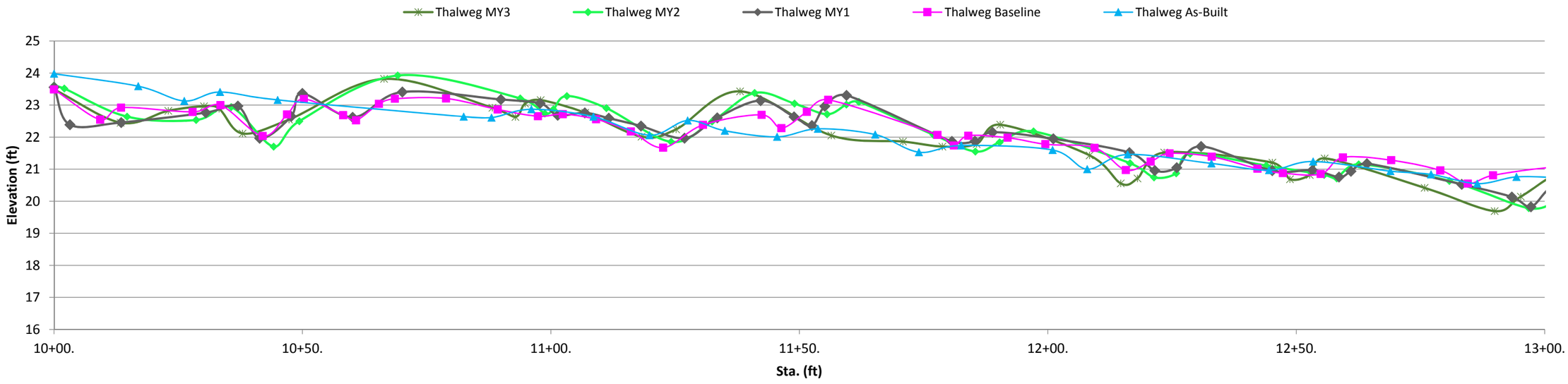
	Minimum	Mean	Max
Bankfull Slope		0.0117	
Pool-Pool Spacing (ft)	18.7	36.8	63.9
Pool Length (ft)	5.8	12.8	23
Riffle Length (ft)	9	17.7	24.2
Dmax Riffle (ft)	0.58	1.46	2.42
Dmax Pool (ft)	1.58	2.4	3.42

REACH B: MY3 LONGITUDINAL PROFILE DATA

Sta.	Distance	TW	BKF		Sta.	Distance	TW	BKF
10+00.	0	23.4913	25.629		13+56.44	356.4403	19.3678	21.5606
10+13.39	13.39465	22.4514	25.3771		13+79.78	379.7828	18.8115	20.6128
10+22.99	22.99257	22.8233	25.3815		13+91.96	391.9649	18.5101	20.9635
10+30.18	30.17592	22.9647	25.2361		13+97.71	397.7083	18.492	20.6147
10+33.24	33.23688	22.8878	25.9311		14+02.94	402.9376	18.7333	20.7031
10+37.93	37.92592	22.1148	25.3204		14+14.09	414.0895	19.3369	20.7709
10+47.31	47.3068	22.5475	25.2368		14+17.4	417.3981	18.1674	20.7194
10+66.42	66.4157	23.8186	24.9311		14+19.85	419.8542	18.7559	20.8599
10+88.22	88.21632	22.9173	24.495		14+28.31	428.3065	19.314	20.9592
10+92.85	92.85142	22.6323	24.7701		14+46.42	446.4239	19.0274	20.6434
10+94.81	94.80668	23.0485	24.616		14+52.18	452.1804	18.1913	20.6614
10+97.94	97.93944	23.1575	24.3576		14+57.52	457.5206	18.6025	20.6054
11+06.91	106.9052	22.7611	24.7295		14+61.04	461.0363	19.2176	20.6634
11+18.23	118.2257	22.0172	24.2296		14+74.45	474.4486	18.3337	18.9603
11+25.19	125.1897	22.2437	24.4759		14+82.89	482.8862	18.1204	19.9576
11+38.05	138.0549	23.4291	24.2798		14+85.82	485.8192	18.1296	19.8017
11+56.42	156.4246	22.0527	23.7375		14+90.66	490.6615	18.4175	20.0029
11+70.84	170.835	21.8621	22.8869		15+14.9	514.9041	17.4896	19.752
11+78.77	178.7675	21.7058	23.2866		15+20.96	520.9608	16.6351	20.0592
11+85.67	185.667	21.7867	23.248					
11+90.41	190.4139	22.3891	22.9676					
12+08.41	208.4099	21.4315	22.8553					
12+14.66	214.6628	20.5578	22.7685					
12+18.04	218.0426	20.7125	22.8862					
12+23.41	223.4111	21.5215	22.8374					
12+45.17	245.1735	21.2054	22.5188					
12+48.72	248.7191	20.6875	22.3638					
12+52.7	252.6988	20.8204	22.6699					
12+55.7	255.6975	21.3388	22.5917					
12+75.82	275.8243	20.4198	22.2512					
12+89.91	289.9061	19.6925	21.8224					
12+95.18	295.1794	20.1447	22.1392					
13+04.18	304.1753	20.8637	21.7607					
13+04.99	304.9947	19.1327	21.5565					
13+17.86	317.8629	19.4419	21.5654					
13+24.05	324.0516	19.2044	21.8589					
13+30.45	330.4477	19.2951	21.7449					
13+38.34	338.3435	20.3916	21.8982					
13+40.53	340.5337	19.3649	21.7363					
13+47.59	347.5853	19.0675	21.6707					
13+51.54	351.544	19.2742	21.5982					

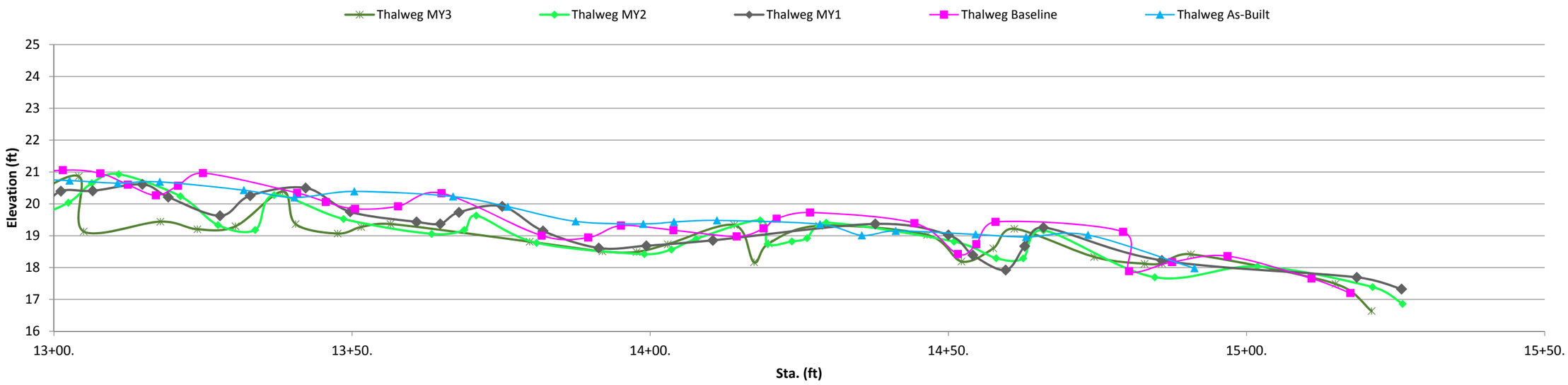
REACH B: Longitudinal Profile: MY3, MY2, MY1, Baseline, and As-Built

Station 10+00 - 13+00



REACH B: Longitudinal Profile: MY3, MY2, MY1, Baseline, and As-Built

Station 13+00 - 15+50



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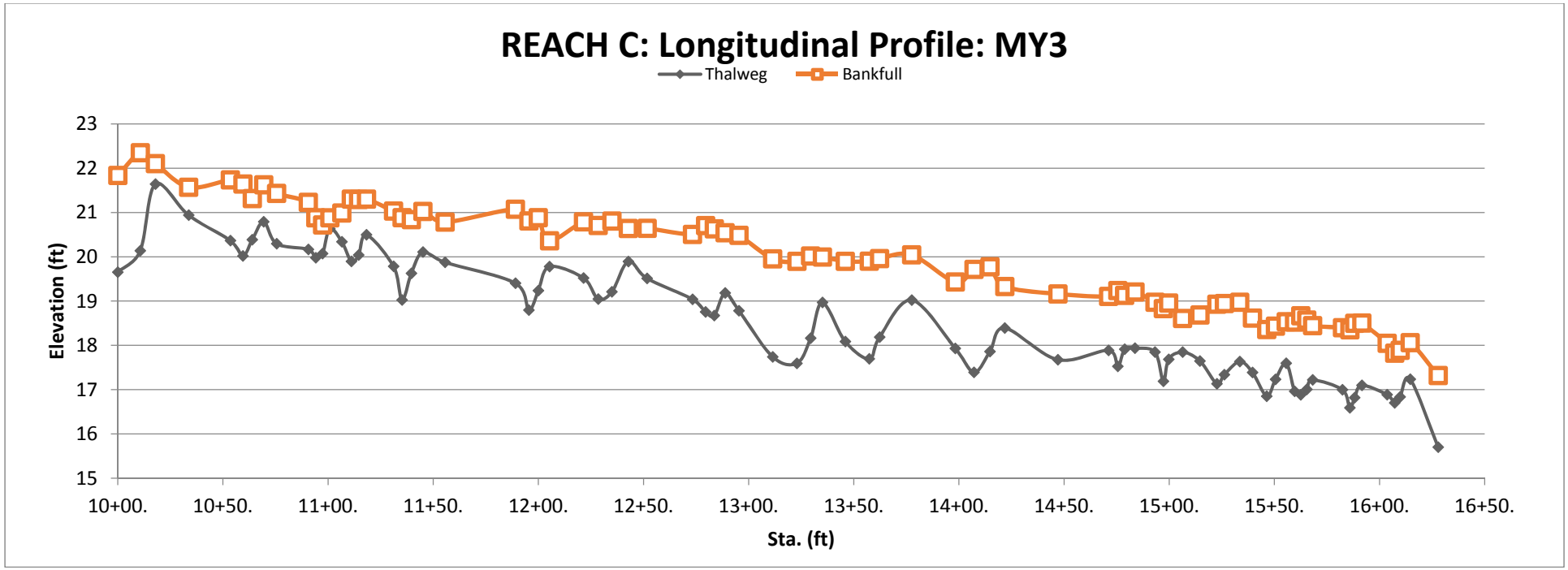


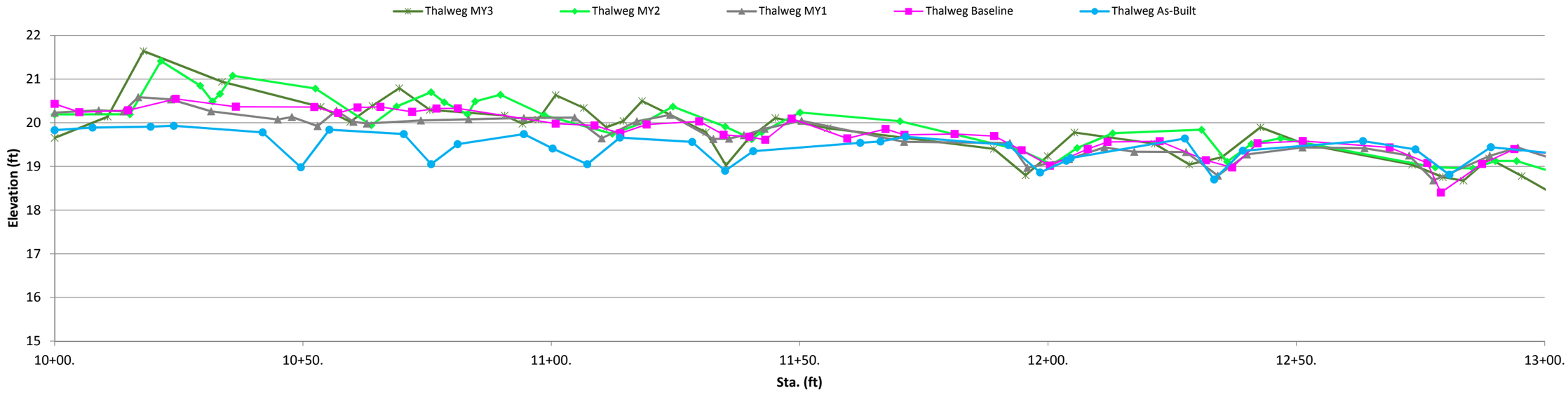
	Minimum	Mean	Max
Bankfull Slope		0.0061	
Pool-Pool Spacing (ft)	15.9	35.5	72.9
Pool Length (ft)	5.8	10.2	18
Riffle Length (ft)	4	11.5	25.3
Dmax Riffle (ft)	0.25	0.93	1.4
Dmax Pool (ft)	0.9	1.76	2.32

REACH C: MY3 LONGITUDINAL PROFILE DATA

Sta.	Distance	ELEV-TW	BKF		Sta.	Distance	ELEV-TW	BKF
10+00.	0.00	19.6527	21.8357		13+57.37	357.37	17.6951	19.8997
10+10.69	10.69	20.1379	22.3489		13+62.27	362.27	18.1864	19.9602
10+17.88	17.88	21.642	22.1051		13+77.52	377.52	19.023	20.043
10+33.7	33.70	20.9393	21.5707		13+98.24	398.24	17.9315	19.432
10+53.54	53.54	20.3642	21.738		14+07.16	407.16	17.3907	19.7146
10+59.51	59.51	20.0207	21.6431		14+14.75	414.75	17.8612	19.7758
10+63.96	63.96	20.3863	21.3146		14+21.8	421.80	18.3904	19.328
10+69.4	69.40	20.7915	21.6249		14+47.07	447.07	17.6752	19.1603
10+75.53	75.53	20.2956	21.4312		14+71.16	471.16	17.8861	19.104
10+90.61	90.61	20.1668	21.2306		14+75.56	475.56	17.5263	19.2371
10+94.17	94.17	19.978	20.88		14+78.8	478.80	17.9126	19.1288
10+97.37	97.37	20.0735	20.7204		14+83.69	483.69	17.9353	19.2066
11+00.85	100.85	20.6339	20.8816		14+93.22	493.22	17.8479	18.9722
11+06.55	106.55	20.3394	20.99		14+97.19	497.19	17.1867	18.8295
11+11.08	111.08	19.895	21.3043		14+99.72	499.72	17.6838	18.9552
11+14.52	114.52	20.0407	21.2931		15+06.35	506.35	17.847	18.6079
11+18.28	118.28	20.4973	21.3026		15+14.6	514.60	17.647	18.6851
11+31.14	131.14	19.7833	21.0316		15+22.64	522.64	17.1331	18.9308
11+35.18	135.18	19.025	20.8834		15+26.2	526.20	17.3392	18.9434
11+39.61	139.61	19.6261	20.8408		15+33.52	533.52	17.6337	18.9727
11+45.11	145.11	20.1081	21.0242		15+39.59	539.59	17.3876	18.6159
11+55.63	155.63	19.875	20.7844		15+46.36	546.36	16.852	18.3564
11+89.08	189.08	19.4029	21.0747		15+50.51	550.51	17.2321	18.4327
11+95.49	195.49	18.7971	20.8103		15+55.63	555.63	17.5964	18.5348
11+99.96	199.96	19.2365	20.8842		15+59.6	559.60	16.9621	18.5259
12+05.3	205.30	19.7781	20.3613		15+62.54	562.54	16.8817	18.6697
12+21.46	221.46	19.5201	20.789		15+65.4	565.40	17.0071	18.571
12+28.44	228.44	19.0449	20.7064		15+68.17	568.17	17.2191	18.4441
12+34.98	234.98	19.2085	20.8065		15+82.36	582.36	16.9965	18.3987
12+42.77	242.77	19.8945	20.6391		15+85.88	585.88	16.589	18.3508
12+51.7	251.70	19.511	20.6414		15+88.18	588.18	16.8193	18.4988
12+73.29	273.29	19.0401	20.5059		15+91.6	591.60	17.097	18.5026
12+79.5	279.50	18.7545	20.7058		16+03.63	603.63	16.8864	18.0471
12+83.64	283.64	18.6729	20.6324		16+07.22	607.22	16.7009	17.8233
12+88.81	288.81	19.1818	20.5439		16+09.81	609.81	16.8367	17.8868
12+95.39	295.39	18.7818	20.4836		16+14.57	614.57	17.2364	18.0621
13+11.42	311.42	17.7403	19.9528		16+27.89	627.89	15.7007	17.3175
13+22.96	322.96	17.5944	19.8979					
13+29.47	329.47	18.1615	20.017					
13+35.09	335.09	18.9681	19.995					
13+45.96	345.96	18.0853	19.8986					

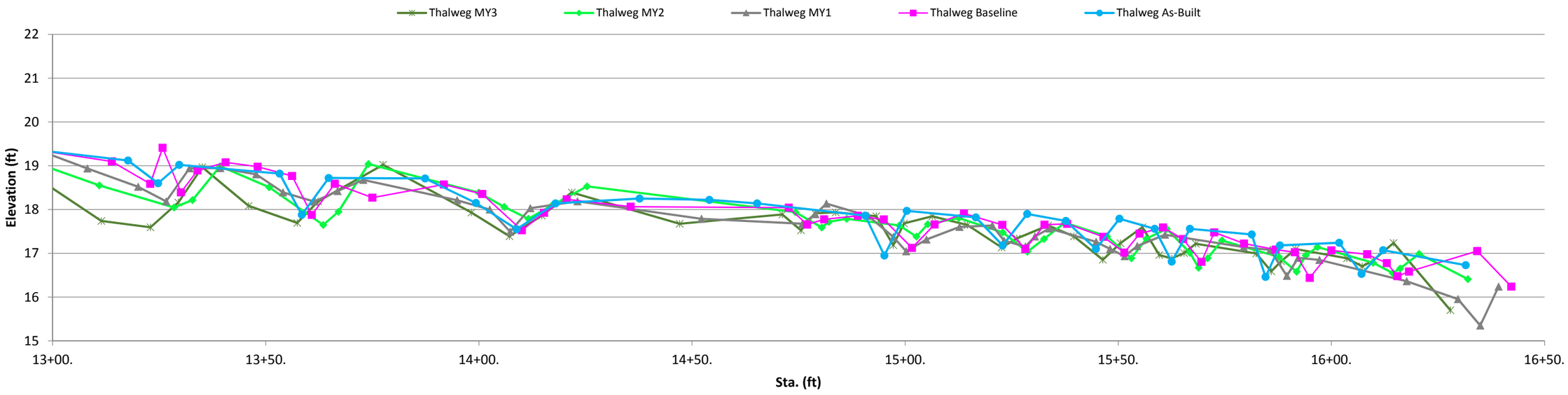
REACH C: Longitudinal Profile: MY3, MY2, MY1, Baseline and As-Built

Station 10+00 - 13+00



REACH C: Longitudinal Profile: MY3, MY2, MY1, Baseline and As-Built

Station 13+00 - 16+50



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Project Name: Jacksonville Country Club
Reach: 1A
Cross Section: CS-1

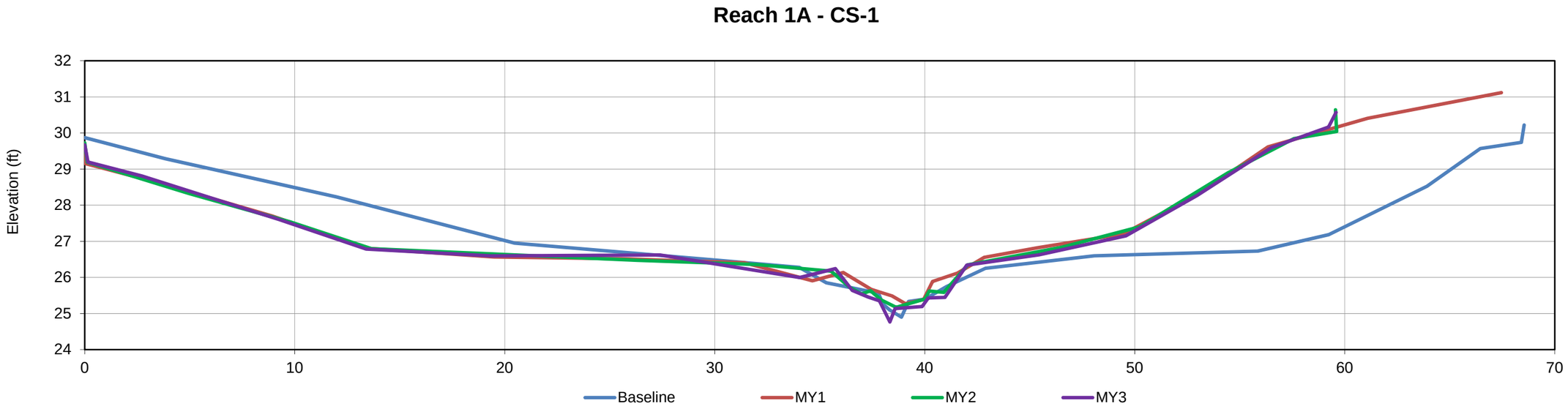
Baseline	
0	29.872
3.8398	29.287
11.9994	28.229
20.4785	26.95
30.3465	26.466
34.0253	26.278
35.3144	25.851
37.7925	25.564
38.0095	25.26
38.3379	25.094
38.8898	24.9
39.2296	25.335
40.0053	25.398
41.0395	25.747
42.8953	26.252
48.0732	26.599
55.8552	26.73
59.2382	27.185
63.9148	28.524
66.4565	29.569
68.41	29.74
68.5435	30.219

MY 1	
0.00	29.6441
0.02	29.1542
3.43	28.6337
8.93	27.6976
13.38	26.8087
19.50	26.5658
25.55	26.5175
31.40	26.406
34.65	25.9077
36.12	26.1359
37.44	25.6725
37.85	25.5944
38.44	25.4875
39.08	25.2728
39.94	25.3864
40.37	25.8883
41.56	26.1198
42.83	26.5555
45.37	26.8212
49.44	27.2028
53.11	28.3376
56.33	29.6127
61.09	30.4057
67.46	31.117

MY2	
0.00	29.7256
0.12	29.1915
4.95	28.3247
9.81	27.5311
13.66	26.7953
19.26	26.6545
26.32	26.4721
31.97	26.358
35.54	26.1732
36.43	25.7222
36.99	25.5392
37.42	25.6309
37.93	25.3762
38.64	25.1712
40.01	25.4004
40.21	25.624
40.91	25.5848
42.05	26.3476
46.49	26.8326
50.24	27.4016
54.44	28.8968
57.58	29.8423
59.61	30.0418
59.56	30.6416

MY3	
0	29.668
0.15265	29.1946
2.73522	28.806
9.26138	27.6007
13.4012	26.7861
19.3475	26.5962
27.3971	26.6225
34.0459	25.9984
35.7453	26.2424
36.5451	25.6422
37.3143	25.4545
37.8412	25.3532
38.3396	24.7673
38.5888	25.1371
39.8729	25.1944
40.1687	25.433
40.9613	25.446
42.0013	26.3393
45.4464	26.6279
49.574	27.1513
52.9662	28.2692
56.5195	29.6001
59.2283	30.164
59.5855	30.5692

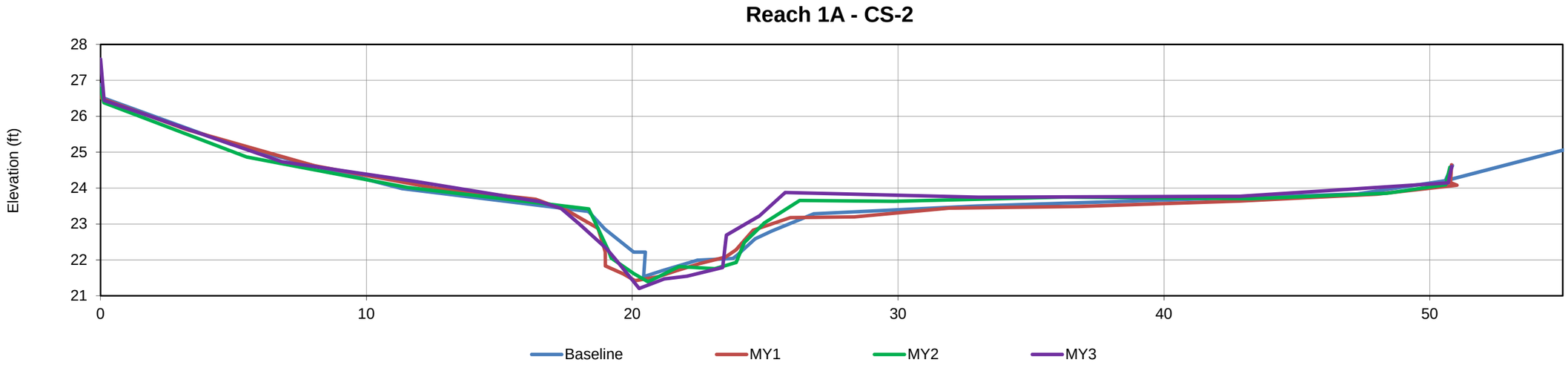
Looking downstream at CS 1 (November 2016)



Project Name: Jacksonville Country Club
Reach: 1A
Cross Section: CS-2

Baseline		MY1		MY2		MY3	
0	26.882	0.00	26.766	0	26.776	0	27.59
-0.124	26.573	0.05	26.49	0.1292	26.376	0.1351	26.441
4.9107	25.22	3.23	25.632	5.4982	24.866	6.8279	24.733
11.34	23.987	8.03	24.624	11.548	24.018	11.853	24.183
18.355	23.349	12.57	23.998	18.366	23.42	16.507	23.622
18.975	22.856	16.37	23.689	19.103	22.261	17.322	23.435
20.055	22.217	17.55	23.373	19.205	22.051	18.03	22.986
20.492	22.217	18.71	22.879	20.061	21.617	19.043	22.306
20.428	21.531	18.98	22.222	20.598	21.389	19.432	21.961
21.114	21.698	18.99	21.832	21.761	21.815	20.258	21.205
22.465	21.993	19.66	21.612	23.112	21.754	21.202	21.47
23.786	22.038	20.11	21.421	23.907	21.927	22.059	21.547
23.93	22.117	20.99	21.534	24.212	22.484	23.4	21.787
24.617	22.584	21.65	21.695	24.977	23.034	23.54	22.689
25.25	22.805	22.53	21.895	26.298	23.654	24.78	23.223
26.832	23.285	23.50	22.079	29.839	23.63	25.751	23.875
32.951	23.501	23.91	22.282	36.208	23.747	33.03	23.745
47.269	23.837	24.55	22.827	43.288	23.705	42.856	23.771
50.589	24.204	25.95	23.178	48.388	23.857	50.689	24.145
50.853	24.629	28.36	23.198	50.595	24.094	50.824	24.598
50.589	24.204	31.90	23.44	50.758	24.581		
57.898	25.611	36.79	23.487				
		42.87	23.638				
		48.01	23.828				
		51.02	24.08				
		50.78	24.151				
		50.82	24.645				

Looking downstream at CS 2 (November 2016)



Project Name: Jacksonville Country Club
Reach: 1A
Cross Section: CS-5

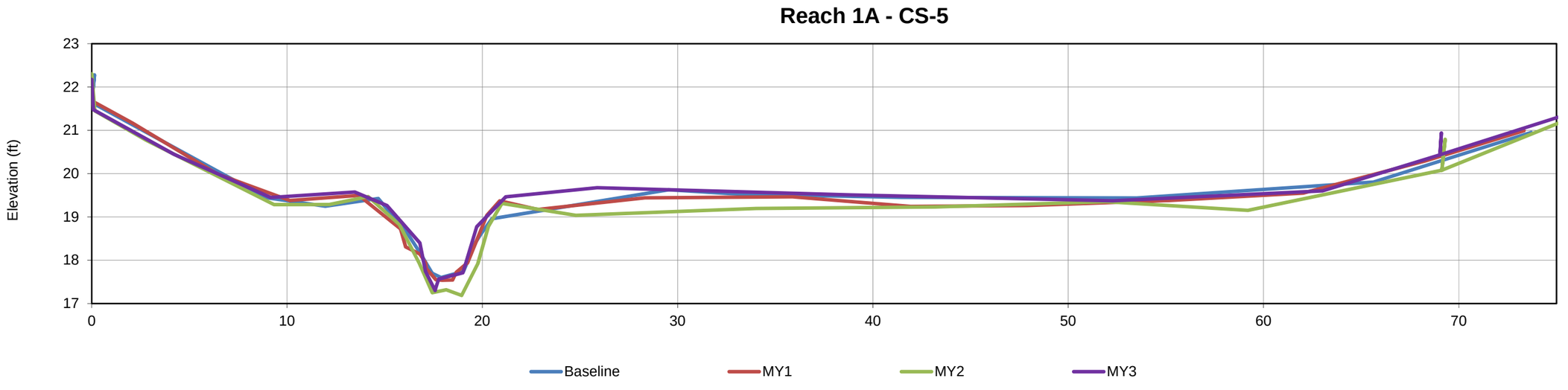
Baseline	
0	21.641
0.1408	22.278
0	21.641
8.9313	19.444
11.96	19.247
14.668	19.425
16.149	18.634
16.816	18.166
17.431	17.697
17.888	17.602
19.034	17.742
19.662	18.419
19.921	18.602
20.497	18.958
29.541	19.627
33.084	19.528
41.459	19.452
53.502	19.438
65.624	19.805
73.704	20.95

MY1	
0.00	22.247
-0.10	21.709
2.10	21.164
6.40	19.999
10.14	19.379
13.68	19.496
15.81	18.722
16.08	18.307
16.80	18.142
17.10	17.938
17.13	17.806
17.62	17.55
17.95	17.539
18.48	17.543
18.67	17.723
19.24	17.942
20.23	19.037
20.89	19.37
22.84	19.171
28.31	19.44
35.87	19.465
41.93	19.242
47.89	19.263
55.19	19.38
62.02	19.55
68.30	20.296
73.34	20.989

MY2	
0	22.305
0.1562	21.451
2.7937	20.77
9.3364	19.285
12.162	19.287
14.159	19.469
15.759	18.819
16.773	17.928
17.437	17.251
18.15	17.318
18.94	17.187
19.767	17.922
20.307	18.78
20.999	19.312
24.788	19.037
34.027	19.195
43.191	19.231
51.919	19.353
59.199	19.152
69.132	20.079
69.301	20.792
69.132	20.079
78.474	21.78

MY3	
0	22.174
0.0825	21.477
4.2087	20.447
9.1617	19.448
13.465	19.576
15.118	19.262
16.801	18.398
17.092	17.741
17.584	17.301
17.622	17.369
17.765	17.565
19.003	17.711
19.711	18.773
21.201	19.465
25.882	19.674
38.926	19.508
52.277	19.374
63.024	19.601
69.034	20.434
69.106	20.937
69.034	20.434
78.413	21.78

Looking downstream at CS 5 (November 2016)



Project Name: Jacksonville Country Club
Reach: 1A
Cross Section: CS-X2

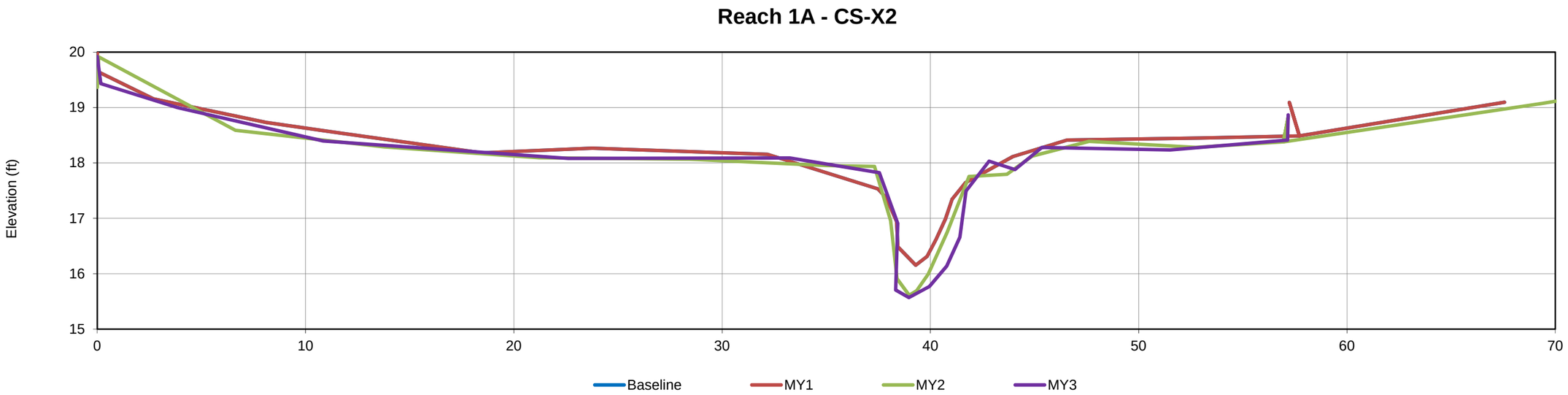
Baseline	
0	20.136
0.0082	19.651
2.7084	19.154
8.1132	18.731
11.35	18.555
18.462	18.181
23.767	18.266
32.181	18.155
37.473	17.532
37.878	17.371
38.377	16.945
38.435	16.485
39.293	16.154
39.84	16.312
40.271	16.621
40.725	16.992
41.043	17.346
41.68	17.642
43.956	18.114
46.559	18.413
52.947	18.45
57.714	18.488
57.233	19.092
57.714	18.488
67.56	19.095

MY1	
0.00	20.136
0.01	19.651
2.71	19.154
8.11	18.731
11.35	18.555
18.46	18.181
23.77	18.266
32.18	18.155
37.47	17.532
37.88	17.371
38.38	16.945
38.44	16.485
39.29	16.154
39.84	16.312
40.27	16.621
40.73	16.992
41.04	17.346
41.68	17.642
43.96	18.114
46.56	18.413
52.95	18.45
57.71	18.488
57.23	19.092
57.71	18.488
67.56	19.095

MY2	
0	19.364
0.0653	19.914
6.6337	18.589
13.772	18.29
21.216	18.093
28.446	18.067
34.978	17.953
37.317	17.937
38.086	16.961
38.399	15.91
38.98	15.612
39.336	15.691
39.897	15.994
40.804	16.748
41.853	17.755
43.675	17.795
44.888	18.124
47.615	18.39
52.73	18.281
56.942	18.38
57.183	18.839
56.942	18.38
69.355	19.074
81.806	19.83

MY3	
0	19.919
0.1669	19.432
3.8489	18.999
10.85	18.396
22.613	18.082
33.245	18.09
37.549	17.824
38.433	16.908
38.33	15.707
38.969	15.57
39.949	15.77
40.78	16.137
41.412	16.661
41.711	17.493
42.816	18.032
44.059	17.88
45.353	18.279
51.519	18.234
57.149	18.413
57.175	18.867

Looking downstream at CS-X2 (November 2016)



Project Name: Jacksonville Country Club
Reach: 2A
Cross Section: CS-9

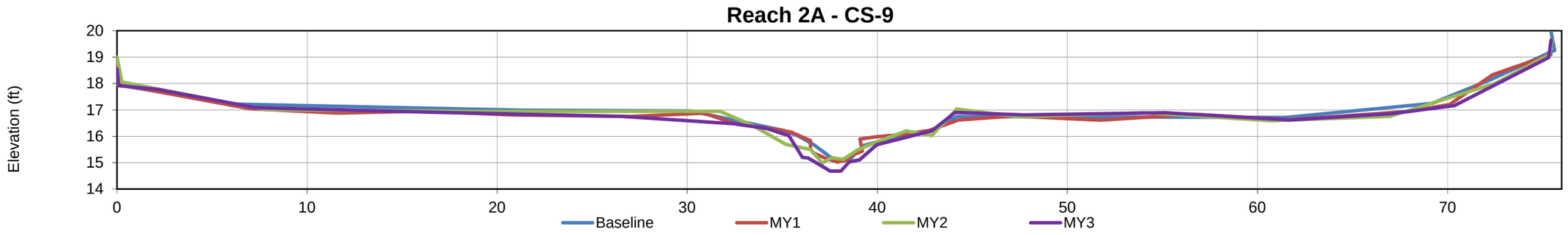
Baseline	
0	18.668
0.0305	17.946
6.0971	17.222
21.321	16.99
30.159	16.961
35.087	16.218
35.846	16.014
36.646	15.685
37.575	15.19
38.293	15.095
38.614	15.167
39.247	15.646
40.061	15.802
42.959	16.214
44.172	16.748
51.099	16.733
61.454	16.714
69.187	17.246
72.214	18.129
75.632	19.261
75.451	19.927

MY1	
0.00	18.699
-0.12	18.004
2.63	17.63
7.02	17.042
11.63	16.879
16.04	16.95
20.85	16.809
27.02	16.751
30.87	16.877
32.56	16.469
34.46	16.282
35.45	16.162
36.48	15.834
36.48	15.528
36.62	15.376
37.25	15.174
37.89	15.022
38.37	15.096
38.66	15.281
39.21	15.437
39.08	15.897
39.98	15.983
41.20	16.058
42.72	16.223
44.27	16.619
47.15	16.768
51.73	16.612
56.68	16.838
61.58	16.626
67.99	16.945
70.11	17.203
72.36	18.329
75.43	19.098
74.88	19.81

MY2	
0	19
0.259	18.052
7.7923	17.006
19.608	16.944
31.73	16.945
33.503	16.387
35.19	15.694
36.508	15.498
37.1	14.98
37.554	15.183
38.205	15.128
38.967	15.487
40.021	15.796
41.529	16.205
42.861	16.027
44.172	17.031
47.408	16.743
54.017	16.892
60.745	16.59
66.968	16.756
72.503	18.004
75.342	19.088
75.505	19.641

MY3	
0	18.552
0.0928	17.919
2.1362	17.777
7.2768	17.084
16.987	16.904
26.535	16.757
32.444	16.475
34.176	16.297
35.352	16.022
36.059	15.201
36.352	15.18
37.29	14.783
37.522	14.68
38.086	14.685
38.521	15.031
39.064	15.106
39.971	15.679
42.864	16.208
44.096	16.905
47.72	16.812
55.123	16.895
61.7	16.618
67.011	16.856
70.355	17.161
75.315	18.983
75.449	19.651

Looking downstream at CS-9 (November 2016)



Project Name: Jacksonville Country Club
Reach: 2A
Cross Section: CS-X3

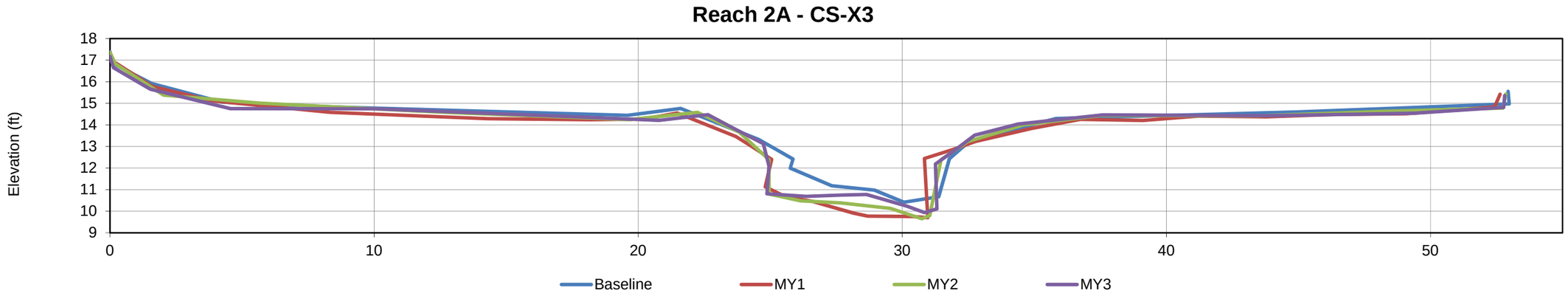
Baseline	
0	17.387
0.0878	16.861
1.588	15.912
4.2336	15.058
8.604	14.827
19.591	14.442
21.608	14.763
24.563	13.323
25.862	12.415
25.755	11.999
27.328	11.179
28.943	10.979
30.062	10.415
31.376	10.67
31.783	12.435
32.432	13.125
33.53	13.561
35.825	14.295
44.894	14.599
52.981	14.974
52.938	15.555

MY1	
0.00	17.35
0.00	17.039
1.61	15.774
3.86	15.117
8.35	14.581
14.30	14.289
18.20	14.24
20.24	14.276
21.47	14.552
23.71	13.459
24.25	13.04
25.05	12.404
24.81	11.128
25.57	10.681
26.59	10.46
28.14	9.915
28.69	9.7737
30.37	9.757
30.96	9.7017
30.84	12.445
31.90	12.854
32.78	13.235
34.90	13.839
36.74	14.257
39.11	14.205
41.21	14.409
43.78	14.375
46.32	14.481
49.09	14.515
52.43	14.837
52.63	15.42

MY2	
0	17.357
0.2024	16.824
2.0255	15.38
5.7133	15.007
12.764	14.578
19.666	14.246
22.246	14.581
23.821	13.67
24.948	12.389
24.957	10.796
26.151	10.482
27.66	10.387
29.553	10.13
30.736	9.6508
31.038	9.7983
31.465	12.386
32.48	13.228
34.596	14.005
37.557	14.437
43.481	14.417
48.332	14.633
52.745	14.781
52.853	15.429

MY3	
0	17.17
0.1254	16.658
1.5239	15.658
4.558	14.753
10.078	14.746
17.047	14.404
20.782	14.21
22.641	14.472
23.62	13.841
24.738	13.129
24.951	12.094
24.876	10.809
26.36	10.689
27.714	10.749
28.637	10.775
30.168	10.236
30.837	9.9382
31.309	10.106
31.255	12.186
31.875	12.724
32.744	13.525
34.393	14.04
37.594	14.465
43.892	14.424
49.404	14.545
52.773	14.816
52.81	15.357

Looking downstream at CS-X3 (November 2016)



Project Name: Jacksonville Country Club
Reach: B
Cross Section: CS-X1

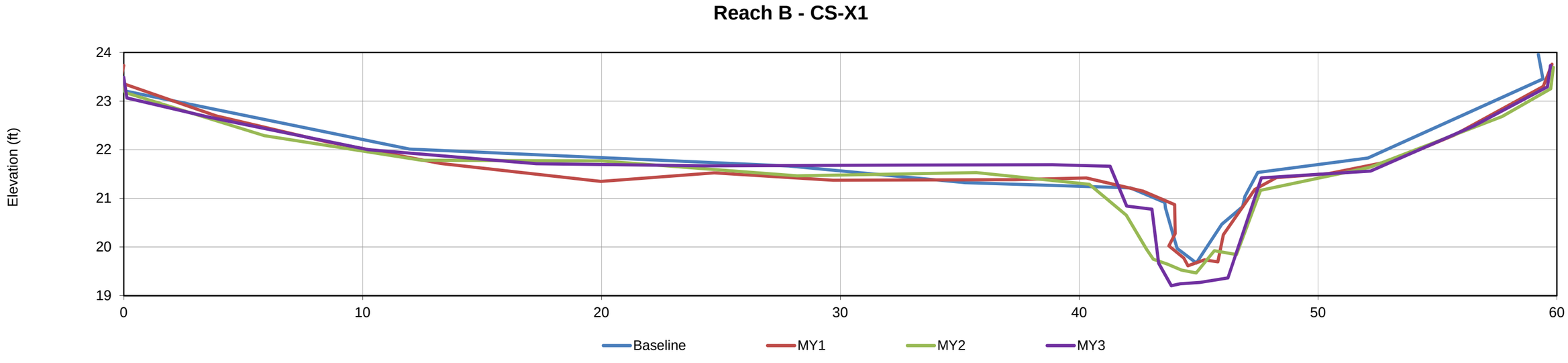
Baseline	
0	23.483
-0.617	23.275
11.956	22.014
27.837	21.665
35.251	21.322
42.142	21.217
43.585	20.916
43.609	20.81
43.951	20.225
44.104	19.971
44.904	19.672
45.974	20.47
46.844	20.83
46.94	21.043
47.476	21.533
52.087	21.829
59.415	23.455
59.224	23.958

MY1	
0.00	23.732
-0.15	23.38
3.88	22.694
8.43	22.171
13.26	21.718
19.97	21.349
24.71	21.524
29.69	21.373
37.32	21.386
40.30	21.42
42.68	21.148
44.00	20.871
44.02	20.278
43.76	20.024
44.38	19.774
44.56	19.615
45.24	19.736
45.81	19.696
46.04	20.253
47.35	21.183
48.26	21.427
50.41	21.507
53.08	21.768
55.70	22.3
59.43	23.301
59.80	23.757

MY2	
0	23.445
0.0577	23.176
5.8868	22.289
12.461	21.784
20	21.77
28.187	21.465
35.7	21.53
40.424	21.29
41.97	20.655
42.819	19.955
43.102	19.75
43.704	19.648
44.281	19.527
44.896	19.468
45.662	19.924
46.585	19.846
47.594	21.166
52.169	21.637
57.705	22.682
59.743	23.254
59.853	23.692

MY3	
0	23.487
0.1282	23.063
3.5588	22.67
10.228	22.001
17.269	21.713
24.436	21.669
32.731	21.684
38.88	21.692
41.294	21.66
41.99	20.843
43.046	20.778
43.328	19.668
43.857	19.205
44.233	19.245
45.059	19.273
46.228	19.365
47.628	21.422
52.198	21.562
56.506	22.485
59.604	23.292
59.734	23.731

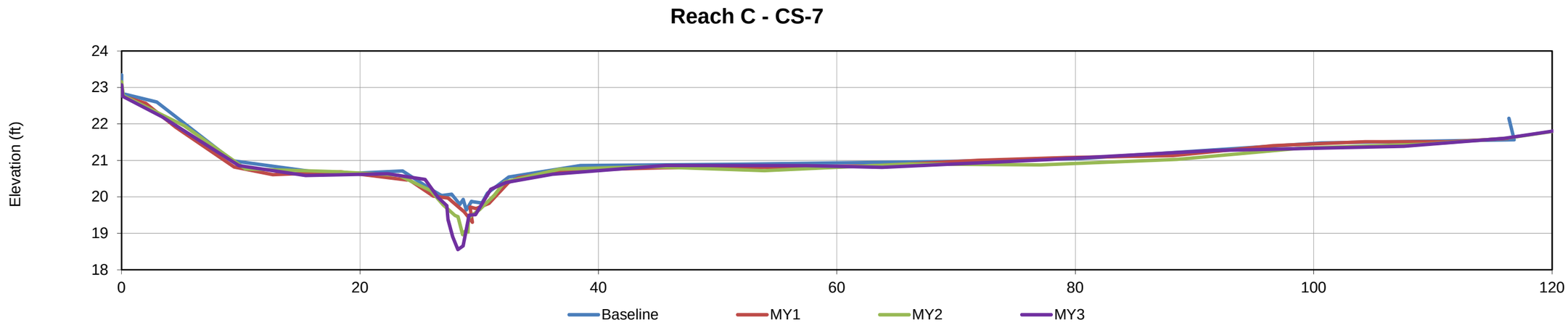
Looking downstream at CS-X1 (November 2016)



Project Name: Jacksonville Country Club
Reach: C
Cross Section: CS-7

Baseline		MY1		MY2		MY3	
0	23.344	0	23.144	0	23.156	0	23.069
-0.008	22.837	4E-05	22.772	0.1382	22.774	0.0949	22.755
2.9552	22.6	2.0205	22.566	5.2525	21.949	3.423	22.19
9.308	20.99	4.5176	21.913	10.385	20.766	9.8439	20.856
17.669	20.618	9.4402	20.817	17.922	20.689	15.444	20.584
23.567	20.71	12.701	20.608	23.236	20.593	22.333	20.632
26.069	20.182	18.381	20.685	25.942	20.168	25.461	20.476
26.833	20.035	23.94	20.461	26.995	19.772	26.531	19.987
27.685	20.071	23.847	20.525	27.965	19.49	27.283	19.757
28.37	19.793	26.151	20.02	28.215	19.457	27.381	19.377
28.652	19.929	27.387	19.965	28.612	18.962	27.773	18.905
28.919	19.639	28.722	19.591	28.806	19.054	28.209	18.553
29.344	19.875	29.426	19.302	29.057	19.028	28.65	18.655
29.465	19.866	29.225	19.719	29.088	19.417	29.144	19.496
30.235	19.831	29.737	19.677	30.008	19.642	29.689	19.512
30.694	20.102	30.833	19.822	31.246	20.037	30.968	20.208
32.471	20.541	32.467	20.396	32.112	20.404	32.243	20.394
38.504	20.859	33.318	20.526	36.735	20.757	36.142	20.619
52.225	20.897	37.256	20.728	44.137	20.827	45.639	20.86
68.866	20.97	45.427	20.796	53.921	20.718	57.448	20.855
80.474	21.05	54.261	20.811	66.083	20.901	63.798	20.809
100.66	21.478	63.207	20.85	77.094	20.876	77.519	21.018
116.81	21.565	71.846	21.001	88.524	21.025	91.667	21.272
116.38	22.152	79.174	21.077	99.067	21.339	107.56	21.385
		88.206	21.129	109.38	21.442	116	21.603
		96.611	21.404	116.16	21.608	121.92	21.892
		104.31	21.51	122.09	21.892	129.55	21.986
		111.27	21.508	129.72	21.986	139.04	22.405
		116.24	21.599	139.21	22.405	150.22	23.62

Looking downstream at CS-7 (November 2016)



Project Name: Jacksonville Country Club
Reach: C
Cross Section: CS-8

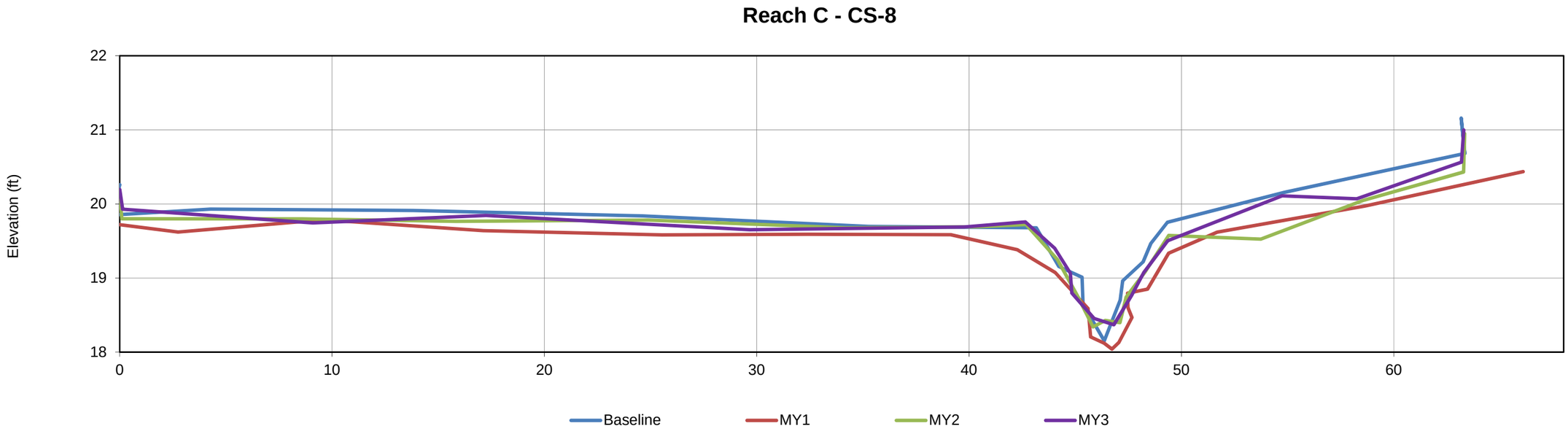
Baseline	
0	20.26
-0.391	19.85
4.2769	19.93
13.826	19.912
24.644	19.839
35.275	19.697
43.164	19.678
44.227	19.156
44.612	19.104
45.319	19.011
45.368	18.647
46.363	18.153
47.117	18.702
47.234	18.962
48.197	19.219
48.56	19.467
49.342	19.753
54.848	20.157
63.342	20.681
63.174	21.158
63.342	20.681

MY1	
0.00	20.172
-0.21	19.728
2.75	19.621
9.58	19.786
17.12	19.64
25.54	19.583
32.39	19.592
39.13	19.585
42.27	19.382
44.06	19.074
45.60	18.59
45.72	18.205
46.37	18.12
46.73	18.041
47.05	18.129
47.67	18.468
47.48	18.599
47.46	18.796
48.40	18.85
49.40	19.335
51.69	19.62
58.66	19.972
66.09	20.436

MY2	
0	20.144
0.0959	19.8
8.5939	19.798
15.837	19.765
24.877	19.783
34.188	19.679
40.392	19.692
42.683	19.722
44.159	19.25
45.093	18.764
45.836	18.341
46.413	18.428
47.101	18.398
47.398	18.742
48.292	19.083
49.402	19.575
53.736	19.526
58.553	20.048
63.29	20.432
63.34	20.949

MY3	
0	20.194
0.1353	19.929
9.095	19.744
17.241	19.845
29.677	19.652
39.768	19.69
42.649	19.757
44.028	19.404
44.768	19.066
44.84	18.799
45.884	18.456
46.816	18.37
47.652	18.766
48.22	19.072
49.357	19.504
54.741	20.109
58.259	20.069
63.19	20.564
63.295	20.997

Looking downstream at CS-8 (November 2016)



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Appendix E.
Hydrologic Data

Table 16. Documentation of Bankfull Events in 2016

Stream Gauge No.	#1		#2	
Location	Reach 2A		Reach 1A	
Date of Occurrence	1/1/2016		1/1/2016	9/29/2016
	1/15/2016		1/15/2016	9/30/2016
	1/22/2016		1/17/2016	10/2/2016
	2/4/2016 - 2/5/2016		1/22/2016	10/7/2016
	2/7/2016		2/4/2016 - 2/5/2016	10/8/2016 - 10/9/2016
	2/16/2016		2/7/2016	10/21/2016
	3/4/2016		2/16/2016	11/14/2016
	3/20/2016		2/24/2016	12/5/2016
	3/25/2016		3/4/2016	12/6/2016
	5/3/2016		3/19/2016	12/12/2016
	5/5/2016		3/20/2016	12/13/2016
	5/17/2016		3/25/2016	
	5/18/2016		4/1/2016	
	5/31/2016		4/12/2016	
	6/1/2016		4/23/2016	
	6/7/2016		5/3/2016	
	6/15/2016		5/5/2016	
	6/16/2016		5/17/2016	
	7/3/2016		5/18/2016	
	7/4/2016		5/30/2016	
	7/8/2016		5/31/2016	
	7/9/2016		6/1/2016	
	7/15/2016		6/7/2016	
	7/17/2016		6/15/2016	
	7/19/2016		6/16/2016	
	7/30/2016		7/3/2016	
	7/31/2016		7/4/2016	
	8/2/2016		7/8/2016	
	8/3/2016		7/9/2016	
	8/6/2016		7/15/2016	
	8/19/2016		7/17/2016	
	9/2/2016 - 9/3/2016		7/19/2016	
	9/23/2016		7/30/2016	
	9/27/2016		7/31/2016	
	9/29/2016		8/2/2016	
	10/2/2016		8/3/2016	
	10/7/2016		8/6/2016	
	10/8/2016 - 10/9/2016		8/19/2016	
	10/21/2016		8/29/2016	
	12/5/2016		9/2/2016 - 9/3/2016	
	12/6/2016		9/19/2016	
	12/12/2016		9/23/2016	
			9/27/2016	
TOTAL NUMBER	**42**		**54**	

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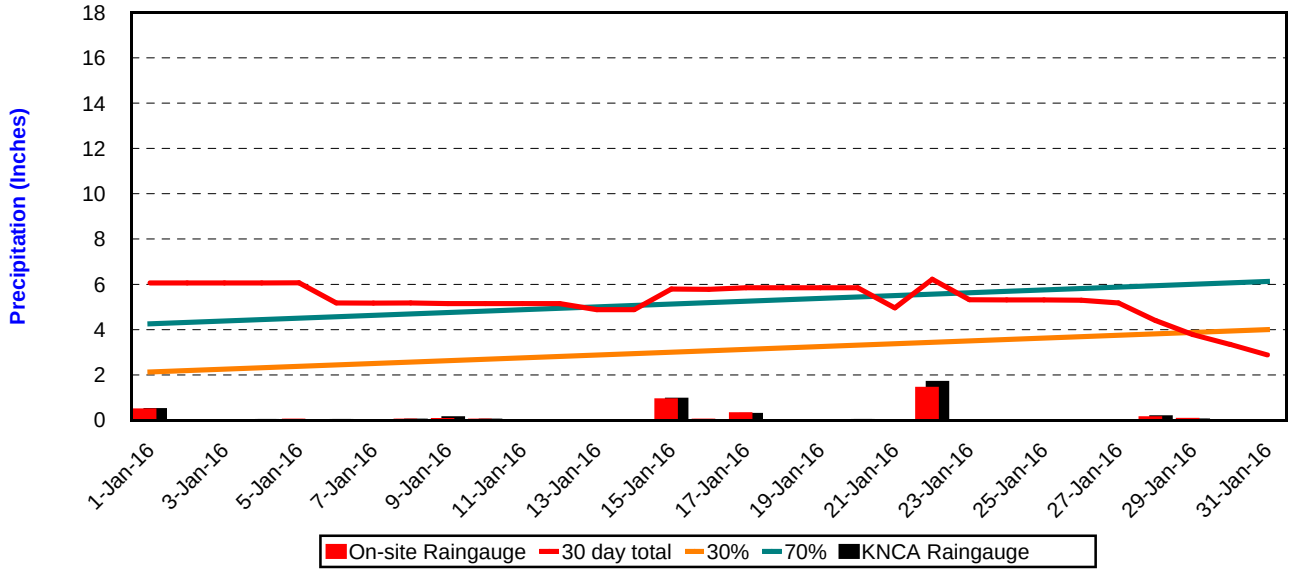
Hydrology Assessment

January 2016

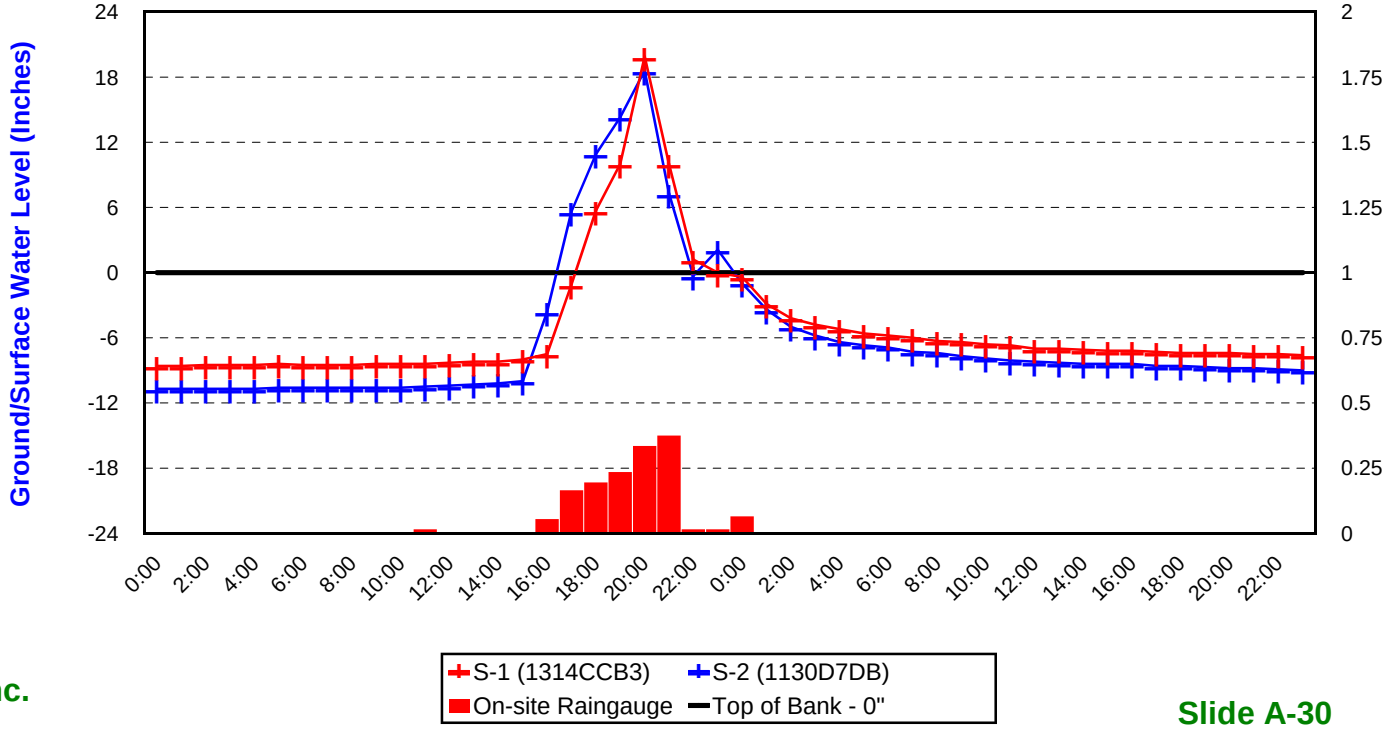
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from WETS Station : HOFFMANN FOREST, NC4144 (wcc.nrcs.usda.gov)



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- January 22, 2016 to January 23, 2016
- One reading per hour

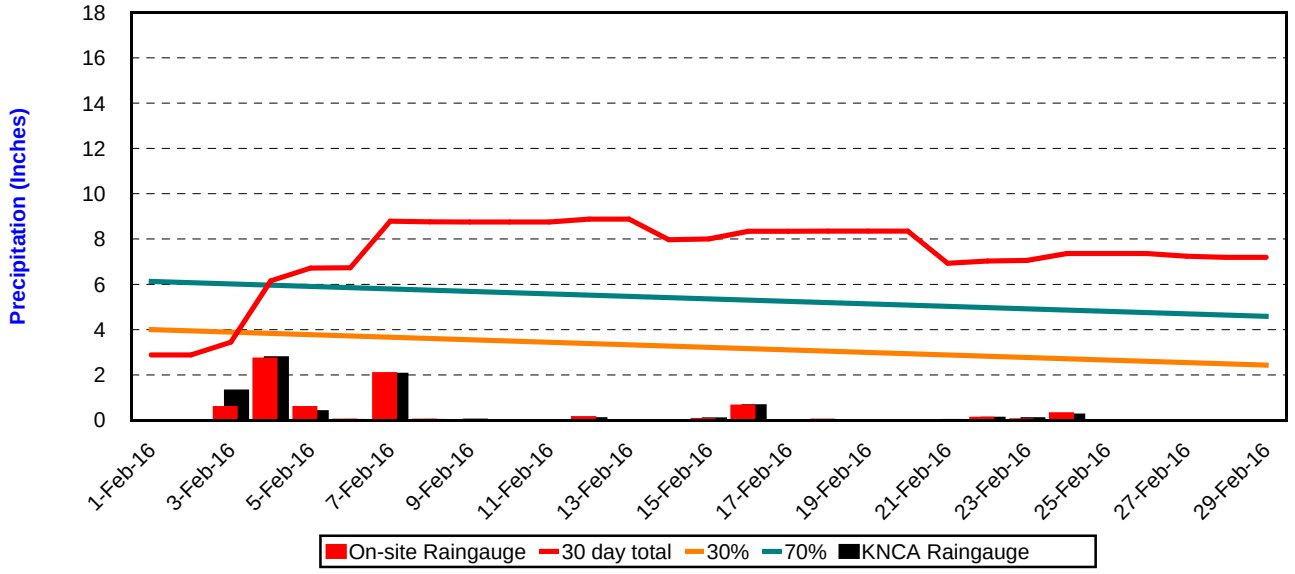


Hydrology Assessment

February 2016

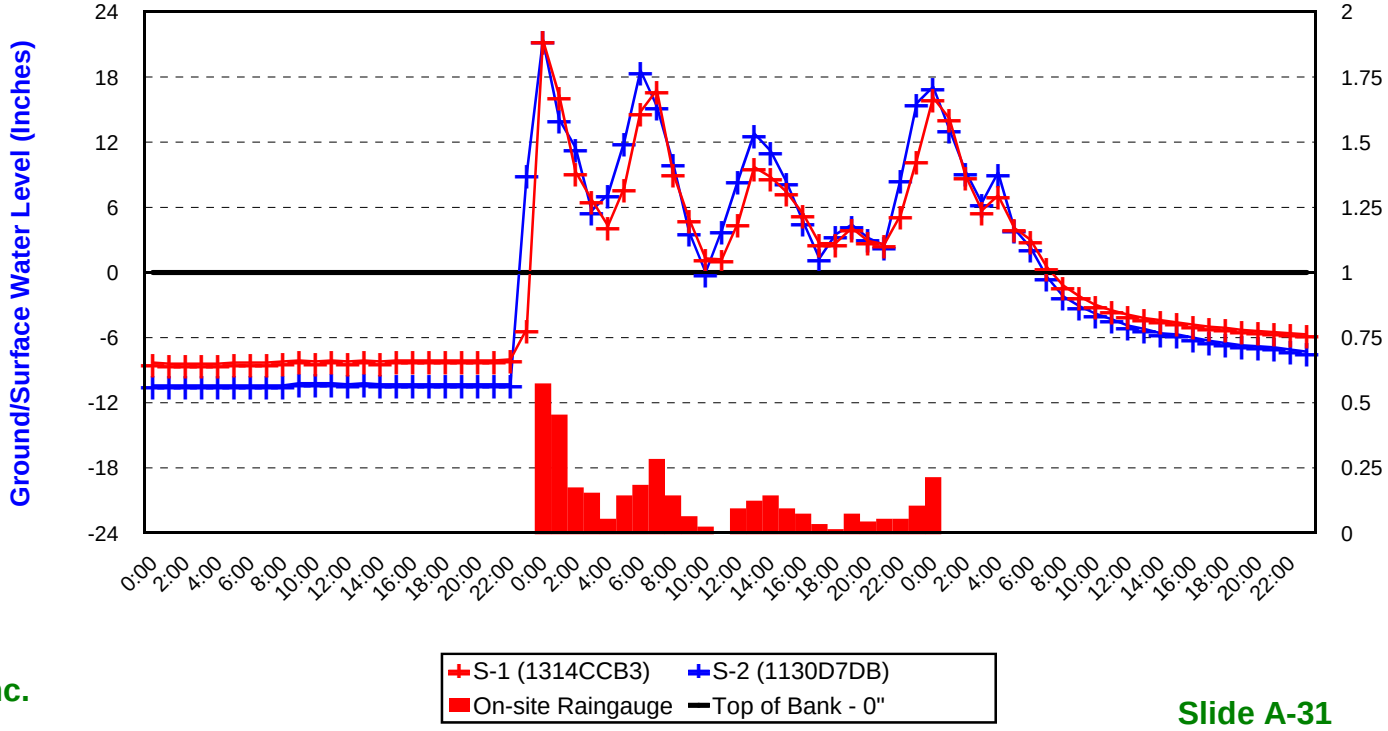
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from WETS Station : HOFFMANN FOREST, NC4144 (wcc.nrcs.usda.gov)



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- February 3, 2016 to February 5, 2016
- One reading per hour

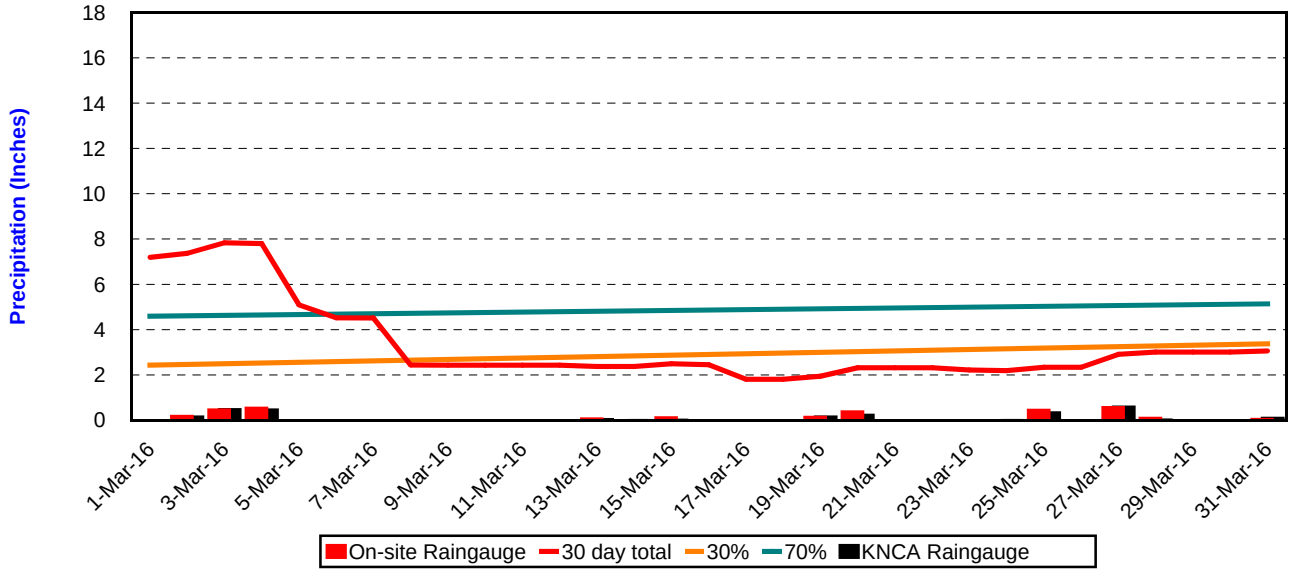


Hydrology Assessment

March 2016

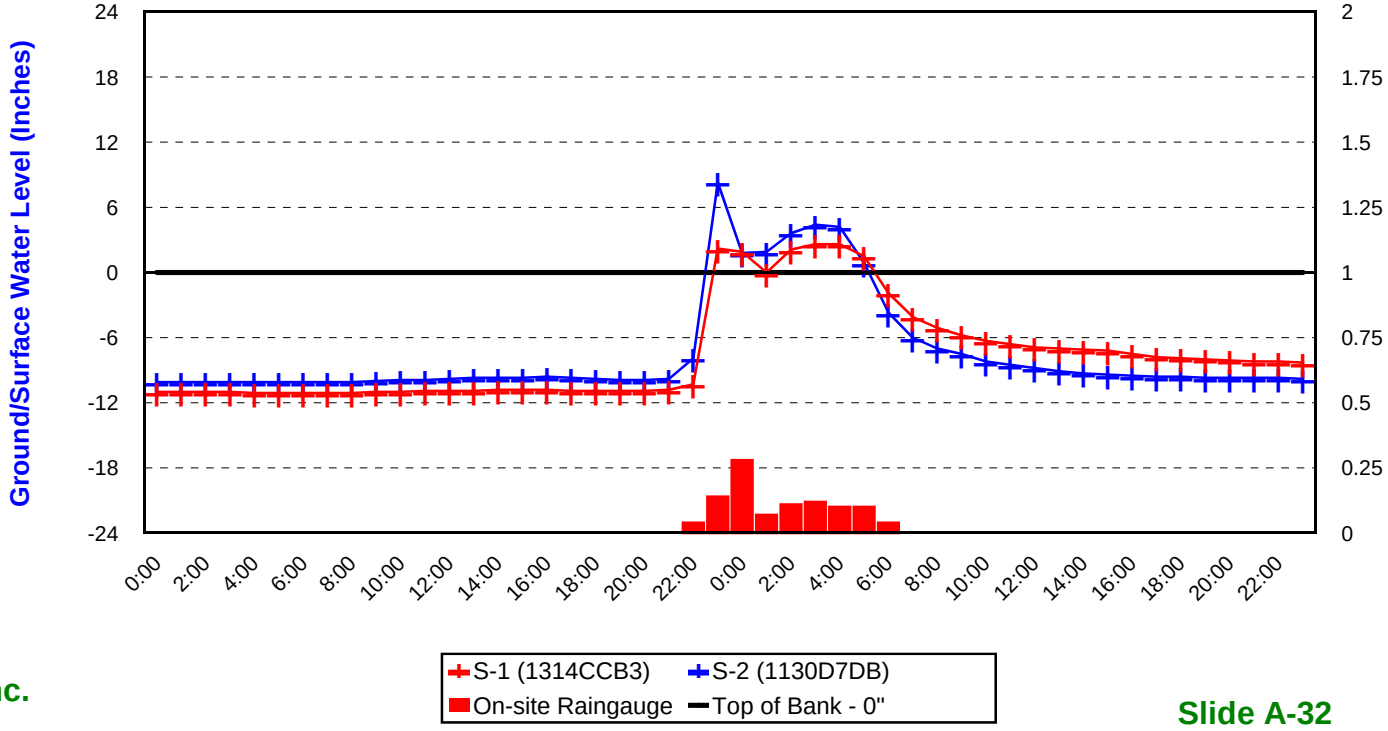
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from WETS Station : HOFFMANN FOREST, NC4144 (wcc.nrcs.usda.gov)



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- March 4, 2016 to March 5, 2016
- One reading per hour



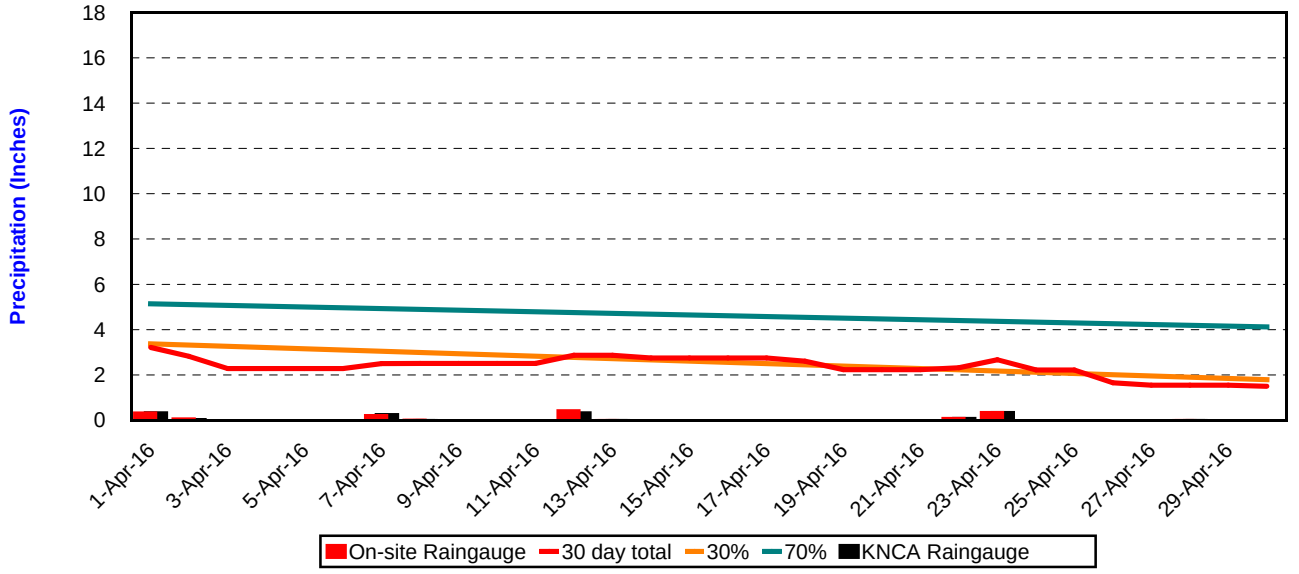
Hydrology Assessment

April 2016

Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

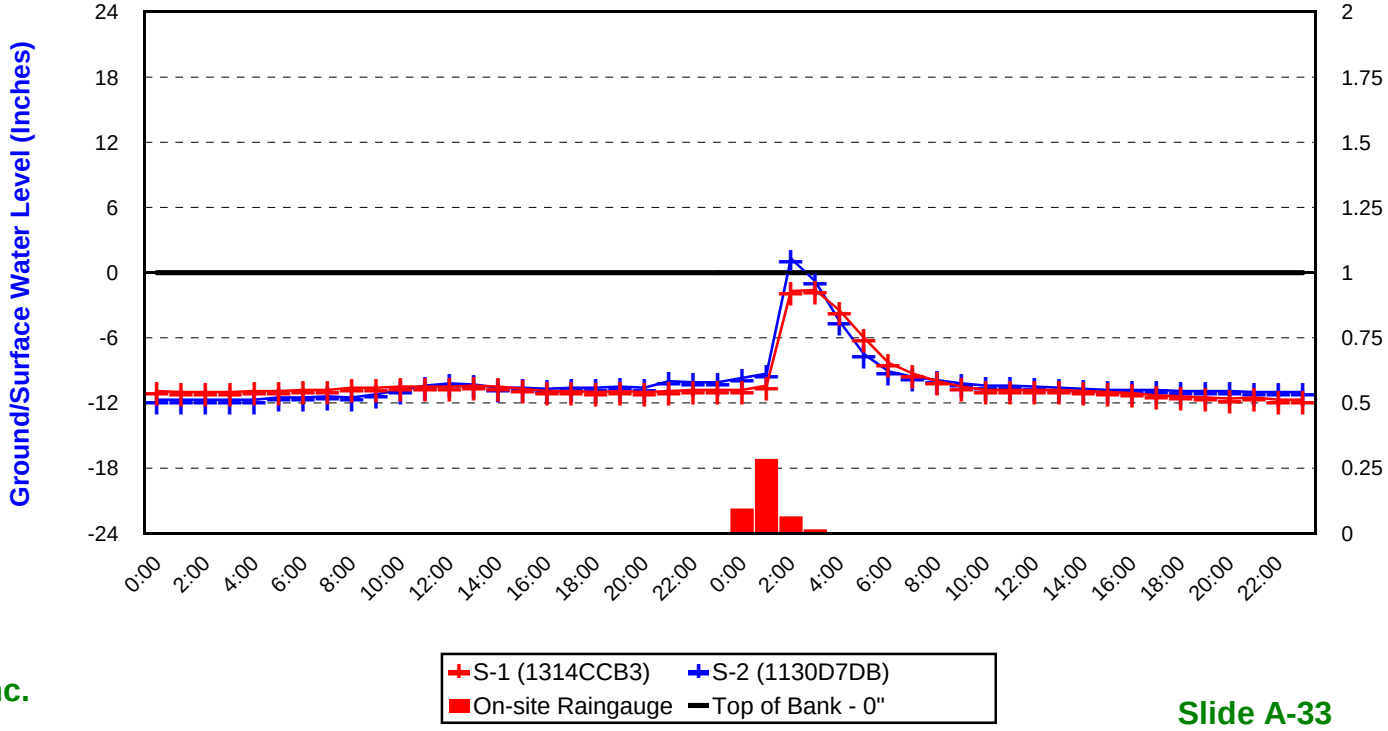
30% & 70% precipitation data obtained from WETS Station : HOFFMANN FOREST, NC4144 (wcc.nrcs.usda.gov)

***Raingauge malfunction - data gap from 4/13 to 9/30. Inserted KNCA data for that interval.**



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- April 22, 2016 to April 23, 2016
- One reading per hour



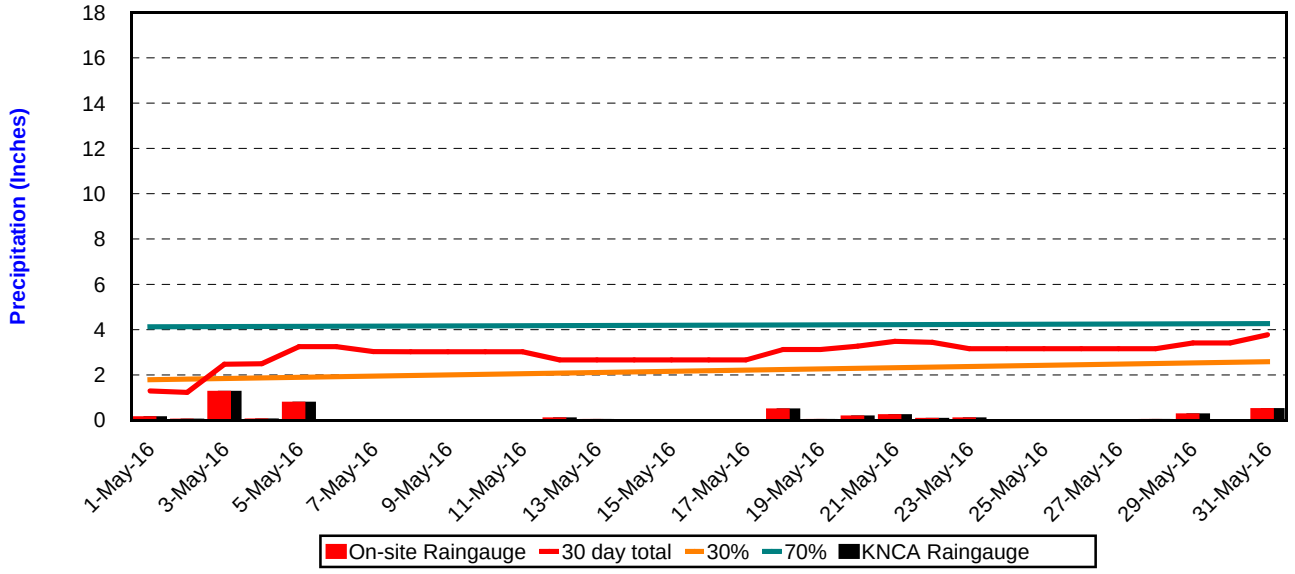
Hydrology Assessment

May 2016

Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

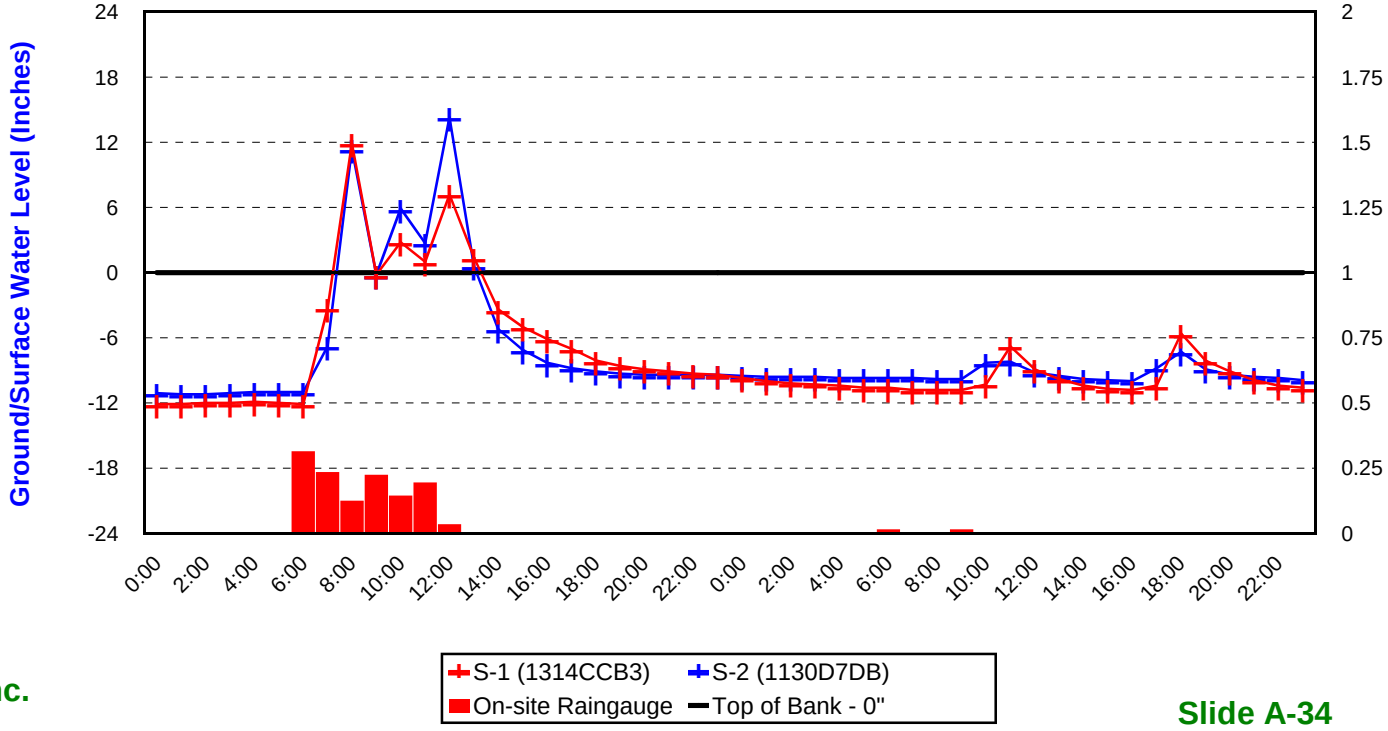
30% & 70% precipitation data obtained from WETS Station : HOFFMANN FOREST, NC4144 (wcc.nrcs.usda.gov)

***Raingauge malfunction - data gap from 4/13 to 9/30. Inserted KNCA data for that interval.**



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- May 3, 2016 to May 4, 2016
- One reading per hour



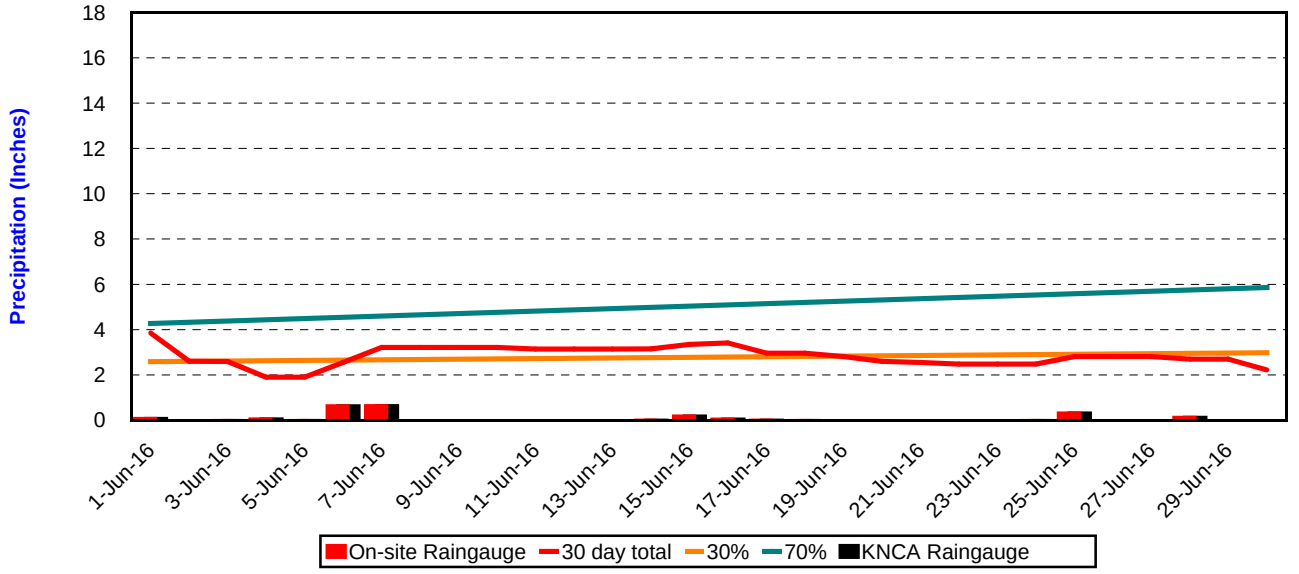
Hydrology Assessment

June 2016

Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

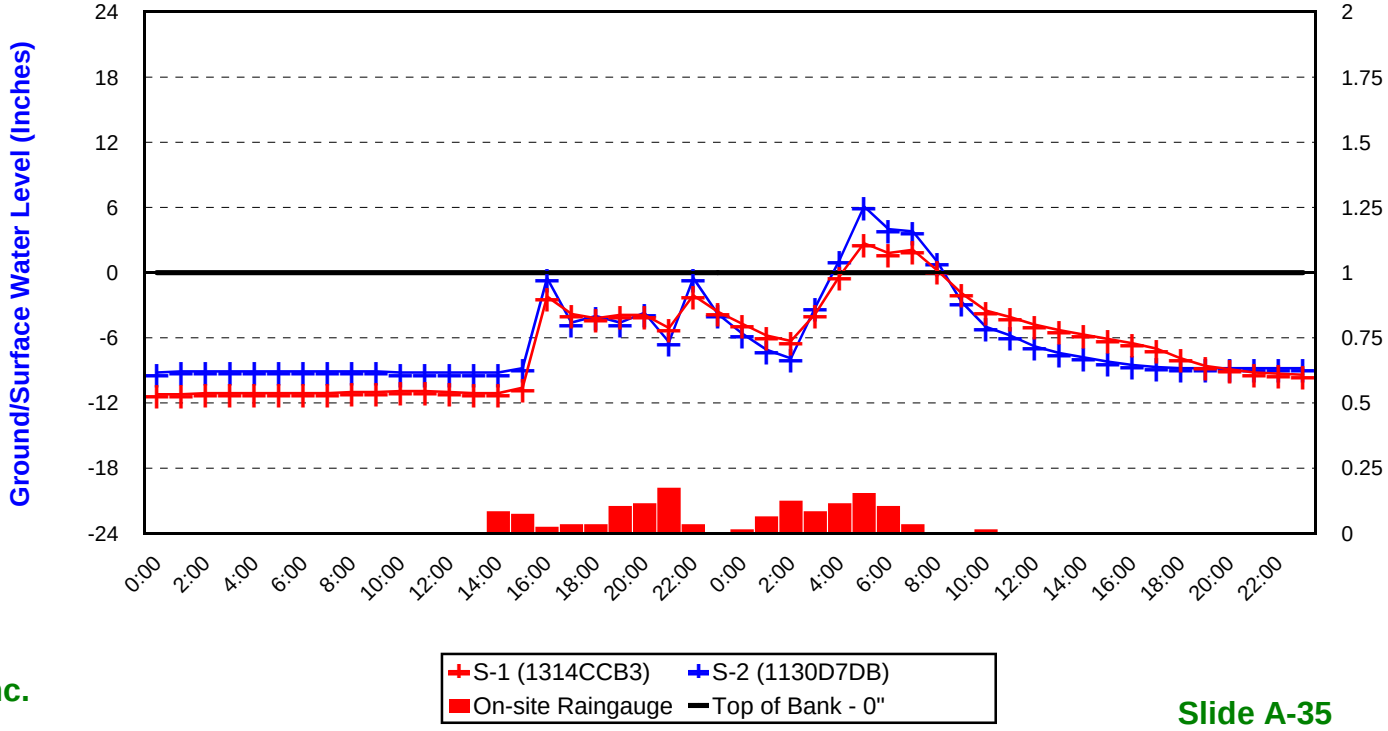
30% & 70% precipitation data obtained from WETS Station : HOFFMANN FOREST, NC4144 (wcc.nrcs.usda.gov)

***Raingauge malfunction - data gap from 4/13 to 9/30. Inserted KNCA data for that interval.**



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- June 6, 2016 to June 7, 2016
- One reading per hour



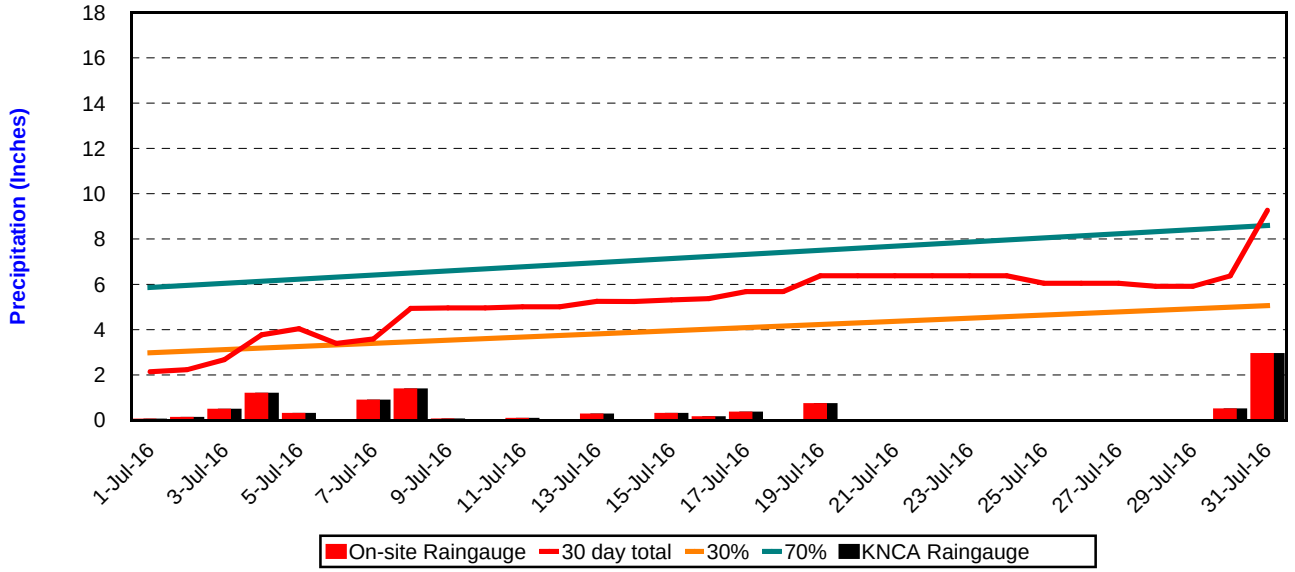
Hydrology Assessment

July 2016

Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

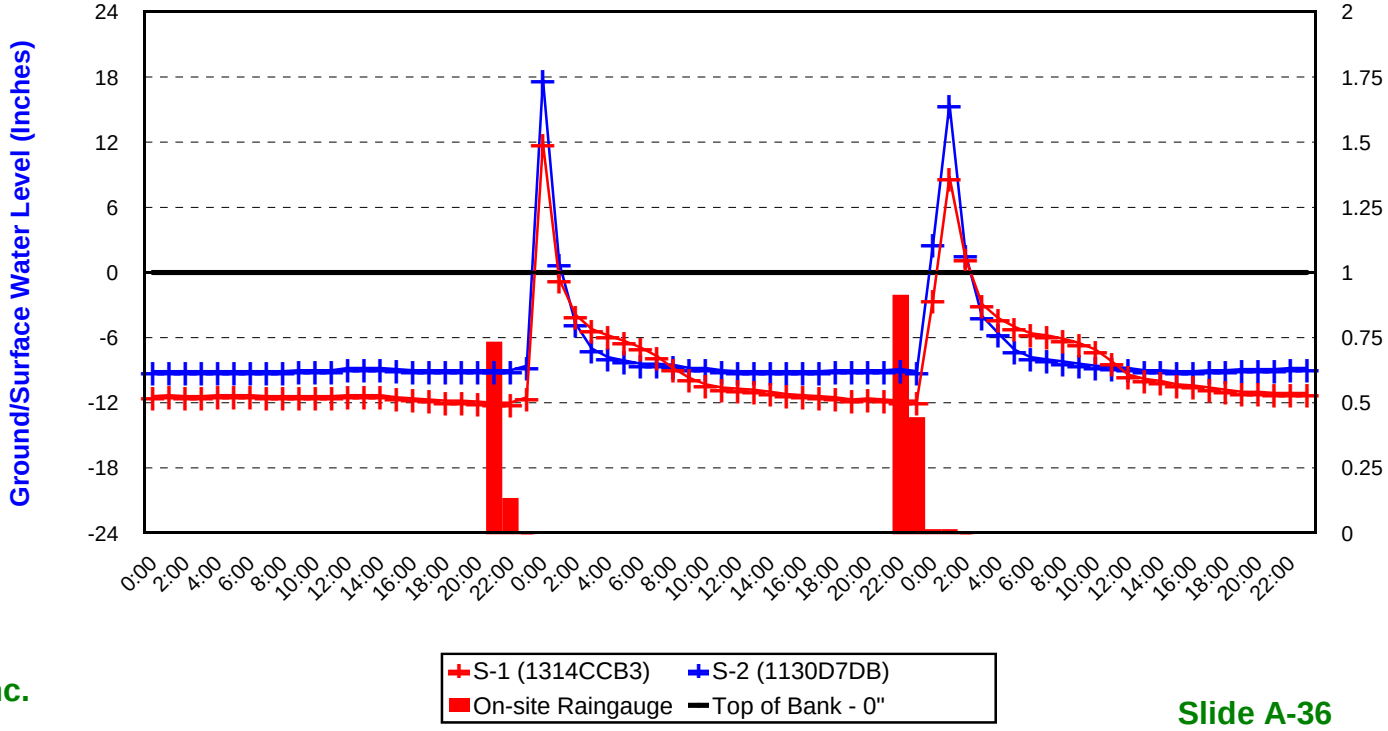
30% & 70% precipitation data obtained from WETS Station : HOFFMANN FOREST, NC4144 (wcc.nrcs.usda.gov)

***Raingauge malfunction - data gap from 4/13 to 9/30. Inserted KNCA data for that interval.**



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- July 7, 2016 to July 9, 2016
- One reading per hour



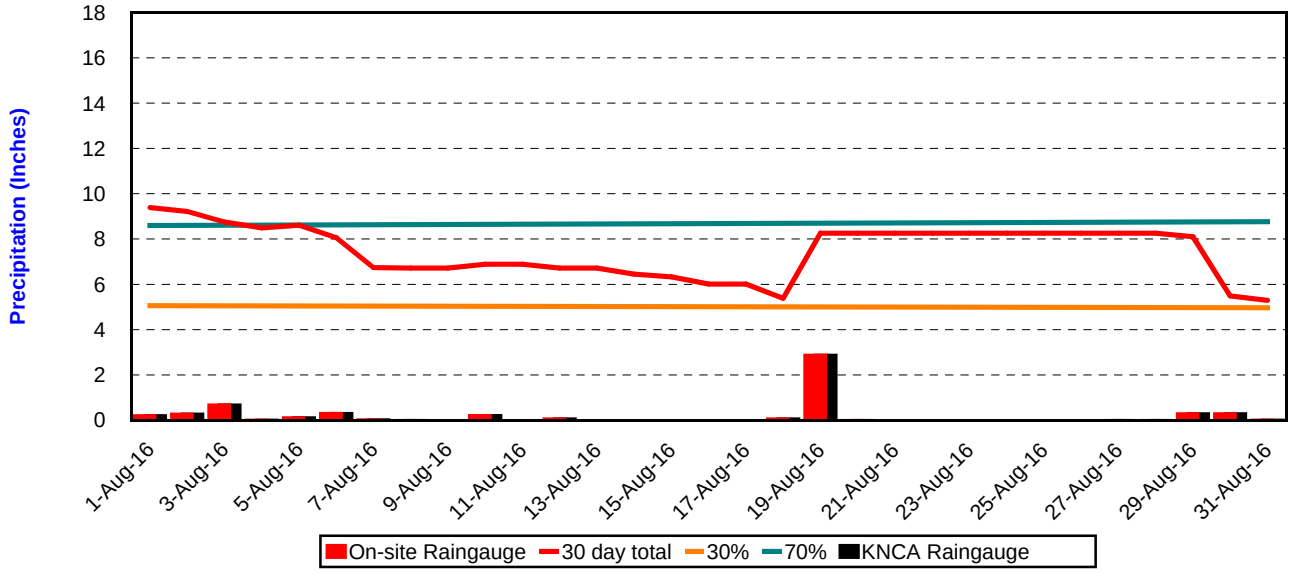
Hydrology Assessment

August 2016

Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

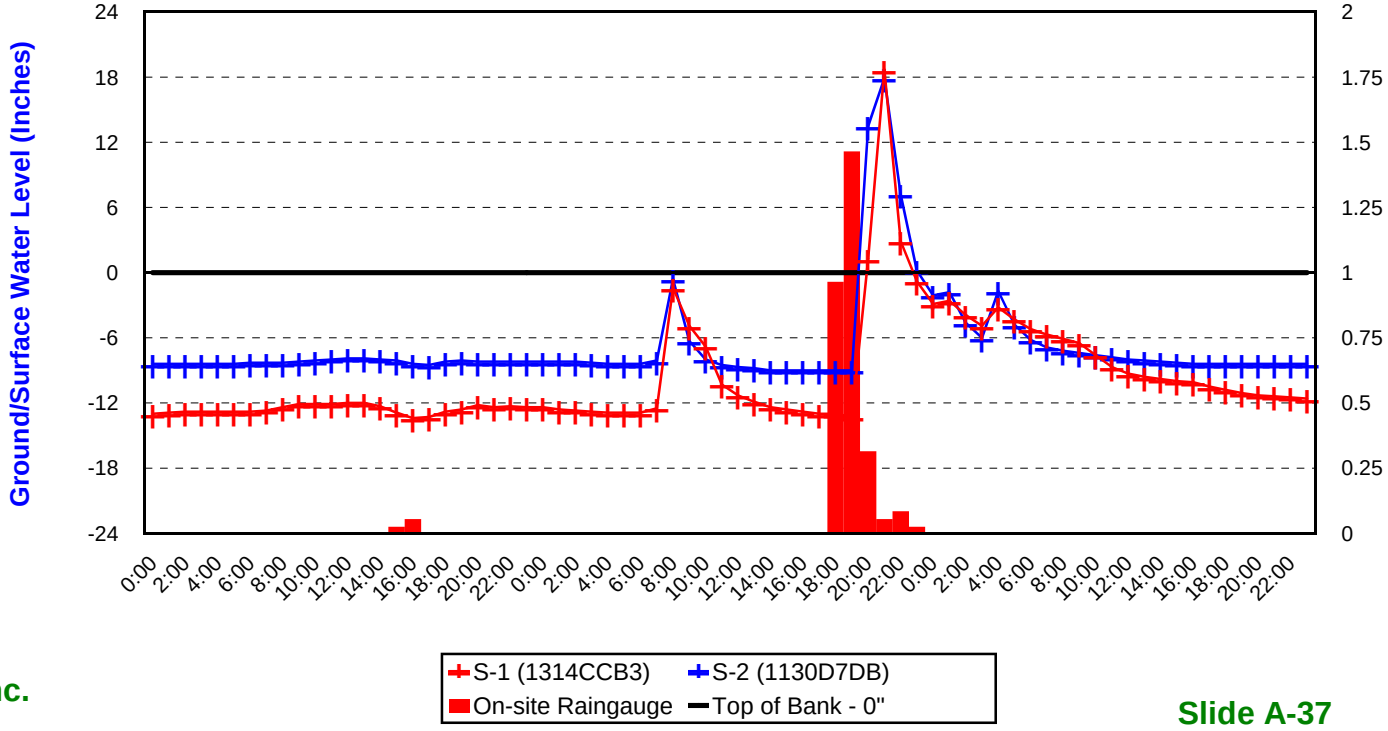
30% & 70% precipitation data obtained from WETS Station : HOFFMANN FOREST, NC4144 (wcc.nrcs.usda.gov)

***Raingauge malfunction - data gap from 4/13 to 9/30. Inserted KNCA data for that interval.**



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- August 18, 2016 to August 20, 2016
- One reading per hour



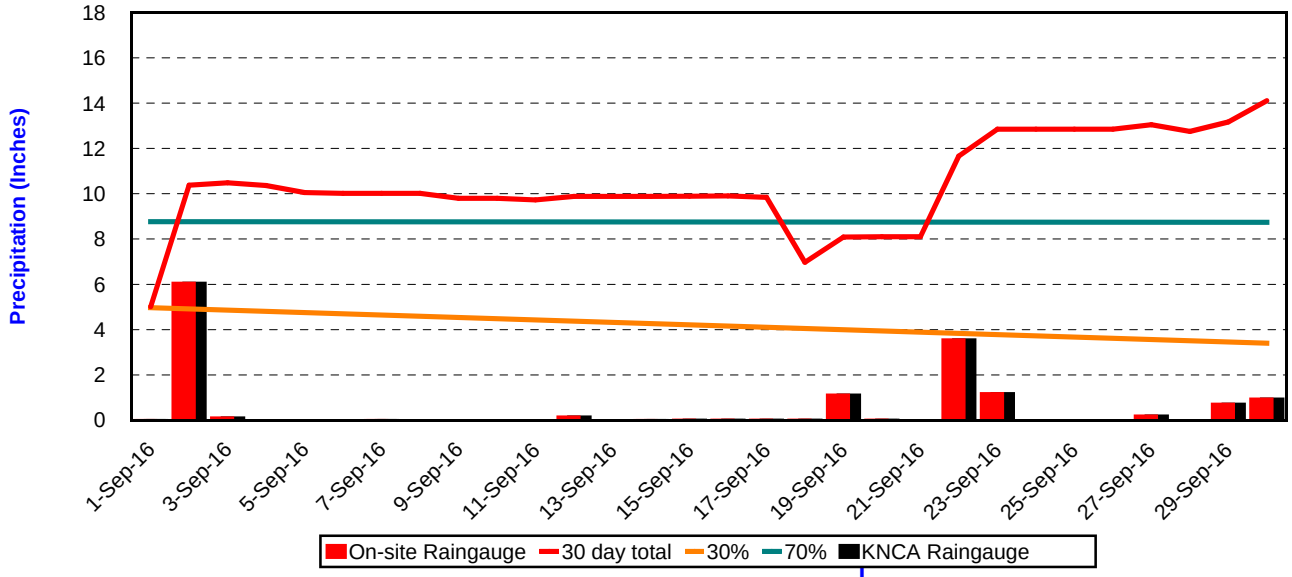
Hydrology Assessment

September 2016

Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

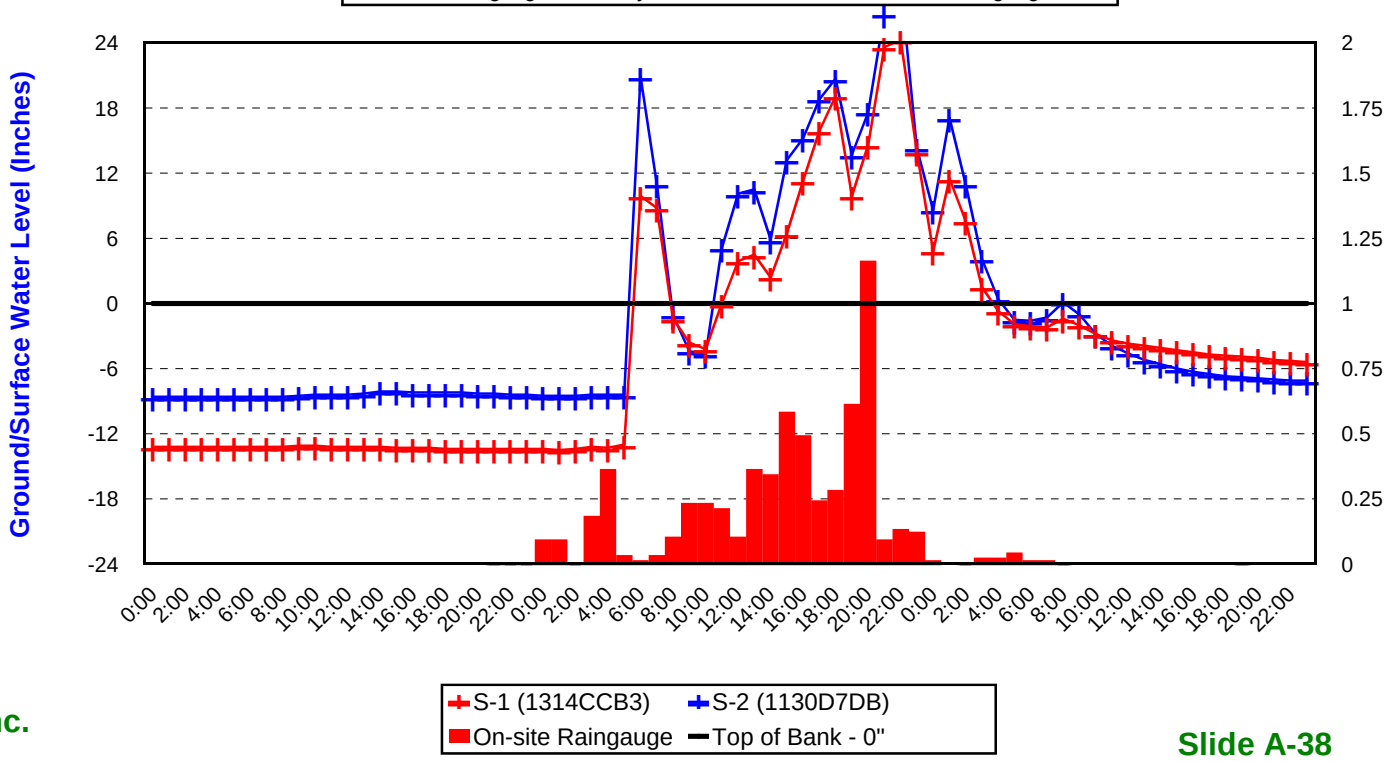
30% & 70% precipitation data obtained from WETS Station : HOFFMANN FOREST, NC4144 (wcc.nrcs.usda.gov)

***Raingauge malfunction - data gap from 4/13 to 9/30. Inserted KNCA data for that interval.**



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- September 1, 2016 to September 3, 2016
- One reading per hour

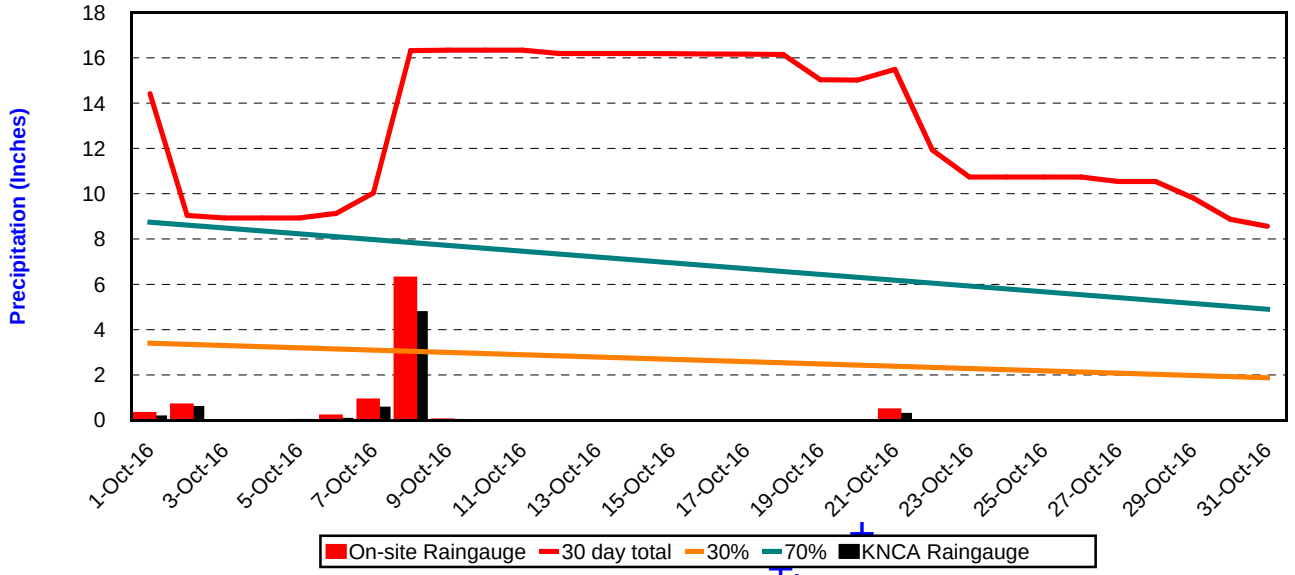


Hydrology Assessment

October 2016

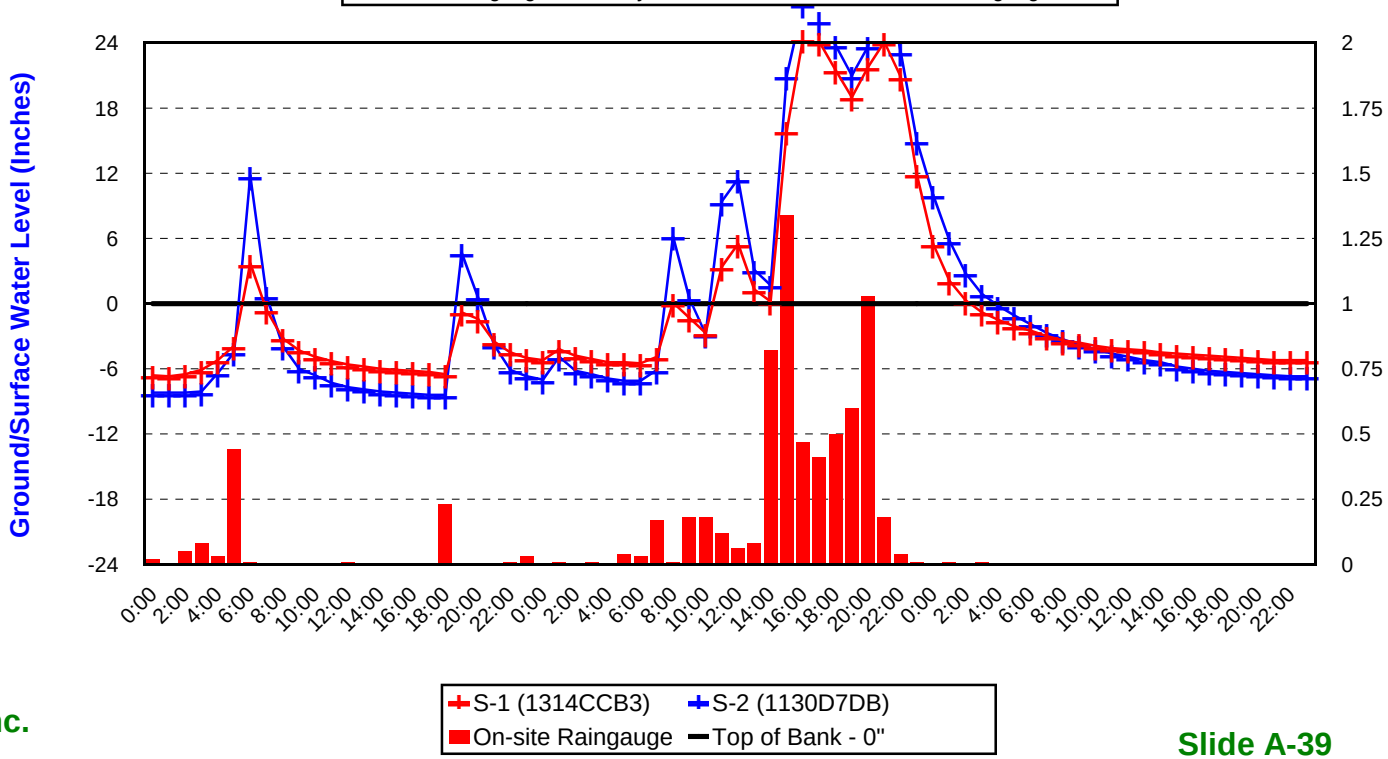
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from WETS Station : HOFFMANN FOREST, NC4144 (wcc.nrcs.usda.gov)



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- October 7, 2016 to October 9, 2016
- One reading per hour

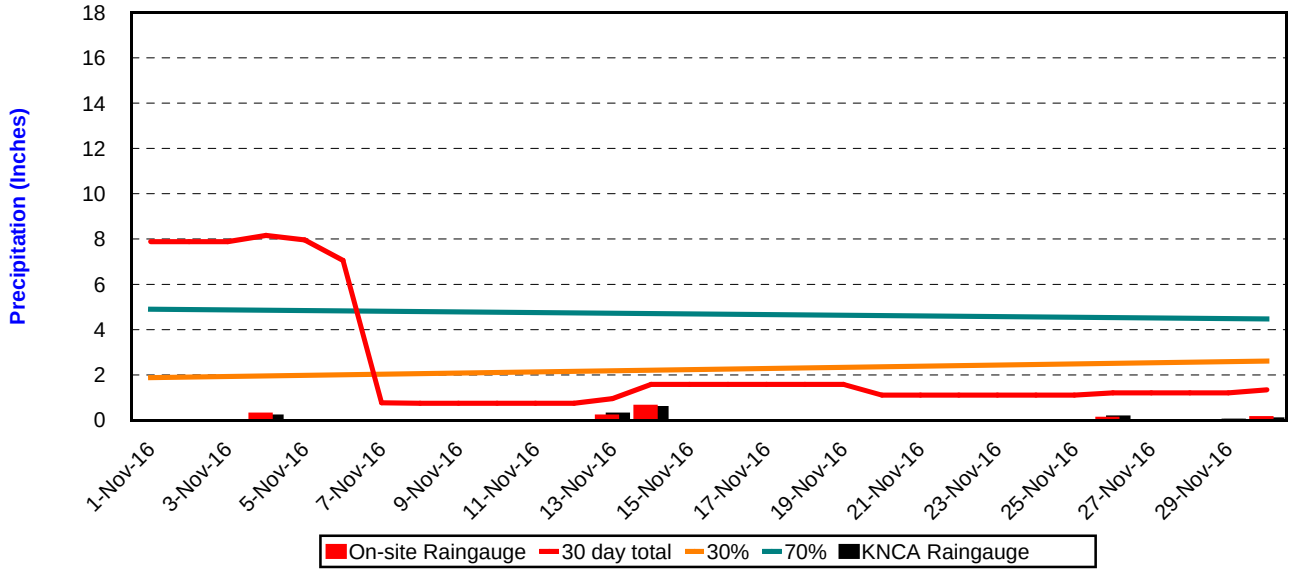


Hydrology Assessment

November 2016

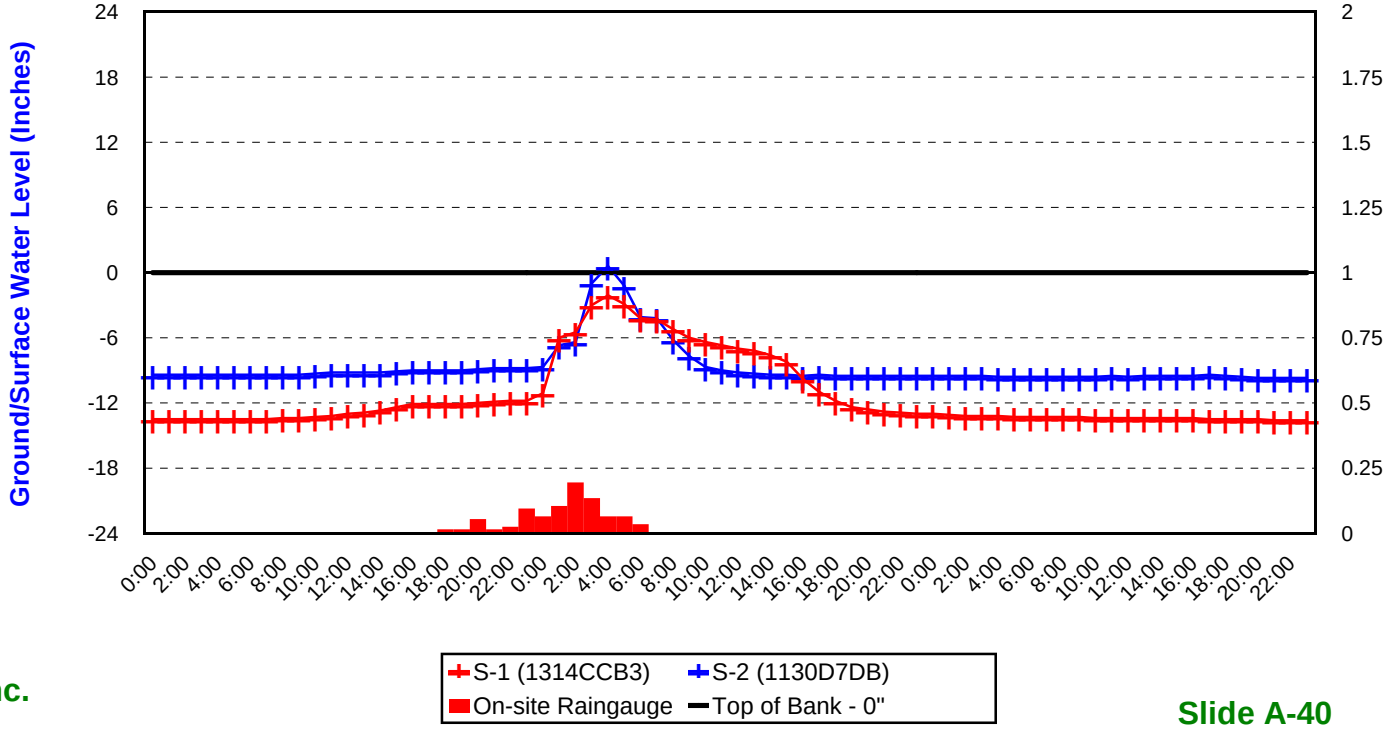
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from WETS Station : HOFFMANN FOREST, NC4144 (wcc.nrcs.usda.gov)



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- November 13, 2016 to November 15, 2016
- One reading per hour

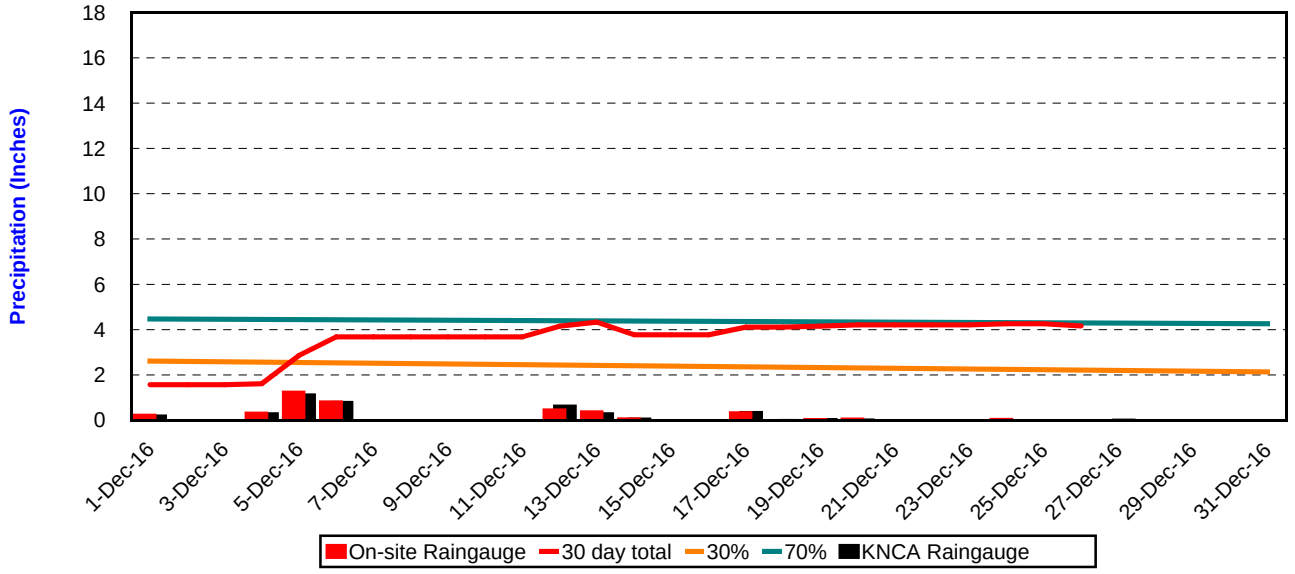


Hydrology Assessment

December 2016

Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from WETS Station : HOFFMANN FOREST, NC4144 (wcc.nrcs.usda.gov)



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- December 4, 2016 to December 6, 2016
- One reading per hour