Jacksonville Country Club
Stream Restoration and Enhancement Project

SCO No. 070715501
DENR Contract No. D08049S
EEP Project No. 194
Onslow County, North Carolina

Year 1 of 5 Monitoring Report
Data Collection: January through December 2014
Submission Date: March 31, 2015

Prepared for:

North Carolina Department of Environment and Natural Resources
Ecosystem Enhancement Program
2728 Capital Boulevard, Suite 1H-103 Raleigh, NC 27606

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Prepared by:

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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 3,145 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 1 (MY1 2014) observed a mean stem density of 422 planted stems per acre in the plots. When volunteer stems were included, the site had an overall mean stem density of 3,089 stems per acre. Plots #2, #6, and #8 did not meet the vegetation success criterion in MY1 2014. Plot #6 and an area surrounding it (~0.18 acre total) appeared to have been mowed and sprayed with herbicide. Only three planted stems were found within the plot.

Stream monitoring in MY1 (2014) consisted of both visual and morphological (i.e. survey) assessment of the channels. A visual inspection of the restored stream channels and the BMP areas was conducted in December of 2014. Please see Appendix B for stream morphology assessment tables and photos. The BMP areas were stable; however, some vegetation had been removed. The BMP along the north side of 2A is actively managed because of the playover and trees are kept to a minimum height. The BMP at the top of Reach C was partially hand cleared of vegetation (near maintenance road).

The stream enhancement area was visually assessed in March of 2015 (Table 5e). Very little flow was observed within the reach during the site visit. This is a small channel and vegetative debris was located thoughout it. However, no specific stream problem areas were noted.

Many problem areas were identified along the four restored stream reaches (1A, 2A, B & C) during the visual inspection. Appendix B contains photographs of most of the problem areas and Figure 2 depicts the GPS location of specific points noted below.

Reach 1A

A total of 22 problem areas were noted within Reach 1A. These included 7 undercuts, 12 areas of degradation, and 3 scour holes.

Reach 2A

Twenty two problem areas were noted within this reach during the visual inspection. These included 10 bank undercuts, 8 areas of degradation, 3 scour holes, and one area of mass wasting.

Reach B

As observed during the baseline monitoring, it appeared that some water was bypassing the constructed channel and forming another, more direct route to the main channel (Pt 45). This was classified as aggradation. Additionally, three bank undercuts were noted within this reach. Three of the seven 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

Vegetation clearing and earthwork had caused sediment to enter the stream channel at the top of this reach. Five of the eight 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.

A longitudinal profile and cross sectional survey (nine cross sections) was performed by Paramounte Engineering in November of 2014. Please see Appendix D for summary tables and plots of longitudinal profiles and cross sections for each reach. Based on the MY1 survey data, reaches remain fairly consistent with baseline data. While several 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 2014 (Table 16; Appendix E).

4.0 METHODOLOGY

Nine (9) permanent vegetation plots are used for vegetation monitoring. All vegetation monitoring was completed in September 2014 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 EEP's website. All raw data supporting the tables and figures in the appendices are available from EEP upon request.

5.0 REFERENCES

NCEEP. 2014. Jacksonville Country Club Stream Restoration and Enhancement Project Baseline Monitoring Report. North Carolina Department of Environment and Natural Resources, Ecosystem Enhancement Program. Raleigh, NC. June, 2014.

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NCEEP. 2007. Jacksonville Country Club Stream Restoration, Restoration Plan Addendum. Prepared by Stantec for the North Carolina Department of Environment and Natural Resources, Ecosystem Enhancement Program. Raleigh, NC. June 11, 2007.

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US Army Corps Of Engineers. 2003. U.S. Army Corps. of Engineers. Stream Mitigation Guidelines. Wilmington Regulatory Field Office.

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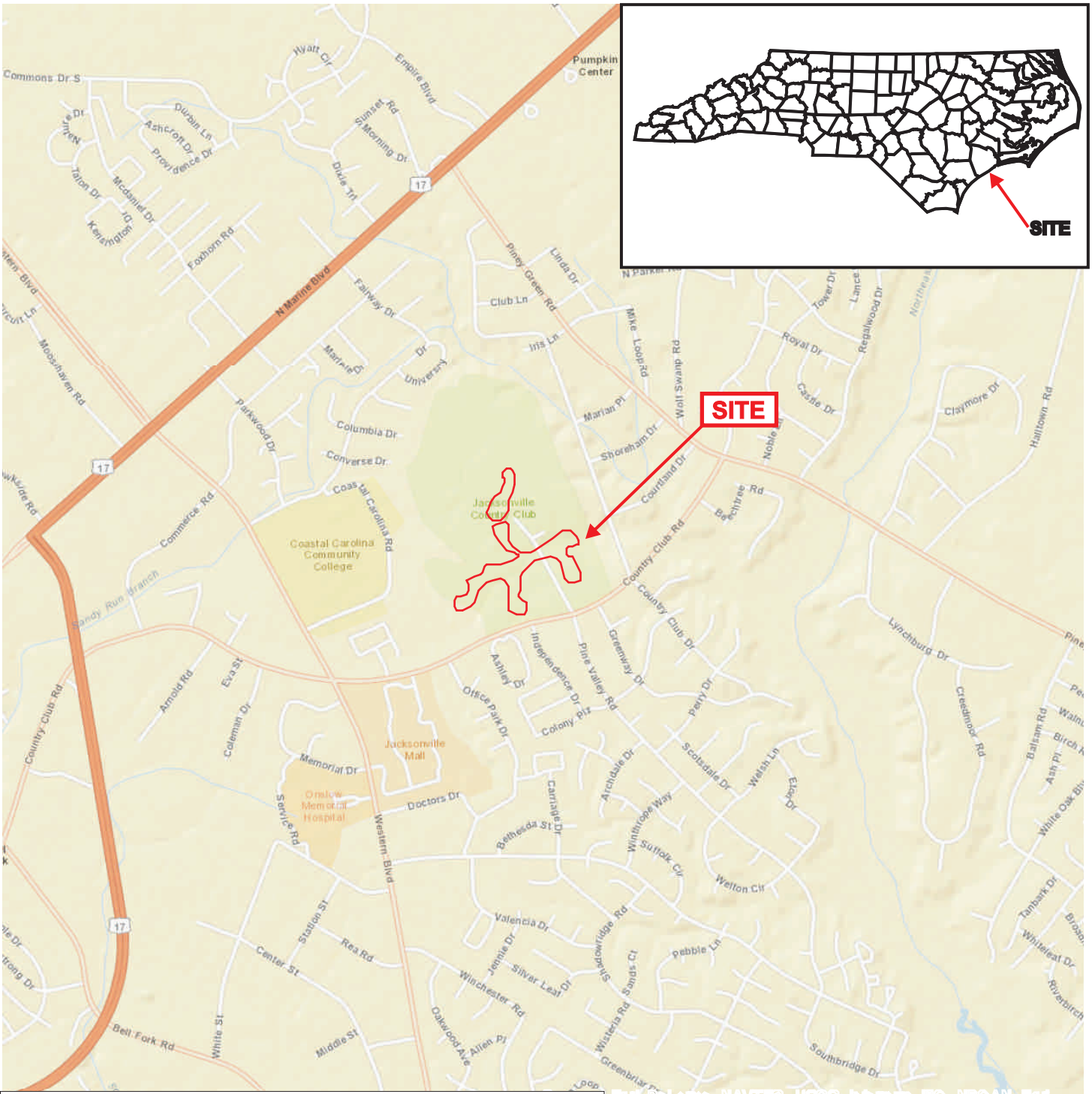
6.0 PROJECT CONDITION AND MONITORING DATA APPENDICES

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'

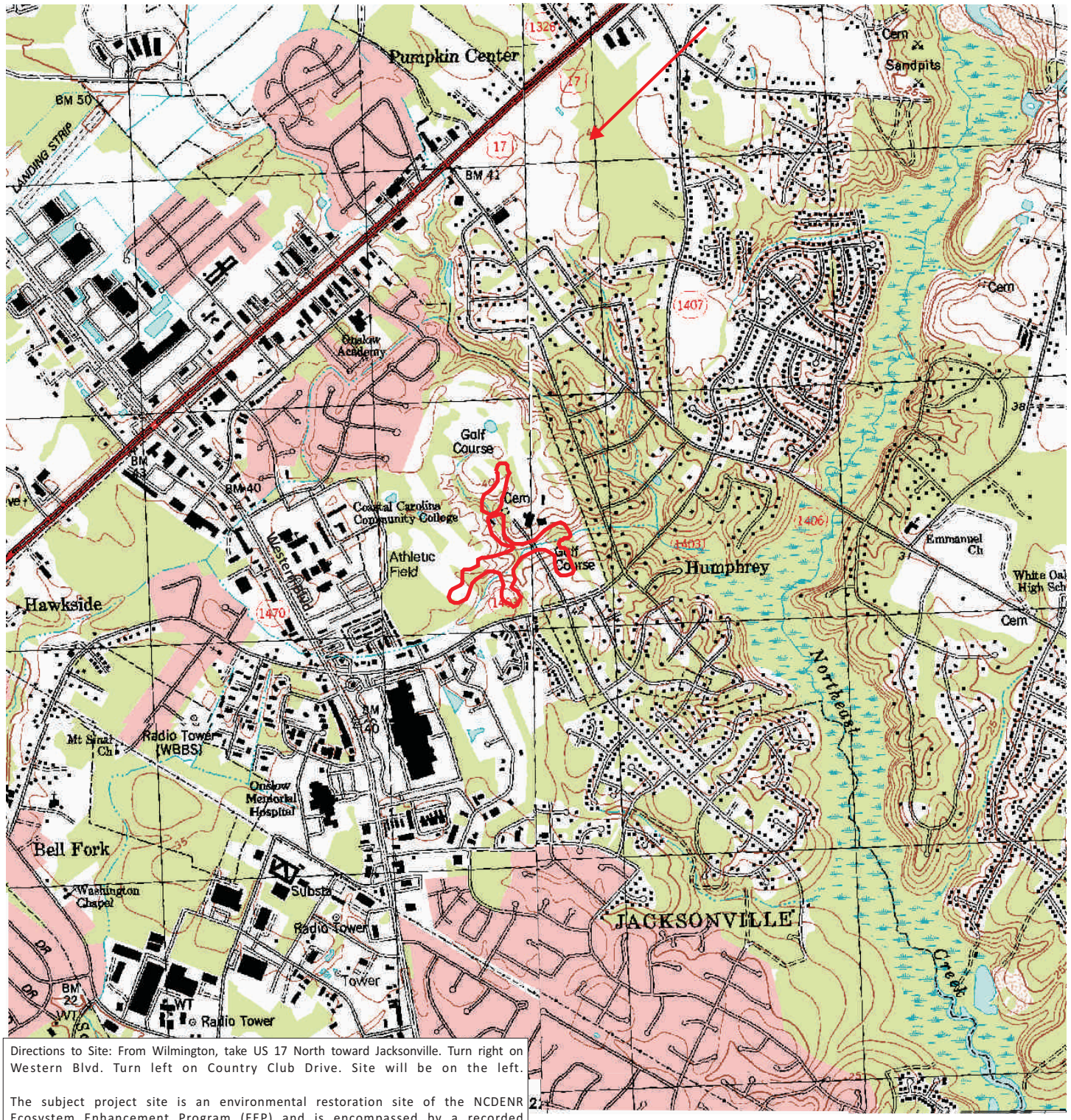
Jacksonville Country Club
Stream Restoration & Enhancement Project
Onslow County, NC

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

LMG Land Management Group, Inc. Environmental Consultants

Ecosystem Enhancement Program

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
EEP Project No. 194

LMG Land Management Group, Inc. Environmental Consultants

Ecosystem Enhancement Program

Figure 1b
Topographic Map

Table 1. Project Components and Mitigation Credits

Jacksonville Country Club Stream Restoration & Enhancement Project, EEP 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	3,145	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	1,429	P1	Restoration	1429 LF	1:1
Stream Restoration	2A	743	P1 and P2	Restoration	743 LF	1:1
Stream Restoration	B	512	P1 and P2	Restoration	512 LF	1:1
Stream Restoration	C	558	P1	Restoration	558 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	3145				
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 -EEP 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
Baseline Monitoring Document (Year 0 Monitoring - baseline)	November-13	June-14
Year 1 Monitoring	December-14	March-15
Year 2 Monitoring		
Year 3 Monitoring		
Year 4 Monitoring		
Year 5 Monitoring		

Table 3. Project Contacts Table Jacksonville Country Club Stream Restoration & Enhancement Project	
EEP 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
EEP 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

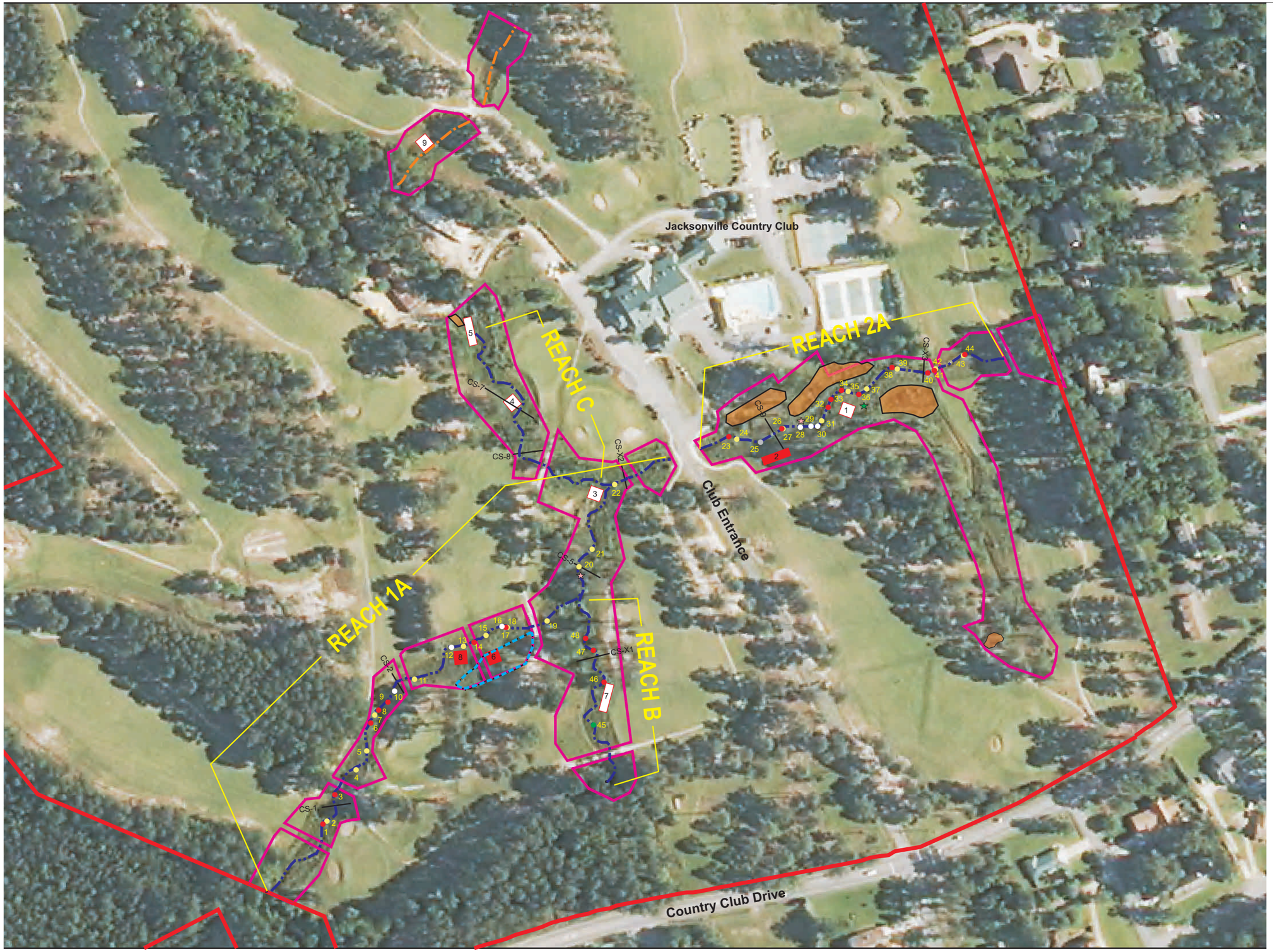
Appendix B.
Visual Assessment Data

FIGURE 2.

Current Conditions Plan View

Jacksonville Country Club
Stream Restoration
and Enhancement Site

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



LEGEND

- Stream Restoration (3145 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)
- Mowed/Sprayed Area (~0.18 ac)

Bed/Bank Problem Areas

- Undercut
- Degradation
- Scour
- Mass Wasting
- Aggradation

N

SCALE 1" = 200'

LMG LAND MANAGEMENT GROUP INC. Environmental Consultants

Ecosystem Enhancement PROGRAM

March 2015

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Table 5a **Visual Stream Morphology Stability Assessment**
Reach ID **Reach 1A**
Assessed Length **1429**

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)					100%			
		2. Degradation - Evidence of downcutting			12	180	87%			
	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			3	30	99%	0	0	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.			6	60	98%	0	0	98%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%			100%
				Totals	9	90	97%	0	0	97%
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 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 5b **Visual Stream Morphology Stability Assessment**
Reach ID **Reach 2A**
Assessed Length **743**

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)					100%			
		2. Degradation - Evidence of downcutting			8	120	84%			
	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			2	20	99%	0	0	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.			10	100	93%	0	0	93%
	3. Mass Wasting	Bank slumping, calving, or collapse			1	10	99%	0	0	99%
				Totals	13	130	91%	0	0	91%
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.	12	14			86%			
	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 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 **517**

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			0	0	100%			
	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			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.	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 **631**

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)					100%			
		2. Degradation - Evidence of downcutting					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)			0	0	100%			
		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			0	0	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.	0.1 acres	Blue Dotted	1	0.18	2.2%
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	4	0.28	3.5%
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	4	0.28	3.5%

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%

BMP: South of Reach 2A

Reach 1A: Cross Section #1

Photos recorded on September 18 and November 24, 2014

Reach 1A: Cross Section #2

Reach 1A: Cross Section #5

Photos recorded on November 24, 2014

Reach 1A: Cross Section #X2

Reach 2A: Cross Section #9

Photos recorded on November 24, 2014

Reach 2A: Cross Section #X3

Reach B: Cross Section #X1

Photos recorded on November 24, 2014

Reach C: Cross Section #7

Reach C: Cross Section #8

Photos recorded on November 24, 2014

Stream Enhancement Reach - Looking North Along Channel

Stream Enhancement Reach - Looking South At End of Reach

Photos recorded on March 26, 2015

Vegetation Plot Photos (recorded on September 18, 2014)

Vegetation Plot 1 - X-axis

Vegetation Plot 1 - diagonal

Photos recorded on September 18, 2014

Vegetation Plot 2 - X-axis

Vegetation Plot 2 - diagonal

Photos recorded on September 18, 2014

Vegetation Plot 3 - X-axis

Vegetation Plot 3 - diagonal

Photos recorded on September 18, 2014

Vegetation Plot 4 - X-axis

Vegetation Plot 4 - diagonal

Photos recorded on September 18, 2014

Vegetation Plot 5 - X-axis

Vegetation Plot 5 - diagonal

Photos recorded on September 18, 2014

Vegetation Plot 6 - X-axis

Vegetation Plot 6 - diagonal

Photos recorded on September 18, 2014

Vegetation Plot 7 - X-axis

Vegetation Plot 7 - diagonal

Photos recorded on September 18, 2014

Vegetation Plot 8 - X-axis

Vegetation Plot 8 - diagonal

Photos recorded on September 18, 2014

Vegetation Plot 9 - X-axis

Vegetation Plot 9 - diagonal

Photos recorded on September 18, 2014

BMP: Top of Reach B

BMP: Top of Reach C

Photos recorded on September 18, 2014

BMP: Reach 2A (northwest)

BMP: Middle of Reach 2A

Photos recorded on September 18, 2014

BMP: South of Reach 2A

Reach 1A: Cross Section #1

Photos recorded on September 18 and November 24, 2014

Appendix C.
Vegetation Plot Data

Table 7. Vegetation data by plot

			Current Plot Data (MY1 2014)																				
			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			9			14			9			6									9
Betula nigra	river birch	Tree	3	3	3				2	2	2				2	2	2				4	4	4
Cephalanthus occidentalis	common buttonbush	Shrub							1	1	1	6	6	6	2	2	2						
Clethra alnifolia	sweet pepperbush	Shrub																					
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							4	4	4	5	5	5							5	5	5
Juniperus virginiana	eastern redcedar	Tree						1															
Liquidambar styraciflua	sweetgum	Tree			8			6						5			13						5
Liriodendron tulipifera	tuliptree	Tree																					
Magnolia virginiana	sweetbay	Tree													1	1	1						
Malus angustifolia	southern crabapple	Tree	1	1	1										1	1	1						
Morella cerifera	wax myrtle	shrub	8	8	8				1	1	1			1	8	8	8				5	5	5
Nyssa sylvatica	blackgum	Tree																			1	1	1
Pinus taeda	loblolly pine	Tree			36			52			27						6			5			10
Platanus occidentalis	American sycamore	Tree							2	2	2				5	5	5						
Quercus michauxii	swamp chestnut oak	Tree													1	1	1						
Quercus pagoda	cherrybark oak	Tree							1	1	1												
Quercus phellos	willow oak	Tree							1	1	1				1	1	1						
Salix nigra	black willow	Tree															1						23
		Stem count	12	12	65	3	3	76	13	13	49	11	11	23	21	21	41	3	3	8	17	17	64
		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	8	8	10	2	2	5	8	8	11	1	1	2	5	5	9
		Stems per ACRE	485.62	485.62	2630.5	121.41	121.41	3075.6	526.09	526.09	1983	445.15	445.15	930.78	849.84	849.84	1659.2	121.41	121.41	323.75	687.97	687.97	2590

Color for Density

Exceeds requirements by 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

			Plot Data (MY1 2014)						Annual Means					
			194-01-0008			194-01-0009			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
Acer rubrum	red maple	Tree			1						1			16
Baccharis halimifolia	eastern baccharis	Shrub									47			41
Betula nigra	river birch	Tree	1	1	1				12	12	12	11	11	11
Cephalanthus occidentalis	common buttonbush	Shrub		2	2				9	11	11	9	11	11
Clethra alnifolia	sweet pepperbush	Shrub										2	2	2
Fraxinus pennsylvanica	green ash	Tree							3	3	3	3	3	3
Hamamelis virginiana	American witchhazel	Tree										2	2	2
Ilex glabra	inkberry	Shrub							6	6	6	9	9	9
Itea virginica	Virginia sweetspire	Shrub	3	3	3	10	10	10	27	27	27	28	28	28
Juniperus virginiana	eastern redcedar	Tree									1			
Liquidambar styraciflua	sweetgum	Tree			1						38			274
Liriodendron tulipifera	tuliptree	Tree												2
Magnolia virginiana	sweetbay	Tree							1	1	1	1	1	1
Malus angustifolia	southern crabapple	Tree							2	2	2			1
Morella cerifera	wax myrtle	shrub			1			14	22	22	38	22	22	41
Nyssa sylvatica	blackgum	Tree							1	1	1	1	1	16
Pinus taeda	loblolly pine	Tree			26			302			464			1346
Platanus occidentalis	American sycamore	Tree							7	7	7	7	7	7
Quercus michauxii	swamp chestnut oak	Tree							1	1	1	1	1	1
Quercus pagoda	cherrybark oak	Tree							1	1	1	1	1	1
Quercus phellos	willow oak	Tree							2	2	2	2	2	2
Salix nigra	black willow	Tree									24			22
		Stem count	4	6	35	10	10	326	94	96	687	99	101	1837
		size (ares)	1			1			9			9		
		size (ACRES)	0.02			0.02			0.22			0.22		
		Species count	2	3	7	1	1	3	13	13	19	14	14	21
		Stems per ACRE	161.87	242.81	1416.4	404.69	404.69	13193	422.67	431.66	3089.1	445.15	454.15	8260.1

Color for Density

Exceeds requirements by 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 EEP No. 194

Report Prepared By	Kim Williams
Date Prepared	3/31/2015 10:00
Database Name	JacksonvilleCountryClub_194_MY12014.mdb
Database Location	L:\Wetlands\2008\Jacksonville Country Club/Annual Monitoring Report\Year 1
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)	3521
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	2	10					
	Cephalanthus occidentalis	common buttonbush	2	8	1				
	Clethra alnifolia	coastal sweetpepperbush					2		
	Fraxinus pennsylvanica	green ash	2	1					
	Ilex glabra	inkberry	4	2			3		
	Itea virginica	Virginia sweetspire	11	15	1		1		
	Nyssa sylvatica	blackgum	1						
	Quercus michauxii	swamp chestnut oak		1					
	Quercus pagoda	cherrybark oak			1				
	Quercus phellos	willow oak	1	1					
	Salix nigra	black willow	23						
	Morella cerifera	wax myrtle	21						1
	Malus angustifolia	southern crabapple	2						
	Magnolia virginiana	sweetbay			1				
	Platanus occidentalis	American sycamore	5	2					
TOT:	**15**	**15**	**74**	**40**	**4**		**6**		**1**

Table 10. CVS Vegetation Damage by Species

Species	CommonName	Count of Damage Categories	(no damage)	Diseased	Insects	Mowing	Unknown	Vine Strangulation
Betula nigra	river birch	4	8		2			2
Cephalanthus occidentalis	common buttonbush	8	3		5			3
Clethra alnifolia	coastal sweetpepperbush	2				2		
Fraxinus pennsylvanica	green ash	1	2		1			
Ilex glabra	inkberry	4	5			4		
Itea virginica	Virginia sweetspire	3	25		3			
Magnolia virginiana	sweetbay	0	1					
Malus angustifolia	southern crabapple	0	2					
Morella cerifera	wax myrtle	0	22					
Nyssa sylvatica	blackgum	0	1					
Platanus occidentalis	American sycamore	0	7					
Quercus michauxii	swamp chestnut oak	0	1					
Quercus pagoda	cherrybark oak	1					1	
Quercus phellos	willow oak	1	1	1				
Salix nigra	black willow	0	23					
TOTAL: 15		**24**	**101**	**1**	**11**	**6**	**1**	**5**

Table 11. CVS Vegetation Damage by Plot

plot	Count of Damage Categories	(no damage)	Diseased	Insects	Mowing	Unknown	Vine Strangulation
194-01-0001-year:1	0	12					
194-01-0002-year:1	0	3					
194-01-0003-year:1	3	10		2		1	
194-01-0004-year:1	6	5		4			2
194-01-0005-year:1	2	19	1				1
194-01-0006-year:1	6	2			6		
194-01-0007-year:1	5	35		3			2
194-01-0008-year:1	0	7					
194-01-0009-year:1	2	8		2			
9	**24**	**101**	**1**	**11**	**6**	**1**	**5**

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:1	plot 194-01-0002-year:1	plot 194-01-0003-year:1	plot 194-01-0004-year:1	plot 194-01-0005-year:1	plot 194-01-0006-year:1	plot 194-01-0007-year:1	plot 194-01-0008-year:1	plot 194-01-0009-year:1
		Betula nigra	Tree	river birch	12	5	2.4	3		2		2		4	1	
		Cephalanthus occidentalis	Shrub Tree	common buttonbush	11	4	2.75			1	6	2			2	
		Fraxinus pennsylvanica	Tree	green ash	3	2	1.5			1				2		
		Ilex glabra	Shrub	inkberry	6	2	3		3				3			
		Itea virginica	Shrub	Virginia sweetspire	27	5	5.4			4	5			5	3	10
		Magnolia virginiana	Shrub Tree	sweetbay	1	1	1					1				
		Malus angustifolia	Shrub Tree	southern crabapple	2	2	1	1				1				
		Morella cerifera	Shrub Tree	wax myrtle	22	4	5.5	8		1		8		5		
		Nyssa sylvatica	Tree	blackgum	1	1	1							1		
		Platanus occidentalis	Tree	American sycamore	7	2	3.5			2		5				
		Quercus michauxii	Tree	swamp chestnut oak	1	1	1					1				
		Quercus pagoda	Tree	cherrybark oak	1	1	1			1						
		Quercus phellos	Tree	willow oak	2	2	1			1		1				
TOT:	**0**	**13**	**13**	**13**	**96**	**13**		**12**	**3**	**13**	**11**	**21**	**3**	**17**	**6**	**10**

Appendix D.
Stream Geomorphology Data

Table 13a. Baseline Stream Data Summary
Jacksonville Country Club (EEP# 194) Segment/Reach: 1A (1429 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			C5				
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 (EEP# 194) Segment/Reach: 2A (743 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 (EEP# 194) Segment/Reach: B (512 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/ft^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 (EEP# 194) Segment/Reach: C (631 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																				C5					
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 (EEP# 194) Segment/Reach: 1A (1429 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						6.4	6						3.8	5.3						3.2	3.2												
Floodprone Width (ft)	20.3	34.3													52.8	65.6																		
Bankfull Mean Depth (ft)	0.3	0.4						0.7	1						0.7	0.9						0.7	0.7												
Bankfull Max Depth (ft)	0.8	0.8						1.3	1.5						1	1.5						1.2	1.2												
Bankfull Cross Sectional Area (ft^2)	1.5	2.3						4.5	5.9						2.5	4.6						2.4	2.4												
Bankfull Width/Depth Ratio	15.5	12.5						9.3	6.2						5.8	6						4.4	4.4												
Bankfull Entrenchment Ratio	4.2	6.4													13.8	12.4																		
Bankfull Bank Height Ratio	1.6	1						1.3	1.2						1.3	1.2						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 (EEP# 194) Segment/Reach: 2A (743 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						8.4	8.1																									
Floodprone Width (ft)	34.3	65.2																																
Bankfull Mean Depth (ft)	0.4	0.5						1.7	2.2																									
Bankfull Max Depth (ft)	0.9	1.1						2.9	3.3																									
Bankfull Cross Sectional Area (ft^2)	2.4	3.1						14.5	17.9																									
Bankfull Width/Depth Ratio	13.8	14.4						4.8	3.6																									
Bankfull Entrenchment Ratio	6	9.7																																
Bankfull Bank Height Ratio	1.2	1.3						1.3	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 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 (EEP# 194) Segment/Reach: B (512 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																																		
Floodprone Width (ft)	46.8	53.8																																		
Bankfull Mean Depth (ft)	0.68	0.8																																		
Bankfull Max Depth (ft)	1.4	1.6																																		
Bankfull Cross Sectional Area (ft^2)	2.7	3.8																																		
Bankfull Width/Depth Ratio	5.9	6.6																																		
Bankfull Entrenchment Ratio	11.7	10.8																																		
Bankfull Bank Height Ratio	**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 (EEP# 194) Segment/Reach: C (631 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						4.1	4.8																										
Floodprone Width (ft)	7.8	17.4																																	
Bankfull Mean Depth (ft)	0.2	0.2						0.4	0.5																										
Bankfull Max Depth (ft)	0.4	0.7						1.1	1																										
Bankfull Cross Sectional Area (ft^2)	0.6	0.9						1.8	2.4																										
Bankfull Width/Depth Ratio	25.4	16						9.6	9.7																										
Bankfull Entrenchment Ratio	2	4.5																																	
Bankfull Bank Height Ratio	2.1	1.6						1.4	1.3																										
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 (EEP# 194) Segment/Reach: 1A (1429 feet)

Parameter	Baseline						MY-1						MY-2						MY- 3						MY- 4						MY- 5					
only	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	Min	Mean	Med	Max	SD[4]	n
Bankfull Width (ft)	3.8	4.3		4.8			3.2	5		6		4																								
Floodprone Width (ft)	20.3	36.5		52.8			34.3	50		65.6		2																								
Bankfull Mean Depth (ft)	0.3	0.5		0.7			0.4	0.65		1		4																								
[1]Bankfull Max Depth (ft)	0.8	0.9		1			0.8	1.2		1.5		4																								
Bankfull Cross Sectional Area (ft^2)	1.5	2		2.5			2.3	3.5		5.9		4																								
Width/Depth Ratio	5.8	10.7		15.5			4.4	8.2		12.5		4																								
Entrenchment Ratio	4.2	9		13.8			6.4	9.4		12.4		2																								
[1]Bank Height Ratio	**1.3**	**1.45**		**1.6**			**1**	**1.1**		**1.2**		**4**																								
Profile																																				
Riffle Length (ft)	2.6	8		40.5			3.7	16.6		50.6																										
Riffle Slope (ft/ft)	0	1		6.9			0	1.7		7.5																										
Pool Length (ft)	4	16.8		54.8			4.7	15.7		31.9																										
Pool Max depth (ft)	1.2	1.2		1.3			1.12	2.08		3.3																										
Pool Spacing (ft)	9.5	33.3		143.4			8	29.4		67.2																										
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																																
Additional Reach Parameters																																				
Rosgen Classification	C5						E5/C5																													
Channel Thalweg length (ft)							1403																													
Sinuosity (ft)	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																																				

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

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 (EEP# 194) Segment/Reach: 2A (743 feet)

Parameter	Baseline						MY-1						MY-2						MY- 3						MY- 4						MY- 5					
Dimension and Substrate - Riffle only	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	Min	Mean	Med	Max	SD[4]	n
Bankfull Width (ft)		5.7					6.7	7.4		8.1		2																								
Floodprone Width (ft)		34.3					65.2	65.2		65.2		1																								
Bankfull Mean Depth (ft)		0.4					0.5	1.4		2.2		2																								
[1]Bankfull Max Depth (ft)		0.9					1.1	2.2		3.3		2																								
Bankfull Cross Sectional Area (ft[2])		2.4					3.1	10.5		17.9		2																								
Width/Depth Ratio		13.8					3.6	9		14.4		2																								
Entrenchment Ratio		6					9.7	9.7		9.7		1																								
[1]Bank Height Ratio		**1.2**					**1.1**	**1.2**		**1.3**		**2**																								
Profile																																				
Riffle Length (ft)	6.2	20.8		42.7			4.1	19		37.4																										
Riffle Slope (ft/ft)	0	1		3.5			0	1.4		5.5																										
Pool Length (ft)	13.1	20		29.8			3.5	15		41.8																										
Pool Max depth (ft)	1.4	2.09		3.39			1.56	2.7		4.43																										
Pool Spacing (ft)	18.6	56.3		103			6.8	30.9		73.5																										
Pattern																																				
Channel Beltwidth (ft)	11	23.5		33																																
Radius of Curvature (ft)	20.7	24.7		29.5																																
Rc:Bankfull width (ft/ft)	**3.632**	**4.333**		**5.175**																																
Meander Wavelength (ft)	59	116		140																																
Meander Width Ratio	1.93	4.123		5.789																																

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/C5						E5/C5																													
Channel Thalweg length (ft)																																				
Sinuosity (ft)	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 (EEP# 194) Segment/Reach: B (512 feet)

Parameter	Baseline						MY-1						MY-2						MY- 3						MY- 4						MY- 5					
Dimension and Substrate - Riffle only	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	Min	Mean	Med	Max	SD[4]	n
Bankfull Width (ft)		4						5																												
Floodprone Width (ft)		46.8						53.8																												
Bankfull Mean Depth (ft)		0.68						0.8																												
[1]Bankfull Max Depth (ft)		1.4						1.6																												
Bankfull Cross Sectional Area (ft^2)		2.7						3.8																												
Width/Depth Ratio		5.9						6.6																												
Entrenchment Ratio		11.7						10.8																												
[1]Bank Height Ratio		**1.1**						1																												
Profile																																				
Riffle Length (ft)	6.3	12.5		22			6.5	20.5		52.5																										
Riffle Slope (ft/ft)	0	1.6		4.5			0	0.25		1.8																										
Pool Length (ft)	6.3	10.7		14.5			10.5	20.4		46.4																										
Pool Max depth (ft)	0.85	1.51		2.41			0.86	1.61		2.46																										
Pool Spacing (ft)	24.7	31.9		36.8			20.3	39.6		64																										
Pattern																																				
Channel Beltwidth (ft)	9	16.4		23																																
Radius of Curvature (ft)	8.1	11.8		12.5																																
Rc:Bankfull width (ft/ft)	**2.025**	**2.95**		**3.125**																																
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																													
Channel Thalweg length (ft)																																				
Sinuosity (ft)	1.1						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

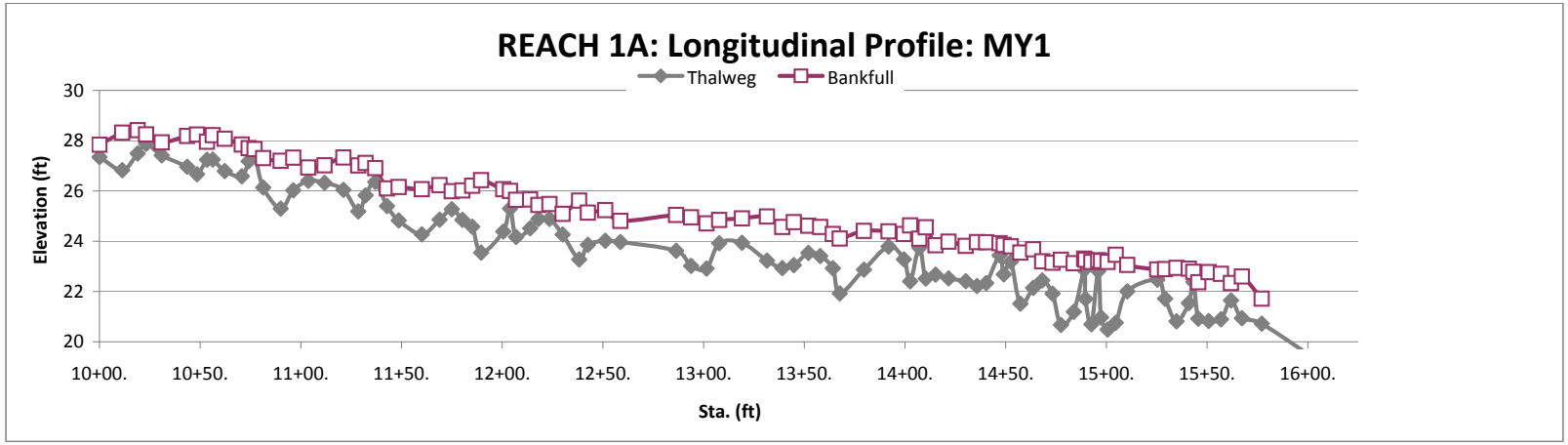
Table 15d. Monitoring Data - Stream Reach Data Summary
Jacksonville Country Club (EEP# 194) Segment/Reach: C (631 feet)

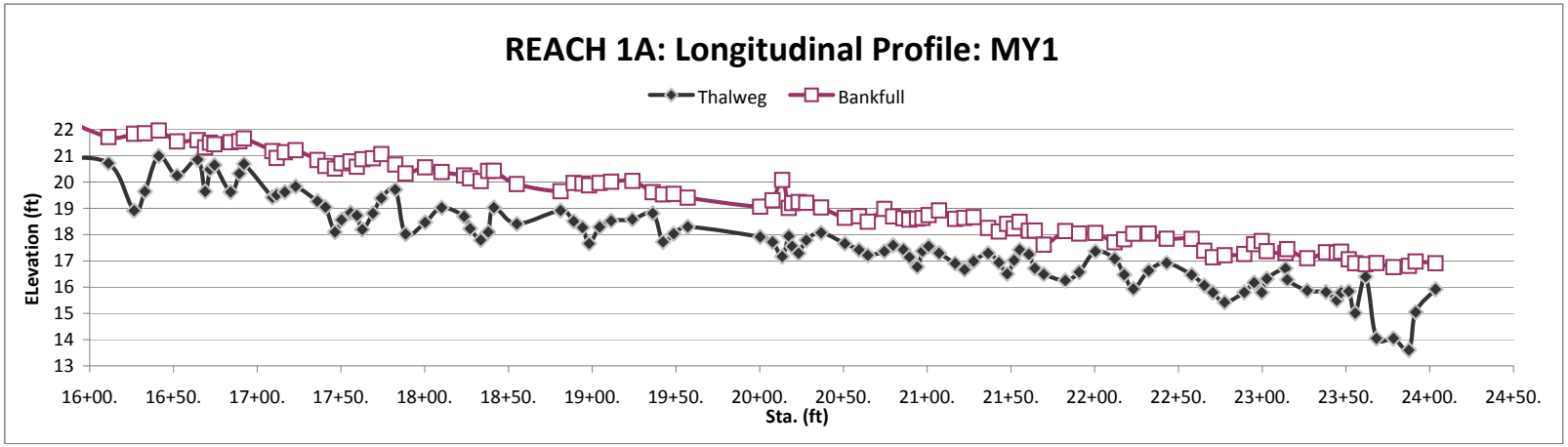
Parameter	Baseline						MY-1						MY-2						MY- 3						MY- 4						MY- 5					
Dimension and Substrate - Riffle only	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n
Bankfull Width (ft)		4					3.9	4.4		4.8		2																								
Floodprone Width (ft)		7.8					17.4	17.4		17.4		1																								
Bankfull Mean Depth (ft)		0.2					0.2	0.35		0.5		2																								
[1]Bankfull Max Depth (ft)		0.4					0.7	0.85		1		2																								
Bankfull Cross Sectional Area (ft^2)		0.6					0.9	1.65		2.4		2																								
Width/Depth Ratio		25.4					9.7	12.9		16		2																								
Entrenchment Ratio		2					4.5	4.5		4.5		1																								
[1]Bank Height Ratio		**2.1**					1.3	**1.5**		1.6		**2**																								
Profile																																				
Riffle Length (ft)	4.6	10.5		20			3.4	21.8		52.8																										
Riffle Slope (ft/ft)	0	0.71		3.4			0	0.92		2.9																										
Pool Length (ft)	6.3	10.7		14.5			10.6	17		23.4																										
Pool Max depth (ft)	0.46	1.29		2.11			0.56	1.32		1.73																										
Pool Spacing (ft)	13.4	34.1		71.9			15.2	38.8		73.3																										
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

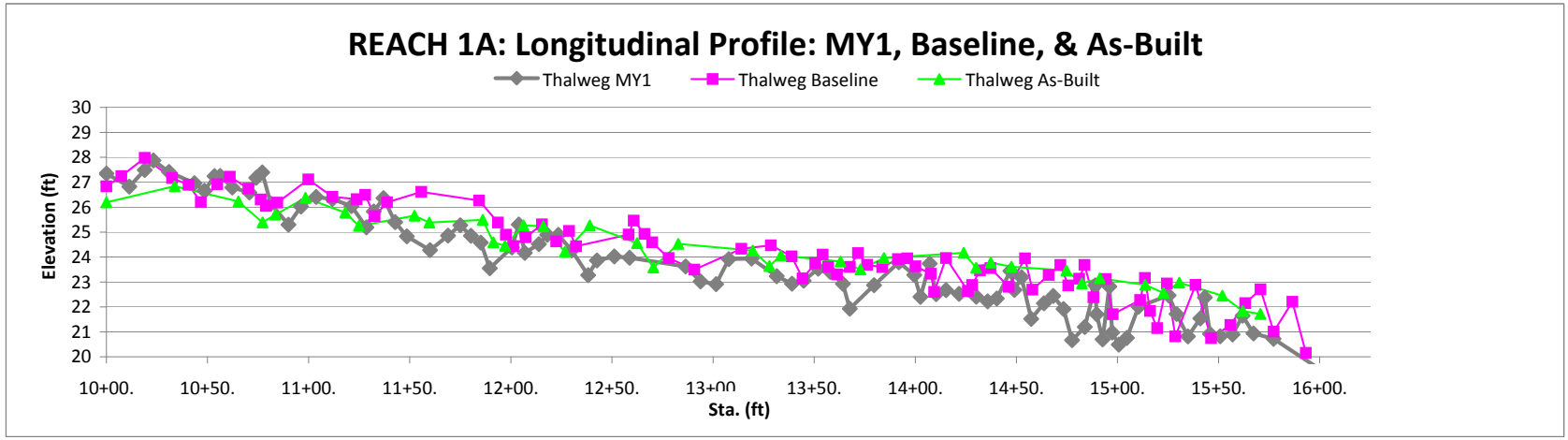
Additional Reach Parameters																																				
Rosgen Classification	C5						C5																													
Channel Thalweg length (ft)																																				
Sinuosity (ft)	1.1						1.3																													
Water Surface Slope (Channel) (ft/ft)																																				
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																																				

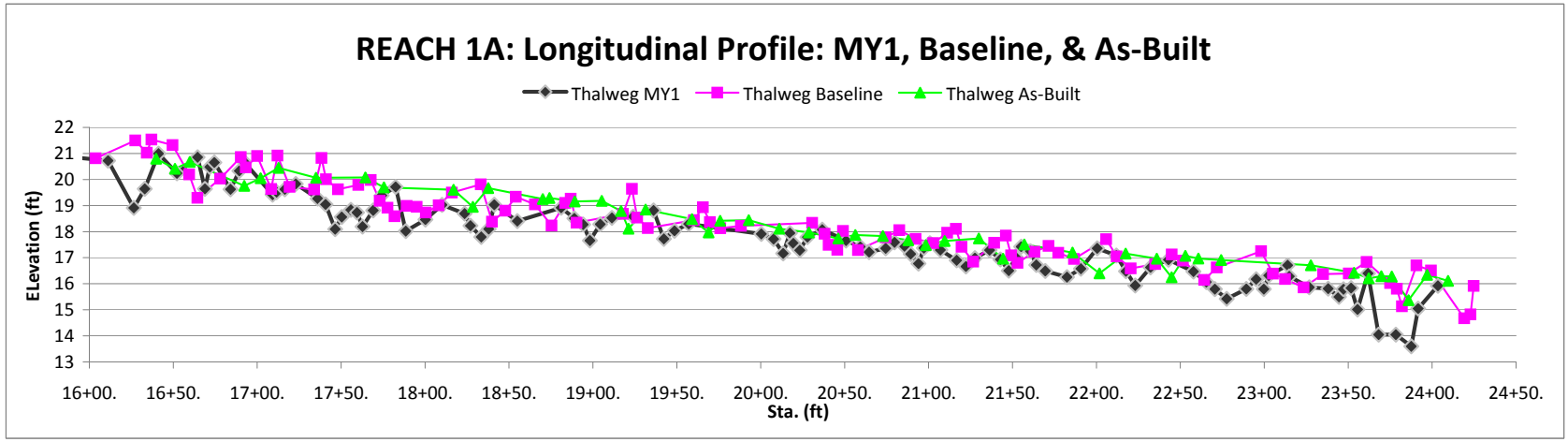
Shaded cells indicate that these will typically not be filled in.
1 = The distributions for these parameters can include information from both the cross-section surveys and the longitudinal profile.
2 = Proportion of reach exhibiting banks that are eroding based on the visual survey from visual assessment 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		0.0083	
Pool-Pool Spacing (ft)	8	29.4	67.2
Pool Length (ft)	4.7	15.7	31.9
Riffle Length (ft)	3.7	16.6	50.6
Dmax Riffle (ft)	0.27	1.1	1.95
Dmax Pool (ft)	1.12	2.08	3.3


REACH 1A: Longitudinal Profile: MY1, Baseline, & As-Built
Thalweg MY1
Thalweg Baseline
Thalweg As-Built
Elevation (ft)
30
29
28
27
26
25
24
23
22
21
20
10+00.
10+50.
11+00.
11+50.
12+00.
12+50.
13+00
13+50.
14+00.
14+50.
15+00.
15+50.
16+00.
Sta. (ft)


REACH 1A: Longitudinal Profile: MY1, Baseline, & As-Built
Thalweg MY1
Thalweg Baseline
Thalweg As-Built
ELevation (ft)
22
21
20
19
18
17
16
15
14
13
16+00.
16+50.
17+00.
17+50.
18+00.
18+50.
19+00.
19+50.
20+00.
20+50.
21+00.
21+50.
22+00.
22+50.
23+00.
23+50.
24+00.
24+50.
Sta. (ft)

REACH 1A: LONGITUDINAL PROFILE DATA - UPSTREAM REACH

Sta.	Distance	TW	BKF	Sta.	Distance	TW	BKF
10+00.	0.0	27.8197	28.5265	13+19.06	319.1	23.9182	24.8471
10+11.3	11.3	27.3472	27.8392	13+31.52	331.5	23.9387	24.9071
10+18.97	19.0	26.8253	28.3142	13+39.05	339.1	23.2306	24.9816
10+23.21	23.2	27.4918	28.4134	13+44.8	344.8	22.9309	24.5678
10+30.92	30.9	27.8733	28.2502	13+52.	352.0	23.0481	24.7596
10+43.56	43.6	27.4134	27.9324	13+57.9	357.9	23.5319	24.6148
10+48.47	48.5	26.9612	28.1872	13+64.24	364.2	23.4082	24.5661
10+53.43	53.4	26.6628	28.2392	13+67.64	367.6	22.9265	24.2844
10+56.26	56.3	27.2432	27.9595	13+79.62	379.6	21.9282	24.1032
10+62.23	62.2	27.2503	28.2185	13+91.86	391.9	22.8687	24.4095
10+70.67	70.7	26.7883	28.0721	13+99.51	399.5	23.7895	24.3888
10+74.13	74.1	26.5863	27.8471	14+02.54	402.5	23.2779	24.2838
10+77.03	77.0	27.1786	27.7028	14+07.13	407.1	22.4038	24.6257
10+81.29	81.3	27.3958	27.6655	14+10.3	410.3	23.7369	24.1007
10+89.98	90.0	26.1386	27.3048	14+15.24	415.2	22.5131	24.5547
10+96.26	96.3	25.2961	27.2015	14+21.69	421.7	22.6723	23.8355
11+03.7	103.7	26.0262	27.3256	14+30.17	430.2	22.5223	23.9809
11+11.81	111.8	26.4061	26.9343	14+35.79	435.8	22.4102	23.8112
11+21.18	121.2	26.3256	27.0188	14+40.33	440.3	22.2194	23.9621
11+28.55	128.6	26.0437	27.3272	14+47.01	447.0	22.3344	23.9592
11+32.17	132.2	25.1884	27.0107	14+49.07	449.1	23.4391	23.9211
11+37.01	137.0	25.8244	27.1146	14+52.56	452.6	22.6815	23.8525
11+42.77	142.8	26.361	26.9077	14+57.3	457.3	23.1882	23.7941
11+48.6	148.6	25.3994	26.0978	14+63.64	463.6	21.5177	23.5449
11+60.06	160.1	24.8289	26.156	14+68.18	468.2	22.1448	23.6787
11+68.94	168.9	24.2733	26.0691	14+73.31	473.3	22.4403	23.1987
11+75.01	175.0	24.8572	26.2319	14+77.5	477.5	21.9152	23.1447
11+80.27	180.3	25.2737	25.9861	14+83.8	483.8	20.6678	23.259
11+85.13	185.1	24.8532	26.0195	14+88.99	489.0	21.1937	23.1254
11+89.57	189.6	24.575	26.2042	14+89.66	489.7	22.8626	23.3037
12+00.53	200.5	23.5488	26.4315	14+92.61	492.6	21.7061	23.2617
12+03.92	203.9	24.384	26.0671	14+96.	496.0	20.6981	23.1719
12+06.91	206.9	25.301	25.9994	14+97.39	497.4	22.8152	23.2415
12+13.89	213.9	24.1664	25.6488	15+00.63	500.6	20.9705	23.2136
12+17.99	218.0	24.516	25.6571	15+04.66	504.7	20.4836	23.1733
12+23.48	223.5	24.8897	25.4419	15+10.39	510.4	20.7583	23.4572
12+30.05	230.0	24.8896	25.4759	15+25.32	525.3	22.0034	23.0564
12+38.23	238.2	24.2641	25.0857	15+29.21	529.2	22.463	22.8758
12+42.59	242.6	23.2739	25.6169	15+34.85	534.8	21.7155	22.8892
12+51.15	251.1	23.8602	25.1383	15+41.	541.0	20.8166	22.9367
12+58.7	258.7	24.0212	25.2332	15+43.22	543.2	21.54	22.9039
12+86.39	286.4	23.9679	24.8053	15+45.72	545.7	22.3759	22.7847
12+93.81	293.8	23.6234	25.0449	15+50.84	550.8	20.9196	22.3643
13+01.47	301.5	23.0207	24.9482	15+56.9	556.9	20.8234	22.7731
13+07.78	307.8	22.9128	24.7053	15+61.87	561.9	20.8956	22.7033

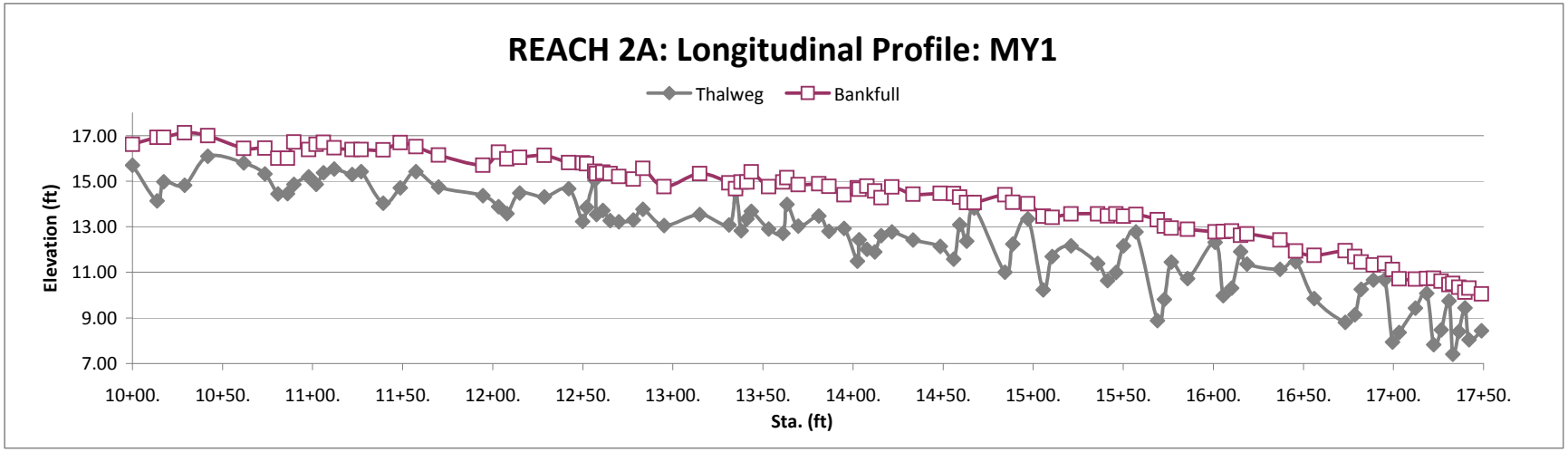
REACH 1A: LONGITUDINAL PROFILE DATA - UPSTREAM REACH

Sta.	Distance	TW	BKF	Sta.	Distance	TW	BKF
15+67.29	567.3	21.6484	22.3347	19+42.31	942.3	17.7208	19.5317
15+77.18	577.2	20.937	22.5972	19+48.58	948.6	18.0347	19.5519
16+11.15	611.1	20.7209	21.7128	19+57.06	957.1	18.2973	19.4038
16+26.47	626.5	18.911	21.8392	20+00.33	1000.3	17.9123	19.0631
16+32.96	633.0	19.6446	21.8553	20+07.63	1007.6	17.7171	19.3059
16+41.22	641.2	20.9922	21.965	20+13.4	1013.4	17.163	20.0814
16+52.18	652.2	20.2426	21.5499	20+17.36	1017.4	17.9435	19.0141
16+64.47	664.5	20.8578	21.594	20+19.41	1019.4	17.5478	19.1982
16+68.88	668.9	19.6435	21.3209	20+23.24	1023.2	17.2865	19.2379
16+71.8	671.8	20.4846	21.4986	20+27.81	1027.8	17.7892	19.2131
16+74.5	674.5	20.6516	21.4379	20+36.66	1036.7	18.0762	19.0288
16+84.11	684.1	19.6228	21.516	20+50.8	1050.8	17.6604	18.639
16+89.33	689.3	20.33	21.5533	20+59.28	1059.3	17.4172	18.698
16+92.08	692.1	20.6888	21.6594	20+64.52	1064.5	17.2133	18.4905
17+09.12	709.1	19.4197	21.1797	20+74.46	1074.5	17.3593	18.9791
17+11.6	711.6	19.5128	20.9179	20+79.69	1079.7	17.5901	18.6907
17+16.46	716.5	19.6235	21.1356	20+85.83	1085.8	17.4272	18.622
17+22.94	722.9	19.8347	21.2121	20+89.32	1089.3	17.1386	18.5668
17+36.02	736.0	19.269	20.8429	20+94.	1094.0	16.7717	18.6078
17+40.72	740.7	19.0451	20.6131	20+97.2	1097.2	17.3714	18.6304
17+46.41	746.4	18.0961	20.5105	21+00.8	1100.8	17.556	18.7388
17+50.36	750.4	18.5611	20.7171	21+07.03	1107.0	17.293	18.9207
17+55.78	755.8	18.8352	20.7846	21+16.7	1116.7	16.8997	18.5953
17+59.47	759.5	18.7312	20.5862	21+22.24	1122.2	16.6626	18.6321
17+62.78	762.8	18.1949	20.8713	21+27.64	1127.6	16.9858	18.6615
17+69.09	769.1	18.8113	20.903	21+36.33	1136.3	17.2887	18.2544
17+74.14	774.1	19.3874	21.0643	21+42.8	1142.8	16.9364	18.118
17+82.43	782.4	19.7184	20.6654	21+47.75	1147.8	16.5049	18.4065
17+88.57	788.6	18.0207	20.3272	21+51.88	1151.9	17.0225	18.234
18+00.2	800.2	18.4651	20.563	21+55.19	1155.2	17.4201	18.482
18+10.15	810.1	19.0286	20.3849	21+60.69	1160.7	17.2478	18.1468
18+23.55	823.6	18.6947	20.2485	21+64.2	1164.2	16.7193	18.1497
18+27.09	827.1	18.2279	20.1449	21+69.55	1169.6	16.4916	17.6131
18+33.48	833.5	17.7933	20.0367	21+82.44	1182.4	16.2531	18.1355
18+37.91	837.9	18.1006	20.426	21+90.73	1190.7	16.5753	18.0367
18+41.27	841.3	19.0302	20.4282	22+00.47	1200.5	17.3584	18.0645
18+55.	855.0	18.4055	19.9246	22+11.88	1211.9	17.0821	17.7043
18+81.14	881.1	18.9192	19.6502	22+17.59	1217.6	16.4764	17.8191
18+88.93	888.9	18.5109	19.9649	22+23.13	1223.1	15.9324	18.033
18+94.25	894.2	18.2727	19.9399	22+32.24	1232.2	16.6311	18.039
18+98.2	898.2	17.6559	19.879	22+42.96	1243.0	16.9219	17.8422
19+04.4	904.4	18.2856	19.9657	22+57.84	1257.8	16.4689	17.8361
19+11.32	911.3	18.5255	20.0137	22+65.46	1265.5	16.0643	17.3812
19+24.01	924.0	18.5803	20.0436	22+70.6	1270.6	15.7937	17.1359
19+36.13	936.1	18.8117	19.6143	22+77.58	1277.6	15.4221	17.2086

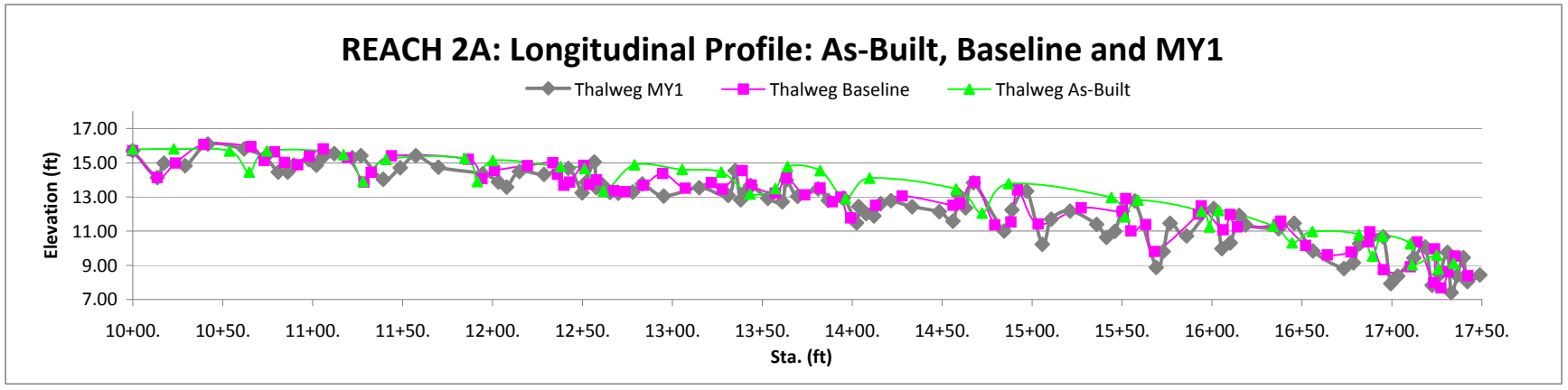
REACH 1A: LONGITUDINAL PROFILE DATA - UPSTREAM REACH

Sta.	Distance	TW	BKF
22+89.3	1289.3	15.8033	17.2604
22+95.21	1295.2	16.1723	17.631
22+99.75	1299.7	15.7932	17.7508
23+02.7	1302.7	16.3198	17.3659
23+13.92	1313.9	16.7119	17.3028
23+14.92	1314.9	16.2826	17.4407
23+26.85	1326.8	15.8649	17.0994
23+38.09	1338.1	15.8114	17.3243
23+44.47	1344.5	15.4978	17.3015
23+47.18	1347.2	15.7915	17.3494
23+51.69	1351.7	15.8371	17.0571
23+55.56	1355.6	15.0118	16.9067
23+61.82	1361.8	16.3995	16.8732
23+68.16	1368.2	14.0492	16.9114
23+78.36	1378.4	14.0444	16.7583
23+87.61	1387.6	13.5982	16.8042
23+91.64	1391.6	15.0491	16.9761
24+03.42	1403.4	15.9231	16.91

Sta.	Distance	TW	BKF



	Minimum	Mean	Max
Bankfull Slope		0.0088	
Pool-Pool Spacing (ft)	6.8	30.9	73.5
Pool Length (ft)	3.5	15	41.8
Riffle Length (ft)	4.1	19	37.4
Dmax Riffle	0.66	1.42	1.97
Dmax Pool (ft)	1.56	2.7	4.43

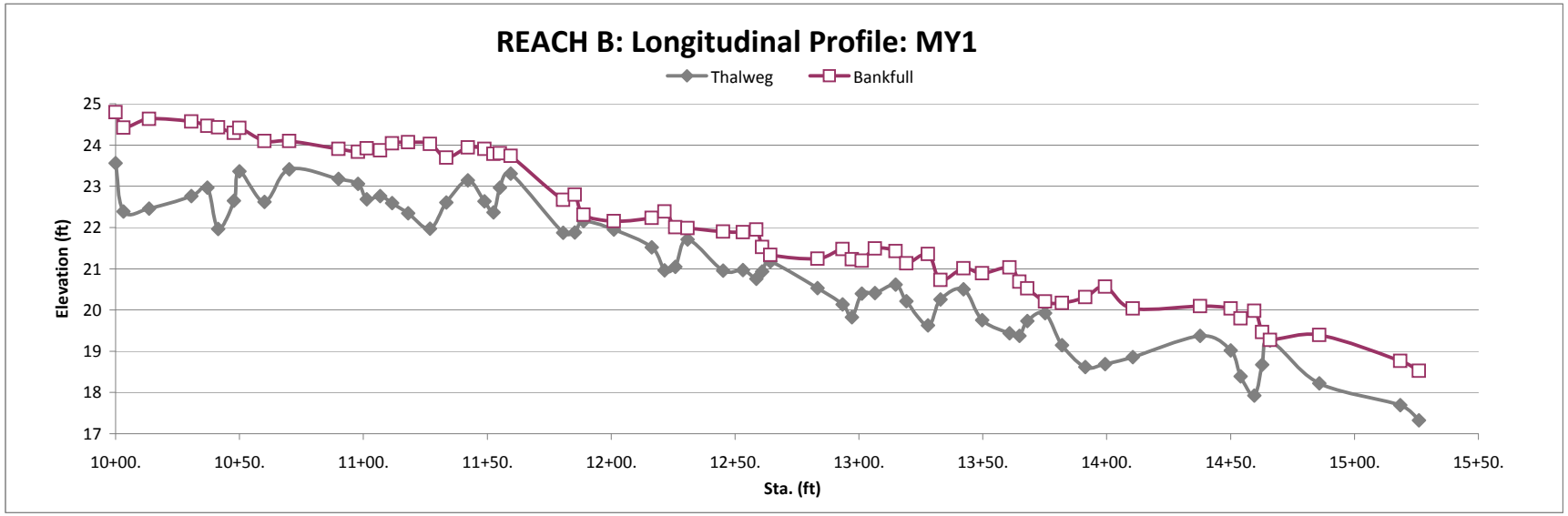


REACH 2A: LONGITUDINAL PROFILE DATA - DOWNSTREAM REACH

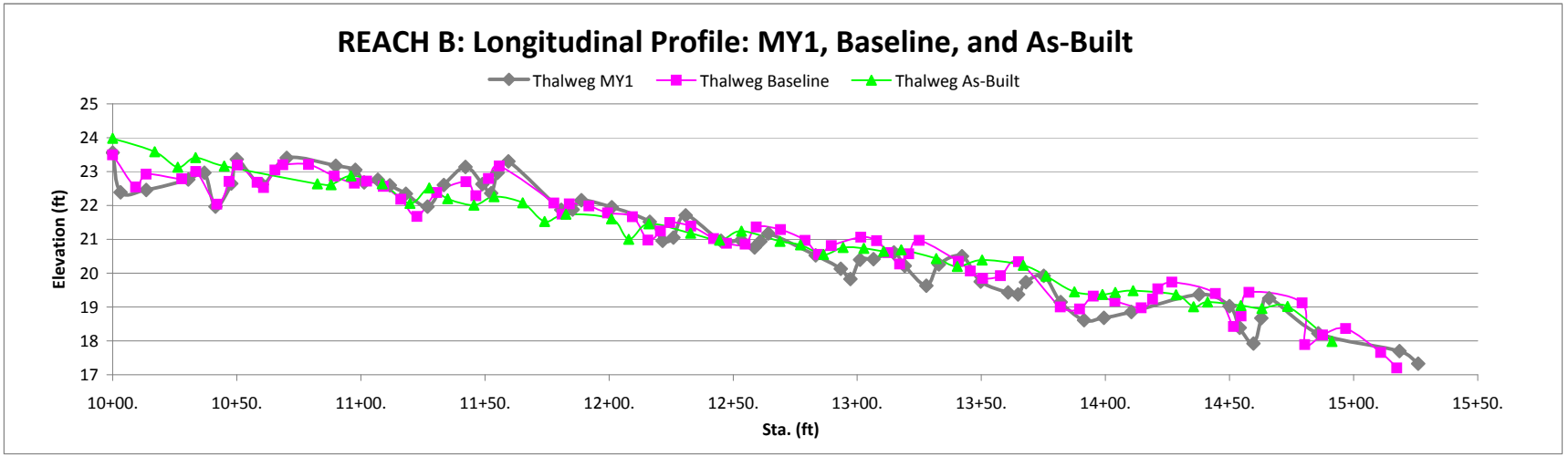
Sta.	Distance	ELEV-TW	BKF		Sta.	Distance	TW	BKF
10+00.	0.0	15.695	16.618		13+53.12	353.1	12.9065	14.7522
10+13.68	13.7	14.128	16.917		13+61.03	361.0	12.7097	14.9584
10+17.34	17.3	14.9737	16.921		13+63.41	363.4	13.984	15.1525
10+29.03	29.0	14.8238	17.1249		13+69.56	369.6	13.027	14.8441
10+41.77	41.8	16.0945	16.9948		13+81.04	381.0	13.4763	14.8862
10+61.84	61.8	15.8063	16.4416		13+86.72	386.7	12.8025	14.7643
10+73.48	73.5	15.3107	16.4519		13+95.06	395.1	12.9281	14.398
10+80.79	80.8	14.444	16.007		14+02.36	402.4	11.4848	14.7115
10+86.1	86.1	14.4582	16.0045		14+03.47	403.5	12.4341	14.6436
10+89.58	89.6	14.8619	16.7171		14+07.77	407.8	12.0122	14.7876
10+97.88	97.9	15.1851	16.3869		14+12.08	412.1	11.8898	14.5641
11+02.03	102.0	14.8546	16.6122		14+15.68	415.7	12.6118	14.2696
11+05.99	106.0	15.3705	16.7075		14+21.52	421.5	12.7756	14.7442
11+12.07	112.1	15.5307	16.4673		14+33.25	433.3	12.4192	14.4246
11+21.98	122.0	15.2885	16.3892		14+48.45	448.4	12.1367	14.4693
11+26.9	126.9	15.413	16.3789		14+55.93	455.9	11.5812	14.4582
11+39.18	139.2	14.0368	16.3767		14+59.19	459.2	13.0922	14.2995
11+48.69	148.7	14.7025	16.6949		14+63.08	463.1	12.362	14.0547
11+57.43	157.4	15.4167	16.5168		14+67.36	467.4	13.8188	14.063
11+69.97	170.0	14.7465	16.1397		14+84.39	484.4	11.0112	14.4014
11+94.6	194.6	14.3572	15.6928		14+88.72	488.7	12.2343	14.0679
12+03.15	203.2	13.88	16.2731		14+97.	497.0	13.3397	14.0006
12+07.9	207.9	13.5809	15.9797		15+05.58	505.6	10.2245	13.4597
12+14.92	214.9	14.4787	16.0411		15+10.62	510.6	11.6987	13.4153
12+28.6	228.6	14.3149	16.1345		15+21.05	521.1	12.1663	13.5593
12+42.11	242.1	14.6699	15.8179		15+35.79	535.8	11.3927	13.5682
12+49.82	249.8	13.2358	15.7954		15+41.36	541.4	10.6383	13.4671
12+52.13	252.1	13.8545	15.7576		15+45.91	545.9	10.9874	13.5625
12+56.62	256.6	15.0468	15.4354		15+50.2	550.2	12.1643	13.4606
12+57.64	257.6	13.5365	15.3351		15+57.15	557.1	12.7693	13.5394
12+61.11	261.1	13.7102	15.3874		15+68.93	568.9	8.8817	13.3068
12+65.23	265.2	13.2675	15.3305		15+72.82	572.8	9.8118	13.0335
12+69.98	270.0	13.2246	15.1971		15+76.72	576.7	11.4534	12.9411
12+78.	278.0	13.2905	15.0927		15+85.79	585.8	10.7247	12.8898
12+83.29	283.3	13.7666	15.5616		16+01.02	601.0	12.3201	12.7778
12+95.11	295.1	13.0531	14.7614		16+05.46	605.5	9.9732	12.7917
13+14.92	314.9	13.5359	15.3247		16+10.1	610.1	10.3068	12.8071
13+31.08	331.1	13.0765	14.9266		16+15.08	615.1	11.9121	12.6199
13+34.89	334.9	14.5431	14.6677		16+18.68	618.7	11.3606	12.682
13+37.93	337.9	12.8247	14.9565		16+36.97	637.0	11.1357	12.4151
13+41.17	341.2	13.3456	14.9598		16+45.66	645.7	11.4629	11.9367
13+43.47	343.5	13.6788	15.4024		16+56.1	656.1	9.8429	11.74

REACH 2A: LONGITUDINAL PROFILE DATA - DOWNSTREAM REACH

Sta.	Distance	ELEV-TW	BKF		Sta.	Distance	TW	BKF
16+73.26	673.3	8.8061	11.9519					
16+78.58	678.6	9.1408	11.6988					
16+82.06	682.1	10.2607	11.4482					
16+88.82	688.8	10.6571	11.3187					
16+95.13	695.1	10.6708	11.3892					
16+99.4	699.4	7.9373	11.1144					
17+03.24	703.2	8.3658	10.7114					
17+12.22	712.2	9.4273	10.6984					
17+18.49	718.5	10.08	10.729					
17+22.4	722.4	7.832	10.737					
17+26.51	726.5	8.4775	10.6059					
17+30.85	730.9	9.7517	10.465					
17+32.89	732.9	7.4043	10.5053					
17+36.29	736.3	8.4025	10.3423					
17+39.7	739.7	9.4464	10.1279					
17+42.02	742.0	8.0455	10.3					
17+48.91	748.9	8.4367	10.0495					

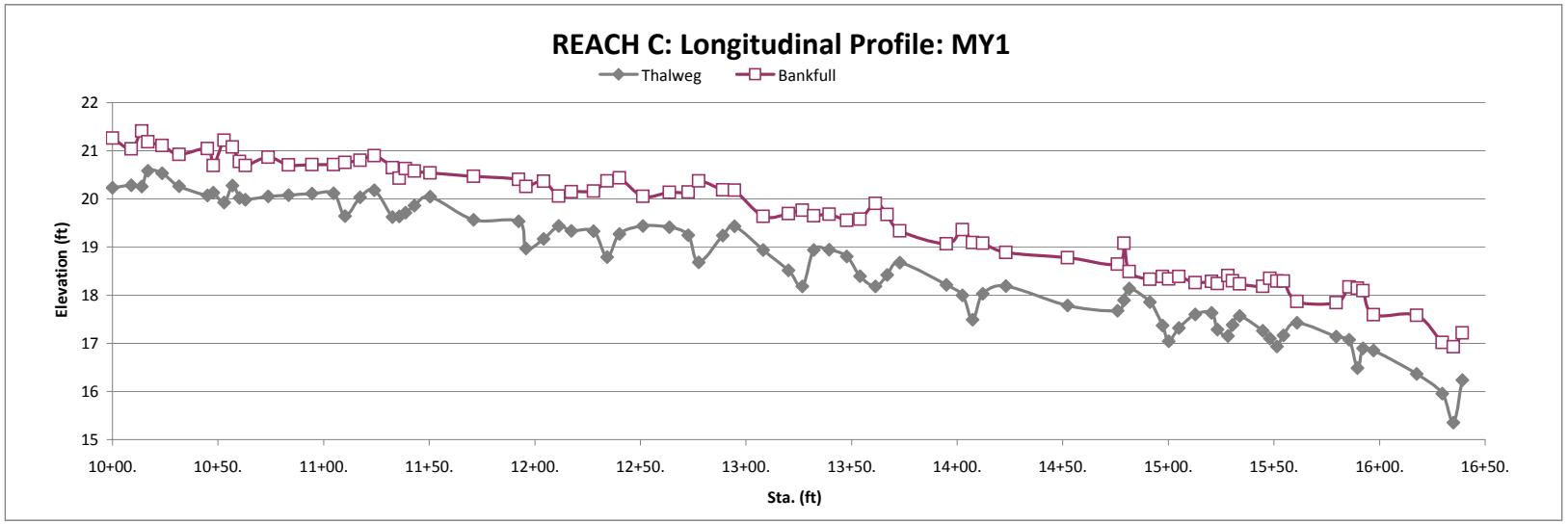


	Minimum	Mean	Max
Bankfull Slope		0.0119	
Pool-Pool Spacing (ft)	20.3	39.6	64
Pool Length (ft)	10.5	20.4	46.4
Riffle Length (ft)	6.5	20.5	52.5
Dmax Riffle (ft)	0.48	0.82	1.19
Dmax Pool (ft)	0.86	1.61	2.46

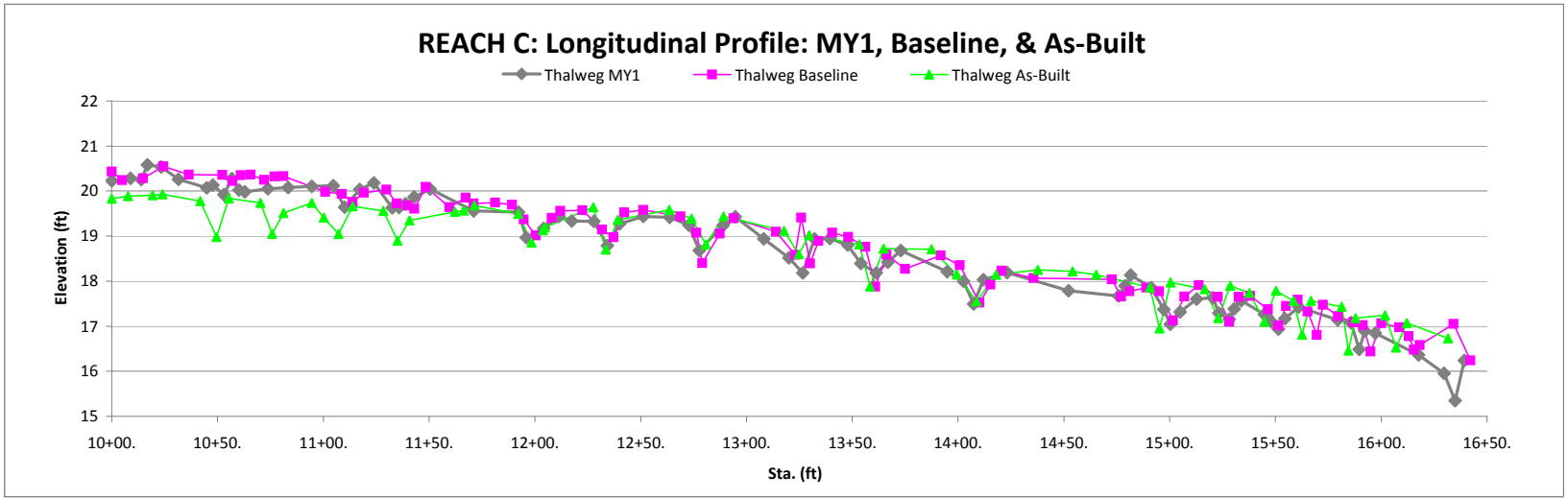


REACH B: LONGITUDINAL PROFILE DATA

Sta.	Distance	ELEV-TW	BKF		Sta.	Distance	TW	BKF
10+00.	0.0	23.5568	24.7972		13+19.18	319.2	20.215	21.1334
10+03.21	3.2	22.3893	24.4234		13+27.85	327.8	19.6269	21.3584
10+13.51	13.5	22.4565	24.6302		13+32.91	332.9	20.2585	20.7297
10+30.53	30.5	22.7646	24.57		13+42.2	342.2	20.5012	21.0138
10+37.	37.0	22.9694	24.4638		13+49.68	349.7	19.7524	20.8911
10+41.38	41.4	21.9658	24.4307		13+60.8	360.8	19.4334	21.0319
10+47.73	47.7	22.6477	24.2919		13+64.77	364.8	19.3719	20.6866
10+49.97	50.0	24.3645	24.4105		13+67.92	367.9	19.7338	20.5215
10+60.09	60.1	22.6197	24.0986		13+75.16	375.2	19.9227	20.2032
10+70.09	70.1	23.4093	24.0982		13+82.01	382.0	19.1491	20.173
10+89.93	89.9	23.1761	23.9068		13+91.36	391.4	18.6144	20.3103
10+97.83	97.8	23.0553	23.832		13+99.34	399.3	18.6847	20.5661
11+01.36	101.4	22.6835	23.9174		14+10.5	410.5	18.8546	20.037
11+06.82	106.8	22.7586	23.8676		14+37.73	437.7	19.3713	20.0913
11+11.65	111.7	22.5917	24.0401		14+50.	450.0	19.0228	20.0328
11+18.12	118.1	22.3482	24.0672		14+54.1	454.1	18.3917	19.7991
11+26.88	126.9	21.9684	24.0275		14+59.59	459.6	17.9235	19.9776
11+33.46	133.5	22.6035	23.6954		14+62.78	462.8	18.6721	19.4651
11+42.19	142.2	23.1411	23.9415		14+65.93	465.9	19.2596	19.0704
11+48.93	148.9	22.6326	23.9078		14+85.79	485.8	18.2229	19.3956
11+52.51	152.5	22.3637	23.7876		15+18.47	518.5	17.6948	18.7634
11+55.12	155.1	22.9658	23.7967		15+25.98	526.0	17.3272	18.5264
11+59.48	159.5	23.303	23.7368					
11+80.69	180.7	21.8686	22.6707					
11+85.33	185.3	21.8756	22.8003					
11+88.86	188.9	22.153	22.3127					
12+01.1	201.1	21.9494	22.1534					
12+16.41	216.4	21.5186	22.2298					
12+21.52	221.5	20.9597	22.3906					
12+25.93	225.9	21.0494	22.0071					
12+30.84	230.8	21.711	21.9872					
12+45.16	245.2	20.9568	21.902					
12+53.24	253.2	20.9707	21.8858					
12+58.59	258.6	20.7565	21.9483					
12+60.99	261.0	20.9356	21.5251					
12+64.2	264.2	21.1739	21.3374					
12+83.28	283.3	20.5286	21.2428					
12+93.36	293.4	20.133	21.4749					
12+97.21	297.2	19.8267	21.2315					
13+01.17	301.2	20.3985	21.1976					
13+06.5	306.5	20.4101	21.4875					
13+14.83	314.8	20.6121	21.4262					



	Minimum	Mean	Max
Bankfull Slope		0.0059	
Pool-Pool Spacing (ft)	15.2	38.8	73.3
Pool Length (ft)	10.6	17	23.4
Riffle Length (ft)	3.4	21.8	52.8
Dmax Riffle (ft)	0.44	0.64	0.8
Dmax Pool (ft)	0.56	1.32	1.73



REACH C: LONGITUDINAL PROFILE DATA

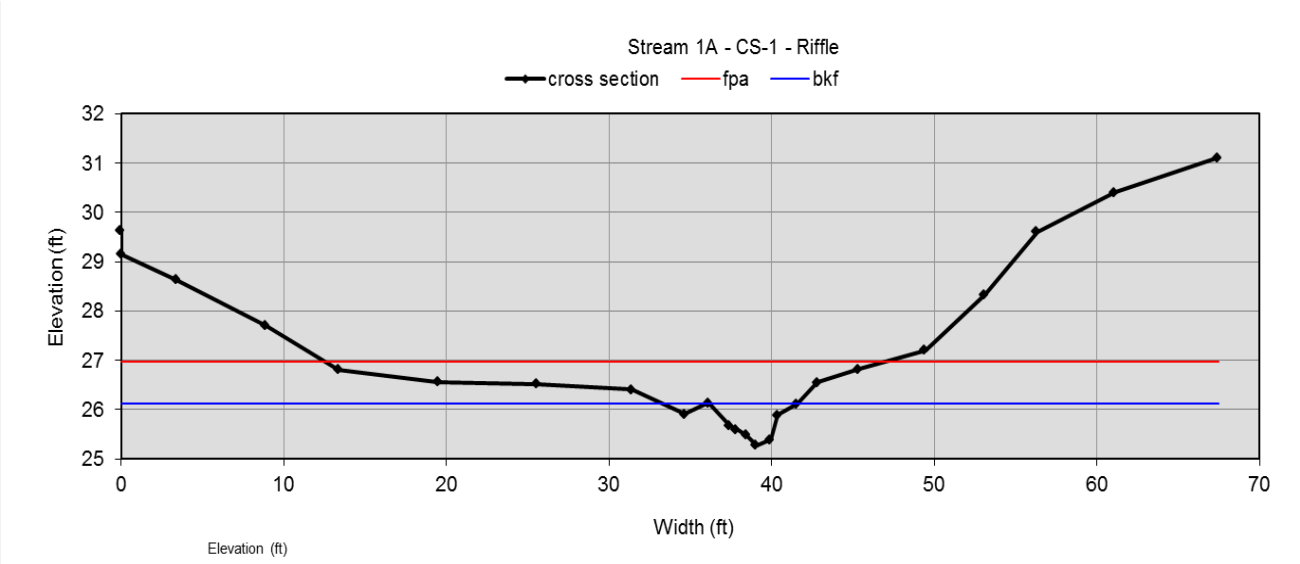
Sta.	Distance	ELEV-TW	BKF
10+00.	0.0	20.2306	21.2617
10+08.89	8.9	20.2846	21.0385
10+13.89	13.9	20.2574	21.4105
10+16.82	16.8	20.5851	21.1843
10+23.44	23.4	20.5335	21.1087
10+31.51	31.5	20.2622	20.9224
10+44.93	44.9	20.073	21.0483
10+47.77	47.8	20.1326	20.6928
10+52.93	52.9	19.9232	21.2189
10+56.75	56.7	20.2781	21.0803
10+60.15	60.2	20.0234	20.7771
10+62.89	62.9	19.9829	20.6956
10+73.75	73.8	20.0521	20.8668
10+83.34	83.3	20.077	20.7045
10+94.47	94.5	20.1078	20.7153
11+04.7	104.7	20.1188	20.713
11+10.14	110.1	19.6431	20.7564
11+17.23	117.2	20.0337	20.8025
11+23.92	123.9	20.1805	20.8968
11+32.63	132.6	19.6265	20.6473
11+35.79	135.8	19.6344	20.4309
11+38.78	138.8	19.7143	20.6323
11+42.93	142.9	19.8634	20.5794
11+50.38	150.4	20.0447	20.5399
11+71.03	171.0	19.5632	20.4717
11+92.31	192.3	19.5334	20.4066
11+95.84	195.8	18.9702	20.2574
12+04.23	204.2	19.1711	20.369
12+11.35	211.3	19.4373	20.061
12+17.36	217.4	19.3347	20.1515
12+27.79	227.8	19.3296	20.1604
12+34.19	234.2	18.7901	20.3728
12+40.04	240.0	19.2742	20.4362
12+51.24	251.2	19.4352	20.052
12+63.74	263.7	19.4152	20.1351
12+72.7	272.7	19.2489	20.1424
12+77.61	277.6	18.6794	20.3715
12+88.95	289.0	19.2411	20.1854
12+94.59	294.6	19.4329	20.1819
13+08.15	308.2	18.9369	19.6371
13+20.05	320.1	18.5188	19.6934
13+26.63	326.6	18.1853	19.7651
13+32.1	332.1	18.9415	19.6476
13+39.33	339.3	18.9448	19.6802

Sta.	Distance	TW	BKF
13+47.76	347.8	18.8049	19.5541
13+54.03	354.0	18.3918	19.5772
13+61.35	361.4	18.1813	19.908
13+66.84	366.8	18.4212	19.6739
13+72.87	372.9	18.6776	19.3341
13+94.88	394.9	18.2123	19.0654
14+02.53	402.5	18.0004	19.3613
14+07.34	407.3	17.4936	19.0897
14+12.06	412.1	18.0311	19.0787
14+23.12	423.1	18.189	18.889
14+52.2	452.2	17.7891	18.778
14+75.88	475.9	17.6749	18.6462
14+78.93	478.9	17.8937	19.0821
14+81.51	481.5	18.1359	18.4925
14+91.31	491.3	17.8541	18.328
14+97.23	497.2	17.3713	18.3849
15+00.22	500.2	17.045	18.3366
15+04.97	505.0	17.3156	18.3866
15+12.74	512.7	17.6026	18.2605
15+20.44	520.4	17.6338	18.2823
15+23.19	523.2	17.2883	18.2382
15+28.2	528.2	17.1519	18.4043
15+30.43	530.4	17.3847	18.2991
15+33.81	533.8	17.5665	18.2323
15+44.78	544.8	17.2627	18.1828
15+48.07	548.1	17.1001	18.351
15+51.46	551.5	16.9327	18.2888
15+54.44	554.4	17.1658	18.2923
15+60.94	560.9	17.4248	17.8672
15+79.4	579.4	17.1422	17.8453
15+85.63	585.6	17.0767	18.1688
15+89.53	589.5	16.4848	18.1438
15+92.19	592.2	16.8974	18.0906
15+97.16	597.2	16.8485	17.5941
16+17.64	617.6	16.361	17.5827
16+29.68	629.7	15.9532	17.0176
16+34.9	634.9	15.3493	16.9258
16+39.2	639.2	16.238	17.219

Jacksonville Country Club

Reach 1A – Permanent Cross Section CS1

(Yr01 Monitoring – November 2014)

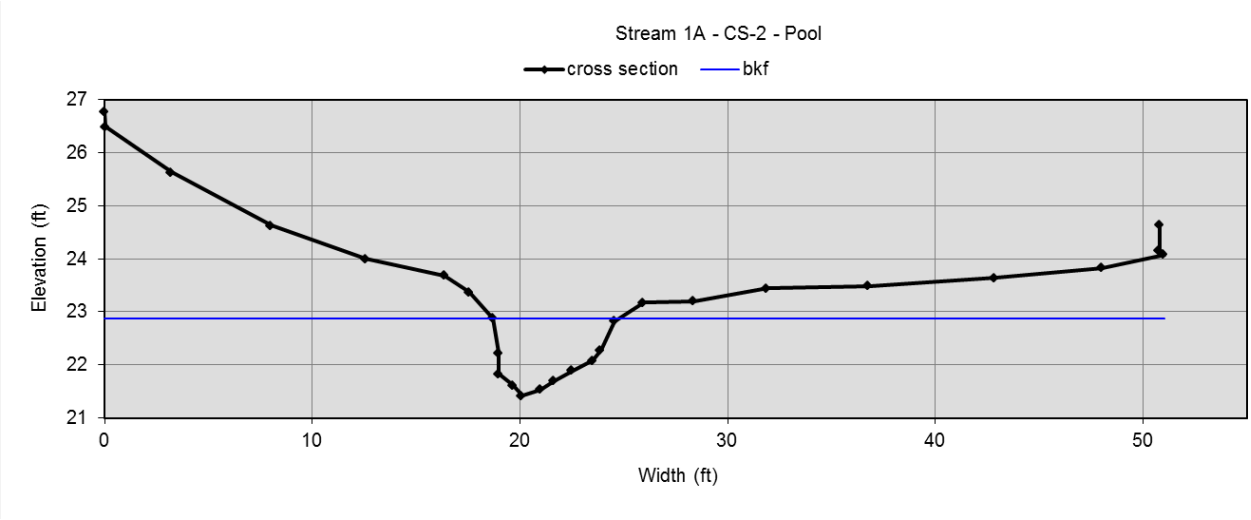


Bankfull Dimensions		Flood Dimensions	
2.6	x-section area (ft.sq.)	34.3	W flood prone area (ft)
8.1	width (ft)	4.2	entrenchment ratio
0.3	mean depth (ft)	0.9	low bank height (ft)
0.8	max depth (ft)	1.0	low bank height ratio
8.6	wetted parimeter (ft)		
0.3	hyd radi (ft)		
25.3	width-depth ratio		

Jacksonville Country Club

Reach 1A – Permanent Cross Section CS2

(Yr01 Monitoring – November 2014)

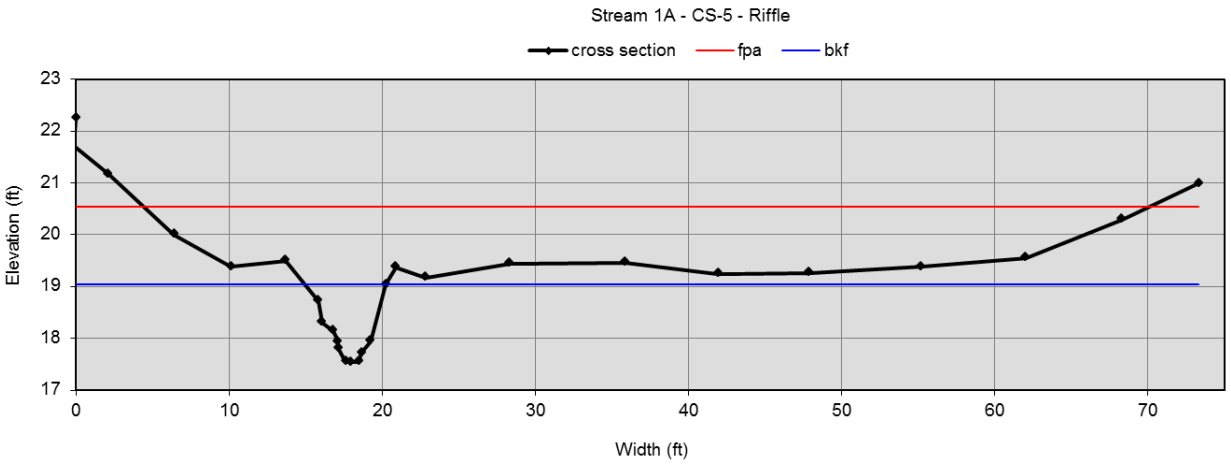


Bankfull Dimensions		Flood Dimensions	
5.9	x-section area (ft.sq.)	---	W flood prone area (ft)
6.0	width (ft)	---	entrenchment ratio
1.0	mean depth (ft)	1.8	low bank height (ft)
1.5	max depth (ft)	1.2	low bank height ratio
7.3	wetted parimeter (ft)		
0.8	hyd radi (ft)		
6.2	width-depth ratio		

Jacksonville Country Club

Reach 1A – Permanent Cross Section CS5

(Yr01 Monitoring – November 2014)



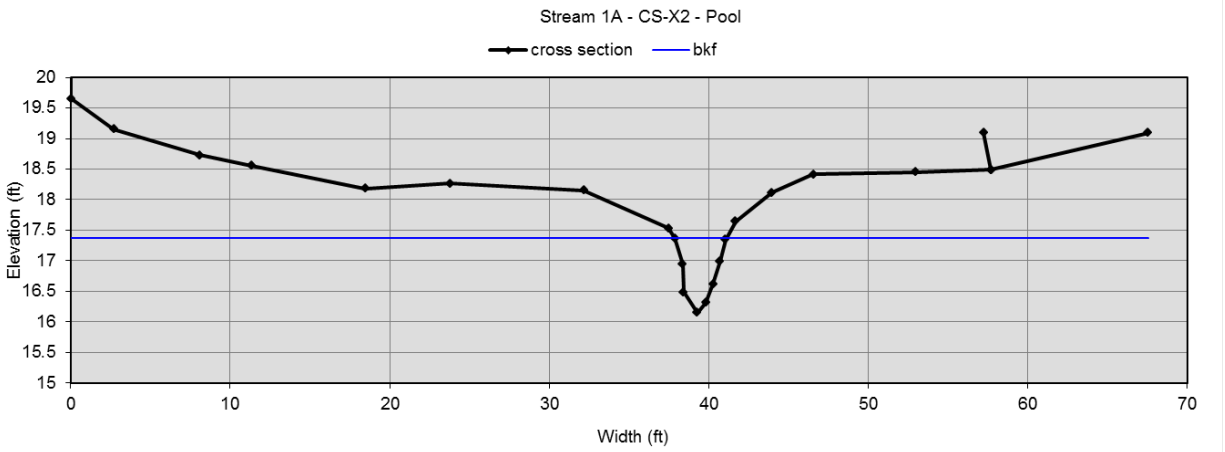
Bankfull Dimensions	
4.6	x-section area (ft.sq.)
5.3	width (ft)
0.9	mean depth (ft)
1.5	max depth (ft)
6.4	wetted parimeter (ft)
0.7	hyd radi (ft)
6.0	width-depth ratio

Flood Dimensions	
65.6	W flood prone area (ft)
12.4	entrenchment ratio
1.8	low bank height (ft)
1.2	low bank height ratio

Jacksonville Country Club

Reach 1A – Permanent Cross Section CS-X2

(Yr01 Monitoring – November 2014)

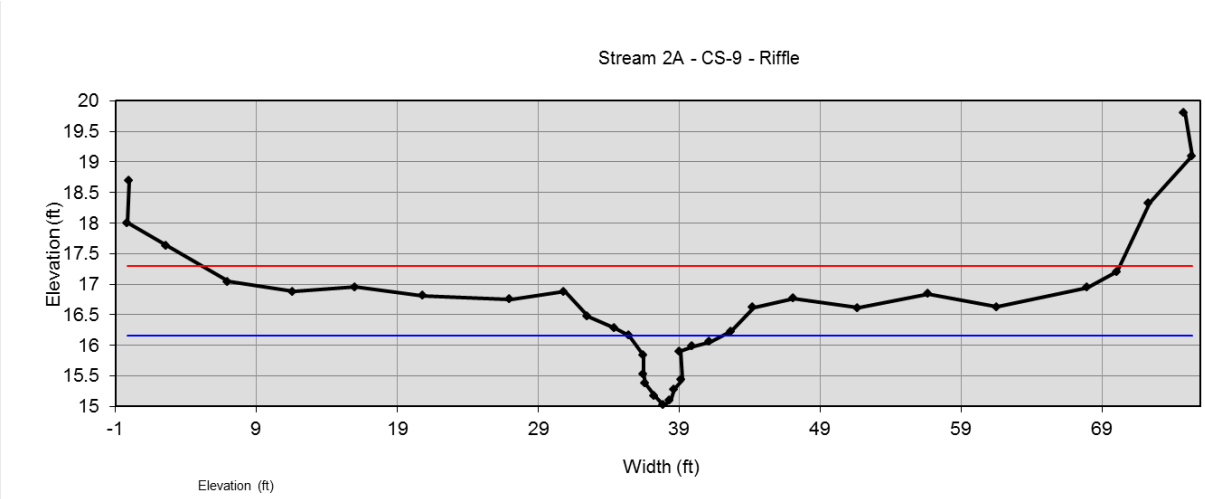


Bankfull Dimensions		Flood Dimensions	
2.4	x-section area (ft.sq.)	---	W flood prone area (ft)
3.2	width (ft)	---	entrenchment ratio
0.7	mean depth (ft)	1.4	low bank height (ft)
1.2	max depth (ft)	1.1	low bank height ratio
4.3	wetted parimeter (ft)		
0.6	hyd radi (ft)		
4.4	width-depth ratio		

Jacksonville Country Club

Reach 2A – Permanent Cross Section CS-9

(Yr01 Monitoring – November 2014)



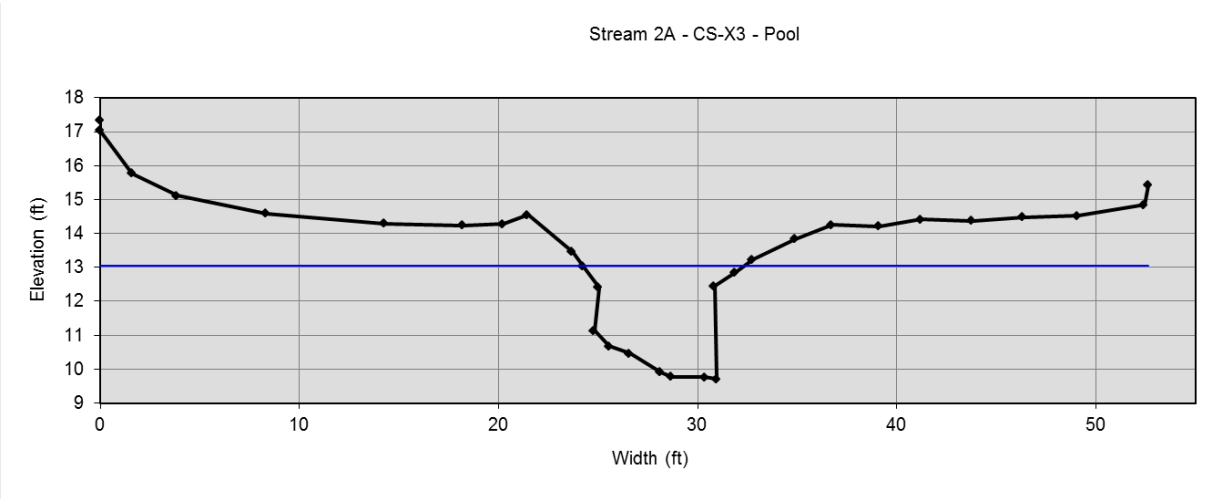
Bankfull Dimensions	
3.1	x-section area (ft.sq.)
6.7	width (ft)
0.5	mean depth (ft)
1.1	max depth (ft)
7.9	wetted parimeter (ft)
0.4	hyd radi (ft)
14.4	width-depth ratio

Flood Dimensions	
65.2	W flood prone area (ft)
9.7	entrenchment ratio
1.4	low bank height (ft)
1.3	low bank height ratio

Jacksonville Country Club

Reach 2A – Permanent Cross Section CS-X3

(Yr01 Monitoring – November 2014)

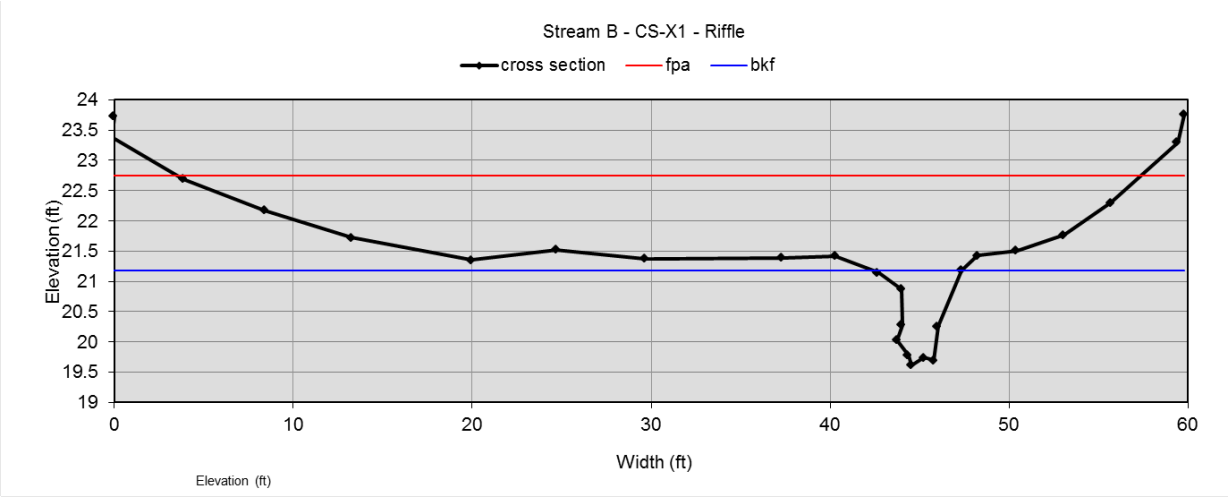


Bankfull Dimensions		Flood Dimensions	
17.9	x-section area (ft.sq.)	---	W flood prone area (ft)
8.1	width (ft)	---	entrenchment ratio
2.2	mean depth (ft)	3.5	low bank height (ft)
3.3	max depth (ft)	1.1	low bank height ratio
13.1	wetted parimeter (ft)		
1.4	hyd radi (ft)		
3.6	width-depth ratio		

Jacksonville Country Club

Reach B – Permanent Cross Section CS-X1

(Yr01 Monitoring – November 2014)



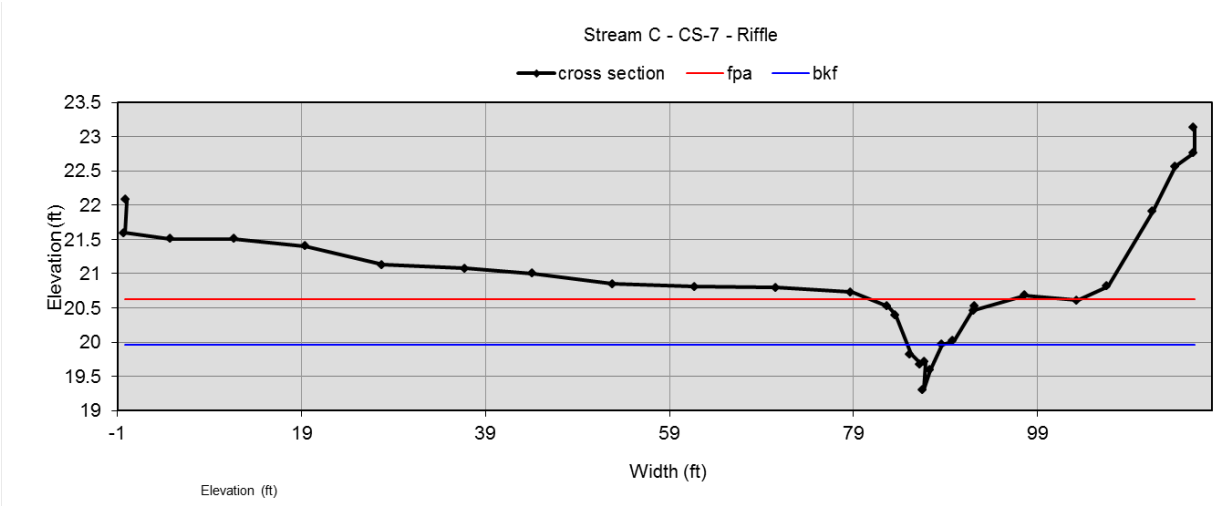
Bankfull Dimensions	
3.8	x-section area (ft.sq.)
5.0	width (ft)
0.8	mean depth (ft)
1.6	max depth (ft)
7.0	wetted parimeter (ft)
0.5	hyd radi (ft)
6.6	width-depth ratio

Flood Dimensions	
53.8	W flood prone area (ft)
10.8	entrenchment ratio
1.5	low bank height (ft)
1.0	low bank height ratio

Jacksonville Country Club

Reach C – Permanent Cross Section CS-7

(Yr01 Monitoring – November 2014)



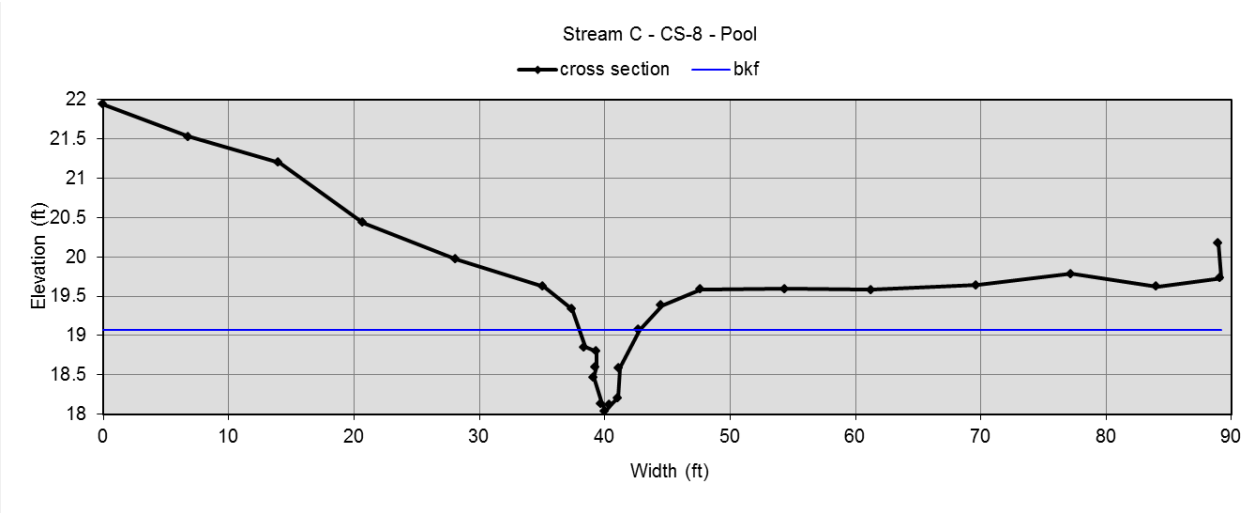
Bankfull Dimensions	
0.9	x-section area (ft.sq.)
3.9	width (ft)
0.2	mean depth (ft)
0.7	max depth (ft)
4.7	wetted parimeter (ft)
0.2	hyd radi (ft)
16.0	width-depth ratio

Flood Dimensions	
17.4	W flood prone area (ft)
4.5	entrenchment ratio
1.1	low bank height (ft)
1.6	low bank height ratio

Jacksonville Country Club

Reach C – Permanent Cross Section CS-8

(Yr01 Monitoring – November 2014)



Bankfull Dimensions		Flood Dimensions	
2.4	x-section area (ft.sq.)	---	W flood prone area (ft)
4.8	width (ft)	---	entrenchment ratio
0.5	mean depth (ft)	1.3	low bank height (ft)
1.0	max depth (ft)	1.3	low bank height ratio
6.0	wetted parimeter (ft)		
0.4	hyd radi (ft)		
9.7	width-depth ratio		

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Appendix E.
Hydrologic Data

Table 16. Documentation of Geomorphologically Significant Flow Events

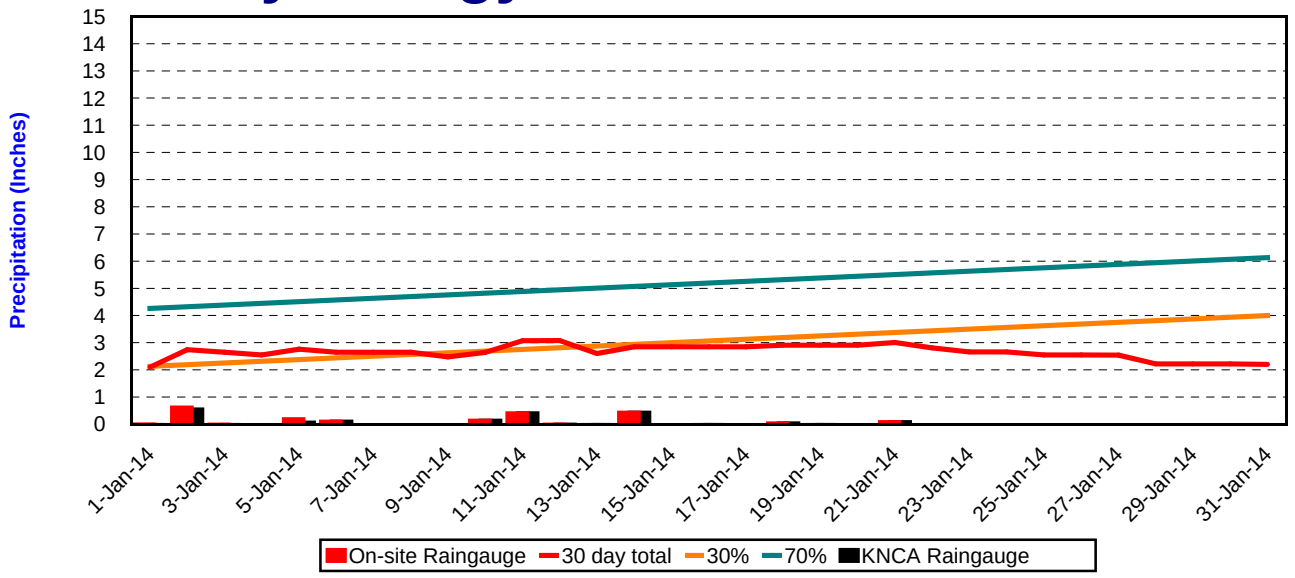
Stream Gauge No.	#1		#2	
Location	Reach 2A		Reach 1A	
Date of Occurrence	1/2/14 - 1/3/14	8/12/2014	1/2/14 - 1/3/14	8/30/2014
	1/11/2014	8/19/2014	1/11/2014	9/7/2014
	1/14/2014	8/23/2014	1/14/2014	9/8/2014
	1/31/2014	8/30/2014	1/31/2014	9/12/2014
	2/1/2014	9/7/2014	2/1/2014	9/13/2014
	2/5/2014	9/8/2014	2/5/2014	9/21/2014
	2/8/2014	9/12/2014	2/8/2014	9/24/2014
	2/12/2014	9/13/2014	2/12/2014	9/25/2014
	2/13/2014	9/20/2014	2/13/2014	10/3/2014
	2/21/2014	9/21/2014	2/21/2014	10/11/2014
	3/6/2014	9/24/2014	3/6/2014	10/14/2014
	3/7/2014	9/25/2014	3/7/2014	10/15/2014
	3/16/2014	10/3/2014	3/16/2014	11/16/2014
	3/17/2014	10/11/2014	3/17/2014	11/24/2014
	3/18/2014	10/14/2014	3/18/2014	11/26/2014
	3/29/2014	10/15/2014	3/29/2014	
	4/15/2014	11/16/2014	4/15/2014	
	4/19/14 - 4/20/14	11/24/2014	4/19/14 - 4/20/14	
	4/25/2014	11/26/2014	4/25/2014	
	4/30/2014		4/30/2014	
	5/16/2014		5/16/2014	
	6/5/2014		6/5/2014	
	6/12/2014		6/13/2014	
	6/13/2014		6/27/2014	
	6/14/2014		6/28/2014	
	6/27/2014		7/3/2014	
	6/28/2014		7/4/2014	
	7/3/2014		7/10/2014	
	7/4/2014		7/15/2014	
	7/10/2014		7/16/2014	
	7/15/2014		7/20/2014	
	7/16/2014		7/21/2014	
	7/20/2014		7/22/2014	
	7/21/2014		7/24/14 - 7/25/14	
	7/22/2014		8/1/2014	
	7/24/14 - 7/25/14		8/2/2014	
	7/28/2014		8/3/2014	
	8/1/2014		8/4/2014	
	8/2/2014		8/6/2014	
	8/3/2014		8/12/2014	
	8/4/2014		8/19/2014	
	8/6/14 - 8/7/14		8/23/2014	
TOTAL NUMBER	**61**		**57**	

Hydrology Assessment

January 2014

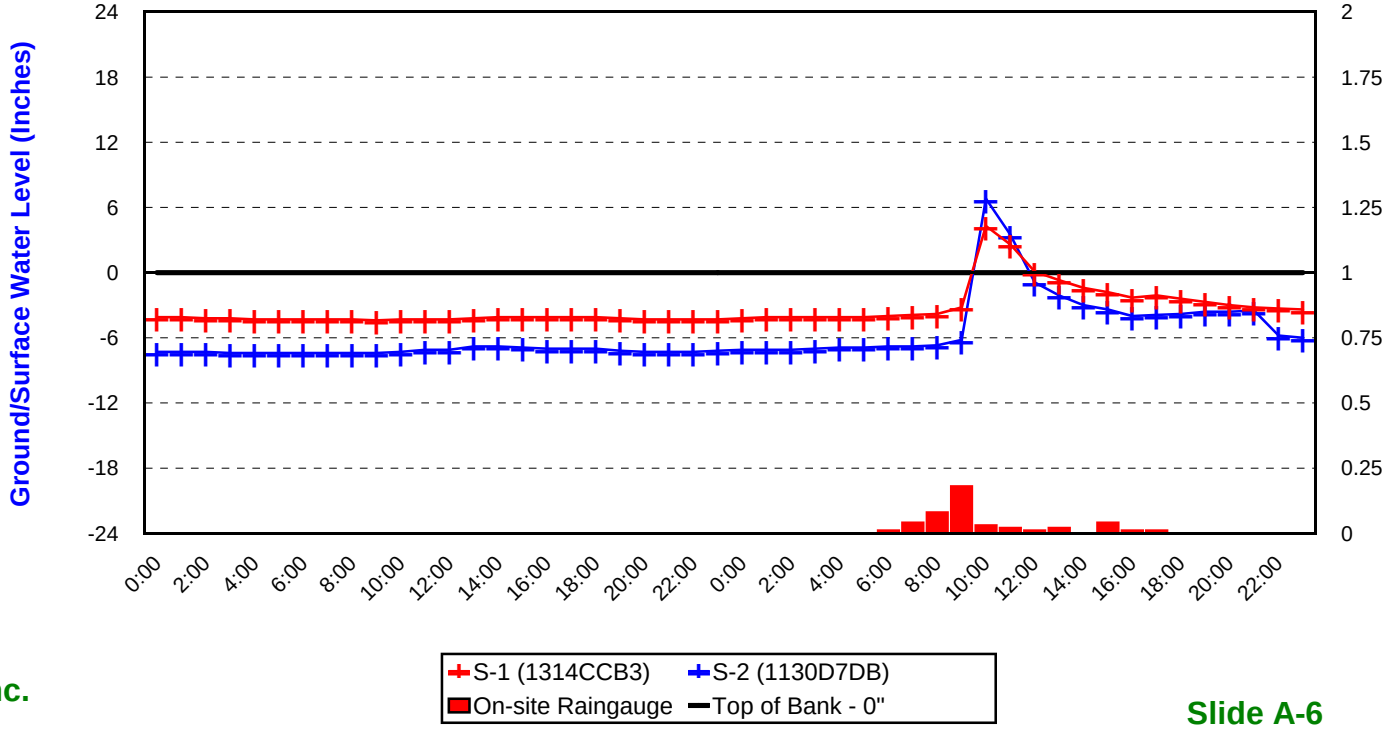
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 13, 2014 to January 14, 2014
- One reading per hour

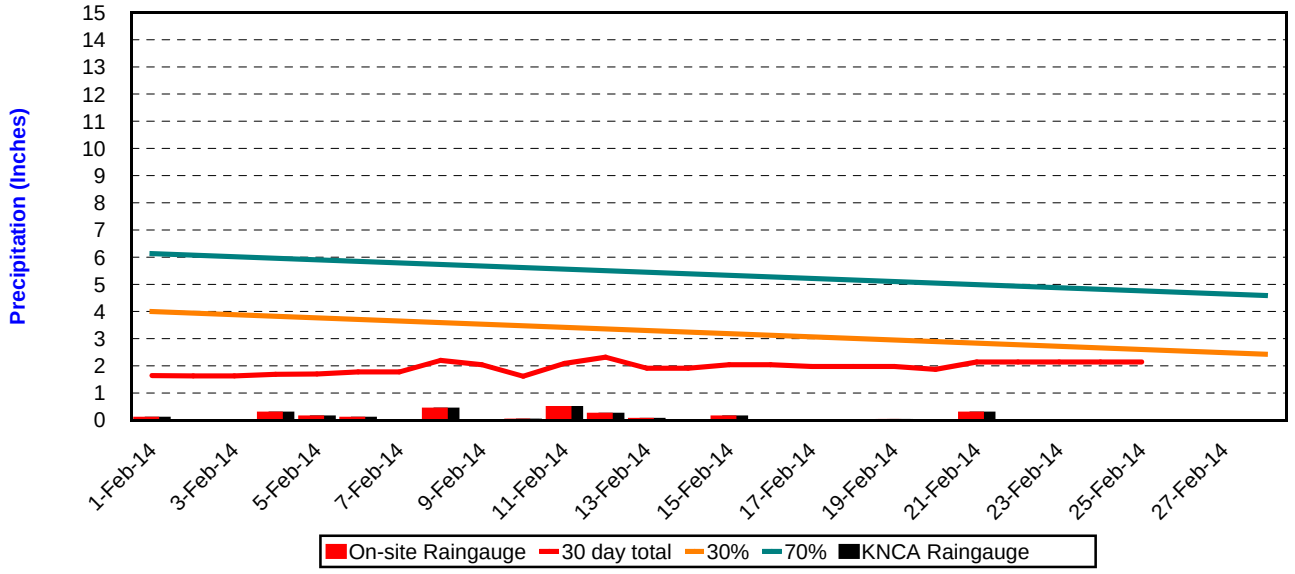


Hydrology Assessment

February 2014

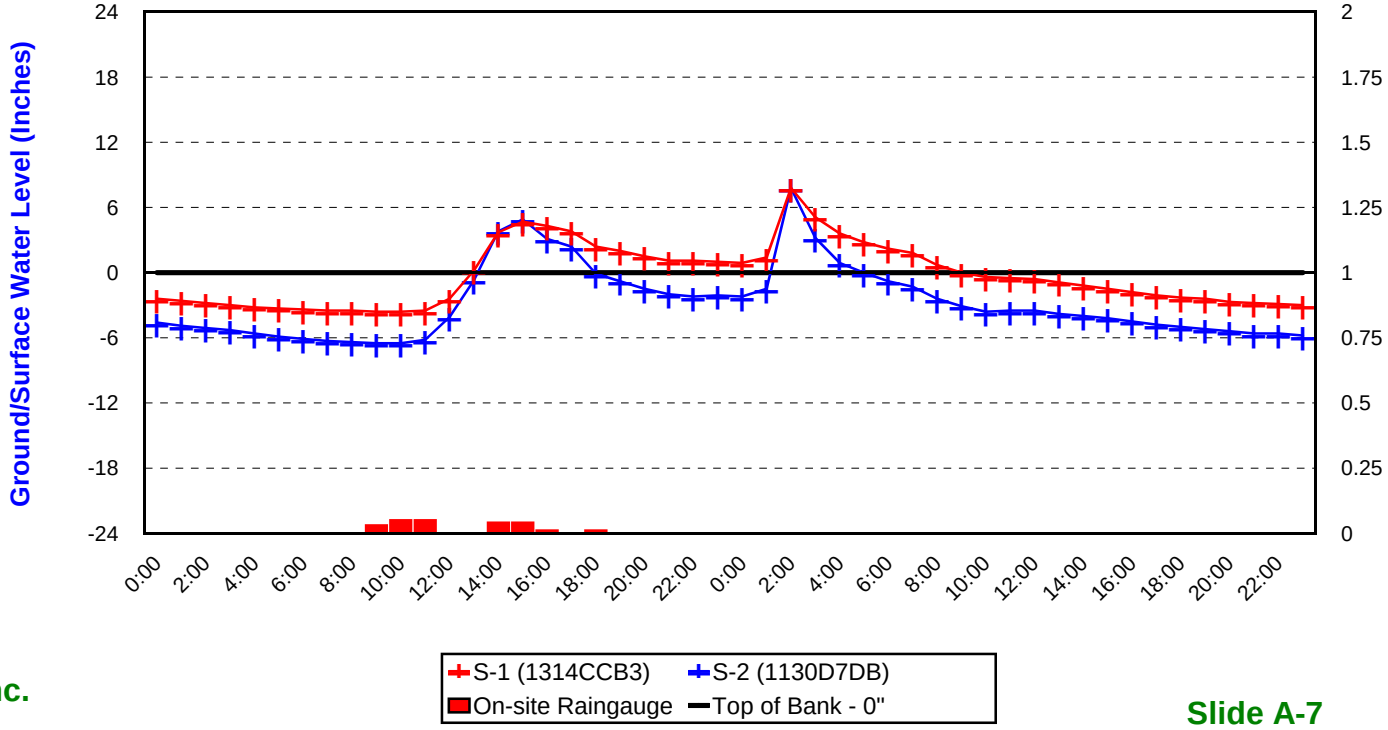
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 12, 2014 to February 13, 2014
- One reading per hour

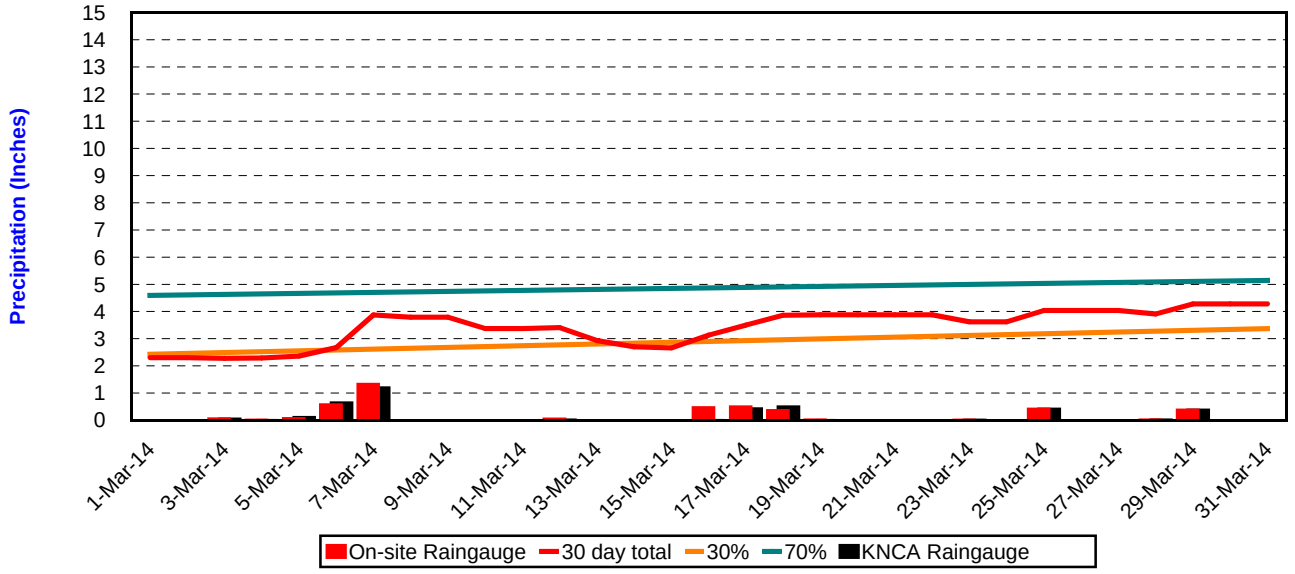


Hydrology Assessment

March 2014

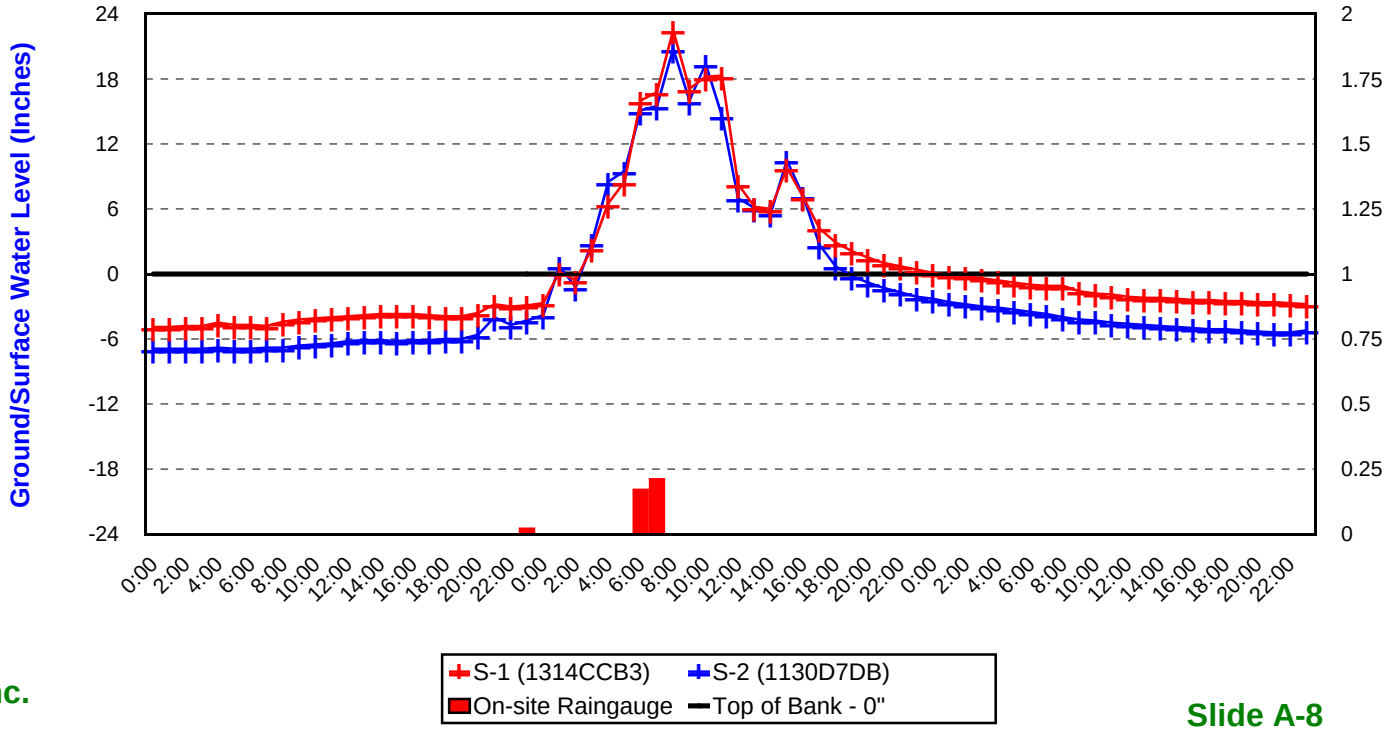
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 28, 2014 to March 30, 2014
- One reading per hour

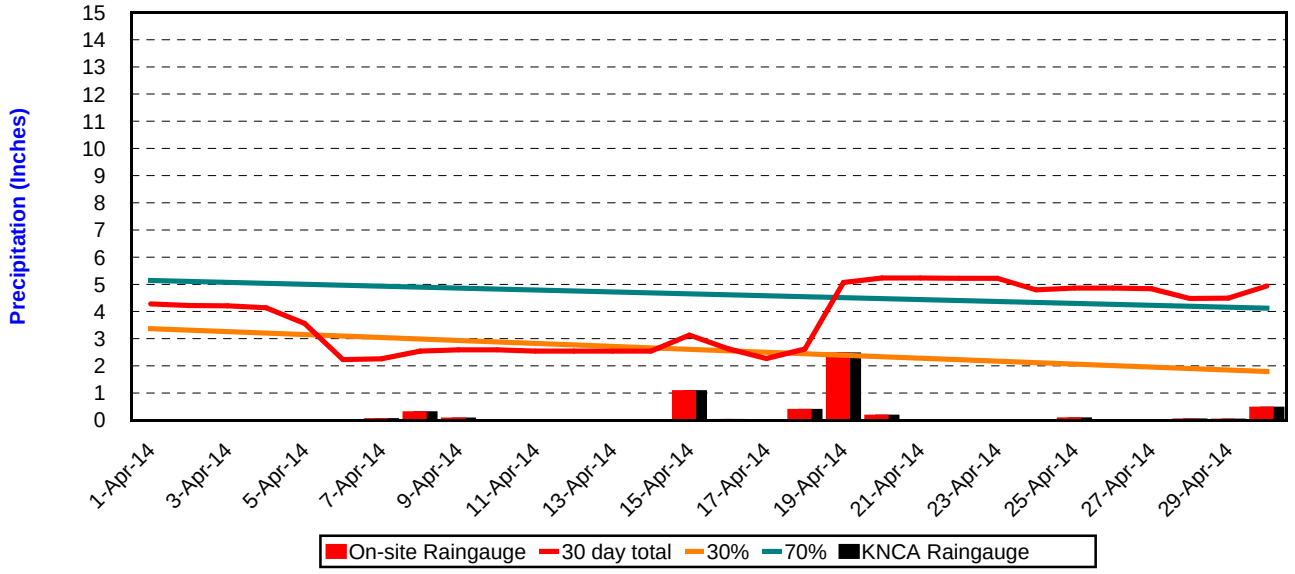


Hydrology Assessment

April 2014

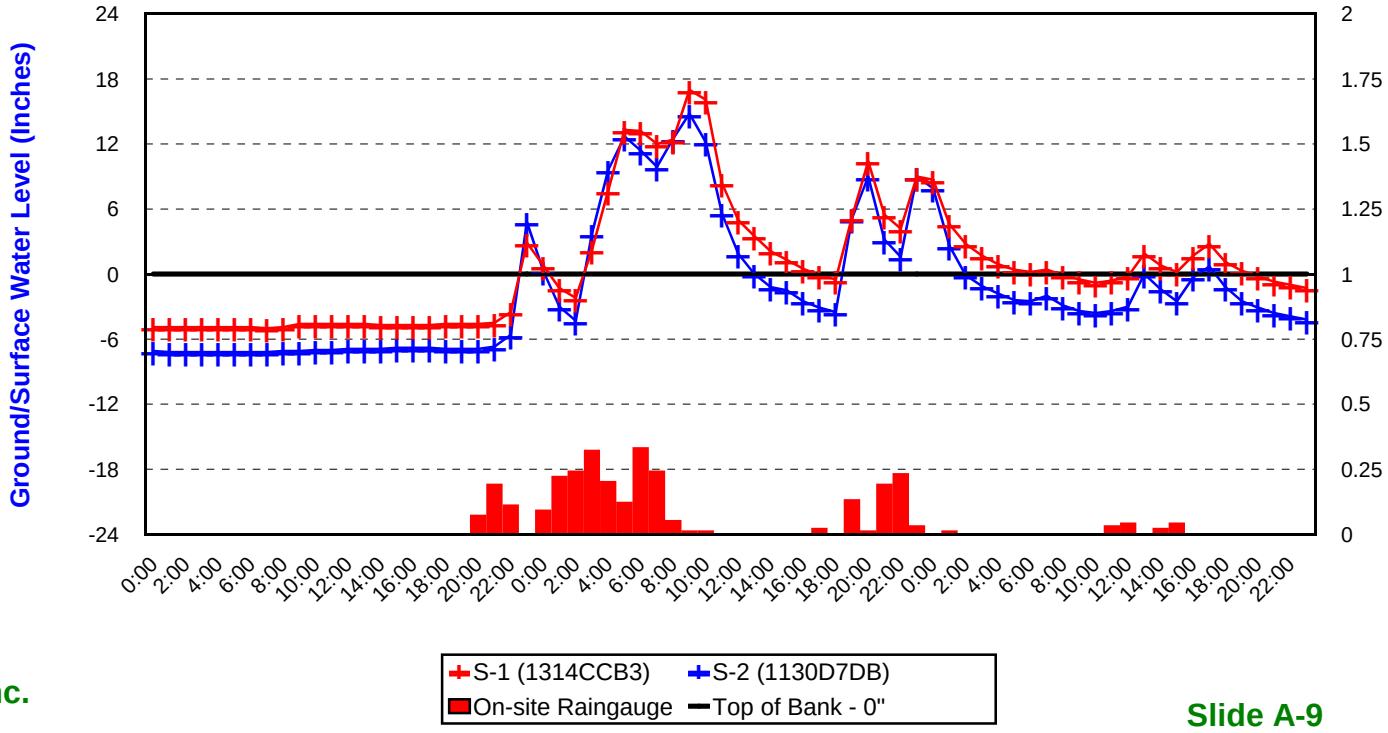
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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
- April 18, 2014 to April 20, 2014
- One reading per hour

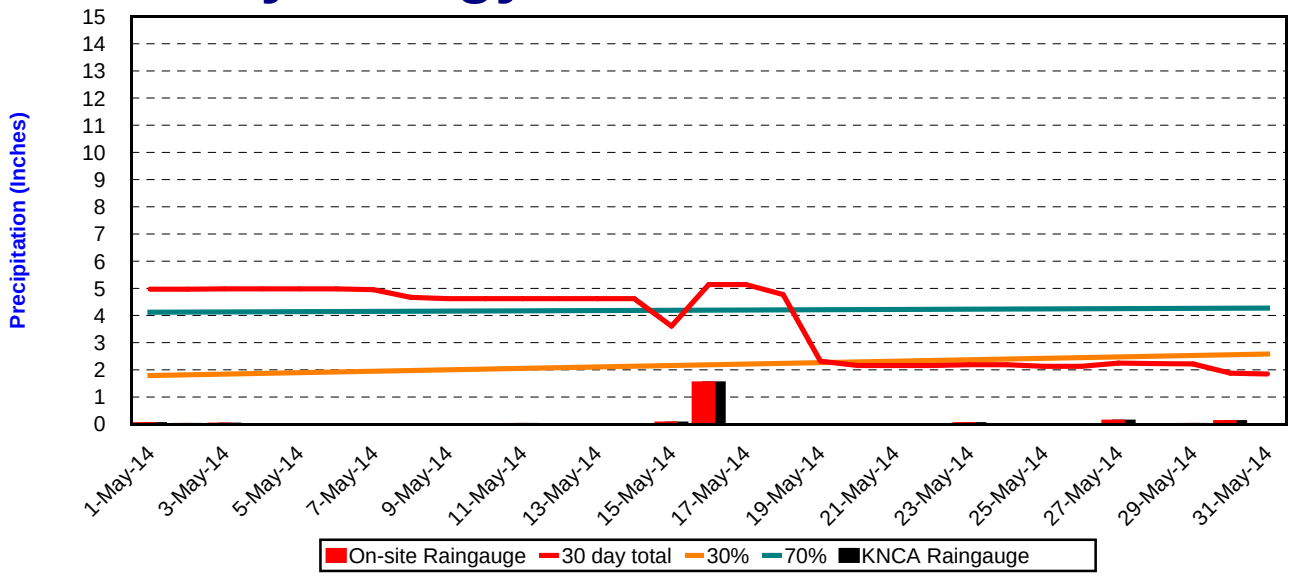


Hydrology Assessment

May 2014

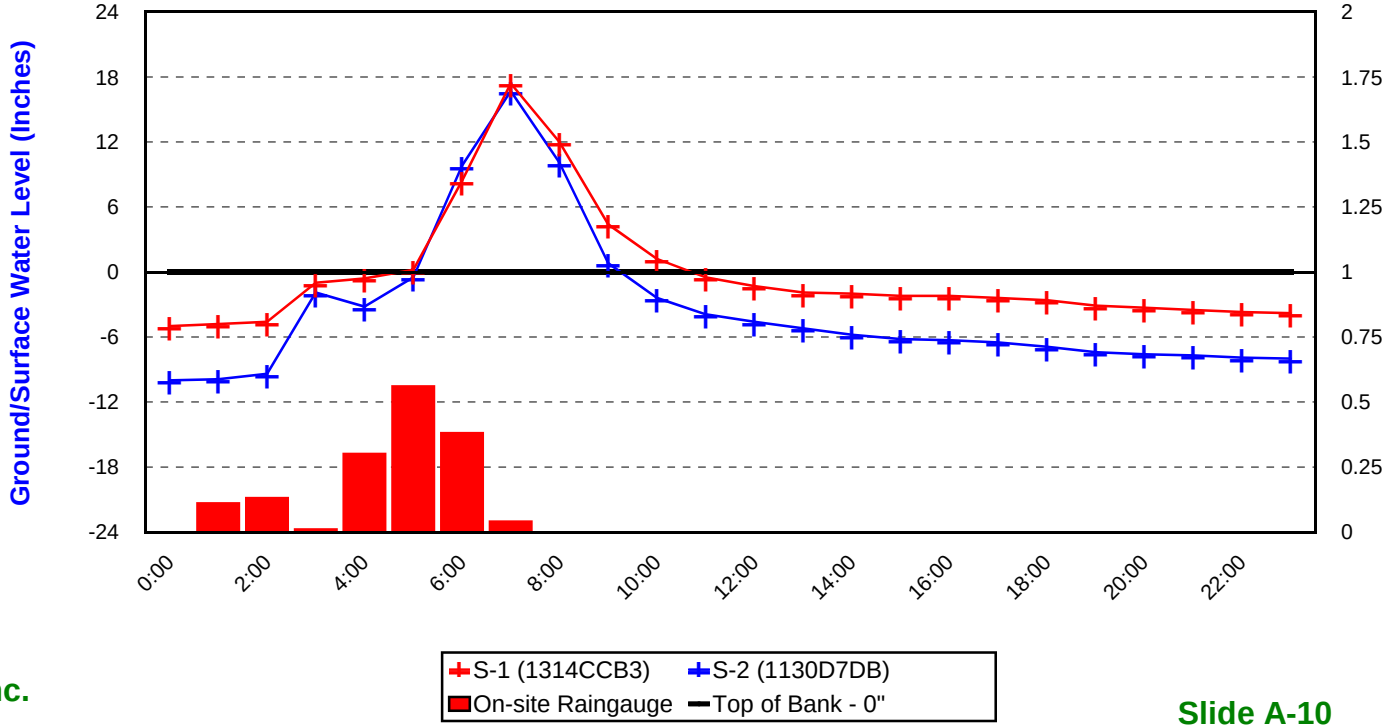
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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
- May 16, 2014
- One reading per hour

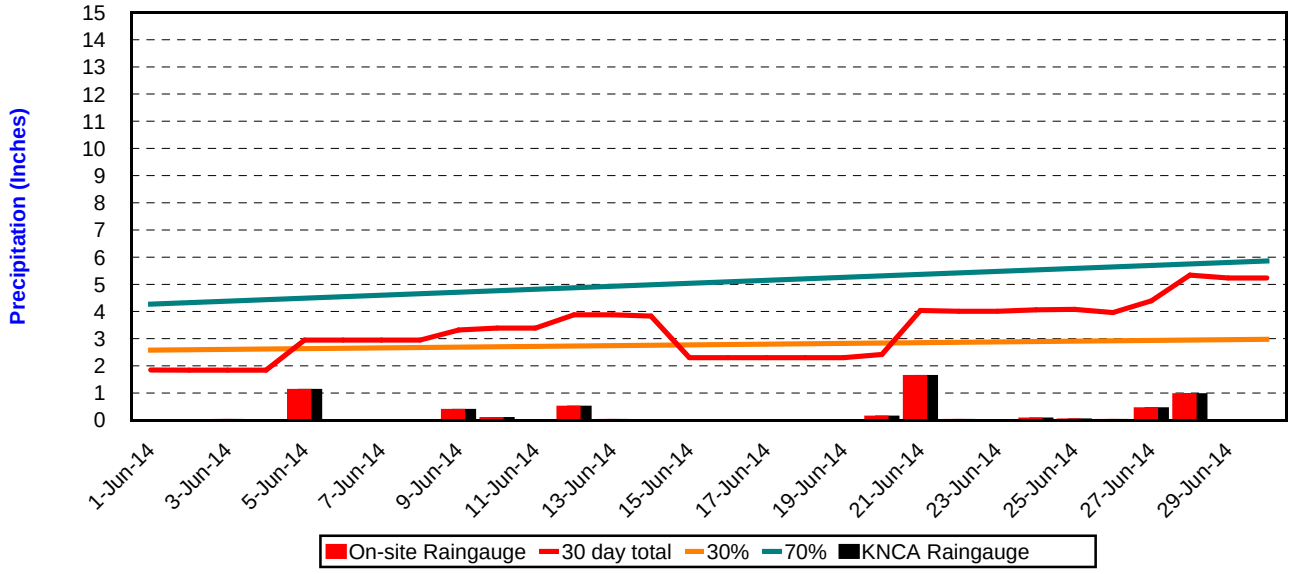


Hydrology Assessment

June 2014

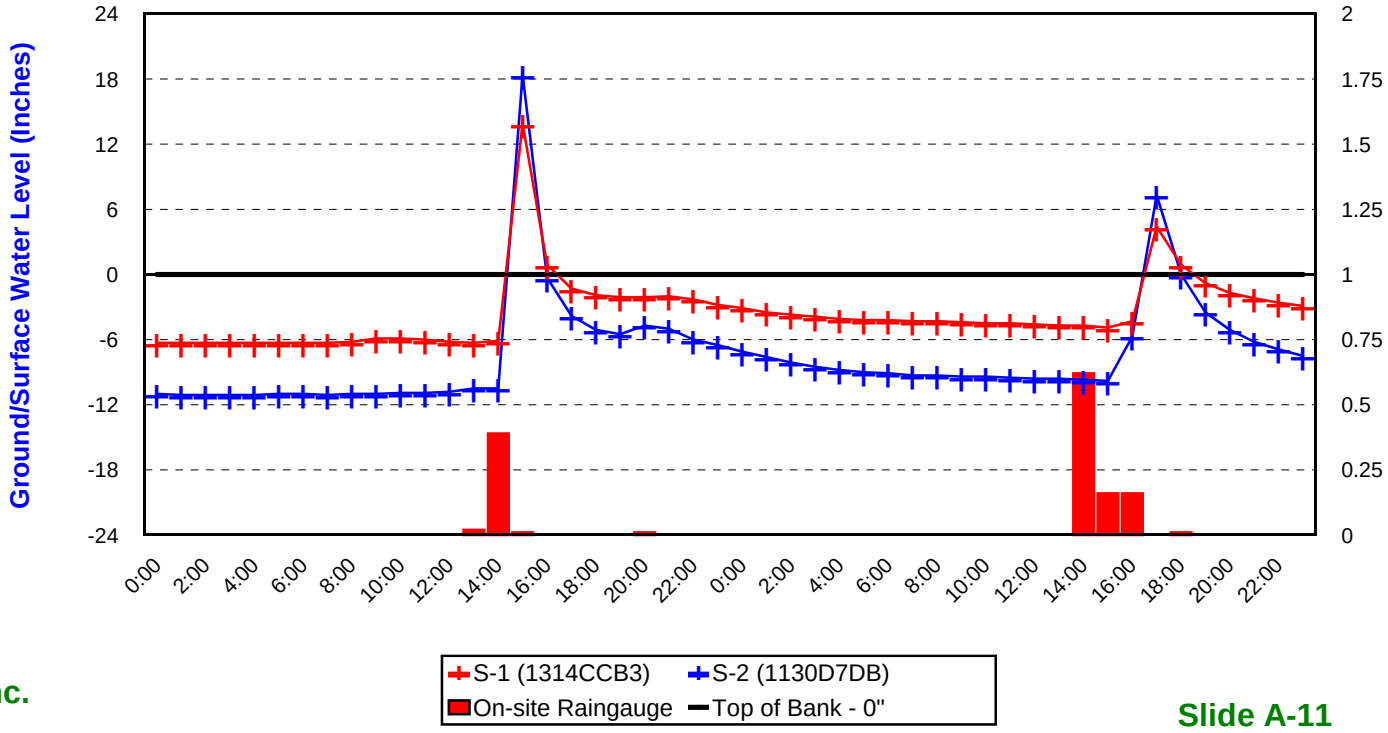
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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
- June 27, 2014 to June 28, 2014
- One reading per hour

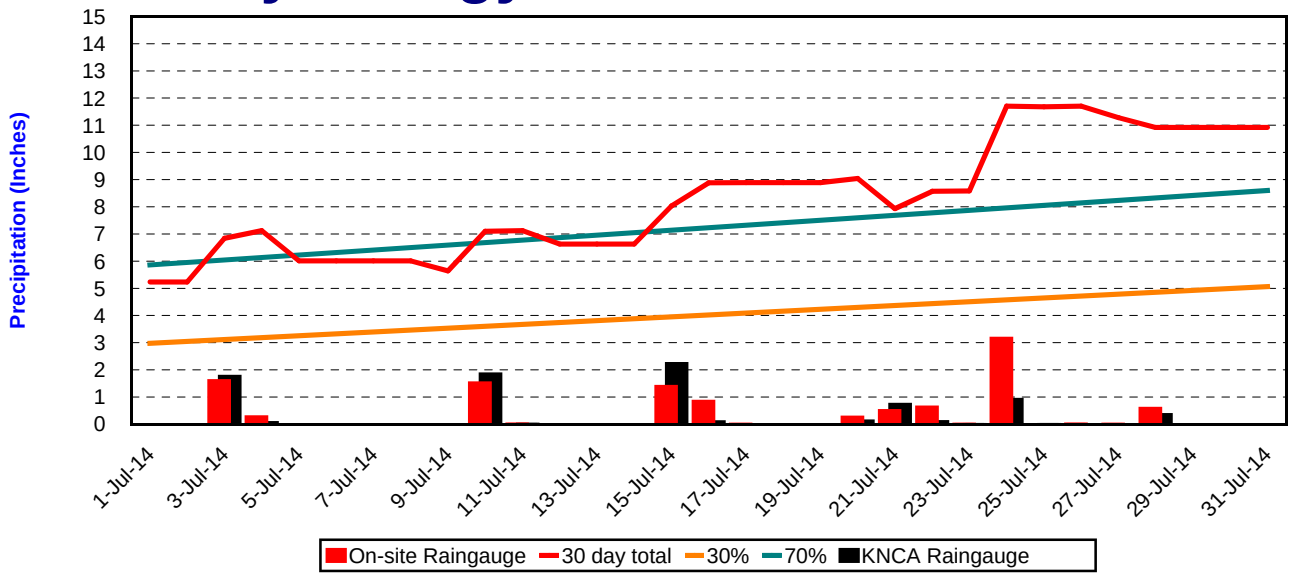


Hydrology Assessment

July 2014

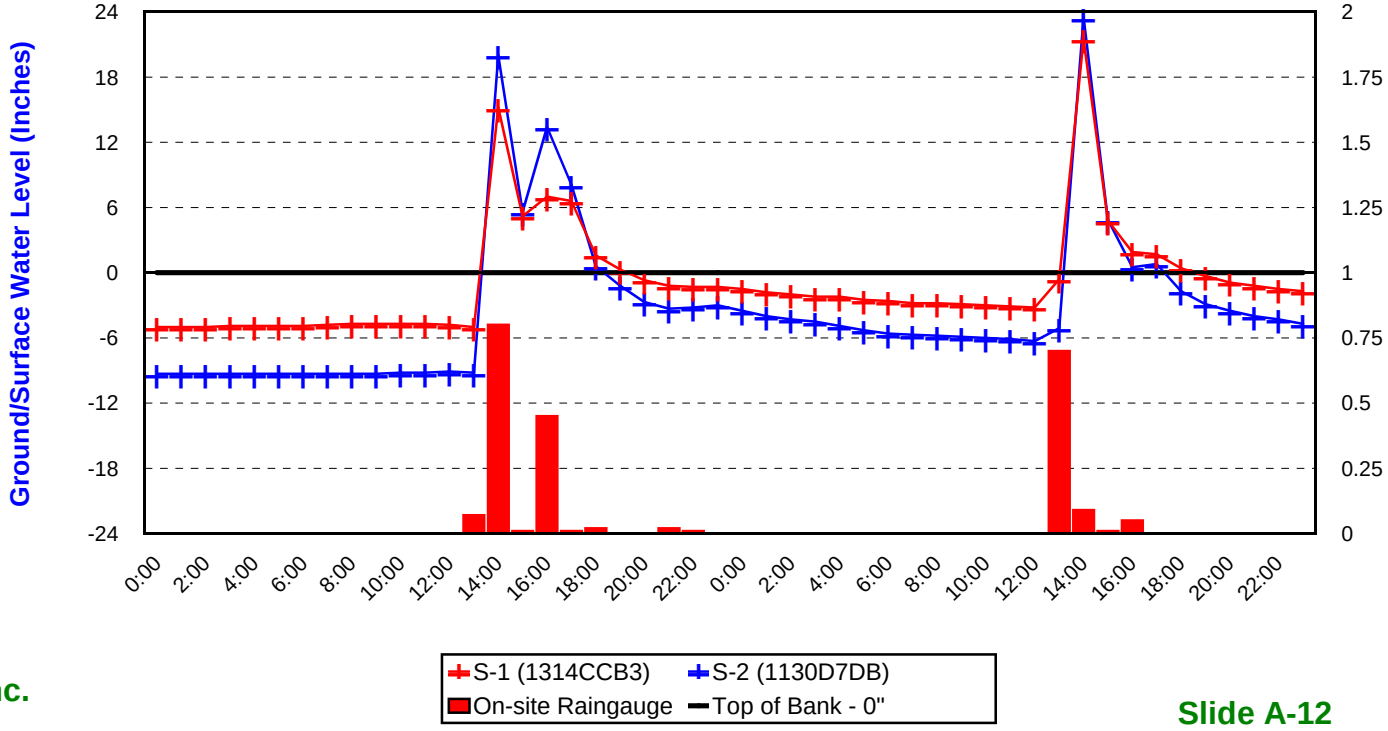
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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
- July 15, 2014 to July 16, 2014
- One reading per hour

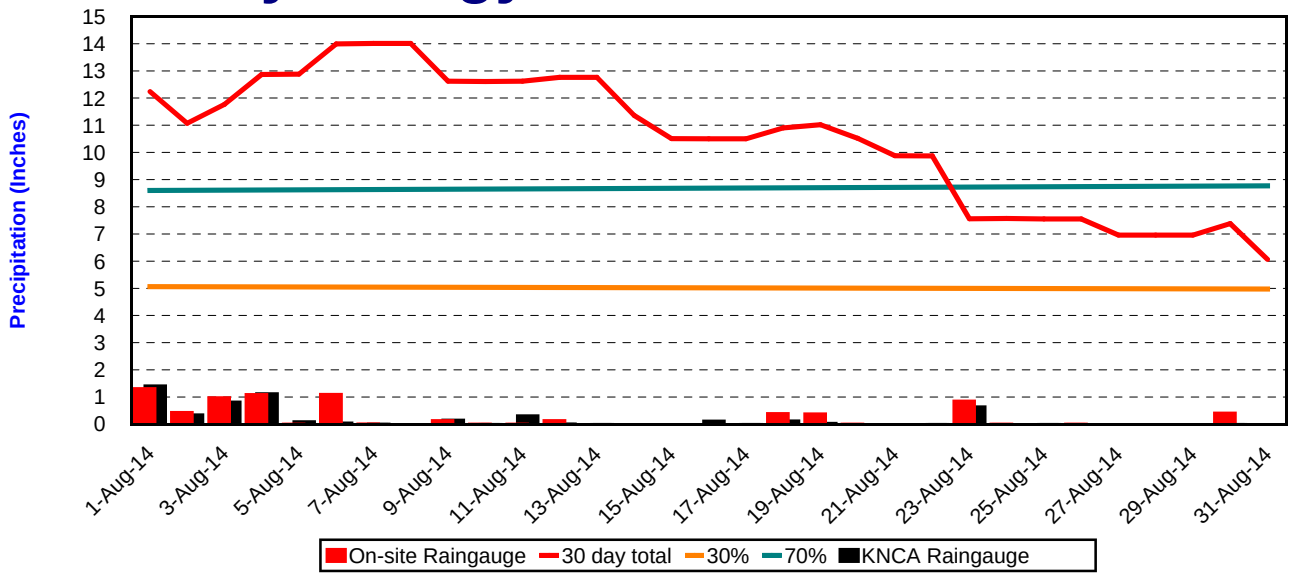


Hydrology Assessment

August 2014

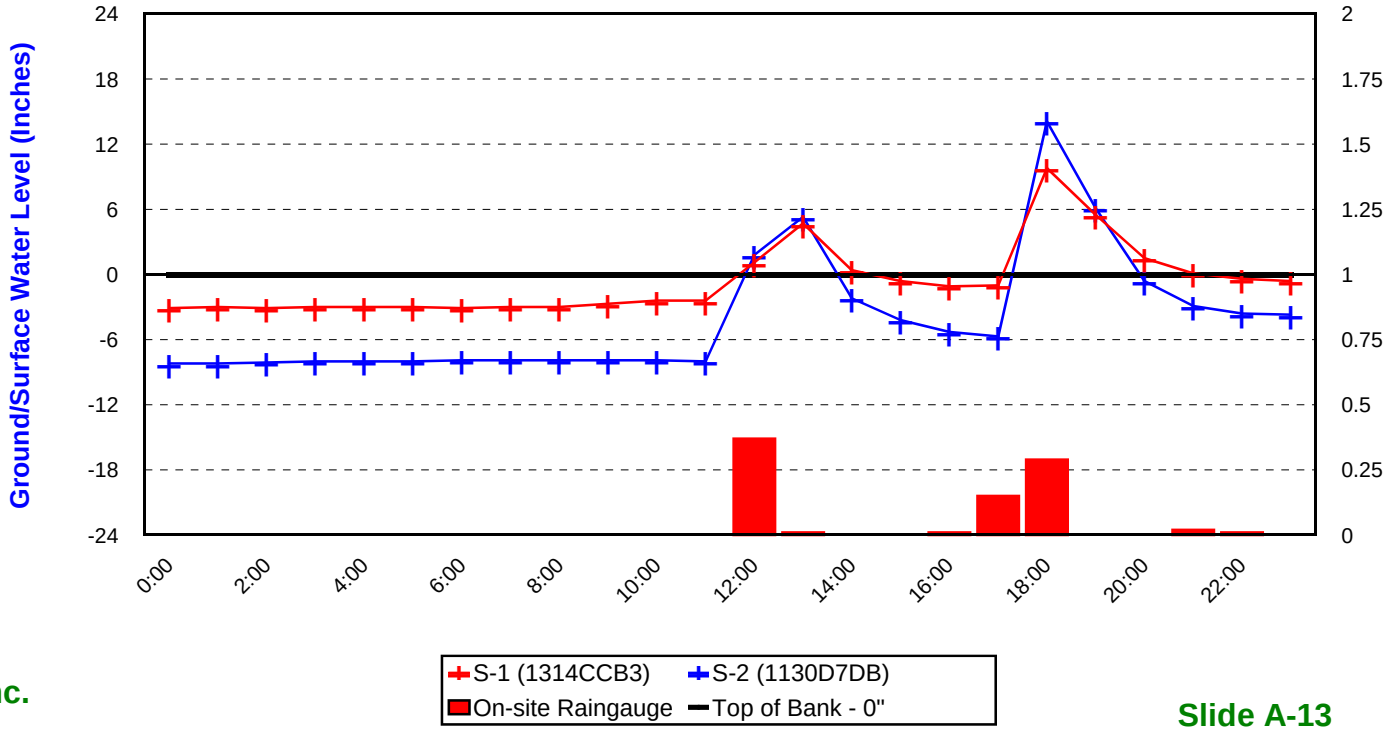
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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
- August 23, 2014
- One reading per hour

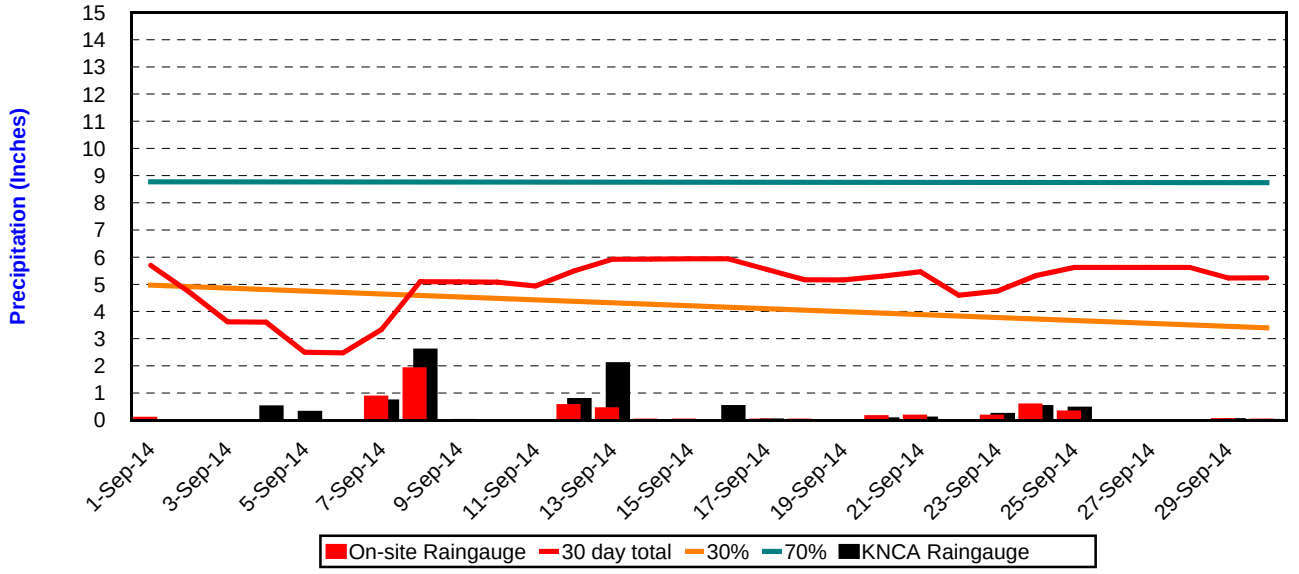


Hydrology Assessment

September 2014

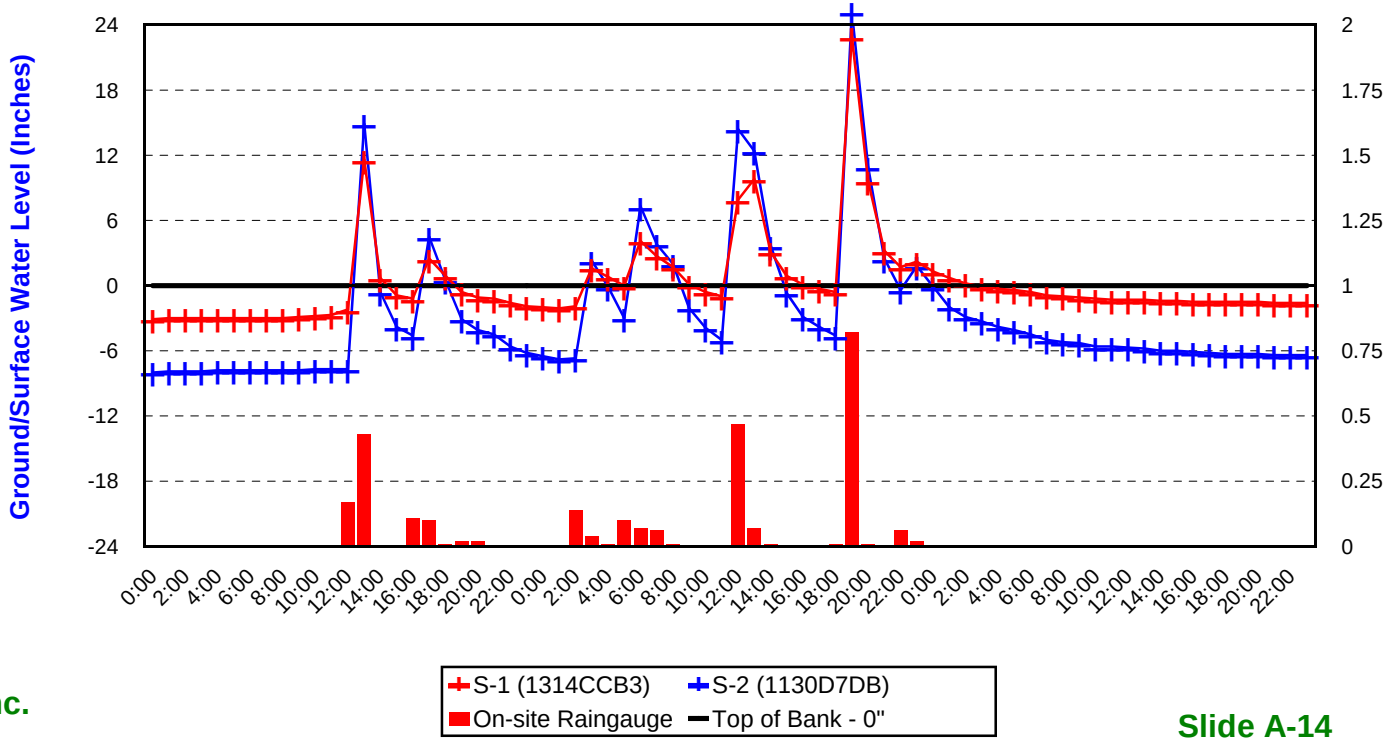
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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
- September 7, 2014 to September 9, 2014
- One reading per hour

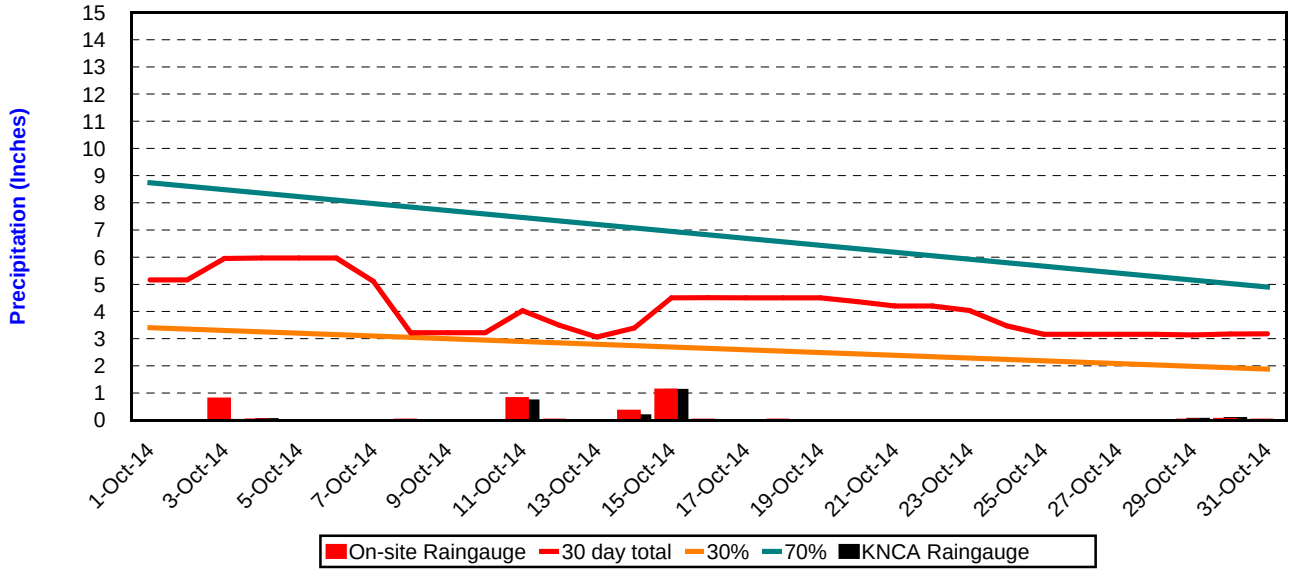


Hydrology Assessment

October 2014

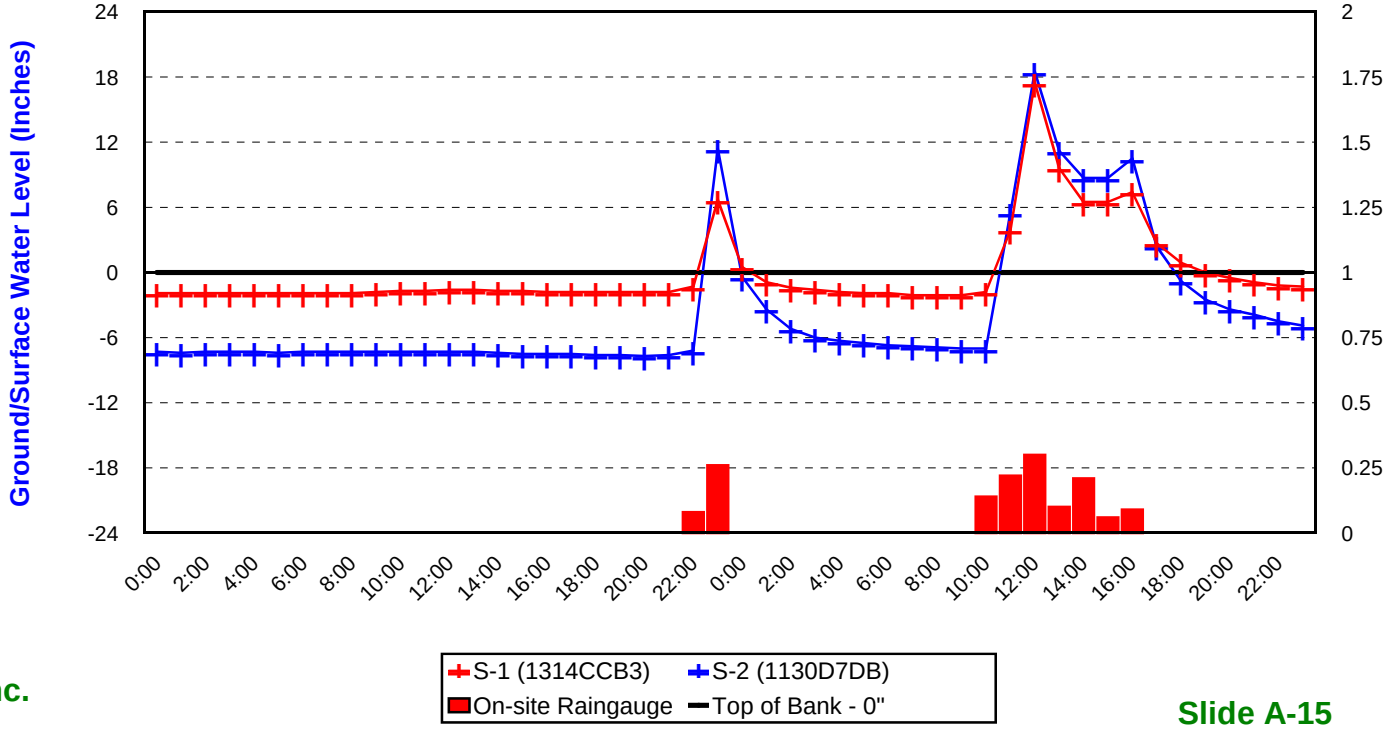
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 14, 2014 to October 15, 2014
- One reading per hour

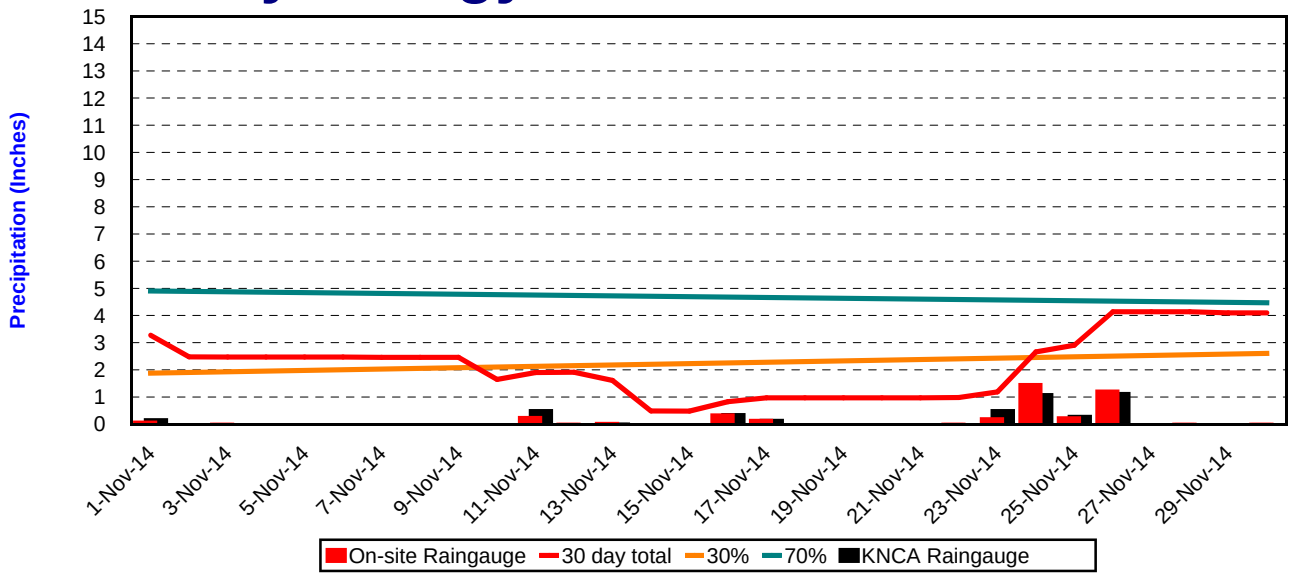


Hydrology Assessment

November 2014

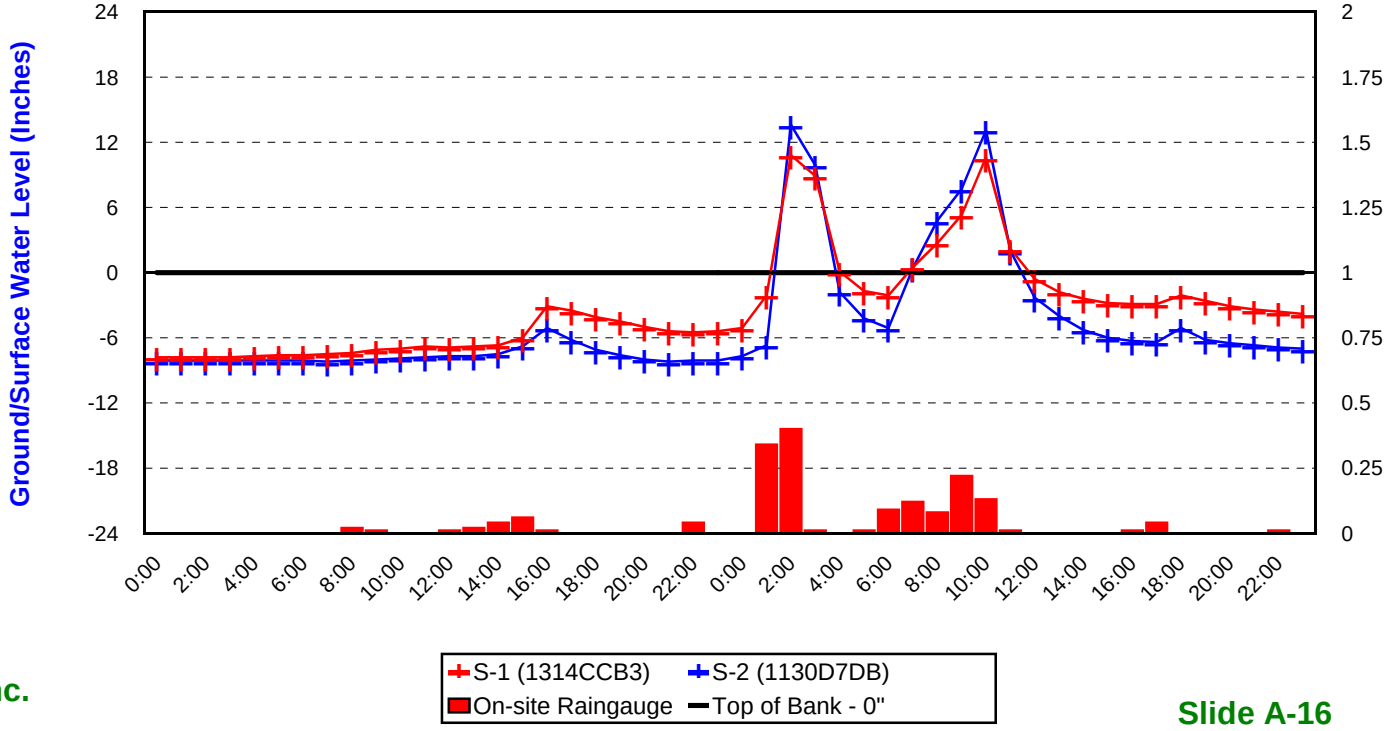
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 23, 2014 to November 24, 2014
- One reading per hour

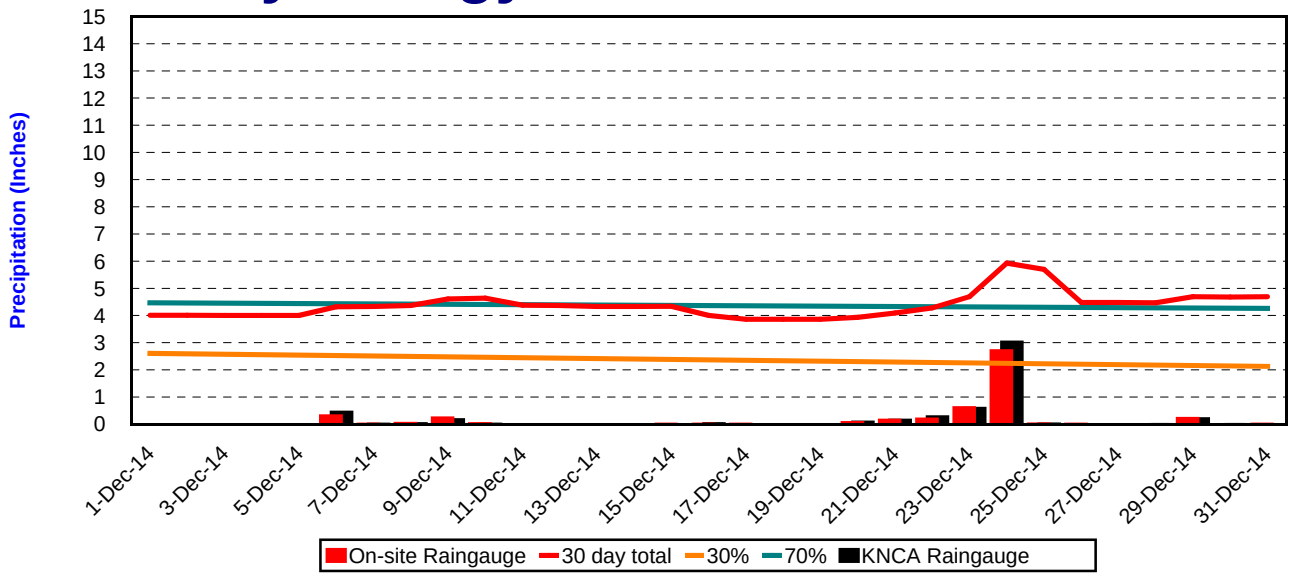


Hydrology Assessment

December 2014

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 23, 2014 to December 24, 2014
- One reading per hour