Jacksonville Country Club
Stream Restoration and Enhancement Project

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

Year 5 of 5 Monitoring Report
Data Collection: January through December 2018
Submission Date: February 13, 2019

Prepared for:

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

LMG
LAND MANAGEMENT GROUP
a DAVEY company

February 14, 2019

TO: Mr. Jeff Schaffer
North Carolina Division of Mitigation Services
1652 Mail Service Center
Raleigh, NC 27699-1652

RE: Jacksonville Country Club Stream Restoration & Enhancement Project
Year 5 of 5 Monitoring Report: Response to Comments
SCO No. 070715501
DEQ Contract No. D08049S
DMS Project No. 194

Dear Jeff:

Thank you for your letter regarding the Year 5 Monitoring Report for the Jacksonville Country Club Stream Restoration and Enhancement Project. Below is a response to each of your comments. Additionally, I have enclosed three hard copies of the report and one CD containing a pdf of the report and updated digital files.

1. *The digital data and drawings have been reviewed and determined to meet DMS requirements. However, during the review, DMS received a pop-up warning that the spatial reference information is missing for the Aggradation, Degradation, Mass Wasting, Scour, and Undercut layers.*

   The enclosed digital data has been spatially referenced.

2. *Appendix A, Table 1: I have the same comments on this table as I did last year. Replace this table with Table 1 from the final MY4 report. The only change being the footer which should show the final submittal date and refer to Year 5 of 5 monitoring.*

   Table 1 has been revised.

3. *Appendix D, Table 14a. During our review of the Bank Height Ratios (BHR) in Tables 14a-d, DMS staff performs a visual comparison of the MY5 data to As-Built/Baseline cross-sections. DMS noted/realized that by displaying the As-built Bankfull Cross-Sectional Area alone, the calculation for the BHR can be difficult to reconcile. We noted possible discrepancies in the BHR calculations for cross-sections CS-1, CS-5, CS-9, CS-X1, and CS-7 given this disconnect. Using the new BHR calculation methodology where the As-Built*

Bankfull Area is held constant, please display the Year 5 bankfull elevation as another data series just for the sake of clarity between the BHR calculation and the overlay in both the digital and hardcopies of the cross-section graphs.

The cross-sectional graphs in Appendix D have been revised to display the MY5 bankfull elevation as another data series.

Please let me know if you have any other questions about the report.

Sincerely,

Kim Williams
Wetland Scientist

Encl.

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3805 Wrightsville Avenue, Suite 15 • Wilmington, NC 28403

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Land Management Group
3805 Wrightsville Avenue; Suite 15
Wilmington, NC 28403
(910) 452-0001

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3.0 EXECUTIVE SUMMARY/PROJECT ABSTRACT

3.1 Goals and Objectives

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

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

3.2 Project Success Criteria

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

3.3 Site Location and History

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

3.4 Project Components

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

3.5 Project Design/Approach

To accomplish the above-stated goals, the dimension, pattern and profile of the channel was restored and enhanced. Where possible, fifty-foot vegetative buffers have been added to each side of the channel. The provision of a wider floodplain, the retrofitting of an existing

stormwater wetland and the addition of stormwater BMPs (best management practice) helps to maintain the integrity of the designed project. In addition, the project replaces habitat to a system relatively void in plant community diversity. Refer to Tables 2-4 in Appendix A for additional project and contact details.

3.6 Project Performance

Vegetation monitoring is conducted on an annual basis using nine (9) permanent vegetation plots (Figure 2). Monitoring Year 5 (MY5 2018) observed a mean stem density of 409 planted stems per acre in the plots, which is less than what was observed last year (422 planted stems), but well above the Year 5 vegetative success criterion of 260 planted woody stems per acre. When volunteer stems were included, the site had an overall mean stem density of 3,201 stems per acre. As in previous years, Plots #2, #6, and #8 did not meet the vegetation success criterion in MY5 2018. During the vegetation monitoring, herbaceous and some woody vegetation had volunteered into these areas.

Stream monitoring in MY5 (2018) consisted of both visual and morphological (i.e. survey) assessment of the channels. A visual inspection of the restored and enhanced stream channels and the BMP areas was conducted in December of 2018. Please see Appendix B for stream morphology assessment tables and photos. The BMP areas were stable. However, the BMP along the north side of 2A is actively managed because of the playover and trees are kept to a minimum height. Additionally, the outlet of the central BMP along Reach 2A is degraded.

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

Reach 1A

A total of 34 problem areas were noted within Reach 1A (compared to 28 areas in MY4). These included 5 undercuts, 13 areas of degradation, 10 scour holes, 3 areas of mass wasting, and 3 areas of aggradation. As noted in previous years, an area of aggradation has caused a new channel to form at the very top of the reach.

Reach 2A

Twenty-eight problem areas were noted within this reach during the visual inspection (compared to 25 areas in MY4). These included 1 bank undercut, 4 areas of degradation, 15 scour holes, and 8 areas of mass wasting. Grade control structures were observed. Most appeared to be functioning properly, but areas of scour were noted downstream at several locations.

Reach B

Seven problem areas were observed along this reach. This included four areas of bank undercut, one scour hole, and two areas of mass wasting. As in previous years, most of the grade controls features were not observed and it was assumed that they have been buried by sediment. However, the stream appeared to be functioning properly in these areas. In September, Hurricane Florence blew a large pine tree down across this stream reach.

Reach C
Six problem areas were noted along this reach. Two areas of aggradation, one scour hole, one area of degradation, one under cut, and one area of mass wasting were noted. As observed in previous years, gravel from the road at the top of this reach washed down into the stream channel. This was classified as aggradation. Several grade control features were not observed and it was assumed that they have been buried by sediment. However, the stream appeared to be functioning properly in these areas.

Enhancement Reach
The enhancement reach is a small channel and it contains a great deal of vegetative debris. Five areas of aggradation (compared to 3 areas in MY3 and MY4), two scour holes, and one undercut were noted within this channel.

A longitudinal profile and cross-sectional survey (nine cross sections) was performed by Paramounte Engineering in November of 2018. Please see Appendix D for summary tables and plots of longitudinal profiles and cross sections for each reach. Based on the MY5 survey data, reaches remain fairly consistent with MY4, MY3, MY2, MY1 and baseline data. However, many problem areas were noted along the reaches during the visual inspection.

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 2018 (Table 16; Appendix E). Note that the gauge in Reach 1A came loose from its post in April during a high flow event. It was replaced in September.

LMG staff observed vegetation maintenance in several locations within the project area. Most of the maintenance occurred around the playover areas and consisted of cutting the tops of the trees so that greens are visible to the golfers (total of approximately 3.2 acres). Trees were generally cut to approximately 5' in height, although it varied based on the topography of the area. Some mowing, where vegetation was cleared to the ground, also occurred in one area near Vegetation Plot #8 (total of approximately 0.1 acre) (see Figure 2). The mowed area is considered an encroachment.

It should also be noted that several survey markers were missing or were unstable. At Plot 5, the origin plot marker was missing. Three plot markers were missing at Plot 6. At Plot 7, two markers were missing. One of these was the northeast plot marker, which likely eroded into the channel (mass wasting area). Additionally, the northern pin at Cross Section 2 was missing and may have been mowed/removed.

4.0 METHODOLOGY

Nine (9) permanent vegetation plots are used for vegetation monitoring. All vegetation monitoring was completed in September 2018 utilizing the Carolina Vegetation Survey (CVS) – EEP protocol Level 2 (version 4.2)

Stream morphological monitoring occurs annually. Elevation data has been 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 has been collected and analyzed to identify bankfull slope, pool-to-pool spacing, pool length, riffle length, max-pool depth and other parameters. Plan views have been 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 is conducted by walking the entire site. A digital camera is used to take photos at each predetermined photo point location.

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

5.0 REFERENCES

NCDMS. 2018. Jacksonville Country Club Stream Restoration and Enhancement Project Year Four Monitoring Report. North Carolina Department of Environmental Quality, Division of Mitigation Services. Raleigh, NC. March, 2018.

NCDMS. 2017. Jacksonville Country Club Stream Restoration and Enhancement Project Year Three Monitoring Report. North Carolina Department of Environmental Quality, Division of Mitigation Services. Raleigh, NC. February, 2017.

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

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

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NCEEP. 2014. Annual Monitoring and Closeout Reporting Format, Data Requirements, and Content Guidance. North Carolina Department of Environment and Natural Resources, Ecosystem Enhancement Program. Raleigh, NC. February, 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.

NCEEP. 2006. Jacksonville Country Club Stream Restoration Project. Draft Restoration Plan Report. Prepared by BLWI for the North Carolina Department of Environment and Natural Resources, Ecosystem Enhancement Program. Raleigh, NC. April 24, 2006.

Schafale, M.P. and A.S. Weakley. 1990. Classification of the natural communities of North Carolina, Third Approximation. Prepared for North Carolina Natural Heritage Program and Division of Parks and Recreation. Raleigh, NC.

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

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

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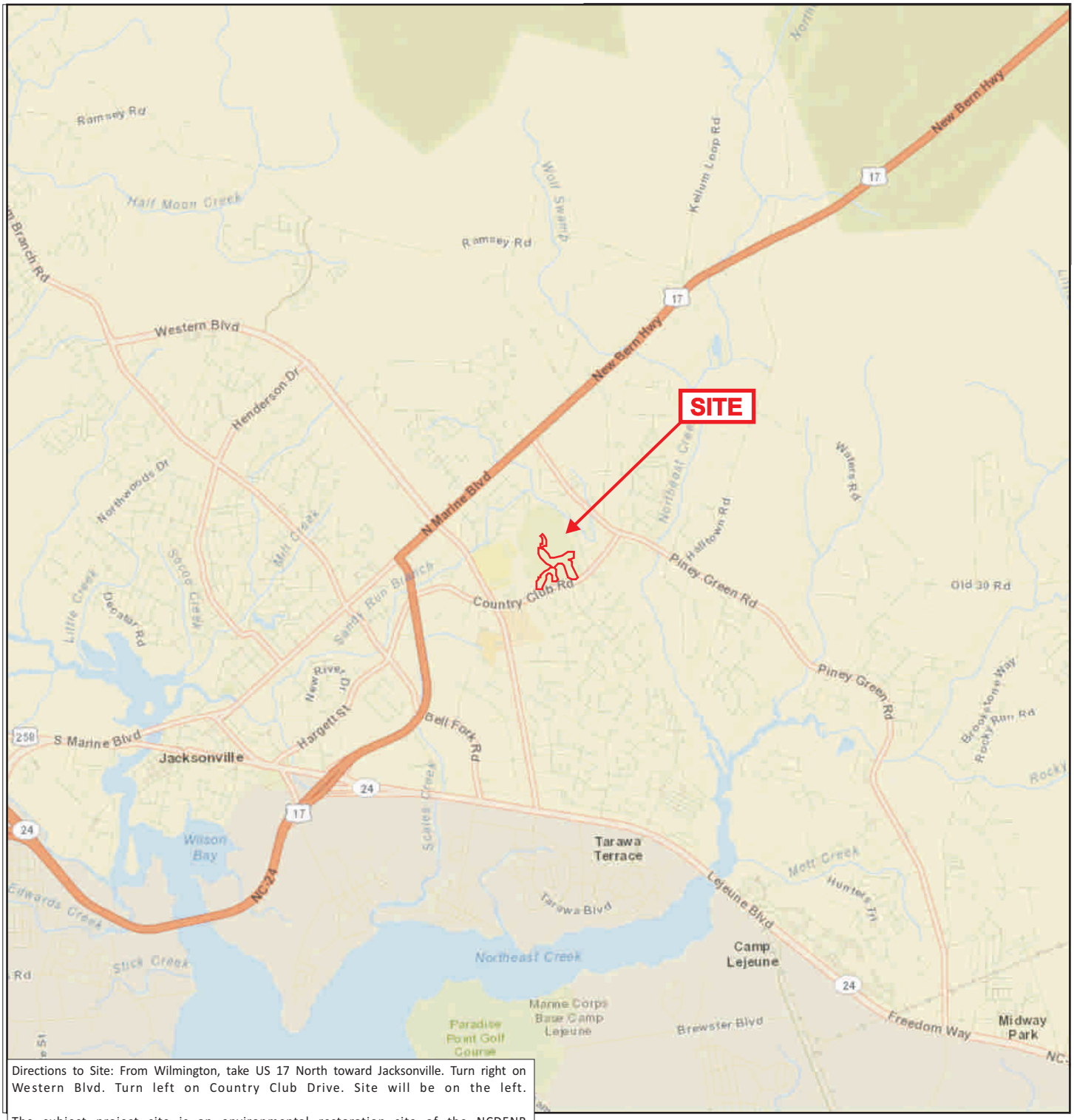
Appendix A.
Project Background Data and Maps



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: ArcGIS World Street Map

N

SCALE 1" = 1 mile

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

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

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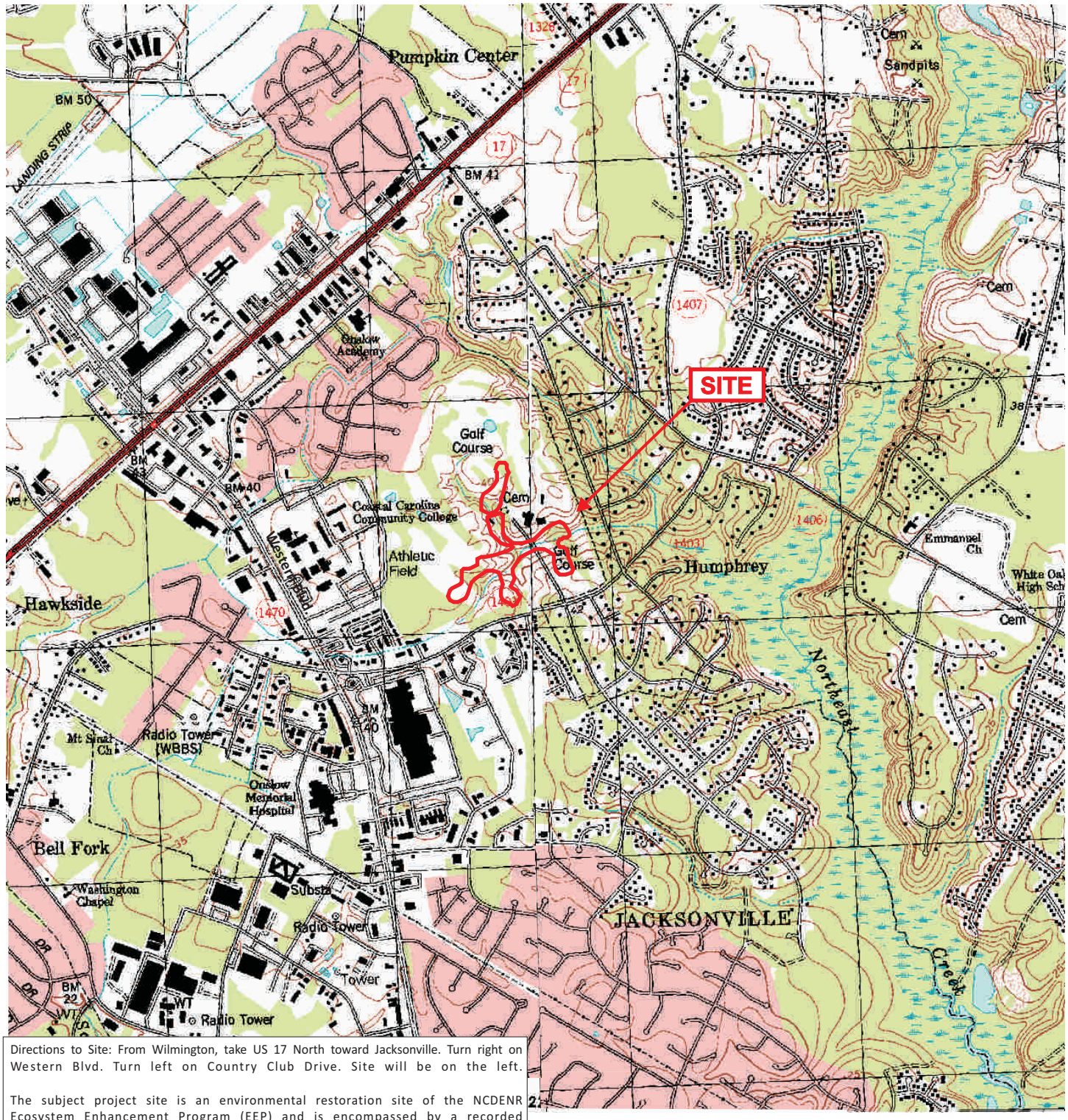
Figure 1a
Site Vicinity Map



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*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
DMS Project No. 194

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Figure 1b
Topographic Map

Table 1. Project Components and Mitigation Credits

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

Mitigation Credits

	Stream		Riparian Wetland		Non-Riparian Wetland		Buffer	Nitrogen Nutrient Offset	Phosphorus Nutrient Offset
Type	R	RE	R	RE	R	RE			
Totals	3,297								

Project Components

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

Component Summation

Restoration Level	Stream (lf)	Riparian Wetland (ac)	Non-Riparian Wetland (ac)	Buffer (sq ft)	Upland (ac)
Restoration	3109*				
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

* MY0 and MY1 reports incorrectly documented 3,145 LF of stream restoration, which was taken from a 2009 survey.
It was later determined that data from a 2010 survey that documented 3,109 LF of stream restoration was more accurate.

Table 2. Project Activity and Reporting History Jacksonville Country Club Stream Restoration and Enhancement Project -DMS Project No. 194		
Activity or Report	**Data Collection Complete**	**Actual Completion or Delivery**
Restoration Plan	NA	Jun-07
Final Design – Construction Plans	NA	
Construction	NA	Aug-10
Temporary S&E mix applied to entire project area	NA	Aug-10
Containerized and B&B plantings	NA	Apr-10 & Apr-11
Temporary repairs to site	NA	Jan-11
Permanent repairs to stream & culvert/headwall	NA	Jun-13
Invasives Treatment (Chinese tallow tree)	NA	2013
Invasives Treatment (Chinese tallow tree)	NA	2014
Invasives Treatment (Chinese tallow tree)	NA	2015
Baseline Monitoring Document (Year 0 Monitoring - baseline)	November-13	June-14
Year 1 Monitoring	December-14	March-15
Year 2 Monitoring	December-15	April-16
Year 3 Monitoring	December-16	December-16
Year 4 Monitoring	December-17	December-17
Year 5 Monitoring	December-18	December-18

Table 3. Project Contacts Table Jacksonville Country Club Stream Restoration & Enhancement Project	
DMS Project No. 194	
Designer Primary project design POC	BLWI; 295 Becky Branch Rd; Southern Pines, NC Stantec; 801 Jones Franklin Rd #300; Raleigh, NC (919) 851-6866
Construction Contractor Construction contractor POC	Charles Hughes Construction; 4675 Ben Dail Rd, La Grange, NC (252) 566-5040
Live Staking & Seeding Contractor Seeding Contractor POC	Charles Hughes Construction; 4675 Ben Dail Rd, La Grange, NC (252) 566-5040
Planting Contractor Planting Contractor POC	Backwater Environmental; 119 Ilex Ct, Pittsboro, NC (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 3805 Wrightsville Avenue, Suite 15; Wilmington, NC 28403 Kim Williams (910) 452-0001 Kim Williams (910) 452-0001

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

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

Appendix B.
Visual Assessment Data

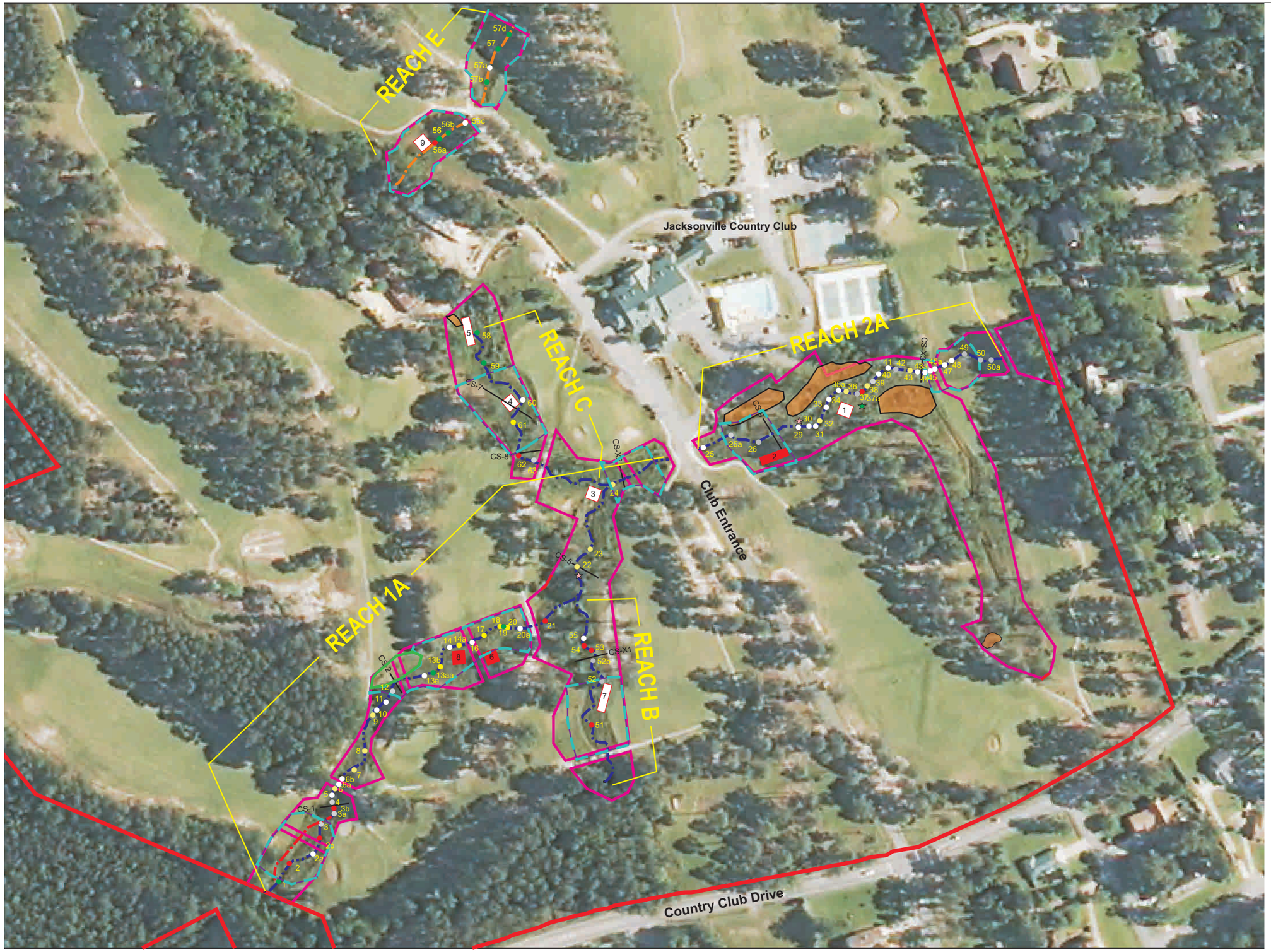

FIGURE 2.

Current Conditions Plan View

Jacksonville Country Club
Stream Restoration
and Enhancement Site

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

LEGEND

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

Bed/Bank Problem Areas

- Undercut
- Degradation
- Bank Scour
- Mass Wasting
- Aggradation
- New Channel Formation
- Encroachment (Mowing): 0.1 acre
- Tree Topping: 3.2 acres

N

SCALE 1" = 200'

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December 2018

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

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjusted % for Stabilizing Woody Vegetation
1. Bed	1. **Vertical Stability** (Riffle and Run units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			3	85	93%			
		2. Degradation - Evidence of downcutting			13	250	81%			
	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 downstream 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			10	95	96%	0	0	96%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			5	60	98%	0	0	98%
	3. Mass Wasting	Bank slumping, calving, or collapse			3	20	99%			99%
				Totals	18	175	93%	0	0	93%
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)	10	14			71%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	14	14			100%			

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

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjusted % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			0	0	100%			
		2. Degradation - Evidence of downcutting			4	100	86%			
	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			15	160	89%	0	0	89%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			1	10	99%	0	0	99%
	3. Mass Wasting	Bank slumping, calving, or collapse			8	100	93%	0	0	93%
				Totals	24	270	81%	0	0	81%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	13	14			93%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	12	14			86%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	13	14			93%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	11	14			79%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio > 1.6 Rootwads/logs providing some cover at base-flow.	14	14			100%			

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

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjusted % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			0	0	100%			
		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			1	5	99%			99%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			4	25	97%			97%
	3. Mass Wasting	Bank slumping, calving, or collapse			2	10	99%			99%
				Totals	7	40	96%	0	0	96%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	7	7			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	7	7			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	7	7			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	7	7			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio > 1.6 Rootwads/logs providing some cover at base-flow.	7	7			100%			

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

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjusted % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			2	50	92%			
		2. Degradation - Evidence of downcutting			1	6	99%			
	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			1	3	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.			1	8	99%			99%
	3. Mass Wasting	Bank slumping, calving, or collapse			1	10	99%			99%
				Totals	3	21	98%	0	0	98%
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)			5	120	68%			
		2. Degradation - Evidence of downcutting			0	0	100%			
	2. Riffle Condition	1. Texture/Substrate - Riffle maintains coarser substrate	10	N/A			N/A			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth > 1.6)	10	N/A			N/A			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	10	N/A			N/A			
	4.Thalweg Position	1. Thalweg centering at upstream of meander bend (Run)	N/A	N/A			N/A			
		2. Thalweg centering at downstream of meander (Glide)	N/A	N/A			N/A			
2. Bank	1. Scoured/Eroding	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			2	20	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.			1	2	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	N/A	N/A			N/A			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	N/A	N/A			N/A			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	N/A	N/A			N/A			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	N/A	N/A			N/A			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio > 1.6 Rootwads/logs providing some cover at base-flow.	N/A	N/A			N/A			

Table 6 Vegetation Condition Assessment

Planted Acreage[1] **8.1**

Vegetation Category	Definitions	Mapping Threshold	CCPV Depiction	Number of Polygons	Combined Acreage	% of Planted Acreage
1. Bare Areas	Very limited cover of both woody and herbaceous material.	N/A	N/A	0	0.00	0.0%
2. Low Stem Density Areas	Woody stem densities clearly below target levels based on MY3, 4, or 5 stem count criteria.	0.1 acres	Red Square	3	0.10	1.2%
			Total	3	0.10	1.2%
3. Areas of Poor Growth Rates or Vigor	Areas with woody stems of a size class that are obviously small given the monitoring year.	0.25 acres	N/A	0	0.00	0.0%
			Cumulative Total	3	0.10	1.2%

Easement Acreage[2] **14**

Vegetation Category	Definitions	Mapping Threshold	CCPV Depiction	Number of Polygons	Combined Acreage	% of Easement Acreage
4. Invasive Areas of Concern[4]	Areas or points (if too small to render as polygons at map scale).	1000 SF	N/A	0	0.00	0.0%
5. Easement Encroachment Areas[3]	Areas or points (if too small to render as polygons at map scale).	none	green line	1	0.10	1.2%

Vegetation Plot Photos (Recorded on 9/27/18 & 10/2/18)

Vegetation Plot #1 – X-Axis

Vegetation Plot #1 – Diagonal

Vegetation Plot #2 – X-Axis

Vegetation Plot #2 – Diagonal

Vegetation Plot #3 – X-Axis

Vegetation Plot #3 – Diagonal

Vegetation Plot #4 – X-Axis

Vegetation Plot #4 – Diagonal

Vegetation Plot #5 – X-Axis

Vegetation Plot #5 – Diagonal

Vegetation Plot #6 – X-Axis

Vegetation Plot #6 – Diagonal

Vegetation Plot #7 – X-Axis

Vegetation Plot #7 – Diagonal

Vegetation Plot #8 – X-Axis

Vegetation Plot #8 – Diagonal

Vegetation Plot #9 – X-Axis

Vegetation Plot #9 – Diagonal

BMP Photos (Recorded on 9/27/18, 10/2/18 & 11/8/18)

BMP – Top of Reach B

BMP – Top of Reach C

BMP – Reach 2A (northwest)

BMP – Middle of Reach 2A

BMP – South of Reach 2A

Stream Cross Section Photos (Recorded on 11/7/18 & 11/8/18)

Reach 1A – Cross Section #1

Reach 1A – Cross Section #2

Reach 1A – Cross Section #5

Reach 1A – Cross Section #X2

Reach 2A – Cross Section #9

Reach 2A – Cross Section #X3

Reach B – Cross Section #X1

Reach C – Cross Section #7

Reach C – Cross Section #8


Stream Enhancement Reach

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 1A: Stream Problem Area 1 – Aggradation; New channel has formed

Reach 1A: Stream Problem Area 2 – Undercut near Log Vane Structure

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 1A: Stream Problem Area 2a – Scour near Log Vane Structure

Reach 1A: Stream Problem Area 2c – Undercut/Scour

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 1A: Stream Problem Area 3 – Mass Wasting where channels come together

Reach 1A: Stream Problem Area 3a – Mass Wasting

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 1A: Stream Problem Area 3b – Undercut on both sides of channel

Reach 1A: Stream Problem Area 4 – Mass Wasting

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 1A: Stream Problem Area 5 – Scour

Reach 1A: Stream Problem Area 6 – Degradation

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 1A: Stream Problem Area 6a – Scour

Reach 1A: Stream Problem Area 6b – Scour and Undercut

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 1A: Stream Problem Area 7 – Degradation

Reach 1A: Stream Problem Area 8 – Degradation

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 1A: Stream Problem Area 9 – Degradation

Reach 1A: Stream Problem Area 10 – Scour

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 1A: Stream Problem Area 11 – Scour and Undercut

Reach 1A: Stream Problem Area 12 – Mass Wasting

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 1A: Stream Problem Area 12a – Degradation

Reach 1A: Stream Problem Area 13a – Scour

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 1A: Stream Problem Area 13aa – Aggradation

Reach 1A: Stream Problem Area 13b – Degradation

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 1A: Stream Problem Area 14 – Scour

Reach 1A: Stream Problem Area 14a – Degradation

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 1A: Stream Problem Area 16 – Scour after log vane structure. Structure appears to be failing.

Reach 1A: Stream Problem Area 17 – Degradation

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 1A: Stream Problem Area 18 – Degradation

Reach 1A: Stream Problem Area 19 – Aggradation caused by Mass Wasting

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 1A: Stream Problem Area 20 – Degradation

Reach 1A: Stream Problem Area 20a – Scour

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 1A: Stream Problem Area 21 – Undercut

Reach 1A: Stream Problem Area 22 – Degradation

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 1A: Stream Problem Area 23– Degradation

Reach 1A: Stream Problem Area 24 – Degradation

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 2A: Stream Problem Area 25 – Scour off of road

Reach 2A: Stream Problem Area 25a – Mass Wasting

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 2A: Stream Problem Area 26 – Mass Wasting

Reach 2A: Stream Problem Area 29 – Scour

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 2A: Stream Problem Area 30 – Scour

Reach 2A: Stream Problem Area 31 – Scour

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 2A: Stream Problem Area 32 – Degradation and Mass Wasting

Reach 2A: Stream Problem Area 33 – Scour

Log Vane at this location not functioning

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 2A: Stream Problem Area 34 – Scour

Reach 2A: Stream Problem Area 35a – Scour

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 2A: Stream Problem Area 36 – Degradation

Reach 2A: Stream Problem Area 37 – Mass Wasting

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 2A: Stream Problem Area 37a – Undercut

Reach 2A: Stream Problem Area 38 – Degradation

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 2A: Stream Problem Area 39 – Mass Wasting

Reach 2A: Stream Problem Area 40 – Scour

Log Vane appears intact and functioning

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 2A: Stream Problem Area 41 – Scour

Reach 2A: Stream Problem Area 42 – Mass Wasting

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 2A: Stream Problem Area 43 – Degradation

Reach 2A: Stream Problem Area 43a – Scour

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 2A: Stream Problem Area 44 – Scour

Reach 2A: Stream Problem Area 45 – Scour

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 2A: Stream Problem Area 45a – Scour

Reach 2A: Stream Problem Area 47 – Scour

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 2A: Stream Problem Area 48 – Scour

Reach 2A: Stream Problem Area 49 – Mass Wasting

Stream Problem Area Photos (Recorded on 12/06/18)

Reach 2A: Stream Problem Area 50 – Mass Wasting

Reach 2A: Stream Problem Area 50a – Mass Wasting

Stream Problem Area Photos (Recorded on 12/06/18)

Reach B: Stream Problem Area 51 – Under Cut

Reach B: Stream Problem Area 52 – Mass Wasting

Stream Problem Area Photos (Recorded on 12/06/18)

Reach B: Stream Problem Area 52b – Mass Wasting

Reach B: Stream Problem Area 53 – Under Cut

Stream Problem Area Photos (Recorded on 12/06/18)

Reach B: Stream Problem Area 54 – Under Cut

Reach B: Stream Problem Area 55 – Scour

Stream Problem Area Photos (Recorded on 12/06/18)

Enhancement Reach: Stream Problem Area 56a – Aggradation

Enhancement Reach: Stream Problem Area 56b – Head Cut

Stream Problem Area Photos (Recorded on 12/06/18)

Enhancement Reach: Stream Problem Area 56c – Aggradation

Enhancement Reach: Stream Problem Area 56d – Scour

Stream Problem Area Photos (Recorded on 12/06/18)

Enhancement Reach: Stream Problem Area 57b – Aggradation

Enhancement Reach: Stream Problem Area 57a – Scour near footbridge

Stream Problem Area Photos (Recorded on 12/06/18)

Enhancement Reach: Stream Problem Area 57 – Aggradation

Enhancement Reach: Stream Problem Area 57d – Aggradation

Stream Problem Area Photos (Recorded on 12/06/18)

Reach C: Stream Problem Area 58 – Aggradation

Reach C: Stream Problem Area 59 – Aggradation

Stream Problem Area Photos (Recorded on 12/06/18)

Reach C: Stream Problem Area 60 – Scour

Reach C: Stream Problem Area 61 – Degradation

Stream Problem Area Photos (Recorded on 12/06/18)

Reach C: Stream Problem Area 62 – Under Cut

Reach C: Stream Problem Area 63 – Mass Wasting

Appendix C.
Vegetation Plot Data

Table 7. Vegetation Data by Plot

			Current Plot Data (MY5 2018)																									
			194-01-0001			194-01-0002			194-01-0003			194-01-0004			194-01-0005			194-01-0006			194-01-0007			194-01-0008			194-01-0009		
Scientific Name	Common Name	Species Type	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
Acer rubrum	red maple	Tree															2								2			22
Baccharis halimifolia	eastern baccharis	Shrub			2			36			24									22			6			8			1
Betula nigra	river birch	Tree	4	4	16				1	1	2				1	1	1				4	4	4						
Carya	hickory	Tree															1												
Celtis laevigata	sugarberry	Tree							1	1	1													1	1	1			
Cephalanthus occidentalis	common buttonbush	Shrub							1	1	1	5	5	5	3	3	3						1		2	2			
Clethra alnifolia	sweetpepperbush	Shrub																											
Diospyros virginiana	common persimmon	Tree																											
Fraxinus pennsylvanica	green ash	Tree							1	1	1										2	2	2						
Hamamelis virginiana	American witchhazel	Tree																											
Ilex glabra	inkberry	Shrub				3	3	3										3	3	3									
Itea virginica	Virginia sweetspire	Shrub							3	3	4	2	2	2							5	5	7	3	3	5	11	11	11
Juniperus virginiana	eastern redcedar	Tree									1																		1
Ligustrum sinense	Chinese privet	Exotic									2						10						1			1			
Liquidambar styraciflua	sweetgum	Tree			28			9			1			11			19						13			3			33
Liriodendron tulipifera	tuliptree	Tree																											
Magnolia virginiana	sweetbay	Tree													1	1	2												
Malus angustifolia	southern crabapple	Tree	1	1	1										1	1	1												
Morella cerifera	wax myrtle	shrub	8	8	8			12	1	1	3			3	8	8	12			1	4	4	5			2			13
Nyssa sylvatica	blackgum	Tree															1				1	1	2						11
Pinus	pine	Tree																											
Pinus taeda	loblolly pine	Tree			48			55			48						2			13						27			62
Platanus occidentalis	American sycamore	Tree							2	2	2				5	5	5												
Prunus serotina	black cherry	Tree															1												
Quercus michauxii	swamp chestnut oak	Tree													1	1	1												
Quercus nigra	water oak	Tree						1																					
Quercus pagoda	cherrybark oak	Tree																											
Quercus phellos	willow oak	Tree							1	1	1				1	1	1												
Rhus copallinum	flameleaf sumac	shrub																											
Salix nigra	black willow	Tree																			2	2	21						4
Triadica sebifera	tallowtree	Exotic									1									1									
Unknown		Shrub or Tree									1						4									1			
Vaccinium	blueberry	Shrub						1																					
	Stem count		13	13	103	3	3	117	11	11	93	7	7	21	21	21	66	3	3	40	18	18	62	4	6	52	11	11	158
	size (ares)		1			1			1			1			1			1			1			1			1		
	size (ACRES)		0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02		
	Species count		3	3	6	1	1	7	8	8	15	2	2	4	8	8	16	1	1	5	6	6	10	2	3	10	1	1	9
	Stems per ACRE		526.1	526.1	4168	121.4	121.4	4735	445.2	445.2	3764	283.3	283.3	849.8	849.8	849.8	2671	121.4	121.4	1619	728.4	728.4	2509	161.9	242.8	2104	445.2	445.2	6394

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

Table 7 contd.

Scientific Name	Common Name	Species Type	Annual Means																	
			MY5 (2018)			MY4 (2017)			MY3 (2016)			MY2 (2015)			MY1 (2014)			MY0 (2013)		
			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			26			30			2			5			1			16
Baccharis halimifolia	eastern baccharis	Shrub			99			124			71			97			47			41
Betula nigra	river birch	Tree	10	10	23	10	10	12	10	10	10	11	11	12	12	12	12	11	11	11
Carya	hickory	Tree			1			2												
Celtis laevigata	sugarberry	Tree	2	2	2	2	2	2												
Cephalanthus occidentalis	common buttonbush	Shrub	9	11	12	9	11	11	9	11	12	10	12	13	9	11	11	9	11	11
Clethra alnifolia	sweetpepperbush	Shrub																2	2	2
Diospyros virginiana	common persimmon	Tree									1									
Fraxinus pennsylvanica	green ash	Tree	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Hamamelis virginiana	American witchhazel	Tree																2	2	2
Ilex glabra	inkberry	Shrub	6	6	6	6	6	6	6	6	6	4	4	7	6	6	6	9	9	9
Itea virginica	Virginia sweetspire	Shrub	24	24	29	27	27	30	24	24	24	26	26	26	27	27	27	51	51	51
Juniperus virginiana	eastern redcedar	Tree			2			5			2			1			1			
Ligustrum sinense	Chinese privet	Exotic			14			18			8			4						
Liquidambar styraciflua	sweetgum	Tree			117			108			60			81			38			274
Liriodendron tulipifera	tuliptree	Tree																		2
Magnolia virginiana	sweetbay	Tree	1	1	2	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1
Malus angustifolia	southern crabapple	Tree	2	2	2	2	2	3	2	2	3	2	2	3	2	2	2			1
Morella cerifera	wax myrtle	shrub	21	21	59	21	21	48	22	22	48	22	22	42	22	22	38	22	22	41
Nyssa sylvatica	blackgum	Tree	1	1	14	1	1	5	1	1	2			4	1	1	1	1	1	16
Pinus	pine	Tree									117									
Pinus taeda	loblolly pine	Tree			255			336						218			464			1346
Platanus occidentalis	American sycamore	Tree	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Prunus serotina	black cherry	Tree			1			1			1									
Quercus michauxii	swamp chestnut oak	Tree	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Quercus nigra	water oak	Tree			1															
Quercus pagoda	cherrybark oak	Tree												1	1	1	1	1	1	1
Quercus phellos	willow oak	Tree	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Rhus copallinum	flameleaf sumac	shrub						1												
Salix nigra	black willow	Tree	2	2	25	2	2	23	2	2	19	2	2	16			24			
Triadica sebifera	tallowtree	Exotic			2			5												
Unknown		Shrub			6															
Vaccinium	blueberry	Shrub			1															
Stem count			91	93	712	94	96	786	90	92	400	91	93	544	94	96	687	122	124	1838
size (ares)			9			9			9			9			9			9		
size (ACRES)			0.22			0.22			0.22			0.22			0.22			0.22		
Species count			14	14	26	14	14	24	13	13	21	12	12	20	13	13	19	14	14	20
Stems per ACRE			409.18	418.18	3201.51	422.67	431.66	3534.25	404.69	413.68	1798.60	409.18	418.18	2446.10	422.67	431.66	3089.10	548.57	557.57	8264.58

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

Table 8. CVS Vegetation Plot Metadata

Jacksonville Country Club Project DMS No. 194

Report Prepared By	Kim Williams
Date Prepared	2/13/2019 14:00
Database Name	JacksonvilleCountryClub_194_MY52018.mdb
Database Location	L:\Wetlands\2008\Jacksonville Country Club/Annual Monitoring Report\Year 5
Computer Name	KWILLIAMS
Description Worksheets in This Document	
Metadata	Description of database file, the report worksheets, and a summary of project and project data.
Proj Planted	Each project is listed with its PLANTED stems per acre, for each year. This includes live stakes, all planted stems, and all natural/volunteer stems.
Proj Total Stems	Each project is listed with its TOTAL stems per acre, for each year. This includes live stakes, all planted stems, and all natural/volunteer stems.
Plots	List of plots surveyed with location and summary data (live stems, dead stems, missing, etc)
Vigor	Frequency distribution of vigor classes for stems for all plots.
Vigor by Spp	Frequency distribution of vigor classes listed by species.
Damage	List of most frequent damage classes with number of occurrences and percent of total stems impacted by each.
Damage by Spp	Damage values tallied by type for each species.
Damage by Plot	Damage values tallied by type for each plot.
Planted Stems by Plot and Spp	A matrix of the count of PLANTED living stems of each species for each plot; dead and missing stems are excluded.
Project Summary	
Project Code	194
Project Name	Jacksonville Country Club
Description	Stream Restoration and Enhancement Project
River Basin	White Oak
Length (ft)	3485
Stream-to-Edge Width (ft)	
Area (sq m)	
Required Plots (calculated)	9

Table 9. CVS Vegetation Vigor by Species

	Species	CommonName	4	3	2	1	0	Missing	Unknown
	Betula nigra	river birch	4	3	3				
	Celtis laevigata	sugarberry	2						
	Cephalanthus occidentalis	common buttonbush		6	5				
	Fraxinus pennsylvanica	green ash	3						
	Ilex glabra	inkberry	3	3					
	Itea virginica	Virginia sweetspire	11	11	1	1	2	2	
	Nyssa sylvatica	blackgum	1						
	Quercus michauxii	swamp chestnut oak		1					
	Quercus phellos	willow oak	1		1				
	Salix nigra	black willow	1	1					
	Morella cerifera	wax myrtle	12	6	3			1	
	Malus angustifolia	southern crabapple	2						
	Magnolia virginiana	sweetbay		1					
	Platanus occidentalis	American sycamore	5	2					
TOT:	**14**	**14**	**45**	**34**	**13**	**1**	**2**	**3**	

Table 10. CVS Vegetation Damage by Species

	Species	CommonName	Count of Damage Categories	(no damage)	_Enter other damage_	Insects	Unknown	Vine Strangulation
	Betula nigra	river birch	7	3	7			
	Celtis laevigata	sugarberry	0	2				
	Cephalanthus occidentalis	common buttonbush	9	2	2			7
	Fraxinus pennsylvanica	green ash	0	3				
	Ilex glabra	inkberry	3	3				3
	Itea virginica	Virginia sweetspire	13	15	8	1	1	3
	Magnolia virginiana	sweetbay	1		1			
	Malus angustifolia	southern crabapple	0	2				
	Morella cerifera	wax myrtle	12	10	6		1	5
	Nyssa sylvatica	blackgum	0	1				
	Platanus occidentalis	American sycamore	1	6	1			
	Quercus michauxii	swamp chestnut oak	1		1			
	Quercus phellos	willow oak	1	1	1			
	Salix nigra	black willow	1	1				1
TOT:	**14**	**14**	**49**	**49**	**27**	**1**	**2**	**19**

Table 11. CVS Vegetation Damage by Plot

	plot	Count of Damage Categories	(no damage)	_Enter other damage_	Insects	Unknown	Vine Strangulation
	194-01-0001-year:5	10	3	5			5
	194-01-0002-year:5	3					3
	194-01-0003-year:5	6	5	4			2
	194-01-0004-year:5	5	4				5
	194-01-0005-year:5	8	13	6		1	1
	194-01-0006-year:5	0	3				
	194-01-0007-year:5	8	11	6		1	1
	194-01-0008-year:5	4	2	3			1
	194-01-0009-year:5	5	8	3	1		1
TOT:	**9**	**49**	**49**	**27**	**1**	**2**	**19**

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:5	plot 194-01-0002-year:5	plot 194-01-0003-year:5	plot 194-01-0004-year:5	plot 194-01-0005-year:5	plot 194-01-0006-year:5	plot 194-01-0007-year:5	plot 194-01-0008-year:5	plot 194-01-0009-year:5
		Betula nigra	Tree	river birch	10	4	2.5	4		1		1		4		
		Celtis laevigata	Shrub Tree	sugarberry	2	2	1			1					1	
		Cephalanthus occidentalis	Shrub Tree	common buttonbush	11	4	2.75			1	5	3			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	24	5	4.8			3	2			5	3	11
		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	21	4	5.25	8		1		8		4		
		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 phellos	Tree	willow oak	2	2	1			1		1				
		Salix nigra	Tree	black willow	2	1	2							2		
TOT:	**0**	**14**	**14**	**14**	**93**	**14**		**13**	**3**	**11**	**7**	**21**	**3**	**18**	**6**	**11**

Appendix D.
Stream Geomorphology Data

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

Parameter	Gauge[2]	Regional Curve			Pre-Existing Condition						Reference Reach(es) Data						Design			Monitoring Baseline					
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						10		5	6.9		8.8		
Floodprone Width (ft)												200						n/a		44.6	54.2		63.8		
Bankfull Mean Depth (ft)				1.7								1.54						0.83		0.6	0.7		0.8		
[1]Bankfull Max Depth (ft)												n/a						1.2		1.4	1.4		1.4		
Bankfull Cross Sectional Area (ft^2)				16.2								23.9						8.33		3.9	4.5		5.1		
Width/Depth Ratio												10.05						12		6.2	10.75		15.3		
Entrenchment Ratio												12.9						n/a		5.1	9		12.9		
[1]Bank Height Ratio												**n/a**						**n/a**		**1**	**1**		**1**		
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**	**1.7**	**3.3**		**3.7**		
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	1.6	3.2		3.9		

Transport parameters																									
Reach Shear Stress (competency) lb/ft^2																	0.01			0.207					
Max part size (mm) mobilized at bankfull																				10.2					
Stream Power (transport capacity) W/m^2																				24.6					
Additional Reach Parameters																									
Rosgen Classification	C5/E5												E5				C5				E5				
Bankfull Velocity (fps)																									
Bankfull Discharge (cfs)				23																					
Valley length (ft)																									
Channel Thalweg length (ft)																									
Sinuosity (ft)												1.1					1.2			1.2					
Water Surface Slope (Channel) (ft/ft)																	0.0012			n/a					
BF slope (ft/ft)																									
[3]Bankfull Floodplain Area (acres)																									
[4]% of Reach with Eroding Banks																									
Channel Stability or Habitat Metric																									
Biological or Other																									

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

Parameter	Gauge[2]	Regional Curve			Pre-Existing Condition						Reference Reach(es) Data						Design			Monitoring Baseline					
Dimension and Substrate - Riffle Only		LL	UL	Eq.	Min	Mean	Med	Max	SD[5]	n	Min	Mean	Med	Max	SD[5]	n	Min	Med	Max	Min	Mean	Med	Max	SD[5]	n
Bankfull Width (ft)				4.1								15.5						12.9			12.6				
Floodprone Width (ft)												200						n/a			73				
Bankfull Mean Depth (ft)				1.7								1.54						0.89			0.7				
[1]Bankfull Max Depth (ft)												n/a						1.3			1.7				
Bankfull Cross Sectional Area (ft^2)				16.2								23.9						11.5			9.2				
Width/Depth Ratio												10.05						14.47			17.3				
Entrenchment Ratio												12.9						n/a			5.8				
[1]Bank Height Ratio												**n/a**						**n/a**			**1**				
Profile																									
Riffle Length (ft)												30						38		6.2	20.8		42.7		
Riffle Slope (ft/ft)												0.002						n/a		0	1		3.5		
Pool Length (ft)											22.5	26.3		30				22		13.1	20		29.8		
Pool Max depth (ft)												3						2.4		2.9	2.9		2.9		
Pool Spacing (ft)											26.4	43.4		60.5			40	60	80	18.6	56.3		103		
Pattern																									
Channel Beltwidth (ft)											45	57.4		69.8			25	40	55	11	23.5		33		
Radius of Curvature (ft)											10.9	25.6		40.3			25	30	35	20.7	24.7		29.5		
Rc:Bankfull width (ft/ft)											**0.7**	**1.7**		**2.6**			**1.9**	**2.3**	**2.7**	**3.6**	**4.3**		**5.2**		
Meander Wavelength (ft)											63.6	84.5		105.4			80	120	160	59	116		140		
Meander Width Ratio											2.9	3.7		4.5			1.9	3.1	4.3	1.9	4.1		5.8		
Transport parameters																									
Reach Shear Stress (competency) lb/f^2																					0.25				
Max part size (mm) mobilized at bankfull																					12.3				
Stream Power (transport capacity) W/m^2																					22.3				
Additional Reach Parameters																									
Rosgen Classification												E5 and C5						C5			C5				
Bankfull Velocity (fps)																		n/a							
Bankfull Discharge (cfs)				23																					
Valley length (ft)																									
Channel Thalweg length (ft)																									
Sinuosity (ft)																		1.2			1.2				
Water Surface Slope (Channel) (ft/ft)												0.0037						n/a							
BF slope (ft/ft)																									
[3]Bankfull Floodplain Area (acres)																									
[4]% of Reach with Eroding Banks																									
Channel Stability or Habitat Metric																									
Biological or Other																									

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

Parameter	Gauge[2]	Regional Curve			Pre-Existing Condition						Reference Reach(es) Data						Design			Monitoring Baseline					
Dimension and Substrate - Riffle Only		LL	UL	Eq.	Min	Mean	Med	Max	SD[5]	n	Min	Mean	Med	Max	SD[5]	n	Min	Med	Max	Min	Mean	Med	Max	SD[5]	n
Bankfull Width (ft)				2.3	3.32	3.65		3.97			10.4	10.95		11.5				6			5				
Floodprone Width (ft)					45	68.5		92			199.7	199.9		200				n/a			51.8				
Bankfull Mean Depth (ft)				1.1	1.17	1.21		1.25			0.83	1.19		1.56				0.5			0.7				
[1]Bankfull Max Depth (ft)					1.8	1.96		2.11			n/a	n/a		n/a				0.7			1.5				
Bankfull Cross Sectional Area (ft^2)				5.5	3.88	4.42		4.95			8.6	13.2		17.9				3			3.5				
Width/Depth Ratio					2.84	3.01		3.18			7.39	10		12.58				12			7.1				
Entrenchment Ratio					13.55	18.36		23.17			17.39	18.3		19.2				n/a			10.4				
[1]Bank Height Ratio					**1.66**	**1.7**		**1.74**													**1**				
Profile																									
Riffle Length (ft)											13.4	17.7		22				14		6.3	12.5		22		
Riffle Slope (ft/ft)											0.004	0.005		0.006				n/a		0	1.6		4.5		
Pool Length (ft)											10.6	15.4		20.2				18		6.3	10.7		14.5		
Pool Max depth (ft)											1.7	2.1		2.5				1.3							
Pool Spacing (ft)											13.75	33.1		52.5			25	35	45	24.7	31.9		36.8		
Pattern																									
Channel Beltwidth (ft)					6.25	7.32		8.38			17.7	45.2		72.9			18	24	30	9	16.4		23		
Radius of Curvature (ft)					12.68	15.52		18.36			7.6	14.1		20.6			12	15	18	8.1	11.8		12.5		
Rc:Bankfull width (ft/ft)					**3.82**	**4.22**		**4.62**			**0.47**	**1.3**		**1.9**			**2**	**2.5**	**3**	**2.0**	**3.0**		**3.1**		
Meander Wavelength (ft)					14.02	15.61		17.2			23.1	51		78.8			50	70	90	46	54		80		
Meander Width Ratio					1.88	2		2.11			2.1	4.6		7.1			1.2	3	5	2.3	4.1		5.8		
Transport parameters																									
Reach Shear Stress (competency) lb/f^2																				0.3					
Max part size (mm) mobilized at bankfull																				14.7					
Stream Power (transport capacity) W/m^2																				48.1					
Additional Reach Parameters																									
Rosgen Classification																				E5					
Bankfull Velocity (fps)																				8.2					
Bankfull Discharge (cfs)				7.1																					
Valley length (ft)																									
Channel Thalweg length (ft)																									
Sinuosity (ft)							1.15													1.3					
Water Surface Slope (Channel) (ft/ft)							1.7																		
BF slope (ft/ft)																									
[3]Bankfull Floodplain Area (acres)																									
[4]% of Reach with Eroding Banks																									
Channel Stability or Habitat Metric																									
Biological or Other																									

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

Parameter	Gauge[2]	Regional Curve			Pre-Existing Condition						Reference Reach(es) Data						Design			Monitoring Baseline					
Dimension and Substrate - Riffle Only		LL	UL	Eq.	Min	Mean	Med	Max	SD[5]	n	Min	Mean	Med	Max	SD[5]	n	Min	Med	Max	Min	Mean	Med	Max	SD[5]	n
Bankfull Width (ft)				2.3							1.01	1.1		1.18				7			8.1				
Floodprone Width (ft)											199.7	199.9		200				n/a			91.5				
Bankfull Mean Depth (ft)				1.1							0.83	1.19		1.56				0.7			0.4				
[1]Bankfull Max Depth (ft)											n/a	n/a		n/a				1.1			0.9				
Bankfull Cross Sectional Area (ft^2)				5.5							8.6	13.2		17.9				4.9			3.5				
Width/Depth Ratio											7.39	10		12.58				10			19				
Entrenchment Ratio											17.39	18.3		19.2				n/a			11.3				
[1]Bank Height Ratio																		**n/a**			**1**				
Profile																									
Riffle Length (ft)											13.4	17.7		22				20		4.6	10.5		20		
Riffle Slope (ft/ft)											0.004	0.005		0.006				n/a		0	0.7		3.4		
Pool Length (ft)											10.6	15.4		20.2				12		0	9.9		14.8		
Pool Max depth (ft)											1.7	2.1		2.5				1.8		1.1	1.1		1.1		
Pool Spacing (ft)											13.75	33.1		52.5			25	33.75	42.5	4.5	32.3		71.9		
Pattern																									
Channel Beltwidth (ft)											17.7	45.2		72.9			14	19.5	25	8	14.8		32		
Radius of Curvature (ft)											7.6	14.1		20.6			9	11.5	14	6.1	8.5		11.4		
Rc:Bankfull width (ft/ft)											**0.47**	**1.3**		**1.9**			**1.3**	**1.6**	**2**	**1.5**	**2.1**		**2.9**		
Meander Wavelength (ft)											23.1	51		78.8			50	67.5	85	43	65.7		89		
Meander Width Ratio											2.1	4.6		7.1			2	2.8	3.6	2	3.7		8		
Transport parameters																									
Reach Shear Stress (competency) lb/f^2																				0.041					
Max part size (mm) mobilized at bankfull																				2					
Stream Power (transport capacity) W/m^2																				2.96					
Additional Reach Parameters																									
Rosgen Classification																				B5c					
Bankfull Velocity (fps)																									
Bankfull Discharge (cfs)				7.1																					
Valley length (ft)																									
Channel Thalweg length (ft)																									
Sinuosity (ft)																				1.3					
Water Surface Slope (Channel) (ft/ft)																									
BF slope (ft/ft)																									
[3]Bankfull Floodplain Area (acres)																									
[4]% of Reach with Eroding Banks																									
Channel Stability or Habitat Metric																									
Biological or Other																									

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

	Cross Section 1 (Riffle)							Cross Section 2 (Pool)							Cross Section 5 (Riffle)							Cross Section X2 (Pool)						
Based on fixed baseline bankfull elevation[1]	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+
Record elevation (datum) used	26.25	26.25	26.25	26.25	26.25	26.25		23.05	23.05	23.05	23.05	23.05	23.05		18.96	18.96	18.96	18.96	18.96	18.96		17.35	17.35	17.35	17.35	17.35	17.35	
Bankfull Width (ft)	8.8	6.9	6.4	6.2	6.1	7.0		6.3	5.8	5.9	6.5	5.6	4.6		5	3.4	4.5	4.4	4.6	4.6		3.1	3.2	3.7	3.7	3.7	4.9	
Floodprone Width (ft)	44.6	38.2	38.9	42.8	44.7	43.6									63.8	63.9	69.8	66.8	68.8	68.3								
Bankfull Mean Depth (ft)	0.6	0.5	0.7	0.8	0.8	0.9		0.9	1.2	1.2	1.1	1.1	1.3		0.8	1.1	1.2	0.8	1.2	1.4		0.7	0.7	1	1.3	1.5	1.5	
Bankfull Max Depth (ft)	1.4	1	1.1	1.5	1.6	2.3		1.5	1.6	1.7	1.8	1.8	1.8		1.4	1.4	1.8	1.7	1.8	1.9		1.2	1.2	1.7	1.8	1.9	1.9	
Bankfull Cross Sectional Area (ft^2)	5.1	3.4	4.2	4.8	4.7	6.5		5.7	6.9	6.8	7	6.4	5.8		3.9	3.7	5.5	3.7	5.6	6.3		2.3	2.3	3.8	4.6	5.6	7.1	
Bankfull Width/Depth Ratio	15.3	14.2	9.6	7.8	7.9	7.6		6.9	5	5.1	5.9	5	3.6		6.2	3.2	3.7	5.2	3.8	3.3		4.3	4.3	3.5	2.9	2.5	3.3	
Bankfull Entrenchment Ratio	5.1	5.5	6.1	7	7.4	6.2									12.9	18.6	15.3	15.2	14.9	14.9								
Bankfull Bank Height Ratio	1	1.2	1	1	1	1.1		1.2	1.1	1.2	1.2	1.2	1.4		1	1.3	1.2	1.2	1.3	1.3		1.2	1.2	1.3	1.3	1.4	1.5	
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)						
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+
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 14b. Monitoring Data - Dimensional Morphology Summary (Dimensional Parameters – Cross Sections)

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

	Cross Section 9 (Riffle)							Cross Section X3 (Pool)																		Cross Section 5 (Riffle)						
Based on fixed baseline bankfull elevation[1]	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+
Record elevation (datum) used	16.75	16.75	16.75	16.75	16.75	16.8		14.3	14.3	14.3	14.3	14.3	14.3																					
Bankfull Width (ft)	12.6	11.7	11.5	11.4	12.1	12.4		13.3	11.2	13.9	13.4	11.8	11.8																					
Floodprone Width (ft)	73	65.2	75.7	73.3	75.5	75.1																												
Bankfull Mean Depth (ft)	0.7	0.8	0.9	1	1	0.8		1.9	2.8	2.2	2.1	2.5	2.9																					
Bankfull Max Depth (ft)	1.7	1.7	1.8	2.1	2.4	2.2		3.9	4.6	4.6	4.4	4.2	4.6																					
Bankfull Cross Sectional Area (ft^2)	9.2	9.1	10.2	11.4	12.3	10.5		25	30.8	30.9	28.4	29.5	33.8																					
Bankfull Width/Depth Ratio	17.3	15	12.9	11.3	12	14.8		7	4.1	6.2	6.4	4.8	4.1																					
Bankfull Entrenchment Ratio	5.8	5.6	6.6	6.4	6.2	6																												
Bankfull Bank Height Ratio	1	0.8	1.1	0.9	1	0.9		1	1	1	1	0.9	0.9																					
Based on current/developing bankfull feature[2]																																		
Record elevation (datum) used																																		
Bankfull Width (ft)																																		
Floodprone Width (ft)																																		
Bankfull Mean Depth (ft)																																		
Bankfull Max Depth (ft)																																		
Bankfull Cross Sectional Area (ft^2)																																		
Bankfull Width/Depth Ratio																																		
Bankfull Entrenchment Ratio																																		
Bankfull Bank Height Ratio																																		
Cross Sectional Area between end pins (ft^2)																																		
d50 (mm)																																		

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

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

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

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

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

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

	Cross Section X1 (Riffle)							Cross Section (Riffle)							Cross Section (Riffle)							Cross Section (Pool)							Cross Section 5 (Riffle)						
Based on fixed baseline bankfull elevation[1]	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+
Record elevation (datum) used	21.22	21.22	21.22	21.22	21.22	21.22																													
Bankfull Width (ft)	5	4.7	7	5.8	7.2	7.7																													
Floodprone Width (ft)	51.8	54.5	57.3	59.3	59.9	59.9																													
Bankfull Mean Depth (ft)	0.7	0.8	1.1	1.3	1.5	1.6																													
Bankfull Max Depth (ft)	1.5	1.6	1.8	2	2.6	2.8																													
Bankfull Cross Sectional Area (ft^2)	3.5	4	7.6	7.5	10.9	12.4																													
Bankfull Width/Depth Ratio	7.1	5.5	6.5	4.5	4.7	4.8																													
Bankfull Entrenchment Ratio	10.4	11.7	8.2	10.2	8.4	7.8																													
Bankfull Bank Height Ratio	1	1.1	1	1.1	1	1																													
Based on current/developing bankfull feature[2]																																			
Record elevation (datum) used																																			
Bankfull Width (ft)																																			
Floodprone Width (ft)																																			
Bankfull Mean Depth (ft)																																			
Bankfull Max Depth (ft)																																			
Bankfull Cross Sectional Area (ft^2)																																			
Bankfull Width/Depth Ratio																																			
Bankfull Entrenchment Ratio																																			
Bankfull Bank Height Ratio																																			
Cross Sectional Area between end pins (ft^2)																																			
d50 (mm)																																			

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

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

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

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

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

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

	Cross Section 7 (Riffle)							Cross Section 8 (Pool)							Cross Section (Riffle)							Cross Section (Pool)							Cross Section 5 (Riffle)						
Based on fixed baseline bankfull elevation[1]	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+
Record elevation (datum) used	20.54	20.54	20.54	20.54	20.54	20.5		19.68	19.68	19.68	19.68	19.68	19.7																						
Bankfull Width (ft)	8.1	9.5	10.3	9.3	9.2	8.1		6	7.1	6.6	6.4	6	8.1																						
Floodprone Width (ft)	91.5	111.1	128.5	138.7	131.7	141.6																													
Bankfull Mean Depth (ft)	0.4	0.5	0.5	0.6	0.8	1.1		0.7	0.8	0.7	0.7	0.9	0.8																						
Bankfull Max Depth (ft)	0.9	1.2	1.6	2	2.1	2.2		1.5	1.5	1.3	1.3	1.7	1.8																						
Bankfull Cross Sectional Area (ft^2)	3.5	4.9	5.6	5.8	7.5	8.6		4	5.6	4.8	4.6	5.3	6.4																						
Bankfull Width/Depth Ratio	19	18.1	18.9	15	11.3	7.7		8.9	9	9.1	8.9	6.9	10.3																						
Bankfull Entrenchment Ratio	11.3	11.7	12.4	14.9	14.4	17.4																													
Bankfull Bank Height Ratio	1	1	1	1	1	0.9		1	1	0.9	0.9	0.9	0.9																						
Based on current/developing bankfull feature[2]																																			
Record elevation (datum) used																																			
Bankfull Width (ft)																																			
Floodprone Width (ft)																																			
Bankfull Mean Depth (ft)																																			
Bankfull Max Depth (ft)																																			
Bankfull Cross Sectional Area (ft^2)																																			
Bankfull Width/Depth Ratio																																			
Bankfull Entrenchment Ratio																																			
Bankfull Bank Height Ratio																																			
Cross Sectional Area between end pins (ft^2)																																			
d50 (mm)																																			

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

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

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

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

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

Parameter	Baseline						MY-1						MY-2						MY- 3						MY- 4						MY- 5					
Riffle only	Min	n	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n
Bankfull Width (ft)	3.8	4.3		4.8			5.3	5.4		5.4		2	6.2	6.4		6.5			5.6	5.9		6.1			5	5.2		5.4			4.6	5.8		7		
Floodprone Width (ft)	20.3	36.5		52.8			34.3	50		65.6		2	37.1	56.7		76.4			42.7	58.1		73.4			43.7	57.5		70.5			43.6	56		68.3		
Bankfull Mean Depth (ft)	0.3	0.5		0.7			0.4	0.7		0.9		2	0.6	0.89		1.2			0.8	0.85		0.9			0.8	1.05		1.3			0.9	1.15		1.4		
[1]Bankfull Max Depth (ft)	0.8	0.9		1			0.8	1.2		1.5		2	1	1.6		2.1			1.5	1.7		2			1.5	1.8		2.1			1.9	2.1		2.3		
Bankfull Cross Sectional Area (ft^2)	1.5	2		2.5			2.3	3.5		4.6		2	3.7	5.7		7.6			4.8	5		5.3			4.4	5.55		6.7			6.3	6.4		6.5		
Width/Depth Ratio	5.8	10.7		15.5			6	9.3		12.5		2	5.5	7.1		10.4			6.1	6.9		7.9			3.8	5.3		6.8			3.3	5.45		7.6		
Entrenchment Ratio	4.2	9		13.8			6.4	9.4		12.4		2	5.8	8.9		12			7.2	9.8		12.5			8.1	11.1		14			6.2	10.6		14.9		
[1]Bank Height Ratio	**1.3**	**1.45**		**1.6**			**1**	**1.1**		**1.2**		**2**	**0.6**	**1**		**1.4**			**0.9**	**1**		**1.1**			**1**	**1.1**		**1.2**			**1.1**	**1.2**		**1.3**		
Profile																																				
Riffle Length (ft)	2.6	8		40.5			3.7	16.6		50.6			6.6	27.9		78.9			7.6	29.2		76.5			1.5	27		52.5			3.5	20.3		56.7		
Riffle Slope (ft/ft)	0	1		6.9			0	1.7		7.5			0	1.1		9.2			0	1.4		5.9			0	1.05		2.1			0	2.2		36		
Pool Length (ft)	4	16.8		54.8			4.7	15.7		31.9			7.1	13.7		33.1			4.3	11.2		22.3			5.5	17.2		28.9			5.1	12.8		24.6		
Pool Max depth (ft)	1.2	1.2		1.3			1.12	2.08		3.3			0.9	2.77		4.36			1.25	2.83		4.17			0.53	2.64		4.18			1.54	2.75		4.03		
Pool Spacing (ft)	9.5	33.3		143			8	29.4		67.2			11.1	44.1		103			8	39		111			8.3	35.3		62.2			9.2	36.4		72.1		
Pattern																																				
Channel Beltwidth (ft)	8	22		34																																
Radius of Curvature (ft)	8.3	22.7		32.4																																
Rc:Bankfull width (ft/ft)	**2.2**	**5.3**		**6.8**																																
Meander Wavelength (ft)	64	108		140																																
Meander Width Ratio	2.1	5.1		7.1																																

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

Additional Reach Parameters																																				
Rosgen Classification	E5						E5						E5						E5						E5						E5					
Channel Thalweg length (ft)							1403						1424						1423						1423						1427					
Sinuosity (ft)	1.2						1.2						1.2						1.2						1.2						1.2					
Water Surface Slope (Channel) (ft/ft)																																				
BF slope (ft/ft)																																				
[3]Ri% / Ru% / P% / G% / S%	0.21	0.08	0.5	0.21																																
[3]SC% / Sa% / G% / C% / B% / Be%																																				
[3]d16 / d35 / d50 / d84 / d95 /																																				
[2]% of Reach with Eroding Banks																																				
Channel Stability or Habitat Metric																																				
Biological or Other																																				

Shaded cells indicate that these will typically not be filled in.

1 = The distributions for these parameters can include information from both the cross-section surveys and the longitudinal profile. 2 = Proportion of reach exhibiting banks that are eroding based on the visual survey from visual assessment table

3 = Riffle, Run, Pool, Glide, Step; Silt/Clay, Sand, Gravel, Cobble, Boulder, Bedrock; dip = max pave, disp = max subpave; 4. = Of value/needed only if the n exceeds 3

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

Parameter	Baseline						MY-1						MY-2						MY- 3						MY- 4						MY- 5					
Dimension and Substrate - Riffle only	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n
Bankfull Width (ft)		12.6						11.7						11.5						11.4						12.1						12.4				
Floodprone Width (ft)		73						65.2						75.7						73.3						75.5						75.1				
Bankfull Mean Depth (ft)		0.7						0.8						0.9						1						1						0.8				
[1]Bankfull Max Depth (ft)		1.7						1.7						1.8						2.1						2.4						2.2				
Bankfull Cross Sectional Area (ft^2)		9.2						9.1						10.2						11.4						12.3						10.5				
Width/Depth Ratio		17.3						15						12.9						11.3						12						14.8				
Entrenchment Ratio		5.8						5.6						6.6						6.4						6.2						6				
[1]Bank Height Ratio		**1**						**0.8**						**1.1**						**0.9**						**1**						**0.9**				
Profile																																				
Riffle Length (ft)	6.2	20.8		42.7			4.1	19		37.4			10.7	25.5		43.9			4.7	19.8		30.1			7.9	26.9		47			6.2	27		53.5		
Riffle Slope (ft/ft)	0	1		3.5			0	1.4		5.5			0	1.4		3.7			0	1.8		7.8			0	2.3		6			0	-0.7		2.2		
Pool Length (ft)	13.1	20		29.8			3.5	15		41.8			2.5	14.3		32.1			4.1	15.5		25.3			1.9	11.6		25			1.6	12.8		36.7		
Pool Max depth (ft)	1.4	2.09		3.39			1.56	2.7		4.43			2.68	3.8		5.75			2.55	3.91		5.88			1.52	3.56		5.57			1.85	3.68		6.36		
Pool Spacing (ft)	18.6	56.3		103			6.8	30.9		73.5			9.8	39.8		72.9			8.9	44.8		82.9			9.4	40.1		88.6			7.4	37.5		79.7		
Pattern																																				
Channel Beltwidth (ft)	11	23.5		33																																
Radius of Curvature (ft)	20.7	24.7		29.5																																
Rc:Bankfull width (ft/ft)	**3.63**	**4.33**		**5.18**																																
Meander Wavelength (ft)	59	116		140																																
Meander Width Ratio	1.93	4.12		5.79																																

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

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

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

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

Parameter	Baseline						MY-1						MY-2						MY- 3						MY- 4						MY- 5					
Dimension and Substrate - Riffle only	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n
Bankfull Width (ft)		5						4.7						7						5.8						7.2						7.7				
Floodprone Width (ft)		51.8						54.5						57.3						59.3						59.9						59.9				
Bankfull Mean Depth (ft)		0.7						0.8						1.1						1.3						1.5						1.6				
[1]Bankfull Max Depth (ft)		1.5						1.6						1.8						2						2.6						2.8				
Bankfull Cross Sectional Area (ft^2)		3.5						4						7.6						7.5						10.9						12.4				
Width/Depth Ratio		7.1						5.5						6.5						4.5						4.7						4.8				
Entrenchment Ratio		10.4						11.7						8.2						10.2						8.4						7.8				
[1]Bank Height Ratio		**1**						1.1						1						1.1						1						1				
Profile																																				
Riffle Length (ft)	6.3	12.5		22			6.5	20.5		52.5			8	17.9		55.2			9	17.7		24.2			5.1	15.3		34			4.1	13.1		32.9		
Riffle Slope (ft/ft)	0	1.6		4.5			0	0.25		1.8			0	1.8		5			0	2.3		5.3			0	1.9		11			0	1.6		4.5		
Pool Length (ft)	6.3	10.7		14.5			10.5	20.4		46.4			5	14.5		26.5			5.8	12.8		23			5.4	13.5		27.5			6.5	12.9		29.7		
Pool Max depth (ft)	0.85	1.51		2.41			0.86	1.61		2.46			1.31	2.08		3.14			1.58	2.4		3.42			1.11	2.36		3.65			1.7	2.35		3.05		
Pool Spacing (ft)	24.7	31.9		36.8			20.3	39.6		64			17.3	37.1		70.2			18.7	36.8		63.9			12.9	32.5		51.9			16.1	29.3		46.9		
Pattern																																				
Channel Beltwidth (ft)	9	16.4		23																																
Radius of Curvature (ft)	8.1	11.8		12.5																																
Rc:Bankfull width (ft/ft)	**2.03**	**2.95**		**3.13**																																
Meander Wavelength (ft)	46	54		80																																
Meander Width Ratio	2.25	4.1		5.75																																

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

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

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

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

Parameter	Baseline						MY-1						MY-2						MY- 3						MY- 4						MY- 5					
Dimension and Substrate - Riffle only	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n	Min	n	Med	Max	SD[4]	n
Bankfull Width (ft)		8.1						9.5						10.3						9.3						9.2						8.1				
Floodprone Width (ft)		91.5						111						129						139						132						142				
Bankfull Mean Depth (ft)		0.4						0.5						0.5						0.6						0.8						1.1				
[1]Bankfull Max Depth (ft)		0.9						1.2						1.6						2						2.1						2.2				
Bankfull Cross Sectional Area (ft^2)		3.5						4.9						5.6						5.8						7.5						8.6				
Width/Depth Ratio		19						18.1						18.9						15						11.3						7.7				
Entrenchment Ratio		11.3						11.7						12.4						14.9						14.4						17.4				
[1]Bank Height Ratio		1						1						1						1						1						0.9				
Profile																																				
Riffle Length (ft)	4.6	10.5		20			6	13.3		29.1			2.7	15.8		48.9			4	11.5		25.3			4.2	17.5		45.6			3.4	14		46.6		
Riffle Slope (ft/ft)	0	0.71		3.4			0	1.5		4.2			0	1.4		4.5			0	2.2		6.8			0	1.5		7.2			0	1.2		6.4		
Pool Length (ft)	6.3	10.7		14.5			2.2	5.3		11.3			4	11.7		35.7			5.8	10.2		18			6.7	12.8		21.4			5	10.3		17.7		
Pool Max depth (ft)	0.46	1.29		2.11			0.56	1.32		1.73			0.92	1.61		2.38			0.9	1.76		2.32			1.13	1.73		2.47			0.85	1.65		2.58		
Pool Spacing (ft)	4.5	32.3		71.9			15.1	38.8		71.6			19.4	34.1		68.3			15.9	35.5		72.9			18.3	35.8		70.3			16.7	30		68.7		
Pattern																																				
Channel Beltwidth (ft)	8	14.8		32																																
Radius of Curvature (ft)	6.1	8.5		11.4																																
Rc:Bankfull width (ft/ft)	**1.53**	**2.13**		**2.85**																																
Meander Wavelength (ft)	43	65.7		89																																
Meander Width Ratio	2	3.7		8																																

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

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

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1 = The distributions for these parameters can include information from both the cross-section surveys and the longitudinal profile.
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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

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

Bankfull (Baseline)
26.3

Bankfull (MY5)
26.1

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

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

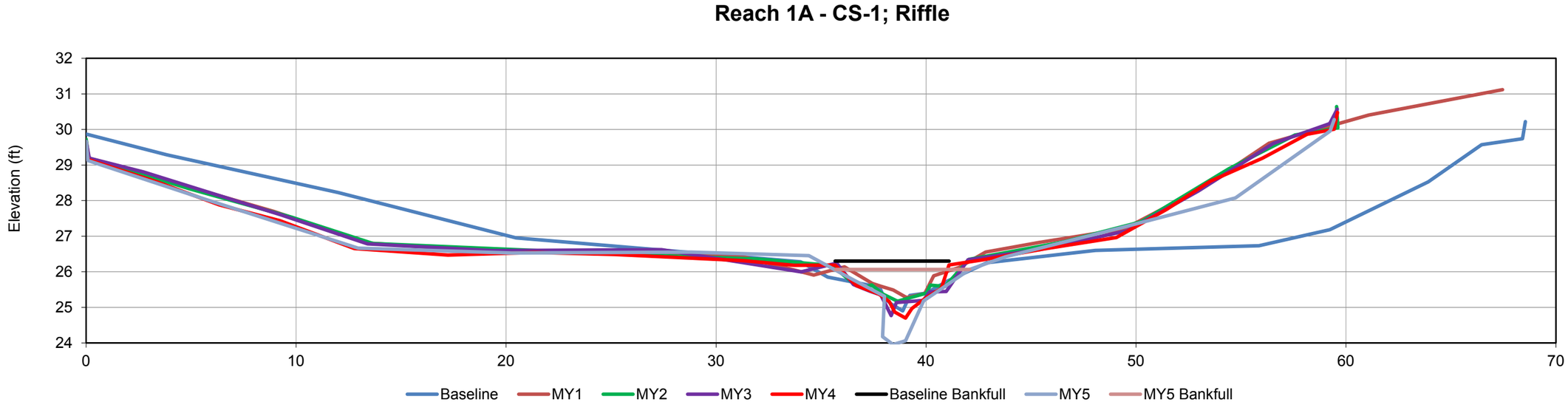
MY2	
0.00	29.7256
0.12	29.1915
4.95	28.3247
9.81	27.5311
13.66	26.7953
19.26	26.6545
26.32	26.4721
31.97	26.358
35.54	26.1732
36.43	25.7222
36.99	25.5392
37.42	25.6309
37.93	25.3762
38.64	25.1712
40.01	25.4004
40.21	25.624
40.91	25.5848
42.05	26.3476
46.49	26.8326
50.24	27.4016
54.44	28.8968
57.58	29.8423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

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

MY4	
0	29.5869
0.09079	29.1535
3.37668	28.5275
6.33591	27.882
9.23753	27.4356
12.7669	26.6501
17.2302	26.4682
21.3714	26.54
25.1971	26.4858
28.7373	26.3857
31.3068	26.3109
33.7317	26.1818
35.6696	26.1861
36.7003	25.6066
37.7607	25.3721
38.249	25.1622
38.5075	24.8689
39.0207	24.6978
39.3307	24.966
40.0191	25.2791
40.7202	25.5296
41.0975	26.1916
42.7323	26.3382
45.5674	26.6352
49.0653	26.9602
51.4499	27.7489
53.5469	28.5455
56.0277	29.1941
58.1465	29.8654
59.4426	30.0044
59.5967	30.4774

MY5	
0	29.667
0.09	29.127
5.45	28.081
12.96	26.663
20.25	26.525
28.82	26.551
34.42	26.454
36.53	25.775
38.02	25.307
37.93	24.178
38.43	23.955
39.02	24.062
39.89	25.185
42.08	26.065
43.79	26.424
49.28	27.234
54.74	28.075
59.24	29.956
59.44	30.277

Looking downstream at CS 1 (November 2018)



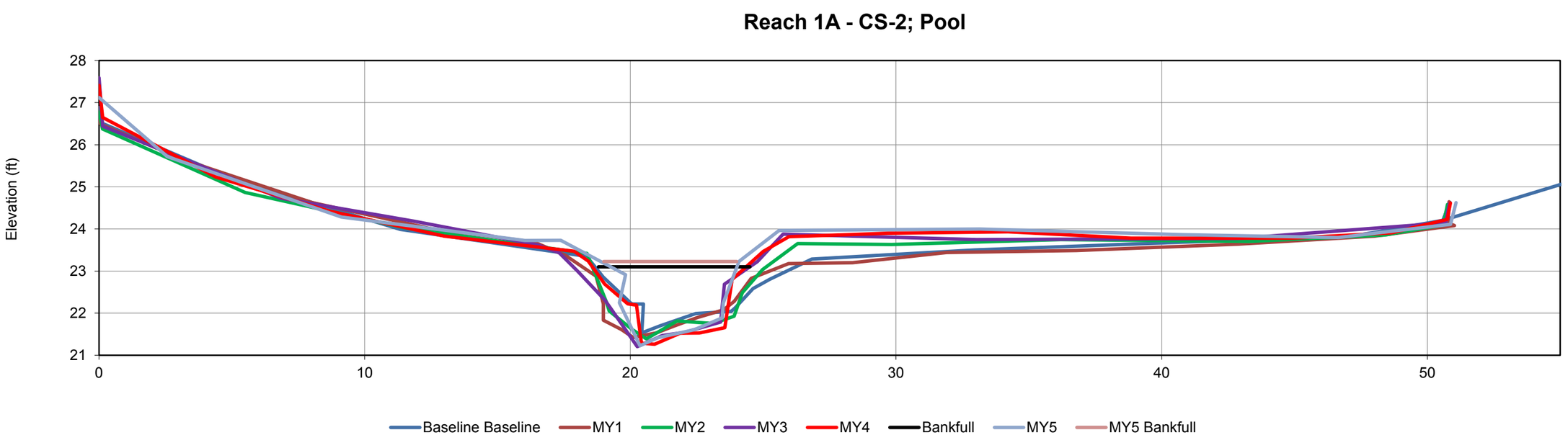
Project Name: Jacksonville Country Club
Reach: 1A
Cross Section: CS-2; Pool

Bankfull (Baseline)
23.1

Bankfull (MY5)
23.2

Baseline		MY1		MY2		MY3		MY4		MY5	
0	26.882	0.00	26.7661	0	26.7761	0	27.5898	0	27.4099	0	27.12
-0.1236	26.573	0.05	26.4899	0.12922	26.3764	0.13509	26.4405	0.14	26.6477	2.57	25.72
4.91066	25.22	3.23	25.6319	5.4982	24.8656	6.82791	24.733	4.39268	25.2335	9.12	24.282
11.3404	23.987	8.03	24.6235	11.5476	24.0184	11.8532	24.1833	8.63775	24.428	16.03	23.723
18.3549	23.349	12.57	23.9982	18.366	23.4196	16.5066	23.6222	13.0014	23.828	17.38	23.728
18.9754	22.856	16.37	23.6892	19.1033	22.2608	17.3216	23.4349	17.8797	23.4721	19.82	22.914
20.0551	22.217	17.55	23.3725	19.2054	22.051	18.0295	22.9857	18.4152	23.2376	19.59	22.245
20.4922	22.217	18.71	22.8787	20.0608	21.6169	19.0427	22.3064	19.0306	22.6904	20.36	21.226
20.4276	21.531	18.98	22.2216	20.5976	21.3887	19.4321	21.9608	19.8995	22.2197	21.04	21.416
21.114	21.698	18.99	21.8321	21.7606	21.8145	20.2579	21.2046	20.23	22.1898	22.41	21.607
22.4646	21.993	19.66	21.6121	23.1116	21.7538	21.2025	21.4695	20.4172	21.288	23.46	21.888
23.7856	22.038	20.11	21.421	23.9065	21.9267	22.0587	21.5469	20.9119	21.2609	23.49	22.235
23.9298	22.117	20.99	21.534	24.2121	22.4837	23.4	21.7874	21.873	21.5255	24.09	23.226
24.6175	22.584	21.65	21.6951	24.9766	23.0343	23.5401	22.6888	22.5963	21.5299	25.6	23.963
25.2504	22.805	22.53	21.8952	26.2977	23.6536	24.7796	23.2228	23.5546	21.6564	33.15	23.997
26.832	23.285	23.50	22.0786	29.8387	23.6302	25.7511	23.8754	23.8295	22.7979	40.83	23.864
32.9515	23.501	23.91	22.2818	36.2082	23.7474	33.0299	23.7447	24.9991	23.4641	46.63	23.793
47.2695	23.837	24.55	22.8272	43.2881	23.7046	42.8556	23.771	25.9694	23.8151	50.87	24.11
50.5892	24.204	25.95	23.1779	48.3884	23.8565	50.6886	24.145	29.7348	23.8965	51.08	24.625
50.8532	24.629	28.36	23.1978	50.5954	24.0941	50.824	24.5982	34.222	23.9328		
50.5892	24.204	31.90	23.4404	50.7575	24.5812			38.8513	23.7821		
57.8977	25.611	36.79	23.4865					44.9208	23.782		
		42.87	23.6384					48.6583	23.9049		
		48.01	23.8283					50.746	24.2264		
		51.02	24.0802					50.8676	24.6169		
		50.78	24.1506								
		50.82	24.6449								

Looking downstream at CS 2 (November 2018)



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

Bankfull (Baseline)
19

Bankfull (MY5)
19.1

Baseline	
0	21.641
0.14081	22.278
0	21.641
8.93127	19.444
11.9599	19.247
14.6677	19.425
16.1488	18.634
16.8162	18.166
17.4309	17.697
17.8877	17.602
19.0341	17.742
19.6619	18.419
19.9206	18.602
20.4975	18.958
29.5408	19.627
33.0842	19.528
41.459	19.452
53.5022	19.438
65.6245	19.805
73.7041	20.95

MY1	
0.00	22.2472
-0.10	21.7089
2.10	21.1638
6.40	19.9986
10.14	19.379
13.68	19.4963
15.81	18.7218
16.08	18.307
16.80	18.1418
17.10	17.9376
17.13	17.8059
17.62	17.5504
17.95	17.5387
18.48	17.543
18.67	17.7227
19.24	17.9418
20.23	19.0367
20.89	19.37
22.84	19.1713
28.31	19.4399
35.87	19.4646
41.93	19.2421
47.89	19.2633
55.19	19.3799
62.02	19.5498
68.30	20.2958
73.34	20.9893

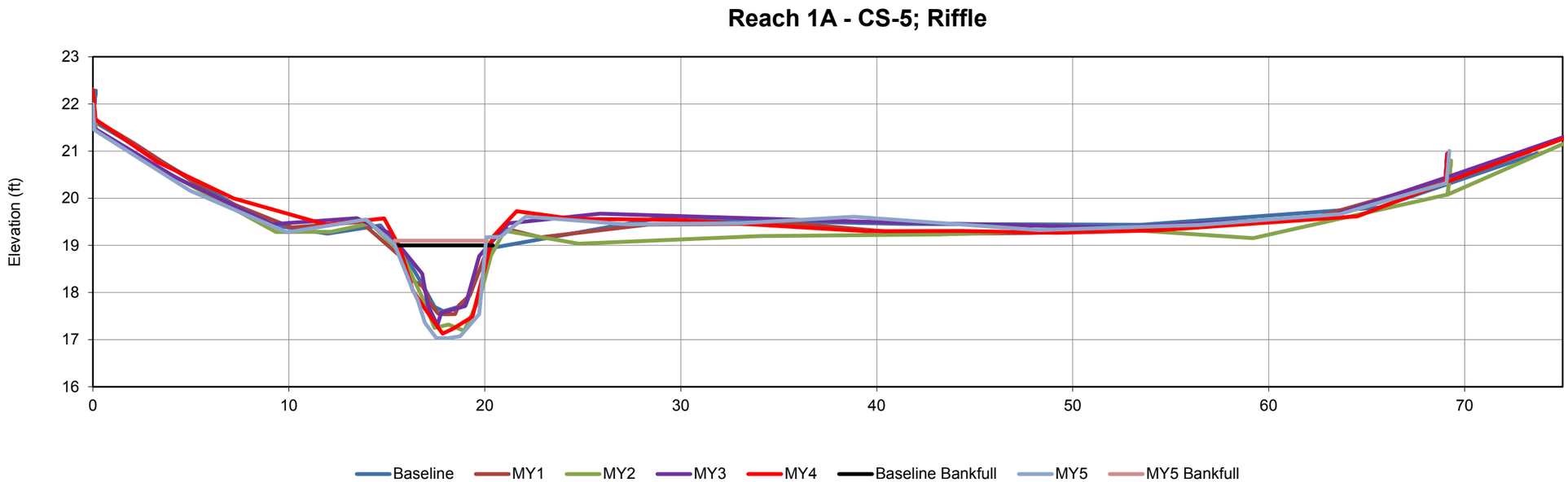
MY2	
0	22.3053
0.15615	21.4511
2.79365	20.7699
9.33638	19.285
12.1624	19.2868
14.1591	19.4686
15.7591	18.8192
16.7726	17.9282
17.4371	17.2508
18.1498	17.3182
18.9403	17.1874
19.7671	17.9223
20.3069	18.7797
20.9994	19.3117
24.7879	19.0368
34.0266	19.1948
43.1906	19.2309
51.9194	19.3525
59.1994	19.1518
69.1317	20.0788
69.3011	20.7917
69.1317	20.0788
78.474	21.78

MY3	
0	22.1735
0.08254	21.4767
4.20874	20.4465
9.16168	19.4483
13.4648	19.5755
15.1185	19.2619
16.8007	18.3978
17.0916	17.7405
17.584	17.3005
17.6224	17.3692
17.7648	17.5654
19.0026	17.711
19.7105	18.7731
21.2009	19.4648
25.8815	19.674
38.9257	19.5076
52.2772	19.3736
63.0242	19.601
69.0336	20.4343
69.1058	20.9372
69.0336	20.434
78.413	21.78

MY4	
0	22.2961
0.13752	21.6717
3.29578	20.7694
7.18472	19.9966
11.8953	19.442
14.8634	19.5729
15.6461	18.9634
16.3227	18.0475
16.973	17.6379
17.467	17.344
17.8424	17.128
18.3586	17.2282
19.3602	17.4874
20.4075	19.1778
21.6171	19.723
24.4567	19.5633
29.7512	19.5414
39.4182	19.3027
44.3246	19.304
49.1989	19.2648
54.3212	19.3191
59.7059	19.4767
64.5209	19.615
69.0292	20.3335
69.1343	20.9543
69.0292	20.334
78.3788	21.78

MY5	
0	21.996
0.07	21.447
4.95	20.162
9.92	19.274
13.94	19.548
15.39	19.02
16.32	18.058
16.58	17.831
16.94	17.36
17.53	17.032
18.13	17.031
18.74	17.069
19.71	17.543
20.08	19.174
20.79	19.181
22.09	19.609
27.25	19.444
33.13	19.473
38.83	19.607
48.31	19.325
56.44	19.434
63.64	19.662
69.07	20.322
69.22	21.001

Looking downstream at CS 5 (November 2018)



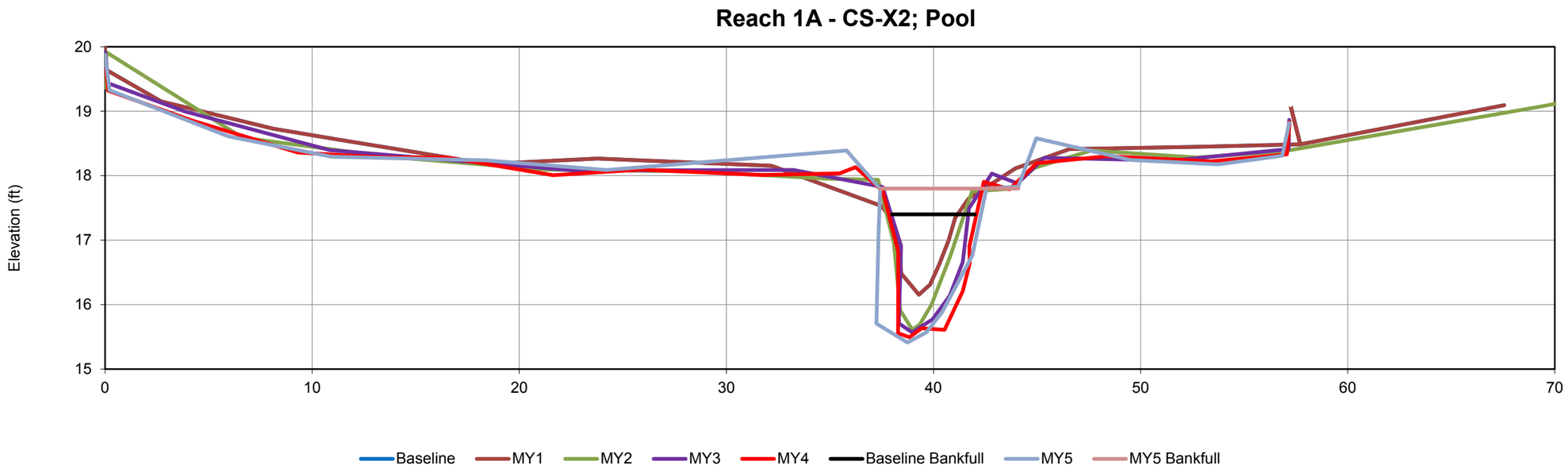
Project Name: Jacksonville Country Club
Reach: 1A
Cross Section: CS-X2; Pool

Bankfull (Baseline)
17.4

Bankfull (MY5)
17.8

Baseline		MY1		MY2		MY3		MY4		MY5	
0	20.136	0.00	20.136	0	19.3639	0	19.9193	0	19.8549	0	19.874
0.00815	19.651	0.01	19.651	0.06532	19.9144	0.16691	19.4317	0.14283	19.3209	0.21	19.326
2.70842	19.154	2.71	19.154	6.63371	18.589	3.84893	18.9986	4.15395	18.8612	5.98	18.607
8.11315	18.731	8.11	18.731	13.7723	18.2897	10.8504	18.3956	9.31546	18.3587	10.95	18.293
11.35	18.555	11.35	18.555	21.2159	18.0934	22.6128	18.0822	13.4025	18.2841	18.41	18.238
18.4621	18.181	18.46	18.181	28.446	18.067	33.2448	18.0899	16.5415	18.2808	24.22	18.089
23.767	18.266	23.77	18.266	34.9777	17.9528	37.549	17.8238	21.6324	18.0078	29.72	18.232
32.1811	18.155	32.18	18.155	37.3173	17.9373	38.4334	16.908	25.8382	18.0963	35.8	18.392
37.4733	17.532	37.47	17.532	38.0861	16.9607	38.3303	15.7071	31.68	18.0095	37.43	17.793
37.8784	17.371	37.88	17.371	38.3988	15.9096	38.9695	15.57	35.4614	18.0365	37.35	17.169
38.3768	16.945	38.38	16.945	38.9801	15.6116	39.9489	15.77	36.2392	18.1327	37.24	15.706
38.4351	16.485	38.44	16.485	39.3357	15.6907	40.7802	16.1372	37.5496	17.7581	38.74	15.412
39.293	16.154	39.29	16.154	39.8967	15.9936	41.4118	16.6606	38.3018	16.8205	39.66	15.573
39.8396	16.312	39.84	16.312	40.8044	16.7484	41.7113	17.4933	38.2934	15.5563	40.43	15.888
40.2711	16.621	40.27	16.621	41.8533	17.7547	42.8161	18.0318	38.8358	15.4939	41.88	16.764
40.7253	16.992	40.73	16.992	43.6752	17.7953	44.0589	17.8801	39.4286	15.6339	42.55	17.799
41.0433	17.346	41.04	17.346	44.8878	18.1236	45.3525	18.2791	40.5333	15.6091	44.09	17.83
41.6799	17.642	41.68	17.642	47.6148	18.3898	51.5186	18.234	41.4119	16.2088	44.96	18.579
43.9561	18.114	43.96	18.114	52.73	18.2809	57.1495	18.4127	41.7538	16.6462	49.51	18.245
46.5589	18.413	46.56	18.413	56.9424	18.3799	57.1751	18.8674	41.7281	16.9024	53.75	18.175
52.9469	18.45	52.95	18.45	57.1832	18.8388			42.4322	17.9065	56.84	18.309
57.7137	18.488	57.71	18.488	56.9424	18.3799			43.6737	17.7897	57.18	18.819
57.233	19.092	57.23	19.092	69.3554	19.074			44.9777	18.196		
57.7137	18.488	57.71	18.488	81.8062	19.8301			48.3996	18.303		
67.5603	19.095	67.56	19.095					53.3881	18.2234		
								57.0612	18.3299		
								57.1894	18.833		

Looking downstream at CS-X2 (November 2018)



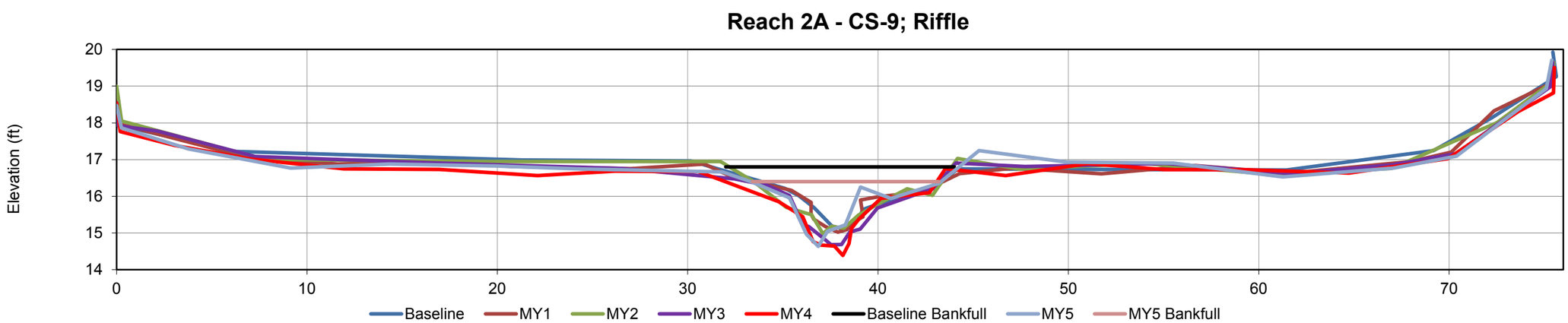
Project Name: Jacksonville Country Club
Reach: 2A
Cross Section: CS-9; Riffle

Bankfull (Baseline)
16.8

Bankfull (MY5)
16.4

Baseline		MY1		MY2		MY3		MY4		MY5	
0	18.668	0.00	18.6985	0	19	0	18.5518	0	18.5413	0.00	18.476
0.03047	17.946	-0.12	18.0039	0.25904	18.0523	0.09284	17.9191	0.18729	17.7626	0.25	17.864
6.09708	17.222	2.63	17.6299	7.79233	17.0061	2.13617	17.7771	3.05702	17.3843	3.76	17.293
21.321	16.99	7.02	17.0419	19.6084	16.9436	7.27676	17.0844	6.95421	17.0171	9.15	16.766
30.1586	16.961	11.63	16.8793	31.7304	16.9454	16.9872	16.9039	11.9349	16.7457	14.34	16.877
35.0871	16.218	16.04	16.9497	33.5027	16.3872	26.5346	16.7571	16.9356	16.7307	19.86	16.826
35.8458	16.014	20.85	16.8085	35.1896	15.6937	32.4437	16.4754	22.1134	16.5646	24.46	16.744
36.6464	15.685	27.02	16.7506	36.5085	15.4976	34.1762	16.2974	26.1908	16.6859	31.81	16.663
37.5746	15.19	30.87	16.8774	37.0995	14.9797	35.3517	16.0218	30.5545	16.6751	33.38	16.384
38.2932	15.095	32.56	16.4693	37.5543	15.1825	36.0589	15.2007	34.7857	15.8531	35.35	15.959
38.6136	15.167	34.46	16.2815	38.2049	15.128	36.3525	15.1801	36.0485	15.4423	36.24	14.969
39.2474	15.646	35.45	16.1616	38.9674	15.4865	37.2898	14.7826	36.5879	14.7621	36.86	14.635
40.0611	15.802	36.48	15.8337	40.0213	15.7961	37.5218	14.6804	36.989	14.6714	37.35	15.049
42.9587	16.214	36.48	15.528	41.5293	16.2051	38.0857	14.6848	37.7043	14.6425	38.29	15.218
44.1722	16.748	36.62	15.376	42.861	16.0269	38.5206	15.0313	38.1537	14.3878	39.08	16.252
51.0992	16.733	37.25	15.1735	44.1722	17.0314	39.0638	15.1064	38.4736	14.7134	40.67	15.942
61.454	16.714	37.89	15.0223	47.408	16.7427	39.971	15.6792	38.6078	15.1238	43.21	16.354
69.1872	17.246	38.37	15.0959	54.0175	16.8916	42.8637	16.2084	38.9945	15.3829	45.30	17.243
72.214	18.129	38.66	15.2805	60.7448	16.5902	44.0963	16.9049	40.1507	15.9416	49.90	16.929
75.6315	19.261	39.21	15.437	66.9683	16.7561	47.7196	16.8121	42.7008	16.0988	55.50	16.906
75.451	19.927	39.08	15.8971	72.5027	18.0043	55.1227	16.8948	43.5443	16.7534	61.25	16.529
		39.98	15.9834	75.3422	19.0882	61.7001	16.6176	46.7044	16.564	67.09	16.766
		41.20	16.0584	75.5054	19.6414	67.0114	16.8564	51.0077	16.8902	70.39	17.094
		42.72	16.2228			70.3546	17.1609	55.0563	16.728	72.78	18.036
		44.27	16.6186			75.315	18.9826	59.4154	16.7188	75.11	18.935
		47.15	16.7675			75.449	19.6512	64.7496	16.6347	75.39	19.708
		51.73	16.612					69.9295	17.0252		
		56.68	16.8383					73.6411	18.3116		
		61.58	16.6258					75.4817	18.8152		
		67.99	16.9448					75.5294	19.5081		
		70.11	17.203								
		72.36	18.3293								
		75.43	19.0984								
		74.88	19.8096								

Looking downstream at CS-9 (November 2018)



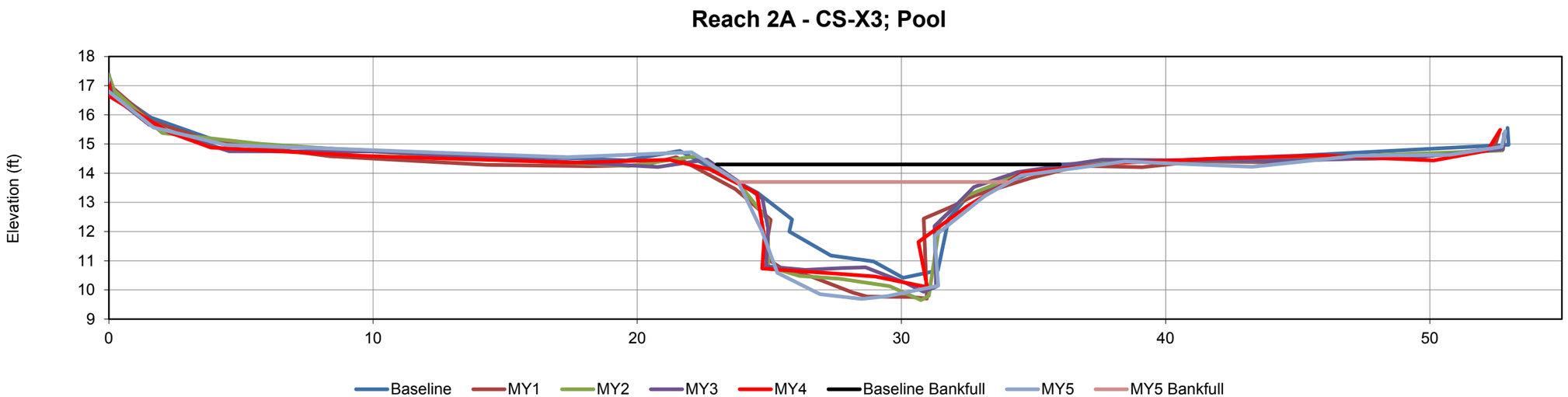
Project Name: Jacksonville Country Club
Reach: 2A
Cross Section: CS-X3; Pool

Bankfull (Baseline)
14.3

Bankfull (MY5)
13.7

Baseline		MY1		MY2		MY3		MY4		MY5	
0	17.387	0.00	17.3498	0	17.3565	0	17.1699	0	17.1122	0.00	17.224
0.08785	16.861	0.00	17.0387	0.20244	16.8235	0.12545	16.658	0.0677	16.6095	-0.13	16.89
1.58798	15.912	1.61	15.774	2.02547	15.3804	1.52392	15.658	2.25253	15.4143	1.69	15.568
4.23364	15.058	3.86	15.1168	5.71332	15.0069	4.55797	14.7526	3.85718	14.8828	4.44	14.964
8.60401	14.827	8.35	14.5814	12.7636	14.5779	10.0783	14.746	9.56027	14.5958	8.14	14.855
19.591	14.442	14.30	14.2891	19.6665	14.2465	17.0468	14.4044	13.44	14.4853	12.88	14.69
21.6076	14.763	18.20	14.2403	22.2461	14.5806	20.7824	14.2103	17.6366	14.3599	17.37	14.548
24.563	13.323	20.24	14.2764	23.8209	13.6701	22.6413	14.472	21.191	14.4615	22.06	14.716
25.8617	12.415	21.47	14.5522	24.9485	12.3892	23.6202	13.8405	22.7481	14.1294	23.83	13.693
25.755	11.999	23.71	13.4591	24.9568	10.7963	24.7381	13.1286	24.5268	13.3088	24.72	12.025
27.3275	11.179	24.25	13.0397	26.1512	10.4816	24.9508	12.0937	24.8145	11.8203	25.30	10.583
28.9433	10.979	25.05	12.4043	27.6597	10.387	24.8757	10.8087	24.7273	10.7311	26.92	9.851
30.0622	10.415	24.81	11.1275	29.5534	10.1297	26.3601	10.6887	25.9706	10.6568	28.49	9.691
31.3764	10.67	25.57	10.6813	30.7359	9.65075	27.7139	10.7491	27.4044	10.5634	29.46	9.784
31.7833	12.435	26.59	10.4601	31.0382	9.79832	28.6374	10.7752	29.0161	10.4595	31.39	10.143
32.4324	13.125	28.14	9.915	31.4647	12.3856	30.1682	10.2355	30.9797	10.0957	31.25	11.843
33.5305	13.561	28.69	9.7737	32.4804	13.2277	30.8372	9.9382	30.6461	11.6395	33.16	13.227
35.8249	14.295	30.37	9.757	34.5963	14.0048	31.3093	10.106	32.4536	12.849	34.53	13.927
44.8939	14.599	30.96	9.7017	37.5572	14.4375	31.2547	12.1861	34.5892	14.0139	38.46	14.4
52.9812	14.974	30.84	12.4447	43.4809	14.4172	31.8754	12.7239	38.1093	14.3481	43.28	14.22
52.9381	15.555	31.90	12.8539	48.3322	14.6334	32.7439	13.5252	42.1303	14.5126	47.22	14.595
		32.78	13.2347	52.7449	14.7811	34.3929	14.0401	45.934	14.6131	50.75	14.628
		34.90	13.8394	52.8529	15.4293	37.5944	14.4646	50.1394	14.437	52.72	14.907
		36.74	14.2567			43.8924	14.4241	52.1861	14.777	52.86	15.438
		39.11	14.2054			49.4036	14.5445	52.6638	15.4878		
		41.21	14.4094			52.7732	14.8161				
		43.78	14.3749			52.8102	15.3569				
		46.32	14.4806								
		49.09	14.5151								
		52.43	14.8368								
		52.63	15.4203								

Looking downstream at CS-X3 (November 2018)



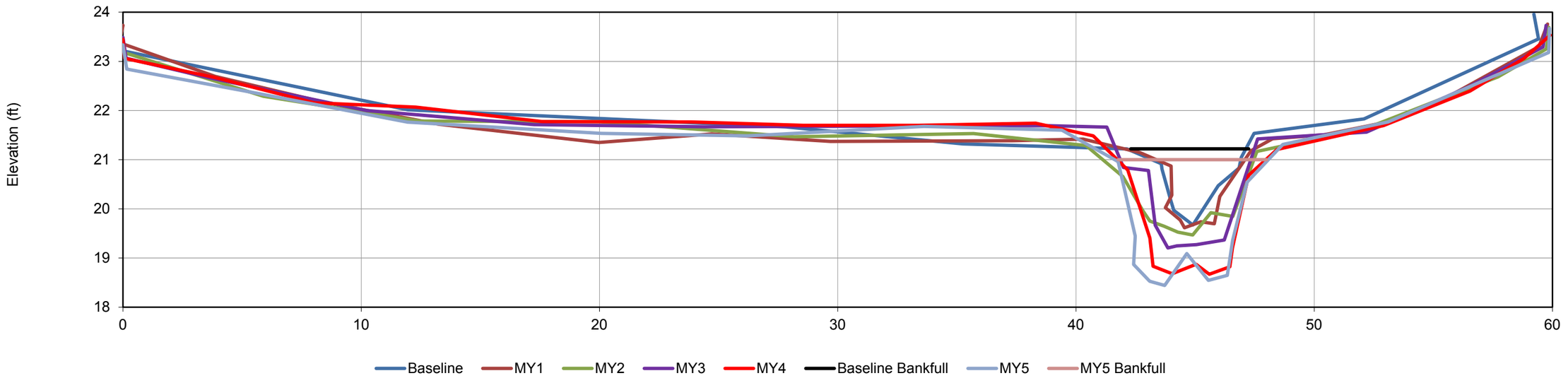
Project Name: Jacksonville Country Club
Reach: B
Cross Section: CS-X1; Riffle

Bankfull (Baseline)
21.22

Bankfull (MY5)
21

Baseline		MY1		MY2		MY3		MY4		MY5	
0	23.483	0.00	23.732	0	23.4447	0	23.4867	0	23.4495	0.00	23.34
-0.6166	23.275	-0.15	23.3803	0.05773	23.1757	0.12818	23.0633	0.07043	23.0605	0.16	22.84
11.956	22.014	3.88	22.6942	5.88684	22.2892	3.5588	22.6704	3.82412	22.6747	5.65	22.35
27.8368	21.665	8.43	22.171	12.4611	21.7842	10.2278	22.0011	8.03762	22.1558	11.94	21.76
35.2505	21.322	13.26	21.7183	20.0004	21.7698	17.2685	21.713	12.2854	22.0697	20.09	21.53
42.1424	21.217	19.97	21.3489	28.1872	21.4645	24.436	21.6692	17.6032	21.7743	26.21	21.49
43.5846	20.916	24.71	21.5238	35.6995	21.5304	32.7307	21.684	23.841	21.7664	33.62	21.68
43.6087	20.81	29.69	21.3725	40.4241	21.2895	38.8801	21.6924	28.5518	21.6974	39.41	21.60
43.951	20.225	37.32	21.3856	41.9702	20.655	41.2937	21.6604	33.3948	21.6994	41.77	20.96
44.1044	19.971	40.30	21.4199	42.8188	19.9547	41.9904	20.8425	38.3067	21.7422	42.49	19.45
44.904	19.672	42.68	21.1476	43.1023	19.75	43.0456	20.7782	40.7295	21.4847	42.42	18.87
45.9742	20.47	44.00	20.8711	43.7038	19.6475	43.3279	19.6677	42.1744	20.7916	43.09	18.53
46.8442	20.83	44.02	20.2784	44.281	19.5269	43.8569	19.2048	43.104	19.4048	43.72	18.44
46.9401	21.043	43.76	20.0238	44.8962	19.468	44.2325	19.2452	43.2376	18.8313	44.65	19.09
47.4758	21.533	44.38	19.774	45.6615	19.9237	45.059	19.2729	44.0388	18.6811	45.56	18.55
52.0871	21.829	44.56	19.6151	46.5853	19.8455	46.2283	19.3647	45.0441	18.874	46.35	18.65
59.4151	23.455	45.24	19.7358	47.5941	21.1662	47.6276	21.4221	45.5988	18.6699	46.58	19.36
59.2239	23.958	45.81	19.696	52.1693	21.6373	52.198	21.5617	46.4559	18.8231	47.19	20.55
		46.04	20.2531	57.7053	22.6818	56.5058	22.4851	46.5703	19.2111	48.68	21.31
		47.35	21.1831	59.7429	23.2541	59.6044	23.2917	47.2468	20.6821	53.10	21.77
		48.26	21.4266	59.853	23.692	59.7336	23.7308	48.4394	21.2097	59.84	23.18
		50.41	21.5065					52.9153	21.6931	59.88	23.67
		53.08	21.768					56.5381	22.3956		
		55.70	22.2998					58.8075	23.0593		
		59.43	23.3014					59.9075	23.5321		
		59.80	23.7573								

Looking downstream at CS-X1 (November 2018)



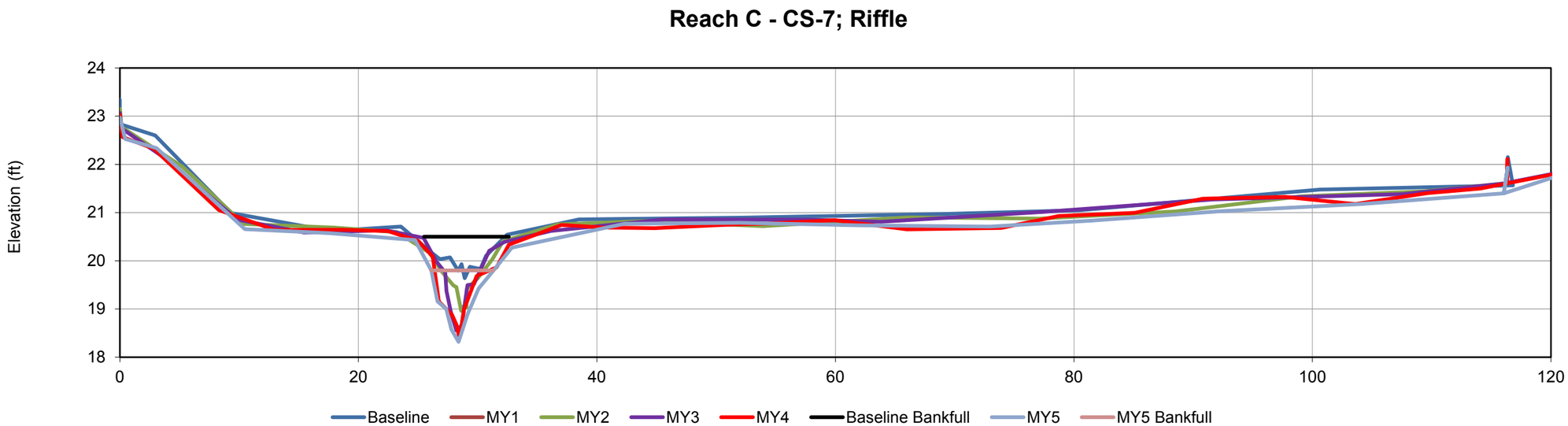
Project Name: Jacksonville Country Club
Reach: C
Cross Section: CS-7; Riffle

Bankfull (Baseline)
20.5

Bankfull (MY5)
19.8

Baseline		MY1		MY2		MY3		MY4		MY4 contd.		MY5	
0	23.344	0	23.1438	0	23.156	0	23.0685	0	23.0296	103.586	21.1772	0.00	22.97
-0.008	22.837	3.8E-05	22.7715	0.13818	22.7736	0.09489	22.7549	0.20099	22.5698	109.637	21.4055	0.44	22.53
2.95515	22.6	2.02054	22.5659	5.25248	21.9494	3.423	22.19	2.82185	22.3296	114.078	21.4982	3.07	22.34
9.30797	20.99	4.51761	21.9127	10.3848	20.7658	9.84392	20.8562	8.29719	21.0525	116.311	21.6069	10.48	20.66
17.669	20.618	9.44018	20.8169	17.9218	20.6894	15.4444	20.5844	12.9667	20.6404	116.352	22.1103	17.53	20.57
23.5666	20.71	12.701	20.6076	23.2364	20.593	22.3325	20.6316	18.7293	20.6451	116.311	21.6069	24.74	20.43
26.0693	20.182	18.3812	20.6852	25.9416	20.1681	25.4611	20.4763	22.4745	20.6172	122.221	21.8925	26.11	19.80
26.8327	20.035	23.9404	20.4611	26.9948	19.7716	26.5309	19.9868	25.016	20.4141	129.853	21.9858	26.63	19.16
27.6852	20.071	23.847	20.5253	27.9647	19.4899	27.2832	19.7571	26.2289	20.0886	139.338	22.405	27.36	19.00
28.3705	19.793	26.1507	20.0197	28.2155	19.4567	27.3813	19.3774	26.7482	19.1527	150.515	23.6197	27.80	18.58
28.6524	19.929	27.3871	19.9653	28.6117	18.9624	27.7731	18.9052	27.8454	18.8826			28.40	18.32
28.9192	19.639	28.7216	19.591	28.8063	19.0541	28.209	18.5531	28.2472	18.6584			29.14	18.89
29.3438	19.875	29.4256	19.3022	29.0571	19.0284	28.6501	18.6554	28.4099	18.4567			30.08	19.43
29.4648	19.866	29.2247	19.7189	29.0883	19.4166	29.1439	19.4962	28.5433	18.5019			31.28	19.78
30.2346	19.831	29.7371	19.6765	30.0083	19.6417	29.6892	19.512	28.8648	18.9975			32.87	20.27
30.6943	20.102	30.8326	19.8217	31.2456	20.0367	30.9678	20.2083	29.9186	19.6871			42.32	20.77
32.4708	20.541	32.4674	20.3963	32.1121	20.4038	32.2426	20.3936	31.5855	19.8637			51.97	20.79
38.5036	20.859	33.3184	20.5255	36.7348	20.7568	36.1417	20.6192	32.6119	20.3361			62.07	20.74
52.2254	20.897	37.2558	20.7281	44.1365	20.8275	45.6395	20.8596	37.0328	20.7422			72.98	20.71
68.8663	20.97	45.4275	20.7955	53.9212	20.7179	57.4483	20.8547	40.668	20.6914			81.53	20.83
80.4744	21.05	54.2607	20.8105	66.0828	20.9013	63.7976	20.8087	44.8431	20.6784			92.28	21.03
100.661	21.478	63.2065	20.8496	77.0937	20.8759	77.5191	21.0175	50.4987	20.7415			104.04	21.18
116.813	21.565	71.8458	21.0011	88.5243	21.0255	91.6666	21.2715	54.4773	20.7754			116.05	21.40
116.375	22.152	79.1737	21.0771	99.0672	21.339	107.564	21.385	59.9277	20.842			116.37	21.93
		88.2064	21.1291	109.381	21.4425	115.999	21.6033	65.9817	20.6515			116.05	21.40
		96.6109	21.4044	116.162	21.6076	121.922	21.8925	73.9119	20.6805			122.21	21.89
		104.31	21.5104	122.092	21.8925	129.554	21.9858	78.7216	20.929			129.84	21.99
		111.272	21.5082	129.724	21.9858	139.039	22.405	85.0851	20.9955			139.32	22.40
		116.245	21.599	139.209	22.405	150.216	23.6197	90.8061	21.2871			150.50	23.62
				150.386	23.6197			97.6978	21.3252				

Looking downstream at CS-7 (November 2018)



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

Bankfull (Baseline)
19.7

Bankfull (MY5)
19.4

Baseline	
0	20.26
-0.3907	19.85
4.27694	19.93
13.8257	19.912
24.6438	19.839
35.2746	19.697
43.1636	19.678
44.2267	19.156
44.612	19.104
45.3187	19.011
45.3679	18.647
46.3626	18.153
47.1172	18.702
47.234	18.962
48.1966	19.219
48.5602	19.467
49.342	19.753
54.8481	20.157
63.3417	20.681
63.1743	21.158
63.3417	20.681

MY1	
0.00	20.1715
-0.21	19.7283
2.75	19.621
9.58	19.7864
17.12	19.6396
25.54	19.5826
32.39	19.5915
39.13	19.5851
42.27	19.3821
44.06	19.0739
45.60	18.5898
45.72	18.2052
46.37	18.1198
46.73	18.0411
47.05	18.1292
47.67	18.4681
47.48	18.5992
47.46	18.7959
48.40	18.8499
49.40	19.3348
51.69	19.6201
58.66	19.9724
66.09	20.4363

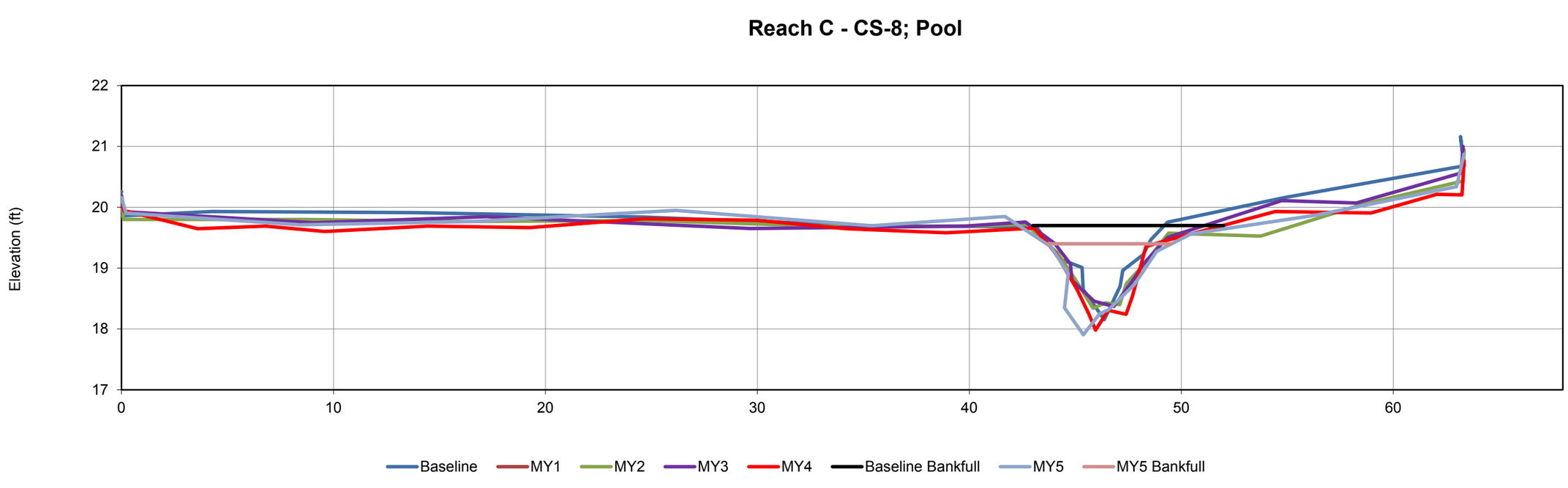
MY2	
0	20.1441
0.09587	19.7995
8.59386	19.7983
15.8374	19.7651
24.8774	19.7828
34.1883	19.6785
40.3919	19.6924
42.6829	19.7217
44.1587	19.2503
45.0932	18.7645
45.8359	18.3408
46.4132	18.4283
47.1007	18.3981
47.3976	18.7424
48.2925	19.0834
49.4016	19.5754
53.7357	19.5258
58.5525	20.0476
63.2899	20.4316
63.3398	20.9486

MY3	
0	20.1935
0.13528	19.9288
9.09502	19.7438
17.2405	19.8445
29.6772	19.6519
39.7684	19.6895
42.6495	19.7572
44.0278	19.4037
44.768	19.0659
44.8395	18.7989
45.884	18.4557
46.8159	18.3703
47.6524	18.7657
48.2204	19.0716
49.3572	19.5042
54.7406	20.1093
58.2588	20.0693
63.1896	20.5639
63.2953	20.9974

MY4	
0	20.0849
0.10966	19.9469
3.59744	19.6466
6.78522	19.6912
9.59623	19.6009
14.4606	19.6897
19.271	19.666
24.6455	19.8116
29.9594	19.7881
34.1818	19.6472
38.8938	19.5814
43.0642	19.6561
44.0649	19.2519
45.0858	18.6467
45.6413	18.245
45.958	17.9804
46.5461	18.3086
47.3895	18.2402
47.6914	18.5316
48.3381	19.356
49.0985	19.4338
54.4352	19.9304
58.9489	19.907
62.0591	20.2118
63.2382	20.204
63.3403	20.766

MY5	
0	20.16
0.21	19.904
8.45	19.712
16.61	19.766
26.15	19.948
35.38	19.697
41.68	19.849
43.85	19.351
44.66	18.908
44.49	18.347
45.38	17.905
46.15	18.251
46.58	18.321
47.78	18.727
48.83	19.275
50.46	19.564
56.39	19.872
62.98	20.339
63.34	20.876

Looking downstream at CS-8 (November 2018)



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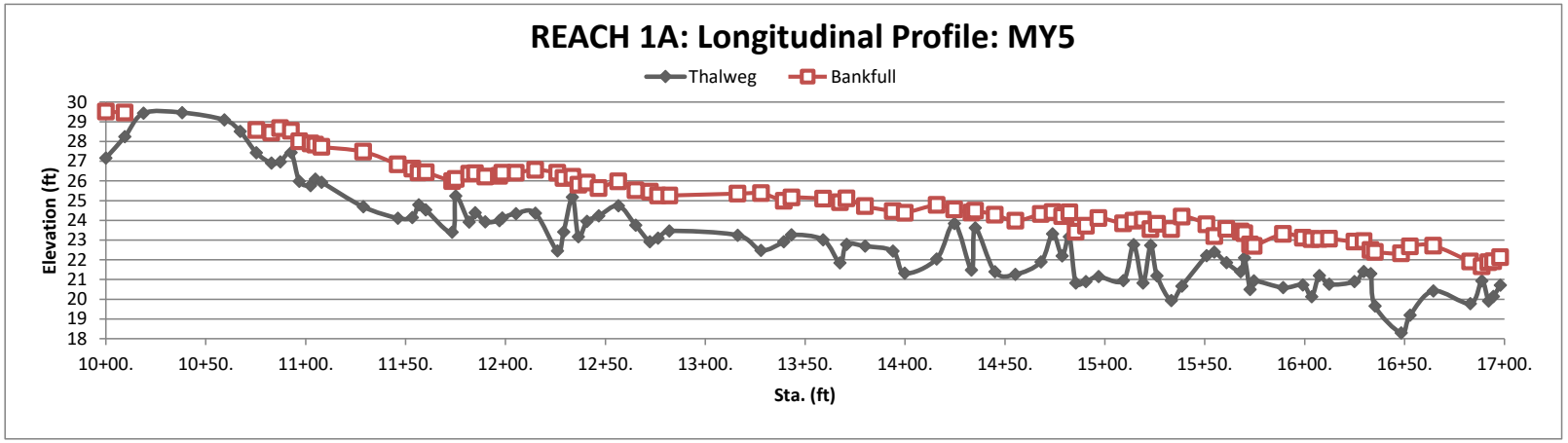
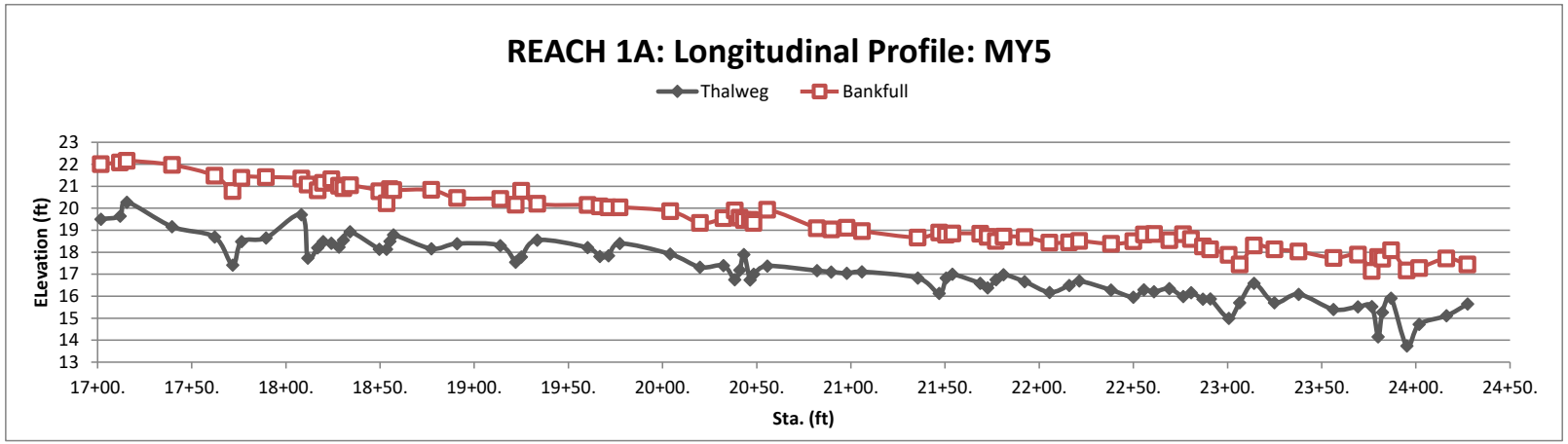
REACH 1A: MY5 LONGITUDINAL PROFILE DATA - UPSTREAM REACH

Sta.	Distance	ELEV-TW	BKF		Sta.	Distance	ELEV-TW	BKF
10+00.	0	27.161	29.516		13+43.14	343.1412	23.267	25.16
10+09.48	9.478829	28.238	29.467		13+59.05	359.0494	23.017	25.098
10+18.91	18.908937	29.435			13+67.44	367.4361	21.839	24.911
10+38.22	38.222334	29.465			13+70.7	370.7035	22.782	25.113
10+59.34	59.344249	29.093			13+79.97	379.9688	22.692	24.719
10+67.26	67.260705	28.507			13+93.93	393.9348	22.436	24.463
10+75.35	75.346384	27.425	28.575		13+99.83	399.8307	21.316	24.38
10+82.85	82.854784	26.909	28.447		14+15.81	415.8094	22.043	24.779
10+87.27	87.274137	26.972	28.672		14+24.68	424.6847	23.843	24.546
10+92.66	92.659151	27.44	28.547		14+33.27	433.2739	21.484	24.399
10+96.84	96.838944	25.982	28.005		14+35.12	435.1248	23.621	24.486
11+02.48	102.484352	25.765	27.895		14+44.94	444.9374	21.395	24.289
11+04.84	104.839865	26.088	27.842		14+55.22	455.2243	21.258	23.977
11+07.94	107.943257	25.938	27.725		14+68.01	468.0099	21.897	24.316
11+28.82	128.815665	24.688	27.485		14+73.84	473.8426	23.315	24.419
11+46.16	146.155271	24.112	26.838		14+78.63	478.6343	22.201	24.211
11+53.39	153.386325	24.141	26.615		14+82.22	482.2233	23.166	24.411
11+56.6	156.600369	24.792	26.427		14+85.46	485.455	20.822	23.42
11+60.12	160.117869	24.531	26.431		14+90.54	490.5409	20.897	23.723
11+73.34	173.337221	23.397	25.984		14+96.84	496.8387	21.147	24.119
11+75.15	175.145462	25.244	26.096		15+09.23	509.2295	20.947	23.843
11+81.87	181.874432	23.915	26.369		15+14.37	514.3662	22.769	23.982
11+84.83	184.827213	24.392	26.389		15+19.05	519.0455	20.823	24.029
11+89.93	189.931001	23.925	26.217		15+22.91	522.9081	22.727	23.555
11+96.95	196.949027	23.981	26.258		15+26.09	526.0908	21.187	23.817
11+98.42	198.418515	24.124	26.411		15+33.26	533.2593	19.933	23.554
12+05.2	205.198474	24.344	26.415		15+38.54	538.5441	20.663	24.183
12+14.96	214.960888	24.362	26.561		15+50.91	550.906	22.204	23.798
12+25.98	225.983746	22.452	26.409		15+54.78	554.7789	22.387	23.203
12+29.1	229.096652	23.411	26.14		15+60.85	560.8461	21.854	23.571
12+33.53	233.532899	25.177	26.207		15+67.99	567.9925	21.4	23.438
12+36.5	236.501234	23.175	25.805		15+69.88	569.8775	22.099	23.346
12+40.8	240.796867	23.952	25.918		15+72.68	572.6847	20.491	22.769
12+46.65	246.651002	24.224	25.633		15+74.56	574.5645	20.932	22.704
12+56.53	256.528149	24.742	25.974		15+89.19	589.1877	20.587	23.306
12+65.13	265.129009	23.753	25.519		15+99.1	599.1022	20.725	23.119
12+72.3	272.303636	22.918	25.448		16+03.51	603.5143	20.132	23.044
12+76.4	276.398786	23.096	25.258		16+07.35	607.3522	21.202	23.056
12+82.06	282.056360	23.461	25.261		16+12.27	612.2684	20.756	23.07
13+16.22	316.221259	23.249	25.356		16+24.96	624.9597	20.895	22.919
13+27.92	327.917904	22.48	25.374		16+29.53	629.5328	21.402	22.948
13+39.31	339.306866	22.919	24.987		16+33.07	633.0704	21.299	22.5
					16+35.19	635.1894	19.654	22.396

REACH 1A: MY5 LONGITUDINAL PROFILE DATA - UPSTREAM REACH

Sta.	Distance	ELEV-TW	BKF		Sta.	Distance	ELEV-TW	BKF
16+48.32	648.324632	18.296	22.326		20+48.34	1048.337	17.008	19.332
16+52.75	652.7540117	19.188	22.681		20+55.59	1055.595	17.378	19.935
16+64.38	664.3824447	20.423	22.717		20+82.03	1082.029	17.162	19.098
16+82.87	682.8697816	19.782	21.91		20+89.56	1089.564	17.107	19.038
16+88.64	688.6367812	20.931	21.669		20+97.78	1097.778	17.044	19.12
16+92.04	692.0356959	19.905	21.875		21+05.87	1105.87	17.115	18.964
16+94.41	694.4113712	20.138	21.926		21+35.5	1135.5	16.83	18.666
16+97.88	697.8826764	20.714	22.126		21+46.89	1146.891	16.128	18.902
17+01.77	701.7680759	19.505	22.01		21+50.56	1150.563	16.832	18.798
17+11.95	711.9539921	19.644	22.085		21+53.91	1153.908	17.003	18.858
17+15.52	715.5239997	20.282	22.162		21+68.68	1168.684	16.585	18.844
17+39.57	739.5744886	19.162	21.973		21+72.66	1172.658	16.382	18.699
17+62.15	762.1474904	18.691	21.48		21+77.05	1177.054	16.748	18.519
17+71.71	771.7060251	17.418	20.783		21+81.04	1181.04	16.983	18.712
17+76.42	776.4234418	18.488	21.389		21+92.28	1192.284	16.662	18.684
17+89.45	789.450475	18.653	21.416		22+05.5	1205.5	16.179	18.44
18+08.21	808.2081697	19.71	21.357		22+15.93	1215.934	16.491	18.446
18+11.58	811.5792838	17.739	21.078		22+21.26	1221.263	16.693	18.516
18+16.89	816.8876972	18.204	20.814		22+38.17	1238.171	16.281	18.38
18+19.76	819.7644906	18.487	21.158		22+50.02	1250.021	15.961	18.501
18+24.16	824.1641644	18.416	21.319		22+55.6	1255.598	16.299	18.807
18+28.25	828.2510827	18.236	21.02		22+60.94	1260.943	16.205	18.831
18+30.52	830.524203	18.553	20.917		22+69.09	1269.093	16.345	18.551
18+34.07	834.0700763	18.939	21.042		22+76.46	1276.464	15.984	18.824
18+49.67	849.6707025	18.14	20.769		22+80.64	1280.637	16.163	18.603
18+53.47	853.4677784	18.136	20.227		22+86.97	1286.972	15.872	18.265
18+55.28	855.2830789	18.5	20.869		22+90.85	1290.854	15.876	18.138
18+57.12	857.1161651	18.792	20.824		23+00.64	1300.635	15.001	17.877
18+77.2	877.2039501	18.165	20.835		23+06.43	1306.432	15.705	17.443
18+90.93	890.9283519	18.392	20.466		23+14.06	1314.063	16.585	18.303
19+13.85	913.8512169	18.305	20.428		23+24.9	1324.905	15.7	18.136
19+22.05	922.0464439	17.552	20.159		23+37.72	1337.72	16.088	18.035
19+25.04	925.0374721	17.789	20.792		23+56.28	1356.276	15.402	17.742
19+33.51	933.5148532	18.554	20.206		23+69.26	1369.256	15.518	17.891
19+60.23	960.2310155	18.21	20.15		23+76.57	1376.566	15.531	17.155
19+66.68	966.6800285	17.814	20.084		23+79.97	1379.967	14.158	17.787
19+71.25	971.2453	17.845	20.041		23+82.21	1382.21	15.271	17.712
19+77.23	977.2320194	18.401	20.047		23+86.82	1386.824	15.911	18.094
20+04.08	1004.081422	17.917	19.868		23+95.18	1395.177	13.743	17.173
20+19.91	1019.906456	17.321	19.332		24+01.76	1401.76	14.719	17.28
20+32.35	1032.35495	17.394	19.548		24+16.21	1416.215	15.111	17.716
20+38.36	1038.35928	16.749	19.897		24+27.43	1427.431	15.645	17.447
20+40.94	1040.942866	17.187	19.577					
20+43.21	1043.20877	17.896	19.465					
20+46.45	1046.445772	16.742	19.48					





	Minimum	Mean	Max
Bankfull Slope		0.0078	
Pool-Pool Spacing (ft)	9.2	36.4	72.1
Pool Length (ft)	5.1	12.8	24.6
Riffle Length (ft)	3.5	20.3	56.7
Dmax Riffle (ft)	1.11	1.99	2.97
Dmax Pool (ft)	1.54	2.75	4.03

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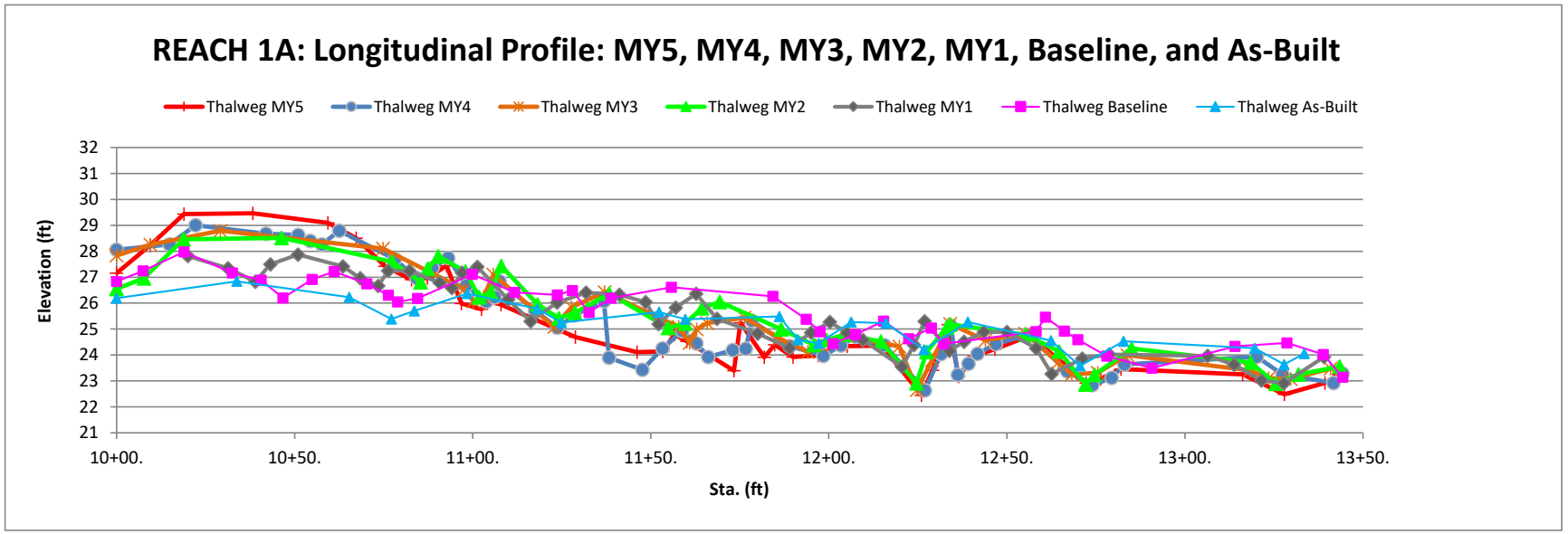
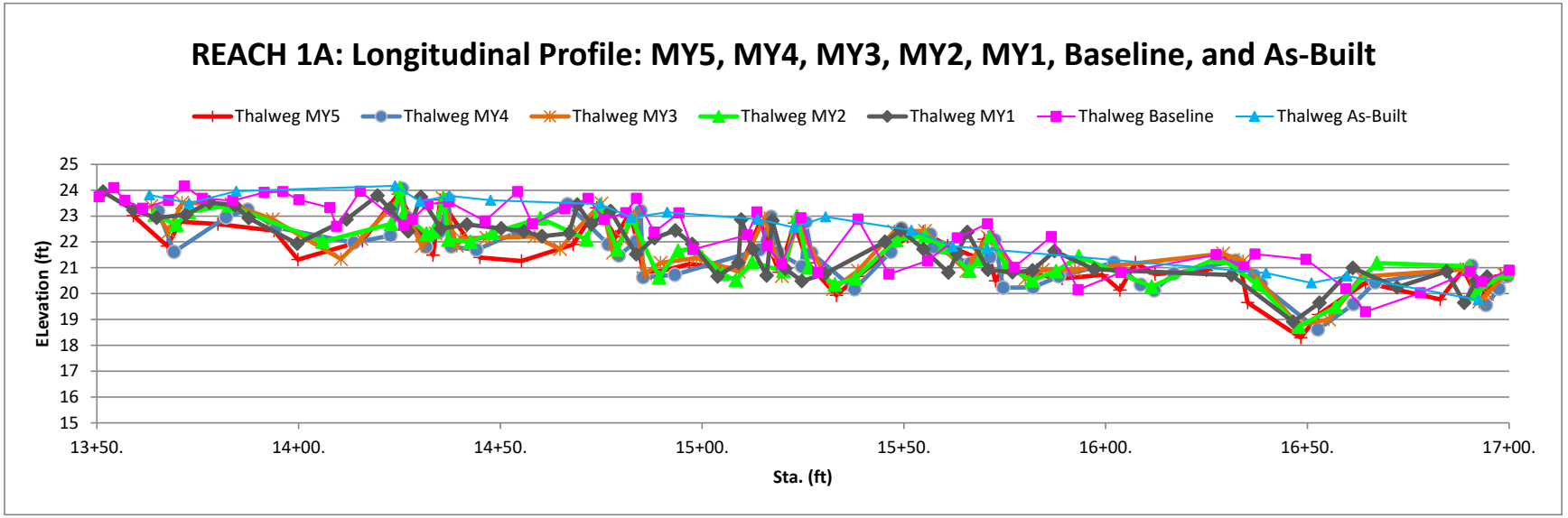
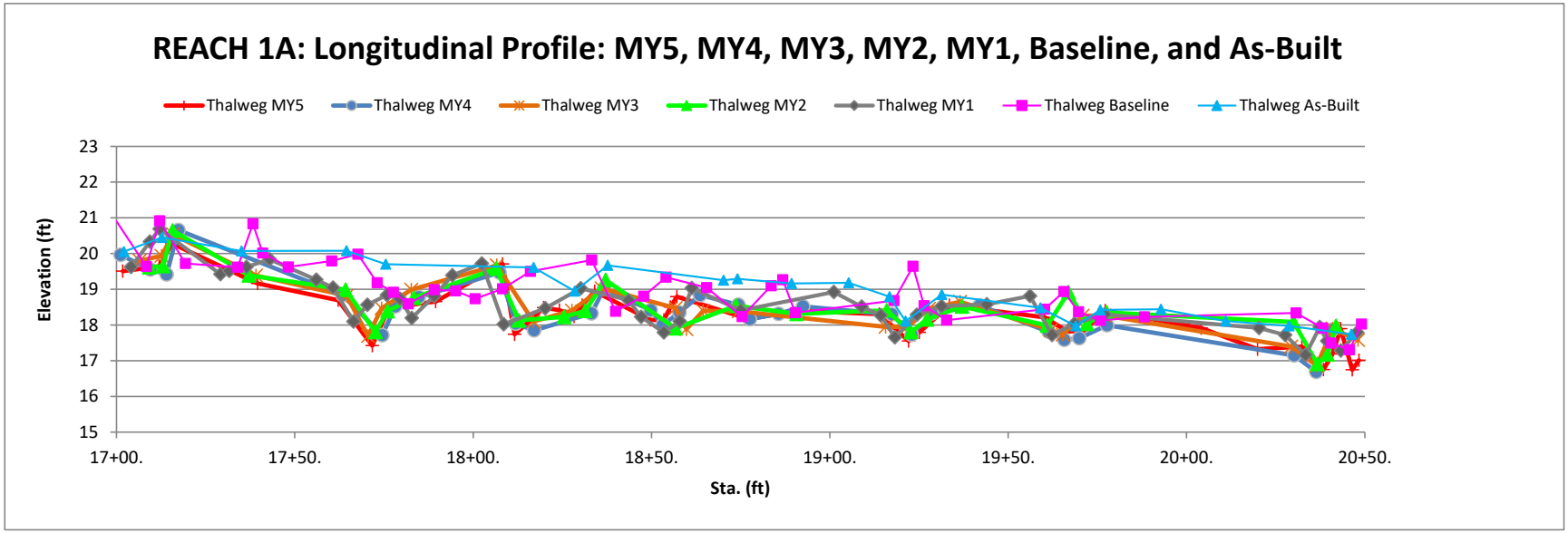
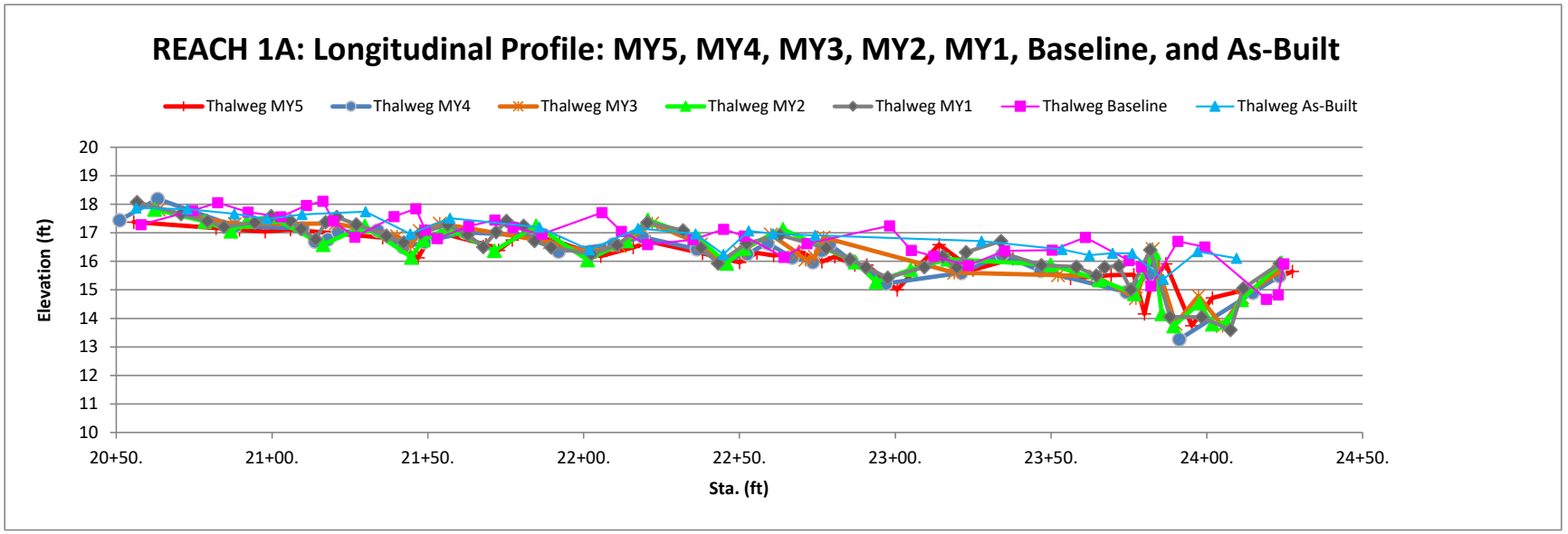

REACH 1A: Longitudinal Profile: MY5, MY4, MY3, MY2, MY1, Baseline, and As-Built
Thalweg MY5
Thalweg MY4
Thalweg MY3
Thalweg MY2
Thalweg MY1
Thalweg Baseline
Thalweg As-Built
Elevation (ft)
32
31
30
29
28
27
26
25
24
23
22
21
10+00.
10+50.
11+00.
11+50.
12+00.
12+50.
13+00.
13+50.
Sta. (ft)

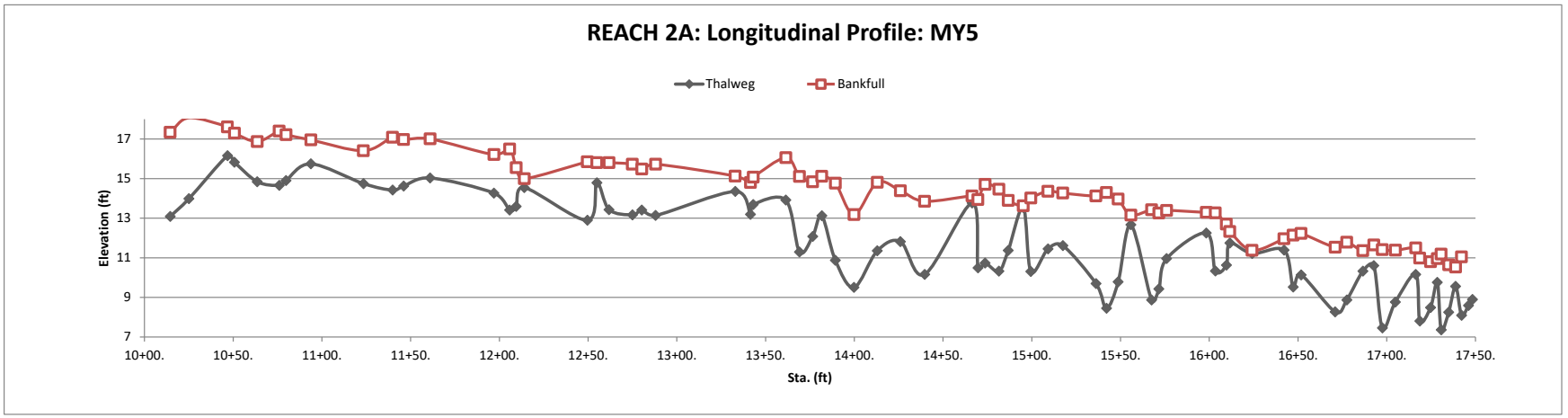

REACH 1A: Longitudinal Profile: MY5, MY4, MY3, MY2, MY1, Baseline, and As-Built
Thalweg MY5
Thalweg MY4
Thalweg MY3
Thalweg MY2
Thalweg MY1
Thalweg Baseline
Thalweg As-Built
ELevation (ft)
25
24
23
22
21
20
19
18
17
16
15
13+50.
14+00.
14+50.
15+00.
15+50.
16+00.
16+50.
17+00.
Sta. (ft)


REACH 1A: Longitudinal Profile: MY5, MY4, MY3, MY2, MY1, Baseline, and As-Built
Thalweg MY5
Thalweg MY4
Thalweg MY3
Thalweg MY2
Thalweg MY1
Thalweg Baseline
Thalweg As-Built
Elevation (ft)
23
22
21
20
19
18
17
16
15
17+00.
17+50.
18+00.
18+50.
19+00.
19+50.
20+00.
20+50.
Sta. (ft)

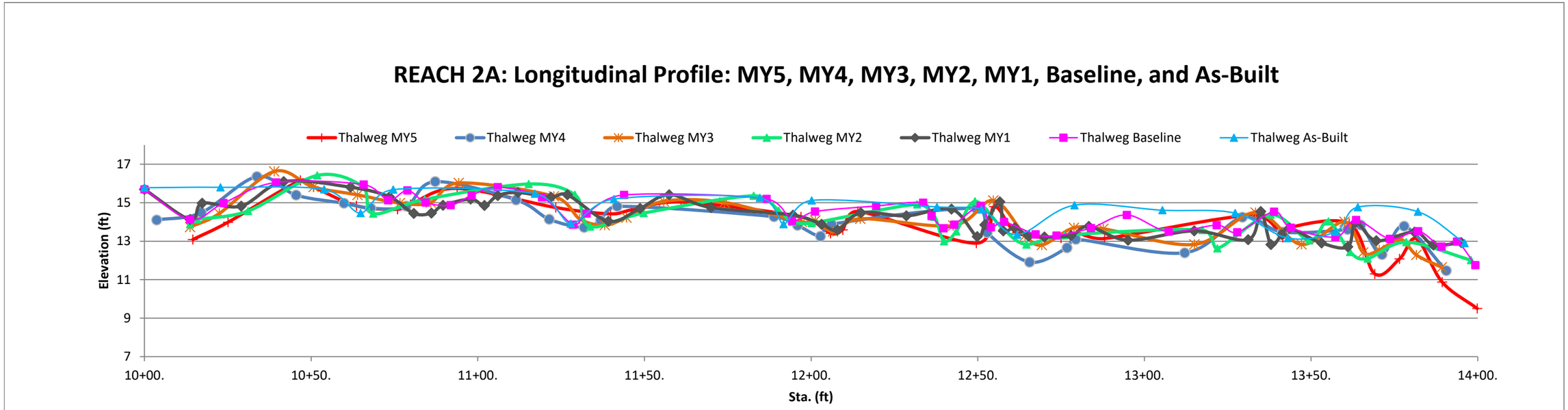

REACH 1A: Longitudinal Profile: MY5, MY4, MY3, MY2, MY1, Baseline, and As-Built
Thalweg MY5
Thalweg MY4
Thalweg MY3
Thalweg MY2
Thalweg MY1
Thalweg Baseline
Thalweg As-Built
Elevation (ft)
20
19
18
17
16
15
14
13
12
11
10
20+50.
21+00.
21+50.
22+00.
22+50.
23+00.
23+50.
24+00.
24+50.
Sta. (ft)

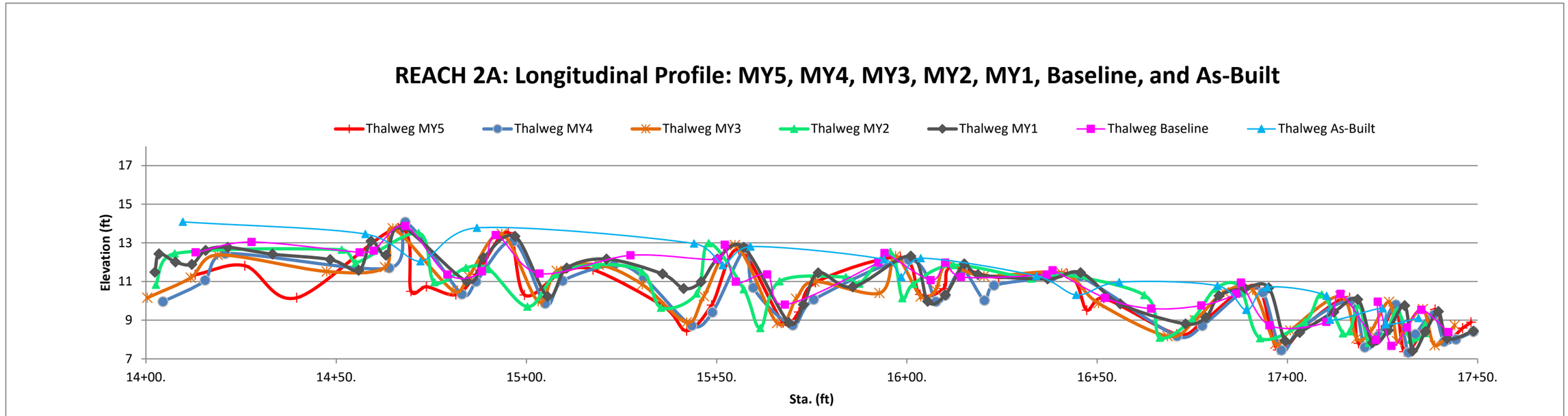
REACH 2A: MY 5 LONGITUDINAL PROFILE DATA - DOWNSTREAM REACH

Sta.	Distance	ELEV-TW	BKF		Sta.	Distance	ELEV-TW	BKF
10+14.54	14.54	13.089	17.335		1517.51	517.5104	11.615	14.266
10+25.07	25.06987	13.984	18.067		1536.179	536.1789	9.698	14.12
10+46.82	46.82199	16.157	17.61		1542.096	542.0964	8.456	14.299
10+50.73	50.72621	15.824	17.299		1548.68	548.6801	9.783	13.964
10+63.59	63.59358	14.84	16.869		1555.835	555.8351	12.667	13.159
10+75.96	75.95732	14.659	17.4		1567.501	567.5007	8.868	13.426
10+79.81	79.81319	14.906	17.218		1571.608	571.6084	9.425	13.258
10+93.81	93.81368	15.745	16.952		1575.983	575.983	10.959	13.391
11+23.41	123.41	14.748	16.407		1598.347	598.3468	12.254	13.29
11+39.83	139.8261	14.42	17.086		1603.426	603.426	10.332	13.268
11+46.05	146.0534	14.623	16.975		1609.634	609.6344	10.631	12.704
11+61.	160.9957	15.033	17.003		1611.613	611.6131	11.743	12.331
11+96.96	196.9578	14.267	16.21		1624.13	624.1305	11.218	11.376
12+05.81	205.807	13.414	16.49		1642.147	642.1475	11.393	11.959
12+09.49	209.492	13.592	15.552		1647.263	647.2625	9.526	12.147
12+14.04	214.0392	14.547	14.994		1651.774	651.774	10.138	12.231
12+49.57	249.568	12.896	15.844		1670.941	670.941	8.272	11.531
12+54.92	254.9169	14.793	15.804		1677.493	677.4926	8.873	11.782
12+61.8	261.8045	13.433	15.804		1686.551	686.5506	10.329	11.357
12+74.95	274.9496	13.17	15.727		1692.75	692.7497	10.603	11.647
12+80.24	280.2433	13.41	15.48		1697.53	697.53	7.457	11.409
12+88.05	288.0517	13.14	15.725		1704.894	704.8942	8.769	11.383
13+32.92	332.9195	14.352	15.126		1716.361	716.3614	10.161	11.496
13+41.51	341.5085	13.198	14.803		1718.656	718.6556	7.806	10.988
13+43.08	343.0775	13.695	15.07		1724.684	724.6843	8.488	10.805
13+61.41	361.4103	13.913	16.056		1728.504	728.5037	9.761	10.954
13+69.11	369.113	11.298	15.105		1730.693	730.6929	7.367	11.184
13+76.52	376.5243	12.077	14.834		1734.908	734.9082	8.254	10.647
13+81.7	381.6955	13.12	15.113		1738.809	738.8089	9.56	10.535
13+89.33	389.3267	10.873	14.767		1742.154	742.1539	8.094	11.043
13+99.81	399.8147	9.503	13.184		1746.057	746.057	8.594	
14+12.94	412.9411	11.353	14.81		1748.278	748.2775	8.898	
14+25.99	425.9946	11.819	14.387					
14+39.61	439.6143	10.161	13.855					
14+66.35	466.351	13.768	14.124					
14+69.68	469.6845	10.496	13.935					
14+73.7	473.7011	10.736	14.704					
14+81.48	481.4842	10.322	14.463					
14+86.75	486.7527	11.376	13.892					
14+95.21	495.2059	13.544	13.622					
14+99.48	499.4771	10.311	14.014					
15+09.12	509.1198	11.452	14.361					



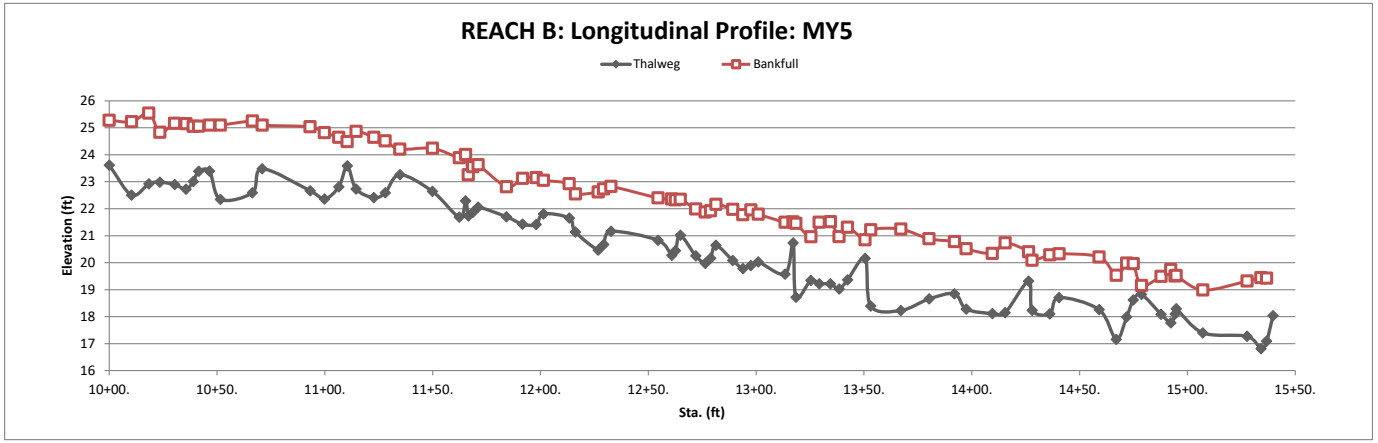
	Minimum	Mean	Max
Bankfull Slope		0.0091	
Pool-Pool Spacing (ft)	7.4	37.5	79.7
Pool Length (ft)	1.6	12.1	23.6
Riffle Length (ft)	6.5	24.7	53.5
Dmax Riffle	0.45	1.81	2.99
Dmax Pool (ft)	1.85	3.68	6.36


REACH 2A: Longitudinal Profile: MY5, MY4, MY3, MY2, MY1, Baseline, and As-Built
Thalweg MY5
Thalweg MY4
Thalweg MY3
Thalweg MY2
Thalweg MY1
Thalweg Baseline
Thalweg As-Built
Elevation (ft)
17
15
13
11
9
7
10+00.
10+50.
11+00.
11+50.
12+00.
12+50.
13+00.
13+50.
14+00.
Sta. (ft)

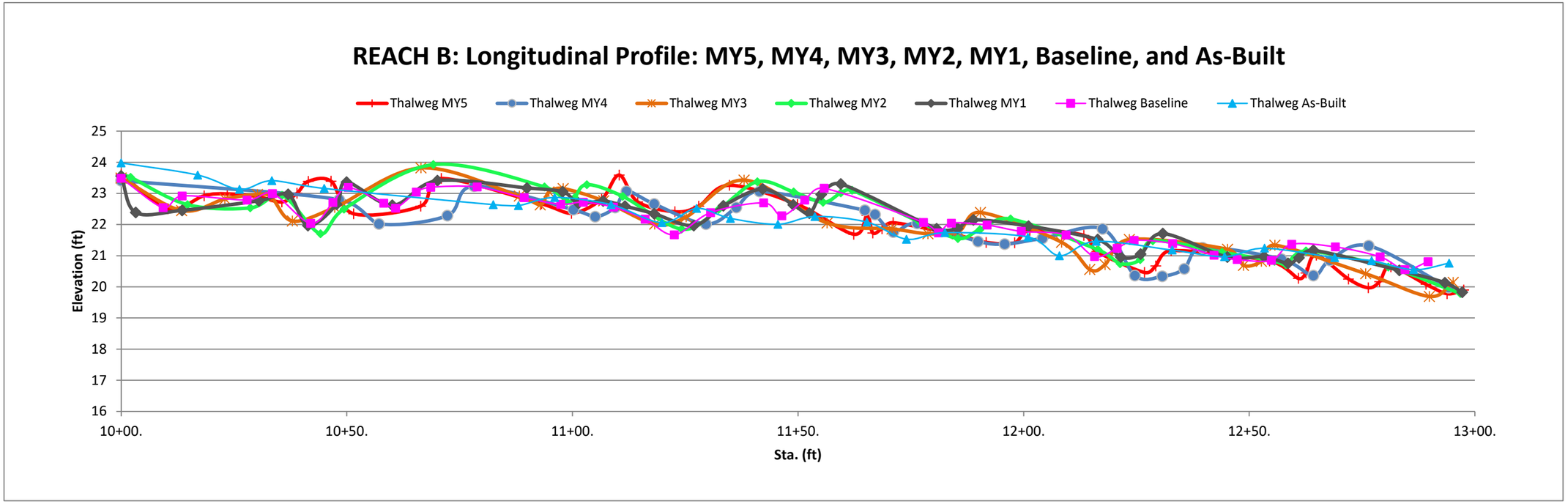

REACH 2A: Longitudinal Profile: MY5, MY4, MY3, MY2, MY1, Baseline, and As-Built
Thalweg MY5
Thalweg MY4
Thalweg MY3
Thalweg MY2
Thalweg MY1
Thalweg Baseline
Thalweg As-Built
Elevation (ft)
17
15
13
11
9
7
14+00.
14+50.
15+00.
15+50.
16+00.
16+50.
17+00.
17+50.
Sta. (ft)

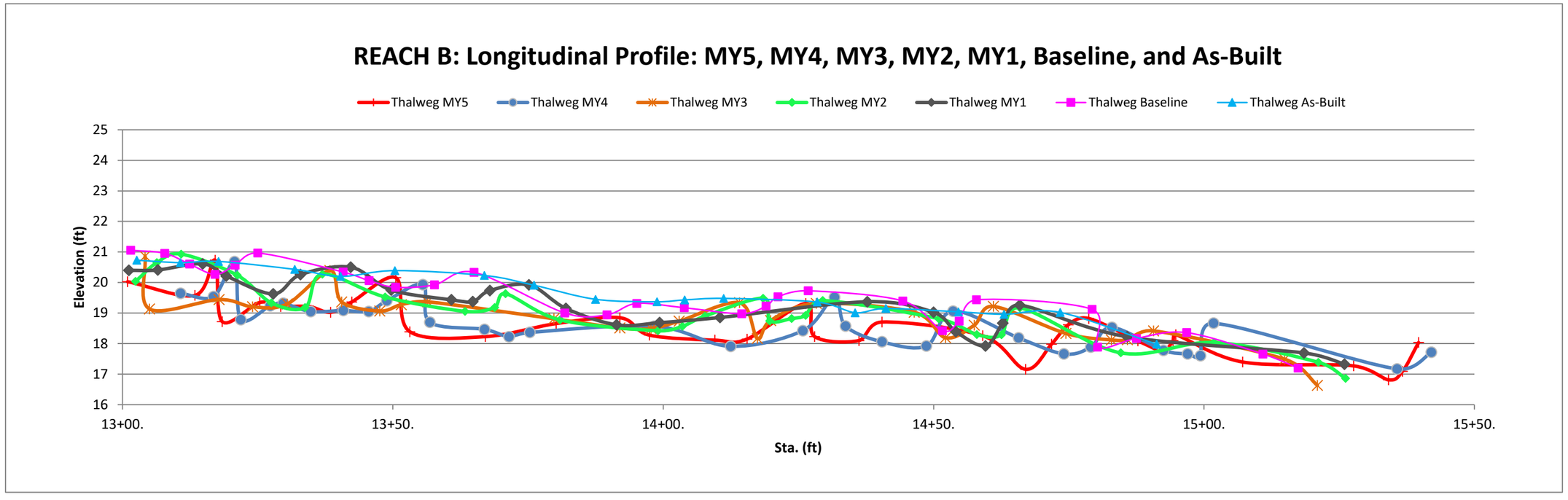
REACH B: MY5 LONGITUDINAL PROFILE DATA

Sta.	Distance	TW	BKF		Sta.	Distance	TW	BKF
10+00.	0	23.614	25.279		12+78.88	278.88	20.165	21.922
10+10.35	10.35155	22.506	25.224		12+81.36	281.3603	20.644	22.165
10+18.37	18.37413	22.926	25.547		12+89.17	289.1653	20.081	21.977
10+23.49	23.49065	22.986	24.834		12+93.84	293.8368	19.78	21.78
10+30.35	30.35	22.896	25.168		12+97.54	297.542	19.897	21.954
10+35.61	35.60638	22.726	25.152		13+00.95	300.9474	20.027	21.8
10+38.97	38.97088	23.008	25.052		13+13.4	313.4032	19.578	21.499
10+41.46	41.46115	23.387	25.061		13+17.13	317.1269	20.728	21.512
10+46.52	46.51834	23.392	25.1		13+18.44	318.4356	18.72	21.458
10+51.52	51.51764	22.347	25.1		13+25.37	325.3715	19.345	20.957
10+66.38	66.37936	22.593	25.249		13+29.27	329.2708	19.214	21.498
10+70.95	70.95272	23.48	25.1		13+34.43	334.428	19.216	21.516
10+93.15	93.15297	22.666	25.037		13+38.48	338.4826	19.024	20.97
10+99.8	99.80318	22.361	24.822		13+42.4	342.402	19.364	21.309
11+06.46	106.46	22.812	24.649		13+50.52	350.5214	20.157	20.849
11+10.37	110.3679	23.588	24.489		13+53.14	353.1394	18.389	21.22
11+14.47	114.4663	22.73	24.87		13+67.09	367.0904	18.228	21.244
11+22.7	122.7023	22.411	24.649		13+80.18	380.1796	18.655	20.884
11+27.98	127.9787	22.593	24.513		13+91.97	391.9679	18.846	20.779
11+34.78	134.7835	23.262	24.209		13+97.41	397.4086	18.279	20.514
11+49.88	149.8792	22.644	24.241		14+09.52	409.5239	18.113	20.343
11+62.36	162.3574	21.689	23.888		14+15.49	415.49	18.148	20.733
11+65.27	165.272	22.295	24.012		14+26.34	426.3441	19.313	20.404
11+66.56	166.5564	21.732	23.261		14+27.98	427.9805	18.23	20.09
11+68.6	168.6025	21.867	23.56		14+36.18	436.1817	18.099	20.288
11+71.07	171.0684	22.06	23.63		14+40.46	440.4632	18.706	20.332
11+84.2	184.198	21.702	22.817		14+59.07	459.0675	18.258	20.212
11+91.68	191.6846	21.428	23.129		14+66.99	466.9891	17.159	19.533
11+98.	197.9989	21.415	23.152		14+71.81	471.8059	17.984	19.983
12+01.37	201.3695	21.809	23.056		14+74.9	474.9033	18.617	19.964
12+13.35	213.345	21.654	22.929		14+78.7	478.6991	18.821	19.155
12+16.2	216.1957	21.138	22.55		14+87.78	487.7821	18.088	19.489
12+26.76	226.7629	20.462	22.618		14+92.3	492.2991	17.77	19.747
12+29.27	229.2731	20.67	22.733		14+94.28	494.2824	18.099	19.503
12+32.69	232.6944	21.164	22.826		14+94.79	494.7865	18.292	19.524
12+54.49	254.4884	20.831	22.401		15+07.15	507.1493	17.397	18.984
12+60.88	260.8766	20.271	22.361		15+27.66	527.6587	17.27	19.318
12+62.57	262.5729	20.448	22.327		15+34.11	534.1069	16.814	19.443
12+64.86	264.8573	21.014	22.351		15+36.71	536.7064	17.091	19.428
12+71.99	271.9931	20.252	21.987		15+39.68	539.6792	18.035	
12+76.38	276.3823	19.972	21.877					



	Minimum	Mean	Max
Bankfull Slope		0.0123	
Pool-Pool Spacing (ft)	16.1	29.3	46.9
Pool Length (ft)	6.5	12.9	29.7
Riffle Length (ft)	4.1	13.1	32.9
Dmax Riffle (ft)	0.9	1.53	2.28
Dmax Pool (ft)	1.7	2.35	3.05


REACH B: Longitudinal Profile: MY5, MY4, MY3, MY2, MY1, Baseline, and As-Built
Thalweg MY5
Thalweg MY4
Thalweg MY3
Thalweg MY2
Thalweg MY1
Thalweg Baseline
Thalweg As-Built
Elevation (ft)
25
24
23
22
21
20
19
18
17
16
10+00.
10+50.
11+00.
11+50.
12+00.
12+50.
13+00.
Sta. (ft)


REACH B: Longitudinal Profile: MY5, MY4, MY3, MY2, MY1, Baseline, and As-Built
Thalweg MY5
Thalweg MY4
Thalweg MY3
Thalweg MY2
Thalweg MY1
Thalweg Baseline
Thalweg As-Built
Elevation (ft)
25
24
23
22
21
20
19
18
17
16
13+00.
13+50.
14+00.
14+50.
15+00.
15+50.
Sta. (ft)

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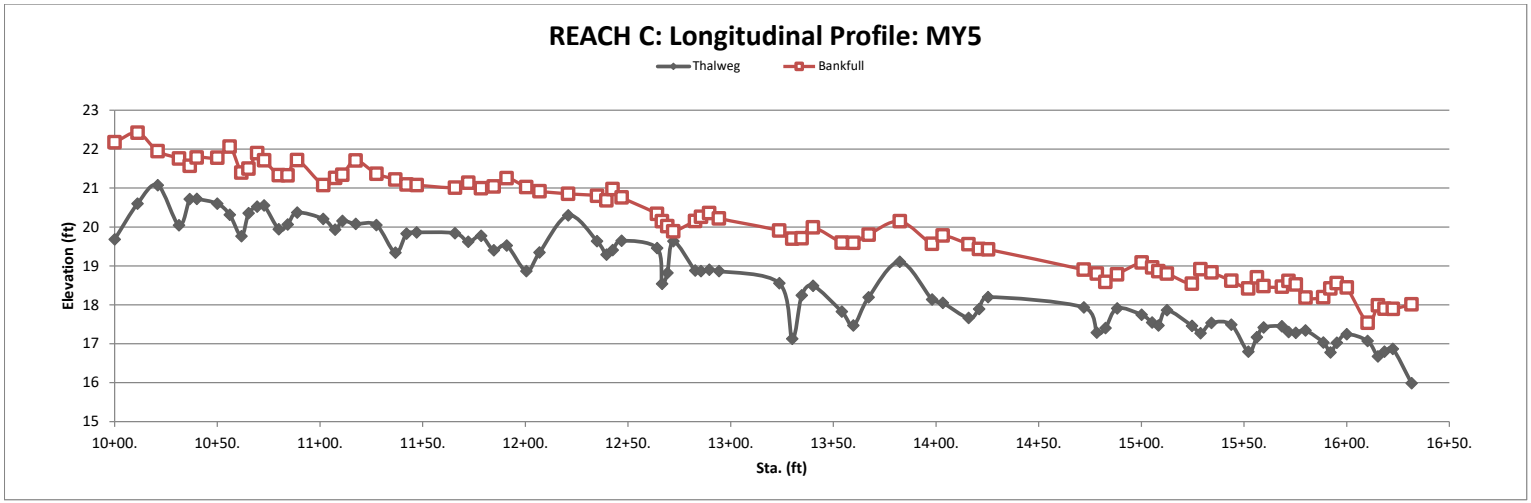
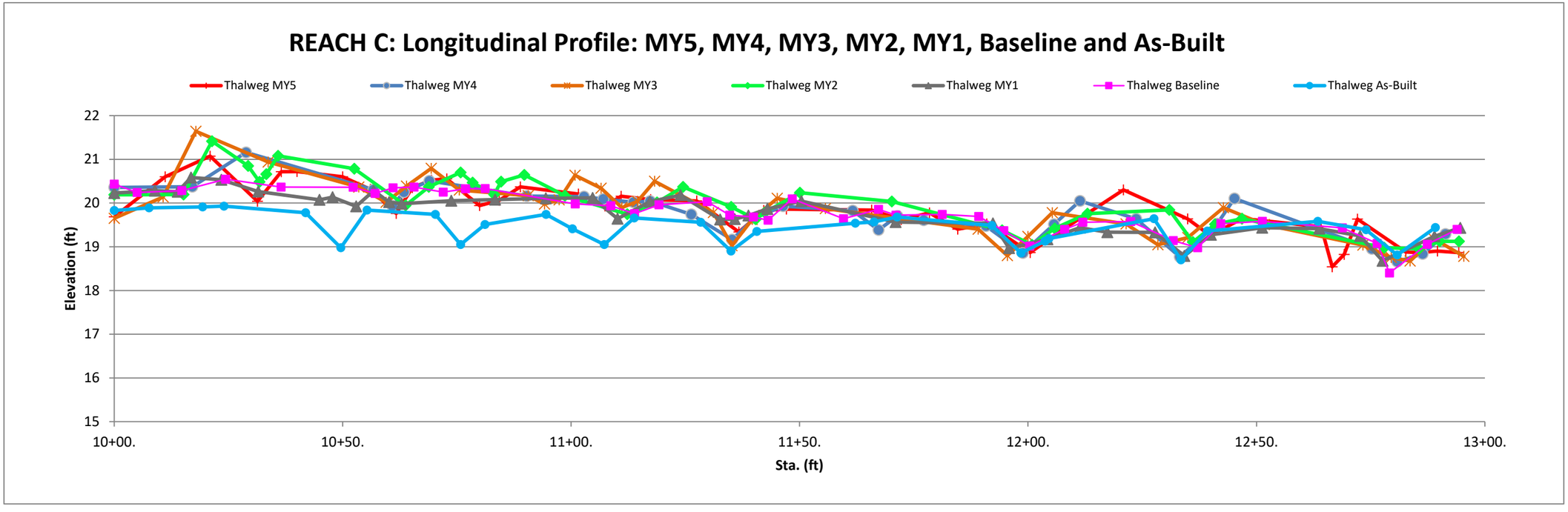
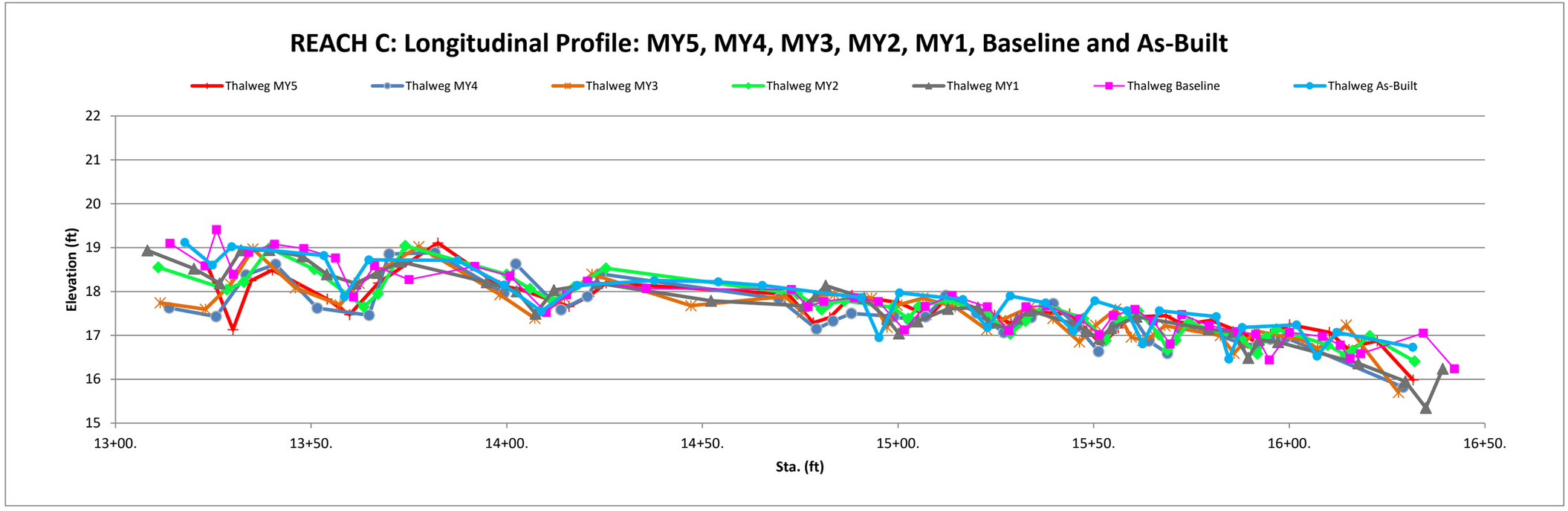
REACH C: MY5 LONGITUDINAL PROFILE DATA

Sta.	Distance	ELEV-TW	BKF		Sta.	Distance	ELEV-TW	BKF
10+00.	0.00	19.683	22.177		13+23.68	323.68	18.555	19.907
10+11.16	11.16	20.601	22.421		13+30.02	330.02	17.127	19.702
10+20.99	20.99	21.074	21.946		13+34.61	334.61	18.245	19.71
10+31.36	31.36	20.042	21.759		13+40.11	340.11	18.492	19.988
10+36.57	36.57	20.717	21.571		13+54.1	354.10	17.825	19.598
10+40.	40.00	20.72	21.784		13+59.79	359.79	17.47	19.593
10+50.	50.00	20.6	21.781		13+67.2	367.20	18.195	19.804
10+56.06	56.06	20.314	22.063		13+82.4	382.40	19.108	20.147
10+61.72	61.72	19.763	21.395		13+98.1	398.10	18.137	19.568
10+65.22	65.22	20.353	21.499		14+03.29	403.29	18.052	19.781
10+69.44	69.44	20.523	21.897		14+15.86	415.86	17.662	19.558
10+72.8	72.80	20.553	21.711		14+21.	421.00	17.892	19.433
10+79.95	79.95	19.943	21.331		14+25.36	425.36	18.197	19.424
10+84.24	84.24	20.062	21.328		14+71.98	471.98	17.935	18.903
10+88.89	88.89	20.369	21.72		14+78.34	478.34	17.287	18.802
11+01.6	101.60	20.208	21.078		14+82.55	482.55	17.406	18.591
11+07.4	107.40	19.932	21.257		14+88.21	488.21	17.911	18.785
11+10.92	110.92	20.157	21.34		15+00.16	500.16	17.744	19.086
11+17.39	117.39	20.078	21.707		15+05.26	505.26	17.545	18.959
11+27.49	127.49	20.05	21.368		15+08.35	508.35	17.47	18.862
11+36.71	136.71	19.339	21.221		15+12.48	512.48	17.861	18.804
11+42.17	142.17	19.831	21.091		15+24.66	524.66	17.46	18.544
11+47.12	147.12	19.861	21.075		15+28.82	528.82	17.27	18.913
11+65.77	165.77	19.841	21.008		15+34.17	534.17	17.535	18.831
11+72.23	172.23	19.62	21.138		15+43.83	543.83	17.489	18.617
11+78.44	178.44	19.774	20.992		15+52.09	552.09	16.796	18.422
11+84.62	184.62	19.404	21.039		15+56.28	556.28	17.171	18.705
11+90.95	190.95	19.523	21.255		15+59.52	559.52	17.417	18.481
12+00.48	200.48	18.868	21.026		15+68.46	568.46	17.448	18.465
12+06.94	206.94	19.346	20.919		15+71.73	571.73	17.301	18.615
12+20.9	220.90	20.3	20.853		15+75.26	575.26	17.28	18.521
12+34.92	234.92	19.638	20.802		15+79.96	579.96	17.342	18.187
12+39.53	239.53	19.288	20.682		15+88.63	588.63	17.034	18.195
12+42.54	242.54	19.406	20.973		15+92.08	592.08	16.779	18.419
12+46.92	246.92	19.645	20.762		15+95.17	595.17	17.025	18.559
12+64.18	264.18	19.458	20.339		16+00.05	600.05	17.246	18.446
12+66.59	266.59	18.542	20.151		16+10.21	610.21	17.071	17.541
12+69.18	269.18	18.823	20.023		16+15.23	615.2321	16.676	17.985
12+72.09	272.09	19.634	19.887		16+18.43	618.4304	16.795	17.9
12+82.7	282.70	18.88	20.156		16+22.48	622.4762	16.871	17.895
12+85.58	285.58	18.867	20.259		16+31.61	631.609	15.985	18.011
12+89.6	289.5988	18.902	20.355					
12+94.29	294.2872	18.869	20.222					



	Minimum	Mean	Max
Bankfull Slope		0.0065	
Pool-Pool Spacing (ft)	16.7	30	68.7
Pool Length (ft)	5	10.3	17.7
Riffle Length (ft)	3.4	14	46.6
Dmax Riffle (ft)	0.55	1.16	1.64
Dmax Pool (ft)	0.85	1.65	2.58


REACH C: Longitudinal Profile: MY5, MY4, MY3, MY2, MY1, Baseline and As-Built
Thalweg MY5
Thalweg MY4
Thalweg MY3
Thalweg MY2
Thalweg MY1
Thalweg Baseline
Thalweg As-Built
Elevation (ft)
22
21
20
19
18
17
16
15
10+00.
10+50.
11+00.
11+50.
12+00.
12+50.
13+00.
Sta. (ft)


REACH C: Longitudinal Profile: MY5, MY4, MY3, MY2, MY1, Baseline and As-Built
Thalweg MY5
Thalweg MY4
Thalweg MY3
Thalweg MY2
Thalweg MY1
Thalweg Baseline
Thalweg As-Built
Elevation (ft)
22
21
20
19
18
17
16
15
13+00.
13+50.
14+00.
14+50.
15+00.
15+50.
16+00.
16+50.
Sta. (ft)

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Appendix E.
Hydrologic Data

Table 16. Documentation of Bankfull Events in 2018

Stream Gauge No.	#1		#2	
Location	Reach 2A		Reach 1A	
Date of Occurrence	1/12/2018	9/22/2018	1/12/2018	
	1/23/2018	9/23/2018	1/23/2018	
	1/29/2018	9/25/2018	1/29/2018	
	2/4/2018	9/26/2018	2/4/2018	
	2/10/2018	9/27/2018	2/12/2018	
	2/12/2018	9/28/2018	3/1/2018	
	3/12/2018	10/2/2018	3/12/2018	
	3/20/2018	10/10/2018	3/20/2018	
	3/25/2018	10/26/2018	3/25/2018	
	4/7/2018	11/2/2018	4/7/2018	
	4/16/2018	11/5/2018	*	
	4/24/2018	11/8/2018	9/13/18 - 10/8/18	
	5/6/2018	11/13/2018	10/9/2018	
	5/17/2018	11/15/2018	10/10/18 - 10/12/18	
	5/19/2018	12/9/2018	10/26/2018	
	5/21/2018	12/14/2018	11/8/2018	
	5/23/2018		11/13/2018	
	5/26/2018		12/9/2018	
	5/28/2018		12/14/2018	
	5/29/2018			
	5/31/2018			
	6/10/2018			
	6/15/2018			
	6/24/2018			
	6/26/2018			
	6/29/2018			
	7/20/2018			
	7/24/2018			
	7/25/2018			
	7/27/2018			
	7/28/18 - 8/1/18			
	8/3/18 - 8/7/18			
	8/9/2018			
	8/11/18 - 8/17/18			
	8/18/2018			
	8/20/2018			
	8/21/2018			
	8/22/2018			
	8/23/2018			
	8/28/2018			
	9/13/18 9/19/18			
	9/20/2018			
	9/21/2018			
TOTAL NUMBER	**59**		**18**	

* Gauge damaged

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Hydrology Assessment

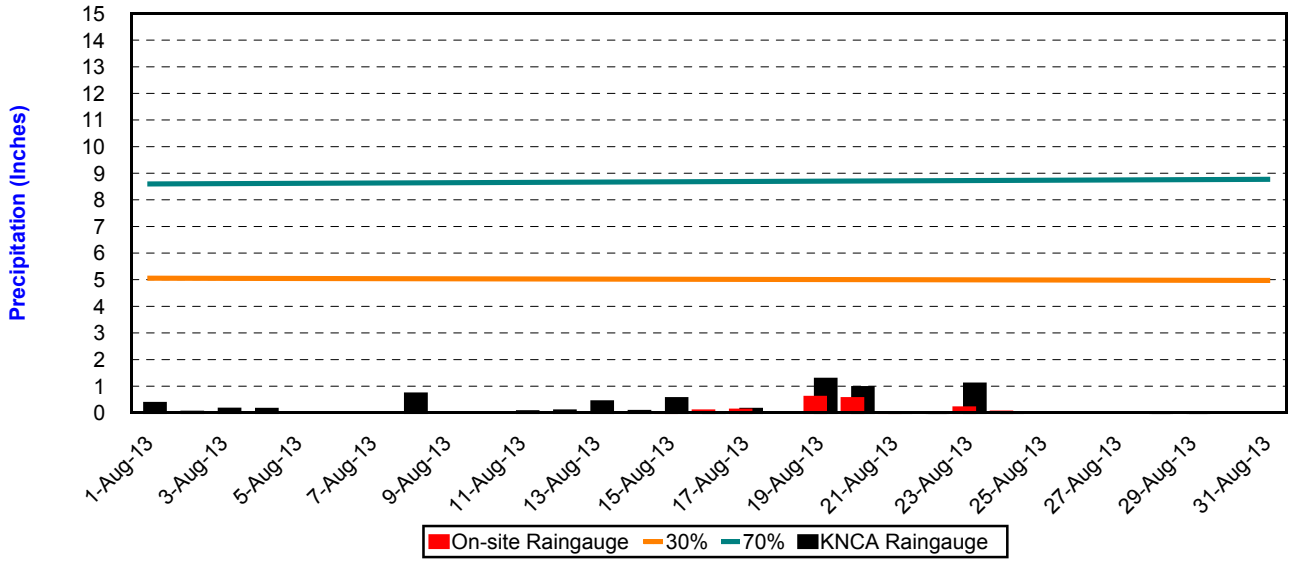
August 2013

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)

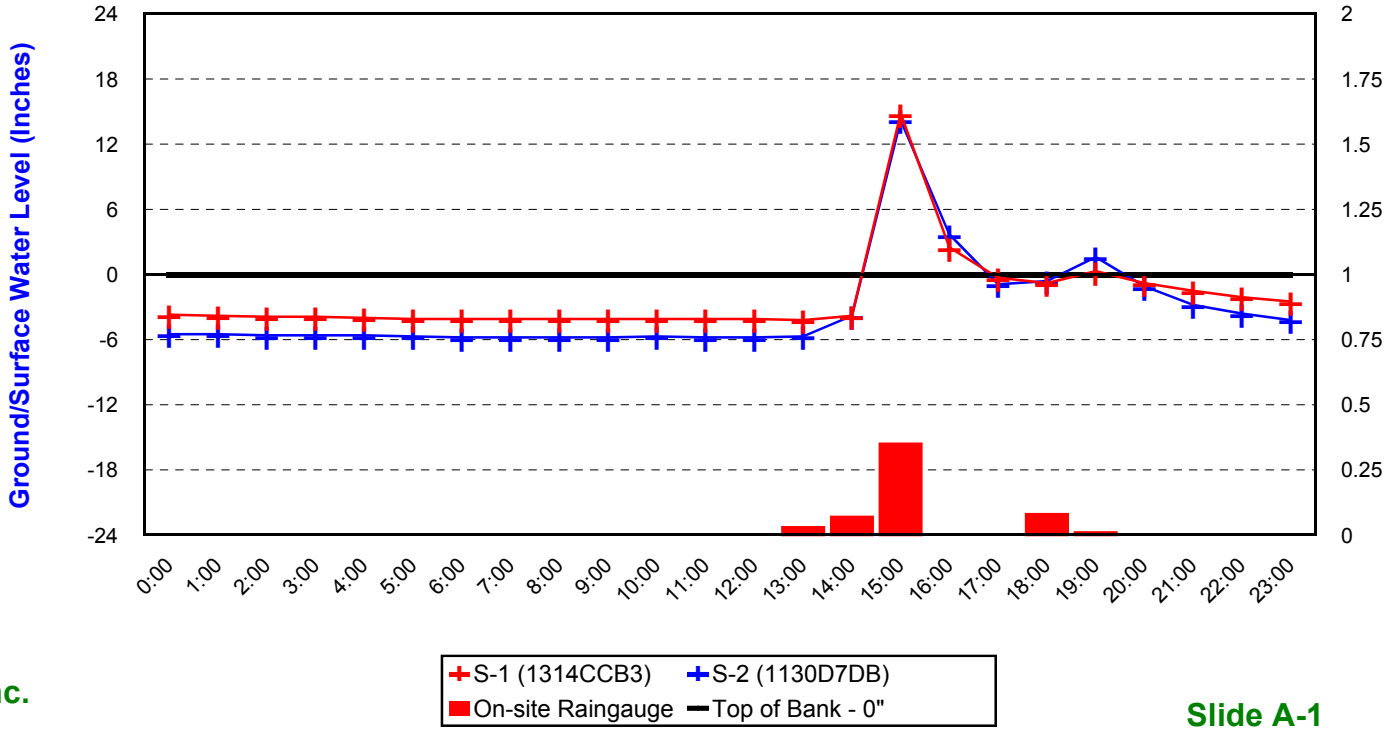
*Wells and Raingauge installed 8-15-13

*30 Day totals derived from onsite raingauge beginning September 13, 2013



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- August 20, 2013
- One reading per hour



Hydrology Assessment

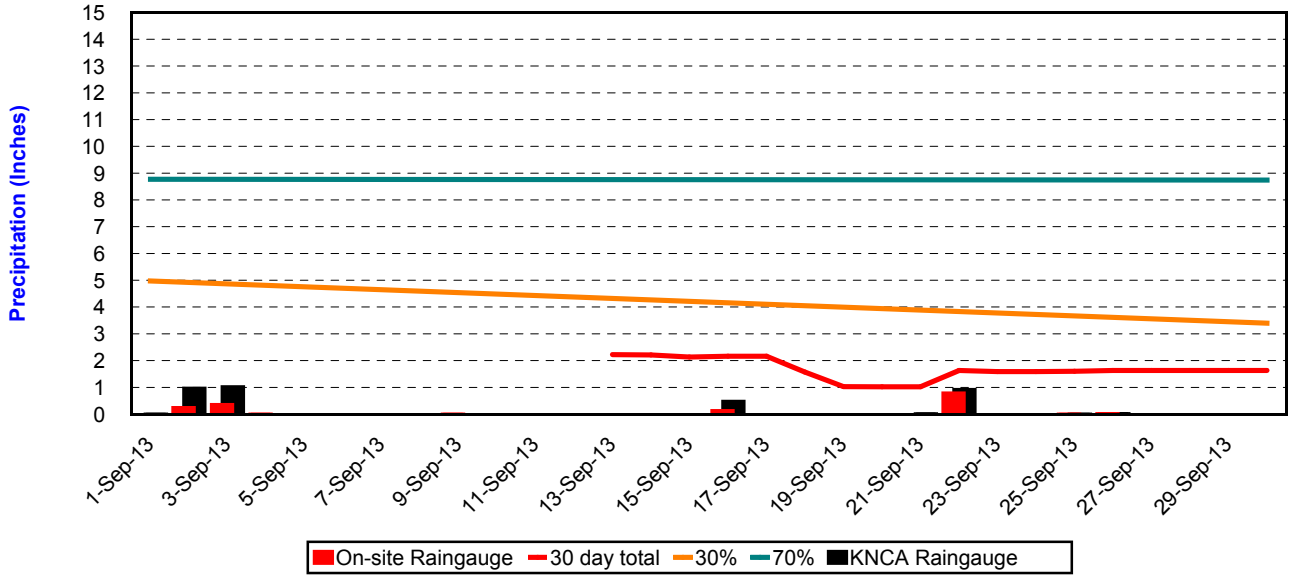
September 2013

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)

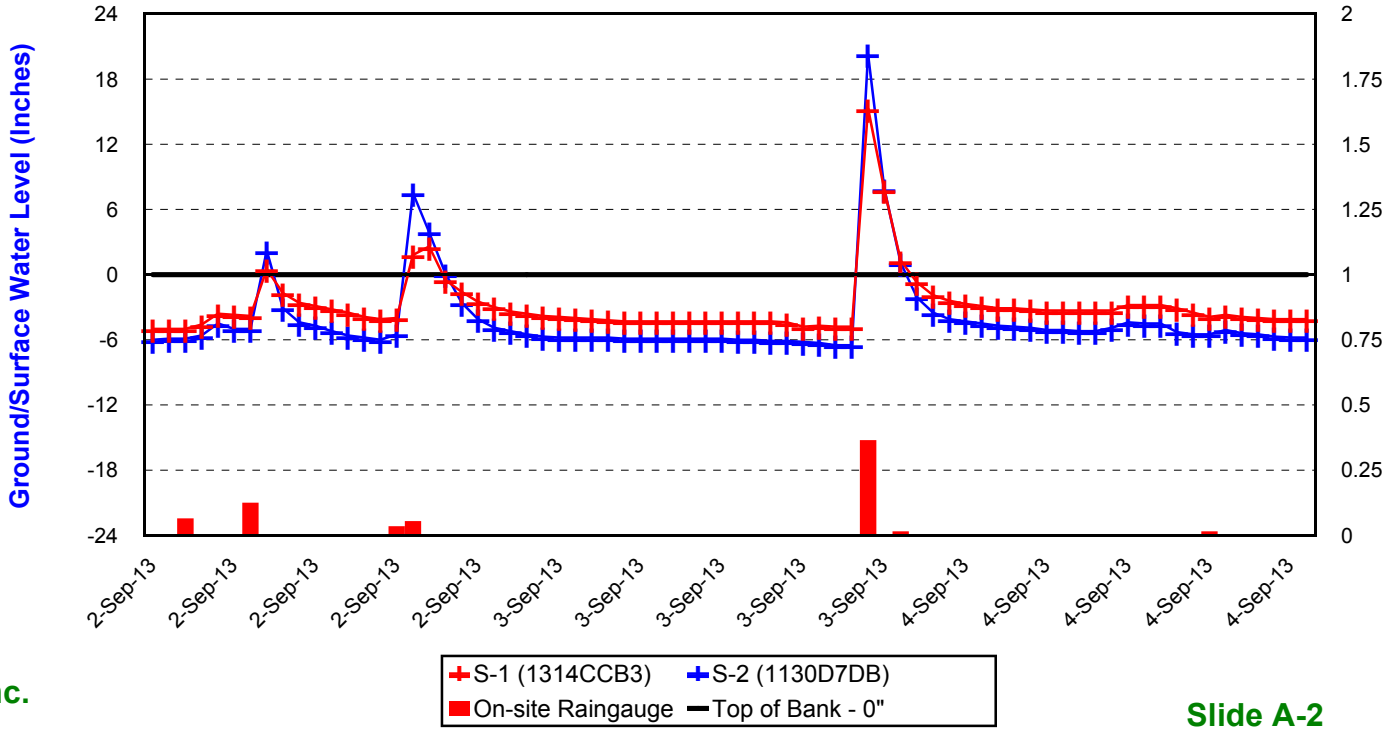
*Wells and Raingauge installed 8-15-13

*30 Day totals derived from onsite raingauge beginning September 13, 2013



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- September 2, 2013 to September 4, 2013
- One reading per hour



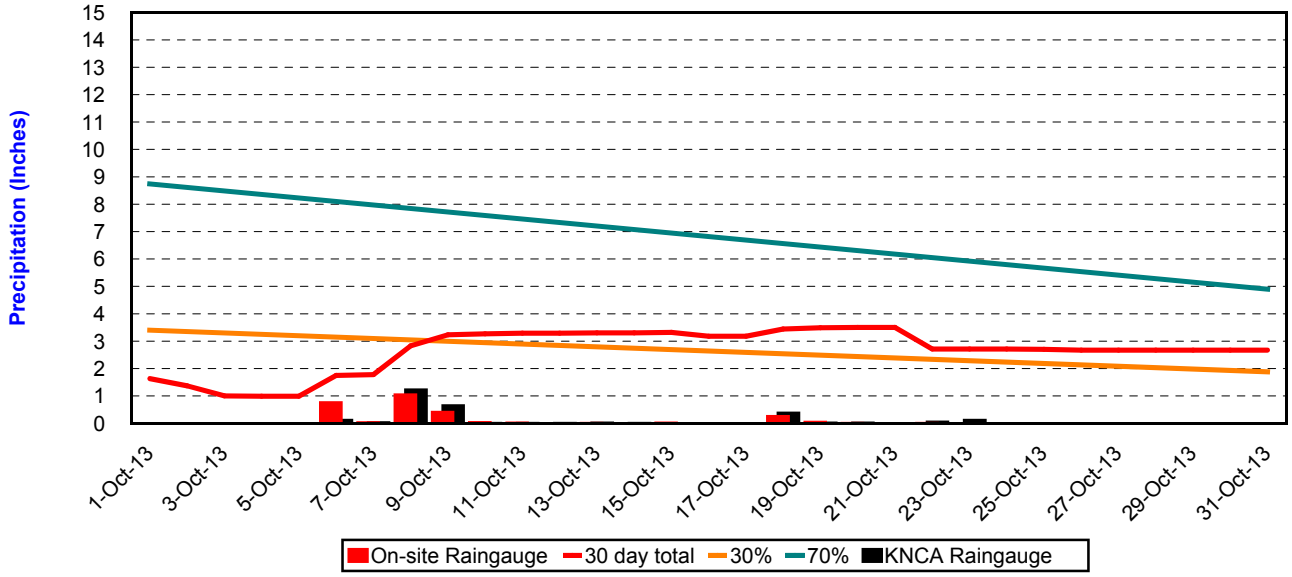
Land Management Group, Inc.
www.lmgroup.net

Hydrology Assessment

October 2013

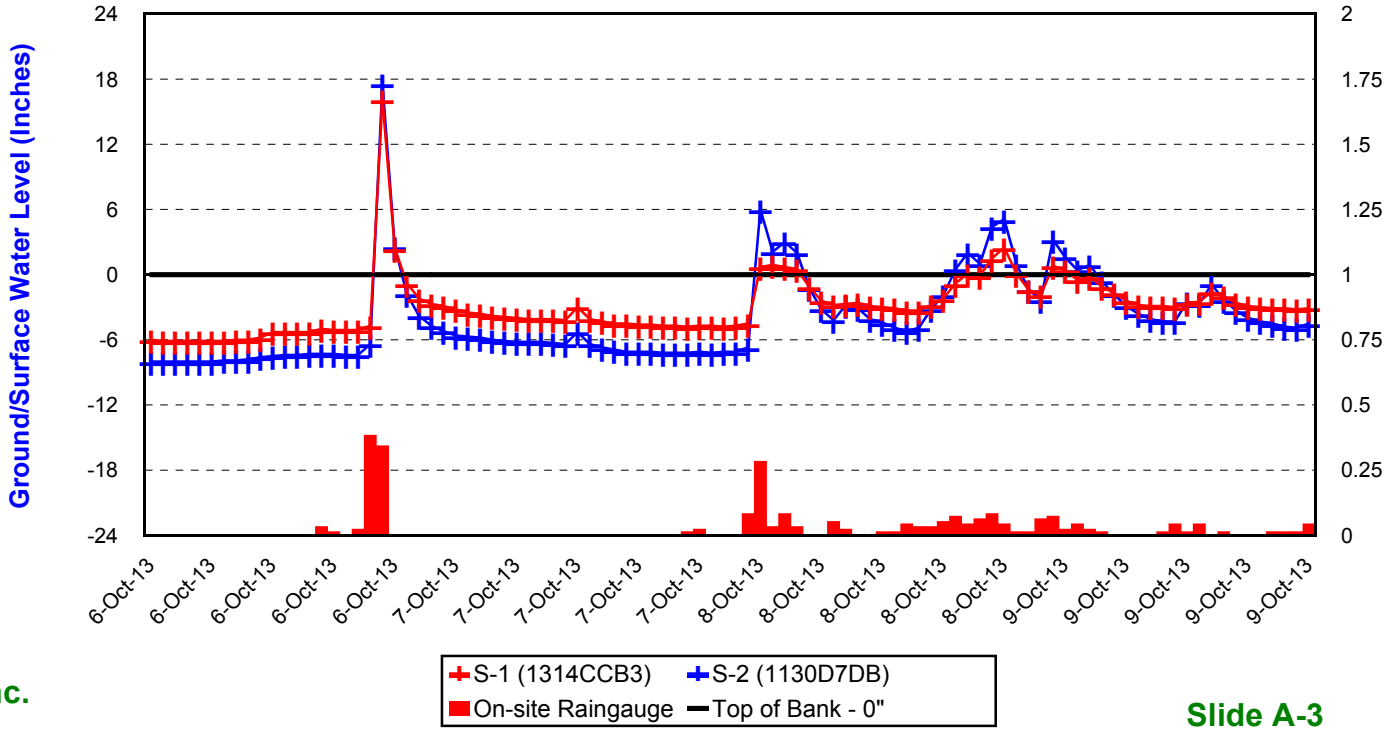
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 6, 2013 to October 9, 2013
- One reading per hour

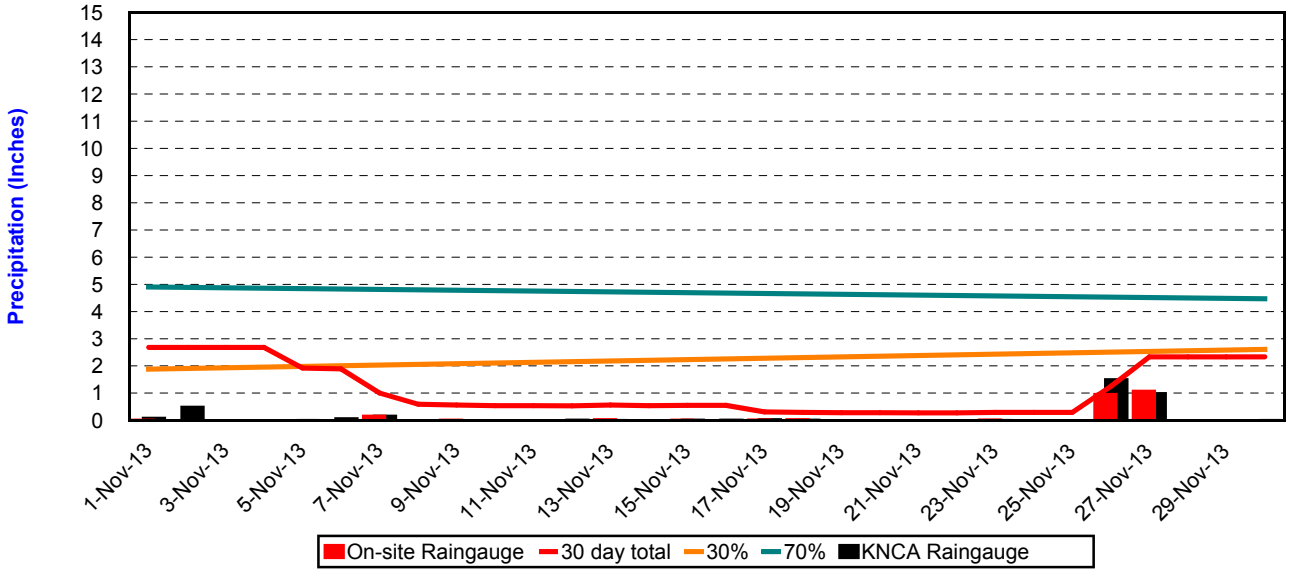


Hydrology Assessment

November 2013

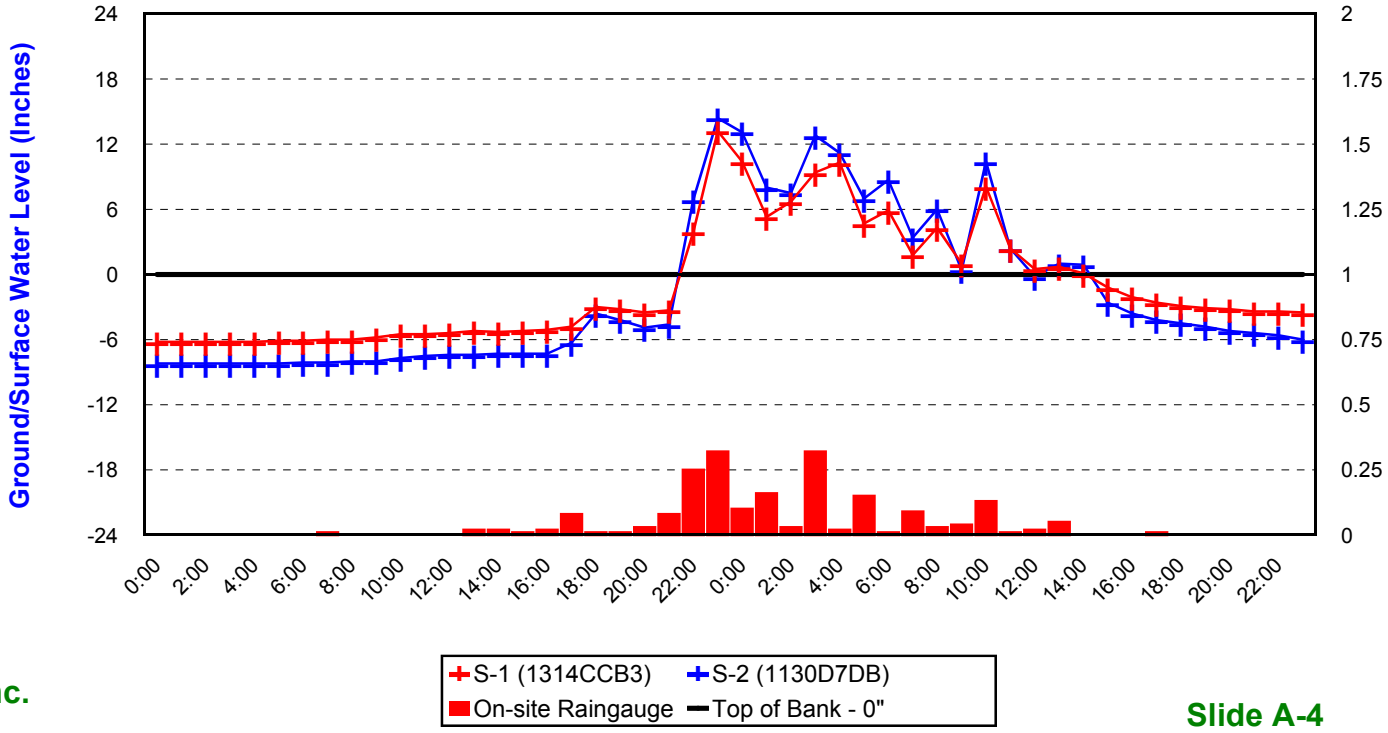
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 26, 2013 to November 27, 2013
- One reading per hour

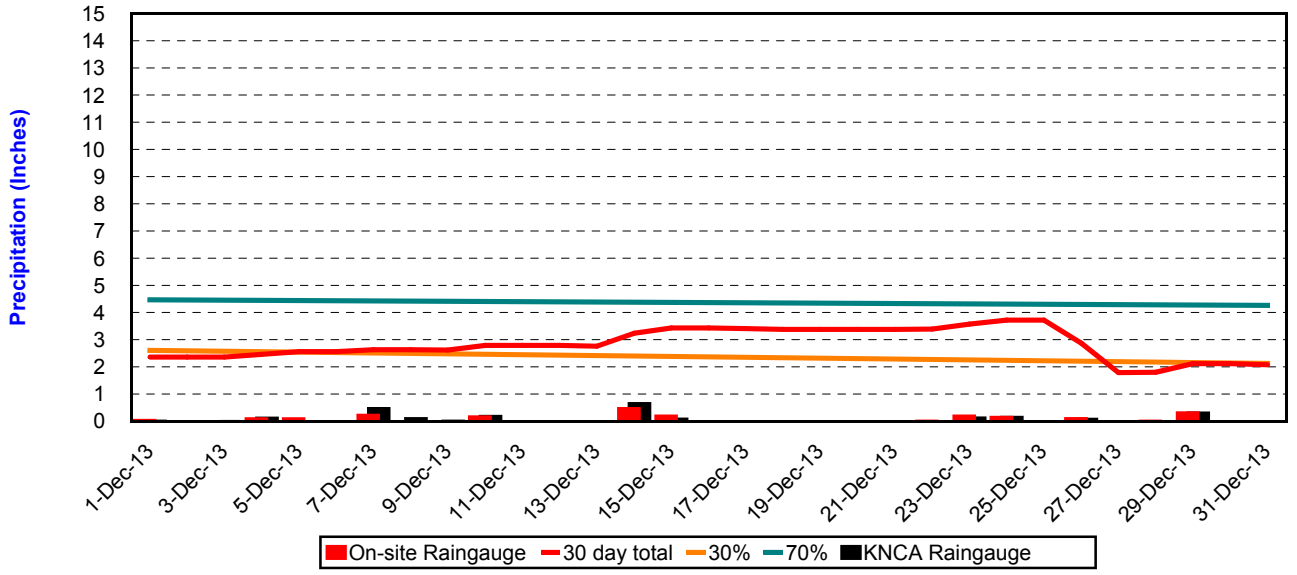


Hydrology Assessment

December 2013

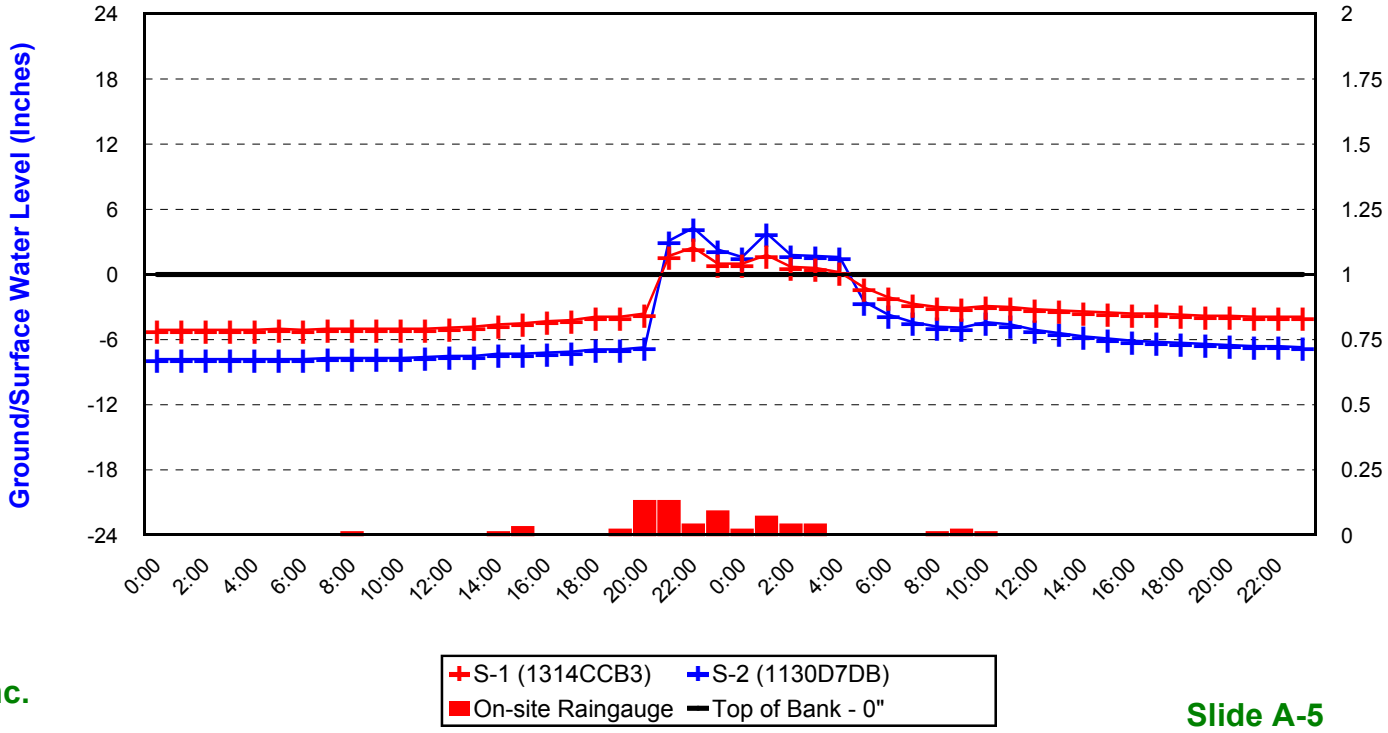
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 14, 2013 to December 15, 2013
- One reading per hour

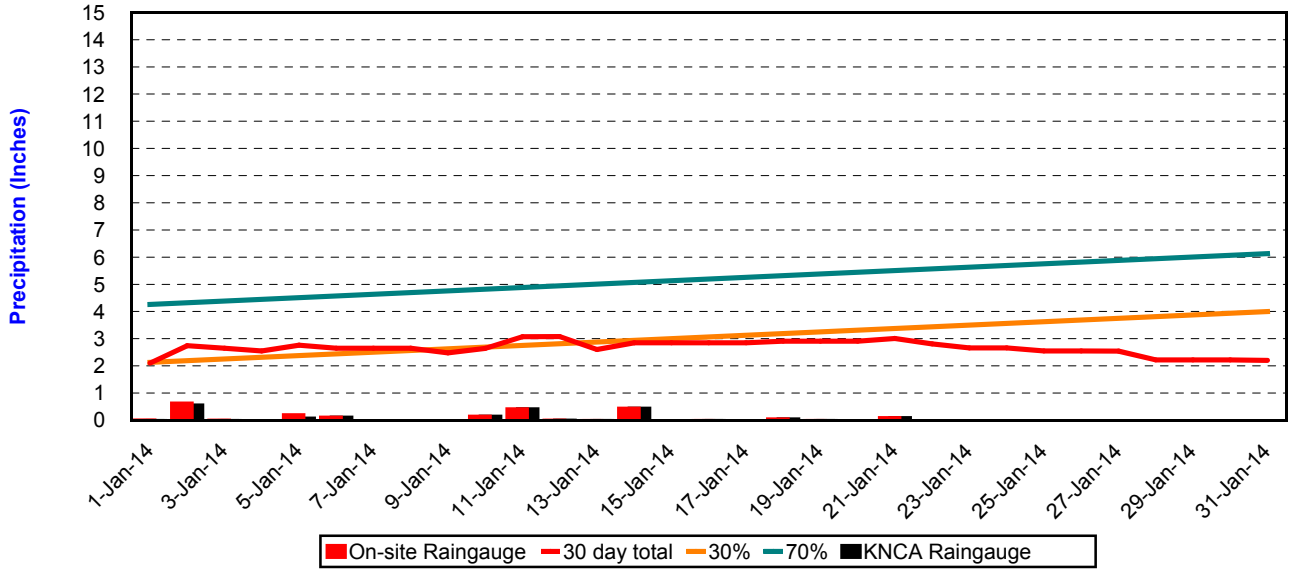


Hydrology Assessment

January 2014

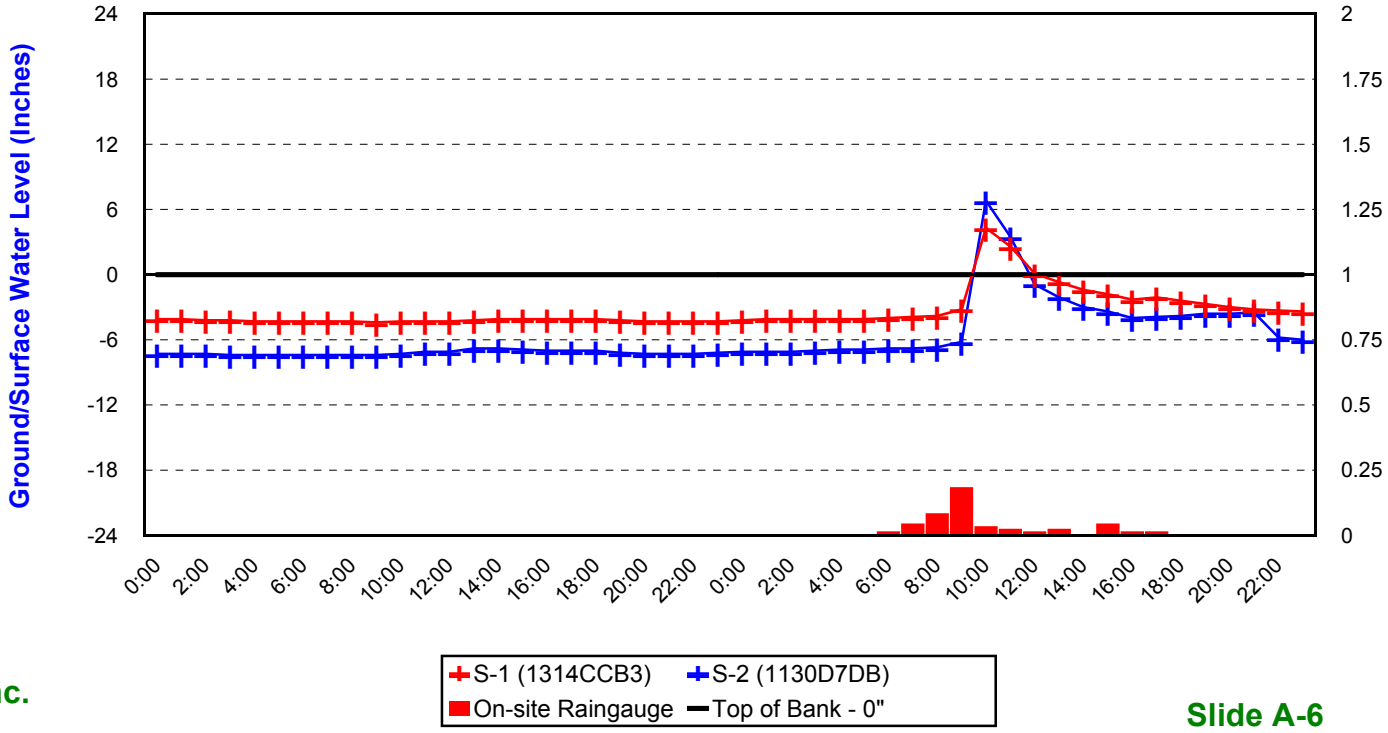
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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

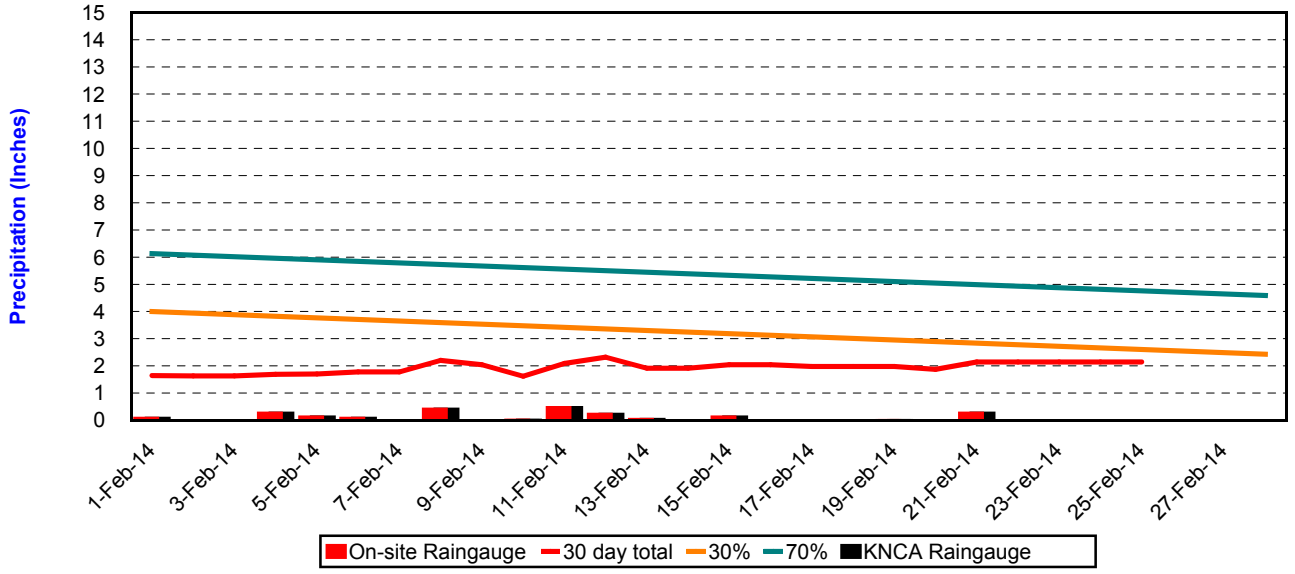


Hydrology Assessment

February 2014

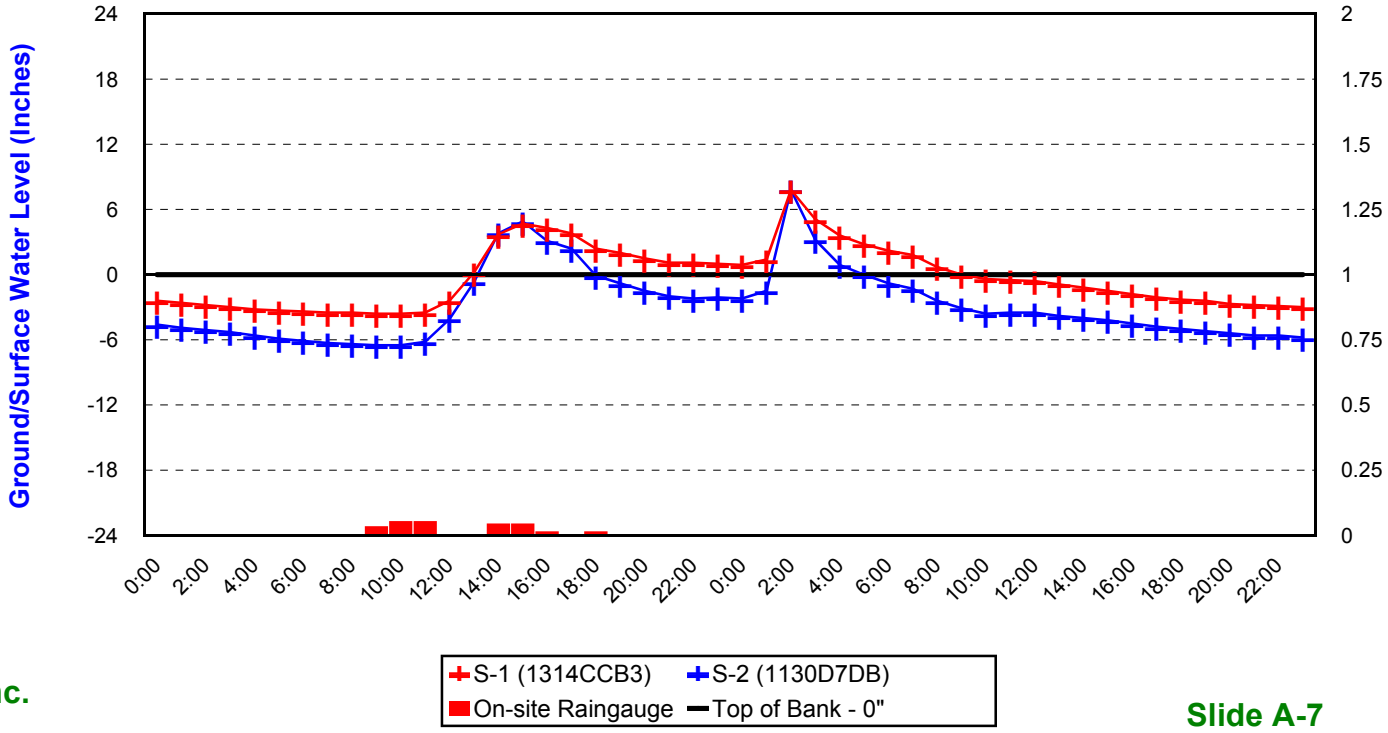
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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

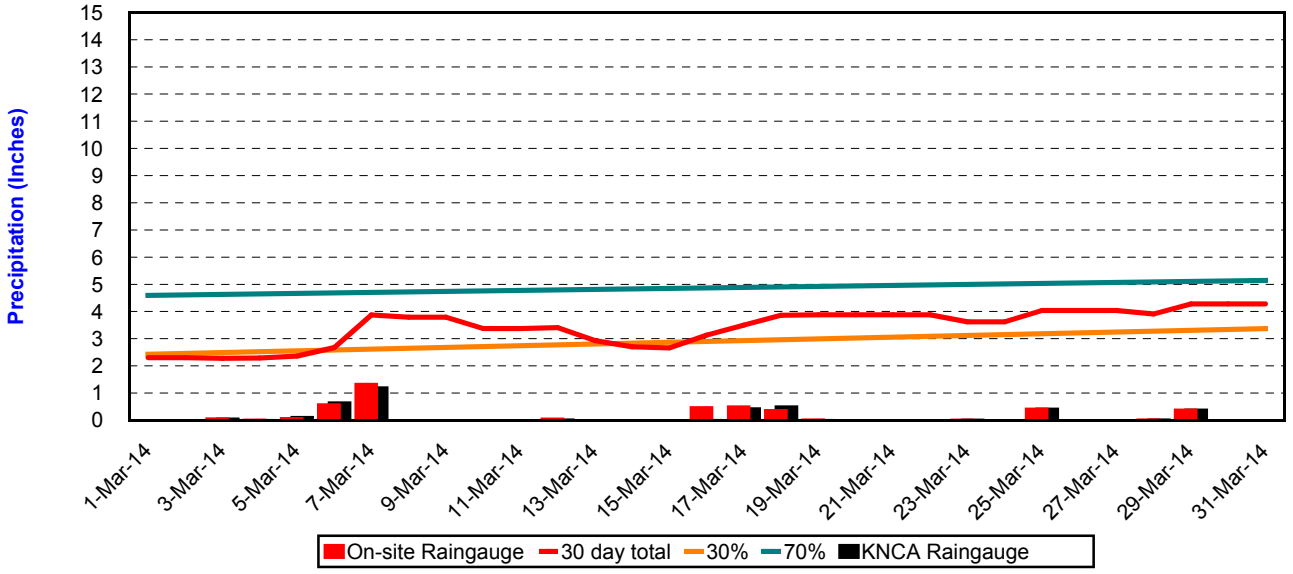


Hydrology Assessment

March 2014

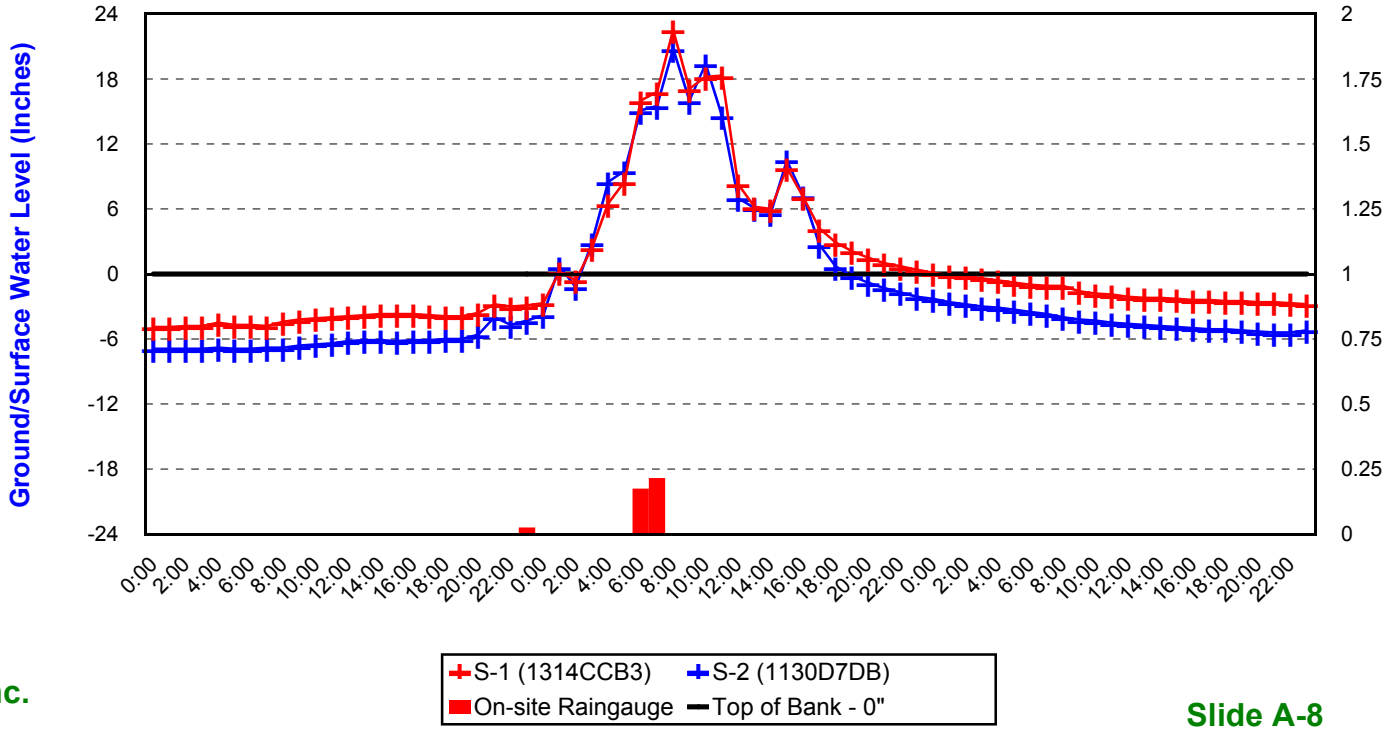
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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

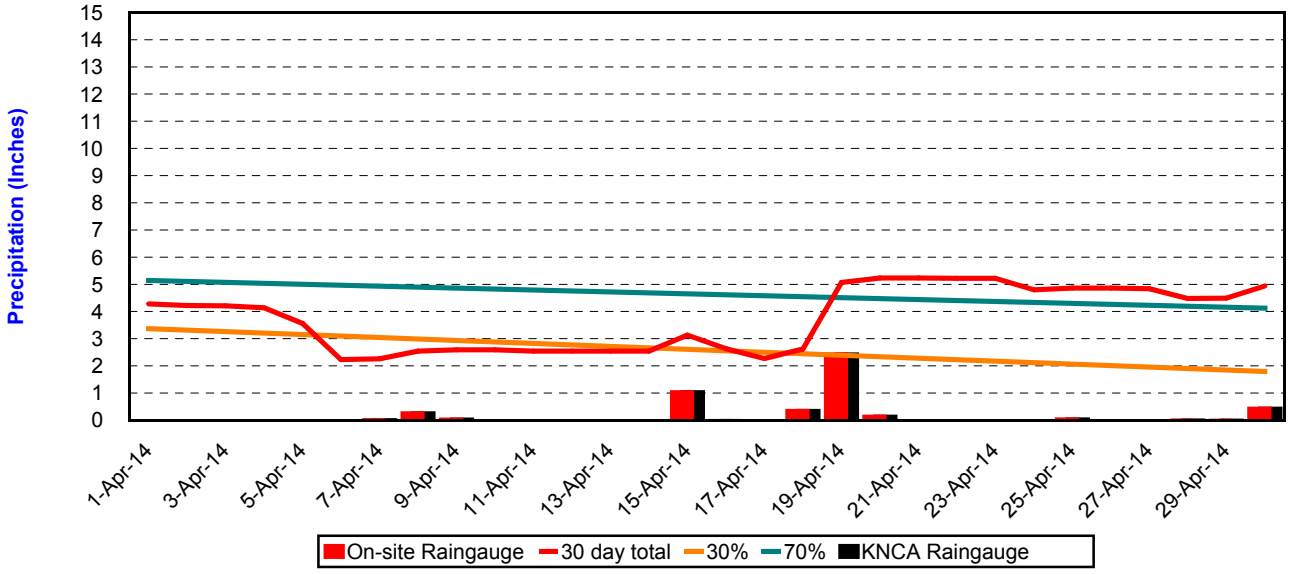


Hydrology Assessment

April 2014

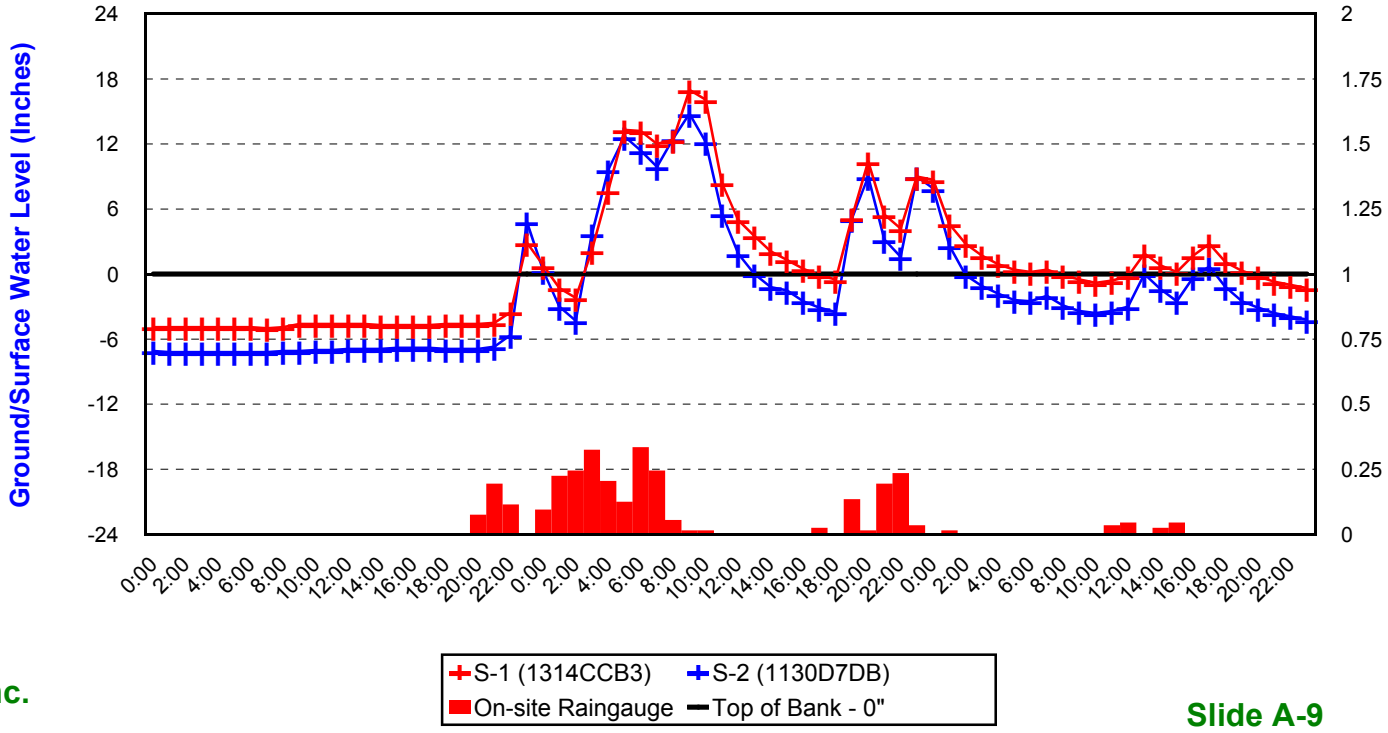
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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

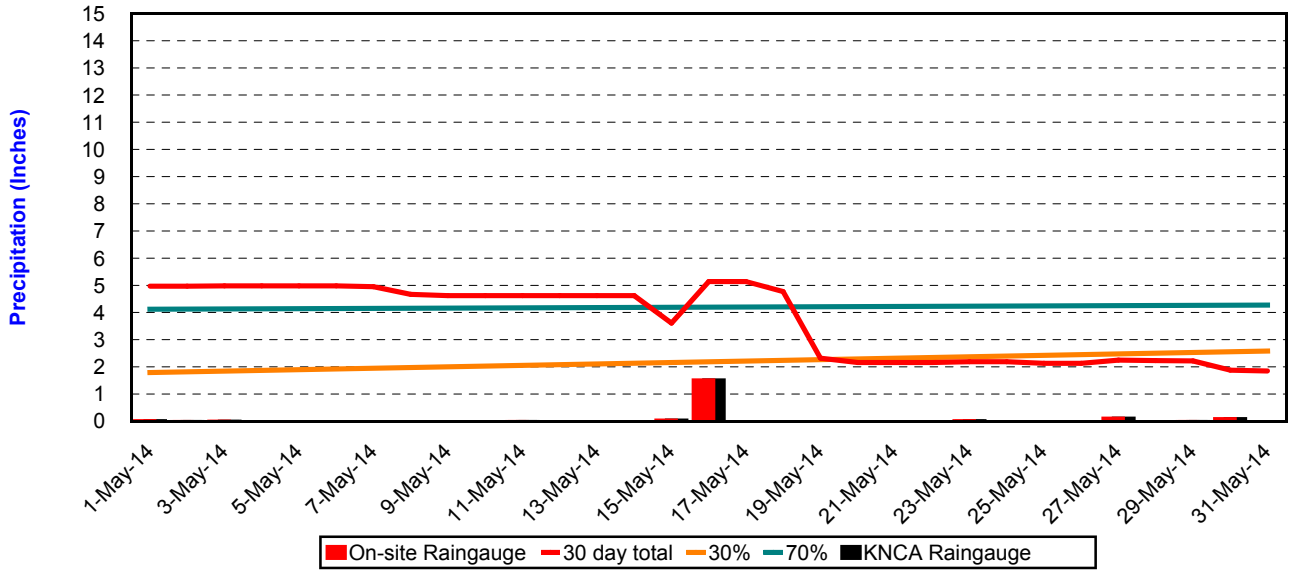


Hydrology Assessment

May 2014

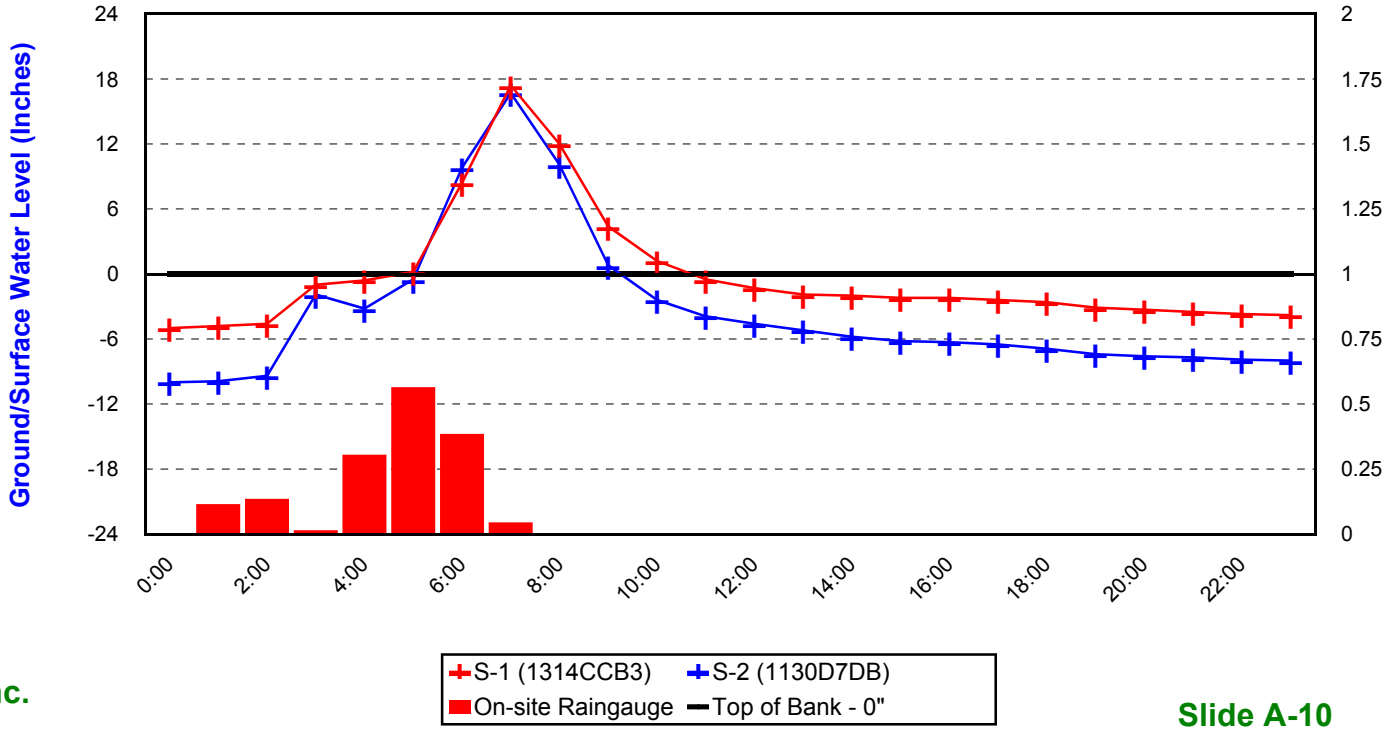
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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

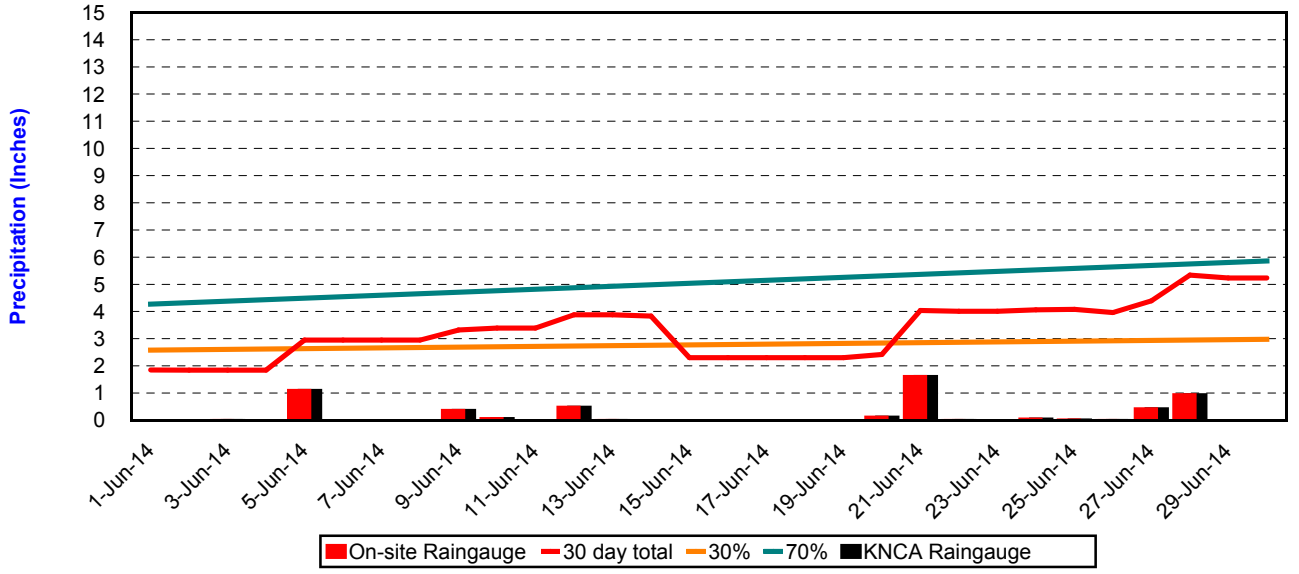


Hydrology Assessment

June 2014

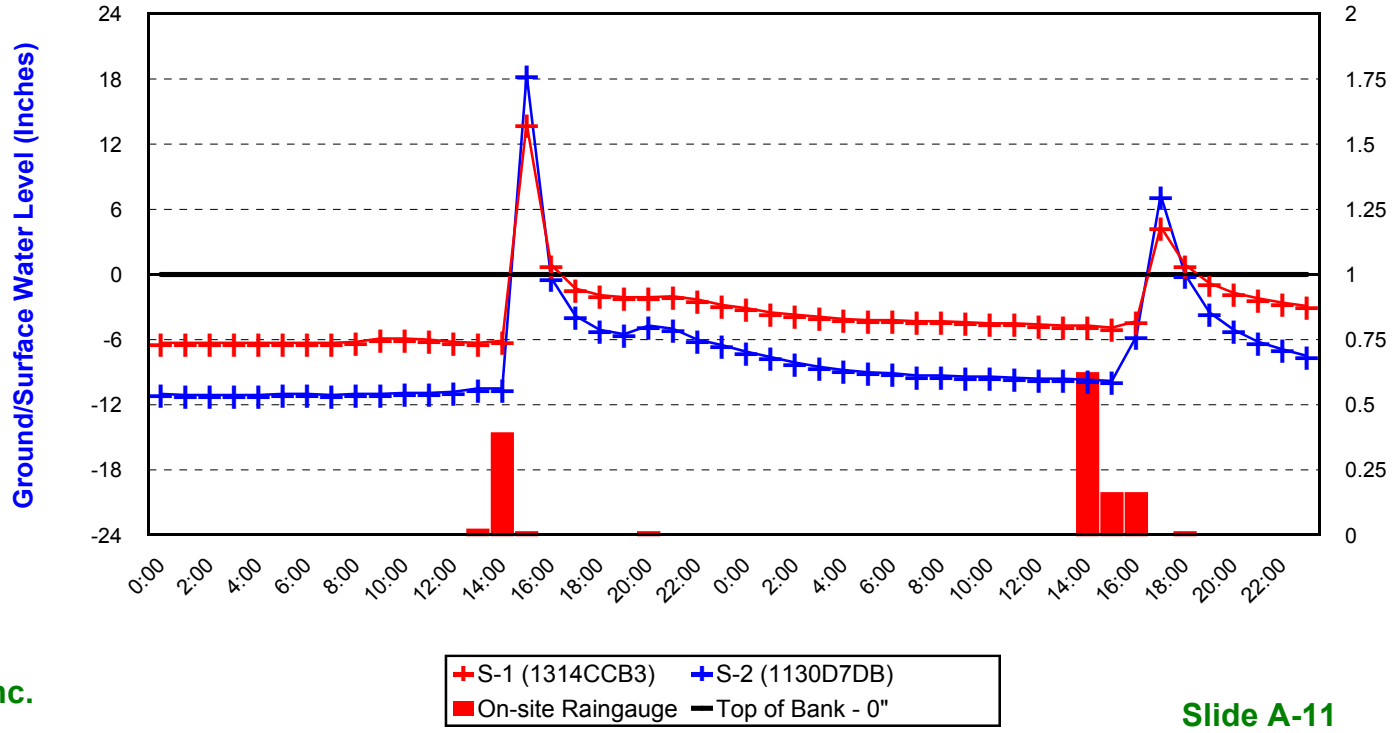
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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

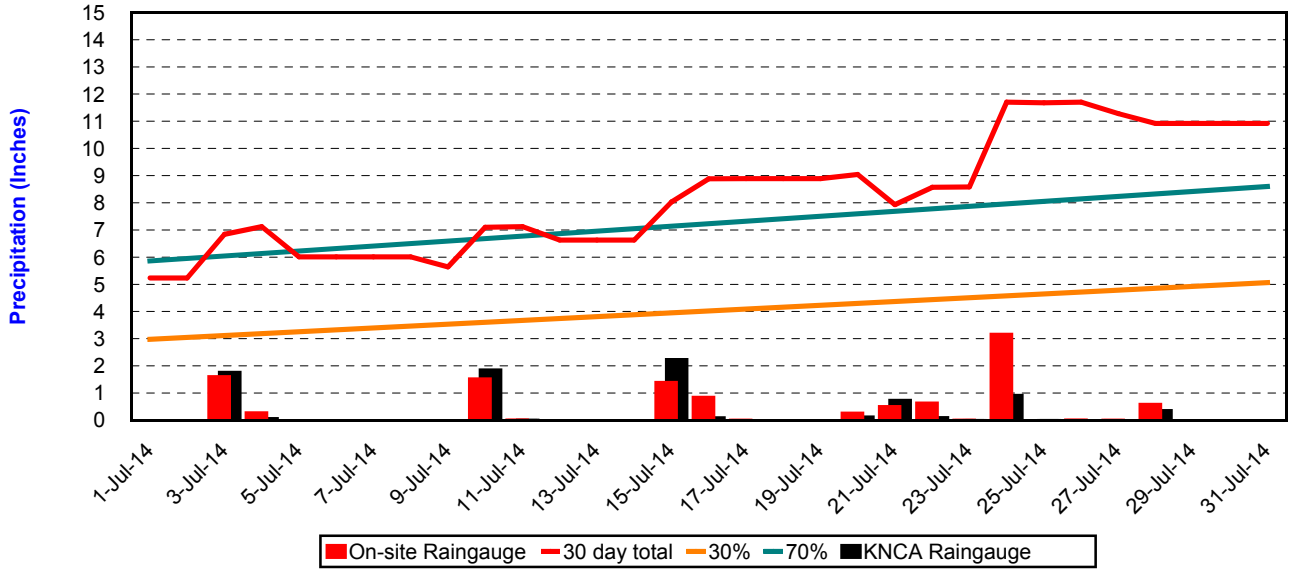


Hydrology Assessment

July 2014

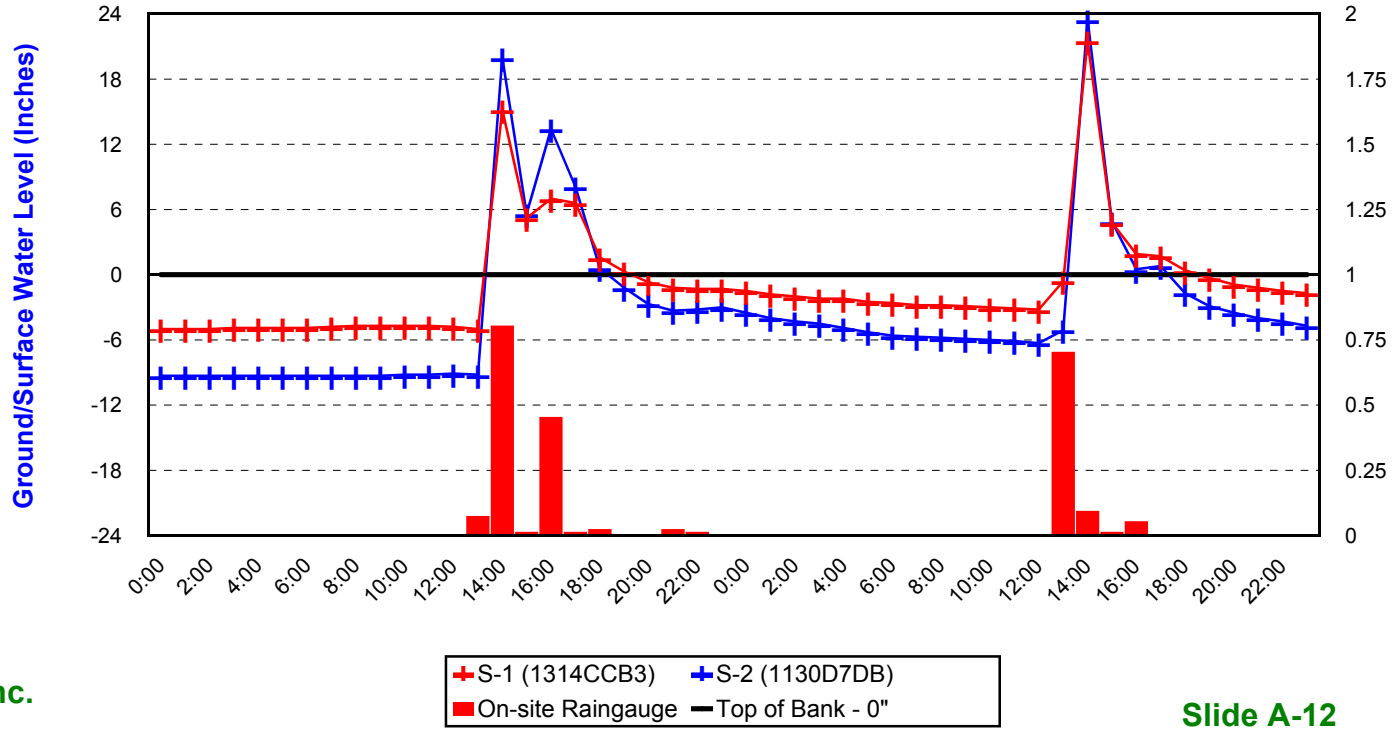
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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

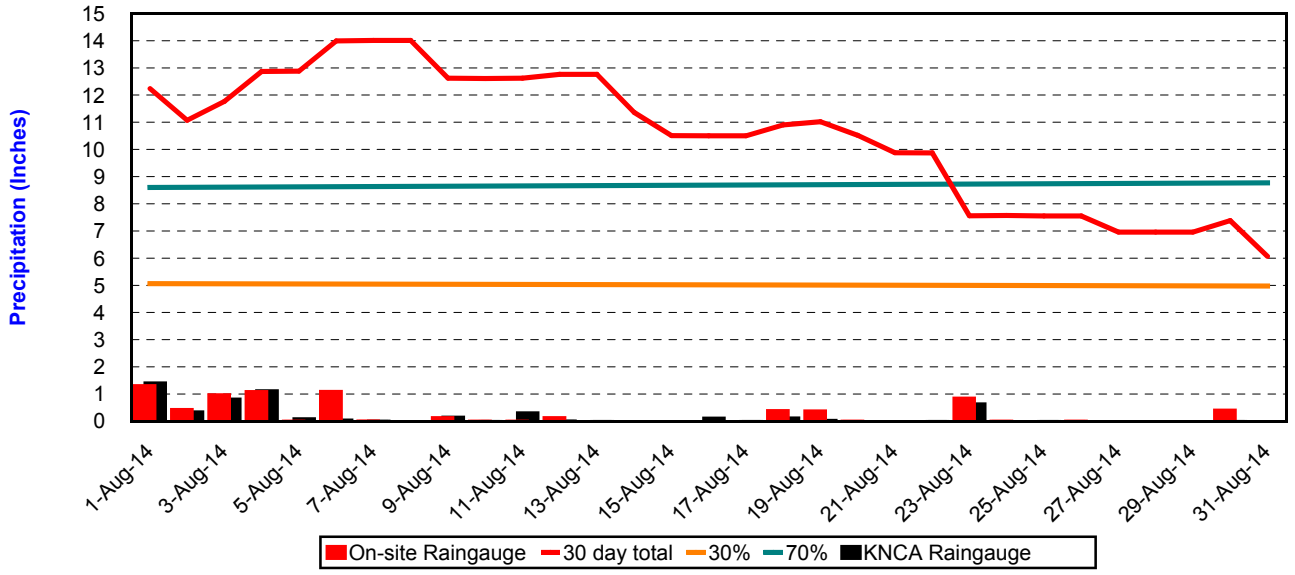


Hydrology Assessment

August 2014

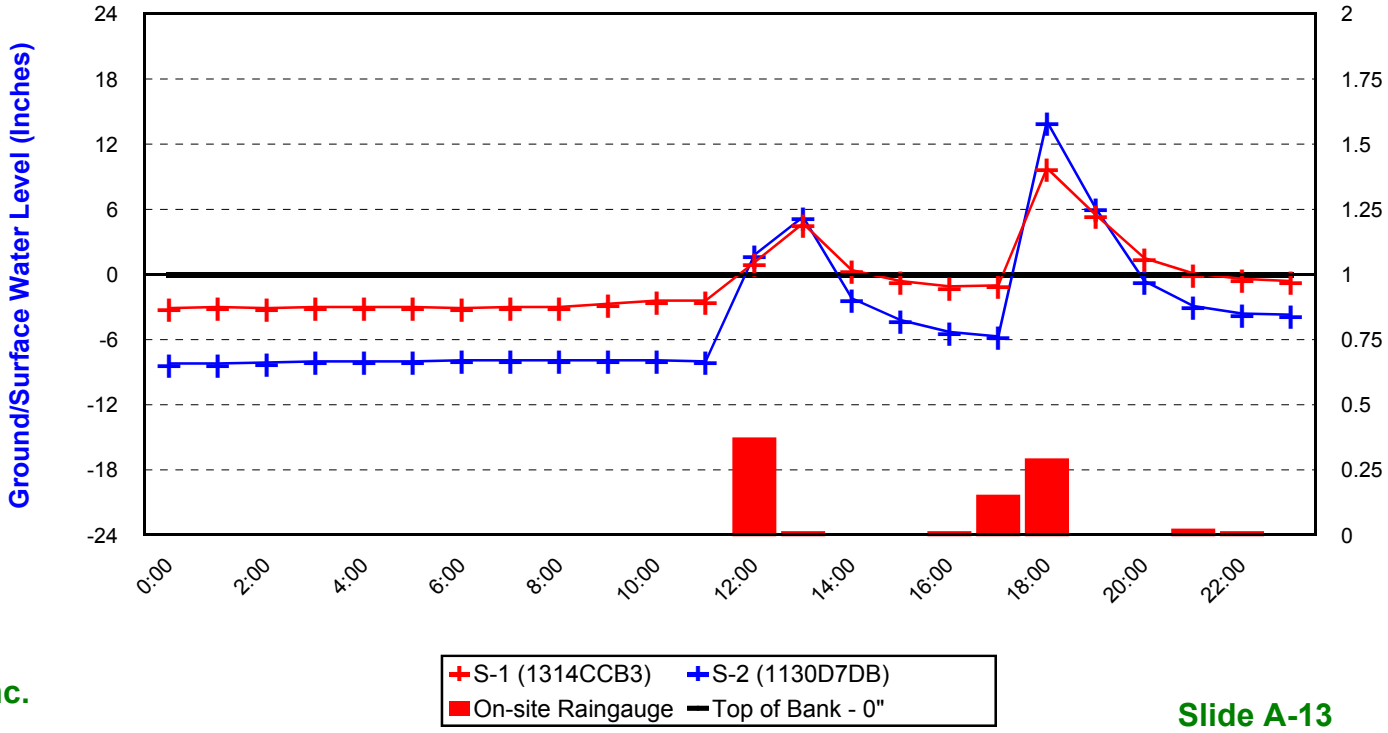
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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

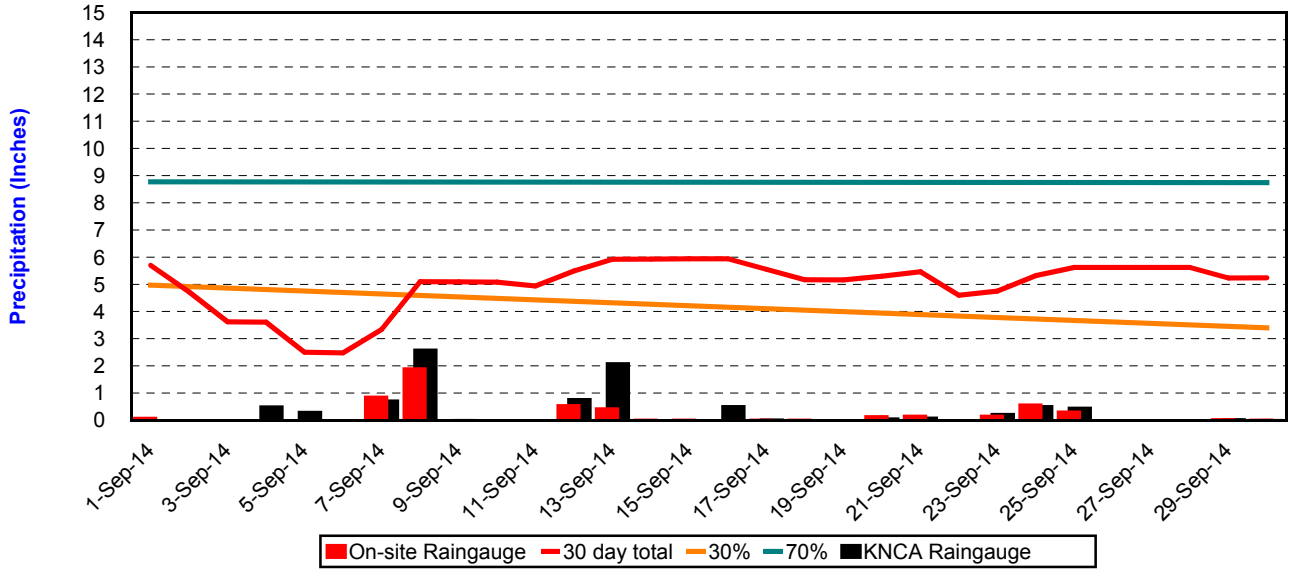


Hydrology Assessment

September 2014

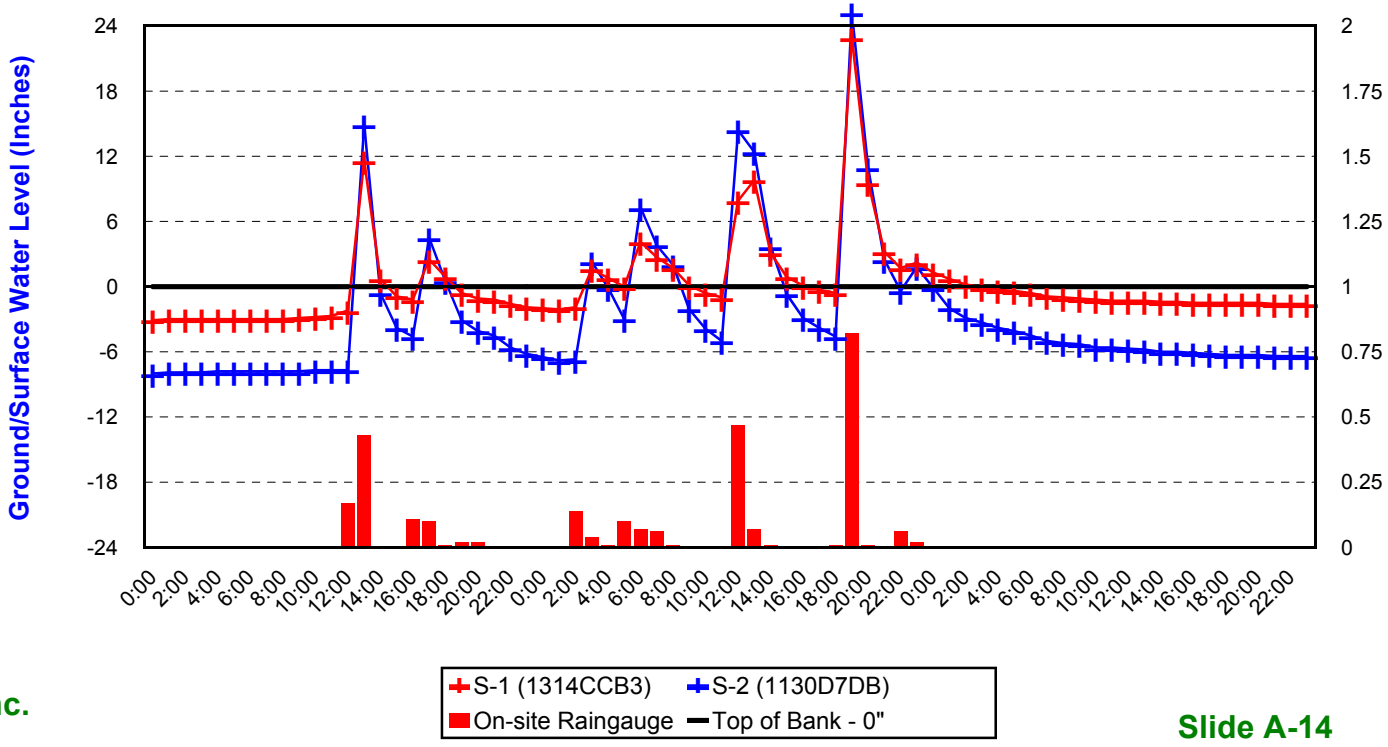
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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

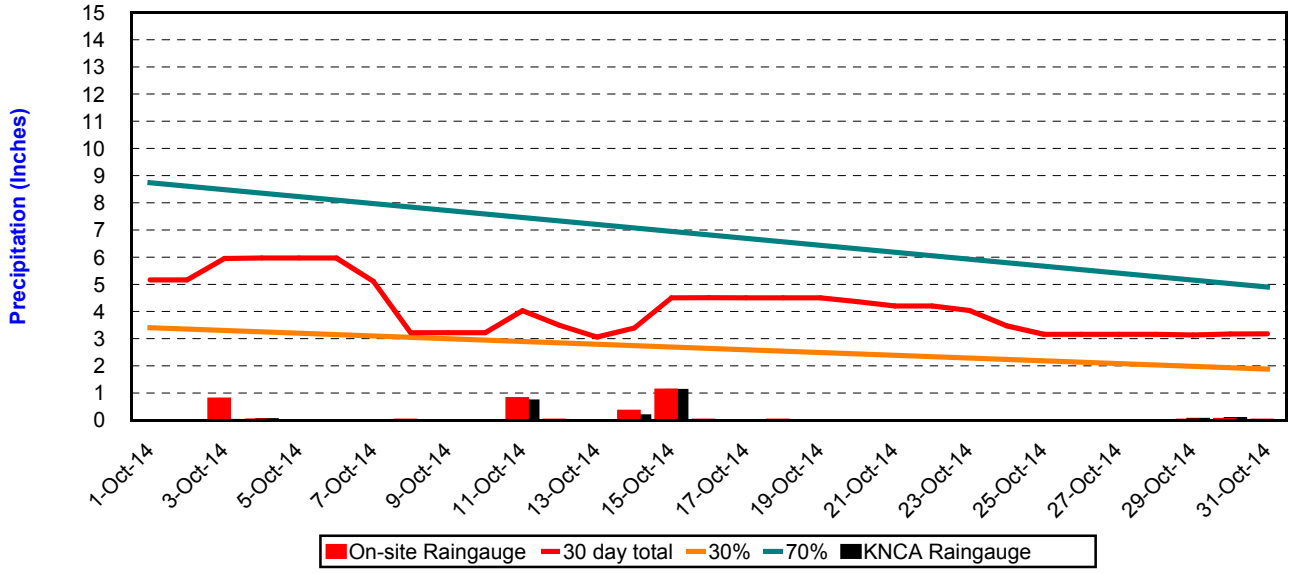


Hydrology Assessment

October 2014

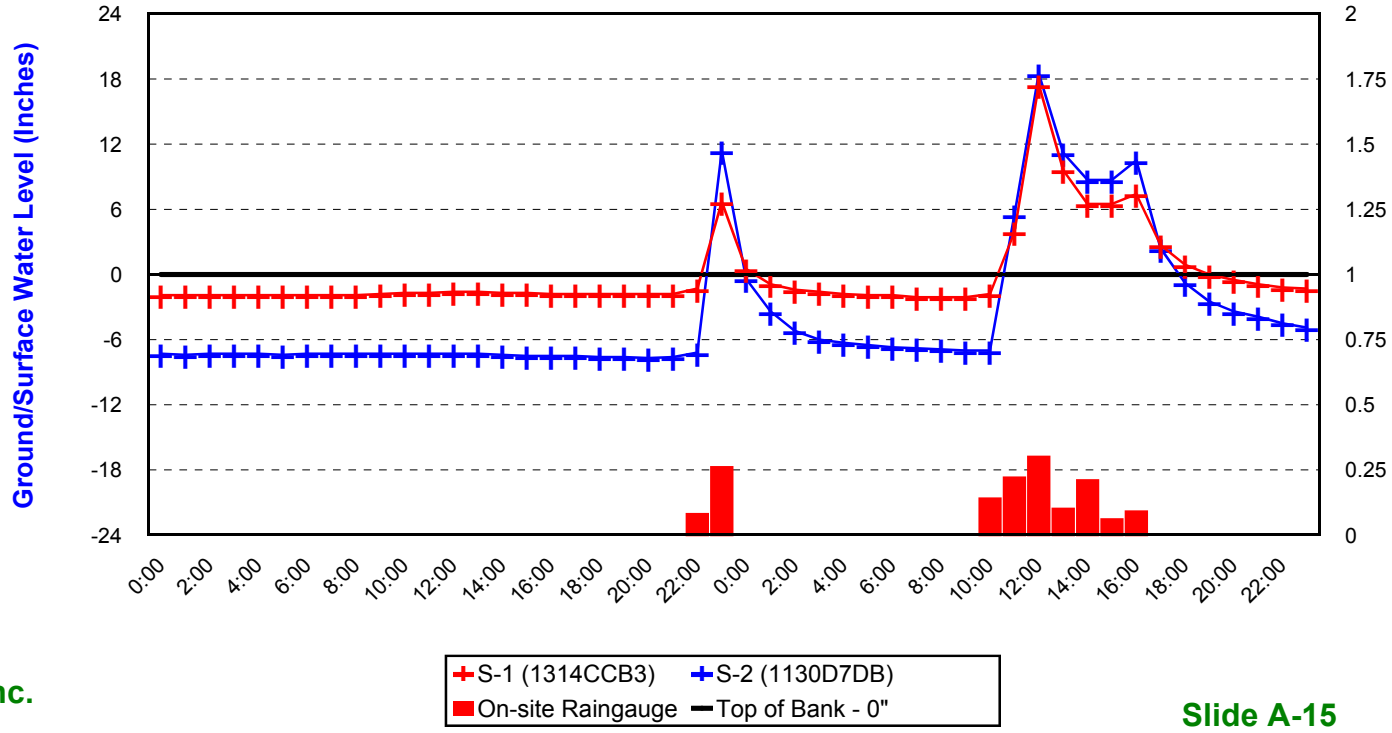
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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

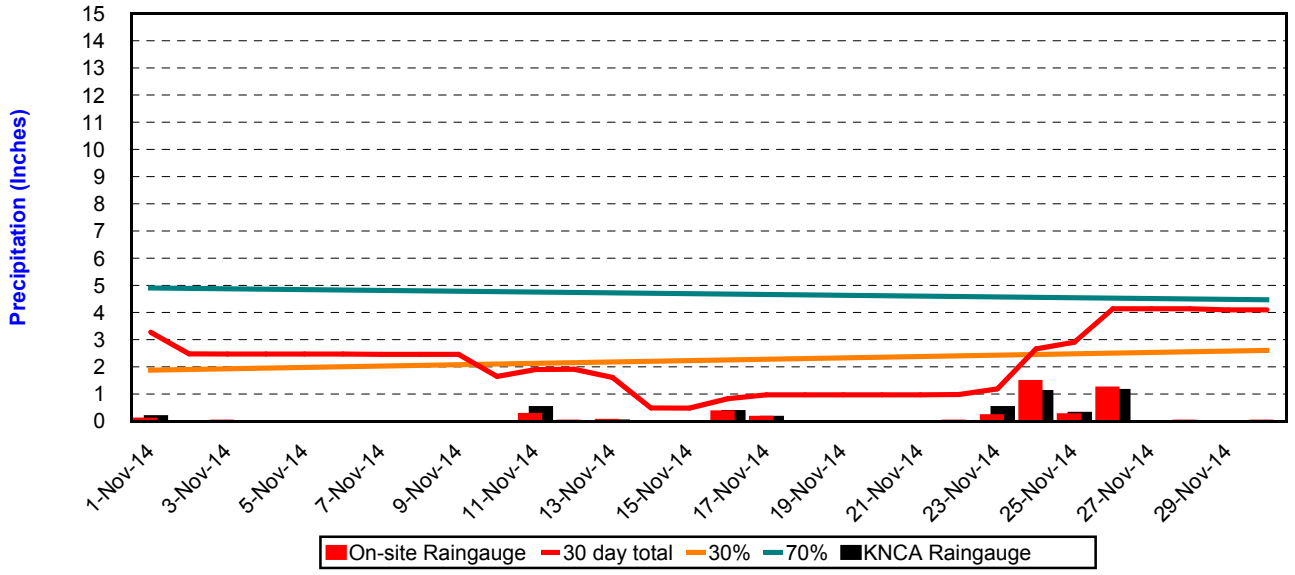


Hydrology Assessment

November 2014

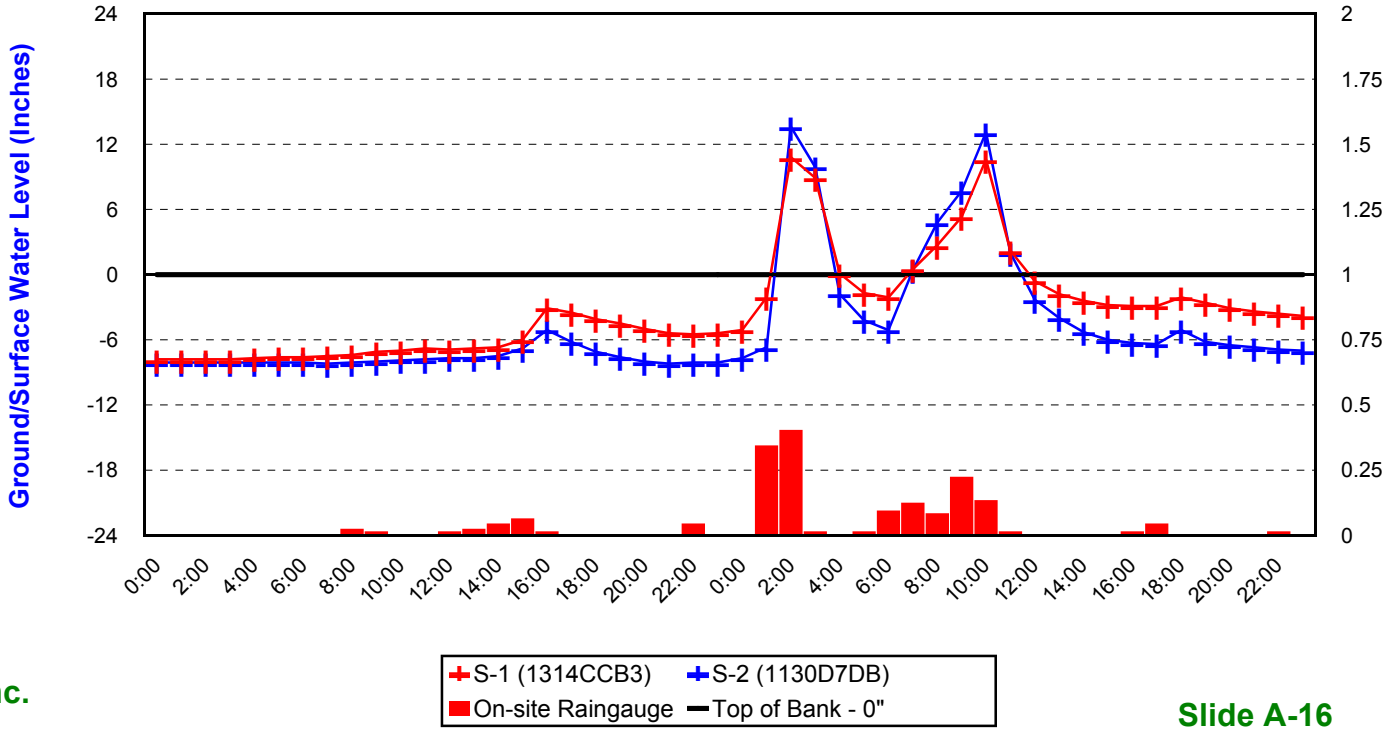
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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

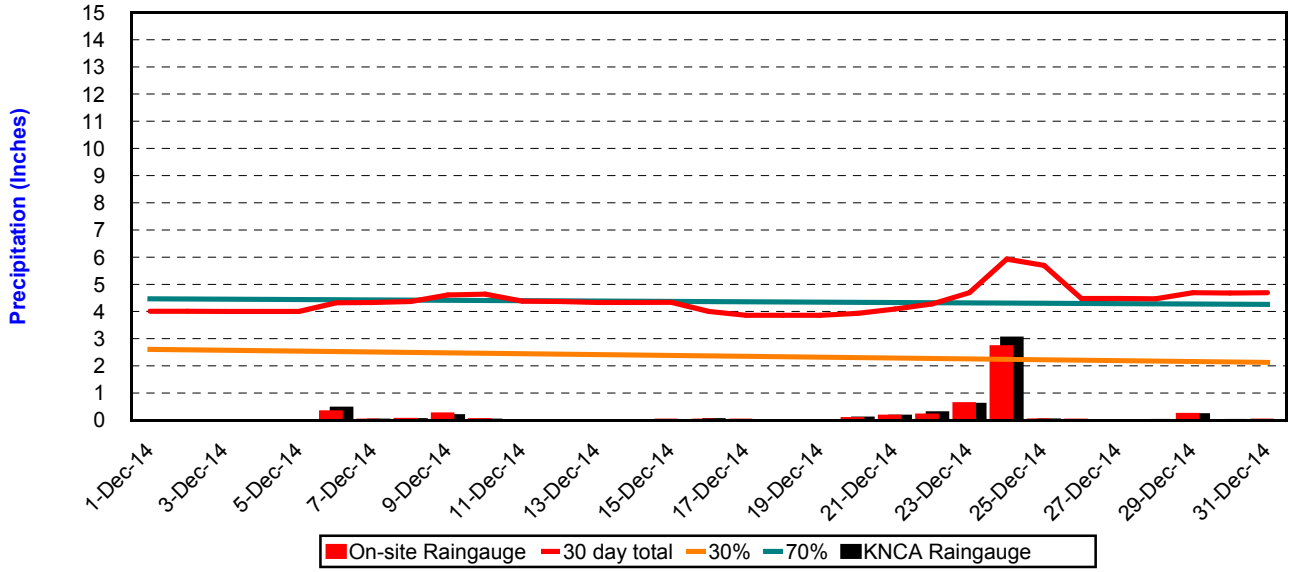


Hydrology Assessment

December 2014

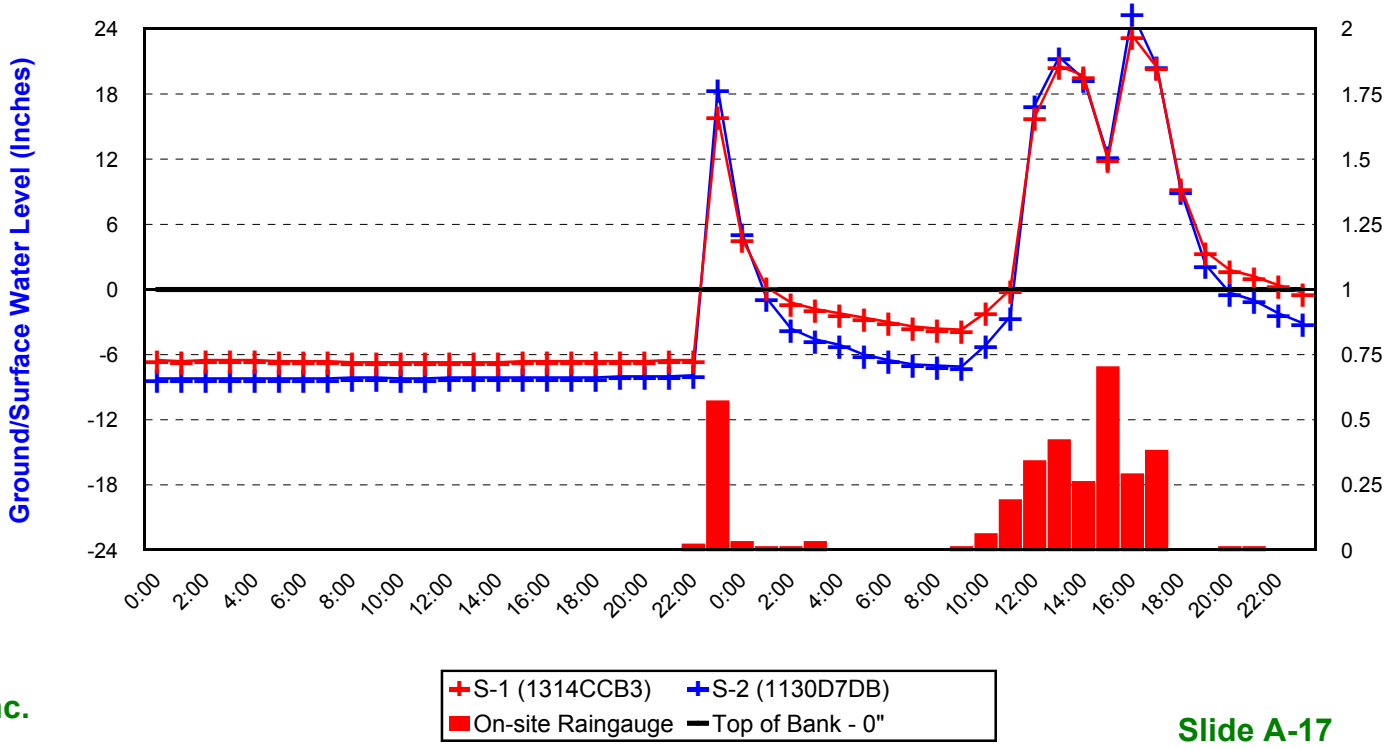
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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

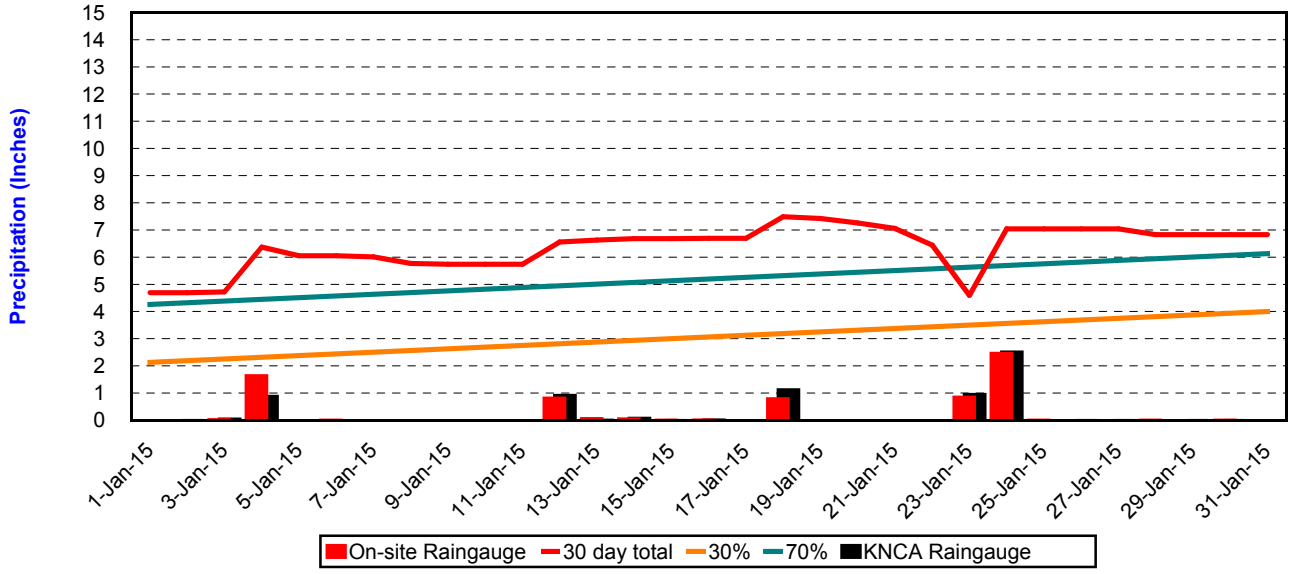


Hydrology Assessment

January 2015

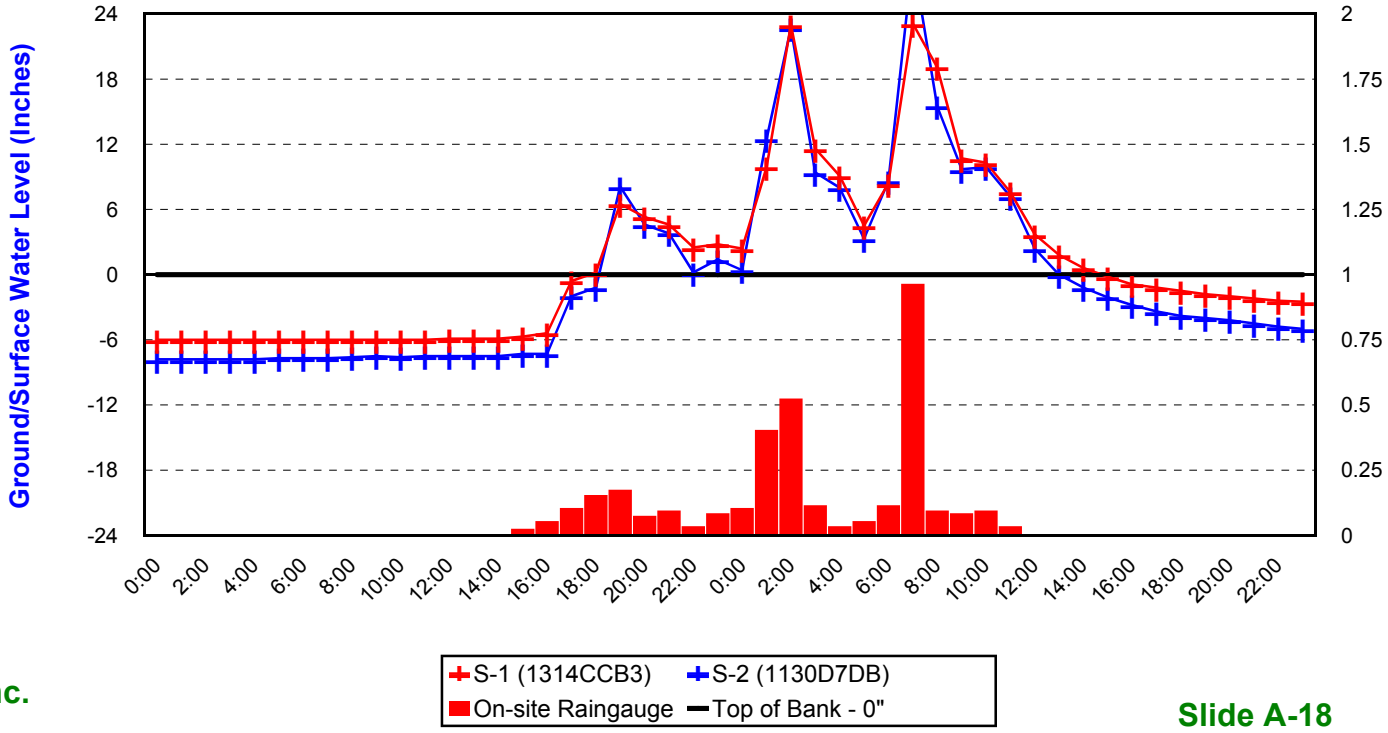
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 23, 2015 to January 24, 2015
- One reading per hour

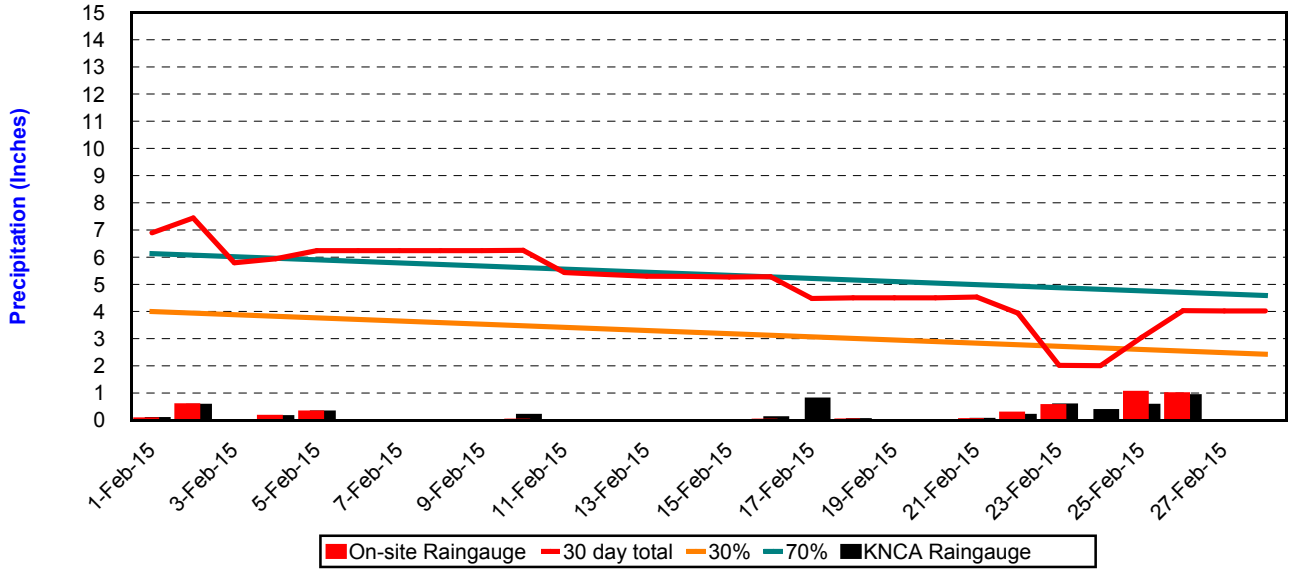


Hydrology Assessment

February 2015

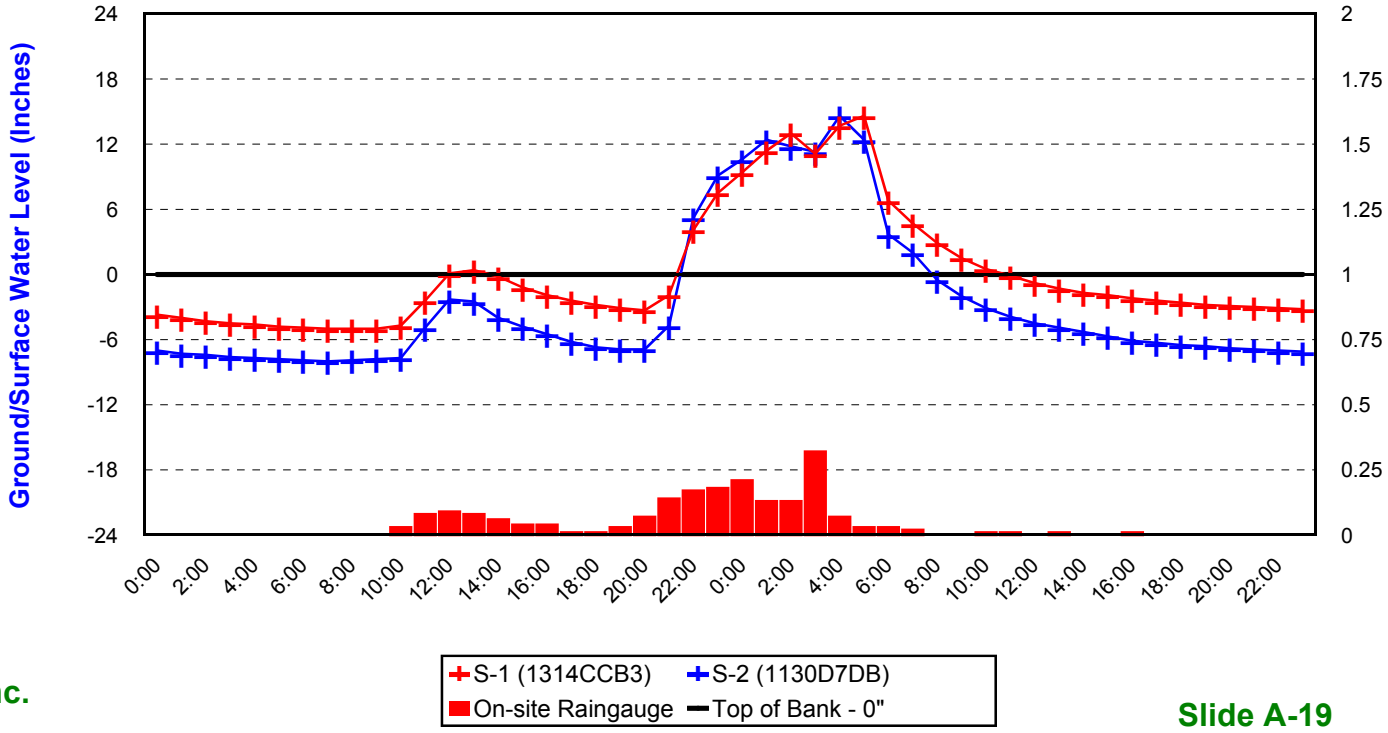
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 25, 2015 to February 26, 2015
- One reading per hour

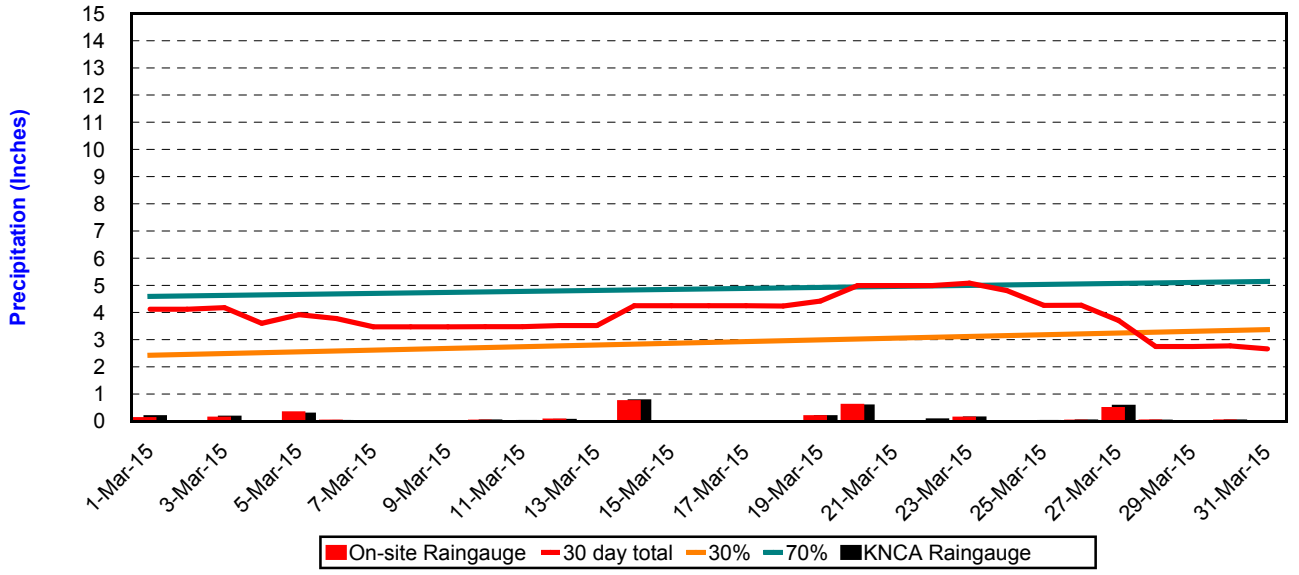


Hydrology Assessment

March 2015

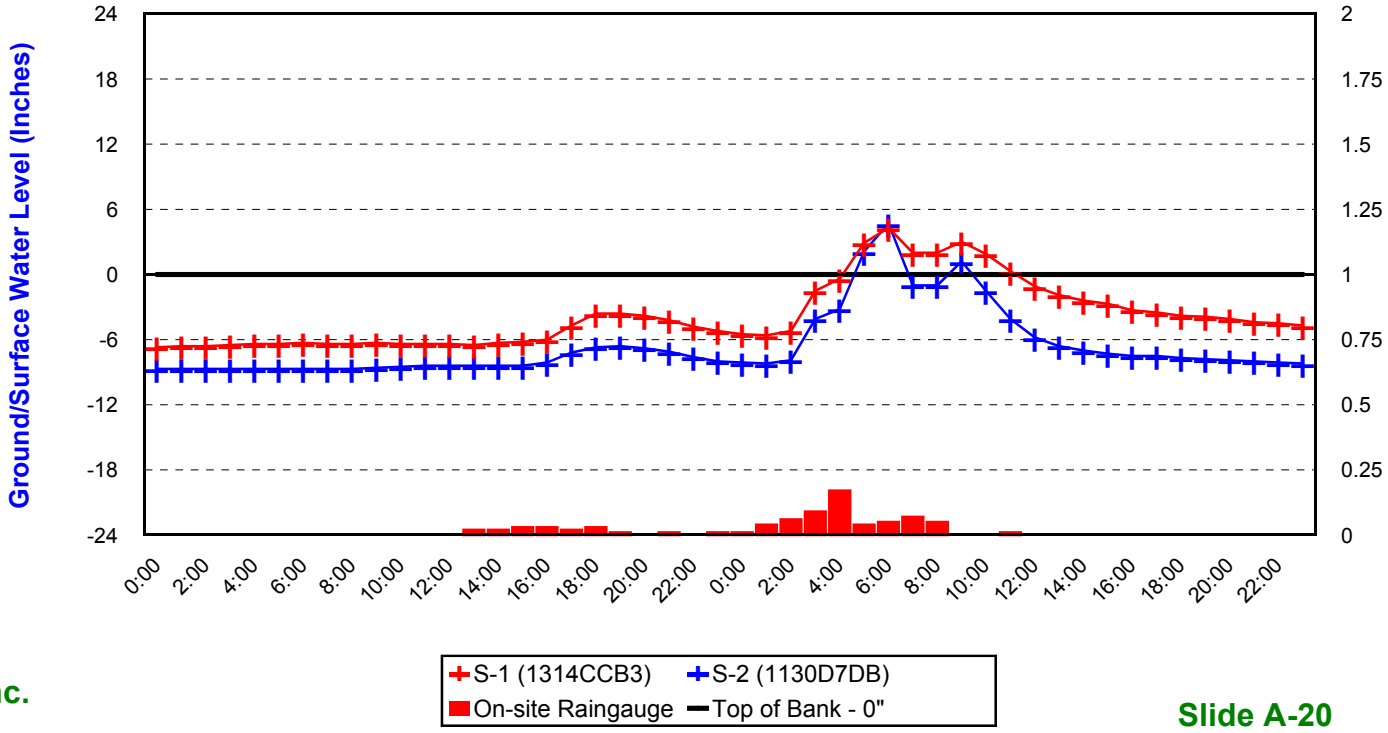
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 19, 2015 to March 20, 2015
- One reading per hour

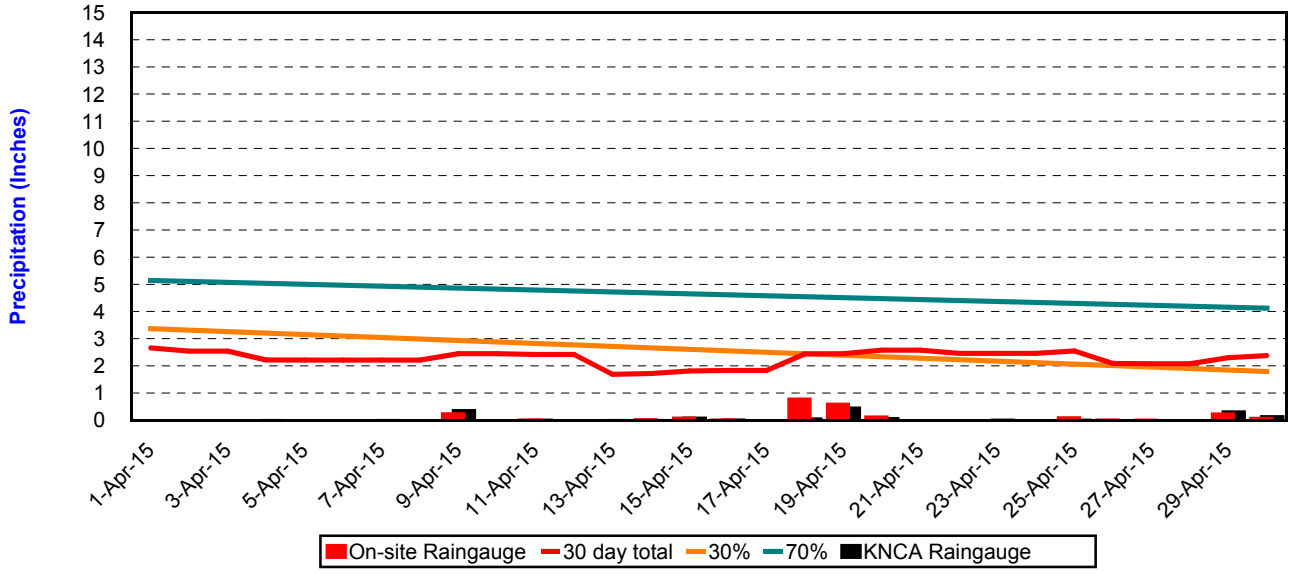


Hydrology Assessment

April 2015

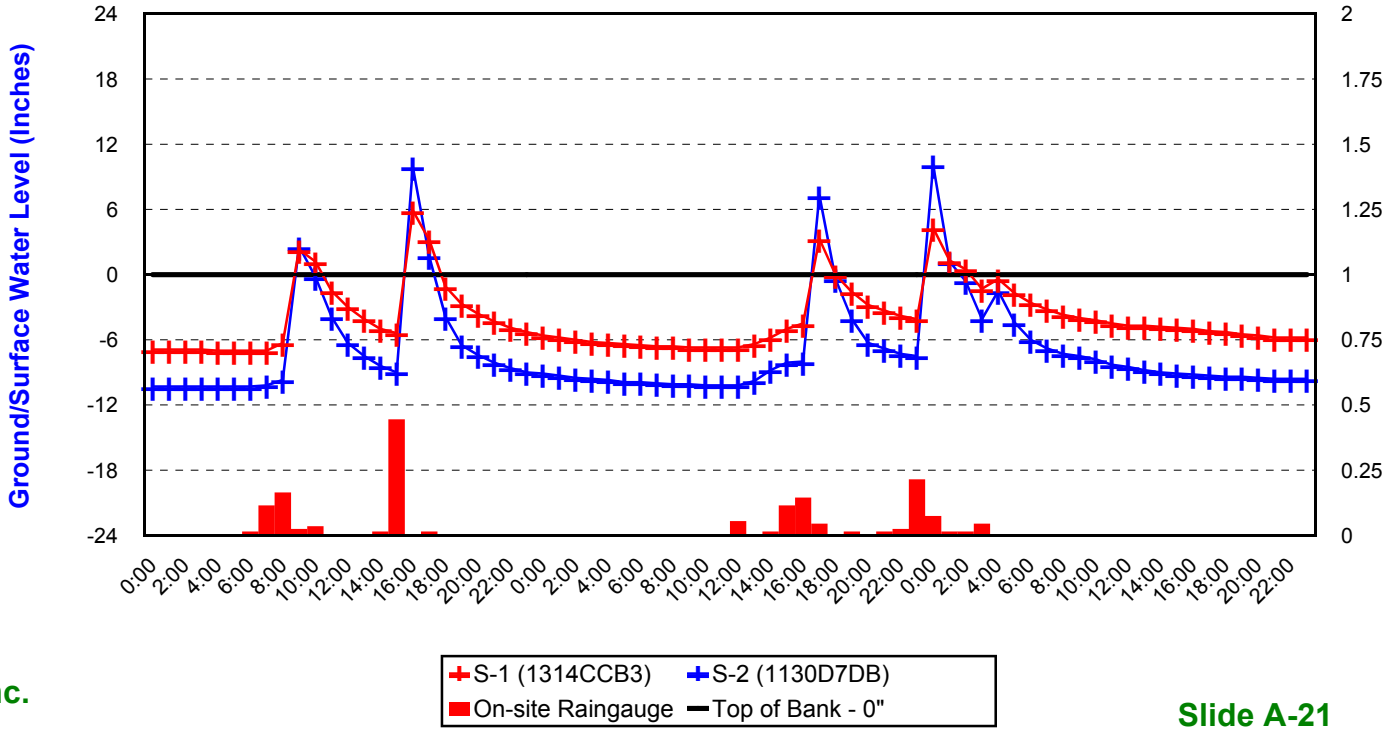
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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, 2015 to April 20, 2015
- One reading per hour

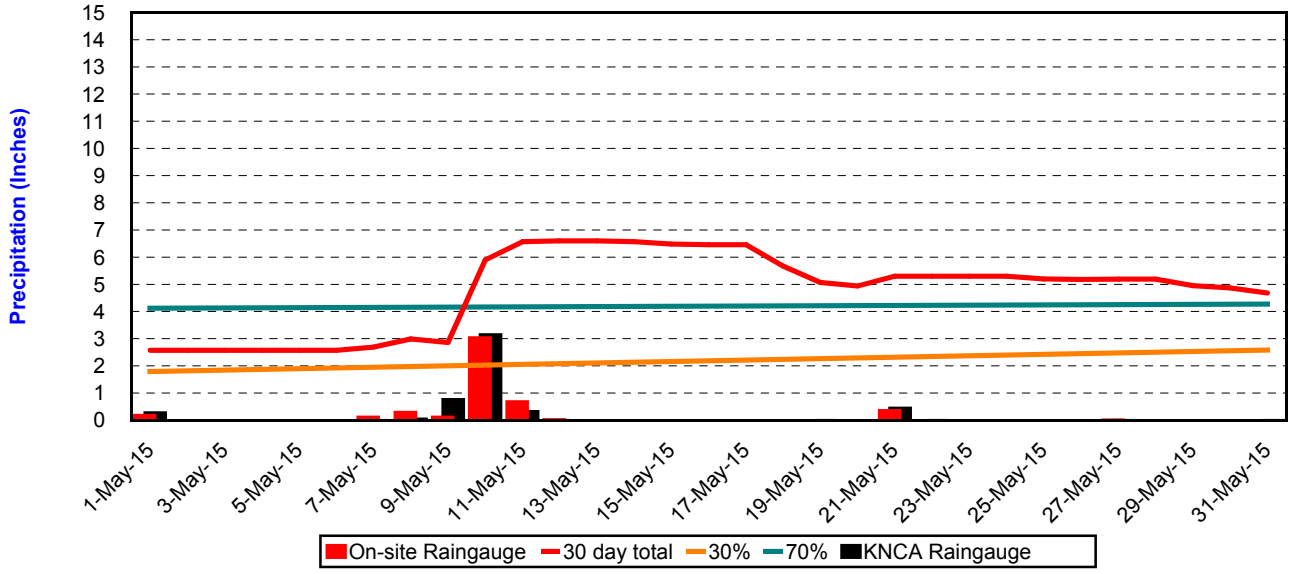


Hydrology Assessment

May 2015

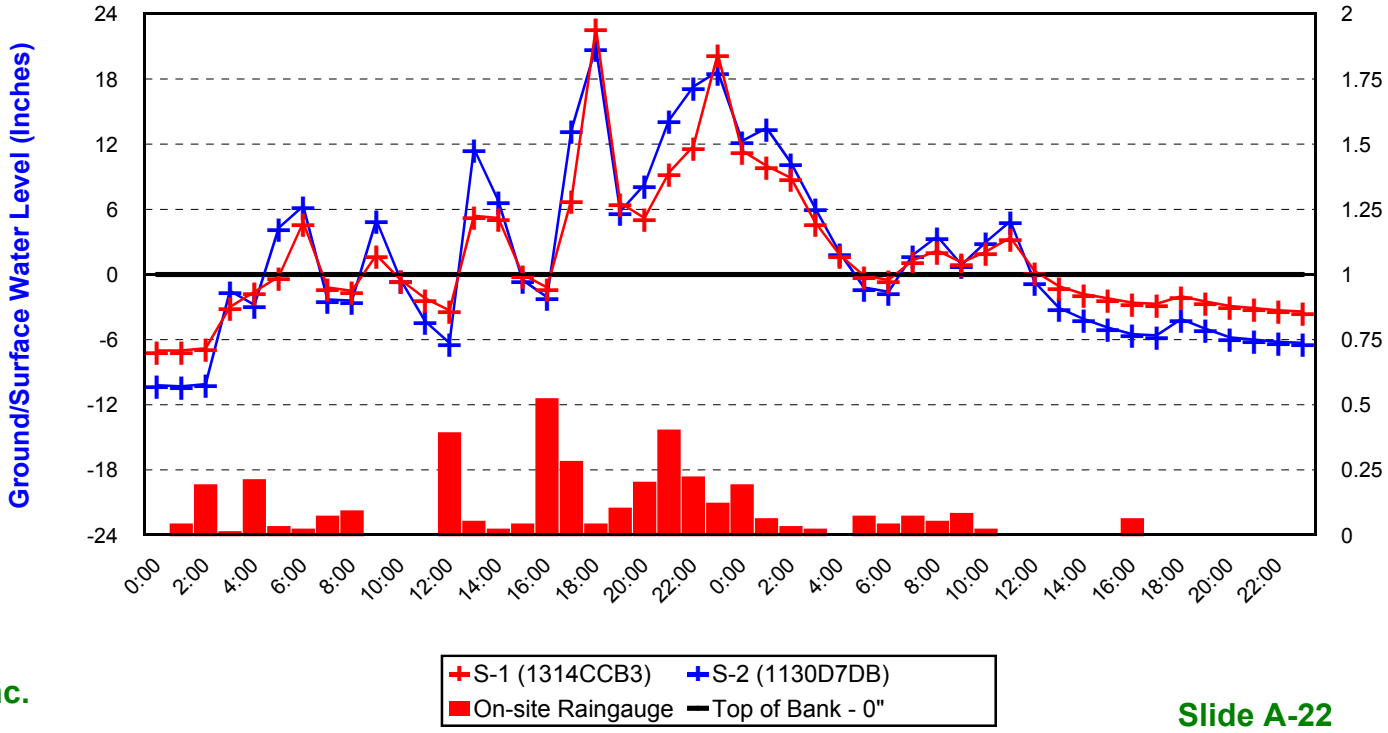
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 10, 2015 to May 11, 2015
- One reading per hour

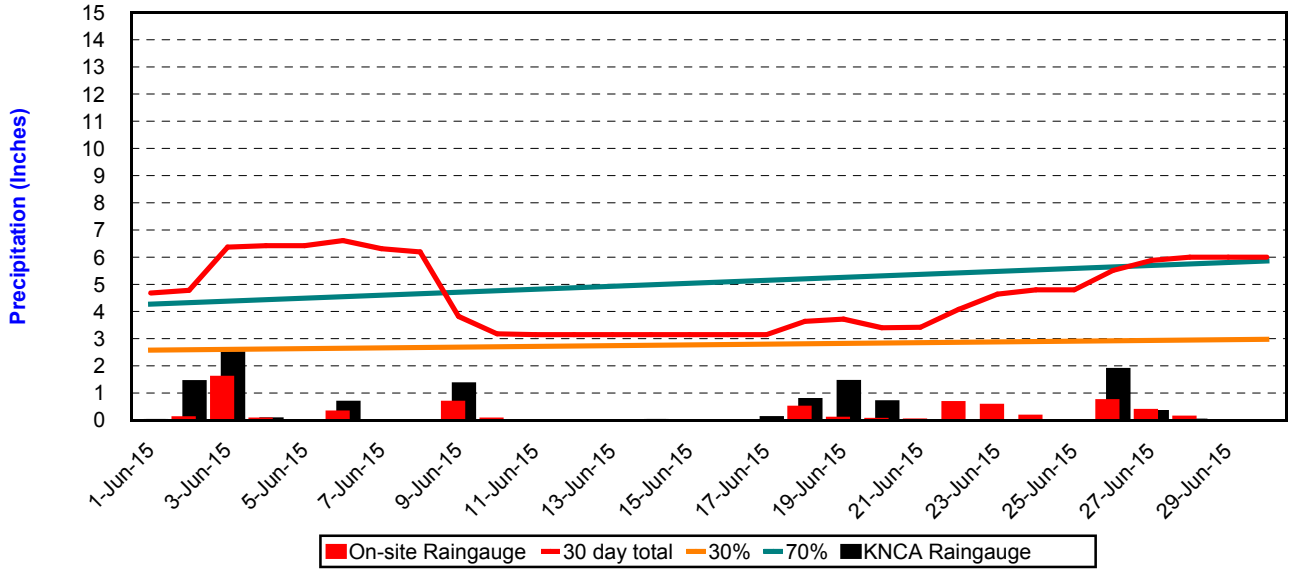


Hydrology Assessment

June 2015

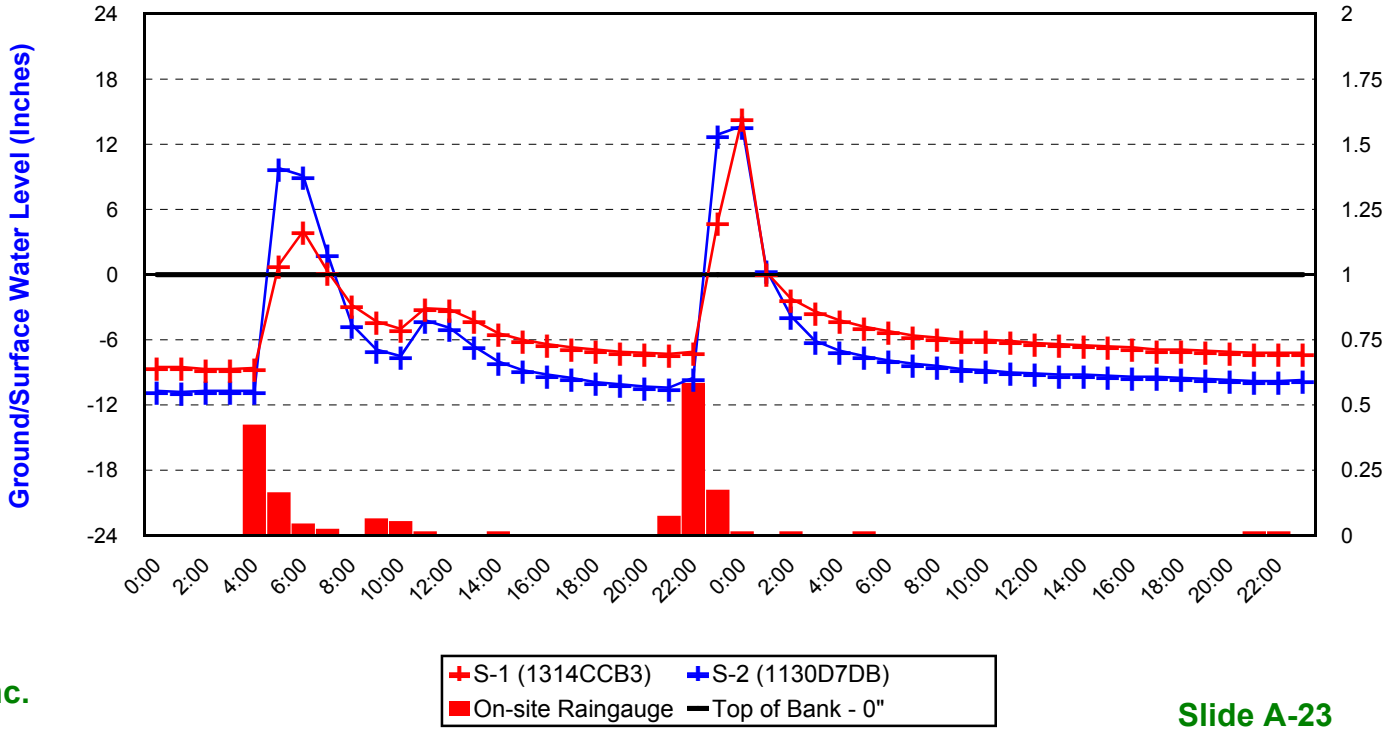
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 3, 2015 to June 4, 2015
- One reading per hour

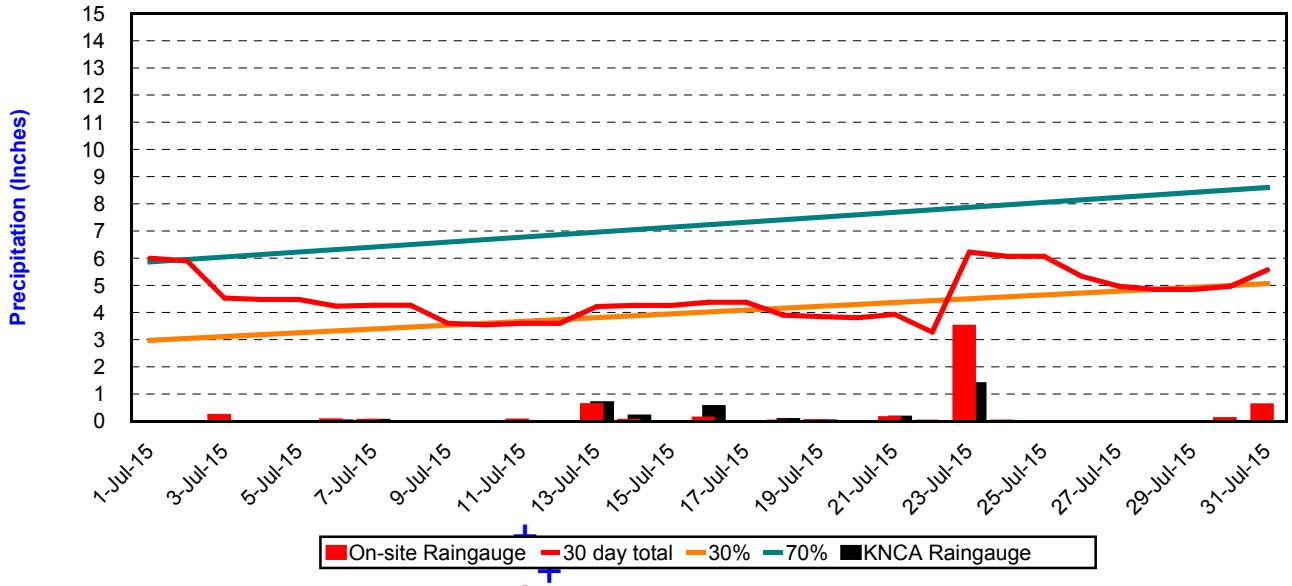


Hydrology Assessment

July 2015

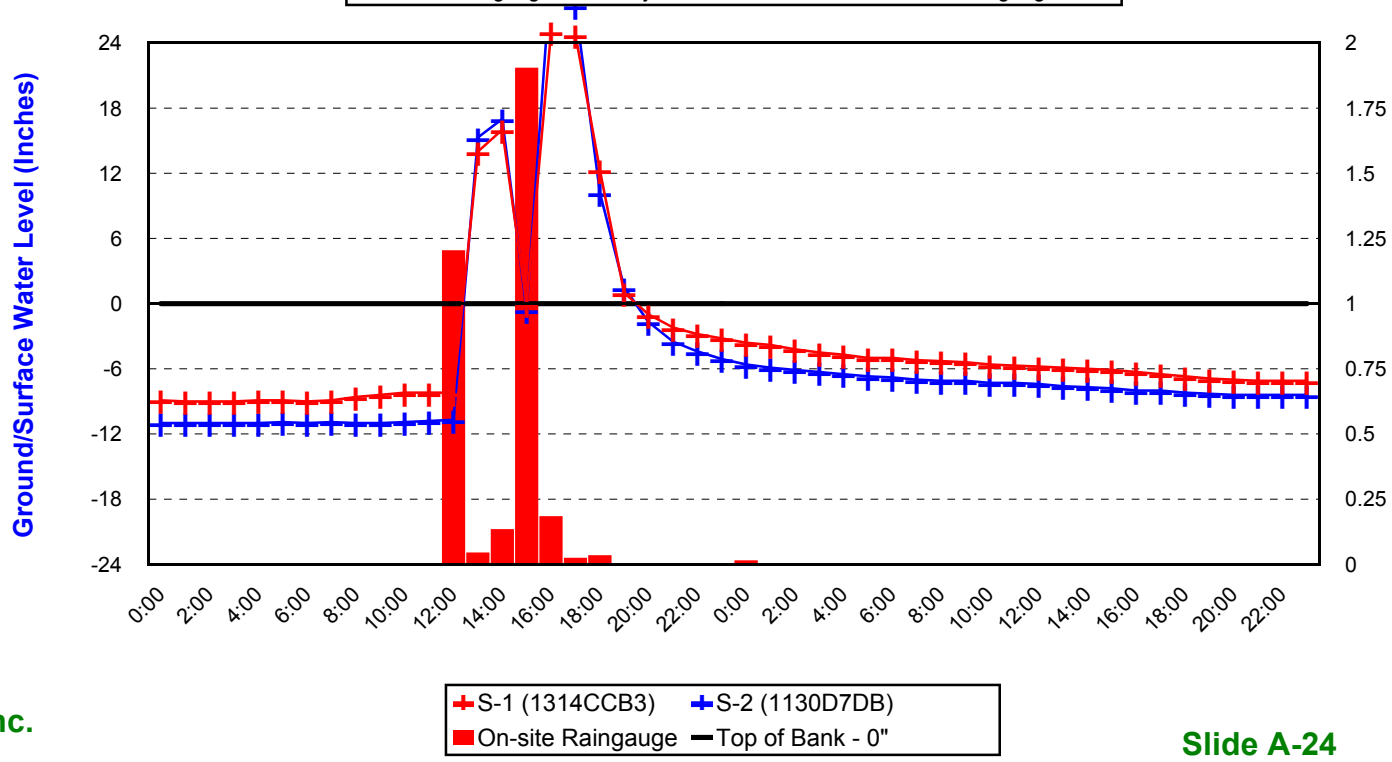
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 23, 2015 to July 24, 2015
- One reading per hour

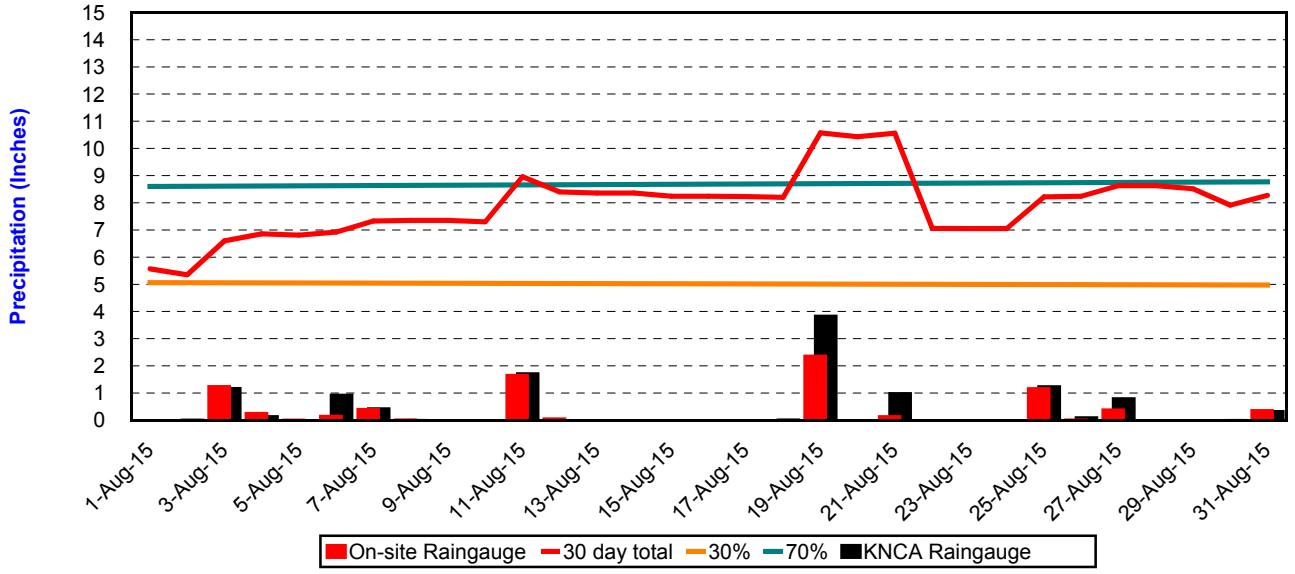


Hydrology Assessment

August 2015

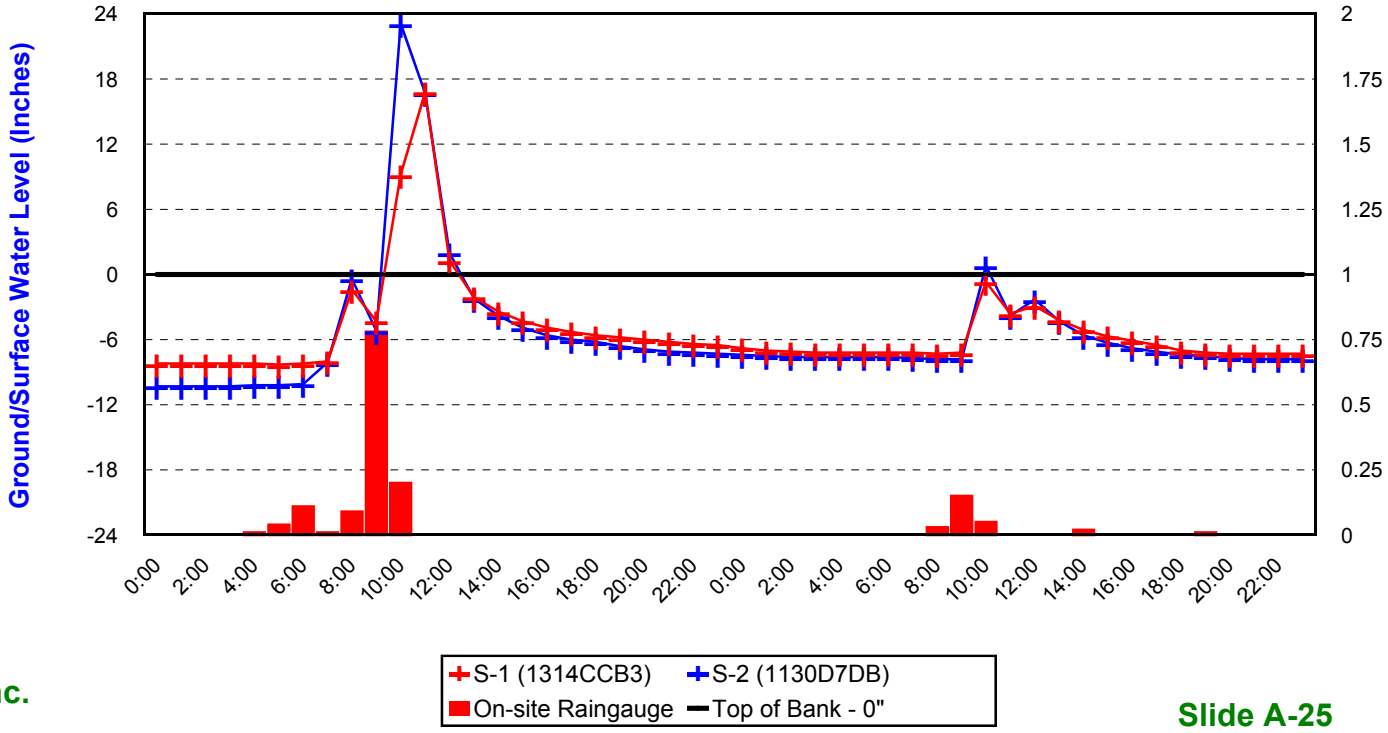
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 3, 2015 to August 4, 2015
- One reading per hour

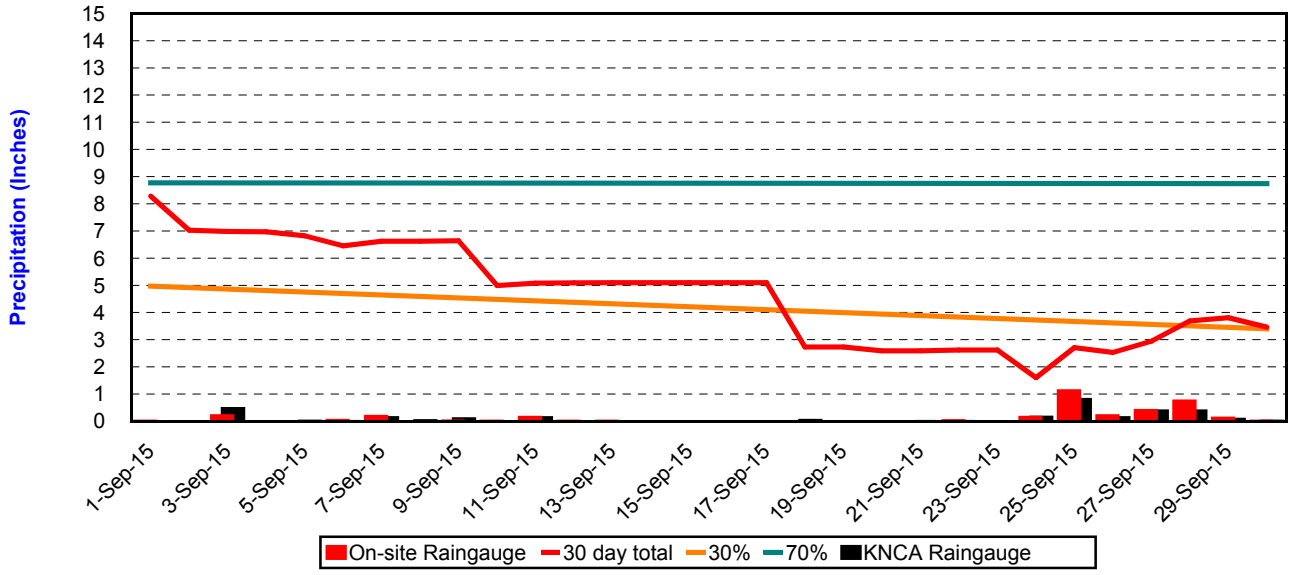


Hydrology Assessment

September 2015

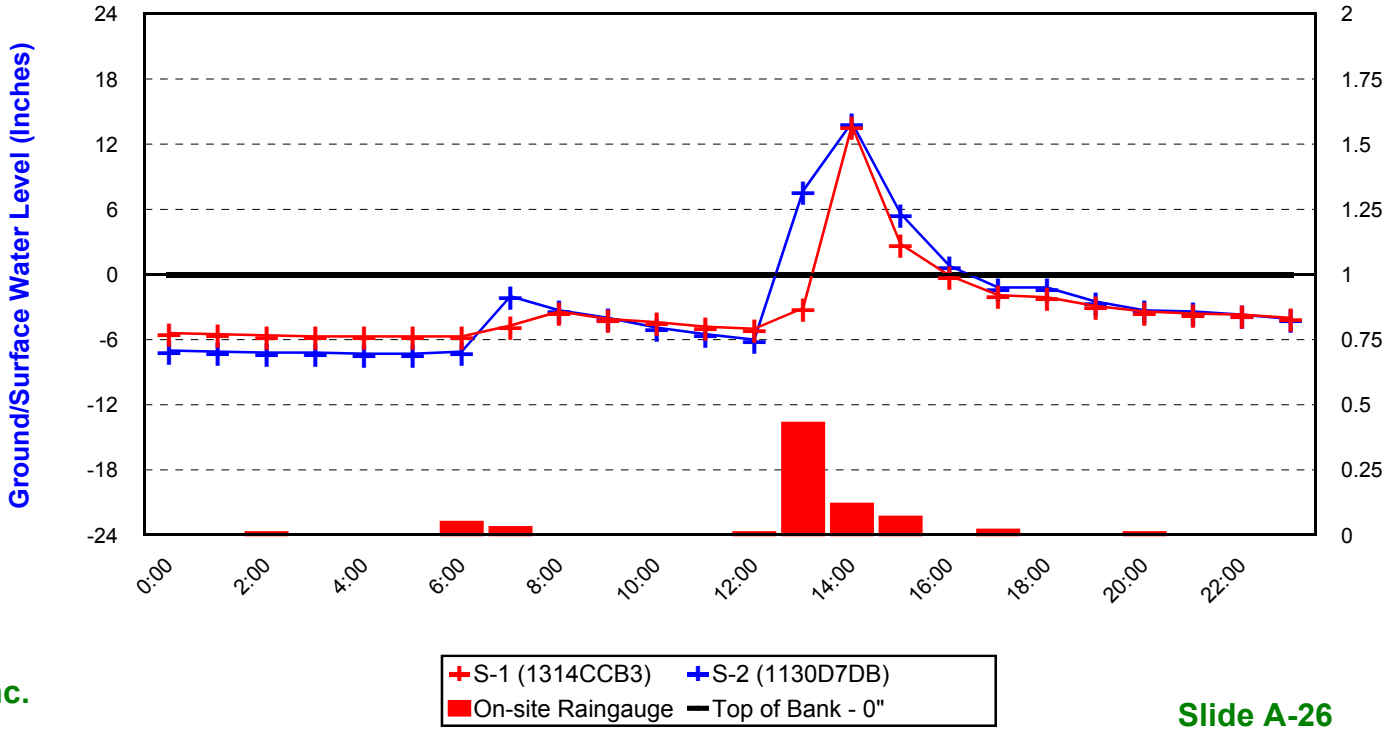
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 28, 2015
- One reading per hour

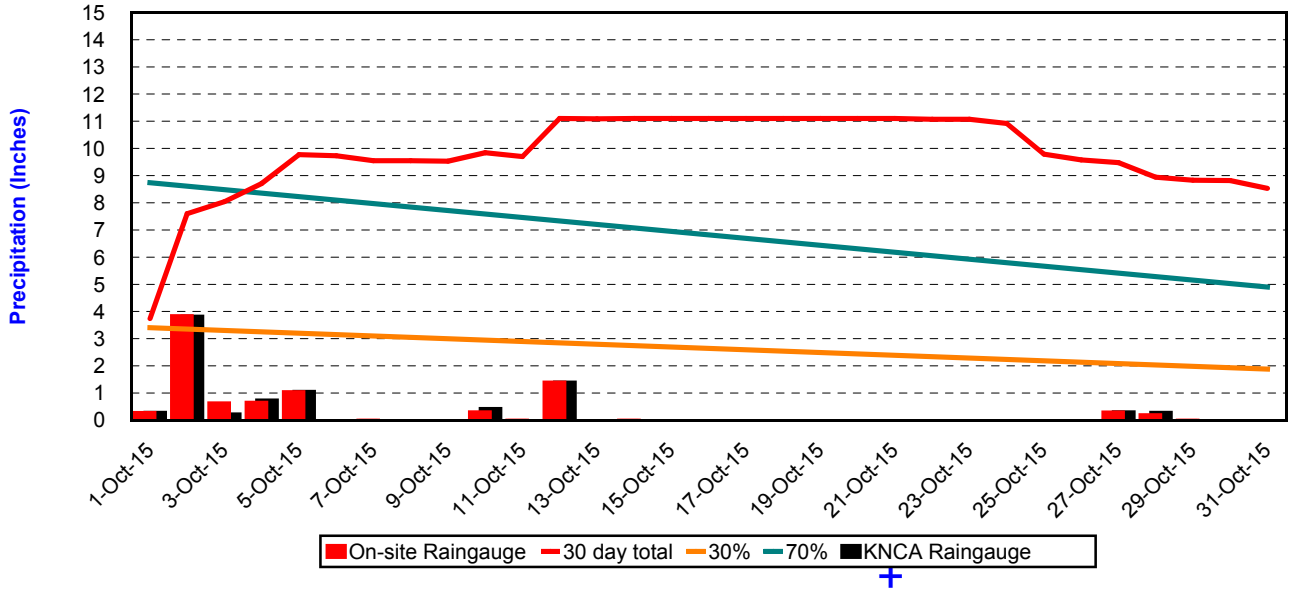


Hydrology Assessment

October 2015

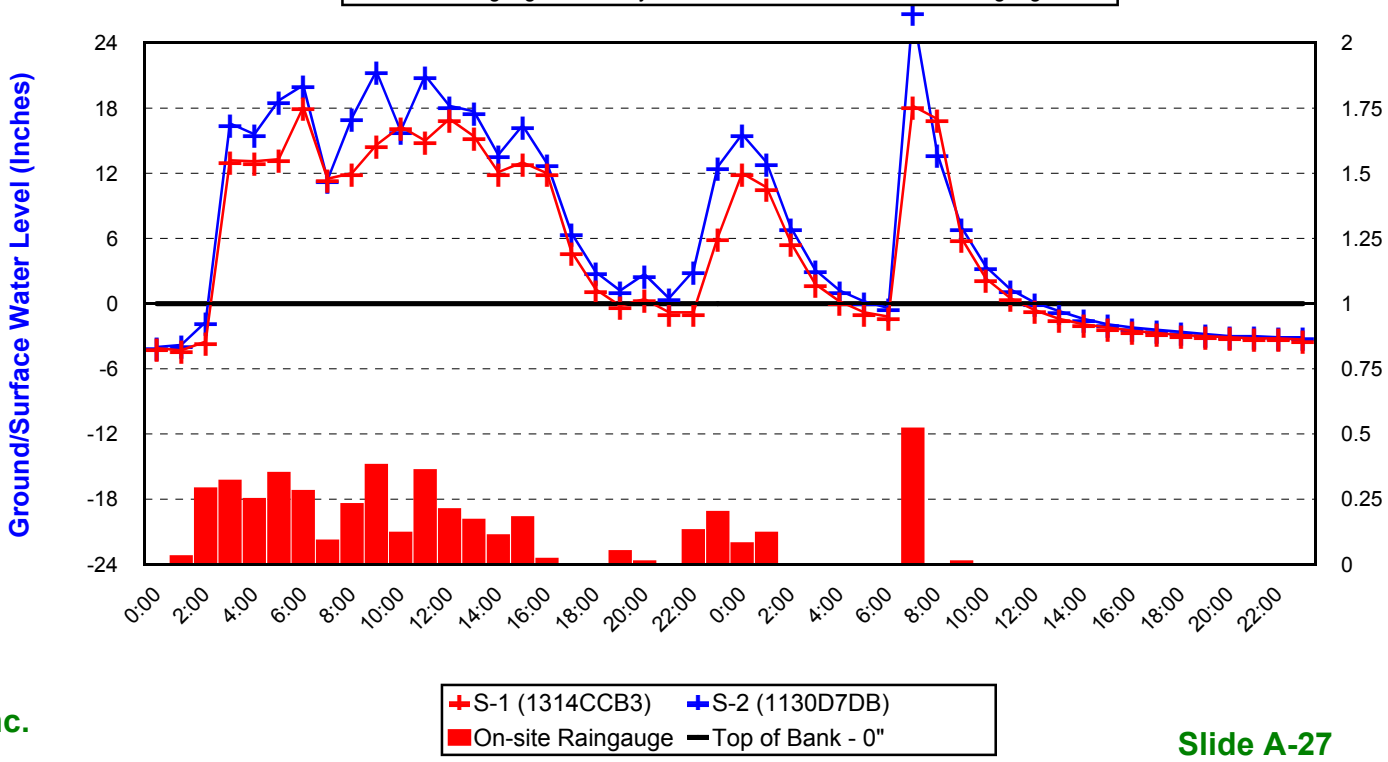
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 2, 2015 to October 3, 2015
- One reading per hour

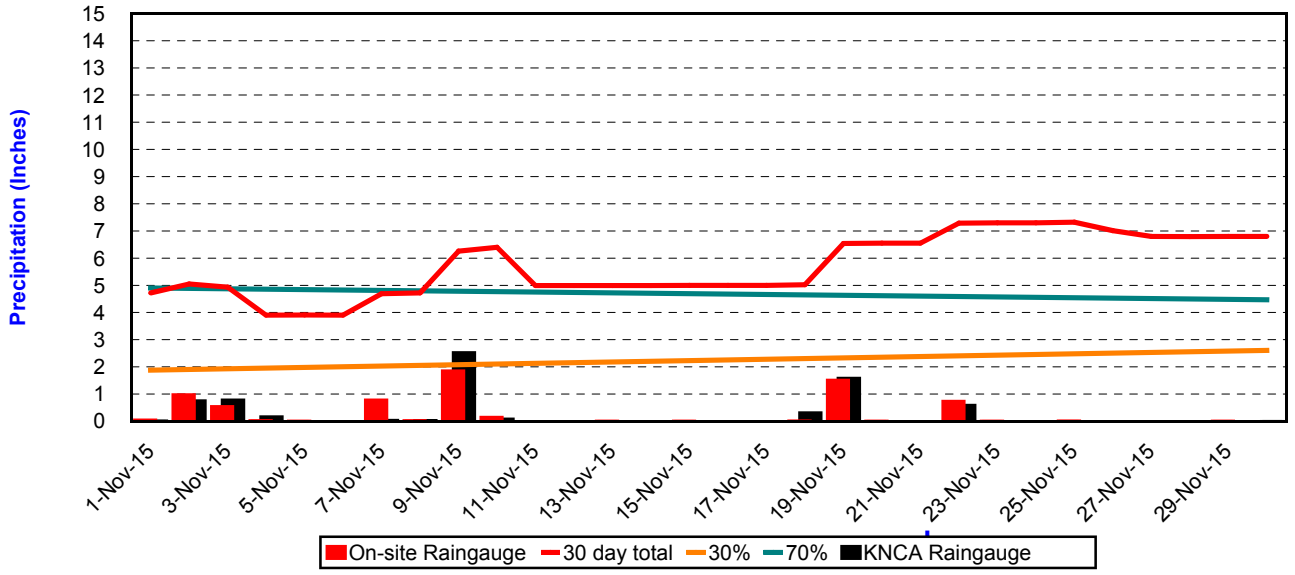


Hydrology Assessment

November 2015

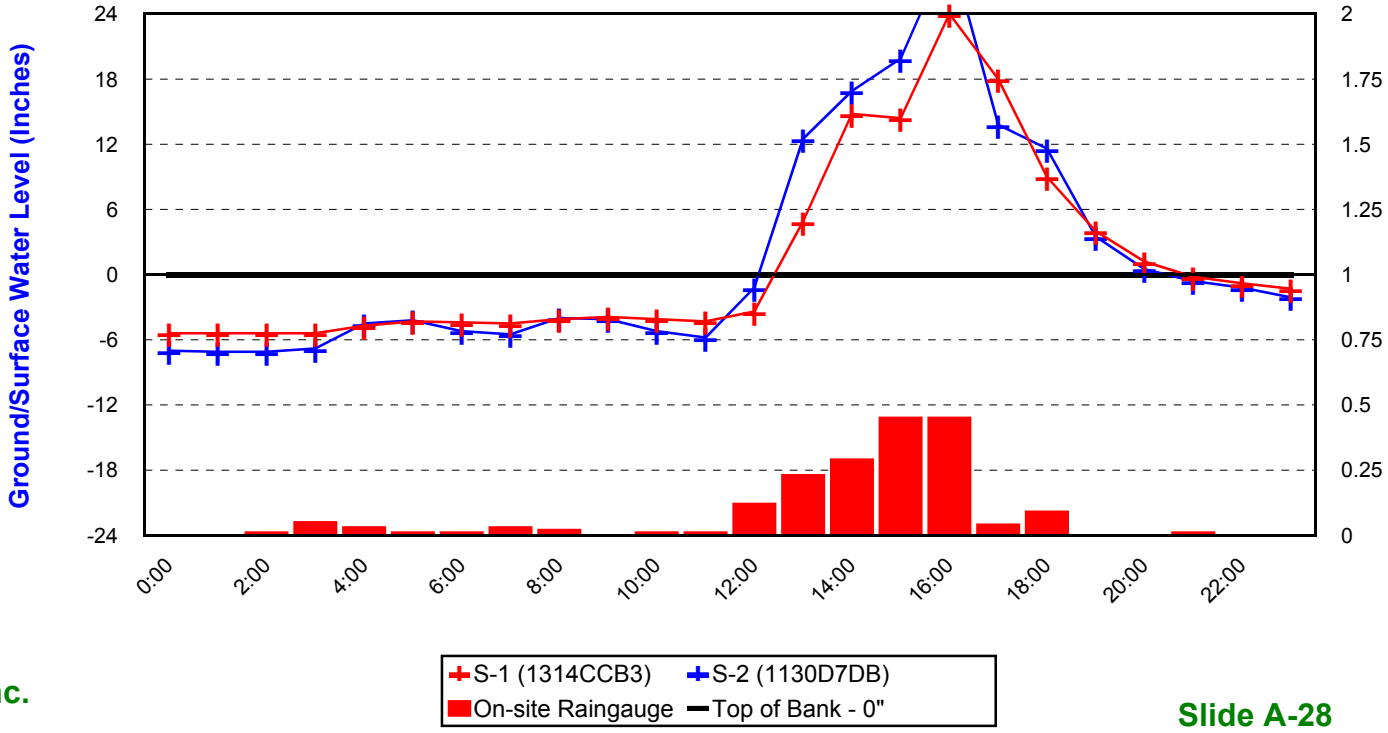
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 9, 2015
- One reading per hour

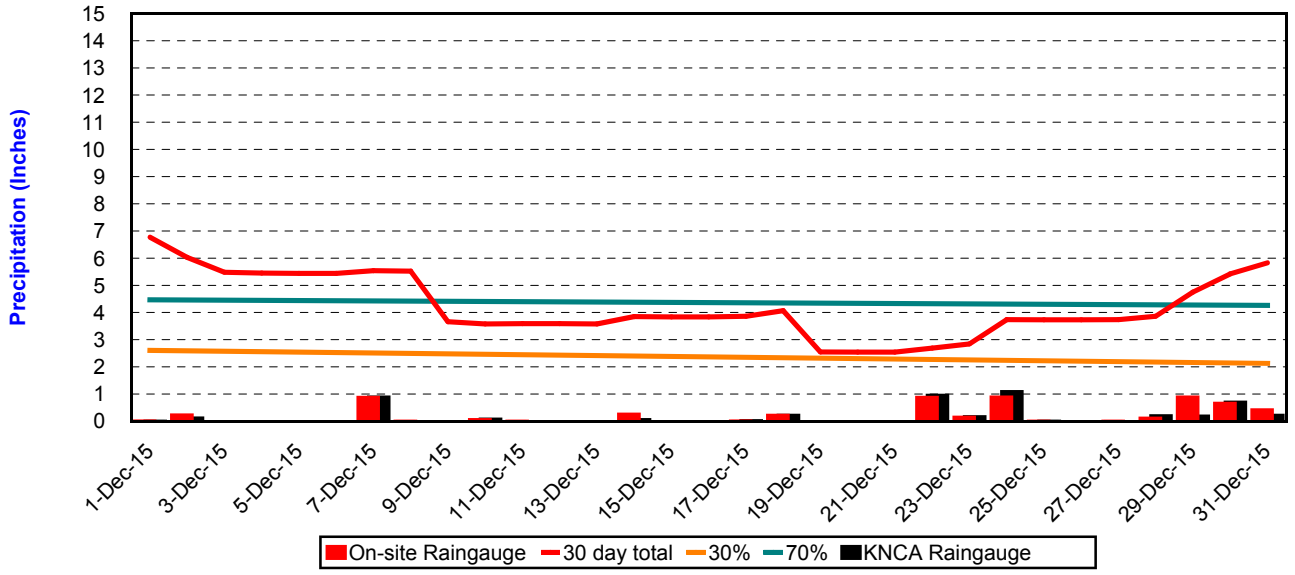


Hydrology Assessment

December 2015

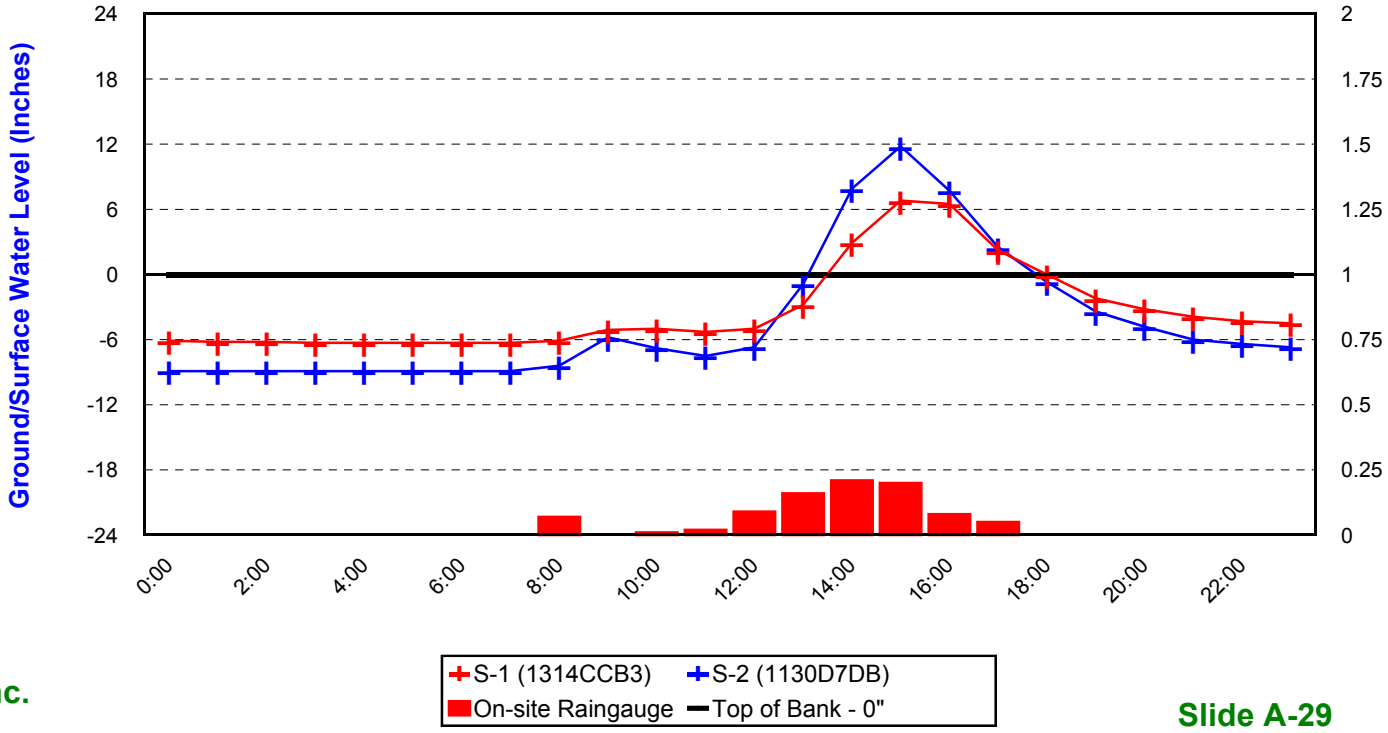
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 7, 2015
- One reading per hour

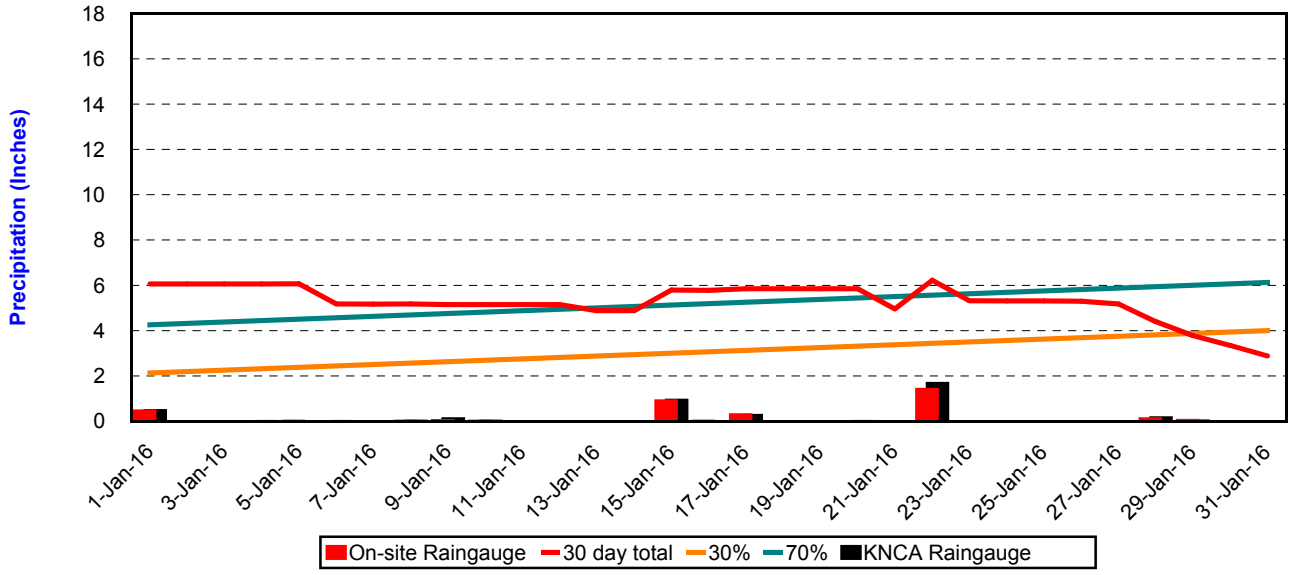


Hydrology Assessment

January 2016

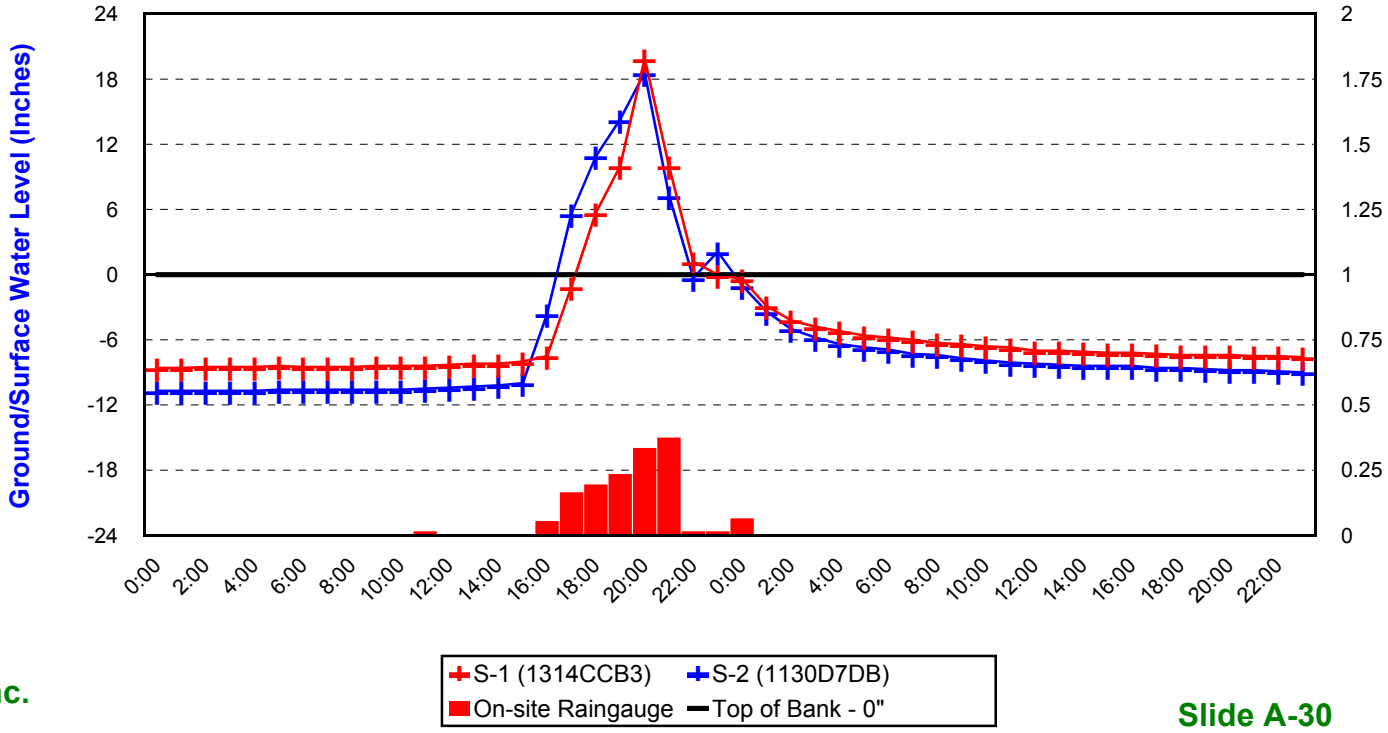
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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



Monitoring Well Record

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

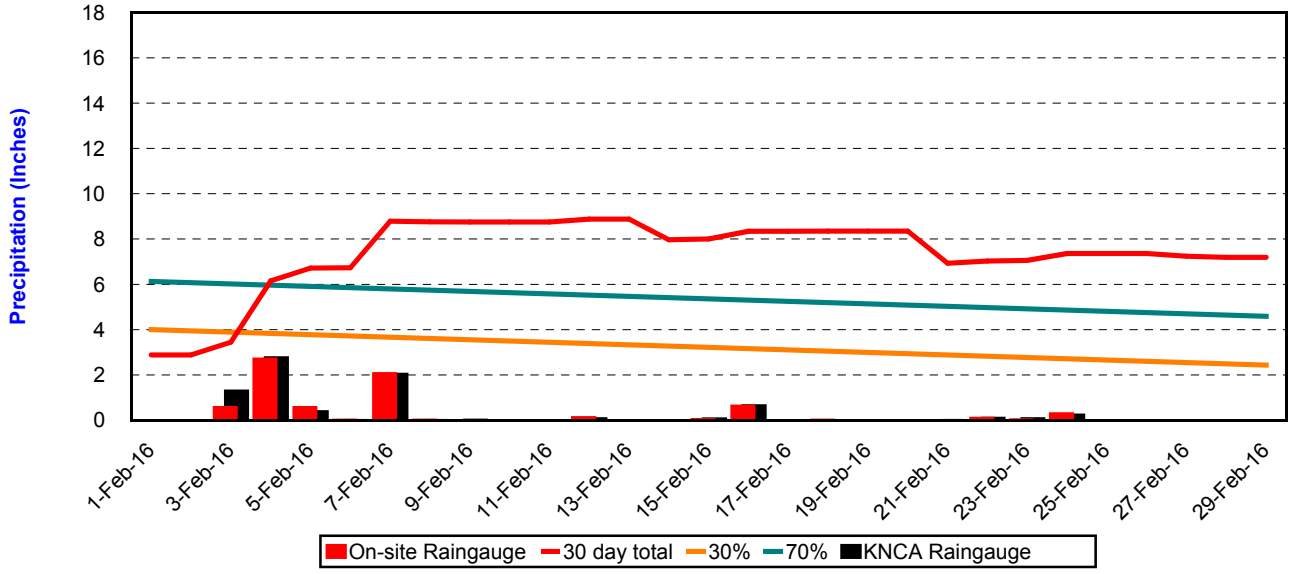


Hydrology Assessment

February 2016

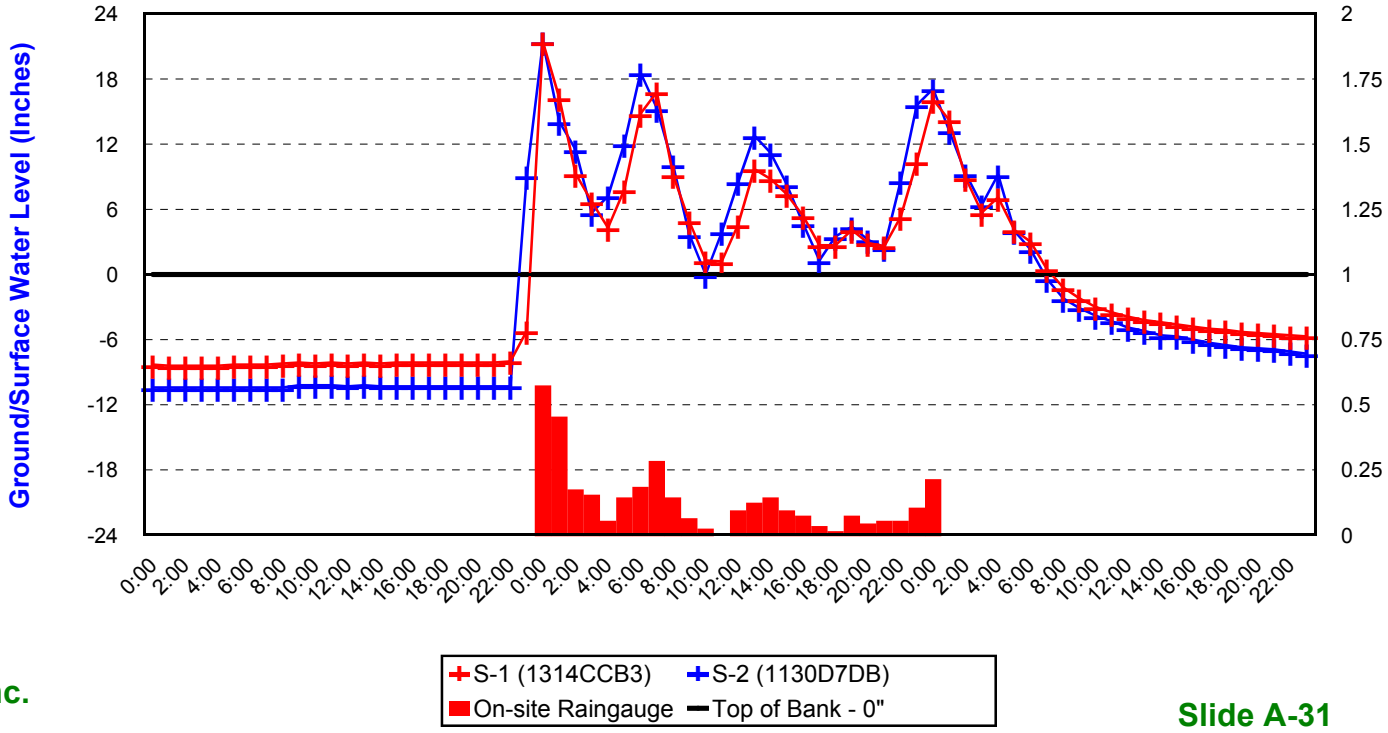
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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



Monitoring Well Record

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

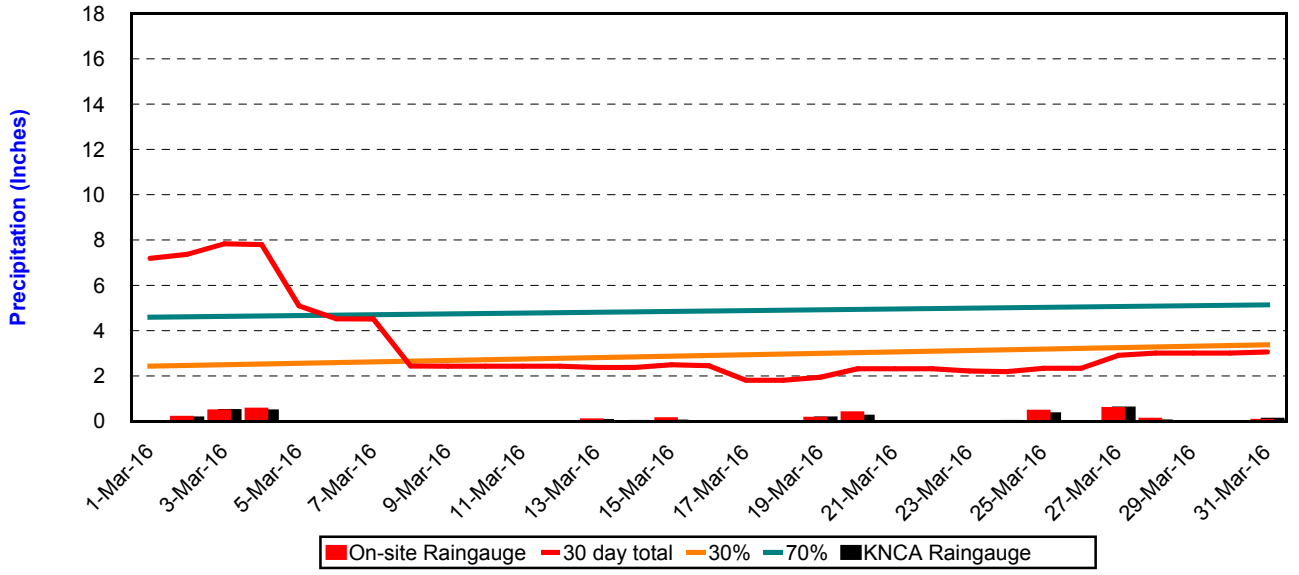


Hydrology Assessment

March 2016

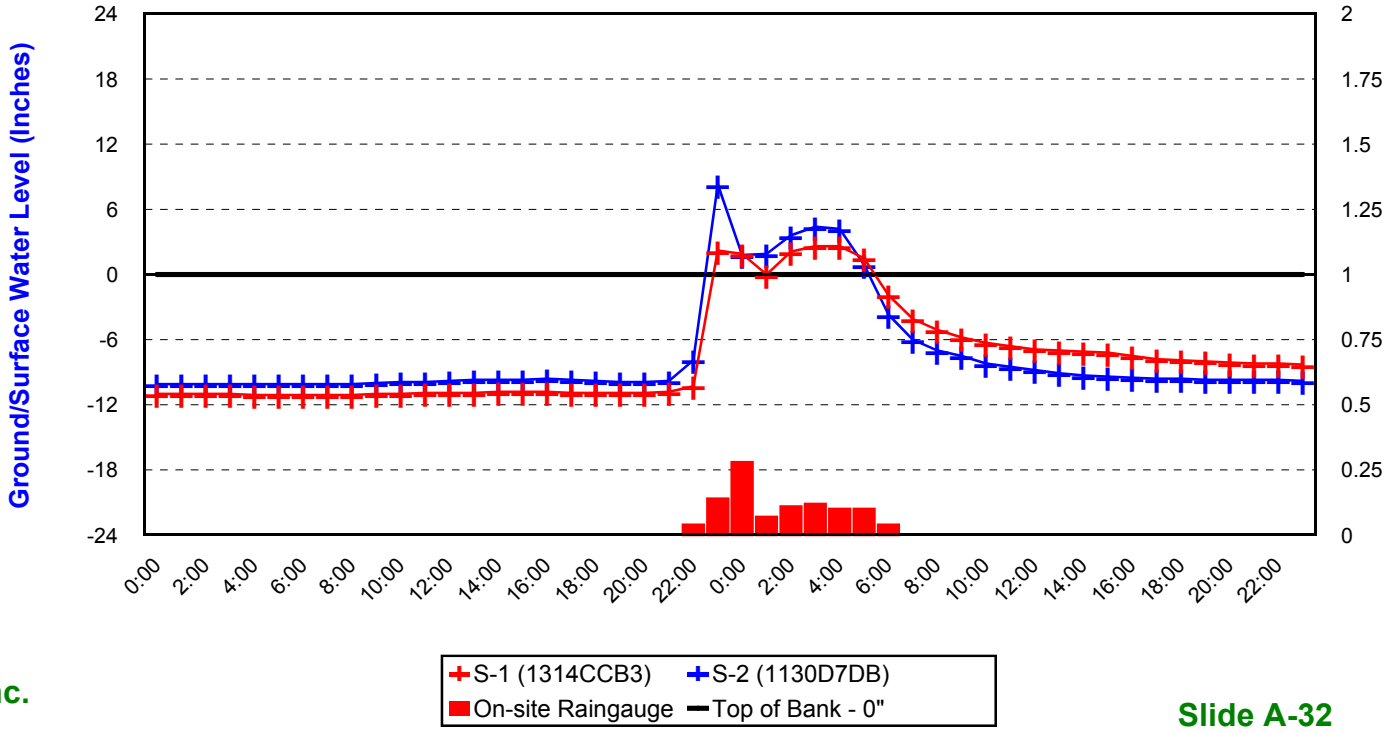
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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



Monitoring Well Record

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



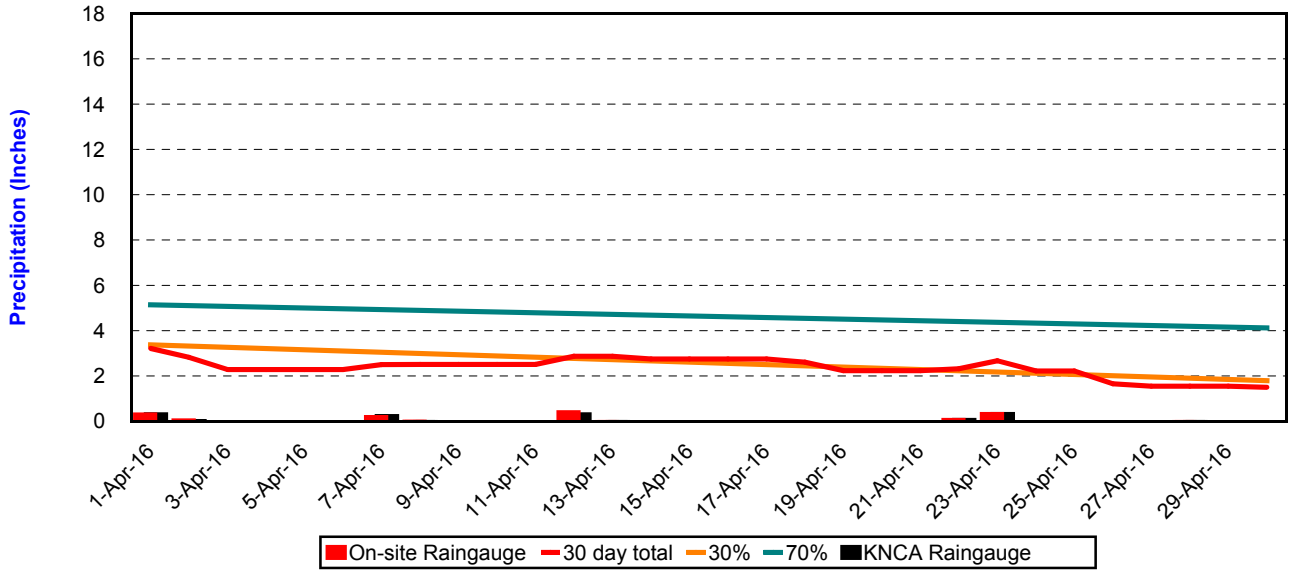
Hydrology Assessment

April 2016

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

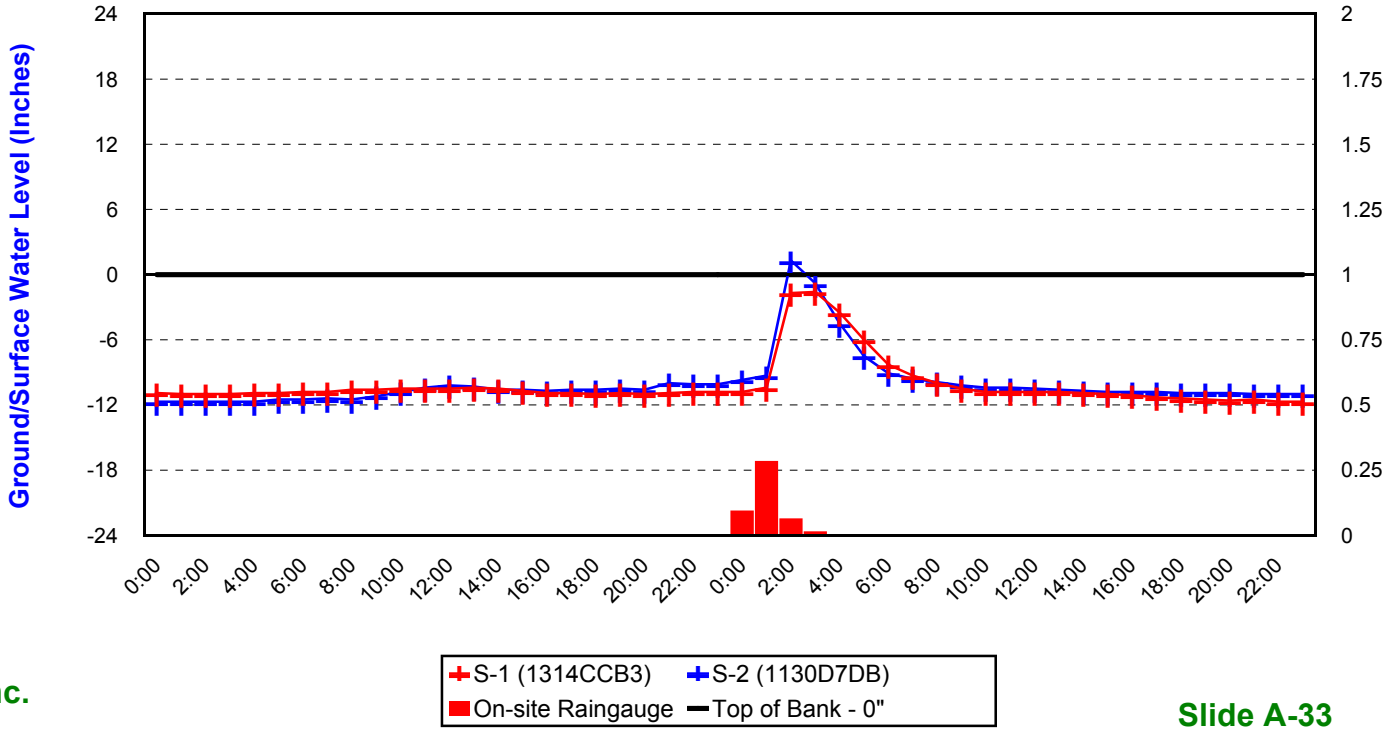
30% & 70% precipitation data obtained from WETS Station : HOFFMANN FOREST, NC4144 (wcc.nrcs.usda.gov)

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



Monitoring Well Record

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



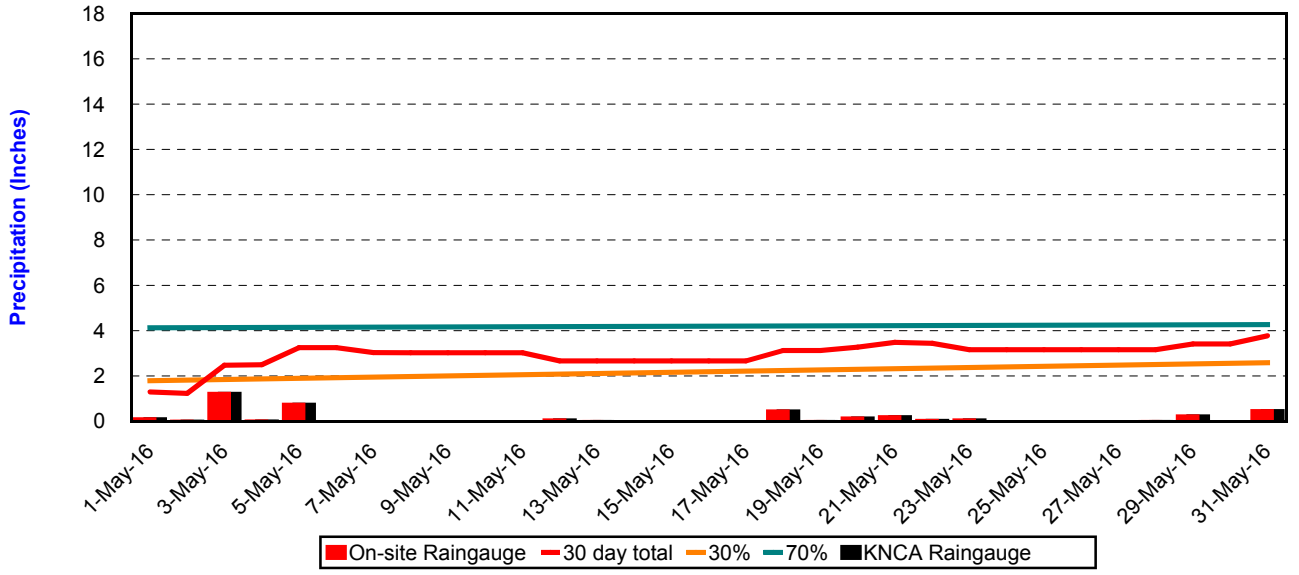
Hydrology Assessment

May 2016

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

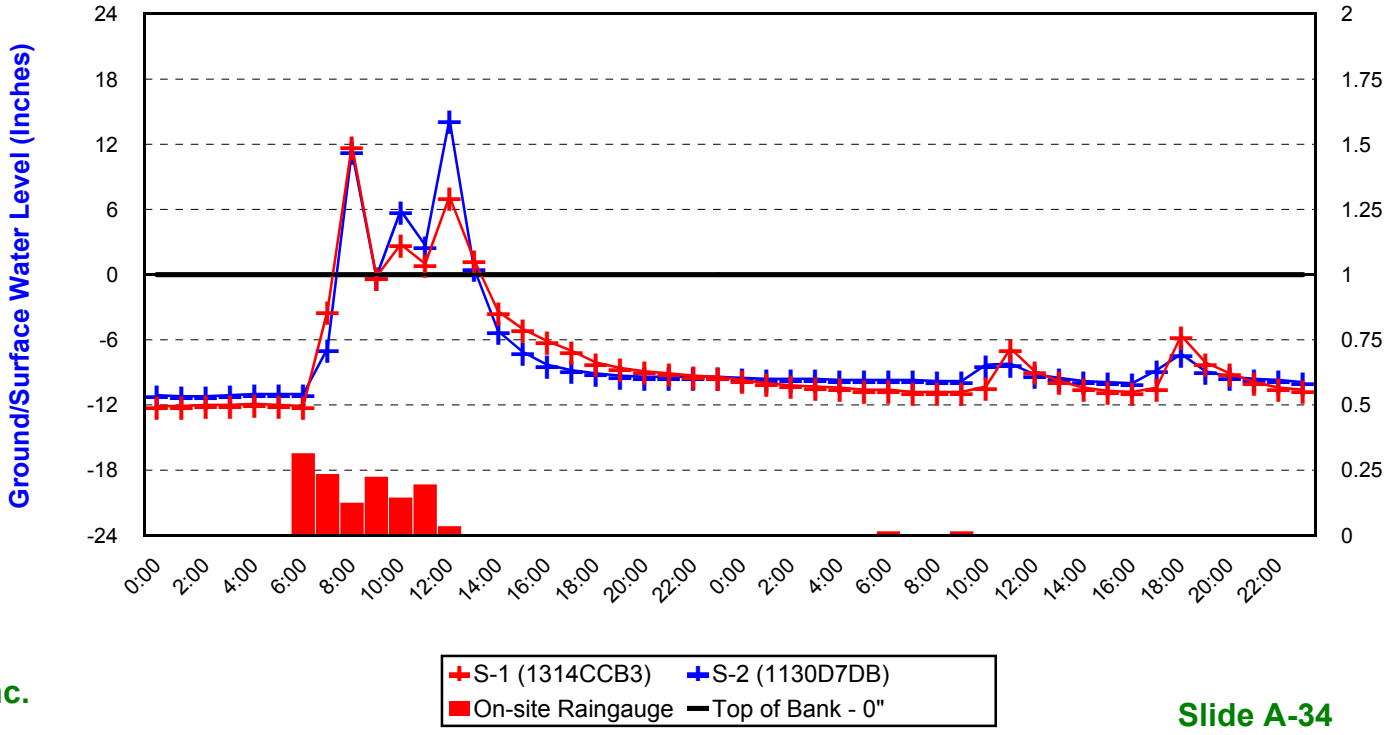
30% & 70% precipitation data obtained from WETS Station : HOFFMANN FOREST, NC4144 (wcc.nrcs.usda.gov)

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



Monitoring Well Record

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



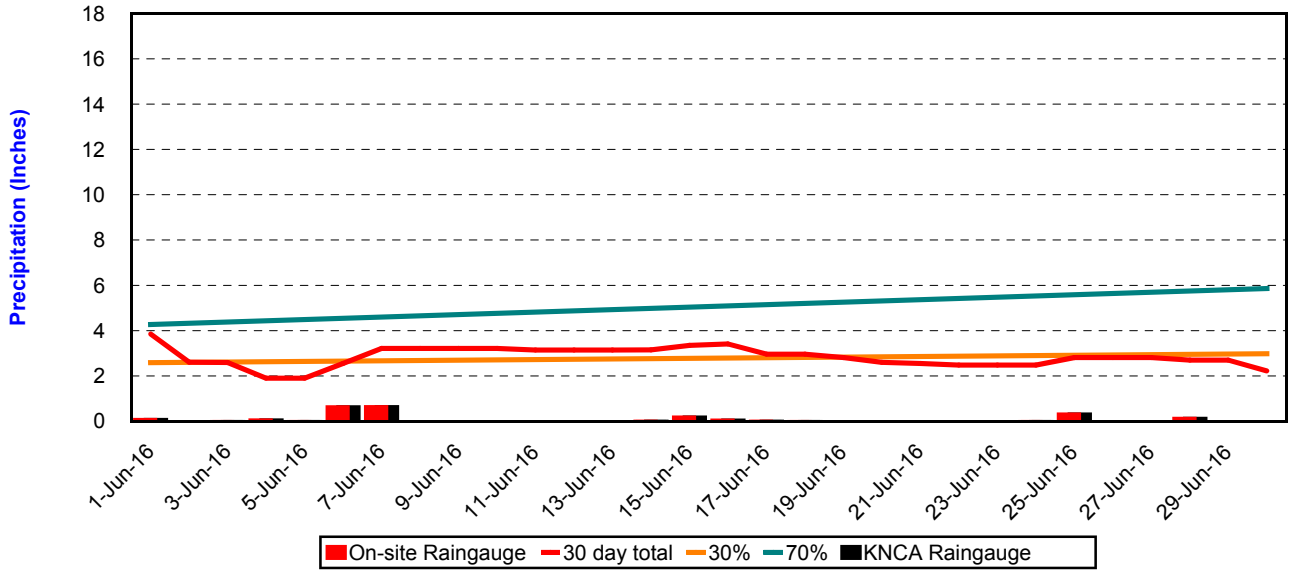
Hydrology Assessment

June 2016

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

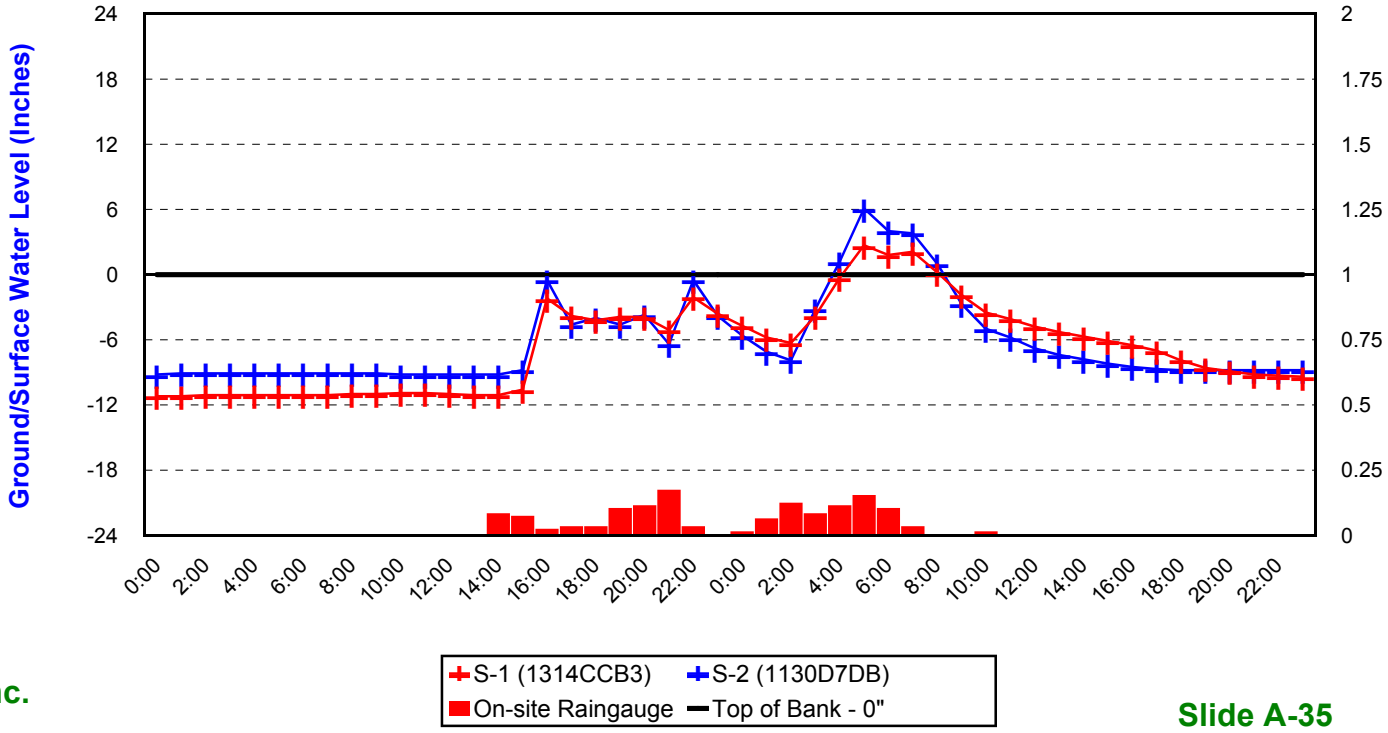
30% & 70% precipitation data obtained from WETS Station : HOFFMANN FOREST, NC4144 (wcc.nrcs.usda.gov)

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



Monitoring Well Record

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



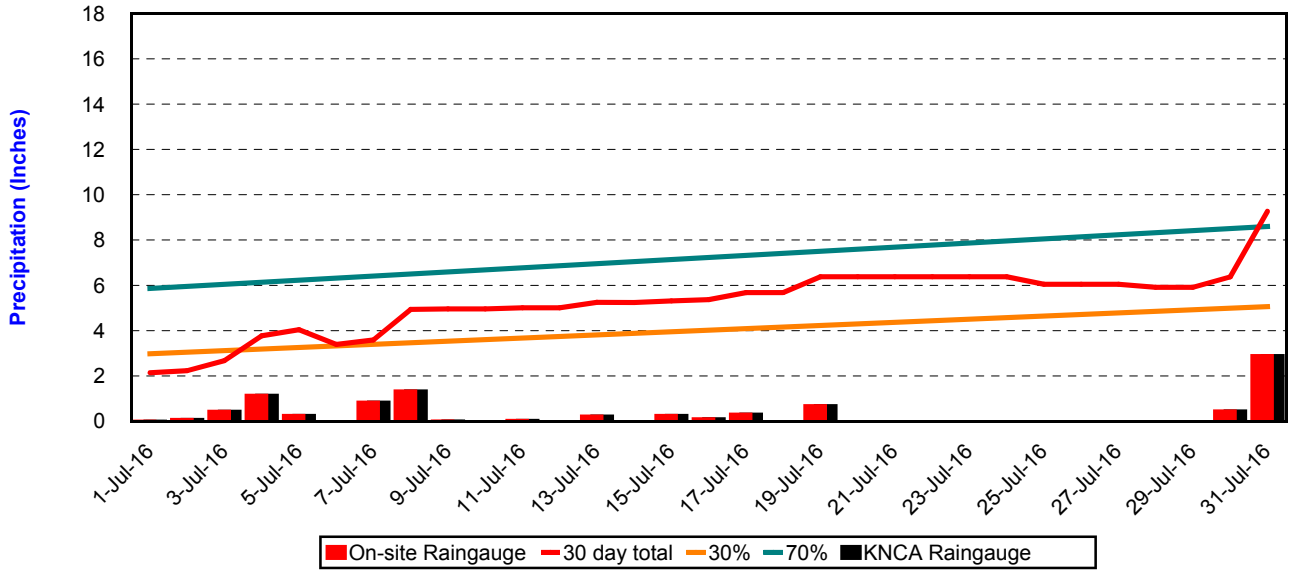
Hydrology Assessment

July 2016

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

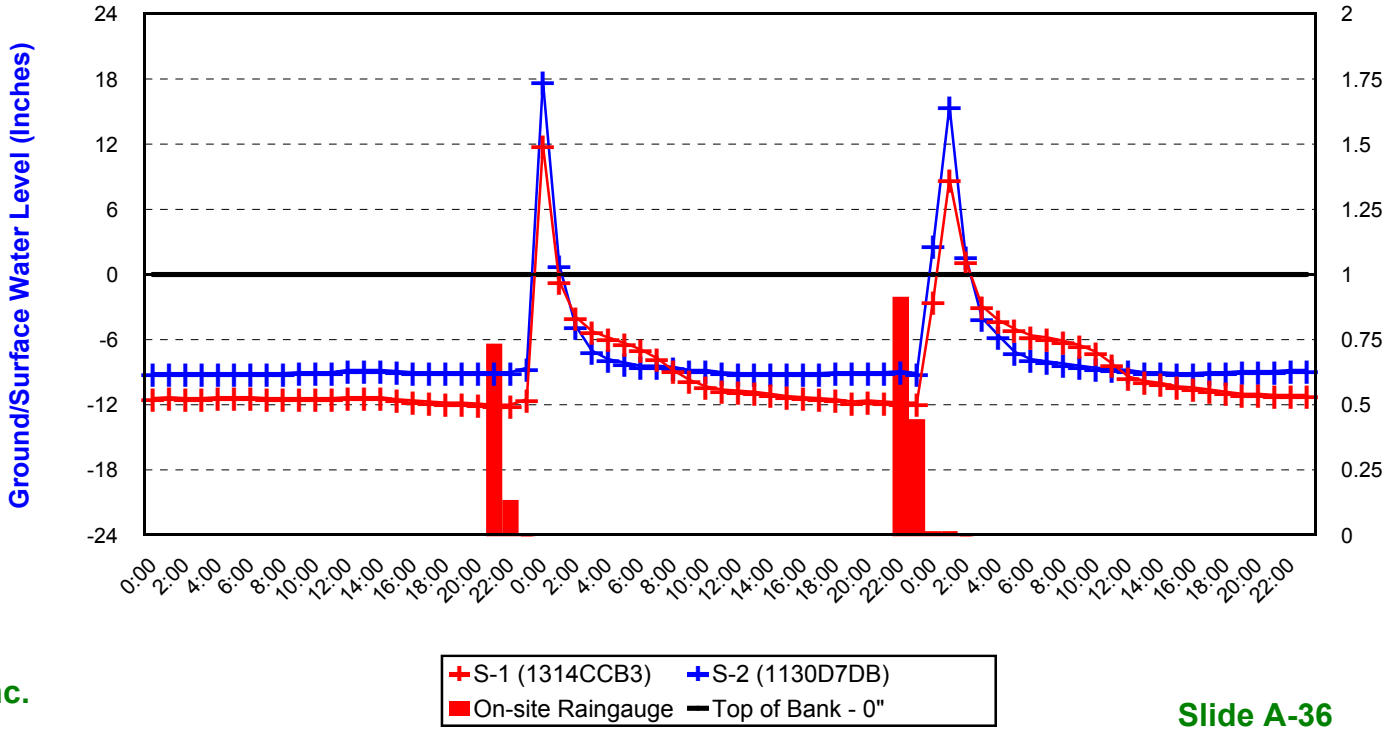
30% & 70% precipitation data obtained from WETS Station : HOFFMANN FOREST, NC4144 (wcc.nrcs.usda.gov)

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



Monitoring Well Record

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



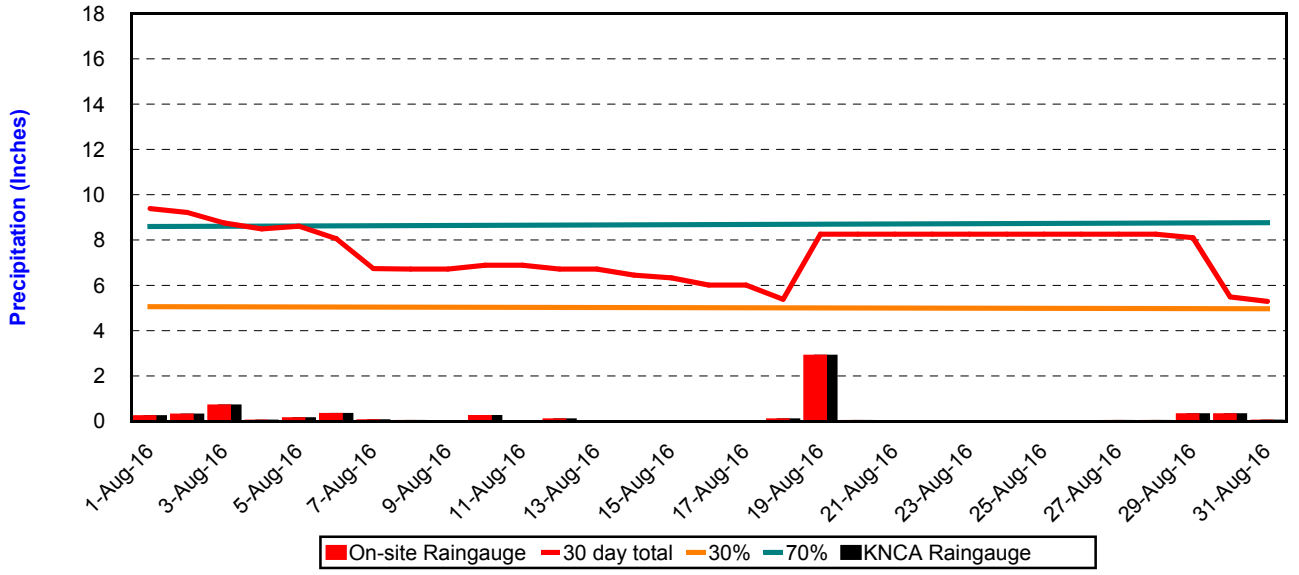
Hydrology Assessment

August 2016

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

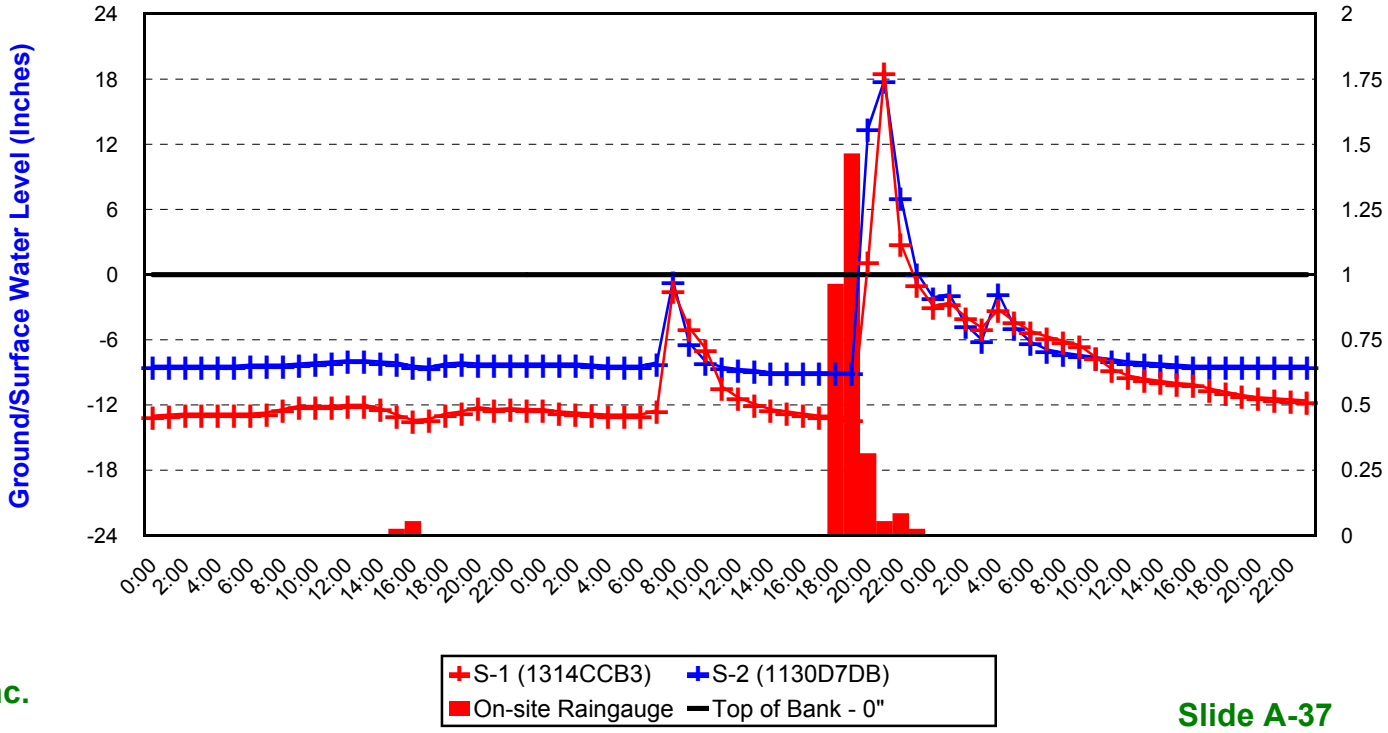
30% & 70% precipitation data obtained from WETS Station : HOFFMANN FOREST, NC4144 (wcc.nrcs.usda.gov)

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



Monitoring Well Record

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



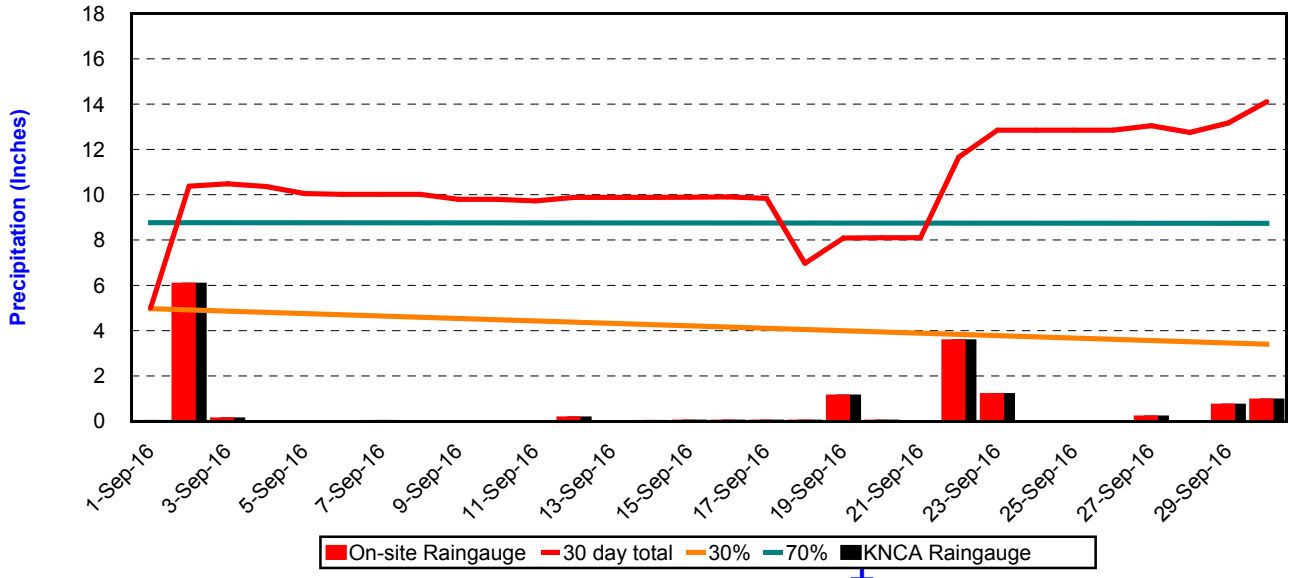
Hydrology Assessment

September 2016

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

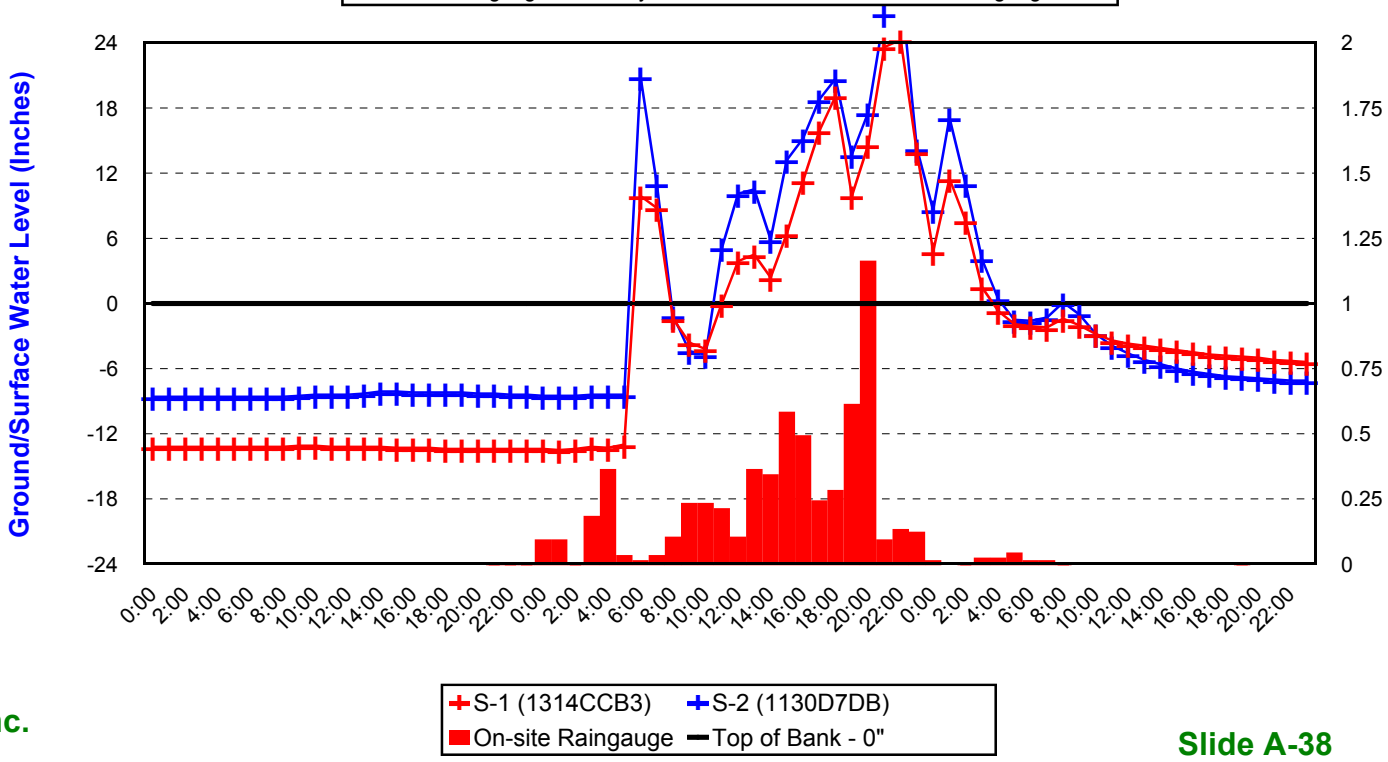
30% & 70% precipitation data obtained from WETS Station : HOFFMANN FOREST, NC4144 (wcc.nrcs.usda.gov)

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



Monitoring Well Record

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

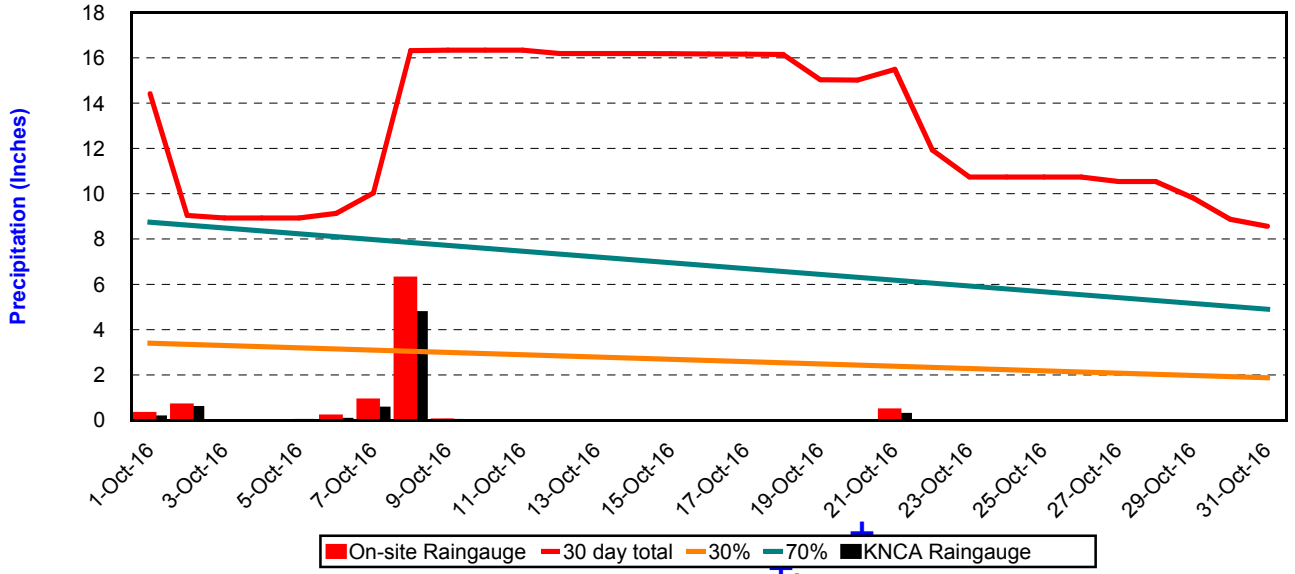


Hydrology Assessment

October 2016

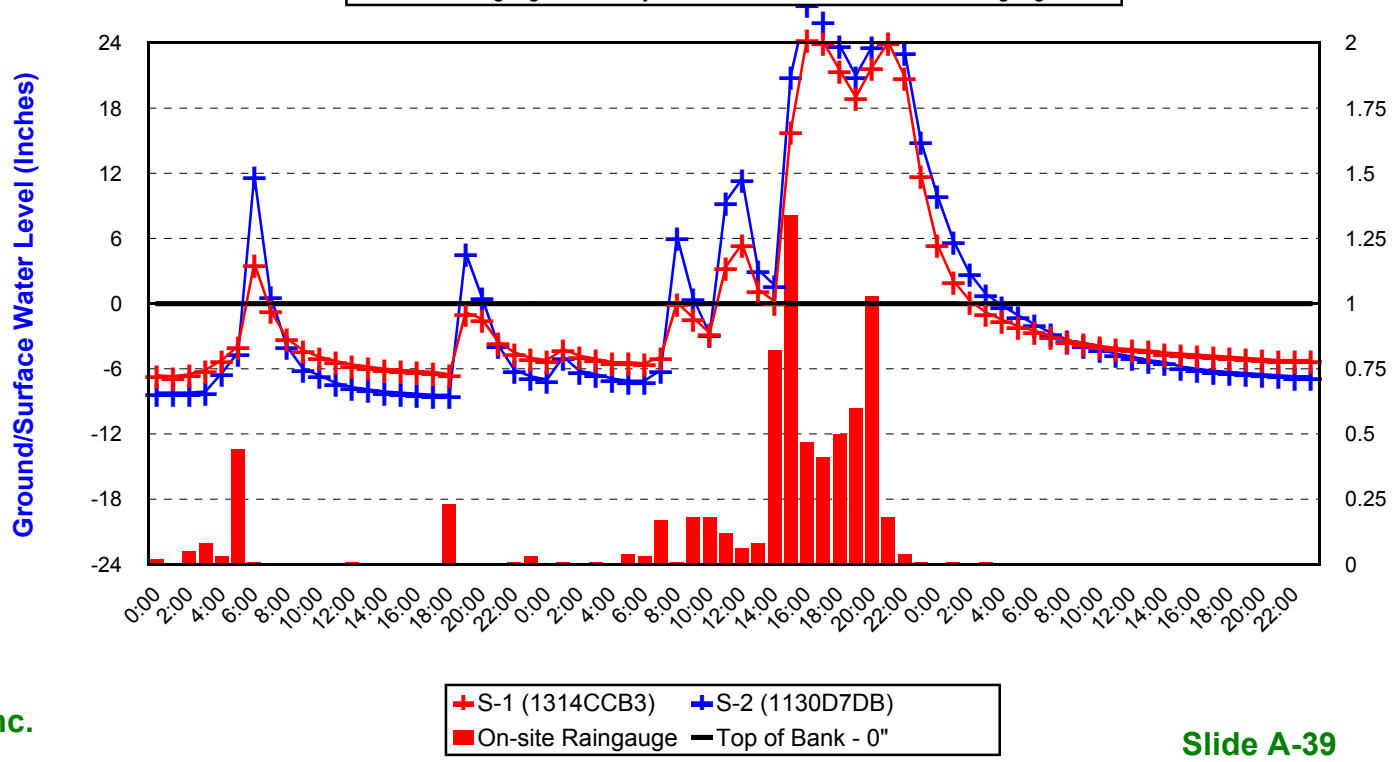
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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



Monitoring Well Record

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

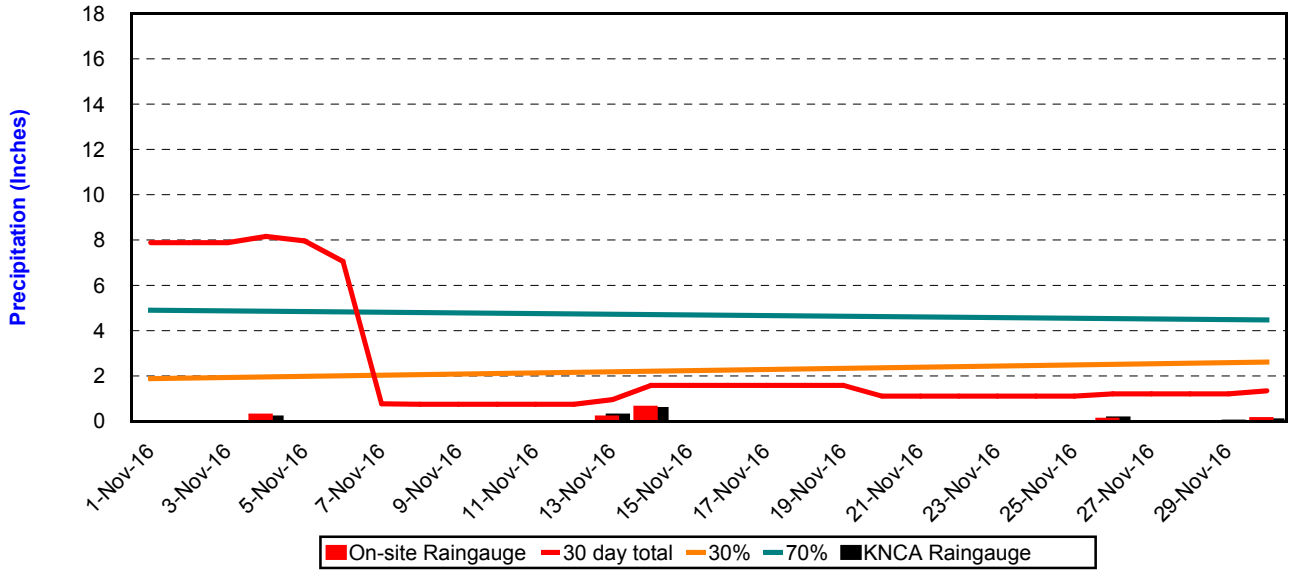


Hydrology Assessment

November 2016

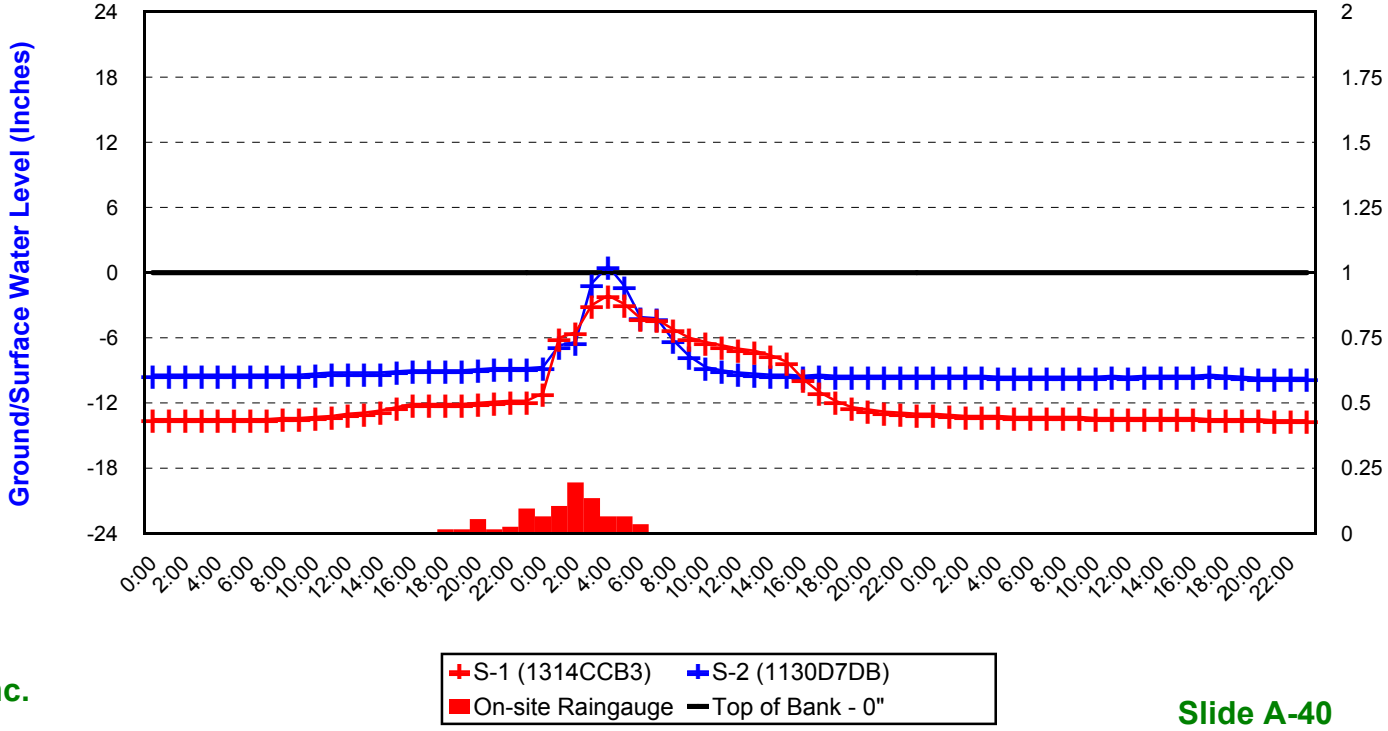
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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



Monitoring Well Record

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

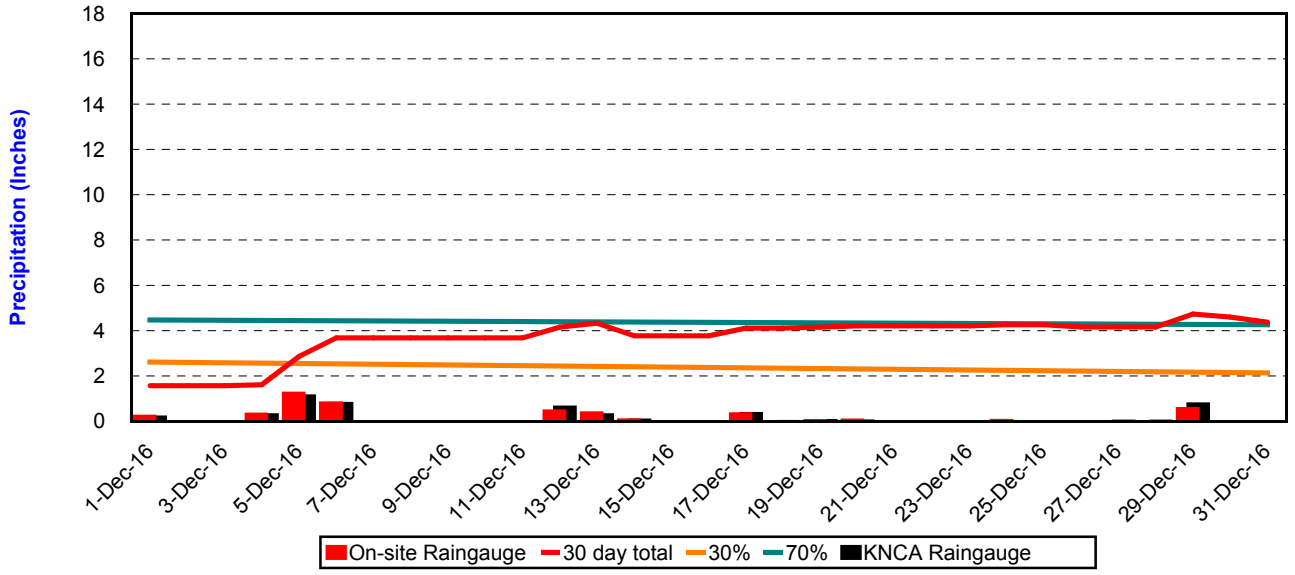


Hydrology Assessment

December 2016

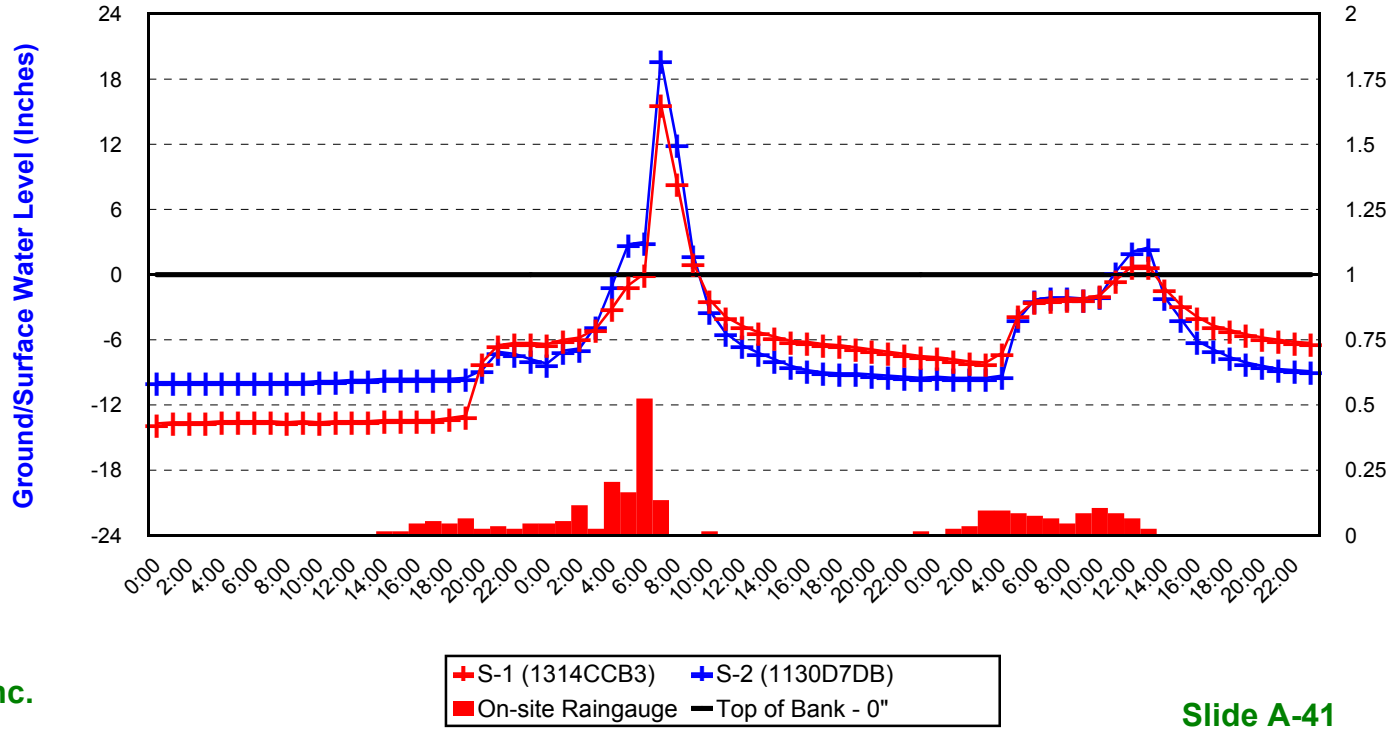
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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



Monitoring Well Record

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

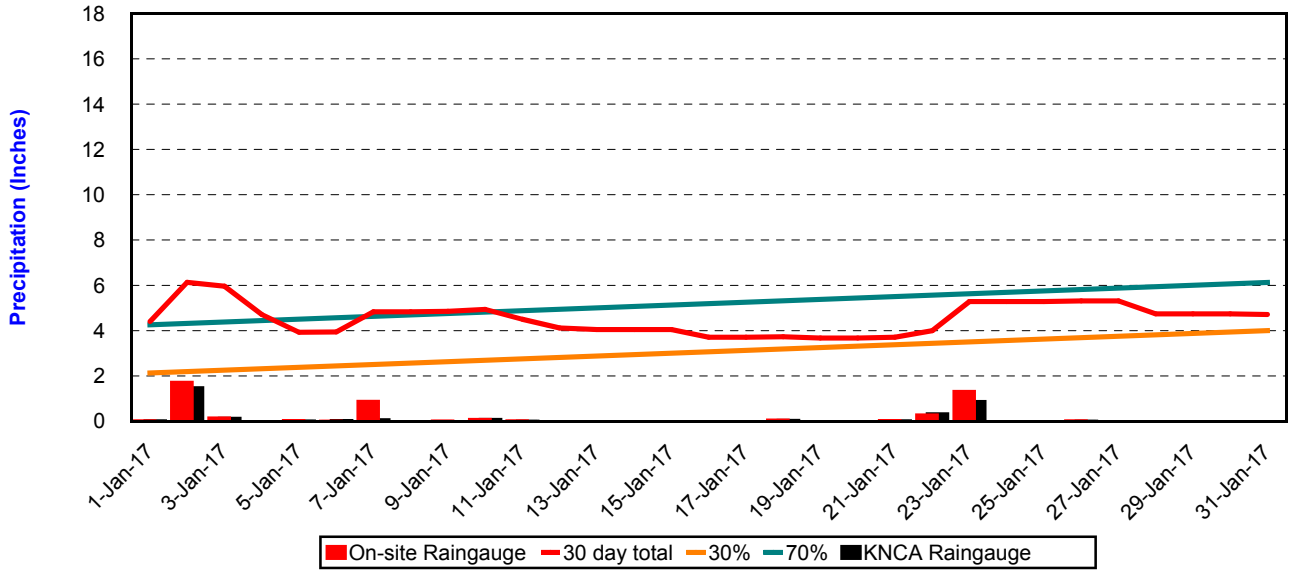


Hydrology Assessment

January 2017

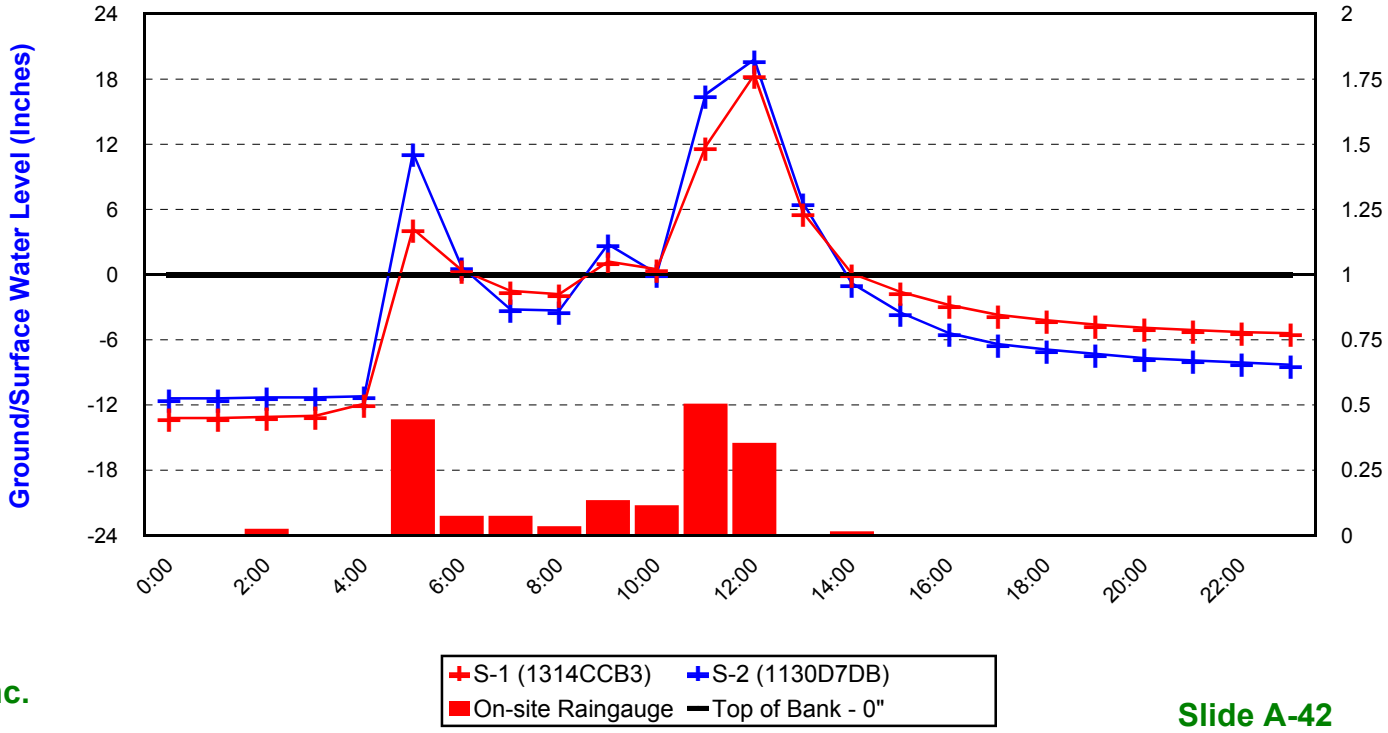
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 2, 2017
- One reading per hour

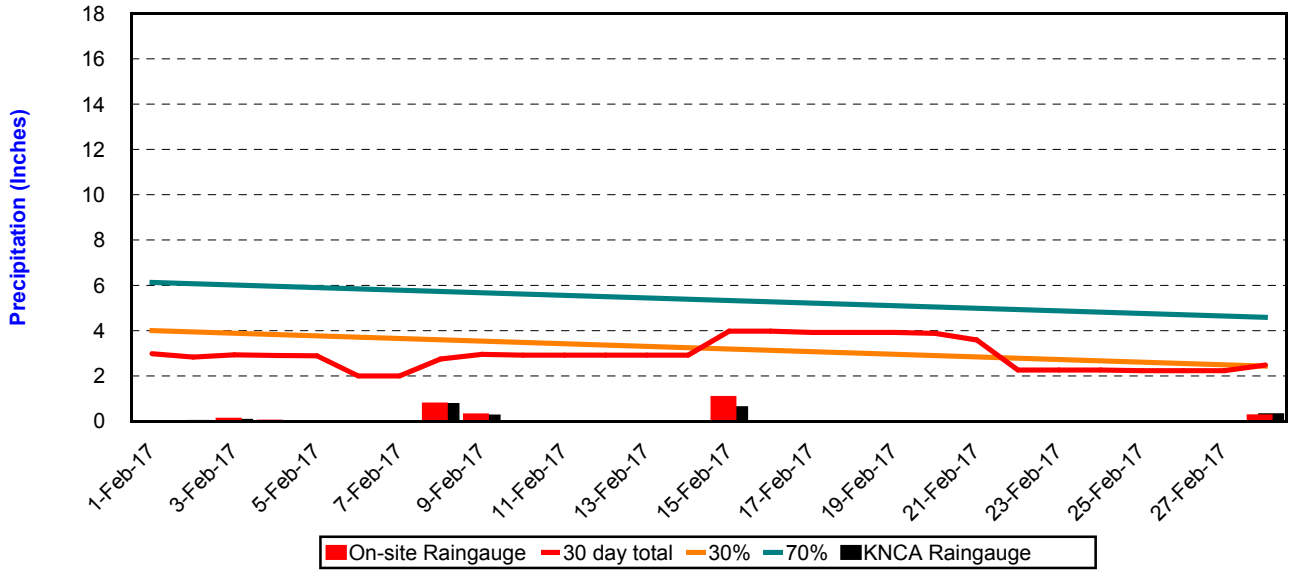


Hydrology Assessment

February 2017

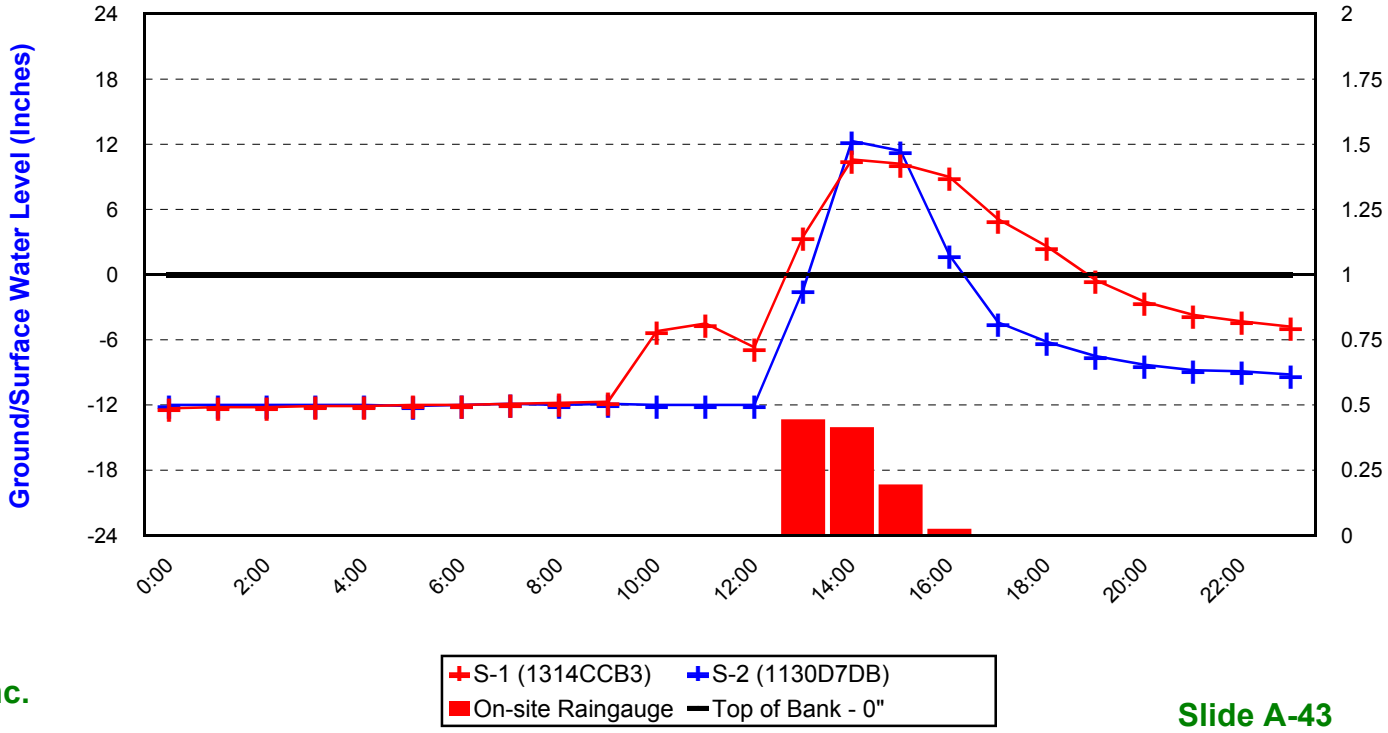
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 15, 2017
- One reading per hour

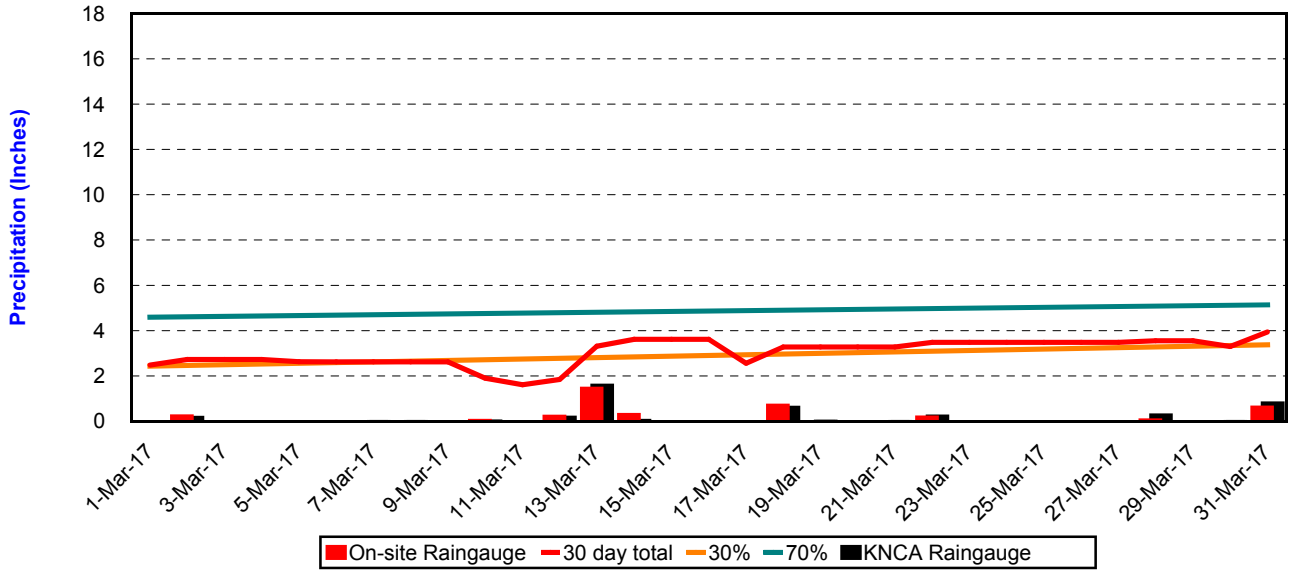


Hydrology Assessment

March 2017

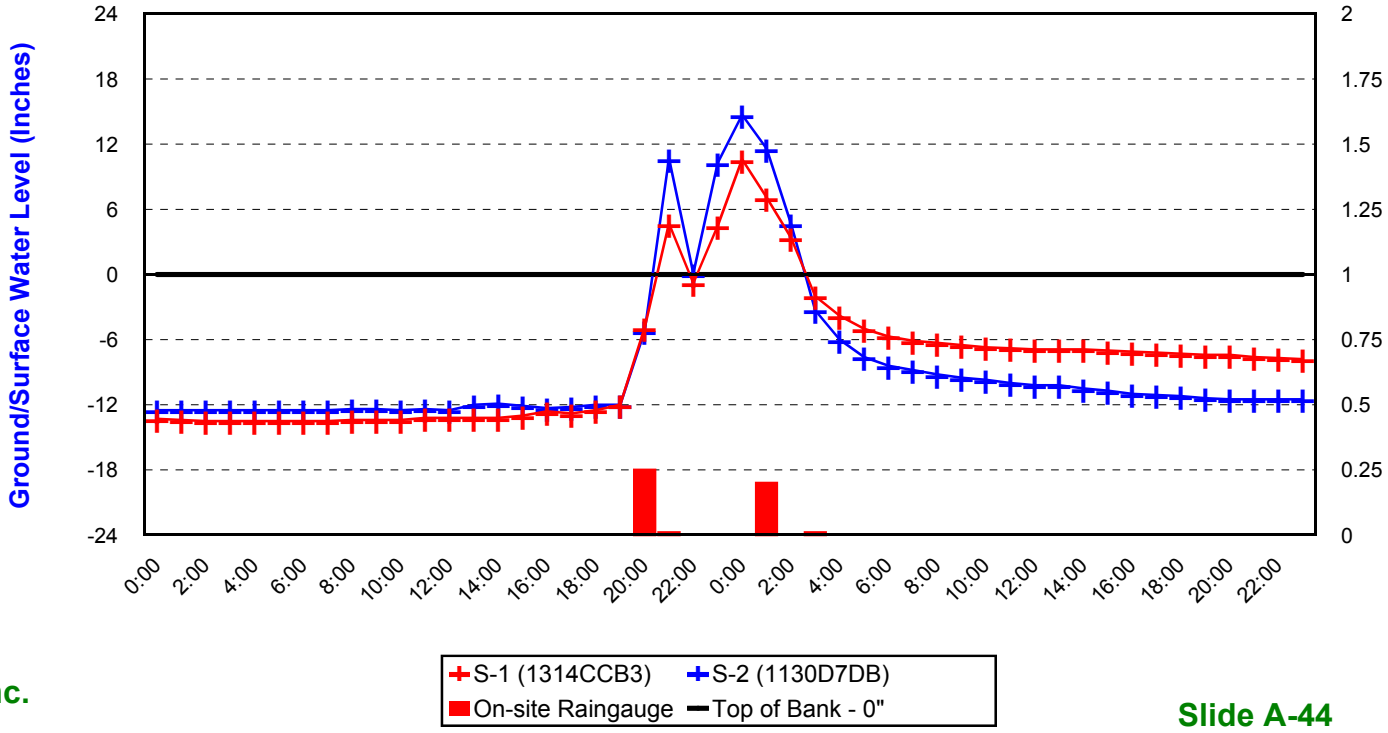
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 13, 2017 to March 14, 2017
- One reading per hour



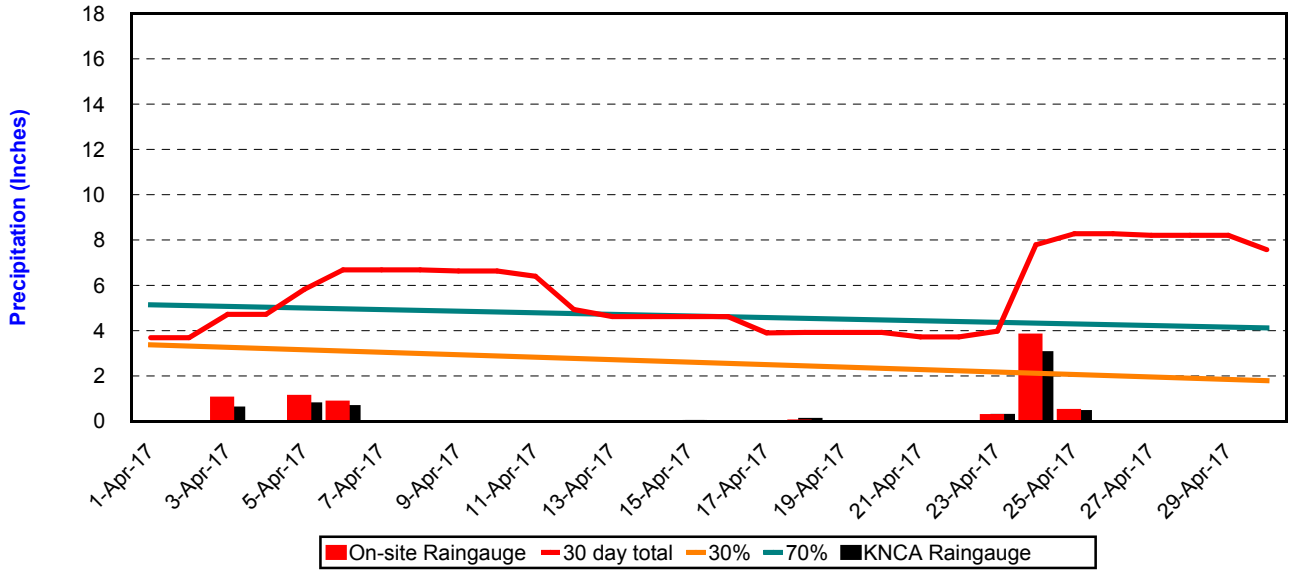
Hydrology Assessment

April 2017

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

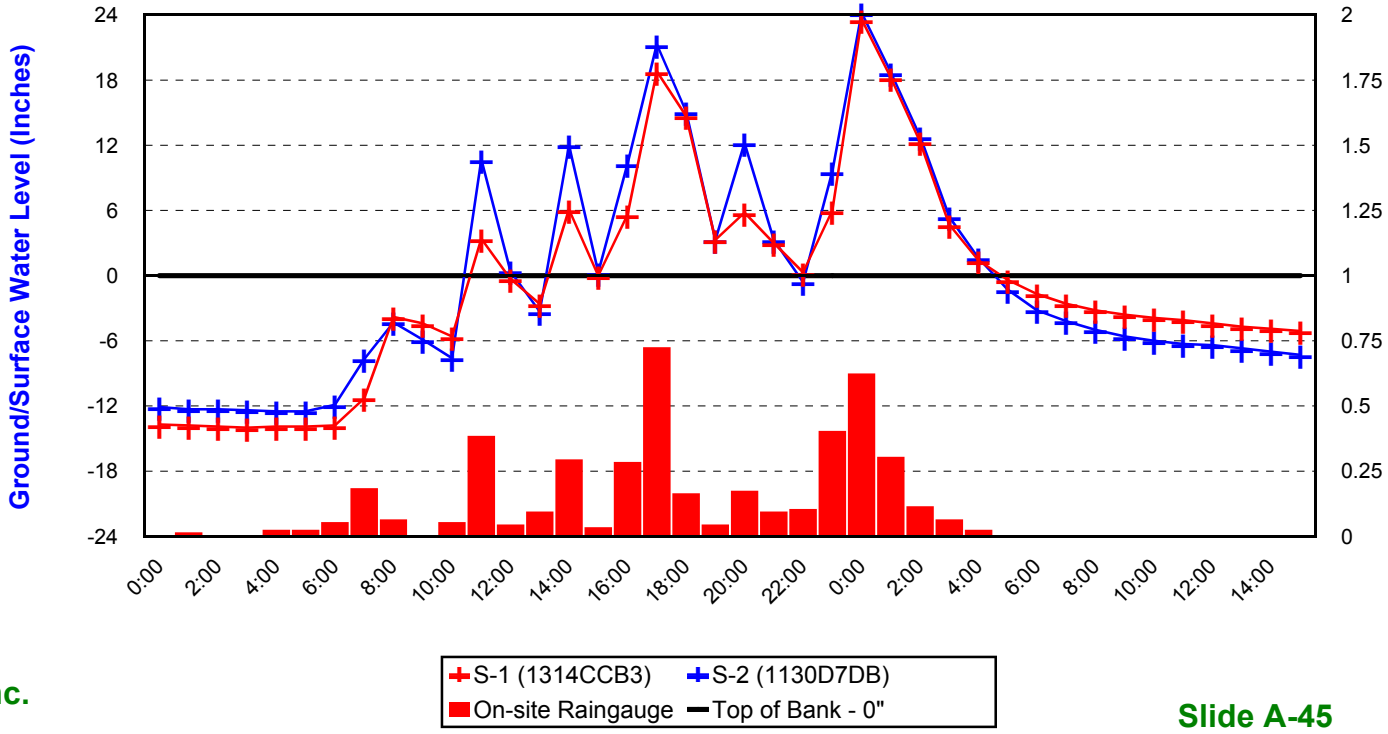
30% & 70% precipitation data obtained from WETS Station : HOFFMANN FOREST, NC4144 (wcc.nrcs.usda.gov)

Onsite raingauge malfunction - Data substituted from KNCA from April 27 to July 13



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- April 24, 2017 to April 25, 2017
- One reading per hour



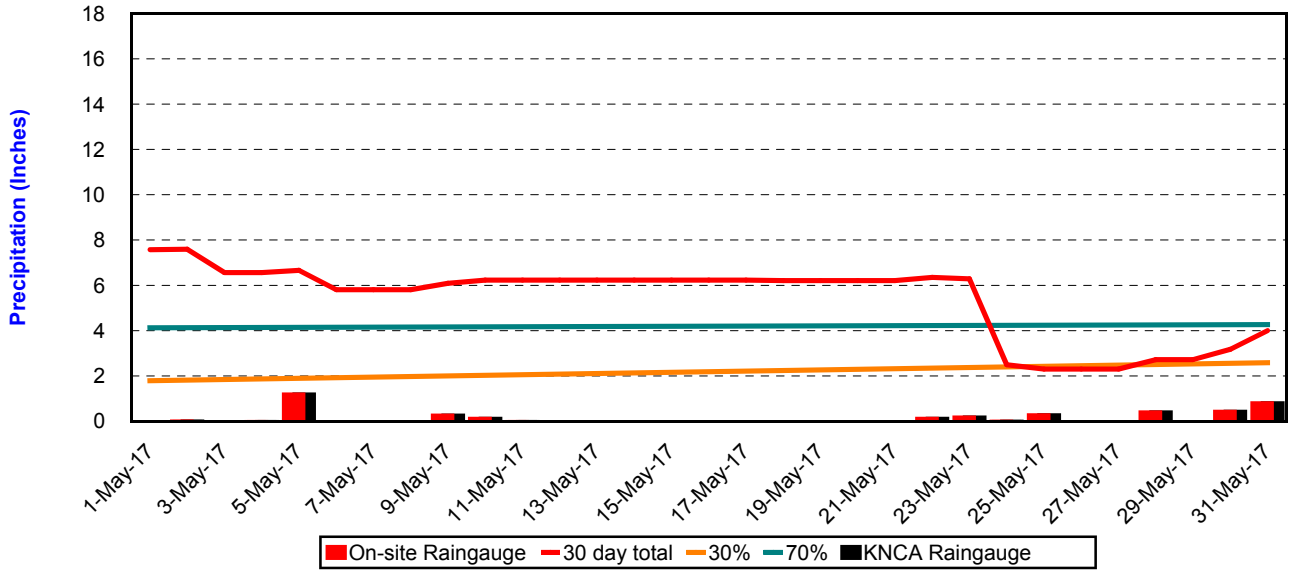
Hydrology Assessment

May 2017

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

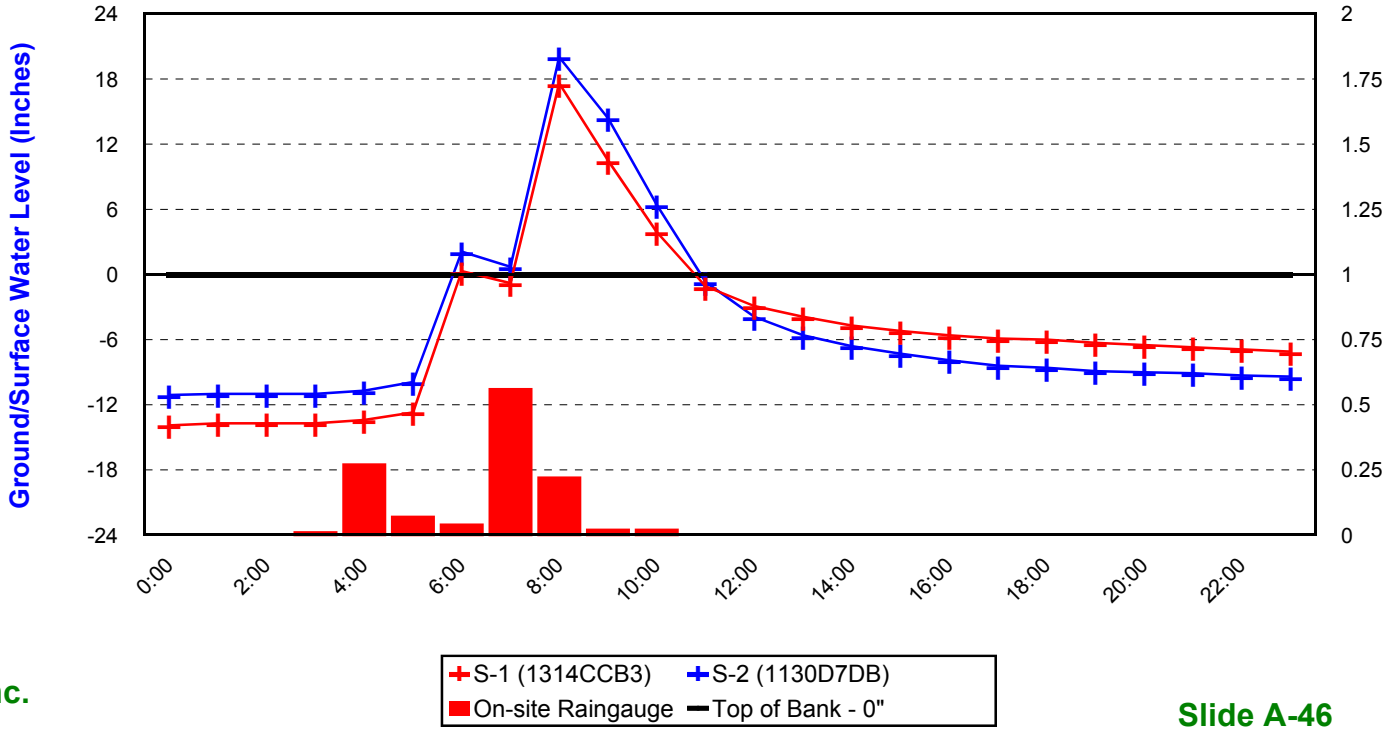
30% & 70% precipitation data obtained from WETS Station : HOFFMANN FOREST, NC4144 (wcc.nrcs.usda.gov)

Onsite raingauge malfunction - Data substituted from KNCA from April 27 to July 13



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- May 5, 2017
- One reading per hour



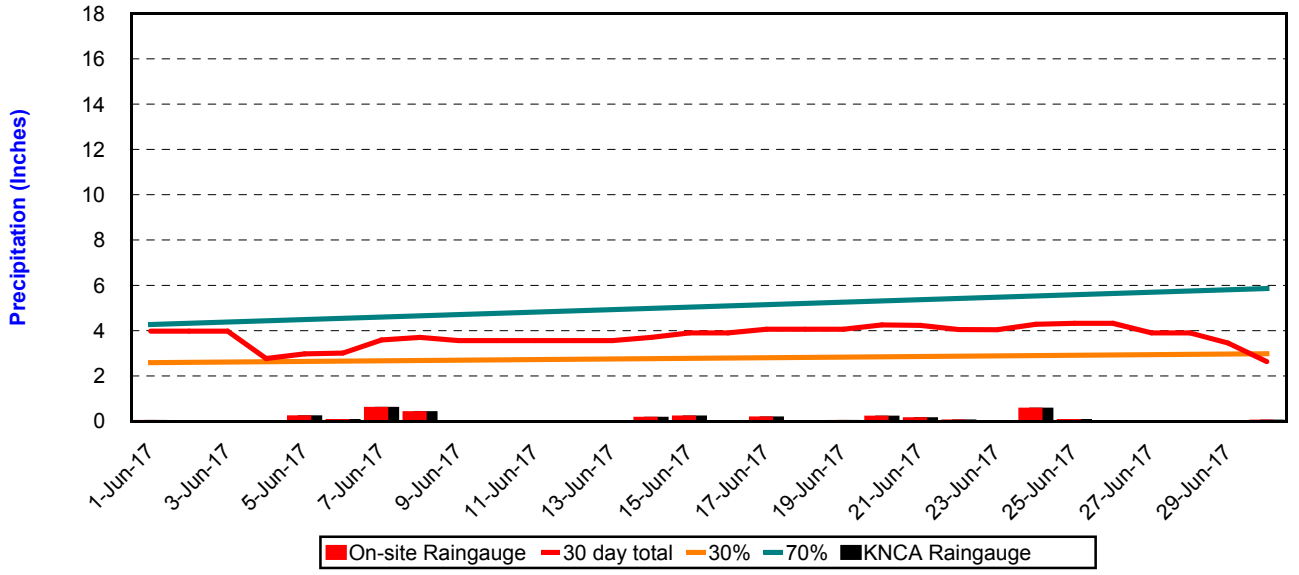
Hydrology Assessment

June 2017

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

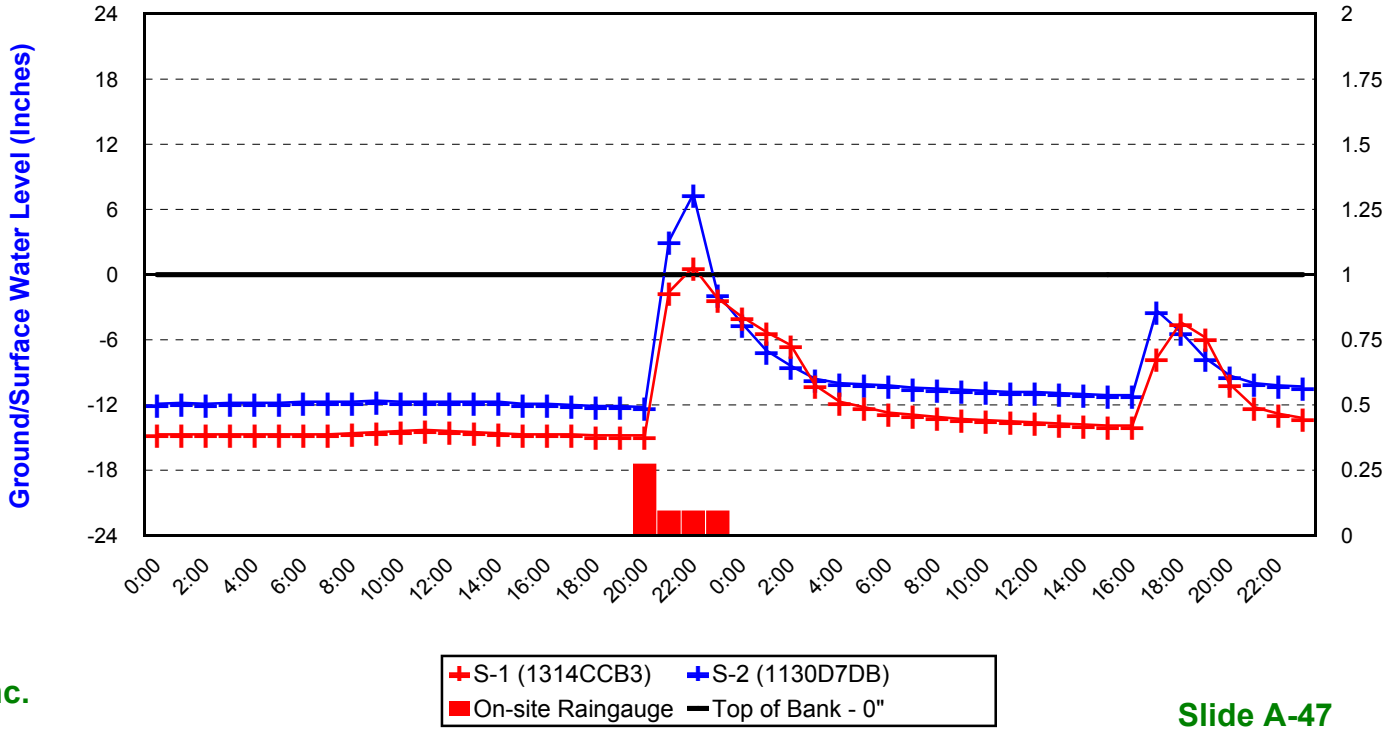
30% & 70% precipitation data obtained from WETS Station : HOFFMANN FOREST, NC4144 (wcc.nrcs.usda.gov)

Onsite raingauge malfunction - Data substituted from KNCA from April 27 to July 13



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- June 24, 2017 to June 25, 2017
- One reading per hour



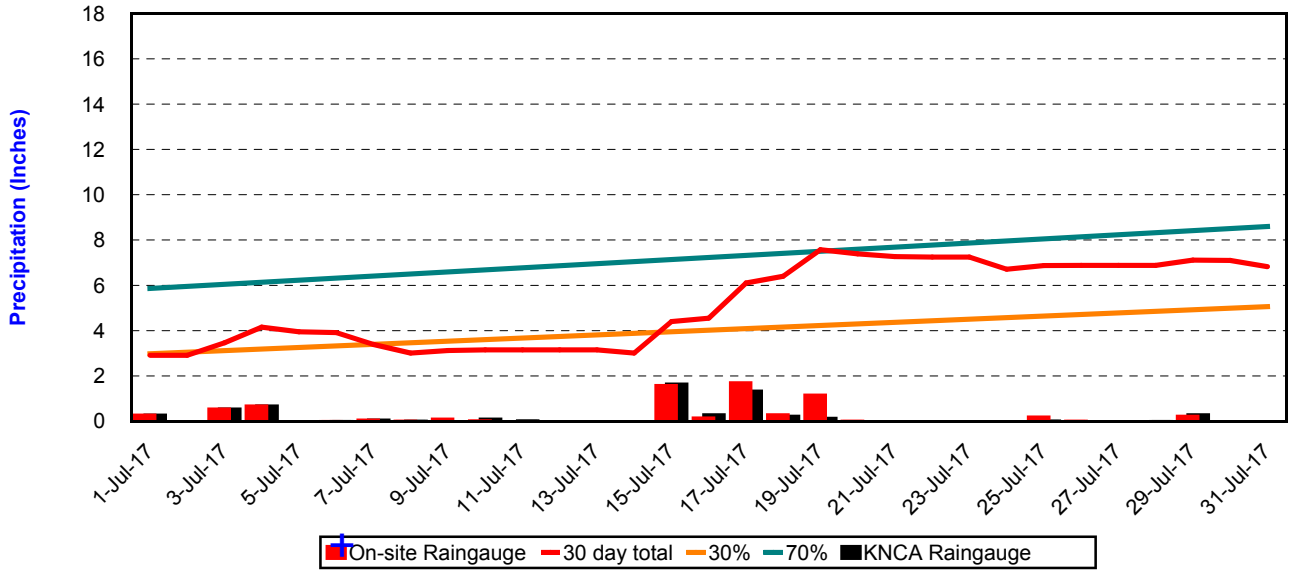
Hydrology Assessment

July 2017

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

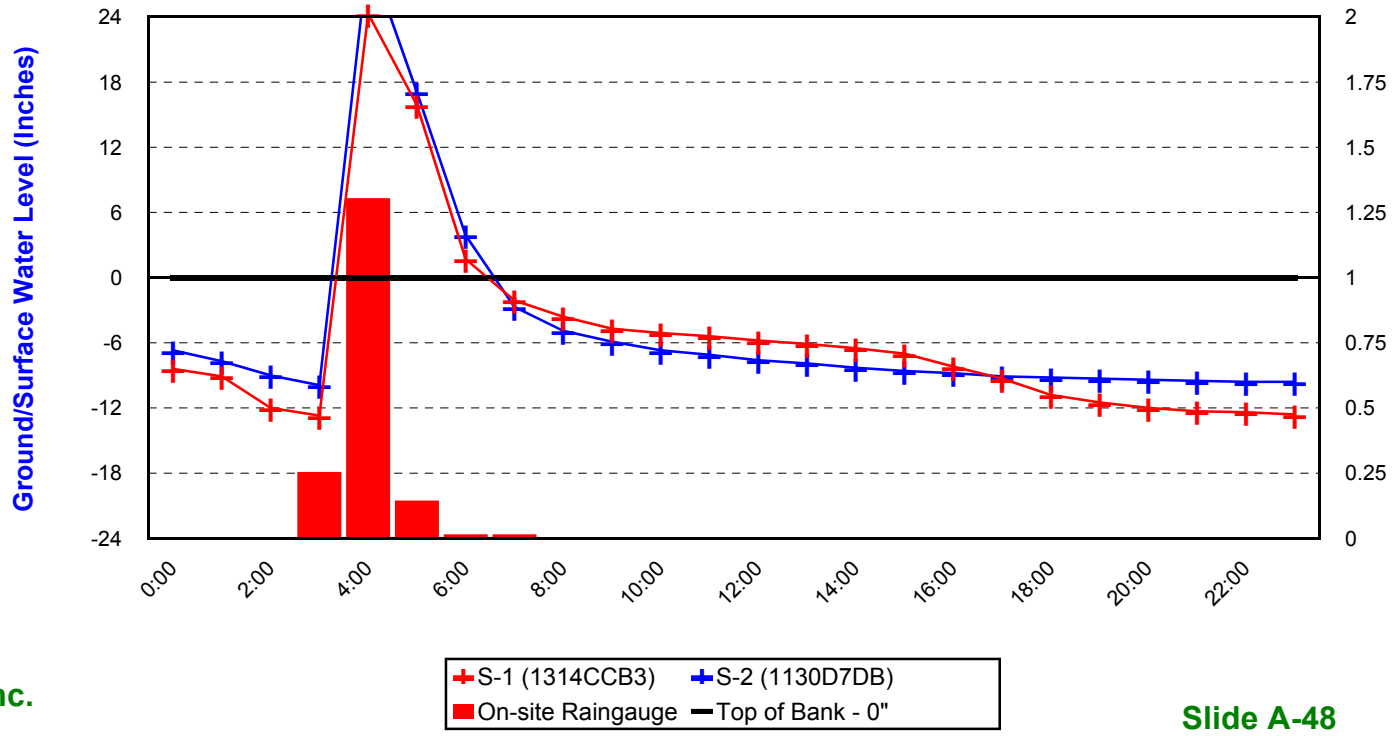
30% & 70% precipitation data obtained from WETS Station : HOFFMANN FOREST, NC4144 (wcc.nrcs.usda.gov)

Onsite raingauge malfunction - Data substituted from KNCA from April 27 to July 13



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- July 17, 2017
- One reading per hour

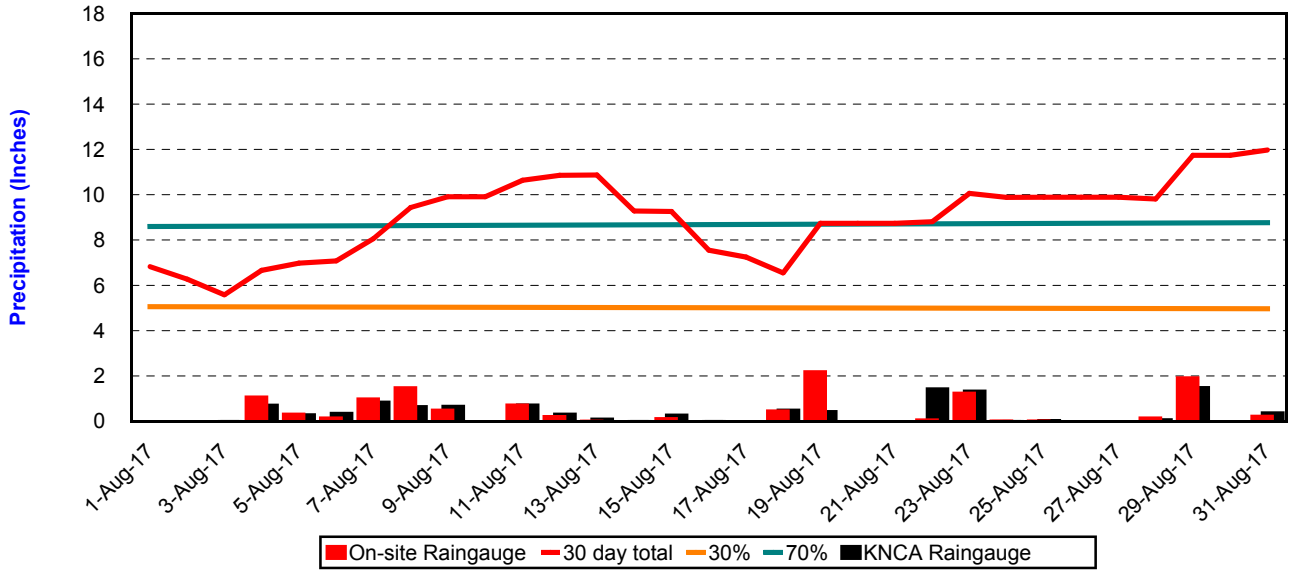


Hydrology Assessment

August 2017

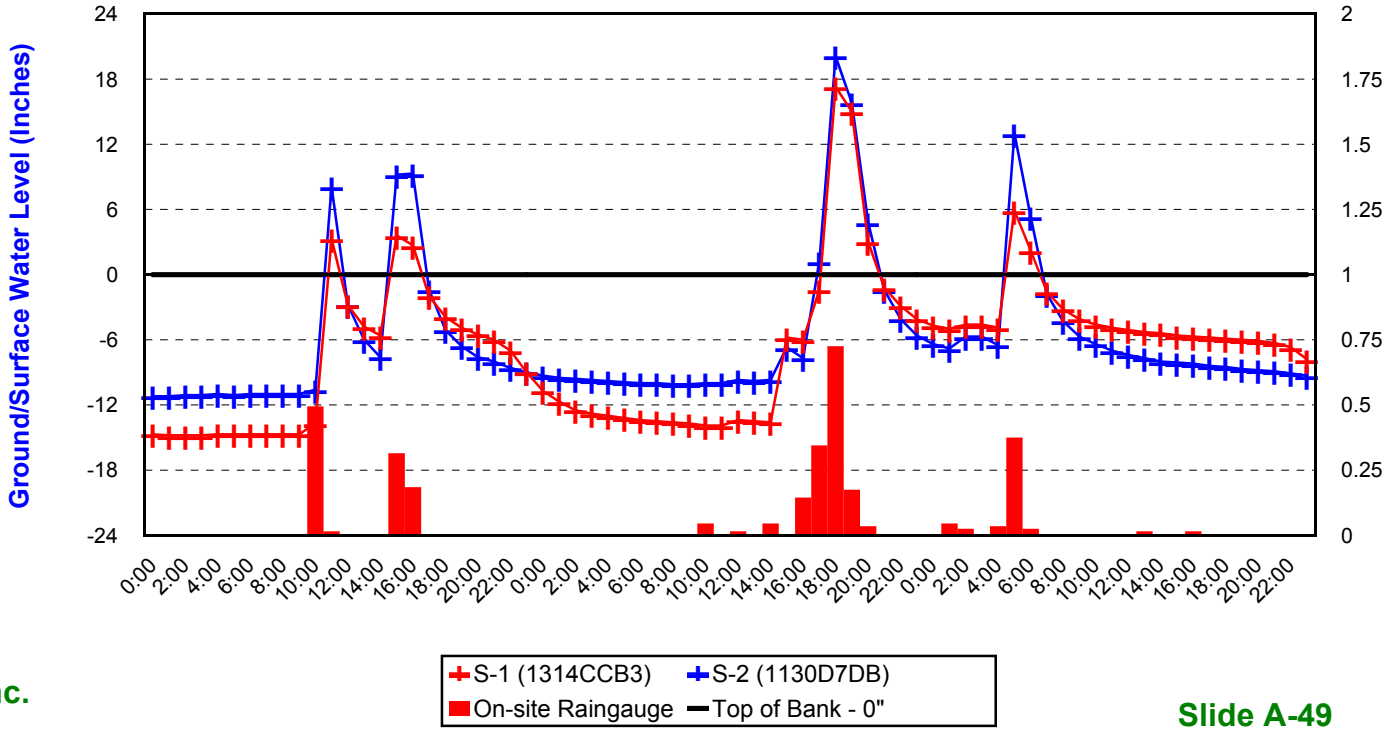
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 7, 2017 to August 9, 2017
- One reading per hour

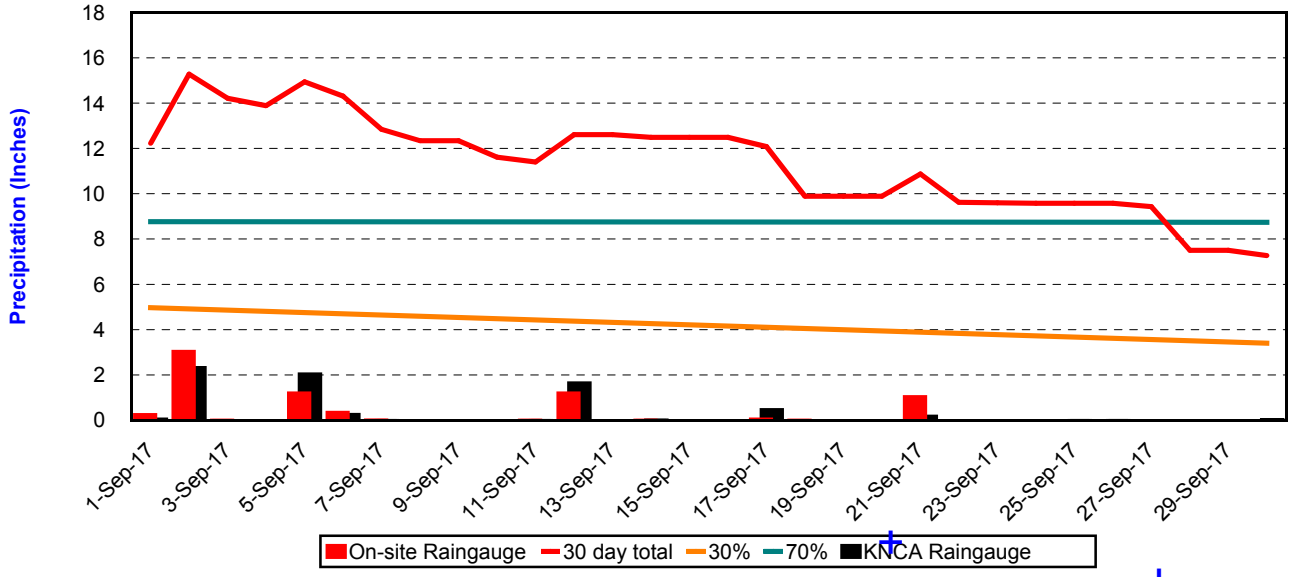


Hydrology Assessment

September 2017

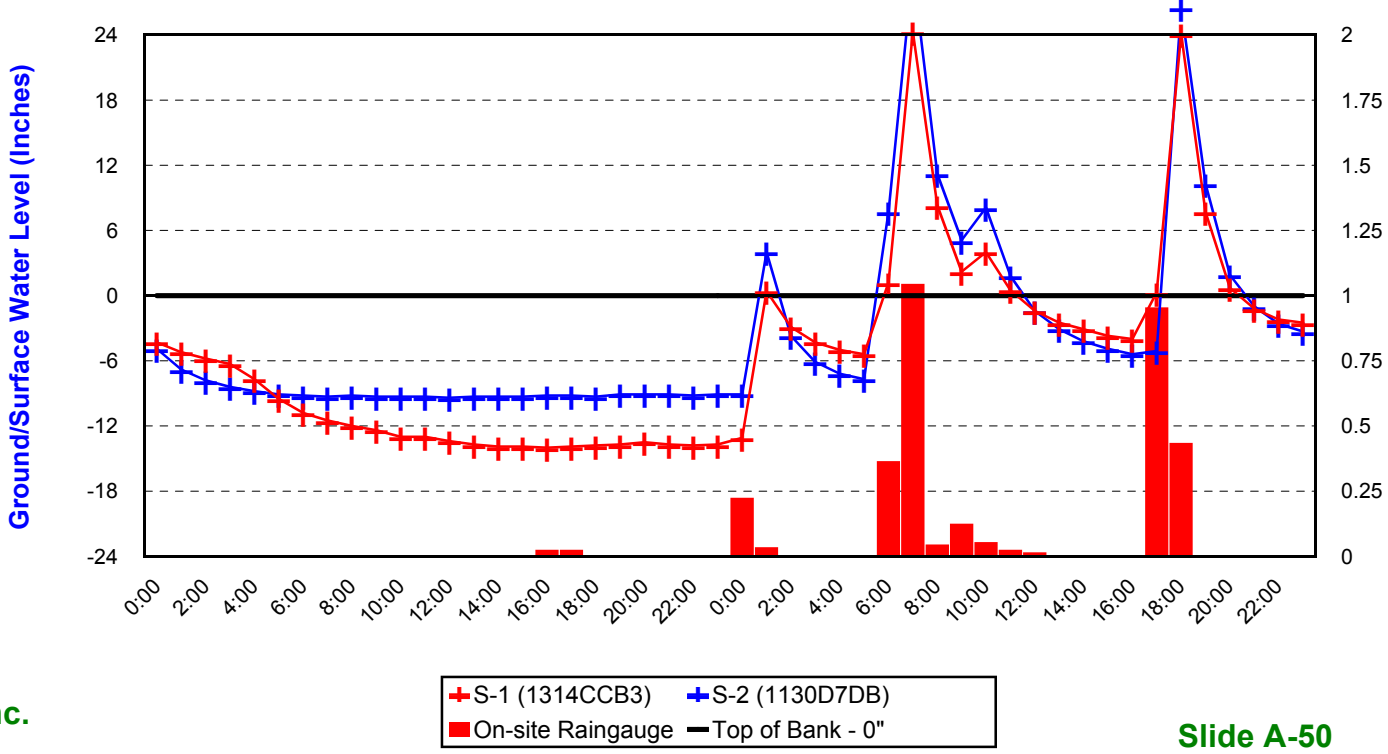
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 1, 2017 to September 2, 2017
- One reading per hour

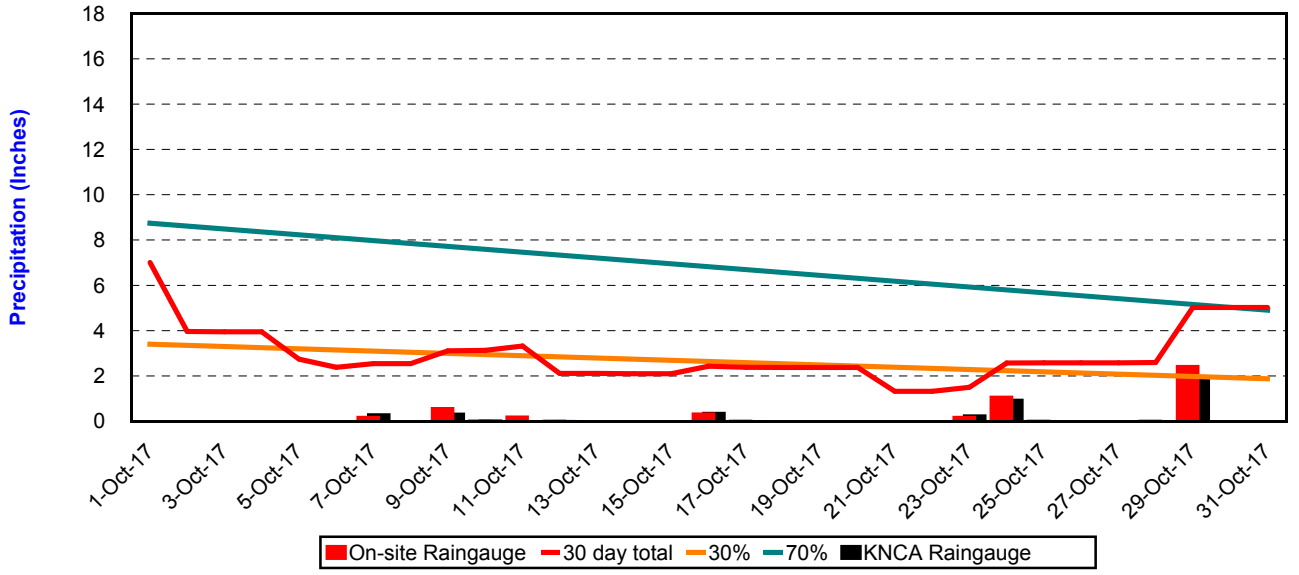


Hydrology Assessment

October 2017

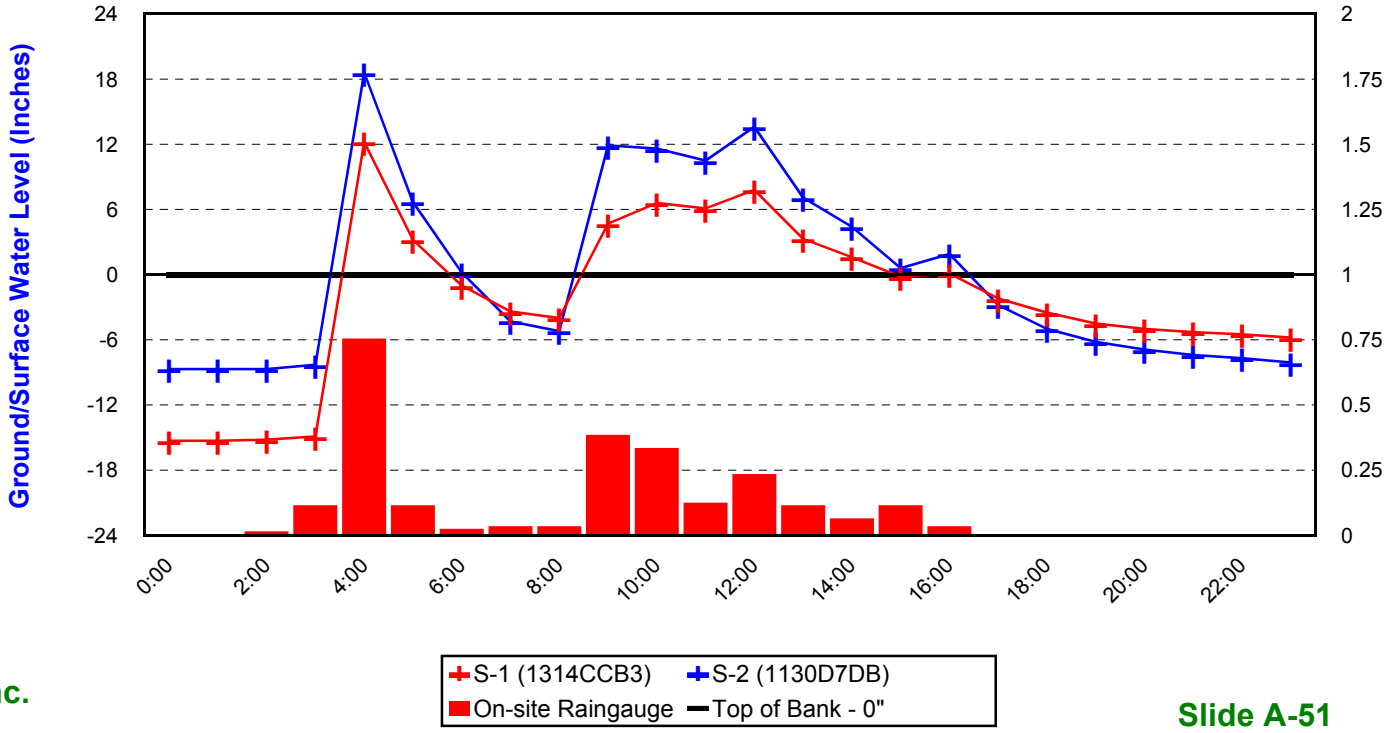
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 29, 2017
- One reading per hour

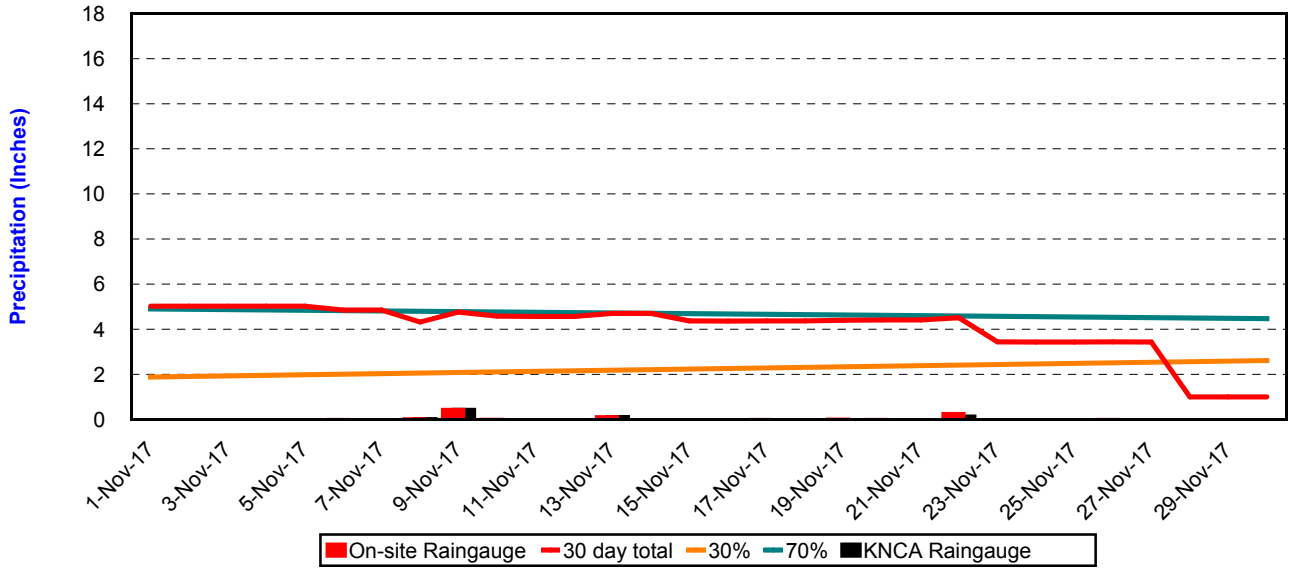


Hydrology Assessment

November 2017

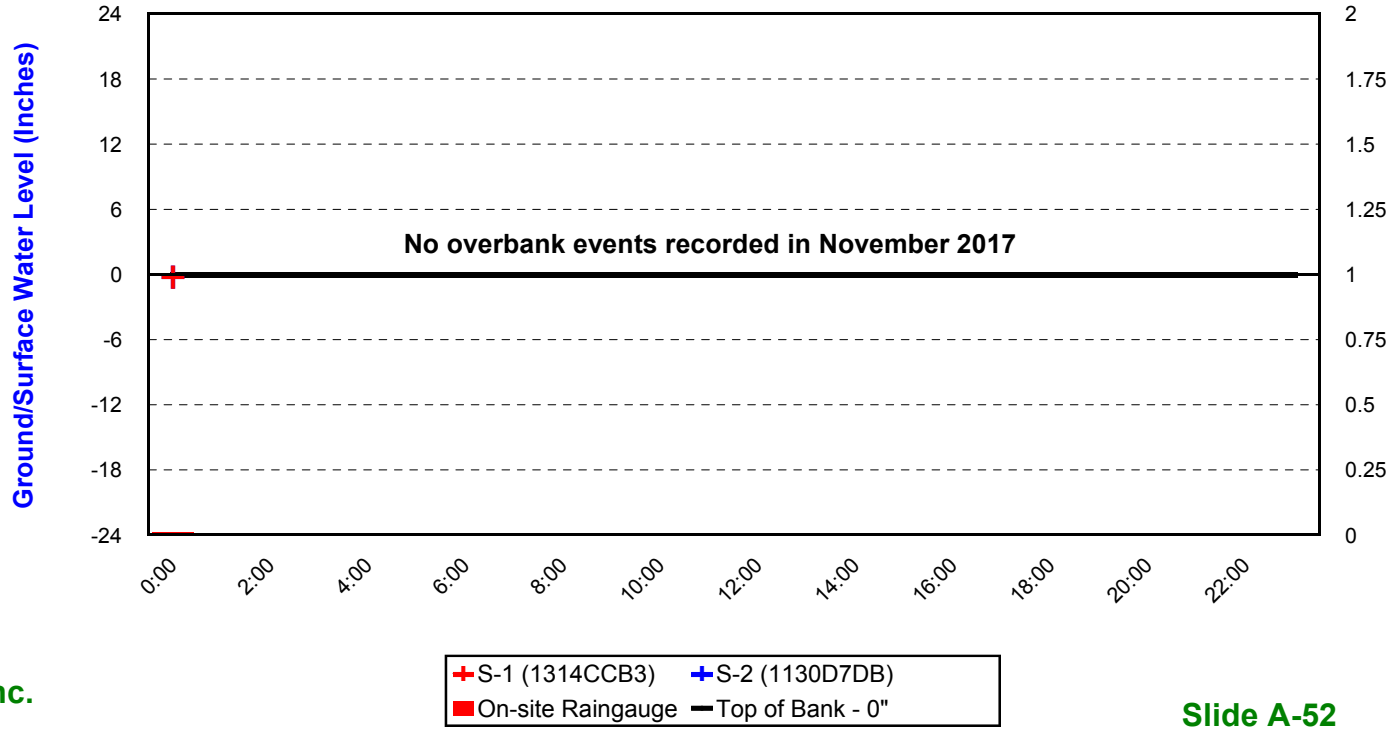
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 2017
- One reading per hour

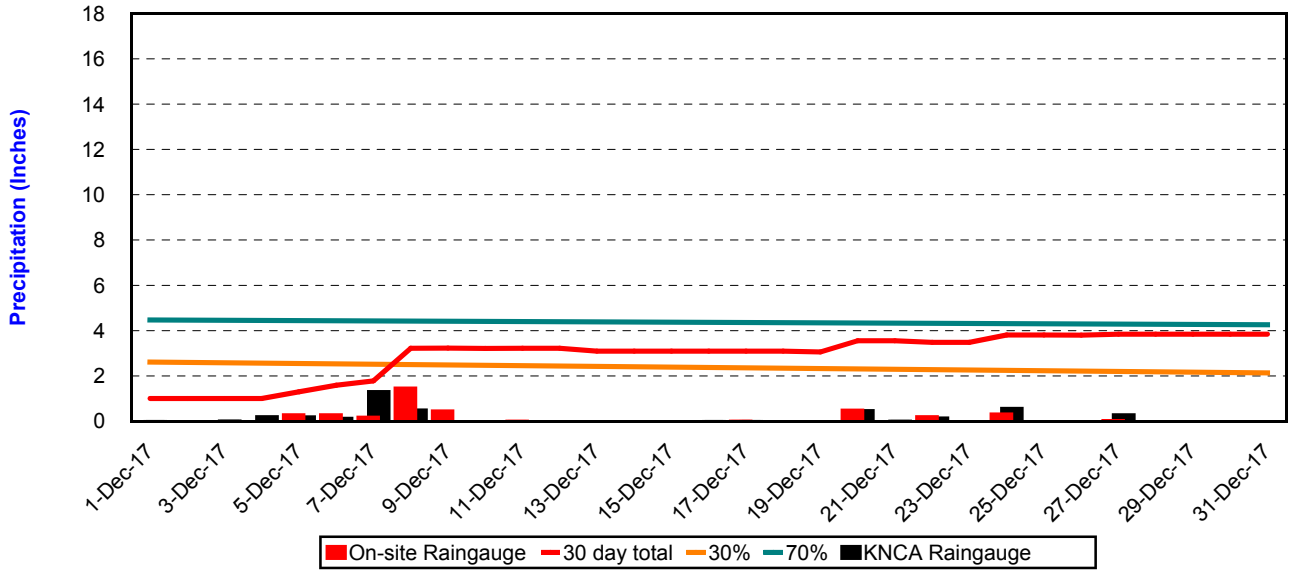


Hydrology Assessment

December 2017

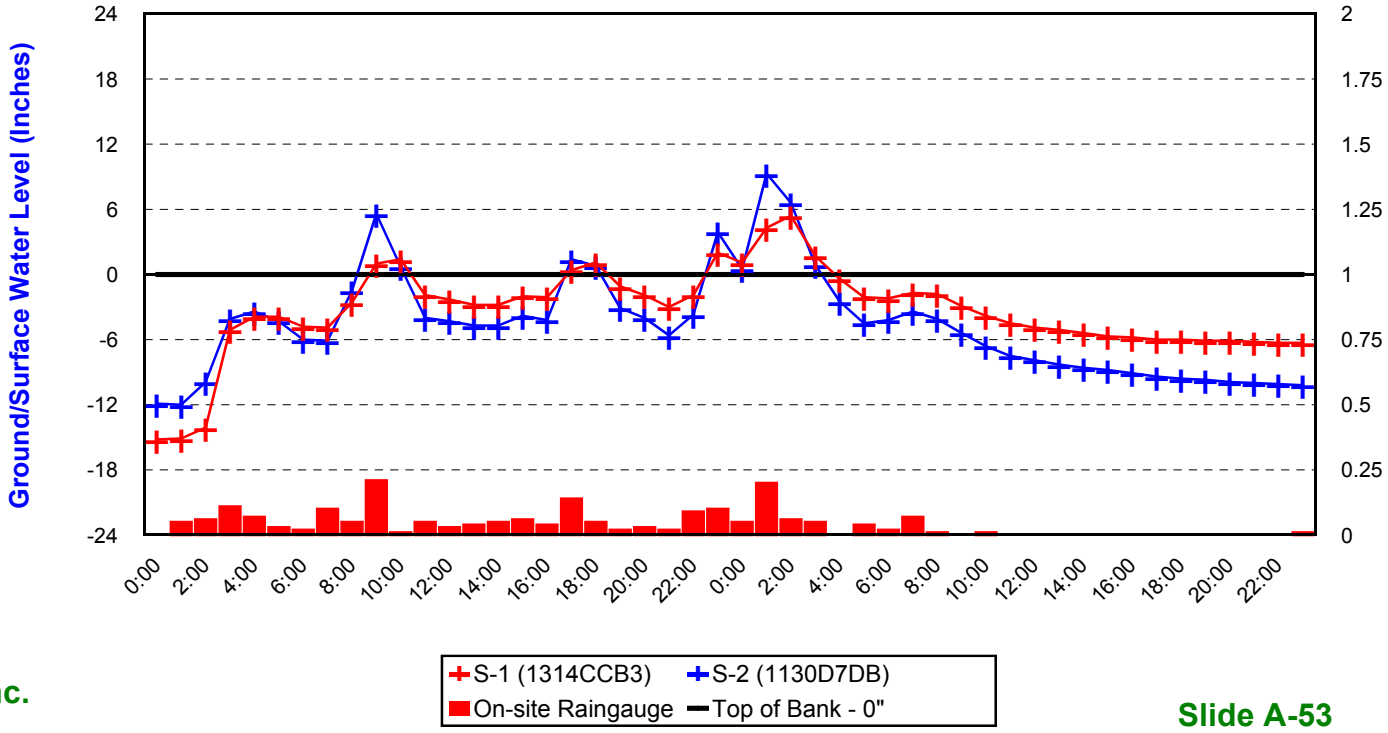
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

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 8, 2017 to December 9, 2017
- One reading per hour

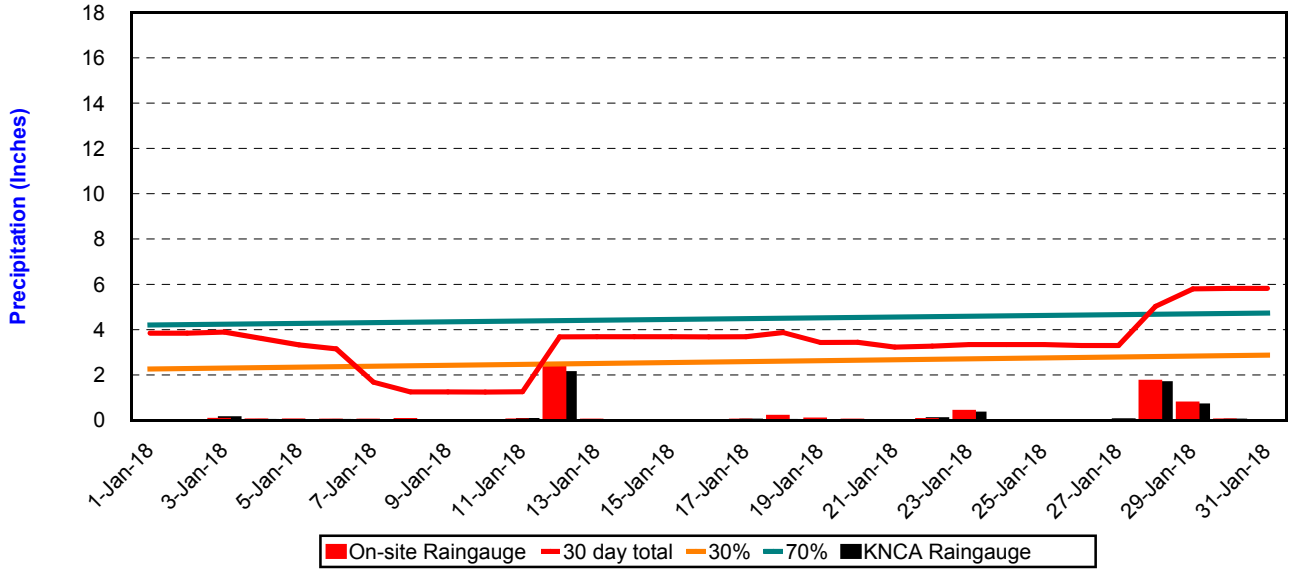


Hydrology Assessment

January 2018

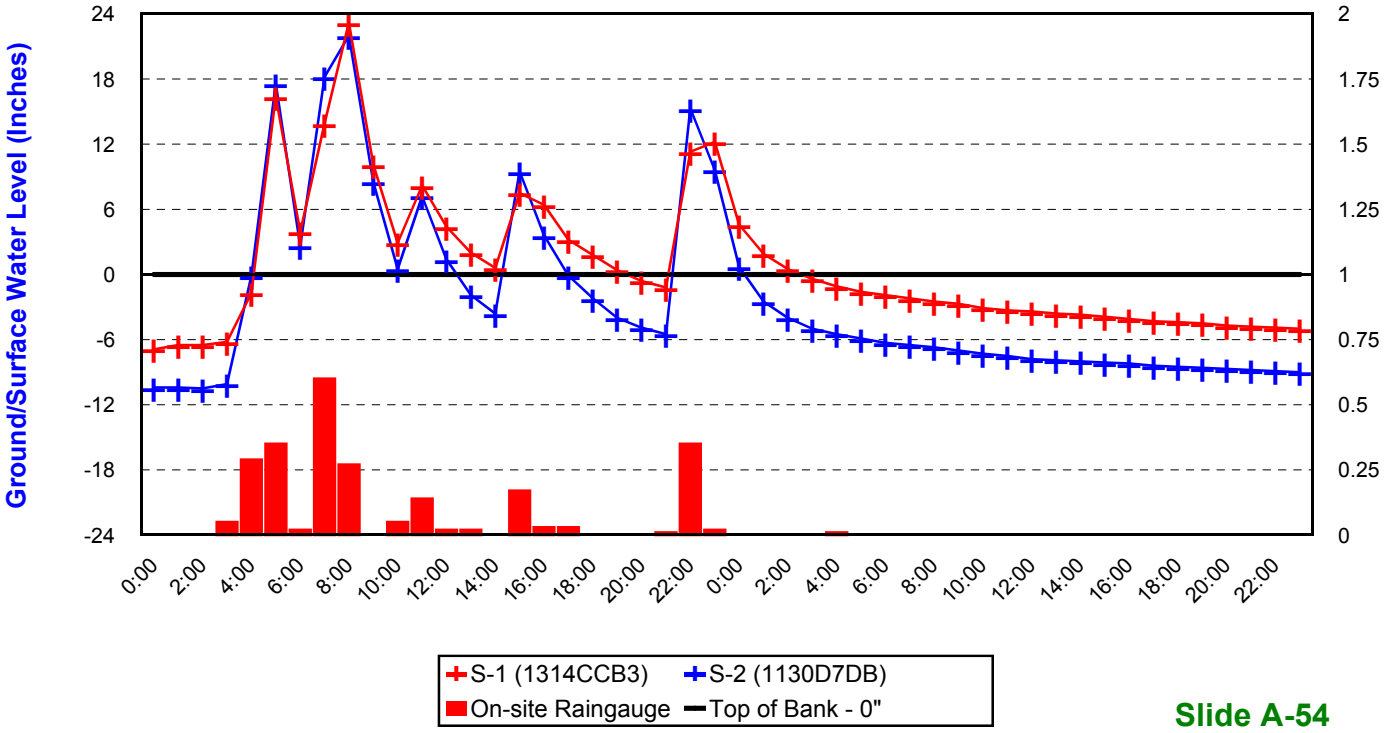
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from WETS Station : NEW RVR MCAF, NC 1987-2016 (wcc.nrcs.usda.gov)



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- January 12, 2018 to January 13, 2018
- One reading per hour

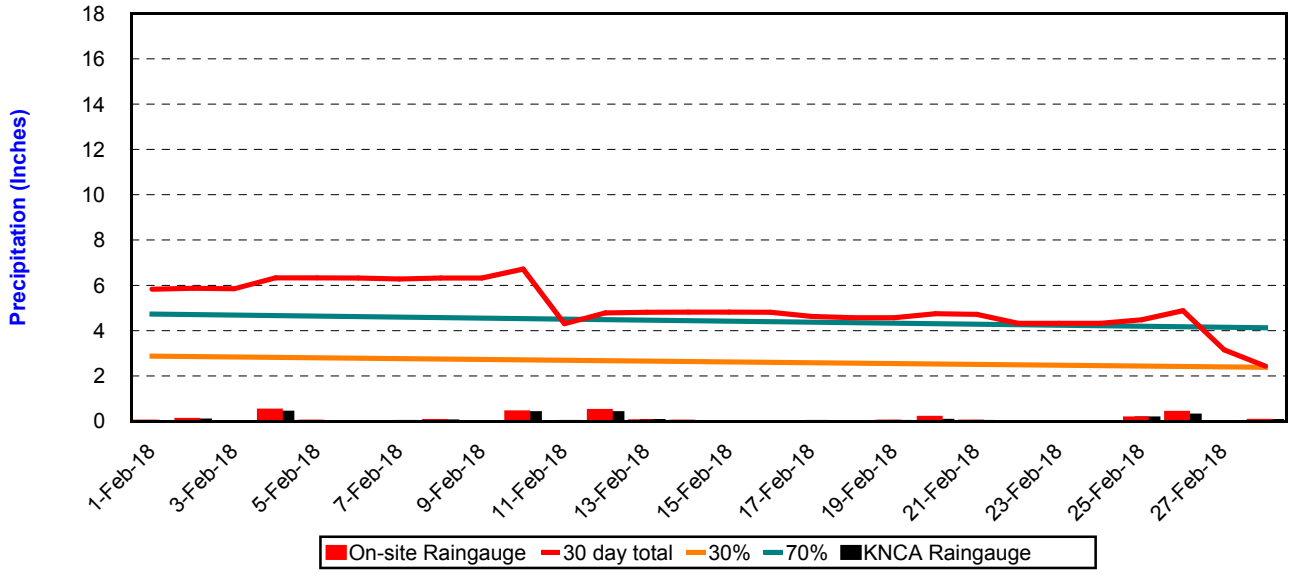


Hydrology Assessment

February 2018

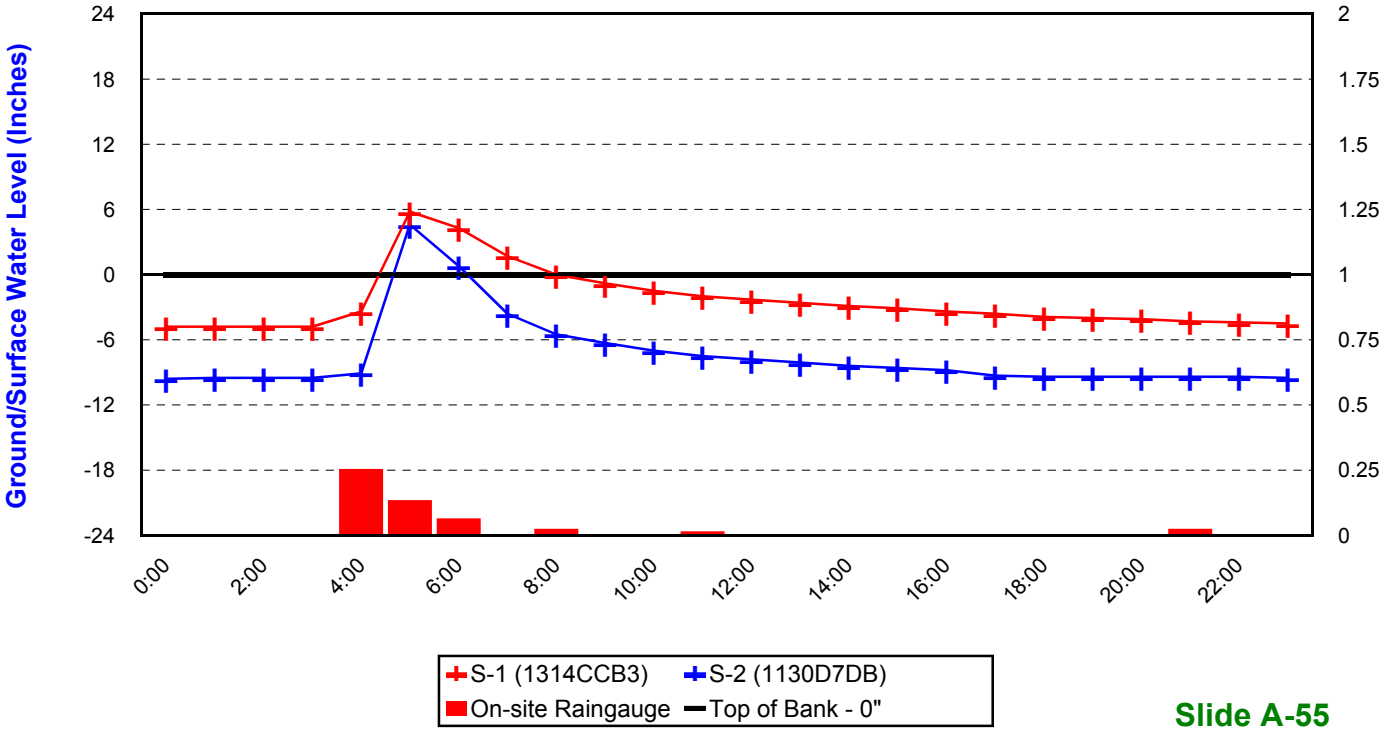
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from WETS Station : NEW RVR MCAF, NC 1987-2016 (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, 2018
- One reading per hour

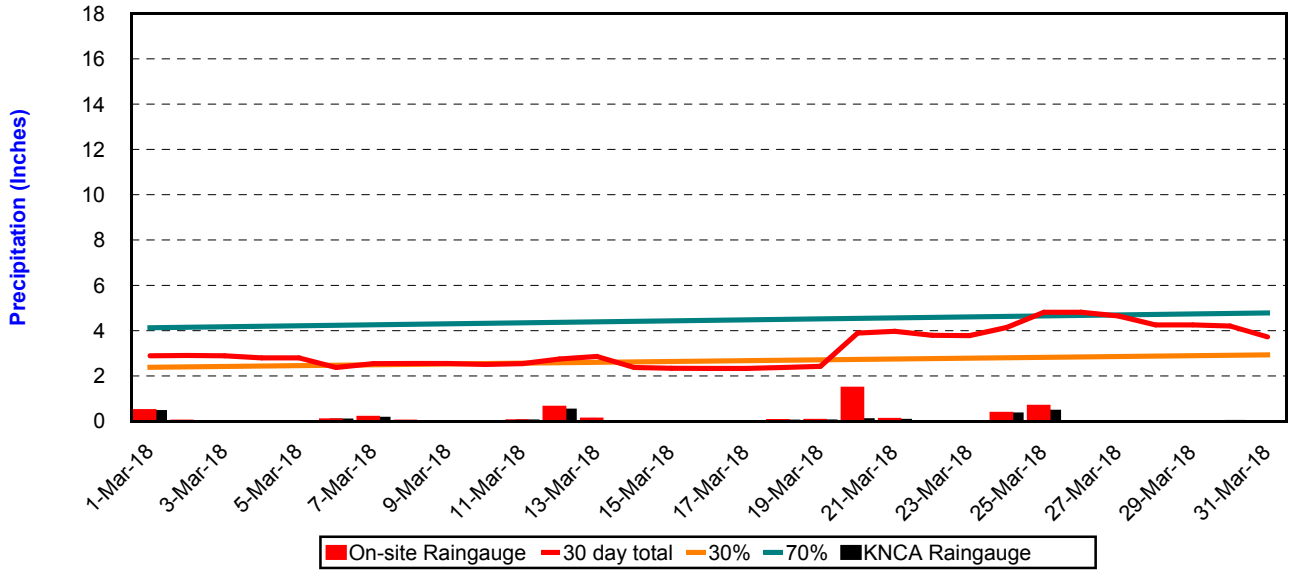


Hydrology Assessment

March 2018

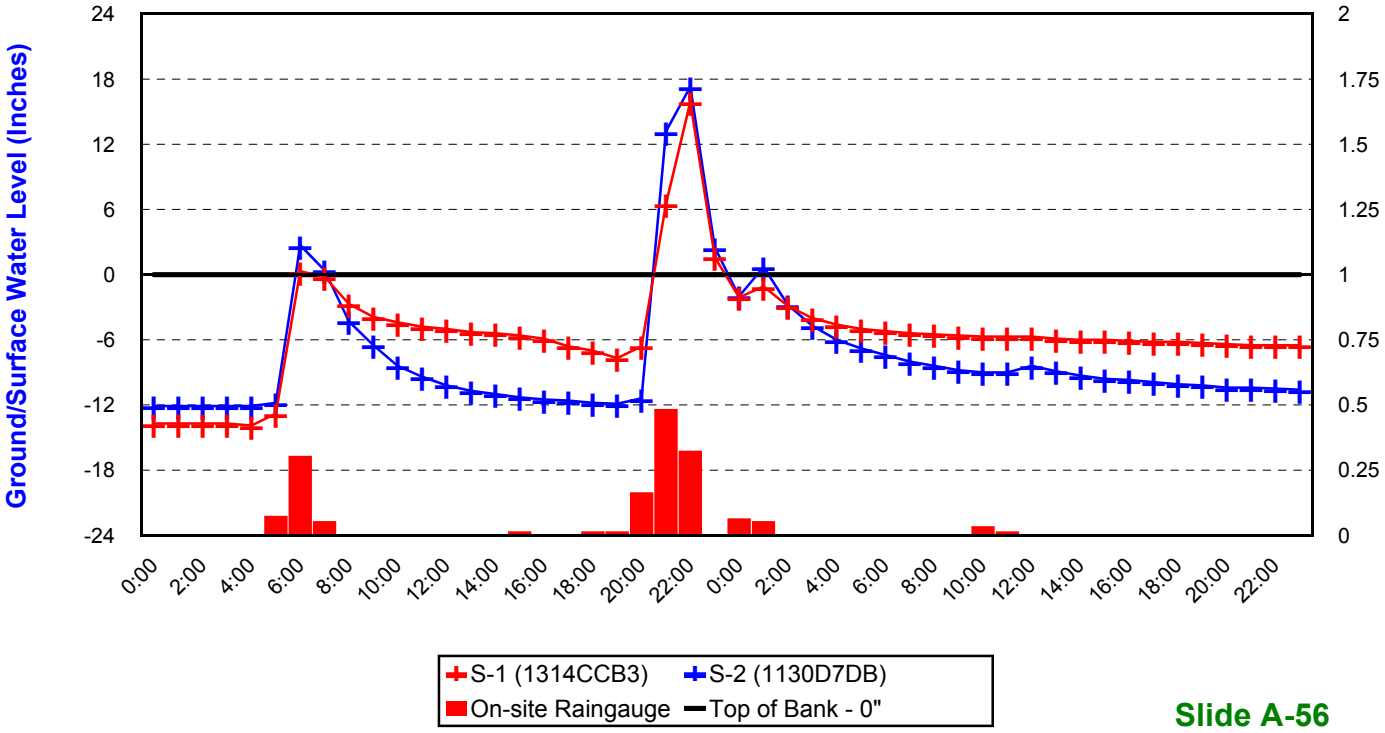
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from WETS Station : NEW RVR MCAF, NC 1987-2016 (wcc.nrcs.usda.gov)



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- March 20, 2018 to March 21, 2018
- One reading per hour

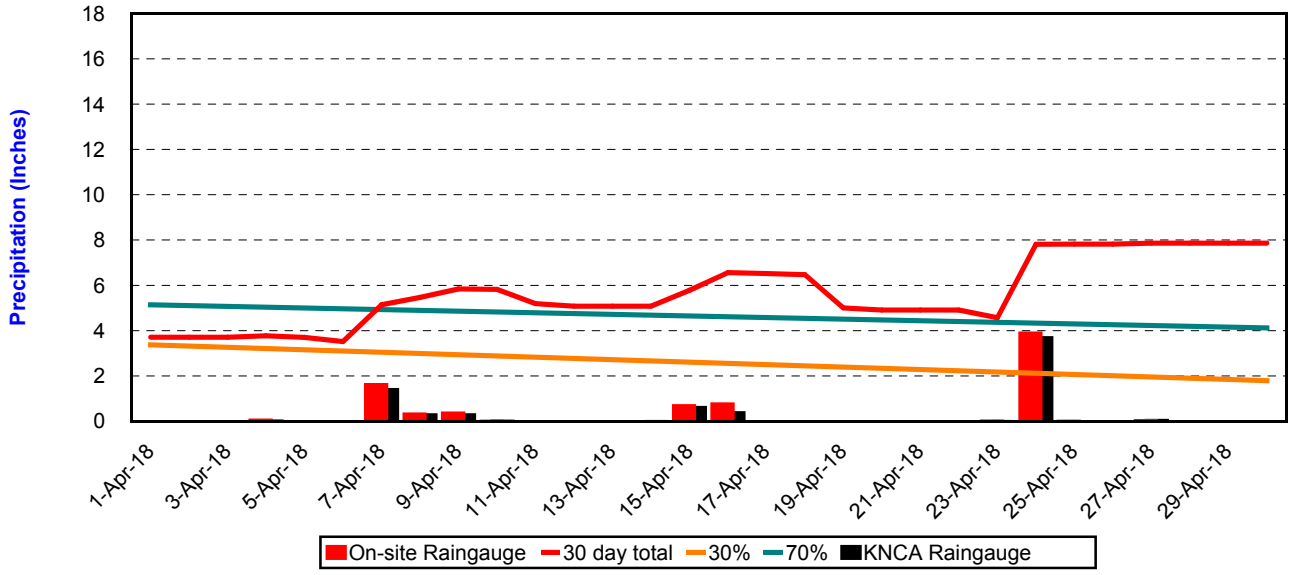


Hydrology Assessment

April 2018

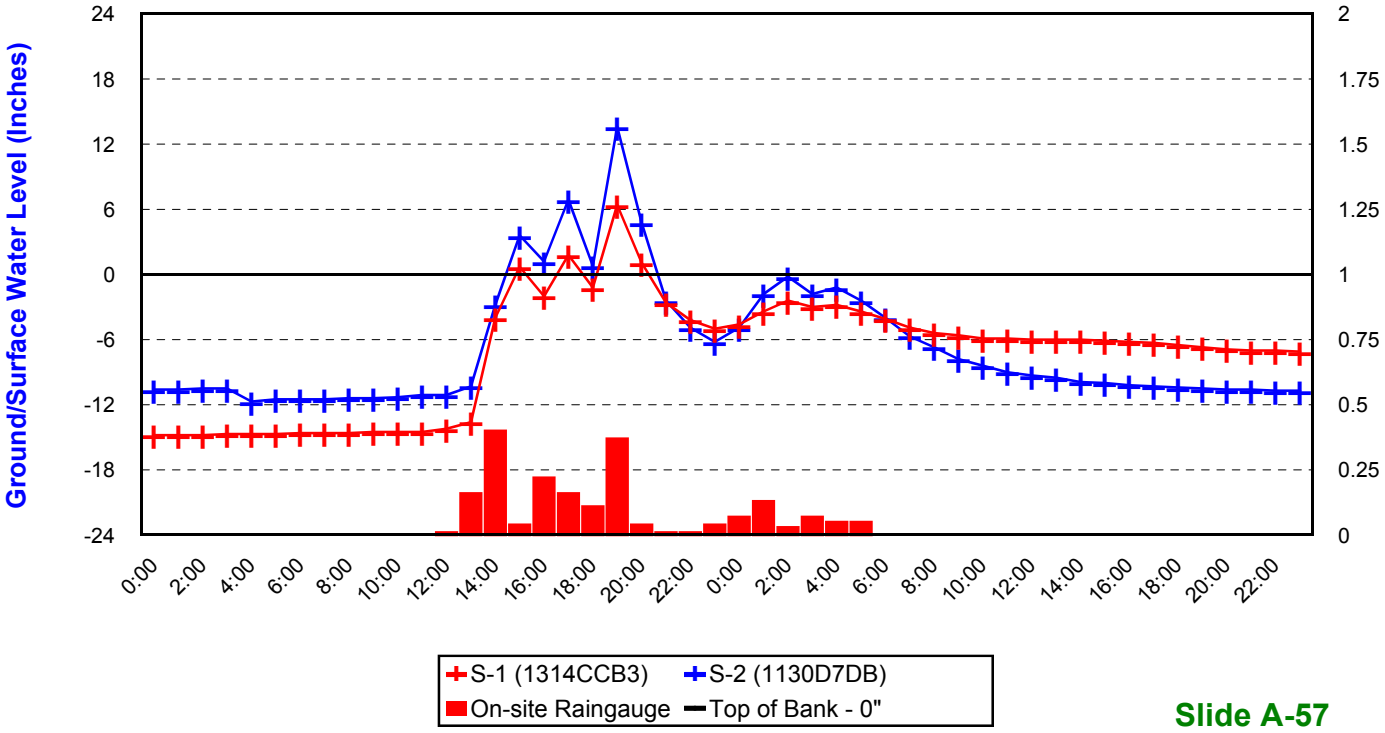
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from WETS Station : NEW RVR MCAF, NC 1987-2016 (wcc.nrcs.usda.gov)



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- April 7, 2018 to April 8, 2018
- One reading per hour



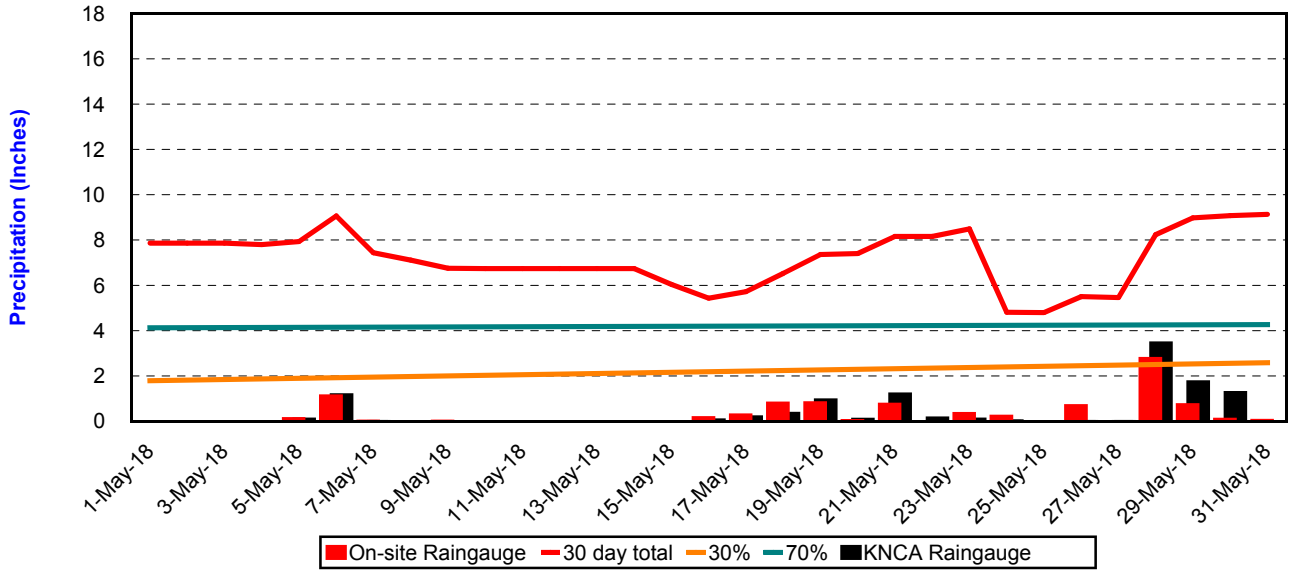
Hydrology Assessment

May 2018

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

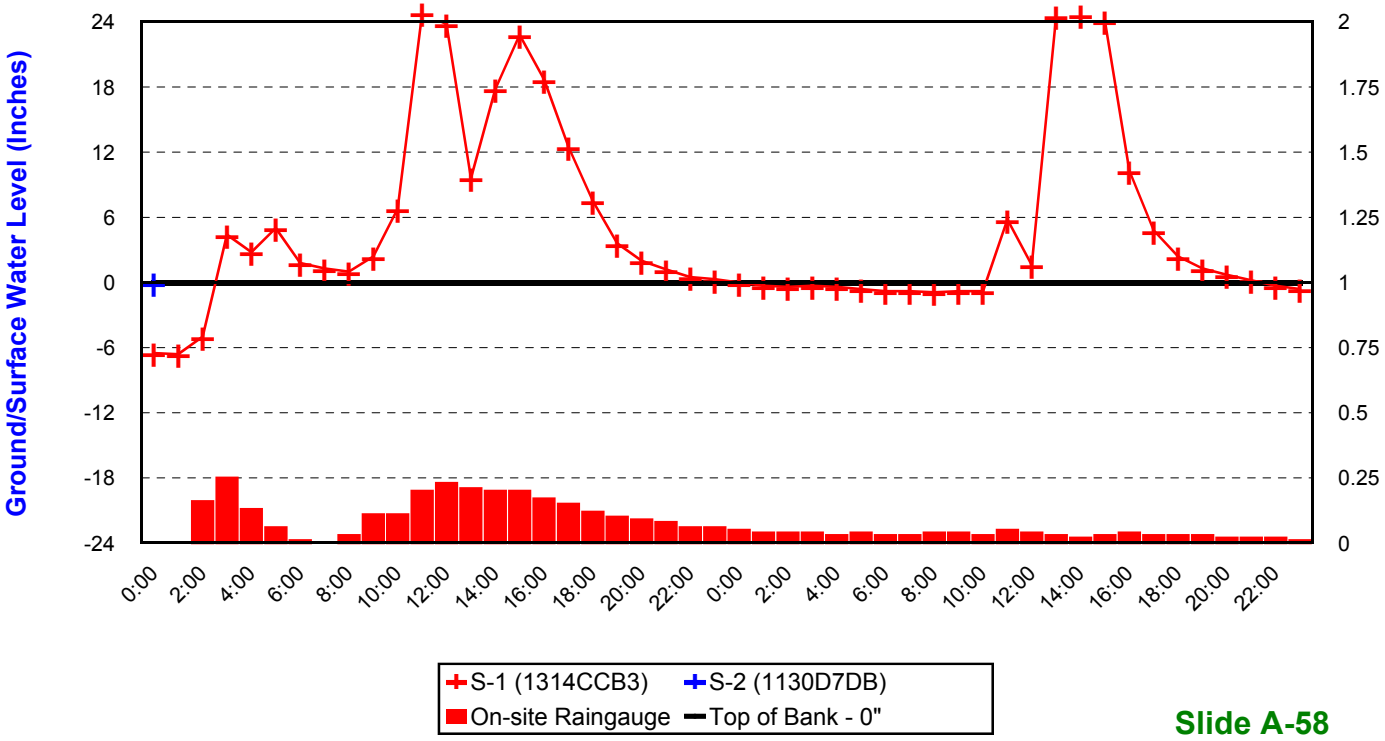
30% & 70% precipitation data obtained from WETS Station : NEW RVR MCAF, NC 1987-2016 (wcc.nrcs.usda.gov)

Gauge S-2 removed from support, reinstalled 9-5-18



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- May 28, 2018 to May 29, 2018
- One reading per hour



Hydrology Assessment

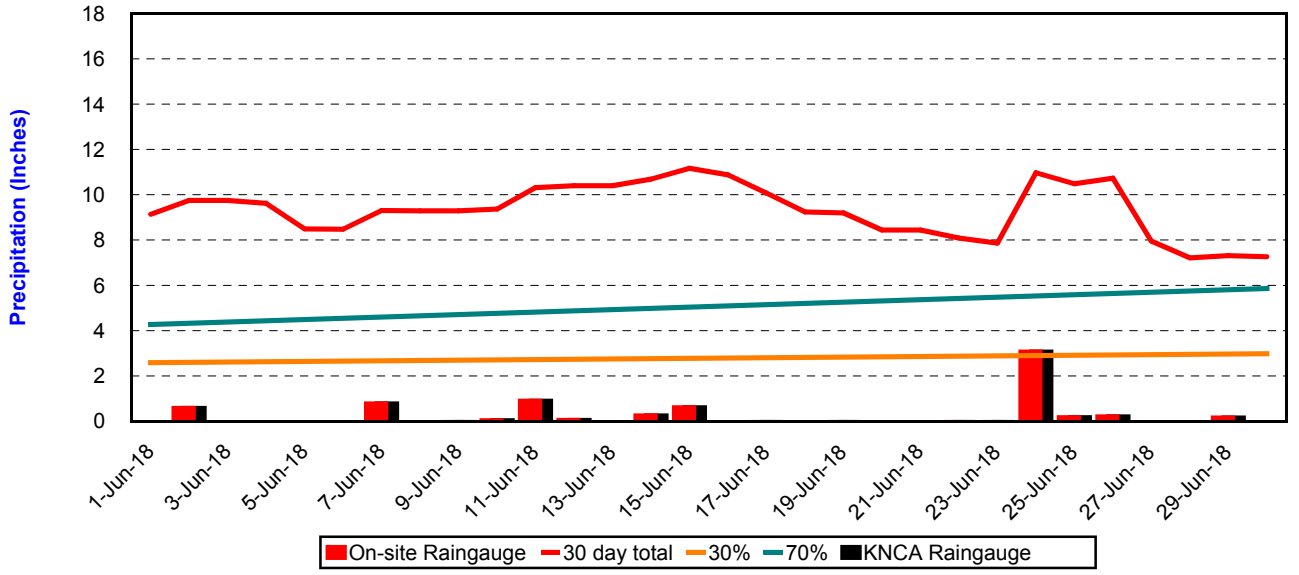
June 2018

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 : NEW RVR MCAF, NC 1987-2016 (wcc.nrcs.usda.gov)

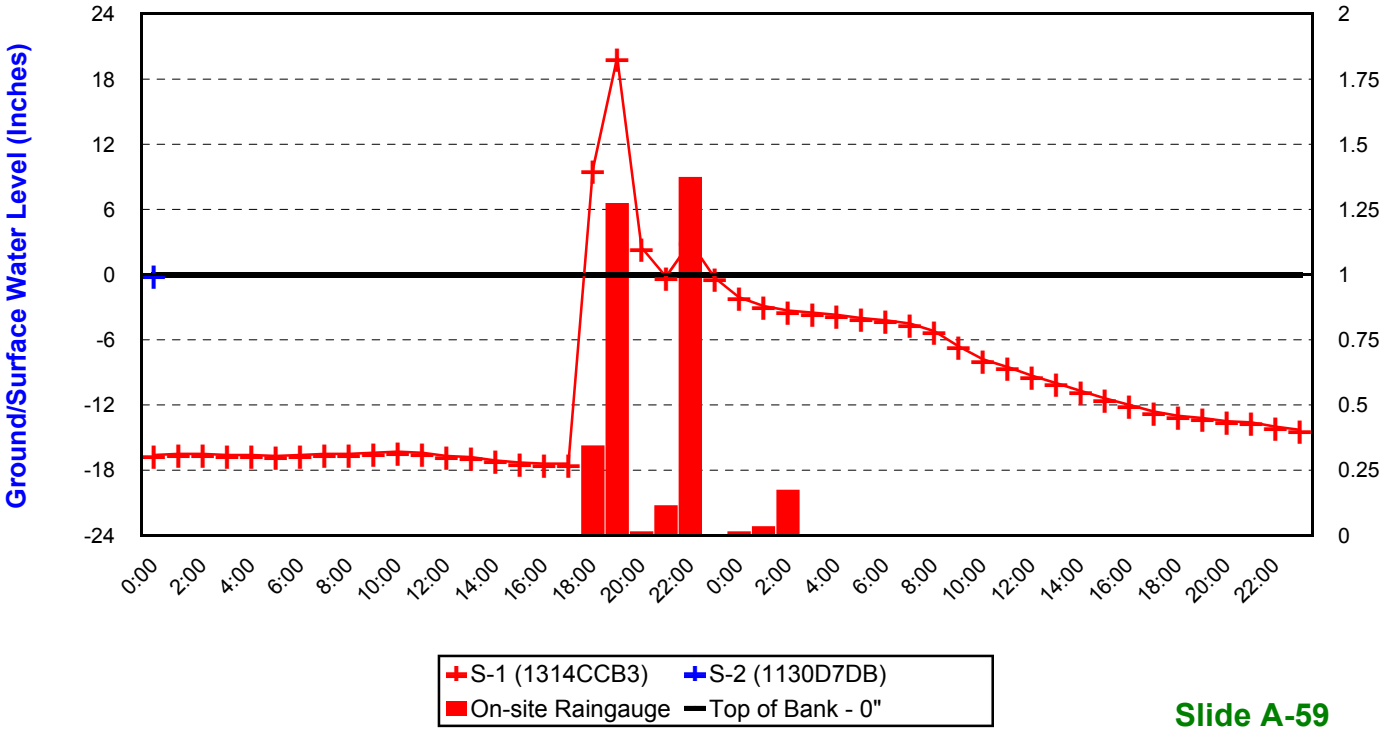
Gauge S-2 removed from support, reinstalled 9-5-18

Onsite Raingauge clogged with debris, data substituted from KNCA from June to August



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- June 24, 2018 to June 25, 2018
- One reading per hour



Hydrology Assessment

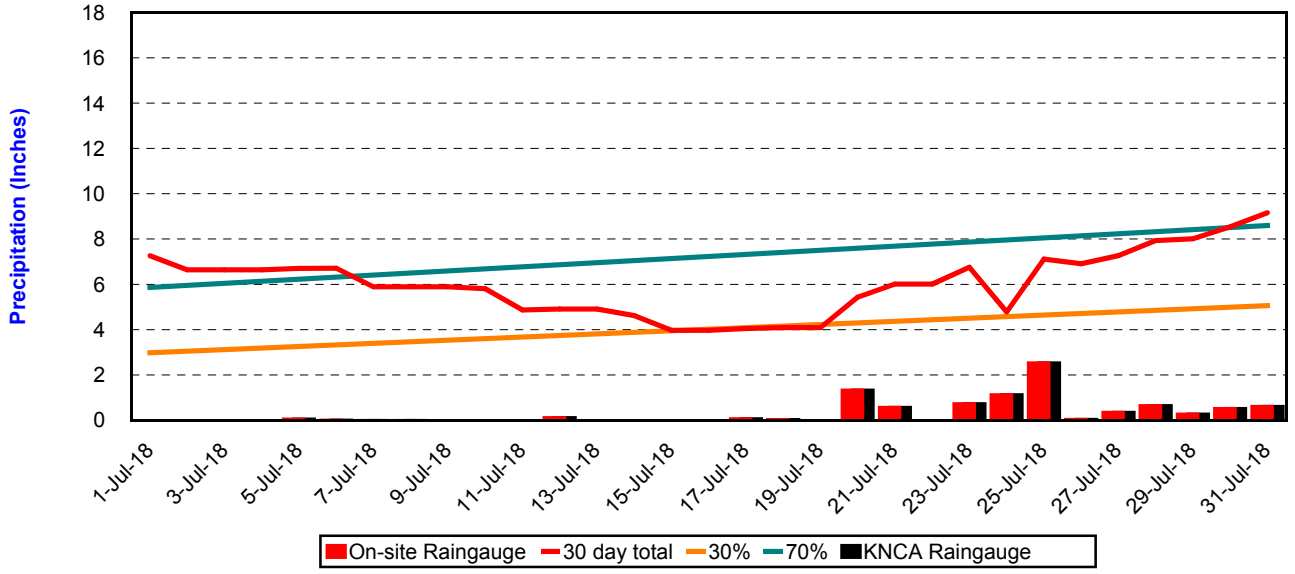
July 2018

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 : NEW RVR MCAF, NC 1987-2016 (wcc.nrcs.usda.gov)

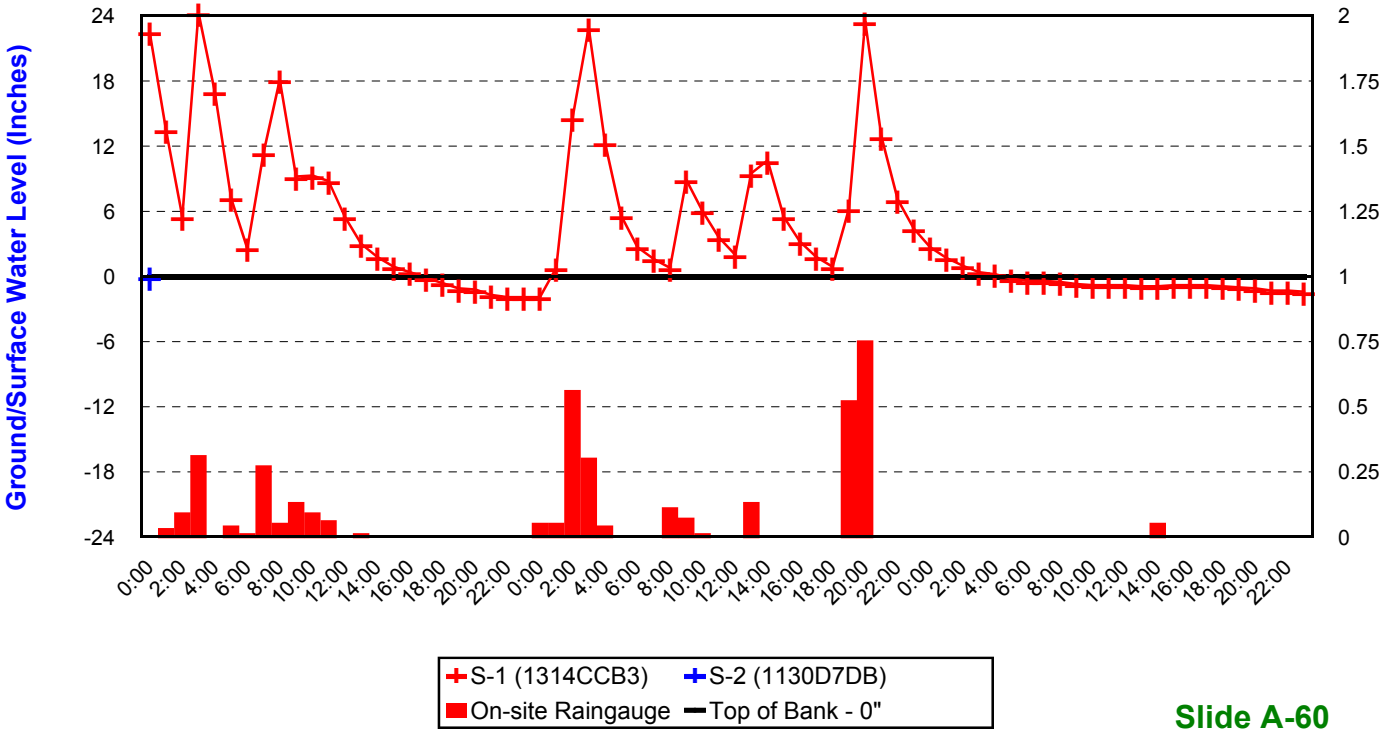
Gauge S-2 removed from support, reinstalled 9-5-18

Onsite Raingauge clogged with debris, data substituted from KNCA from June to August



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- July 24, 2018 to July 26, 2018
- One reading per hour



Hydrology Assessment

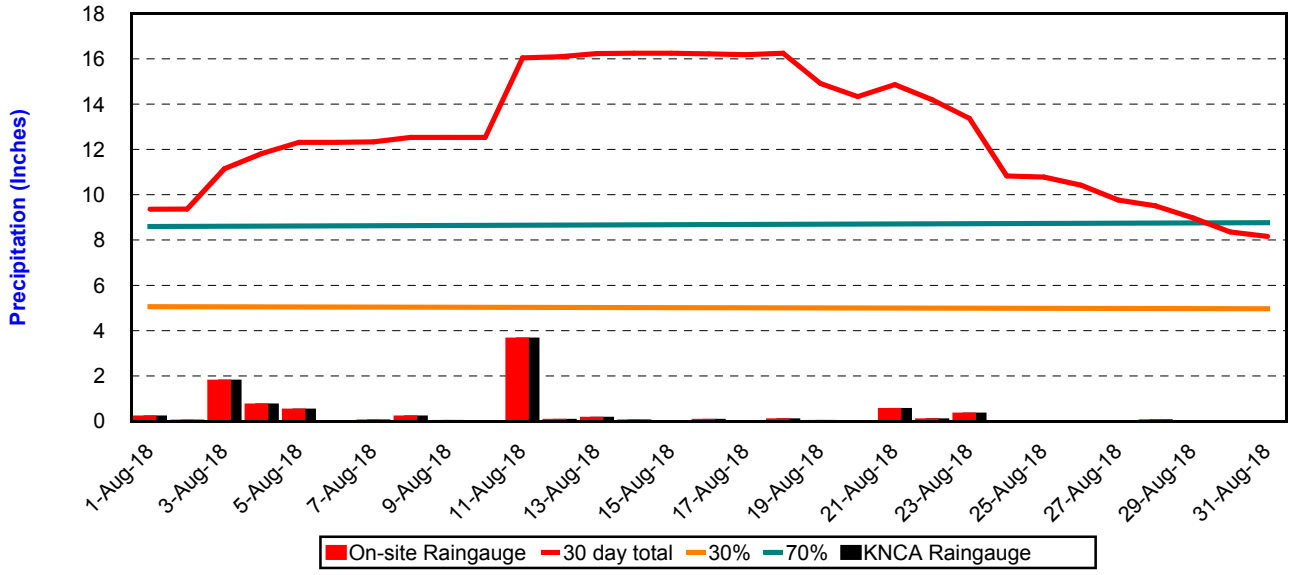
August 2018

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 : NEW RVR MCAF, NC 1987-2016 (wcc.nrcs.usda.gov)

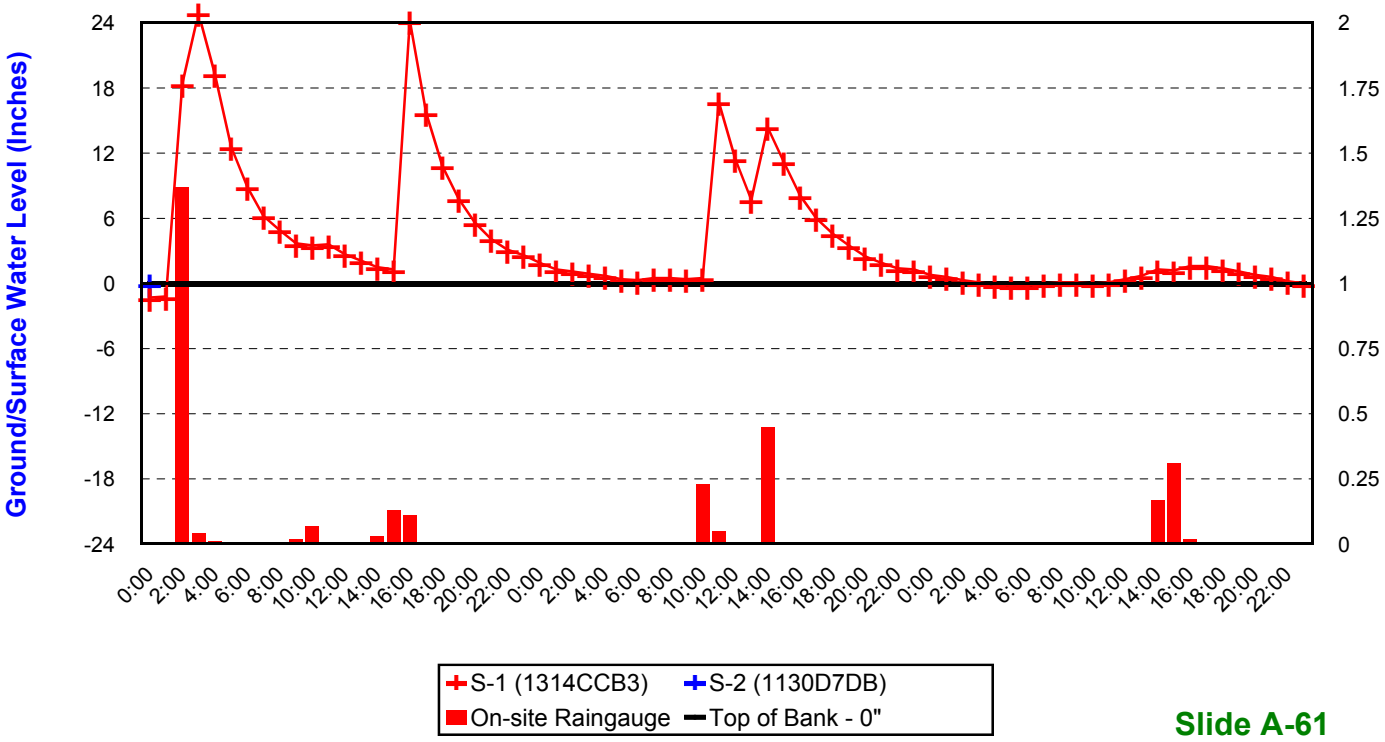
Gauge S-2 removed from support, reinstalled 9-5-18

Onsite Raingauge clogged with debris, data substituted from KNCA from June to August



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- August 3, 2018 to August 5, 2018
- One reading per hour



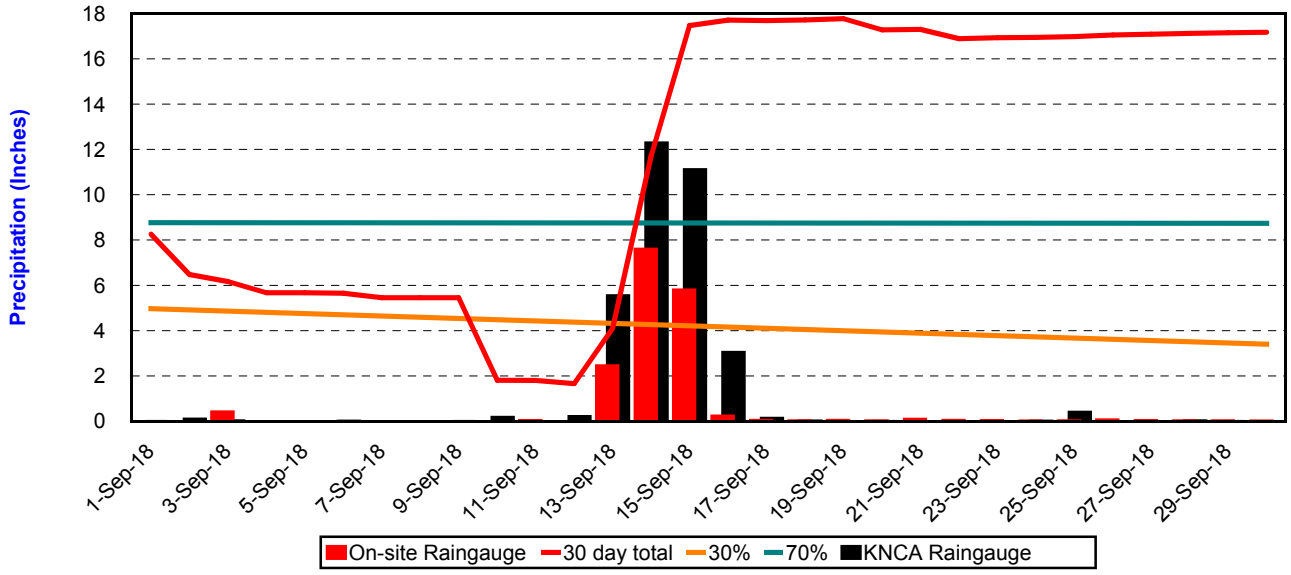
Hydrology Assessment

September 2018

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

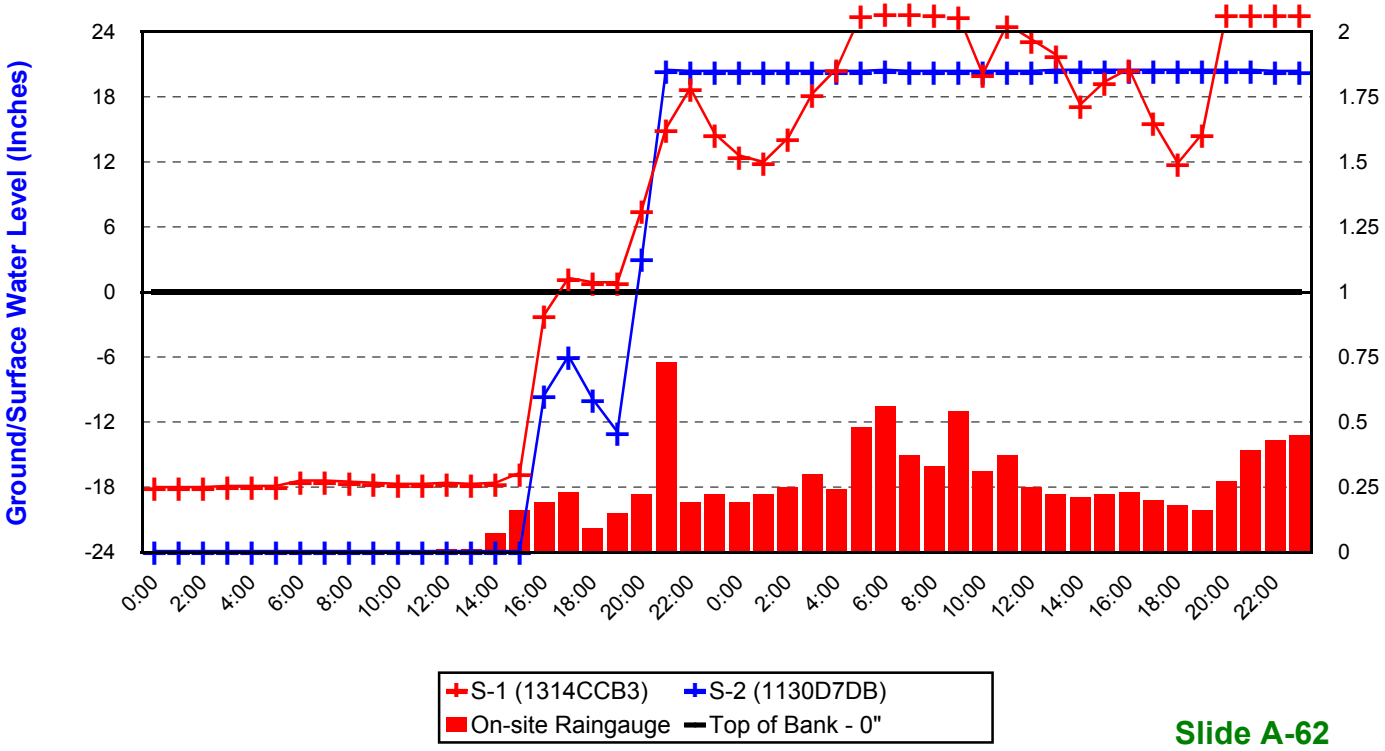
30% & 70% precipitation data obtained from WETS Station : NEW RVR MCAF, NC 1987-2016 (wcc.nrcs.usda.gov)

Gauge S-2 removed from support, reinstalled 9-5-18



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- September 13, 2018 to September 14, 2018
- One reading per hour

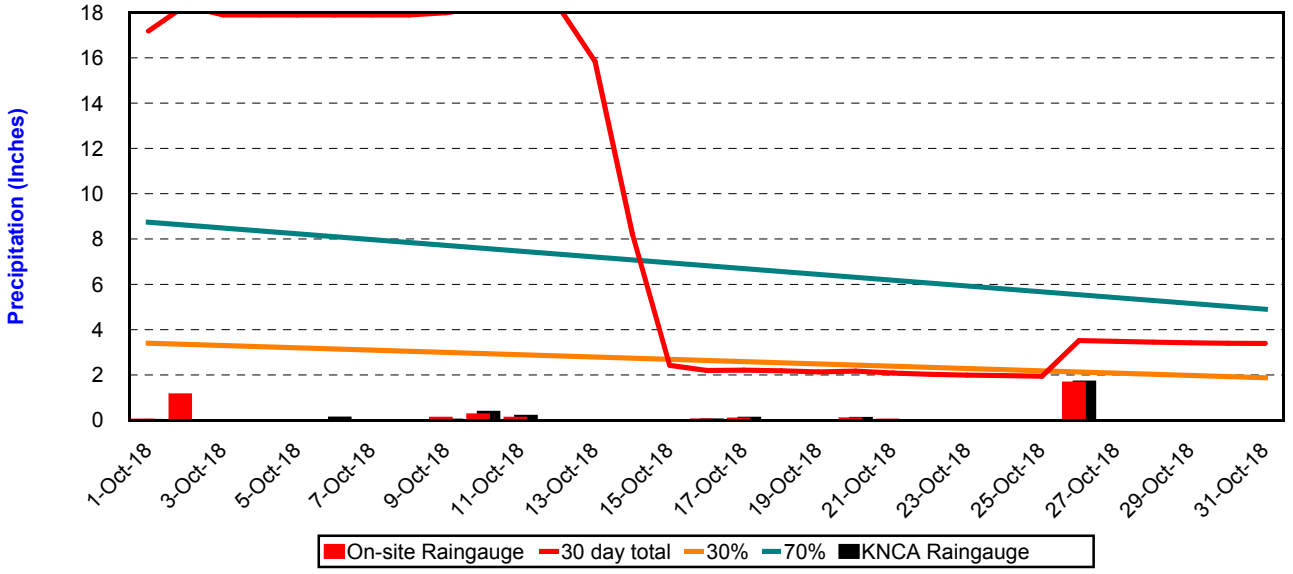


Hydrology Assessment

October 2018

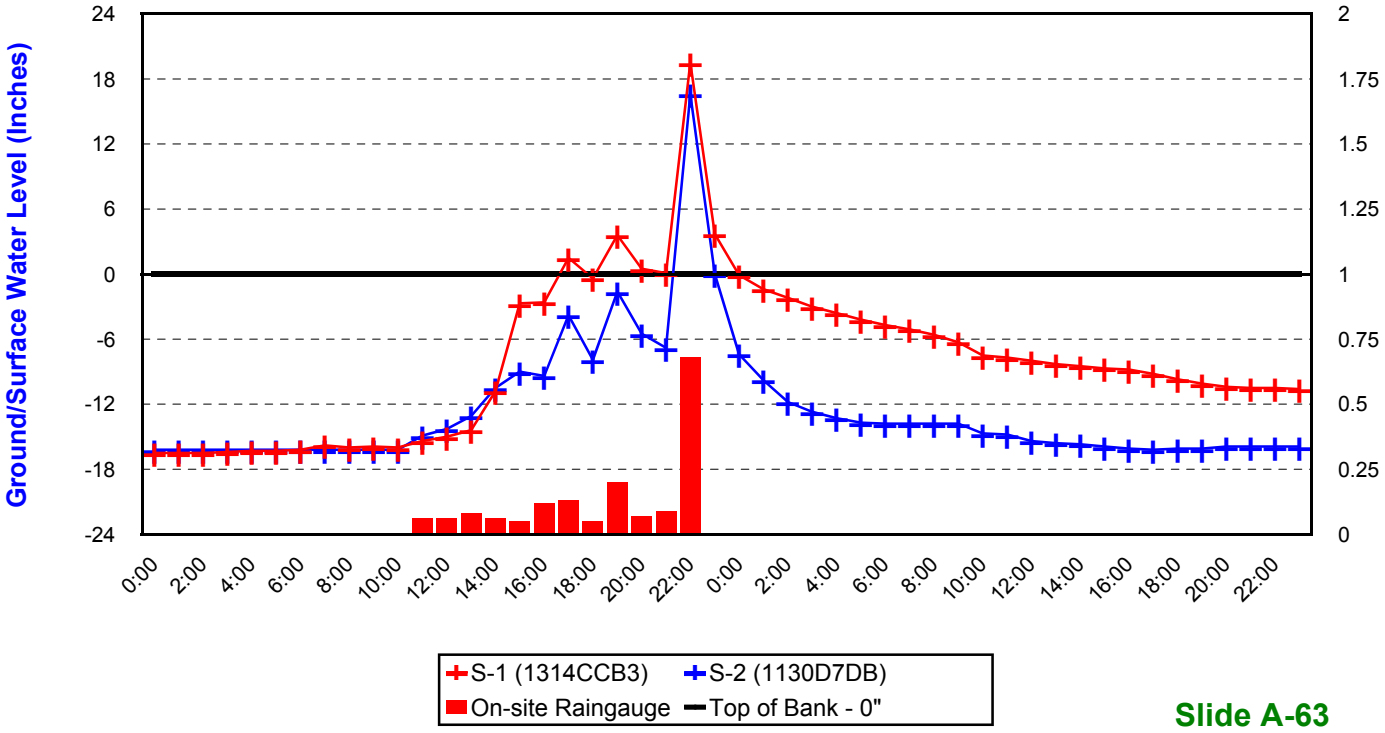
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from WETS Station : NEW RVR MCAF, NC 1987-2016 (wcc.nrcs.usda.gov)



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- October 26, 2018 to October 27, 2018
- One reading per hour



Land Management Group
www.lmgroup.net

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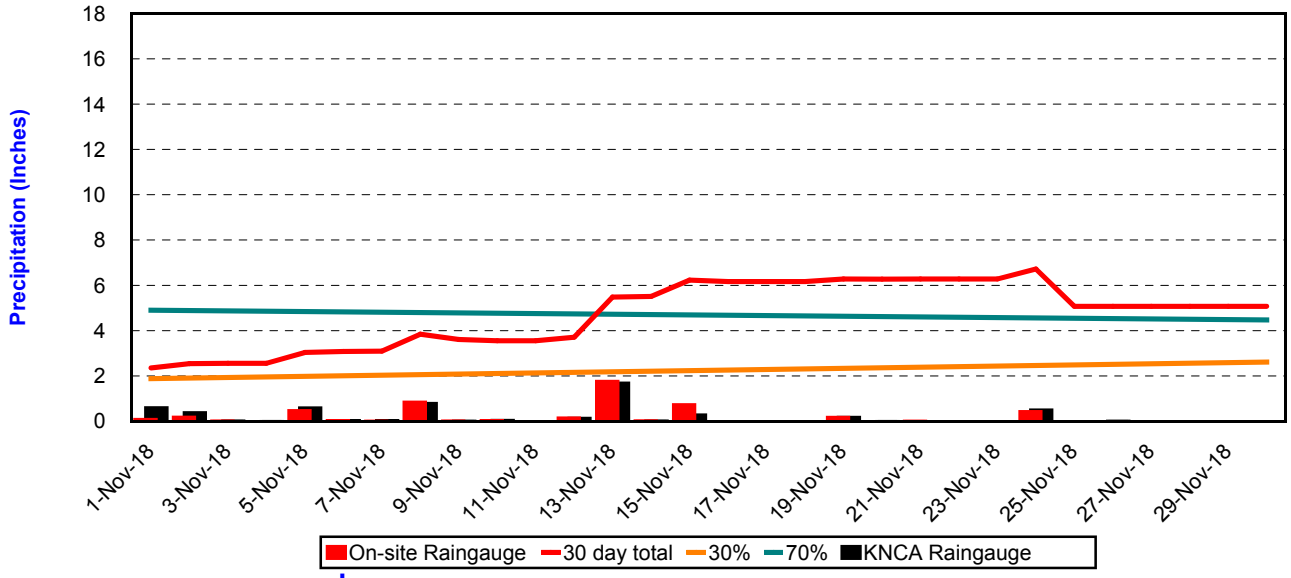
Hydrology Assessment

November 2018

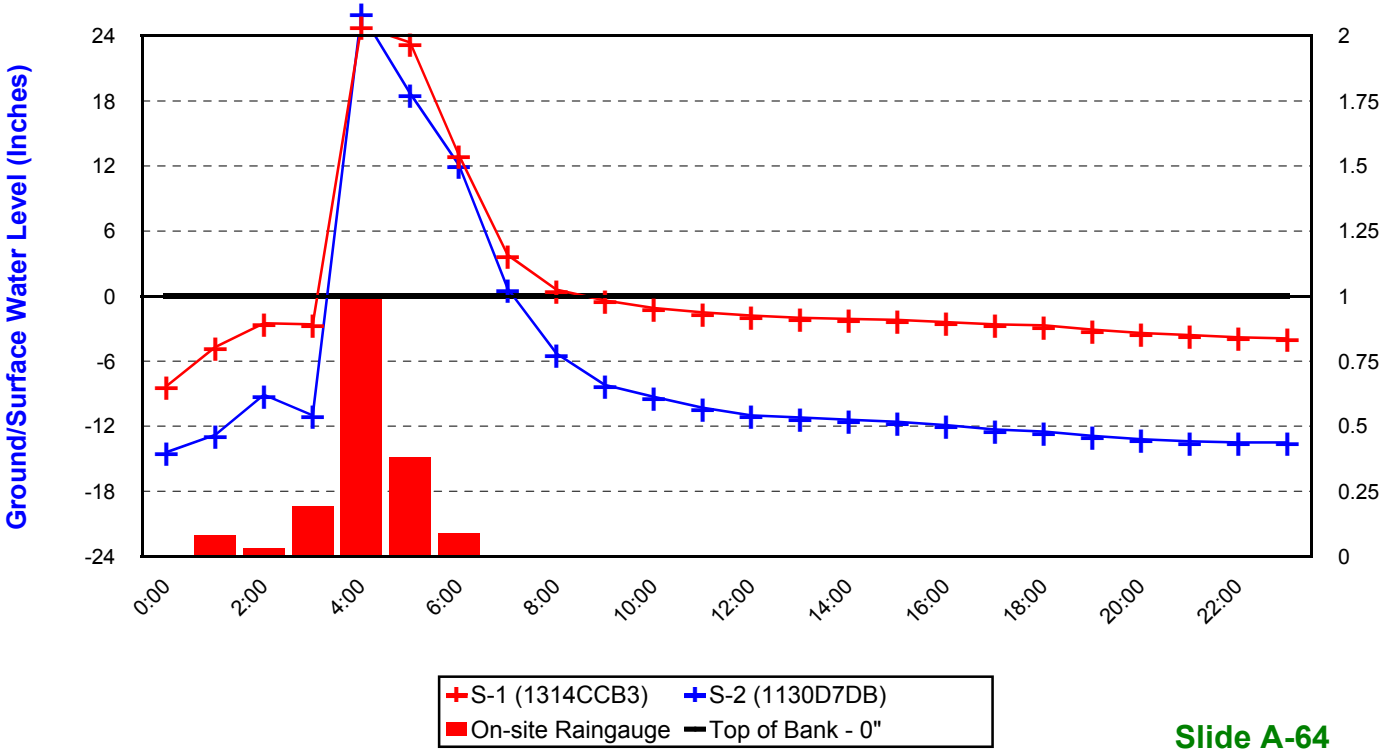
Precipitation data obtained from: On-site rain gauge and New River MCAS (KNCA) (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from WETS Station : NEW RVR MCAF, NC 1987-2016 (wcc.nrcs.usda.gov)



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- November 13, 2018
- One reading per hour

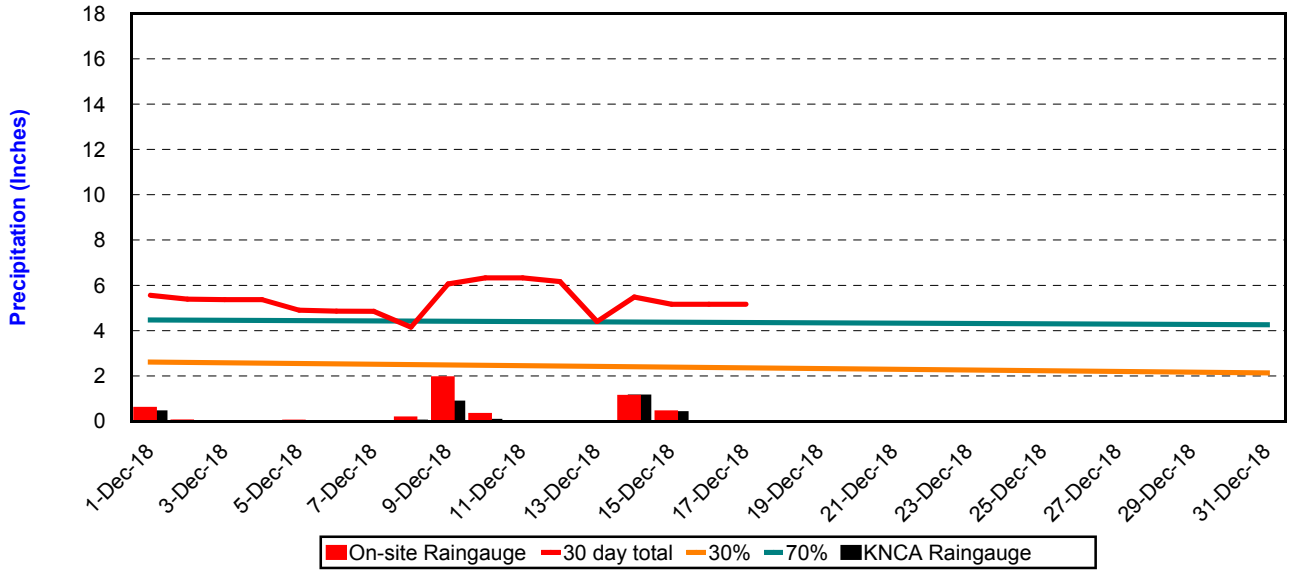


Hydrology Assessment

December 2018

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 : NEW RVR MCAF, NC 1987-2016 (wcc.nrcs.usda.gov)



Monitoring Well Record

- EEP Jacksonville CC
- Onslow County, NC
- 40-08-189
- Stream Wells 1 & 2
- Ecotone WM 40
- December 9, 2018
- One reading per hour