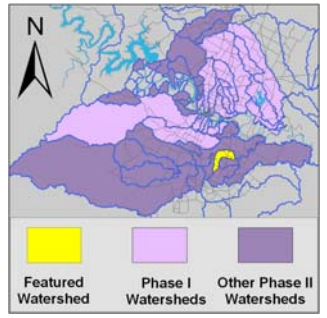


Cottonmouth Creek Watershed

Watershed Overview

Catchment	Total area	5 sq. miles						
	Area in recharge	0						
	Creek length	7 miles						
	Receiving water	Onion Creek						
Demographics	2000 population	420						
	2030 projected population	3,312						
	30 year projected % increase	689 %						
Land Use	Impervious cover (2003 estimate)	7.3 %						
	Impervious cover (2013 estimate)	6.0 %						
Overall EII Scores	1999	2002	2005	2008	2010	2012	2014	2016
	56	56	53	68	71	66	61	70



Flow Regime* for Sample Sites on Cottonmouth Creek

Site	2002					2005					2008					2010				2011				2012					2014					2016				
	Feb	Feb	May	Aug	Nov	Mar	Jun	Jun	Sep	Dec	Feb	May	Jun	Sep	Dec	Mar	May	May	Oct	Dec	Mar	May	Jul	Sep	Jan	Apr	May	Jul	Sep	Jan	Apr	May	Jul	Sep				
	WQ	Bio	WQ	WQ	WQ	WQ	WQ	Bio	WQ	WQ	WQ	WQ	Bio	WQ	WQ	WQ	WQ	WQ	Bio	WQ	WQ	WQ	Bio	WQ	WQ	WQ	WQ	Bio	WQ	WQ	WQ	WQ	WQ	WQ	WQ			
1205	n		n	n																																		
1206	B	B	n	B	B	B	B	B	n	n	B	B	n	n	n	B	B	B	B	n	B	B	n	B	B	B	B	B	B	n	B	B	B	B	B			
1207	B	B	n	n	B	B	n	B	n	n																												

* B = baseflow n = no flow storm = storm flow blue = Samples were taken light blue = Samples were not taken blank = not visited

Index scores* for Cottonmouth Creek sites by year

Reach	Site	Site Name	Year	Water Quality	Sediment**	Contact Rec.	Non-Contact Rec.	Physical Integrity	Aquatic Life	Benthic subindex	Diatom subindex	Total EII Score
CTM1	1205	Cottonmouth Creek @ Colton-Bluff Springs	1999	65	83	99	65	58				62
CTM1	1206	Cottonmouth Creek @ Dee Gabriel Collins	1999	48	83	96	77	56				60
CTM1	1207	Cottonmouth Creek @ Colton Road	1999	53	83	68	32	33				45
CTM1	1205	Cottonmouth Creek @ Colton-Bluff Springs	2002		64		72	55				48
CTM1	1206	Cottonmouth Creek @ Dee Gabriel Collins	2002	40	64	65	78	62	29	40	18	56
CTM1	1207	Cottonmouth Creek @ Colton Road	2002	48	64	92	52	57	34	45	23	58
CTM1	1206	Cottonmouth Creek @ Dee Gabriel Collins	2005	36	68	37	57	51	44	39	49	49
CTM1	1207	Cottonmouth Creek @ Colton Road	2005	53	68	45	59	61	61		61	58
CTM1	1206	Cottonmouth Creek @ Dee Gabriel Collins	2008	67	81	47	77	68	65	65		68
CTM1	1206	Cottonmouth Creek @ Dee Gabriel Collins	2010	65	76	86	73	54	71	74	68	71
CTM1	1206	Cottonmouth Creek @ Dee Gabriel Collins	2012	49	82	69	67	62	68	97	38	66
CTM1	1206	Cottonmouth Creek @ Dee Gabriel Collins	2014	56	81	80	74	34	42	32	52	61
CTM1	1206	Cottonmouth Creek @ Dee Gabriel Collins	2016	56	79	70	71	75	65	64	66	70

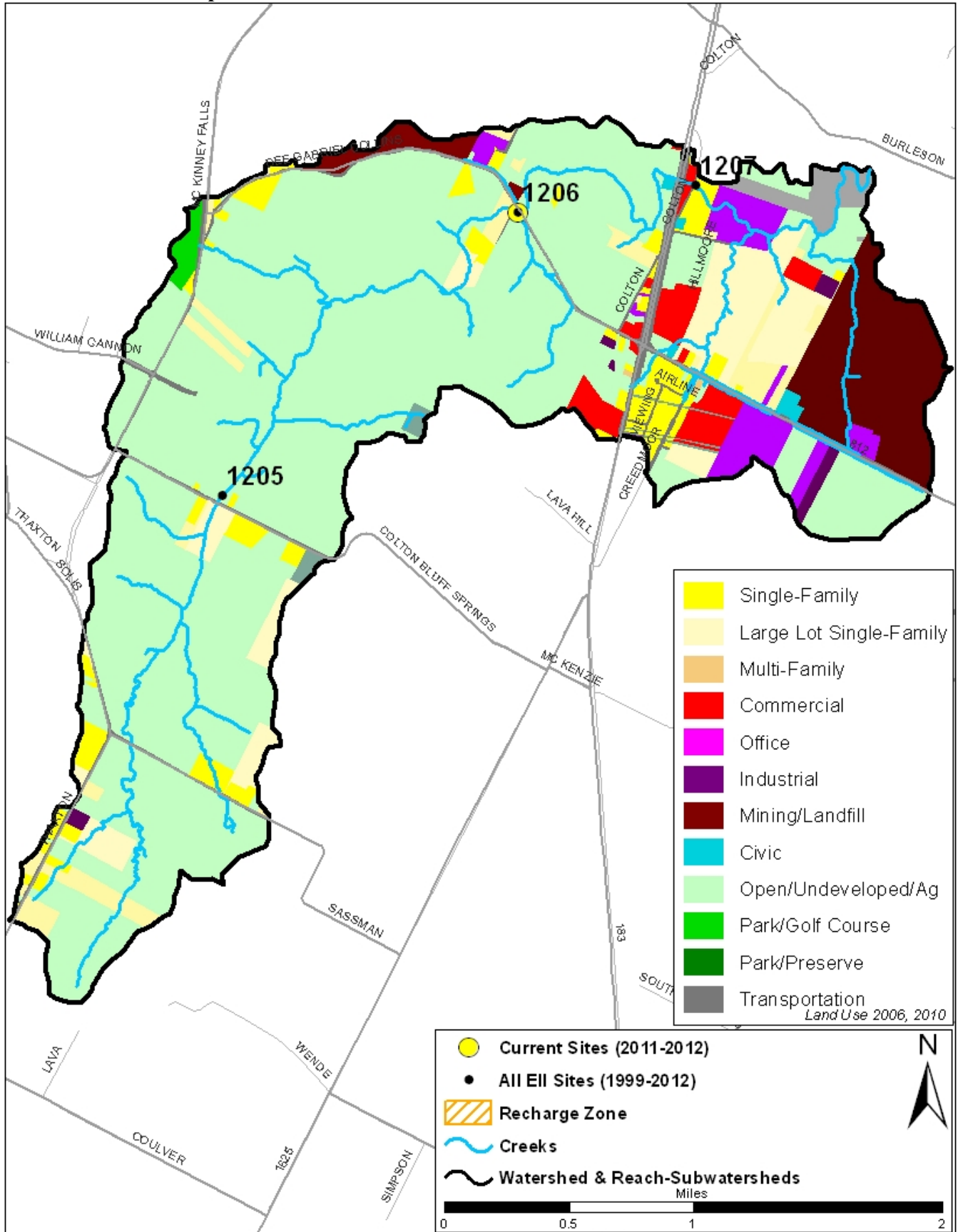
* blank cells indicate parameter was not collected, blank row indicate site was dropped

**sediment samples only collected at the downstream site

100-87.5 Excellent 87.5-75 V. Good 75-62.5 Good 62.5-50 Fair 50-37.5 Marginal 37.5-25 Poor 25-12.5 Bad 12.5-0 V. Bad

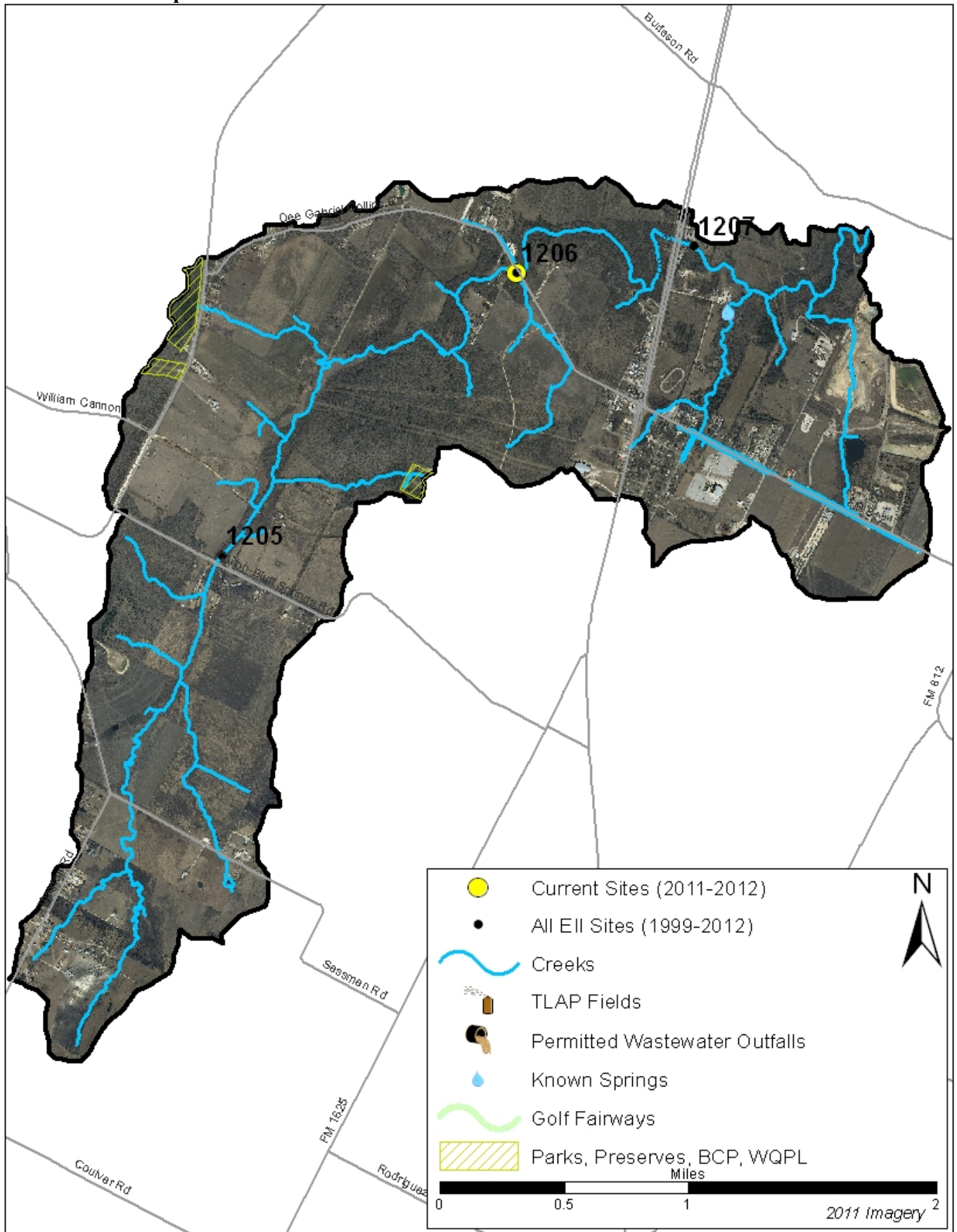
Cottonmouth Creek Watershed

Land Use Map



Cottonmouth Creek Watershed

Aerial Map



Cottonmouth Creek Watershed

Water Quality Data – Temperature, Conductivity, pH, Dissolved Oxygen & E. coli for 2016 Sample Sites (Downstream to Upstream)

Qualifiers to the left of the value	>	Greater than	Qualifiers to the right of the value	(blank)	Useable
	<	Less than		S	Exceeds standard range
	<J	Less than detected limit		R	Rejected, failed QC
	J	Estimated			

Watershed	Site	EII Reach	Date	Temp. flag	Cond. flag	pH flag	D.O. flag	E. Coli flag
Cottonmouth	1206	CTM1	01/12/2016	11.9	661	8.00	9.7	R
Cottonmouth	1206	CTM1	04/12/2016	20.4	714	7.87	6.8	
Cottonmouth	1206	CTM1	05/13/2016	23.2	680	8.77	6.4	
Cottonmouth	1206	CTM1	07/12/2016	26.8	666	8.05	6.4	R
Cottonmouth	1206	CTM1	09/13/2016	23.9	682	7.92	6.7	
CTM1 Mean				21.2	681	7.92	7.2	46.0
Cottonmouth Mean				21.2	681	7.92	7.2	46.0

Gray highlighting indicates that the value exceeds one standard deviation from the mean of all E.I.I. sites combined.

Summary Statistics for all 2015-2016 E.I.I. Sites Combined					
Parameter	2015-2016 Average	2015-2016 Minimum	2015-2016 Maximum	1 Standard Deviation Above	1 Standard Deviation Below
Temperature (C°)	20.7	5.8	34.2	27.5	
Conductivity (uS/cm)	722	160	3549	955	
pH (Standard units)	7.86	5.85	10.25	8.24	7.47
D.O. (mg/l)	7.9	0.1	18.7	10.4	5.5
E. Coli (col/100ml)	316.1	1.0	2420.0	883.7	

Cottonmouth Creek Watershed

Water Quality Data – Ammonia, Nitrate / Nitrite, Ortho-Phosphorus, Total Suspended Solids & Turbidity for 2016 Sample Sites (Downstream to Upstream)

Qualifiers to the left of the value	>	Greater than	Qualifiers to the right of the value	(blank)	Useable
	<	Less than		S	Exceeds standard range
	<J	Less than detected limit		R	Rejected, failed QC
	J	Estimated			

Watershed	Site	EII Reach	Date	NH3-N		NO3/NO2		Ortho-P		T.S.S		Turb.			
				<>	flag	<>	flag	<>	flag	<>	flag	<>	flag		
Cottonmouth	1206	CTM1	01/12/2016	<J	0.008		1.74		0.004		5.8		5.8	R	
Cottonmouth	1206	CTM1	04/12/2016	<J	0.008		2.59		0.004		1.4		2.5		
Cottonmouth	1206	CTM1	05/13/2016												
Cottonmouth	1206	CTM1	07/12/2016		0.269	R	1.65		0.004		<J	1.0		2.5	R
Cottonmouth	1206	CTM1	09/13/2016	<J	0.008		1.88		0.004		<J	1.1		2.3	
CTM1 Mean					0.073		1.96		0.004		2.3		3.3		
Cottonmouth Mean					0.073		1.96		0.004		2.3		3.3		

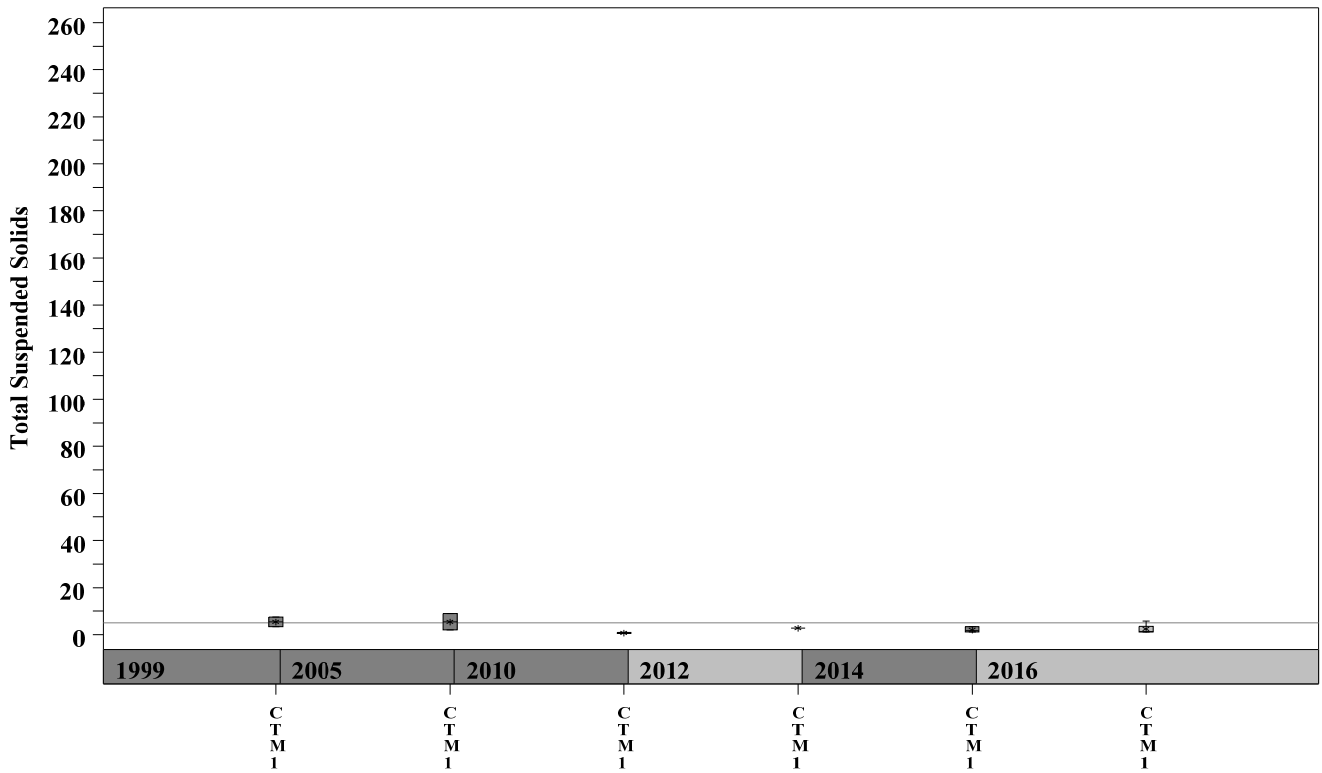
Gray highlighting indicates that the value exceeds one standard deviation from the mean of all E.I.I. sites combined.

Summary Statistics for all 2015-2016 E.I.I. Sites Combined				
Parameter	2015-2016 Average	2015-2016 Minimum	2015-2016 Maximum	1 Standard Deviation Above
Temperature (C°)	20.7	5.8	34.2	0.085
Conductivity (uS/cm)	722	160	3549	3.16
pH (Standard units)	7.86	5.85	10.25	0.08
D.O. (mg/l)	7.9	0.1	18.7	9.7
<i>E. Coli</i> (col/100ml)	316.1	1.0	2420.0	11.7

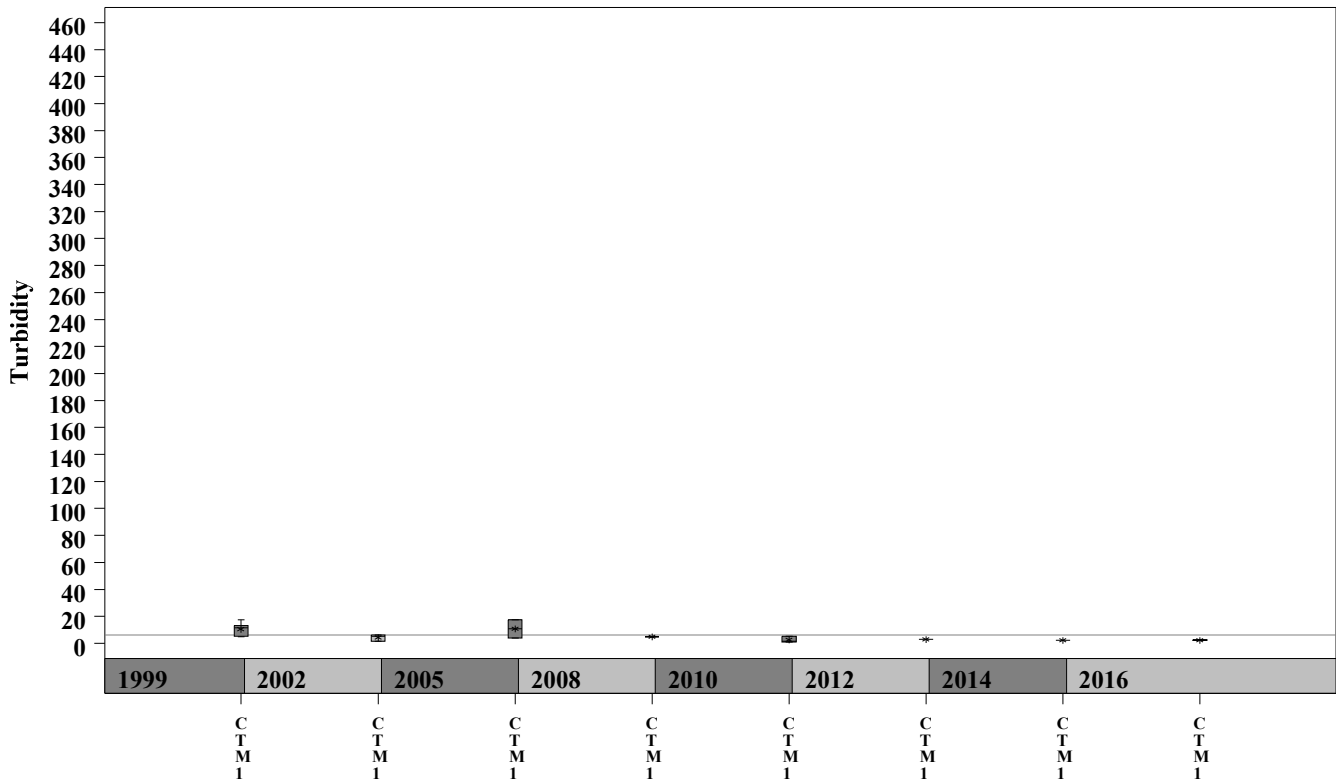
Cottonmouth Creek Watershed

Data Summary Graphs – Total Suspended Solids and Turbidity (Downstream to Upstream by Year)

Parameter = TOTAL SUSPENDED SOLIDS Unit = mg/L Watershed = Cottonmouth



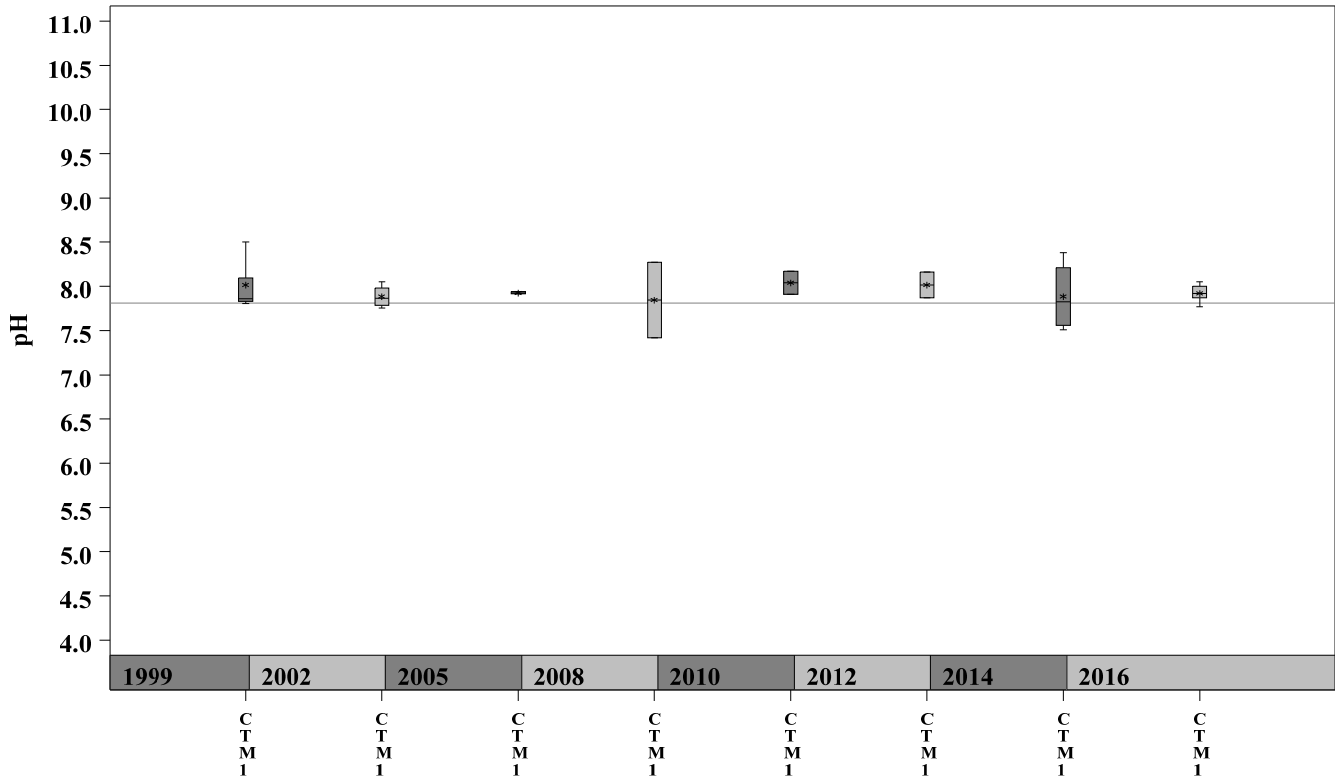
Parameter = TURBIDITY Unit = NTU Watershed = Cottonmouth



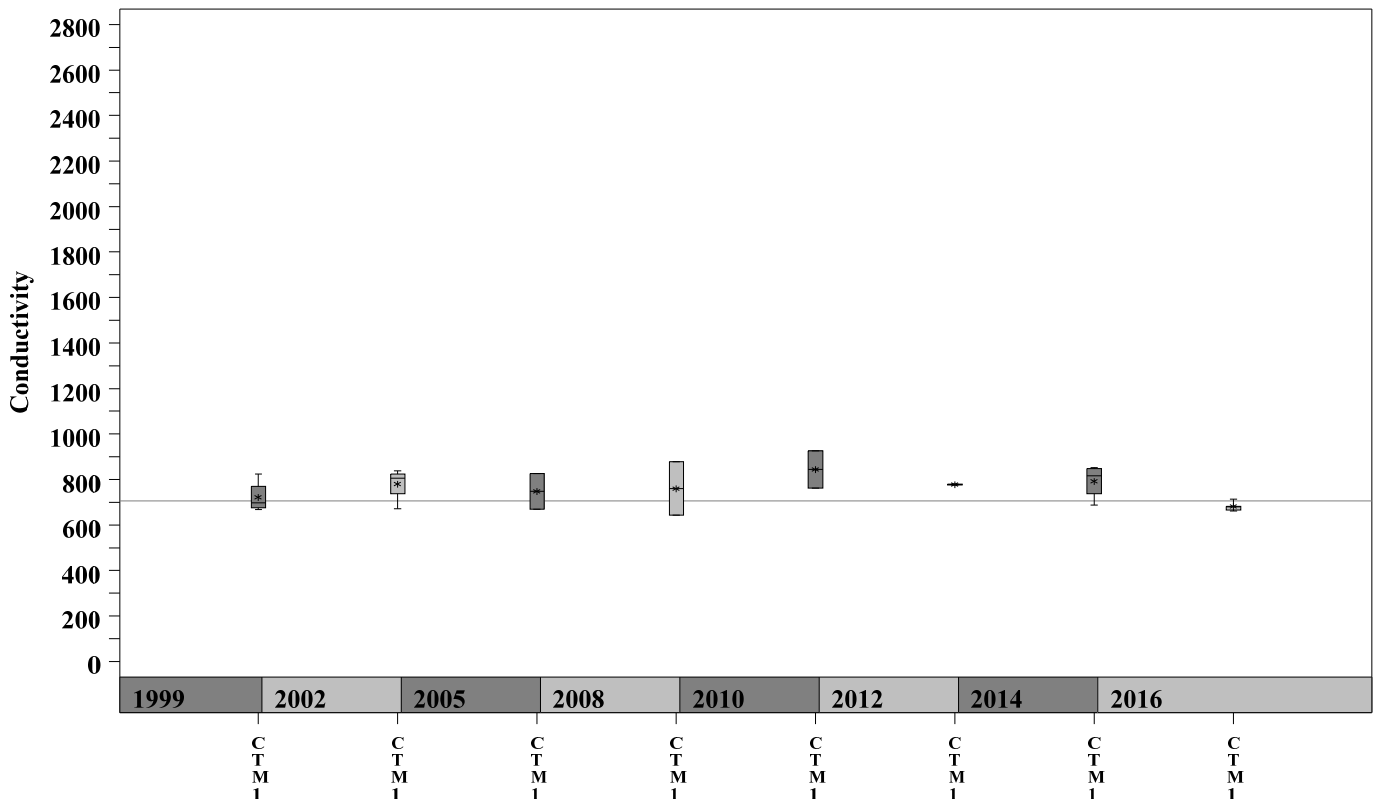
Cottonmouth Creek Watershed

Data Summary Graphs – pH and Conductivity (Downstream to Upstream by Year)

Parameter = pH Unit = Standard Units Watershed = Cottonmouth



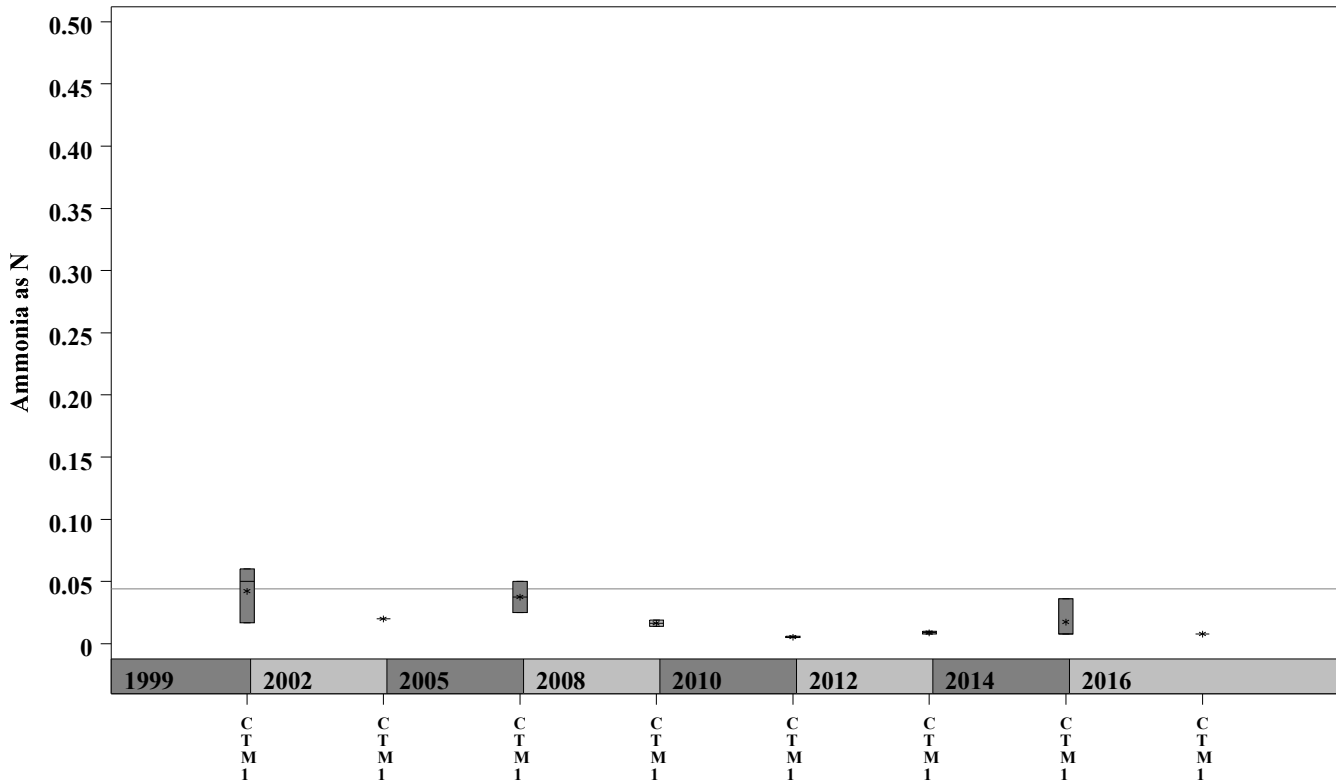
Parameter = CONDUCTIVITY Unit = uS/cm Watershed = Cottonmouth



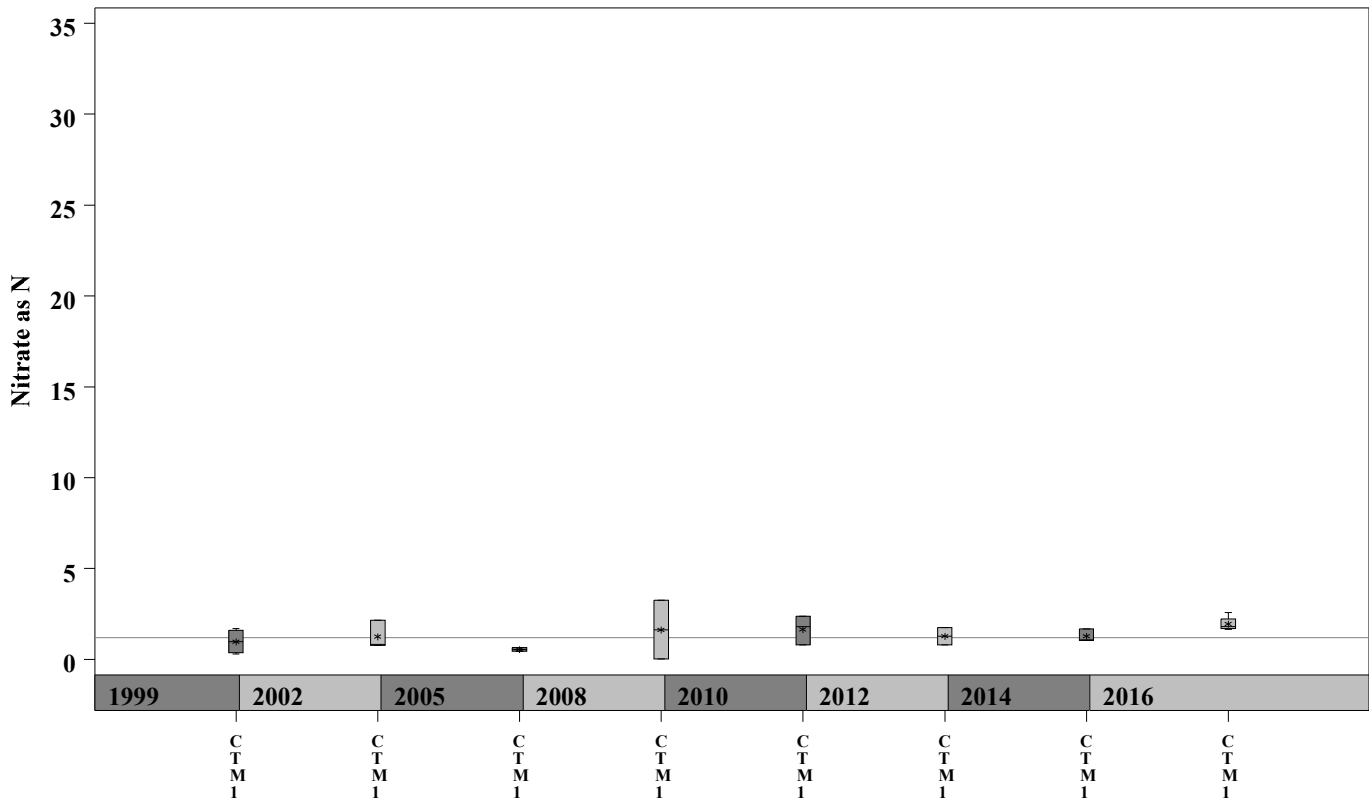
Cottonmouth Creek Watershed

Data Summary Graphs – Ammonia and Nitrate/Nitrite (Downstream to Upstream by Year)

Parameter = AMMONIA AS N Unit = mg/L Watershed = Cottonmouth



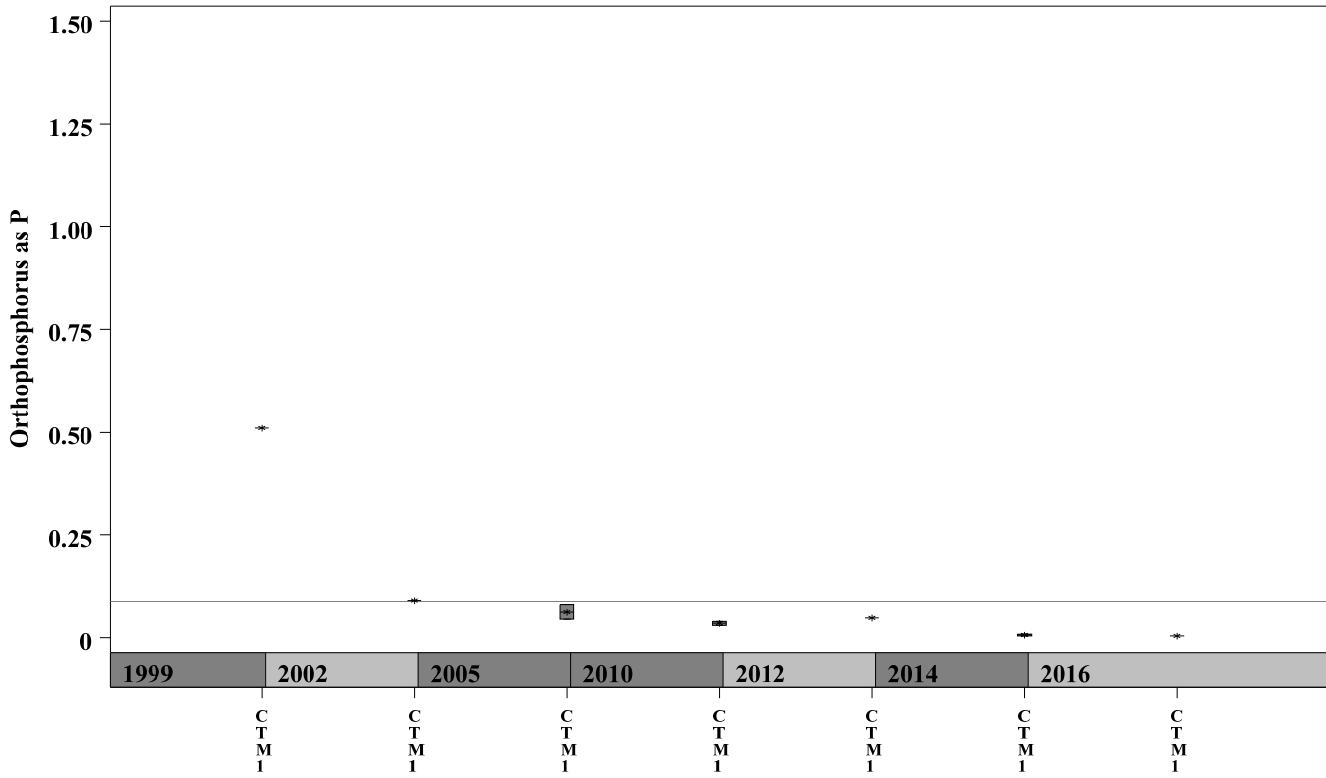
Parameter = NITRATE AS N Unit = mg/L Watershed = Cottonmouth



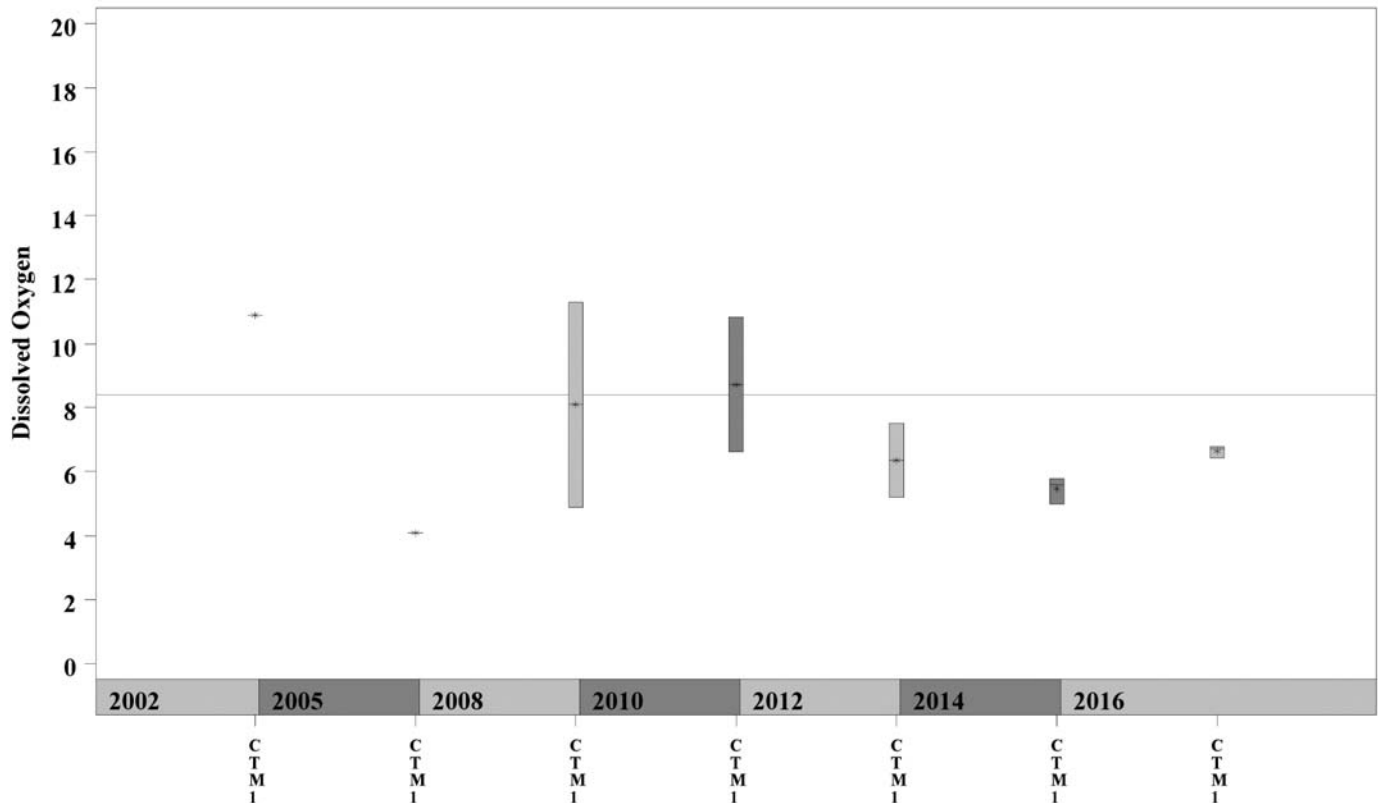
Cottonmouth Creek Watershed

Data Summary Graphs – Orthophosphate and Dissolved Oxygen (Downstream to Upstream by Year)

Parameter = ORTHOPHOSPHORUS AS P Unit = mg/L Watershed = Cottonmouth



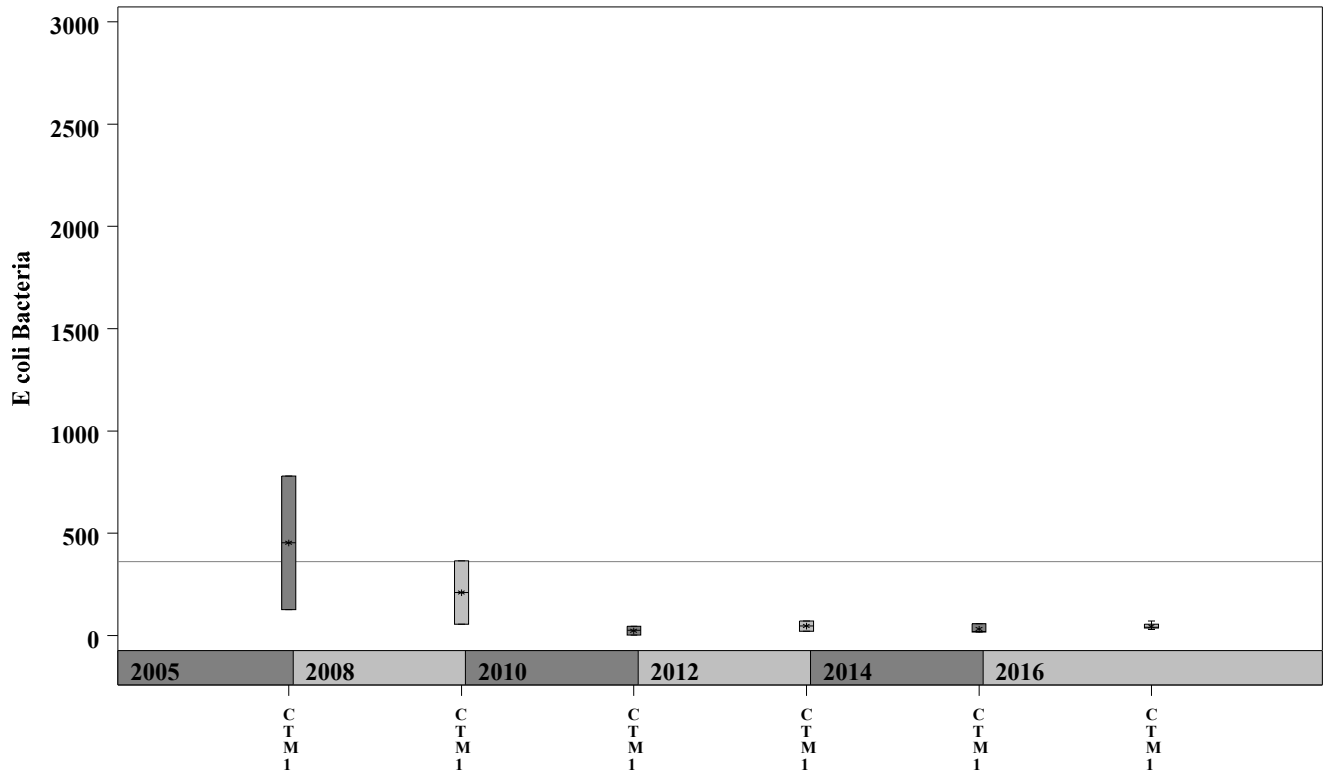
Parameter = DISSOLVED OXYGEN Unit = mg/L Watershed = Cottonmouth



Cottonmouth Creek Watershed

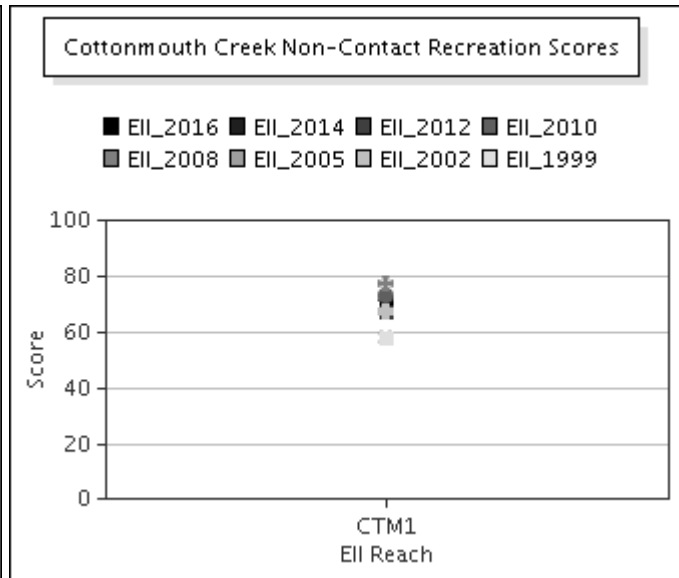
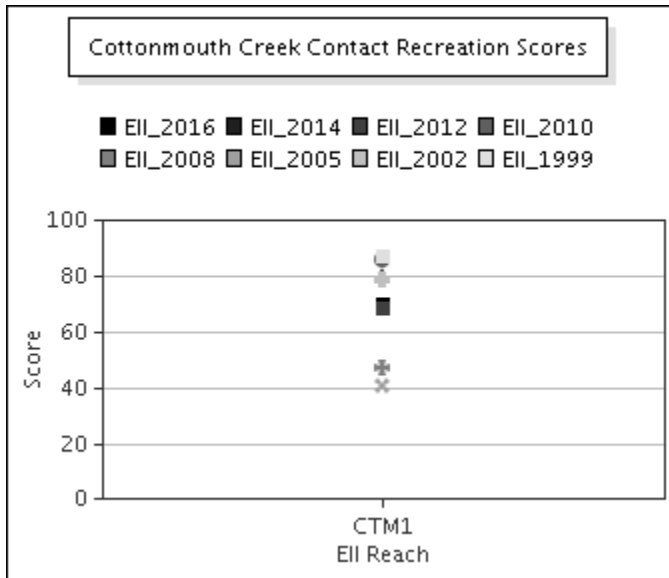
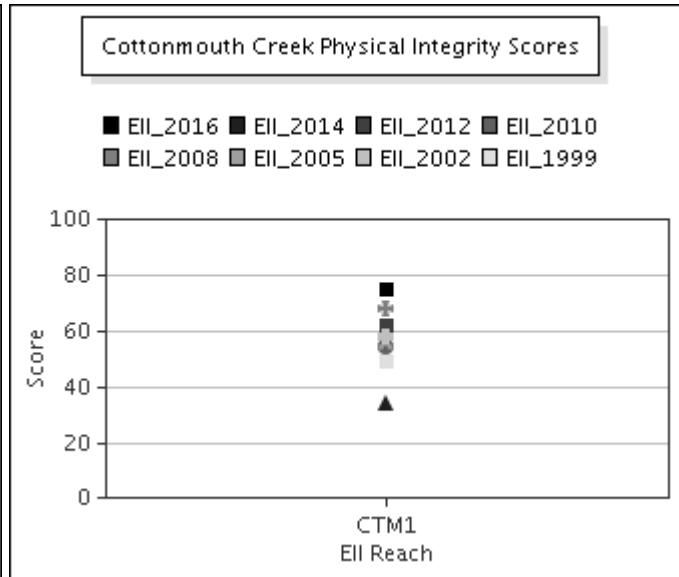
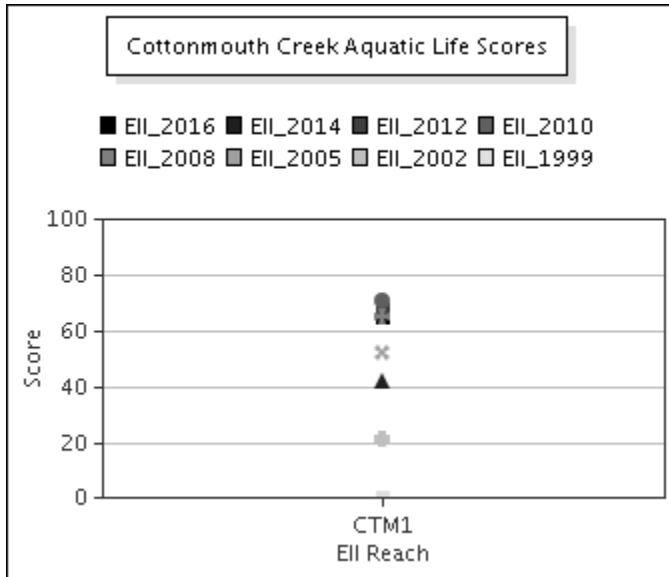
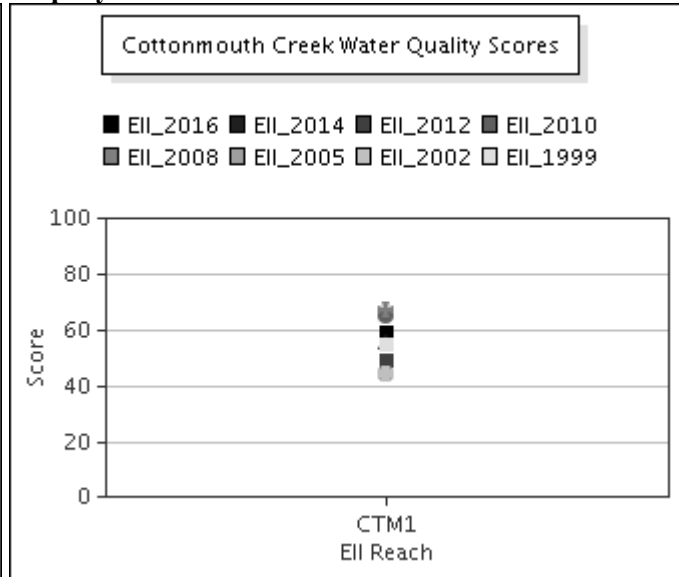
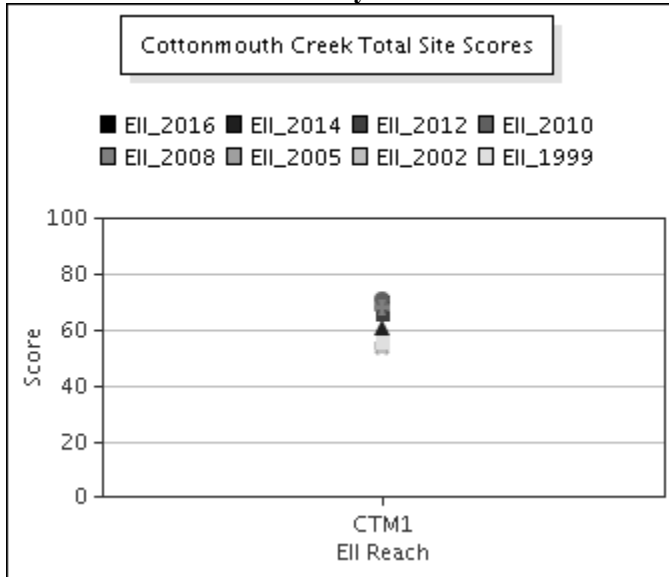
Data Summary Graphs – *E.coli* (Downstream to Upstream by Year)

Parameter=E COLI BACTERIA Unit=MPN/100mL Watershed=Cottonmouth



Cottonmouth Creek Watershed

Score Summary – Reach scores for each sample year



Cottonmouth Creek Watershed

Benthic Macroinvertebrates – Taxa List, Pollution Tolerance Index & Functional Feeding Group for 2016 Sample Sites (Downstream to Upstream)

Benthic Macroinvertebrates - Cottonmouth Creek			CTM @ D G Collins (1206) 05/13/2016 (WRE)
Benthic Macroinvertebrate ID	PTI	FFG	
Chimarra	2	FC	4
Fallceon	4	CG,SC	50
Simulium	4	FC	76
Gerridae	5	P	1
Argia	6	P	17
Cheumatopsyche	6	FC	25
Chironomidae	6	FC,P	2
Hirudinea	8	P	1

Cottonmouth Creek Watershed

Site Photographs



1205_t00-ds1-06_20_2000



1205_t00-ds-03_28_2002



1207_t00-ds-03_28_2002



1207_t00-us-06_15_2005



1207_t00-ds-06_15_2005



1207_t00-ur-06_15_2005

Cottonmouth Creek Watershed

Site Photographs



1206_t00-ds-06_20_2000



1206_t00-ds-03_28_2002



1206_t00-us-06_15_2005



1206_t0-ds-06_17_2008



1206_00-us-05_18_2010



1206_00-ds-05_18_2010