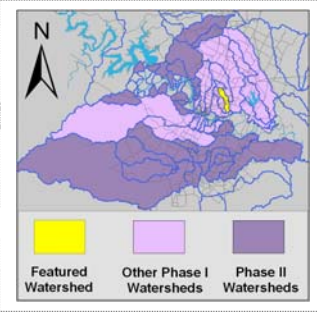


Fort Branch Watershed

Watershed Overview

Catchment	Total area	3 square miles					
	Area in recharge	none					
	Creek length	6 miles					
	Receiving water	Boggy Creek					
Demographics	2000 population	16,796					
	2030 projected population	19,659					
	30 year projected % increase	17 %					
Land Use	Impervious cover (2003 estimate)	38.2 %					
	Impervious cover (2013 estimate)	38.9 %					
Overall EII Scores	2000	2003	2006	2009	2011	2013	2015
	60	55	52	47	43	50	65



Flow Regime* for Sample Sites on Fort Branch Upstream to Downstream

Site	2001		2003					2006					2009					2010		2011					2013					2015					
	Feb	Feb	Feb	Mar	Mar	May	Sep	Dec	Feb	May	Jul	Aug	Nov	Feb	May	Jun	Oct	Dec	Dec	Mar	Jun	Jun	Sep	Jan	Apr	May	Jun	Jun	Sep	Jan	Apr	May	Jul	Sep	
	WQ	Bio	WQ	WQ	Bio	WQ	WQ	WQ	WQ	WQ	Bio	WQ	WQ	WQ	WQ	Bio	WQ	WQ	WQ	WQ	WQ	Bio	WQ	WQ	WQ	Bio	WQ	Bio	WQ	WQ	WQ	WQ	WQ		
126	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	n	B	B	B	B	n	n	n	B	B	B	B		n	B	B		B	n
125	B	B	B	B	B	B	B	B	B	B	B	n	B	n	n	n	n	n	n	n	n	n	B	n	n	n	n	n	n	n	N	n		n	n
898	B	B	B	B	B	B	B	n	n	n	n	n	n	n	n	n	n	n	B	n	n	n	n	n	n	n	n	n	n	n	B	B	B	B	B
123	B	B	B	B	B	B	B	n	n	n	n	n	n	n	n	n	n	n	B	n	n	n	n	n											
5400																									n	n	n	n	n	n	B	B	n	n	n

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

Index scores* for Fort Branch Creek Sites by Year

Reach	Site	Site Name	Year	Water Quality	Sediment**	Contact Rec.	Non-Contact	Physical Integrity	Aquatic Life	Benthic subindex	Diatom subindex	Total EII Score
FOR1	123	Fort Branch Creek @ North Boggy Creek	2000	65	88	86	69	31	37	31	42	63
FOR2	898	Fort Branch Creek @ Single Shot Circle	2000	62	88	71	67	39	32	40	23	60
FOR3	125	Fort Branch Creek Upstream of Manor Rd	2000	59	88	78	67	33	34	29	39	60
FOR4	126	Fort Branch Creek @ Glencrest Drive	2000	45	88	73	72	43	17	31	3	56
FOR1	123	Fort Branch Creek @ North Boggy Creek	2003	68	78	79	74	43	22	19	24	61
FOR2	898	Fort Branch Creek @ Single Shot Circle	2003	49	78	41	60	46	21	25	16	49
FOR3	125	Fort Branch Creek Upstream of Manor Rd	2003	54	78	71	75	41	15	17	12	56
FOR4	126	Fort Branch Creek @ Glencrest Drive	2003	33	78	62	73	44	20	26	14	52
FOR1	123	Fort Branch Creek @ North Boggy Creek	2006		67		35	37				35
FOR2	898	Fort Branch Creek @ Single Shot Circle	2006		67		71	49				47
FOR3	125	Fort Branch Creek Upstream of Manor Rd	2006	75	67	60	75	41	66	62	70	64
FOR4	126	Fort Branch Creek @ Glencrest Drive	2006	44	67	25	89	59	42	39	44	54
FOR1	123	Fort Branch Creek @ North Boggy Creek	2009	79	77	54	12	34				43
FOR2	898	Fort Branch Creek @ Single Shot Circle	2009	71	77	36	28	33				41
FOR3	125	Fort Branch Creek Upstream of Manor Rd	2009		77		63	51				48
FOR4	126	Fort Branch Creek @ Glencrest Drive	2009	65	77	28	55	56	39	27	50	53
FOR1	123	Fort Branch Creek @ North Boggy Creek	2011				25	56				27
FOR2	898	Fort Branch Creek @ Single Shot Circle	2011				55	52	49	49	48	52
FOR3	125	Fort Branch Creek Upstream of Manor Rd	2011				51	45	61	61		52
FOR4	126	Fort Branch Creek @ Glencrest Drive	2011	67		26	60	25				36
FOR1	5400	Fort Branch @ Tura Ln	2013		83		38	58	53	53		58
FOR2	898	Fort Branch Creek @ Single Shot Circle	2013		83		27	54				41
FOR3	125	Fort Branch Creek Upstream of Manor Rd	2013		83		58	56				49
FOR4	126	Fort Branch Creek @ Glencrest Drive	2013	55	83	31	58	62	52	55	49	57
FOR1	5400	Fort Branch @ Tura Ln	2015	71	82	71	47	57	70	73	66	66
FOR2	898	Fort Branch Creek @ Single Shot Circle	2015	71	82	61	68	45	85	93	77	69
FOR3	125	Fort Branch Creek Upstream of Manor Rd	2015		82		62	41	62	52	72	62
FOR4	126	Fort Branch Creek @ Glencrest Drive	2015	46	82	30	78	63	72	69	74	62

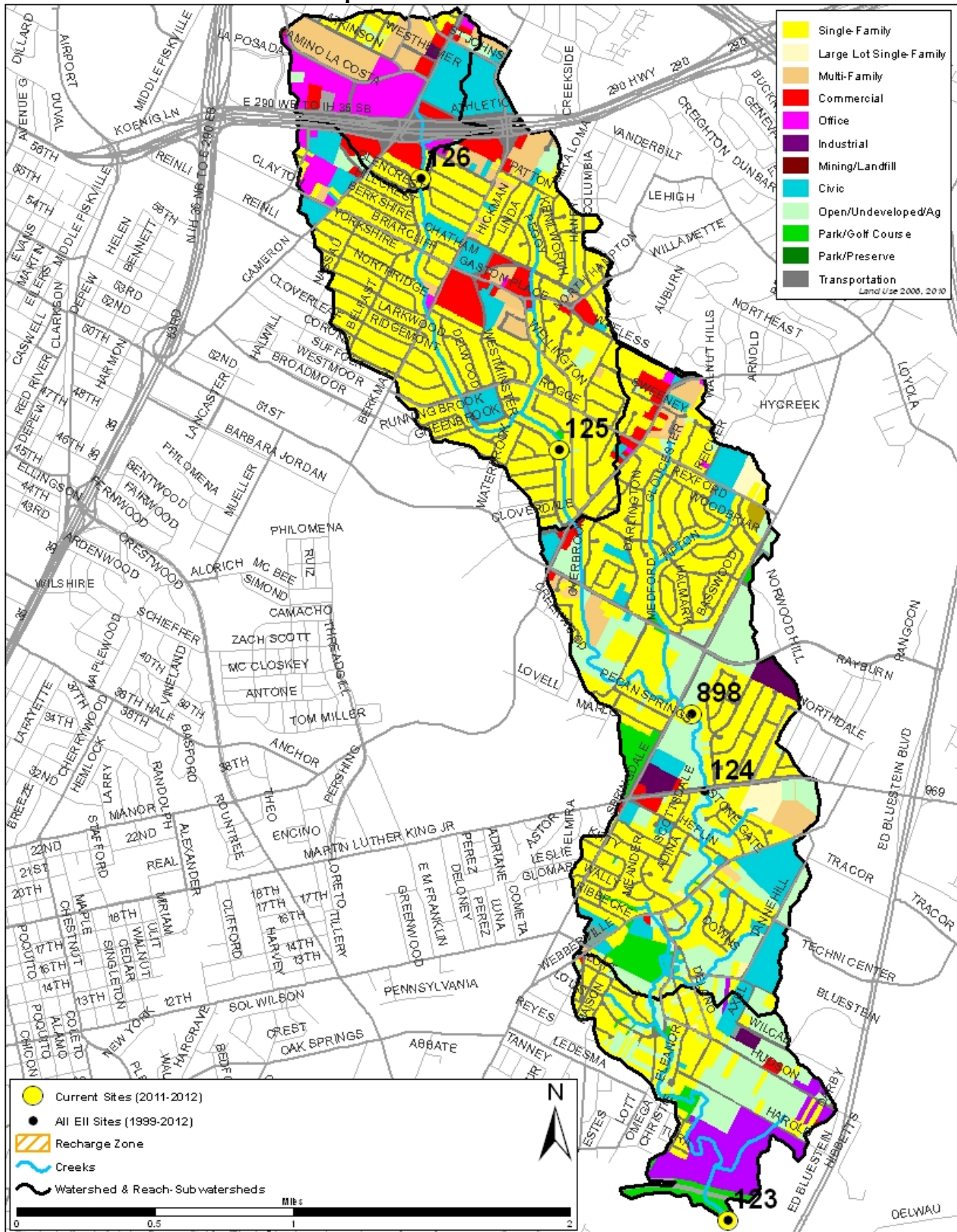
* blank cells indicate parameter was not collected, blank row indicate site was dropped

**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

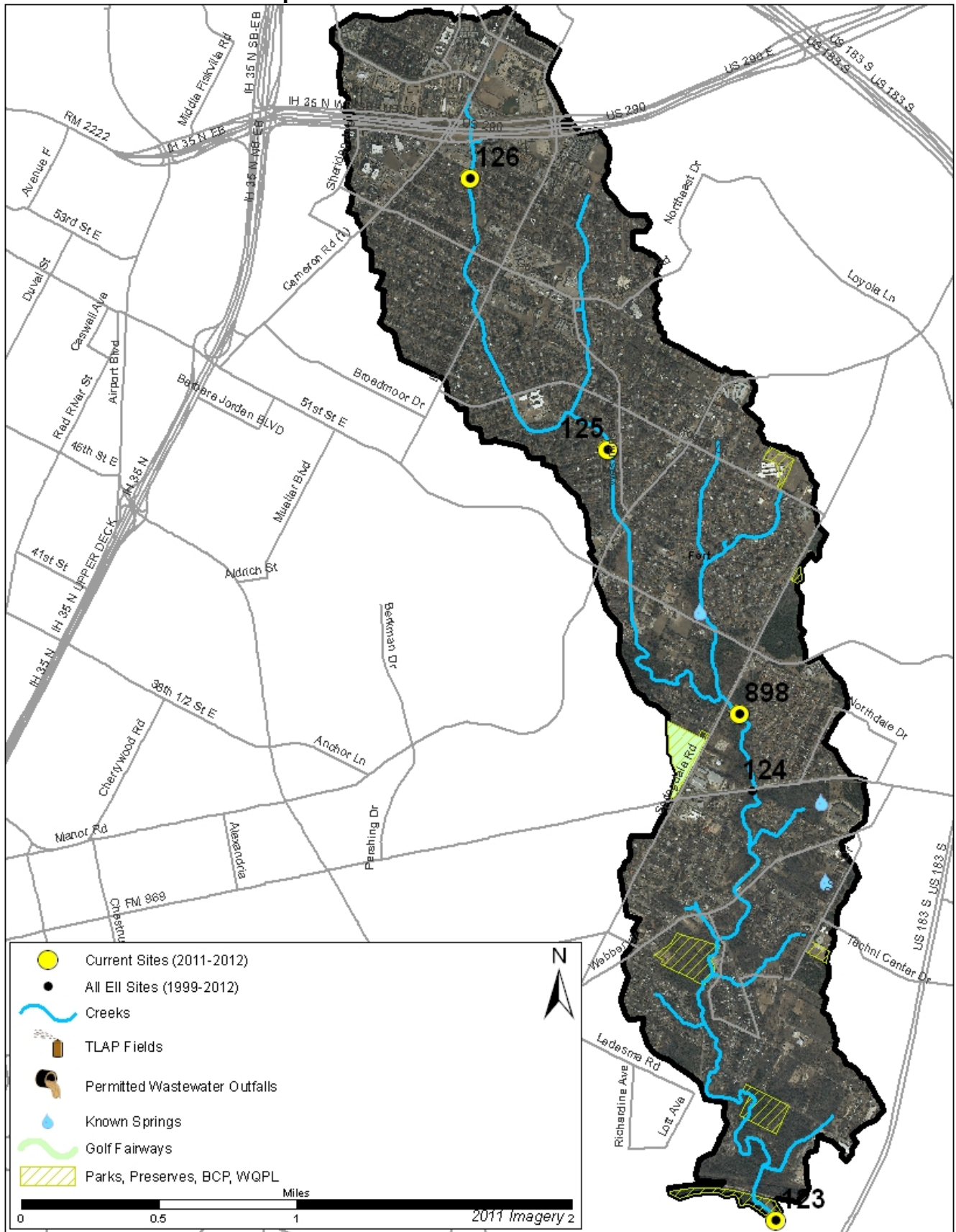
Fort Branch Watershed

Land Use Map



Fort Branch Watershed

Aerial Map



Fort Branch Watershed

Water Quality Data – Temperature, Conductivity, pH, Dissolved Oxygen & *E. coli* for 2015 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.	Cond.	pH	D.O.	E. Coli
				flag	flag	flag	flag	flag
Fort Branch	5400	FOR1	01/14/2015	7.36	680	7.82	11.6	88.4
Fort Branch	5400	FOR1	04/15/2015	19.6	803	7.57	4.5	13.0
FOR1 Mean				13.5	742	7.70	8.0	50.7
Fort Branch	898	FOR2	01/14/2015	6.8	510	7.80	8.6	50.4
Fort Branch	898	FOR2	04/15/2015	24.9	755	7.76	7.9	41.4
Fort Branch	898	FOR2	05/05/2015	23.5	541	7.83	6.9	
Fort Branch	898	FOR2	07/14/2015	30.0	723	7.94	9.2	60.9
Fort Branch	898	FOR2	09/09/2015	28.2	668	7.40	4.4	162.4
FOR2 Mean				22.7	639	7.75	7.4	78.8
Fort Branch	126	FOR3	01/14/2015	8.0	710	7.57	9.6	209.8
Fort Branch	126	FOR3	04/15/2015	18.6	750	7.35	4.1	> 2419.6
Fort Branch	126	FOR3	07/13/2015	25.9	770	7.59	6.6	
Fort Branch	126	FOR3	07/14/2015	25.6	764	7.65	6.7	> 2419.6
FOR4 Mean				19.5	748	7.54	6.7	1683.0
Fort Branch Mean				19.8	698	7.66	7.3	607.3

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	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
<i>E. Coli</i> (col/100ml)	316.1	1.0	2420.0	883.7	

Fort Branch Watershed

Water Quality Data – Ammonia, Nitrate / Nitrite, Ortho-Phosphorus, Total Suspended Solids & Turbidity for 2015 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	
Fort Branch	5400	FOR1	01/14/2015	<J	0.008	<>	0.41	<J	0.004	<J	1.0	<>	2.2	R
Fort Branch	5400	FOR1	04/15/2015	<J	0.008	<J	0.01	<J	0.004	<J	1.0	<>	5.6	
FOR1 Mean					0.008		0.21		0.004		1.0		3.9	
Fort Branch	898	FOR2	01/14/2015	<J	0.008	<>	0.12	<J	0.004	<J	2.0	<>	2.0	
Fort Branch	898	FOR2	04/15/2015	<J	0.008	<J	0.01	<J	0.004	<J	2.1	<>	2.9	
Fort Branch	898	FOR2	05/05/2015											
Fort Branch	898	FOR2	07/14/2015	<J	0.008	<J	0.01	<J	0.004	<J	1.1	<>	2.1	R
Fort Branch	898	FOR2	09/09/2015		0.043	<J	0.01	<J	0.004	<J	1.0	<>	2.5	R
FOR2 Mean					0.017		0.04		0.004		1.6		2.4	
Fort Branch	126	FOR4	01/14/2015	<J	0.008	<>	0.82	<>	0.012	<J	1.1	<>	2.2	R
Fort Branch	126	FOR4	04/15/2015		0.079		0.26		0.025		17.3		7.4	
Fort Branch	126	FOR4	07/13/2015											
Fort Branch	126	FOR4	07/14/2015	<J	0.008	<>	2.55	<J	0.004	<>	2.0	<>	2.2	R
FOR4 Mean					0.032		1.21		0.014		6.8		4.0	
Fort Branch Mean					0.020		0.47		0.007		3.2		3.2	

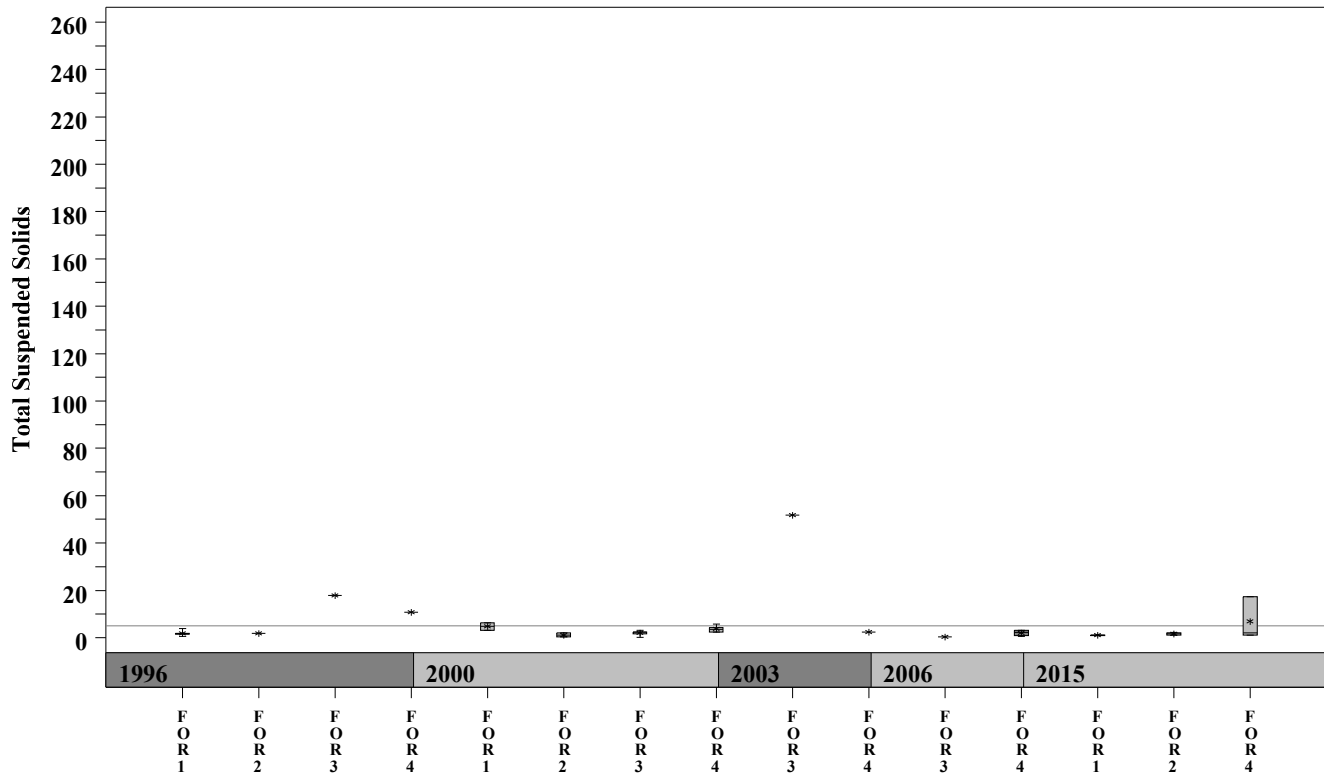
Gray highlighting indicates that the value exceeds one standard deviation from the mean of all E.I.I. sites combined.

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
NH3-N (mg/l)	0.018	0.008	0.881	0.085
NO3-N (mg/l)	1.14	0.01	12.0	3.16
Ortho-P (mg/l)	0.016	0.004	0.661	0.08
T.S.S. (mg/l)	3.7	1.0	58.2	9.7
Turbidity (NTU)	4.4	0.2	98.6	11.7

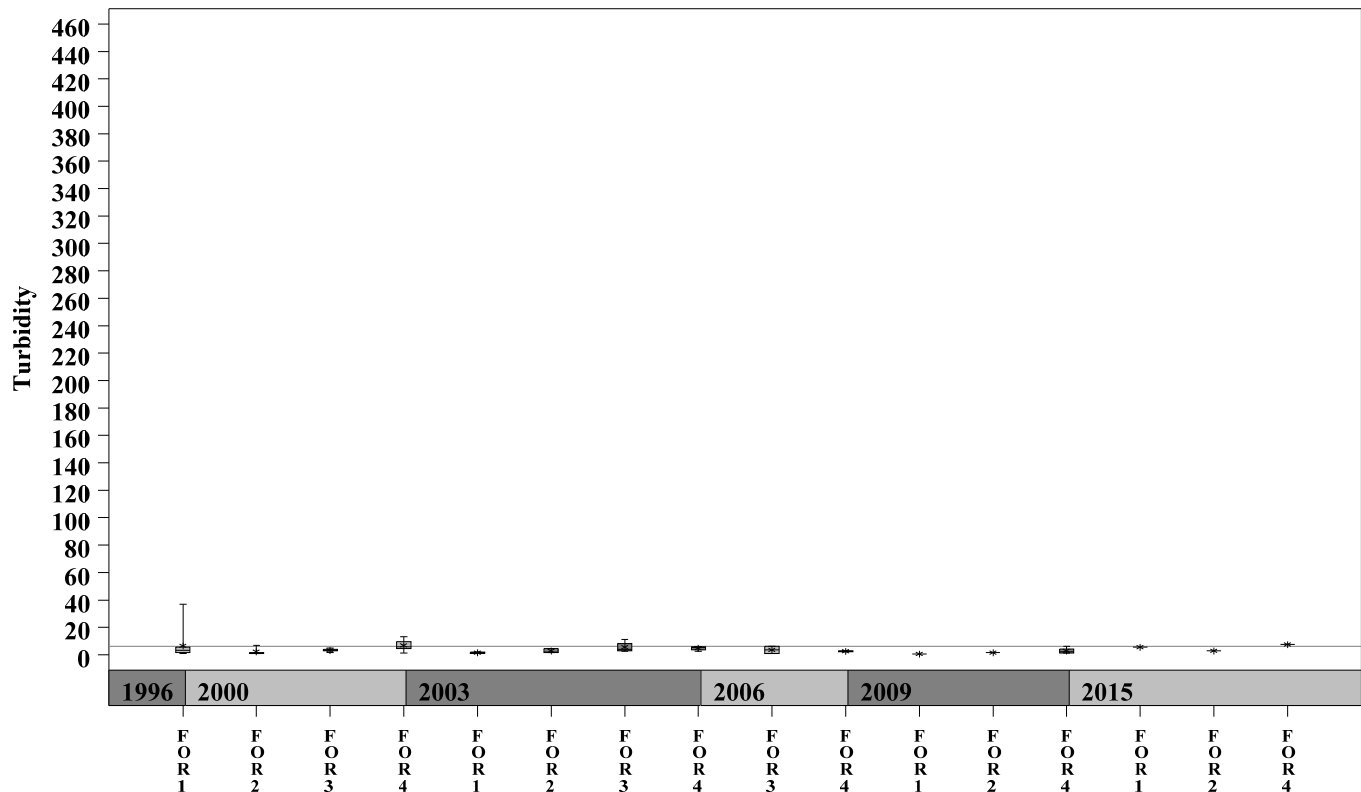
Fort Branch Watershed

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

Parameter = TOTAL SUSPENDED SOLIDS Unit = mg/L Watershed = Fort Branch



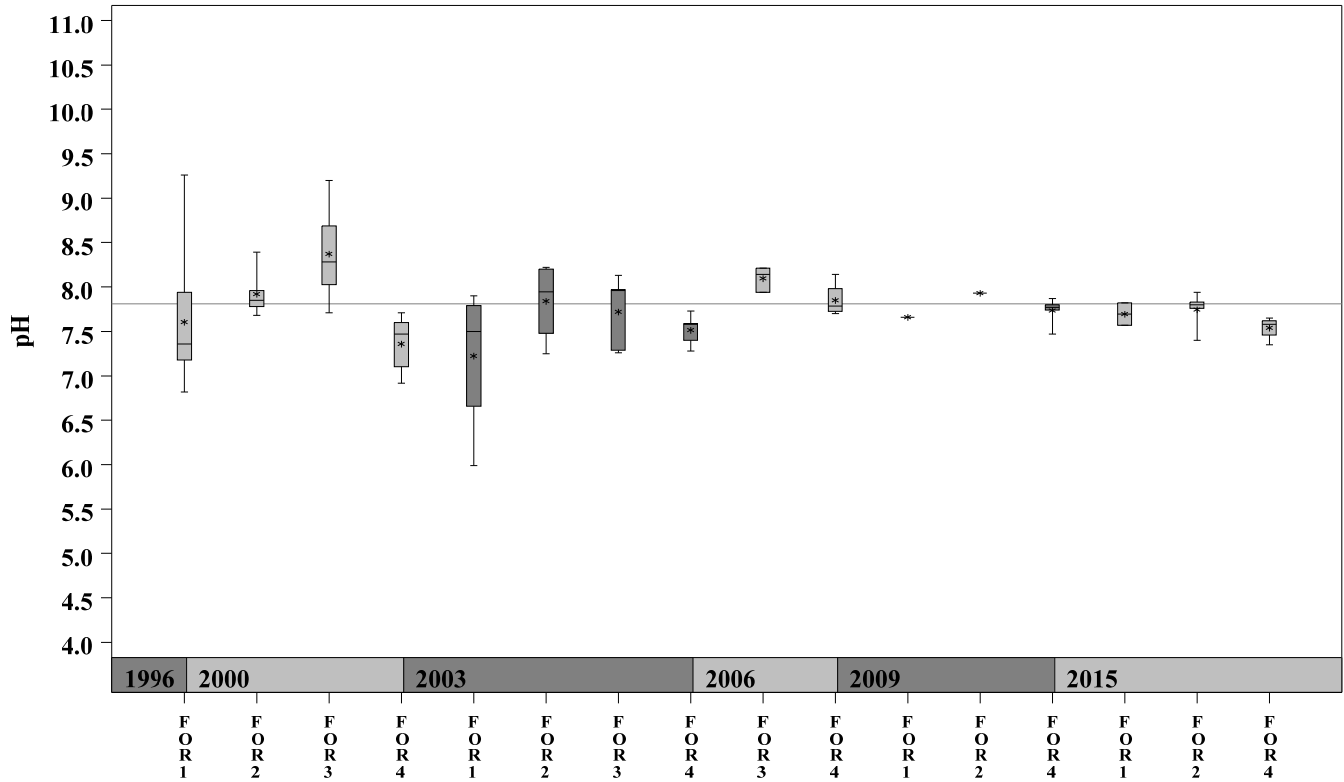
Parameter = TURBIDITY Unit = NTU Watershed = Fort Branch



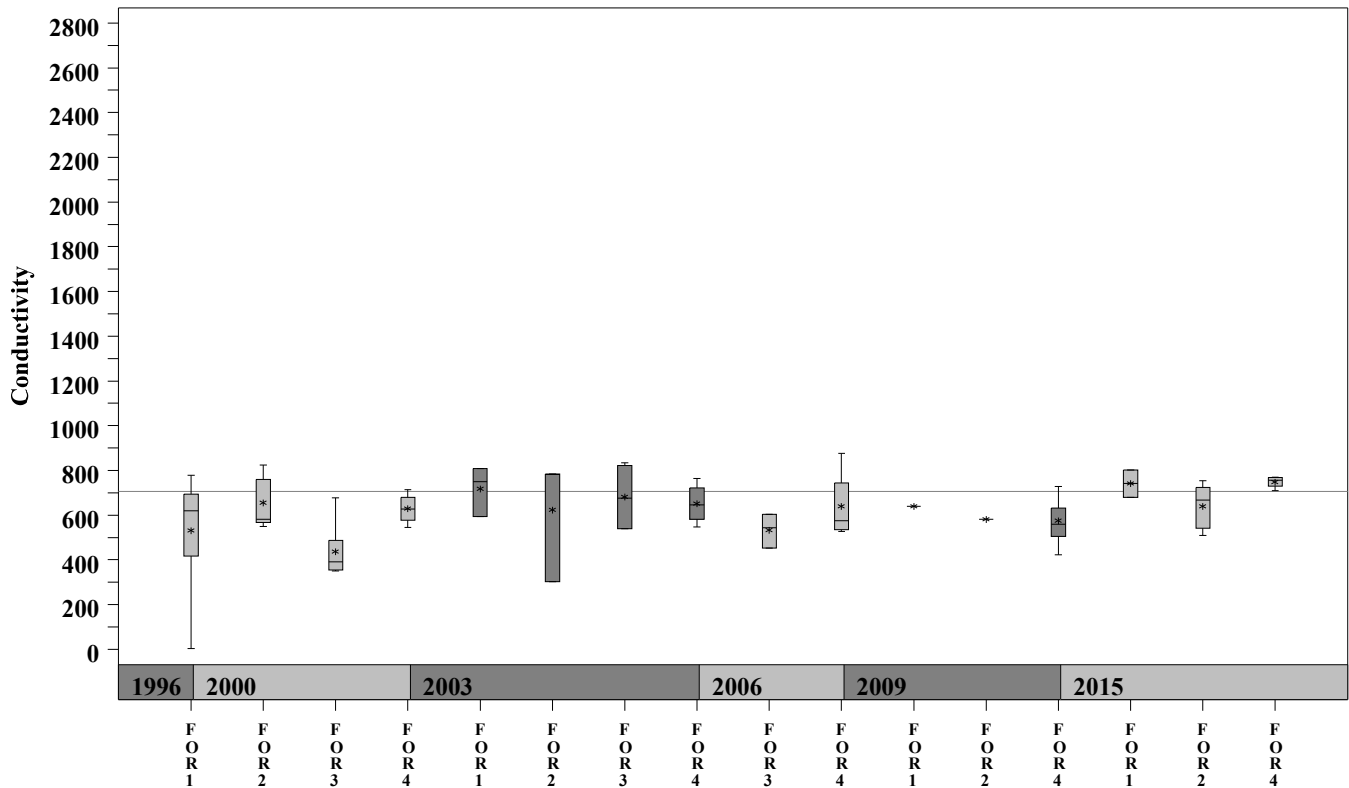
Fort Branch Watershed

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

Parameter = pH Unit = Standard Units Watershed = Fort Branch



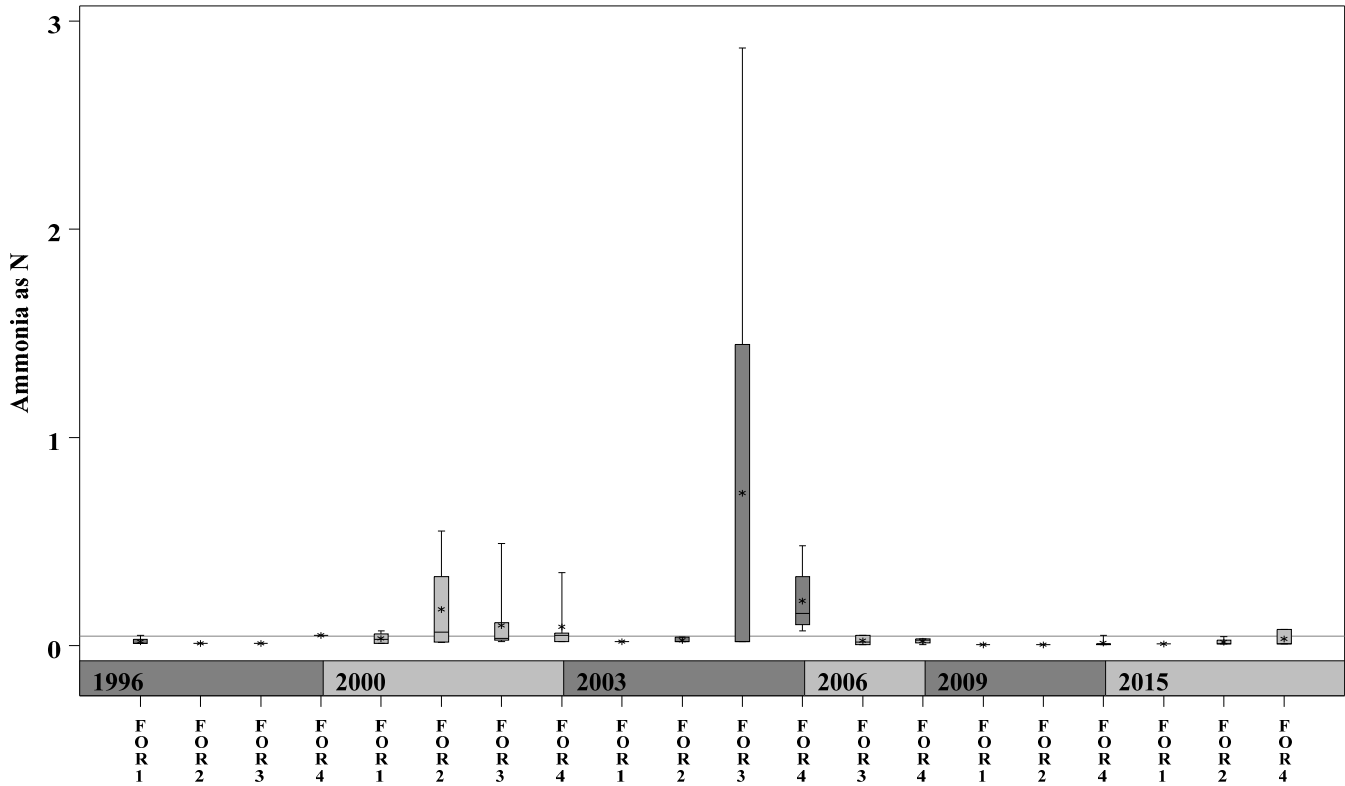
Parameter = CONDUCTIVITY Unit = uS/cm Watershed = Fort Branch



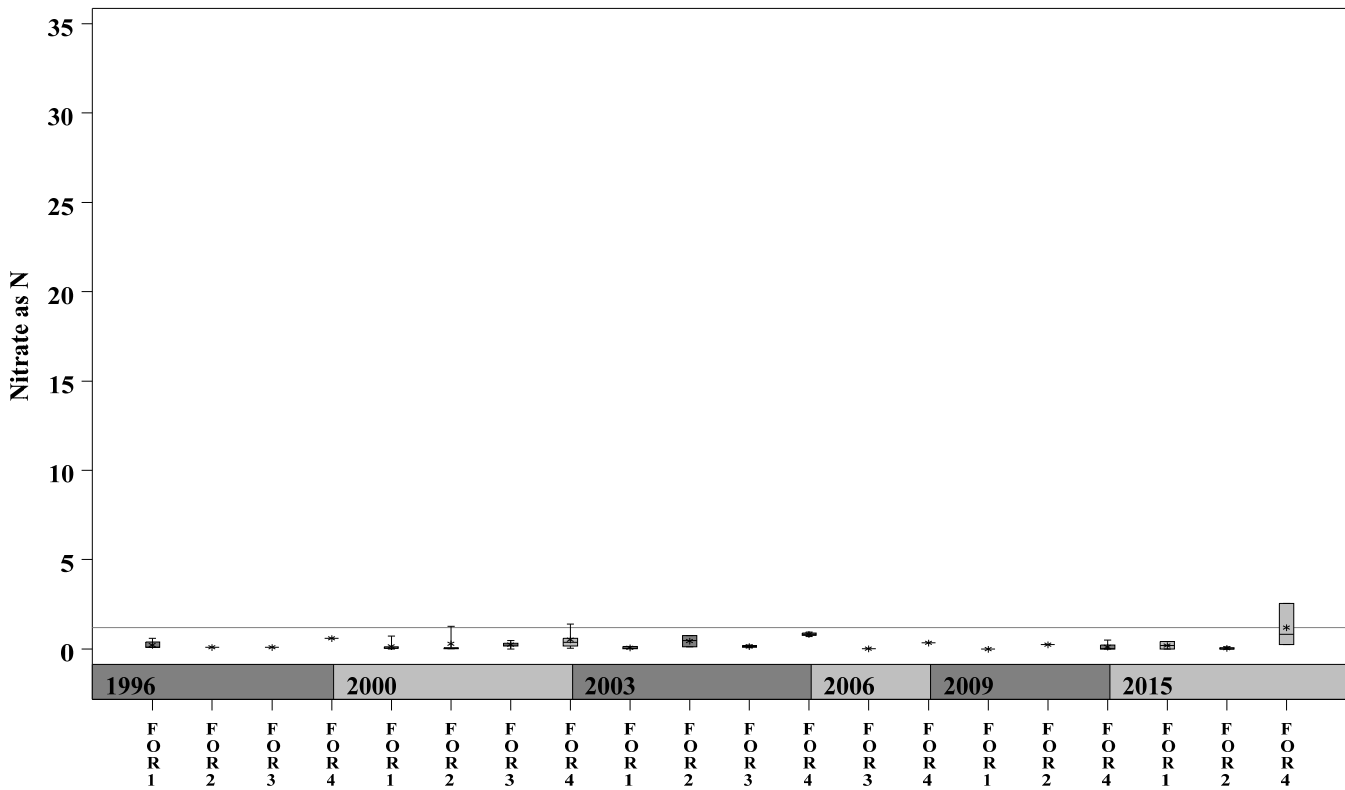
Fort Branch Watershed

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

Parameter = AMMONIA AS N Unit = mg/L Watershed = Fort Branch



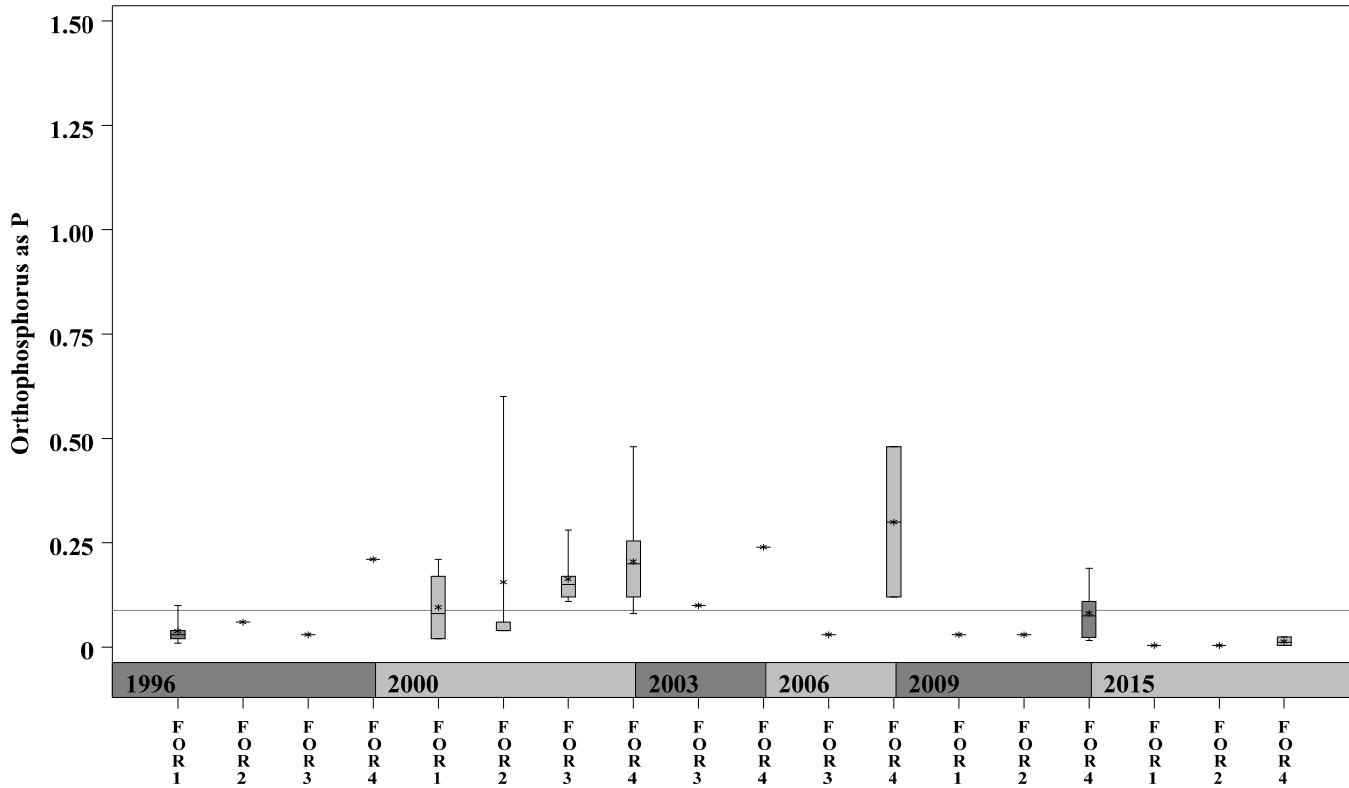
Parameter = NITRATE AS N Unit = mg/L Watershed = Fort Branch



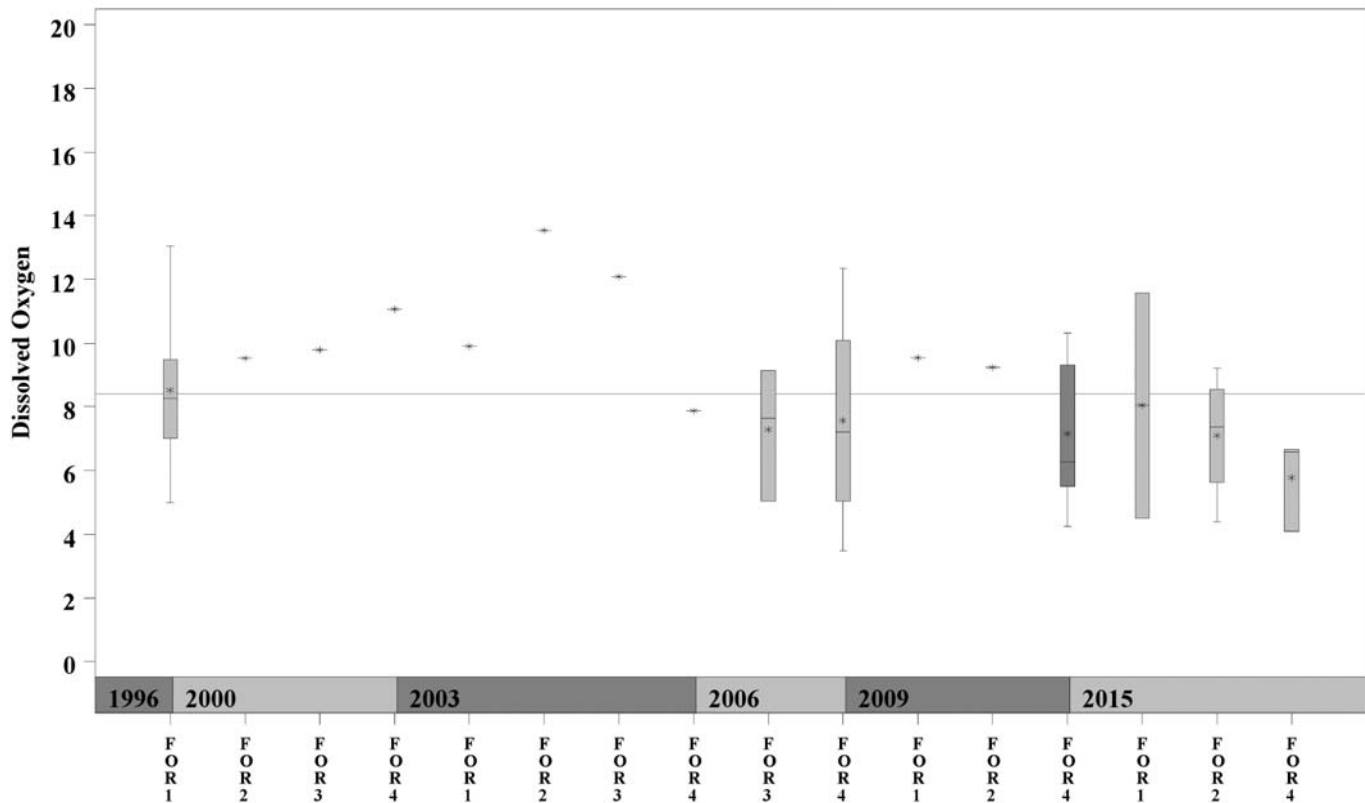
Fort Branch Watershed

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

Parameter = ORTHOPHOSPHORUS AS P Unit = mg/L Watershed = Fort Branch



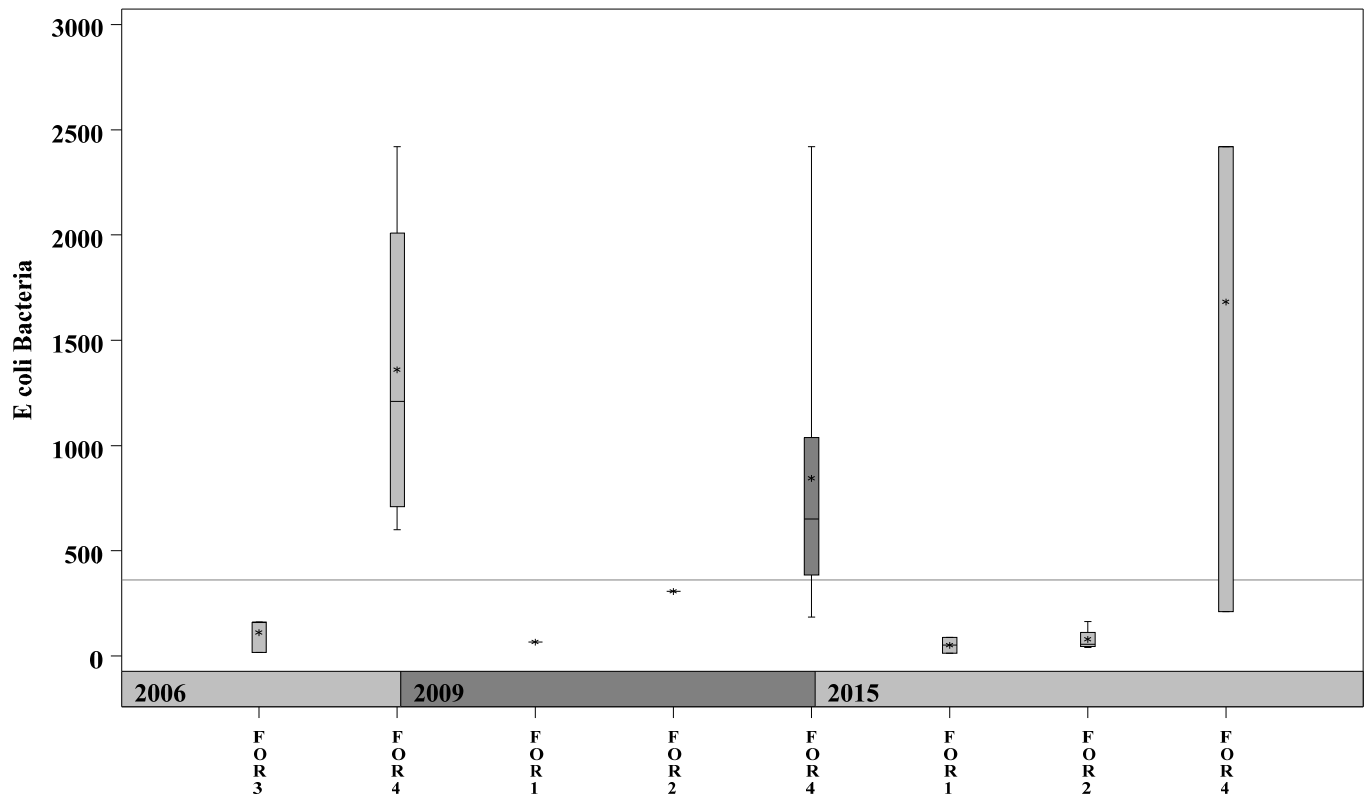
Parameter = DISSOLVED OXYGEN Unit = mg/L Watershed = Fort Branch



Fort Branch Watershed

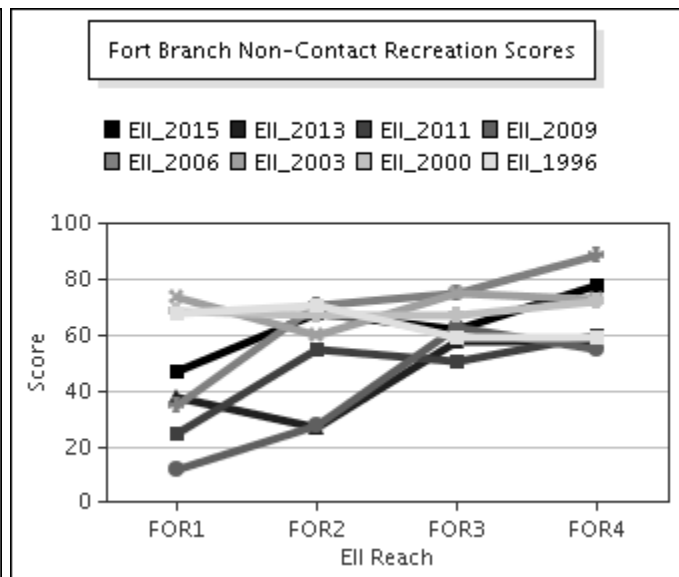
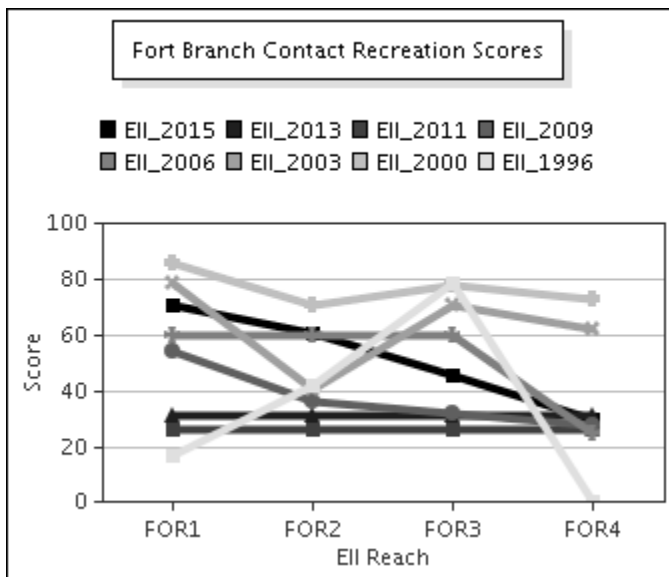
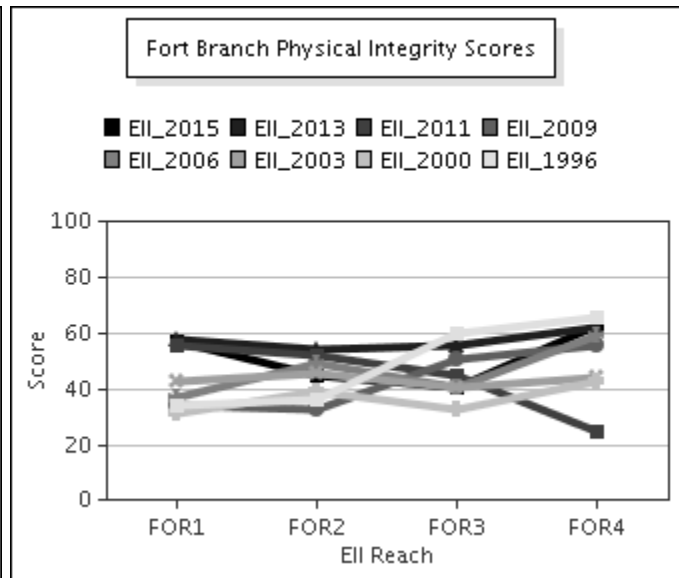
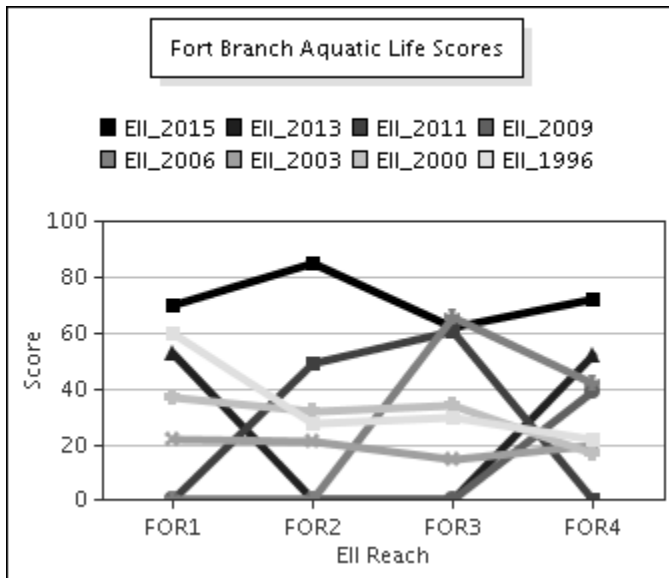
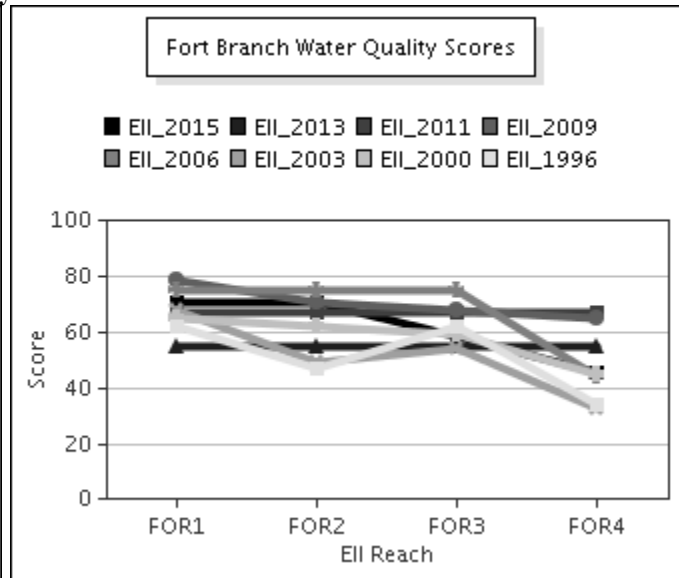
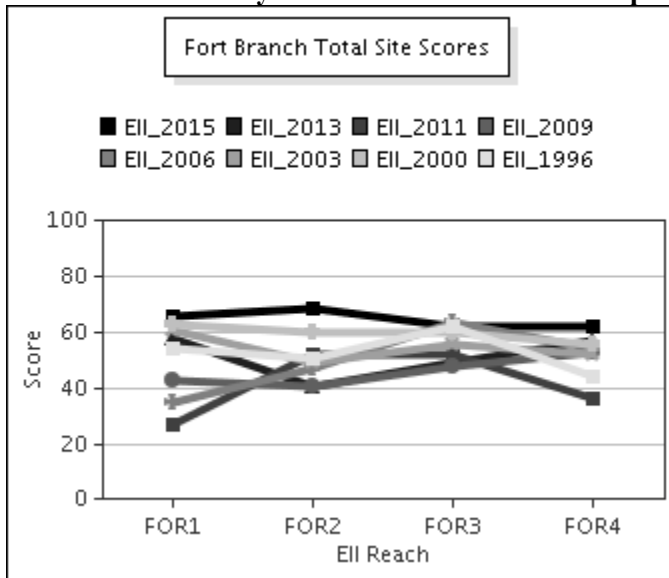
Data Summary Graphs – *E.coli* (Downstream to Upstream by Year)

Parameter = E COLI BACTERIA Unit = MPN/100mL Watershed = Fort Branch



Fort Branch Watershed

Score Summary – Reach scores for each sample year



Fort Branch Watershed

Benthic Macroinvertebrates – Taxa List, Pollution Tolerance Index & Functional Feeding Group for 2015 Sample Sites (Downstream to Upstream)

Benthic Macroinvertebrates - Fort Branch			FOR @ Glencrest (126) 07/13/2015 (WRE)	FOR us Manor (125) 07/07/2015 (WRE)	FOR @ Single Shot (898) 05/05/2015 (WRE)	FOR @ Tura Ln (5400) 05/04/2015 (WRE)
Benthic Macroinvertebrate ID	PTI	FFG				
Chimarra	2	FC			4	
Hydroptila	2	PI,SC			1	
Callibaetis	4	CG		18		27
Camelobaetidium	4	CG	1			
Copepoda	4	SC				1
Fallceon	4	CG,SC	58		98	8
Neochoroterpes	4	CG			3	
Ostracoda	4	CG,FC		1		1
Simulium	4	FC	2		22	
Agabus	5	P			1	2
Aquarius	5	P		1		2
Gerridae	5	P	1		1	
Archilestes	6	P				4
Argia	6	P	32	18		4
Brechmorhoga Mendax	6	P	1			
Cheumatopsyche	6	FC	19		5	
Chironomidae	6	FC,P	6	35	7	19
Enallagma	6	P		6		2
Fossaria	6	SC				1
Hydracarina	6					4
Microvelia	6	P			1	9
Probezzia	6	P				1
Tanypodinae	6	P	7	5	2	11
Caenis	7	CG,SC		14	4	332
Pisidium	7	FC		1		
Ferrissia	7	SC	2			
Scirtidae	7	CG,SC,SH		1		
Stenelmis	7	CG,SC	2			
Anopheles	8	FC				1
Hirudinea	8	P	1			
Oligochaeta	8	CG	5		2	1
Tipula	8	CG,SH			4	
Copelatus	9	P		1		
Ischnura	9	P				1
Physella	9	SC	21	8	5	105
Belostoma	10	P		1		
Laccophilus	10	P		1		
Sympetrum	10	P				1
Dugesia		CG,P			1	

Fort Branch Watershed

Site Photographs



126_t00-us-02_14_2001



126-t00-dr-06-03-2009



125_t00-us-02_15_2001



125_t00-ds-07_10_2006



125-t00-us-06-03-2009



125-t00-ur-06-03-2009

Fort Branch Watershed

Site Photographs



898_t00-ds-02_15_2001



898_t00-ur-03_12_2003



898_t00-us-07_10_2006



898-t00-ds-06-02-2009



123_t00-us1-07_06_2006



123_t00-ds-07_06_2006