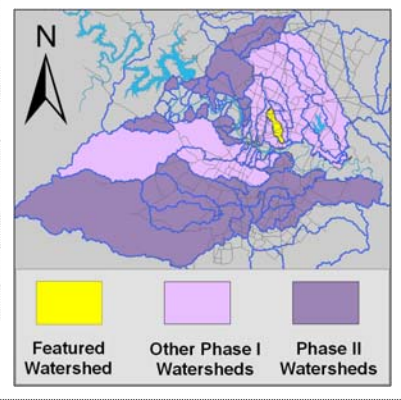


# Tannehill Creek Watershed

## Watershed Overview

Catchment	Total area	4 square miles					
	Area in recharge	none					
	Creek length	7 miles					
	Receiving water	Boggy Creek					
Demographics	2000 population	13,976					
	2030 projected population	24,742					
	30 year projected % increase	77 %					
Land Use	Impervious cover (2003 estimate)	43.5 %					
	Impervious cover (2013 estimate)	44.6 %					
Overall EII Scores	2000	2003	2006	2009	2011	2013	2015
	61	62	62	58	59	61	66



## Flow Regime\* for Sample Sites on Tannehill Creek Upstream to Downstream

Site	2001		2003				2006				2009				2010		2011				2013				2015									
	Feb WO	Feb Bio	Feb WO	Mar WO	Mar Bio	May WO	Sep WO	Dec WO	Feb WO	May WO	Jul Bio	Aug WO	Nov WO	Feb WO	May WO	Jun Bio	Oct WO	Dec WO	Dec WO	Mar WO	Jun Bio	Jun WO	Sep WO	Jan WO	Apr Bio	May WO	Jun Bio	Jun WO	Sep WO	Jan WO	Apr Bio	May WO	Jul Bio	Sep WO
841	B	B																																
3858									B	B	B	n	B	B	B	B	B	B	B	B	n	n	n	B	B	B	B		B	B	B		B	n
842	B	B	B	B	B	B	B	B																										
843	B	B	B	B	B	B	B	B	B	B	B	n	B	B	B	B	B	B	B	B	B	B	n	B	B	B	B	B	B	B	B	B	B	B
1476	B	B	B	B	B	B	B	B	n	n	B	n	B	B	B	B	B	B	B	B	n	n	n	B	B		B	B	n	B	B	B	B	B

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

## Index Scores\* for Tannehill 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
TAN1	854	Tannehill Crk US of Boggy Crk (LISI 2)	1996	59	81	91	51	35	18	22	13	56
TAN2	842	Tannehill Creek @ Bartholomew Park	1996	45	81	48	65	24	25	30	20	48
TAN2	843	Tannehill Creek @ Lovell Drive	1996	65	81	73	58	33	43	42	43	59
TAN3	841	Tannehill Creek @ Highland Mall	1996	30	81		41	72	8	8	7	39
TAN1	1476	Tannehill Creek @ Desirable Drive	2000	66	89	91	74	38	38	35	38	66
TAN2	842	Tannehill Creek @ Bartholomew Park	2000	71	89	86	65	23	32	29	34	61
TAN2	843	Tannehill Creek @ Lovell Drive	2000	69	89	90	76	38	33	29	37	66
TAN3	841	Tannehill Creek @ Highland Mall	2000	45	89	44	68	30	31	44	18	51
TAN1	1476	Tannehill Creek @ Desirable Drive	2003	64	75	75	53	45	53	58	48	61
TAN2	842	Tannehill Creek @ Bartholomew Park	2003	68	75	80	74	64	33	23	42	66
TAN2	843	Tannehill Creek @ Lovell Drive	2003	64	75	73	68	42	38	22	38	59
TAN1	1476	Tannehill Creek @ Desirable Drive	2006	62	69	98	53	37	33	11	54	59
TAN2	843	Tannehill Creek @ Lovell Drive	2006	67	69	57	85	62	74	76	72	69
TAN3	3858	Tannehill Creek @ Berkman Drive	2006	70	69	38	66	57	54	46	62	59
TAN1	1476	Tannehill Creek @ Desirable Drive	2009	67	65	54	40	45	58	33	83	55
TAN2	843	Tannehill Creek @ Lovell Drive	2009	75	65	46	60	46	83	66	100	63
TAN3	3858	Tannehill Creek @ Berkman Drive	2009	68	65	25	53	53	65	40	89	56
TAN1	1476	Tannehill Creek @ Desirable Drive	2011	69	67	54	27	54	55	30	80	54
TAN2	843	Tannehill Creek @ Lovell Drive	2011	72	67	63	56	59	62	42	82	63
TAN3	3858	Tannehill Creek @ Berkman Drive	2011	66	67	57	65	44	54	67	40	59
TAN1	1476	Tannehill Creek @ Desirable Drive	2013	72	68	60	55	51	68	50	85	62
TAN2	843	Tannehill Creek @ Lovell Drive	2013	69	68	39	63	64	74	69	79	63
TAN3	3858	Tannehill Creek @ Berkman Drive	2013	71	68	25	59	51	58	25	88	56
TAN1	1476	Tannehill Creek @ Desirable Drive	2015	61	73	43	74	64	95	95	95	68
TAN2	843	Tannehill Creek @ Lovell Drive	2015	57	73	42	73	51	85	79	90	64
TAN3	3858	Tannehill Creek @ Berkman Drive	2015	61	73	35	83	59	83	85	81	66

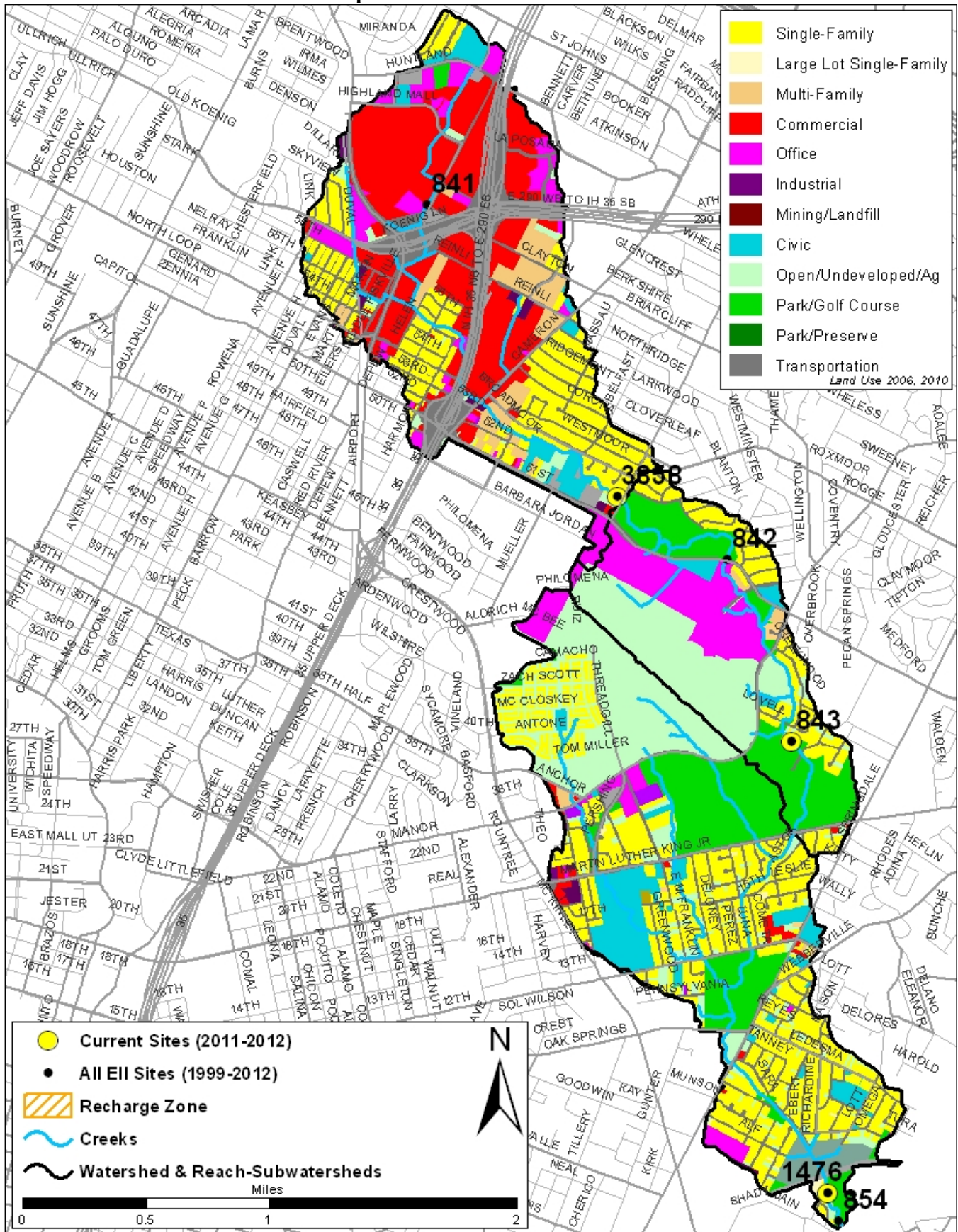
\* blank cells indicate parameter was not collected, blank row indicate site was dropped

\*\*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

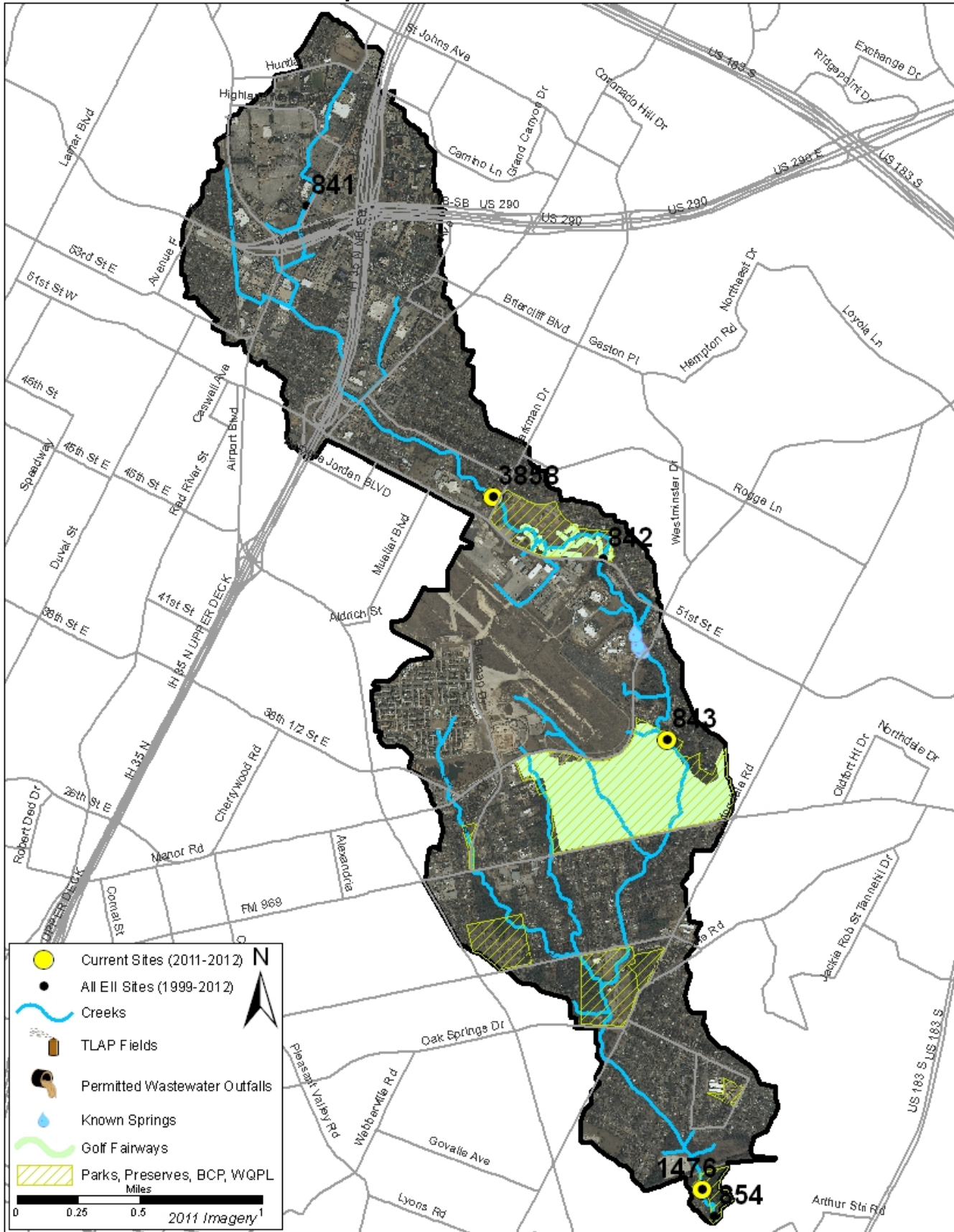
# Tannehill Creek Watershed

## Land Use Map



# Tannehill Creek Watershed

## Aerial Map



# Tannehill Creek 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. flag	Cond. flag	pH flag	D.O. flag	E. Coli flag
Tannehill	1476	TAN1	01/14/2015	6.8	606	8.15	11.7	156.5
Tannehill	1476	TAN1	04/15/2015	20.5	660	7.87	9.7	307.6
Tannehill	1476	TAN1	05/04/2015	22.0	533	7.87	8.3	
Tannehill	1476	TAN1	07/14/2015	31.1	529	8.05	8.7	R 104.3
Tannehill	1476	TAN1	09/09/2015	28.0	564	7.49	8.2	201.4
TAN1 Mean				21.7	578	7.89	8.7	192.4
Tannehill	843	TAN2	01/14/2015	8.2	544	7.67	10.5	R 77.1
Tannehill	843	TAN2	04/15/2015	20.8	718	7.69	8.9	160.7
Tannehill	843	TAN2	05/04/2015	23.0	615	7.87	10.6	
Tannehill	843	TAN2	07/14/2015	27.5	742	7.74	7.3	461.1
Tannehill	843	TAN2	09/09/2015	27.6	673	7.66	7.2	116.9
TAN2 Mean				21.4	658	7.73	8.9	204.0
Tannehill	3858	TAN3	01/14/2015	6.7	644	7.97	11.6	R 110.0
Tannehill	3858	TAN3	04/15/2015	24.5	545	8.10	12.6	325.5
Tannehill	3858	TAN3	07/07/2015	27.6	667	7.66	6.0	
Tannehill	3858	TAN3	07/14/2015	30.3	645	7.99	10.7	1553.1
TAN3 Mean				22.3	625	7.93	10.2	662.9
Tannehill Branch Mean				21.7	620	7.84	9.2	324.9

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	

# Tannehill Creek 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
Tannehill	1476	TAN1	01/14/2015	<J 0.008	0.88	<J 0.004	3.7	2.8 R
Tannehill	1476	TAN1	04/15/2015	<J 0.008	0.03	<J 0.004	1.5	3.0
Tannehill	1476	TAN1	05/04/2015					
Tannehill	1476	TAN1	07/14/2015	0.044	0.62	<J 0.004	3.2	1.4 R
Tannehill	1476	TAN1	09/09/2015	<J 0.008	<J 0.01	<J 0.004	3.2	1.5 R
TAN1 Mean				0.017	0.38	0.004	2.9	2.2
Tannehill	843	TAN2	01/14/2015	<J 0.008	0.51	<J 0.004	1.5	4.5 R
Tannehill	843	TAN2	04/15/2015	<J 0.008	0.46	<J 0.004	<J 1.0	2.4
Tannehill	843	TAN2	05/04/2015					
Tannehill	843	TAN2	07/14/2015	<J 0.008	1.22	<J 0.004	2.6	1.9 R
Tannehill	843	TAN2	09/09/2015	<J 0.008	0.57	<J 0.004	1.9	2.3 R
TAN2 Mean				0.008	0.69	0.004	1.7	2.8
Tannehill	3858	TAN3	01/14/2015	<J 0.008	0.68	<J 0.004	2.0	2.1 R
Tannehill	3858	TAN3	04/15/2015	<J 0.008	0.05	<J 0.004	<J 1.1	3.2
Tannehill	3858	TAN3	07/07/2015					
Tannehill	3858	TAN3	07/14/2015	<J 0.008	0.67	<J 0.004	2.2	2.4 R
TAN3 Mean				0.008	0.46	0.004	1.8	2.6
Tannehill Branch Mean				0.011	0.52	0.004	2.2	2.5

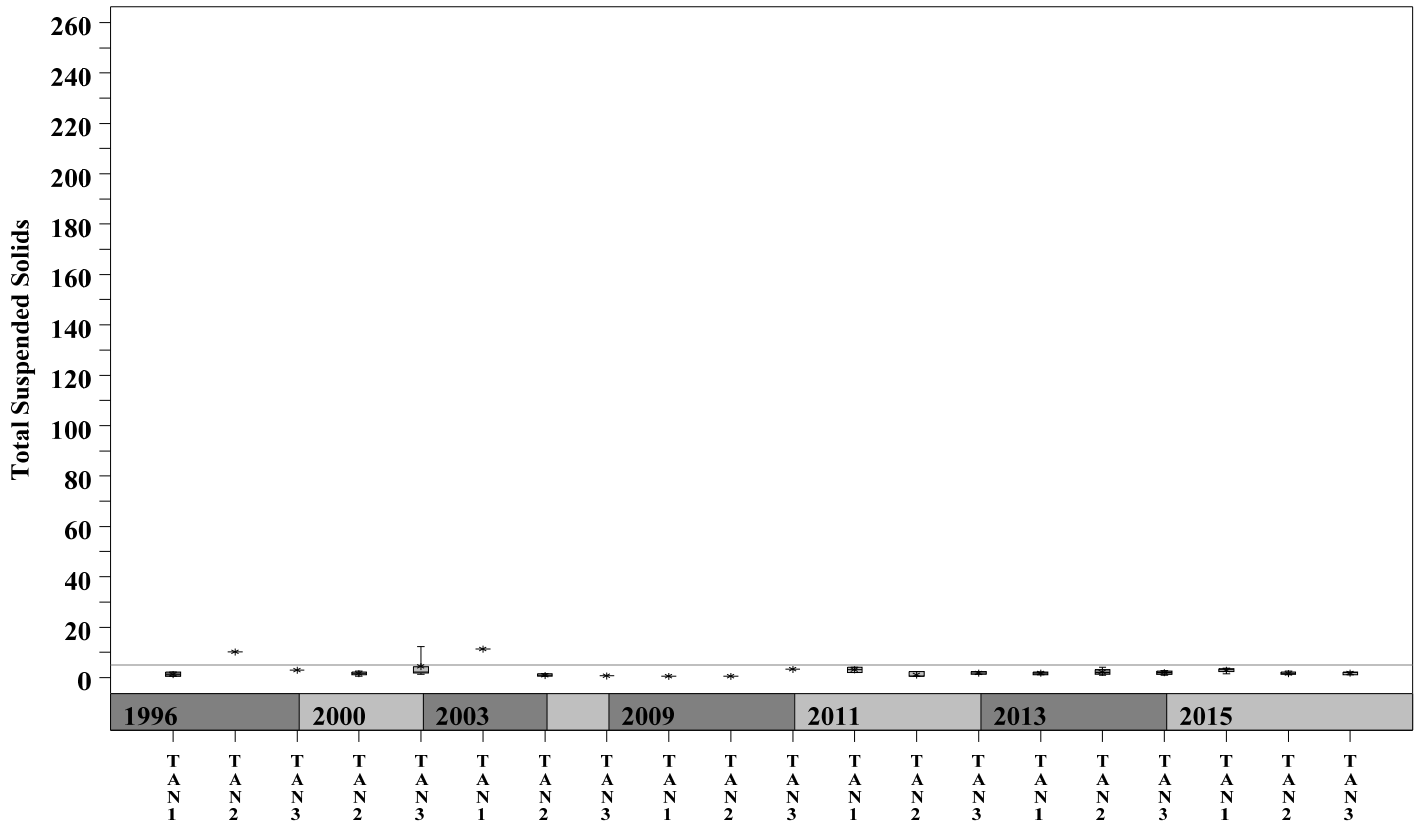
Gray highlighting indicates that the value exceeds one standard deviation from the mean of all E.I.I. sites combined.

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

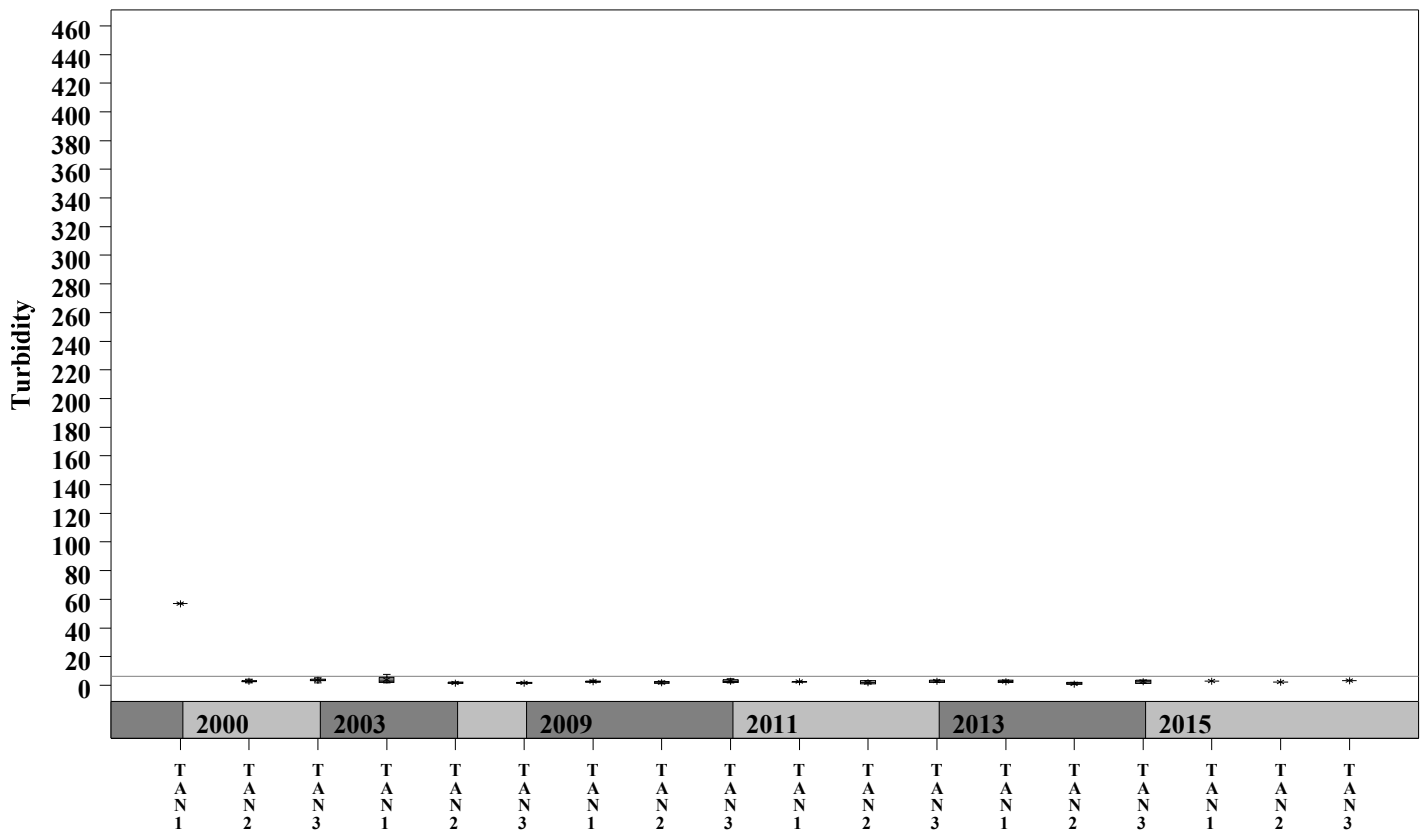
# Tannehill Creek Watershed

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

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



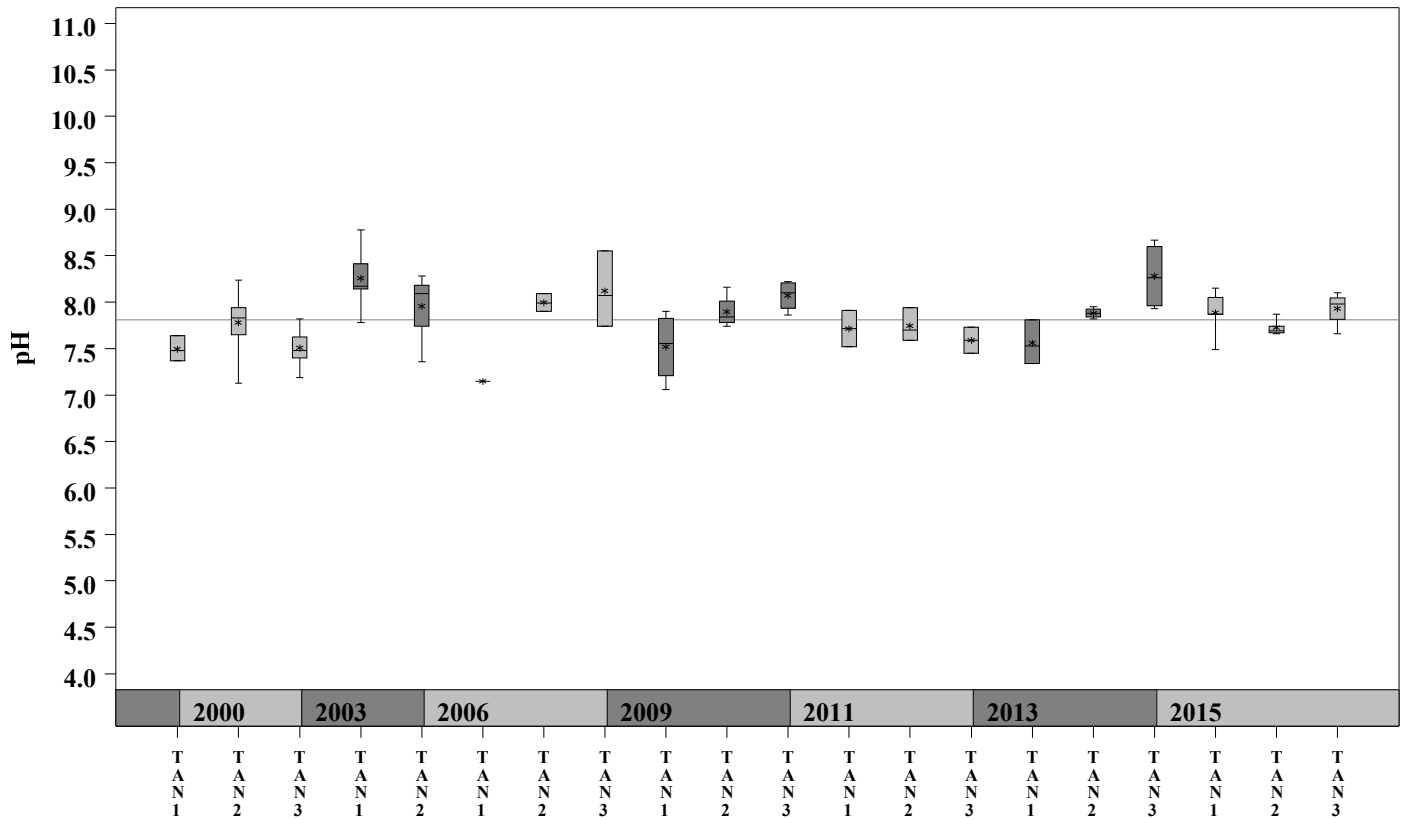
Parameter = TURBIDITY Unit = NTU Watershed = Tannehill Branch



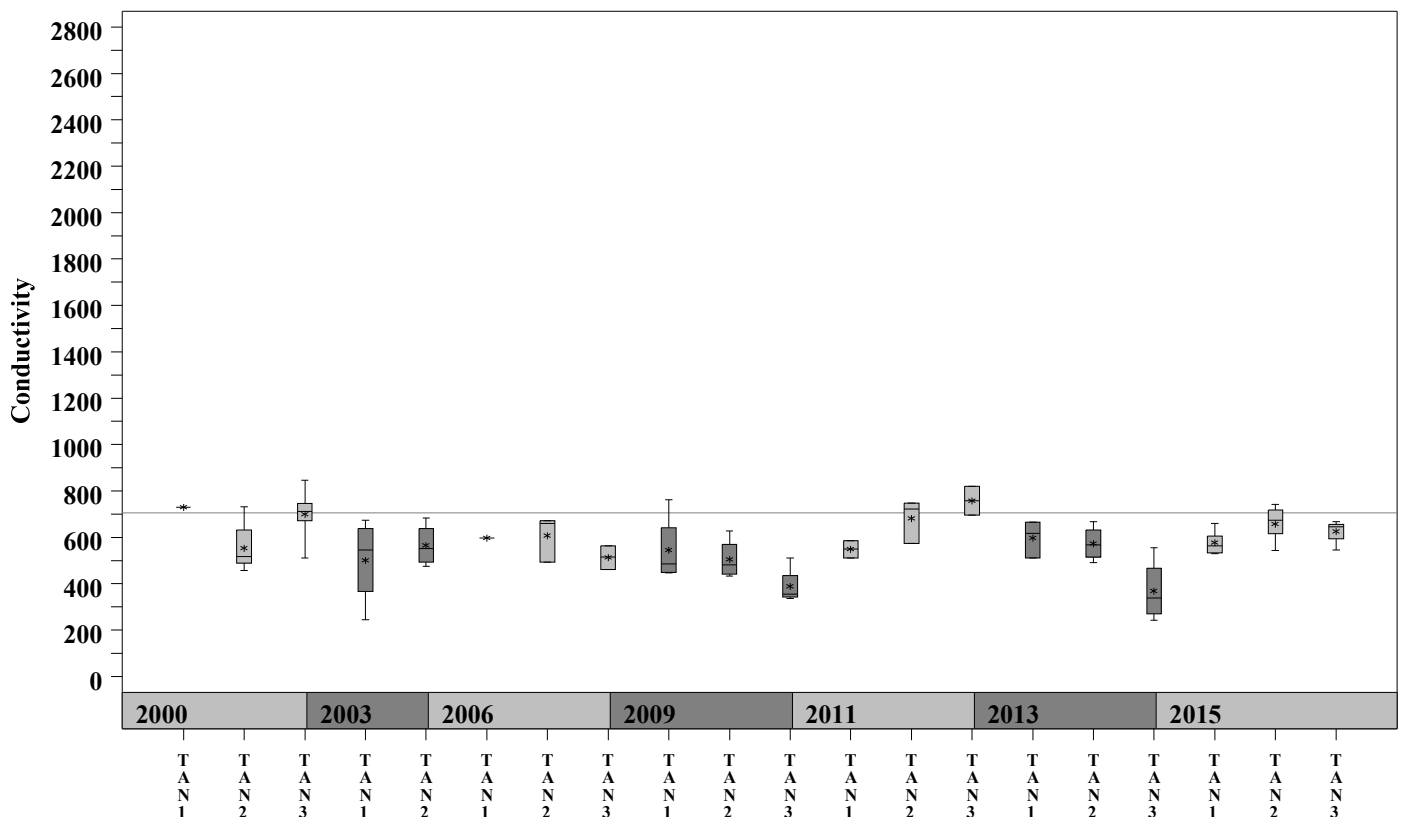
# Tannehill Creek Watershed

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

Parameter = pH Unit = Standard Units Watershed = Tannehill Branch



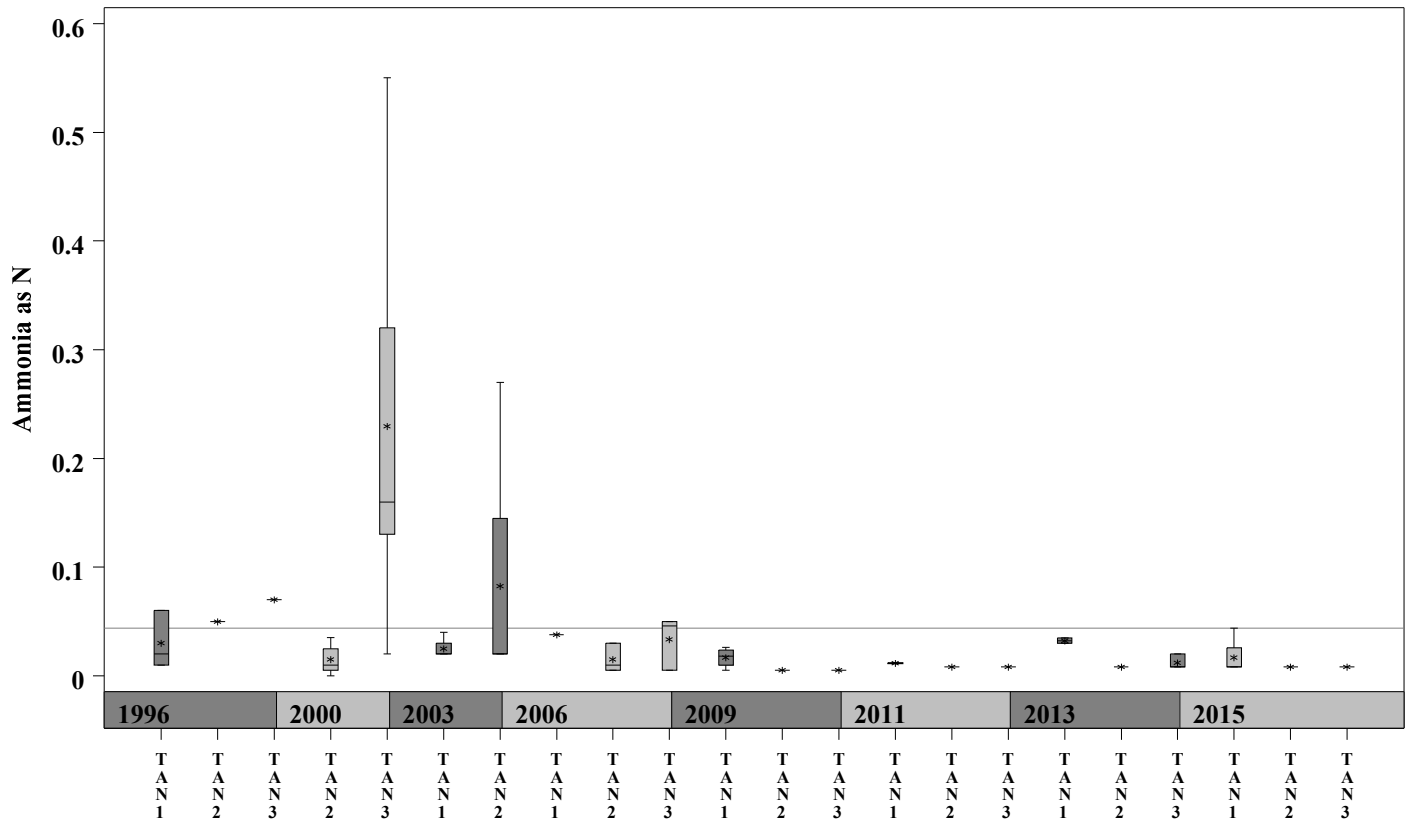
Parameter = CONDUCTIVITY Unit = uS/cm Watershed = Tannehill Branch



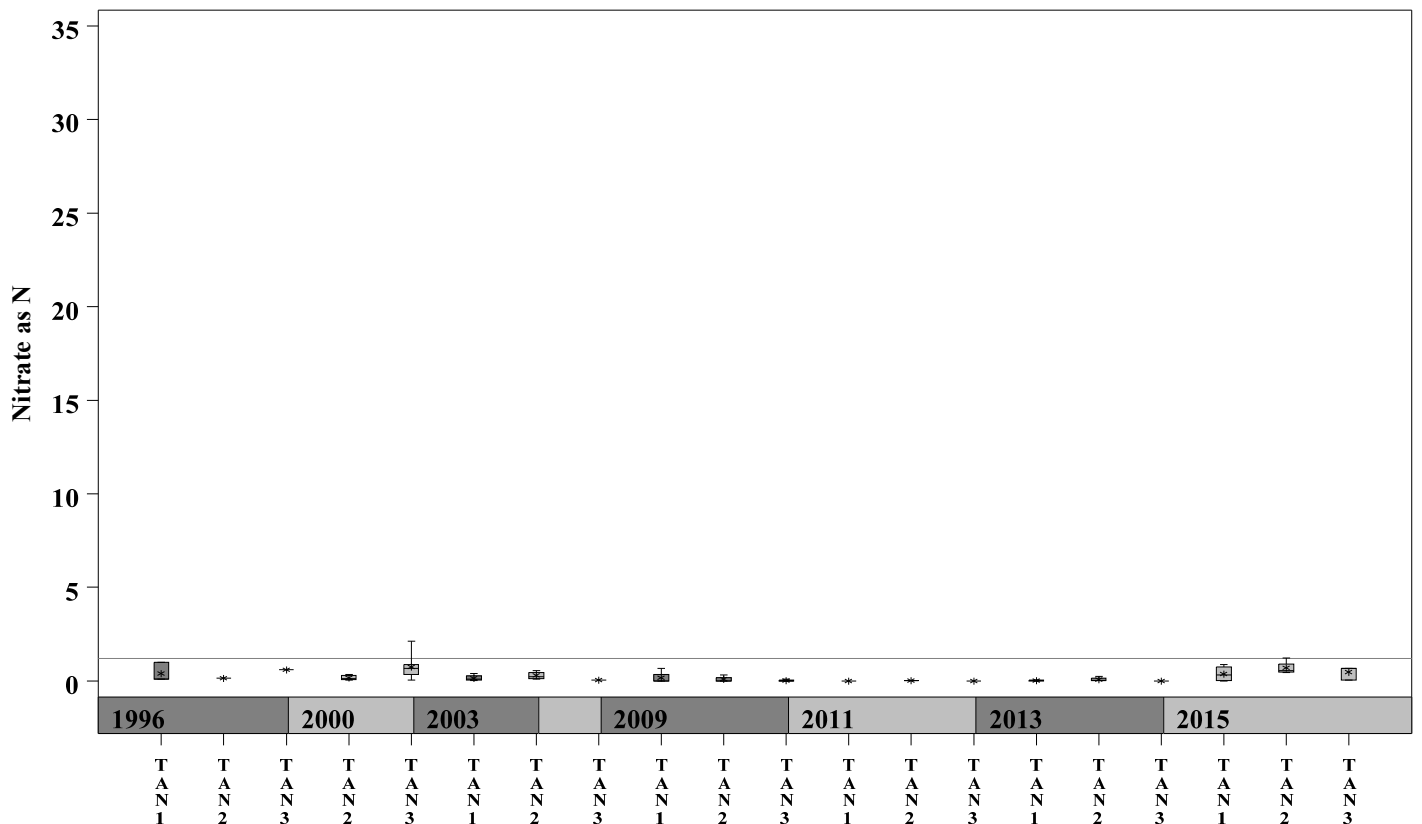
# Tannehill Creek Watershed

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

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



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

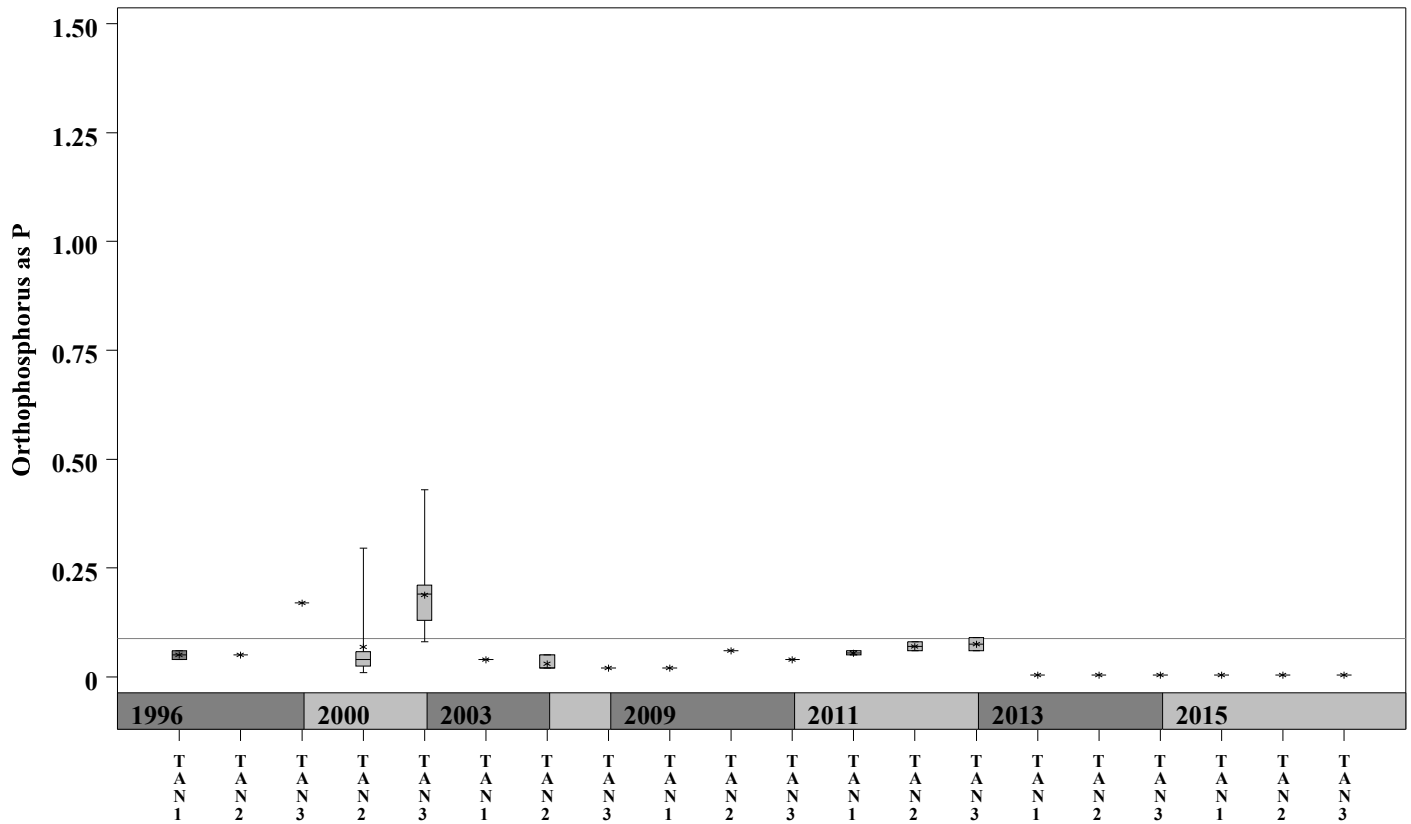




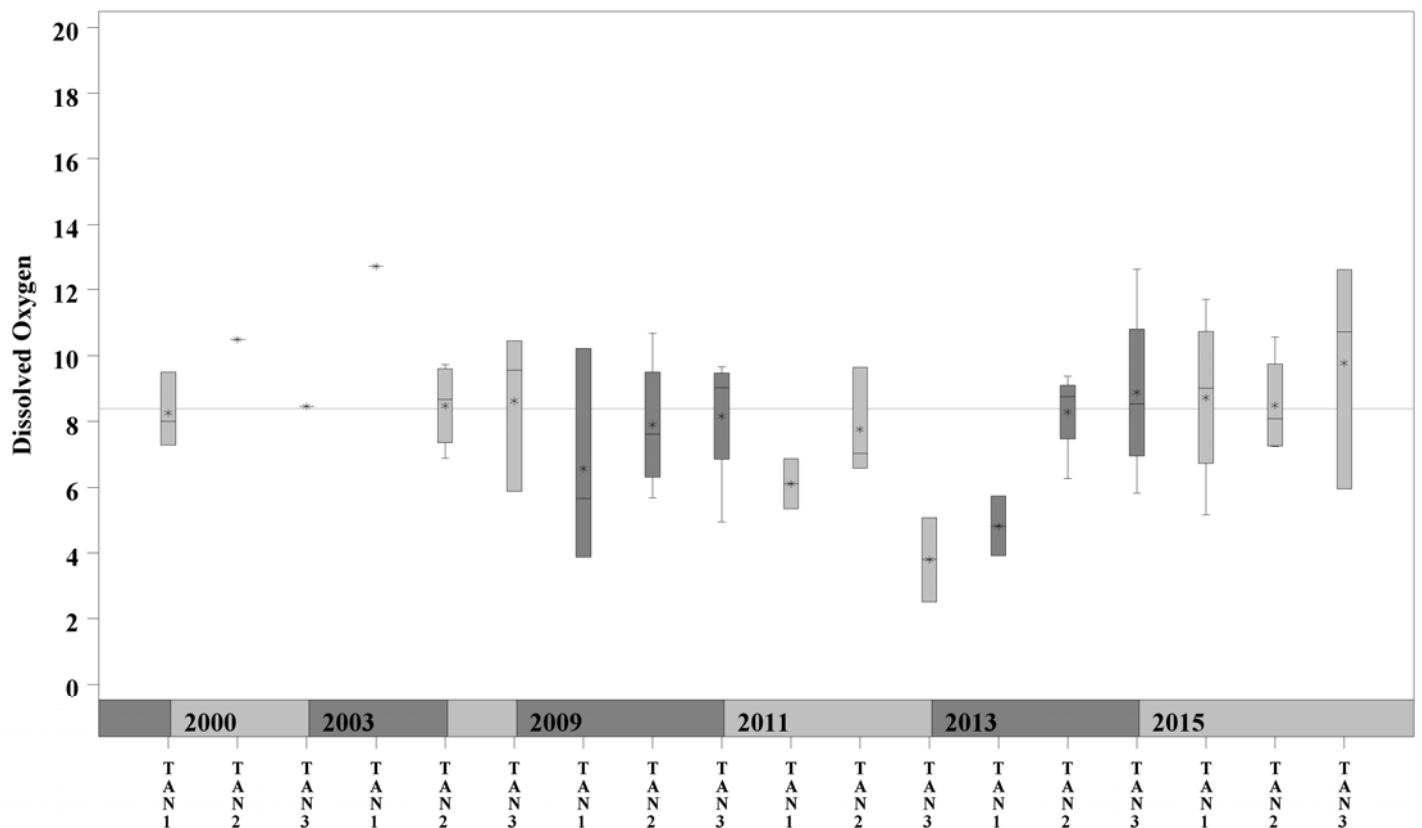
# Tannehill Creek Watershed

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

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



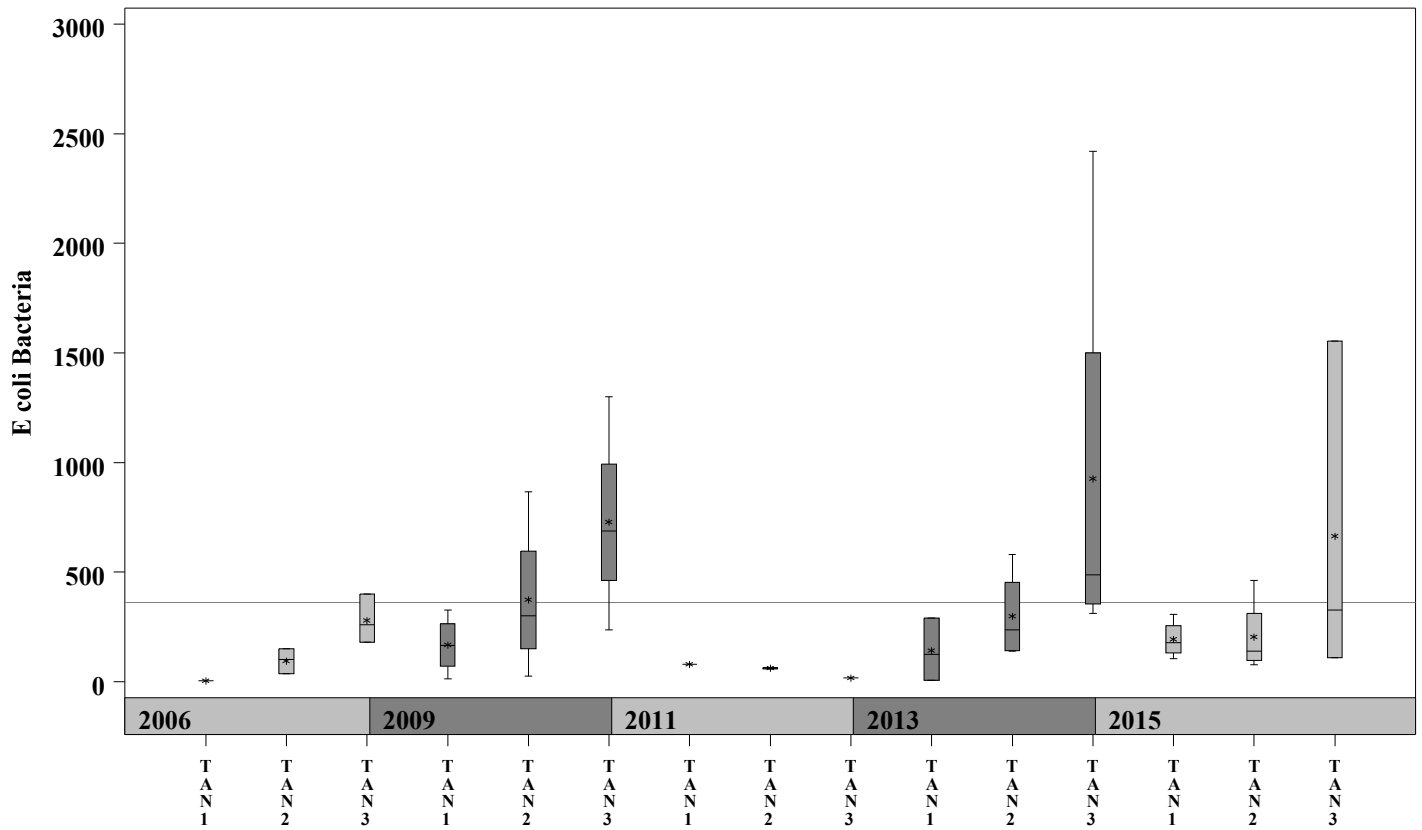
Parameter = DISSOLVED OXYGEN Unit = mg/L Watershed = Tannehill Branch



# Tannehill Creek Watershed

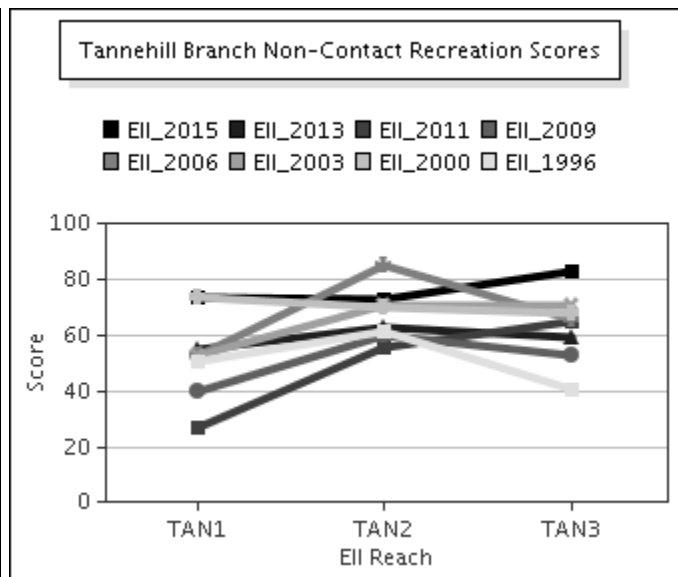
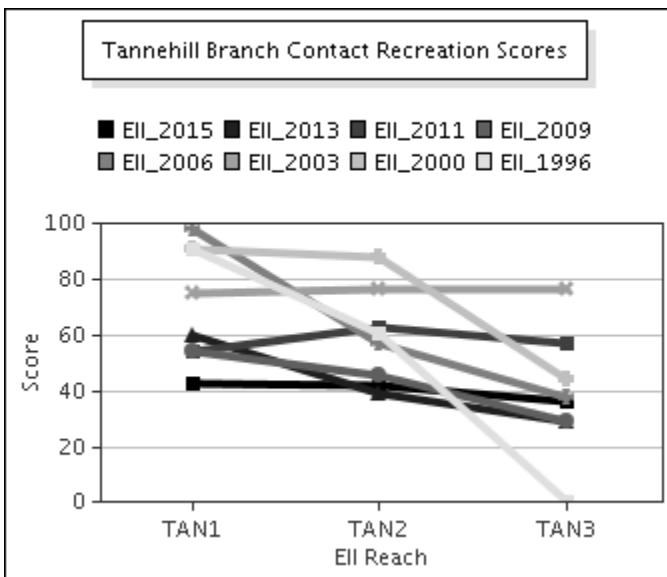
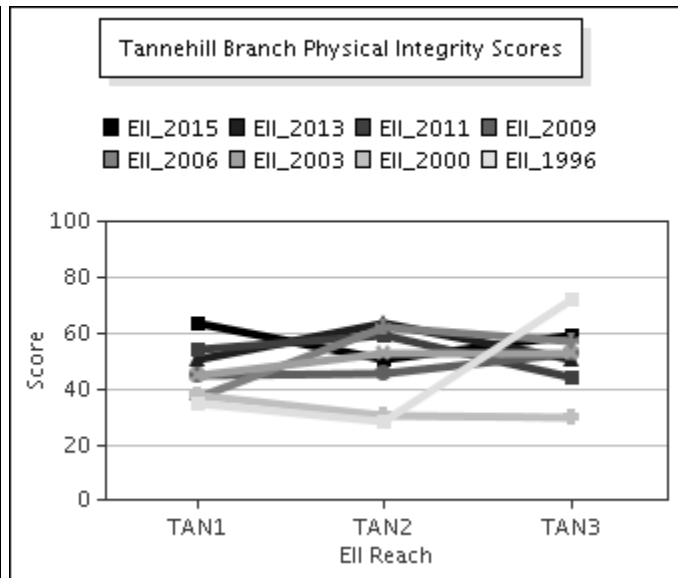
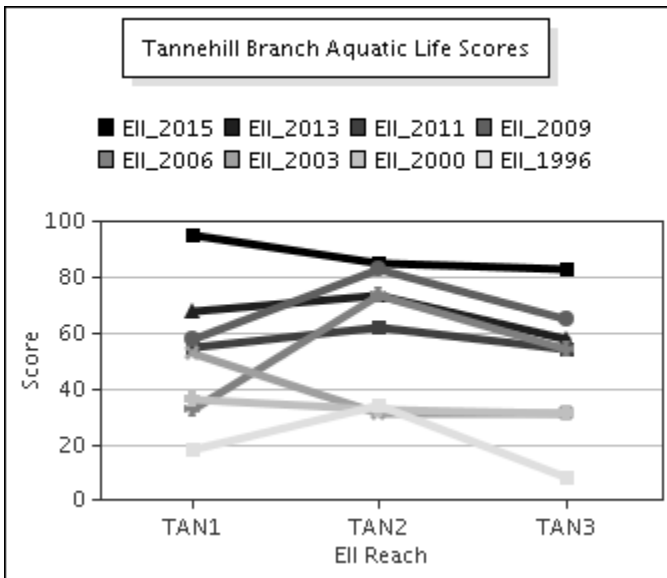
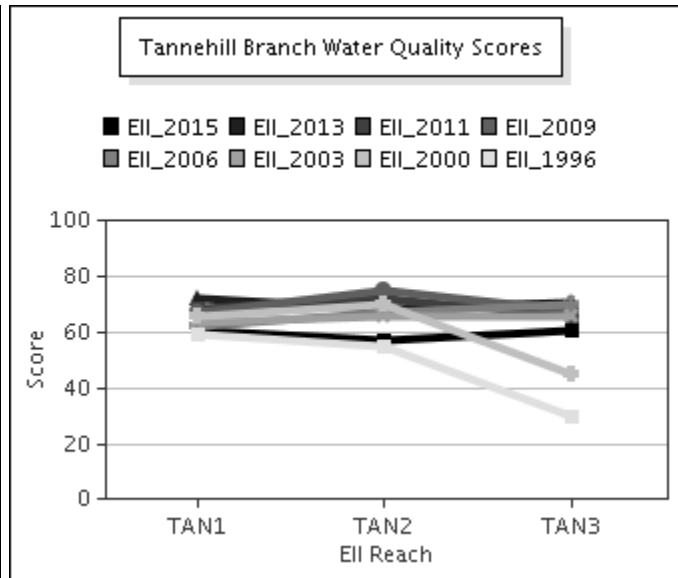
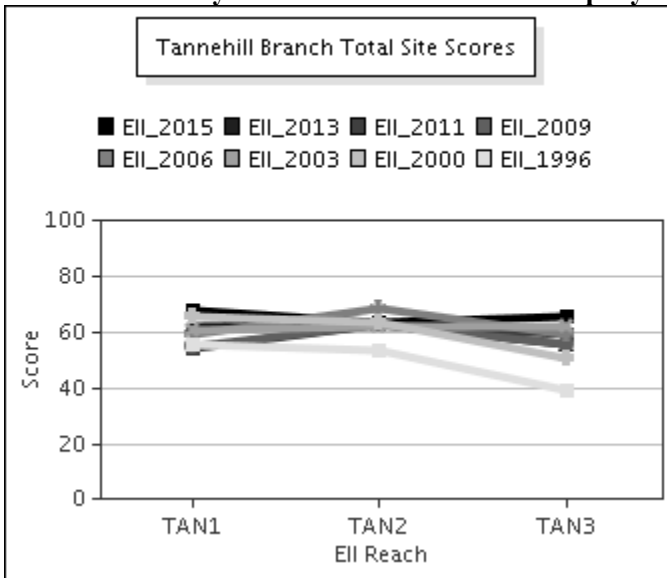
Data Summary Graphs – *E.coli* (Downstream to Upstream by Year)

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



# Tannehill Creek Watershed

## Score Summary – Reach scores for each sample year



# Tannehill Creek Watershed

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

Benthic Macroinvertebrates - Tannehill Branch			TAN @ Berkman (3858) 07/07/2015 (WRE)	TAN @ Lovell (843) 05/05/2015 (WRE)	TAN @ Desirable (1476) 05/04/2015 (WRE)
Benthic Macroinvertebrate ID	PTI	FFG			
Chimarra	2	FC	3	5	14
Helicopsyche	2	SC			7
Hydroptila	2	PI,SC	1	1	2
Camelobaetidium	4	CG	20	1	1
Fallceon	4	CG,SC	525	114	194
Neochoroterpes	4	CG	1		2
Simulium	4	FC		18	3
Petrophila (Moth)	5	SC		6	
Argia	6	P	27	3	4
Brechmorhoga Mendax	6	P	2		
Cheumatopsyche	6	FC	17	14	62
Chironomidae	6	FC,P	108	3	12
Hetaerina	6	P			1
Hydracarina	6		1		1
Microvelia	6	P	2		
Rhagovelia	6	P			3
Tanypodinae	6	P	54	5	3
Bezzia / Palpomyia	7	CG,P	1		
Caloparyphus/Euparyphus	8	CG,SC	2		1
Hyaella	8	CG,SH	2		1
Oligochaeta	8	CG			3
Physella	9	SC			2
Dugesia		CG,P	18	28	6

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# Tannehill Creek Watershed

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## Site Photographs



3858-t00-ur-06-03-2009



3858-t00-ds-06-03-2009



842\_t00-us-02\_14\_2001



842\_t00-ds-02\_14\_2001



841\_t00-us-02\_15\_2001



854\_t00-na-02\_13\_2001

# Tannehill Creek Watershed

## Site Photographs



843\_t00-us-07\_10\_2006



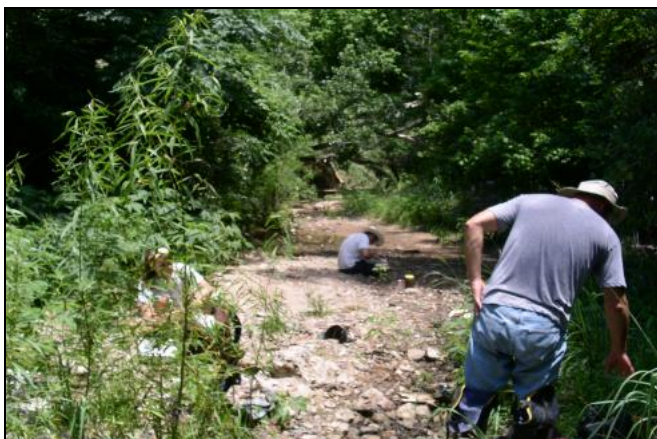
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843-t00-ds-06-03-2009



1476-t00-us-06-02-2009



1476-t00-ds-06-02-2009