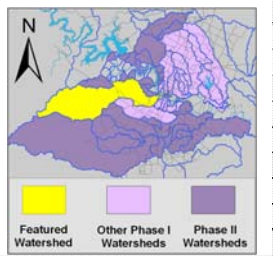


# Barton Creek Watershed

## Watershed Overview

Catchment	Total area	108.7 square miles						
	Area in recharge	7.8 square miles						
	Creek length	49.5 miles						
	Receiving water	Town Lake						
Demographics	2000 population	35,792						
	2030 projected population	52,000						
	30 year projected % increase	145 %						
Land Use	Impervious cover (2003 & 2013 estimates)	Yr 2003 = 3.8%			Yr 2013 = 8.0%			
	Overall EII Scores	2000	2003	2006	2009	2011	2013	2015
		77	87	75	77	77	79	82



## Flow Regime\* for Sample Sites on Barton Creek (Upstream to Downstream)

Site	2003					2006					2009					2010					2011					2013					2015				
	Feb	Mar	Mar	May	Sep	Dec	Feb	May	Jul	Aug	Nov	Feb	May	Jun	Oct	Dec	Mar	Jun	Jun	Sep	Jan	Apr	May	Jun	Jun	Sep	Jan	Apr	Jul	Jul	Sep				
	WQ	WQ	Bio	WQ	WQ	WQ	WQ	WQ	Bio	WQ	WQ	WQ	WQ	Bio	WQ	WQ	WQ	WQ	Bio	WQ	WQ	WQ	Bio	WQ	WQ	WQ	WQ	WQ	Bio	WQ	WQ				
44												n	n	n	B	B	B	B	B	n	B	B	B	B		B	B	B	B	B	B				
45		B	B									n	n	n	B	B	B	B	B	n	B	B	B	B		n	B	B	B	B	B				
48	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		B	B	B	B	B	B				
49	B	B	B	B	B	n	B													B	B	B	n	B	B	B	B	B	B	B	B				
50												B	B	B	B	B																			
51							B	B	B	B	B	B	B	B	B	B	B	B	B	n	B	B				B	B	B	B	B	B				
88	B	B	B	B	B	B																													
879	B	B	B	B	B	n	n	B	n	n	n	n	n	n	n	B	B	B	B	n	n	n	n		B	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

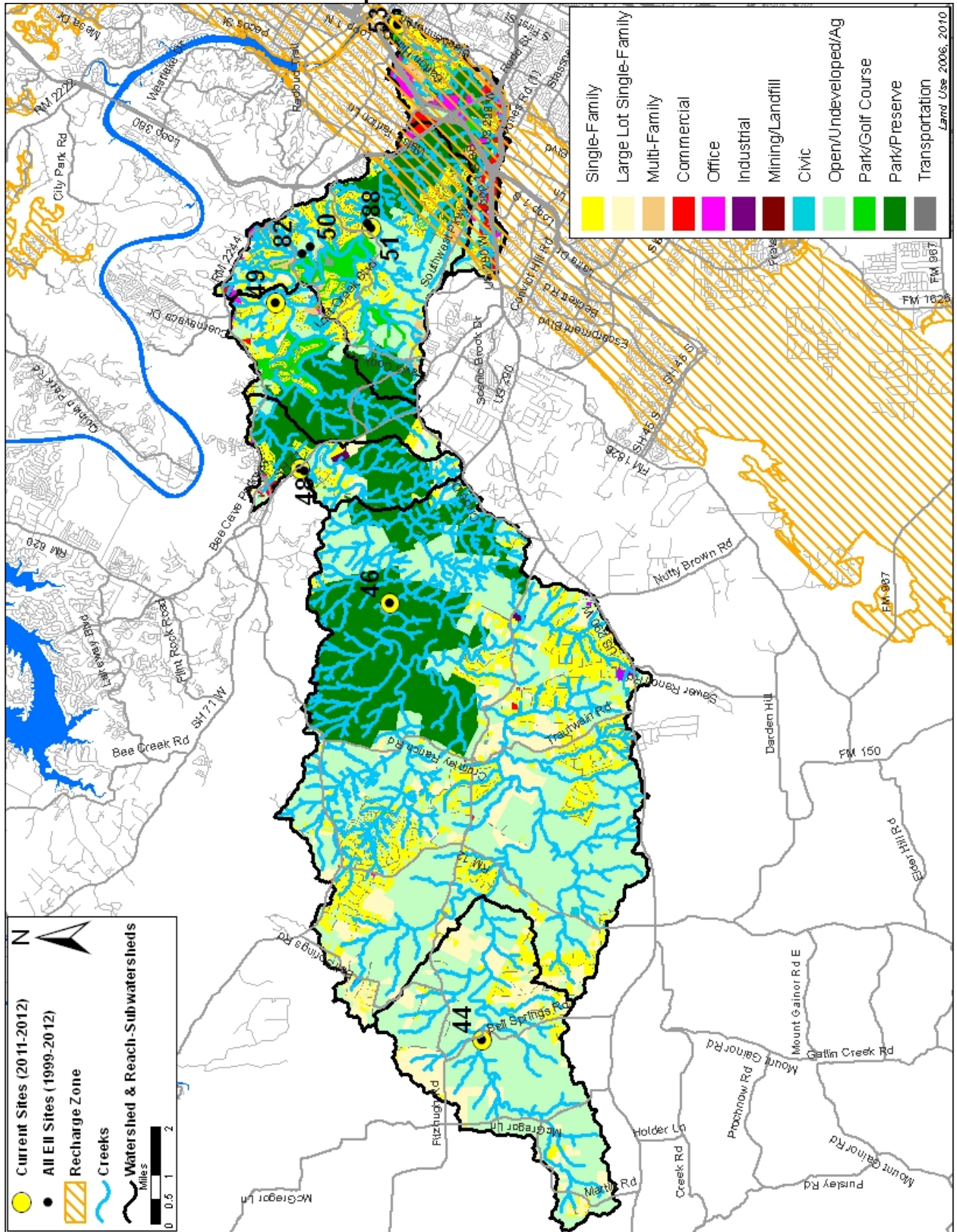
## Index scores\* for Barton Creek Sites by Year

Reach	Site	Site Name	Year	Water Quality	Sediment t**	Contact Rec.	Non-Contact Rec.	Physical Integrity	Aquatic Life	Benthic subindex	Diatom subindex	Total EII Score
BAR1	879	Barton Creek Between Dams US of Pool	2003	62	70	92	96	81	10	100	100	84
BAR2	88	Barton Creek 350m ds of Lost Creek Blvd	2003	75	70	97	93	95	81	72	90	85
BAR3	49	Barton Creek @ Oaktree Pool	2003	84	70	99	99	92	89	84	93	89
BAR4	48	Barton Creek @ Hwy 71 ds of Little Barton	2003	82	70	95	98	88	94	87	100	88
BAR1	879	Barton Creek Between Dams us of Pool	2006	68	75	50	60	62				53
BAR2	51	Barton Cree ds of Lost Creek Blvd	2006	59	75	93	82	86	88	81	94	81
BAR3	49	Barton Creek @ Oaktree Pool	2006	73	75	91	91	88	97	96	97	86
BAR4	48	Barton Creek @ Hwy 71 ds of Little Barton	2006	73	75	62	92	80	98	96	99	80
BAR1	879	Barton Creek Between Dams US of Pool	2009	67	82	67	47	71	54	54		65
BAR2	51	Barton Creek ds of Lost Creek Blvd	2009	75	82	88	86	72	97	100	93	83
BAR3	50	Barton Creek @ Leif Johnson Pool	2009	74	82	82	93	77	97	100	94	84
BAR4	48	Barton Creek @ Hwy 71 ds of Little Barton	2009	70	82	71	79	75	10	100	100	80
BAR5	46	Barton Creek @ Shield Ranch Pool	2009	69	82	60	72	83	74	74		73
BAR6	44	Barton Creek @ Stark Pool	2009	75	82	53	68	72	92	92		74
BAR1	879	Barton Creek Between Dams us of Pool	2011	60	70	72	58	77	68	48	87	68
BAR2	51	Barton Creek DS of Lost Creek Blvd	2011	68	70	66	84	82	92	97	87	77
BAR3	49	Barton Creek @ Oaktree Pool	2011	80	70	91	86	83	88	100	75	83
BAR4	48	Barton Creek @ Hwy 71 ds of Little Barton	2011	79	70	84	91	90	10	100	100	86
BAR5	46	Barton Creek @ Shield Ranch Pool	2011	81	70	79	88	72	91	90	91	80
BAR6	44	Barton Creek @ Stark Pool	2011	68	70	60	88	79	54	71	30	70
BAR1	879	Barton Creek Between Dams Upstream of Pool	2013	56	75	41	67	68	67	40	93	62
BAR2	51	Barton Creek Downstream of Lost Creek Blvd	2013	68	75	71	98	86	99	97	100	83
BAR3	49	Barton Creek @ Oaktree Pool	2013	80	75	94	99	92	97	100	93	90
BAR4	48	Barton Creek @ Hwy 71 Downstream of Little	2013	70	75	73	99	89	99	100	97	84
BAR5	46	Barton Creek @ Shield Ranch Pool	2013	76	75	78	100	92	93	94	91	86
BAR6	44	Barton Creek @ Stark Pool	2013	68	75	49	90	84	61	82	39	71
BAR1	879	Barton Creek Between Dams Upstream of Pool	2015	70	63	79	87	89	97	97	96	81
BAR2	51	Barton Creek Downstream of Lost Creek Blvd	2015	77	63	90	95	96	95	100	90	86
BAR3	49	Barton Creek @ Oaktree Pool	2015	80	63	94	98	93	95	98	91	87
BAR4	48	Barton Creek @ Hwy 71 DS of Little Barton	2015	76	63	73	93	86	97	100	94	81
BAR5	46	Barton Creek @ Shield Ranch Pool	2015	78	63	80	96	94	93	92	93	84
BAR6	44	Barton Creek @ Stark Pool	2015	68	63	47	94	81	88	83	93	74

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

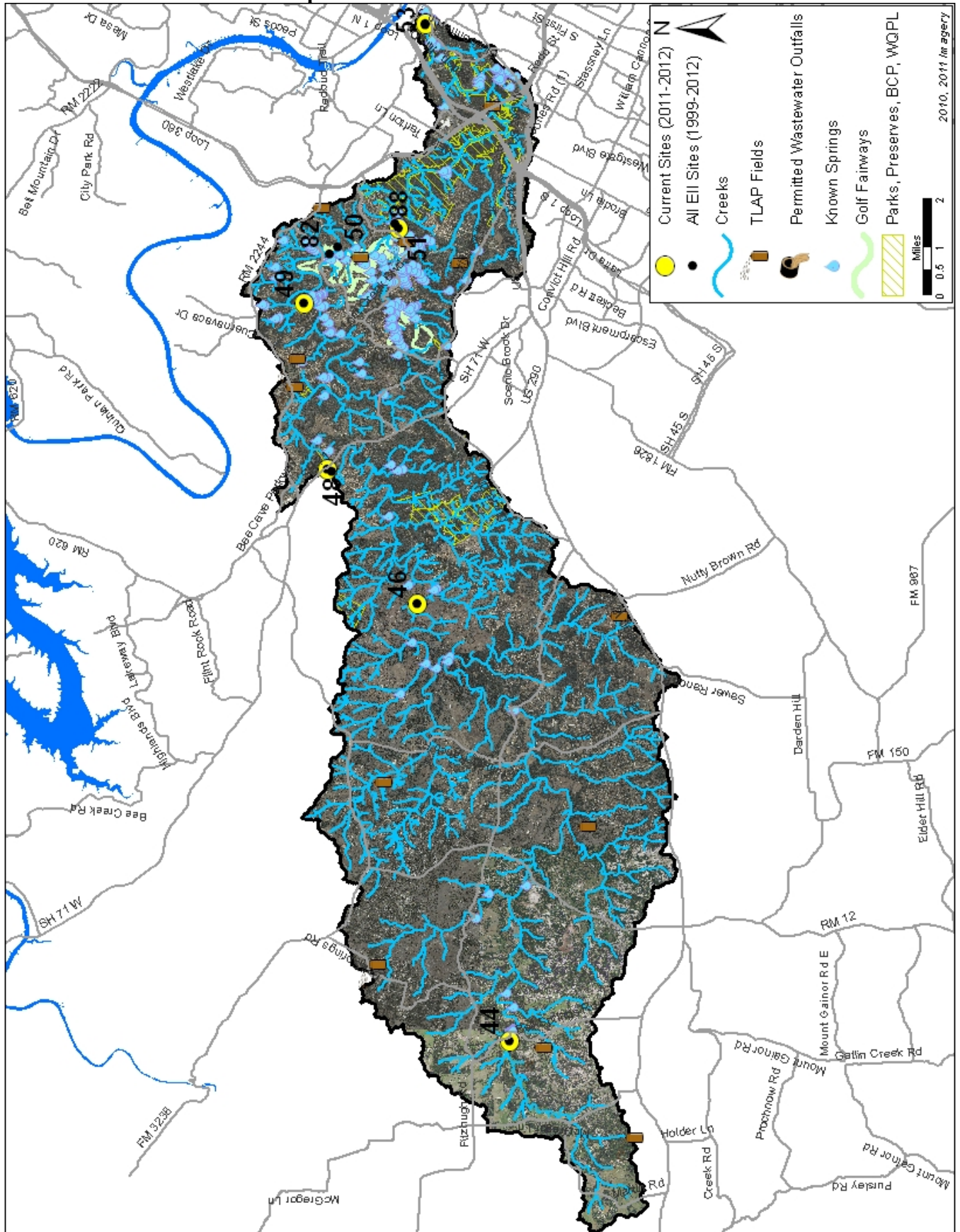
# Barton Creek Watershed

## Land Use Map



# Barton Creek Watershed

## Aerial Map



# Barton 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. Coll flag
Barton	879	BAR1	01/14/2015	8.6	668	7.81	11.2	27.5
Barton	879	BAR1	04/15/2015	20.9	664	7.66	7.4	20.1
Barton	879	BAR1	07/9/2015	26.6	607	7.77	6.3	
Barton	879	BAR1	07/14/2015	28.8	568	7.70	7.6	23.3
Barton	879	BAR1	09/9/2015	23.3	655	7.23	8.3	62.0
BAR1 Mean				21.6	632	7.63	8.1	33.2
Barton	51	BAR2	01/14/2015	8.5	701	8.15	11.9	21.8
Barton	51	BAR2	04/15/2015	21.9	691	8.05	9.4	17.1
Barton	51	BAR2	07/8/2015	27.2	636	7.96	6.8	
Barton	51	BAR2	07/14/2015	29.7	628	8.01	7.9	18.5
Barton	51	BAR2	09/9/2015	28.1	716	7.89	7.5	9.8
BAR2 Mean				23.1	674	8.01	8.7	16.8
Barton	49	BAR3	01/14/2015	8.5	690	8.09	11.6	24.6
Barton	49	BAR3	04/15/2015	21.8	683	7.99	9.1	6.3
Barton	49	BAR3	07/9/2015	27.5	627	7.96	7.4	
Barton	49	BAR3	07/14/2015	29.6	623	7.96	7.9	1.0
Barton	49	BAR3	09/9/2015	28.5	666	7.55	6.3	7.4
BAR3 Mean				23.2	658	7.91	8.4	9.8
Barton	48	BAR4	01/14/2015	8.6	698	8.12	11.5	38.9
Barton	48	BAR4	04/15/2015	21.4	694	8.01	9.3	24.1
Barton	48	BAR4	05/7/2015	24.0	662	8.05	8.4	
Barton	48	BAR4	07/14/2015	28.8	641	7.96	7.9	14.6
Barton	48	BAR4	09/9/2015	27.3	706	7.72	5.9	162
BAR4 Mean				22.0	680	7.97	8.6	59.9
Barton	46	BAR5	01/14/2015	7.6	755	8.08	11.4	43.2
Barton	46	BAR5	04/15/2015	20.0	733	7.88	8.6	93.4
Barton	46	BAR5	05/7/2015	23.6	722	7.93	6.8	
Barton	46	BAR5	07/14/2015	28.2	664	7.91	6.9	6.0
Barton	46	BAR5	09/9/2015	28.6	652	7.51	5.1	<J 1.0
BAR5 Mean				21.6	705	7.87	7.8	35.9
Barton	44	BAR6	01/14/2015	9.8	619	7.67	9.1	260.0
Barton	44	BAR6	04/15/2015	19.0	655	7.80	8.3	129.0
Barton	44	BAR6	05/7/2015	22.2	643	7.72	7.2	
Barton	44	BAR6	07/14/2015	25.8	652	7.63	6.7	71.7
Barton	44	BAR6	09/9/2015	25.7	640	7.37	5.5	71.2
BAR6 Mean				20.5	642	7.64	7.4	133.0
Barton Mean				22.0	665	7.84	8.2	48.1

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	

# Barton 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	
Barton	879	BAR1	1/14/2015	<J	0.008		0.34	<J	0.004	<J	1.0		3.7	R
Barton	879	BAR1	4/15/2015	<J	0.008		0.32	<J	0.004	<J	1.0		0.8	
Barton	879	BAR1	7/9/2015											
Barton	879	BAR1	7/14/2015	<J	0.008		0.54	<J	0.004		1.4		2.4	R
Barton	879	BAR1	9/9/2015	<J	0.008		1.75	<J	0.004	<J	1.0		1.2	R
BAR1 Mean					0.008		0.74		0.004		1.1		2.0	
Barton	51	BAR2	1/14/2015	<J	0.008		0.24	<J	0.004	<J	1.0		3.6	R
Barton	51	BAR2	4/15/2015	<J	0.008		0.10	<J	0.004		1.6		2.1	
Barton	51	BAR2	7/8/2015											
Barton	51	BAR2	7/14/2015	<J	0.008		0.07	<J	0.004		1.3		1.9	R
Barton	51	BAR2	9/9/2015	<J	0.008		0.05	<J	0.004		1.2		2.3	R
BAR2 Mean					0.008		0.11		0.004		1.3		2.5	
Barton	49	BAR3	1/14/2015	<J	0.008		0.20	<J	0.004		2.1		2.7	R
Barton	49	BAR3	4/15/2015	<J	0.008		0.08	<J	0.004	<J	1.0		1.2	
Barton	49	BAR3	7/9/2015											
Barton	49	BAR3	7/14/2015	<J	0.008		0.05	<J	0.004	<J	1.0		1.8	R
Barton	49	BAR3	9/9/2015	<J	0.008		0.06	<J	0.004	<J	1.4		1.6	R
BAR3 Mean					0.008		0.10		0.004		1.4		1.8	
Barton	48	BAR4	1/14/2015	<J	0.008		0.11	<J	0.004	<J	1.0		1.3	R
Barton	48	BAR4	4/15/2015	<J	0.008		0.06	<J	0.004	<J	1.0		1.4	
Barton	48	BAR4	5/7/2015											
Barton	48	BAR4	7/14/2015	<J	0.008		0.06	<J	0.004	<J	1.0		2.0	R
Barton	48	BAR4	9/9/2015	<J	0.008		0.09	<J	0.004		3.8		2.5	R
BAR4 Mean					0.008		0.08		0.004		1.7		1.8	
Barton	46	BAR5	1/14/2015	<J	0.008		0.03	<J	0.004		3.2		0.9	R
Barton	46	BAR5	4/15/2015	<J	0.008		0.05	<J	0.004	<J	1.0		1.5	
Barton	46	BAR5	5/7/2015											
Barton	46	BAR5	7/14/2015	<J	0.008		0.04	<J	0.004		1.3		4.3	R
Barton	46	BAR5	9/9/2015	<J	0.008		0.02	<J	0.004	<J	1.0	<J	1.9	R
BAR5 Mean					0.008		0.04		0.004		1.6		2.1	
Barton	44	BAR6	1/14/2015	<J	0.008	<J	0.008	<J	0.004		8.0		3.7	R
Barton	44	BAR6	4/15/2015	<J	0.008	<J	0.008	<J	0.02		3.2		2.2	
Barton	44	BAR6	5/7/2015											
Barton	44	BAR6	7/14/2015	<J	0.008	<J	0.008	<J	0.004		1.2		2.0	R
Barton	44	BAR6	9/9/2015	<J	0.008		0.06	<J	0.004		7.8		2.0	R
BAR6 Mean					0.008		0.02		0.008		5.1		2.5	
Barton Mean					0.008		0.18		0.005		2.04		2.1	

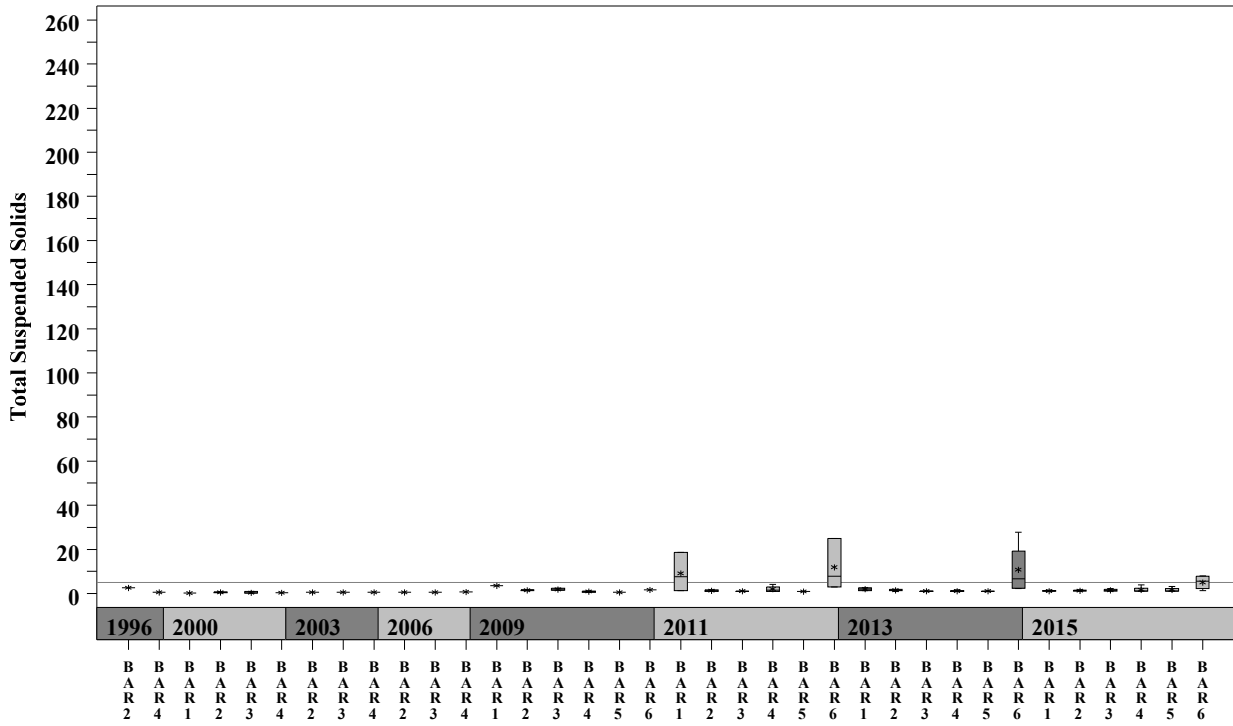
Gray highlighting indicates that the value exceeds one standard deviation from the mean of all E.I.I. sites combined.

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

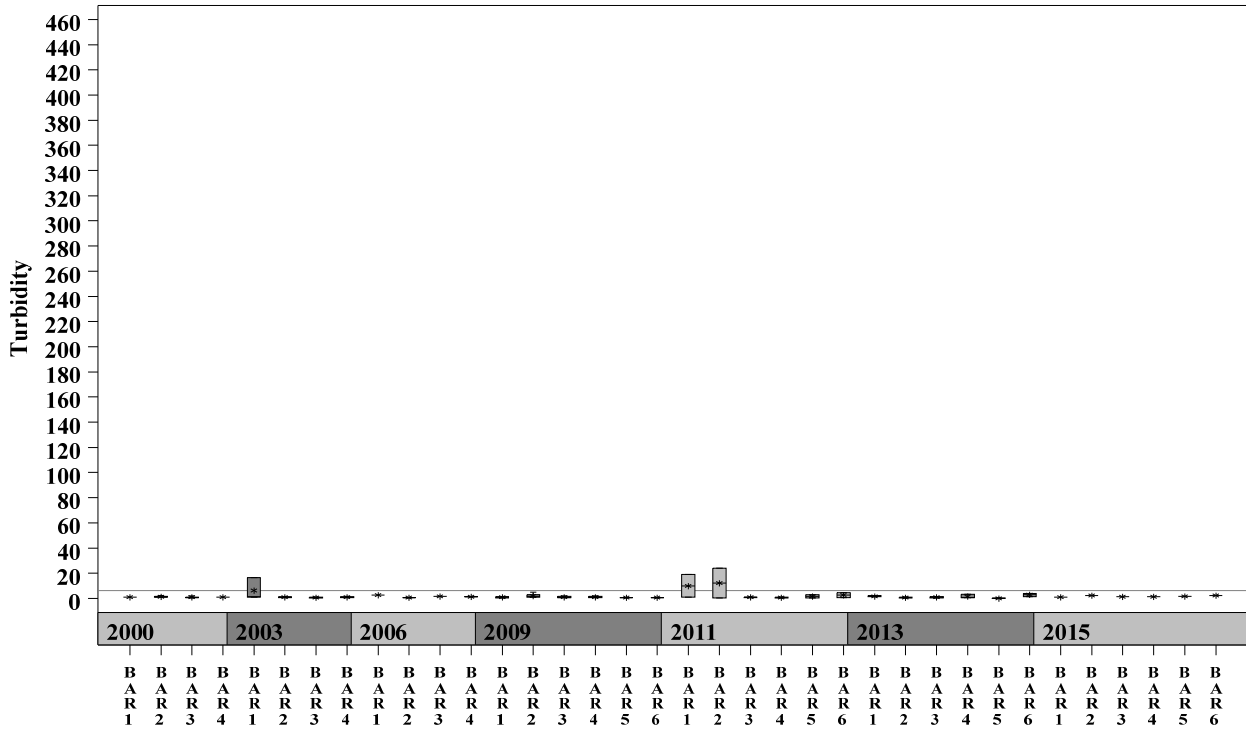
# Barton Creek Watershed

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

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



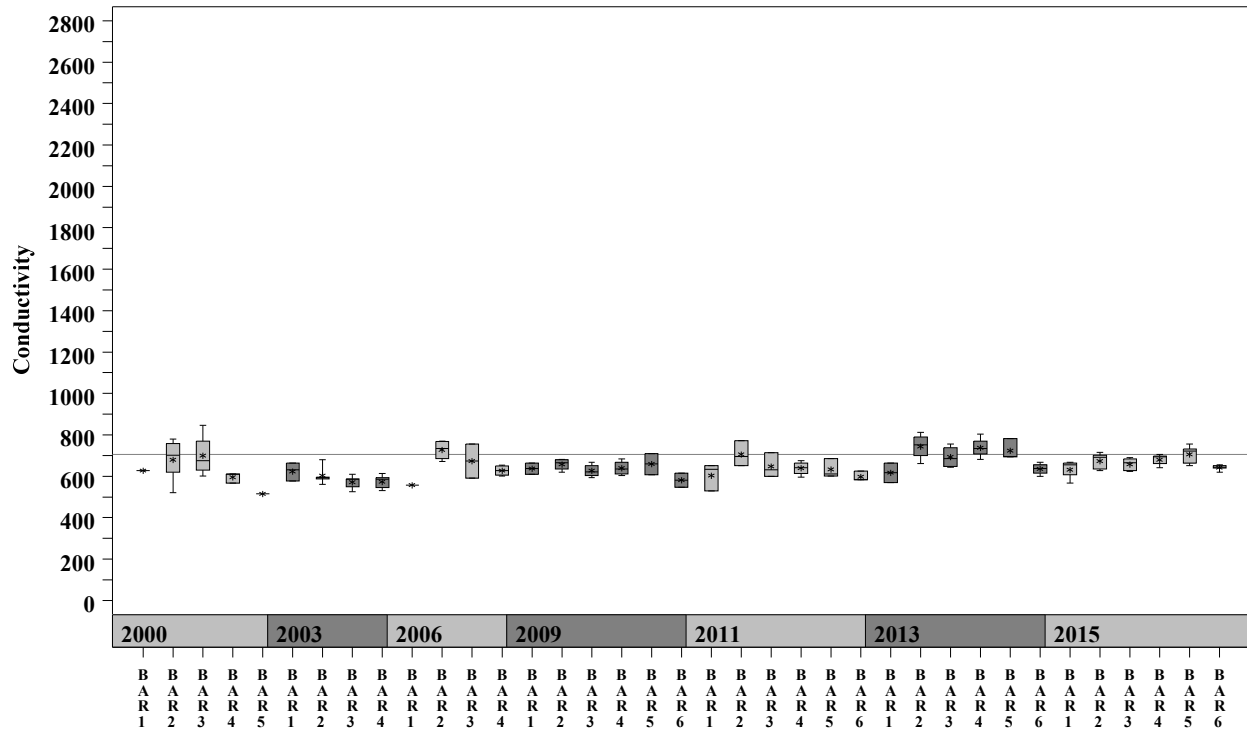
Parameter = TURBIDITY Unit = NTU Watershed = Barton



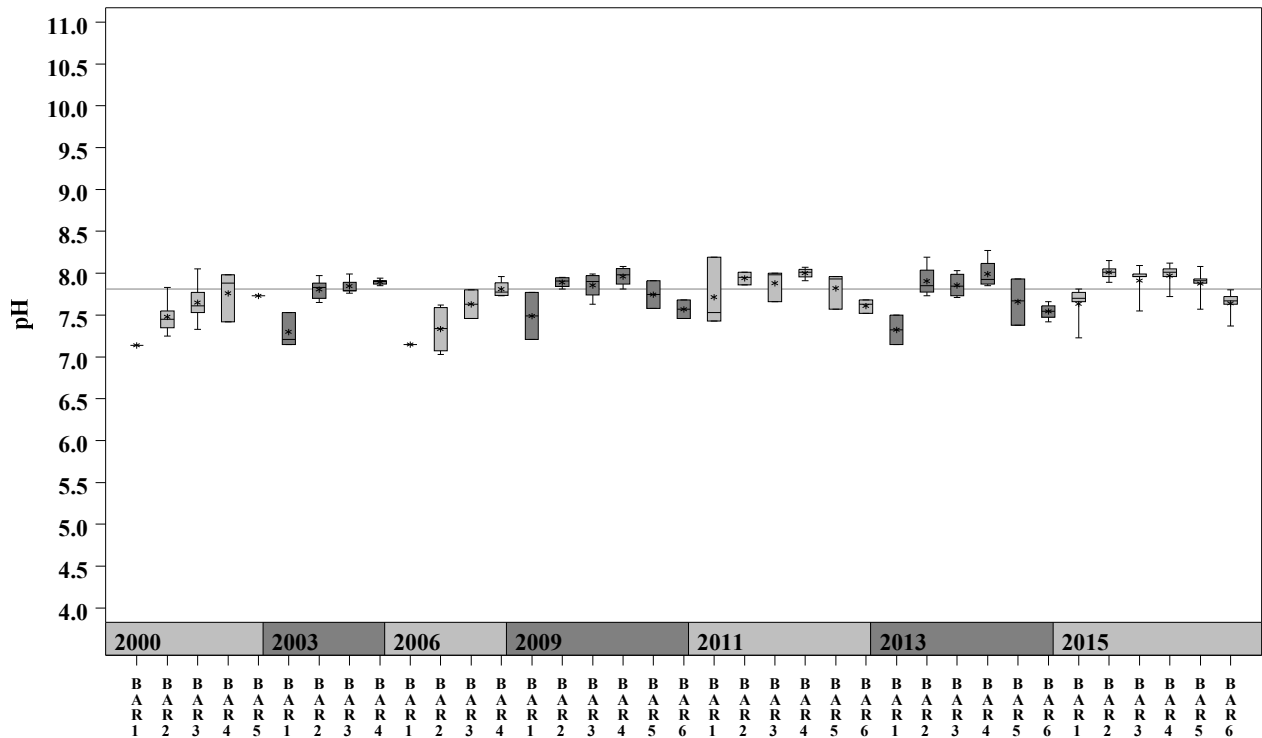
# Barton Creek Watershed

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

Parameter = CONDUCTIVITY Unit = uS/cm Watershed = Barton



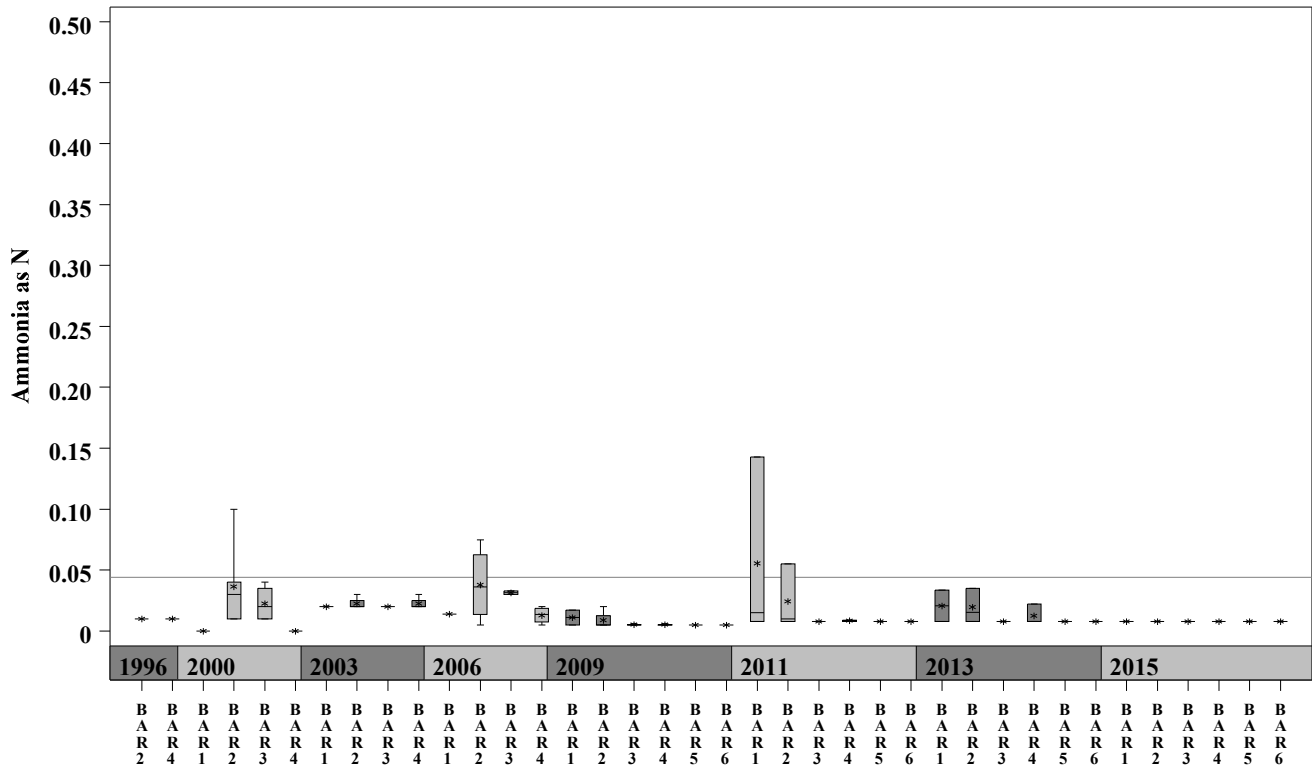
Parameter = pH Unit = Standard Units Watershed = Barton



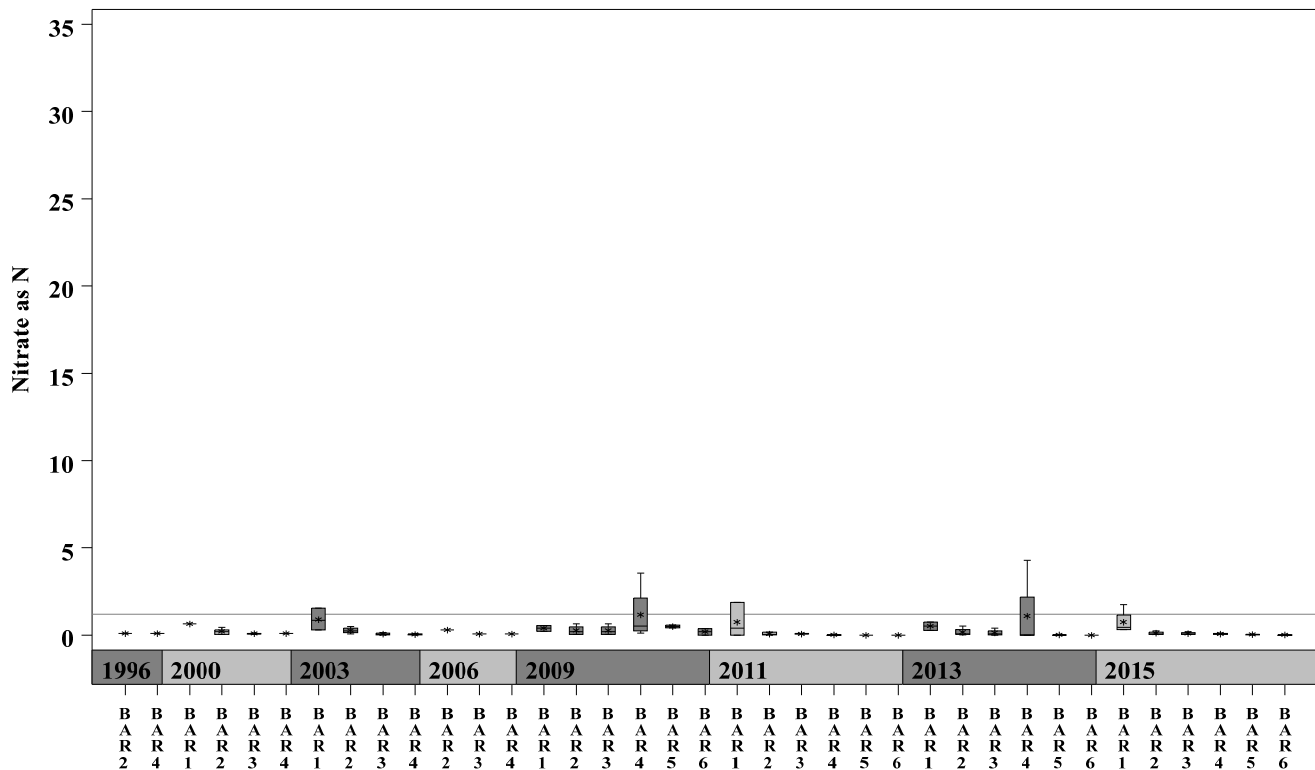
# Barton Creek Watershed

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

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



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

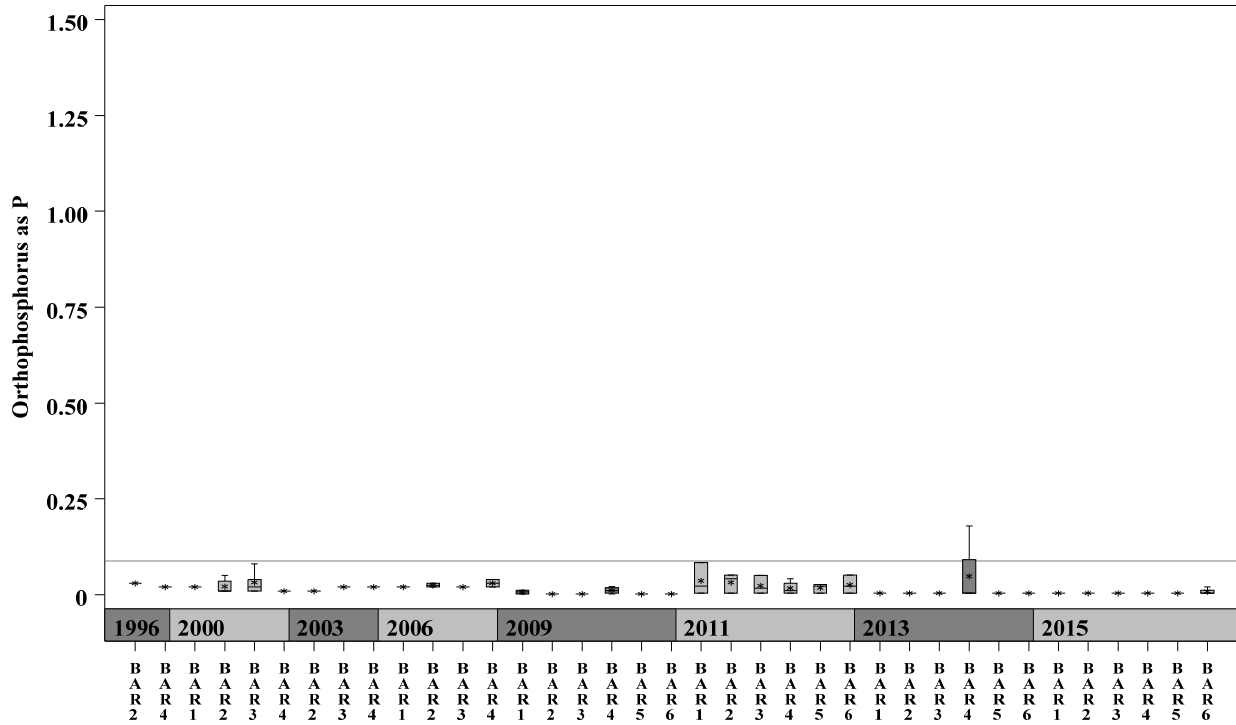




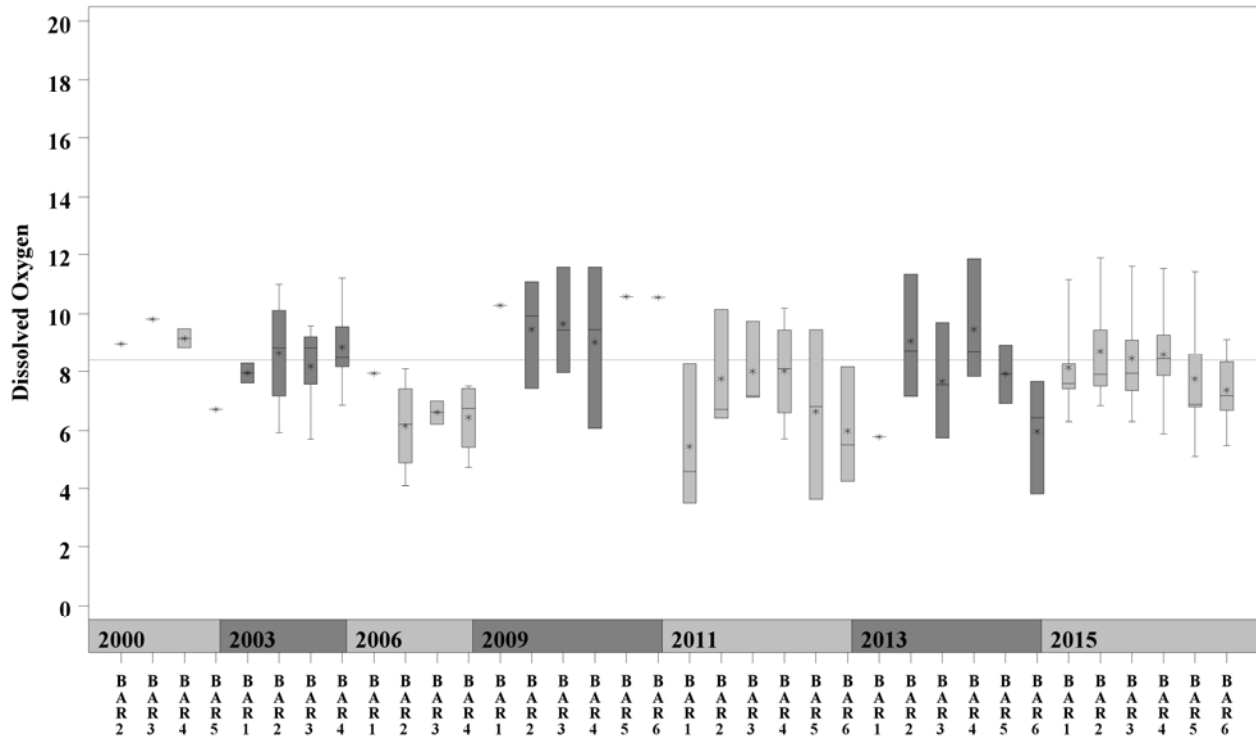
# Barton Creek Watershed

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

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



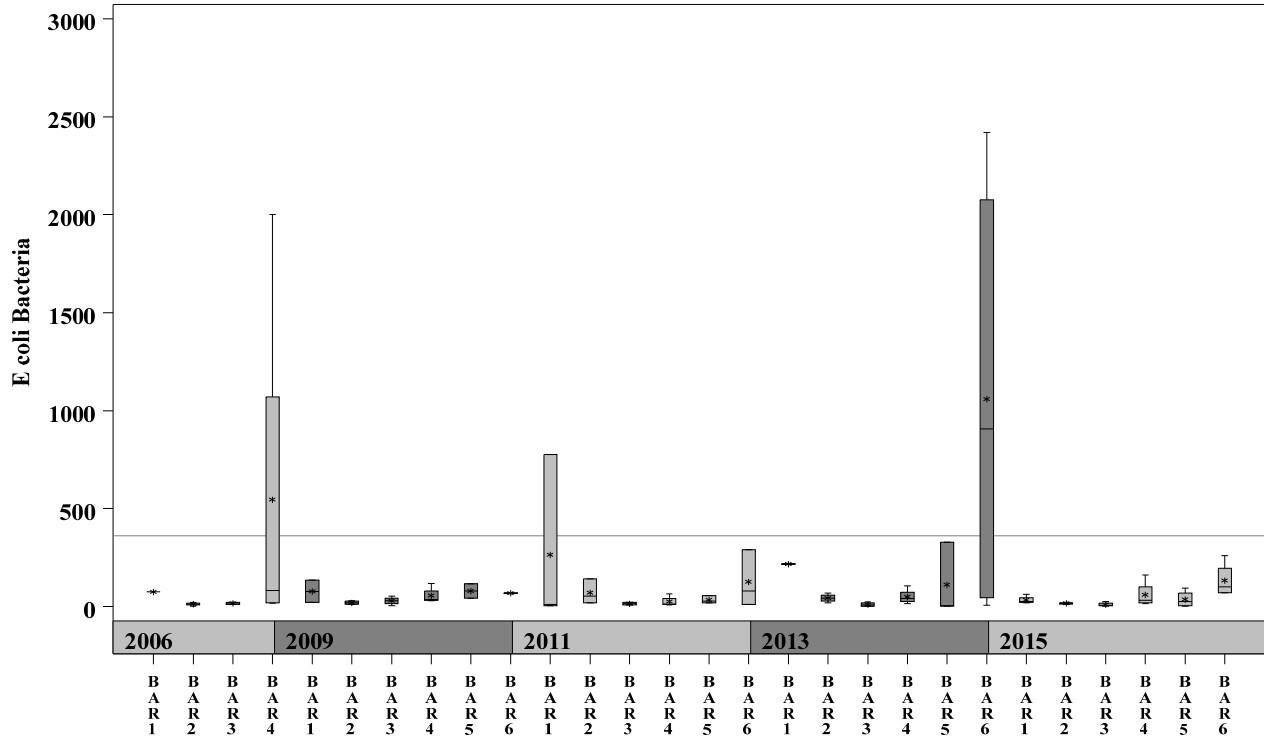
Parameter = DISSOLVED OXYGEN Unit = mg/L Watershed = Barton



# Barton Creek Watershed

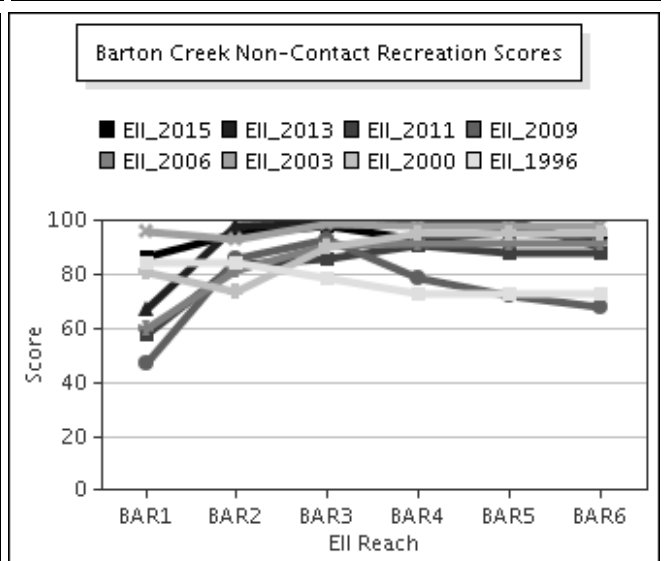
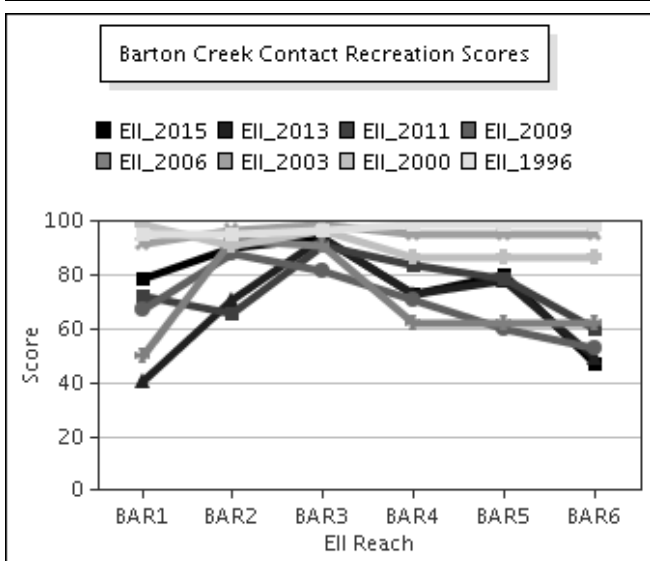
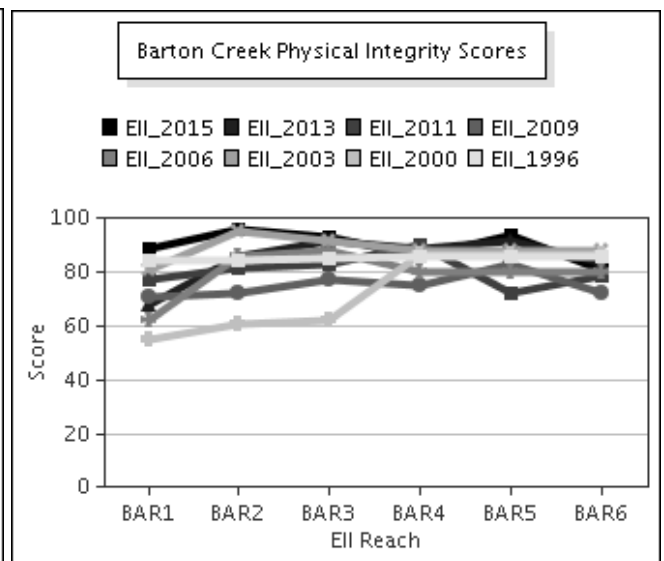
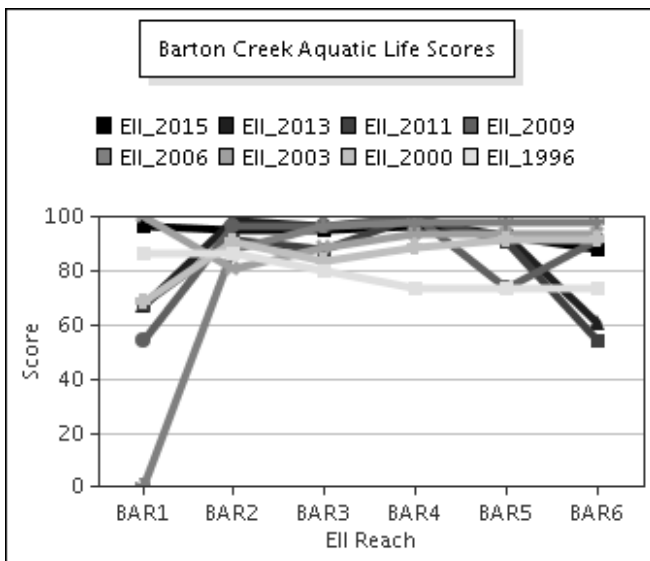
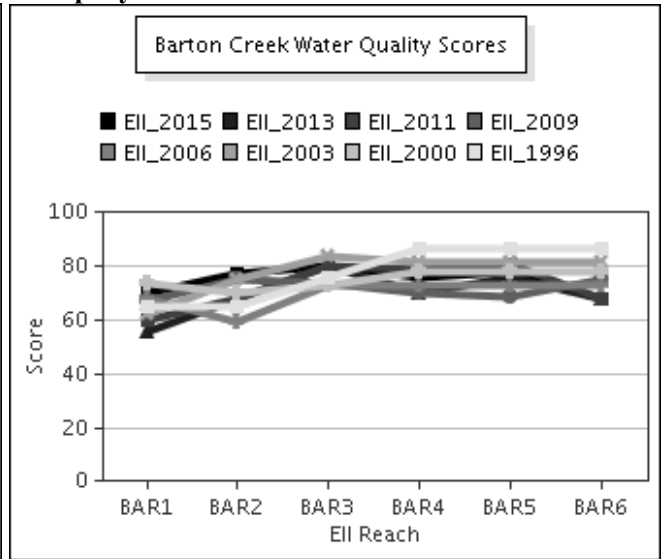
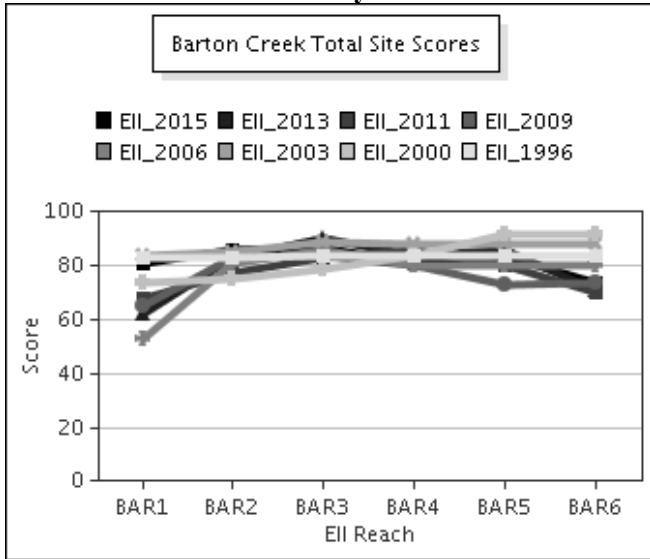
Data Summary Graphs – *E.coli* (Downstream to Upstream by Year)

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



# Barton Creek Watershed

## Score Summary – Reach scores for each sample year



# Barton Creek Watershed

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

Benthic Macroinvertebrates - Barton Creek			BAR @ Stark (44)	BAR @ Shield (46)	BAR @ Hwy71 ds LBA (48)	BAR @ Ogletree (49)	BAR @ Lost Ck (51)	BAR btwn dams us BSP (879)
Benthic Macroinvertebrate ID	PTI	FFG	05/07/2015 (WRE)	05/07/2015 (WRE)	05/07/2015 (WRE)	07/09/2015 (WRE)	07/08/2015 (WRE)	07/09/2015 (WRE)
Perlesta	0	P	2	5				
Chimarra	2	FC	118	129	81	159	109	42
Farrodes Texanus	2	CG,SC					1	1
Hexacyclops Ferrugineus	2	CG,SC		1	2	2	4	
Hydroptila	2	PI,SC			2			
Microcylopus Pusillus	2	CG,SC		4	7	5	16	
Neoelmis Caesa	2	CG,SC			4		5	
Thraulodes Gonzalesi	2	CG,SC				1	2	
Isonychia	3	FC			1	9	8	
Neotrichia	3	SC		1			2	
Baetodes	4	SC			6	11	79	70
Camelobaetidius	4	CG		17	11		11	6
Fallceon	4	CG,SC	22	4	2	4	43	6
Heterelmis	4	CG,SC				1		
Macrelmis	4	CG,SC				1		
Mayatrichia	4	SC					1	
Ostracoda	4	CG,FC					1	
Psephenus	4	SC					1	1
Simulium	4	FC	4	12	7	19	128	35
Smicridea	4	FC			2	46	32	1
Ambrysus	5	P			5			
Cincinnatia Cincinnatiensis	5	SC					1	
Lutrochus	5	CG		2				1
Mesovelgia	5	P	1					
Petrophila (Moth)	5	SC					2	
Tricorythodes	5	CG					1	
Argia	6	P	7	24		4	6	4
Brechmorhoga Mendax	6	P		1		7	2	1
Cheumatopsyche	6	FC	112	58	32	11	60	6
Chironomidae	6	FC,P	10	6	4	3	27	8
Corydalus Cornutus	6	P			3	4	7	
Hetaerina	6	P				1	2	
Hydracarina	6		7	1	3		3	1
Rhagovelia	6	P	1					1
Stenonema Femoratum	6	CG,SC	9			1		
Corbicula Fluminea	6	FC			7		3	
Macromia	6.7	P						1
Bezzia / Palpomyia	7	CG,P		1				
Ferrissia	7	SC	1					
Stenelmis	7	CG,SC		1		1		
Tabanus	7	P		2		1		
Caloparyphus/Euparyphus	8	CG,SC	1					
Oligochaeta	8	CG			3		3	
Physella	9	SC						1
Dugesia		CG,P	11	1	2	3	1	3

# Barton Creek Watershed

## Site Photographs



44\_t3-ds-10\_03\_2007



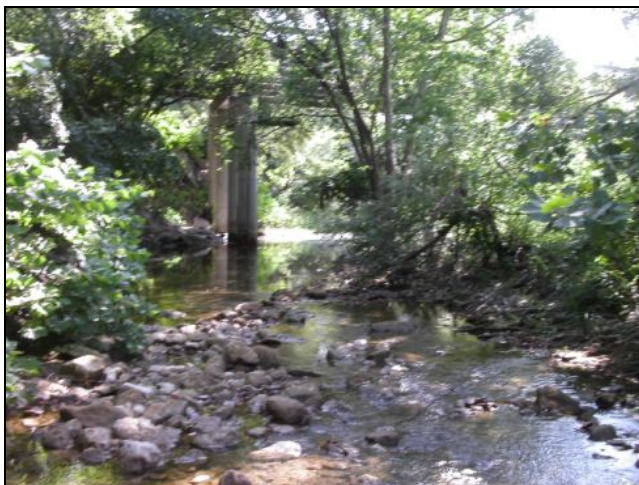
44\_t03-ds-09\_17\_2008



46\_t00-us-05\_19\_2004



46\_t00-ds-06\_01\_2009



48\_t3-ds-07\_28\_2005



48\_t00-ds-06\_01\_2009

# Barton Creek Watershed

## Site Photographs



50\_t3-ds-08\_02\_2005



50\_t00-us-06\_02\_2009



51\_t3-us-08\_01\_2006



51\_t03-us-09\_16\_2008



879\_t2-ds-08\_01\_2006



879\_t00-ds-06\_02\_2009