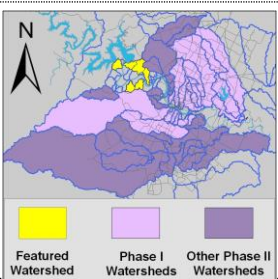


Lake Austin Tributaries

Catchment	Total area		24 sq. miles					
	Area in recharge		0					
	Creek length		26 miles					
	Receiving water		Town Lake					
Demographics	2000 population		23,303					
	2030 projected population		78,558					
Land Use	Impervious cover (2013 estimate)		BRW = 16.5%, RDR = 18.2%, CMF = 6.4%					
	Each stream abbr. as reach ID		PAN = 8.4%, CRN = 15.3%, TRK = 10.5%					
Overall EII Scores	1999	2002	2005	2008	2010	2012	2014	
	81	82	68	61	80	76	77	

Flow Regime* for Sample Sites on Lake Austin Tributaries

Site	Site Name	2002					2005					2008					2010				2011	2012					2014					
		Feb	Feb	May	Aug	Nov	Mar	Jun	Jun	Sep	Dec	Feb	May	Jun	Sep	Dec	Mar	May	May	Oct	Dec	Mar	Apr	May	Jul	Sep	Jan	Apr	May	Jun	Jul	Sep
		WQ	Bio	WQ	WQ	WQ	WQ	WQ	Bio	WQ	WQ	WQ	WQ	Bio	WQ	WQ	WQ	WQ	Bio	WQ	WQ	WQ	Bio	Bio	WQ	WQ	WQ	WQ	WQ	Bio	Bio	WQ
1224	Bear West @ Fritz Hughes	B	B	n	B	B	B	B	B	B	B	B	B	n	B	B	B	B	B	B	B	B		B	B	B	B	B	B		B	B
316	Deer @ Running Deer Trl	B	B	n	B	B	B	B	B	n	B	B	B	B	B	B	B	B	B	B	B	B		B	n	n	B	B	B		B	n
1048	Commons Ford @ C.F.M.P.	B	B	n	B	B	B	B	n	n	n	B	B	n	B	n	B	B	B	B	B	B		B	n	n	B	B		B	B	n
1223	Panther Hollow @ Big View	B	B	n	B	B	B	B	B	n	n	B	B	n	n	n	B	B	B	B	B	B		B	n	n	B	B	n		B	n
1222	Cuernavaca @ River Hills	B	B	n	B	B	B	n	n	n	n	n	B	n	n	n	B	B	B	B	B	B	B		n	n	B	B	B	B	n	n
1221	Turkey @ City Pk	B	B	n	B	B	B	B	B	n	n	n	B	n	n	n	B	B	B	B	n	B	B		n	n	B	B	n		B	n

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

Summary of 2010 Data for Lake Austin Tributaries

Index scores* for LA Tributaries by Year			Year	Water Quality	Sediment**	Contact Rec.	Non-Contact Rec.	Physical Integrity	Aquatic Life	Benthic subindex	Diatom subindex	Total EII Score
Reach	Site	Site Name										
BRW1	1224	Bear Creek (West) @ Fritz Hughes Park Rd	1999	79	94	95	97	79	48	37	64	82
RDR1	316	Deer @ Running Deer Trail (AST)	1999	75	90	97	91	79	54	38	70	81
CMF1	1048	Commons Ford Trib - Common Ford Metro Pk	1999	90	93	99	93	80	56	52	59	85
PAN1	1223	Panther Hollow Creek @ Big View Road	1999	72	94	89	89	79	67	76	58	82
CRN1	1222	Cuernavaca Creek @ River Hills Road	1999	55	93	89	82	84	45	17	72	75
TRK1	1221	Turkey Creek @ City Park Road	1999	81	92	89	97	85	56	51	60	83
BRW1	1224	Bear Creek (West) @ Fritz Hughes Park Rd	2002	65	92	95	89	72	82	68	96	83
RDR1	316	Deer @ Running Deer Trail (AST)	2002	62	94	92	97	76	75	63	87	83
CMF1	1048	Commons Ford Trib - Common Ford Metro Pk	2002	72	93	96	92	81	73	60	86	85
PAN1	1223	Panther Hollow Creek @ Big View Road	2002	68	76	98	85	74	81	69	93	80
CRN1	1222	Cuernavaca Creek @ River Hills Road	2002	56	91	86	83	71	64	42	85	75
TRK1	1221	Turkey Creek @ City Park Road	2002	76	85	97	100	81	61	55	67	83
BRW1	1224	Bear Creek (West) @ Fritz Hughes Park Rd	2005	70	82	56	89	63	80	63	97	73
RDR1	316	Deer @ Running Deer Trail (AST)	2005	66	90	46	86	55	73	73		69
CMF1	1048	Commons Ford Trib - Common Ford Metro Pk	2005	73	88	69	69	56				59
PAN1	1223	Panther Hollow Creek @ Big View Road	2005	76	89	79	69	60	90	79	100	77
CRN1	1222	Cuernavaca Creek @ River Hills Road	2005	50	89	25	81	61				51
TRK1	1221	Turkey Creek @ City Park Road	2005	75	87	86	87	68	80	60	100	81
BRW1	1224	Bear Creek (West) @ Fritz Hughes Park Rd	2008	65	86	80	71	75	69	69		74
RDR1	316	Deer @ Running Deer Trail (AST)	2008	69	84	45	84	52	93	88	98	71
CMF1	1048	Commons Ford Trib - Common Ford Metro Pk	2008	59	82	56	60	68				54
PAN1	1223	Panther Hollow Creek @ Big View Road	2008	59	86	70	48	76				57
CRN1	1222	Cuernavaca Creek @ River Hills Road	2008	57	83	25	63	61				48
TRK1	1221	Turkey Creek @ City Park Road	2008	61	85	49	69	81	35	35		63
BRW1	1224	Bear Creek (West) @ Fritz Hughes Park Rd	2010	69	81	70	91	77	82	64	100	78
RDR1	316	Deer @ Running Deer Trail (AST)	2010	67	87	74	97	61	96	92	99	80
CMF1	1048	Commons Ford Trib - Common Ford Metro Pk	2010	78	86	87	81	60	96	91	100	81
PAN1	1223	Panther Hollow Creek @ Big View Road	2010	71	84	84	88	89	85	78	92	84
CRN1	1222	Cuernavaca Creek @ River Hills Road	2010	61	85	65	96	70	86	72	100	77
TRK1	1221	Turkey Creek @ City Park Road	2010	67	87	80	88	75	66	65	66	77
BRW1	1224	Bear Creek (West) @ Fritz Hughes Park Rd	2012	62	85	57	90	88	81	82	79	77
RDR1	316	Deer @ Running Deer Trail (AST)	2012	61	86	63	90	80	58	71	45	73
CMF1	1048	Commons Ford Trib - Common Ford Metro Pk	2012	66	85	83	91	80	97	93	100	84
PAN1	1223	Panther Hollow Creek @ Big View Road	2012	56	86	71	71	64	81	72	89	72
CRN1	1222	Cuernavaca Creek @ River Hills Road	2012	48	85	53	96	81	85	77	92	75
TRK1	1221	Turkey Creek @ City Park Road	2012	55	85	50	98	84	63	42	83	73
BRW1	1224	Bear Creek (West) @ Fritz Hughes Park Rd	2014	77	74	76	86	84	98	96	100	83
RDR1	316	Deer @ Running Deer Trail (AST)	2014	48	80	31	92	79	99	100	97	72
CMF1	1048	Commons Ford Trib - Common Ford Metro Pk	2014	77	84	94	76	76	86	81	90	82
PAN1	1223	Panther Hollow Creek @ Big View Road	2014	64	76	82	70	62	79	79		72
CRN1	1222	Cuernavaca Creek @ River Hills Road	2014	59	82	75	74	63	94	98	90	75
TRK1	1221	Turkey Creek @ City Park Road	2014	67	82	85	75	82	78	55	100	78

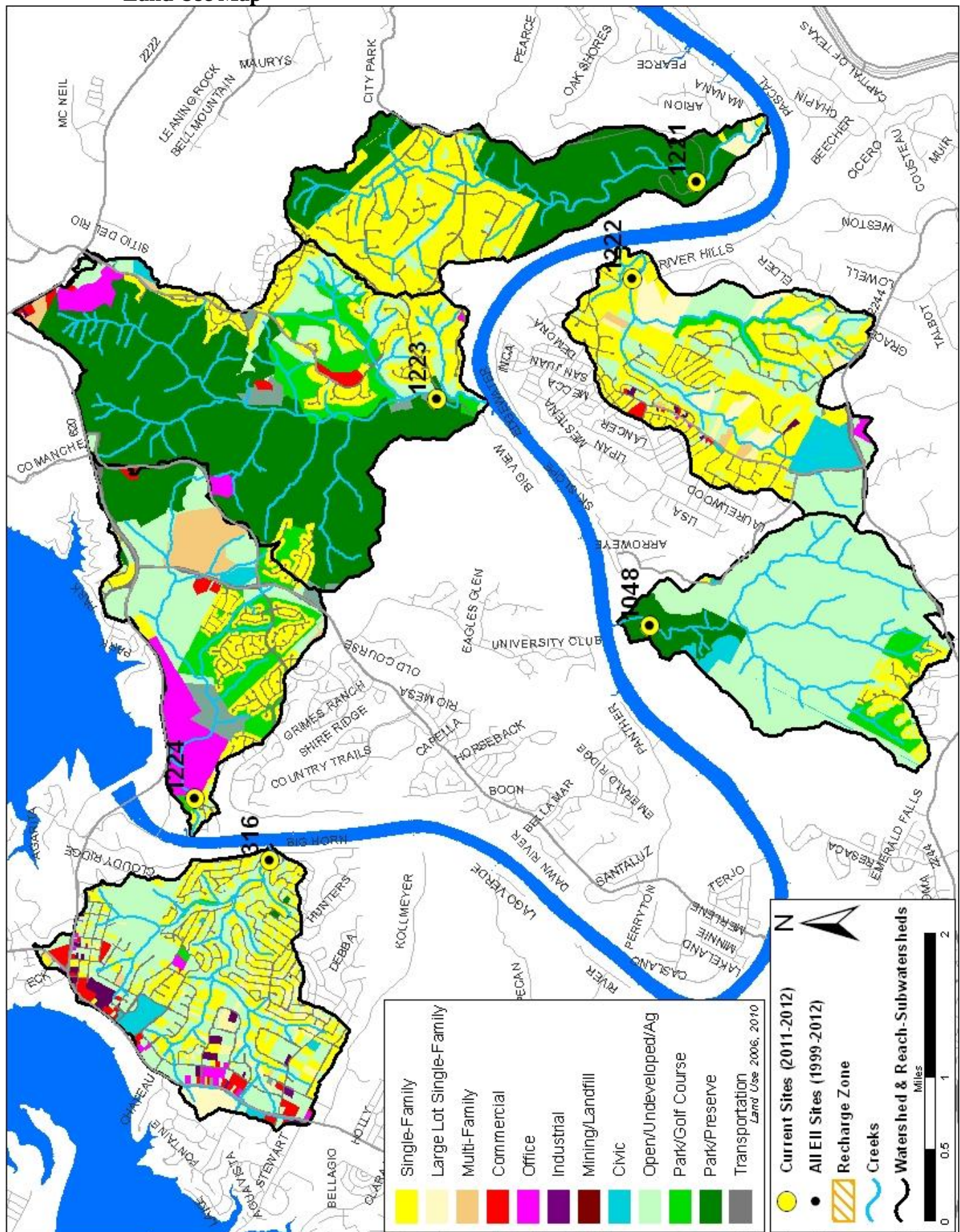
* blank cells indicate parameter was not collected, blank row indicate site was dropped

**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

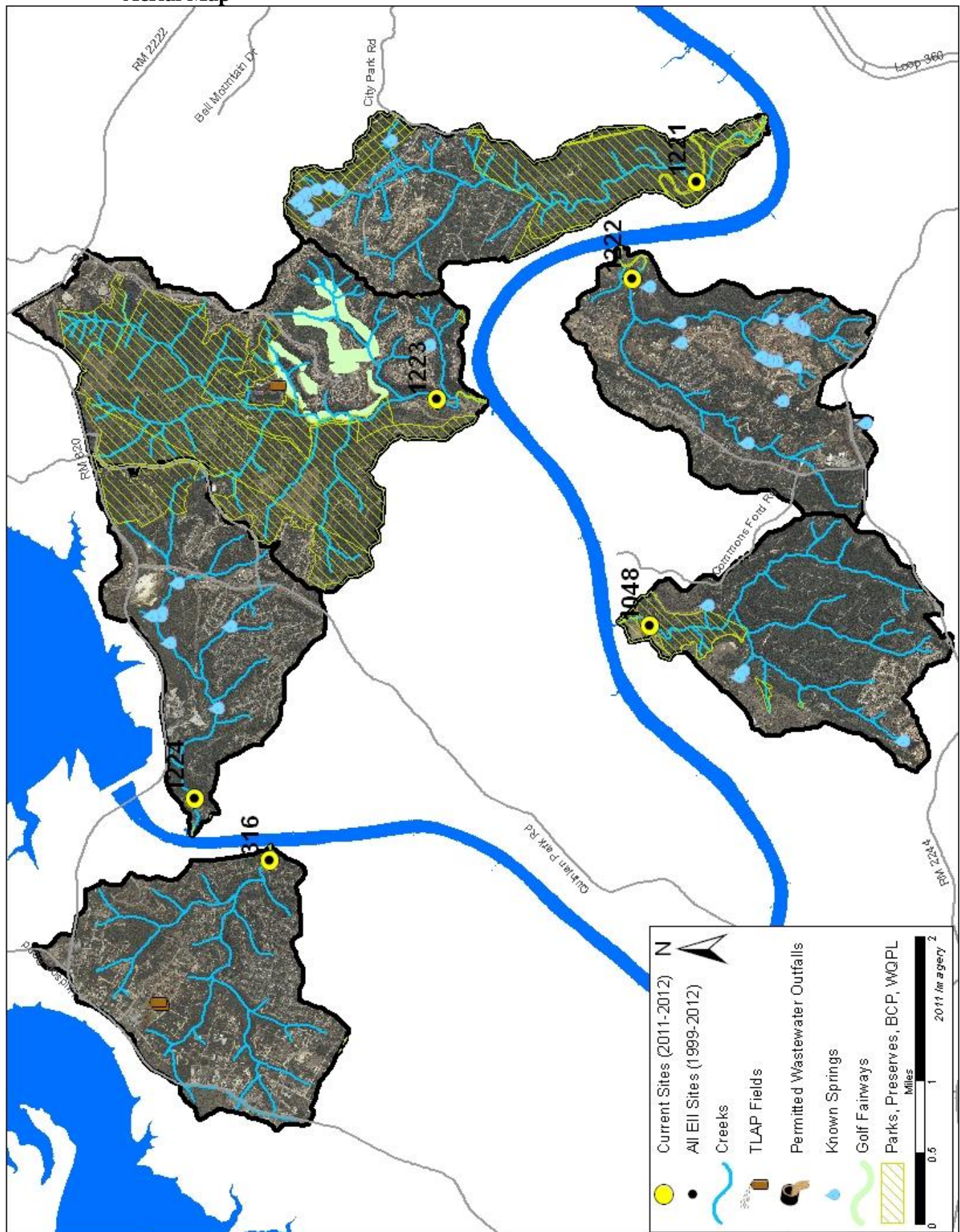
Lake Austin Tributaries

Land Use Map



Lake Austin Tributaries

Aerial Map



Lake Austin Tributaries

Water Quality Data – Temperature, Conductivity, pH, Dissolved Oxygen & *E. coli* for 2014 Sample Sites

Qualifiers to the left of value:	>	greater than	Qualifiers to the right of value:	(blank)	Useable
	<	less than		S	Exceeds standard range
	< J	less than detection limit		R	Rejected, failed QC
	J	Estimated			

Site Name	Site #	Reach	Date	Temp. < > Value flag	Cond. < > Value flag	pH < > Value flag	D.O. < > Value flag	<i>E. coli</i> < > Value flag
Bear Creek West @ Fritz Hughes Park	1224	BRW1	01/15/2014	8.9	360	8.03	11.6	13.5
Bear Creek West @ Fritz Hughes Park	1224	BRW1	04/17/2014	15.4	723	7.72	8.2	5.2
Bear Creek West @ Fritz Hughes Park	1224	BRW1	05/09/2014	19.4	772	7.34	7.8	
Bear Creek West @ Fritz Hughes Park	1224	BRW1	07/02/2014	23.5	718	7.65	6.9	307.6
Bear Creek West @ Fritz Hughes Park	1224	BRW1	09/10/2014					32.3
Site 1224 Mean				16.8	643	7.69	8.6	89.7
Watershed Mean				16.8	643	7.69	8.6	89.7
Commons Ford Trib. @ CMF Metro Park	1048	CMF1	01/15/2014	10.6	541	7.85	9.7	21.1
Commons Ford Trib. @ CMF Metro Park	1048	CMF1	04/17/2014	16.4	695	7.55	7.8	5.2
Commons Ford Trib. @ CMF Metro Park	1048	CMF1	06/11/2014	22.2	631	7.91	2.9	
Commons Ford Trib. @ CMF Metro Park	1048	CMF1	07/02/2014	22.0	656	7.18	2.0	5.0
Site 1048 Mean				17.8	631	7.62	5.6	10.4
Watershed Mean				17.8	631	7.62	5.6	10.4
Cuernavaca Creek @ River Hills Rd	1222	CRN1	01/15/2014	13.1	826	7.94	11.7	40.8
Cuernavaca Creek @ River Hills Rd	1222	CRN1	04/17/2014	15.9	841	7.83	30.5	41.4
Cuernavaca Creek @ River Hills Rd	1222	CRN1	05/07/2014	20.1	866	7.80	5.7	
Site 1222 Mean				16.4	844	7.86	16.0	41.1
Watershed Mean				16.4	844	7.86	16.0	41.1
Panther Hollow Creek @ Big View Rd	1223	PAN1	01/15/2014	10.0	754	7.94	10.6	101.9
Panther Hollow Creek @ Big View Rd	1223	PAN1	04/17/2014	16.7	875	7.38	1.5	2.0
Panther Hollow Creek @ Big View Rd	1223	PAN1	07/02/2014	24.0	817	7.27	1.2	2.0
Site Mean				16.9	815	7.53	4.4	35.3
Watershed Mean				16.9	815	7.53	4.4	35.3
Deer @ Running Deer Trail	316	RDR1	01/15/2014	11.9	715	7.93	11.1	172.3
Deer @ Running Deer Trail	316	RDR1	04/17/2014	15.8	699	7.85	9.2	1119.9
Deer @ Running Deer Trail	316	RDR1	05/09/2014	20.2	718	7.87	8.2	
Deer @ Running Deer Trail	316	RDR1	07/02/2014	23.5	658	7.91	8.2	579.4
Site 316 Mean				17.8	697	7.89	9.2	623.9
Watershed Mean				17.8	697	7.89	9.2	623.9
Turkey Creek @ City Park Rd	1221	TRK1	01/15/2014	8.7	855	8.06	10.9	5.2
Turkey Creek @ City Park Rd	1221	TRK1	04/17/2014	15.8	884	7.82	7.1	6.3
Turkey Creek @ City Park Rd	1221	TRK1	07/02/2014	24.9	922	7.62	4.7	57.3
Site 1221 Mean				16.5	887	7.83	7.6	22.9
Watershed Mean				16.5	887	7.83	7.6	22.9

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

Summary Statistics for all 2013 – 2014 E.I.I. Sites Combined.					
Parameter	2013-2014 Average	2013-2014 Minimum	2013-2014 Maximum	1 Standard Deviation Above	1 Standard Deviation Below
Temperature (C°)	19.6	8.6	34.0	25.8	
Conductivity (uS/cm)	711	107	1783	942	
pH (Standard units)	7.86	6.96	8.97	8.19	7.52
D.O. (mg/l)	8.1	1.2	30.5	11.4	4.8
<i>E. coli</i> (col/100ml)	435	1	4840	1127	

Lake Austin Tributaries

Water Quality Data – Ammonia, Nitrate / Nitrite, Ortho-Phosphorus, Total Suspended Solids & Turbidity for 2014 Sample Sites

Qualifiers to the left of value:	>	greater than	Qualifiers to the right of value:	(blank)	Useable
	<	less than		S	Exceeds standard range
	< J	less than detection limit		R	Rejected, failed QC
	J	Estimated			

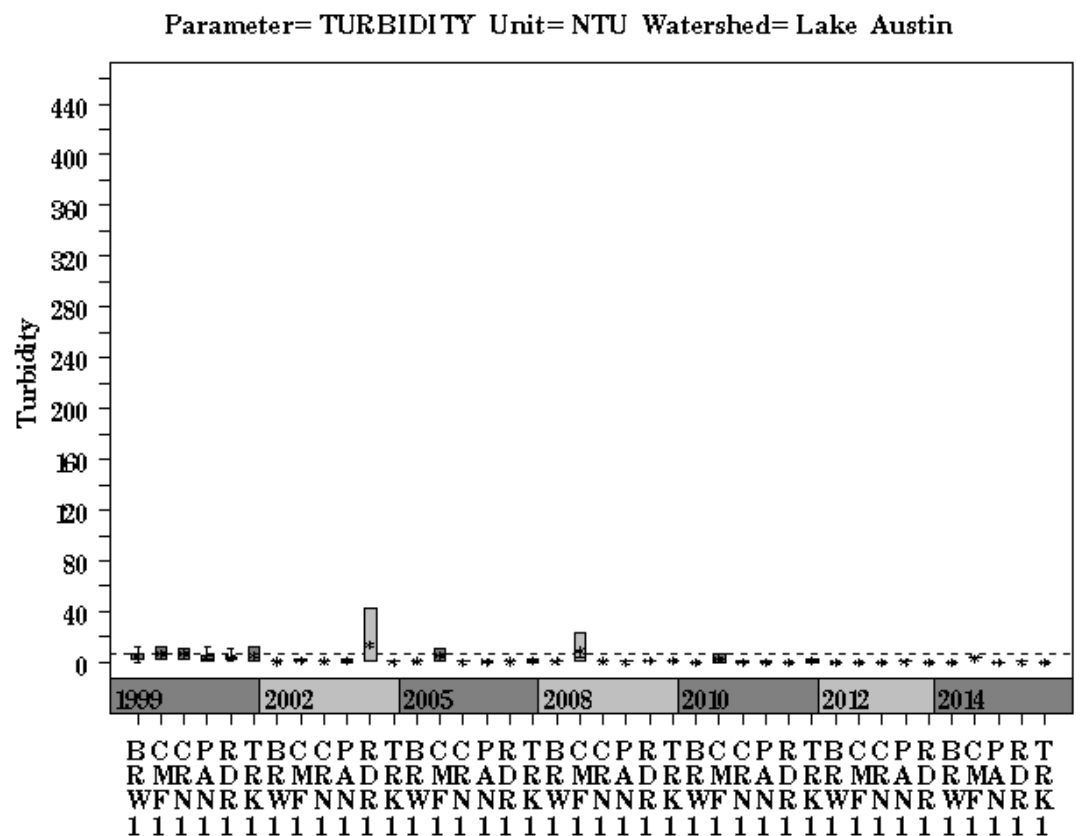
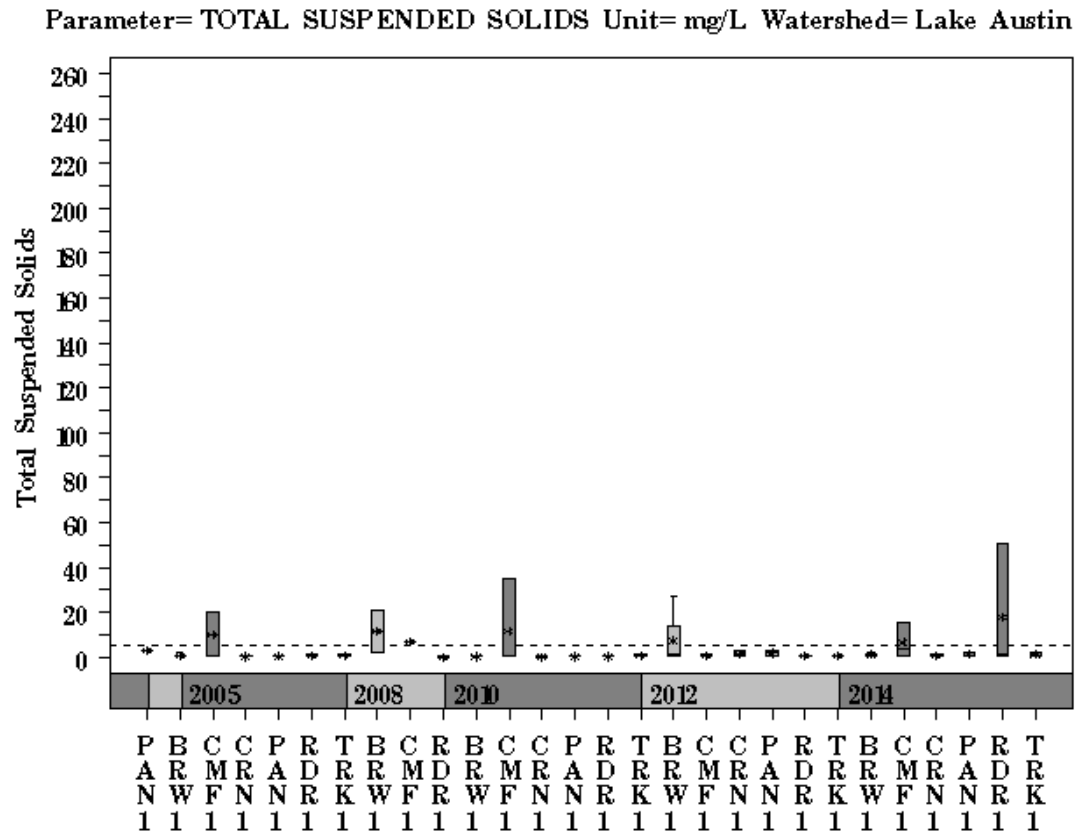
Site Name	Site #	Reach	Date	NH3-N <> Value flag	NO3/NO2 <> Value flag	Ortho-P <> Value flag	T.S.S. <> Value flag	Turb. <> Value flag
Bear Creek West @ Fritz Hughes Park Rd	1224	BRW1	01/15/2014	<J 0.008	0.42	<J 0.004	<J 1.1	0.3 R
Bear Creek West @ Fritz Hughes Park Rd	1224	BRW1	04/17/2014	0.079	<J 0.01	<J 0.004	<J 1.1	0.6 R
Bear Creek West @ Fritz Hughes Park Rd	1224	BRW1	05/09/2014					
Bear Creek West @ Fritz Hughes Park Rd	1224	BRW1	07/02/2014	<J 0.008	0.03	<J 0.004	<J 1.1	0.2
Bear Creek West @ Fritz Hughes Park Rd	1224	BRW1	09/10/2014	<J 0.008	<J 0.01	<J 0.004	2.2	3.2 R
Site 1224 Mean				0.026	0.11	0.004	1.4	1.1
Watershed Mean				0.026	0.11	0.004	1.4	1.1
Commons Ford Trib. @ CMF Metro Park	1048	CMF1	01/15/2014	<J 0.008	0.03	<J 0.004	<J 1.0	0.3 R
Commons Ford Trib. @ CMF Metro Park	1048	CMF1	04/17/2014	0.092	<J 0.01	<J 0.004	15.5	6.2 R
Commons Ford Trib. @ CMF Metro Park	1048	CMF1	06/11/2014					
Commons Ford Trib. @ CMF Metro Park	1048	CMF1	07/02/2014	0.013	<J 0.01	<J 0.004	4.0	3.6
Site 1048 Mean				0.038	0.02	0.004	6.9	3.4
Watershed Mean				0.038	0.02	0.004	6.9	3.4
Cuernavaca Creek @ River Hills Rd	1222	CRN1	01/15/2014	<J 0.008	3.66	<J 0.004	<J 1.0	0.2 R
Cuernavaca Creek @ River Hills Rd	1222	CRN1	04/17/2014	<J 0.008	2.85	<J 0.004	1.3	0.7 R
Cuernavaca Creek @ River Hills Rd	1222	CRN1	05/07/2014					
Site 1222 Mean				0.008	3.26	0.004	1.2	0.5
Watershed Mean				0.008	3.26	0.004	1.2	0.5
Panther Hollow Creek @ Big View Rd	1223	PAN1	01/15/2014	<J 0.008	2.19	<J 0.004	<J 1.04	0.7 R
Panther Hollow Creek @ Big View Rd	1223	PAN1	04/17/2014	0.024	4.78	<J 0.004	2.52	5.3 R
Panther Hollow Creek @ Big View Rd	1223	PAN1	07/02/2014	<J 0.008	<J 0.01	<J 0.004	<J 1.05	0.5
Site 1223 Mean				0.013	2.33	0.004	1.54	2.1
Watershed Mean				0.013	2.33	0.004	1.54	2.1
Deer @ Running Deer Trail	316	RDR1	01/15/2014	<J 0.008	2.43	<J 0.004	<J 1.08	0.5 R
Deer @ Running Deer Trail	316	RDR1	04/17/2014	0.046	1.46	<J 0.004	50.70	0.5 R
Deer @ Running Deer Trail	316	RDR1	05/09/2014					
Deer @ Running Deer Trail	316	RDR1	07/02/2014	<J 0.008	1.02	<J 0.004	1.78	0.6
Site 316 Mean				0.021	1.64	0.004	17.85	0.5
Watershed Mean				0.021	1.64	0.004	17.85	0.5
Turkey Creek @ City Park Rd	1221	TRK1	01/15/2014	<J 0.008	1.06	<J 0.004	<J 1.03	> 0.0 R
Turkey Creek @ City Park Rd	1221	TRK1	04/17/2014	0.025	0.11	<J 0.004	2.05	0.3 R
Turkey Creek @ City Park Rd	1221	TRK1	07/02/2014	<J 0.008	0.06	<J 0.004	<J 1.08	0.1
Site 1221 Mean				0.014	0.41	0.004	1.39	0.2
Watershed Mean				0.014	0.41	0.004	1.39	0.2

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

Summary Statistics for all 2013 – 2014 E.I.I. Sites Combined.				
Parameter	2013-2014 Mean	2013-2014 Minimum	2013-2014 Maximum	1 Standard Deviation Above
NH3-M (mg/l)	0.031	0.008	2.250	0.150
NO3-N (mg/l)	1.16	0.01	16.30	4.02
Ortho-P (mg/l)	0.041	0.004	1.360	0.164
TSS (mg/l)	5.6	1.0	70.0	15.3
Turbidity (NTU)	4.5	0.0	97.1	13.2

Lake Austin Tributaries

Data Summary Graphs – Total Suspended Solids and Turbidity (By Year)



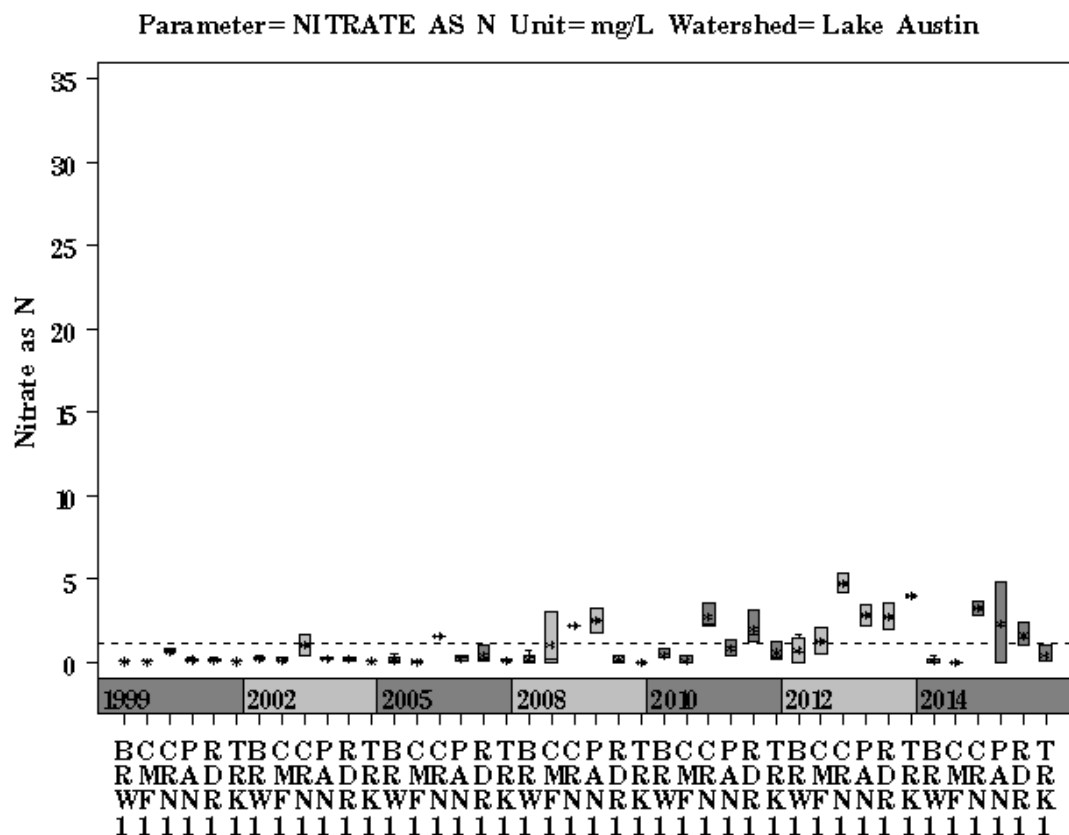
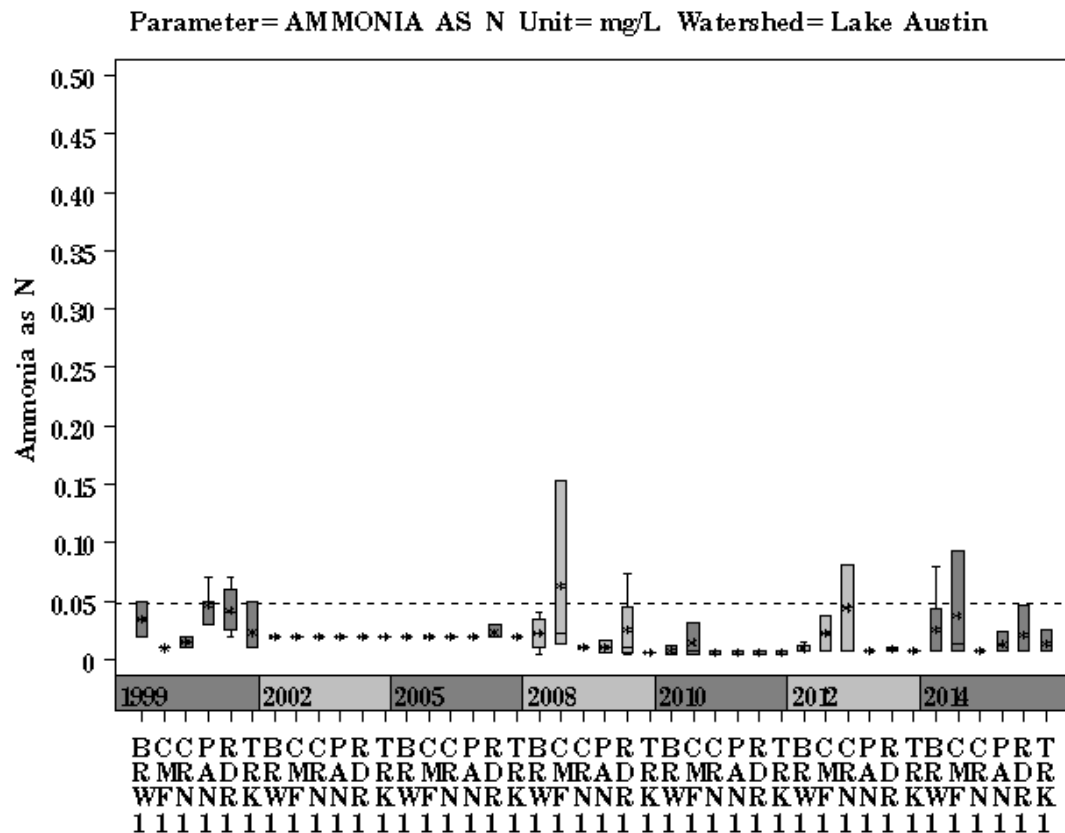
Data Summary Graphs – pH and Conductivity (By Year)

Box plot showing pH values for different treatments (BCCP, RTB, C, P, R, T) across years 1999, 2002, 2005, 2008, 2010, 2012, and 2014. The y-axis represents pH from 4.0 to 11.0. The x-axis shows the year and treatment combinations. A dashed horizontal line is at pH 7.9. Asterisks indicate significant differences.

[illegible]

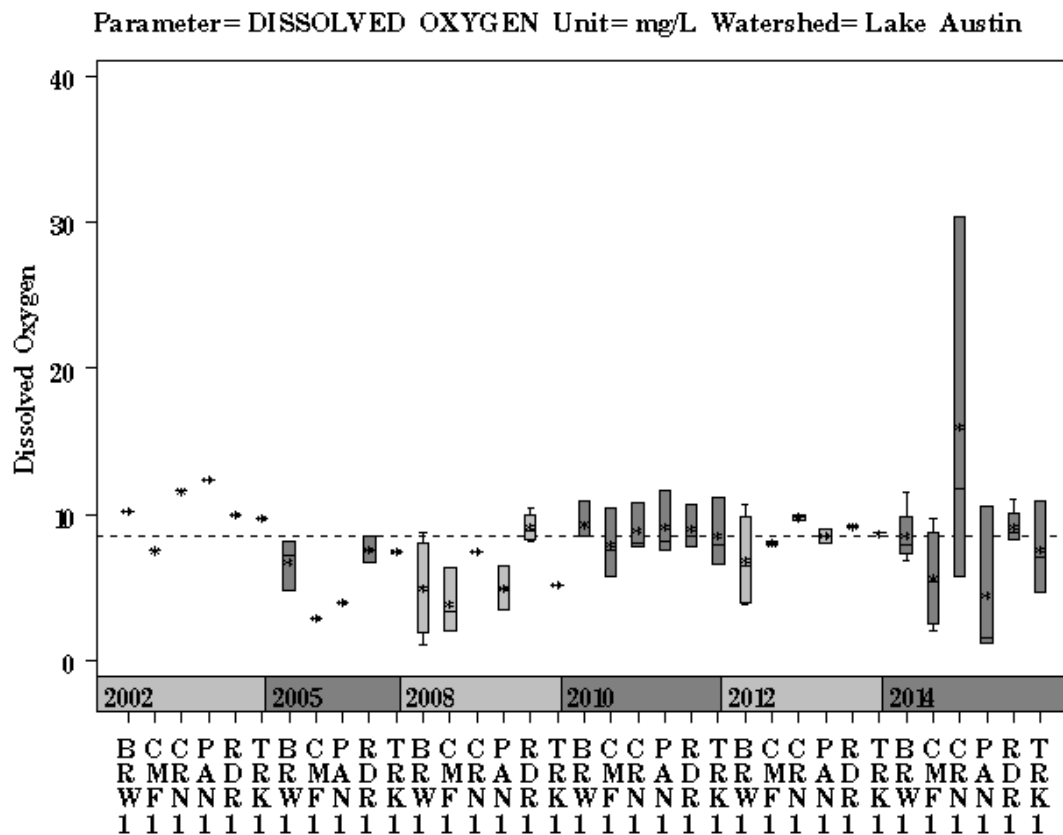
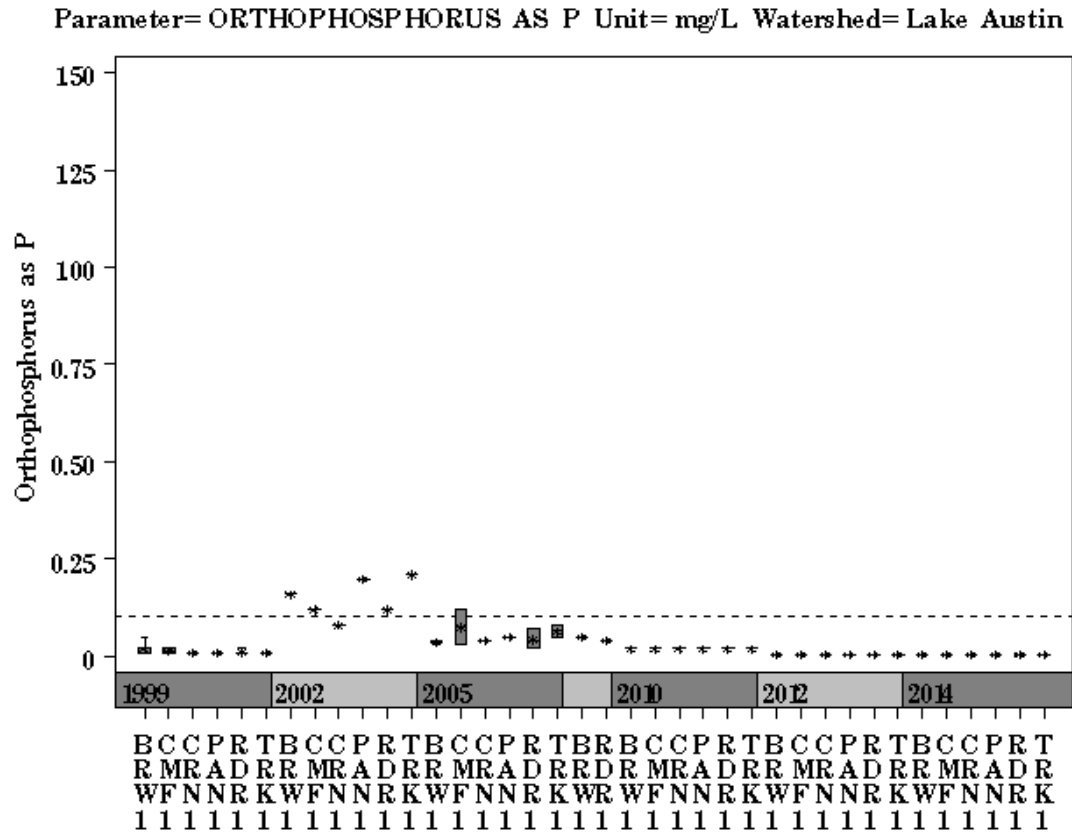
Lake Austin Tributaries

Data Summary Graphs – Ammonia and Nitrate/Nitrite (By Year)



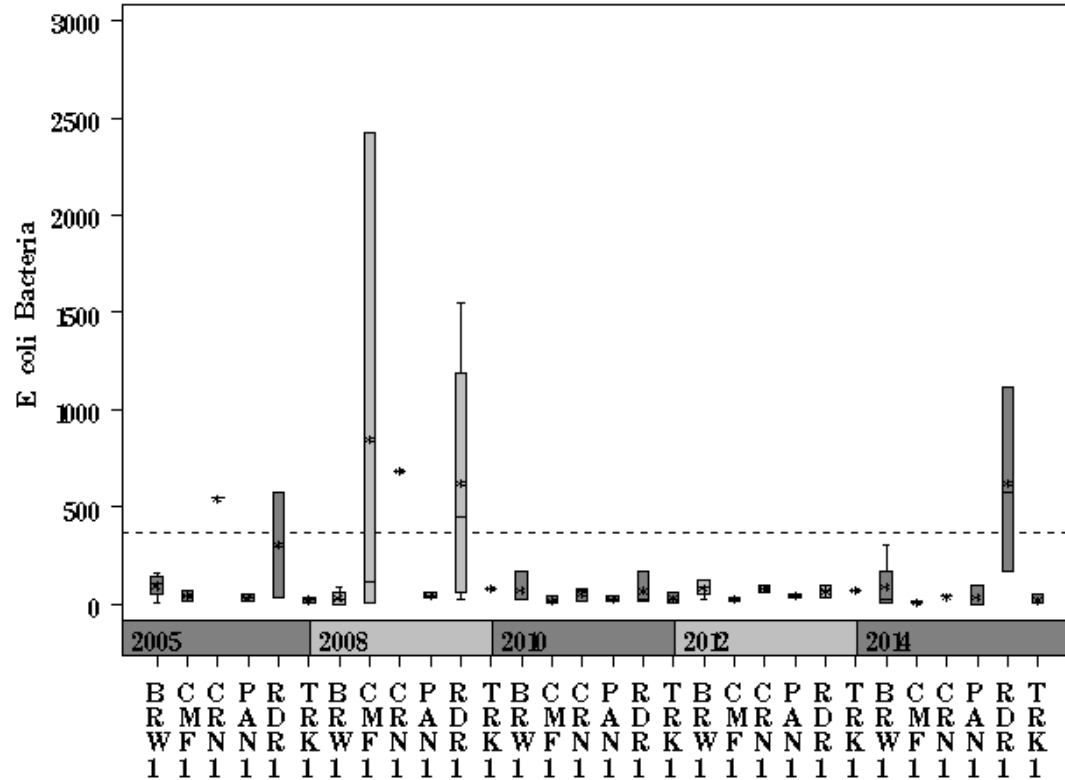
Lake Austin Tributaries

Data Summary Graphs – Orthophosphate and Dissolved Oxygen (By Year)



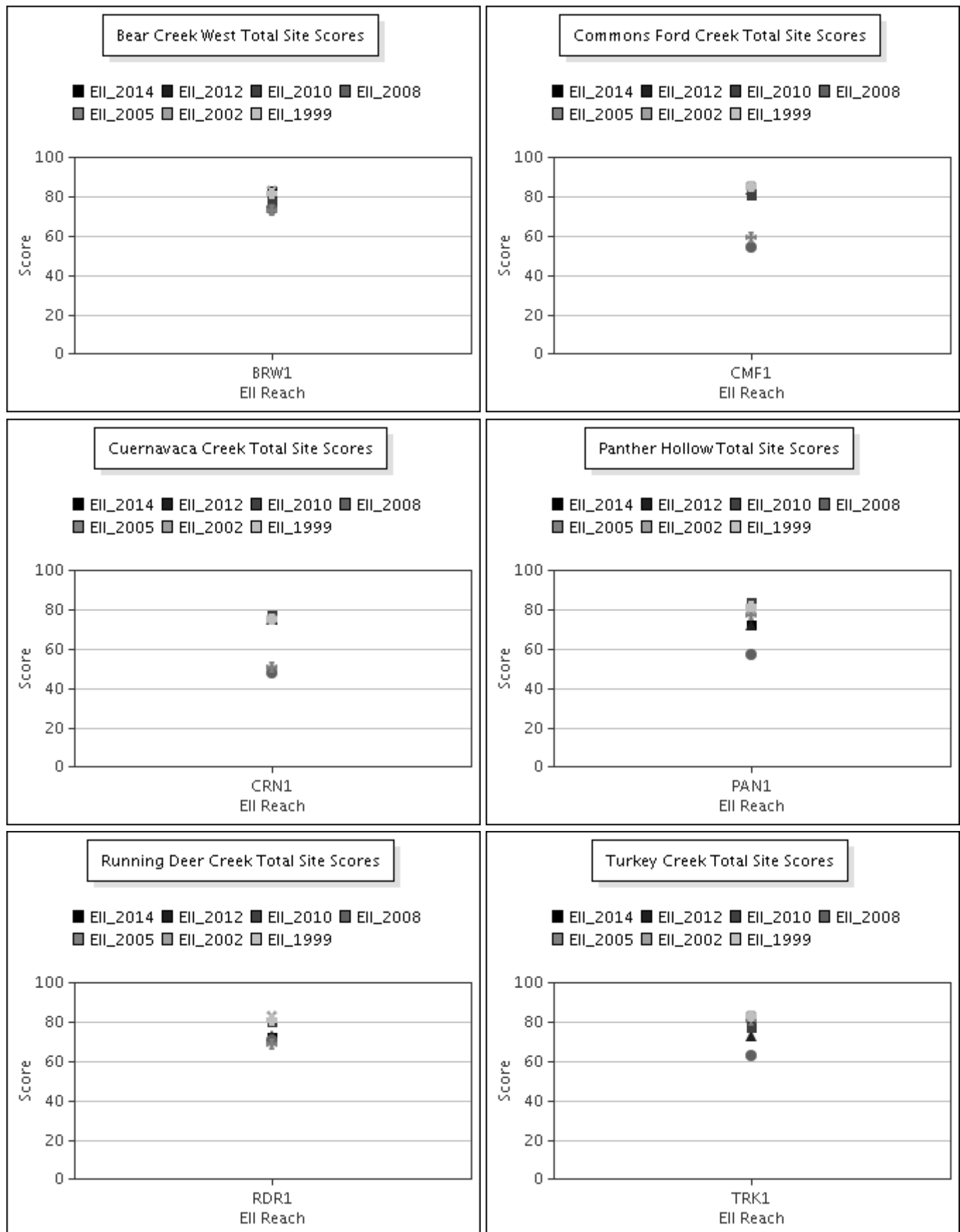
Data Summary Graphs – E.coli (By Year)

Parameter= E COLI BACTERIA Unit= MPN/100mL Watershed= Lake Austin



Lake Austin Tributaries

Score Summary – Reach scores for each sample year



Lake Austin Tributaries

Benthic Macroinvertebrates – Taxa List, Pollution Tolerance Index & Functional Feeding Group for 2014 Sample Sites

Benthic Macroinvertebrate ID	PTI	FFG	Bear Creek West @ Fritz Hughes Park Rd (Site 1224)	Commons Ford Trib. @ CMF Metro Park (Site 1048)	Cuernavaca Creek @ River Hills Rd (Site 1222)	Panther Hollow Creek @ Big View Rd (Site 1223)	Deer @ Running Deer Trail (Site 316)	Turkey Creek @ City Park Rd (Site 1221)
<i>Chimarra</i> sp.	2	FC	6	6			50	
<i>Helicopsyche</i> sp.	2	SC	2				24	
<i>Hydroptila</i> sp.	2	SC,PI		6	1		8	
<i>Microcylloepus pusillus</i>	2	SC,CG				1		
<i>Polycentropus</i> sp. / <i>Cernotina</i> sp.	3	P,FC			3			
<i>Callibaetis</i> sp.	4	CG	18		1	83	6	10
Copepoda	4	SC	1			400		
<i>Fallceon quilleri</i>	4	SC,CG	21	185	437		53	10
Ostracoda	4	FC,CG	2		1	116	3	18
<i>Simulium</i> sp.	4	FC		130	4		27	1
Gerridae	5	P	1		2			16
<i>Limnoporou</i> sp.	5	P				6		
<i>Sphaeromias</i> sp.	5						1	
<i>Archilestes</i> sp.	6	P	2				3	
<i>Argia</i> sp.	6	P	6	2	5	1	9	
<i>Cheumatopsyche</i> sp.	6	FC	7	4	147		75	1
Chironomidae	6	P,FC	29	38	36	9	24	49
<i>Fossaria</i> sp.	6	SC		1			2	1
Hydracarina	6		2		29	56	16	
<i>Microvelia</i> sp.	6	P	19		2	4	1	2
<i>Probezzia</i> sp.	6	P	1					
<i>Rhagovelia</i> sp.	6	P			2		4	
<i>Stenonema femoratum</i>	6	SC,CG	82	2	1	9	3	
Tanypodinae	6	P	16	9	29	5	8	23
<i>Gyraulus</i> sp.	7	SC			1			
<i>Helisoma anceps</i>	7	SC				1		
<i>Stenelmis</i> sp.	7	SC,CG	5	8				
<i>Anopheles</i> sp.	8	FC				1		7
<i>Caloparyphus</i> sp. / <i>Euparyphus</i> sp.	8	SC,CG			1		6	
Cladocera	8	FC				100		
Empididae	8	P,CG					1	
<i>Hyaella</i> sp.	8	SH,CG				114		
<i>Libellula</i> sp.	8	P				1		
Oligochaeta	8	CG	1	4			2	
<i>Tipula</i> sp.	8	SH,CG	1					
<i>Physella</i> sp.	9	SC	10	76	71	6	19	57
Collembola	10	CG						2
<i>Culex</i> sp.	10	FC				1		
<i>Caecidotea</i> sp.		CG	1					
<i>Dugesia</i> sp.		P,CG					3	

Lake Austin Tributaries

Benthic Macroinvertebrates – Metric Summary for 2014 Sample Sites

Scoring Metric	Bear Creek West @ Fritz Hughes Park Rd (Site 1224)	Commons Ford Trib. @ CMF Metro Park (Site 1048)	Cuernavaca Creek @ River Hills Rd (Site 1222)	Panther Hollow Creek @ Big View Rd (Site 1223)	Deer @ Running Deer Trail (Site 316)	Turkey Creek @ City Park Rd (Site 1221)
Number of Taxa *	20	12	17	17	22	11
Hilsenhoff Biotic Index *	5.7	5.1	5.1	5.2	4.7	6.5
Number of Ephemeroptera Taxa *	3	2	3	2	3	2
Percent of Total as Chironomidae *	19	10	8	2	9	37
Number of EPT Taxa *	6	5	6	2	7	3
Percent of Total as EPT *	58	43	76	10	63	11
Percent of Total as Predator *	32	10	10	3	15	46
Number of Intolerant Taxa *	6	4	6	4	7	4
Percent Dominance (Top 3 Taxa) *	57	83	85	69	51	64
EPT / EPT + Chironomidae	1	1	1	1	1	0
Number of Diptera Taxa	3	2	3	3	5	3
Number of Non-Insect Taxa	6	3	4	7	6	3
Number of Organisms	233	471	773	914	348	195
Percent Dominance (Top 1 Taxa)	35	39	57	44	22	29
Percent of Total as Collector / Gatherer	56	42	57	35	22	19
Percent of Total as Dominant Guild (FFG)	56	59	66	46	54	51
Percent of Total as Elmidae	2	2	0	0	0	0
Percent of Total as Filterers	26	40	28	25	54	51
Percent of Total as Grazers (PI & SC)	52	59	66	46	33	35
Percent of Total as Tolerant Organisms	4	16	9	1	5	29
Percent of Trichoptera as Hydropsychidae	47	25	97	0	48	100
Ratio of Intolerant : Tolerant Organisms	0.28	2.27	1.38	1.96	0.99	0.39
TCEQ Qualitative Aquatic Life Use Score	25	28	23	24	33	19
TCEQ Quantitative Aquatic Life Use Score	31	27	29	25	33	23

- * **EII scoring parameter: Nine metric parameters are used in the calculation of the EII Benthic Subindex score. Other metrics are shown to supplement evaluation.**
1. # of Taxa: Higher diversity (number of taxa) correlates with greater biological integrity. The average number of taxa per site for 2013/2014 samples was 15; the lowest value was 5 and the highest value was 30.
 2. Hilsenhoff Biotic Index (HBI): HBI values range from 0 to 10. Low HBI values reflect a higher abundance of taxa that are sensitive to organic (nutrient) pollution, thus a lower level of this type of pollution. The average HBI per site for 2013/2014 samples was 5.4; the lowest value was 3.7 and the highest value was 8.1.
 3. # of Ephemeroptera taxa: A higher number of Ephemeroptera (mayfly) taxa correlates with greater biological integrity. The average number of taxa per site for 2013/2014 samples was 2; the lowest value was 0 and the highest value was 7.
 4. % of total as Chironomidae: The percentage of the sample represented by the Dipteran family Chironomidae will increase with a decrease in biological integrity. The average percent Chironomidae per site for 2013/2014 samples was 16%; the lowest value was 0% and the highest value was 77%.
 5. # of EPT Taxa: A higher number of Ephemeroptera (mayfly), Plecoptera (stonefly) and Trichoptera (caddisfly) taxa correlates with greater biological integrity. The average number of EPT taxa per site for 2013/2014 samples was 4; the lowest value was 0 and the highest value was 12.
 6. % of total as EPT: The percentage of the sample represented by the insect orders Ephemeroptera (mayfly), Plecoptera (stonefly) and Trichoptera (caddisfly) will decrease with a decrease in biological integrity. The average percent EPT taxa per site for 2013/2014 samples was 46%; the lowest value was 0% and the highest value was 89%.
 7. % of total as Predator: The percentage of the sample represented by predators is variable with regard to biological integrity. The average percent predator per site for 2013/2014 samples was 31%; the lowest value was 3% and the highest value was 82%.
 8. # of Intolerant Taxa: A higher number of pollution intolerant taxa correlates with greater biological integrity. The average number of intolerant taxa per site for 2013/2014 samples was 5; the lowest value was 0 and the highest value was 15.
 9. % Dominance (top 3 taxa): The percentage of the sample represented by the three most abundant taxa will increase with a decrease in biological integrity. The average percent of sample dominated by the top three taxa per site for 2013/2014 samples was 72%; the lowest value was 39% and the highest value was 96%.

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Diatoms – Taxa List & Pollution Tolerance Index for 2014 Sample Sites

Diatom Species Name	PTI	Bear West @ Fritz Hughes Park Rd (Site 1224)	Commons Ford @ CMF Metro Park (Site 1048)	Cuernavaca Creek @ River Hills Rd (Site 1222)	Deer @ Running Deer Trail (Site 316)	Turkey Creek @ City Park Rd (Site 1221)
<i>Brachysira neoexilis</i> (serians)	4	12		8	10	9
<i>Cymbella cymbiformis</i>	4					2
<i>Diploneis oblongella</i>	4	1	2	16		54
<i>Eucocconeis flexella</i>	4			4	2	6
<i>Eunotia arcus</i>	4		70		6	
<i>Eunotia formica</i>	4		1			
<i>Platessa hustedtii</i>	4	1				
<i>Achnanthyidium affine</i>	3	22			12	11
<i>Achnanthyidium alteragracillimum</i>	3	102		8	18	79
<i>Achnanthyidium minutissimum</i>	3	92	22	41	140	34
<i>Achnanthyidium pyrenaicum</i>	3	52		187	24	34
<i>Amphora pediculus</i>	3	1				
<i>Brachysira vitrea</i>	3	9				19
<i>Caloneis ventricosa</i>	3	2	3			2
<i>Cocconeis pediculus</i>	3	39	4	4	8	
<i>Cymbella hustedtii</i>	3		5			
<i>Cymbella laevis</i>	3	4			8	1
<i>Denticula elegans</i>	3	4			14	
<i>Denticula kuetzingii</i>	3	6	17	67	35	48
<i>Diploneis parma</i>	3				2	
<i>Diploneis puella</i>	3		5			
<i>Encyonema evergladianum</i>	3	19		57	65	48
<i>Encyonema silesiacum</i>	3	4	23			
<i>Encyonopsis microcephala</i>	3	1		2	31	8
<i>Epithemia turgida</i>	3		2			
<i>Eunotia pectinalis</i>	3		1			
<i>Fragilaria capucina</i>	3			2	2	
<i>Gomphonema acuminatum</i>	3		3			
<i>Gomphonema affine</i>	3		42			2
<i>Gomphonema clavatum</i>	3			4		
<i>Gomphonema gracile</i>	3		4			
<i>Gomphonema intricatum</i> var. <i>vibrio</i>	3	8		5		2
<i>Gomphonema minutum</i>	3	7			22	
<i>Gomphonema truncatum</i>	3		5			
<i>Halamphora montana</i>	3			2		
<i>Navicula cryptocephala</i>	3			4		
<i>Navicula cryptotenella</i>	3				14	2
<i>Navicula radiosa</i>	3		2		12	
<i>Reimeria sinuata</i>	3		5			
<i>Rhopalodia gibba</i>	3		5		1	
<i>Stauroneis smithii</i>	3		1			
<i>Fragilaria vaucheriae</i>	2		1		2	
<i>Gomphonema angustatum</i>	2	1	52		7	2
<i>Navicula recens</i>	2		2			
<i>Nitzschia amphibia</i>	2	2	12		12	
<i>Nitzschia frustulum</i>	2			2		
<i>Tryblionella apiculata</i>	2				1	
<i>Gomphonema parvulum</i>	1	6	2		4	
<i>Amphora copulate</i>			12	1		
<i>Aneumastus stroesei</i>			6			
<i>Cocconeis placentula</i> var. <i>euglypta</i>			116		18	
<i>Cymbella cistula</i>				6	2	2
<i>Cymbella excise</i>				3		
<i>Cymbella neoleptoceros</i>		9				2
<i>Delicata delicatula</i>		76		63	8	52
<i>Encyonema semilanceolatum</i>					7	
<i>Eolimna minima</i>						2
<i>Gomphonema lateripunctatum</i>					10	
<i>Gomphonema mclaughlinii</i>		4				
<i>Gomphonema vibrioides</i>				2		
<i>Navicula lanceolata</i>			31			
<i>Sellaphora stroemii</i>		6			2	12
<i>Ulnaria acus</i>		4		12		
<i>Ulnaria ulna</i>		6	44		1	67

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Diatoms – Metric Summary for 2014 Sample Sites

Scoring Metric	Bear West @ Fritz Hughes Park Rd (Site 1224)	Commons Ford @ CMF Metro Park (Site 1048)	Cuernavaca Creek @ River Hills Rd (Site 1222)	Deer @ Running Deer Trail (Site 316)	Turkey Creek @ City Park Rd (Site 1221)
<i>Cymbella</i> Richness	5	3	3	3	5
Number of organisms	500	500	500	500	500
Number of taxa	28	30	22	31	24
Percent motile taxa	0	3	1	8	0
Percent similarity to reference condition	52	33	42	54	55
Pollution tolerance index	3.00	3.01	3.06	2.97	3.19

- * **EII scoring parameter: Four metric parameters are used in the calculation of the EII Diatom Subindex score: *Cymbella* richness, percent motile taxa, percent similarity to reference condition and pollution tolerance index. Number of taxa is non-scoring, but is shown to supplement evaluation. The number of organisms is typically a sample of 500, but occasionally differs due to sample conditions.**
1. *Cymbella* Richness: The Cymbelloid taxa include species in the genus *Cymbella*, in addition to some species belonging to the genera *Cymbellopsis*, *Cymbopileura*, *Encyonema*, *Encyonemopsis*, *Navicymbula* and *Reimeria*. Their presence highlights the presence of sensitive species, especially with regard to impervious cover, and this value increases with an increase in overall water quality. The average number of Cymbelloid taxa per site for 2013/2014 samples was 3; the lowest value was 0 and the highest value was 7.
 2. % Motile Taxa: This is a siltation index showing the relative abundance of genera that are able to move towards the surface if covered by silt. A higher percentage is indicative of a degraded condition caused by increased silt pollution. The average percent motile taxa per site for 2013/2014 samples was 16%; the lowest value was 0% and the highest value was 77%.
 3. % similarity to reference condition: This percentage compares a site to reference sites that are selected based on having low percent impervious cover. A higher percentage reflects greater biological integrity. The average percent similarity per site for 2013/2014 samples was 31%; the lowest value was 6% and the highest value was 57%.
 4. Pollution Tolerance Index (PTI): This is a total value for a sample, which is a function of the abundance of each taxon (usually species) in a sample and the individual PTI's for each of those taxa. Individual PTI's for each taxon range from 1 (most pollution tolerant) to 4 (most pollution sensitive), thus higher total PTI's for a site reflect greater biological integrity. The average PTI per site for 2013/2014 samples was 2.76; the lowest value was 1.70 and the highest value was 3.45.

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Site Photographs



1048-ds-03_04_2010



1048-us-03_04_2010



1222_00-us-05_17_2010



1222_00-ur-05_17_2010



1223_00-ds-05_26_2010



1223_00-us-05_26_2010

Lake Austin Tributaries

Site Photographs



316_00-ds-05_27_2010



316_00-us-05_27_2010



1221_00-ds-05_26_2010



1221_00-us-05_26_2010



1224_00-ds-05_26_2010



1224_00-us-05_26_2010

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