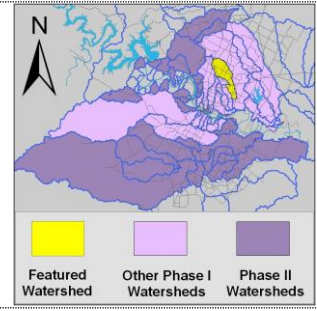


# Little Walnut Creek Watershed

## Summary Sheet

Catchment	Total area	11 square miles				
	Area in recharge	none				
	Creek length	9 miles				
	Receiving water	Walnut Creek				
Demographics	2000 population	63,827				
	2030 projected population	69,571				
	30 year projected % increase	9 %				
Land Use	Impervious cover (2003 estimate)	44.0 %				
	Impervious cover (2013 estimate)	50.2 %				
Overall EII Scores	2000	2003	2006	2009	2011	2013
	70	63	67	65	63	70



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

Site	Site Name	2001		2003					2006				2009					2010		2011				2013							
		Feb	Feb	Feb	Mar	Mar	May	Sep	Dec	Feb	May	Jul	Aug	Nov	Feb	May	May	Jun	Oct	Dec	Dec	Mar	Jun	Jun	Sep	Jan	Apr	May	Jun	Jun	Sep
		WQ	Bio	WQ	WQ	Bio	WQ	WQ	WQ	WQ	WQ	Bio	WQ	WQ	WQ	WQ	Bio	Bio	WQ	WQ	WQ	WQ	WQ	WQ	Bio	WQ	WQ	WQ	Bio	WQ	WQ
838	Golden Meadow	B	B	B	B	B	B	B	B	B	B	n	B	B	B	B	B	B	B	B	n	B	n	B	B	B	B	B	B	n	
3860	Georgian																														
839	Hermitage	B	B	B	B	B	B	B	B																						
3857	Cameron																														
634	US183	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	
840	US290	B	B	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 Little Walnut Creek Sites by Year

Reach	Site	Site Name	Year	Water Quality	Sedimen t**	Contact Rec.	Non-Contact Rec.	Physical Integrity	Aquatic Life	Benthic subindex	Diatom subindex	Total EII Score
LWA1	634	Little Walnut Crk @ US183	1996	68	82	76	64	34	68	63	72	65
LWA1	840	Little Walnut Crk @ US290	1996	60	82	17	80	77	66	51	80	64
LWA2	839	Little Walnut @ Hermitage Drive	1996	68	82	55	65	71	66	63	69	68
LWA4	838	Little Walnut @ Golden Meadow Rd	1996	56	82	11	68	61	29	29	23	51
LWA1	634	Little Walnut Crk @ US183	2000	75	92	89	84	35	54	49	58	72
LWA1	840	Little Walnut Crk @ US290	2000	70	92	90	83	55	67	64	69	76
LWA2	839	Little Walnut @ Hermitage Drive	2000	67	92	91	64	31	68	64	71	69
LWA4	838	Little Walnut @ Golden Meadow Rd	2000	54	92	71	62	31	75	91	59	64
LWA1	634	Little Walnut Crk @ US183	2003	55	75	79	60	58	71	75	67	66
LWA1	840	Little Walnut Crk @ US290	2003	58	75	72	77	67	48	50	46	66
LWA2	839	Little Walnut @ Hermitage Drive	2003	57	75	78	73	53	59	66	52	66
LWA4	838	Little Walnut @ Golden Meadow Rd	2003	54	75	35	58	48	54	61	46	54
LWA1	634	Little Walnut Crk @ US183	2006	67	80	63	73	45	91	91		70
LWA2	3857	Little Walnut @ Cameron Rd	2006	67	80	68	73	49	82	81	82	70
LWA3	3860	Little Walnut @ Georgian Dr	2006	63	80	55	72	53	83	82	84	68
LWA4	838	Little Walnut @ Golden Meadow Rd	2006	51	80	25	72	55	71	61	80	59
LWA1	634	Little Walnut Crk @ US183	2009	73	78	54	78	49	95	90	99	71
LWA2	3857	Little Walnut @ Cameron Rd	2009	69	78	44	70	58	79	75	82	66
LWA3	3860	Little Walnut C @ Georgian Dr	2009	65	78	32	67	52	91	82	99	64
LWA4	838	Little Walnut @ Golden Meadow Rd	2009	59	78	27	70	54	71	64	77	60
LWA1	634	Little Walnut Crk @ US183	2011	71	80	74	33	47	50	50		59
LWA2	3857	Little Walnut @ Cameron Rd	2011	57	80	61	73	72	91	99	82	72
LWA3	3860	Little Walnut @ Georgian Dr	2011	74	80	50	54	49	77	71	83	64
LWA4	838	Little Walnut @ Golden Meadow Rd	2011	68	80	35	48	50	58	41	74	55
LWA1	634	Little Walnut Crk @ US183	2013	78	78	71	76	60	92	96	88	76
LWA2	3857	Little Walnut @ Cameron Rd	2013	71	78	66	63	72	92	86	97	74
LWA3	3860	Little Walnut @ Georgian Dr	2013	70	78	44	68	71	83	69	97	69
LWA4	838	Little Walnut @ Golden Meadow Rd	2013	68	78	25	75	43	66	52	79	59

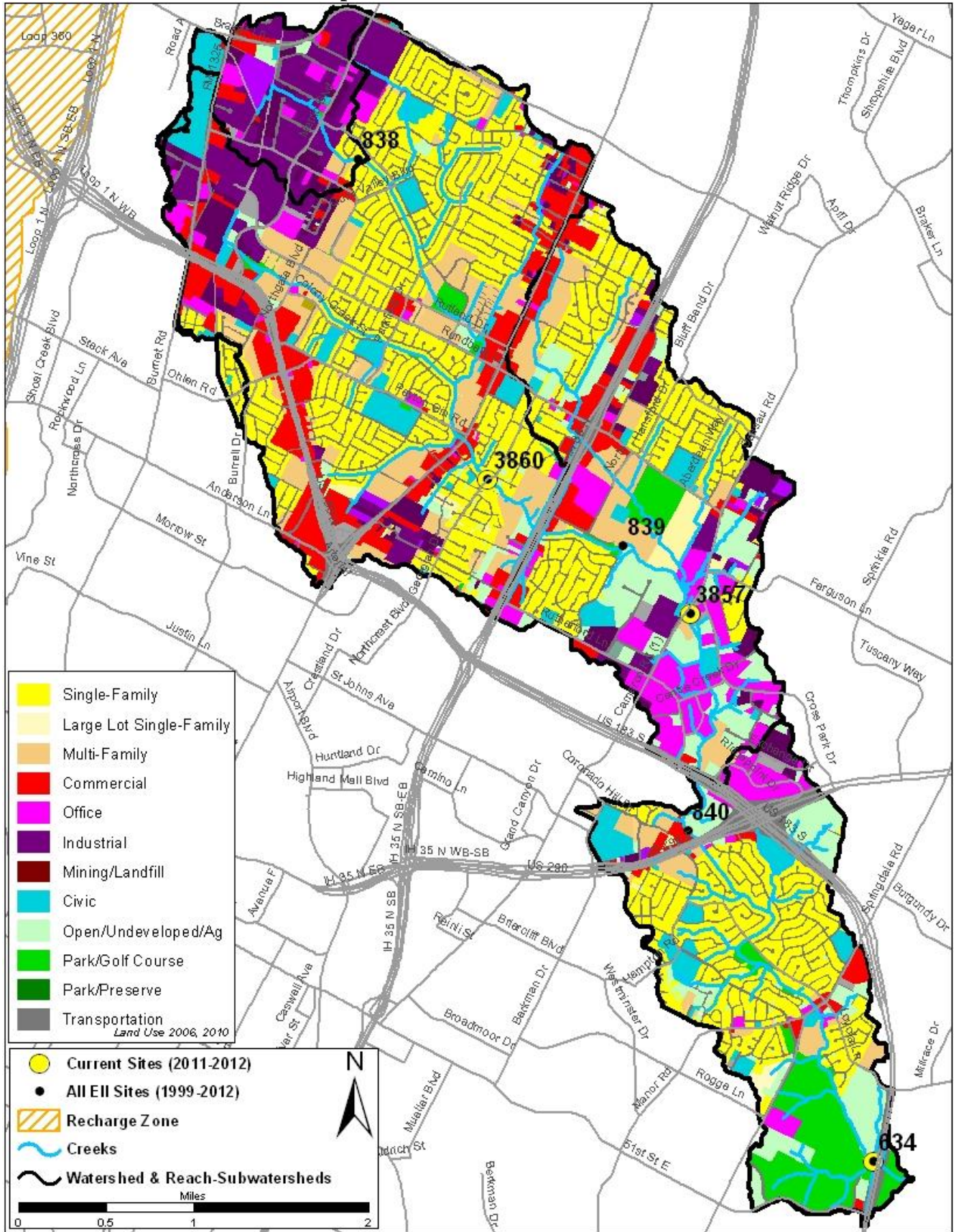
\* blank cells indicate parameter was not collected, blank row indicate site was dropped

\*\*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

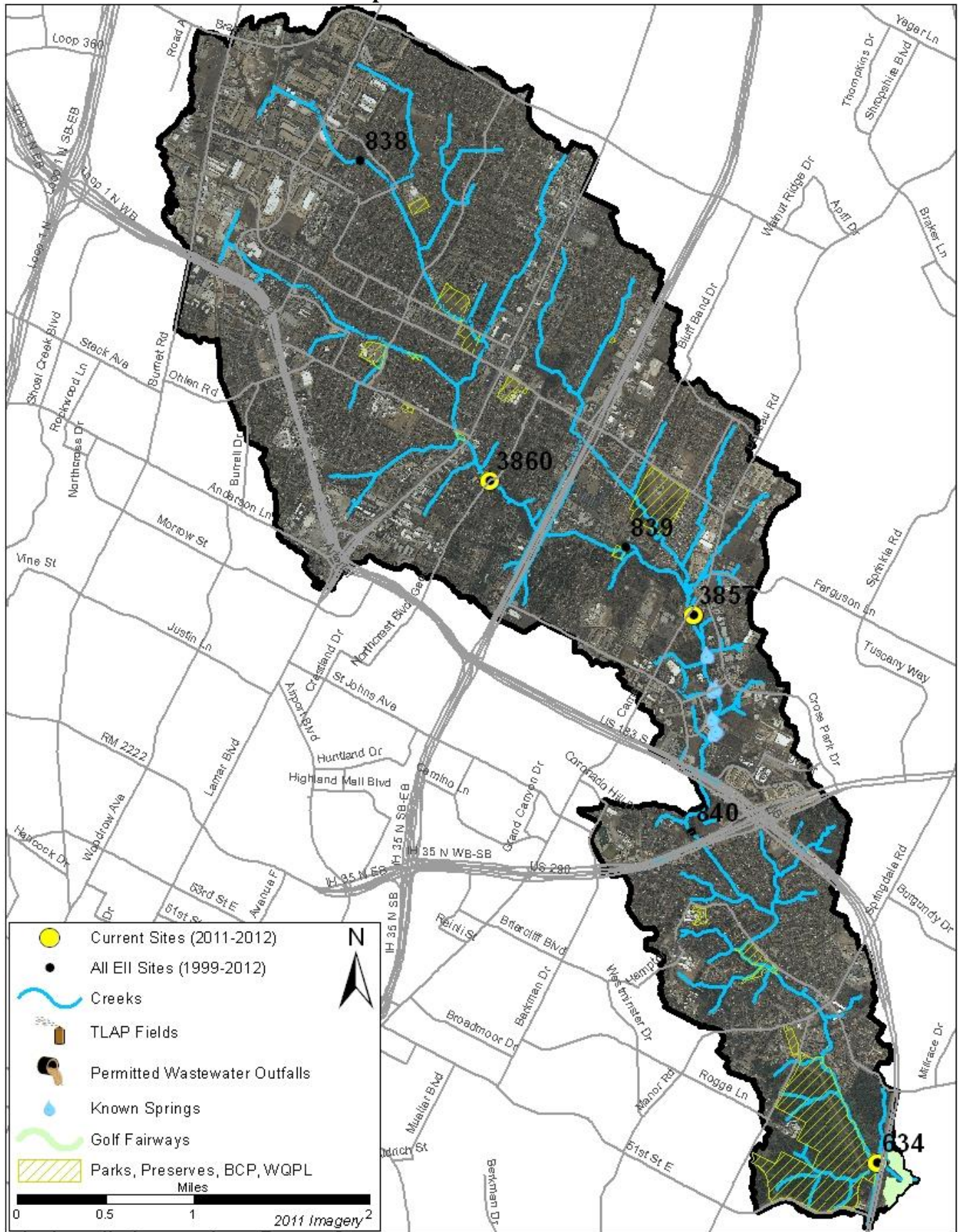
# Little Walnut Creek Watershed

## Land Use Map



# Little Walnut Creek Watershed

## Aerial Map



# Little Walnut Creek Watershed

## Water Quality Data – Temperature, Conductivity, pH, Dissolved Oxygen & *E. coli* for 2013 Sample Sites (Downstream to Upstream)

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	Temp. flag	Cond. Value	Cond. flag	pH Value	pH flag	D.O. Value	D.O. flag	<i>E. coli</i> Value	<i>E. coli</i> flag
Little Walnut @ US183	634	LWA1	01/22/2013	13.2		551		8.29		9.1		9.8	
Little Walnut @ US183	634	LWA1	04/24/2013	19.6		394		8.27		8.8		344.8	
Little Walnut @ US183	634	LWA1	06/26/2013	28.5		351		7.76		5.2		35.9	
Little Walnut @ US183	634	LWA1	09/26/2013	20.5		400		7.79		7.3		38.4	
<b>Site 634 Mean</b>				<b>20.5</b>		<b>424</b>		<b>8.03</b>		<b>7.6</b>		<b>107.2</b>	
Little Walnut @ Cameron Rd	3857	LWA2	01/22/2013	13.9		645		8.02		10.4		26.2	
Little Walnut @ Cameron Rd	3857	LWA2	04/24/2013	16.9		588		7.94		10.2		62.7	
Little Walnut @ Cameron Rd	3857	LWA2	06/26/2013	28.9		553		7.87		7.8		34.5	
Little Walnut @ Cameron Rd	3857	LWA2	09/26/2013	26.4		517		7.79		9.4		185.0	
<b>Site 3857 Mean</b>				<b>21.5</b>		<b>576</b>		<b>7.91</b>		<b>9.5</b>		<b>77.1</b>	
Little Walnut @ Georgian Dr	3860	LWA3	01/22/2013	14.5		638		8.19		11.8		65.0	
Little Walnut @ Georgian Dr	3860	LWA3	04/24/2013	18.3		627		8.24		14.6		152.9	
Little Walnut @ Georgian Dr	3860	LWA3	06/26/2013	30.7		544		8.04		10.2		866.4	
Little Walnut @ Georgian Dr	3860	LWA3	09/26/2013	28.6		525		8.07		13.7		73.3	
<b>Site 3860 Mean</b>				<b>23.0</b>		<b>584</b>		<b>8.14</b>		<b>12.6</b>		<b>289.4</b>	
Little Walnut @ Golden Mdw	838	LWA4	01/22/2013	12.8		609		8.14		10.9		866.4	
Little Walnut @ Golden Mdw	838	LWA4	04/24/2013	13.8		568		8.12		9.3		1986.3	
Little Walnut @ Golden Mdw	838	LWA4	06/26/2013	25.2		356		8.19		8.5	R	> 2419.6	
<b>Site 838 Mean</b>				<b>17.2</b>		<b>511</b>		<b>8.15</b>		<b>9.5</b>		<b>1757.4</b>	
<b>Watershed Mean</b>				<b>20.8</b>		<b>524</b>		<b>8.05</b>		<b>9.8</b>		<b>477.8</b>	

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	

# Little Walnut Creek Watershed

## Water Quality Data – Ammonia, Nitrate / Nitrite, Ortho-Phosphorus, Total Suspended Solids & Turbidity for 2013 Sample Sites (Downstream to Upstream)

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			

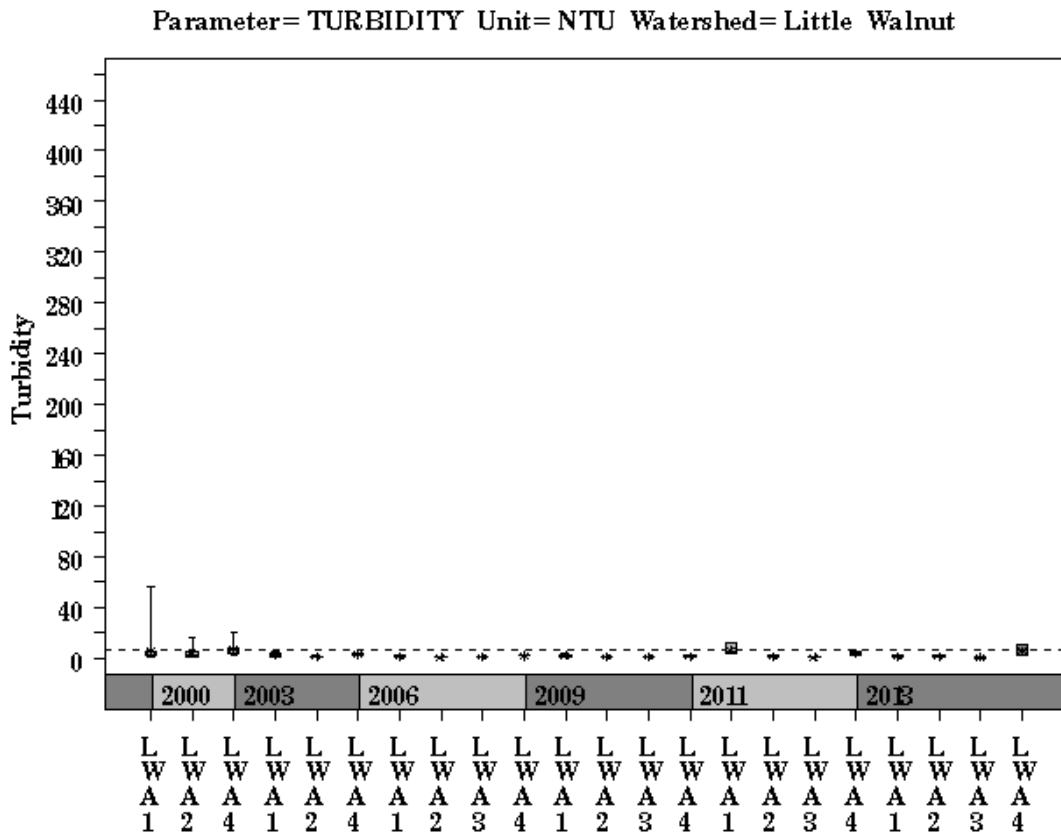
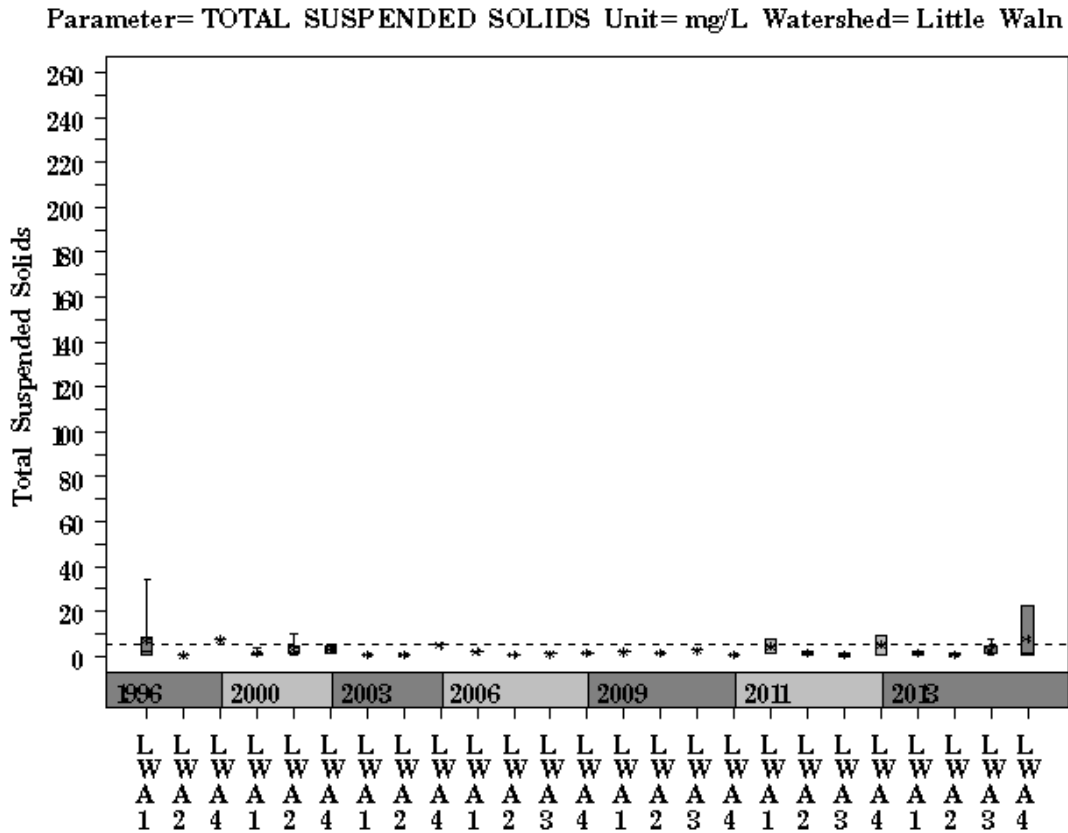
Site Name	Site #	Reach	Date	NH3-N		NO3/NO2		Ortho-P		T.S.S.		Turb.					
				<>	Value	flag	<>	Value	flag	<>	Value	flag	<>	Value	flag		
Little Walnut @ US183	634	LWA1	01/22/2013		0.058			0.27			0.018		<J	1.00		1.3	
Little Walnut @ US183	634	LWA1	04/24/2013	J	0.013	R	<J	0.01		<J	0.004			1.10		1.8	R
Little Walnut @ US183	634	LWA1	06/26/2013	<J	0.008			0.02		<J	0.004			2.27		1.8	
Little Walnut @ US183	634	LWA1	09/26/2013	<J	0.008		<J	0.01		<J	0.004			1.80		2.5	
<b>Site 634 Mean</b>					0.022			0.08			0.008			1.54		1.9	
Little Walnut @ Cameron Rd	3857	LWA2	01/22/2013	<J	0.008			0.66		<J	0.004		<J	1.10		0.9	
Little Walnut @ Cameron Rd	3857	LWA2	04/24/2013	<J	0.008	R		0.18		<J	0.004		<J	1.10		0.6	R
Little Walnut @ Cameron Rd	3857	LWA2	06/26/2013		0.028			0.21		<J	0.004			1.26		1.0	
Little Walnut @ Cameron Rd	3857	LWA2	09/26/2013	<J	0.008			0.25		<J	0.004		<J	1.03		3.2	
<b>Site 3857 Mean</b>					0.013			0.33			0.004			1.12		1.4	
Little Walnut @ Georgian Dr	3860	LWA3	01/22/2013	<J	0.008			0.23		<J	0.004		<J	1.00		0.5	
Little Walnut @ Georgian Dr	3860	LWA3	04/24/2013	<J	0.008	R		0.12		<J	0.004			7.40		1.7	R
Little Walnut @ Georgian Dr	3860	LWA3	06/26/2013		0.027			0.03		<J	0.004			1.43		1.3	
Little Walnut @ Georgian Dr	3860	LWA3	09/26/2013	<J	0.008		<J	0.01		<J	0.004			1.21		1.3	
<b>Site 3860 Mean</b>					0.013			0.10			0.004			2.76		1.2	
Little Walnut @ Golden Mdw	838	LWA4	01/22/2013		0.051			0.02		<J	0.004		<J	1.20		2.0	
Little Walnut @ Golden Mdw	838	LWA4	04/24/2013	J	0.013	R	<J	0.01		<J	0.004		<J	1.00		0.8	R
Little Walnut @ Golden Mdw	838	LWA4	06/26/2013		0.024		<J	0.01		<J	0.004			22.30		10.6	
<b>Site 838 Mean</b>					0.029			0.01			0.004			8.17		4.5	
<b>Watershed Mean</b>					0.019			0.14			0.005			3.08		2.1	

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

# Little Walnut Creek Watershed

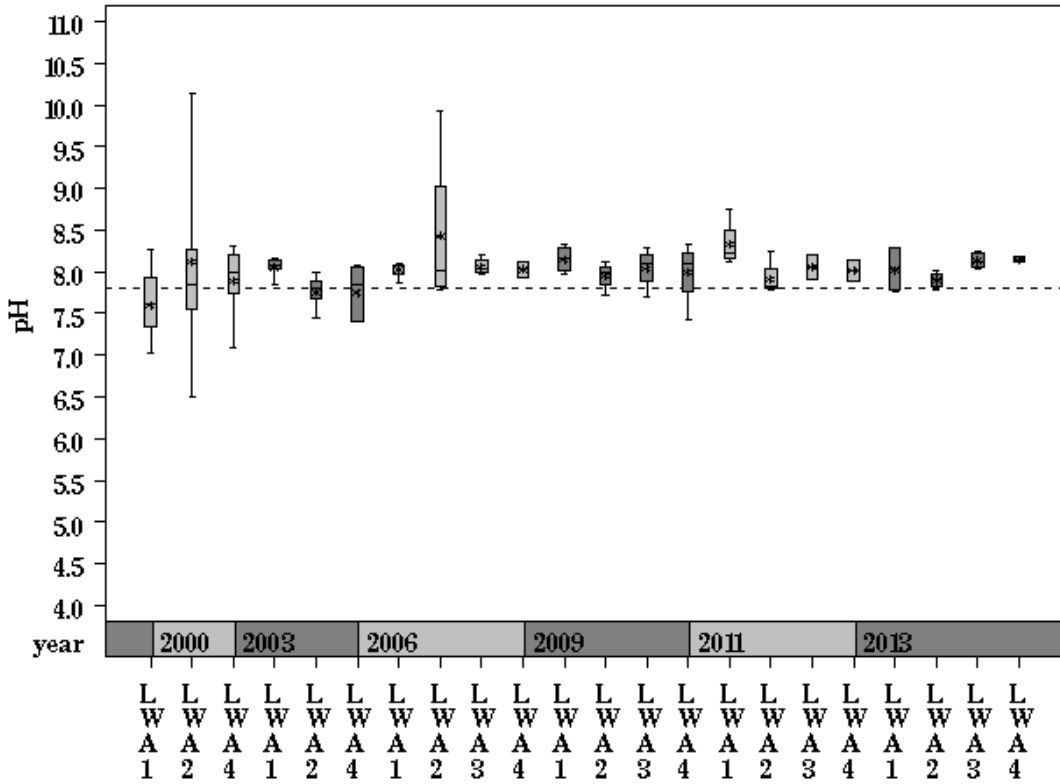
Data Summary Graphs – Total Suspended Solids and Turbidity (Downstream to Upstream by Year)



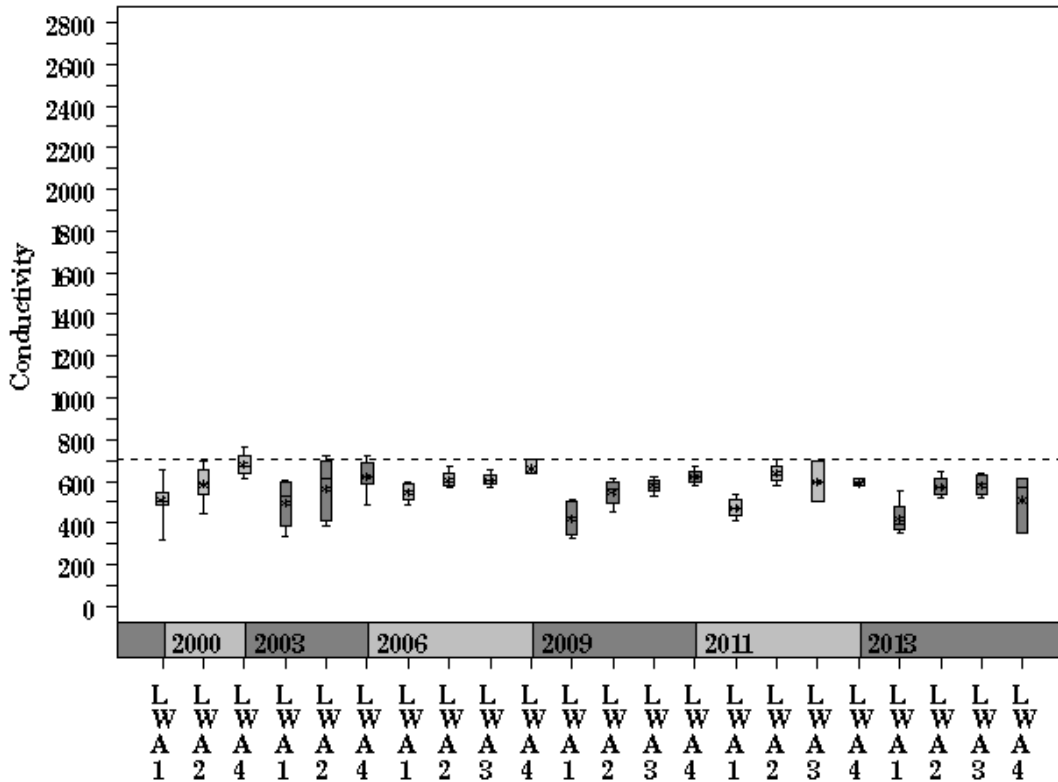
# Little Walnut Creek Watershed

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

Parameter= PH Unit= Standard units Watershed= Little Walnut

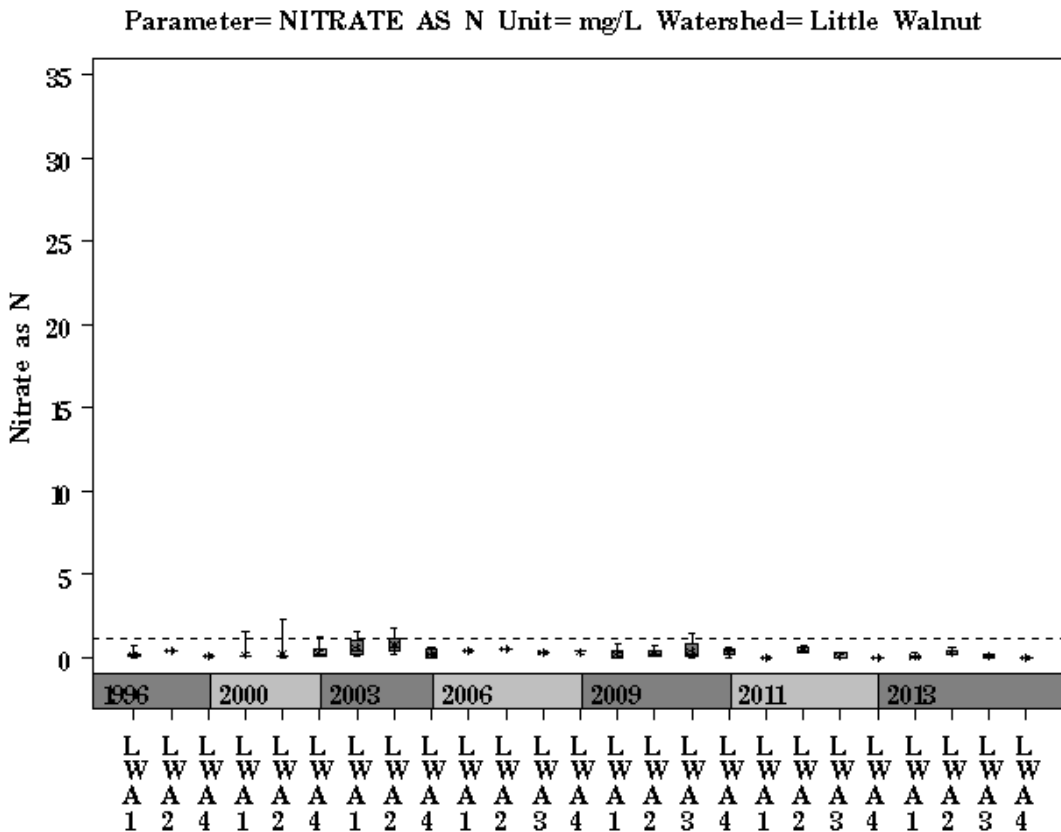
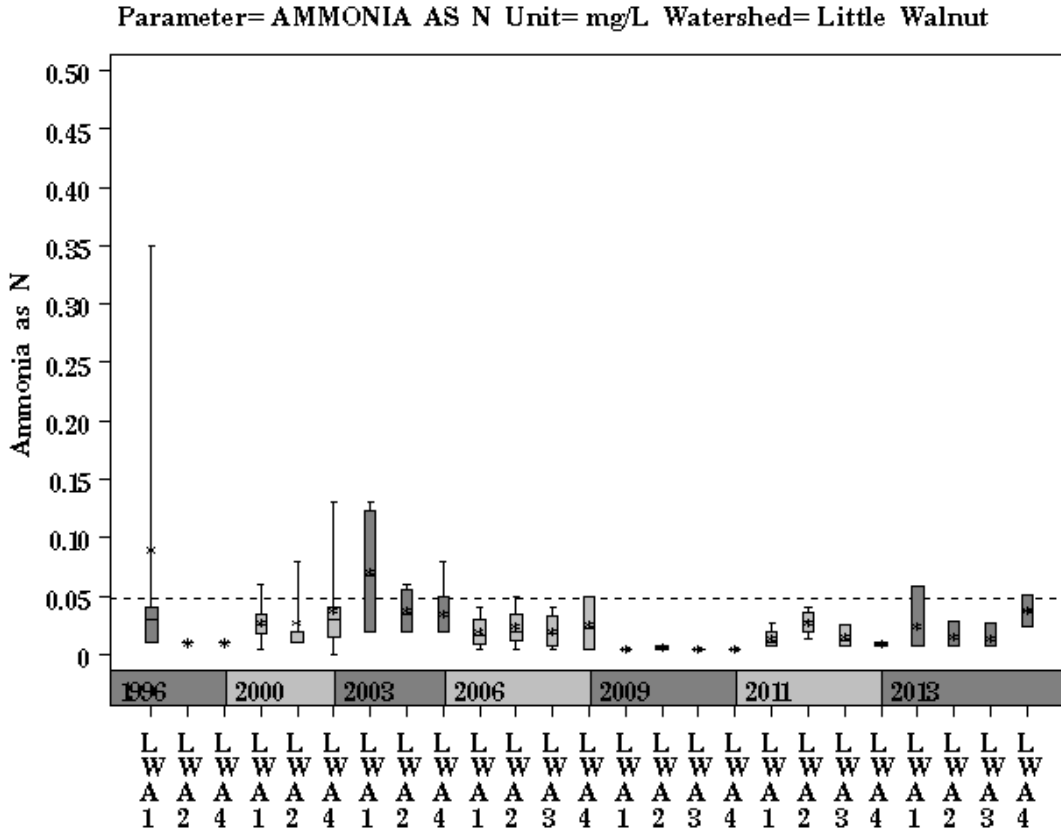


Parameter= CONDUCTIVITY Unit= uS/cm Watershed= Little Walnut



# Little Walnut Creek Watershed

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

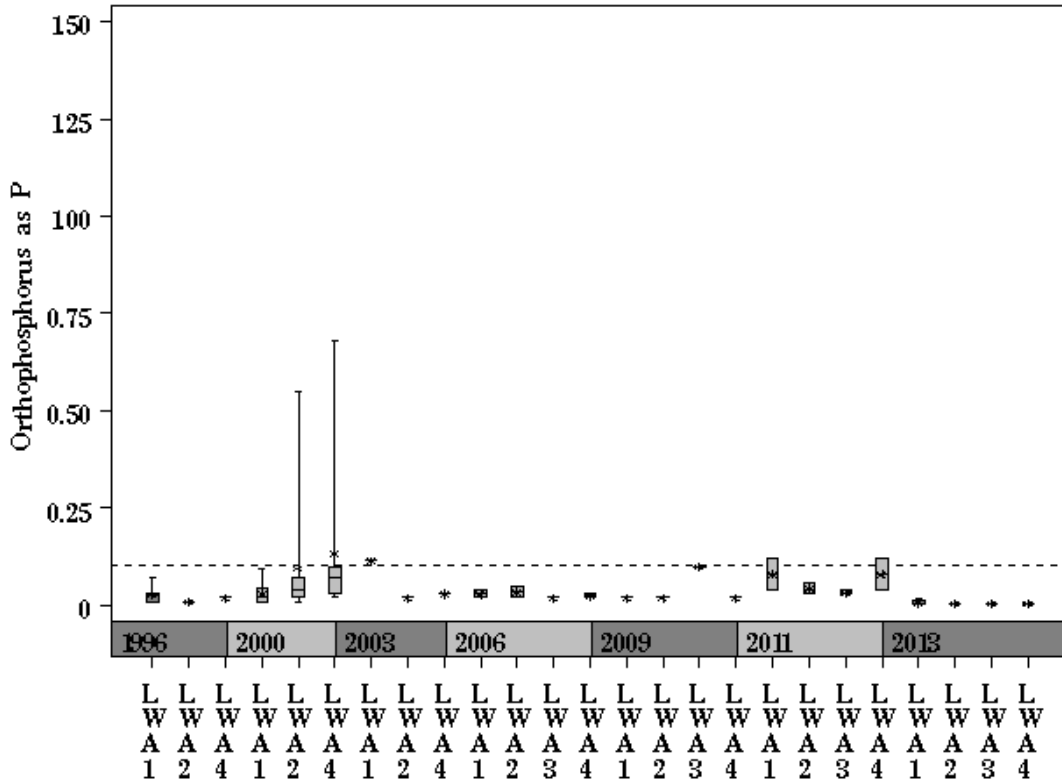




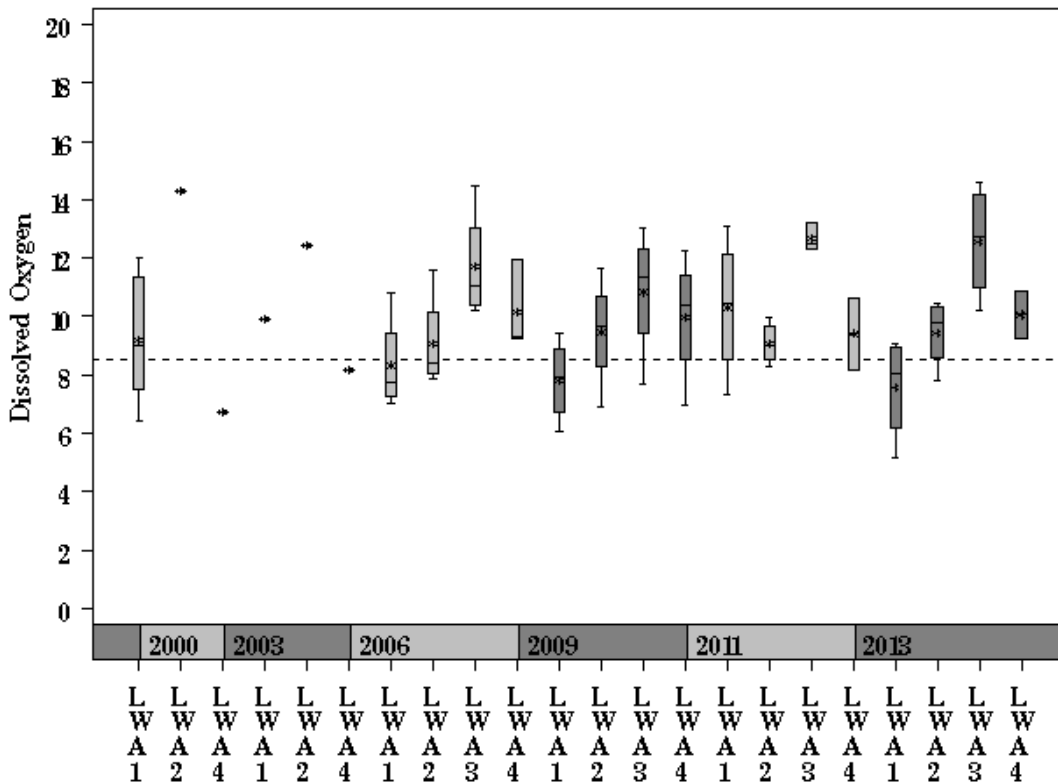
# Little Walnut Creek Watershed

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

Parameter= ORTHOPHOSPHORUS AS P Unit= mg/L Watershed= Little Walnut

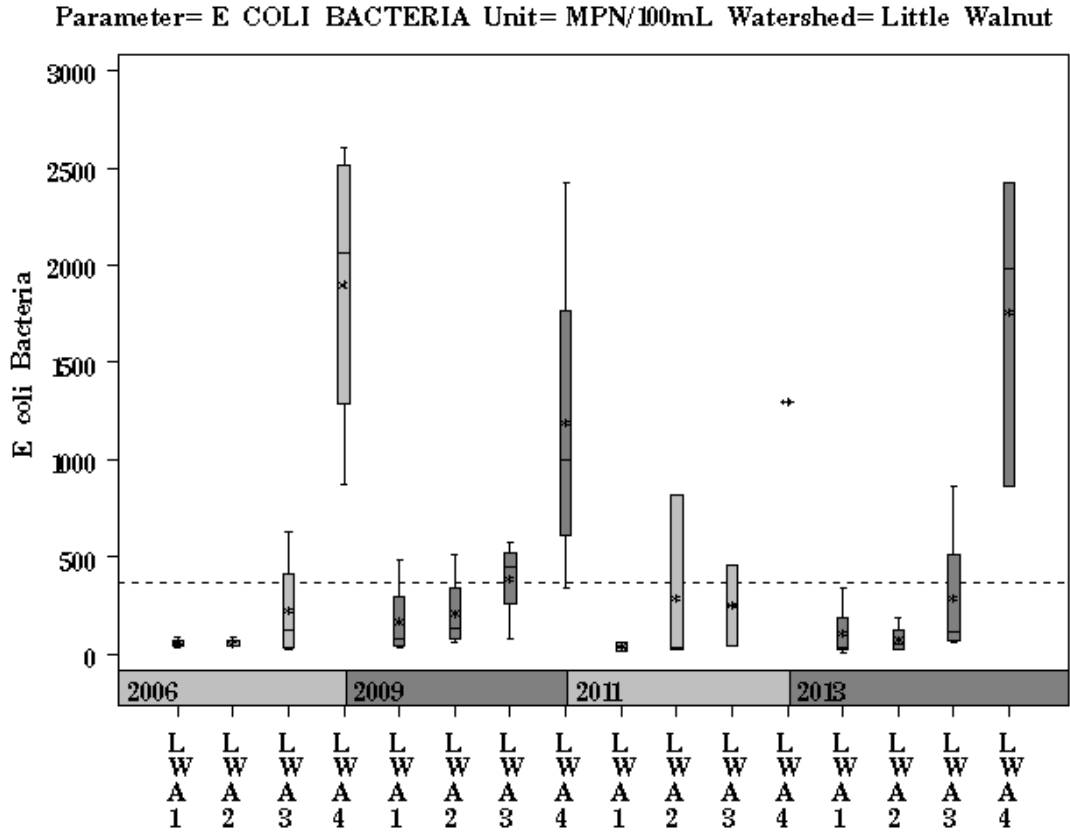


Parameter= DISSOLVED OXYGEN Unit= mg/L Watershed= Little Walnut



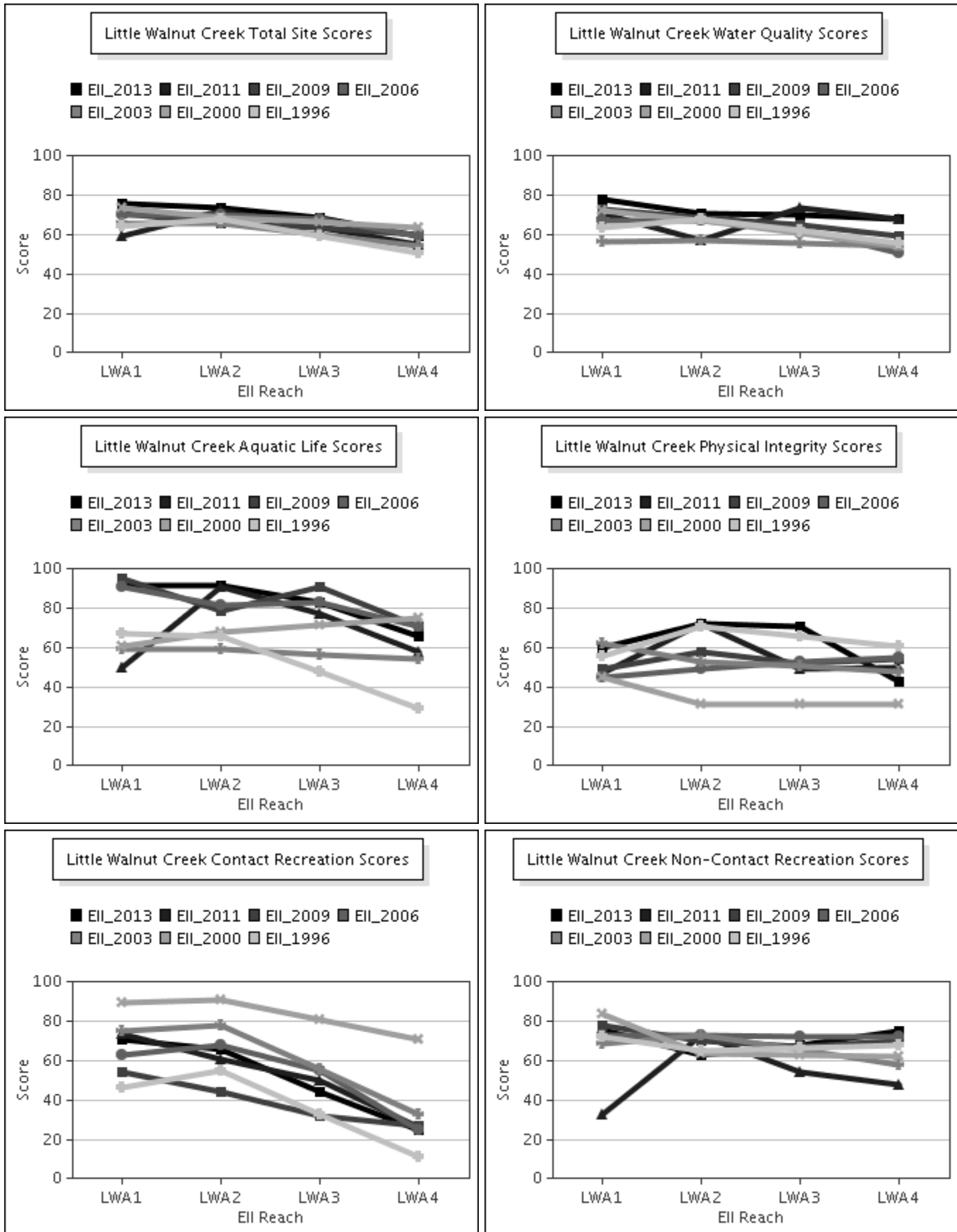
# Little Walnut Creek Watershed

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



# Little Walnut Creek Watershed

## Score Summary – Reach scores for each sample year



# Little Walnut Creek Watershed

## Benthic Macroinvertebrates – Taxa List, Pollution Tolerance Index & Functional Feeding Group for 2013 Sample Sites (Downstream to Upstream)

Benthic Macroinvertebrate ID	PTI	FFG	Little Walnut @ US183 (Site 634)	Little Walnut @ Cameron Rd (Site 3857)	Little Walnut @ Georgian Dr (Site 3860)	Little Walnut @ Golden Mdw (Site 838)
<i>Chimarra</i> sp.	2	FC	6	24		
<i>Helicopsyche</i> sp.	2	SC	1	2		
<i>Hydroptila</i> sp.	2	SC,PI	19	2	2	1
<i>Thraulodes gonzalesi</i>	2	SC,CG	1			
<i>Camelobaetidius</i> sp.	4	CG	20	33	3	
<i>Fallceon quilleri</i>	4	SC,CG	63	85	98	37
Ostracoda	4	FC,CG				2
<i>Simulium</i> sp.	4	FC	9	3	2	
<i>Aquarius</i> sp.	5	P		1		
<i>Petrophila</i> sp.	5	SC	5			
<i>Argia</i> sp.	6	P	3	5	2	12
<i>Brechmorhoga mendax</i>	6	P				1
<i>Cheumatopsyche</i> sp.	6	FC	108	19	1	
Chironomidae	6	P,FC	34	41	17	25
<i>Hetaerina</i> sp.	6	P	1			
<i>Rhagovelia</i> sp.	6	P		2		
Tanypodinae	6	P			20	
<i>Stenelmis</i> sp.	7	SC,CG	3			2
<i>Caloparyphus</i> sp. / <i>Euparyphus</i> sp.	8	SC,CG	8		1	
Hirudinea	8	P				5
<i>Hyalella</i> sp.	8	SH,CG			2	
Oligochaeta	8	CG	3			1
<i>Physella</i> sp.	9	SC				10
<i>Dugesia</i> sp.		P,CG	1	22	36	30

# Little Walnut Creek Watershed

## Benthic Macroinvertebrates – Metric Summary for 2013 Sample Sites (Downstream to Upstream)

Scoring Metric	Little Walnut @ US183 (Site 634)	Little Walnut @ Cameron Rd (Site 3857)	Little Walnut @ Georgian Dr (Site 3860)	Little Walnut @ Golden Mdw (Site 838)
Number of Taxa *	16	12	10	11
Hilsenhoff Biotic Index *	5.0	4.4	4.6	5.6
Number of Ephemeroptera Taxa *	3	2	2	1
Percent of Total as Chironomidae *	12	17	20	20
Number of EPT Taxa *	7	6	4	2
Percent of Total as EPT *	76	69	57	30
Percent of Total as Predator *	14	30	41	58
Number of Intolerant Taxa *	7	6	4	3
Percent Dominance (Top 3 Taxa) *	72	67	84	73
EPT / EPT + Chironomidae	1	1	1	1
Number of Diptera Taxa	3	2	3	1
Number of Non-Insect Taxa	2	1	2	5
Number of Organisms	285	239	184	126
Percent Dominance (Top 1 Taxa)	38	36	53	29
Percent of Total as Collector / Gatherer	35	59	76	57
Percent of Total as Dominant Guild (FFG)	55	59	76	58
Percent of Total as Elmidae	1	0	0	2
Percent of Total as Filterers	55	36	22	21
Percent of Total as Grazers (PI & SC)	35	37	55	40
Percent of Total as Tolerant Organisms	0	0	0	8
Percent of Trichoptera as Hydropsychidae	81	40	33	0
Ratio of Intolerant : Tolerant Organisms	0.77	2.23	2.44	0.71
TCEQ Qualitative Aquatic Life Use Score	27	21	19	20
TCEQ Quantitative Aquatic Life Use Score	29	31	29	29

\* **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%.

# Little Walnut Creek Watershed

## Diatoms – Taxa List & Pollution Tolerance Index for 2013 Sample Sites (Downstream to Upstream)

Diatom Species Name	PTI	Little Walnut @ US183 (Site 634)	Little Walnut @ Cameron Rd (Site 3857)	Little Walnut @ Georgian Dr (Site 3860)	Little Walnut @ Golden Mdw (Site 838)
<i>Amphora inariensis</i>	4	11		2	2
<i>Fragilaria acus</i>	4		3	58	
<i>Pseudostaurosira brevistriata</i>	4				2
<i>Achnanthydium minutissimum</i>	3	40	102	66	301
<i>Achnanthydium pyrenaicum</i>	3		112	16	5
<i>Amphipleura pellucida</i>	3			5	
<i>Amphora libyca</i>	3			2	
<i>Amphora pediculus</i>	3		2	54	12
<i>Caloneis bacillum</i>	3	2	4	2	6
<i>Caloneis ventricosa</i>	3		3	3	2
<i>Cocconeis pediculus</i>	3	118			
<i>Cymbella affinis</i>	3	1		2	
<i>Cymbella hustedtii</i>	3			2	3
<i>Cymbella laevis</i>	3		8	10	
<i>Denticula kuetzingii</i>	3	10	26	63	11
<i>Diploneis puella</i>	3		3		6
<i>Encyonema evergladianum</i>	3		1	6	
<i>Encyonema silesiacum</i>	3	3	2	4	1
<i>Epithemia turgida</i>	3	16			
<i>Eunotia bilunaris</i>	3		4		
<i>Fragilaria capucina</i>	3		24	26	
<i>Gomphonema affine</i>	3	2	6	4	
<i>Gomphonema clavatum</i>	3		6		
<i>Gomphonema truncatum</i>	3		14	33	
<i>Halamphora montana</i>	3				8
<i>Navicula cryptotenella</i>	3		1	1	1
<i>Navicula kotschy</i>	3			10	2
<i>Navicula radiosa</i>	3		2	4	
<i>Nitzschia dissipata</i>	3	2			
<i>Nitzschia fonticola</i>	3				1
<i>Nitzschia nana</i>	3	1			
<i>Nitzschia sinuata</i> var. <i>delognei</i>	3				53
<i>Nitzschia sinuata</i> var. <i>tabellaria</i>	3		14	4	
<i>Reimeria sinuata</i>	3	212	27		
<i>Rhoicosphenia abbreviata</i>	3	7			
<i>Rhopalodia gibba</i>	3				5
<i>Stauroneis phoenicenteron</i>	3				2
<i>Staurosira construens</i> var. <i>venter</i>	3			2	
<i>Tabularia fasciculata</i>	3			2	
<i>Achnantheiopsis lanceolata</i>	2				1
<i>Cyclotella meneghiniana</i>	2		5	2	3
<i>Cymatopleura solea</i>	2		2		
<i>Diademesmis confervacea</i>	2	2	2		
<i>Encyonema minutum</i>	2	12	22	42	
<i>Gyrosigma acuminatum</i>	2		1		
<i>Mastogloia elliptica</i>	2				2
<i>Navicula recens</i>	2		2		2
<i>Navicula trivialis</i>	2			3	
<i>Nitzschia amphibia</i>	2	6	9	10	40
<i>Nitzschia amphibioides</i>	2		3		
<i>Nitzschia inconspicua</i>	2				1
<i>Surirella angusta</i>	2		1		
<i>Synedra ulna</i>	2	9	21	27	2
<i>Tryblionella apiculata</i>	2		1		
<i>Gomphonema parvulum</i>	1	2	33	31	23
<i>Sellaphora seminulum</i>	1		7		
<i>Achnanthes rupestroides</i>					2
<i>Achnanthydium gracillimum</i>		2	6		
<i>Cocconeis placentula</i> var. <i>lineata</i>		42	21		1
<i>Eolimna minima</i>				4	

# Little Walnut Creek Watershed

## Diatoms – Metric Summary for 2013 Sample Sites (Downstream to Upstream)

Scoring Metric	Little Walnut @ US183 (Site 634)	Little Walnut @ Cameron Rd (Site 3857)	Little Walnut @ Georgian Dr (Site 3860)	Little Walnut @ Golden Mdw (Site 838)
<i>Cymbella</i> Richness	4	5	6	2
Number of organisms	500	500	500	500
Number of taxa	20	35	31	28
Percent motile taxa	2	8	6	20
Percent similarity to reference condition	31	48	44	34
Pollution tolerance index	2.95	2.69	2.83	2.81

\* **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*, *Cymbopleura*, *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.

# Little Walnut Creek Watershed

## Site Photographs



838\_t00-us-07\_10\_2006



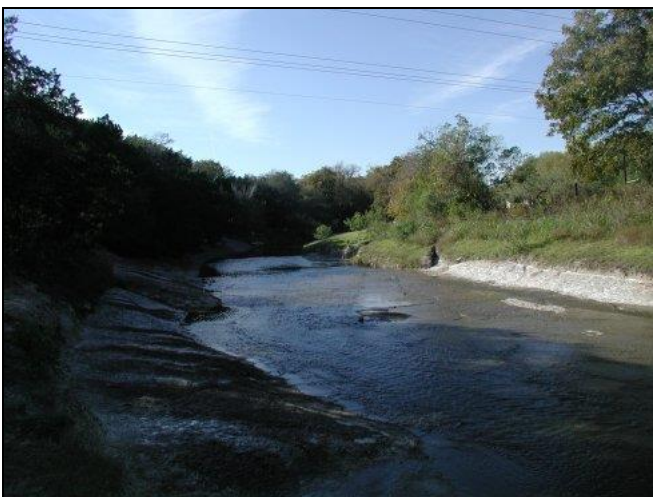
838\_t00-ds-07\_10\_2006



3860\_t00-us-05-27-2009



3860\_t00-ds-05-27-2009



839\_t00-us-02\_20\_2001



839\_t00-na-02\_19\_2003



# Little Walnut Creek Watershed

## Site Photographs



3857\_t00-us1-07\_11\_2006



3857\_t00-us-07\_11\_2006



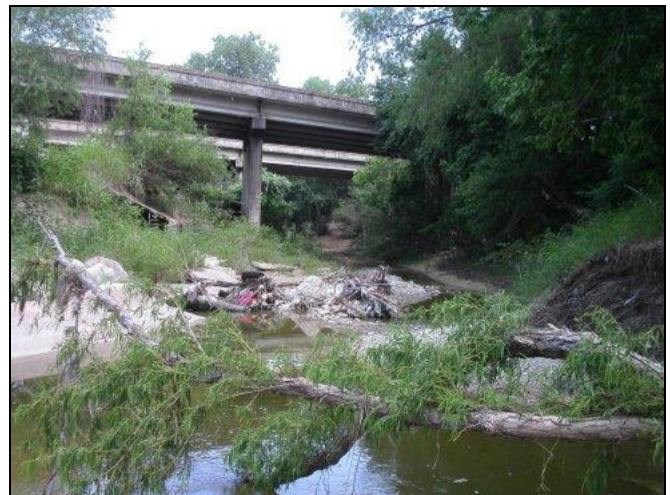
840\_t00-us-02\_19\_2003



840\_t00-ds-02\_20\_2001



634\_t00-us-07\_06\_2006



634\_t00-ds-07\_06\_2006

This page left intentionally blank