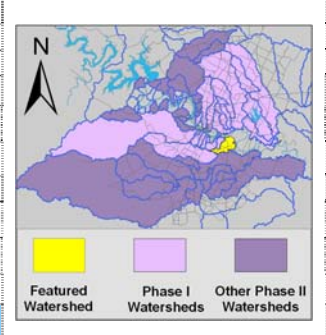


# Carson Creek Watershed

## Watershed Overview

Catchment	Total area	6 square miles					
	Area in recharge	none					
	Creek length	6 miles					
Demographics	Receiving water	Colorado River					
	2000 population	6,982					
	2030 projected population	9,273					
Land Use	30 year projected % increase	33 %					
	Impervious cover (2003 estimate)	19.4 %					
	Impervious cover (2013 estimate)	32.1 %					
Overall EII Scores	2001	2004	2007	2010	2012	2014	2016
	65	60	66	65	68	65	70



## Flow Regime\* for Sample Sites on Carson Creek

Site	1999		2001				2004				2007				2010				2011		2012			2014			2016							
	Jan	Mar	Jun	Sep	Dec	Mar	May	Jun	Oct	Dec	Feb	May	Jun	Sep	Dec	Mar	May	May	Oct	Dec	Mar	Apr	Jul	Sep	Jan	Apr	May	Jul	Sep	Jan	Apr	May	Jul	Sep
1095	B	B	B	B	n	B	B	B	n		B	B	B																					
1096	B	B	B	B	n	B	B	B	B	B	B	B	B	B	B	B	B	S	B	B	B	B	n	n	B	B	B	B	B	B	B	B	B	B
1094	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	S	B	B	B	B	B	B	B	B	B	B	B	B	B	B	n	B

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

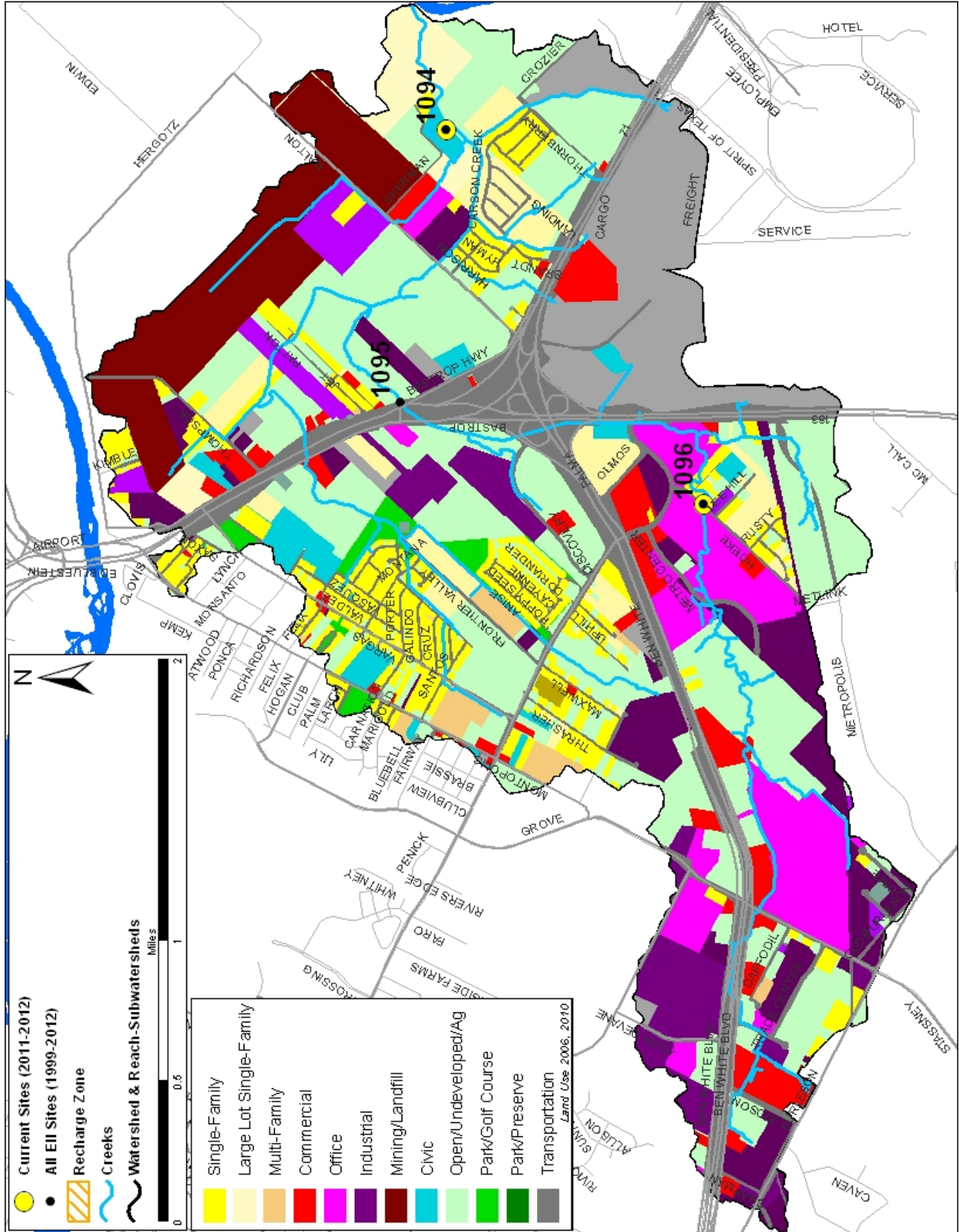
## Index scores\* for Carson Creek Sites by Year

Reach	Site	Site Name	Year	Water Quality	Sediment**	Contact Recreation	Non-Contact Rec.	Physical Integrity	Aquatic Life	Benthic subindex	Diatom subindex	Total EII Score
CAR1	1094	@ Shady Spring Sub	1998	45	83	85	85	69	53	55	50	70
CAR2	1095	@ US 183	1998	59	83	90	62	53	50	49	51	66
CAR2	1096	@ Hoecke Lane	1998	57	83	92	74	38	66	75	57	68
CAR1	1094	@ Shady Spring Sub	2001	40	85	76	82	74	48	39	56	64
CAR2	1095	@ US 183	2001	62	85	92	68	61	22	37	6	65
CAR2	1096	@ Hoecke Lane	2001	54	85	91	73	55	12	18	6	60
CAR1	1094	@ Shady Spring Sub	2004	54	85	51	88	72	67	60	73	70
CAR2	1095	@ US 183	2004	68	85	46	37	44				47
CAR2	1096	@ Hoecke Lane	2004	56	85	43	65	57	70	75	65	63
CAR1	1094	@ Shady Spring Sub	2007	46	73	43	89	64	74	66	82	65
CAR2	1096	@ Hoecke Lane	2007	56	73	52	91	62	70	71	68	67
CAR1	1094	@ Shady Spring Sub	2010	56	78	46	83	78	50	35	65	65
CAR2	1096	@ Hoecke Lane	2010	66	78	45	79	55	68	65	71	65
CAR1	1094	@ Shady Spring Sub	2012	49	77	33	71	87	82	71	93	67
CAR2	1096	@ Hoecke Lane	2012	64	77	51	80	71	73	72	73	69
CAR1	1094	@ Shady Spring Sub	2014	44	78	30	83	79	62	52	72	63
CAR2	1096	@ Hoecke Lane	2014	69	78	32	79	65	78	74	82	67
CAR1	1094	@ Shady Spring Sub	2016	39	84	38	88	79	70	60	79	66
CAR2	1096	@ Hoecke Lane	2016	68	84	60	91	54	85	90	79	74

\* 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

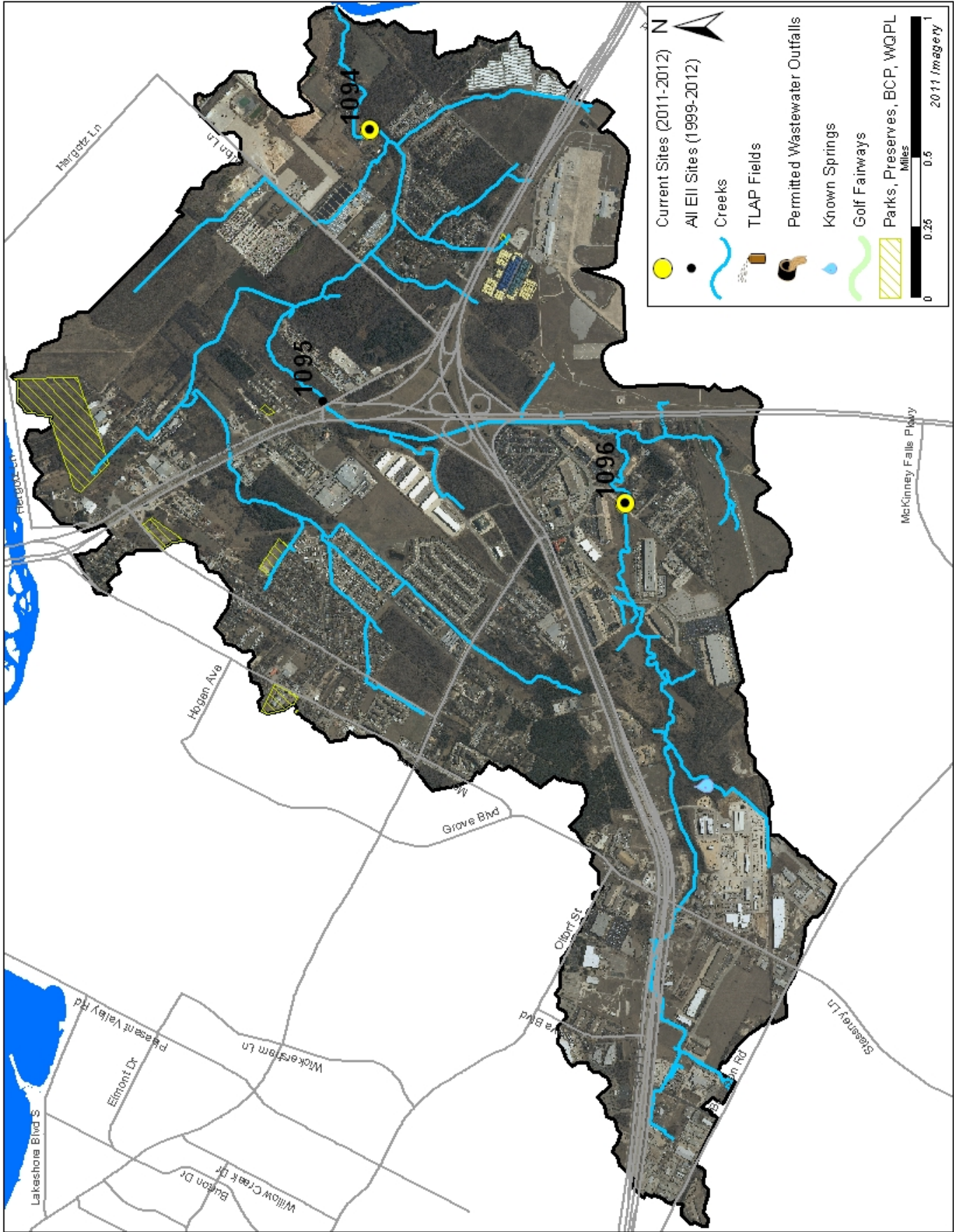
# Carson Creek Watershed

## Land Use Map



# Carson Creek Watershed

## Aerial Map



# Carson Creek Watershed

## Water Quality Data – Temperature, Conductivity, pH, Dissolved Oxygen & E. coli for 2016 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	E.I.I. Reach	Date	Temp.	flag	Cond.	flag	pH	flag	D.O.	flag	E. Coll	flag
Carson	1094	CAR1	01/12/2016	17.2		723		7.14		6.1	R	435.2	
Carson	1094	CAR1	04/12/2016	20.7		1013		7.06		6.3		248.9	
Carson	1094	CAR1	05/12/2016	23.9		532		7.17		6.4			
Carson	1094	CAR1	07/12/2016	23.1		931		7.06		4.5	R	238.2	
Carson	1094	CAR1	09/12/2016	23.1		975		7.03		3.8		178.5	
CAR1 Mean				21.6		835		7.09		5.4		275.2	
Carson	1096	CAR2	01/12/2016	13.0		784		8.07		12.8	R	18.9	
Carson	1096	CAR2	04/12/2016	20.1		725		7.96		9.6		547.5	
Carson	1096	CAR2	05/12/2016	26.0		618		8.01		10.7	R		
Carson	1096	CAR2	07/12/2016	27.8		600		8.04		8.1	R	148.3	
Carson	1096	CAR2	09/12/2016	27.6		634		8.03		8.7		29.2	
CAR2 Mean				22.9		672		8.02		10.0		186.0	
Carson Mean				22.3		753		7.56		7.7		230.6	

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

# Carson Creek Watershed

## Water Quality Data – Ammonia, Nitrate / Nitrite, Ortho-Phosphorus, Total Suspended Solids & Turbidity for 2016 Sample Sites (Downstream to Upstream)

<b>Qualifiers to the left of the value</b>	>	Greater than	<b>Qualifiers to the right of the value</b>	(blank)	Useable
	<	Less than		S	Exceeds standard range
	<J	Less than detected limit		R	Rejected, failed QC
	J	Estimated			

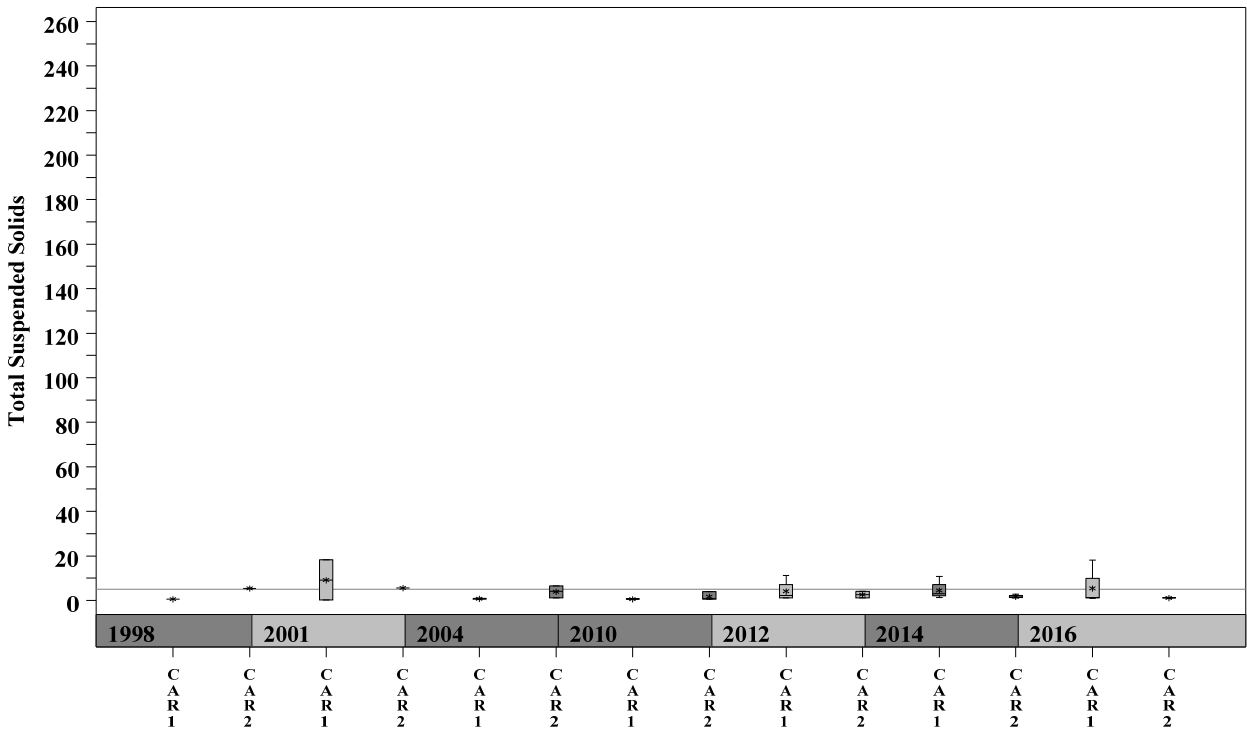
Watershed	Site	EII Reach	Date	NH3-N		NO3/NO2		Ortho-P		T.S.S		Turb.			
				<>	flag	<>	flag	<>	flag	<>	flag	<>	flag		
Carson	1094	CAR1	01/12/2016		0.360		2.14		0.074		1.7		1.8	R	
Carson	1094	CAR1	04/12/2016		0.057		2.50		0.017	R	<J	1.0		1.0	
Carson	1094	CAR1	05/12/2016												
Carson	1094	CAR1	07/12/2016		0.089		3.52		<J	0.004	<J	1.0		0.8	R
Carson	1094	CAR1	09/12/2016		0.086		3.25			0.019		18.0		3.7	
<b>CAR1 Mean</b>					0.148		2.85			0.028		5.4		1.4	
Carson	1096	CAR2	01/12/2016	<J	0.008		0.57		<J	0.004	<J	1.0		1.2	R
Carson	1096	CAR2	04/12/2016	<J	0.008		0.25		<J	0.004		1.2		1.7	
Carson	1096	CAR2	05/12/2016												
Carson	1096	CAR2	07/12/2016	<J	0.008		0.07		<J	0.004	<J	1.0		1.2	
Carson	1096	CAR2	09/12/2016	<J	0.008		0.25		<J	0.004	<J	1.2		1.7	R
<b>CAR2 Mean</b>					0.008		0.28			0.004		1.1		1.5	
<b>Carson Mean</b>					0.078		1.57			0.016		3.3		1.6	

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

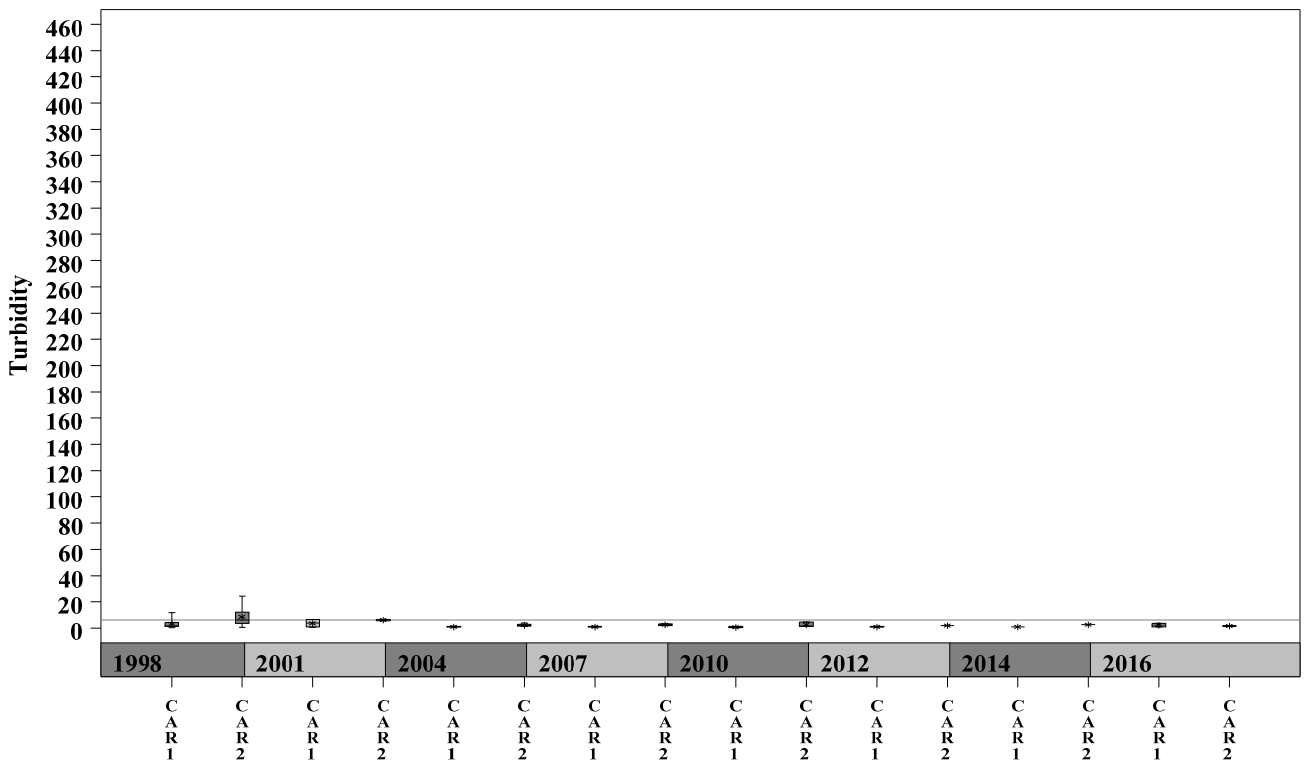
# Carson Creek Watershed

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

**Parameter = TOTAL SUSPENDED SOLIDS Unit = mg/L Watershed = Carson**



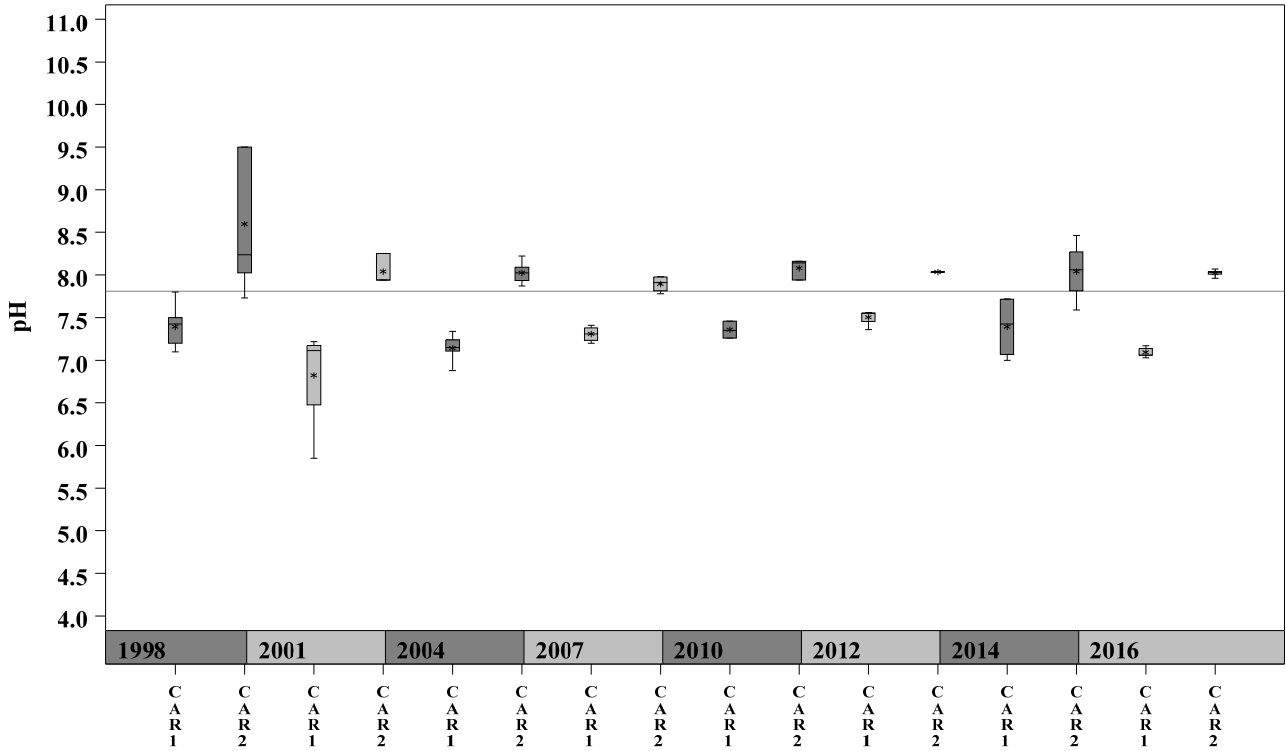
**Parameter = TURBIDITY Unit = NTU Watershed = Carson**



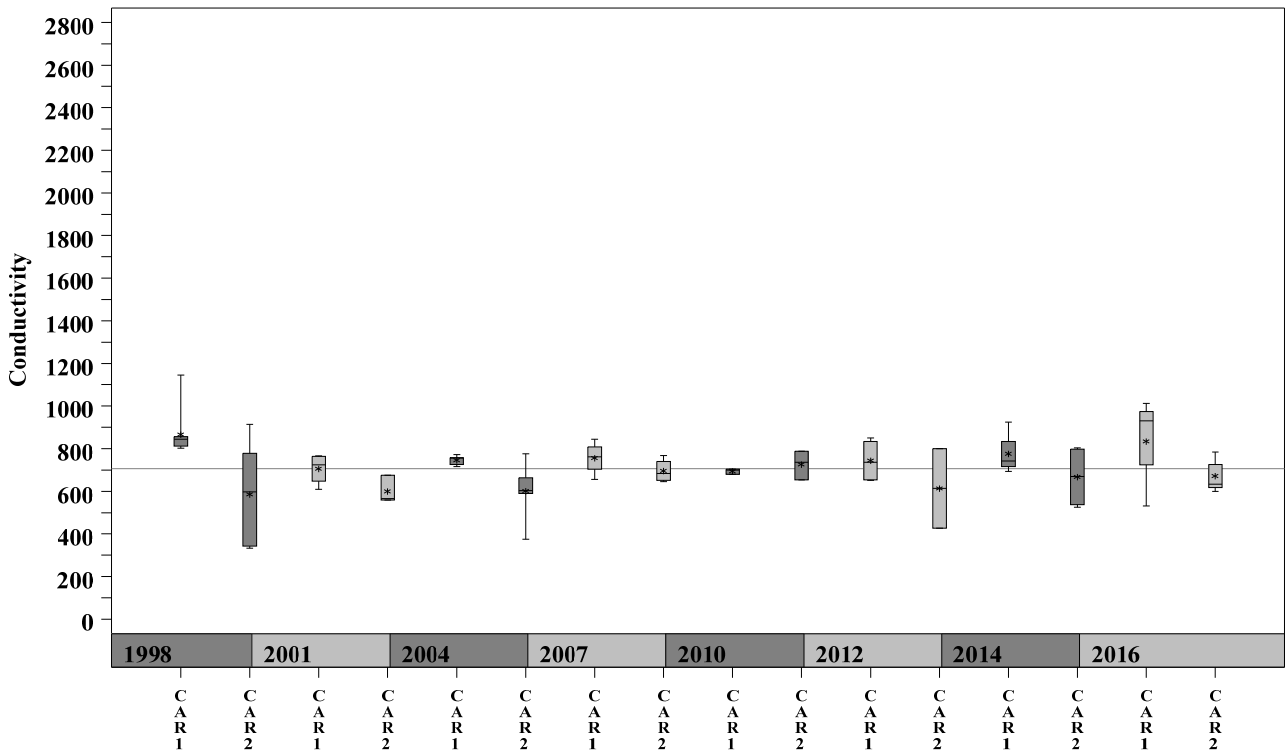
# Carson Creek Watershed

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

Parameter = pH Unit = Standard Units Watershed = Carson



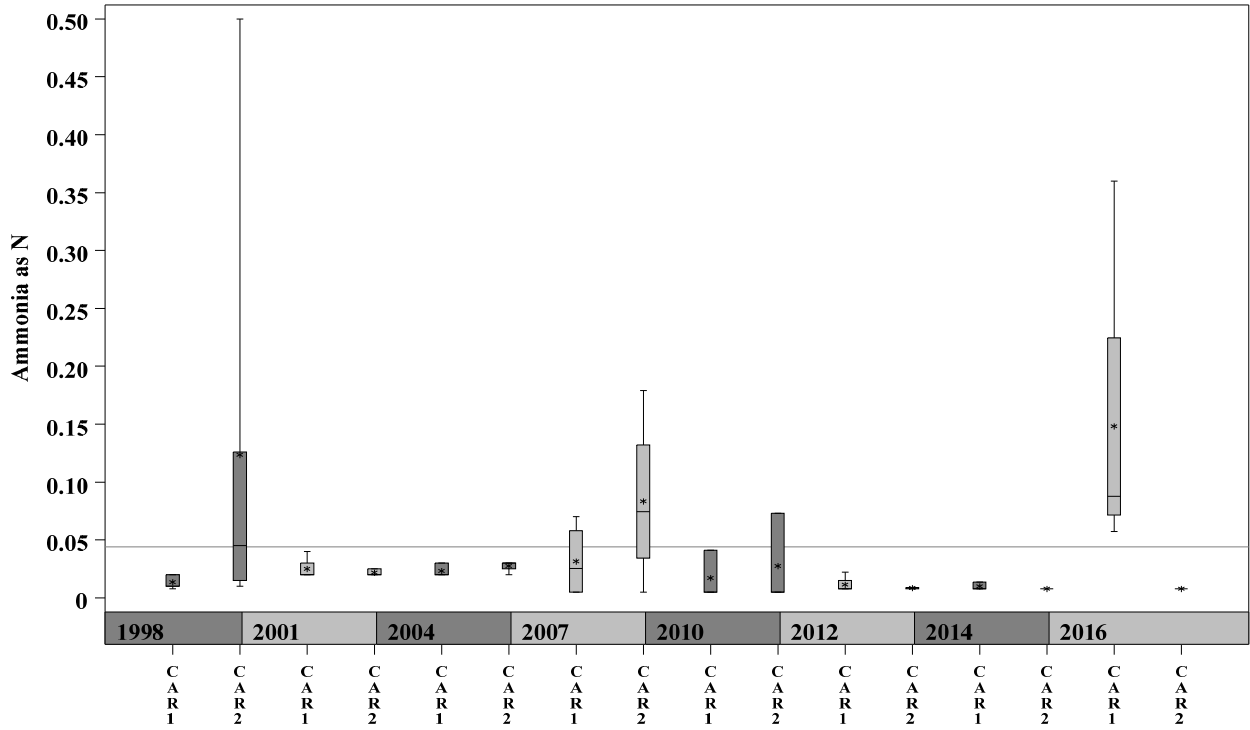
Parameter = CONDUCTIVITY Unit = uS/cm Watershed = Carson



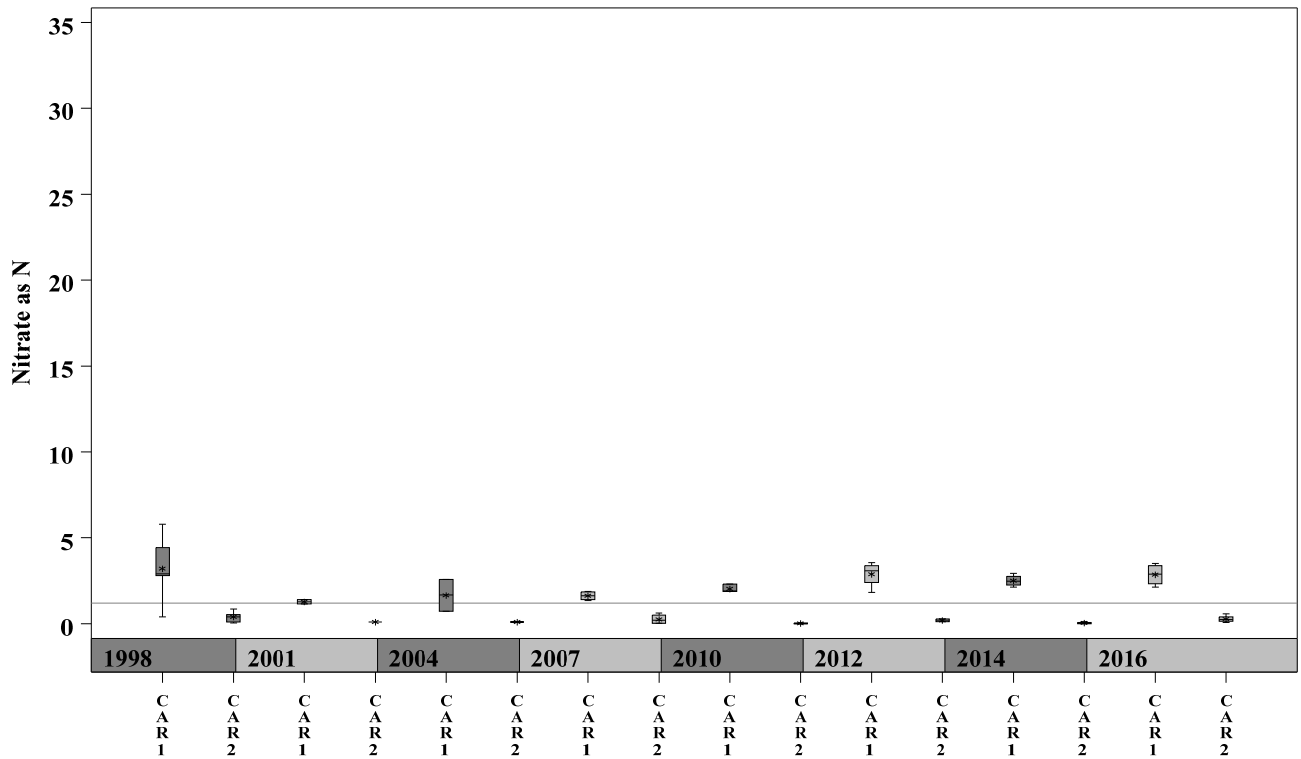
# Carson Creek Watershed

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

**Parameter = AMMONIA AS N Unit = mg/L Watershed = Carson**



**Parameter = NITRATE AS N Unit = mg/L Watershed = Carson**

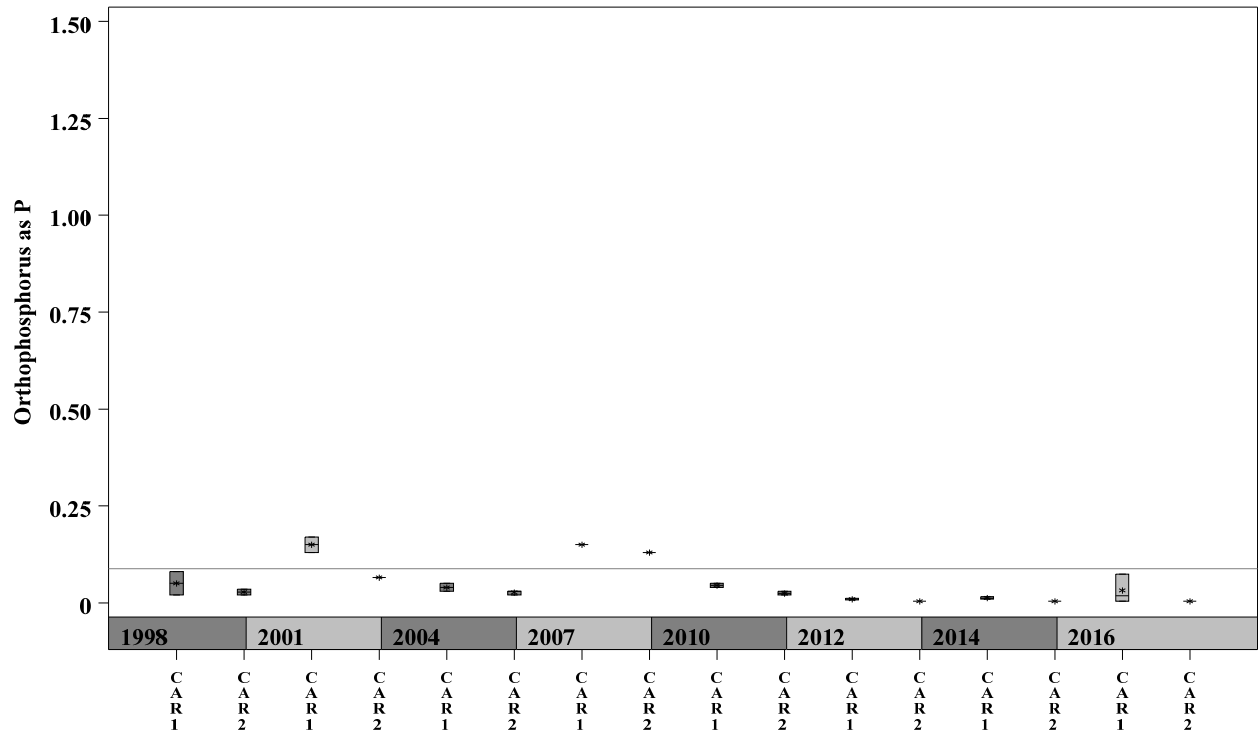




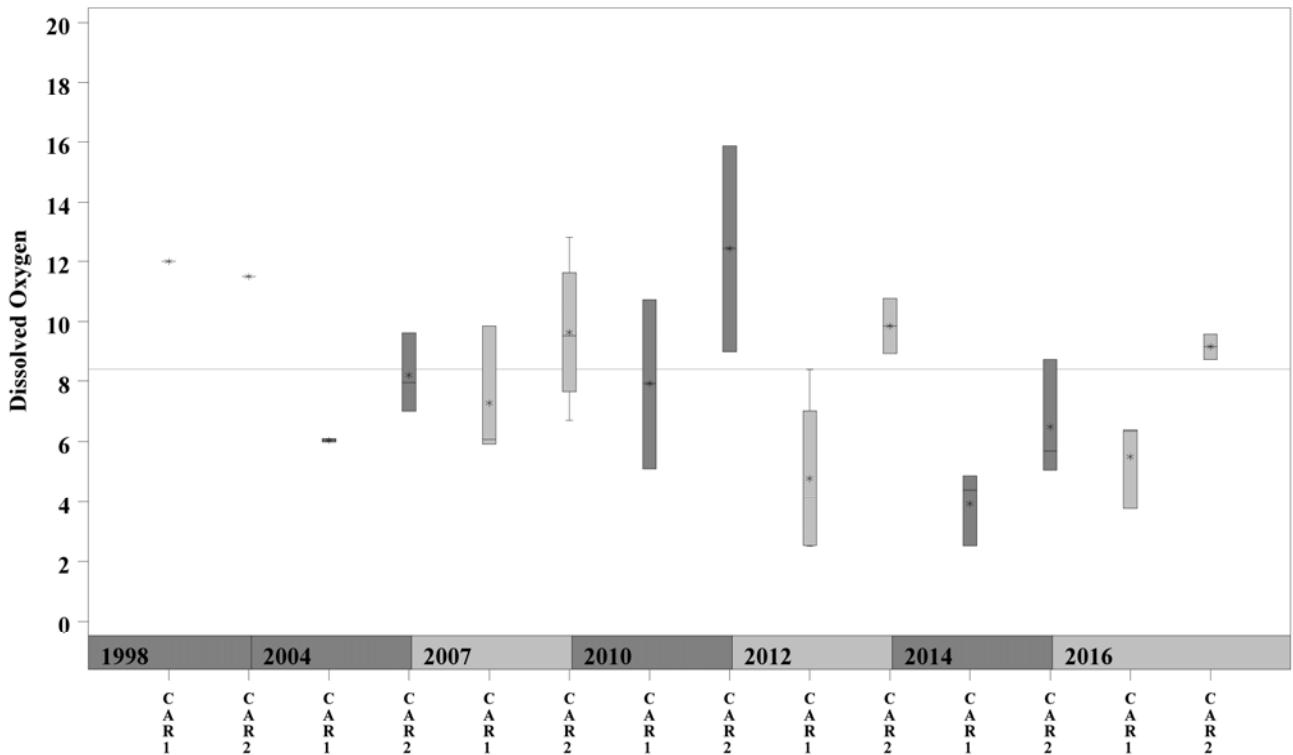
# Carson Creek Watershed

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

**Parameter = ORTHOPHOSPHORUS AS P Unit = mg/L Watershed = Carson**



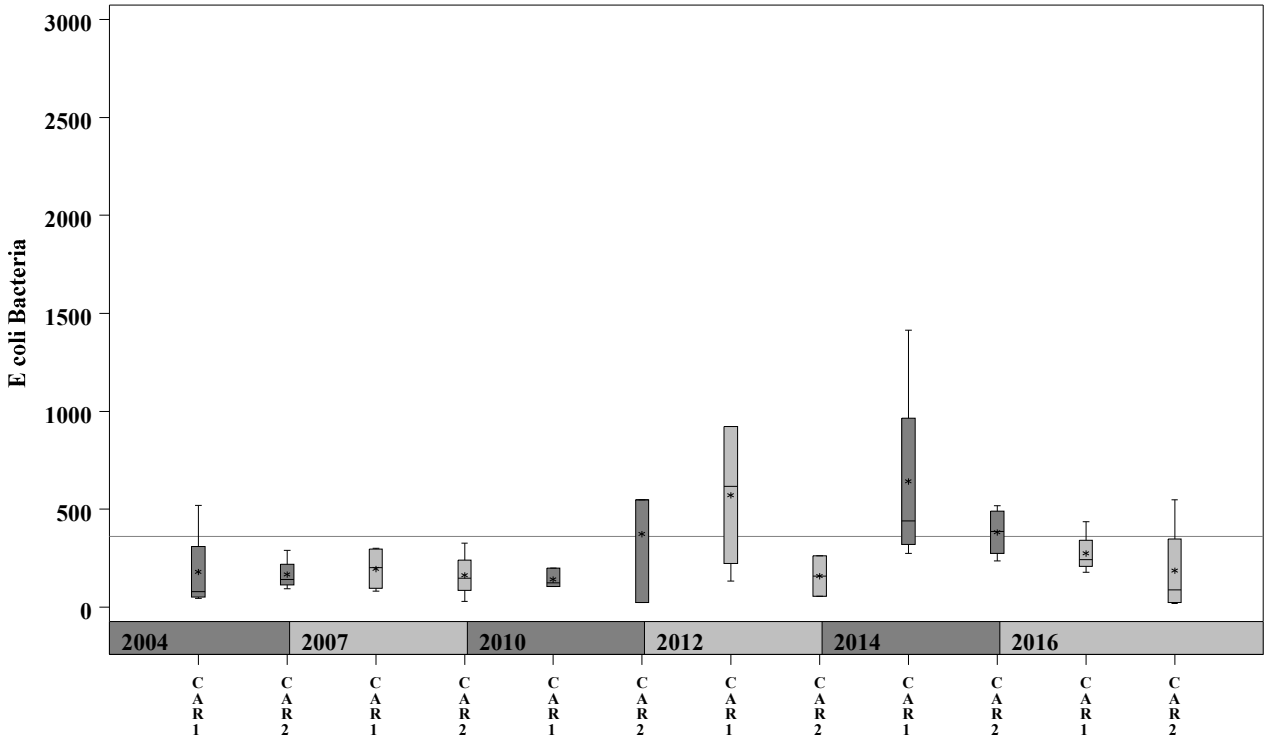
**Parameter = DISSOLVED OXYGEN Unit = mg/L Watershed = Carson**



# Carson Creek Watershed

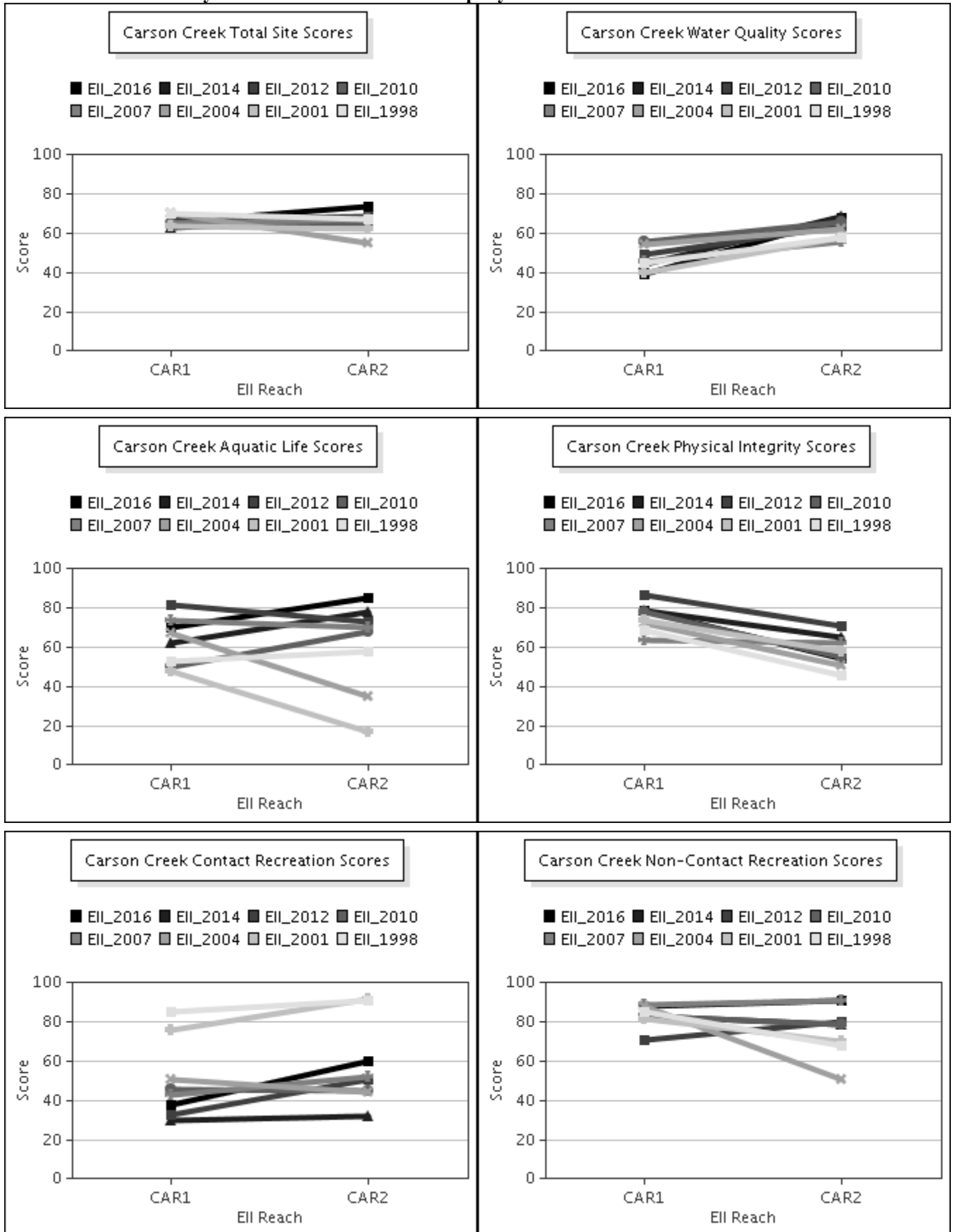
Data Summary Graphs – *E.coli* (Downstream to Upstream by Year)

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



# Carson Creek Watershed

Score Summary – Reach scores for each sample year



# Carson Creek Watershed

## Benthic Macroinvertebrates – Taxa List, Pollution Tolerance Index & Functional Feeding Group for 2016 Sample Sites (Downstream to Upstream)

Benthic Macroinvertebrates - Carson Creek			CAR @ Hoecke (1096) 05/10/2016 (WRE)	CAR @ Shady Spgs (1094) 05/12/2016 (WRE)
Benthic Macroinvertebrate ID	PTI	FFG		
Chimarra	2	FC	208	
Helicopsyche	2	SC	1	
Hydroptila	2	PI,SC	3	
Microcylloepus Pusillus	2	CG,SC	1	
Fallceon	4	CG,SC	190	15
Neochoroterpes	4	CG	15	6
Simulium	4	FC	153	1
Petrophila (Moth)	5	SC	1	
Argia	6	P	5	
Brechmorhoga Mendax	6	P	1	
Cheumatopsyche	6	FC	84	
Chironomidae	6	FC,P	84	2
Hydracarina	6		2	
Tanypodinae	6	P	12	1
Ferrissia	7	SC		1
Stenelmis	7	CG,SC	1	
Hyaella	8	CG,SH		1
Dugesia		CG,P	95	13

# Carson Creek Watershed

## Site Photographs



1094\_t00-us-05\_20\_2004



1094\_ur\_06\_19\_2007



1094\_00-us-05\_18\_2010



1094\_00-ds-05\_18\_2010



1095\_t00-us-05\_20\_2004



1095\_t00-ds-05\_20\_2004

# Carson Creek Watershed

## Site Photographs



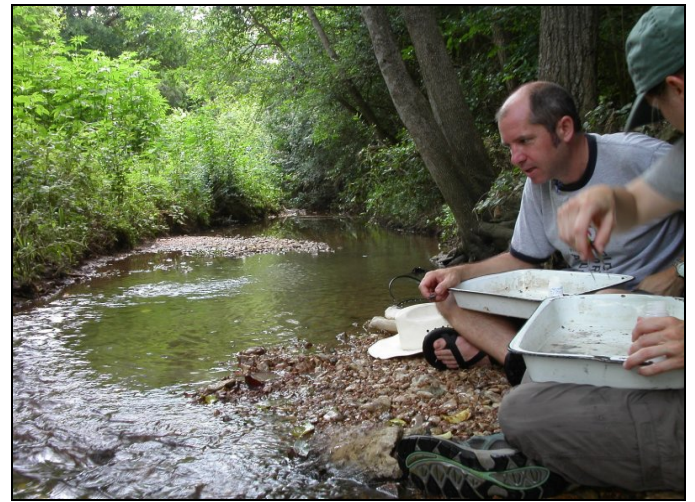
1096\_t00-ur-05\_18\_2004



1096\_t00-ds-05\_18\_2004



1096\_ur\_06\_19\_2007



1096\_ds\_06\_19\_2007



1096\_00-ur-05\_18\_2010



1096\_00-ds-05\_18\_2010