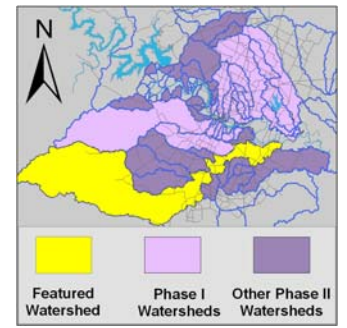


Onion Creek Watershed

Watershed Overview

Catchment	Total area	211 sq. miles					
	Area in recharge	24.6 sq. miles					
	Creek length	79 miles					
	Receiving water	Colorado River					
Demographics	2000 population	32,955					
Land Use	Impervious cover (2003 estimate)	3.3 %					
	Impervious cover (2013 estimate)	9.5 %					
Overall EII Scores	2001	2004	2007	2010	2012	2014	2016
	82	80	79	86	80	80	83



Flow Regime* for Sample Sites on Onion Creek

Site	2001					2002				2003		2004						2007							
	Mar	Mar	Jun	Sep	Dec	Feb	Feb	Mar	Mar	Mar	Mar	Mar	May	May	Jun	Oct	Dec	Feb	May	Jun	Jul	Aug	Sep	Dec	
	WQ	Bio	WQ	WQ	WQ	WQ	Bio	WQ	Bio	WQ	Bio	WQ	WQ	Bio	WQ	WQ	WQ	WQ	WQ	Bio	Bio	Bio	WQ	WQ	
1118	B	B	B	n	B																				
1365	B	B	B	B	B							B	B	B	B	B	B	B	B	B				B	B
4595																									
612						B						B	B	B	B	B	B	B	B	B				B	B
1364	B	B	B	B	B		B			B	B														
1494	B	B	B	n	B																				
236	B	B	B	B	B			B	B	B	B	B	B	B	B	B	B	B	B	B				B	B
239	B	B	B	B	B																				
610												B	B	B	B	B	B								
220	B	B	B	B	B																				
241																		B	B	B				B	B
255	B	B	B	B	B							B	B	B	B	B	B	B	B	S				B	B
1366	B	B	B	B	B			B	B	B	B	B	B	B	B	B	B	B	B		S	B	B	B	B

Flow Regime* for Sample Sites on Onion Creek (Cont.)

Site	2010				2011		2012					2014						2016					
	Mar	May	May	Oct	Dec	Mar	Apr	May	Jul	Sep	Jan	Apr	May	Jun	Jul	Sep	Jan	Apr	May	Jul	Sep		
	WQ	WQ	Bio	WQ	WQ	WQ	Bio	Bio	WQ	WQ	WQ	WQ	Bio	Bio	WQ	WQ	WQ	WQ	WQ	WQ	WQ		
1118																							
1365																							
4595	B	B	B	B	n	B	B				B	B	B	B			B	B	B	B	B	B	B
612	B	B	B	B	n	B	B				B	B	B	B			B	B	B	B	B	B	B
1364																							
1494																							
236	B	B	B	B	B	B	B				B	B	B	B	B		B	B	B	B	B	B	B
239																							
610																							
220																							
241	B	B	B	B	B	B		B			B	B	B	B			B	B	B	B	B	B	B
255	B	B	B	B	B	B		B			B	B	B	B	B		B	B	B	B	B	B	B
1366	B	B	B	B	B	B	B				B	B	B	B	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 North Fork Dry Creek Sites by Year

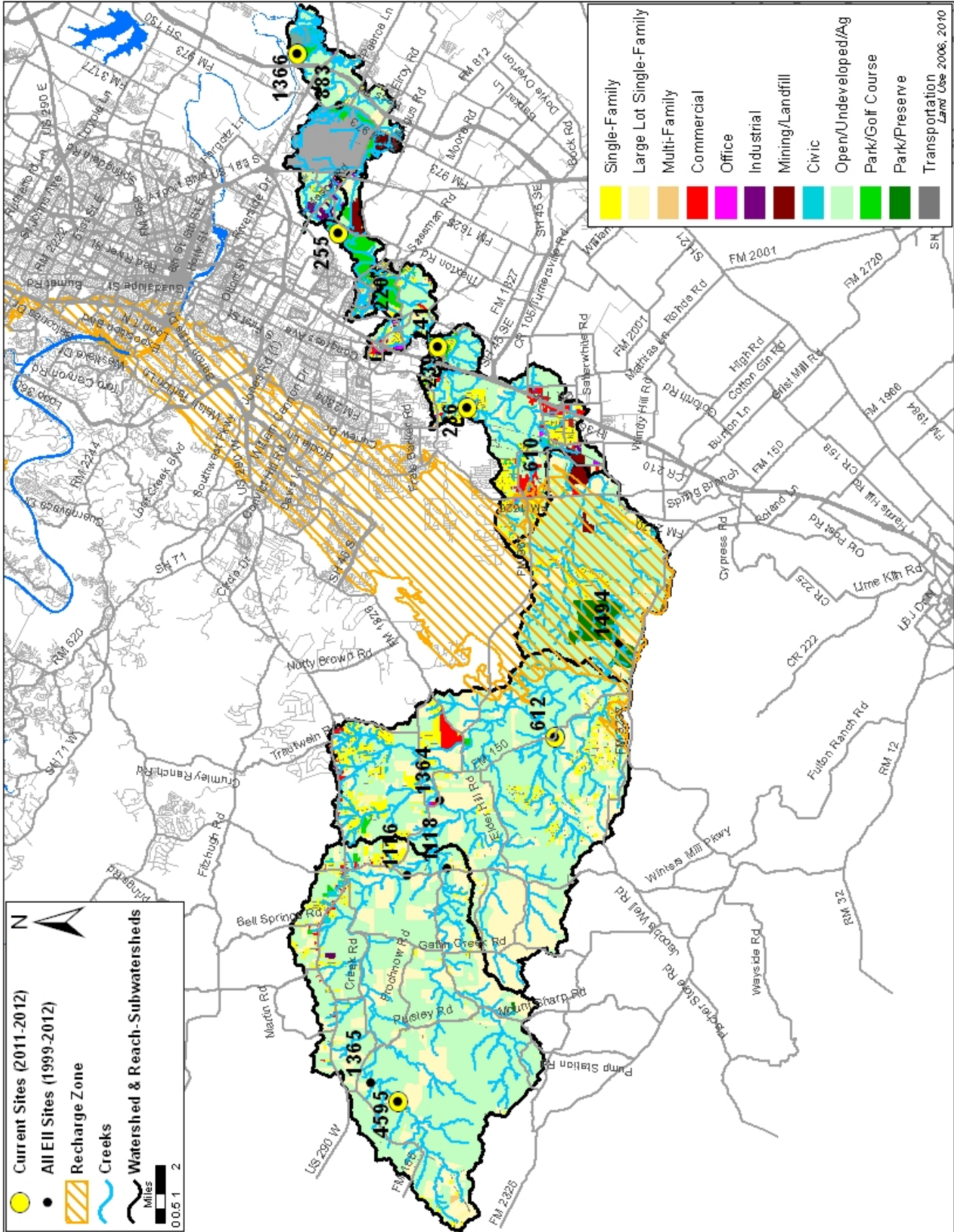
Reach	Site	Site Name	Year	Water Quality	Sediment**	Contact Rec.	Non-Contact Rec.	Physical Integrity	Aquatic Life	Benthic subindex	Diatom subindex	Total EII Score
ONI1	1366	Onion @ South Austin Regional WWTP	2001	46	88	84	88	82	68	91		72
ONI2	255	Onion @ McKinney Falls ds Lower Falls	2001	58	88	90	94	82	82	87	77	78
ONI3	220	Onion Creek @ Old Lockhart Hwy (ON4)	2001	60	88	86	84	87	66	61	70	74
ONI4	236	Onion @ Twin Creeks Road (OC1)	2001	65	88	88	93	84	72	60	83	78
ONI4	239	Onion Creek Upstream of IH35 (OC2)	2001	67	88	83	92	94	70	70	69	78
ONI5	1364	Onion @ Most US Hwy 150 Crossing	2001	71	88	89	100	86	73	70	76	81
ONI5	1494	Onion Creek @ Sky Ranch	2001	68	88	89	100	95	67	70	64	80
ONI6	1118	Onion Creek South Fork @ Hwy 12	2001	68	88	81	98	82	65	69	61	76
ONI6	1365	Onion Creek at Pfulman Ranch	2001	71	88	94	98	82	64	78	50	79
ONI1	1366	Onion @ South Austin Regional WWTP	2004	52	89	57	76	74	88	97	79	73
ONI2	255	Onion @ McKinney Falls DS Lower Falls	2004	59	89	58	85	82	89	94	83	77
ONI4	236	Onion @ Twin Creeks Road (OC1)	2004	77	89	66	87	84	80	74	85	81
ONI4	610	Onion Creek @ Buda (USGS)	2004	75	89	79	71	67	71	45	96	75
ONI5	612	Onion Creek near Driftwood (Hwy 150)	2004	77	89	60	100	92	97	100	93	86
ONI6	1365	Onion Creek at Pfulman Ranch	2004	85	89	72	99	97	88	99	77	88
ONI1	1366	Onion @ South Austin Regional WWTP	2007	52	82	59		89	75	100	50	71
ONI2	255	Onion @ McKinney Falls DS Lower Falls	2007	63	82	83	70	85	91	96	86	79
ONI3	241	Onion Creek US of Footbridge (OC3)	2007	62	82	70	83	69	91	100	81	76
ONI4	236	Onion @ Twin Creeks Road (OC1)	2007	70	82	63	89	78	95	96	94	80
ONI5	612	Onion Creek near Driftwood (Hwy 150)	2007	69	82	50	100	91	99	98	100	82
ONI6	1365	Onion Creek at Pfulman Ranch	2007	77	82	69	97	84	93	99	87	84
ONI1	1366	Onion @ South Austin Regional WWTP	2010	63	87	84	91	87	94	98	89	84
ONI2	255	Onion @ McKinney Falls DS Lower Falls	2010	72	87	87	91	89	95	95	95	87
ONI3	241	Onion Creek US of Footbridge (OC3)	2010	65	87	67	85	70	91	85	96	78
ONI4	236	Onion @ Twin Creeks Road (OC1)	2010	79	87	85	94	82	100	100	99	88
ONI5	612	Onion Creek near Driftwood (Hwy 150)	2010	80	87	83	97	97	96	92	100	90
ONI6	4595	Onion @ Hudson Tract	2010	82	87	93	100	89	89	91	87	90
ONI1	1366	Onion @ South Austin Regional WWTP	2012	54	86	60	93	91	90	100	80	79
ONI2	255	Onion @ McKinney Falls DS Lower Falls	2012	61	86	57	87	88	88	100	76	78
ONI3	241	Onion Creek US of Footbridge (OC3)	2012	55	86	56	97	74	98	100	95	74
ONI4	236	Onion @ Twin Creeks Road (OC1)	2012	64	86	42	81	89	96	97	95	76
ONI5	612	Onion Creek near Driftwood (Hwy 150)	2012	79	86	67	94	96	92	84	100	86
ONI6	4595	Onion @ Hudson Tract	2012	75	86	73	94	89	97	100	94	86
ONI1	1366	Onion @ South Austin Regional WWTP	2014	51	83	55	85	83	96	99	92	76
ONI2	255	Onion @ McKinney Falls DS Lower Falls	2014	64	83	59	89	72	91	86	95	76
ONI3	241	Onion Creek US of Footbridge (OC3)	2014	59	83	48	89	83	82	87	76	74
ONI4	236	Onion @ Twin Creeks Road (OC1)	2014	65	83	63	93	89	96	100	92	82
ONI5	612	Onion Creek near Driftwood (Hwy 150)	2014	81	83	88	98	87	88	92	84	88
ONI6	4595	Onion @ Hudson Tract	2014	79	83	71	95	82	91	92	90	84
ONI1	1366	Onion @ South Austin Regional WWTP	2016	46	83	54	94	86	82	100	64	74
ONI2	255	Onion @ McKinney Falls DS Lower Falls	2016	62	83	70	98	97	90	98	81	83
ONI3	241	Onion Creek US of Footbridge (OC3)	2016	61	83	58	97	84	88	96	80	79
ONI4	236	Onion @ Twin Creeks Road (OC1)	2016	79	83	83	98	92	92	97	87	88
ONI5	612	Onion Creek near Driftwood (Hwy 150)	2016	77	83	75	98	99	86	96	75	86
ONI6	4595	Onion @ Hudson Tract	2016	78	83	79	98	93	79	98	60	85

* 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

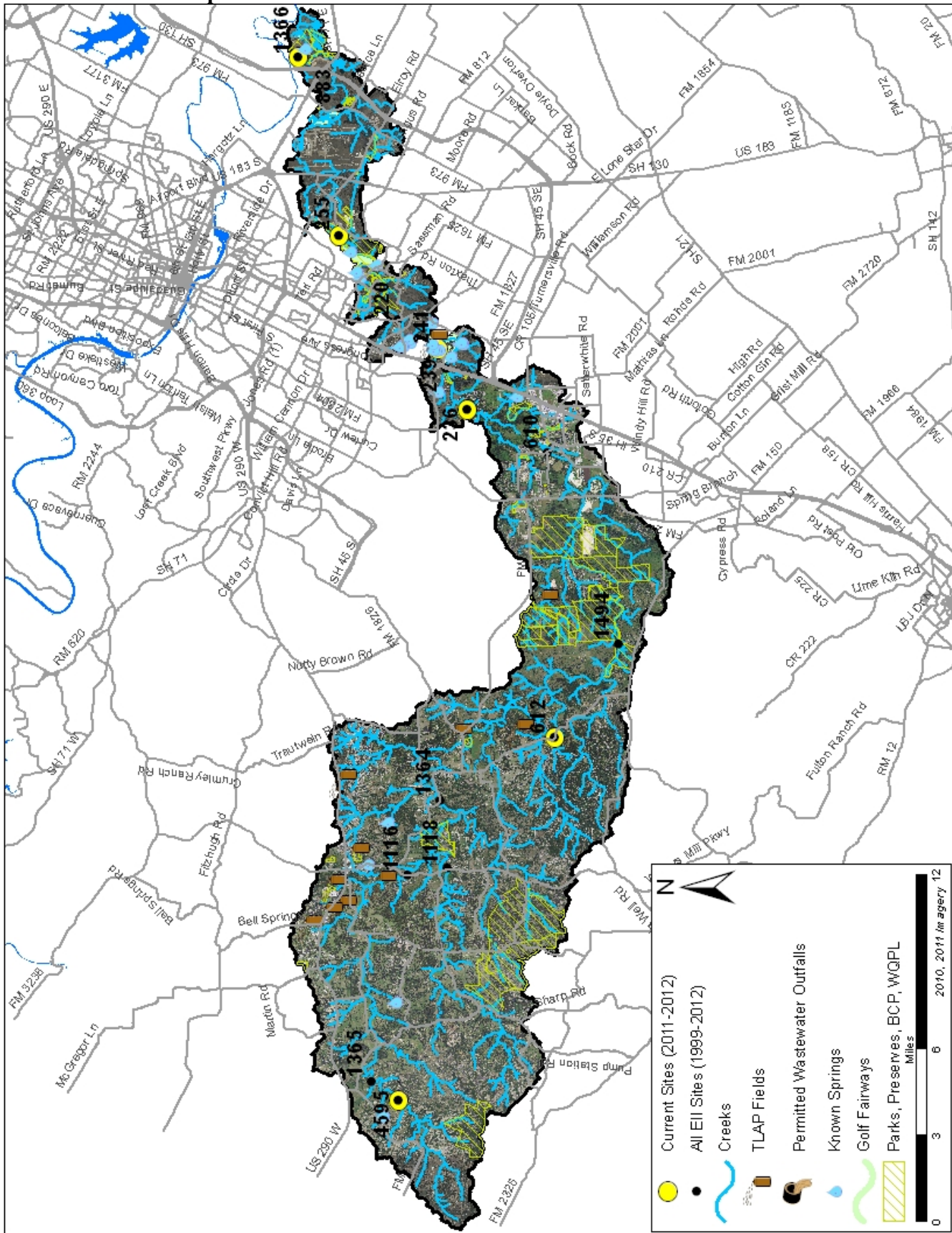
Onion Creek Watershed

Land Use Map



Onion Creek Watershed

Aerial Map



Onion 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	EII Reach	Date	Temp.	flag	Cond.	flag	pH	flag	D.O.	flag	E. Coli	flag
Onion	1366	ONI1	01/12/2016	12.1		592		8.00		10.1	R	75.9	
Onion	1366	ONI1	04/12/2016	22.0		698		7.88		8.2		44.3	
Onion	1366	ONI1	05/12/2016	25.6		595		7.95		8.1			
Onion	1366	ONI1	07/12/2016	29.2		653		7.81		6.6	R	114.0	
Onion	1366	ONI1	09/13/2016	27.2		649		7.84		7.3		114.0	
ONI1 Mean				23.2		638		7.90		8.1		87.05	
Onion	255	ONI2	01/12/2016	10.2		567		8.19		11.1	R	184.0	
Onion	255	ONI2	04/12/2016	21.6		673		7.97		8.0		24.6	
Onion	255	ONI2	05/12/2016	26.7		577		8.14		9.2	R		
Onion	255	ONI2	07/12/2016	29.2		589		8.00		7.4	R	57.3	
Onion	255	ONI2	09/13/2016	27.7		593		8.03		7.3		18.9	
ONI2 Mean				23.1		600		8.07		8.6		71.2	
Onion	241	ONI3	01/12/2016	11.2		483		7.85				52.0	
Onion	241	ONI3	04/12/2016	21.3		628		7.82		9.8		32.3	
Onion	241	ONI3	05/12/2016	24.8		538		7.79		6.8	R		
Onion	241	ONI3	07/12/2016	28.3		590		7.78		6.7		124.0	
Onion	241	ONI3	09/13/2016	28.4		600		7.88		8.1		270.0	
ONI3 Mean				22.8		568		7.82		7.8		119.6	
Onion	236	ONI4	01/12/2016	10.7		511		8.13				41.7	
Onion	236	ONI4	04/12/2016	21.6		571		7.74		6.5		41.7	
Onion	236	ONI4	05/12/2016	22.8		480		8.09		9.2			
Onion	236	ONI4	07/12/2016	28.9		552		7.93		7.8		12.5	
Onion	236	ONI4	09/13/2016	28.5		569		7.77		7.1		18.1	
ONI4 Mean				22.5		537		7.93		7.6		28.5	
Onion	612	ONI5	01/12/2016	11.2		588		8.01		10.6		61.3	
Onion	612	ONI5	04/12/2016	21.1		572		8.00		7.4		44.8	
Onion	612	ONI5	05/12/2016	23.7		544		7.98		8.5			
Onion	612	ONI5	07/12/2016	27.7		537		7.94		7.1		35.0	
Onion	612	ONI5	09/13/2016	28.0		559		7.95		7.8		18.9	
ONI5 Mean				21.9		560		7.98		8.3		40.0	
Onion	4595	ONI6	01/12/2016	9.1		583		8.33		10.4		84.0	
Onion	4595	ONI6	04/12/2016	21.2		560		8.09		8.4		12.1	
Onion	4595	ONI6	05/12/2016	21.2		526		8.11		8.5			
Onion	4595	ONI6	07/12/2016	27.2		487		8.23		6.9		21.6	
Onion	4595	ONI6	09/13/2016	27.1		468		8.10		7.5		24.6	
ONI6 Mean				21.2		525		8.17		8.3		35.6	
Onion Mean				22.4		571		7.98		8.2		63.6	

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

Onion Creek Watershed

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

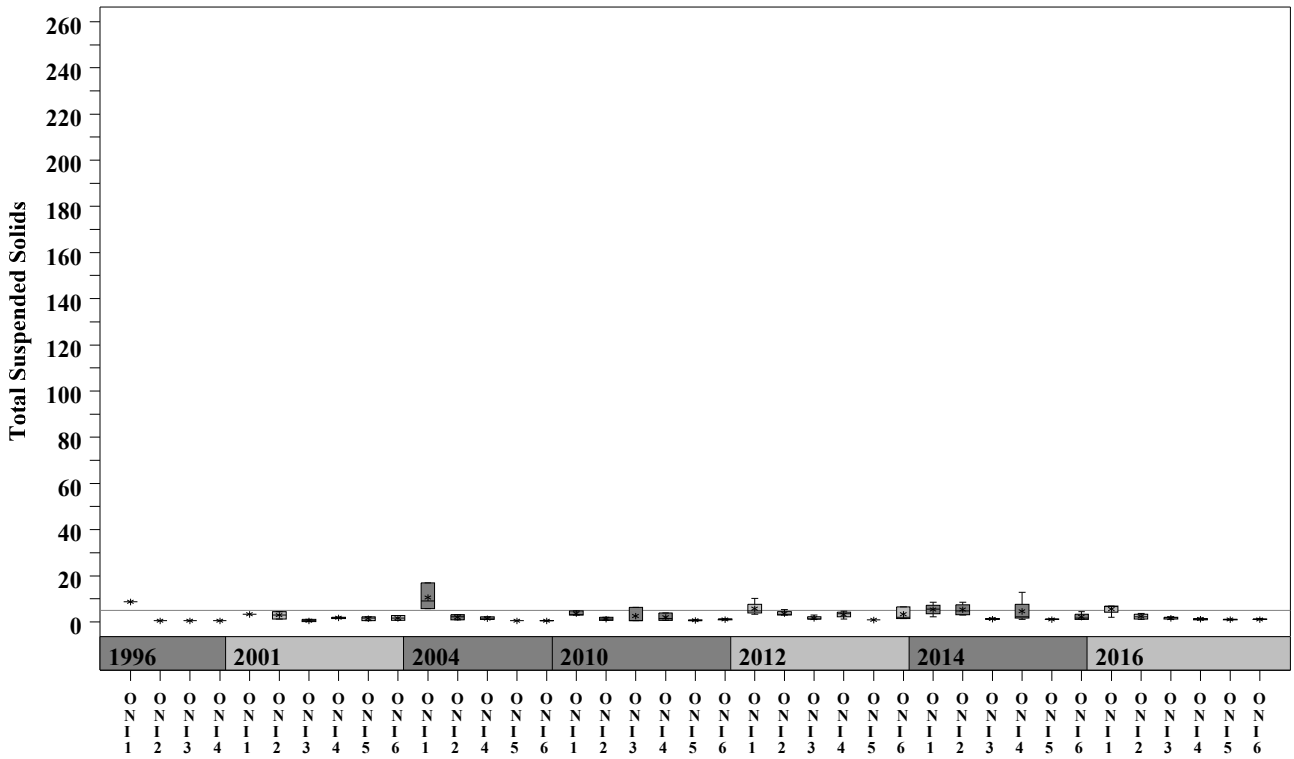
Watershed	Site	EII Reach	Date	NH3-N		NO3/NO2		Ortho-P		T.S.S		Turb.	
				<	flag	<>	flag	<>	flag	<>	flag		
Onion	1366	ONI1	01/12/2016		0.029		0.66		0.004		6.8		6.0 R
Onion	1366	ONI1	04/12/2016		0.054		0.68		0.004		6.9		5.9
Onion	1366	ONI1	05/12/2016										
Onion	1366	ONI1	07/12/2016		0.353		0.81		0.004		2.1		7.1 R
Onion	1366	ONI1	09/13/2016		0.070		0.68		0.004		6.5		11.3
ONI1 Mean					0.127		0.71		0.004		5.6		7.6
Onion	255	ONI2	01/12/2016	<J	0.008		0.62		0.004	<J	1.1		1.4 R
Onion	255	ONI2	04/12/2016		0.022		0.94		0.004		3.7		4.6
Onion	255	ONI2	05/12/2016										
Onion	255	ONI2	07/12/2016	<J	0.008		0.79		0.004		2.9		2.6 R
Onion	255	ONI2	09/13/2016	<J	0.008		0.61		0.004		1.6		4.1
ONI2 Mean					0.012		0.74		0.004		2.3		3.2
Onion	241	ONI3	01/12/2016	<J	0.008		0.52		0.004	<J	1.0		3.0 R
Onion	241	ONI3	04/12/2016	<J	0.008		0.40		0.004		1.9		1.8
Onion	241	ONI3	05/12/2016										
Onion	241	ONI3	07/12/2016		0.037		0.75		0.011 R		2.1		5.2 R
Onion	241	ONI3	09/13/2016	<J	0.008		0.65		0.004		1.7		2.1
ONI3 Mean					0.015		0.58		0.006		1.7		3.0
Onion	236	ONI4	01/12/2016	<J	0.008		0.352		0.004	<J	1.0		0.6 R
Onion	236	ONI4	04/12/2016	<J	0.008	<J	0.01		0.004		1.8		2.2
Onion	236	ONI4	05/12/2016										
Onion	236	ONI4	07/12/2016	<J	0.008		0.18		0.004	<J	1.0		1.1 R
Onion	236	ONI4	09/13/2016	<J	0.008		0.15		0.004	<J	1.0		2.7
ONI4 Mean					0.008		0.17		0.004		1.2		1.6
Onion	612	ONI5	01/12/2016	<J	0.008		0.37		0.004	<J	1.0		0.9 R
Onion	612	ONI5	04/12/2016	<J	0.008		0.10		0.004	<J	1.0		0.4
Onion	612	ONI5	05/12/2016										
Onion	612	ONI5	07/12/2016	<J	0.008		0.15		0.004	<J	1.0		3.0 R
Onion	612	ONI5	09/13/2016		0.021		0.13		0.004	<J	1.0		2.5
ONI5 Mean					0.011		0.19		0.004		1.0		1.7
Onion	4595	ONI6	01/12/2016	<J	0.008		0.21		0.004	<J	1.1		0.8 R
Onion	4595	ONI6	04/12/2016	<J	0.008		0.14		0.004		1.5		2.1
Onion	4595	ONI6	05/12/2016										
Onion	4595	ONI6	07/12/2016		0.027		0.25		0.004	<J	1.0		2.2 R
Onion	4595	ONI6	09/13/2016	<J	0.008	<J	0.01		0.004	<J	1.0		1.8
ONI6 Mean					0.013		0.15		0.004		1.2		1.7
Onion Mean					0.031		0.42		0.004		2.2		3.1

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

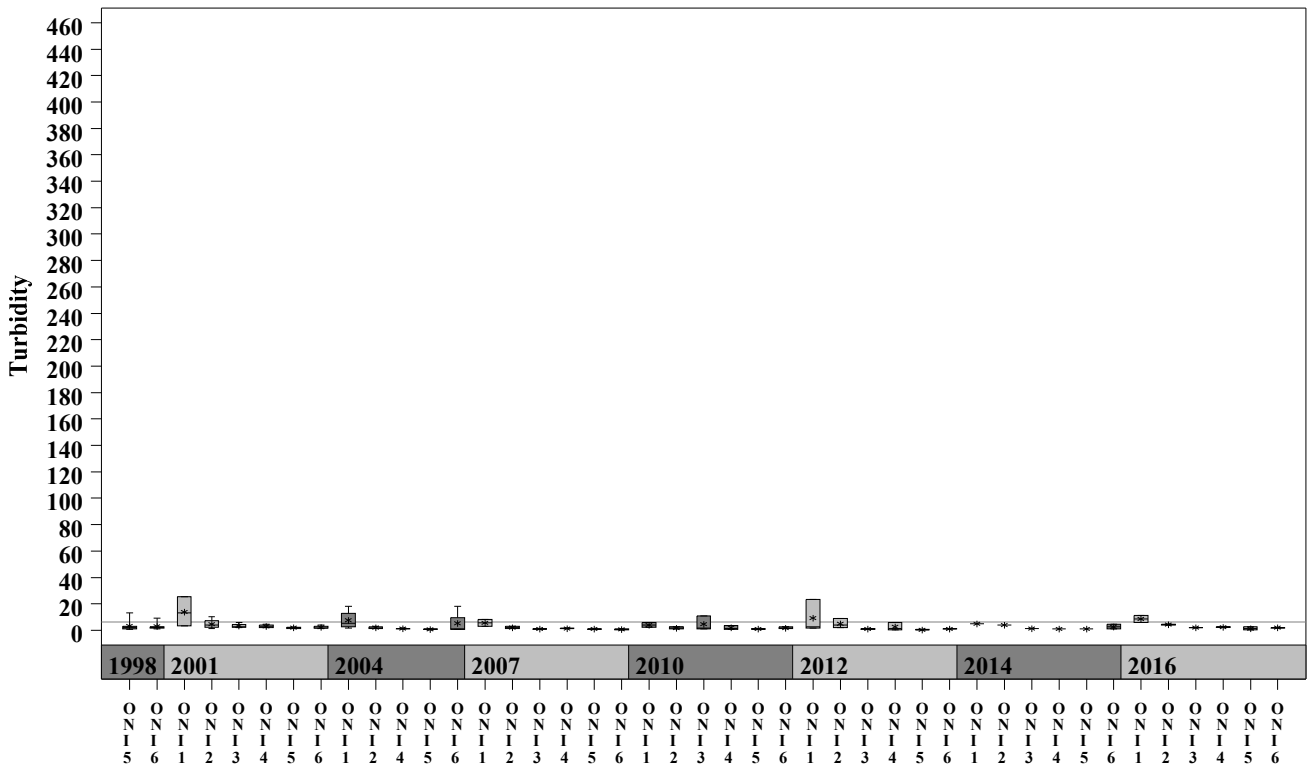
Summary Statistics for all 2015-2016 E.I.I. Sites Combined				
Parameter	2015-2016 Average	2015-2016 Minimum	2015-2016 Maximum	1 Standard Deviation Above
NH3-N (mg/l)	0.018	0.008	0.881	0.085
NO3-N (mg/l)	1.14	0.01	12.0	3.16
Ortho-P (mg/l)	0.016	0.004	0.661	0.08
T.S.S. (mg/l)	3.7	1.0	58.2	9.7
Turbidity (NTU)	4.4	0.2	98.6	11.7

Onion Creek Watershed

Data Summary Graphs – Total Suspended Solids and Turbidity (Downstream to Upstream by Year)
 Parameter = **TOTAL SUSPENDED SOLIDS** Unit = **mg/L** Watershed = **Onion**



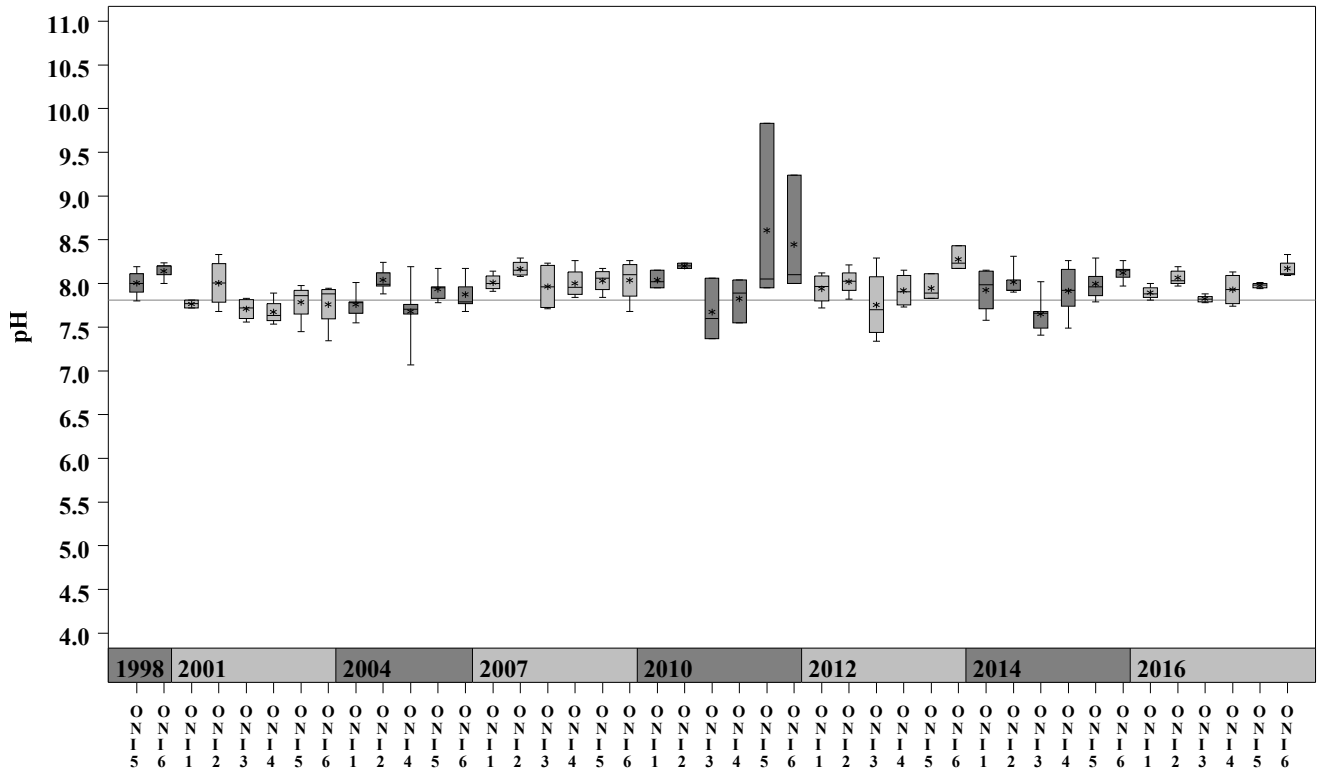
Parameter = **TURBIDITY** Unit = **NTU** Watershed = **Onion**



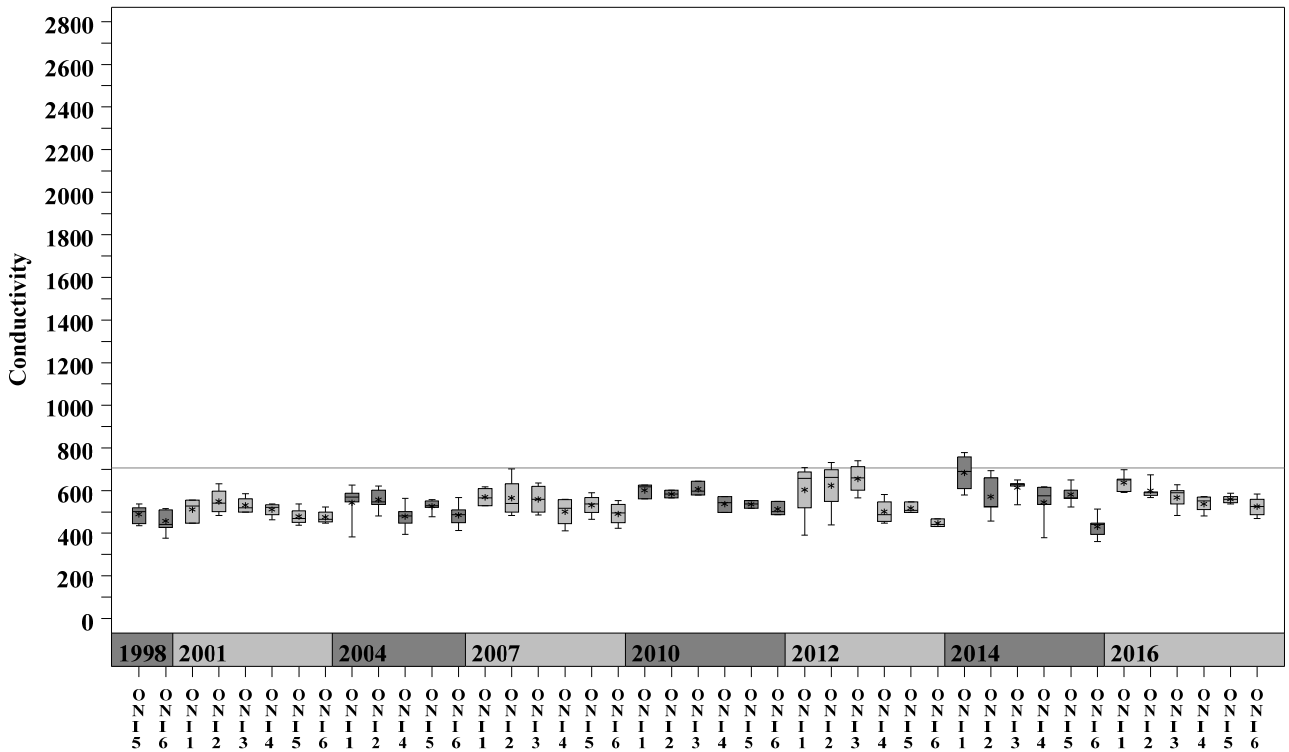
Onion Creek Watershed

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

Parameter = pH Unit = Standard Units Watershed = Onion



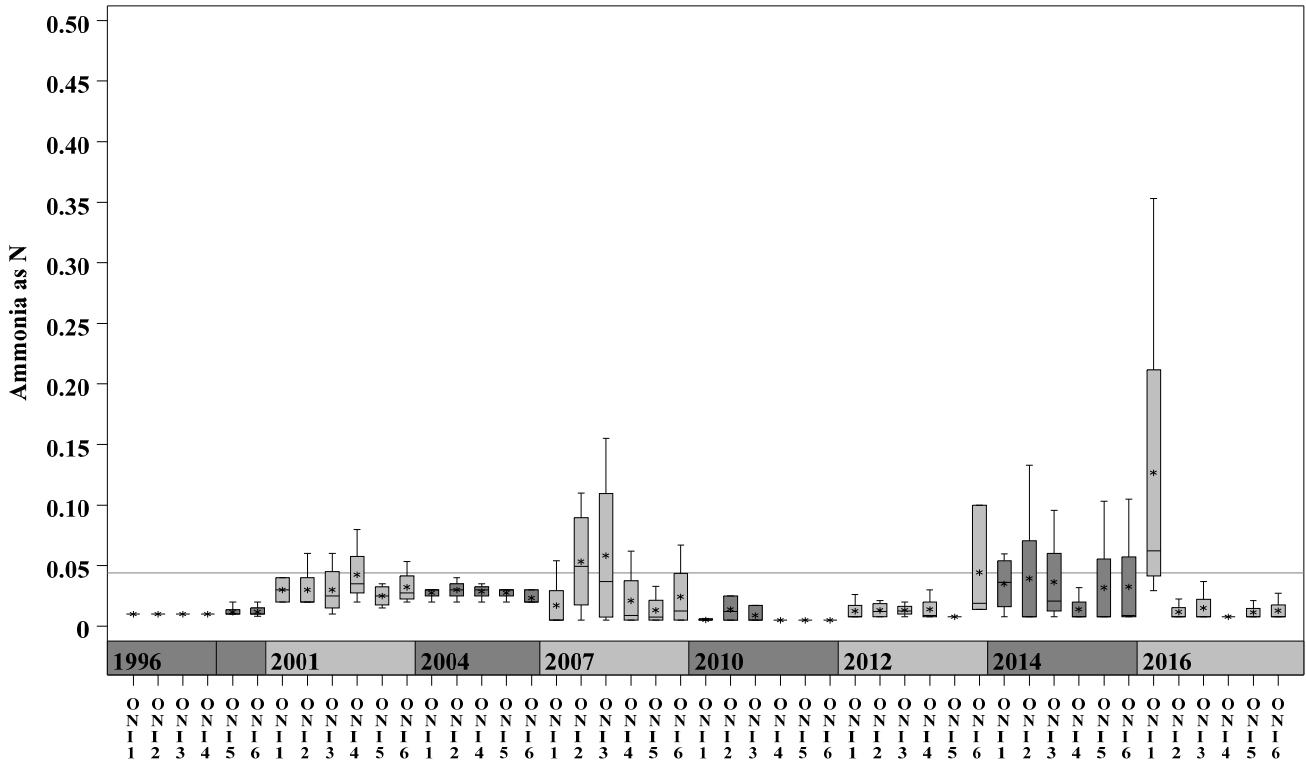
Parameter = CONDUCTIVITY Unit = uS/cm Watershed = Onion



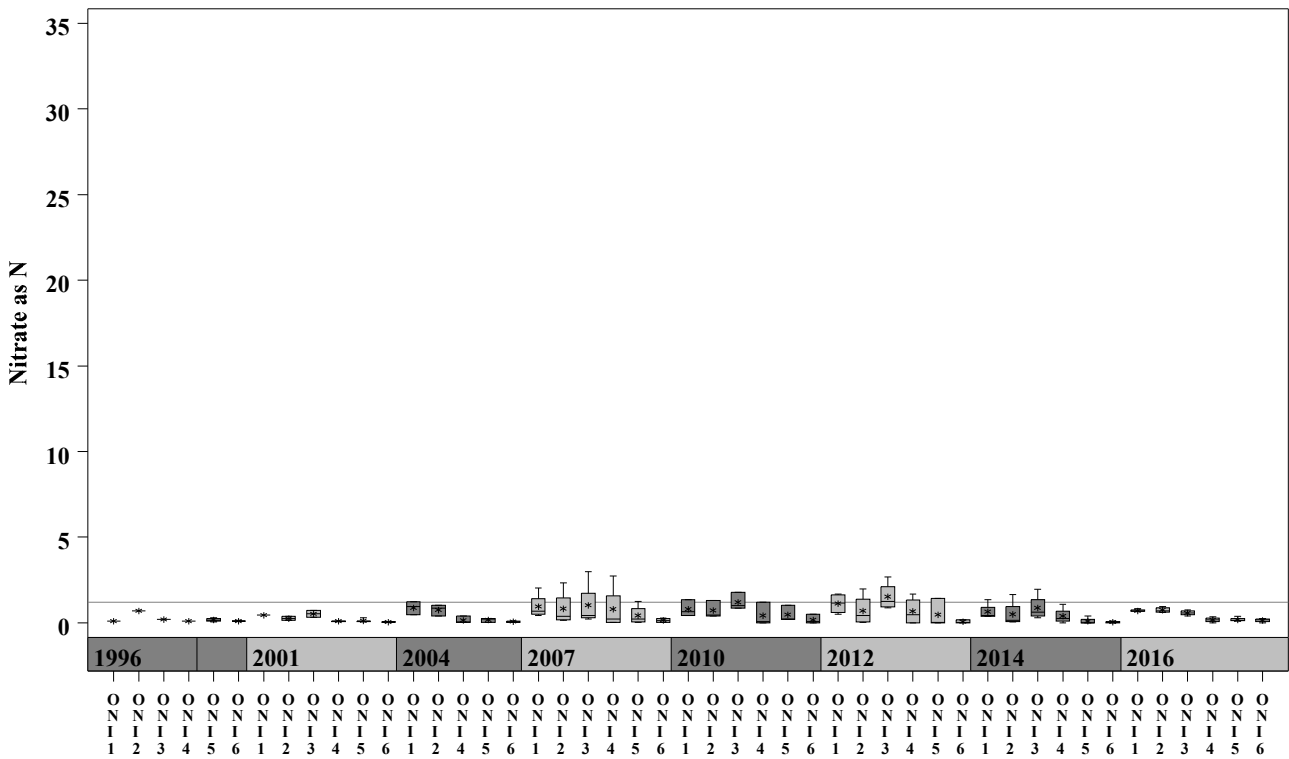
Onion Creek Watershed

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

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



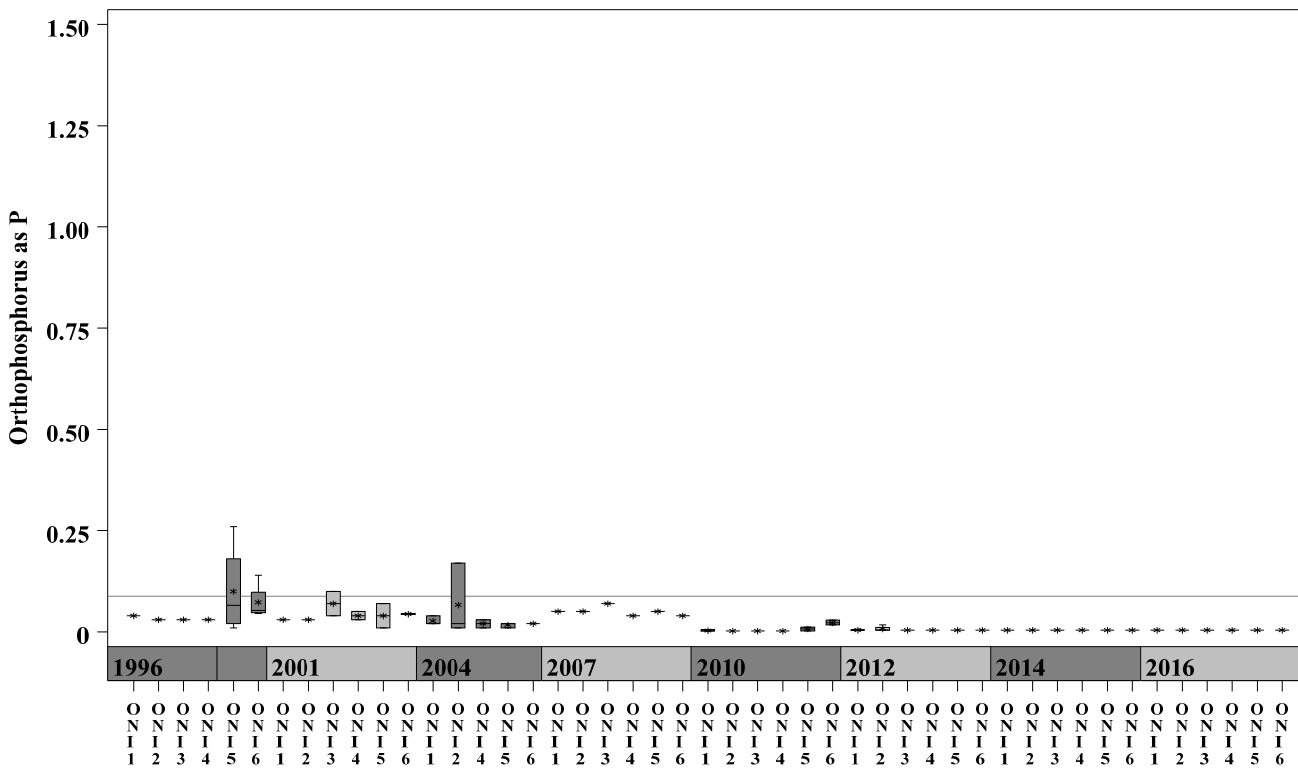
Parameter=NITRATE AS N Unit=mg/L Watershed=Onion



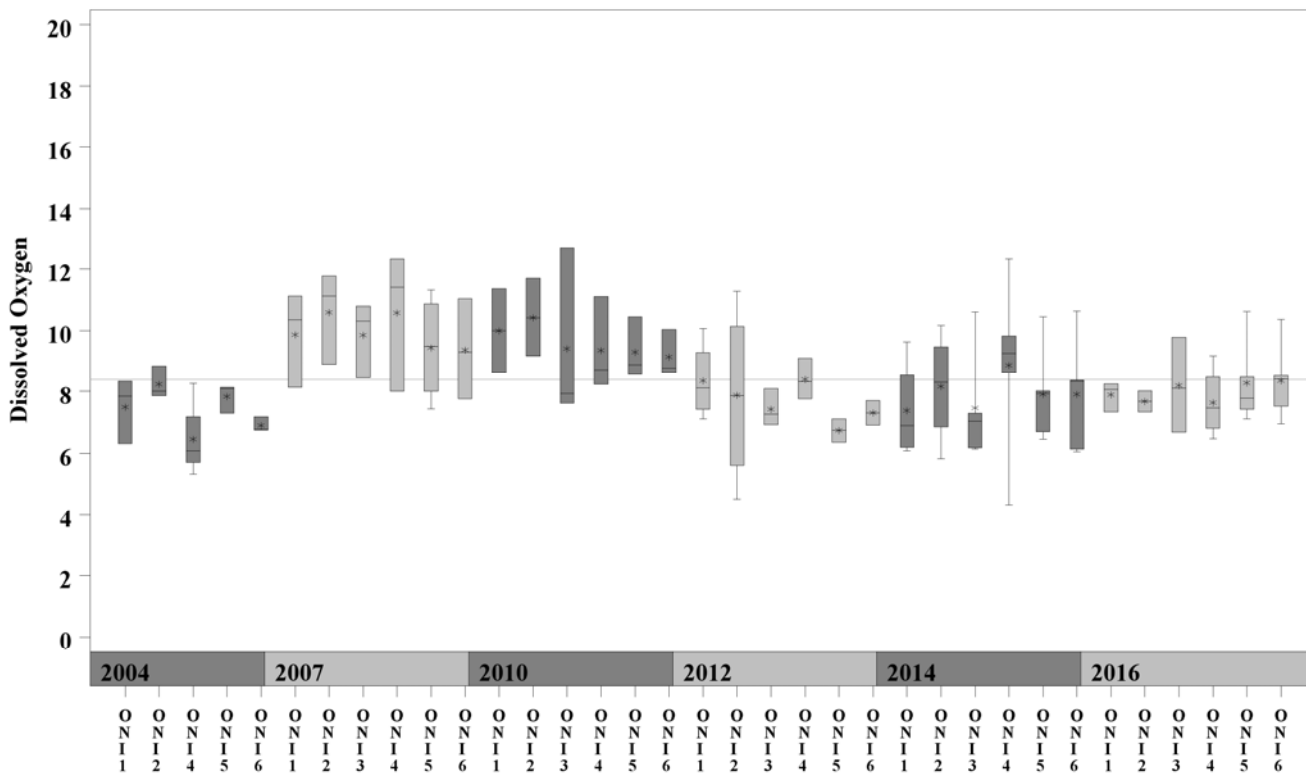
Onion Creek Watershed

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

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

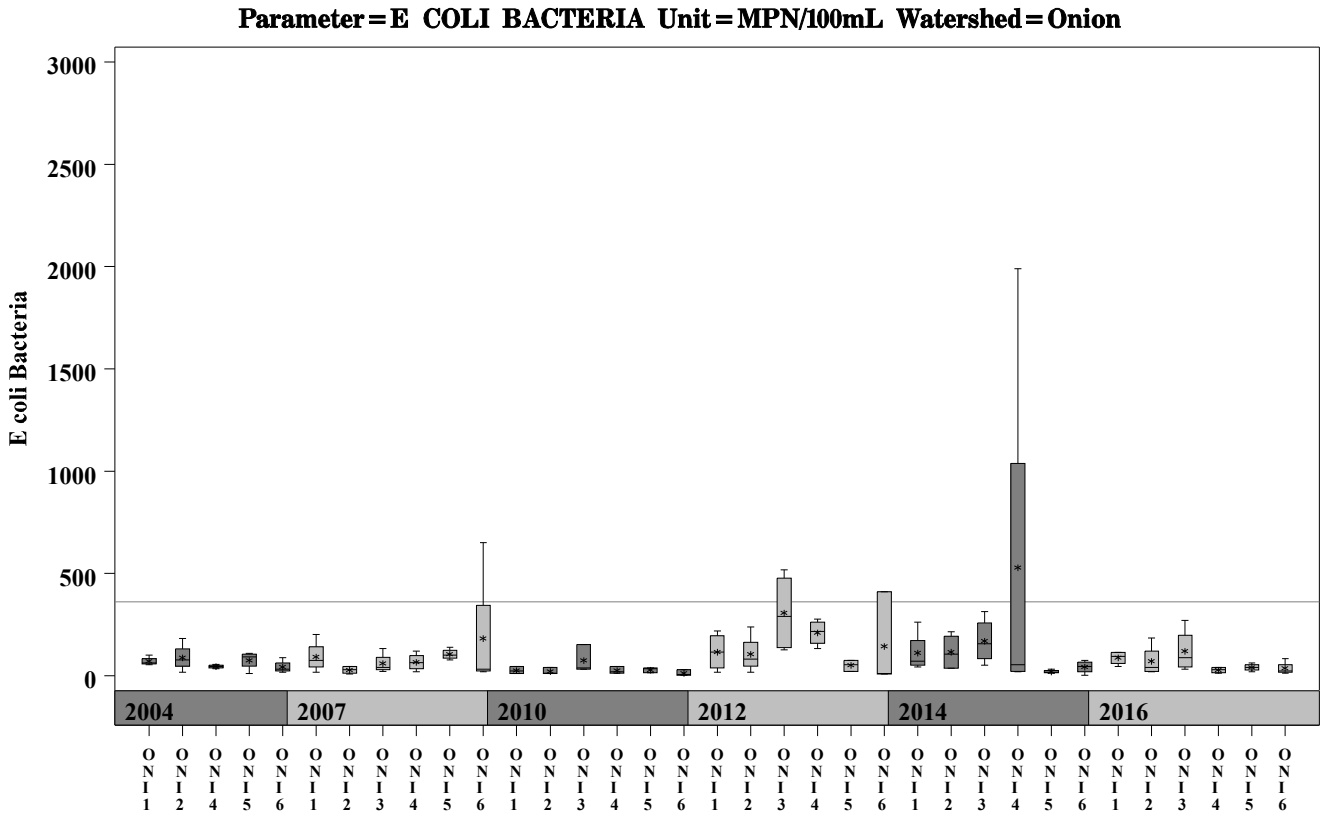


Parameter = DISSOLVED OXYGEN Unit = mg/L Watershed = Onion



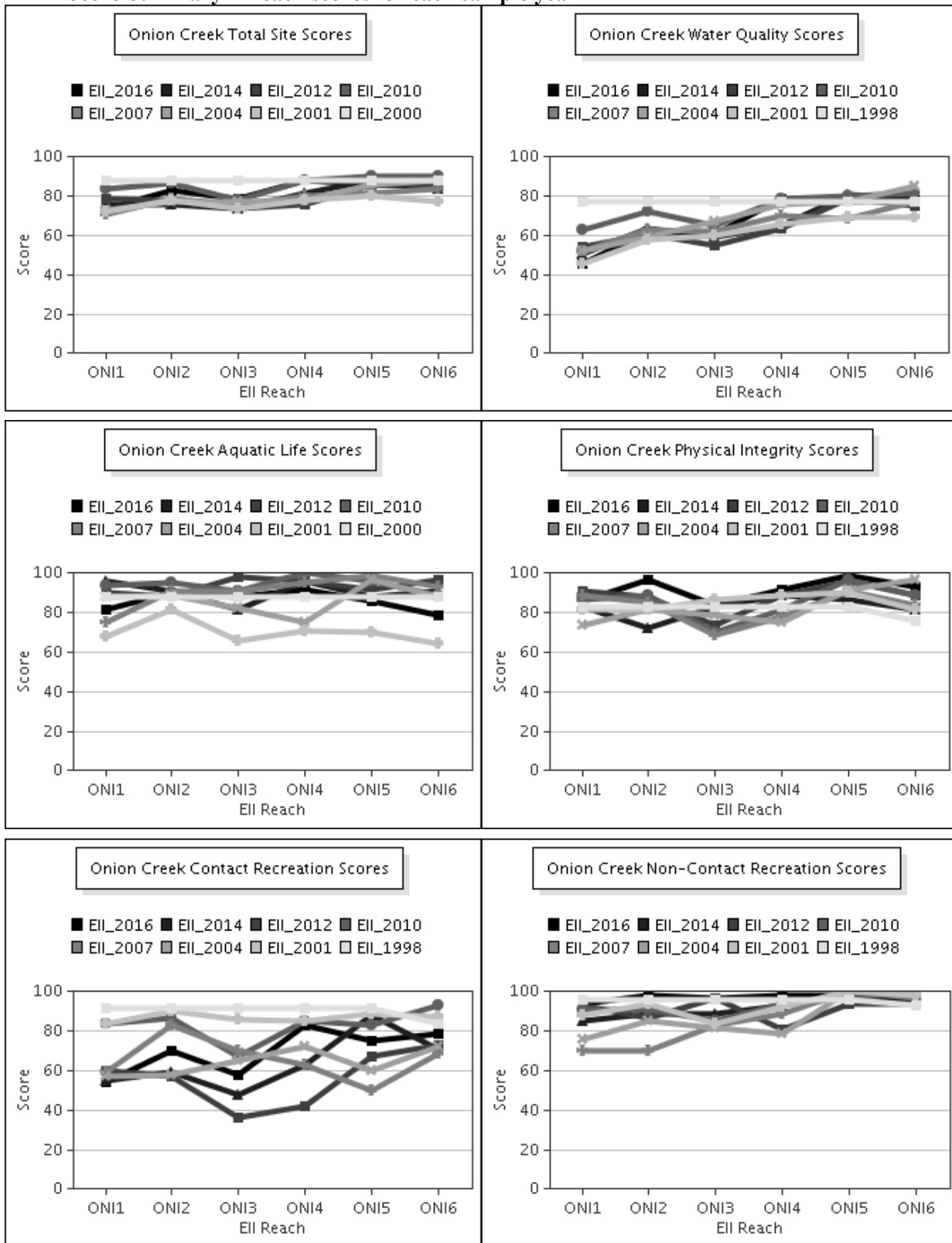
Onion Creek Watershed

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



Onion Creek Watershed

Score Summary – Reach scores for each sample year



Onion Creek Watershed

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

Benthic Macroinvertebrates - Onion Creek			ONI @ Hudson Tract (4595) 05/09/2016 (WRE)	ONI nr Driftwood (612) 05/13/2016 (WRE)	ONI @ Twin Cks (236) 05/06/2016 (WRE)	ONI us Footbridge (241) 05/10/2016 (WRE)	ONI @ Mckinney Lower Falls (255) 05/10/2016 (WRE)	ONI @ SAR (1366) 05/12/2016 (WRE)
Benthic Macroinvertebrate ID	PTI	FFG						
Marilia	0	SH			1			
Perlesta	0	P	1		2			
Culoptila	1	SC						1
Erpetogomphus	1	P	5					
Chimarra	2	FC	41	109	187	206	81	7
Helicopsyche	2	SC			1			
Hexacylloepus Ferrugineus	2	CG,SC	1	3				
Hydroptila	2	PI,SC					2	1
Microcyloepus Pusillus	2	CG,SC	2			2		
Neelmis Caesa	2	CG,SC	1					
Thraulodes Gonzalesi	2	CG,SC		2				17
Traverella Presidana	2	FC	1					
Isonychia	3	FC	19	4				2
Baetodes	4	SC			4			
Camelobaetidius	4	CG	21	8	34	11	15	6
Fallceon	4	CG,SC	19	12	28	43	173	69
Ithytrichia Clavata	4	SC	1					
Macrelmis	4	CG,SC	2					
Mayatrachia	4	SC		1				
Neochoroterpes	4	CG	1		3		1	127
Ostracoda	4	CG,FC			2			
Psephenus	4	SC			13	4		2
Simulium	4	FC	3		8	39	37	24
Smicridea	4	FC				2	1	
Vacupernius Packeri	4	CG	1					
Hydropsyche	5	FC	8					
Lutrochus	5	CG	1	2				
Petrophila (Moth)	5	SC			4	2	1	
Tricorythodes	5	CG	20			1	8	2
Argia	6	P	18	3	3	1	3	1
Brechmorhoga Mendax	6	P	1					
Cheumatopsyche	6	FC	30	39	141	83	71	17
Corbicula Fluminea	6	FC	2	5		9		5
Chironomidae	6	FC,P	21	4	12	9	19	
Fossaria	6	SC	1	1				
Hetaerina	6	P	3					
Hydracarina	6		6	4	1	4	15	11
Rhagovelia	6	P	1				3	
Stenonema Femoratum	6	CG,SC	1	1				
Tanypodinae	6	P				1	2	1
Bezzia / Palpomyia	7	CG,P	1					
Stenelmis	7	CG,SC			12	5	10	16
Hyalella	8	CG,SH		2	1			
Oligochaeta	8	CG		3	1	2	1	4
Physella	9	SC	1				1	
Ceratopogon							2	
Dugesia		CG,P	2	8	43	46	11	13
Gyretes								1

Onion Creek Watershed

Site Photographs



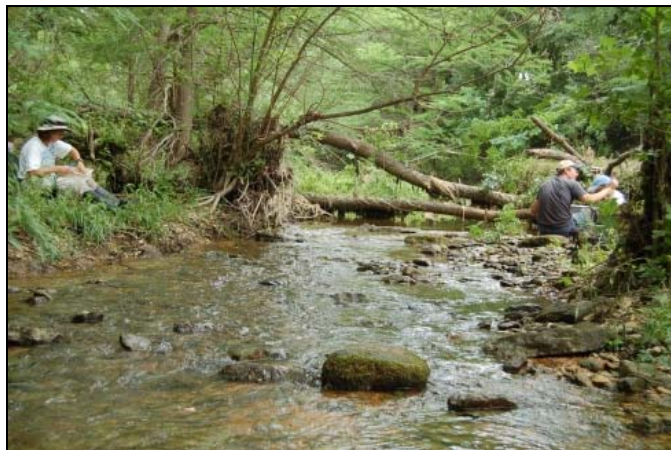
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1365_t3-us-08_07_2007



612_00-ds-05_25_2010610



236_00-ur-05_25_2010



239_t00-ds-03_06_2002



241_00-us-05_27_2010

Onion Creek Watershed

Site Photographs



220_t00-ds-03_04_2002



255_00-us-05_19_2010611



1364_t00-ds-03_17_2003



1366_00-us-05_28_2010



1494_t00-us-03_06_2002



610_t00-us-05_20_2004