



(R-8) EMPLOYING BIO-ZYME PROTOCOLS TO IMPROVE LAKE AND WATERWAYS WATER QUALITY IN FOUR REPRESENTATIVE SITES v2

FLORIDA EFFICACY DATA

EMPLOYING BIO-ZYME PROTOCOLS TO IMPROVE LAKE AND WATERWAYS WATER QUALITY IN FOUR REPRESENTATIVE SITES

28 AUGUST 2016

BOCA WEST BOCA RATON, FLORIDA

LAKE AND WATERWAYS SYSTEM SIXTY-NINE LAKES, 215 ACRES

GEORGETOWN HOMEOWNERS ASSOCIATION DAYTONA BEACH, FLORIDA LAKE #1, 2.7 ACRES

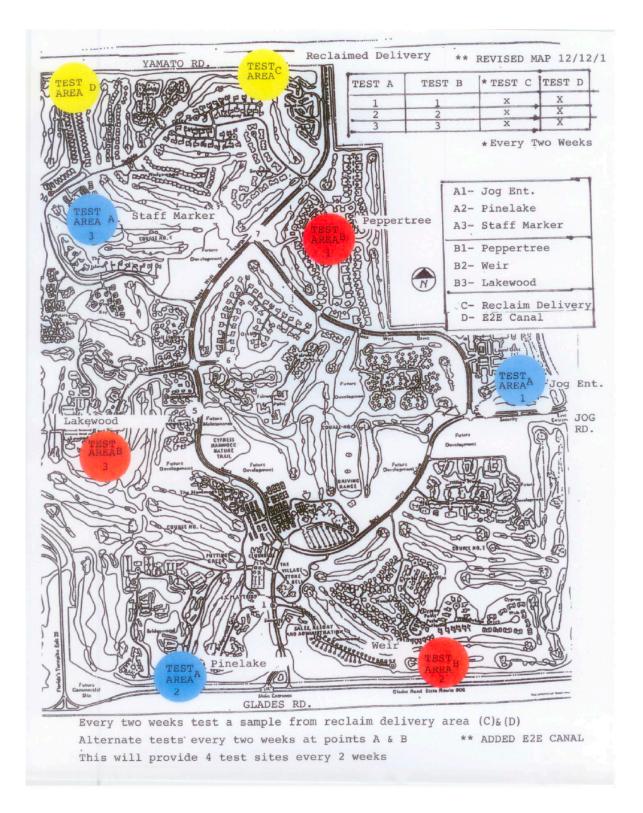
GEORGETOWN HOMEOWNERS ASSOCIATION DAYTONA BEACH, FLORIDA LAKE #2, 1.3 ACRES

PINE ISLAND HOMEOWNERS ASSOCIATION NEW SMYRNA BEACH, FLORIDA LAKE, 3.0 ACRES



Visual Rating -	Visual Rating - Water Quality Report for Boca West, Boca Raton, FL								
Sixty-nine Lakes and 215 Acres of Water in the Boca West Lakes and Waterways System									
Year	2009	2010	2011	2012	2013	2014	2015	2016	
January								10	
February								9	
March								8	
April								9	
May								9	
June								9	
July									
August							4		
September							4		
October							5		
November							9+		
December							10		
Scale: grade w	aterways 1-	10 with 1 b	eing poor.						
Take into cons	ideration: r	esidents' co	mplaints, a	lgae coverag	e, and wate	er clarity			







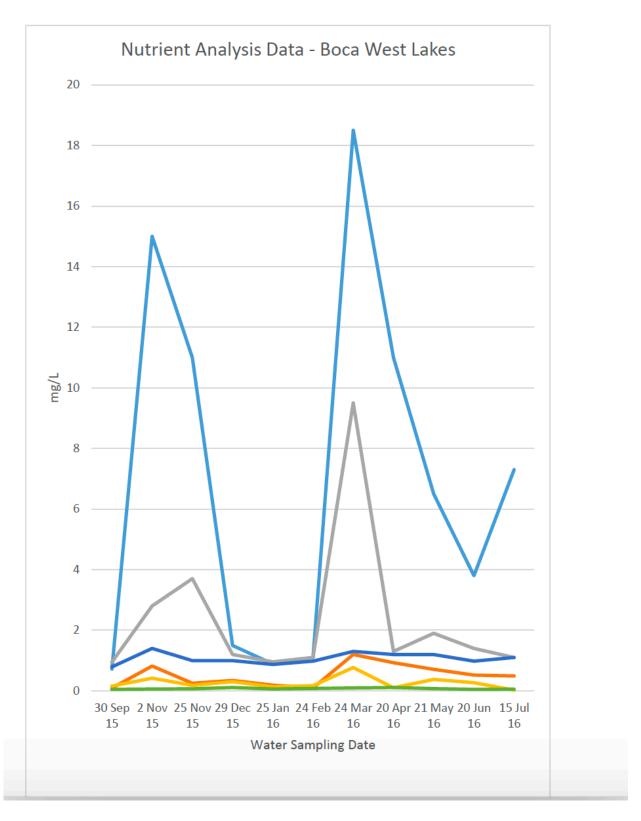
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Reclaimed Water Flows - City of Boca Raton –							
Received by Boca West Waterways							
Month Total Monthly Flow,							
Million Gallons							
Oct 15	21.001						
Nov 15	43.395						
Dec 15	0.851						
Jan 16	2.949						
Feb 16	5.170						
Mar 16	42.587						
Apr 16	21.156						
May 16	20.137						
Jun 16	6.911						

Nutrient Ana	alysis Data	a						
Month	N-C	P-C	N-A3	P-A3	N-A2	P-A2		
30 Sep 15	0.720	0.090	0.950	0.160	0.790	0.050		
2 Nov 15	15.000	0.820	2.800	0.420	1.400	0.061		
25 Nov 15	11.000	0.250	3.700	0.180	1.000	0.067		
29 Dec 15	1.500	0.340	1.200	0.300	1.000	0.110		
25 Jan 16	0.890	0.190	0.960	0.130	0.870	0.063		
24 Feb 16	1.100	0.093	1.100	0.170	0.980	0.080		
24 Mar 16	18.500	1.200	9.500	0.770	1.300	0.094		
20 Apr 16	11.000	0.930	1.300	0.100	1.200	0.110		
21 May 16	6.500	0.710	1.900	0.380	1.200	0.070		
20 Jun 16	3.800	0.520	1.400	0.270	0.980	0.050		
15 Jul 16	7.300	0.490	1.100	0.025	1.100	0.053		

Nutrient Analysis Data for Total Nitrogen (N) and Total Phosphorus (P) for water sampling stations: SP C (C), SP A3 (A3), and SP A2 (A2).





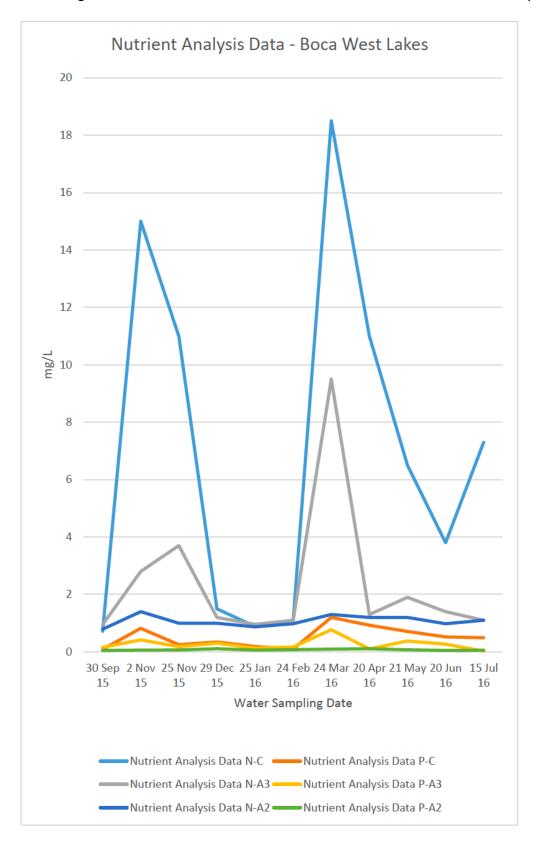


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Nutrient Analysis Data for Total Nitrogen (N) and Total Phosphorus (P) for water sampling stations: SP C (C), SP A3 (A3), and SP A2 (A2).





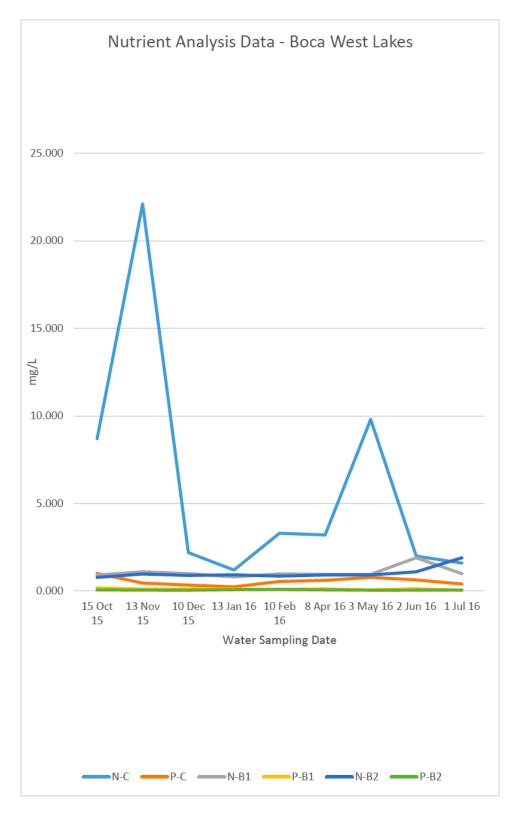


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Nutrient Analysis Data						
Month	N-C	P-C	N-B1	P-B1	N-B2	P-B2
15 Oct 15	8.700	1.000	0.920	0.180	0.780	0.063
13 Nov 15	22.100	0.460	1.100	0.110	0.970	0.050
10 Dec 15	2.200	0.340	1.000	0.120	0.890	0.052
13 Jan 16	1.200	0.240	0.810	0.110	0.930	0.073
10 Feb 16	3.300	0.550	0.980	0.098	0.850	0.087
8 Apr 16	3.200	0.610	0.950	0.120	0.920	0.070
3 May 16	9.800	0.780	0.950	0.065	0.920	0.051
2 Jun 16	2.000	0.640	1.900	0.130	1.100	0.050
1 Jul 16	1.600	0.400	0.990	0.050	1.900	0.050

Nutrient Analysis Data for Total Nitrogen (N) and Total Phosphorus (P) for water sampling stations: SP C (C), SP B1 (B1), SP B2 (B2).







Georgetown	HOA Lake	e #1						
Off Beville Ro	oad in Day	ytona Beach	n, Volusia	County, Fl				
Visual Rating	- Water	Quality Rep	ort for Ge	orgetown	НОА			
Lake #1 is ap	proximat	ely 2.7 acre	s					
Year	2011	2012	2013	2014				
January	9	10	9	10	10	10		
February	8	10	9	10	10	10		
March	7	6	7	10	10	10		
April	7	6	7	10	10	10		
May	7	8	6	10	10	10		
June	7							
July	7	7	7					
August	7	7	8	10	10			
September	8	7	10	10	10			
October	9	8	10	10	10			
November	9	8	10	10	10			
December	9	9	10	10	10			
Scale: grade	waterway	/s 1-10 with	1 being p	oor.				
Take into cor	nsideratio	n: residents	s' complai	nts, algae	coverage,	and water	clarity,	
Began trying	the Bio-Z	yme in Lake	#1 and #	4 (June 20)11)			
Bio-Zyme Use	ed: Bulk c	lry formulat	ion and E	coSocks				
Lakes #1 and	#2 are tv	vo blocks ap	part on the	e same Ro	ad in the	same HOA		
Lake #1 Had	been a pr	oblem lake	as far bac	k as the 1	980's			



Off Beville Ro	ad in Dayt	ona Beach,	Volusia Co	unty, FL						
Visual Rating	/isual Rating - Water Quality Report for Georgetown HOA									
Lake #2 is on	ake #2 is on Yorktowne Drive. There is no aeration in this lake.									
Year										
January	7	7	2	6						
February	6	6	2	6						
March	6	6	3	7						
April	6	5	4	8						
May	7	5	4	9						
June	7	5	5	10						
July	6	5	6	10						
August	5	4	6	10						
September	5	4	3							
October	5	5	4							
November	6	5	6							
December	7	5	6							
Scale: grade	waterways	1-10 with 1	L being poo	r.						
Take into cor	nsideration	: residents'	complaints	, algae cove	rage, and w	ater clarity	1,			
Bio-Zyme Use	ed: Began f	full scale in	Sept of 201	.5 using Bulk	Dry Formu	ation and	EcoSocks.			
Lake #1 and l	Lake #2 are	two blocks	s apart in th	ne same HOA	١.					



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	8/23/2016											
	Clear Water	s, Inc.										
	THE EI	THE EFFECTS OF BIO-ZYME ON A TYPICAL LAKE MANAGEMENT ACCOUNT										
	Georgetowr #4	n Homeownei	rs Association	, Lake #1, Lak	ke #2, Lake #3	, and	d Lake					
	The data cor Lake #4.	nsists of an ac	count with 4	lakes; Lake #	1, Lake #2, La	ke #	3, and					
	Lake #4 has	been on the	Bio-Zyme Pro	gram for the	entire time.							
	Lake #1 the costliest.	largest and co	ostliest until J	uly 2014. The	en Lake #2 be	cam	e the					
	Today the co	ostliest is Lak	e #3.									
12-Month Period	08/11- 07/12	08/12- 07/13	08/13- 07/14	08/14- 07/15	08/15-07/16	5						
Total Bio-Zyme Use	\$434.31	\$530.36	\$359.75	\$420.14	\$645.40							
Total Copper Use	\$1,250.23	\$1,262.89	\$819.28	\$1,175.20	\$359.89							
Total Chemical Use	\$2,489.43	\$2,496.71	\$2,099.05	\$2,411.61	\$2,011.09							

^{*} Jan-Mar 2015 Lake #2 surface was 50% covered with filamentous algae, slender pondweed, and planktonic algae

We did not achieve good clarity or clean it up until late summer. Low oxygen levels were an issue also.



Pine Island Locat	ion in Nev	v Smyrna	Beach, F	L, Volusia							
County											
Visual Rating - W	ater Qual	ity Report	t for the I	Pine Islan	d Ho	meow	ners As	sociat	ion		
(HOA) Lake											
Lake area is 3.0 a	cres. Bio-	Zyme Pro	gram beg	gan in Ma	y						
of 2014	1	1	1	1							
Year	2013	2014	2015	2016							
January	9	2	10	10							
February	9	2	10	10							
March	8	2	10	10							
April	7	3	10	10							
May	6	4	10	10							
June	8	9	10								
July	7	10	10								
August	7	10	10								
September	6	10	10								
October	6	10	10								
November	5	10	10								
December	2	10	10								
Cooley and lawy		10			\sqcup						
Scale: grade wat					Ш		<u> </u>				
Take into conside	eration: re	esidents' (complain	ts, algae c	ove	rage, a	nd wat	er			
clarity		1	1								
Products used: O)no 55 Co	llon Ric (Conorata	rwith 1 E	⊥ lh	Rio Go	norator				
EcoSocks	nie 33-Gai	ייים ווטווו	oenerato	i witti 4.5	ıD.	ыо-че	nerator				
Plus the Spray Bo	oat applica	ation of 1	lb. bulk E	Bio-Zyme	Dry	Formu	lation p	owde	r and 1	L gal. Bio	o-Zyme
Nitrifier monthly											