



PhosRID™ Passive Phosphorus Wastewater Removal System

	MA Site	GA Site
Influent Total P	4.2 mg/L	7.0 mg/L
Effluent Total P	0.43 mg/L	2.1 mg/L

The PhosRID™ system removes phosphorus from water through reductive iron dissolution and mineralization of phosphorus.

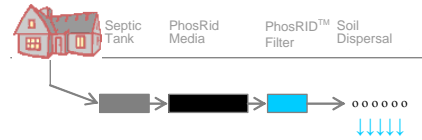
Septic System Test Center, MA Project

Project Description

Lombardo Associates, Inc. and the University of Waterloo have installed a demonstration unit PhosRID™ phosphorus removal system at the Massachusetts Septic System Test Center. Data collection and analysis is performed by the Barnstable County Health Department.

Project Application Data

- Location: Otis Air Force Base, Massachusetts
- Site Application: Massachusetts Septic System Test Center
- Installation Date: August 2002



PhosRID™ module in a septic system

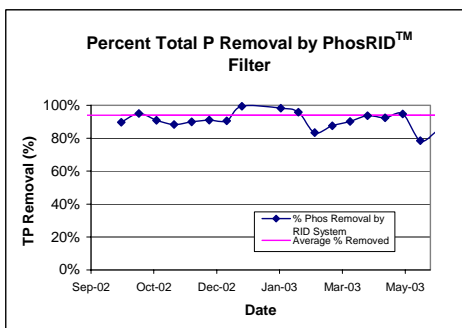
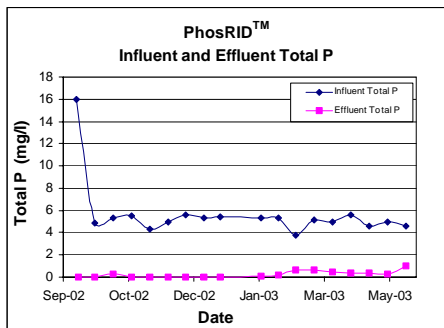
Design Profile

- Design Wastewater Flow: 330 gpd
- Wastewater Treatment Process: Septic Tank - PhosRid™ - Media Filter - Leaching Trench

PhosRid™ Treatment Performance

The PhosRID™ installed at the Massachusetts Septic System Test Center has reduced phosphorus in the effluent by an average of 94% over the one year that it has been in operation. In addition, the PhosRID™ has reduced the Total Nitrogen by 54% and BOD in the effluent by 86%.

Date	Influent to RID						RID Filter					
	PO4 - 3 (mg-P/L)	BOD 5 (mg/L)	Total P (mg/L)	TSS (mg/L)	TN (mg/L)	Temp C	PO4 - 3 (mg-P/L)	% Ortho P Removal	Total P (mg/L)	% BOD Removal	% N Removal	Temp C
Average (mean)	4.2	150.0	5.7	23.2	33.3	8.7	0.4	94%	0.4	86%	54%	9.4
Std Dev	0.6	67.9	2.6	7.3	3.9	6.5	0.2	7%	0.3	15%	9%	6.8
Minimum	3.1	46.0	3.8	4.4	26.2	1.5	0.1	79%	0.0	37%	40%	1.8
Maximum	5.5	277.0	16.0	40.7	37.2	21.9	0.8	100%	1.0	99%	63%	22.5



Hall County, GA Project

Project Description

As part of the National On-Site Demonstration Project (Phase V) Lombardo Associates, Inc. installed and monitored a PhosRID™ demonstration unit to address the use of alternative technologies and innovative phosphorous removal techniques, a major concern in Hall County, Georgia. The University of Georgia performed the data collection and analysis.

Project Application Data

- Location: Hall County, Georgia
- Site Application: 3 bedroom residence
- Installation Date: November 2003

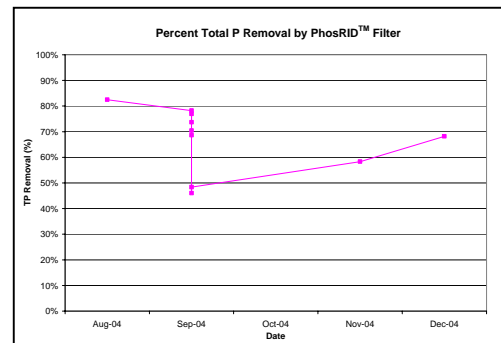
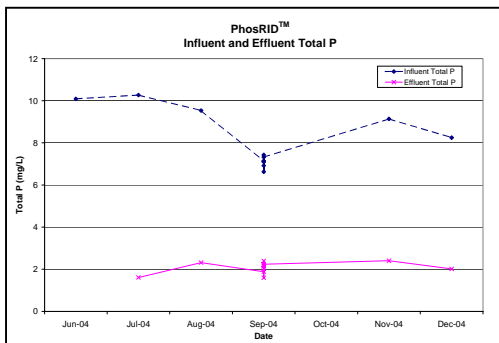
Design Profile

- Design Wastewater Flow: 450 gpd
- Wastewater Treatment Process: Septic Tank – Anaerobic Upflow Filter - PhosRid™ - Media Filter - Leaching Trench

PhosRid™ Treatment Performance

The PhosRid™ installed in Hall County has reduced phosphorus in the effluent by an average of 71%. In addition, the PhosRid™ has reduced the Total Nitrogen by 14% and BOD in the effluent by 17%.

Date	Influent to RID					RID Filter				
	PO4 - 3 (mg-P/L)	BOD 5 (mg/L)	Total P (mg/L)	TSS (mg/L)	TN (mg/L)	PO4 - 3 (mg-P/L)	% Ortho P Removal	Total P (mg/L)	% BOD Removal	% N Removal
Average (mean)	5.8	104.5	7.0	58.2	54.0	1.8	69%	2.1	17%	14%
Std Dev	2.3	59.8	1.9	45.2	11.6	0.3	18%	0.3	25%	16%
Minimum	1.9	26.2	4.1	19.0	33.7	1.3	34%	1.6	7%	-24%
Maximum	9.6	194.8	10.6	161.3	69.6	2.2	81%	2.4	94%	33%



References:

Mr. George Heufelder
Barnstable County Department of Health
Post Office Box 427
Barnstable, MA 02630
(508) 375-6616

Professor Larry West
University of Georgia
College of Agricultural and Environmental Sciences
Athens, GA 30602-7272
(706) 542-0906

The PhosRid™ technology has proven extremely effective at removing phosphorus from septic tank effluent. In addition, PhosRid™ also provides nitrogen reduction, BOD reduction and reduction in the total suspended solids.

Lombardo Associates, Inc. is a full-service environmental engineering firm with wastewater and water projects in numerous states from New England to Florida. Lombardo Associates has been the Engineer of Record for over \$200 million of wastewater and water projects and Chief Engineer for over \$100 million of design, build and operate (DBO) projects. Lombardo Associates is a recipient of the prestigious American Consulting Engineer's Council Engineering Excellence Award for its innovative wastewater project. An *Engineering News Record* Construction Man of the Year candidate, Pio Lombardo was also designated an Entrepreneur of the Year finalist.

Contact:

Pio Lombardo, P.E.
Lombardo Associates, Inc.
49 Edge Hill Road
Newton, MA 02467

Tel: 617-964-2924
Fax: 617-332-5477
Email: Pio@LombardoAssociates.com
Web Site: www.LombardoAssociates.com