A CASE HISTORY: Crowley LA. Waste Water TreatmentPlant
Water Discharge & System Management and Sludge Reduction

Product Overview –

Bio-Regen OWS - Using billions of organic waste-specific microbes, **Bio-Regen™ OWS (Organic Waste Solution)** is formulated to treat organic waste problems at the source. An array of highly specialized species and subspecies of Bacillus microbes that exhibit specific enzymatic activities is selected to rapidly decompose organic solid waste.

Bio-Regen Sludge Pellets – This unique dry pellet is specifically designed to be a low maintenance, low cost solution for in-situ sludge degradation in municipal and industrial applications. **BR Sludge Pellets** are fortified with specially selected beneficial bacteria that are high volume waste consumers of sludge and other organic material. In addition the pellets contain a nutritionally complete trace mineral package with a broad spectrum enzyme and amino acid complex.

Bio-Regen WW Shock – Is a convenient bio-pouch that provides operators a convenient method for rapid adjustment or establishment of beneficial bacteria. **BR WW Shock** combines multiple strains of our specially selected bacteria in large volume counts and natural proprietary preservatives to provide a wide variety of stable and advanced boost of beneficial bacteria for the degradation of organic materials.

Before Treatment

After Treatment

Site Overview and Treatment Objective – This municipal treatment plant consists of two primary lagoons that receive between 1 to 3 million gallons daily that gravity feed into a series smaller feeder, duckweed, and rock filter ponds. At the end of the series, the water flows through an ammonia removal tank & UV treatment tank prior to release, or the water is recirculated back to the beginning of the system. Each rock filter pond is approximately nine (9) surface acres in size. Each lagoon holds approximately 4.4 million gallons of water. The average holding time through this system is 60 to 72 days. Our goal at this facility was to establish an effective program allowed for water discharge within regulatory standards, reduce sludge build up on the rock filters allowing them to operate more efficiently (also deferring costly replacement & cleaning)as well as reducing the degradable organics further "upstream" from the rock filters to keep the system operating at peak efficiency.

Application Overview –

BR Sludge Pellets – Initially, 200 pounds of Bio-Regen Sludge Pellets were applied. 150 pounds was applied evenly over the first rock filter. The final 50 pounds were topically applied in the small feeder pond that fed the rock filter.

BR OWS & WW Shock - During the spring, summer and fall months, 7.5 gallons of Bio-Regen OWS was injected weekly at the far Eastern point of the duckweed pond. In addition six 1 pound water soluble pouches of Bio-Regen WW Shock were also added at the same location where the OWS was injected.

During the first winter cycle of the system, discharge levels of TSS increased, so to combat this problem injection of OWS was reduced to 5 gallons weekly, while two additional pouches of WW Shock (WW Shock contains cold weather tolerant microbes) were added which resulted in a re-balancing of the system. Annual program now includes this seasonal application adjustment.

Application Result: The application of the various 3 Tier waste water products achieved the desired goals of consistent water quality standards needed for safe discharge while cleaning the rock filters of excess sludge resulting in higher performance and better water flow through. Please see the pictures above. A resulting benefit to the system was a reduction of sludge in other areas of the system. The feeder pond demonstrated dramatic sludge reduction, the rock filters were cleaned of excess organics and the main ponds started to show minor reductions in sludge due to the recirculated water in the system. It is expected that continued reductions in all areas or maintenance of the existing ponds will continue. Please review the following data summary of the various sludge reductions over the last 12 months.

Summary: 3 Tier Technology's cost effective combination of Bio-Regen Sludge Pellets, WW Shock pouches and OWS proved to be a very effective tool for operational maintenance while reducing sludge volume and improving rock filter operation. Contact your local 3 Tier Distributor for a site specific solution.

	TREATED WITH OWS & PELLETS FEEDER POND			
Sample Point	1/4/12 Sludge Depth	7/2/12 Sludge Depth	12/17/12 Sludge Depth	Total Change
Point 1	23"	18"	11"	-12
Point 2	17"	11"	7"	-10
Point 3	17"	15"	13"	-4
Point 4	18"	13"	3"	-15
Point 5	21"	15"	10"	-11
Point 6	13"	8"	2"	-11
Point 7		16"	10"	-6

	TREATED WITH OWS & PELLETS DUCKWEED POND			
Sample Point	1/4/12 Sludge Depth	7/2/12 Sludge Depth	12/17/12 Sludge Depth	Total Change
Point 1	30"	12"	9"	-21"
Point 2	30"	12"	9"	-21"
Point 3	30"	12"	11"	-19"
Point 4	30"	12"	9"	-21"
Point 5	30"	13"	9"	-21"
Point 6	27"	13"	7"	-20"
Point 7	24"	12"	11"	-13"
Point 8	32"	12"	9"	-23"
Point 9	26"	18"	9"	-17"
Point 10	30"	10"	3"	-27"
Point 11	26"	15"	9"	-17"
Point 12	32"	12"	14"	-18"
Point 13	30"	21"	14"	-16"
Point 14	26"	13"	9"	-17"
Point 15	32"	12"	9"	-23"
Point 16	30"	21"	14"	-16"
Point 17	27"	15"	3"	-24"
Point 18	30"	16"	9"	-21"
Point 19	47"	20"	9"	-38"
Point 20	54"	21"	9"	-45"
Point 21	29"	15"	9"	-20"
Point 22	30"	16"	9"	-21"
Point 23	32"	12"	14"	-18"
Point 24	32"	12"	9"	-21"
Point 25	36"	12"	2"	-34"

	NO DIRECT TREATMENT MAIN LAGOON			
Sample Point	1/4/12 Sludge Depth	7/2/12 Sludge Depth	12/17/12 Sludge Depth	Total Change
Point 1	8'	5'	3"	-5"
Point 2	10"	8"	9"	-1"
Point 3	10"	9	6"	-4"
Point 4	10"	11"	7"	-3"
Point 5	8"	11"	10"	+2"
Point 6	3"	4"	2"	-1"
Point 7	10"	7"	7"	-3"
Point 8	10"	9"	8"	-2"
Point 9	13"	13"	11"	-2"
Point 10	10"	10"	11"	+3"
Point 11	10"	8"	11"	+1"
Point 12	10"	9"	11"	+1"
Point 13	11"	13"	11"	0"
Point 14	9"	14"	11"	+2"
Point 15	9"	10"	11"	+2"
Point 16	12"	12"	11"	-1"
Point 17	9"	8"	6"	-3"
Point 18	10"	9"	6"	-4"
Point 19	10"	10"	6"	-4"
Point 20	11"	8"	6"	-5"