

AquaMats®

PROCESS

SITE STATS:

Average Daily Flow: .6 MGD
Population Served: 6,000
Location: Southeastern Georgia
Water Temperature: Avg. Low (5°C), Avg. High (25°C)

PERMIT(S):

- BOD₅ – 10 mg/L
- TSS – 20 mg/L
- Ammonia – 5 mg/L
- Fecal Coliform – 200 mpn/100 ml

RATIONALE FOR AQUAMATS® PROCESS UPGRADE:

Larchmont WWTP is owned and operated by Consolidated Utilities, a privately held company located in Savannah, Georgia.

Larchmont determined that a system upgrade was necessary because the population served and the related daily flow rates were increasing substantially from approximately 0.3 mgd to 0.6 MGD. In addition, a more demanding and stringent discharge permit was implemented by the Georgia Department of Environmental Quality (GDEQ).

New requirements for treatment were becoming more stringent such that Biochemical Oxygen Demand ("BOD") was to be discharged at levels not to exceed of 10 mg/L, Total Suspended Solids ("TSS") were to be discharged at levels not to exceed of 20 mg/L, Ammonia (NH₃) was to be discharged at levels not to exceed of 5 mg/L and Fecal Coliform was to be discharged at levels not to exceed of 200 mpn/100 ml.

Without changed practices, compliance by Larchmont with more stringent standards from GDEQ, at more than twice the daily flow rate, was regarded as improbable.

Larchmont was impressed with the performance history of the AquaMats® Process and its predicted capability to provide solid year round performance, even with cold climate conditions, and to substantially reduce the high cost associated with periodic sludge disposal. **Briefly, AquaMats® Process provides the quality treatment of mechanical plants in lagoons at significant savings in capital and operating costs.** The AquaMats® Process combines ADS's proprietary diffusion aeration products, engineered surface area ("AquaMats®") and bioaugmentation ("Bacta-Pur®") technologies to form a very stable, and low-maintenance integrated system for natural microbial treatment of municipal wastewater. Because of the efficiency of AquaMats® Process, sludge handling is typically not necessary for up to 10 years or longer.

Larchmont considered a number of different proposals and selected the AquaMats® Process from Meridian because it offered the most impressive performance at low capital and O & M costs, all supported by a 5-year performance guarantee.

DESCRIPTION OF AQUAMATS® PROCESS UPGRADE:

The basic goal of the AquaMats® Process for Larchmont was to convert and upgrade the existing facilities to a high performance lagoon system so that discharge requirements were consistently achieved with a comfortable margin.

Case Study Snapshots Larchmont, Georgia

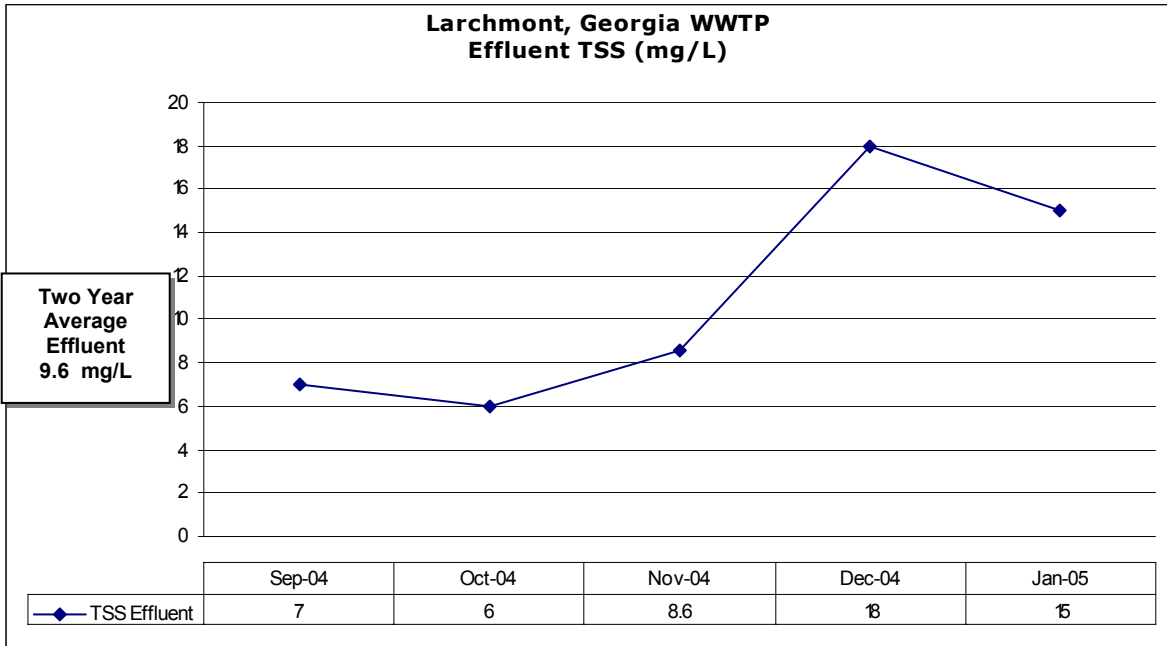


Flow enters AquaMats® Process treatment cells which feature AquaMats® for Biofiltration, Air Diffusion Systems' (ADS) fine bubble diffusion and BactaPur®'s precision bacterial formulations.



From above, actual final effluent discharge from Larchmont, GA WWTP... In addition to such striking results, efficiency of the means sludge handling is typically not necessary for up to 10 years or longer.

**Larchmont, Georgia WWTP
Effluent TSS (mg/L)**



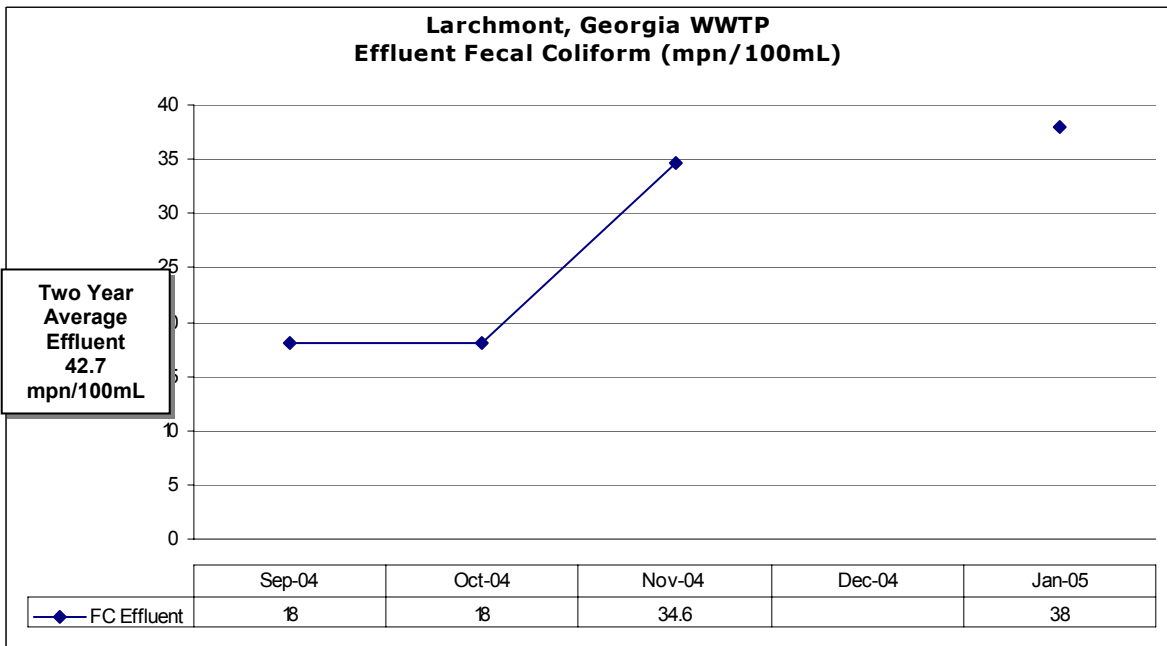
LARCHMONT, GEORGIA TSS EFFLUENT DATA TABLE

2002	J	F	M	A	M	J	J	A	S	O	N	D
2002 TSS Effluent								2.0	12.0	12.0	17.0	13.5
2003	J	F	M	A	M	J	J	A	S	O	N	D
2003 TSS Effluent	15.0	15.0	17.0		7.0	10.0	9.0	4.0	4.0	5.0	6.0	5.0
2004	J	F	M	A	M	J	J	A	S	O	N	D
2004 TSS Effluent	12.0	14.0	14.0	14.0	8.0	8.0	6.0	8.0	7.0	6.0	8.6	18.0
2005	J	F	M	A	M	J	J	A	S	O	N	D
2005 TSS Effluent	15.0											

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**Larchmont, Georgia WWTP
Effluent Fecal Coliform (mpn/100mL)**



LARCHMONT, GEORGIA TSS EFFLUENT DATA TABLE

2002	J	F	M	A	M	J	J	A	S	O	N	D
2002 FC Effluent								9.0	35.0	35.0	15.0	16.0
2003	J	F	M	A	M	J	J	A	S	O	N	D
2003 FC Effluent	11.0	11.0	21.0			79.0	50.0			125.0	114.0	83.0
2004	J	F	M	A	M	J	J	A	S	O	N	D
2004 FC Effluent	41.0	3.0	37.0	66.0	21.0	25.0	22.0	5.0	18.0	18.0	34.6	
2005	J	F	M	A	M	J	J	A	S	O	N	D
2005 FC Effluent	38.0											

Above ground header pipe and high efficiency diffusion aeration tubing were laid across the width of all primary and second lagoons. Baffles were installed in each primary and secondary lagoons. The primary lagoons were also equipped with Bacta-Pur[®] Bactivators[™] to continuously supply a metered and activated quantity of XLG, a Bacta-Pur[®] sludge digesting product.

AQUAMATS[®] PROCESS COSTS---CAPITAL, OPERATING AND MAINTENANCE:

Capital costs incurred by Larchmont for the AquaMats[®] Process upgrade were under \$500,000 in equipment and installation related services.

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INTERNET LINKS:

Meridian Aquatic Technology for High Performance AquaMats[®] Technology - <http://www.aquamats.com/Biofiltration/biofiltration.html>

Air Diffusion Systems, A John Hinde Co.: Lead supplier of aeration engineering and technology products and services - <http://www.airdiffusion.com/>

IET Aquaresearch for Bacta-Pur[®] and Bactivator[™] Bioaugmentation Products - <http://www.bactapur.com/>

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Case Study Snapshots Larchmont, Georgia



View of surface biofilm and invertebrate colonization on an AquaMat after 6 weeks in wastewater lagoon. When combined with ADS fine bubble diffusion and BactaPur's formulations, AquaMats[®] support the animal (as opposed to the plant or algal) side of the biological food chain and convert vast quantities of organic waste into aquatic animal life!





ADS Header Pipe and BactaPur[®]'s Bactivator[™]

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