

FOG Impact on Collection Systems



Case History Examples

- High Grease in Municipality
- High Oils in Industry
- High Oils in Food plants
- Low Flow and Septicity from long lines in Collection Systems
- Wineries



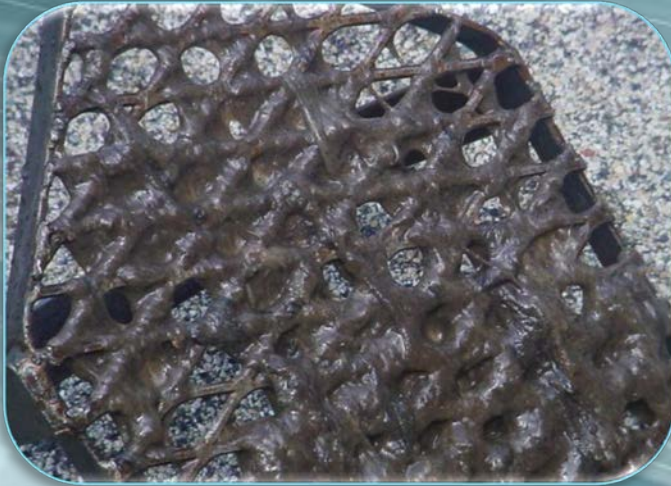
Lawn Mower Blade Manufacturer

7 ft. sewer slime

Rod out lines 2x week



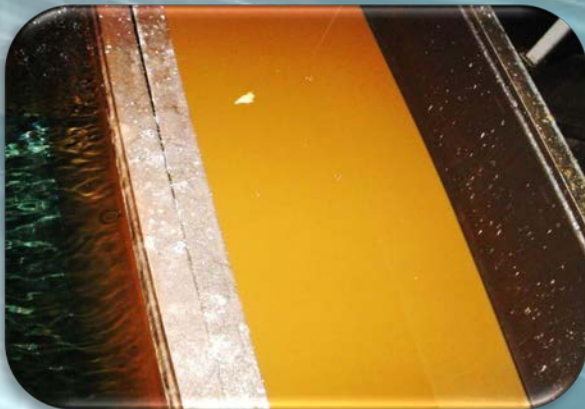
Slime Build-up in Sewers from a Lawn Mower Blade Production



Cutting oils:

Lawn mower blade manufacturer

Clean out pits, add bioaugmentation products & nutrients



High Flow Lift Stations and Small Manholes

5MGD
Lift
station



Manhole
clogged
w/Grease
from a
Oriental
restaurant

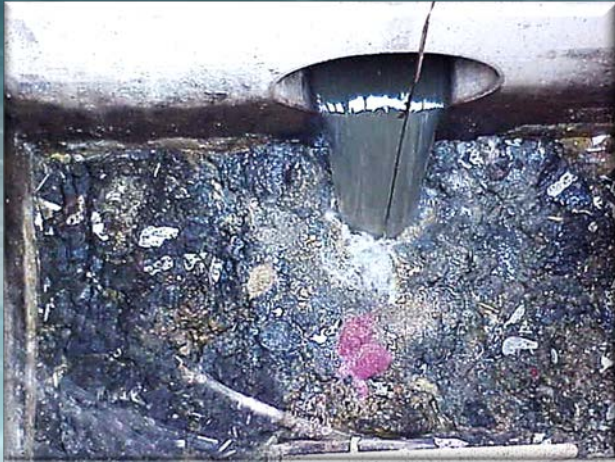


5 MGD Lift station in Municipality

Before & After Bioaugmentation Product Program



Before & After Treatment



Benefits:

Grease Removal

Less Maintenance

Wear & Tear on
Pumps

Safety

Odors

Line Cleaning

WWTP Benefits



Orange Juice Factory

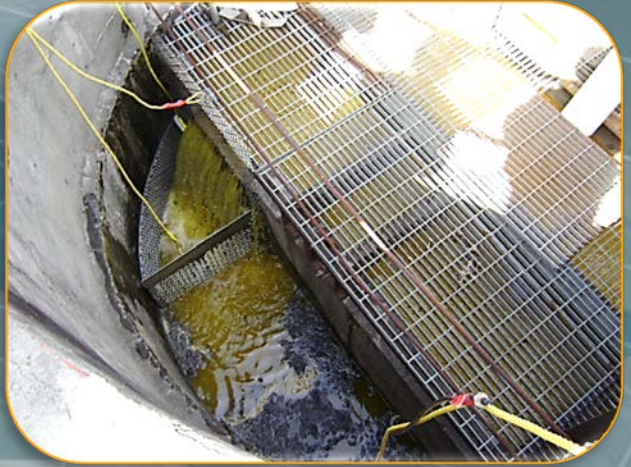
pH Control Upstream
MicroBlock in Lift Station



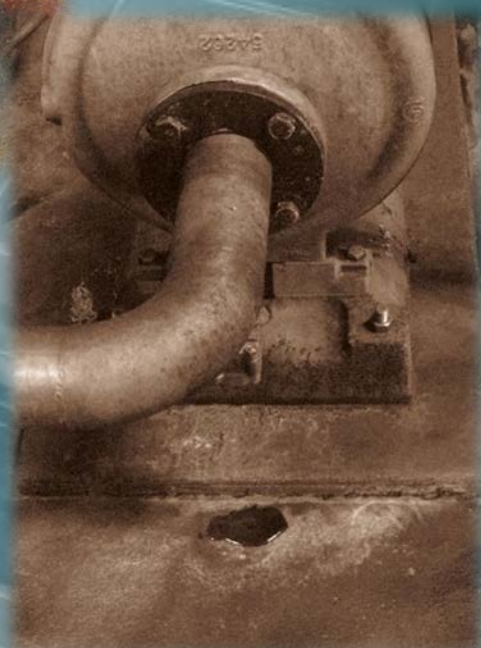
Before



After



Industry Equipment oils



Restaurant Grease

High Temps - grease dissolved

Cools downstream

Clog lines

Back up water into kitchens



Meat Packing Plant



**Going on 120 days with no permit violations

Meat Packing Plant



Papermill with Oil & Grease



Juice / Beverage Manufacturing Facilities

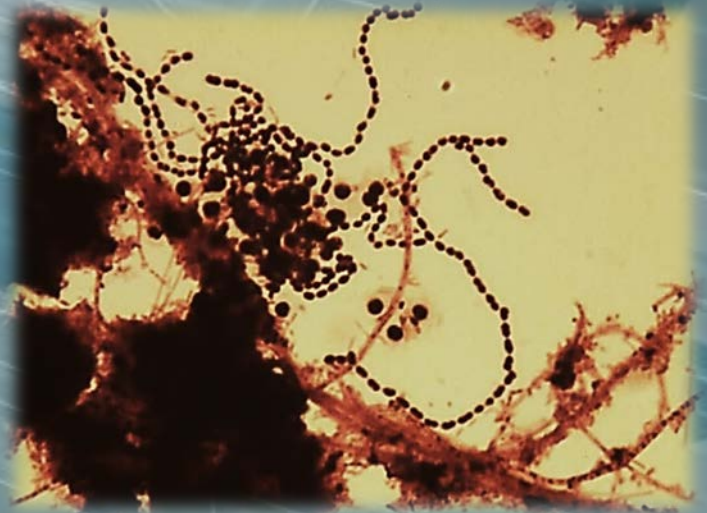
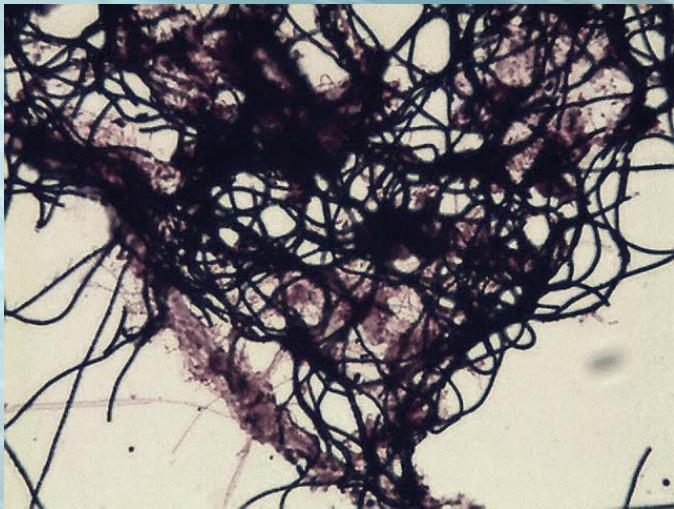


Grease and Oil Filaments

Nocardia

M. parvicella

1863



Grease and Oil Causes



Lift
Stations,
Wet wells

Change in
temp 180-
210 °F for
restaurants

Construction
traffic

Industry-
process
equipment
leaks

Food
processing
Industries



Is it Nocardia?

All foam is not alike

Different process changes may be required as a solution



Municipality Case History



Environmental
Leverage[®]
INC.

Turning Liabilities Into Leverage!™



Grease in Manhole outside Chinese Restaurant prior to bioaugmentation





Oxidation Ditch
7-7-2011
Before
Bioaugmentation



Oxidation Ditch
8-8-2011
After
Bioaugmentation

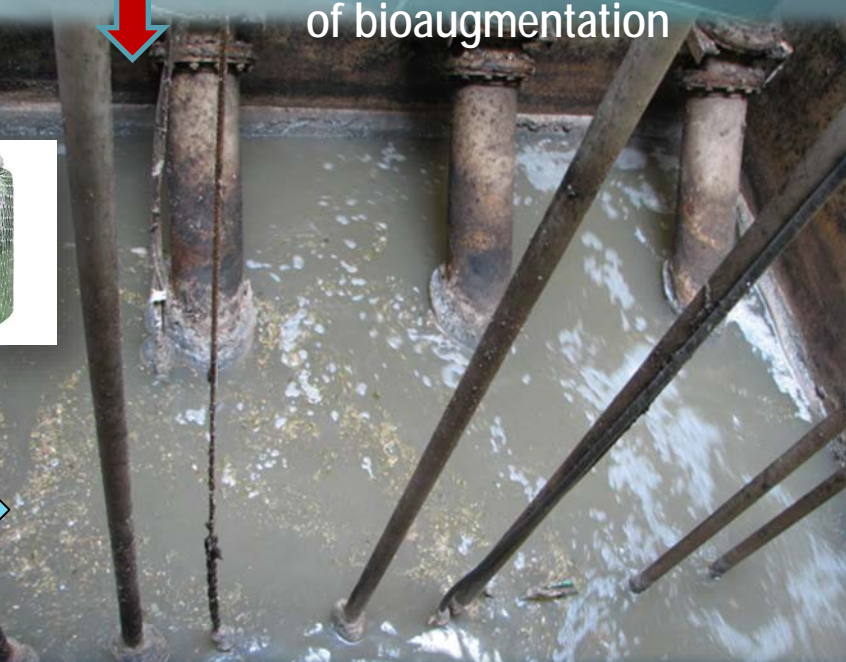


WETWELL

Notice the grease shelf along the walls

July 7, 2011

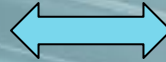
August 8, 2011 after short term use of bioaugmentation



Hospital Kitchen Lift Station



Before



After



Before & After
Bioaugmentation:
Initial trial

Chicken Wings Processing



**Before left: Grease from chicken wings,
and hot sauce**



**After above right image:
MicroClear® MicroBlock™
and Nutrients added to lift station**

Bakery Lift Stations



High levels of zooglea and slime in lift station due to oils and grease. MicroClear® MicroBlock used to break down FOG.



Bakery Butters and Oils



MicroClear 207 for high FOG MicroBlock Solid for FOG



Shortening, butter, oils and sprays are used at many bakeries. Use of MicroClear® Microblock in lift stations and MicroClear® 207 in drains easily will break down oils and grease and lower surcharges.



Snack Factory East Coast



Oils from productions as well as lubricating oils causing high levels of organics

MicroClear® MicroBlock used in lift stations



Snack Factory Midwest



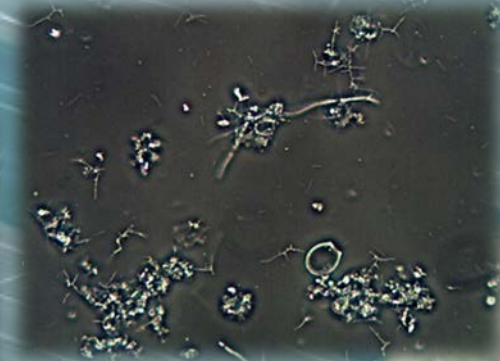
High foaming due to overload of BOD

Bioaugmentation w/ MicroClear® M100 and MicroClear® 205 and optimization of Critical 5



Oils in Winery

Lubricating oils are used in wineries. Bioblocks can be used in the lift station to pretreat the oils. A DAF was used as well at this plant.



Troubleshooting

Broken chains

Solids removal

Grease build-up

Corrosion

Plant growth

Flight speed



Troubleshooting



Analytical Report

Client: Amwell - A Division Of McNish Corp
Project ID: VA - WWTP PO# 64120
Sample Primary Tank #1 Pass 3
Sample 7-3986-001

Date 09/06/07
Time 10:15
Date Received: 09/07/07
Date 09/12/07

Results are reported on a dry weight basis.

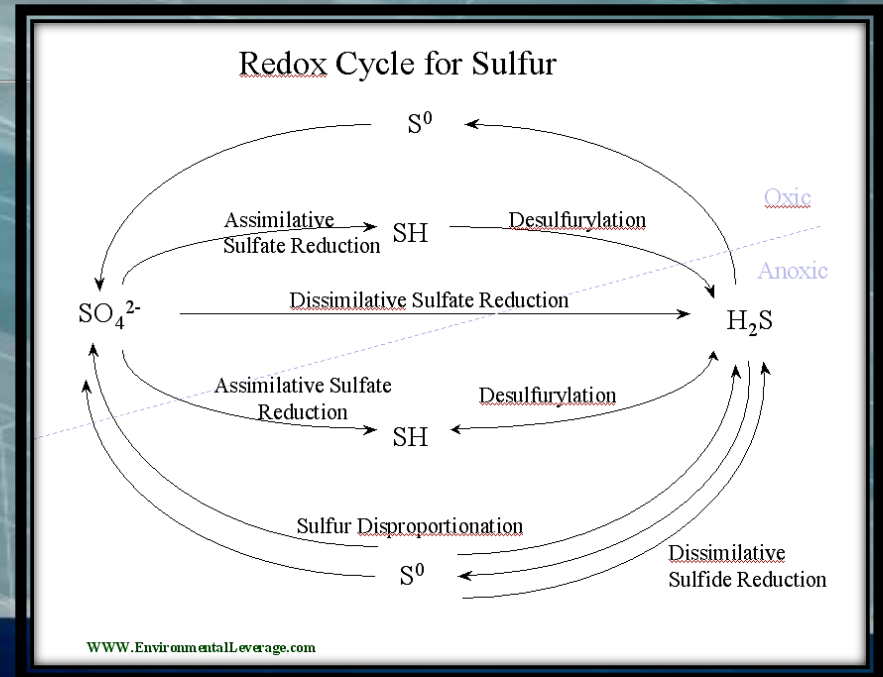
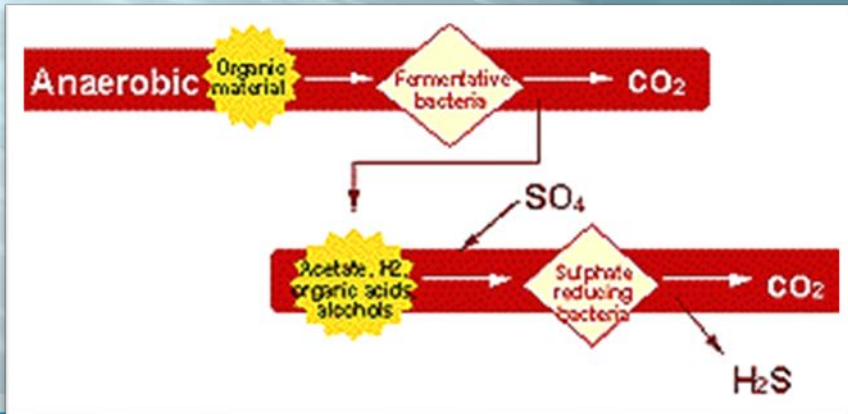
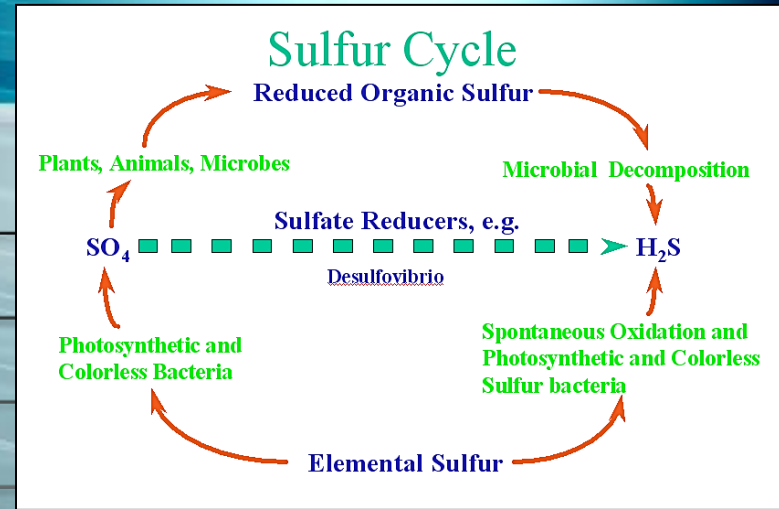
Analyte	Result	R.L.	Units	Date Analyzed	Method	Flag
Oil & Grease	748,000	10	mg/kg	09/12/0	9071B	P
Specific Gravity	1.00	1.00		09/11/0	2710F	N
COD	3,690,000	100	mg/kg	09/10/0	5220D	

Septicity

Low D.O. & Septicity

Typical Oxygen requirements in a WWTP

- 5 lbs. oxygen oxidizes 1 lb. nitrogen
- 3 lbs. oxygen oxidizes 1 lb. carbon
- 1-1.5 lbs. oxygen oxidizes 1 lb. B.O.D.
- **1 lb. oxygen oxidizes 1 lb. hydrogen sulfide**
- .67 lb. oxygen oxidizes 1 lb. manganese
- .4 lb. oxygen oxidizes 1 lb. iron



New Equipment for air and mixing in Lift Stations

Check out
the internet
for new
Technology
To provide
air and
mixing



Lift Station Solutions

Bioaugmentation

Nutrients - N & P

pH Control

Mixing and Aeration

Upstream Pits

Venturi vs. mechanical Recirc Pumps

Raise float to Dissolve Grease Ledge

Critical “5”

