

***Welcome To ...***

***Natural Resource Protection, Inc.***



# Cellular Bio-Activation

## A Natural Odour Control Solution with *Bio-Kat*

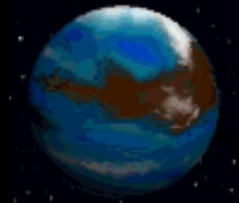
Gordon Fromm

NRP Northwest

NRP Group, Inc

# **Bio-Kat** Provides a Unique 100% Natural Solution to Traditional Wastewater Treatment Problems

- Cellular Bio-Activation Is Effective In Two Areas
  - Wastewater Collection Systems
  - Wastewater Treatment Plant



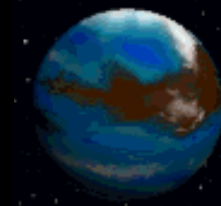
**Bio-Kat** Is Not a Cultured Microorganism

**Bio-Kat** Is Not an Enzyme

**Bio-Kat** provides specific intracellular co-factors and certain micronutrients that are deficient in wastewater. and is derived naturally from certain plant extracts

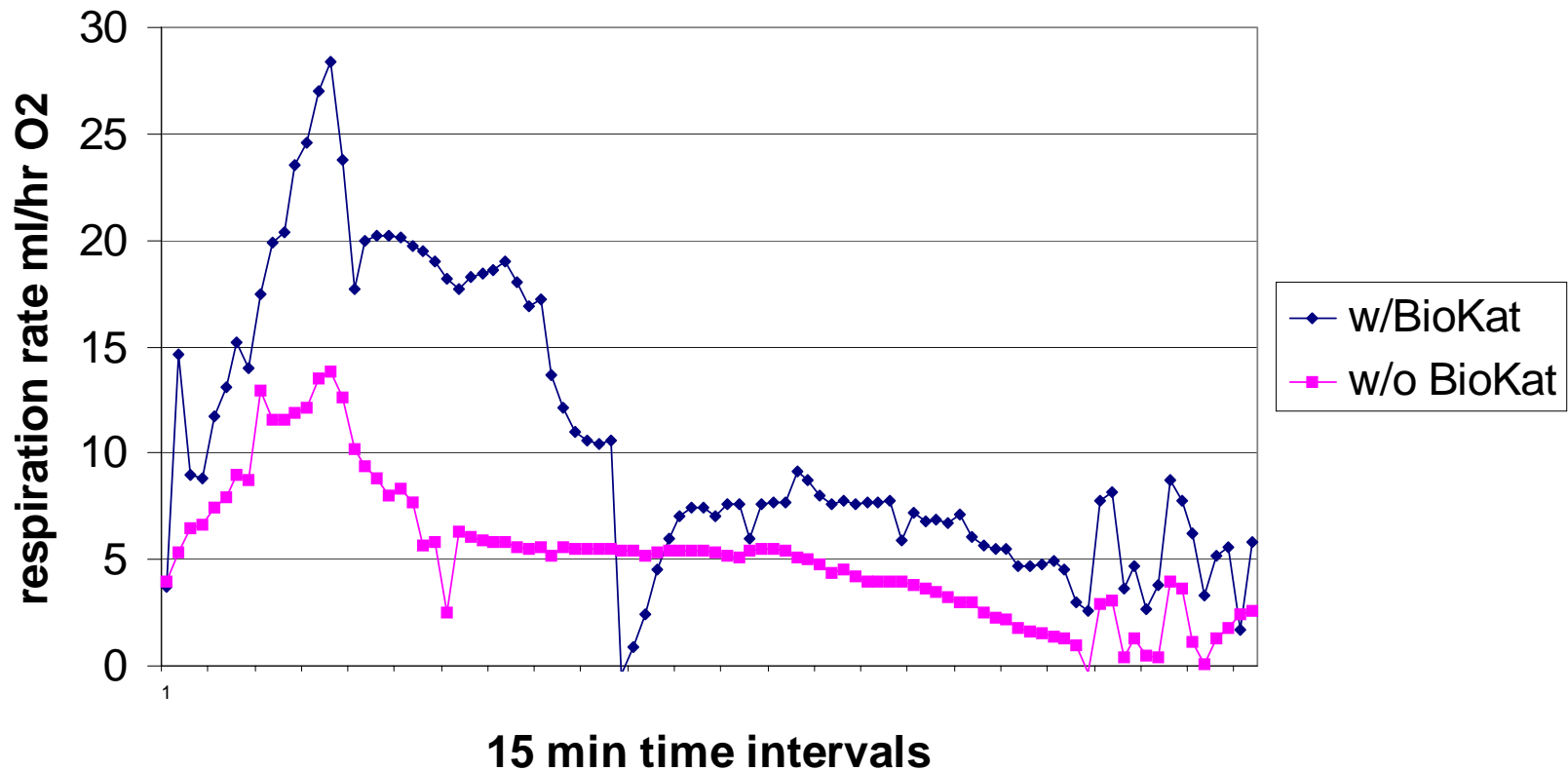
# *Bio-Kat* Accelerates Microbial Activity

- Allows **indigenous** microorganisms to achieve optimum performance.
- Increases respiration rate up to 30%
- Lowers TVSS in the collection system
- Creates a pretreatment environment in the collection system process.



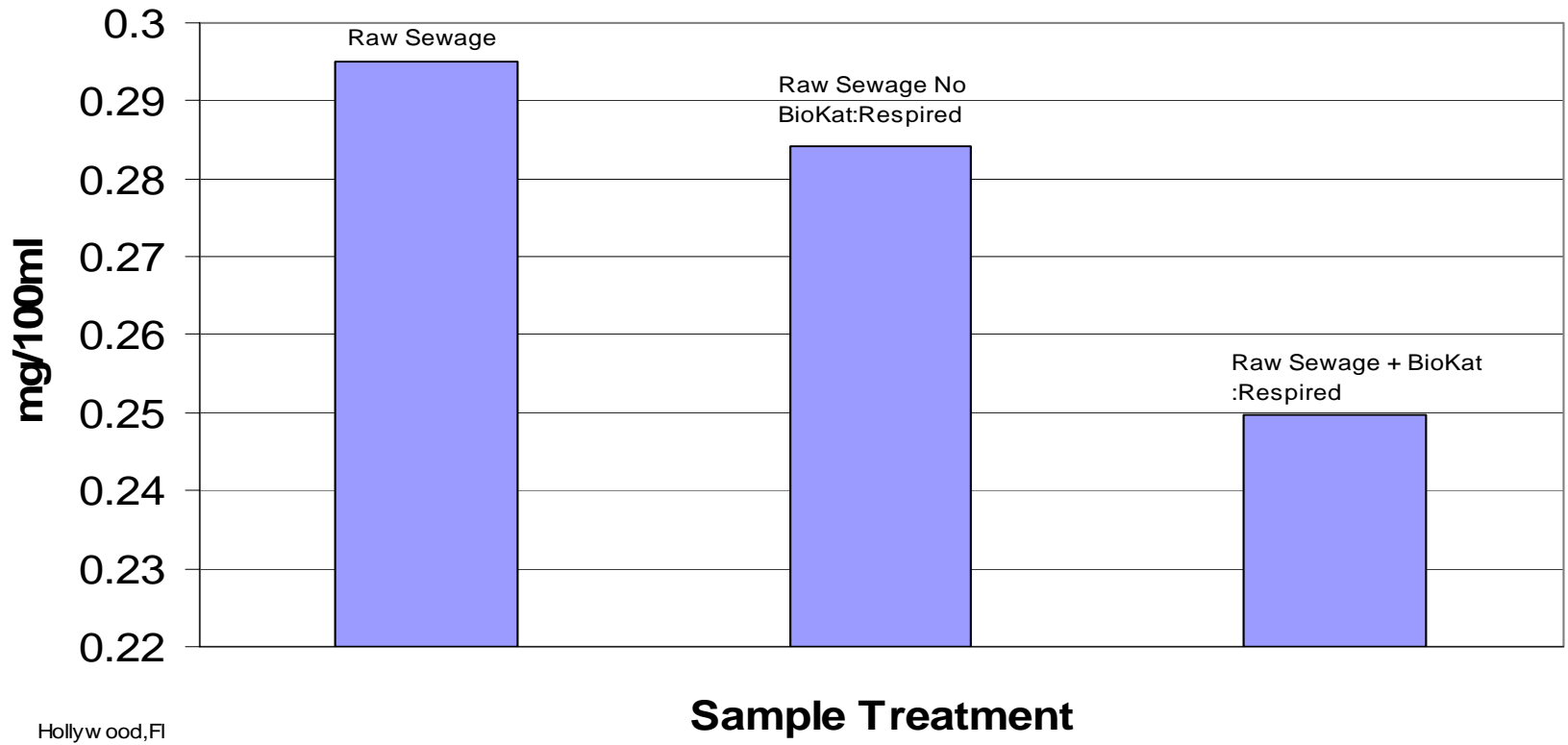
# Increased Respiration Of RAW

## Raw Sewage-Hollywood, FI 8/2/02



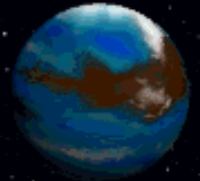
# *Bio-Kat* Achieves Total Solids Reduction in RAW of 10%

## TS Raw Sewage Experiment



Hollywood, FL

# Collection System Requirements



- Eliminate or Reduce Hydrogen Sulfide Odor Issues
  - Traditional treatment usually applied where problems manifest themselves by filtering or scrubbing the air, or use toxic heavy metals to achieve an chemical oxidation process.
- Hydrogen Sulfide Infrastructure Corrosion Issues
  - Requires Extensive Capital Expenditure
- Eliminate or Reduce Fats, Oils and Grease Accumulation
  - Degreaser or Manually Clean

# Hydrogen Sulfide Remediation

- Stimulate the aerobic bacteria to reduce the organic electron donor molecules that are available to anaerobic sulfate reducing bacteria to reduce the creation of H<sub>2</sub>S gas.
- Cellular Bio-activation can reduce atmospheric H<sub>2</sub>S to acceptable levels.
- Reduce anoxic laminar flow layer zone thereby reduce available habitat for H<sub>2</sub>S reducing bacteria.
- Solve collection system odor issues and infrastructure destruction due to corrosion

# Collections System Treatment Begins Upstream



**HIDRO SERVICIOS MEXICANOS, S.A. DE C.V.**  
TRATAMIENTO DE AGUA - AUTOMATIZACION Y CONTROL



Estación # 1 en la Colonia Alfonso Hernández



Instalación de dosificadores en la alcantarilla



Vista de dosificador # 1 instalado

Ave. San Bernabé 327A Col. Valle Morelos, Monterrey, NL. 64180  
TEL: (81) 8371-4142 TEL/Fax: (81) 8371-4143  
Cel: 044 81 8678-4444  
Email: [hidroservicios@hidroservicios.com](mailto:hidroservicios@hidroservicios.com)  
[operaciones@hidroservicios.com](mailto:operaciones@hidroservicios.com)



**HIDRO SERVICIOS MEXICANOS, S.A. DE C.V.**  
TRATAMIENTO DE AGUA - AUTOMATIZACION Y CONTROL



Estación # 2 en la Colonia Zapata



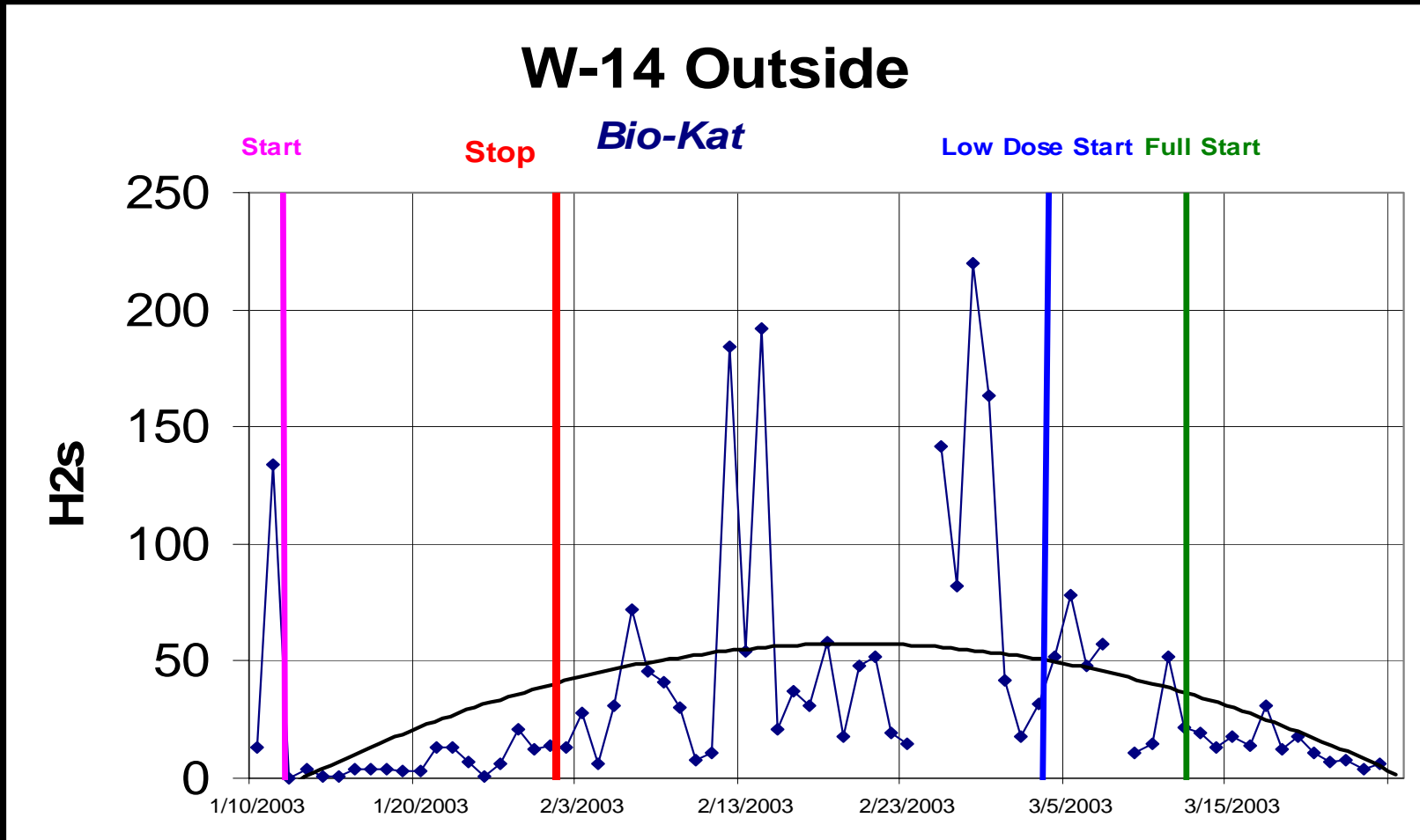
Programación del equipo en sitio



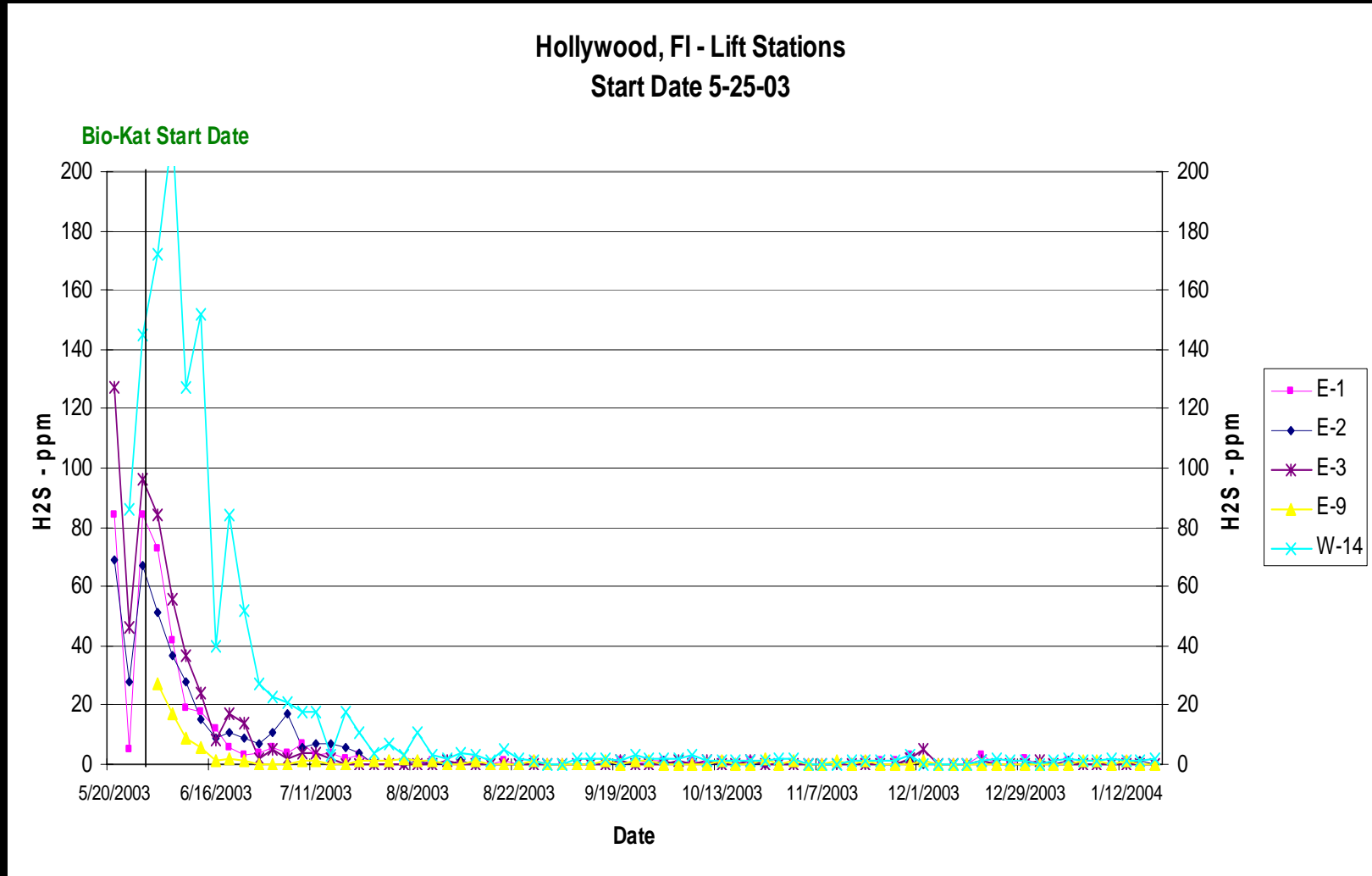
Vista de dosificador # 2 instalado

Ave. San Bernabé 327A Col. Valle Morelos, Monterrey, NL. 64180  
TEL: (81) 8371-4142 TEL/Fax: (81) 8371-4143  
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[operaciones@hidroservicios.com](mailto:operaciones@hidroservicios.com)

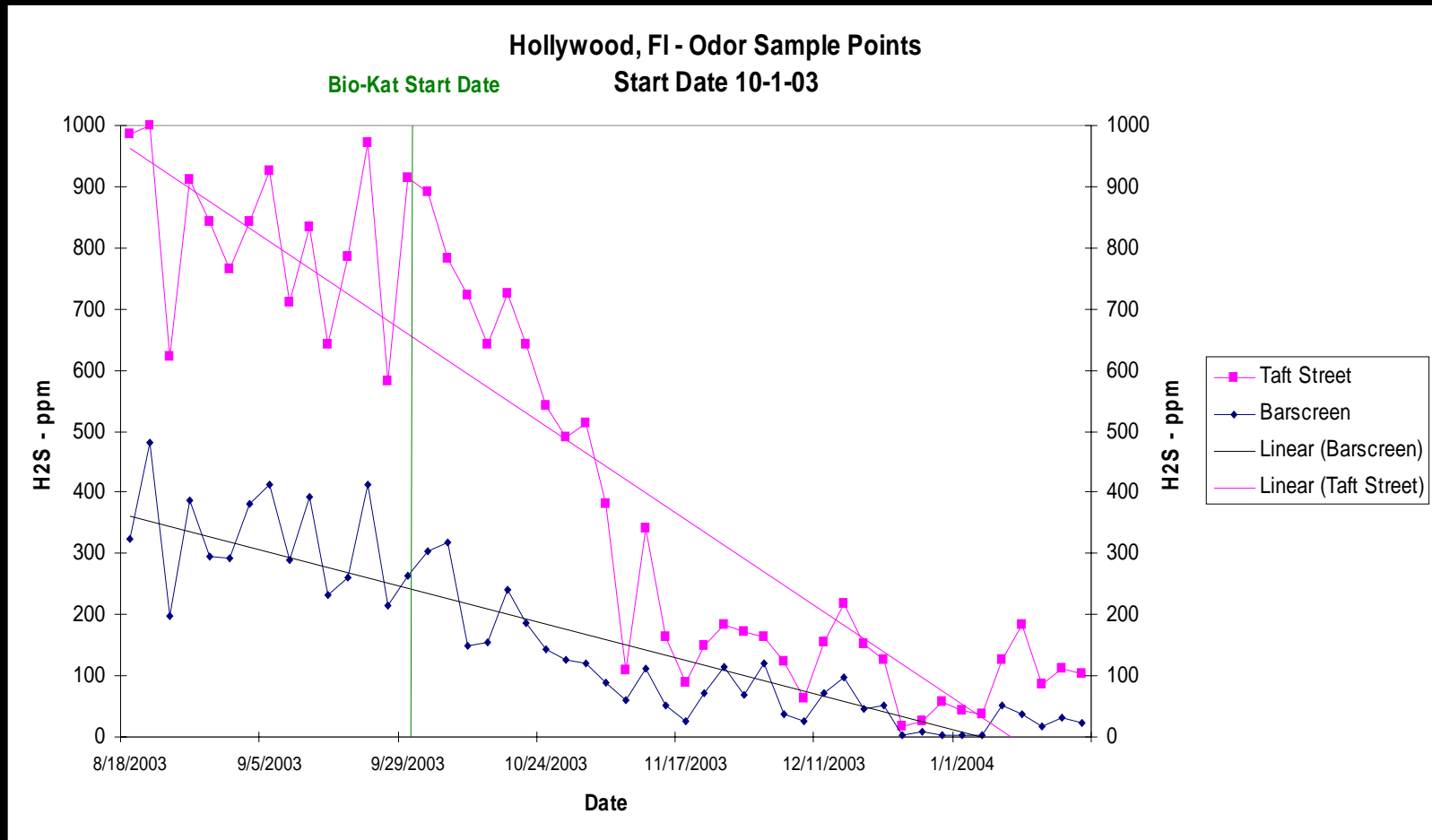
# Hollywood, FL Lift Station W-14



# Continued application = Continued results

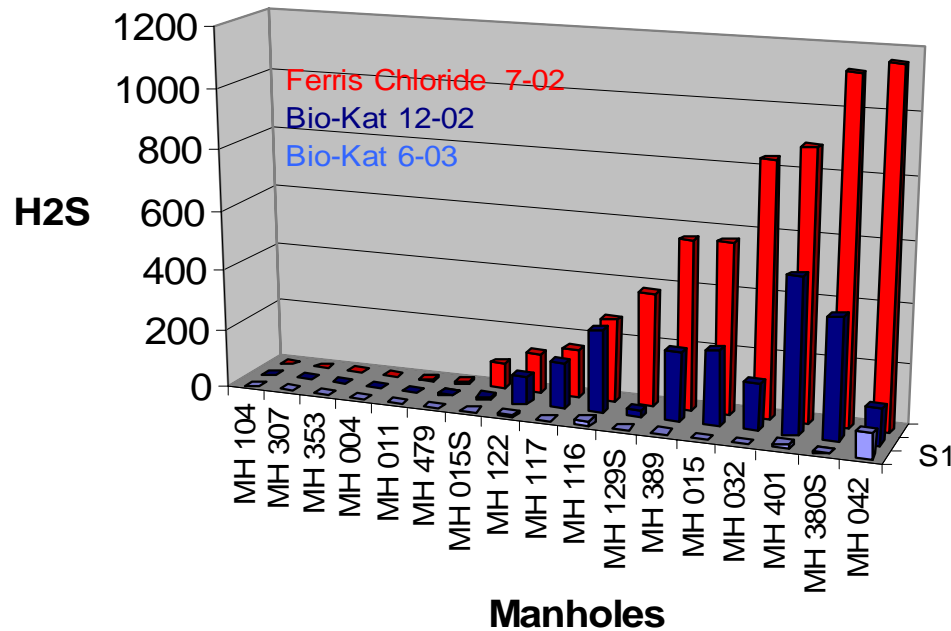


# A system wide approach can have a major impact at the Headwork's



**Wichita Kansas**  
**Comparison between**  
**Ferris Chloride and Bio-Kat**  
 July 2002 Thru June 2003

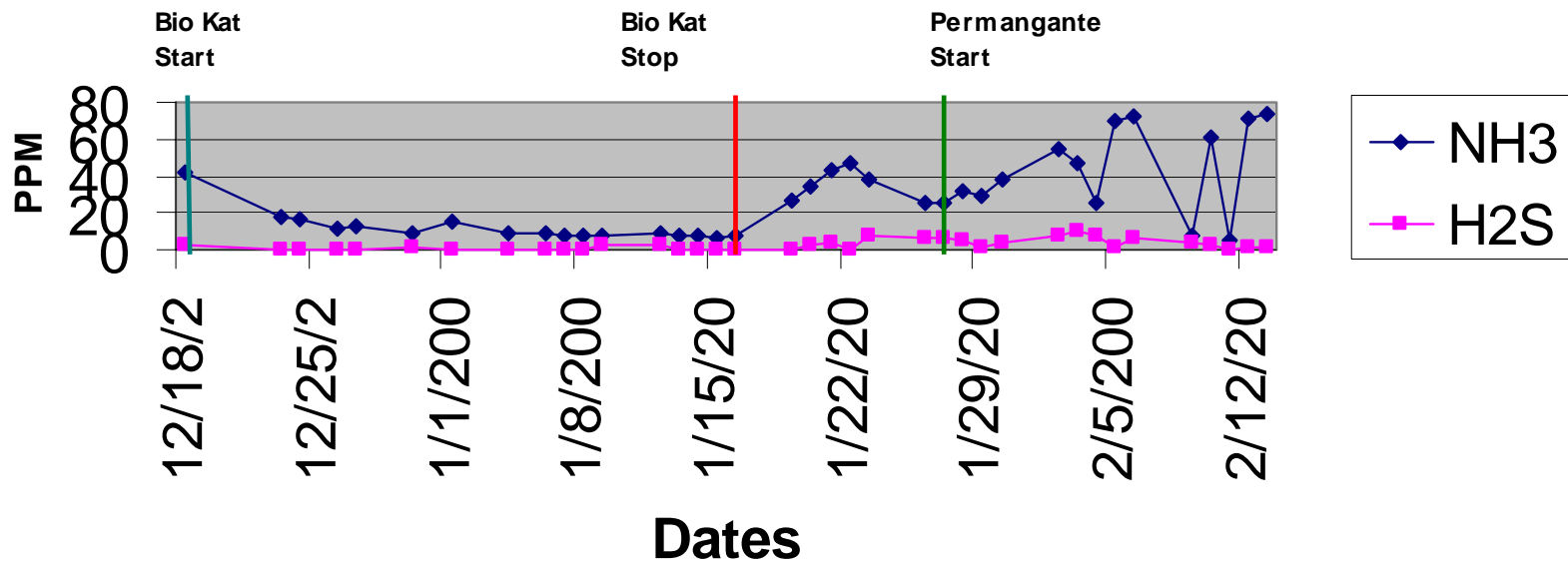
**H2S Levels Wichita, Ks.**



All readings were taken on a Tuesday between 9:00AM and 11:00AM

# Accelerating biological activity can provide significant benefits in the Yonkers, NY WWTP

## Ammonia at the Cake Pump Hopper



# *Bio-Kat* Corrosion Protection

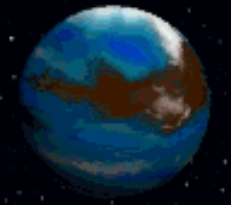


# Cellular Bio-activation has Multiple Benefits

- By accelerating the Biological Activity in the Collection System we now have 1 product to accomplish 2 jobs in a pretreatment environment
- Corrosion Control Above and Below the Water Line

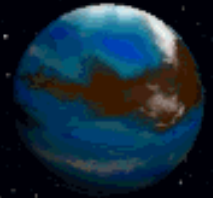
# Accelerating Microbial Activity can have Down Stream Benefits for the Wastewater Treatment Plant

- Lower BOD Loading Due to Less Organics Reaching WWTP
- Increase Plant Throughput per Unit Time
- Improve Settle-ability
- Improve Turbidity
- Improve Plant Operations
- Reduce Sludge Generated by WWTP
  - 20% to 40%



# Collection System

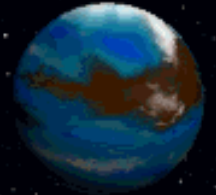
## *Bio-Kat* Cost Analysis



- Reduce or eliminate electricity and maintenance costs for Bio-Filters or Scrubbers
- Reduce or eliminate labor cost for manual lift station pump out and line jetting
- Extend Life of Pumps and Other Metal Parts
- Extend the Life of the Infrastructure
- 50% of cost of traditional toxic heavy metal Chemical Oxidation Agents

***Bio-Kat* Reduces Costs!**

# *Bio-Kat* Key Benefits



- Solve Hydrogen Sulfide Odor and Corrosion Issues Instead of Masking The Problem
- Prohibit Corrosion Above and Below the Water Line
- Delivery System has the Smallest Footprint in the Industry
- Reduce Costs
- Provide Downstream Benefits



*The Bio-Activator  
Innovator*