



# Clogged Leachate System Rehabilitation

Joseph Nemesh, P.E. - Senior Project Manager

Cornerstone Environmental Group, LLC – A Tetra Tech Company

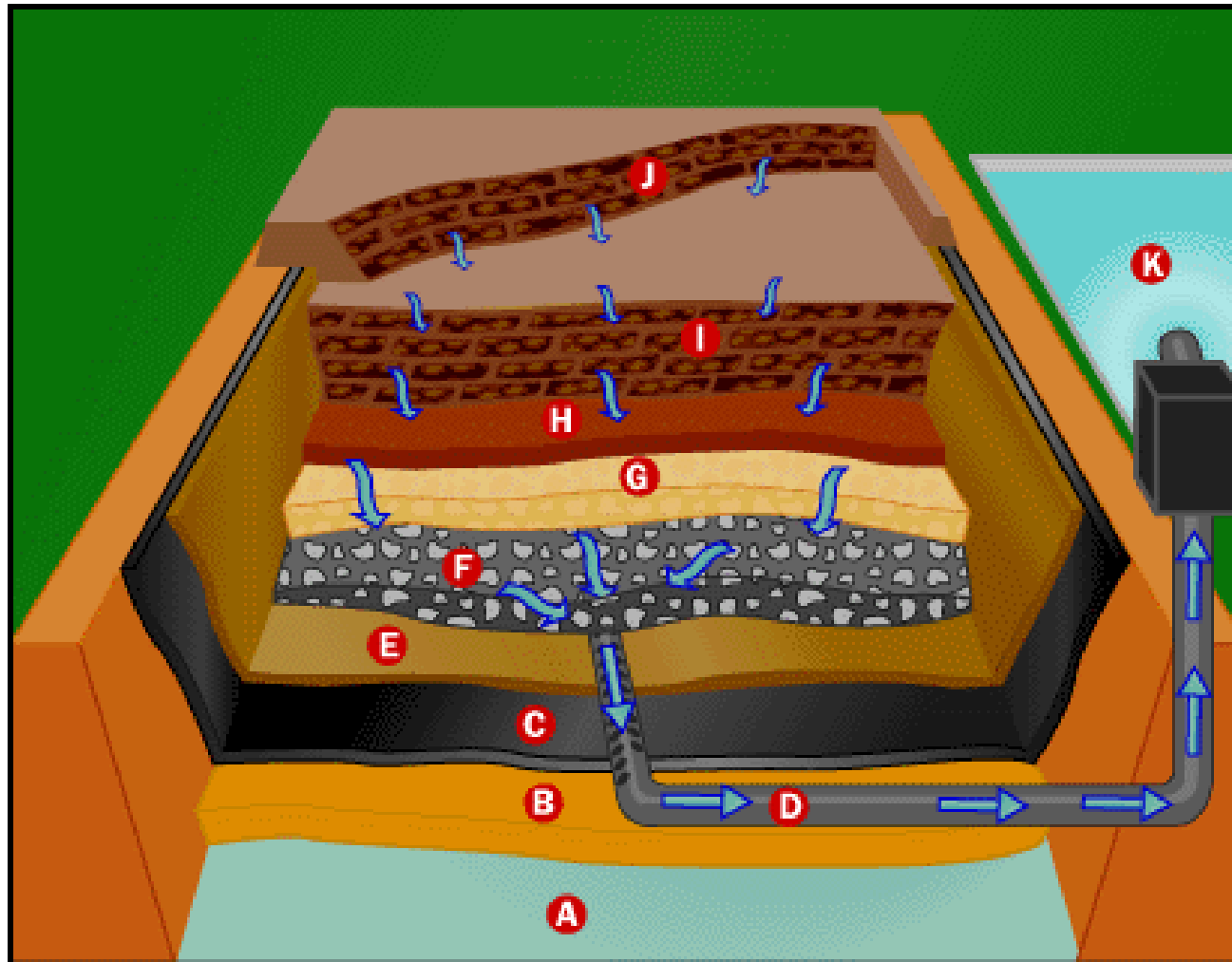


Building lifetime relationships with our clients and employees.

# Presentation Outline

- Leachate collection systems basics
- What can impact leachate collection?
- What problems can result?
- What to do when there is a problem?
- Can something be done before problems start?
- Key takeaways

# Leachate Collection System Basics



- A** Ground Water
- B** Compacted Clay
- C** Plastic Liner
- D** Leachate Collection Pipe
- E** Geotextile Mat
- F** Gravel
- G** Drainage Layer
- H** Soil Layer
- I** Old Cells
- J** New Cells
- K** Leachate Pond

©2000 How Stuff Works

# What Can Impact Leachate Collection?

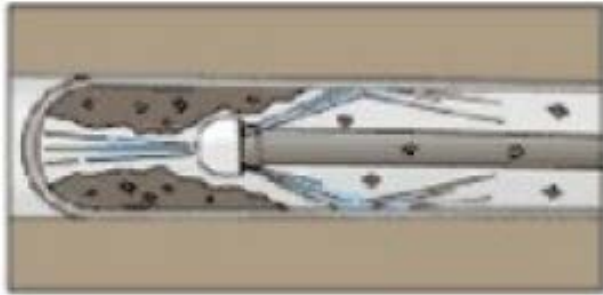
- Sediment/debris in leachate
- Weather can be a factor
- Precipitation of carbonate compounds
- Waste types matter

# What Problems Can Result?

- Clogging / fouling of leachate collection system components
- Potential long-term issues
  - Increased operating \$\$\$
  - Leachate seeps
  - Reduced LFG collection
  - Odors
  - Slope failure

# Options once there is a fouling issue?

- High-pressure water jetting



Before



After

# Options once there is a fouling issue?

- Cutting/milling/cabling machines



Before



After

# Options once there is a fouling issue?

- Chemical treatment





# Preventative Measures?

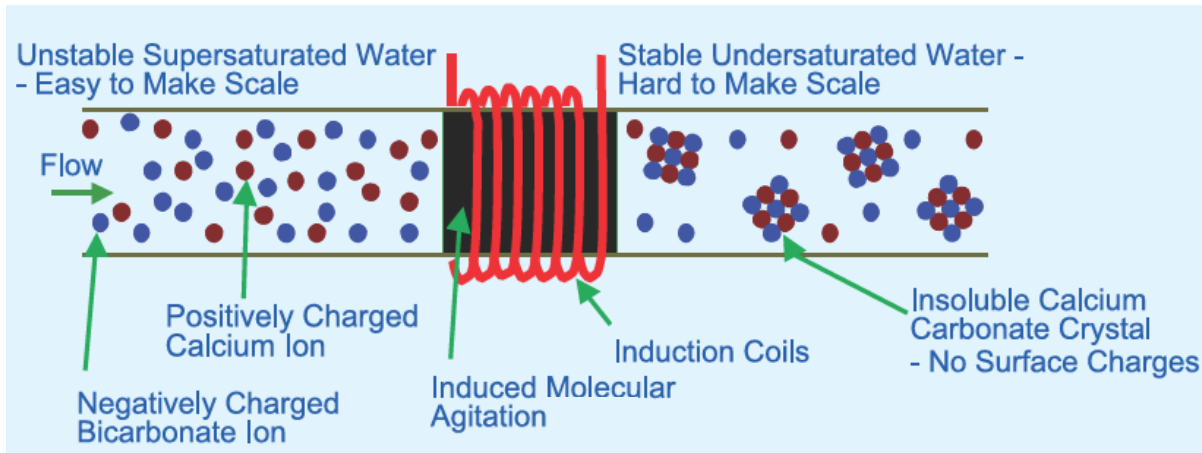
- Design options
  - Oversize pumps
  - Oversize pipes
  - Pipe slope
  - Chemical maintenance “drip” treatment
  - Clean-In-Place
  - Recirculation
  - Access points

# Preventative Measures?



# Preventative Measures?

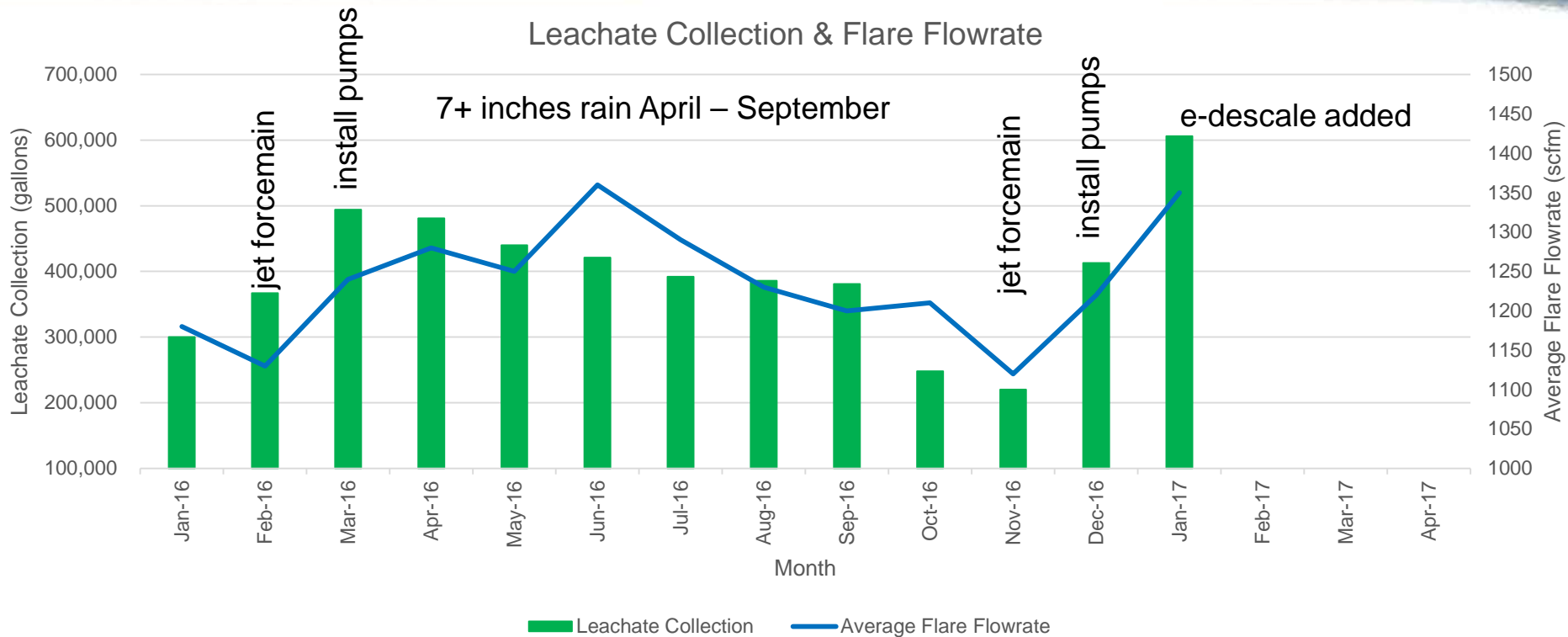
- Electronic descaling systems



# Landfill Leachate Case Study

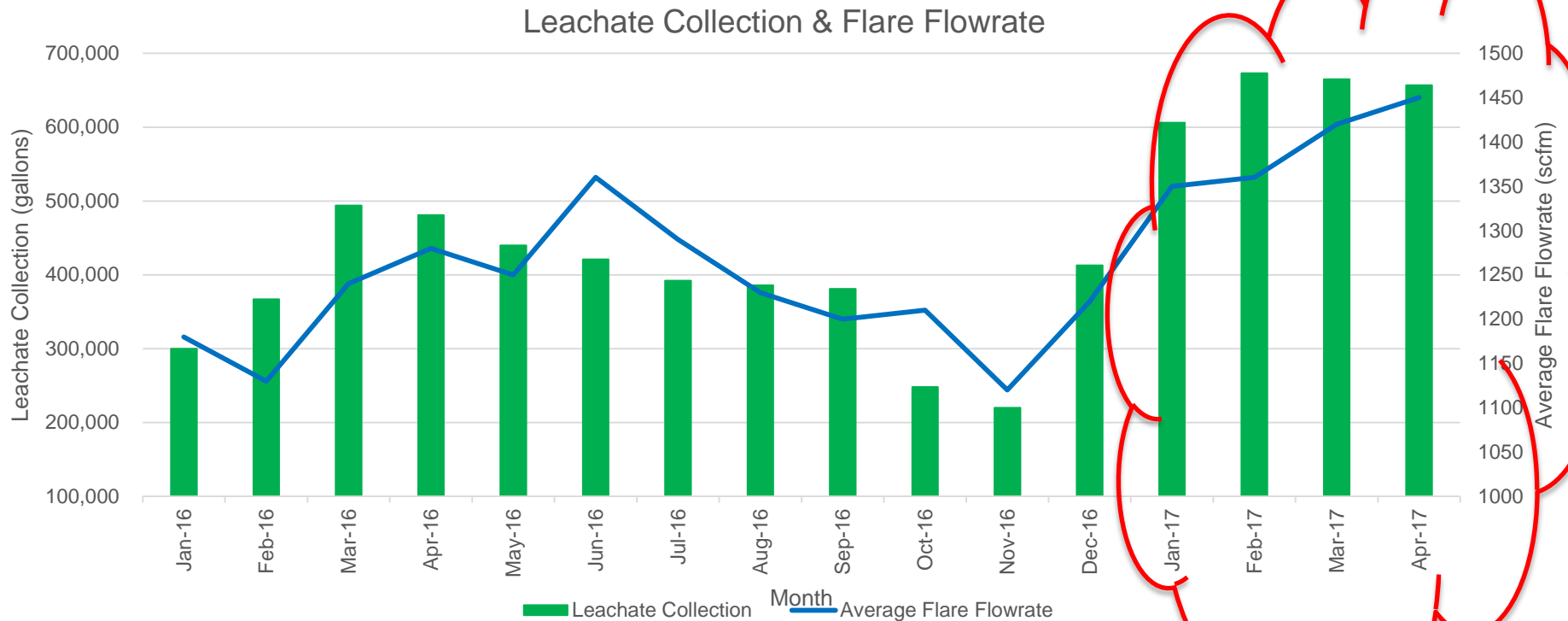
- Landfill in the mid-west
- 2016 – Typical operations
  - Warmer, wet weather
  - Additional dual-extraction wells installed
  - Additional pumps added to existing wells
  - Jetted force main for leachate collection system

# Combined Leachate & Flare Data



- Drop in leachate generation
- Drop in flare flow
- Wet summer weather
- Leachate seeps popping up
- Odors

# Combined Leachate and Flare Data

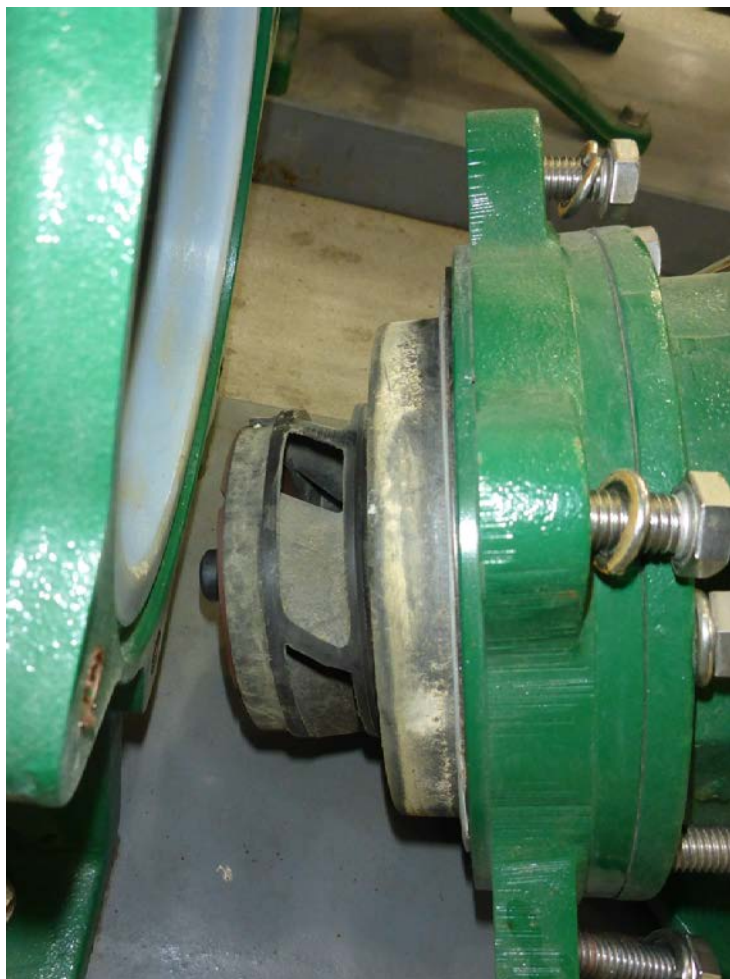


- Electronic descaling unit seems to be working
- Very wet weather
- Mild winter temperatures
- Another electronic descaling unit installed in late April

# Groundwater Treatment Case Study

- Groundwater contaminated with metals and chlorinated solvents.
- Located next to tidal water body. High TDS and hardness.
- Liquid treatment train
  - pH adjust and aeration for metals precipitation
  - Lamella clarifier and upflow sand filter
  - Shallow tray air strippers
  - Granulated activated carbon polishing

# Groundwater Treatment Case Study





# Groundwater Treatment Case Study



# Groundwater Treatment Case Study



# Key Takeaways

- Fouling is a fact of life
- Every site is unique
- There is no perfect answer
- Design for ease of preventative maintenance and put plan into action. Don't wait for failures.

# Questions?

## Contact Information



**Joseph J. Nemesh, P.E.**

Cornerstone Environmental Group, LLC

Joseph.Nemesh@CornerstoneEG.Com

Phone: (845) 695-0261