# BIOREACTOR BENEFITS

PRESENTATION BY

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# ANAEROBIC BIOREACTOR LANDFILL
## *POTENTIAL GOALS AND BENEFITS*

***RAPID ORGANIC WASTE STABILIZATION***

**(almost complete within 5 to 10 years of initializing bioreactor process)**

- **Rapid settlement; mostly complete during landfill operation**
- **Increased gas unit yield, total yield and flow rate during active operational period; mostly occurs during landfill operation**
- **Landfill land use possible during landfill operation; remainder within 5 to 10 years of closure**

# ANAEROBIC BIOREACTOR LANDFILL
## *POTENTIAL GOALS AND BENEFITS*

***MAXIMIZATION OF LANDFILL GAS CAPTURE FOR ENERGY PROJECTS***

- **Significantly increased total gas available within relatively short time period (landfill operating period plus 5 to 10 years after closure) for energy use-provides entrepreneurial opportunities**
- **Significant economy of scale advantage and potential increase in total landfill gas extraction efficiency (due to high generation rate enabled over shorter generation period)**
- **Greatly increased greenhouse gas reduction from lessened emission and consequent fossil fuel offsets**
- **Revenues can help defray landfill gas system from otherwise mandated non-funded environmental costs**

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# ANAEROBIC BIOREACTOR LANDFILL
## *POTENTIAL GOALS AND BENEFITS*

***LEACHATE TREATMENT AND DISPOSAL***

**(almost complete stabilization within 5 to 10 years of initializing bioreactor process)**

- **Low cost partial or complete reduction of organic constituents in leachate**
- **Low cost partial removal of some salts and metal by precipitation, chemical transformation, filtration, sorption, etc.**
- **Retention of leachate within landfill available up to field capacity significantly reduces of eliminates off-site transport of leachate for treatment and/or disposal**

# AEROBIC BIOREACTOR LANDFILL
## *POTENTIAL GOALS AND BENEFITS*

***POST-CLOSURE CARE AND MAINTENANCE REDUCTION***

(almost complete stabilization of gas and settlement within 1 to 3 years of closure; almost complete stabilization of leachate within 2 to 4 years of closure)

- After reaching stabilization, minimizes future environmental risk and liability related to gas, settlement and leachate
- After reaching stabilization, significant reduction in landfill operation and maintenance activities
- After reaching stabilization, significant reduction in landfill monitoring activities

# AEROBIC BIOREACTOR LANDFILL
## *POTENTIAL GOALS AND BENEFITS*

***RAPID ORGANIC WASTE STABILIZATION***

**(almost complete within 1 to 3 years of initializing bioreactor process)**

- **Rapid settlement; mostly complete during landfill operation**
- **Increased gas unit yield, total yield and flow rate during active operational period; mostly occurs during landfill operation; operated to generate mostly carbon dioxide and little if any methane gas**
- **Landfill land use possible during landfill operation; remainder within 1 to 3 years of closure**

# AEROBIC BIOREACTOR LANDFILL
## *POTENTIAL GOALS AND BENEFITS*

***LEACHATE TREATMENT AND DISPOSAL***

**(almost complete stabilization within 2 to 4 years of initializing bioreactor process)**

- **Low cost partial or complete reduction of organic constituents in leachate**
- **Low cost partial removal of some salts and metal by precipitation, chemical transformation, filtration, sorption, etc.**
- **Retention of leachate within landfill available up to field capacity significantly reduces of eliminates off-site transport of leachate for treatment and/or disposal**