



Prince William County Government  
Board of County Supervisors



# NEW BENEFICIAL USE OF LFG – ANIMAL INCINERATION

*Tom Smith, P.E. and Sadhu Sandhu, Ph.D., P.E.  
Prince William County*

*Darrin Dillah, Ph.D., P.E., BCEE and Balwinder Panesar, Ph.D.  
SCS Engineers*

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# OUTLINE



- Background
- Design
- Construction
- Incinerator Conversion
- Testing
- Economics



# BACKGROUND - SITE



- Location: 25 miles southwest of Washington, DC
- The Prince William County landfill has operated for 40 years.
- Over 8 million tons of trash is buried at the landfill.



# BACKGROUND - SITE PLAN



**Future Phase IV Expansion**  
- About 192 acres

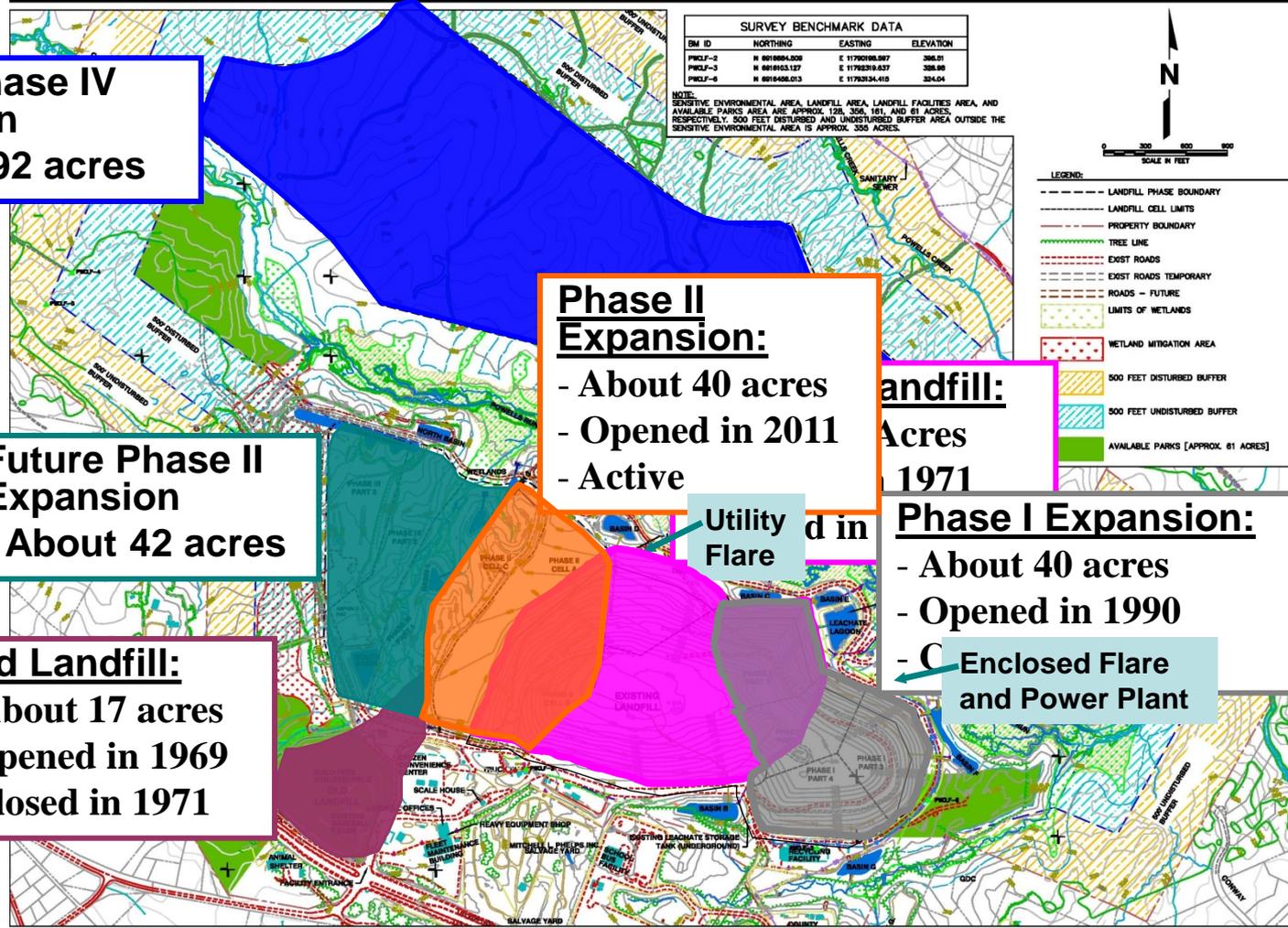
**Phase II Expansion:**  
- About 40 acres  
- Opened in 2011  
- Active

**Future Phase II Expansion**  
- About 42 acres

**Old Landfill:**  
- About 17 acres  
- Opened in 1969  
- Closed in 1971

**Landfill:**  
- About 17 acres  
- Closed in 1971

**Phase I Expansion:**  
- About 40 acres  
- Opened in 1990  
- Enclosed Flare and Power Plant



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# BACKGROUND - ENCLOSED FLARE



- LFG Specialties Enclosed Flare
- Installed in 1998
- About 2,000 scfm LFG destruction capacity



# BACKGROUND - UTILITY FLARE



- LFG Specialties  
"Candlestick" Flare
- Installed in 2007
- About 1,350 scfm LFG  
destruction capacity



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# BACKGROUND - LANDFILL AND GCCS OPERATIONAL DYNAMICS



- County owns, operates, and maintains the landfill
- December 1996 agreement with developer:
  - ◆ provides gas rights to developer
  - ◆ Developer performs O&M of wellfield and blowers/flare
  - ◆ Developer installs, maintains and operates engine generators
- County's responsibility for wellfield and blower/flare expansions and non-routine maintenance of wellfield
- County receives royalties and a 5% share of electric revenues.



# LFG USES



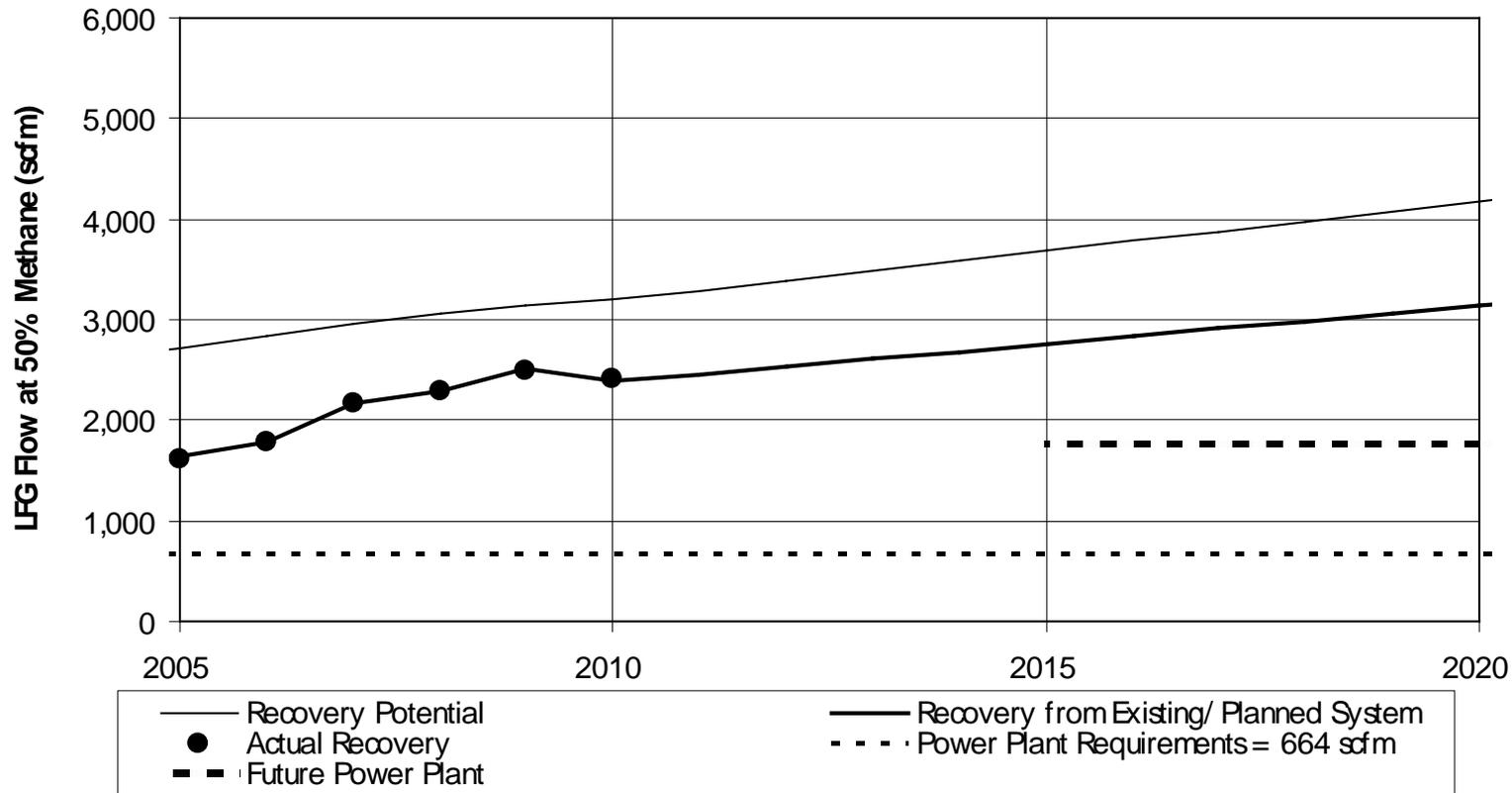
- In 1998, a 1.9 MW power plant and flare was constructed for all LFG generated.
- Only 25% of the LFG was used by the existing plant.
- Fortistar and the County are in process of expanding the power plant.
- ~200 scfm of excess LFG will be available for County.
  - ◆ LFG utilized to heat fleet shops and to fuel the Animal Shelter incinerator.



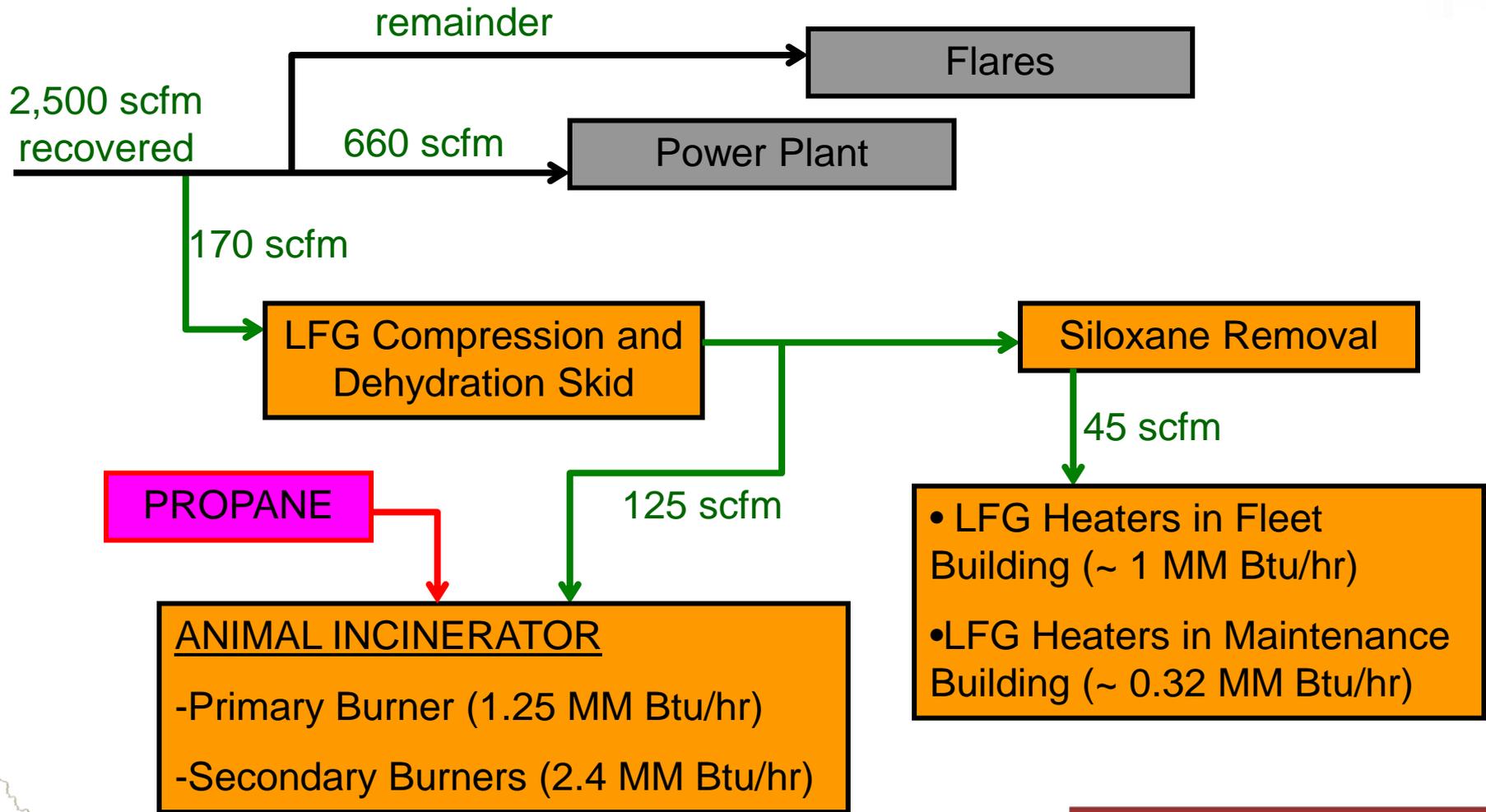
# LFG PROJECTIONS



**Exhibit 5. LFG Recovery Projection  
Prince William County Sanitary Landfill, Manassas, Virginia**

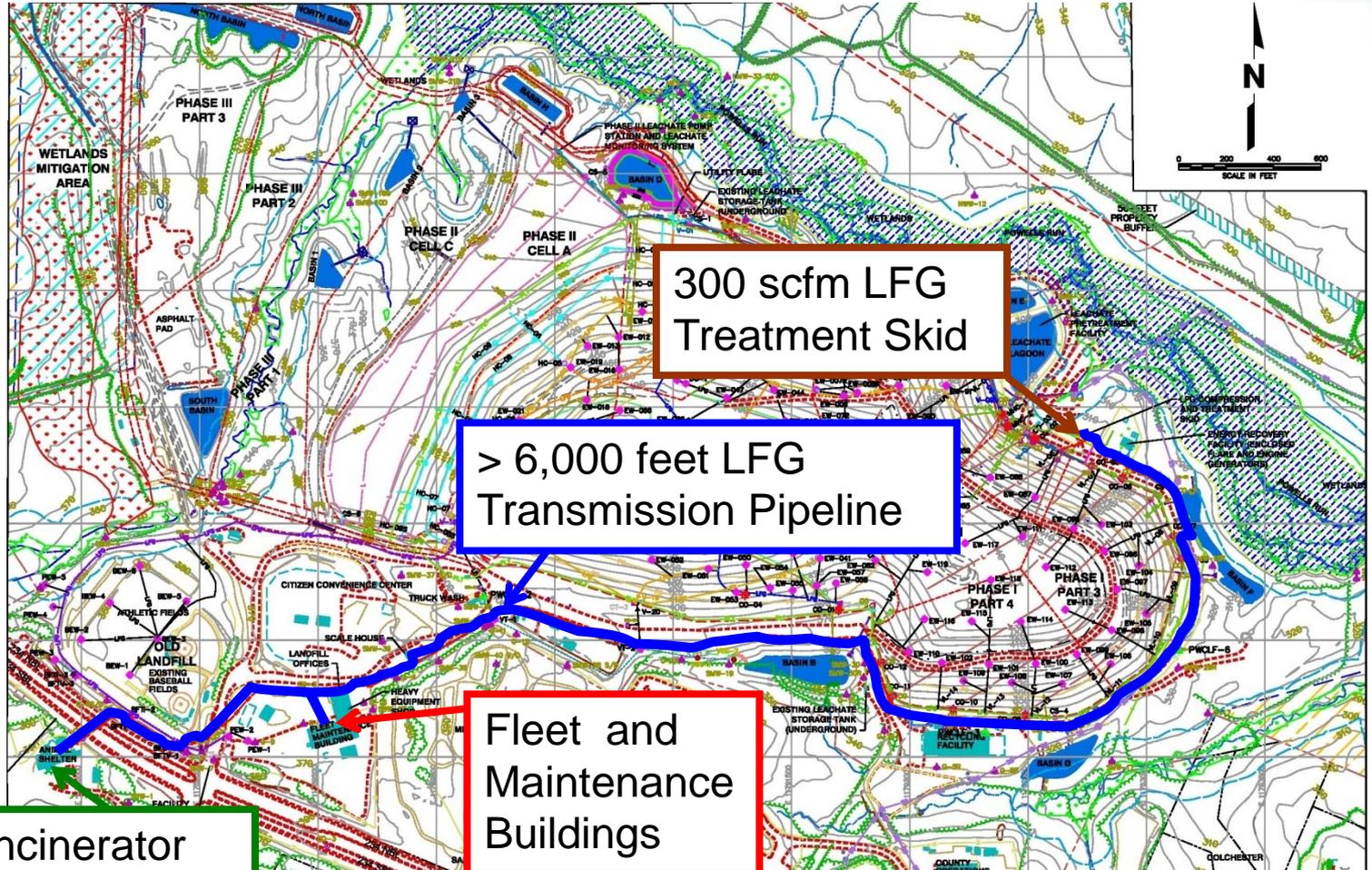


# DESIGN SCHEMATIC



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# PROJECT LAYOUT



300 scfm LFG Treatment Skid

> 6,000 feet LFG Transmission Pipeline

Fleet and Maintenance Buildings

Animal Incinerator

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# PROJECT CONSTRUCTION



## ■ LFG Treatment Skid

ENCLOSED



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# PROJECT CONSTRUCTION



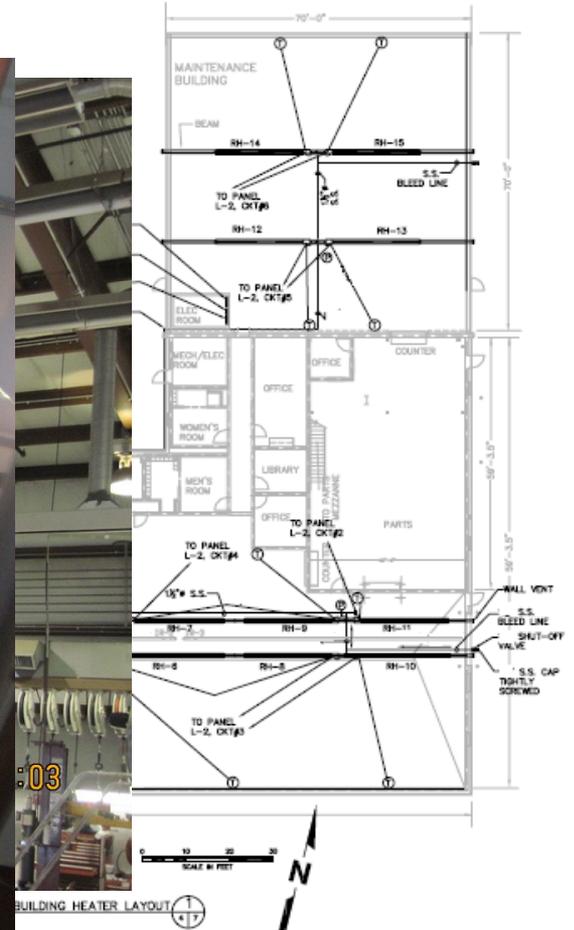
## ■ LFG Pipeline



# PROJECT CONSTRUCTION



## ■ LFG Heaters



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# CONVERSION



## ■ Incinerator manufacturer concerns:

- ◆ Corrosion
- ◆ Flame stability
- ◆ Gas quality: chlorine, H<sub>2</sub>S, siloxanes
- ◆ Btu content
- ◆ Chamber temperatures



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# TESTING



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# PRIMARY BURNER MODIFICATION



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# RESULTS



- Test run:
  - ◆ 1 month for gas valve on LFG
  - ◆ Four hours for existing primary burner on LFG
- No issues noted
- New primary burner operational for 7+ months with no issues



# NEXT STEPS



- Around March 2012
  - ◆ Upgrade stack sections to SS
  - ◆ Convert secondary burners to dual fuel
  - ◆ Modify temperature controllers



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# ECONOMICS



- Landfill pays \$1/MM Btu for LFG
- Construction \$1,088,130
- Landfill sells processed LFG for \$14/MM Btu
- Pay back period about 8-10 years



# WIN-WIN



## ■ Fleet Building and Animal Shelter

### ◆ Reduction of fuel costs

- \$14 vs ~\$20-\$23/MM Btu

### ◆ Savings of \$25,000-\$35,000/year



# QUESTIONS



THOMAS SMITH, P.E.  
SOLID WASTE DIVISION  
CHIEF  
PRINCE WILLIAM COUNTY  
5 COUNTY COMPLEX COURT  
PRINCE WILLIAM, VA 22192  
TEL: (703)-296-6252  
EMAIL:  
TSMITH@PWCGOV.ORG

DARRIN D. DILLAH, PH.D, P.E., BCEE  
VICE PRESIDENT  
SCS ENGINEERS  
11260 ROGER BACON DRIVE  
RESTON, VA 20190  
TEL: (703)-471-6150  
DDILLAH@SCSENGINEERS.COM



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