

Philadelphia Water Department

Biosolids Management Program
June 2012

PWD - A Regional Utility

- City-owned regional utility
- 3 WPCPs with centralized biosolids processing at the Biosolids Recycling Center (BRC)
 - BRC privately operated since October 2010 by Philadelphia Biosolids Services (PBS) / Synagro
 - 65,000 DT biosolids processed per year

Biosolids History

- Initially disposed of in lagoons at the wastewater treatment facilities, and then dumped in Atlantic Ocean.
- 1980 Federal Ocean Dumping Ban Act
- 1986 PWD completes construction of the Biosolids Recycling Center (BRC) for 100 % Class A Static Pile composting of all biosolids produced.

Biosolids History (cont'd.)

- 100% Class A Static Pile Composting reduced in 1990:
 - Cost, Labor, & Utilization Issues Warranted a More Diverse Program
 - Development of Strip-Mine & Agricultural Programs
- A Mix of Class A Compost and Class B Anaerobically Digested Cake were the backbone of the program from 1990 through 2012. (composting was eliminated in 2007)
- Privatized Class A Thermal Drying (Pelletization) Facility commissioned in February 2012.

Why Privatization?

Continued Problems at BRC:

- Odor issues, site aesthetics.
- Composting was halted in FY07 to reduce odors.
- Non-Compliance with Air Management Services (AMS) / Title V permit.
- Uncertain fate of Class B biosolids program:
 - Environmental Groups, Local Ordinances, PADEP, PA Legislature
- Impact of rising fuel costs for the 10,000 annual truck trips needed to transport biosolids.
- Labor intensive, 68 positions, 60 DC 33 (unionized) employees.



Why Privatization? (cont'd.)

Rapid Escalation of Annual Biosolids Disposal Costs:

■ FY1996	\$4.9 MM
■ FY2000	\$4.3 MM
■ FY2004	\$6.13 MM
■ FY2008	\$10.9 MM

BRC Privatization Objectives

- Ensure long term integrity and sustainability of biosolids processing and beneficial reuse
- Eliminate odors at BRC
- Reliable production of a Class A (pathogen free) product using a Proven Technology
- Compliance with all anticipated AMS Title V requirements
- Improve BRC site aesthetics
- Achieve long term cost savings

Criteria for Evaluation of a Proven Technology

- Biosolids Technology is grouped in three categories according to the EPA: *
 - Embryonic – Technologies in demonstration and/or laboratory or bench scale operation. New technologies demonstrated overseas, but not established there
 - Innovative – Full Scale demonstration in U.S.; available and implemented in the U.S. for less than 5 yrs; less than 25 facilities in the US; established overseas with some initial use in U.S.
 - Established – Technologies widely used (more than 25 facilities throughout the U.S.)
- The Thermal Drying (Pelletization) system is considered Established technology by the EPA

*Source: Emerging Technologies for Biosolids Management, Office of Wastewater Management, U.S. Environmental Protection Agency, Washington, D.C. Sept. 2006

RFQ Minimum Qualifications Criteria

- Design
 - 2 facilities of 20 Dry Tons Per Day (DTPD) of Proposed Technology
- Construction
 - 2 projects greater than \$25 million
- Operations
 - Operations and maintenance of 5 years for a facility of 20 DTPD
- Primary contractor
 - 5 years direct biosolids operation and maintenance experience
- DBE Equity Participation
 - Minimum DBE Equity of at least 10% for MBE and 5% for WBE
- Financial Strength
 - minimum standards set for:
 - Performance Bonds (\$75 million design and construction, \$25 million operations)
 - Insurance – Liability and Environmental (\$75 million)
 - Letter of Credits (\$15 million)
 - Tangible Net Worth (\$50 million)

Procurement Process

RFQ/RFP

- RFQ/RFP Team: Procurement, PWD, Law, MBEC, City Council Technical Staff, and Camp Dresser & McKee consultants
- RFQ Issued June 2003
- RFP issued in May 2004
- PBS / Synagro submitted responsive proposal

Philadelphia Biosolids Services

- Synagro WWT, Inc -- guarantor
- McKissack and McKissack -- design and construction -20% WBE equity member
- Len Parker Associates -- general contractor - 10% MBE equity member
- Andritz-Ruther – Thermal drying equipment
- CH2MHill -- design

Synagro Qualifications (prime contractor)

- Nation's largest Biosolids Management Company
- Working for 600 generators throughout the US
- Operates all proven biosolids processing and recycling technologies
- Maintains largest product marketing distribution channels in industry
- Technology Neutral – utilizes best available technologies for each project
- Meets all PWD project prequalification requirements

PBS Proposal

- PBS to manage current BRC operations for 3-5 yr interim/construction period
- PBS to finance, design, build, operate, and own (DBO) a new Class A thermal drying facility at BRC for 20 years with a five year extension option
- Thermal Drying Facility -- evaporates water then forms a fertilizer pellet for use in agriculture

The Contract Basics

- Commencement Date – October 2008
- *TRANSITION PERIOD*
- *INTERIM PERIOD* – Class B Program – October 2008 thru December 2011
- *CLASS A PERIOD* – Thermal Dryer / Pelletizer operation started up Jan. 2012.

The Contract Basics

Transition Period:

- PBS / Synagro submitted operating Plans
- The City demonstrated the operational processing capacity of the existing facility to dewater 70,000 DT/Year while maintaining a 93% capture rate

The Contract Basics

Interim Period:

- Continued Class B Operation
- Obtained:
 - Permits and Approvals
 - Facility Financing
- Completed:
 - Design
 - Construction
 - Start-up

The Contract Basics

Class A Period – DBO

- Processing Capacity – 63,000 DT/YR
- Class A Pellet – 93% TS
- Centrate solids shall not exceed 5475 Tons/year
- Energy Usage Guarantees:
 - Gas < 85 therms/DT, currently 70 therms/DT
 - Electric < 375 kwh/DT, currently 250 kwh/DT
- Anticipated that up to 30% of thermal needs will be met using available digester gas. Currently being achieved.

A new thermal drying facility, containing the largest dryers in the world, with state of the art pollution control systems has been constructed



PBS / Synagro Thermal-Drying Facility

PBS Project Benefits

- Saves rate payers nearly \$200 million over 23 yr. contract, helping to minimize future rate increases.
- Eliminates odors and achieves Title V Air Permit compliance.
- Reduces emissions including green house gas emissions
- All Class A pathogen free biosolids
- Proven and reliable technology with 30 years experience
- Reduces truck traffic from 10,000 trips/yr to 3,000, a 70% reduction
- Shifts the risks of biosolids disposition to PBS

The new facility eliminates the outdoor storage of malodorous sludge cake at the BRC



Average Annual BRC Costs

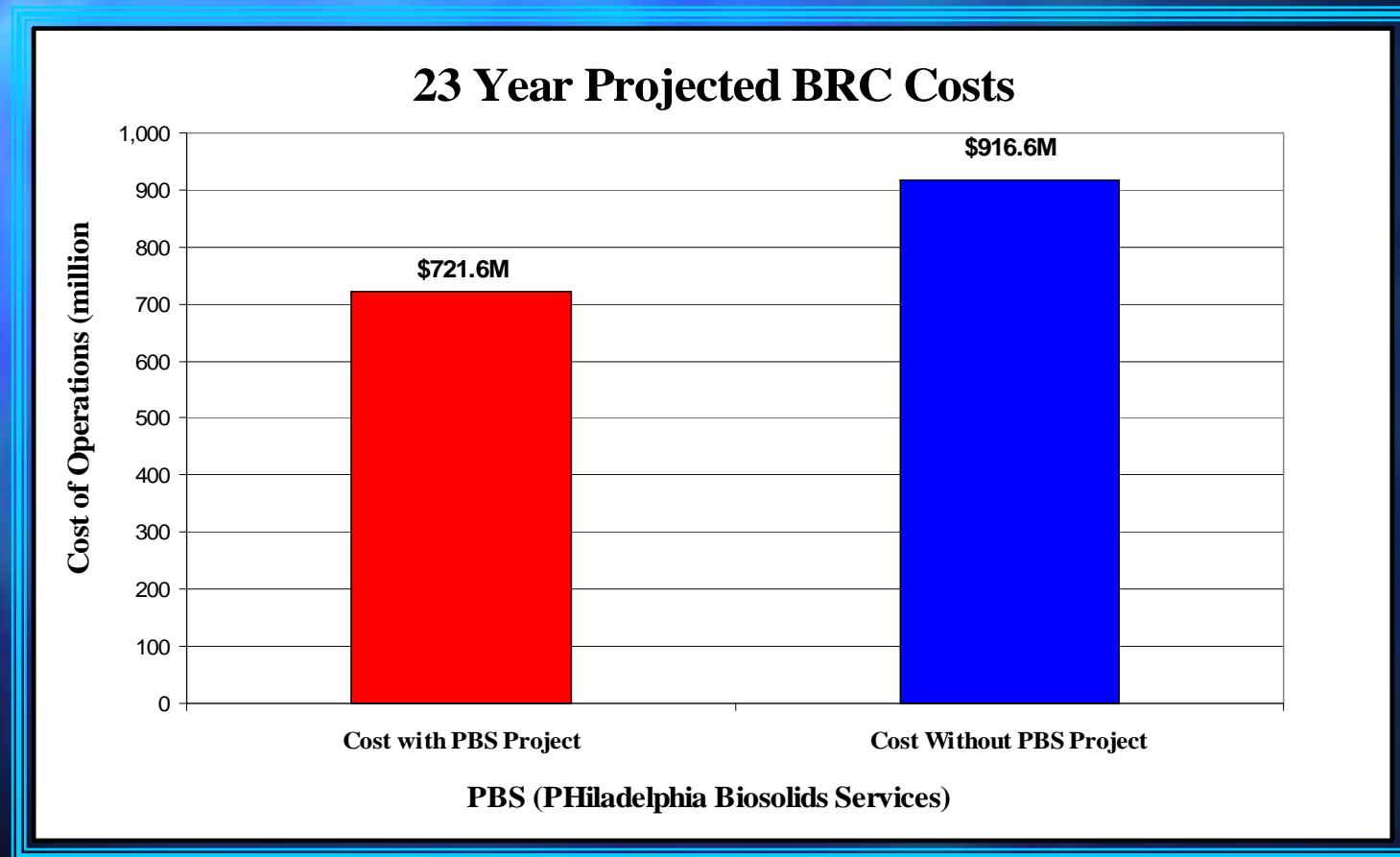
■ Operating Costs	\$ 24.30 million
■ Rehab and Renewal*	\$ 03.00 million
■ Vehicle Purchase/ fuel	\$ 00.70 million
■ Total Annual Cost	\$ 28.00 million
■ PBS Comparative Cost	\$ 21.75 million
■ Annual Savings	\$ 06.25 million

*R&R is a yearly average based on a fifteen year analysis of BRC capital expenditures.

PBS Contract Pricing

- City paid PBS an average of \$21.75 million per year during *Interim Period* (approximately \$6.25 million less than projected annual BRC operating costs)
- PBS / Synagro financed, designed, built and now owns and operates a \$70 million thermal drying facility.
- City is now paying \$26.35 million per year during the *Class A Period* which includes a payment of \$21.35 million to PBS and \$5 million for energy (\$5 million less than projected City costs)

23 YR Projected Cost Savings \$194 Million



Summary of Project Benefits

- Good for the environment
 - Good for the community
 - Good for the ratepayers
- A Triple Bottom Line