

AGENDA ITEM #2  
February 9, 2010  
**Briefing**

**MEMORANDUM**

February 5, 2010

TO: County Council

FROM: *KL* Keith Levchenko, Senior Legislative Analyst

SUBJECT: **Briefing from the County's Representatives to the District of Columbia's Water and Sewer Authority (WASA)**

On February 9 the Council will meet with the County's representatives on the District of Columbia Water and Sewer Authority (WASA) Board of Directors. Montgomery County's principal board members are Chief Administrative Officer Tim Firestine and Department of Environmental Protection (DEP) Director Robert Hoyt. Their alternates are Assistant Chief Administrative Officer Kathleen Boucher (for Mr. Firestine) and David Lake of DEP (for Mr. Hoyt).

William Walker, Chairman of the WASA Board of Directors and George Hawkins, WASA General Manager also will be attending the meeting.

Executive staff have prepared a detailed agenda/outline (see ©1-2) and presentation slides (see ©3-20) which include the following general topics:

- An overview of WASA and its operations
- A presentation on several significant projects with major cost implications for WSSC including:
  - WASA's Combined Sewage Overflow (CSO) Long Term Control Plan (total estimated cost of \$2.3 billion)
  - Blue Plains Total Nitrogen Removal (TNR) (total estimated cost of \$850 million)
  - Implementation of WASA's Biosolids Management Plan (total estimated cost: \$450 million)
- A discussion of the Intermunicipal Agreement (IMA) of 1985 and current efforts to update the IMA.

## **Background**

### Blue Plains Intermunicipal Agreement (IMA) of 1985

The IMA is the governing document regarding the use of the Blue Plains Wastewater Treatment Plant. Issues such as capacity allocations, capital cost and operating and maintenance cost allocations are addressed in the document. This agreement predates the creation of DCWASA. Signatories to the IMA are: The District of Columbia, Fairfax County, Montgomery County, Prince George's County, and the Washington Suburban Sanitary Commission.

**Capital Costs:** WSSC (as do all Blue Plains Wastewater Treatment Plant users) pays a pro-rated share of all capital costs at the Blue Plains Wastewater Treatment Plant and related transmission facilities, such as the Potomac Interceptor. The share is based on the allocation of the plant's capacity (assumed in the 1985 IMA to be 370 million gallons per day) to each jurisdiction. WSSC's allocation is 169.6 million gallons per day (or approximately 45.8 percent).

**Operating Costs:** All users (including WSSC) make operating payments based on the actual flows to the plant. For FY10, the total WSSC payment is budgeted at \$42.2 million (8% of WSSC's Operating Budget). Not included in this amount is debt service related to the capital projects for Blue Plains.

The IMA was intended to address the above issues (and others) through 2010. A renegotiation of the IMA was begun several years ago but stalled as a result of leadership changes throughout the region a couple of years ago. All parties have agreed that the IMA's provisions shall remain in place beyond 2010 until new agreements are reached.

However, cost sharing issues involving the Long-Term Control Plan (LTCP), for instance, are more complicated than simply applying the standard IMA assumptions above. The issue with the LTCP cost-sharing is not how much sewage capacity is allocated to WSSC or how much actual sewage flows to Blue Plains, but rather the proportion of the CSO problem that can be attributed to WSSC. Depending on the method used to calculate WSSC's impact, WSSC's cost sharing allocation for the \$2.3 billion total project cost could be as low as 6% or as high as 24%.(see ©11).

### District of Columbia Water and Sewer Authority (WASA)

WASA was formed in 1996 as an independent agency of the District of Columbia with its budgets subject to review and comment by the Mayor and City of Council of the District of Columbia and budget approval by the United States Congress. Prior to WASA's formation in 1996, water and wastewater services in the District of Columbia were managed by the District of Columbia Water and Sewer Utility Administration as part of the District of Columbia Government.

The WASA Board of Directors consists of eleven members: six from the District of Columbia, two each from Montgomery and Prince George's Counties, and one from Fairfax County. All boardmembers vote on joint-use issues (such as issues regarding the Blue Plains Wastewater Treatment Plant). Only the District of Columbia boardmembers vote on non joint-use issues (i.e. those issues specific to the District of Columbia and its ratepayers). The current

WASA Board Chairman is William Walker. George Hawkins is the General Manager. Leonard Benson is the Deputy General Manager and Acting Chief Engineer.

WASA provides drinking water (via purchase from the Army Corps of Engineers Washington Aqueduct) and wastewater collection and treatment to more than 500,000 residential, commercial and governmental customers in the District of Columbia. WASA also collects and treats approximately 65 percent of the wastewater generated in the Washington Suburban Sanitary District.

Rates for WASA's services to retail customers in the District of Columbia are set by the Authority's District of Columbia Board Members. Wastewater treatment is provided to the suburban jurisdictions at a wholesale rate and is paid by those jurisdictions (in Montgomery County and Prince George's case, WSSC pays these costs based on the funding formulas in the IMA mentioned earlier.

#### Attachment

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Agenda/Outline

Council Briefing on  
The District of Columbia Water and Sewer Authority (WASA)

February 9, 2010  
9:00 A.M.

- I. Introductions.....Timothy Firestine
  - a. Montgomery County WASA Board Members
    - i. Tim Firestine - Principal Member - Finance and Budget Committee, and Audit Committee (Chair)
    - ii. Bob Hoyt – Principal Member – Environmental Quality and Operations Committee
    - iii. Kathleen Boucher – Alternate Member – Governance Committee
    - iv. Dave Lake – Alternate Member – Environmental Quality and Operations Committee (Chair)
  - b. William Walker – Chairman, WASA Board of Directors
  - c. George Hawkins – General Manager, WASA
  
- II. Overview of WASA Progress and Operations
  - a. WASA is an independent authority of the District of Columbia (Created by the D.C. Council and approved by the U.S. Congress in 1996)
  - b. WASA’s Board of Directors is comprised of eleven Principle Members (6 from D.C., 2 from Montgomery County, 2 from Prince George’s County, and 1 from Fairfax County) and Eleven Alternates.
  - c. Board Functions as a whole on issues pertaining to budget and finance, administration and policy
  - d. D.C. Members (only) vote on District-only issues related to retail water Service, retail sewer service, and retail rates (Non-Joint Use Issues)
  - e. Entire Board (D.C. and Suburban Members) vote on issues related to Blue Plains, Potomac Interceptor, and other shared facilities (Joint Use Issues)
  - f. WASA Board works well together – successfully addressing issues of finance, budgets, capital investment, planning, policy and operations; but not without its challenges.
  
- III. Presentation On Three Significant Projects Impacting the Maryland Suburban Jurisdictions (Montgomery County and Price George’s County via WSSC Rates)
  - a. Management of Combined Sewer Overflow (CSO) – suburban participation in the Long-Term Control Plan (LTCP)
  - b. Meeting Chesapeake Bay nutrient reduction goal at Blue Plains – Enhanced Nitrogen Removal (ENR) with the Total Nitrogen (TN) Project
  - c. Implementation of the Biosolids Management Plan with cost

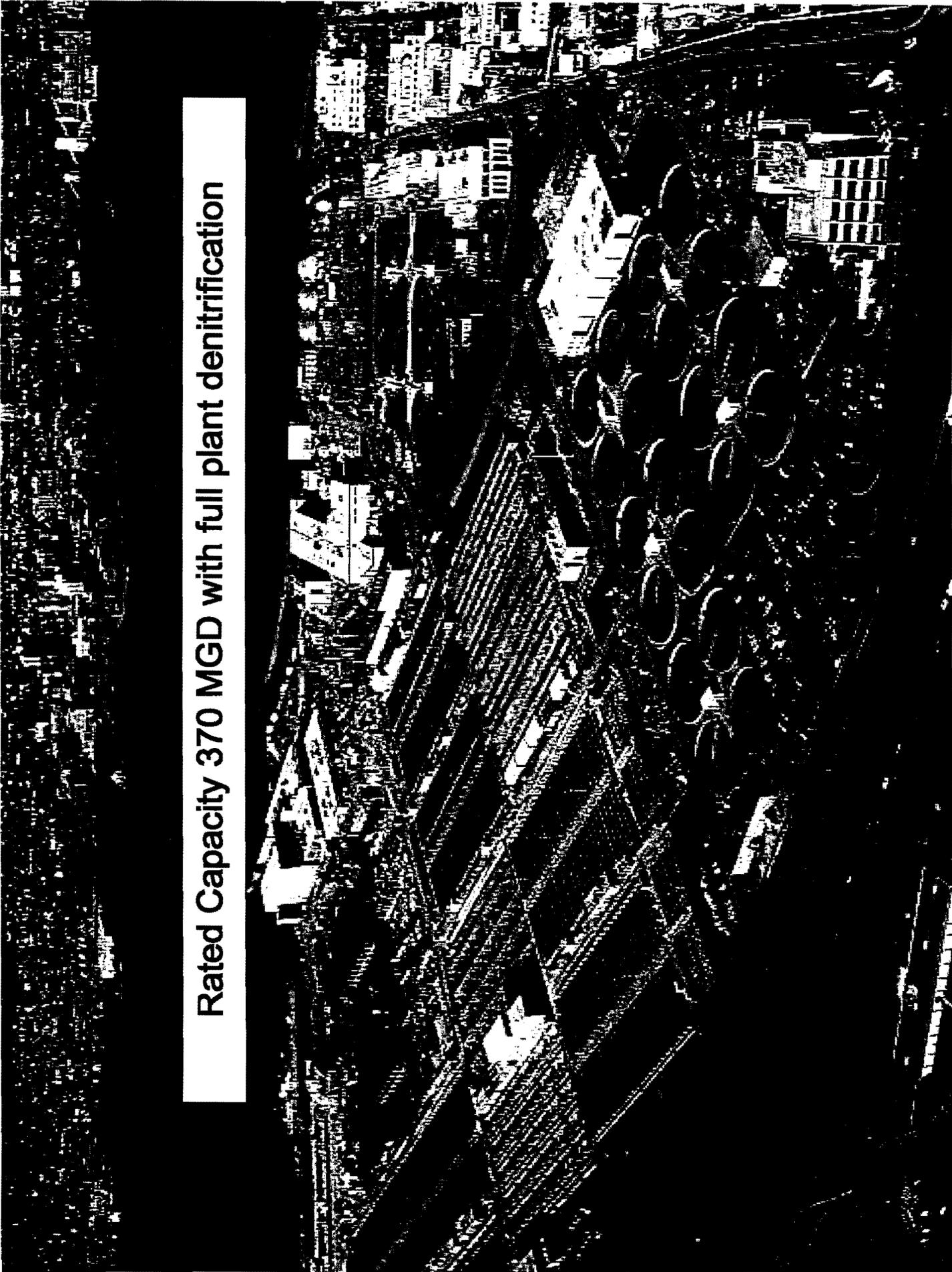
effective/green technology – Cambi/Digester Project

- IV. Intermunicipal Agreement (IMA)
  - a. 1985 signed agreement (District of Columbia, Fairfax County, Montgomery County, Prince George’s County, and the Washington Suburban Sanitary Commission (WSSC)
  - b. Regional agreement on jurisdictional rights and responsibilities related to the Blue Plains Wastewater Treatment Plant and related facilities; addressing capacity allocations, capital and operating cost allocations, sludge management, and system coordination
  - c. The IMA has successfully promoted and guided shared regional responsibilities for Blue Plains and related facilities for twenty five years via the appointed Blue Plains Regional Committee (BPRC), However the agreement is out-of- date and needs to be updated (e.g.; WASA did not exist in 1985, planned facilities are no longer needed or viable, capacity allocations need to be updated, etc.)
  - d. The BPRC worked on a proposed updated IMA in 2005 and 2006, But due to 2006 elections placed the update efforts on hold until 2008. The jurisdictional Chief Administrative Officers (CAOs) appointed an IMA Negotiation Team (a subset of the BPRC) to draft an updated IMA by May 2010. The County Council should expect to receive proposed updated IMA for review in the fall (2010.)
  
- V. Questions/Discussion

# District of Columbia Water and Sewer Authority (WASA)

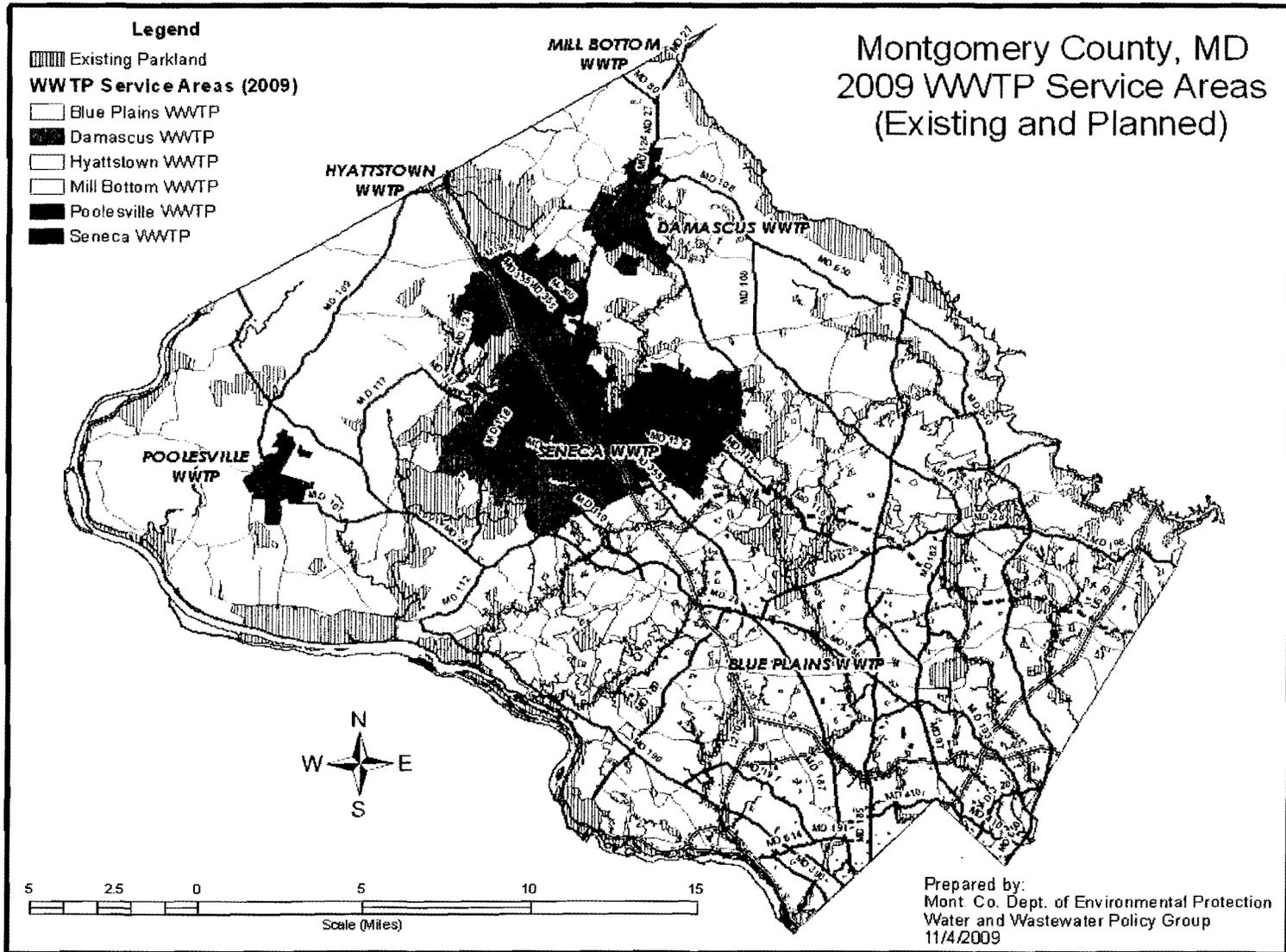
Meeting Montgomery County's  
Wastewater Treatment Needs:  
Both Now and in the Future

**Rated Capacity 370 MGD with full plant denitrification**



# Service Areas of Montgomery County

## 75% of County served by Blue Plains



# Montgomery County Involvement

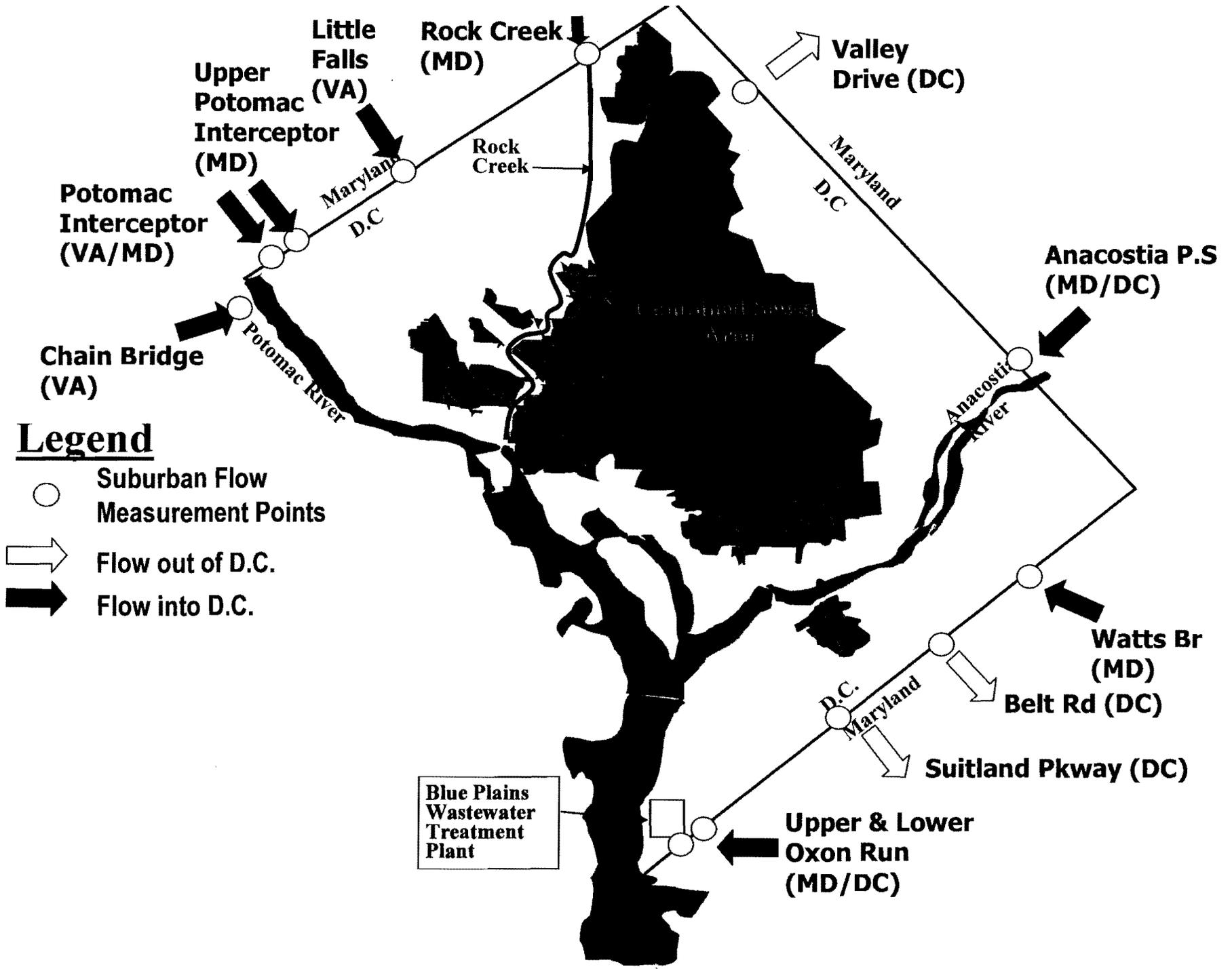
- Participation in IMA (Intermunicipal Agreement ) Regional Committees (planning, coordination, IMA consistency, etc)
- Participation at WASA Board of Directors to provide policy guidance to WASA
- Coordinate Technical and Financial Issues with WSSC  
(Participate in facility planning and budget development to define need and timing of CIP Projects to meet Montgomery County needs.)
- Coordinate Policy Issues

## WASA Major CIP Projects – 2010 Focus (FY2011)

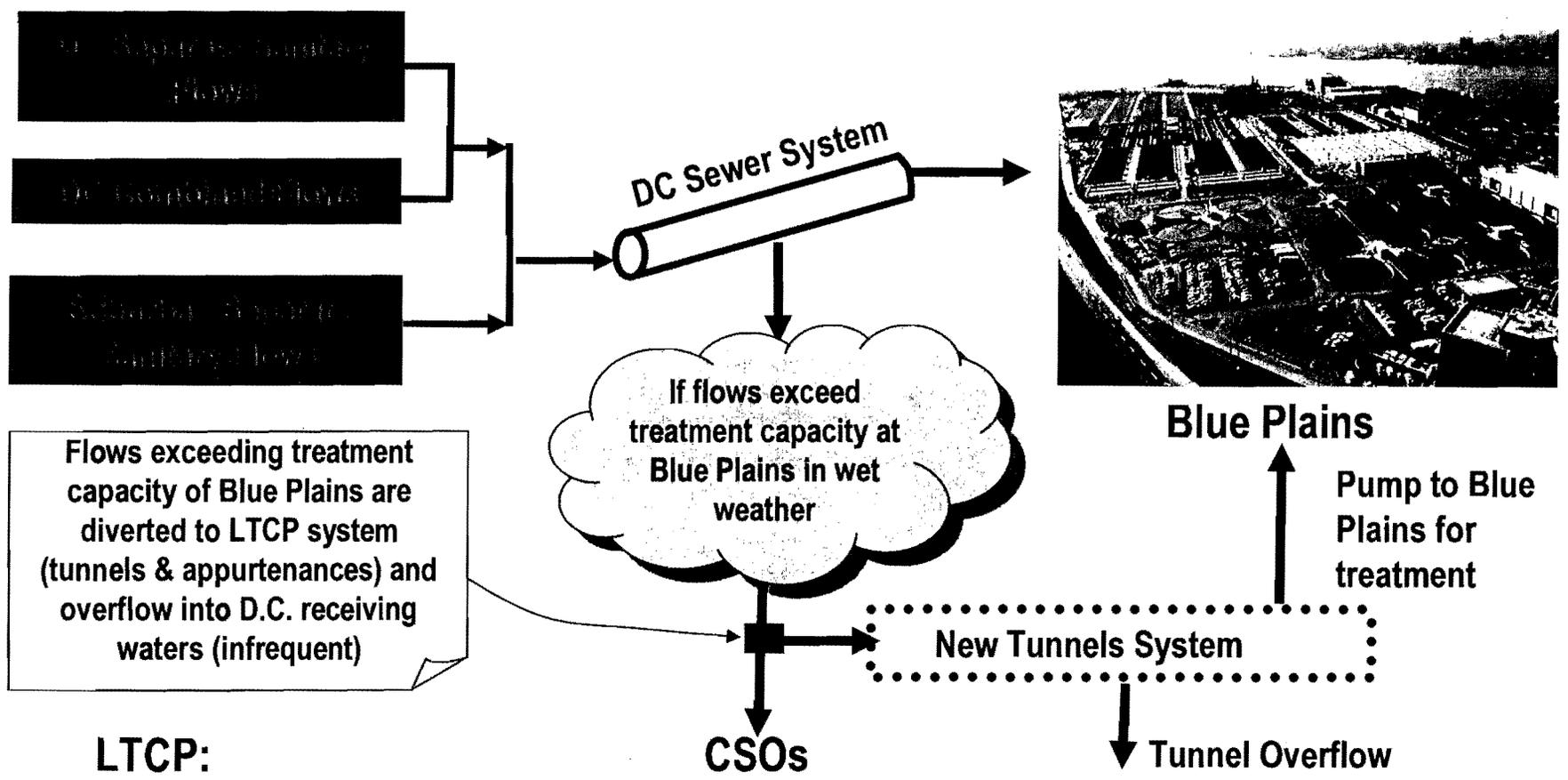
- **Elimination of Combined Sewer Overflows (CSO)**
  - Solution: Long-Term Control Plan (LTCP)
  - Estimated Cost: \$2.3 Billion
- **Meet New Chesapeake Bay Nitrogen Goals and Discharge Permit Limits**
  - Solution: Enhanced Nitrogen Removal – called Total Nitrogen Project (TN)
  - Estimated Cost: \$ 850 Million
- **Implement the WASA Biosolids Management Plan**
  - Solution: Cambi Digester Process
  - Estimated Cost: \$ 450 Million

# Two-tier Stakeholder Involvement Plan

- Tier I – Blue Plains Users – Counties and WSSC
  - WASA Board of Directors (Montgomery County Reps)
  - BP Regional Committee (Montgomery County Reps)
  
- Tier II – Blue Plains Users and Regulators
  - DCDOH (nutrient, CSO)
  - EPA Region III (nutrient, CSO, capacity)
  - EPA CBP (nutrient, CSO, capacity)
  - EPA Headquarters (nutrient, CSO, capacity)
  - MDE/ MD DNR (nutrient)
  - VA DEQ (nutrient)



# How Does LTCP Work?



## LTCP:

- Accommodates current and projected future dry and wet weather flows from all users
- Provides capacity all users need to meet regulatory requirements regardless of source of flows (combined sewer system or separate sanitary sewer system)
- Meets water quality standards

# Cost Allocation Based on Capacity: Model Results

Method	Percent Suburban Use in LTCP
1a. Difference in Tunnel Storage Volume Required in Avg. Year <sup>(1)</sup>	6%
1b. Difference in Tunnel Storage Volume Required in Avg. Year <sup>(2)</sup>	7.6%
2a. Difference in Annual Volume Exceeding Treatment Capacity in Average Year (Annual CSO Overflow Volume) <sup>(1)</sup>	7.1%
2b. Difference in Annual Volume Exceeding Treatment Capacity in Average Year (Annual CSO Overflow Volume) <sup>(2)</sup>	9.4%
3. Difference in Volume Exceeding Treatment Capacity for Largest Storm in 3-year Design Period	12.7 %
4. Difference in Annual Wet Weather Volume Handled in Avg Year	24%

**Notes:**

- (1) Assumes capacity of Potomac Pumping Station for D.C.-only run is 228.8 mgd (D.C. share of facility's capacity)
- (2) Assumes capacity of Potomac Pumping Station for D.C.-only run is 460 mgd (current capacity of facility)

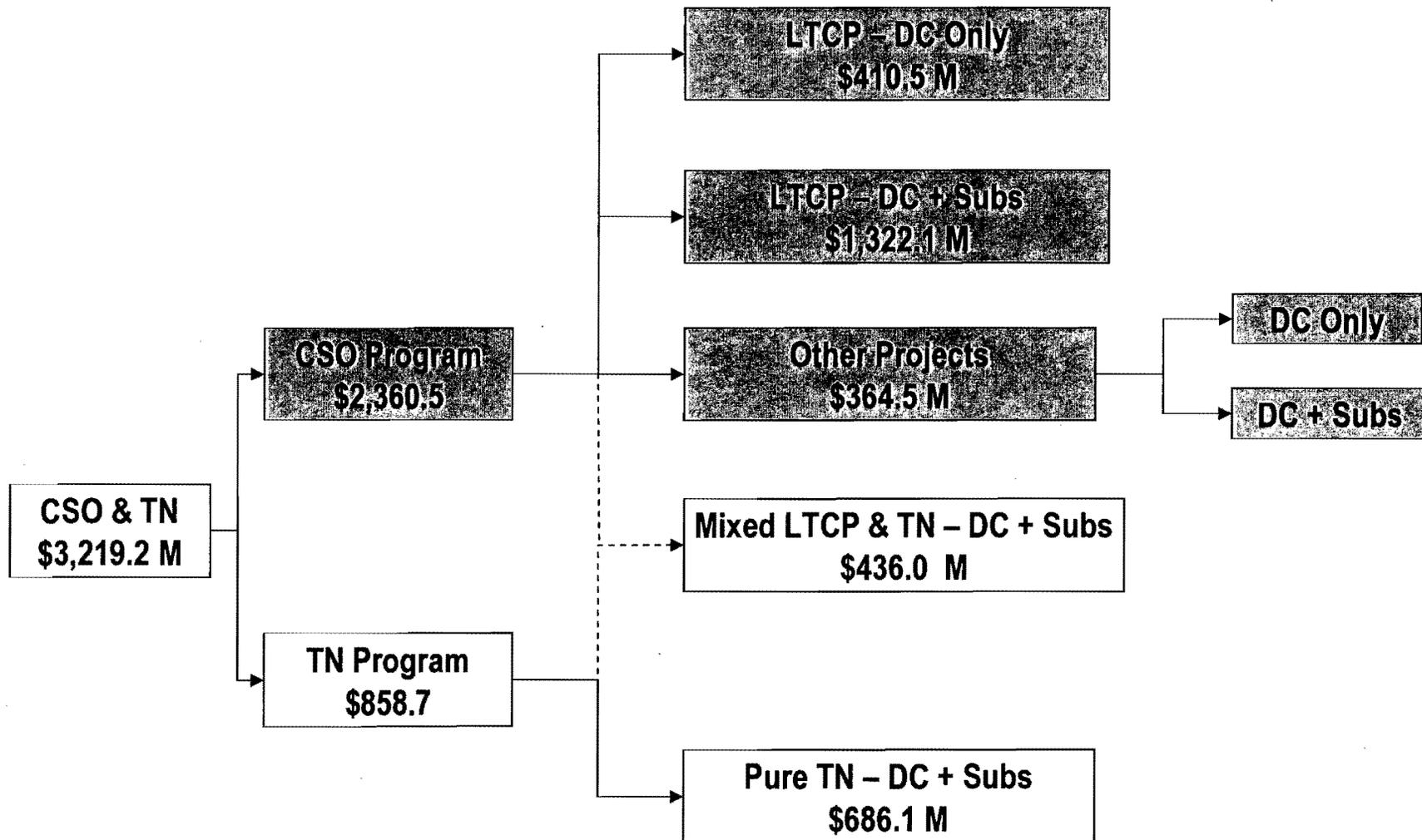
# Meeting Chesapeake Bay Nutrient Goals

- Blue Plains has had the lowest phosphorus concentration of any wastewater treatment plant in the region for over 20 years
- Blue Plains installed BNR (Biological Nutrient Removal) technology ten years ago and has met their Chesapeake Bay goal (lb. loading of nitrogen) since this technology was installed
- Blue Plains is now required to implement technology (ENR) that will meet the strictest concentration of nitrogen (3 mg/l) referred to as the “limit-of-technology”. This is the TN (Total Nitrogen Project)
- WASA has designed this new technology for Blue Plains and will proceed with installation over the next three years to meet the new NPDES requirements in 2014.

## Cost Issues for ENR at Blue Plains

- Conventional design of ENR at Blue Plains would cost approximately \$1.35 Billion (46% WSSC Cost would be approximately (\$600 M)
- U.S. EPA agreed to reducing peak flows (storage with subsequent treatment) at Blue Plains resulting in reduced costs for ENR to \$850 Million (WSSC \$400 M) , saving \$500 Million ( WSSC \$230 M)
- Peak reduction would be achieved by combining ENR storage with expanded LTCP storage
- Storage volumes for ENR (TN) and LTCP have been tracked separately since suburban cost allocations are very different (7.1 % LTCP/ approx. 5% for WSSC and 60% TN/ approx. 46 % WSSC)

# Overview of Costs and Categories



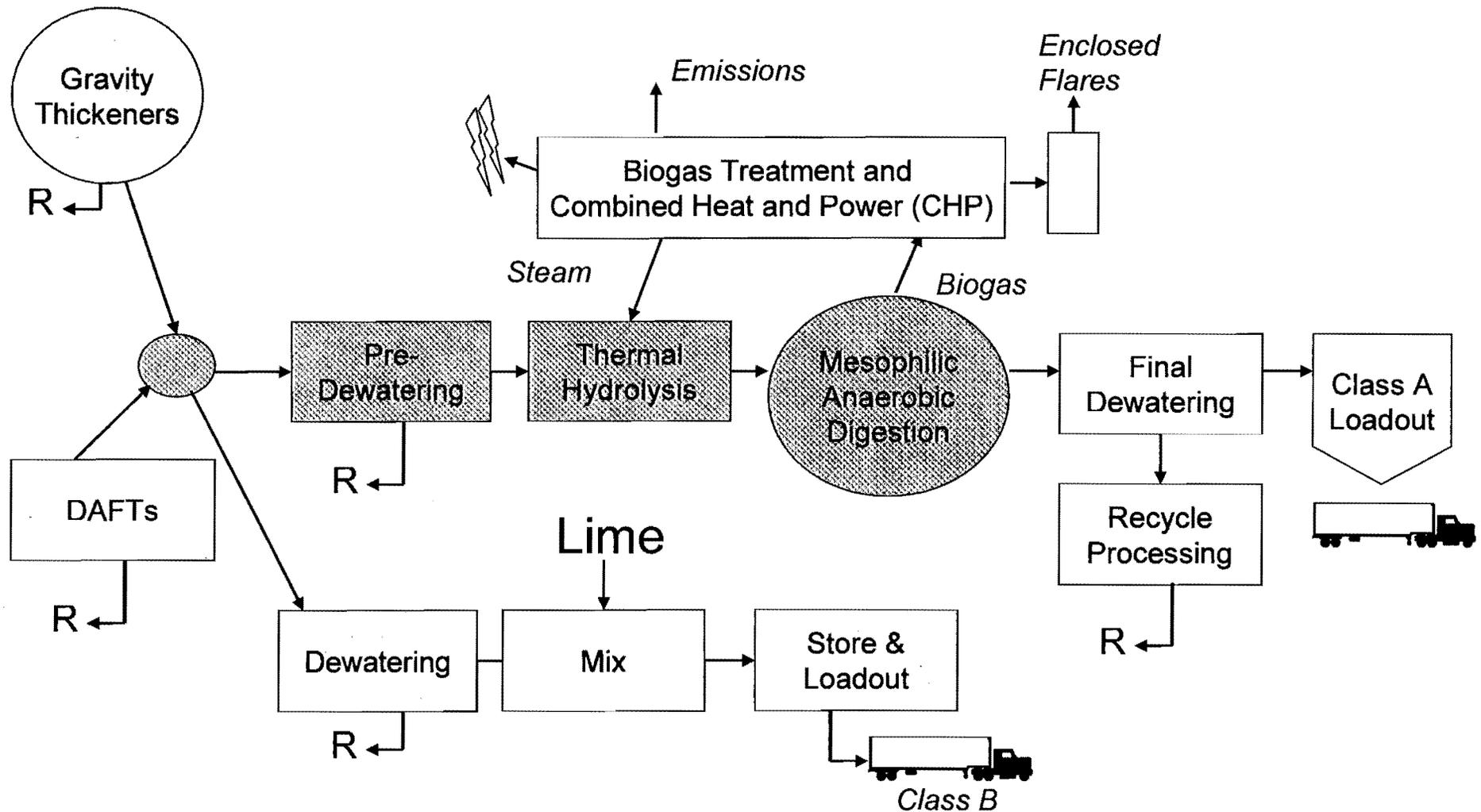
# ENR Cost Reimbursement by MDE “Flush Tax”

- WSSC capacity at Blue Plains is eligible for “Flush Tax” grants from MDE
- “Flush Tax” law states that up to 100% of ENR costs are eligible for reimbursement
- Conventional ENR would result in nearly \$400+ M in eligible reimbursement for MDE to WSSC
- Cost savings design results in “ineligible” processes with MDE indicating a maximum of \$230 M eligible for reimbursement, resulting in WSSC costs of nearly \$200 M
- Discussions are ongoing with MDE to share in ENR savings from more cost effective design by increasing eligible portion of TN project

# Biosolids Management Plan

- WASA has determined that:
  - Digestion remains the cornerstone of the BMP
  - WASA should continue moving toward processes that result in Class A biosolids for program sustainability
  - Thermal Hydrolysis by Cambi is proven to be an effective biosolids treatment technology
  - Use of Cambi process can reduce needed digester volume by 50%
  - Diversity of final product use is an important risk management strategy

# Components of the Biosolids Management Plan (BMP)



# Evaluation Processes Used

BMP meetings with key DC WASA stakeholders held subsequent to LTCP workshops:

- Established goals & objectives
- Developed THP procurement plan
- Compared risks and ability to manage risks associated with design-build-operate (DBO) & design-build (DB)
- Evaluated alternative delivery market
- Researched existing biosolids DB and DBO contracts

# Process Technologies

## Cambi Thermal Hydrolysis (TH)

**Thickening → Dewatering → Cambi → Meso Digestion →  
Dewatering → Beneficial Use (Class A)**

TH precedes anaerobic digestion

- TH uses high temp and pressure to break down sludge for faster digestion and destroys all pathogens; no reactivation and re-growth issues
- TH produces Class A biosolids product
- TH reduces the required digester volume by half
- TH can provide diversity of biosolids product market

## Summary - Basis for Selection of Recommended Alternative

- Produces Class A product with no potential for reactivation or re-growth
- Lowest total cost (O&M plus debt service)
- Diversity of Product Use – Cambi cake product can be land applied or used for horticulture; drying could be added later if needed
- Complexity of Construction – simple digester vessel shape
- Complexity of O&M – single comparatively simple to operate technology selected over two diverse technologies
- Energy Production – greatest production with Cambi; drying uses more energy
- Manages risks better than other alternatives
- Carbon Offsets
- Sustainable infrastructure considerations