DC Water Pretreatment Program - Requirements and Limits

Presented by:

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Questions to Answer

- What type of permit is needed to discharge?
- What are the requirements and limits?
- Under what conditions can I discharge to the combined sewer system?
- Under what conditions can I discharge to the sanitary sewer system?

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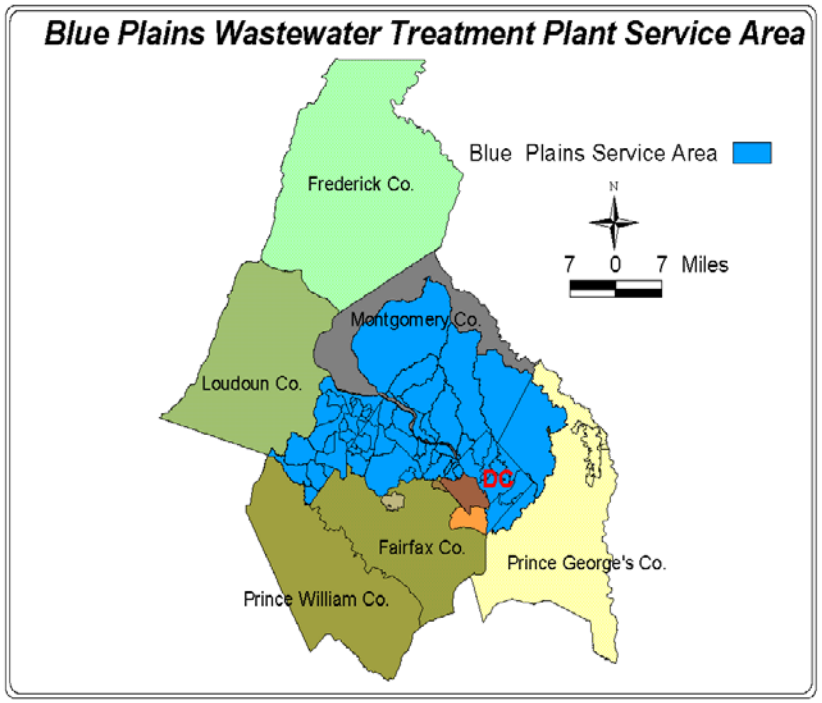
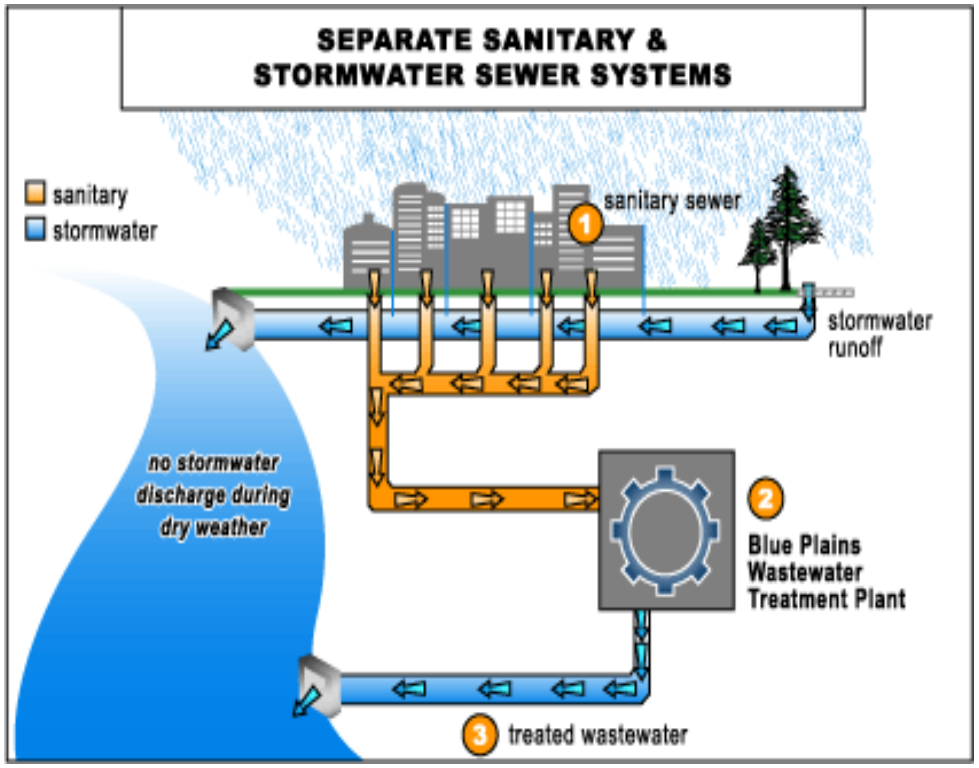
Flow and Service Area

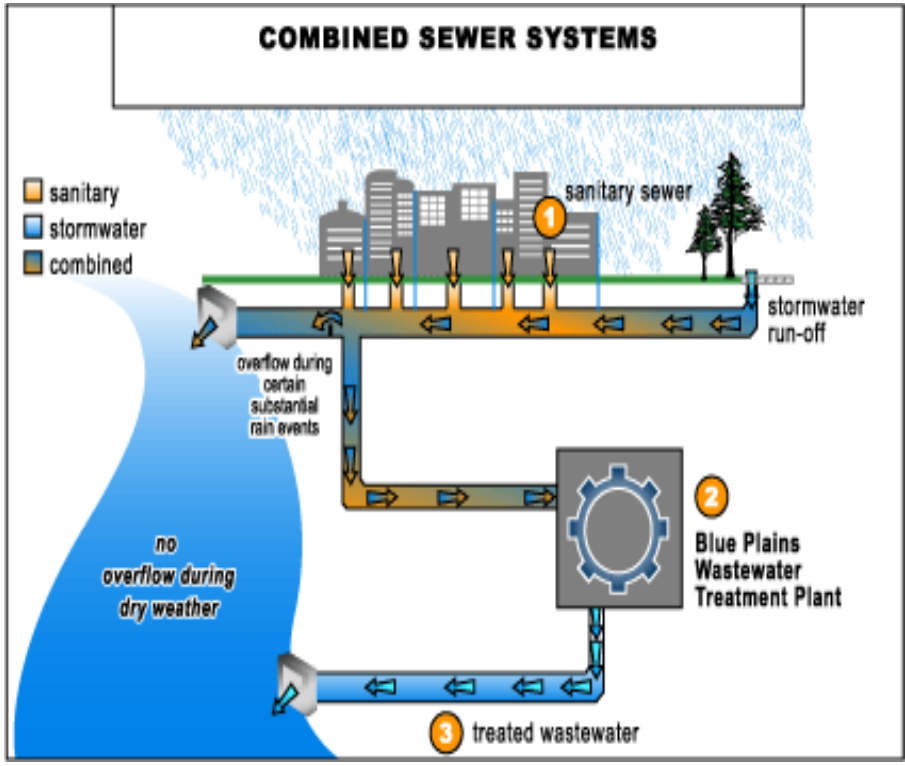


General Information

- 370 MGD Avg Flow
- 1076 MGD Peak Flow
- CSO Flows
- 2 Million Customers
- 726 mi^2 Service Area
- Industrial/commercial discharges about 7%

What is a CSO?





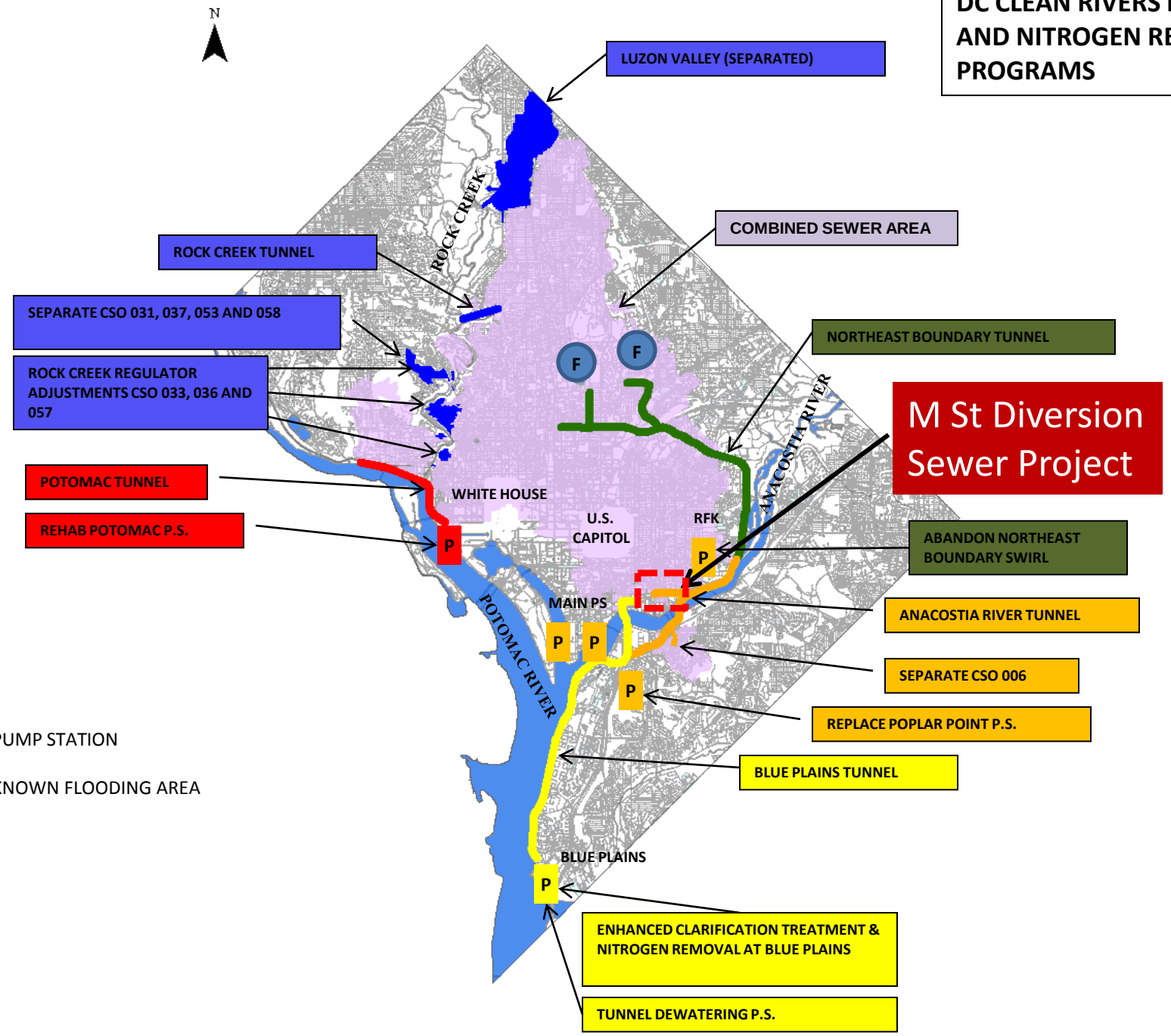
100% of suburbs

67% of D.C.

0% of suburbs

33% of D.C.

DC CLEAN RIVERS PROJECT AND NITROGEN REMOVAL PROGRAMS



Overview of DC's Pretreatment Program

- Legal Authority
- Pretreatment standards and local limits
- Industrial Pretreatment Program
  - Permits, inspections, sampling, reporting
- Temporary Discharge Authorization Program
  - Permits, sampling, reporting
- Waste Hauler Program
  - Permits, sampling, manifest forms

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Legal Authority

- Wastewater System Regulation Amendment Act of 2010 codified in DC Official Code 8-105.01-8-105.15
- 8-105.06(c) – all users shall comply with the National Pretreatment Standards and any national or local pretreatment requirements
- 8-105.06(d) – storm waters, surface waters, ground waters, subsurface drainage…, shall be discharged only into those sewers specifically designated as storm or combined sewers, or to a natural outlet

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Legal Authority - continued

- 8-105.06(f) – unless specifically authorized by WASA, no user shall discharge directly into a manhole or catch basin or similar opening in or into a sewer, any substance…
- 8-105.06(l) – no user shall discharge pollutants into the District's wastewater system in excess of the limitations established and promulgated by WASA
- Implementation regulations in Title 21 DC Municipal Regulations Chapter 15

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Pretreatment Standards and Local Limits

- National Pretreatment Standards include general and specific prohibitions (required and optional), categorical effluent limitations
- Local Limits developed to protect the Blue Plains AWTP processes from inhibition, the Potomac River from pass-through, and biosolids quality for beneficial reuse

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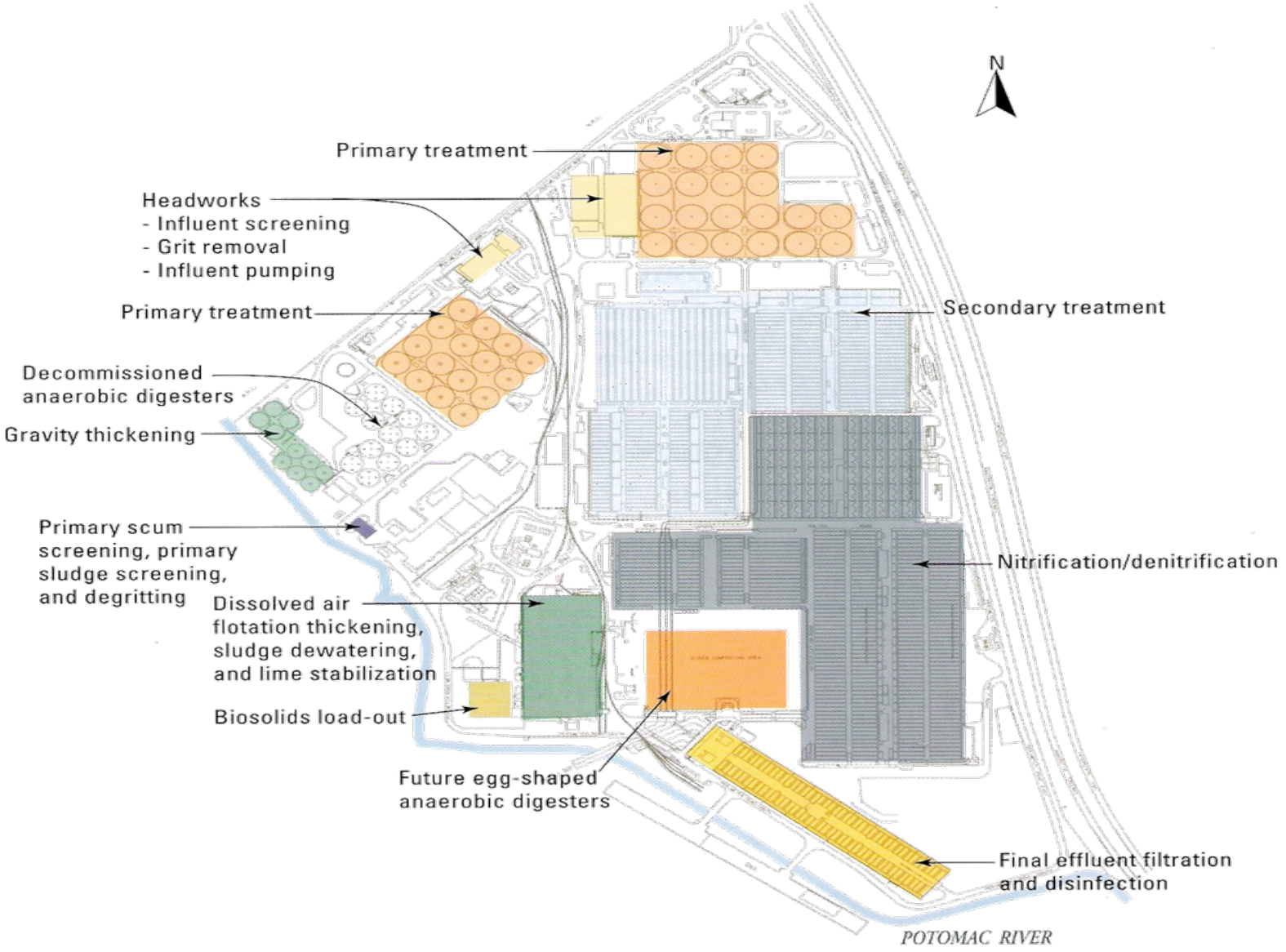
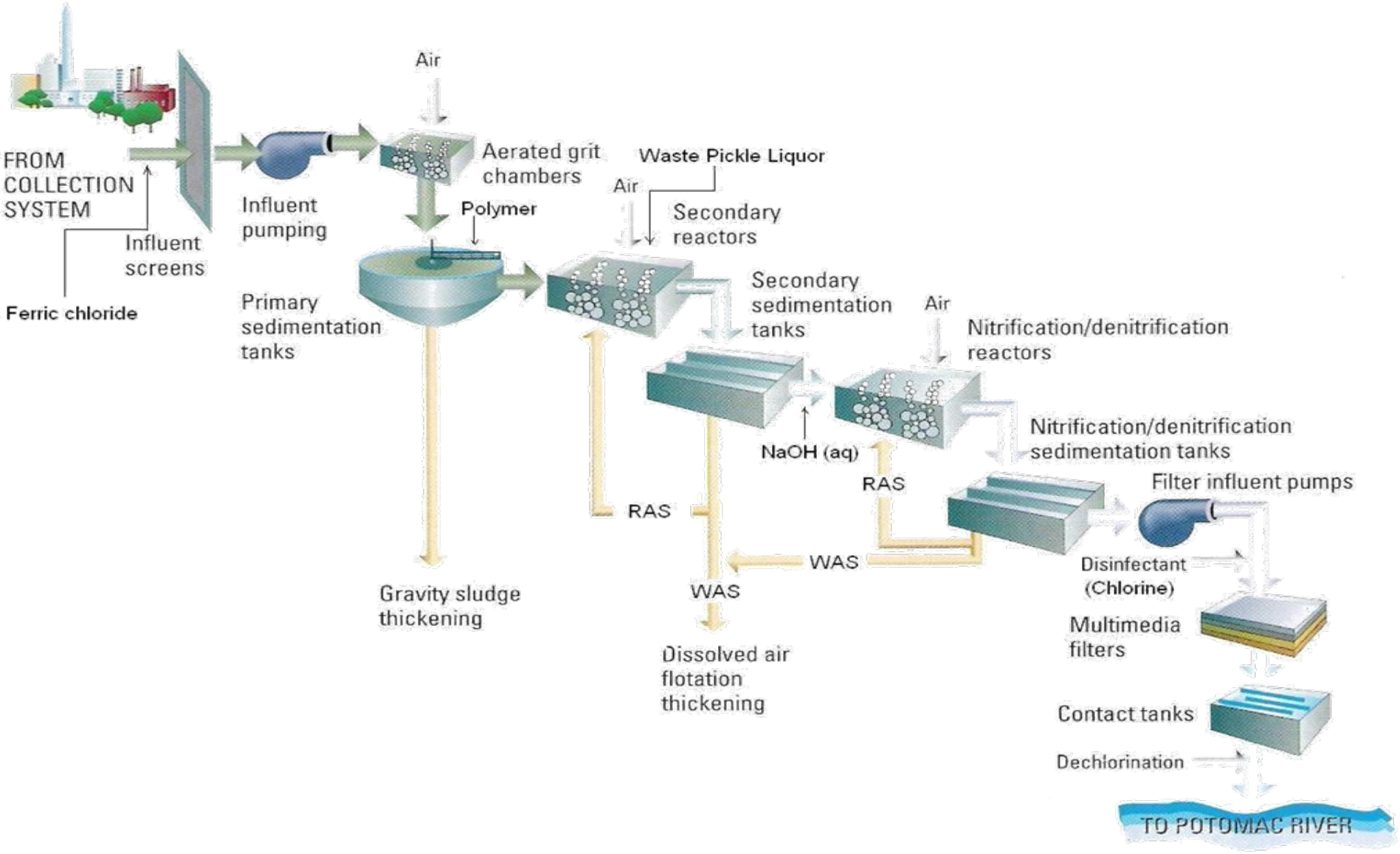
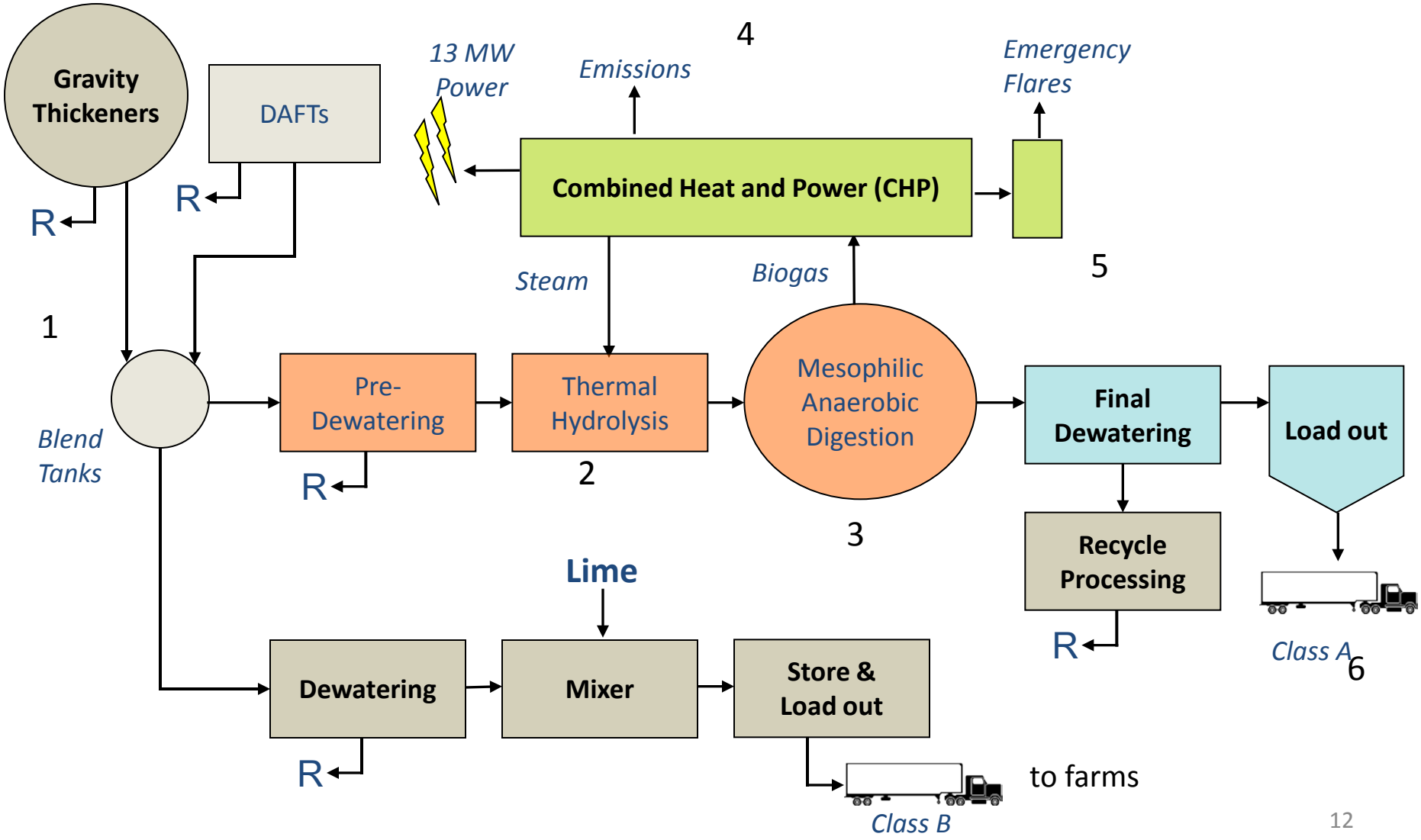
Blue Plains AWTP Layout



Plant Process Flow Diagram



Solids Processing Flow Diagram



Solids Processing and CHP

1. Solids collected from three processes at the plant (primary, secondary, and biological nutrient removal) are blended in preparation for the thermal hydrolysis process.
2. Thermal hydrolysis (TH) is a pre-digestion process for pathogen destruction and preparation for gas production. Solids are treated in 30 minute batches at high heat (165^{o} C) and high pressure (90 psi). The last step of TH is a release of the pressure, where cells burst, making food more available for the methanogenic bacteria in the digesters.
3. Since the TH process accomplishes pathogen destruction, we can optimize the digesters for gas production. Anaerobic digesters employ methanogenic bacteria which live at 35^{o} C and convert 55% of the volatile organic matter to methane.
4. Gas collected in the digesters is fed to a Combined Heat and Power (CHP) system. Gas burns in a turbine, which generates electricity (13 MW, enough to power 8000 homes). Heat generated by the turbine is stripped off with a Heart Recovery Steam Generator (HRSG) unit. The turbine generates enough heat to bring the TH and digestion process up to temperature. The Blue Plains digesters will require no outside energy source for heating.
5. The digesters are not 100% efficient, so some solids are generated as a byproduct. These dewatered solids will be pathogen free, certified EPA Class A biosolids.
6. Class A biosolids (600 tons per day) are suitable for use on farms, reclamation projects, etc, but also as a feedstock in blended soils for tree planting, landscaping, etc.

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Pretreatment Standards and Local Limits - continued

- Headworks analysis for metals and cyanide and other parameters of concern
- Allowable industrial loading allocated uniformly to non-domestic dischargers
- Current limits for 9 metals, cyanide, petroleum oil and grease, and PCBs
- Petroleum oil and grease limit based on historical evaluation

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Pretreatment Standards and Local Limits - continued

- PCB limit based on TMDL for Potomac River - additional future requirements from PCB Pollutant Minimization Plan
- Prohibited discharge of pollutants with pH <5 and >10
- Prohibited discharge of heat in excess of 140^{o}F
- Discharge guidance for volatile organics based on vapor/fume toxicity prohibition
- Discharge guidance for suspended solids – use best management practices for discharges >300 mg/L which is the defined domestic concentration

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Industrial Pretreatment Permits

- Needed for direct discharge of non-domestic wastewater to a POTW
- Local limits apply, sampling required
- Categorical effluent limitations apply to steam electric facilities (40 CFR 423.16 and 17) for existing sources and new sources
- pH and temperature limits based on specific prohibitions

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Temporary Discharge Authorization Permits

- Needed to discharge water from utility vaults to sewer system throughout collection system
- Local limits apply, sampling required
- Flow monitored, but no restrictions on volume due to limited amount of water accumulated
- Discharge authorized to combined sewer system only due to restriction on surface water and groundwater to the sanitary sewer with the following exception…

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Temporary Discharge Authorization Permits

- In cases where the surface water or groundwater is contaminated at levels that exceed pretreatment standards, the discharge may be authorized to the sanitary sewer system with pretreatment
  - General Counsel decision based on historical review of the intent of the legislation
  - Potential limits on volume
  - Access issues to sanitary
  - Ensures water comes to Blue Plains AWTP

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Waste Hauler Permits

- Water must be hauled to the Blue Plains AWTP
- Surface water and groundwater accepted
- Permit requires annual hauling fee per vehicle with unlimited disposal
- Local limits apply, sampling required
- Manifest forms required
- Access issues due to plant construction

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Blue Plains Septage Receiving Facility

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Potential Water Quality Issues with Utilities

- Arsenic, zinc, oil and grease, organics
- When pumping vaults, check for oil sheen
- Use absorbant pad to remove oil from top of water column, if possible, or haul to alternate facility
- Place submersible pump in the water column to avoid pumping solids from the bottom
- Evaluating Pepco proposal for trailerized treatment system including pre-filtration, activated carbon, and ion exchange with flow metering

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Summary

- Type of permit needed to discharge
  - Industrial user wastewater discharge permit
  - Temporary discharge authorization permit
  - Waste hauler permit
- Requirements and Limits
  - Federal standards and local limits
  - Sampling required
  - Volume monitored, but typically not restricted

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Summary - continued

- Discharge to the combined sewer is acceptable under most conditions if pretreatment limits are met
- Discharge to the sanitary sewer may be acceptable if surface water/groundwater is contaminated at levels that exceed pretreatment limits and the discharge is pretreated to meet limits and volume does not overload sewer

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Questions?

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