



A tale of two treatment plants: MWRA/Deer Island vs. DC Water/Blue Plains



presented to
Wastewater Advisory Committee
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Presentation Agenda

- Basic plant statistics (MWRA vs. DC Water)
- Overview
 - Site Plans
 - Process Flow Diagrams
 - DC Water's new Cambi / AD process
- Summary
- Questions/Answers



Basic Plant Statistics

| Parameter | MWRA | DC Water |
|--|--|---|
| Plant | Deer Island WWTP | Blue Plains AWWTP |
| Service Area | Metropolitan Boston | Metropolitan DC |
| Population Served | 2.3 million | 2+ million |
| Plant size | 150 Acres | 153 Acres |
| Design Capacity - Avg Daily - Maximum Capacity | - 361 MGD - 1,270 MGD | - 370 MGD - 1,076 MGD |
| WW Treatment | Pure Oxygen Activated Sludge – Secondary Disinfection/Dechlorination | Air Activated Sludge + Advanced Treatment: Nitrification/Denitrification + filtering (phos) Disinfection/Dechlorination |
| Effluent Discharge | Mass. Bay – Deep ocean discharge | Potomac River – Impaired waterway |

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Basic Plant Statistics (continued)

| Parameter | MWRA | DC Water |
|-----------------------------|--|---|
| Sludge Treatment | Anaerobic Digestion – then thermal drying – Class A Biosolids – since 1991) | Limed Stabilized (Class B biosolids thru 2014), Cambi Slg Pre-treatment + Anaerobic Digestion & thickening (Class A biosolids 2014) |
| Green Energy | Digas utilization since 1968, plus Hydro, Wind & Solar (29%) | Digas utilization started in 2014. (30% of demand) |
| Digestion Performance | 250 dtpd in, 100 dtpd out 62% VS Destruction | 340 dtpd in, 130 dtpd out 60 % VS Destruction |
| Prim Slg vs. Biological Slg | 70:30 | 50:50 |
| Digas Utilization | Bottom Cycle – Boilers then Steam Generators - 50 klbs/hr steam required - 3.4 MW electricity | Top Cycle – Gas Turbines with Duct Burners - 47.5 klbs/hr steam required - 10-13 MW electricity |
| Plant Energy Demand | 16.8 MW 4.9 MW or 29% by renewables | 37 MW hope for 30% |



MWRA / DITP vs. DC Water / Blue Plains

Deer Island Treatment Plant



Constructed between
1990 – 2001, commissioned 1995

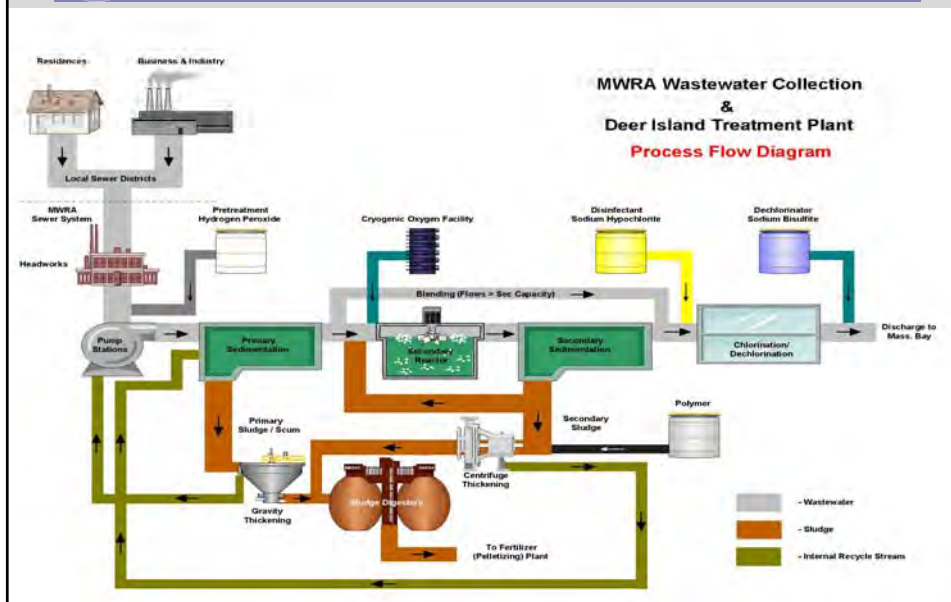
Blue Plains Treatment Plant



First constructed 1937
Upgraded to over decades



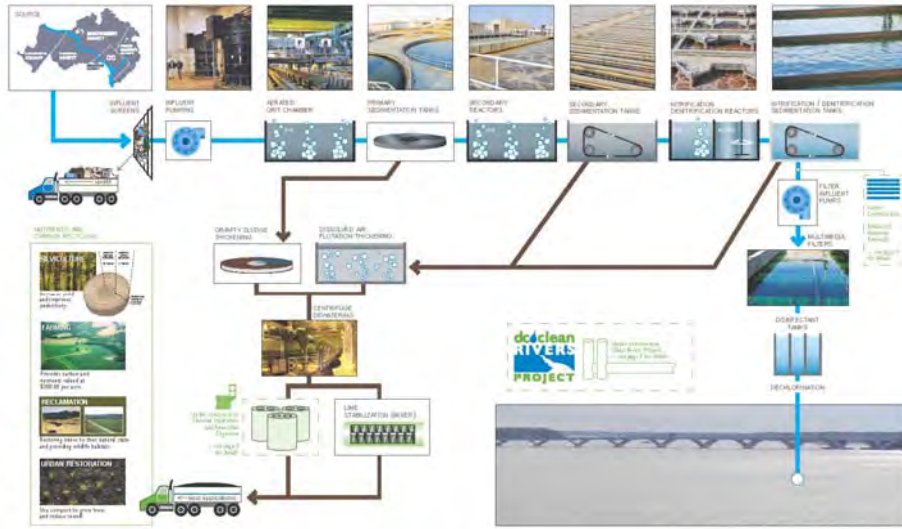
MWRA – Deer Island WWTP





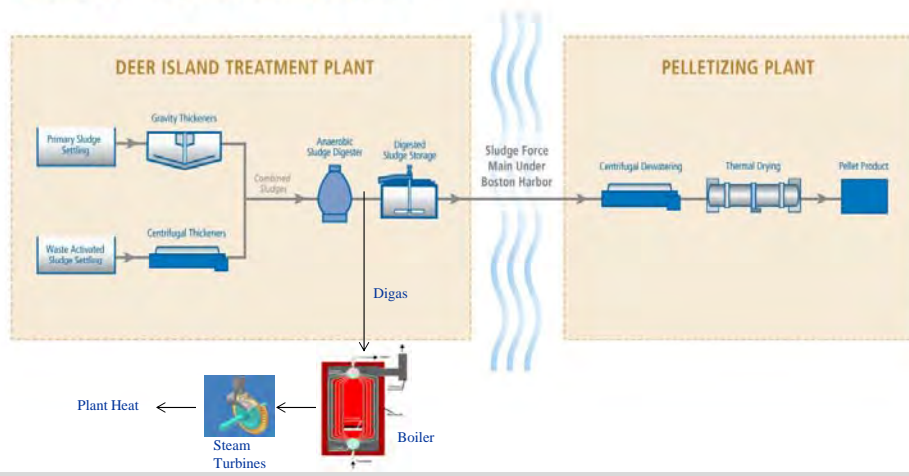
DC Water – Blue Plains AWWTP

dcw The Wastewater Treatment Process



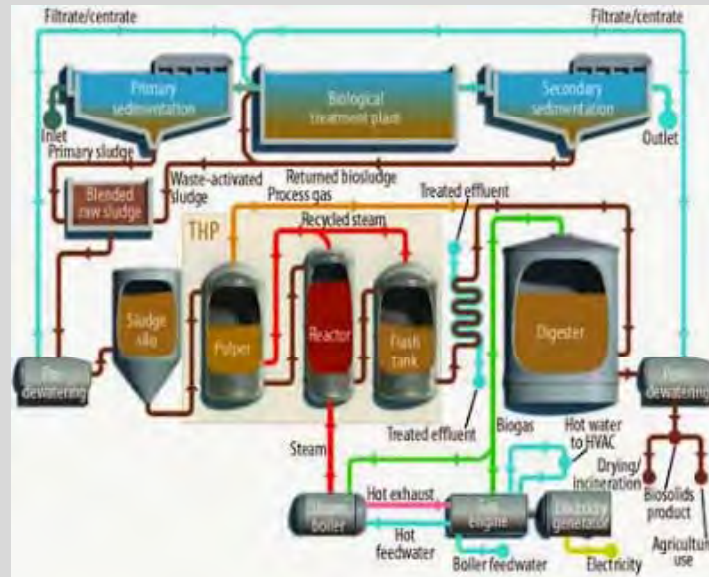
Mwra's Residuals Processing – AD + Thermal Dryers

Existing Solids Process Flow Diagram





Blue Plain's Residuals Processing – CAMBI + AD



Summary

- Both Plants are comparable in size.
- DC provides a higher level of WW treatment due to receiving water requirements

Residuals & Energy:

- **Class A Biosolids** – the most marketable & unrestricted.
 - DC Water just started operation
 - MWRA has produced a Class A Biosolids since 1991
- **Biogas Generation & Utilization for green power**
 - DC Water just added AD with digas recovery
 - MWRA has been utilizing digas for heat since 1968 and electricity since 1988



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Questions?

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