

September, 2014

Biosolids Resource Recovery Monthly Report

NUTRIENTS and CARBON RECYCLING

FARMING

Provides carbon and nutrients valued at \$300.00 per acre.

SILVICULTURE

Increases yield and improves sustainability.

RECLAMATION

Restoring meads to their natural state and providing wildlife habitats.

URBAN RESTORATION

Grow trees and reduce runoff.

dc water is life BLUE PLAINS ADVANCED WASTEWATER TREATMENT PLANT: **A RESOURCE RECOVERY FACILITY**

water • nutrients • carbon • energy

dcwater.com/biosolids

GREEN ENERGY BIORENEWABLES

POWER FROM THE PEOPLE

DC Water will be the first in North America to use thermal hydrolysis for wastewater treatment. When completed, this facility will be the largest plant of its kind in the world.

THERMAL HYDROLYSIS PROCESS (THP) AND DIGESTION FACILITY

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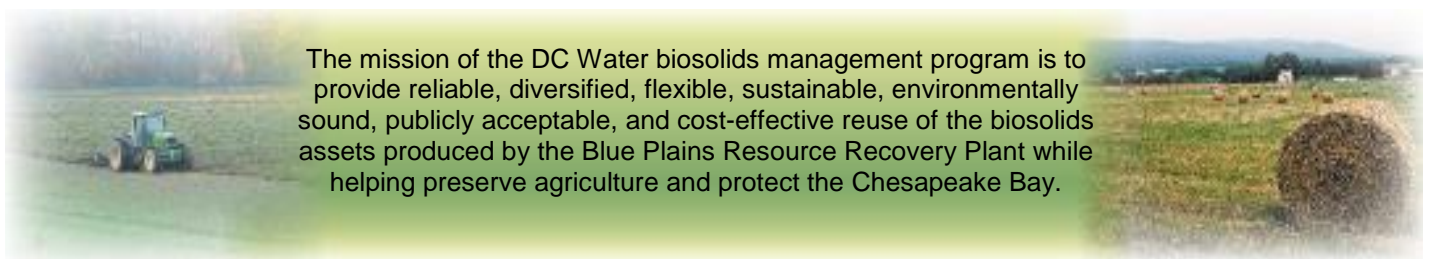
GREEN BENEFITS:

- Produce combined heat and power, generating 13 MW of electricity
- Save DC Water \$10 million annually cutting grid demand by a third (DC Water is the largest consumer of electricity in the District)
- Reduce carbon emissions by approximately 50,000 metric tons of CO₂e per year
- Reduce trucking by 1.7 million miles per year
- Save \$10 million in biosolids trucking costs
- Produce Class A biosolids to grow trees, sequester carbon and reduce runoff.

DC Water

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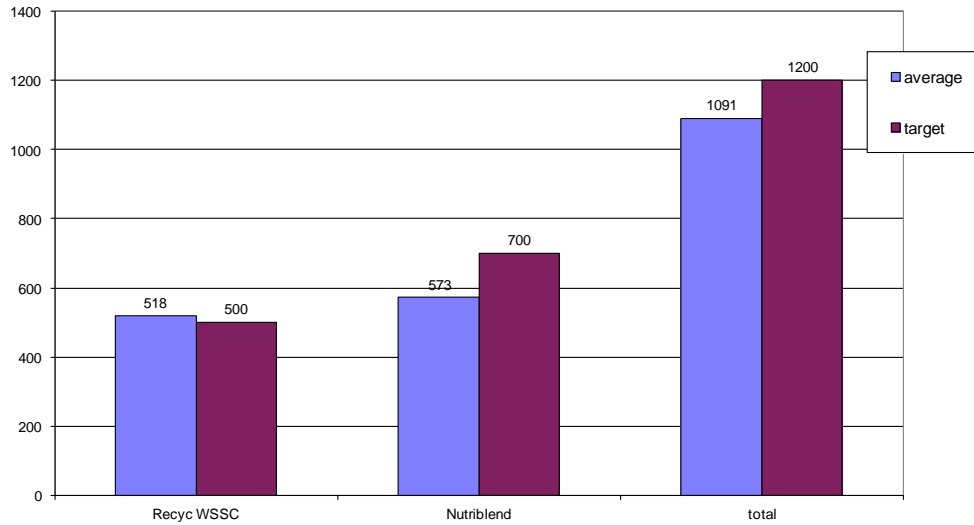
The mission of the DC Water biosolids management program is to provide reliable, diversified, flexible, sustainable, environmentally sound, publicly acceptable, and cost-effective reuse of the biosolids assets produced by the Blue Plains Resource Recovery Plant while helping preserve agriculture and protect the Chesapeake Bay.



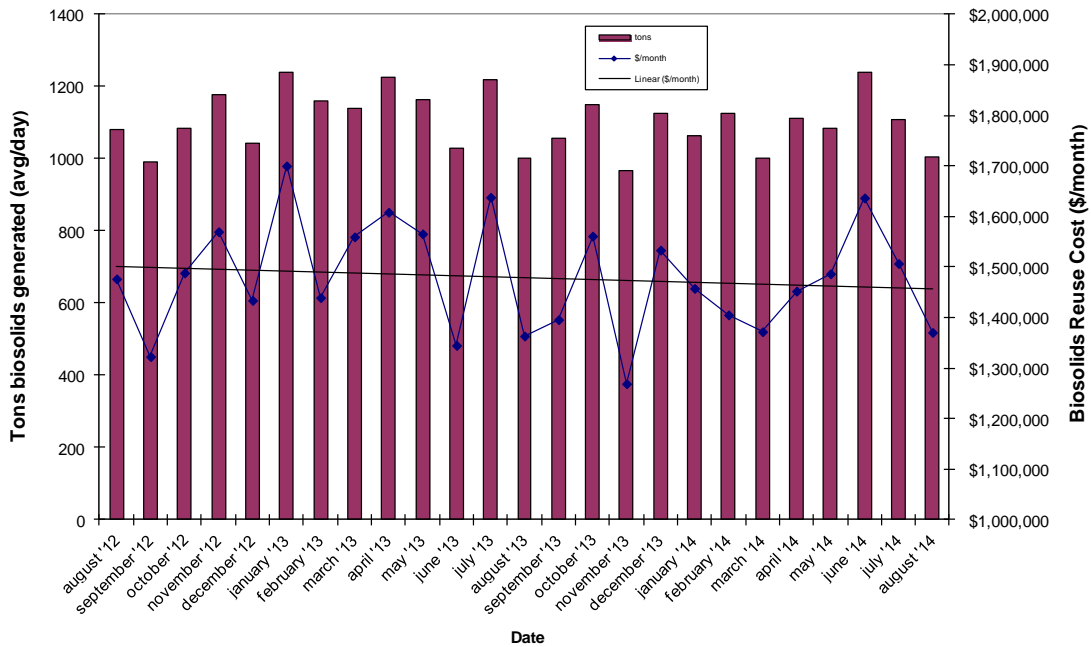
September 2014 Resource Recovery Report

In September, biosolids hauling averaged 1091 wet tons per day. The graph below shows the hauling by contractor for the month of September. Average % solids for the unlimed cake was 28.1%. Average lime dose for the month was 22.6%. At the end of September the Cumberland County storage pad had approximately 8500 tons (~25,000 tons capacity), and the Cedarville lagoon had 0 tons of Blue Plains biosolids (~30,000 tons capacity).

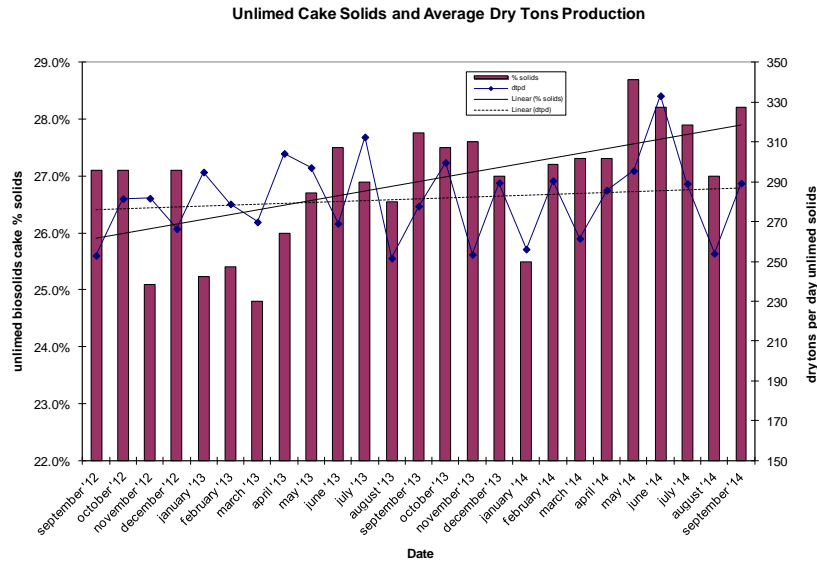
Average Daily Hauling by Contractor for September 2014



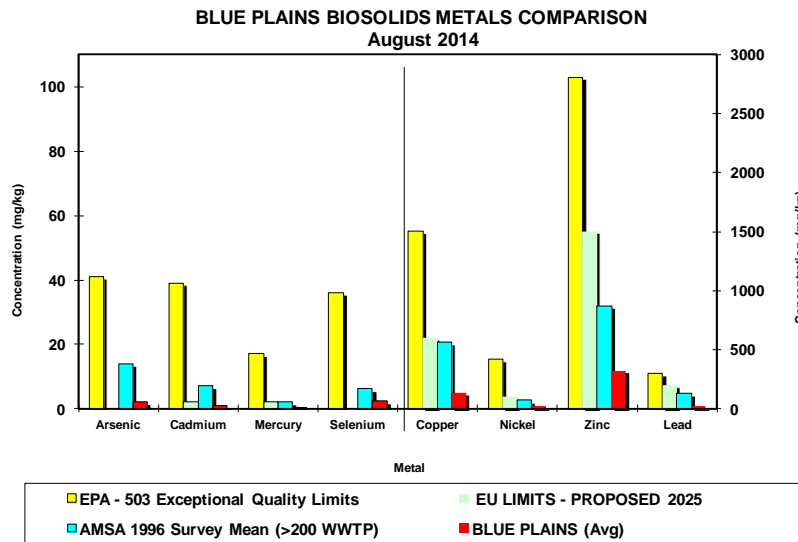
Average Daily Biosolids Production and Reuse Cost



The graph above shows a slight overall average cost decrease for biosolids reuse over the past two years. This is not due to a change in contractors, which happened beyond this two year look back, but rather to increased efficiency in dewatering. The graph below shows average dry solids processed and the average percent solids of the dewatered cake solids. While dry solids processed has held steady, cake solids has risen over one percent in the period. This means we are hauling less water, paying for fewer trucks, and reducing our overall program costs. While a 1% increase sounds small, at our volume it represents a savings of ~\$650,000/yr in avoided water hauled.



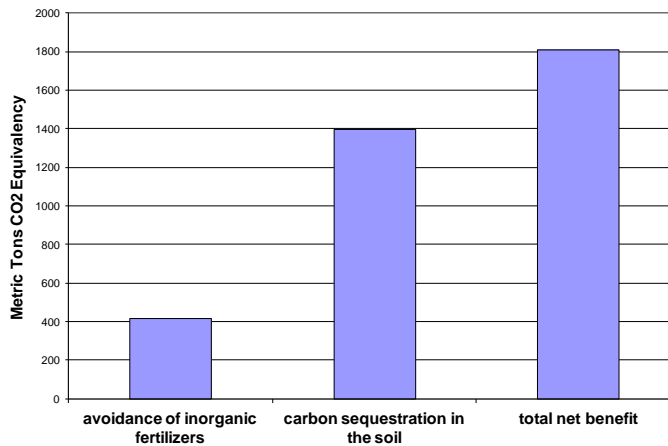
The graphs below show the EPA regulated heavy metals in the Blue Plains biosolids for the month of August 2014. As can be seen in the graphs, the Blue Plains levels are considerably below the regulated exceptional quality limits, the national average levels surveyed in 1996, and the European Union (EU) limits. The EU limits are more conservative than the USEPA limits, and Blue Plains biosolids metals content is lower than the EU standards as well.



Environmental Benefits

The quantity land applied in August coming directly from the plant and from storage facilities equaled 31,541 tons. Taking into account the fuel required to transport biosolids to the field, the net benefit of the land applied material is 1808 metric tons CO₂ equivalent avoided emissions. This is equivalent to taking 3,682,706 car miles off the road in the month of August (assumes 20 mpg, 19.4 lb CO₂ equivalent emissions/gallon gas – EPA estimate). The cumulative total avoided carbon emission since January, 2006 is 132,747 metric tons CO₂ equivalent.

**DCWater Biosolids Recycling Program
Greenhouse Gas Balance Benefits
August 2014 Totals**



September Highlights

WEFTEC – NBP recognition

At the WEFTEC conference in New Orleans, staff accepted a plaque of recognition from the National Biosolids Partnership (NBP), a partnership between the Water Environment Federation (WEF), The US Environmental Protection Agency (EPA), and the National Association of Clean Water Agencies (NACWA). The ceremony recognized the three agencies in the US (City of Los Angeles, Orange County (California) Sanitation District, and DC Water, that have been certified platinum status for 10 years in the NBP Environmental Management System program. These three agencies are the only in the US to achieve this recognition. DC Water will have its second platinum certification, third-party audit in November this year.



WEFTEC Water Resource Recovery Facility (WRRF) report and concept adoption

At WEFTEC this past month, WEF rolled out a concept and a report entitled *Moving Toward Water Resource Recovery Facilities*, described as follows on the WEF webpage:

Resource recovery is an emerging societal need around the globe. Due to the ever-increasing pressures on increasingly limited environmental resources, it is critical that recovery of resources (water, nutrients, and energy) from waste streams be implemented. Moving Toward Resource Recovery Facilities is about moving away from waste streams and moving toward values streams. Providing an overview of the fundamental drivers for resource recovery from wastewater and presenting the basic case for resource recovery, Moving Toward Resource Recovery Facilities provides an overview of state-of-the-art technological approaches to resources recovery and provides general guidance on the applicability of recovery technologies for the cross section of facility types. This allows facilities to take steps towards recycling a greater number of otherwise lost resources

This concept and the report is a direct result of a concept paper authored by DC Water staff that came out of the WEF Residuals and Biosolids Committee (RBC) at WEFTEC last year. WEF has fully adopted the term “water resource recovery facility” as a substitute for “wastewater treatment facility”. This change is made as an effort to focus on the products instead of the process and influent.

Co-Digestion Task Force

Staff is leading a co-digestion task force to examine the possibility of bringing outside wastes to Blue Plains for input to the digesters. The task force will produce a market survey of potential waste products in the DC Metro area, test samples through the pilot digesters, report out on data collected and “best fit” wastes, and produce a feasibility study. The feasibility study will examine the benefits (tip fees, additional power, Tier 1 REC’s) and challenges (additional steam requirement, ammonia load to sidestream treatment, dewatering costs). Preliminary results from the pilot digesters indicate that pre-processed food waste may favorably benefit the pH conditions in the digesters while increasing gas production. This study is designed to determine whether or not it is favorable to maximize the asset of digester capacity.

NRL water reuse meeting

Resource Recovery staff met with the representatives from the Naval Research Lab (NRL) to discuss effluent reuse projects. NRL has extensive requirements for cooling water in chiller towers. NRL believes this is fresh water, so an effluent reuse program would cut into DC Water’s fresh water revenue. Staff is investigating NRL’s water bills to check the accuracy of this assumption. If so, the project will require a discussion at management level to determine the benefits, which should include buying less water wholesale from the Army Corps, hedging against future fresh water needs (for capital planning purposes), and generating revenue for the effluent (likely less than the fresh water rate).

Solar RFP

The Blue Plains solar energy project, which could generate 8 MW of power on site (during daylight hours), moved past the RFQ phase into the RFP phase. Ten teams responded to the RFQ, and after review of the qualifications, staff chose 4 teams from whom we will request full proposals. Staff sent this request to the 4 teams on 9/26, with proposals due 11/18. DC Water requested proposals for a no-capital project, to be designed, built, owned, and operated by a power provider, in exchange for a power purchase agreement for DC Water to buy the output of the facility. This project will allow for better long-term planning for power purchasing.

Map of Blue Plains Biosolids Applications and Agricultural \$'s for August 2014

