Annual Report, 2012

Biosolids Reuse Monthly Report

DC Water

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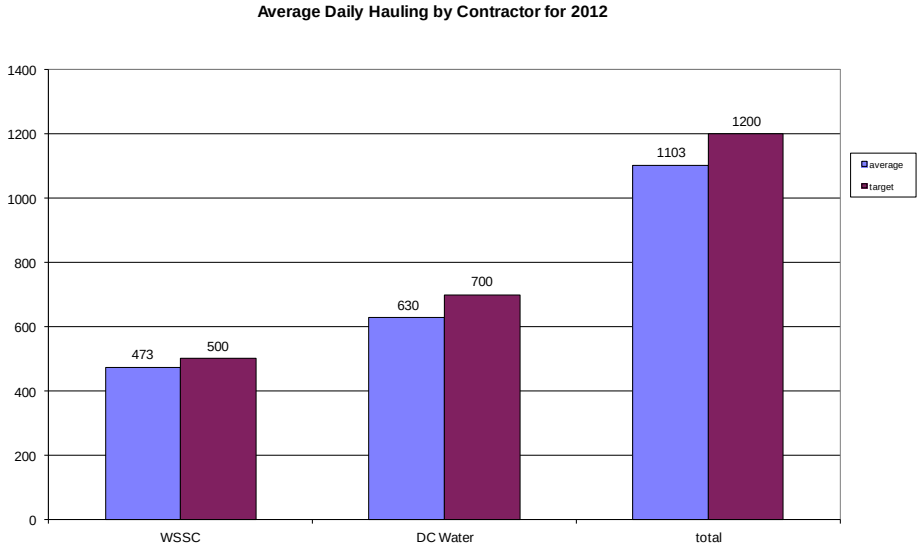
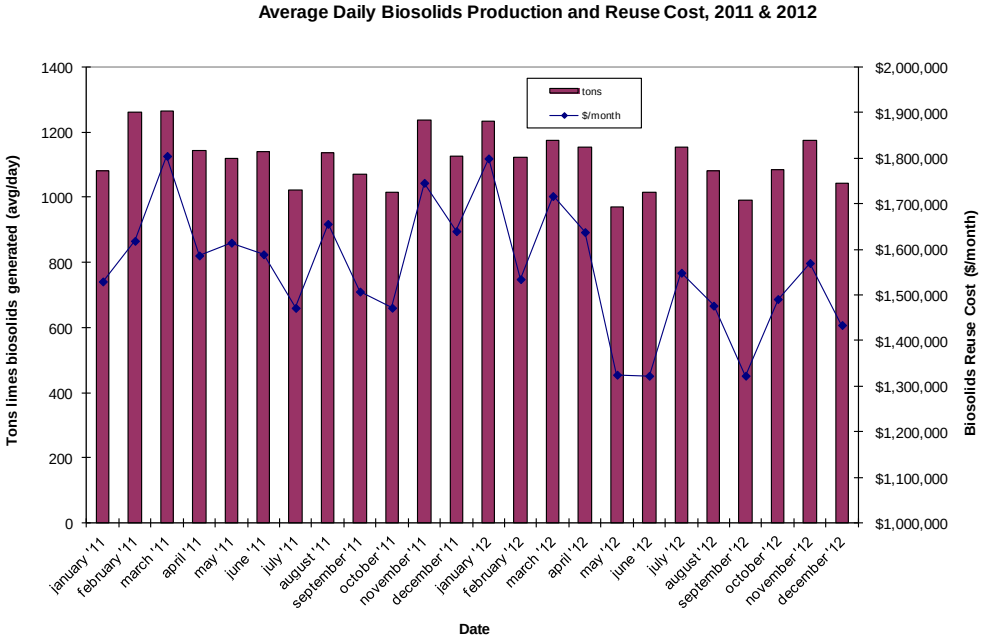
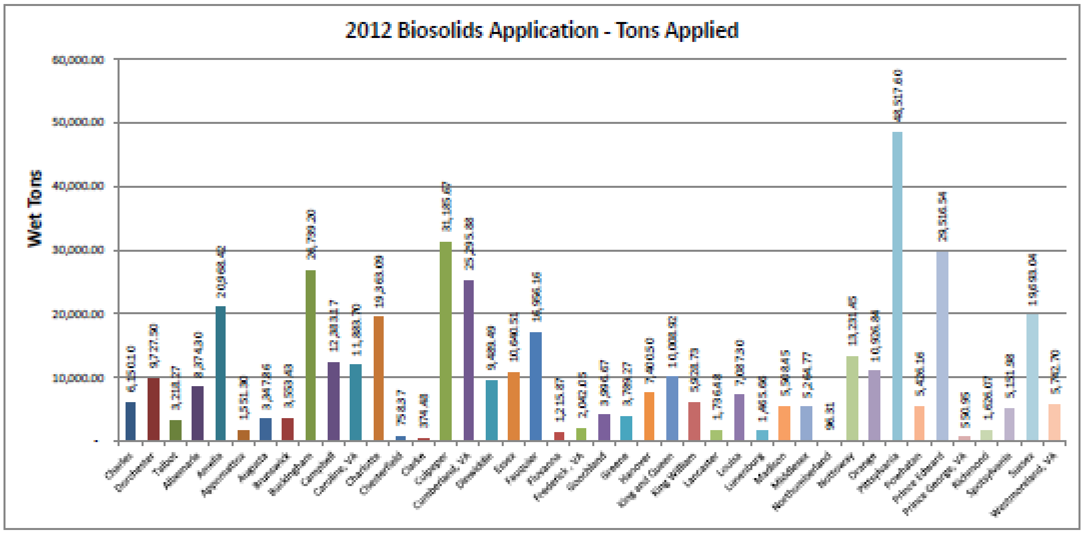
The mission of the DC Water biosolids management program is to provide reliable, diversified, flexible, sustainable, environmentally sound, publicly acceptable, and cost-effective reuse of biosolids asset produced by the Blue Plains Resource Recovery Plant while helping preserve agriculture and protect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

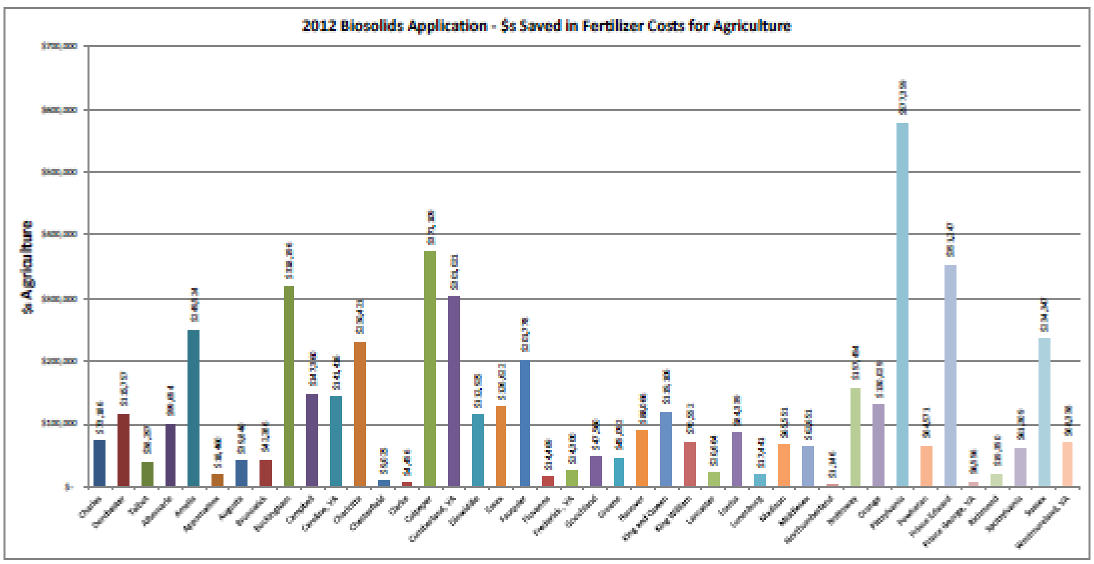
2012 Annual Biosolids Division Report

In 2012, biosolids hauling averaged 1103 wet tons per day (402,648 wet tons total). Contractors took material to agriculture, forestry, restoration, and composting sites in VA and MD. The graph below shows the hauling by contractor for 2012. Average % solids for the unlimed cake was 26.7%. Average lime dose for the month was 22.5%. The second graph below shows the geographic distribution of the material, with quantities hauled to each county and the corresponding value of the nutrients and lime in the product. DC Water provided this material free of charge to farmers, a value totaling $4,791,508.

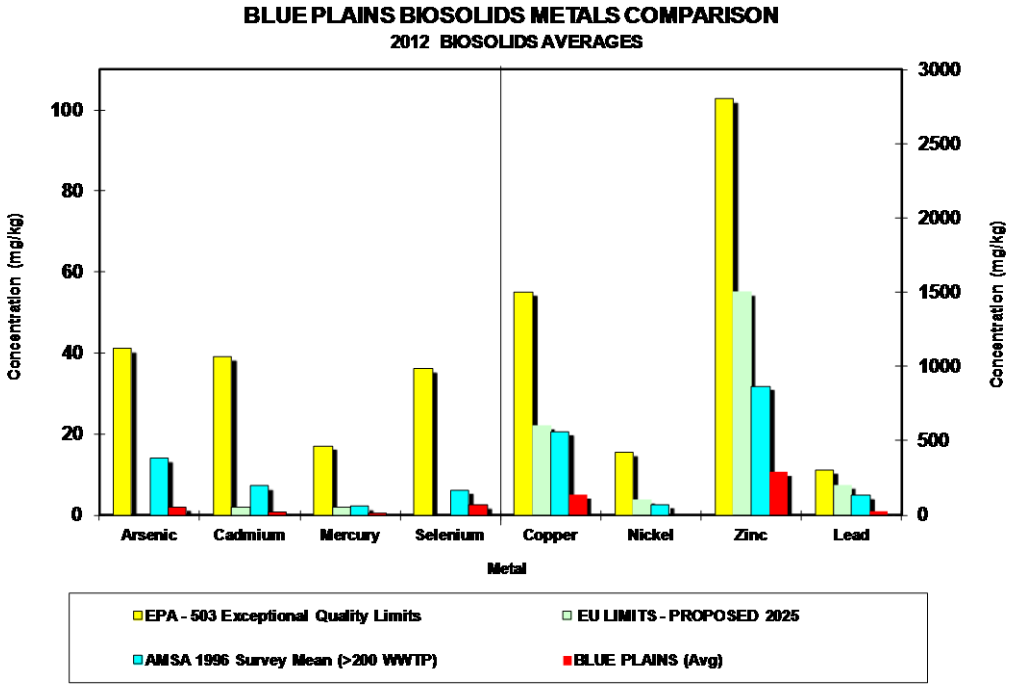





2012 Biosolids Application - Tons Applied
Wet Tons
60,000.00
50,000.00
40,000.00
30,000.00
20,000.00
10,000.00
-

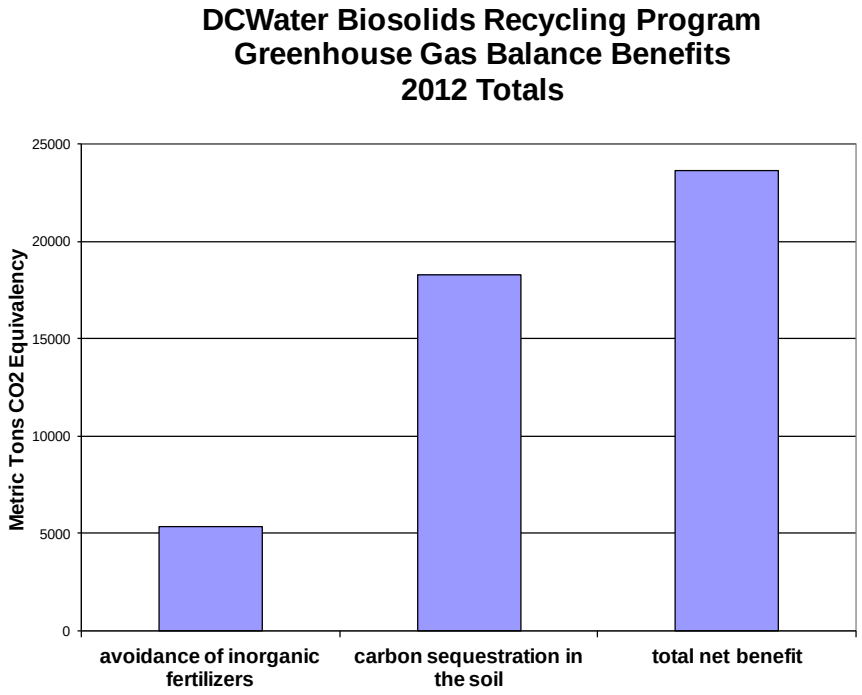

2012 Biosolids Application - $s Saved in Fertilizer Costs for Agriculture
$s Agriculture

The graphs below show the EPA regulated heavy metals in the Blue Plains biosolids for 2012. 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 during 2012 coming directly from the plant and from storage facilities equaled 418,289 tons. Taking into account the fuel required to transport biosolids to the field, the net benefit of the land applied material is 23,603 metric tons CO_2 equivalent avoided emissions. This is equivalent to taking 48,079,900 car miles off the road in 2012 (assumes 20 mpg, 19.4 lb CO_2 equivalent emissions/gallon gas – EPA estimate).



In 2012, DC Water saw a drop in complaints surrounding the biosolids land application program. As part of the National Biosolids Partnership (NBP) Environmental Management System (EMS), DC Water tracks complaints and inquiries in a database, allowing for analysis of data and corrective actions. This past year we agreed to exchange and compare data with VA DEQ, the Virginia agency tasked with monitoring biosolids in the state. This was done to ensure that we and they were hearing all the issues brought by the public. Total complaints captured by DC Water inspectors (MES) dropped by 50% from 2011 to 2012. This was likely due to better communication with contractors concerning product quality issues (odors, etc.). In addition, the total number of complaints attributed to DC Water 21.4%, a proportionately low percentage, considering that 59.4% of the biosolids land applied in Virginia came from Blue Plains.

COMPARISON BETWEEN VA DEQ COMPLAINT DATA AND MES INCIDENT REPORTING DATA FOR CALENDAR YEARS 2011 AND 2012

Va DEQ Complaint Data						MES Incident Data			Comparison	
Va DEQ Complaint Concern Category	2008	2009	2010	2011	Through November 2012	MES Complaint Concern Category for Blue Plains' Biosolids	MES TOTALS 2011	MES TOTALS THROUGH DEC. 13, 20112	% of Incidents Attributable to Blue Plains in 2011	% of Incidents Attributable to Blue Plains in 2012
Health	14	7	12	25	13	NA	NA	NA	NA	NA
Odors	46	37	34	44	25	Odor Complaints (from Public, MES Inspectors, Contractors)	5	3	11.4	12.0
Runoff	15	14	10	20	8	NA	NA	NA	NA	NA
Buffers	25	6	19	11	12	Contractor /Field Management Issues	11	5	NA	NA
Groundwater	17	7	12	21	9	Biosolids pre Treatment/Quality	9	0	NA	NA
Truck Traffic	11	5	7	9	1	On/Off-Site Trailers/Vehicle Accidents/Truck/Equipment Malfunctions	7	7	77.8	> 100
Biosolids on Road	10	7	6	6	2	Biosolids spills/Biosolids Dropped onto Public Roadways	2	0	33.3	0.0
Inquiry Only	37	13	25	29	6	Informational Requests/ Inquiries from the Public	2	1	6.9	16.7
Other	29	10	18	15	8	General Complaint	NA	2	NA	25.0
TOTALS	203	106	143	180	84	TOTALS	36	18	20.0	21.4

NOTE: PER MES' DATABASE, IN CALENDAR YEAR 2011 THE TOTAL TONNAGE TO VIRGINIA TO BENEFICIAL REUSE = 362,968 WET TONS
AVERAGE % TOTAL SOLIDS CONTENT OF LIME STABILIZED BIOSOLIDS = 36.0 % (PER RECYC BIOSOLIDS LAB ANALYTICAL DATA FOR CALENDAR YEAR 2011)
ESTIMATED BLUE PLAINS DRY TONS TO VIRGINIA IN CALENDAR YEAR 2011 = 362,968 WET TONS x 0.36 = 130,668 DRY TONS
PER VA DEQ DATA , TOTAL DRY TONS LAND APPLIED IN VIRGINIA IN CALENDAR YEAR 2011 = 220,000 DRY TONS
ESTIMATED % OF DRY TONS FROM BLUE PLAINS TO VIRGINIA IN CALENDAR YEAR 2011 = [(130,668) ÷ (220,000)] x 100 = 59.4 %

2012 Highlights

Staff gave a tour to a group of representatives from the National Agronomy, Crop, Soil Science Societies, including the Director of Science Policy. The group was interested in hearing about our plans for digesting solids and producing Class A Biosolids for use in agriculture and blended soils. They have a keen interest in restoration of urban soils to help with water retention, carbon sequestration, runoff, etc. We agreed to continue the dialogue and work together when we have product for demonstration.

Staff participated in the National Biosolids Partnership (NBP) Steering Committee strategic planning meeting in Alexandria. As a member of the Steering Committee, staff is tasked with defining the direction for the organization going forward, beyond merely branding agencies with its EMS certification. The new charge includes outreach, coordination, and proactive communication with lawmakers and the press.

Staff was named this past month to head a WEF Task Force to look at the feasibility of rebranding wastewater treatment plants in the US. The examination will look at changing the perception of what we do from “wastewater treatment” to “resource recovery”. The Task Force is charged with producing a report for the WEF Leadership Committee for the mid-year meeting in late January.

The Virginia State Water Control Board passed the Virginia biosolids Regulations, which are now in the public comment period. Proactive interaction with regulators and decision makers helped ensure that the regulations were based on science while remaining protective of the public and the environment. Several changes were included in this regulation, including increased buffers for those with health concerns, storage changes, and a requirement for doctor consultation in cases of health concerns.

Staff attended the Virginia Biosolids Council annual meeting, also attended by representatives of Virginia Department of Environmental Quality (DEQ, regulatory

agency for biosolids use in VA) and Department of Conservation and Recreation (DCR, responsible for nutrient management planning in VA). DC Water is a board member of VBC, and contributes to the organization's annual budget and with volunteer hours. During the meeting, members heard of three goals met in the previous year. These include the re-design of the VBC webpage to include testimonials from farmers, posting of informational videos on YouTube, and the launch of a Facebook page. Links to all three of these are listed below. Please take the time to view the short YouTube video describing biosolids recycling in Virginia.

http://www.virginiabiosolids.com/
http://www.youtube.com/watch?v=1avekQ1mYUM&feature=youtu.be
https://www.facebook.com/pages/Virginia-Biosolids-Council/281732988519325

Staff organized a meeting with researchers from U of MD, USDA, and Virginia Tech to discuss biosolids research needs and begin the process of planning for FY2012 research. Staff discussed the desire to solicit research designed to make use of and extract value from a Class A biosolids product. With the digester project underway, staff recognizes the opportunity to make use of the product within the service area, and will focus a portion of research resources toward developing products for this use. Of the tree sources of funds available for Blue Plains biosolids research (biosolids contract nutrient rebate, COG Blue Plains Regional Committee, and WSSC), the COG funds will be dedicated solely to this purpose. Other funds will look at this as well, but will also continue to seek answers to persistent questions about quality, odors, and nutrient dynamics.

Staff met with representatives of the US Department of Energy to discuss advances in fuel cell technology. DOE has placed a fuel cell at a WWTP in Orange County, CA, which delivers electricity for use at the plant and a side stream product of hydrogen. DOE is interested in promoting the use of fuel cells at WWTP's in an effort to produce green power in the form of electricity and hydrogen. The auto industry has a goal to produce hydrogen fueled vehicles in the next 10 years, and DOE is attempting to demonstrate that hydrogen fueling stations can be established in urban areas, using WWTP digester gas as a feedstock. Staff is continuing discussions. This would not replace the existing turbines in the digester project, but could serve us if we expand the digesters in Phase II.

Staff met with two food waste companies, both of which see synergies with our digestion project. One company promotes the use of in-sink food grinders, with the purpose of sending more organics to the WWTP for gas generation. The other company collects food waste and brings it to a centralized facility for processing into a slurry. They would then like to feed it into a digester at a WWTP. Preliminary discussions indicate that if they collect and process 150 tons per day of food waste and introduce it to our digesters, it would produce an additional 2 MW of power for DC Water. Of course, capacity is an issue for DC Water to consider, as we will have days when we have peaks and do not have excess capacity. Staff will continue discussions of this concept.

Staff participated in a Water Environment Federation (WEF) webinar on April 25th. Over 300 people registered for and participated in the webinar, which centered on the DC Water digestion project, with a special emphasis on the thermal hydrolysis process. Walt Bailey presented the history of the digester project and described the decisions that led to our project. Other presentations on the project included one on the planning

process (Brown and Caldwell), specifics about the Thermal Hydrolysis process (Cambi), and the design/construction (CDM).

Staff coordinated the delivery of 10 loads of Blue Plains biosolids compost for a DC DOT restoration project at the intersection of New York Avenue and South Dakota Avenue NW. This site is slated for restoration and tree planting, as it is the gateway to DC for cars entering the District from the east on NY Avenue.

Staff attended the awards banquet for the American Association of Environmental Engineers (AAEE) on April 26th. AAEE recognized DC Water with three awards, including one for planning of the digester project, one for research associated with the nitrogen removal project at blue Plains, and one for communications and outreach for the Clean Rivers Project.

Staff, at the request of EPA Region 3, made a presentation to EPA staff at a technical seminar on the benefits of the annamox deammonification process. This was made in an attempt to bring them up to speed on our progress toward testing this in a pilot lab scale setting, and our desire to implement the technology on a larger scale. The process can save considerable energy and methanol use, and dramatically reduces our overall carbon footprint while saving operations costs.

Staff met with a commercial soil blender to discuss uses of the digested Class A biosolids in their products. There is mutual interest in this concept, and the company has expressed interest in serving as a test site for a pilot project. Staff is managing a research project with Va Tech to help determine what products we can make from the Class A biosolids. This research project is funded through the Blue Plains User Group, through COG.

Staff has agreed to serve on a working group for NACWA to discuss nutrient trading and how this concept might benefit the profession and the environment. Staff participated in two working group conference calls to discuss comments on the draft EPA trading policy. This concept could benefit DC Water by allowing trading nutrient credits with other point and non-point sources.

Staff agreed to serve on a WEF Roadmap to Energy Sustainability at Wastewater Treatment Facilities work group. Staff is authoring a chapter for a WEF document on this subject, and has several others contributing. The document is to be ready for publication this fall. The document will serve as a broad overview of the subject and will likely spawn more detailed reports on specific aspects of this concept.

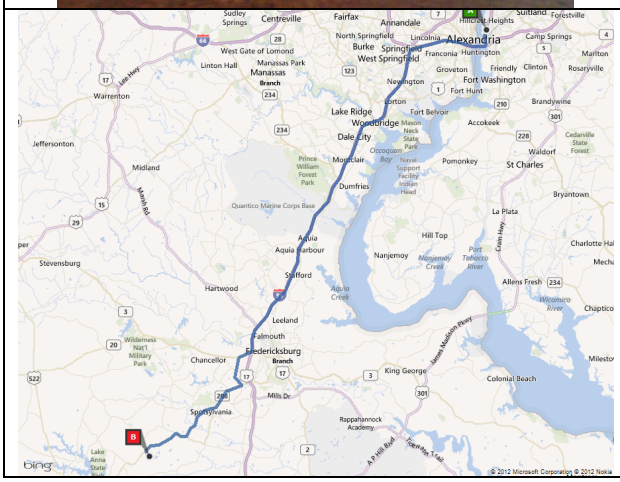
Staff participated in two outreach efforts this past month, one with Science magazine, and another with Voice of America. The science reporter called the DC Water External Affairs office to gather information for a story, and decided to come for a visit. Upon hearing about the innovations ongoing at Blue Plains, DC Water became the central focus of the article, describing both the digester project and the ERN/annamox research. A link to the article and video is below.

http://video.sciencemag.org/SciOriginals/wastetx/

As a result of the Science article, a reporter from Voice of America made contact with External Affairs, hoping to run a similar story on innovations at Blue Plains. Staff led the

tour and for this effort, conducted after a lengthy interview with the General Manager. VOA will produce an article, video, and slide presentation from the content gathered, likely to be finalized early this fall.

Staff visited and the Spotsylvania County Compost Facility this past month to discuss their acceptance of Blue Plains biosolids. The DC Water biosolids reuse contractor, Nutriblend, has a subcontracting agreement with this facility. After a pilot test this summer of 8 trucks, Spotsylvania County has agreed to accept on truck per day and produce compost. The facility is 75 miles from Blue Plains, considerably closer than the facility used under the previous contract. Nutriblend will transport finished product back to DC for use in tree planting, restoration, and LID projects. Staff coordinated with the Clean Rivers Project to ensure the use of our product in the Low Impact Development Retrofit at DC Water Facilities. Staff will coordinate the delivery of 100 cy of finished compost in November for one such project at Fort Reno.

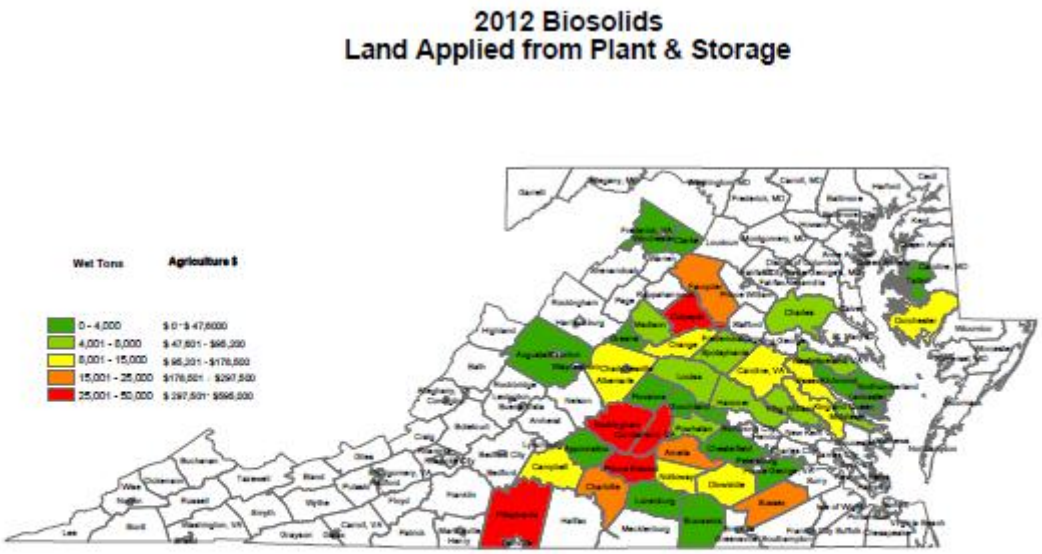


Staff participated in a technical session of the Virginia Water Environmental Association (VWEA) meeting on September 10. This session, coordinated by the Virginia Biosolids Council (VBC), covered innovations in the biosolids industry. Staff presented a summary of the Blue Plains digester project, focusing on the environmental and fiscal benefits, the planning process, and the technology used.

Staff led two tours this past month. The first was with a group of technical and political leaders from Thailand, who were interested in learning about our environmental initiates and efforts to reduce our energy use. The second tour was with a group of federal EPA

officials interested in learning more about the thermal hydrolysis and digestion project.

Staff attended a town hall meeting organized by concerned citizens in Spotsylvania County, VA seeking information about a pending biosolids application. The sight in question is a 90 acre pasture site near Lake Anna. Neighbors had read internet accounts of biosolids problems, and were concerned that there may be similar issues at this site. Staff sat on a panel with VA DEQ and VDH personnel, answering questions and outlining the many layers of inspection and protection with the DC Water biosolids reuse program. For a link to the news story, click here: http://wtvr.com/2012/11/30/residents-fight-against-sewer-sludge-near-their-homes/



2012 Biosolids Team Goals

District of Columbia Water and Sewer Authority
Biosolids Management Program

DCWASA Board 2008-2012 Strategic Plan, with BWG goals
Original Date: 01/15/2011

Approved: Chris Peot
Hard copies of this document are uncontrolled. The controlled version location is designated in the Biosolids Management Program Document Control List on on the DC WASA intranet I-

DC Water Critical Success Factors				responsible party	date entered	date due	baseline
CSF 1 – Environmental Sterwardship							
	Design and implement environmentally responsible policies, programs, and technologies that protect our region's waterways, air, and lands.						
OA 4		Support at least 4 research projects.		MR & CP	1/15/2011	12/15/2011	4
			Produce at least one paper or presentation for each of the funded research projects. Obtain copies of all publications and save on the I: drive.				
OA 3		Help promote the benefits of biosolids recycling.		MR	1/15/2011	12/15/2011	0
			Develop curriculum for WEF Teach and for High School Science Core Curriculum to educate the next generation and current County Council Members on Biosolids Recycling				
CSF 2 – Customer Confidence and Communications							
	Effectively anticipate, respond in a timely manner to, and communicate about the needs of our customers, the public, and other regional stakeholders with honesty, respect and transparency						
OA 1		Revise Field Incident Reporting Protocol and finalize by due date.		AR	1/15/2011	8/15/2011	0
			Revise standard procedure to define what is, and what is not a reportable incident; revise incident reporting form to make it more user friendly, yet still useful to the BWG.				
			Revise to address comments from EMS external auditor to incorporate corrective actions, and work with the BWG to define criteria for "closing out" an incident.				
			Complete standard procedure by incorporating DC Water's comments.				
CSF 3 – Operating Excellence							
	Excel in all aspects of water delivery, wastewater collection and treatment, and customer service.						
OA 2		Improve line system reliability by 50%.		MR	1/15/2011	8/15/2011	20 incidents
			Maintain over sight of odor and temperature system.				
			Update odor monitoring software to differentiate between locations of high odors.				
			Develop SOP for notification and incident tracking for all odor and pH events.				
OA 2		Develop automated pH monitoring system for post lime biosolids.		MR	1/15/2011	8/15/2011	8 incidents
OA 3		Offer tours for interested parties at least once in the coming year.		MR	1/15/2011	8/15/2011	2 last year
			Announce an annual tours/ presentation date for all interested third parties, research interns and inspectors				
CSF 4 – Financial Integrity							
	Plan and control all financial resources in a manner faithful to our customers, bondholders, and suppliers.						
OA 4		Develop market for digested material in DC Metro area.		CP	1/15/2011	12/15/2011	2 tons last yr
			Use at least 100 tons of compost in DC for tree planting and restoration.				