



DC Water Class A EQ Biosolids

Bloom Marketing Update

July 2nd, 2018

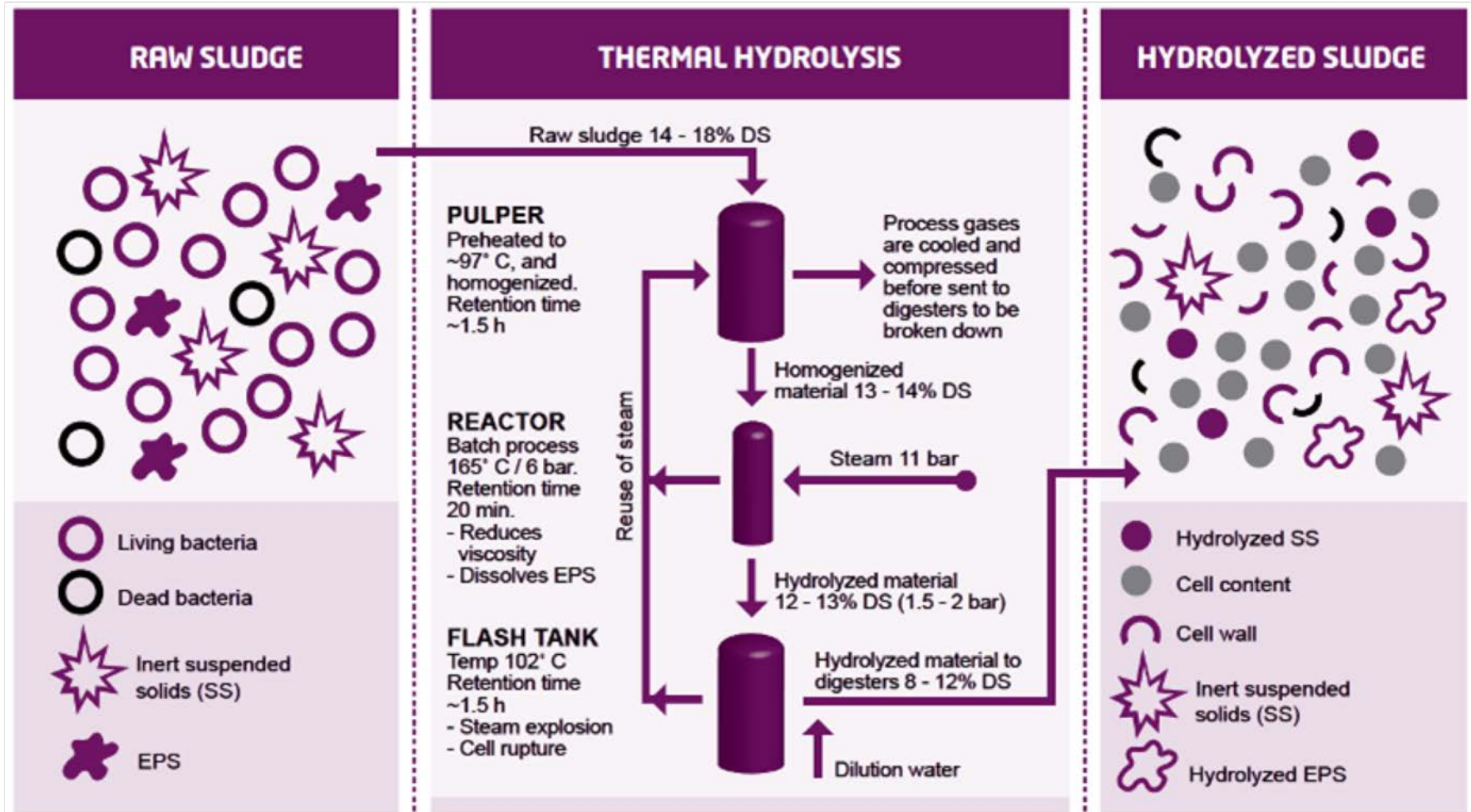
District of Columbia Water and Sewer Authority



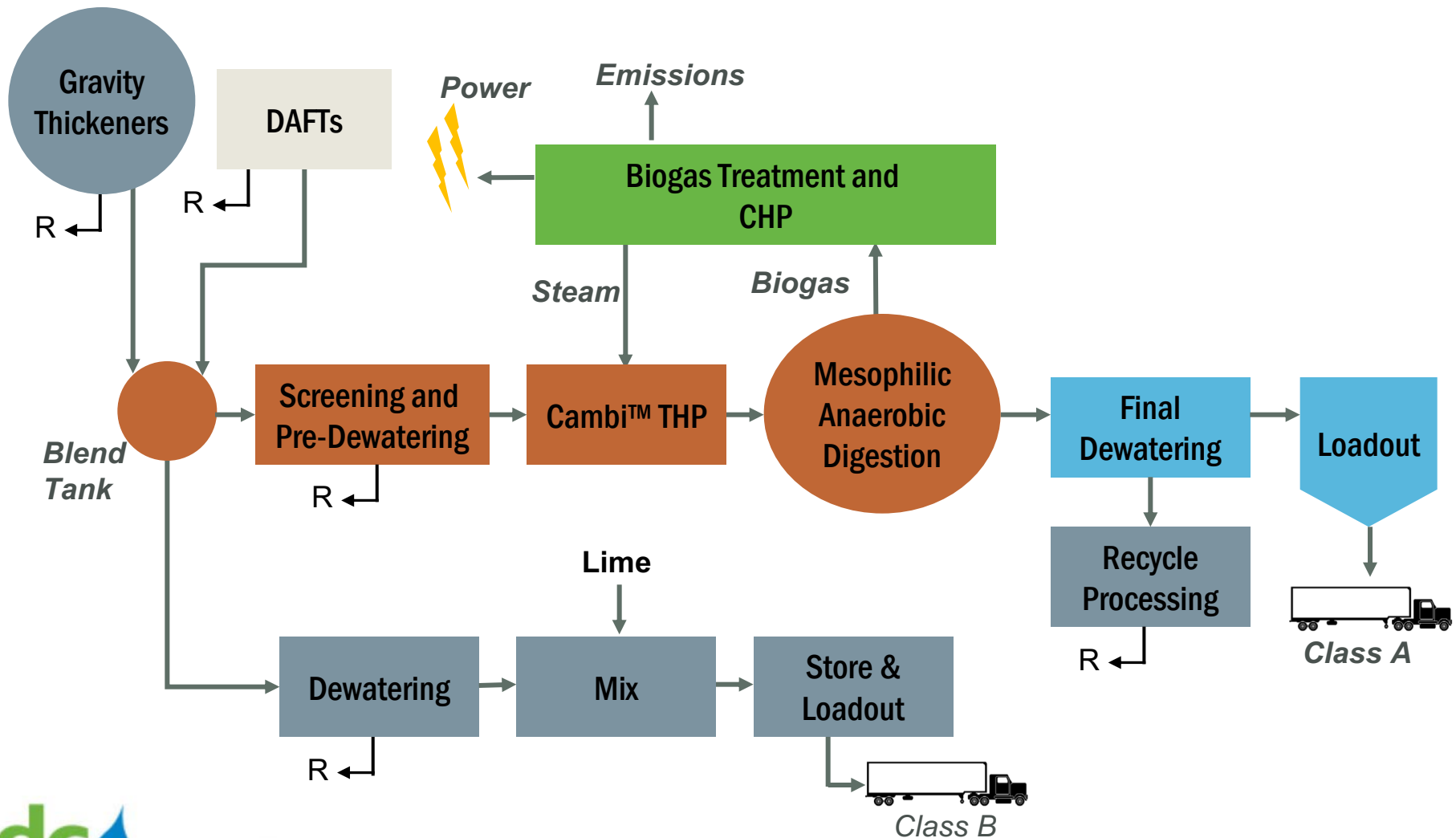
New Equipment = Marketing Opportunity



Thermal Hydrolysis Process



Process Schematic



Class B vs. Class A Product



There is a market for cake at 31% solids.



Bloom Land Application





BLOOM

GOOD SOIL,[®]
BETTER EARTH.

An exceptional
soil amendment



bloomsoil.com



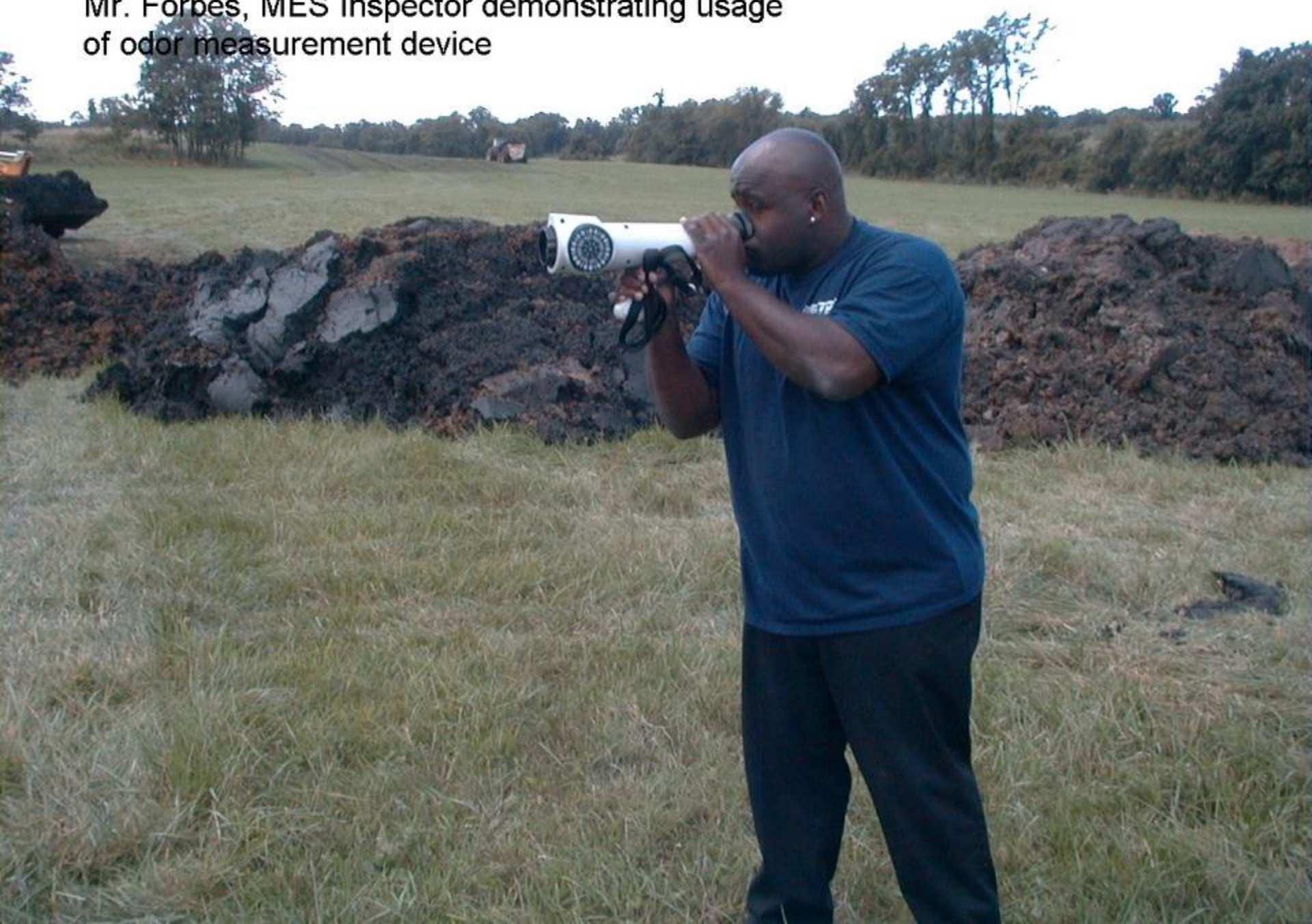
Rolling Out a Brand – Not a Passive Activity

- Product Research
- Study History
- Elected Official Outreach
 - Prior to roll-out
 - Site visits during demo use
- Public Outreach
 - Promoting benefits
 - Addressing concerns
- Product Demonstration
- Brand and Logo Development

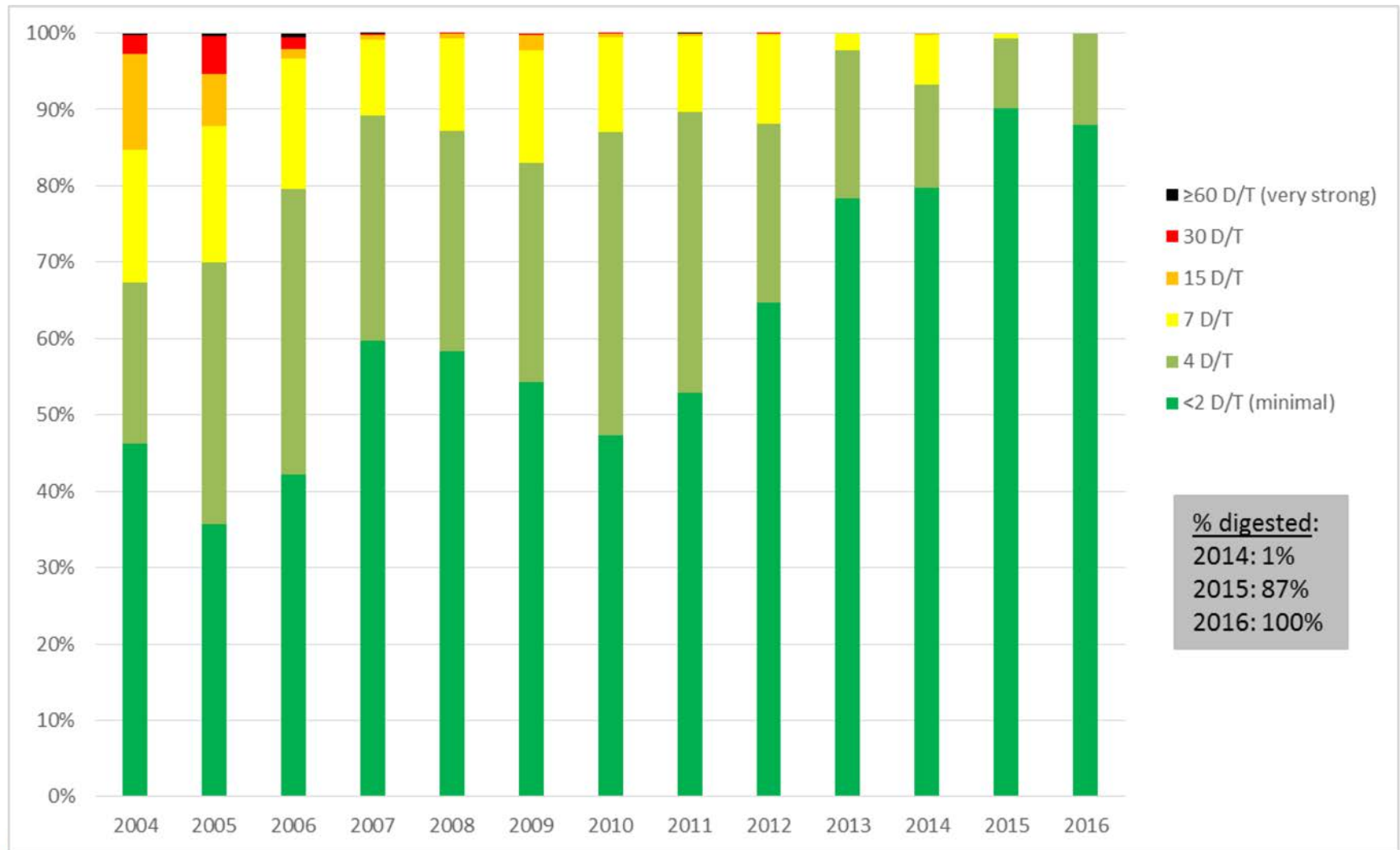
Product Quality Research

- A saleable biosolids product must go beyond mere regulatory requirements
 - Consistent
 - Low odor
 - Document positive benefits
 - Drought resistance
 - Crop yield improvement
 - Carbon sequestration
 - Healthy microbial diversity

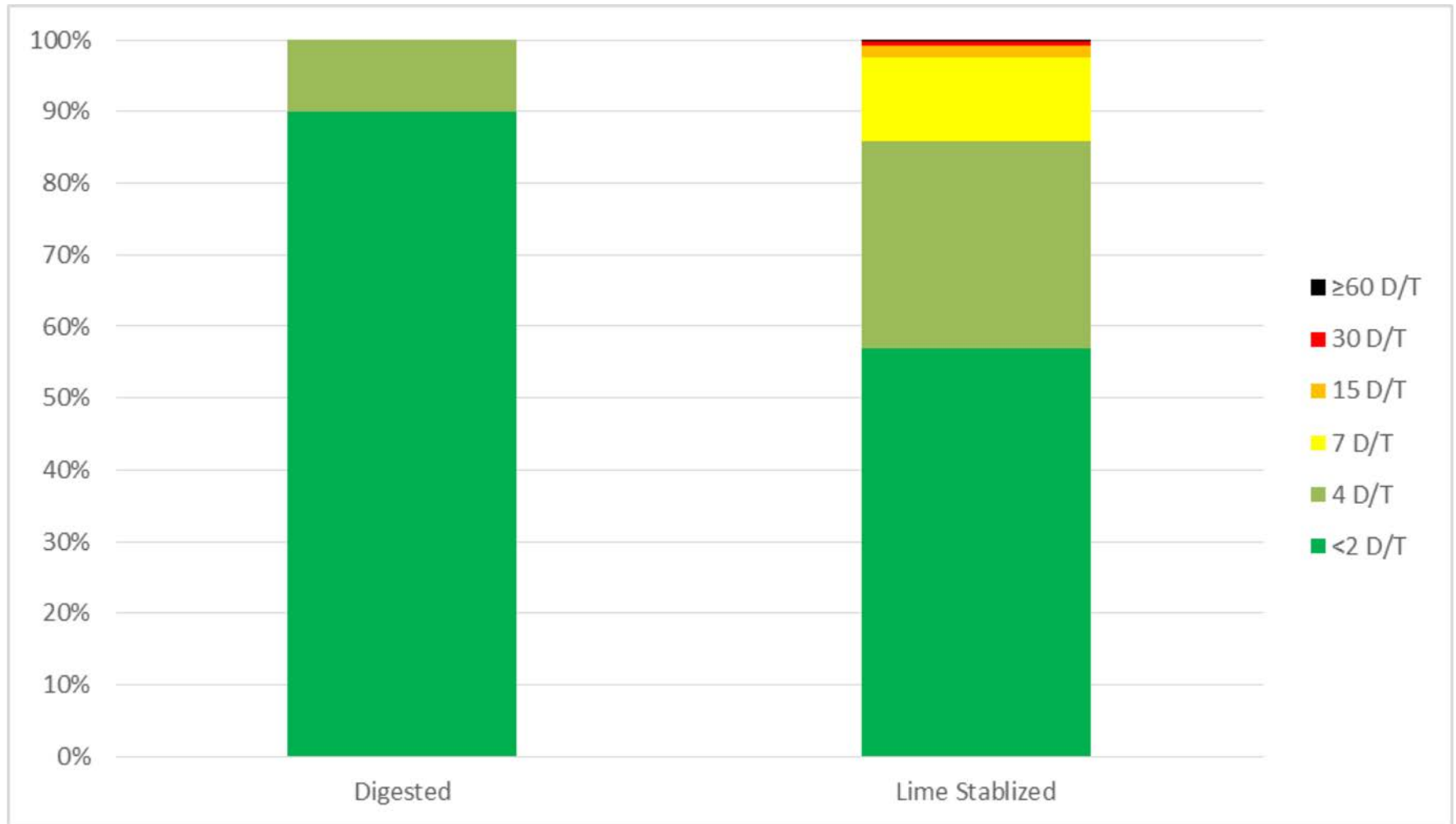
Mr. Forbes, MES Inspector demonstrating usage of odor measurement device



Results: Dilution-to-threshold



Results: Dilution-to-threshold by biosolids type



Proof of Product Quality

**BLUE PLAINS BIOSOLIDS WORKGROUP MEETING
JANUARY 10, 2018
MES AGENDA ITEMS**

FIELD INCIDENTS

No incidents to report since the last meeting

**TOTAL BLUE PLAINS AWTP INCIDENTS NOTED BY MES STAFF
DURING THE PERIOD JANUARY 1, 2017 THROUGH DECEMBER 31, 2017**

INCIDENT TYPE	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	TOTALS
Odors Noted by MES Inspector	0	0	0	0	0	0	0	0	0	0	0	0	0
Odor Complaint From Public	0	0	0	0	1	0	0	0	0	0	0	0	1
Odor Noted by Contractor	0	0	0	0	0	0	0	0	0	0	0	0	0
Overtured Trailers	0	0	1	0	0	0	0	0	0	0	0	0	1
Truck/Equipment Malfunctions	0	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Accident	0	1	1	0	0	0	0	0	0	1	1	0	4
Contractor /Field Management Issues	0	0	0	0	0	0	0	0	0	0	0	0	0
Biosolids pH/Treatment/Quality	0	0	0	0	0	0	0	0	0	0	0	0	0
Biosolids Spills	0	0	0	0	0	0	0	0	0	0	0	0	0
General Complaint	0	1	1	0	0	0	0	0	0	0	0	0	2
Informational Requests/ Inquiries from the Public	0	0	0	0	0	0	0	0	0	0	0	0	0
Dragout onto Public Roadways	0	0	1	0	0	1	0	0	0	0	0	0	2
ESTIMATED NUMBER OF ONE WAY TRUCK TRIPS * =	579	743	686	757	631	624	646	720	586	597	705	N/A	7,274
TOTAL INCIDENTS =	0	2	4	0	1	1	0	0	0	1	1	0	10

Change a Local Paradigm



Public Outreach Template

- Proactive meetings with community gardens and environmental groups
- Ensure all elected officials are informed and on board
- Donate to gardens and non-profits with a high quality product
- Engage the press and inoculate with facts
- Disseminate success stories

Urban Gardening Community Outreach



Community Gardens



 **The Washington Youth Garden**
Yesterday

That's right - we're trying out the highly regulated bio-solids compost from DC Water - and the raised bed we're using them in is amazingly healthy! — with Anna Benfield.



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 Kristin Brower, Emily Anne Roberts, Meghan Higginbotham and 23 others like this.



Concerned Citizens Tours



Digester Launch Event



mayor_bowser
Washington, Distric...

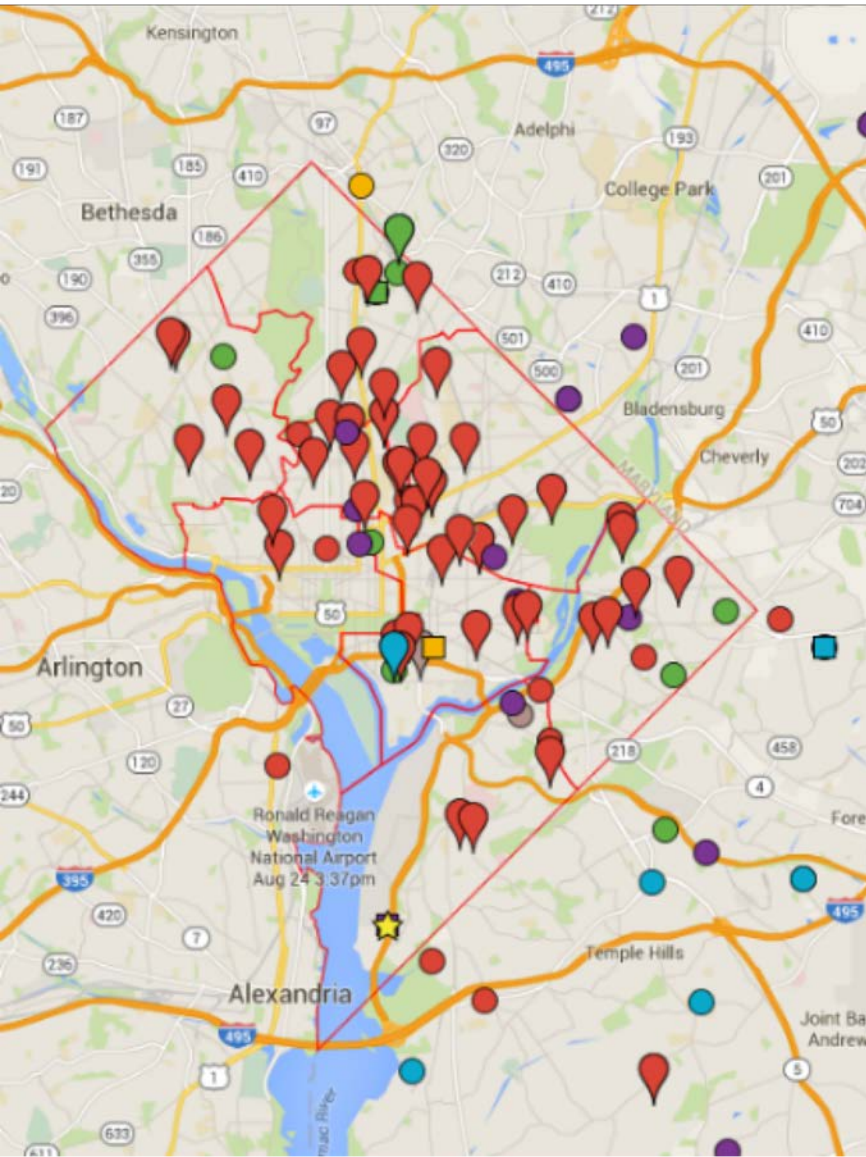
FOLLOW

49 likes

mayor_bowser Yesterday, DC became the first city in the nation to employ thermal hydrolysis technology with the largest facility in the world. This project will allow DC Water to provide clean, green renewable power by collecting sewage for production of electric power & recoverable heat. This 'green gold' will reduce greenhouse gas emissions & save taxpayers money. Turning #pooptopower is just another way we

Log in to like or comment.

Map of Compost Use



- 70+ comm. gardens & tree plantings in all 8 wards (430+ tons)
- 765+ tons to employees and on-site

Brand and Logo Development

- Brainstormed internally – came up with a long list of awful ideas
- Brought in a local professional – Dave Kriebel of Neue Now
- Developed a list of 12 names and taglines
- Whittled it down to 4 concepts
- Developed graphics concepts for the chosen 4
- Chose the best one
- Brought it in-house for alignment with the strong DC Water brand and logo

Final Logo and Tagline



Bloom Dates

- First product from digesters, November 24th, 2014
- Distribution & Marketing permits:
 - DC – 11/2016
 - MD – 05/2016
 - PA – 02/2017
 - VA – 02/2018
- First Distribution (free sample): November, 2015
- First product sale: August, 2016
- Bloom brand trademark registered – January 3, 2017
- First daily production sell-out: April 23, 2018 (450 wt)
- First bagged product in stores: May 20th, 2018

Bloom blends

- Virginia Tech blending study
 - Biosolids:sawdust:sand (1.5:1:1, dry wt basis)
 - Biosolids:mulch (0.75:1, dry wt basis)
- Bioretention mixes
 - University of Washington, University of Maryland
- Blends to meet DOT/SHA specs
- Nutrified mulch
 - Customer most concerned with clumps

Bloom blends—on-site blending facility



Users of blends



NPS: somewhere here

Also: Clean Rivers construction landscaping



Lane: Blending highway mix



HRGM: Takoma Rec

Product Use



Bloom blends—greenhouse



Cured Bloom (biosolids cake air dried to ~60% solids)

- Similar to windrow composting
- Short, long piles
- Turned regularly
- Covered during rain events



Cured Bloom—comparison with Fresh



Cured

Fresh

Cured Bloom meets USCC standards

Date Received: 31 Mar. 16
 Sample Identification: Bloom windrow +30d, post flip
 Sample ID #: 6030946 - 1/3

Nutrients	Dry wt.	As Rcvd.	units	Stability Indicator:	Respirometry	Biologically Available C
Total Nitrogen:	4.2	1.8	%	CO2 Evolution		
Ammonia (NH ₄ -N):	1600	690	mg/kg	mg CO ₂ -C/g OM/day	2.8	2.9
Nitrate (NO ₃ -N):	6.8	2.9	mg/kg	mg CO ₂ -C/g TS/day	1.5	1.5
Org. Nitrogen (Org.-N):	4.0	1.7	%	<i>Stability Rating</i>	<i>stable</i>	<i>stable</i>
Phosphorus (as P ₂ O ₅):	7.7	3.3	%			
Phosphorus (P):	34000	14000	mg/kg	Maturity Indicator: Cucumber Bioassay		
Potassium (as K ₂ O):	0.11	0.048	%	Compost:Vermiculite(v:v)	1:2	
Potassium (K):	950	400	mg/kg	Emergence (%)	100	
Calcium (Ca):	2.8	1.2	%	Seedling Vigor (%)	111	
Magnesium (Mg):	0.40	0.17	%	<i>Description of Plants</i>	<i>healthy</i>	
Sulfate (SO ₄ -S):	2800	1200	mg/kg			
Boron (Total B):	<1.0	<1.0	mg/kg	Pathogens	Results	Units
Moisture:	0	57.9	%	Fecal Coliform	11	MPN/g
Sodium (Na):	0.094	0.040	%	Salmonella	< 3	MPN/4g
Chloride (Cl):	0.07	0.029	%			
pH Value:	NA	6.78	unit			
Bulk Density :	20	46	lb/cu ft			
Carbonates (CaCO ₃):	23	9.5	lb/ton			
Conductivity (EC5):	5.4	NA	mmhos/cm			
Organic Matter:	52.2	22.0	%	Inerts	% by weight	
Organic Carbon:	29.0	12.0	%	Plastic	< 0.5	
Ash:	47.8	20.1	%	Glass	< 0.5	
C/N Ratio	6.9	6.9	ratio	Metal	< 0.5	
AgIndex	> 10	> 10	ratio	Sharps	ND	
Metals	Dry wt.	EPA Limit	units	Size Distribution		
Aluminum (Al):	6700	-	mg/kg	MM	% by weight	
Arsenic (As):	11	41	mg/kg	> 50	0.0	
Cadmium (Cd):	3.5	39	mg/kg	25 to 50	0.0	
Chromium (Cr):	46	1200	mg/kg	16 to 25	0.0	
Cobalt (Co)	7.1	-	mg/kg	9.5 to 16	0.0	
Copper (Cu):	430	1500	mg/kg	6.3 to 9.5	0.0	
Iron (Fe):	86000	-	mg/kg	4.0 to 6.3	1.8	
Lead (Pb):	49	300	mg/kg	2.0 to 4.0	1.6	
Manganese (Mn):	360	-	mg/kg	< 2.0	96.6	
Mercury (Hg):	< 1.0	17	mg/kg			
Molybdenum (Mo):	11	75	mg/kg			
Nickel (Ni):	26	420	mg/kg			
Selenium (Se):	3.9	36	mg/kg			
Zinc (Zn):	720	2800	mg/kg			

Analyst: Assaf Sadeh

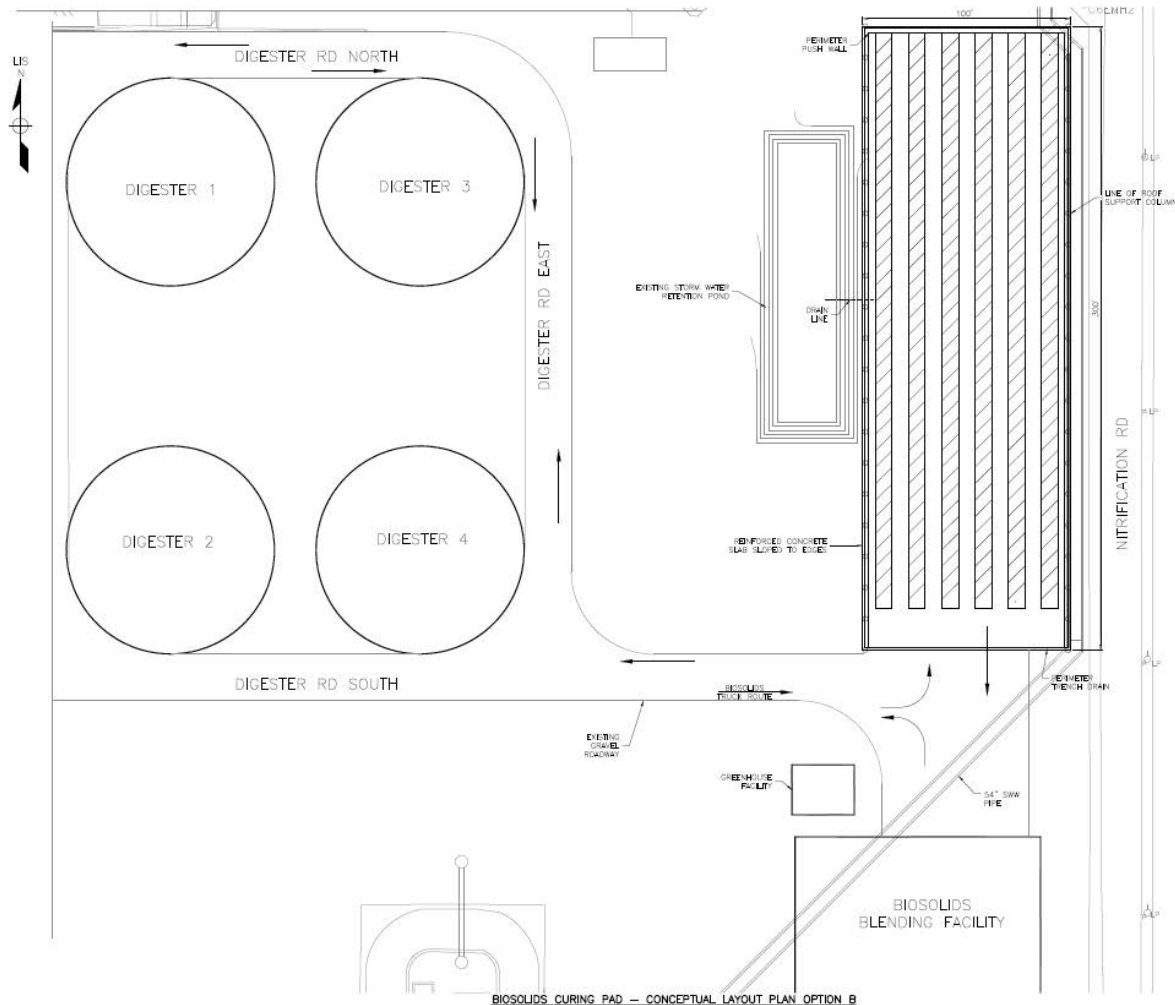


*Sample was received and handled in accordance with TMECC procedures.

DDOT Urban Forestry Administration & Casey Trees: Tree plantings w/cured Bloom



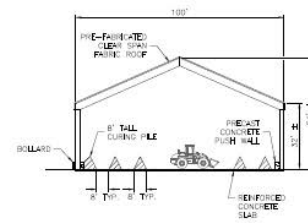
Preliminary layout for Curing Pad



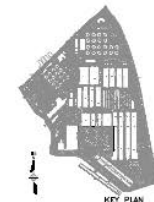
BIOSOLIDS CURING PAD – CONCEPTUAL LAYOUT PLAN OPTION B

BIOSOLIDS CURING DESIGN CRITERIA:

1. CONCRETE PAD SIZE 100' X 300' X 10\"/>



TYPICAL CROSS SECTION – OPTION B



KEY PLAN

Partial drying trials (scalp drying)



Partial drying trials (scalp drying)

Trials thus far:

- Belt dryer pilot at manufacturer's site (2)
- Belt dryer bench-scale unit
- Thin-film dryer full-scale demonstration
- Belt dryer pilot at Blue Plains

Results:

- 55-65 TS%:
 - Dry enough to be easily handled
 - Wet enough to not be dusty
- One vendor backmixed 90 TS% with cake to get 50-70 TS%
 - Mixed results
- Remains low odor
- Fungal growth when stored?
 - Effect of dryer operating temperature?
- Need to age dried material?
 - Poor growth trial results initially

Bagging

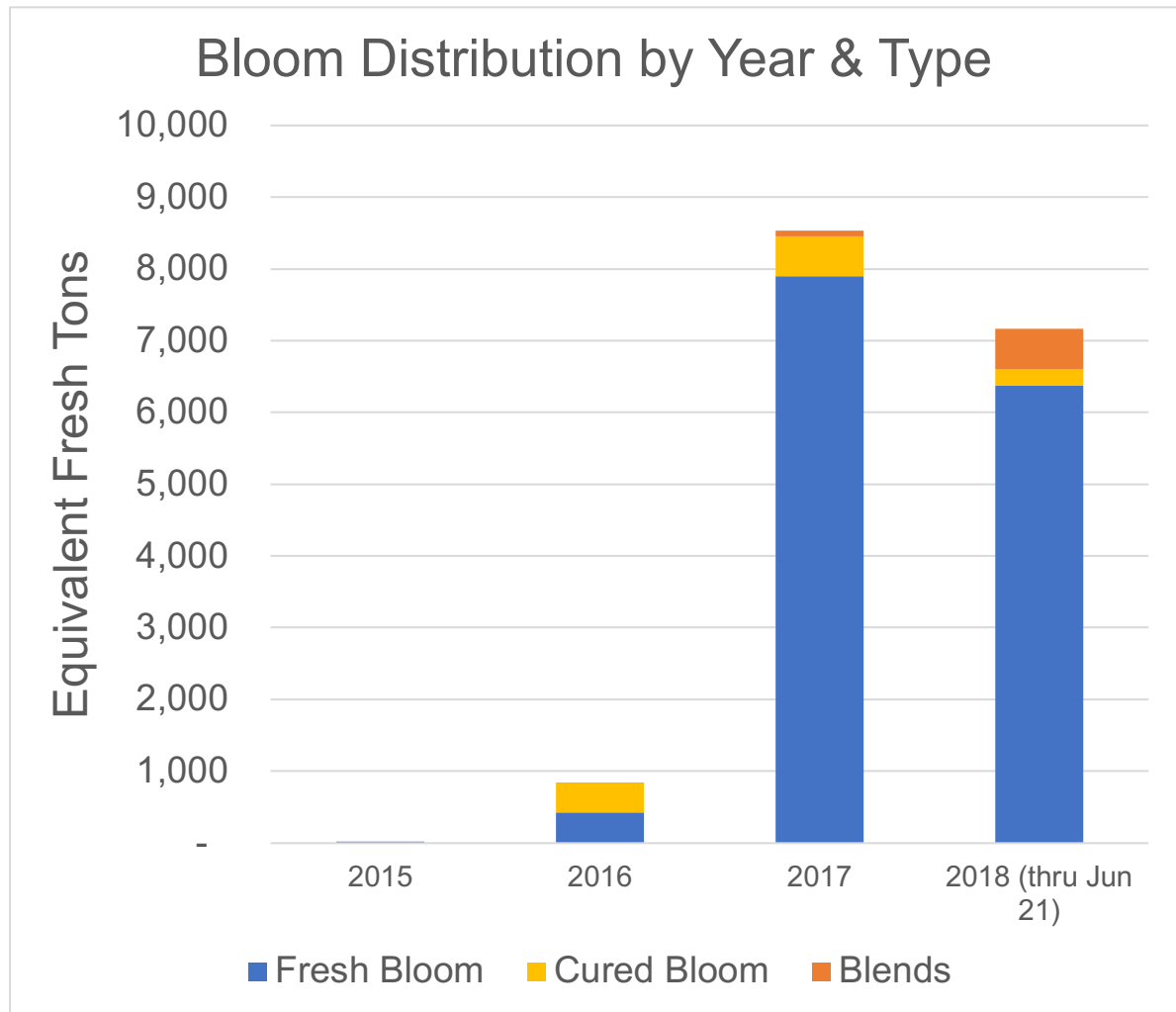
Now
available in
stores –
MD and
DC



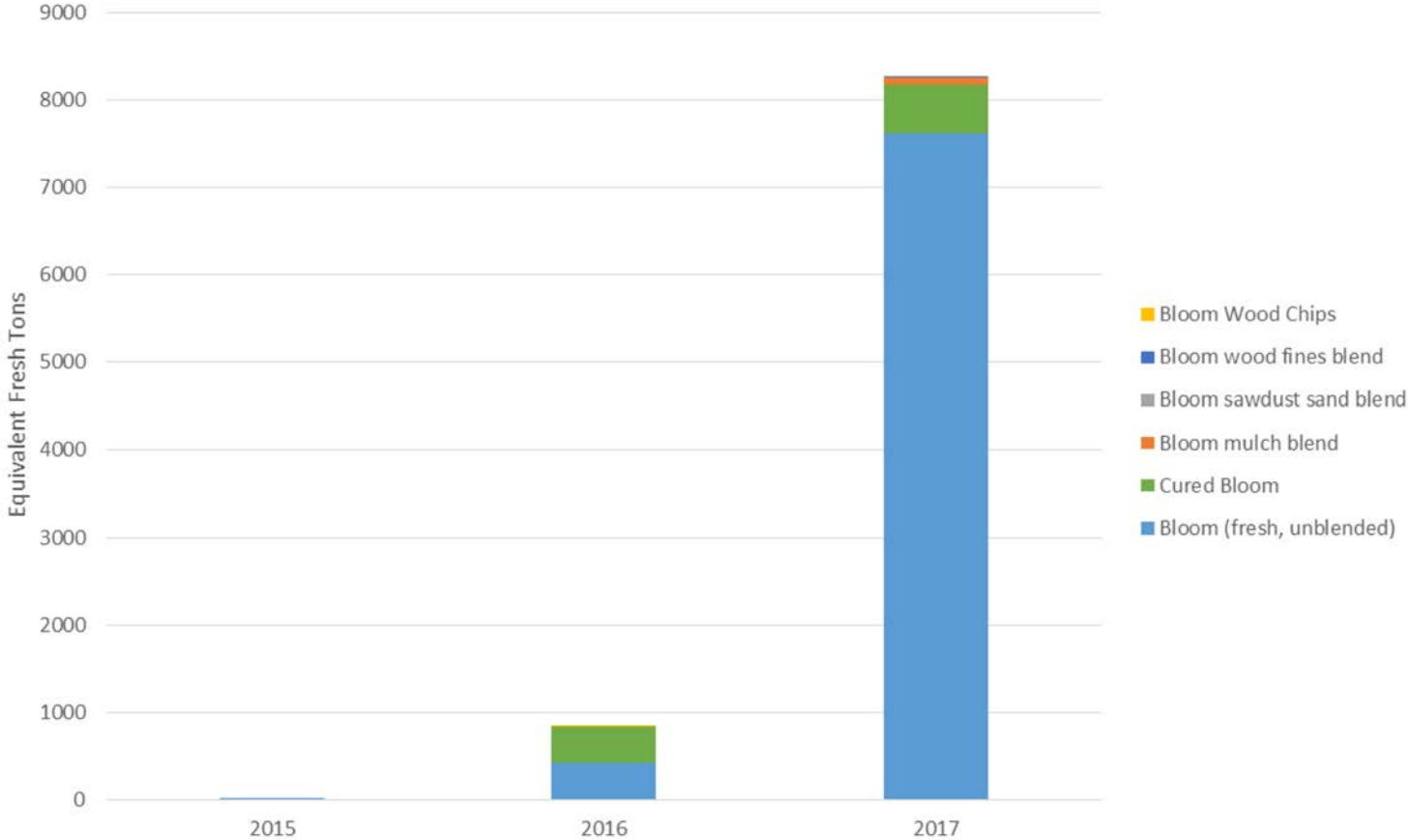
Distribution: Goals & Actual

<u>Year</u>	<u>Goal (wt)</u>
2015	
2016	900
2017	9,000
2018	25,000
2019	40,000

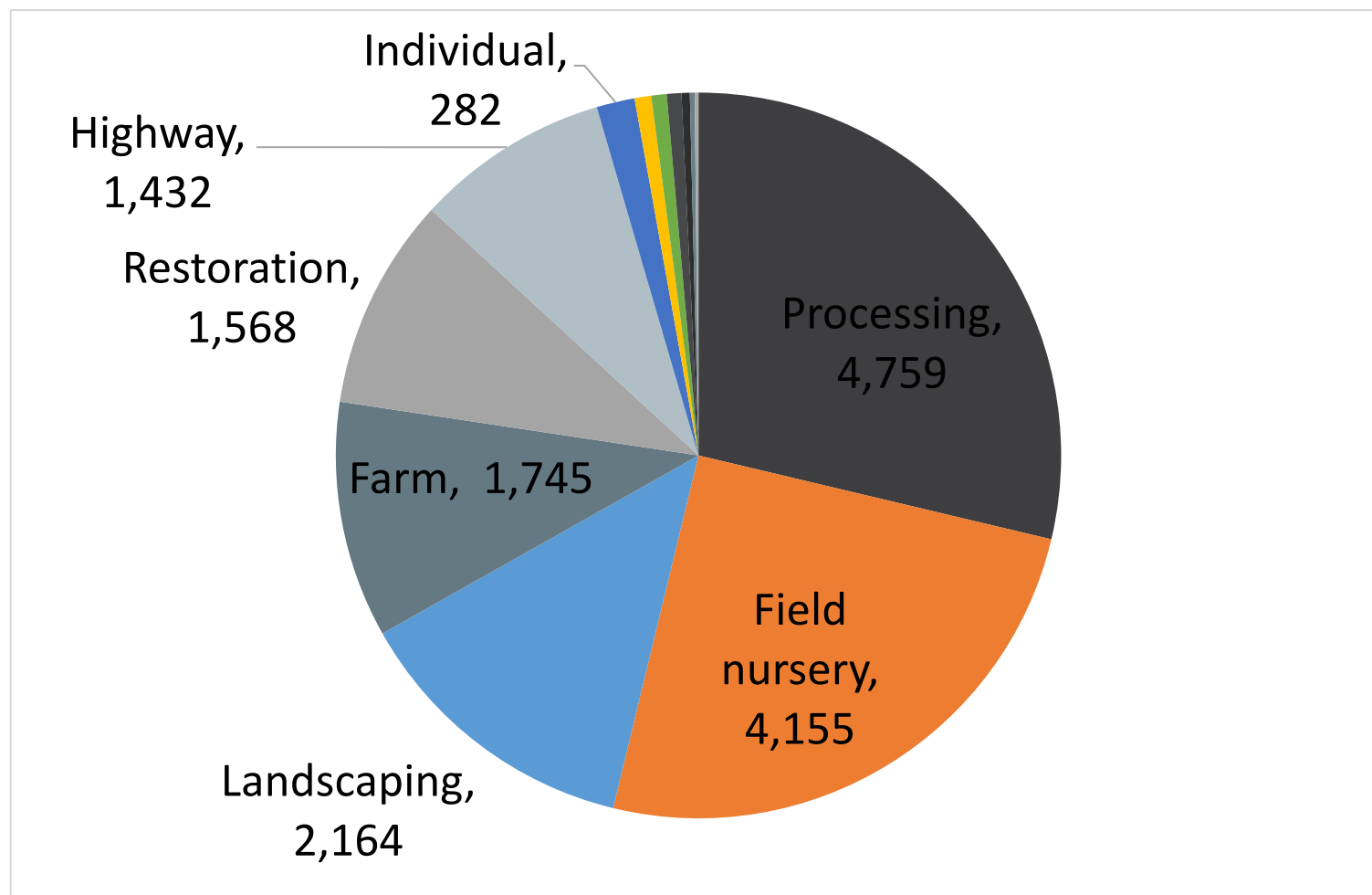
April 23rd, 2018:
Distribution > Production



Bloom Distribution by Year & Type

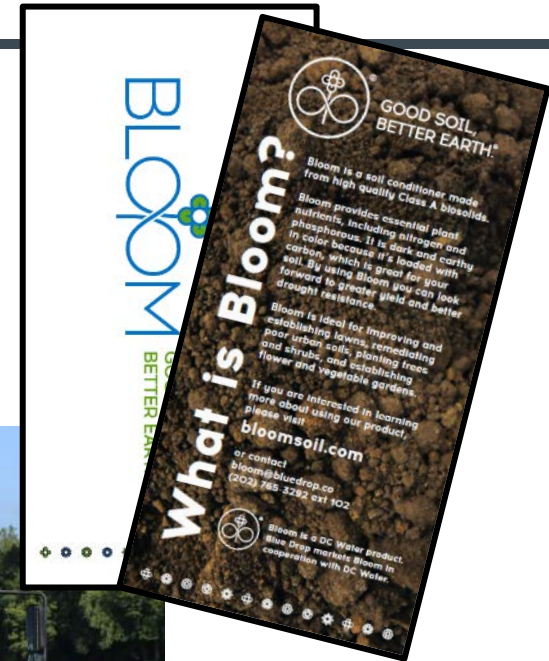


Bloom Distribution, All Sectors, All Time



DC Water open to licensing Bloom[®]

- Registered trademark brand name
- Marketing, communication materials
- Product processing approaches
- Existing arrangements
- Blue Drop could market other plants' mat'l



There is no such thing as waste,
only wasted resources.

www.bloomsoil.com

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