

Class B Land Application – It's Alive

NEBRA – NEWEA Specialty Conference

South Portland, ME

October 23, 2014

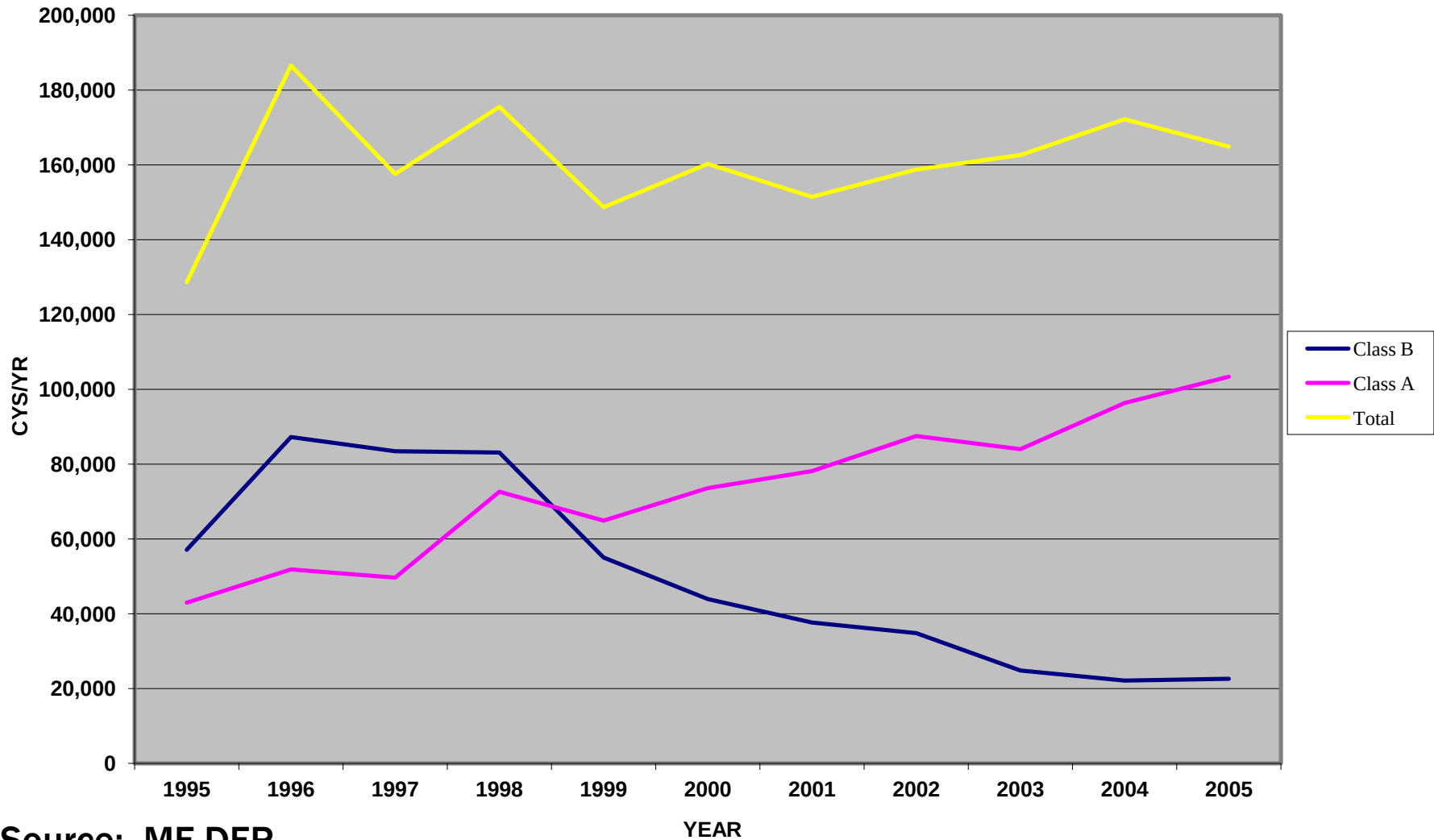


Giving Resources New Life®

Class B – A management strategy from before the 503s



The rise and fall of Class B: Maine Case Study



Source: ME DEP

VT – 25% in 2012 beneficially used; 14% Class B

2012 Estimated Quantities of Biosolids Managed In and Out of State

(As reported to RMS¹ from Vermont facility generators)

Amounts are in wet tons at 15% solids²

Management Option	In-State (wet tons)	Out-of-State (wet tons)	Total (wet tons)	Percent of Total	Percent Managed
Beneficial Uses:					25.8%
Land Application	9,430	0	9,430	14.2%	
EQ Biosolids	6,361	1,374	7,735	11.6%	
Subtotal	15,791	1,374	17,165		
Non-Beneficial Uses:					74.2%
Landfill	47,963	0	47,963	72.2%	
Incineration ³	0	1,284	1,284	1.9%	
Subtotal	47,963	1,284	49,247		
Total:	63,754	2,658	66,412	100%	100%
Percent of Total In & Out of State	96.0%	4.0%			

¹RMS - Residuals Management Section. Wastewater Management Division. (802) 490-6187.

²All amounts of biosolids reported to DEC are converted to dry tons. Then the dry tons are converted to wet weight assuming 15% solids, which is generally the percent solids that can qualify to be landfilled. To convert wet tons to dry tons, multiply wet tons X 0.15.

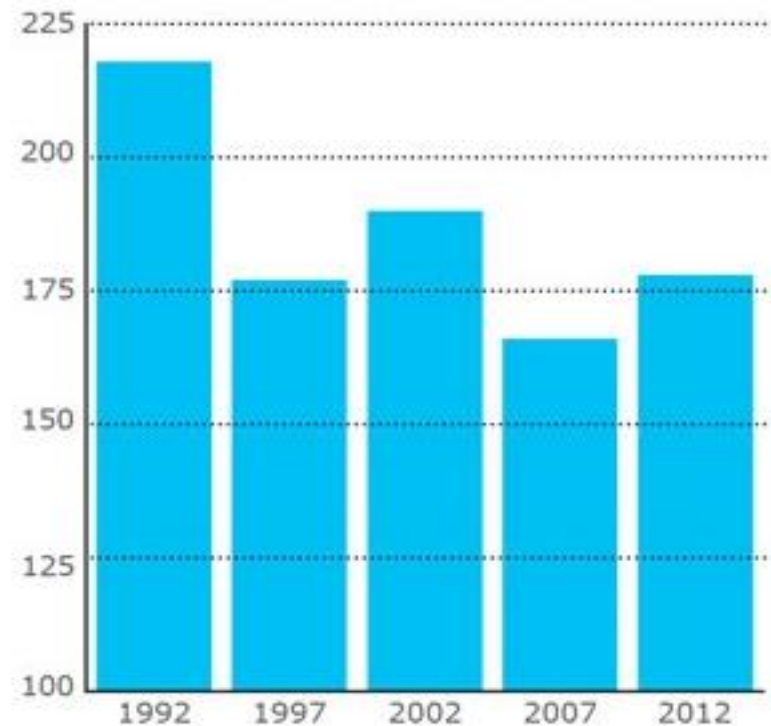
³Please note that nearly all biosolids sent to incinerators are in liquid form and the actual weight is greater than that in this table.

The Resurgence of Farms in the US

Farms by land and number

	Total farming acres (millions)	Number of farms
1992	1.26	5,776
1997	1.30	7,404
2002	1.40	7,196
2007	1.35	8,136
2012	1.45	8,173

Average acres per farm



Source: USDA, National Agriculture Statistics Service 2012 Census of Agriculture

Class B biosolids are good for soils

- New England Ag soils are ripe for amending
- Biosolids provide:
 - N: organic, slow release
 - P, not so much K
 - Organic matter
 - Micronutrients
 - Foundation for health



Class B – a viable option in the Northeast

- **Small POTWs close to agriculture**
- + **Improvements in technology & treatment**
- + **Comparatively low cost/low capital**
- + **Resurgence of farms**
- + **Need for nutrients**
- = **Sustainable solution for all stakeholders**

Summary of Northeast Biosolids Regulations

State	503 Or Custom	Reference
ME	Custom	DEP Chapter 419
NH	Custom	DES ENV WQ 800
VT	Custom	ANR SW Mgmt Rules Ch.6
MA	Custom	DEP 310 CMR 32
RI	Custom	DEM Sewage Sludge Mgmt Rules Ch. 11 &12
CT	503	USEPA 40 CFR 503

Extensive Program Guidelines

LAND APPLICATION OF NON-EXCEPTIONAL QUALITY WASTEWATER RESIDUALS Guidance / Regulation Spreadsheet

	EPA	CT ¹⁹⁹⁸	MA ¹⁹⁹⁸	ME ¹⁹⁹⁸	NH ¹⁹⁹⁹	NJ	NY	RI ¹⁹⁹⁸	VT ¹⁹⁹⁸
General Information									
Generator Permit Required	Yes	Yes	Yes	Yes	Yes	Yes	Yes ⁶	Yes	Yes
Site Permit Required	No	No	No	Yes ⁴	Yes	Approval	No	Yes	Yes (included in generator)
Local Approval	No		Yes	No	No	Notice only	No	N/A	No
Public Notice	Yes	NPDES	No	Yes ⁴	Yes	Yes	Yes	Yes ⁵	Yes
Public Hearing	Possible	Possible	No	Possible	Yes	Possible	Possible	Possible	Possible
Abutter Notification	In Plan	No	No	Yes ⁴	No	Yes	No	Yes ⁵	Yes
Permit Term (yrs)	5 yrs	5 yrs	1 year	Unlimited	5 yrs	5 yrs	Max. 10 yrs	Unlimited	□ 5 yrs
Permit Fees (\$)	No	Yes	Yes	Yes-varies	Yes - varies	\$6,700	No	\$150	\$800
Recordkeeping		Yes	Yes	Yes	Yes	Yes	7 yrs.	Yes	Site life
Recordkeeping-Post-closure	5 yrs to Infinity	N/A	3 yrs.	5 yrs. to Infinity	5 yrs	Yes	No	3 yrs	Yes
Additional Testing	Potential		5 yrs	Potential	Possible	Possible	Potential	Possible	Possible
Inspection and Entry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Access Controls									
Animal Grazing (days)	Class B- 30 days	N/A	PSRP - 30 days	Class B- 30 days		Class B-30 days	dairy - 365 - other 30	30	6 mos.
Public Access	30 days - 1 yr.	No	PSRP - 30 days	No - Access to the general public		Class B-30 days to 1 yr	12 Months	Veg. growth req. or 1 year	12 mos.
Endangered Species	Yes		N/A	No		Yes	N/A	N/A	Yes
Food Crop Limit. (months)	1 - 38 Months	N/A	24 Months	Class B - 18 + Months		Class B 14-38 months	18 Months	1 - 38 months	36 mos.
Feed Crop Limit. (months)	1 Month	N/A	1 Month	Class B - 30 days		Class B 30 days	N/A	1 month	5 wk + 4 months
Seasonal Restrictions									
Frozen soil	③	Prohibited	Prohibited	Prohibited	Prohibited	Restricted	Prohibit	Prohibit	Prohibit
Wet Soil	N/A		Prohibited	Prohibited	Prohibited	Restricted	Prohibit	N/A	Prohibit
Flooded	③	②	Prohibited	Prohibited	Prohibited	Restricted	Prohibit	Prohibit	Prohibit
High Water Table	N/A	18"	Saturated	18"/min to GW		Restricted	24" separation	2.0 Ft.	36" to saturated soil
Rainfall	N/A	N/A	Prohibited	N/A		Restricted	Prohibit	N/A	N/A

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	EPA	CT ¹	MA ²	ME	NH	NJ	NY	RI	VT
Stockpiling/Storage									
Time Limit	N/A	1 yr	N/A	6 Months		6 months	1 yr	Prohibit	No
Setbacks	N/A	Yes	Yes	Yes		Yes	Yes	Prohibit	Yes
Quantity	N/A	Yes	N/A	Unlimited		No	N/A	Prohibit	No
Site Restrictions	N/A	Yes	Yes	Yes		Class B - Yes	Yes	Prohibit	Yes
Other									
Odor Control	N/A	Stable	No	Setbacks	Yes	Yes	Yes	Yes	Yes
Vector control	Yes	Yes	No	Yes	yes	Yes	Yes	Yes	Combined with Pathogen
Pathogen Reduction	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
pH	Possible	Yes	Soil - 6.5	Yes		Possible	Yes-soil	Possible	Yes - soil
Run-off/Run-on Controls	Possible	Covered Equip.	Yes	Yes		Yes	Yes	Possible	Yes
Transport Requirements	No	Yes	Yes		Yes	No	Yes	Yes	Yes
Site Characteristics									
Topography/Slope	N/A	15%	up to 8%	15%	< 15%	Site specific	Yes ⁸	Yes ⁷	Yes
Permeability (in/hr)	N/A	N/A	N/A	Mid range		Site specific	0.05-6 in/hr	N/A	Yes
Area	N/A	N/A	N/A	Unlimited		Site specific	N/A	N/A	Yes
Soil Analysis	N/A	N/A	Yes	Yes		Site specific	Yes	Yes	Yes
Soil Type	N/A	N/A	Yes	Yes		Site specific	Yes	Yes	Yes
Depth to Water Table	N/A	18"	3.0 ft	18"	4/2 ft.	Site specific	24"	2.0	Yes
Vegetative Cover	N/A	N/A	N/A	Yes		Site specific	Yes	N/A	Yes
Depth to Bedrock	N/A	2 ft	3.0 ft	20"	2 ft.	Site specific	24"	3.0	Yes
Land Use Type									
Agricultural	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Forest	Yes	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Public Contact	Yes	Yes	Restricted	Class B - No		Yes	No	Yes	Not allowed - Class B
Reclamation	Yes	Yes	Yes	Possible	Yes	Yes	Possible	Yes	Yes
Lawn	No	Yes	No	Class B - No		Class B-No	No	No	No for Class B
Other			N/A	Landfill Closure	Yes (stockpiling)	Yes	-	Yes	No for Class B
Garden		No	No			Class B-No	No	No	No for Class B
Monitoring Requirements									
Soil Monitoring (#/acre/yr)	N/A	N/A	Yearly	1/8 acres/yr		No	Yes 1/25 - 50 acres/yr	1	Yes
GW Monitoring (#/yr)	N/A	N/A	Possible	Possible		No	N/A	varies	Yes
Sludge Monitoring (#/yr)	1 - 12	1 - 12	1 - 12	Yes-varies		4-12/yr	Varies	1	Up to 4 times/yr
Sample Type	Composite	Composite	Composite	Varies		varies	Composite	Composite	Depends
% Solids		N/A	N/A	Yes possible		Yes	Yes	Yes	Yes
Mineralization		Yes	No			Yes	No		Yes

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	EPA	CT ¹		MA ²		ME		NH	NJ		NY		RI		V ¹
Buffers/Setbacks (ft)													PFRP	PSRP	SURF
Surface Water	30	30 ¹¹		Discretionary		25 - 300			Site specific		200		50	200	100'
Public Water Supply wells	N/A	100		1/2 mile		300			Site specific		200		400	WHPA ¹⁵	WHPA
Private Water supply wells	N/A	100		300 ft		300			Site specific		200		50	1000	300'
On-site/Off-site Dwellings	N/A	N/A		N/A		300			Site specific		500		N/A	400	300'
Property Lines	N/A	N/A		N/A		25			Site specific		50		50	100	50'
Public Roads	N/A	N/A		N/A		25			Site specific		N/A		N/A	N/A	50'
Drainage Swale	30	30		Yes		25			Site specific		25		N/A	N/A	100'
Floodplain	N/A	N/A		N/A		Variance reqd.			Site specific		N/A		50	200	N/A
Wetlands	30	30		100 ft		N/A			Site specific		100		50	200	100'
Public Areas	N/A	N/A		N/A		N/A			Site specific		N/A		N/A	N/A	300'
Sinkholes	N/A	N/A		N/A		N/A			Site specific		N/A		N/A	N/A	N/A
	Current	Current/Propose		Current/Propose		Current/Propose		Current/Propose	Current/Propose		Current/Propose		Current/Propose		Current/F
Max. Concentration															
Arsenic (mg/kg)	75 ⁹	10	10	N/A		N/A	41		75		N/A	41	75		
Boron(mg/kg)	N/A	N/A	N/A	300			N/A		N/A		N/A	N/A			25
Cadmium(mg/kg)	85 ⁹	34	34	25		10	39		85		25	21	85		
Chromium(mg/kg)	N/A	1200	1200	1000		1000	3000		N/A		1000	1000	3000		1000
Copper(mg/kg)	4300 ⁹	1500	1500	1000		1000	1500		4300		1000	1500	4300		1000
Lead(mg/kg)	840 ⁹	300	300	1000		700	300		840		1000	300	840		1000
Mercury(mg/kg)	57 ⁹	17	17	10		10	17		57		10	10	57		10
Molybdenum(mg/kg)	75 ⁹	18	18	10/26 ¹³		N/A	18		75		N/A	54	75		
Nickel(mg/kg)	420 ⁹	420	420	200		200	420		420		200	200	420		200
Nitrogen(mg/kg)	N/A ¹⁰	Mineral-ization	Mineral-ization	N/A ¹⁰			N/A		agronomi- c		N/A	N/A			
Selenium(mg/kg)	100 ⁹	36		N/A		N/A	100		100		N/A	28	100		
Zinc(mg/kg)	7500 ⁹	2800	2800	2500		2000	2800		7500		2500	2500	7500		2500
PCBs(mg/kg)	N/A ¹²	N/A	N/A	10		10	7		<50		10	N/A			10
Dioxin (ppt)		N/A	N/A	N/A		27/250 ¹⁴	27/250		Monitor screen		N/A	N/A			
Other Tests		N/A	yes	TCLP every 2 yrs.		Priority Pollu- tants	VOA ABN organic/ pest		pp scan annual nutrients		Possible	Possi- ble	TCLP ¹⁷		TCLP every 5 yr

Keys to Success



- High quality biosolids
- BMPs
- Supportive enforcement
- Managing seasonality
- Communication
& Public perception

Class B via Digestion

PROS:

Lower odor

Better bioavailability of nutrients

Reduced need for supplemental
fertilizer

Reduced pH adjustment?

Not so PRO:

Reduced effectiveness of
dewatering

Reduced quantities

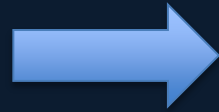


Notable Programs

- **CSWD, VT**
- **Nashua, NH**
- **Franklin, NH**
- **LAWPCA, ME**
- **Madawaska, ME**
- **Progress in NY**
- **Paper fiber**



Challenges



Opportunities

- **Permitting & Compliance**
- **Neighbors**
- **Odors**
- **The generation gap**
- **Weather**



Reclamation as well as active Agriculture







Ok, Class A is alive too 😊





Thank you

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