

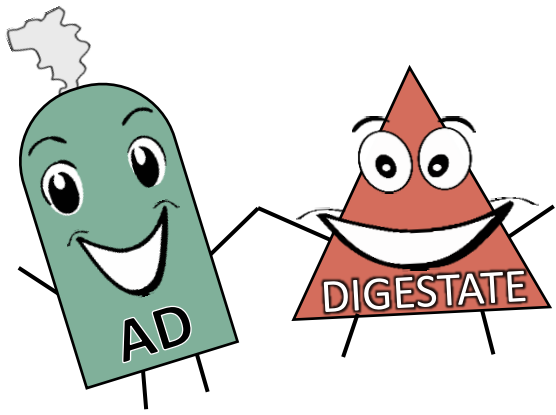
Regulation in New York State:

Anaerobic Digestion

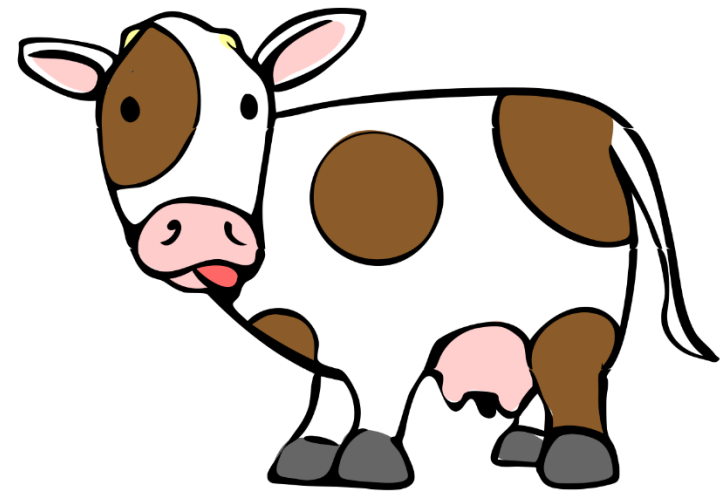
NEWMOA Staff Workshop

May 11, 2017

Sally Rowland, Ph.D., P.E.
Organics Reduction and Recycling
Division of Materials Management
NYSDEC



Regulation of Anaerobic Digestion and Digestate



Big Issues for AD

- PR & VAR? Required?
- Digestate stability
- Analyses of digestate?
- Storage of digestate?
- Digestate use
 - Sufficient market
 - Management
- Contaminants in waste food

Part 360: Regulation of AD and Digestate depends on:



Waste inputs to the AD



Digestate use



Location of the AD

Food Scraps →

Manure →

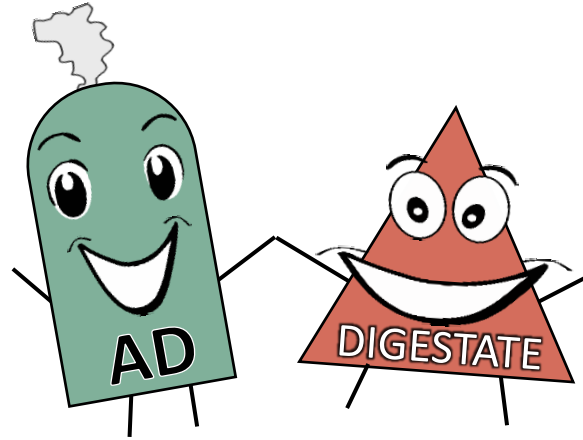
Food Processing Waste →

Biosolids →

FOG →

Slaughter Waste →

MSW
(with lots of pre-
processing) →



- Agricultural Use
- Composting -> Compost
- Animal Bedding
- Topsoil Blending
- Gasification -> Biochar

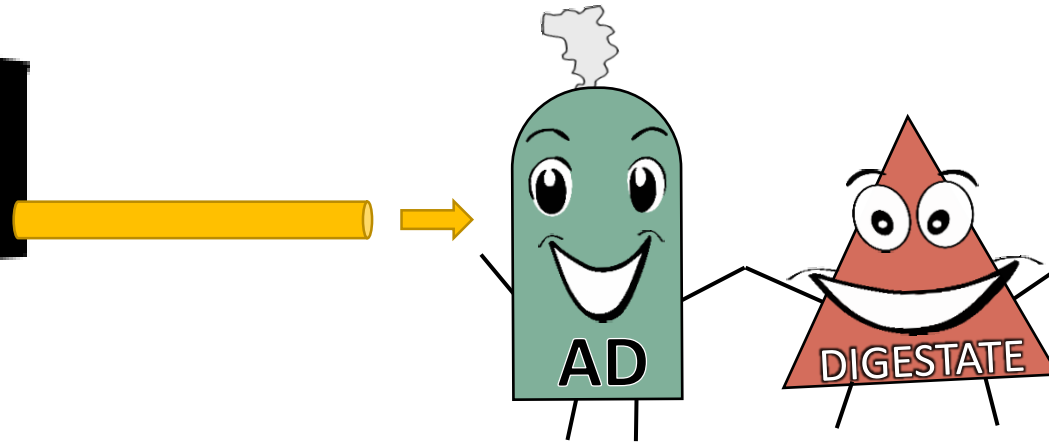
LOCATION

- At site of generation
- Wastewater treatment plant
- Farm
- Regional

AD located at the site of generation (no off-site inputs)



Part 360: AD is exempt from regulation



Digestate:

Food processing waste: Registration for land application (except for CAFO)
Registration for composting

Manure: Exempt

AD Located on a Farm



AD: Is it a CAFO?

YES

Is non-manure < 50% by volume?

YES

Exempt

NO

< 50 tpd?

NO

Permit

YES

Registration

NO

Accepts only manure & other farm waste?

YES

Exempt

NO

< 50 tpd?

NO

Permit

YES

Registration

AD on a Farm: Digestate Use



Only farm waste accepted

Use of digestate for land application, bedding, composting: Exempt

Farm waste & other wastes (other waste < 50% by volume):

Use of digestate for land application, bedding, composting: Exempt

AD on a Farm: Digestate Use



Registered AD (< 50 tpd, > 50% by volume off-site waste):

- Bedding – exempt

- Land application – registration unless CAFO

- Composting – registration

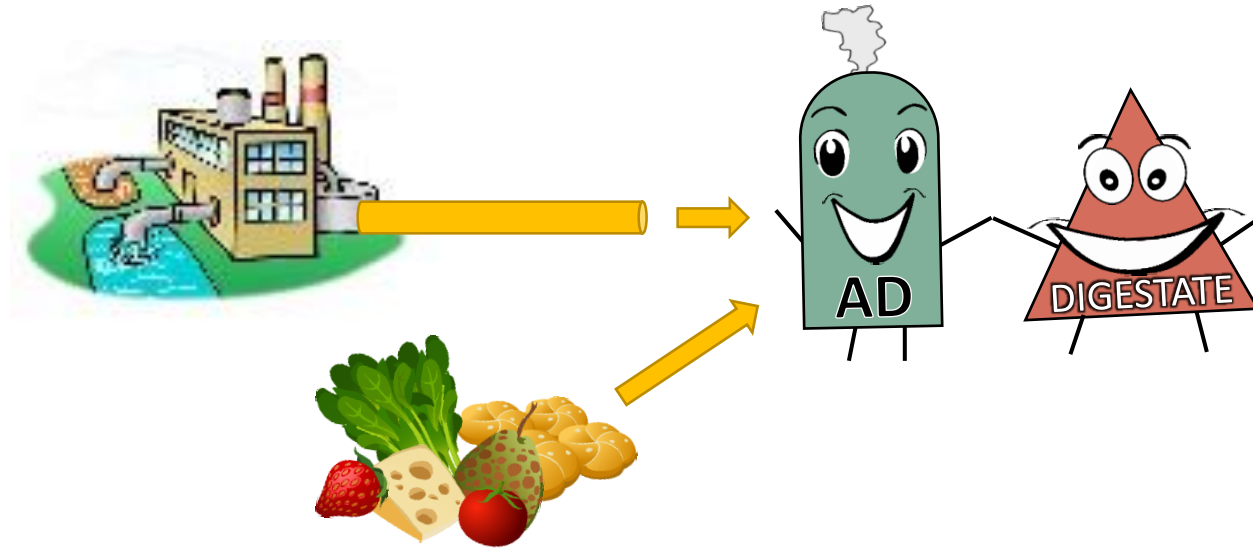
Permitted AD (> 50 tpd, > 50% by volume off-site waste):

- Bedding – exempt

- Land application – registration

- Composting – registration

AD at Wastewater Treatment Plants (POTWs)



AD: Exempt under Part 360 (covered by SPDES)

Digestate (Whether AD takes off-site organics or not): handled under biosolids regulations (360-4&5)

AD: Regional Facility



ANY biosolids, etc: AD is permitted under 360-5
Digestate: Regulated as biosolids (360-4&5)

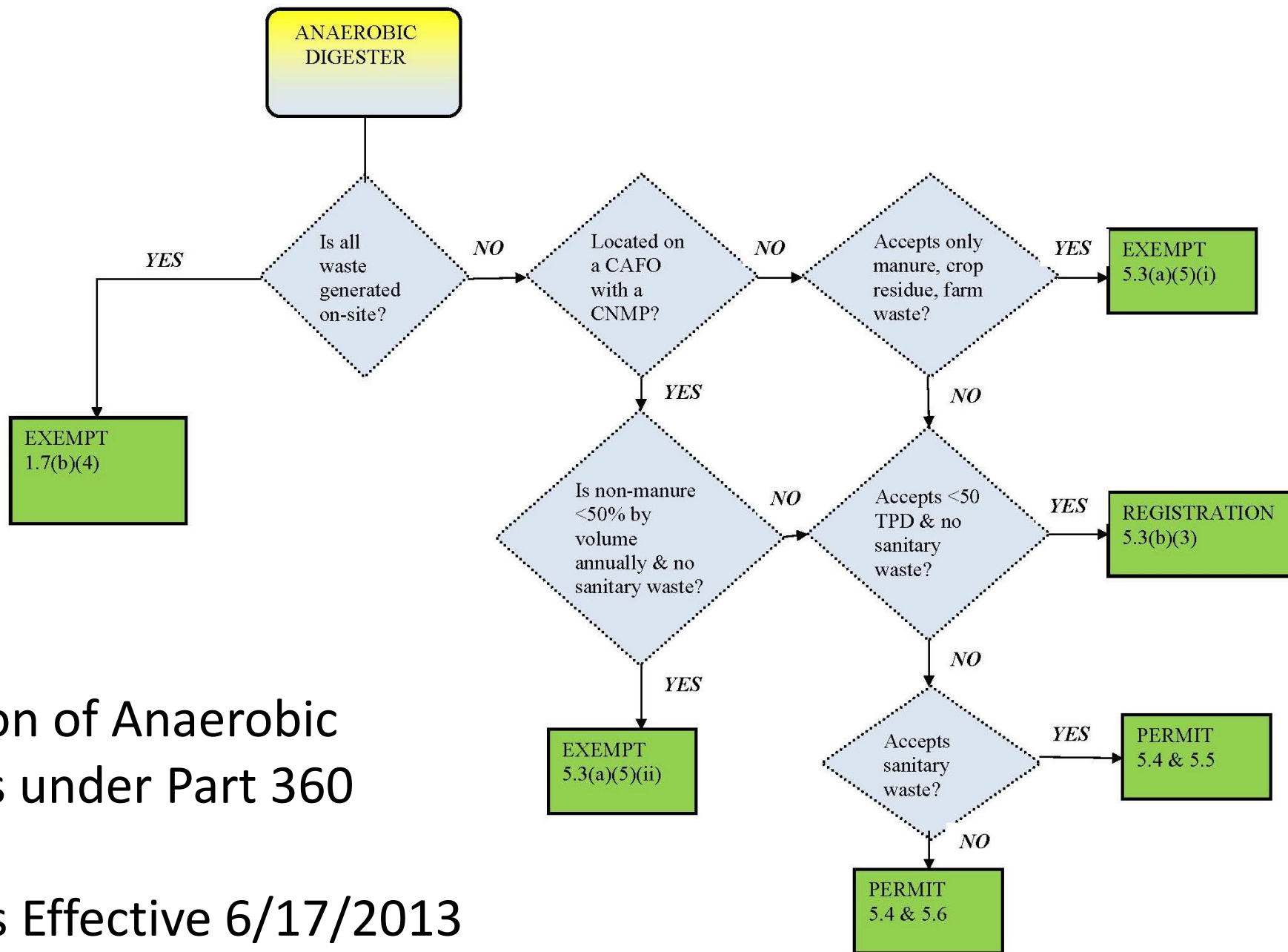
AD: Regional Facility



< 50 tpd --> Registration
> 50 tpd --> Permit

Digestate:

Registered AD:	land application – registration unless CAFO bedding – exempt composting – registration
Permitted AD:	land application – registration bedding – exempt composting – registration



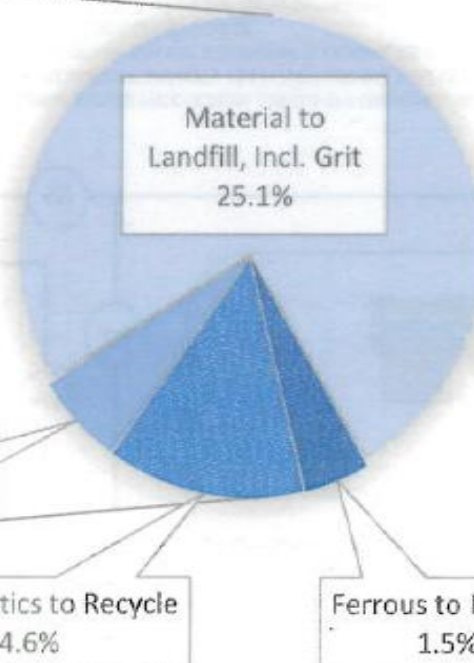
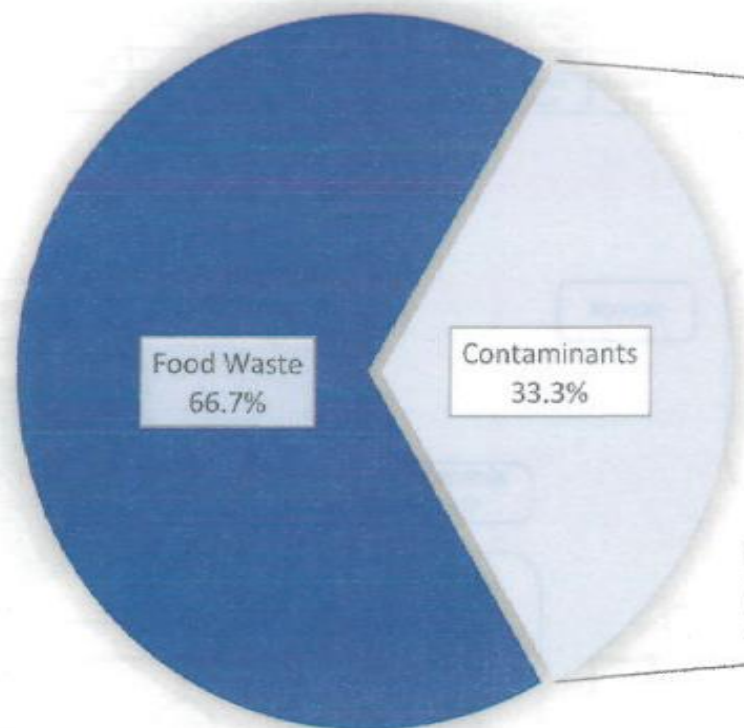
Regulation of Anaerobic Digesters under Part 360

Revisions Effective 6/17/2013

American Organic Energy

Long Island

600 tons per day



25.1 % of total input
 $\frac{25.1}{33.3} = 75.4\%$ of contaminants to LF

	WASTE TO LANDFILL	RIGID PLASTICS	FERROUS	NON-FERROUS	GRIT TO C&D	CAKE SLUDGE (20% TS)	AMMONIUM SULFATE ((NH ₄) ₂ SO ₄)	GROUND WATER INI.
TONS PER YEAR	41,700	8,225	2,725	3,750	3,300	26,645	4,520	
TONS PER DAY ₅	167	33	11	15	13	102		
YARDS PER YEAR					3,300	33,306		
YARDS PER DAY ₅					13	128		
GALLONS PER YEAR							911,389	29,669,852
GALLONS PER DAY ₇							2,497	77,196
MAX DURATION (DAYS)	3	5	2	2	5	2.5	3	
MAX (TONS)	200 (BALED)	50 (BALED)	20	30	65	250		

NOTES:

- 5-DAY WEEK BASED ON 250 D/YR
- PROCESSED INPUT VOLUME 100,000 TON

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ENGINEERING

1630 MADISON AVENUE
WOOSTER, OH 44691

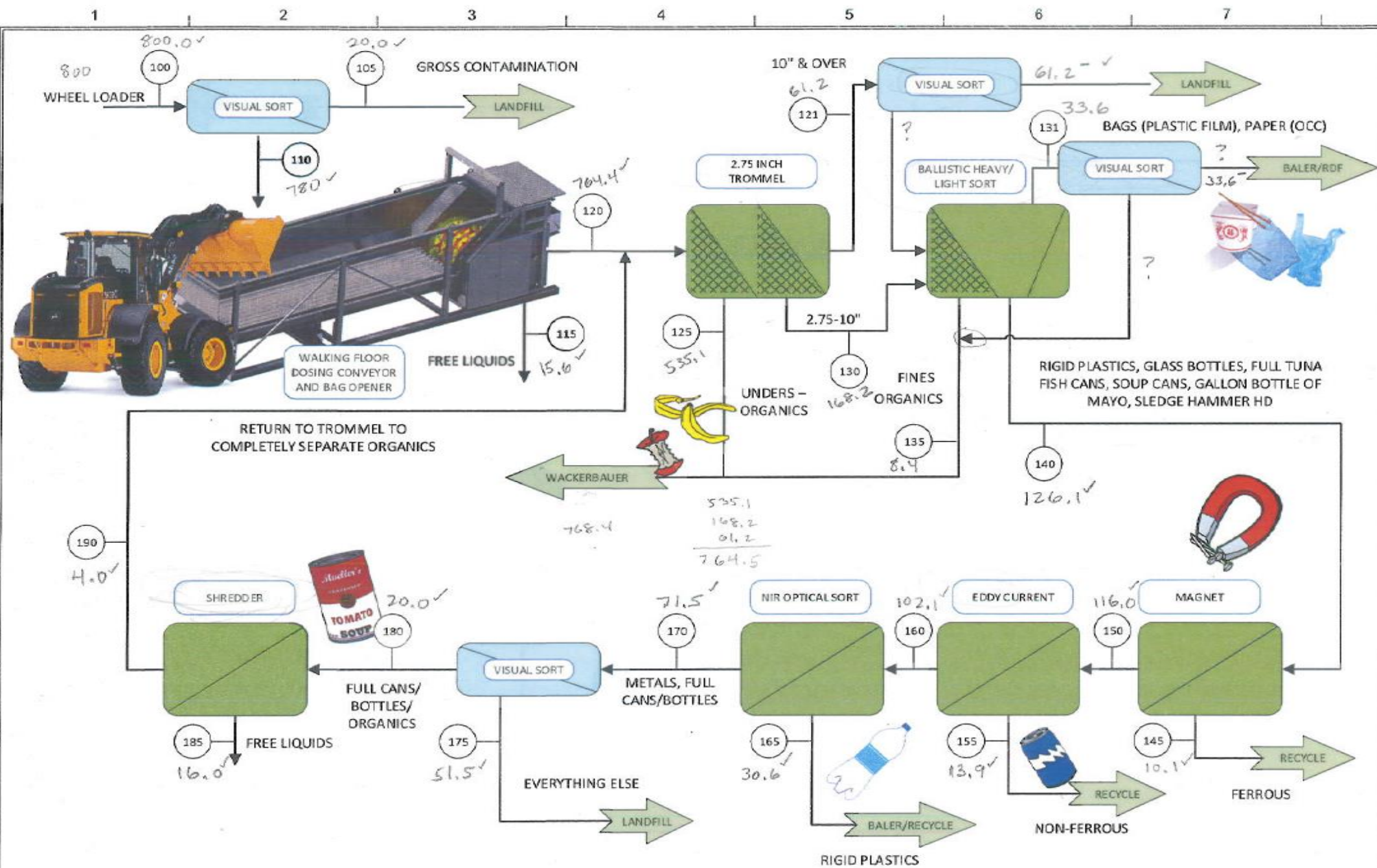
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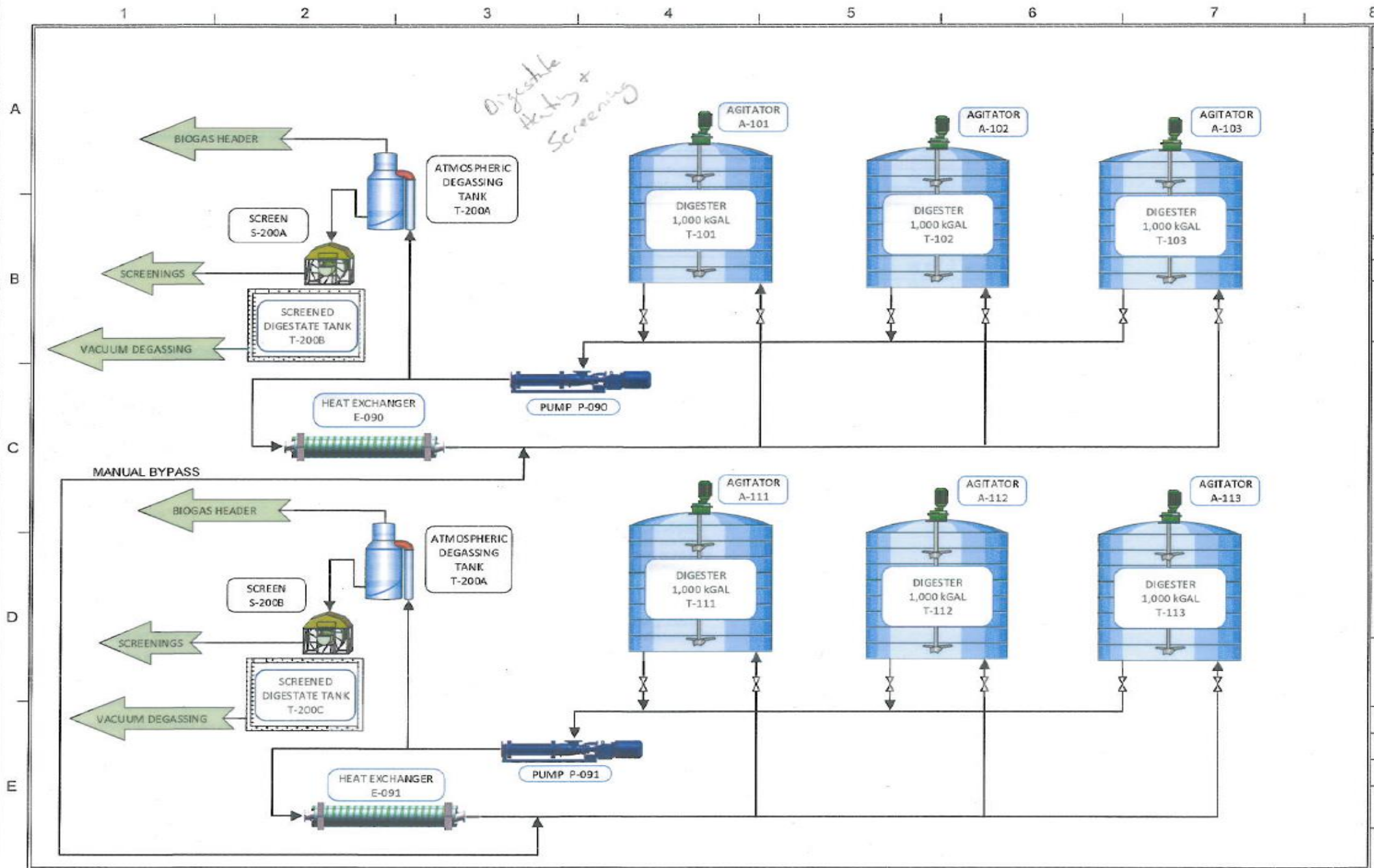
MASS BALANCE
RECOVERED MATERIAL
VOLUMES

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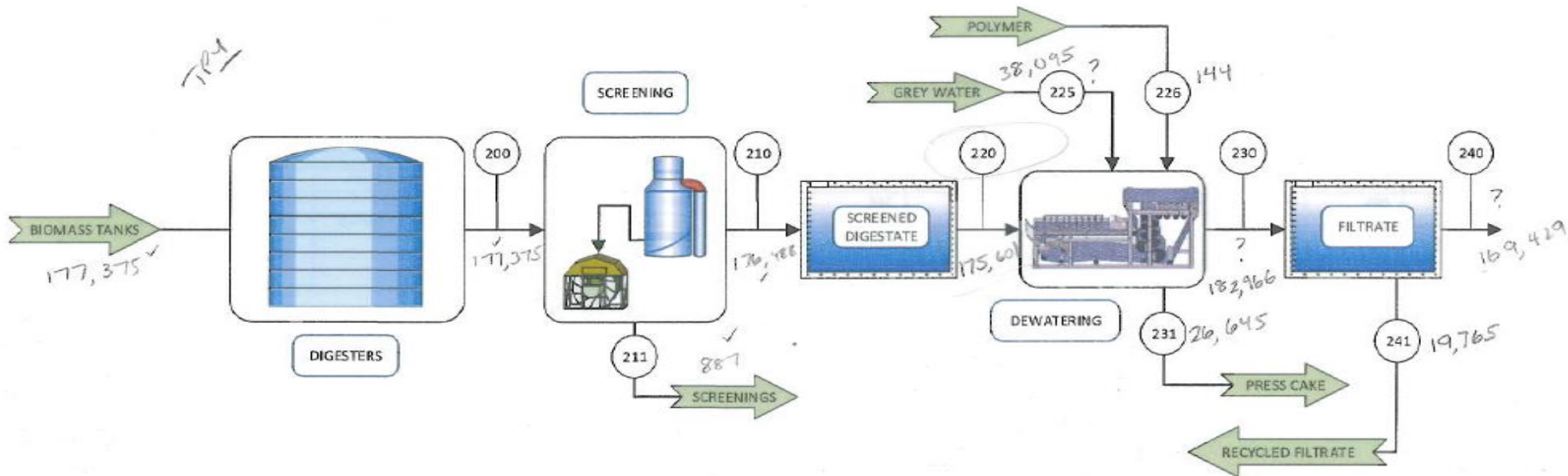
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SCALE N.T.S.	DRAWN BY NM
DWG NO.	DATE 08/18/15
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SHEET NO.	



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DIGESTATE HEATING & SCREENING	
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- 200 DIGESTATE AT 3% TOTAL SOLIDS
 210 SCREENINGS PRIMARILY PLASTICS, PARTICLE SIZE 3/16" AND OVER
 225 GREY WATER USED FOR POLYMER MAKEDOWN AND 5 MIN/HR CIP CYCLE FOR BELTS
 226 POLYMER USAGE 18 LBS 100% ACTIVE POLYMER PER TON OF DRY SOLIDS, TON USAGE AND GALLONS BASED ON 40% ACTIVE EMULSION PRODUCT
 231 CAKE SLUDGE AT 20% TOTAL SOLIDS

→ 220 should be 176,488 tpy

Doesn't balance around
 Dewatering + Filtrate
 using density of H₂O

	DIGESTER EFFLUENT	SCREENED DIGESTATE	SCREENED SOLIDS	DIGESTATE TO DEWATERING	GREY WATER	POLYMER	FILTRATE	CAKE SLUDGE (20% TS)	FILTRATE TO pH ADJ.	RECYCLED FILTRATE FOR DILUTION
	200	210	211	220	225	226	230	231	240	241
STORAGE VOL. (GAL)	5,900,000			48,000		8,000			48,000	
TONS PER YEAR	177,375	176,488	887	175,601		144		26,645		19,765
TONS PER DAY	710	706	4	702		0.575		102		54
YARDS PER YEAR			2,534					33,306		
YARDS PER DAY			10					128		
GALLONS PER YEAR	42,535,971	42,323,291		42,110,612	9,135,576	33,843	43,876,830		40,630,427	3,246,403
GALLONS PER DAY	116,537	115,954		115,372	25,029	93	120,210		107,225	12,986

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<p>MASS BALANCE DIGESTATE POST-TREATMENT</p>	
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