

40 CFR 503

DOMESTIC SEPTAGE & BIOSOLIDS

PATHOGEN CONTROL VECTOR ATTRACTION REDUCTION CERTIFICATION STATEMENT

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TODAY'S OVERVIEW

- Domestic Septage → Biosolids
- Domestic Septage → Many Exemptions

TODAY'S FOCUS:

- PATHOGEN & VECTOR ATTRACTION
REDUCTION for **SEPTAGE**
 - Includes: Certification Statement



DEPT. OF JUSTICE (DOJ) MEETING

- **Meeting Goals**

- Align Staff/Team
- Understand Cross-Dept. Issues
- Evaluate Recent Referrals
 - What can we learn
 - What can we improve

- **Process Changes**

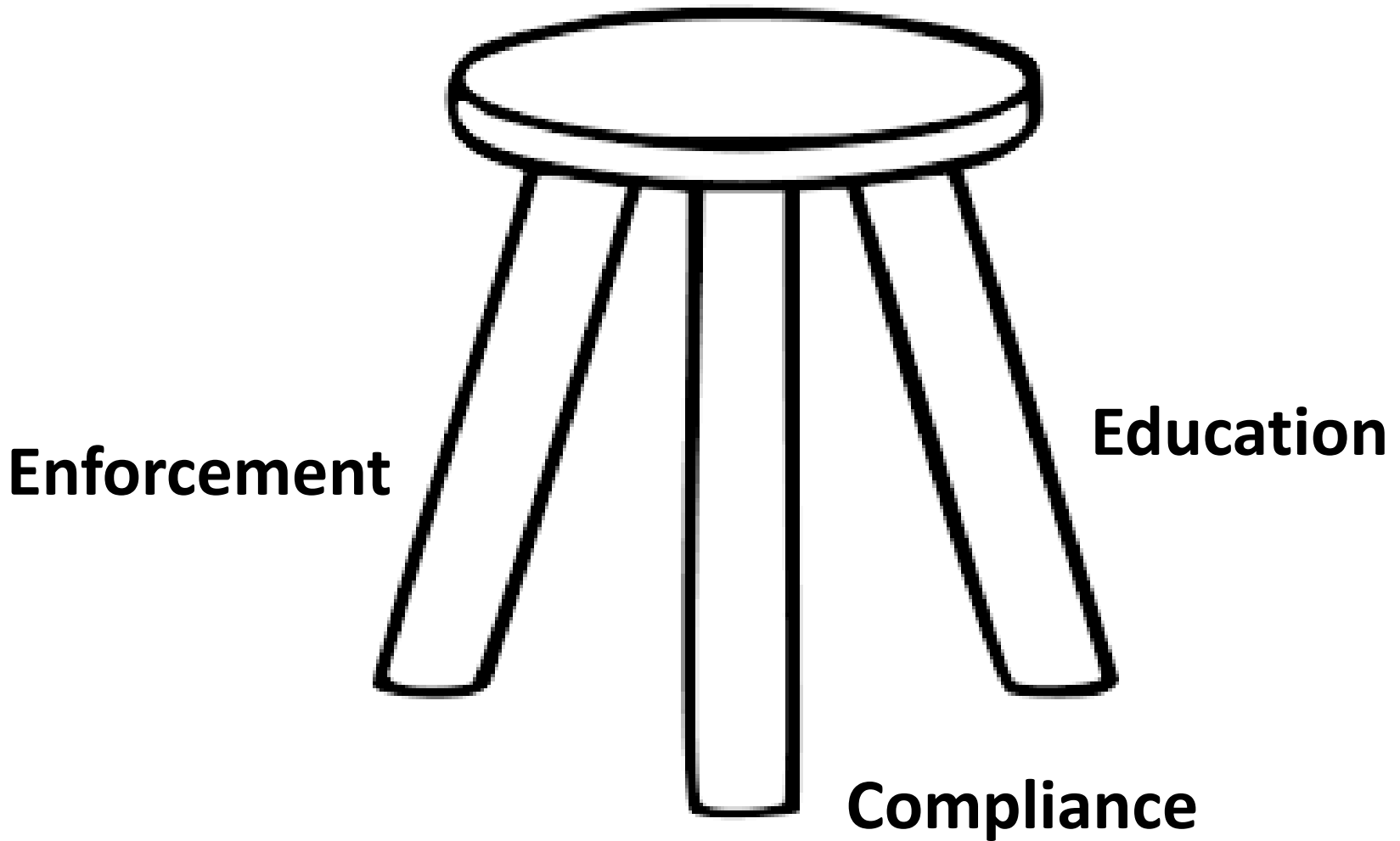
- Consider Revocation earlier
- Pre-referral Meetings
- Strategic Enforcement Matrix



DEPT. OF JUSTICE (DOJ) MEETING

- **Messaging**
 - DOJ/DNR Joint messaging
 - Report Issuance in place of News Releases
 - Compliance Assistance
 - Outreach
 - Identifying KEY POINTS
- **Program “Take Homes”**
 - **Pathogen Control**
 - Cropping Restrictions
 - **VAR**
 - Injection/Incorporation
 - pH Treatment
 - **Certification**

REGULATORY PROGRAM



REGULATORY PROGRAM

3 Legged Stool

- Education through continuing education
- Compliance through audits
- Enforcement through Stepped Enforcement...using as little enforcement as necessary to achieve compliance

GOAL:

Level Playing Field-No unfair advantage

40 CFR 503 **SEPTAGE** RELATED

40 CFR 503 Focuses on:

1. Domestic Septage Only
2. Non-Public Contact Sites
3. **Manage for Pathogens**
4. **Manage for Vectors**
5. Landowner: crop harvesting, grazing, site access restrictions
6. **Certification required for pathogens/vectors**
7. Nitrogen concerns
8. Follow State Rules

Wis. Septage program

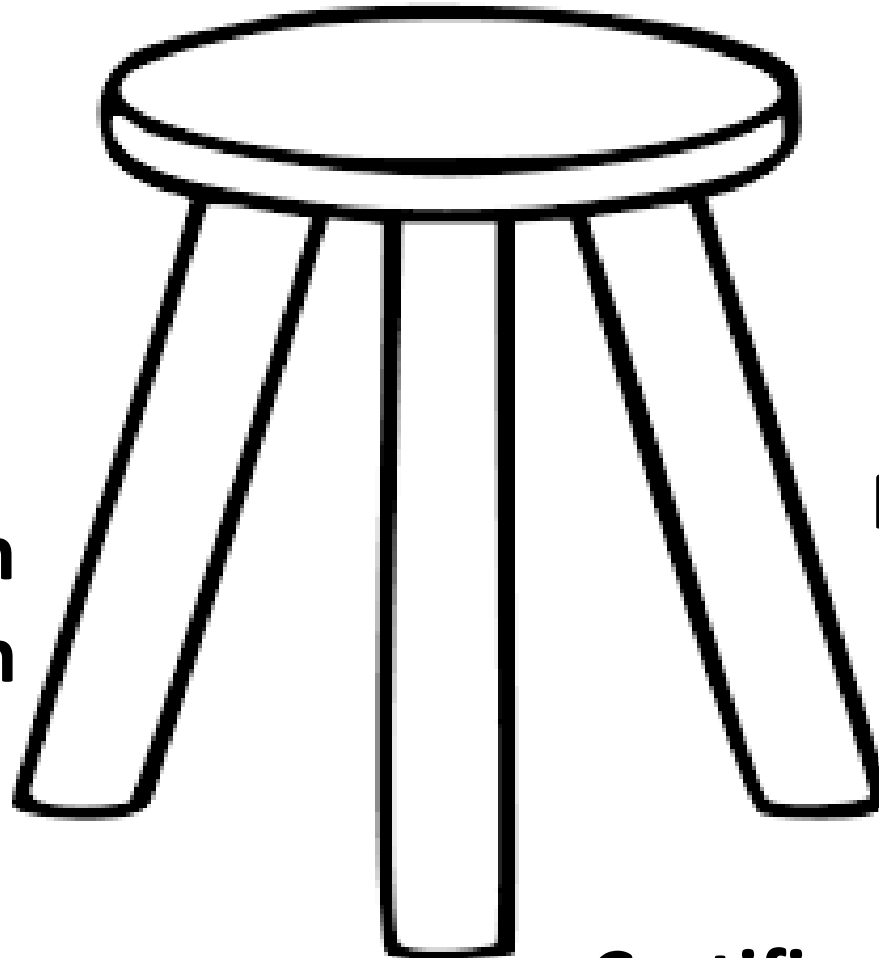
- Not Delegated
 - (\$\$ Penalty issue)
- No state is delegated for septage

40 CFR 503

- State may impose more stringent requirements
- 1-7 included into NR 113

PATHOGEN/VECTOR RELATED STORY

**Vector
Attraction
Reduction**



**Pathogen
Control**

Certification

VECTOR ATTRACTION REDUCTION

Vectors include:

- Flies, mosquitoes, rodents



VECTOR ATTRACTION REDUCTION

1. **>38% Reduction** in Volatile Solids
 2. Demonstrate VAR w/bench scale **Anaerobic Digestion**
 3. Demonstrate VAR w/bench scale **Aerobic Digestion**
 4. **Specific Oxygen Uptake Rate (SOUR)** for aerobically digested solids
 5. **Aerobic Process** – Composted Sludge
 6. **Alkali Addition:** >12 SU- 2 hrs → 11.5 SU-22 hrs
 7. **Drying** w/out primary solids >75% TS
 8. **Drying** w/primary solids >90%
 9. **Injection***
 10. **Incorporation***—6 hrs
 11. ~~Surface Disposal Site~~
 12. **Alkaline Trmt**** of domestic septage pH \geq 12 –30 min
- * Acceptable for Septage
** Only for Domestic Septage

VECTOR ATTRACTION REDUCTION

3 METHODS FOR SEPTAGE

- Injection: Subsurface placement to 4-12 inches deep. No ponding after 1 hr.
- Incorporation: Surface Spread then incorporate w/topsoil to min. depth of 4" w/ disc or plow within 6 hrs.
- pH Treatment: Add lime to septage, raise septage to pH of 12 or higher for 30 minutes with no additional lime.

INJECTION



4 inches deep. No ponding after 1 hr.

INCORPORATION

- Surface spread then incorporate w/topsoil to min. depth of 4" w/ disc or plow within 6 hrs.



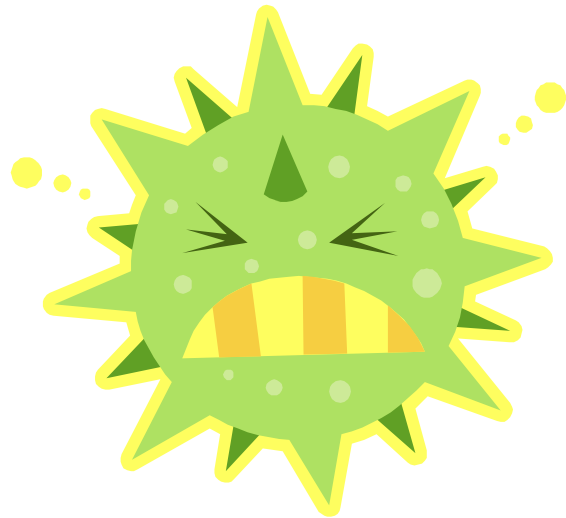
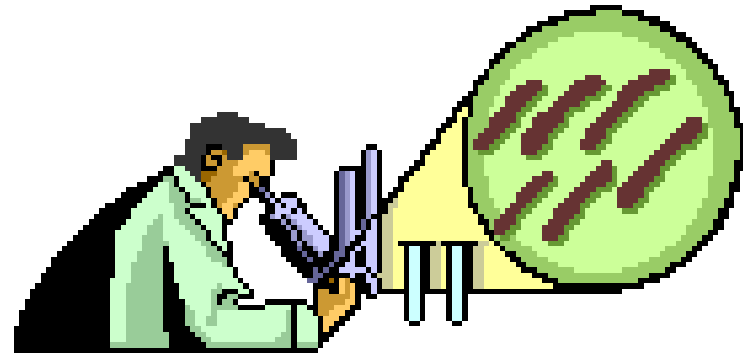
ALKALI ADDITION



- Alkali Addition: Raise pH of septage to 12 by alkali addition & w/out more alkali remain at pH of 12 or higher for 30 minutes.
- Typical Alkali:
 - Quick lime
 - Hydrated lime

PATHOGEN CONTROL

- Example Pathogens
 - Bacteria
 - Viruses
 - Ova



BIOSOLIDS PATHOGEN REQ

- TREATMENT PROCESS
- ORGANISM DENSITY
- CLASS A Requires BOTH
- CLASS B Requires only one
 - Additional CLASS B RESTRICTIONS
 - Crops
 - Grazing
 - Access



CLASS A TREATMENT PROCESSES

**ALT 1: THERMAL
TREATMENT: TEMP/TIME**
based on % Solids

**ALT 2: HIGH pH-HIGH
TEMP**

ALT 3: OTHER PROCESS
Prior test for enteric
virus/ova

**ALT 4: UNKNOWN
PROCESS-Post test for**
enteric virus/ova

ALT 5: USE PFRP
(Processes to Further
Reduce Pathogens--See
Next Slide)

**ALT 6: PROCESS EQUIV TO
PFRP**

CLASS A: ALT 5 - PFRPs

- Composting
- Heat Drying
 - 80°C
 - $\leq 10\%$ moisture
- Heat Treatment
 - Liquid Sludge to 180°C for 30 Min
- Thermophilic Aerobic Digestion
 - Aerobic Cond: 10 days
55° to 60° C
- Irradiate w/ beta rays
- Irradiate w/ gamma rays
- Pasteurization
 - $\geq 70^\circ\text{C}$ for 30+ min

CLASS B TREATMENT PROCESSES

- **ALT 1:** Monitor Indicator Organisms
- **ALT 2:** Process to Significantly Reduce Pathogens (PSRP)
- **ALT 3:** Process Equivalent to PSRP

CLASS B: ALT 2 Options

- Aerobic Digestion
- Air Drying
- Anaerobic Digestion
- Composting
- Lime Stabilization

**CLASS B SITE
RESTRICTIONS ARE
REQUIRED**

CLASS B: SEPTAGE

DOMESTIC SEPTAGE

- EXEMPTIONS
 - NO Pathogen Treatment Process Required
 - No Pathogen Organism Testing Required
- NO EXEMPTION – CLASS B: Site Restrictions



CLASS B PATHOGEN SITE RESTRICTIONS

Two Alternatives for Pathogen Control

- **Alternative 1:** Biosolids/Domestic Septage **WITHOUT** Additional Treatment (i.e., pH adjustment) Applied to Non-Public Contact Sites
- **Alternative 2:** Biosolids/Domestic Septage **WITH** Additional Treatment (i.e, pH adjustment) Applied to Non-Public Contact Sites
- **Criteria** include:
 - Crop Restrictions
 - Grazing Restrictions
 - Site Restrictions

PATHOGEN CONTROL

14 Month Crop Restrictions

Alt 1 (no lime):

- i) Food crops with harvested parts that touch the septage/soil mixture and are totally above ground shall not be harvested for 14 months after application of septage

Alt 2 (lime):

- i) SAME



PATHOGEN CONTROL

38/20 Month Crop Restrictions

Alternative 1:

- ii) Food crops with harvested parts below the surface of the land shall not be harvested for 38 months after application of domestic septage



Alternative 2:

- ii) a. Food crops with harvested parts below the surface of the land shall not be harvested for 20 months after application of domestic septage when the domestic septage remains on the land for four months or longer prior to incorporation

PATHOGEN CONTROL

38/20 Month Crop Restrictions

Alternative 1:



Alternative 2:

- ii) b) Food crops with harvested parts below the surface of the land shall not be harvested for 38 months after application of domestic septage when the domestic septage remains on the land for less than four months prior to incorporation.

PATHOGEN CONTROL

Crop Restrictions

Alternative 1:

c) Animal feed, fiber, and those food crops that do not touch the soil surface shall not be harvested for 30 days after application of the domestic septage.

Alternative 2: (same)

c) Animal feed, fiber, and those food crops that do not touch the soil surface shall not be harvested for 30 days after application of the domestic septage.



CROPS IMPACTED BY SITE RESTRICTIONS

Harvested Parts That:

Usually** DO NOT TOUCH
the Soil/Biosolids Mixture:

- Apples
- Corn
- Wheat
- Oats
- Soybeans



CROPS IMPACTED BY SITE RESTRICTIONS

Harvested Parts That:

Usually** TOUCH the
Soil/Biosolids Mixture:

- Melons
- Strawberries
- Tomatoes
- Cucumbers
- Cabbage
- Squash



CROPS IMPACTED BY SITE RESTRICTIONS

Harvested Parts That:

Are Below the
Soil/Biosolids Mixture:

- Potatoes
- Onions
- Radishes
- Beets
- Carrots



PATHOGEN CONTROL

Crop Restrictions

Alternative 1:

d) Turf grown on land where domestic septage is applied shall not be harvested for one year after application of the domestic septage when the harvested turf is placed on either a lawn or land with a high potential for public exposure, unless otherwise specified by the permitting authority.

Alternative 2: (same)



PATHOGEN CONTROL

Grazing Restrictions

Alternative 1:

- Animals shall not be allowed to graze on the land for 30 days after application of domestic septage

Alternative 2:

- Same-40 CFR 503
- None-NR 113



PATHOGEN CONTROL

Site Restrictions

PUBLIC SITES

Restricted for 1 year.

-Golf Courses

-Ball Fields

-Playgrounds

-Parks

-Residential/Commercial
Yards





PATHOGEN CONTROL Site Restrictions



Alternative 1:

- Public access to land with a low potential for public exposure shall be restricted for 30 days after application of domestic septage.

(Examples of restricted access include:

- *remoteness of site,*
- *posting with no trespassing signs, and/or*
- *simple fencing.)*

Alternative 2:

- 40 CFR 503—30 Days
- NR 113: None



RECORDS

Tell the story....

Summarize activities...

Details...

Describe the goings on...

Communicates...

EPA-RECORDKEEPING SUMMARY*

- Location of Disposal
- Acres applied to
- Date/Time
- Nitrogen Requirement
 - Crop needed
 - Expected crop yield
- Gallons/Volume applied-annual
- **Certification**
- **Pathogen Control Description** (each batch land applied)
- **Vector Attraction Reduction** (each batch land applied)

***Additional items required for Biosolids...those listed show Septage**

LOGS

- Logs ≠ Records
- Records include Logs
- Example Log
- Rest of the story?

Records for Vector Attraction Reduction					
1	Initial pH		≥ 30 Min. pH		30 INI/INC Time Who
	6 Time	7 pH	8 Time	9 pH	
	Temp	Corr. Adj. pH	Temp	Corr. Adj. pH	
VAR**	:	:	:	:	
<input type="checkbox"/> INJ	:	:	:	:	
<input type="checkbox"/> INC	:	:	:	:	
<input type="checkbox"/> pH	:	:	:	:	
<input type="checkbox"/> INJ	:	:	:	:	
<input type="checkbox"/> INC	:	:	:	:	
<input type="checkbox"/> pH	:	:	:	:	
<input type="checkbox"/> INJ	:	:	:	:	

Service Location				Records for Vector Attraction Reduction						Disposal Location			
1 Date Time	2 Owner name Description	3 Physical Address City/Town/State	4 Gallons Waste (S,H,G,P)*	5 VAR**	Initial pH		≥ 30 Min. pH		30 INI/INC Time Who	11 Date Time	12 Location, Name, Site/Field ID WWTF Name WPDES #	13 Gallons Waste	14 Initials
					6 Time	7 pH	8 Time	9 pH					
					Temp	Corr. Adj. pH	Temp	Corr. Adj. pH					
			____ gal <input type="checkbox"/> S <input type="checkbox"/> H <input type="checkbox"/> G <input type="checkbox"/> P <input type="checkbox"/> _____	<input type="checkbox"/> INJ <input type="checkbox"/> INC <input type="checkbox"/> pH	:	:	:	:					
			____ gal <input type="checkbox"/> S <input type="checkbox"/> H <input type="checkbox"/> G <input type="checkbox"/> P <input type="checkbox"/> _____	<input type="checkbox"/> INJ <input type="checkbox"/> INC <input type="checkbox"/> pH	:	:	:	:					
			____ gal <input type="checkbox"/> S <input type="checkbox"/> H <input type="checkbox"/> G <input type="checkbox"/> P <input type="checkbox"/> _____	<input type="checkbox"/> INJ <input type="checkbox"/> INC	:	:	:	:					

DNR RECORD KEEPING (excerpt)

- NR 113.11 (3)(c)
 - 3. Daily books/invoice records shall at a minimum
 - a.-b. Service: Name/Location & Date/Time
 - c.-d. System: Waste type/description & Gallons
 - e. Disposal: location
 - f. Disposal: date & time
 - g. **Written Certification Statement**
 - h. Description: **Pathogen Reduction**
 - i. Description: **Vector Attraction Reduction**

MISSING INFORMATION

Convey to Farmer

- Nitrogen conveyed to Farmer?
- Crop Restrictions conveyed to Farmer?
- Access Restrictions?
- ???

Gather from Farmer

- Planned Crop?
- Harvest Related
 - Actual Crop
 - Yield
 - Dates (for crop year)
- Other Nutrients Applied?
- ???

RECORD KEEPING

Standard Operating Procedures (SOPs)

- How do you do it?
- How do you expect it to be done?
- How often do you discuss it?

CERT. STATEMENT -- 40 CFR 503

“I certify, under penalty of law, that the *[insert each of the following requirements are met: Class A or Class B pathogen requirements, vector attraction reduction requirements, management practices, site restrictions, requirements to obtain information]* in *[insert appropriate section number/s in Part 503 for each requirement]* have/have not been met. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information used to determine that the requirements have been met. I am aware that there are significant penalties for false certification **including the possibility of fine and imprisonment.**”

Signed: _____ Dated: _____

CERT. STATEMENT -- NR 204

“I certify, under penalty of law, that the information verifying compliance with *[insert either Class A pathogen requirements in s. NR 204.07(6)(a) or Class B pathogen requirements in s. NR 204.07(6)(b)]* and the vector attraction reduction requirement in *[insert one of the vector attraction reduction requirements in s. NR 204.07(a) to (k)]*, has been prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification **including the possibility of fine and imprisonment.**”

Signed: _____ Dated: _____

CERT. STATEMENT -- NR 113

“I certify, under penalty of law, that the information that will be used to determine compliance with the pathogen requirements [insert either NR 113.07 (3) (d) 1. a. or NR 113.07 (3) (d) 1. b.] and the vector attraction reduction requirement in [insert NR. 113.07 (3) (e) 1., NR 113.07 (3) (e) 2., or NR 113.07 (3) (e) 3.] has been prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification.”

Signed: _____ Dated: _____

ANNUAL REPORTS

- Only show part of the story...
- Recordkeeping
 - 5 years
 - Available to:
 - DNR
 - EPA

RECORDS

Tell the story....

Summarize activities...

Details...

Describe the goings on...

Communicates...

REDUCE THE SPOTLIGHT

- Neighbors
 - Sensitive to Neighbors Concerns
- Community Perception
 - Odors
 - Litter

TELLING THE STORY (& Recording it)

- Standard Operating Procedures (SOPs)
- Daily Activities & Entries
- Annual/Seasonal Activities & Communication
- Other?
- Collecting Farmer Info.
 - Crop Harvesting
 - Actual Crop
 - Yield
- Septage Info to Farmer
 - Harvesting Restrictions
 - Food Crop
 - Feed Crop
 - Grazing/Turf
 - Access
 - Nutrient Additions

YOUR RESPONSIBILITIES

- Ethics
- Public Health & Safety
- Farmer
- Consumer
- License/Certification
- Laws/Rules
- Liability
- Family
- Employees
- Neighbors
- Community
- Others

Thank you!