

# *Juniper Ridge*

# LANDFILL

**OWNED BY:**  
State of Maine

**OPERATED BY:**  
NEWSME, LLC

# Presentation Overview

- **Site History**
- **Waste Acceptance**
- **Site Walkthrough**
- **Working Face & Placing Waste**
- **Leachate Collection**
- **LFG collection & Odor Control**

- **Leachate:** Any liquid that drains “percolates” through a material carrying with it suspended and dissolved solids.
- **LFG:** Landfill gas, gas generated from aerobic (oxygen present) and anaerobic (oxygen absent) decomposition.
  - 50% Methane (CH<sub>4</sub>)
  - 50% Carbon Dioxide (CO<sub>2</sub>)
- **Cell:** Pre-designed area for waste placement, usually designed and constructed to hold one year of waste.

# Waste Acceptance

WASTE DESCRIPTION	2009 TONS	% OF TOTAL
CONSTRUCTION & DEMOLITION DEBRIS (CDD)	104,309	20%
MSW INCINERATOR ASH	101,262	19%
FRONT-END PROCESS RESIDUE (FEPR)	84,727	16%
OVERSIZED BULKY WASTES (OBW)	51,438	10%
WOOD FINES FOR COVER	46,744	9%
MUNICIPAL WASTEWATER TREATMENT PLANT SLUDGE	38,941	7%
WOOD/FLY ASH	29,870	6%
MUNICIPAL SOLID WASTE BYPASS (MSW)	21,559	4%
SHORT-FIBER PAPER SLUDGE	20,681	4%
PULP/PAPER SLUDGE	10,643	2%
LIME MUD & GRITS	3,245	1%
PULP MILL WASTES	3,064	1%
LIMEKILN/RECAUST WASTE	2,960	1%

Regulate

Hazardous  
Paints  
Chemicals  
Liquid  
Waste  
Medical  
Pathological  
Friable  
Non-A

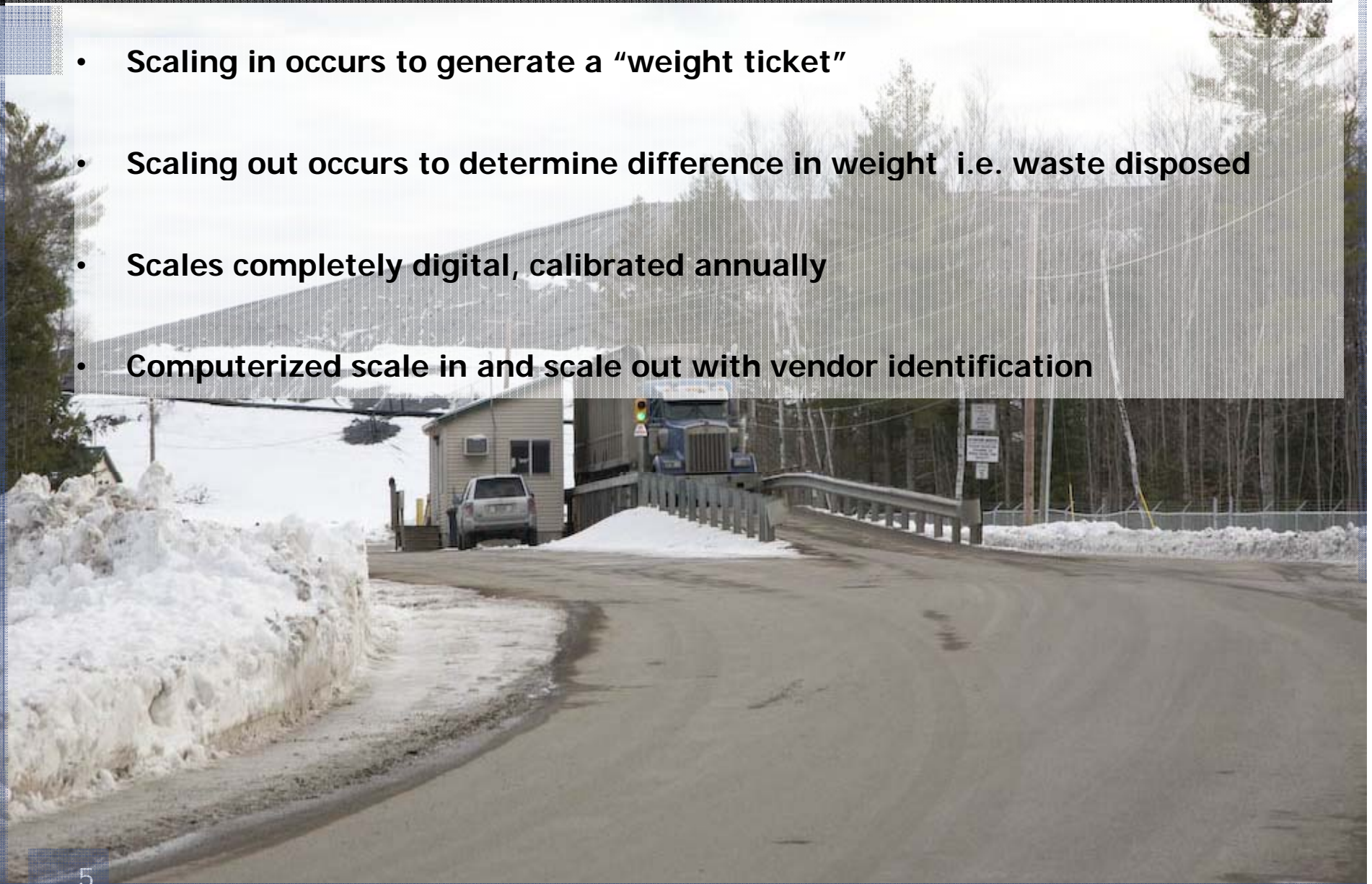
Items such as:

ns

ses

## Site Walkthrough – Scales

- **Scaling in occurs to generate a “weight ticket”**
- **Scaling out occurs to determine difference in weight i.e. waste disposed**
- **Scales completely digital, calibrated annually**
- **Computerized scale in and scale out with vendor identification**



# Site Walkthrough – Scales



## Site Walkthrough – Office

- Central control computer (leachate and LFG flare)
- Offices



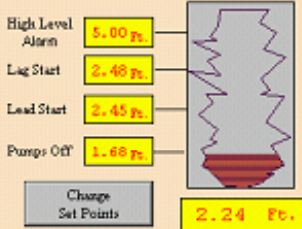
# Site Walkthrough – Office

## JRL Cell 4

MAN

Select Level Source

**Selected Level**  
Sump 1



High Level Alarm: 5.00 ft

Lag Start: 2.48 ft

Lead Start: 2.45 ft

Pump Off: 1.68 ft

Change Set Points: 2.24 ft

**Leachate Collection**

Flow Rate: 0.0 GPM

Daily Acc: 9405 Gal

Building Temperature: 66.9 F

Building LEL: 0.1 %

Cell Floor Level 300: 0.07 ft

Cell Floor Level 500: 0.27 ft

Cell Floor Level 700: 0.16 ft

SMH 13 Dual Containment Pressure: 0 psi

VFD 1 Status: ●

VFD 1 Status: ●

IBBI Control Leachate Pump 1

HAND

OFF

AUTO

**Stopped**

Local HOA Switch Status

LC Pump 1: AUTO

LC Pump 2: AUTO

IBBI Control Leachate Pump 2

HAND

OFF

AUTO

**Stopped**

**Leachate Collection Pump 1**

Speed Feedback: 0.0 Hz

Output Current: 0.0 Amps

VFD Status: Normal

Clear Fault

Valve Position: CLOSED

Run Time Meter: 1068 Hr.

**Leachate Collection Pump 2**

Speed Feedback: 0.0 Hz

Output Current: 0.0 Amps

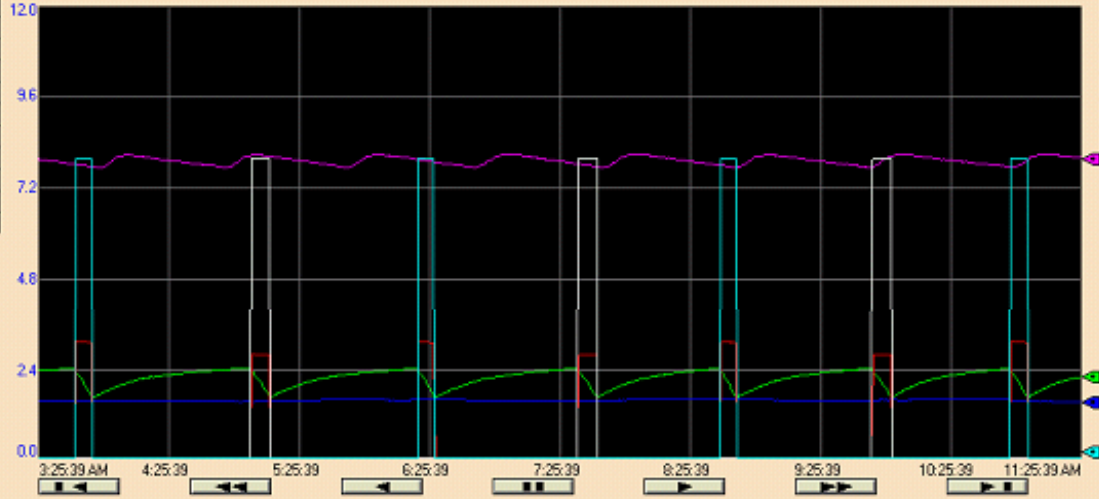
VFD Status: Normal

Clear Fault

Valve Position: CLOSED

Run Time Meter: 1091 Hr.

Cell 4 Monday, January 25, 2010 11:25:39 AM





# Site Walkthrough – Office

## North Landfill Flare (3500)



Caption	7:10:36 AM	Min	Max	Units
Flare_1500Flow_Rate	1240	0	3500	SCFM
Flare_1500Temperature	1207	0	2500	Degrees F
Flare_1500CH4_Concentration	0	0	100	%
Flare_1500VFD2_Speed_FB	34	0	100	%
Flare_1500VFD1_Speed_FB	34	0	100	%
Flare_1500Inlet_Vaccum	6	-70	0	InWC

Gas Flow (SCFM) **1580**

Blower 1 Speed (%) **71.0** Blower Speed Set Point (%) **71** Blower 2 Speed (%) **70.8**

Flame Temperature (F) **1213**

**Emergency Stop**

CH<sub>4</sub> Concentration (%) **0.00**

Inlet Vaccum (In WC) **-31.3**

Flare Flame **Normal**

Run Time

Blower 1 VFD **Normal**  **11728.6 Hrs.**

Blower 2 VFD **Normal**  **10589.9 Hrs.**

Blower 1 **Running**

Blower 2 **Running**

### KO Condensate Pump Control

Pump Cycle Time (Min.)

Pump Cycle Duration (Min.)

**Stopped** Pump Status

Landfill Power Source

**Bangor Hydro**

## Site Walkthrough – Maintenance Garage

- Equipment is maintained internally as much as possible
- Maintenance department responsible for all mechanical equipment

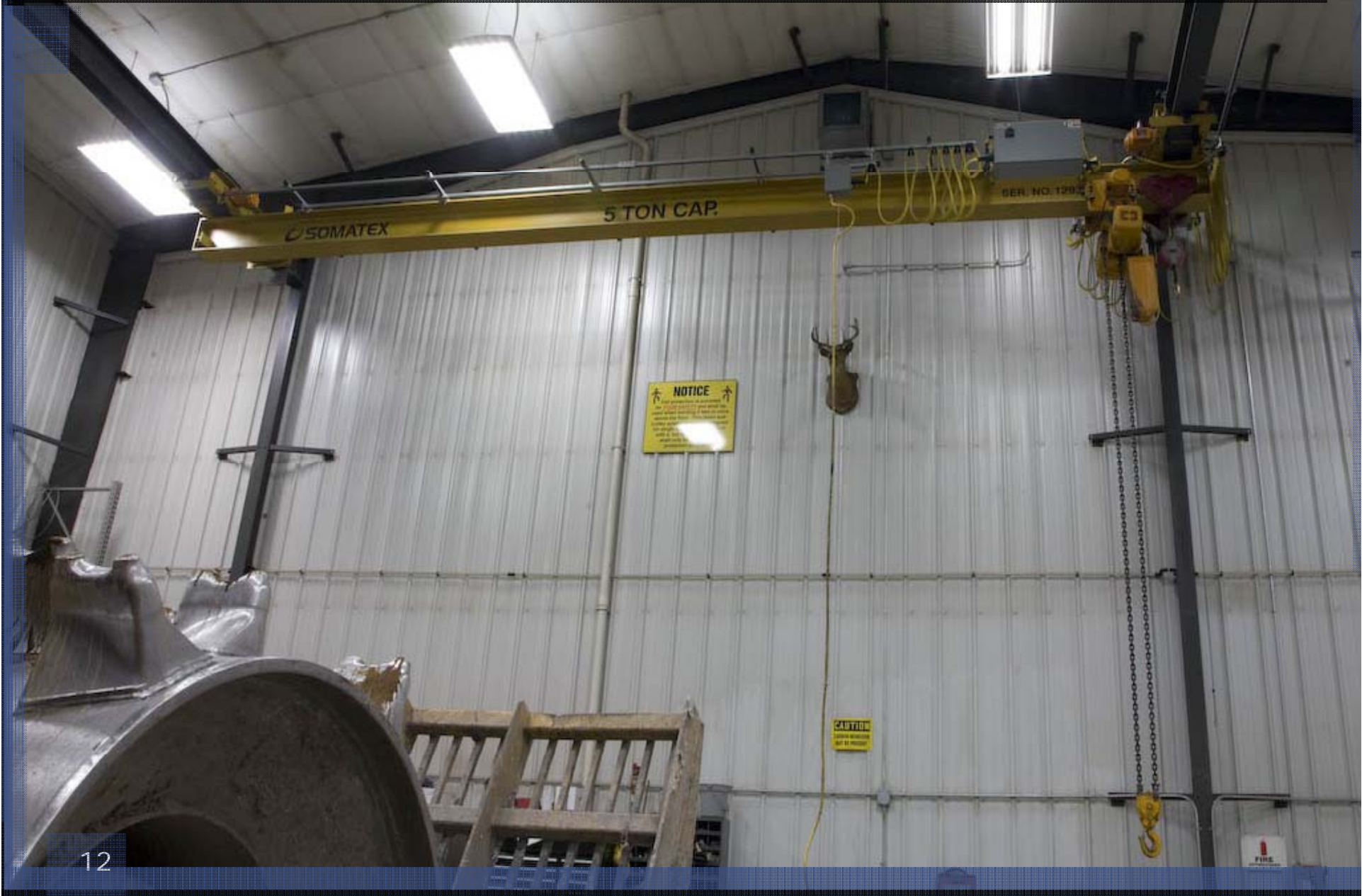


# Site Walkthrough – Maintenance Garage

casella  
waste systems, inc.



# Site Walkthrough – Maintenance Garage



## Site Walkthrough – Dormant Area

- First, covered with ash and SPF (short paper fiber – mill waste)
- Second, covered with one foot lift of sand
- Third, covered with 40 mil (0.04" thick) synthetic liner
- Fourth, Liner sections are then "welded" together
- Fifth, Sandbag ballasts applied to keep liner secure

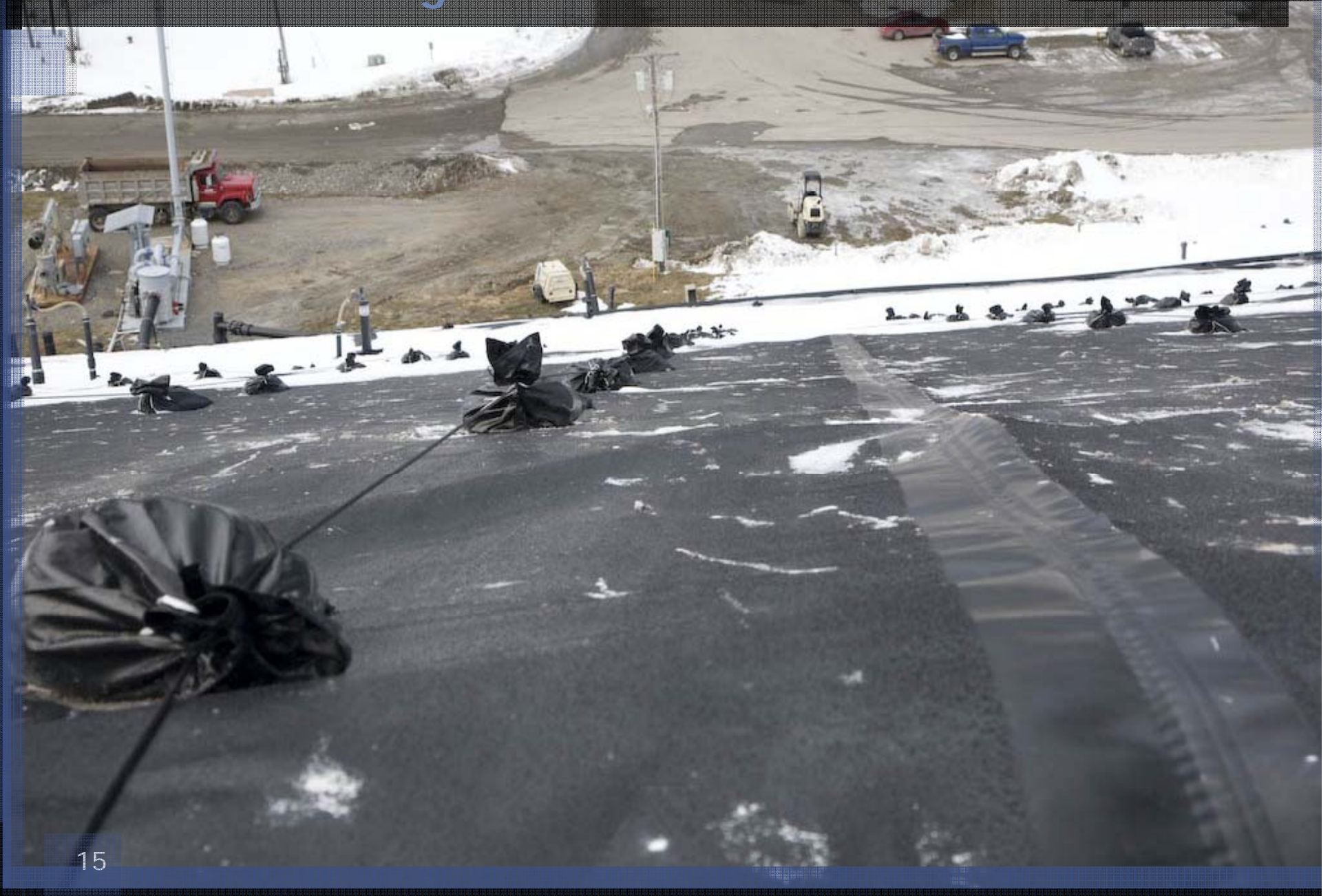


# Site Walkthrough – Dormant Area



# Site Walkthrough – Dormant Area

casella  
waste systems, inc.



# Site Walkthrough – Dormant Area





# Site Walkthrough – Dormant Area



## Site Walkthrough – Current Permitted Area

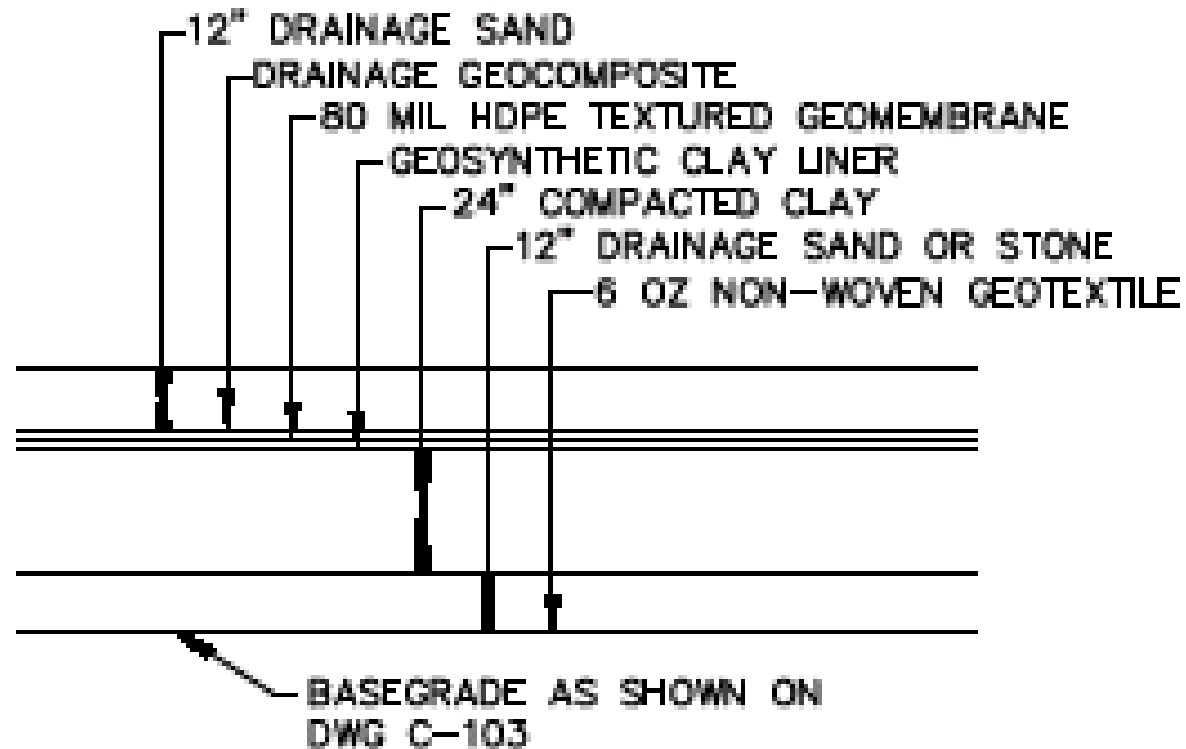
- Current permitted area is 68 acres (15 cells)
- Current permitted height (bottom to top) 190 ft
- Current Permitted elevation is 390 ft
- Current permitted capacity is 10.2 million yds<sup>3</sup>

## Site Walkthrough – Active Area

- Currently working in cell 4 (740,000 yds<sup>3</sup>)
- Starting fill of cell 5 (950,000 yds<sup>3</sup>) early 2010
- Cell 6 to be built, smaller (500,000 yds<sup>3</sup> approx.)

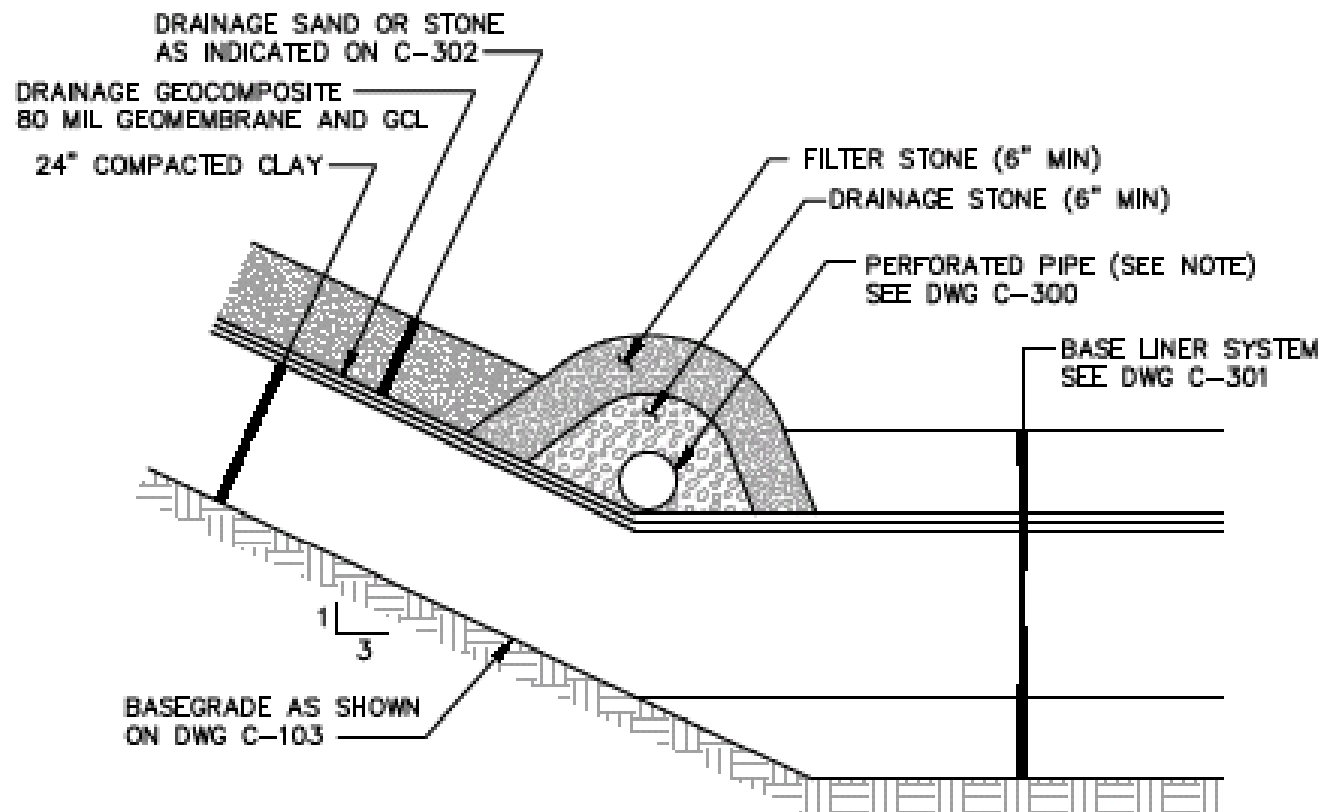


# Site Walkthrough – Cell Liner System



**BASE LINER SYSTEM**  
NTS

# Site Walkthrough – Cell Liner System



**NOTE:**

REFER TO SHEET C-106 FOR PIPE SIZE AND TYPE.

LEACHATE COLLECTION SYSTEM AT PERIMETER DIKE (TYP)  
NTS

## Working Face – Handling Trucks

- **Communication important between trucks and equipment**
- **Access to active areas limited, often only one access point**
- **Wait time and handling of trucks largely dependent on on-board waste**
- **Seasonal issues**

## Working Face – Unloading Waste

- **Different types of trucks require different unloading techniques**
  - Dump bodies
  - Live floors
  - Roll-offs



# Working Face – Unloading Waste

casella  
waste systems, inc.





# Working Face – Unloading Waste

casella  
waste systems, inc.



## Working Face – Placing Waste

- Waste pushed in place from unloading “tipping” area
- Compacted once in place
- 0.86 tons/yd<sup>3</sup> typical



# Working Face – Placing Waste

casella  
waste systems, inc.



# Working Face – Placing Waste

casella  
waste systems, inc.



# Working Face – Placing Waste

casella  
waste systems, inc.



## Working Face – Temporary Cover

- Cover placed on top of waste at end of every shift
- Daily cover removed or worked into waste at beginning of each shift



## Leachate Collection – Storage / loading

- Leachate is collected off entire landfill area (secure)
- Pumped into a fiberglass storage tank (million gallon cap.) from cells
- Loaded out and hauled to Old Town Mill WWTP

# Leachate Collection – Pump Building

casella  
waste systems, inc.





# Leachate Collection – Pump Building

casella  
waste systems, inc.



# Leachate Collection – Cleanouts

casella  
waste systems, inc.



## LFG Collection – Flaring

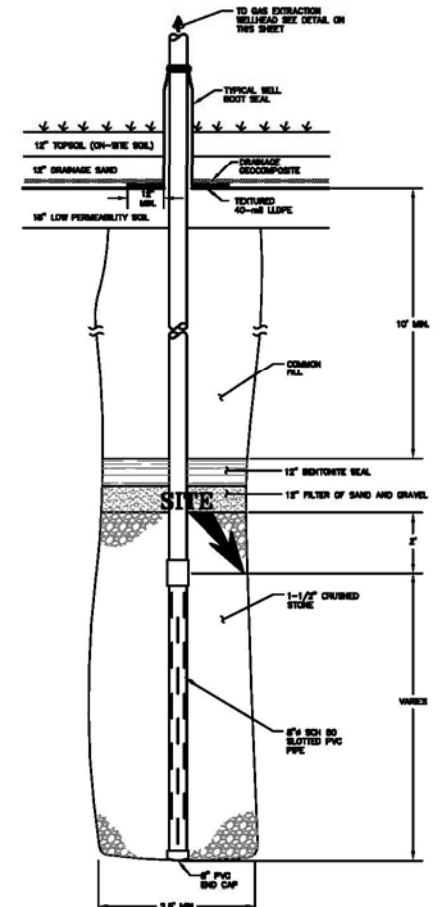
- **LFG (landfill gas) collected primarily for:**
  - Odor Control
  - Greenhouse gas emission reduction
- **Collected via wells and trenches**
- **Currently flaring approx. 1800scfm = 45 MMBTU/hr**
- **Composition:**
  - 40-50% Methane (CH<sub>4</sub>)
  - 25-35% Carbon Dioxide (CO<sub>2</sub>)
  - 0.5-2% Oxygen (O<sub>2</sub>)
  - 15-25% Balance (mostly Nitrogen)

# LFG Collection – Flaring

casella  
waste systems, inc.



# LFG Collection – Well Installation



NOTES:  
1. PIPE PERFORATED WITH SLOTS 1/8\"/>

02 TYPICAL GAS EXTRACTION WELL DETAIL  
SEE TO SIZES

# LFG Collection – Well Installation

casella  
waste systems, inc.



# LFG Collection – Well Installation

casella  
waste systems, inc.



# LFG Collection – Trench Installation



Pine Tree Landfill



# LFG Collection – Wells

casella  
waste systems, inc.



# LFG Collection – Wells & Trenches

casella  
waste systems, inc.



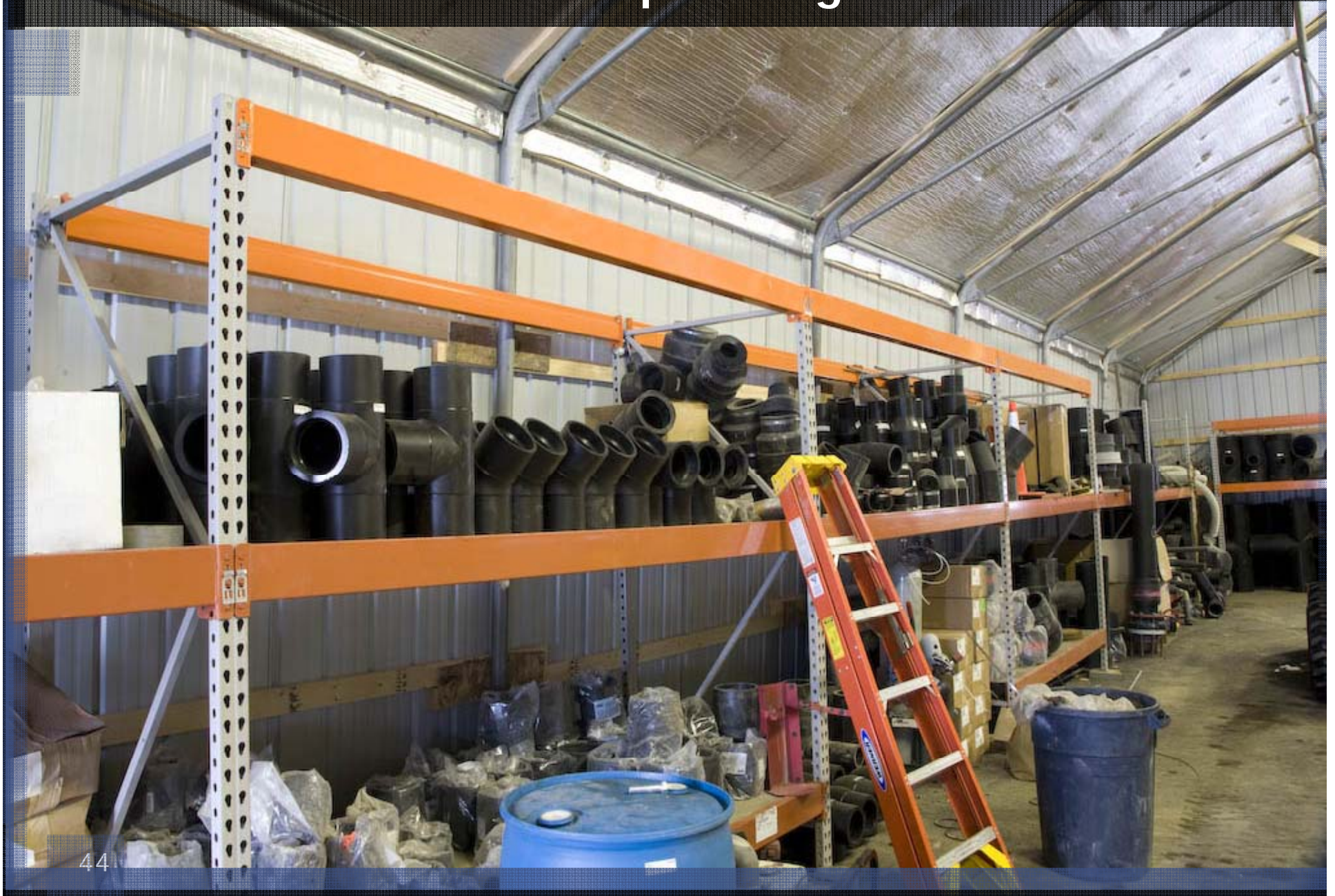
# LFG Collection – HDPE pipe

casella  
waste systems, inc.



# LFG Collection – HDPE Pipe fittings

casella  
waste systems, inc.



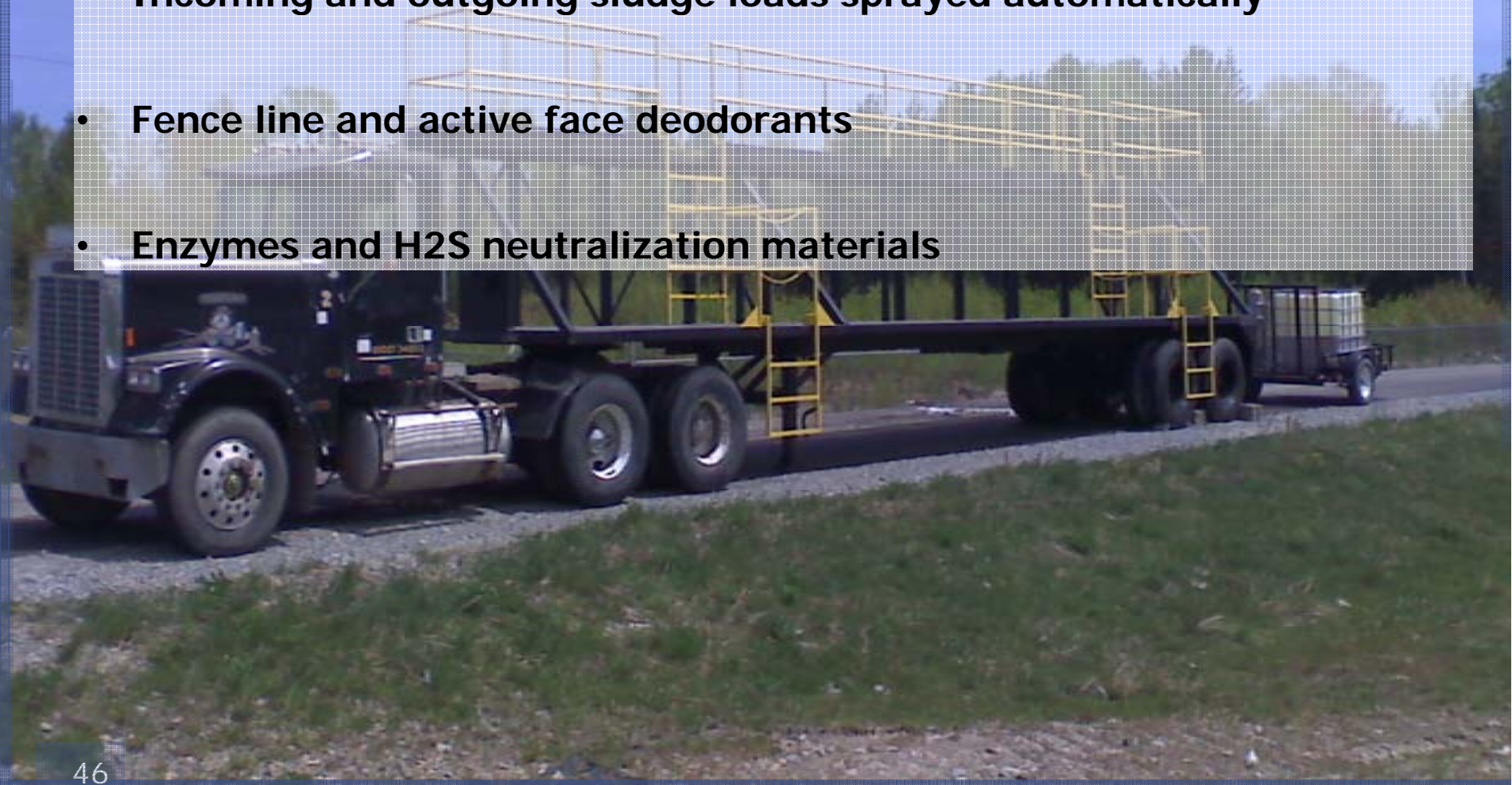
# LFG Collection – Fusion Machine

casella  
waste systems, inc.



## Odor Control

- Proper cover, and LFG collection
- Incoming and outgoing sludge loads sprayed automatically
- Fence line and active face deodorants
- Enzymes and H<sub>2</sub>S neutralization materials



# Odor Control – Truck Sprayer

casella  
waste systems, inc.



# Odor Control – Truck Sprayer





# Odor Control – Deodorant Sprayer

casella  
waste systems, inc.



# Odor Control – Enzyme Application

casella  
waste systems, inc.



