



# Spill Protection: Secondary Containment and Liners

PIOGA's Water & Waste Management Training

New Pig Energy  
April 26, 2018



# Company History



## **New Pig Corporation**

- Founded in 1985 with the patenting of the first contained absorbent
- Over 2700 liquid management products
- Supplies over 300,000 sites in over 100 countries
- 500+ employees in Central PA
- 600+ employees globally

## **New Pig Energy**

- Operating since 2011, spun-off as a subsidiary in 2013
- Durable, patented composite liners for multi-operation use with certified high-traction work surfaces
- Over 100 million square feet installed



# Presentation Outline

- 1) Secondary Containment Definition & Regulations
  - SPCC (Federal)
  - PA Chapter 78a (2016 PA Regulation)
- 2) PA Residual Waste Code 806 (2016 PA Regulation)
- 3) Recommended Liner Reuse Steps



# What is Secondary Containment?

Safeguarding method in addition to the primary containment system

## **Specific/Sized**

- Indoor: Sump capacity should contain 10% of the volume of total containers or the total volume of the largest container, whichever is greater
- Outdoor: Plus sufficient freeboard to contain precipitation

## **General**

- Address typical failure mode and the most likely quantity
- Passive or Active



# Federal SPCC (40CFR112)

## Spill Prevention, Control, and Countermeasure

- Monitors plans to prevent oil spills at facilities
  - Oil, oil-like and oil/water mixtures
  - 1320 gallons of above-ground storage capacity
  - Potential to reach “navigable waters”
  - Defines oil pollution as a “sheen” on the water
- Clarifies “facility”; can be considered mobile or portable

[http://www.epa.gov/osweroe1/docs/oil/spcc/spcc\\_101\\_prod.pdf](http://www.epa.gov/osweroe1/docs/oil/spcc/spcc_101_prod.pdf)



# SPCC §40CFR112.7(c)

The entire containment system, including walls and floor, must be **capable of containing oil** and must be constructed so that any discharge from a primary containment system, such as a tank or pipe, **will not escape the containment system before cleanup occurs**.

At a minimum, you must use one of the following prevention systems or its equivalent:

(1) For onshore facilities:

- (i) Dikes, berms, or retaining walls sufficiently impervious to contain oil;
- (ii) Curbing;
- (iii) Culverting, gutters, or other drainage systems;
- (iv) Weirs, booms, or other barriers;
- (v) Spill diversion ponds;
- (vi) Retention ponds; or
- (vii) Sorbent materials.

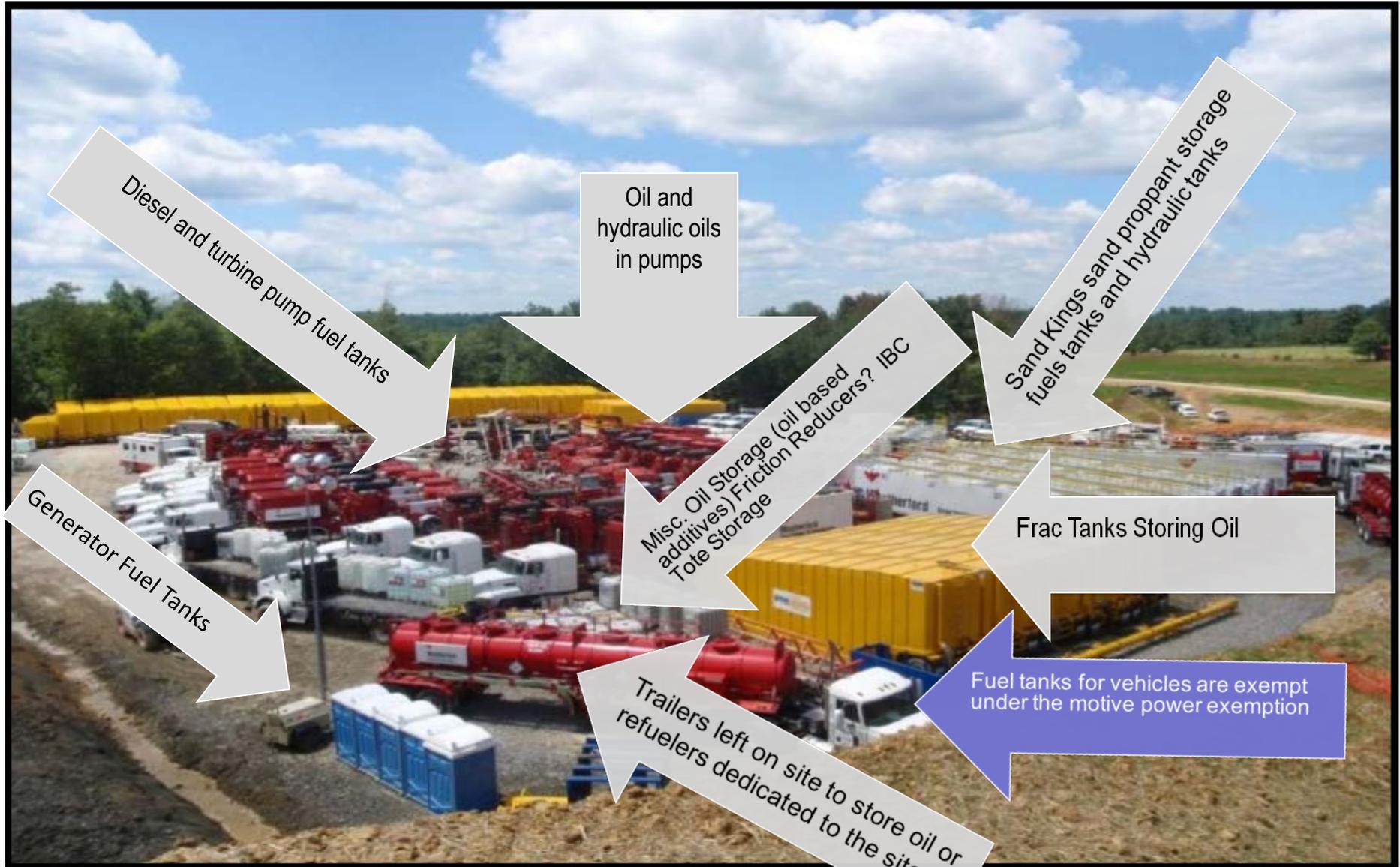


# SPCC §112.10 Provisions

- If you are the **owner or operator** of an onshore oil drilling and workover facility, you must:
  - (a) Meet the **general requirements** listed under §112.7, and also meet the specific discharge prevention and containment procedures listed under this section.
  - (b) Position or locate mobile drilling or workover equipment so as to prevent a discharge as described in §112.1(b).
  - (c) Provide **catchment basins or diversion structures** to intercept and contain discharges of fuel, crude oil, or oily drilling fluids.



# Completions Site



# PA §78a.64a Secondary Containment.

(c) Secondary containment must meet all of the following:

(1) Secondary containment must be used on the well site when any equipment that will be used for any phase of drilling, casing, cementing, hydraulic fracturing or flowback operations is brought onto a well site and when regulated substances including drilling mud, drilling mud additives, hydraulic oil, diesel fuel, hydraulic fracturing additives or flowback are brought onto or generated at the well site.

(2) Secondary containment must have a coefficient of permeability no greater than  $1 \times 10^{-10}$  cm/sec.

(3) The physical and chemical characteristics of all liners, coatings or other materials used as part of the secondary containment, that could potentially come into direct contact with regulated substances being stored, must be compatible with the regulated substance and be resistant to physical, chemical and other failure during handling, installation and use. Liner compatibility must satisfy compatibility test methods as approved by the Department.



# Well Site Secondary Containments

## **Pad**

- Large square footage, typically centered off the wellheads
- 6 to 8 inch high berms

## **Tank**

- 110% of the largest tank
- 18 to 36 inch high berms

## **Chemical Storage**

- Placed under liquid and dry chemicals
- 6 to 8 inch high berms

## **Duck Ponds**

- Placed under equipment that is leak prone
- 6 to 8 inch high berms



# Definitions (ASTM D4491)

*Permeability (cm/s), n*—the rate of flow of a liquid under a differential pressure through a material

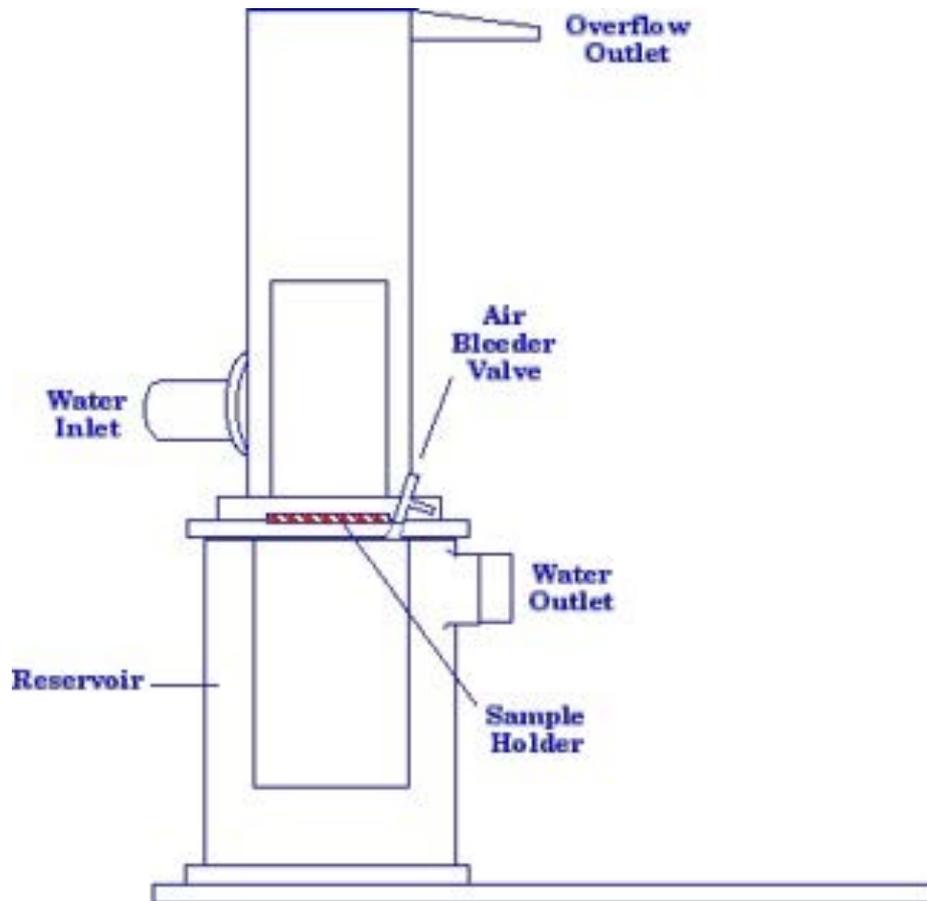
*Permittivity (sec-1), n*—the volumetric flow rate of water per unit cross sectional area per unit head under laminar flow conditions, in the normal direction of the material

Darcy's Law (Section 5.3):

Permeability = Permittivity \* Nominal Thickness



# Permittivity Test Equipment



# PA Residual Waste Code 806

RWC 806 - Synthetic Liner Materials – includes well site liners, liners used in pits or other approved storage structures, freshwater impoundments, centralized impoundments, or used in conjunction with primary containers.

Questions answered by the DEP:

- How can analytical testing be conducted on liner?
- Does residual material on liners require analytical testing?
- How should small sections of liner that are removed during clean-up or repair be managed?
- Can liner be dewasted for reuse on a subsequent sites?
- Is there a square footage exemption for duck ponds?



# Analytical Testing

- **Manufacturer specifications** can be submitted in lieu of chemical analysis
  - No geographical profile
- Residual material/sediment **on top liner may require sampling and analysis**
  - Analysis results of residual material/sediment should be submitted under RWC 806 for Form U
- Gravel, rock or soil frozen or stuck to bottom of liner that meet the definition of **clean fill** do not require sampling and analytical testing

# Disposing of Small Sections

- Liner can be coded as RWC 710 – Plant Trash
- De minimis (i.e. [wheel barrow](#)) amounts of liner material associated with remediation waste that would typically be disposed of with the remediation waste does not need to be segregated or coded using RWC 806.



# Liner Reuse

- Operators who wish to **reuse liner material at another oil and gas well site** or return the material to a liner-processor or manufacturer for reuse can obtain a **permit-by-rule (PBR)** under the residual waste management regulations, §287.102(b), and request **a de-wasting determination** under §287.7.
- The PBR can be obtained by providing a written notice pursuant to §287.102(b), and the de-wasting determination request can be submitted to the Department **as part of the same letter**.
- **One letter can be used for all facilities/sites** owned by an operator that are cleaning/inspecting liner for reuse at another well site.
- All letters should be sent to Ali Tarquino Morris and should copy the appropriate DEP regional office. For more information, please contact Chris Solloway or Ali Tarquino Morris at 717-783-2388 or by email at [csolloway@pa.gov](mailto:csolloway@pa.gov) or [altarquino@pa.gov](mailto:altarquino@pa.gov).

<http://www.depgreenport.state.pa.us/elibrary/GetDocument?docId=10536&DocName=2540-PM-BWM0521.pdf>



# Duck Ponds

- Operators should obtain a permit by rule (PBR)/ de-wasting determination for the duck pond liners.
  - There is no exception based on the amount or square footage of waste being generated. Please refer to “Waste” definition and materials no longer a waste under: § 287.1 and § 287.7.
- The DEP has stated, however, that if the liner has not come in contact with a regulated substance, then it is not a waste.



# Permit-By-Rule Notification

- 1) A description of waste material to be processed
- 2) A description of how the waste material will be processed
- 3) Assurance that residual waste, prior to processing, will be managed in accordance with 25 Pa Code § 299 (relating to storage and transportation of residual waste).
- 4) Confirmation that the operator prepares and maintains a Preparedness, Prevention and Contingency (PPC) plan and daily records in accordance with § 287.102(a)(3).
- 5) Assurance that the permit-by-rule activity does not harm or present a threat of harm to the health, safety or welfare of the people or the environment of the Commonwealth.



# Permit-By-Rule Notification (Continued)

- 6) The type of permit-by-rule under which operations will occur (i.e., captive processing facility). The permits-by-rule are listed in in § 287.101(b)-(i), and the notification should reference the paragraph associated with the permit-by-rule under which the applicant intends to operate.
- 7) Assurance that the conditions applicable to the specific permit-by-rule under which operations will occur are met (i.e., for captive processing facilities, the conditions listed under § 287.102(b)).
- 8) The name, address and telephone number of the facility.
- 9) The individual responsible for operating the facility.



# De-Wasting Determination Request

A request that the Department make a determination, subsequent to the processing activity, that the processed waste ceases to be a waste.

Demonstration of the following information in accordance with § 287.7(b) (*demonstration can be satisfied with submission of Material Data Safety Sheets for the waste material and statements that the conditions under § 287.7(b) will be met*):

- 1) The waste will be used as an ingredient in a manufacturing or production process or as a substitute for a commercial product.



# De-Wasting Determination Request (Continued)

- 2) The waste will not harm or present a threat of harm to the health, safety or welfare of the people or environment of the Commonwealth through exposure to constituents of the waste.
- 3) The waste will not present a greater harm or threat of harm than the use of the product or ingredient which the waste is replacing.
- 4) The physical character and chemical composition of the residual waste contributes to the usefulness of the product.
- 5) Nothing in the physical character or chemical composition of the waste interferes with the usefulness of the product.



# Reuse Steps

*Reuse liner on same site as many times as possible (air to fluid to completions to flow-back). New Pig Energy has an reuse SOP.*

1. Clean liner surface
2. Determine what to keep
3. Cut and roll
4. Mark each section with dimensions
5. Store as dry as possible
6. Patch damaged areas during re-install



# Air to Fluid to Completions to Flow-back (Same Site)



# Clean Liner Surface



Rotary brush with collection basket.



# Mark Each Section



Smaller sections of liner are often used to make duck ponds or tank/equipment containments.

# Questions?



**THANKS!**

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