Valdez Marine Terminal
Secondary Containment Liner Integrity Evaluation

Purpose

Evaluate non-destructive methods to assess the condition of the secondary containment liners in the East Tank Farm at the Valdez Marine Terminal
Secondary Containment Liner System

Material Types
- CBA
- Hypalon
- XR-5

CBA Liner
Hypalon and XR-5

**Hypalon**
- Good UV resistance
- Good freeze-thaw flexibility
- Less compatible with hydrocarbons/fats

**XR-5**
- Good UV resistance
- Good freeze-thaw flexibility
- Compatible with chemicals and hydrocarbons
East Tank Farm Features

• Foundations
  – Tank Ring Walls
  – Vertical Supports for Piping
  – Intercell Containment Walls

• Draw Sumps

• IWWS Manholes and Catch Basins

• Piezometers

• Environmental Remediation
  – Borings
  – Recovery/Vent Wells
  – Injection Points

• Embankment Penetrations/ Concrete Terminations
East Tank Farm Features

[Images of construction sites]
Non-Destructive Methods

Indirect, Inexact, and site-specific

1. Ground Penetrating Radar
2. Electromagnetics
3. Tracer Gas Testing
4. Electric Leak Location
5. Visual Inspection

GPR and EM

Source: www.kci.com

Source: www.hgiworld.com

NOT FEASIBLE
### Tracer Gas Testing & ELL

**Tracer Gas Testing**
Utilized in many other industries
No record of use for buried liner system

**Electric Leak Location**
Typical in waste containment and mining industries
ASTM D 7007 – Covered Geomembrane
Requires electrical isolation
Variable resolution based on cover soil
Cannot be performed in excessively wet conditions
Electronic Leak Location Testing

Source: ASTM D7007

Electronic Leak Location Testing

Source: TRI and HGI
Costs

- ELL = $12k to $15k per acre
  - Does not include engineering planning, support, and reporting
  - Does not include earthwork or isolation of subsurface features
  - Assumes no significant weather or logistical delays
  - Tracer gas testing likely similar cost

Conclusions

- Non-destructive leak location methods are inexact and site-specific
- GPR/EM not technically feasible
- Tracer Gas Testing technically feasible
- ELL technically feasible
- Recommend site-specific Pilot Study before full-scale implementation – could be performed in West Tank Farm
Thank You

Questions?

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