Sustainable Approaches for Reuse and Redevelopment of Closed Landfills in Florida: A Case Study

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What do these photos have in common?
Overview of presentation

• Closed landfills in Florida
• Why recycle closed landfills
• Case Studies
• Lessons Learned
Local Old Landfills/ Abandoned Dumps

171 old landfills/abandoned dumps identified

Source: Environmental Protection Commission – Hillsborough County
Old Landfills/Abandoned Dumps
**Why Recycle Closed Landfills**

- **Value of land**
  - Suburban areas are expanding; Sites exist in former rural areas
  - New land uses/applications (buildings, infrastructure, solar and wind power applications, etc…)

- **Value of buried disposed recyclables**
  - Mining, processing, and marketing/selling recyclables has become more feasible

- **Landfill Management/Compliance**

- **Cost savings from reduced post closure care monitoring**

- **Environmental benefits (reuse of land, reuse of recyclable materials, etc…)**

- **Health and Safety (improved controls)**
Why recycle closed landfills
Why Recycle Closed Landfills

- Redevelopment for Residential/Commercial use has increased over past several years throughout Florida

- Sites exist in areas that were once rural, but are now part of the suburbs

- “Problem” sites are becoming more desirable

- Stigma associated with blighted properties has diminished for many
**Why** Recycle Closed Landfills

- FDEP Rule 62-701.730 Construction and Demolition Debris Disposal and Recycling
  - Mandated material recovery
  - Certified evaluation of economic feasibility

- Buried materials provide value for redevelopment

Value of buried disposed recyclables
Why Recycle Closed Landfills

Regulatory Approvals
- Post Closure Care regulations
- Permitting
- Financial Assurance obligations
- Liabilities
- Incentive programs
- Remediation options
Why Recycle Closed Landfills

Environmental Regulations Related to Waste Disposal Areas in Florida

- **Leachate**
  - Lined vs. Unlined
  - Leachate during construction

- **Gas**
  - Active/Passive Recovery Systems
  - Will Development Facilitate Gas Accumulation

- **Groundwater**
  - Is Groundwater Impacted?
  - Is groundwater quality adequately Characterized

- **Landfill Cover**
  - Exposure
  - Settlement

Cost savings from reduced post closure care monitoring costs
Why Recycle Closed Landfills

- Offer compliance for facilities that may be out of compliance
- Improved Aesthetics
- Habitat Restoration

Environmental Benefits
Why Recycle Closed Landfills

- Improved Controls
- Trespassing
- Health Risks
- Gas migration
Regulatory Oversight in Florida

Florida Department of Environmental Protection
“Guidance for Disturbance and Use of Old Closed Landfills or Waste Disposal Areas in Florida” August 19, 2015

• Waste relocation
• Waste left In-Place
• Waste Removal and Offsite Disposal
• Recycling Wastes and Vegetative Matter
• Use of Screened Solid Waste
• Water Quality Evaluations
• Construction Near Waste-filled Areas
• Construction Over Waste-filled Areas
Case Studies
**Case Study 1 - Former Tampa Jai Alai**

**Former City of Tampa Landfill**
- 13.09 Acres
- Primarily C&D Materials
- Proposed Multifamily
- Hillsborough County EPC Director’s Authorization
- Initial Application Submitted July 2014
- Several Redesigns of Site and Wetlands Permitting
- Permit (DA) Issued March 2016
**Case Study 1 - Former Tampa Jai Alai**

- **Leachate**
  - Unlined Facility, but leachate control required during RSM processing. Stormwater Controls (Lined Ponds)
- **Gas**
  - Venting Under Buildings and Monitoring
- **Groundwater**
  - Arsenic and TDS
- **Cover**
  - RSM will be Processed and reused under Asphalt
Case Study 1 - Former Tampa Jai Alai

Challenges

• Geotechnical Issues
  – Slab design over waste

• RSM Quality
  – Well over 5% Organics make reuse difficult

• Dewatering
  – Unknown quantities of water (large voids)

• Venting
  – Passive with ability to go active quickly

• Adjacent properties with Waste
Case Study 1 - Former Tampa Jai Alai

Outcomes

• Reuse of former blighted property
• Increase in tax base for City of Tampa
• Recovery and Recycling of Landfill Materials
  – On-site Reuse
    o RSM in perimeter greenspaces
    o Crushed concrete for structural fill
    o Former landfill cover for structural fill
  – Off-site recycling
    o Scrap Metal
    o Mulch
• Compliance with current regulations (County/State)
• Improve groundwater quality by removing waste
• Trespassers/Hazards removed
• Brownfields designation
**Case Study 2 – Shredder Residue Landfill (Texas)**

**Mining of former Shredder Residue Landfill**
- Active landfill which is short on capacity in remote area
- Evaluation of landfill mining to increase capacity versus alternative disposal site
  - New technologies capable of material recovery (bench-scale)
  - Mining allows increased capacity at existing landfill
  - Revenue source offset costs of mining and processing buried materials
  - Same equipment used for mining and processing of new material
Case Study 3 – Millersville Landfill (Maryland)

Mining of former municipal solid waste landfill

- Cell 1 East
- Considered partial and full mining of 15-acre cell
- Increase capacity for adjacent yard waste facility
- Schematic Design Report
  - Material recovery technologies
  - Regulatory approvals
  - Extent/volume of materials
  - Disposal options
- 25% Recyclables (100,000 CY)
- Tires/metal/stumps/concrete
- Clean Cover
**Lessons Learned**

Considerations for Developers/Owners

- Is landfill permitted or unpermitted
- Communicate with Regulators early in the process
- Include community in decision making process early
- Investigate opportunities to maximize site use and materials recovery
- If an unknown facility, important to characterize the material
- Utilization of site should be conceptualized early, well in advance of site closure when possible
Questions/Contacts

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