Near-Term Park Construction Projects
Schmul Park
Schmul Park
Schmul Park
Owl Hollow Comfort Station
Owl Hollow Comfort Station
Road System
Road System: Objectives

- Provide access to Park
- Provide Park-like experience for drivers
- Connectivity to local/regional network
- Minimize or avoid impacts with landfill infrastructure and protected natural features
Road System: Objectives

- Provide access to Park
- **Provide Park-like experience for drivers**
- Connectivity to local/regional network
- Minimize or avoid impacts with landfill infrastructure and protected natural features
2-lane, 4-lane and hybrid system still being analyzed
Road System: Objectives

- Provide access to Park
- Provide Park-like experience for drivers
- **Connectivity to local/regional network**
- Minimize or avoid impacts with landfill infrastructure and protected natural features
Road System: Objectives

- Provide access to Park
- Provide Park-like experience for drivers
- Connectivity to local/regional network
- Avoid or minimize impacts with landfill infrastructure and protected natural features
Technical Constraints
The site is dominated by wetlands and landfill infrastructure.
Wetland Systems

Tidal Wetland
Freshwater Wetlands
Landfill Systems

Leachate Management
Landfill Gas Management
Final Cover + Drainage Systems
Landfill Systems

Leachate Management
Landfill Gas Management
Final Cover + Drainage Systems
LEACHATE MANAGEMENT SYSTEM

• Containment
  – Cutoff Wall

• Collection
  – Leachate Collection Drain

• Conveyance
  – Leachate Collection Pump Stations
  – Leachate Force Main
LEACHATE MANAGEMENT SYSTEM

1. Containment
2. Collection
3. Conveyance
LEACHATE MANAGEMENT SYSTEM

Containment

Typical Cross Section FKLF (Section 1/9, 6/7)

Solid Waste Management Unit Boundary

- GROUNDWATER MONITORING WELLS
- LEACHATE COLLECTION DRAIN AND HEADER
- CUTOFF WALL
- STORMWATER DRAIN

Containment (up to 50 ft deep)

Low Permeability Soil Unit (Containment)

Typical Cutoff Wall Construction
LEACHATE MANAGEMENT SYSTEM

Collection - Conveyance

Typical Cross Section FKLF (Section 1/9, 6/7)

Leachate Collection Drain Construction

- **Collection Drain** - Stone backfill with perforated pipe
- **Gravity drainage to Leachate Collection Pump Station**
- **Pump stations** - 6 ft x 12 ft plastic lined concrete vault
- **Pressure flow through Leachate Collection Header**
LEACHATE MANAGEMENT SYSTEM

Typical Cross Section FKLF
(Section 1/9, 6/7)

- **Constraints**
  - Road construction must *NOT* compromise the integrity of the Leachate Management System
  - Cutoff Wall and Collection Drain are permanent features
  - Cannot bury Leachate Collection Pump Stations

- **Mitigation Measures**
  - Demonstrate acceptability of the design
  - Analyze slope stability
  - Monitor Cutoff Call for movement
LEACHATE MANAGEMENT SYSTEM

Cannot Bury Leachate Collection Pump Stations

Leachate Conveyance Pump Station

Leachate Pump Station (14 Locations)
Landfill Systems

Leachate Management

**Landfill Gas Management**

Final Cover + Drainage Systems
LANDFILL GAS (LFG) MANAGEMENT SYSTEM

• Gas Collection
  – LFG Extraction Wells
  – LFG Flare Stations

• Gas Migration
  – LFG Interceptor Venting System
  – LFG Migration Monitoring Wells
LANDFILL GAS MANAGEMENT SYSTEM

LFG Gas Collection

Typical LFG Collection Components

Typical LFG Extraction Well Head
LANDFILL GAS MANAGEMENT SYSTEM

LFG Collection

Typical LFG Collection Components

- **Constraints**
  - Road construction must **NOT** compromise the integrity of the LFG Management System
  - Cannot bury access to Condensate Tanks

- **Mitigation Measures**
  - Demonstrate acceptability of the design
  - Strategic abandonment and relocation of LFG Extraction Wells, or LFG Header Pipes
  - Provide structural reinforcement to LFG Header Pipes
LANDFILL GAS MANAGEMENT SYSTEM

LFG Collection

FKLF Section 6/7 LFG Flare Station

• **Constraints**
  – LFG Flare Stations are permanent structures
  – Multiple utility connections points (firewater, LFG header pipe, condensate tanks, electricity)
  – Must maintain vehicle access
  – Provide crash protection, as necessary

• **Mitigation Measures**
  – Road alignment should avoid LFG Flare Stations
LANDFILL GAS MANAGEMENT SYSTEM

LFG Migration Control

Typical LFG Migration Components

- **LFG Interceptor Venting System** – Trench with stone backfill. Extends to groundwater of low permeability soil layer
- **LFG Utility Seal** – Low permeability soil-cement backfill to prevent gas migration
- **LFG Migration Monitoring Well** – Quarterly Inspection required
LANDFILL GAS MANAGEMENT SYSTEM

LFG Migration Control

Typical LFG Migration Components

- **Constraints**
  - Road construction must **NOT** compromise the integrity of the LFG Management System

- **Mitigation Measures**
  - Demonstrate acceptability of the design
  - Reconstruct LFG Interceptor Venting System and/or LFG Migration Monitoring Wells
  - Augment venting system with lateral vent layer

Utility Seal

Typical Utility (i.e., Water Electric, etc)

Roadway Fill

Landfill

Low Permeability Soil
Landfill Systems

Leachate Management
Landfill Gas Management
Final Cover + Drainage Systems
FINAL COVER & DRAINAGE SYSTEM

• Waste Containment
  – Multi-Layered Soil/Aggregate and Geosynthetic Cover System

• Stormwater Management
  – Swales
  – Culverts
  – Downchutes
  – Drop Inlets
  – Basins and Outfalls
FINAL COVER & DRAINAGE SYSTEM

Waste Containment

Typical Final Cover System Components

- **Topsoil & Vegetative Layer** – Promote vegetation for resistance to soil erosion
- **Barrier Protection Material** – Physical separation and protection of underlying geosynthetic materials
- **Drainage Layer** – Release infiltration water
- **Hydraulic Barrier Layer** – Reduce infiltration and leachate generation
- **Gas Venting Layer** – Dissipate LFG pressure
Five (5) Different Final Cover Systems Approved for Landfill Section 6/7

- **Vegetated Area Final Cover**
  1. Slopes 4 to 15 percent
  2. Slopes 15 to 33 percent
- **Driving Surfaces Final Cover**
  3. Asphalt Roads
  4. Gravel Roads
- **Perimeter Cutoff Wall**
  5. Soil or Asphalt

**Typical Final Cover System Components**

- **Drainage Layer**
  - Geocomposite Layer or Geotextile Layer

**Waste Containment**

30 in. total
Five (5) Different Final Cover Systems Approved for Landfill Section 6/7

- **Vegetated Area Final Cover**
  1. Slopes 4 to 15 percent
  2. Slopes 15 to 33 percent

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  3. Asphalt Roads
  4. Gravel Roads

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Five (5) Different Final Cover Systems Approved for Landfill Section 6/7

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  5. Soil or Asphalt
FINAL COVER & DRAINAGE SYSTEM

Waste Containment

- **Constraints**
  - Road construction must *NOT* compromise the integrity of the Final Cover System

- **Mitigation Measures**
  - Monitor geosynthetic layer for settlement
  - Analyze for stability
FINAL COVER & DRAINAGE SYSTEM

Stormwater Management System - Downchutes

Downchute Locations
- **Constraints**
  - Some downchutes connect to fixed discharge points connected to the Cutoff wall

- **Mitigation Measures**
  - Road alignment should avoid disturbing drop inlet locations
LANDFILL SYSTEMS / ROAD DESIGN INTERACTION

• Leachate Management
  – Not easily modified.
  – Demonstration/monitoring likely required.

• Landfill Gas Management
  – More easily modified.
  – Temporary by-pass options exist.

• Final Cover & Drainage Systems
  – Multiple cover system concepts established.
  – Demonstration and monitoring likely required.
East Mound Alignments

Three Corridors
  Western
  Eastern
  Southern

Each With Three Placements
  Off-Landfill
  On-Service Road
  On-Landfill
Western Corridor
• Excessive fill
• Stability
• Long-term settlement
• Crossing leachate cutoff wall

(difficult)

• Tidal wetlands
• Leachate pump stations
• Leachate cutoff wall
• Operations and Maintenance

(difficult)

• OFF-LANDFILL ALIGNMENT
• ON-SERVICE ROAD ALIGNMENT
• ON-LANDFILL ALIGNMENT
Eastern Corridor
- Excessive fill
- Stability
- Long-term settlement
- Stormwater downchute

(difficult)

- Leachate pump stations
- Stormwater downchute
- Operations and Maintenance

(difficult)

- Fresh water wetlands
- Crossing leachate cutoff wall
- Stormwater basin

(less difficult)
Southern Corridor
ON-LANDFILL
- Landfill gas header and wells
- Crossing leachate cutoff wall

(less difficult)

ON-SERVICE ROAD
- Leachate pump stations
- Crossing leachate cutoff wall
- Operations and Maintenance

(difficult)

OFF-LANDFILL
- Tidal wetlands
- Stormwater basin

(difficult)
Proposed
West Shore Expressway Improvements
Traffic Analysis
Overview of the EIS Traffic Impact Analysis

EIS Traffic Chapter will address these technical areas:

- Traffic flow and operating conditions for the existing, future No-Build and proposed project (Build)
- Assessment of the impact of traffic diversions from park roads
- Coordination with planning and design efforts to ensure adequate park access and traffic circulation
- Maximization of operations and presentation of mitigation/improvement measures
Intersections Under Analysis
FRESH KILLS PARK GEIS
TRAFFIC ANALYSIS FRAMEWORK

Draft scope of work (May 2006)

Final scope of work (August 2006)

Project kick-off meeting (November 2006)

Traffic surveys (May 2007)

Manual turning-movement counts

ATR counts

Baseline traffic network; Weekday (AM, Mid, PM) Saturday (Mid, PM)

Network balancing

Balanced baseline traffic networks

July 11, 2007 meeting with DCP / NYCDOT / NYSDOT

Data comparison (July 2007 counts)

Finalized baseline traffic networks and HCS analysis for existing conditions (August 22, 2007)
FRESH KILLS PARK GEIS
TRAFFIC ANALYSIS FRAMEWORK (continued)

Existing Conditions

September 26, 2007 meeting with City DOT and State DOT

Develop No-Build network:
- 2% annual growth up to 2016;
- 1% annual growth from 2017 to 2036
- No-Build projects

2016

No-Build traffic volumes

Preliminary traffic diversions based on proposed roadway network

Park generated traffic volumes

Build traffic volumes

2036

No-Build traffic volumes

Preliminary traffic diversions based on proposed roadway network

Park generated traffic volumes

Build traffic volumes

Design Team Meeting (To Come)
Roadway Improvement Projects Planned for the Area

New York City Department of Transportation (NYCDOT)
- Arthur Kill Road Improvement Project
- Victory Boulevard and Travis Avenue Intersection Design
- Richmond Hill Road Study
- Forest Hill Road Improvement Project
- Richmondtown Roadway Improvement Study
- Rockland Avenue and Manor Road Improvement Project
- Woodrow Road Improvement Project
- Bloomingdale Road Improvement Project
- Arden Avenue/Amboy Road Intersection Improvement Project

New York State Department of Transportation (NYSDOT)
- Korean War Veterans Parkway Ramp
- West Shore Expressway Improvements
- Arthur Kill Road Park and Ride Facility
2036 Park Roads
Next Steps

• Complete traffic modeling and analysis
• Review and coordinate Traffic Impact Analysis with NYCDOT and NYSDOT
• Conduct CORSIM Analysis for West Shore Expressway segment
• Identify Mitigation/Improvement Measures
• Complete Draft Generic EIS and begin public review process