Stormwater Management at Municipal Solid Waste Landfills
Municipal Solid Waste Landfills are covered under one of the following National Pollutant Discharge Elimination System (NPDES) types of permits for stormwater discharges to receiving waters of the state:

- General NPDES Permit
- Individual NPDES Permit

Permits are issued by the Illinois Environmental Protection Agency – Division of Water Pollution Control. Most active Landfill’s have applied for and have been granted an Individual NPDES Permit specific to that facility.
Individual NPDES Permits identify the following:

- Name and Address of the Permittee.
- Date of Issuance and Expiration. Typically a 5 year coverage.
- Permitted discharge locations and description.
- Effluent Limitations and Monitoring Frequency
- Special Conditions
- Standard Conditions
Individual NPDES Permit – Special Conditions

Under the NPDES Permit, Landfills are required to sample for at least the following:

<table>
<thead>
<tr>
<th>Ammonia (as N)</th>
<th>Lead</th>
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<tbody>
<tr>
<td>Arsenic</td>
<td>Manganese</td>
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<tr>
<td>Barium</td>
<td>Mercury</td>
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<tr>
<td>BOD$_5$</td>
<td>Nickel</td>
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<tr>
<td>Boron</td>
<td>pH</td>
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<tr>
<td>Cadmium</td>
<td>Phenols</td>
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<tr>
<td>Chloride</td>
<td>Sulfate</td>
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<tr>
<td>Chromium (Hexavalent)</td>
<td>Iron (Total)</td>
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<td>Chromium (Trivalent)</td>
<td>Temperature</td>
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<tr>
<td>Copper</td>
<td>TOC</td>
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<tr>
<td>Fluoride</td>
<td>TSS</td>
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<tr>
<td>Oil &amp; Grease</td>
<td>Zinc</td>
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<td>Hardness</td>
<td>Flow</td>
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All Individual NPDES Permits require the development of a Storm Water Pollution Prevention Plan (SWPPP).

The SWPPP provides a Site Description, General Stormwater Management procedures as well as procedures for stormwater control during Landfill Construction Activities.
Individual NPDES Permit - SWPPP

In addition to the guidance provided in the NPDES Permit document itself, the site specific SWPPP is one of the main tools for site operations to utilize in the proper preparation and handling of stormwater and the associated stormwater discharge.

The SWPPP typically contains the following:
- Site Location and Topography
- Site Plan and Operations
- Potentially Present Pollutants
- Identification of Key Personnel
- Good Housekeeping Guidelines
- Spill Prevention and Response
- Sediment and Erosion Control
- Employee Training
- Inspection and Maintenance
- Borrow Area Operations
- Landfill Cover Construction
- Current Site Configurations
- Final Site Configurations
- Stormwater Management
- Approved State or Local Plans
- Spill Prevention and Control and Countermeasures Plan
Site Planning

As part of the siting and permitting for a Landfill, a full evaluation of existing and future conditions is completed. An overall site plan including final constructed infrastructure is developed. As site development continues, additional infrastructure is developed to maintain the stormwater controls necessary to maintain compliance with discharge limits.
Site Planning
Conditions Contributing to Stormwater Issues

Landfills continually face conditions and circumstances that could impair the ability to meet the Stormwater Discharge Limits.

- **General Landfilling:**
  - Regulations require all waste to be covered with clean soil (or an alternative) at the end of each operating day.

- **Construction Activities:**
  - Construction Activities include cell construction, closure construction and general activities that disturb the soil.

- **Dust from Landfill Traffic**

- **Side Slope Maintenance**

All of these conditions have the potential to cause erosion runoff into the stormwater control structures.
Management of Stormwater

Since conditions are continuously present, Landfill’s must plan and manage their sites accordingly to minimize and prevent erosion that could result in an exceedance condition at the NPDES outfall location. These practices are referred to as Best Management Practices (BMP’s). Typical BMP’s include:

- Vegetation
- Planned Stormwater Infrastructures
  - Diversion Berms
  - Detention Basins
  - Stormwater Letdowns
  - Energy Dissipaters
  - Catch Basins
  - Hydrodynamic Separators
  - Wetlands and Bio-filters
  - Oil Water Separators
  - Infiltration Basins
The SmartDitch™ System

When it’s all about CONTROL…
Stormwater Letdown with Rip Rap Outlet
Stormwater Letdown with Rip Rap Outlet
Stormwater Diversion Berms
Energy Dissipater
Energy Dissipater
Energy Dissipater
Aerial Photograph
Thank You