Landfill Stormwater Management
An Overview
Summary

- Regulations
- SWMP
- Sampling
- Inspections/Corrective Action
- Control Measures (BMP’s)
Regulations

- Federal
  - National Pollutant Discharge Elimination System (NPDES)
- State
  - CDPHE
    - COR 9000 Stormwater Discharge Permit for Non-extractive industries
    - General Permit
- Landfills
  - Sector L for Municipal Solid Waste Landfills
Sector L Specific Requirements

- Monthly Inspections
- Quarterly Sampling
- Constituents list
  - Benchmark
  - TSS, Iron
  - Effluent Limitations
    - BOD, TSS, Ammonia, Alpha Terpineol, Benzoic Acid, p-Cresol, Phenol, Total Zinc, and pH
Definitions
Definitions

- **Stormwater**
  Water flowing or collecting on the ground following a rainfall event.

- **Industrial Stormwater**
  Stormwater that happens to fall where industrial activities are present.

- **Stormwater Discharge**
  Stormwater that is not absorbed by the ground and leaves the site at a point of compliance or elsewhere.

- **Pollutant**
  A substance introduced into the environment that has an undesired effect or adversely affects the usefulness of a resource.
Definitions

- **Outfall**
  any discernible, confined and discrete conveyance, including but not limited to any pipe, storm sewer, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, collection system, or other conveyances, which do not lead to treatment systems, from which pollutants are or may be discharged, (i.e. a shallow swale, rill, depression, or curb cut could fit such a description).

- **Measurable Storm Event**
  a storm event that results in an actual discharge from the facility and that follows the preceding measurable storm event by at least 72 hours (3 days). In the case of snowmelt, the monitoring will be conducted at a time when a measurable discharge occurs at the facility.
Stormwater Management Plan
Stormwater Management Plan

Stormwater Management Plan (SWMP)
A site specific plan used to identify potential sources of pollution that may be reasonably expected to affect the quality of stormwater discharges associated with industrial activity. The SWMP also describes procedures and control measures implemented to reduce the amount of pollutants that leave the site in stormwater discharges.

The information contained in the SWMP is in accordance with the requirements of the Colorado Discharge Permit System (CDPS) General Permit for Stormwater Discharges.
Makeup of a SWMP

- SWMP Administrator
- Facility Description
- Facility Map
- Facility Inventory and Assessment of Pollutant Sources
- Description of Control Measures
Makeup of a SWMP
Makeup of a SWMP

- Inspection
  - Procedures and Documentation

- Monitoring
  - Procedures and Documentation

- Corrective Action Documentation
Sampling
Sampling

- Stormwater samples will be collected at the designated outfalls (see your Site Map).
- Monitoring will be performed on a quarterly basis for benchmark parameters and annually for effluent limited.
- If no measurable storm event occurs during the quarter, a substitute sample will be collected during the next qualifying storm event.
- Sampling Protocols and monitoring are discussed in greater detail in the SWMP and in the EPA’s “Industrial Stormwater Monitoring and Sampling Guide”.
Sampling

- Samples and measurements taken will be representative of the nature of the monitored discharge.

- At least one grab sample will be collected from each outfall, to the extent practicable, within the first 30 minutes of the storm event. If this is not possible, the reason will be documented.

- Benchmark-TSS and Iron

- Effluent Limitation- BOD, TSS, Ammonia, Alpha Terpineol, Benzoic Acid, p-Cresol, Phenol, Total Zinc, and pH
Inspections
Inspections

Inspections are performed on a monthly basis and address:

- Outside areas of the facility
- Potential pollutant areas
- Stormwater drainage system
- Evaluation of control measures pertaining to:
  - Good housekeeping
  - Maintenance
  - Spill prevention and response procedures
Inspections

Inspections will be conducted by a qualified person. The following observations will be collected:

- Condition of stormwater outfalls and sampling locations to evaluate the flow dissipation measures
- Condition of discharged stormwater (color, odor, clarity, floating solids, settled solids, suspended solids, foam and oil sheen)
- Presence of non-permitted discharges (process water)
- Verify the SWMP facility diagram reflects the current conditions of the facility
- Confirm the effectiveness of control measures
- Evaluate the need for maintenance or repairs of the control measures (location, reason, schedule)
- Evaluate the need for additional or different control measures (location, reason, and schedule)
Inspections
Inspections
Corrective Action
Corrective Action

Corrective actions to a control measures will be implemented if one of the following conditions occur:

- An unauthorized release
- Sample results indicate Benchmark exceedance
- Water quality standards are not met
- Inspection findings reveal the control measures are not properly selected, designed, installed, operated or maintained
Control Measures
Control Measures (BMP’s)

Minimize Exposure:
Prevent stormwater from coming into contact with potentially impacting raw materials.

To the extent possible, materials should be stored indoors. This eliminates the chance that materials will come in contact with stormwater and pollution to migrate off-site.
Control Measures (BMP’s)
Control Measures (BMP’s)

Good Housekeeping:

Good Housekeeping practices are intended to maintain overall cleanliness of the site and reduce the contact of potential pollutants with stormwater.

Paved surfaces, floors, ground surfaces, etc., need to be kept clean. This includes:

- Sweeping
- Placing waste materials (trash) in proper containers
- Cleaning up spills promptly
- Inspecting and maintaining equipment (trucks) to prevent leaks
Control Measures (BMP’s)
Control Measures (BMP’s)

Materials Inventory and Storage:

- Material containers are stored in designated storage areas
- Containers of waste materials and recycled materials are stored inside or in covered containers when not restricted by the waste material size
- Drums and totes containing oils and chemicals are stored inside
- Materials are handled and stored according to the manufacturers’ suggested procedures
- Storage areas with hazardous materials are covered and have adequate aisle space to allow loading/unloading under cover
Control Measures (BMP’s)
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Erosion and Sediment Controls:

• Reduce the energy (speed of flow) to reduce transport of solids

• Structural controls
  • Berms / curb & gutter / diversions
  • Silt fence / straw bales / rock socks
  • Check dams, sediment ponds, drop structures
  • Rip rap
  • Graded road / wheel wash
Control Measures (BMP’s)
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QUESTIONS?

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