periods of 30 days or more. Deeper than daily covers, intermediate covers may be applied in conjunction with runoff control measures to minimize pooling and high-velocity flow patterns. Both daily and intermediate covers promote infiltration to some extent, depending on depth and soil material.

When a landfill (or landfill unit) has reached disposal capacity, a final cover is applied. Final covers generally provide a relatively impermeable cap over which topsoil is placed and vegetation is established. Permanent runoff controls (diversion channels, recontouring, terracing, etc.) may be constructed to minimize erosion and ponding. Final cover materials in older landfills, which are generally subject to limited regulatory requirements, often consist of a single layer of natural soils. However, at newer landfills subject to more stringent regulatory requirements, other cover materials (polymers, sand and gravel, sewage sludge, etc.) are frequently combined with soil in multiple layers.84

b. Industrial Landfills. Industrial landfills only receive wastes from industrial facilities such as factories, processing plants, and manufacturing sites. These facilities may also receive hazardous wastes from very small quantity hazardous waste generators (less than 100 kilograms per month), as defined in RCRA Subtitle C. Included in these waste streams are some PCBcontaminated wastes. The Toxic Substances Control Act PCB disposal regulations allow limited categories of PCB materials to be disposed of in RCRA Subtitle D landfills.85 In 1988, EPA estimated that there were at least 3,511 industrial Subtitle D landfills (this would presumably be the maximum number of non-MSWLF facilities regulated by the storm water program). The specific number of these units that are onsite and offsite facilities (i.e., centralized waste management units) was not available. Because wastes generated by industrial facilities vary considerably, both between and within industries, the wastes disposed of at industrial landfills can be highly variable. For example, the industrial nonhazardous waste category includes wastes from the pulp and paper industry, the organic chemical industry, the textile manufacturing industry, and a variety of other industries. Consequently, these waste streams may vary in chemical composition and/or

available on industrial landfills. Specific industrial waste streams have not been well characterized and little is known about the hazards they may pose. Limited data are also available regarding the design, operation, and location of these facilities. It has been documented, however, that there has been only sporadic application of design and operating controls at industrial landfills. In 1988, only about 12 percent of industrial landfills (including both onsite and offsite facilities) had any type of liner, and fewer than 35 percent employed runon/runoff controls.87 The use of these controls (including runon and runoff controls) at industrial waste landfills is likely to increase as State industrial waste programs continue to evolve.

c. Land Application Sites. In 1988, EPA estimated that there were approximately 5,605 land application sites in the United States. These sites receive wastes (primarily wastewaters and sludges) from facilities in virtually every major industrial category. More than half of all land application sites cover less than 50 acres and receive less than 50 tons of waste annually. The largest number of active land application sites in 1988 were observed in the food and kindred products industry, however the pulp and paper industry managed the largest gross quantity of waste using this practice. Similar to landfills, the variability in types of waste that are land applied precludes any general characterization of the materials that may be exposed to storm water. Typically, individual land applications will only dispose of wastes with specific characteristics. However, the criteria for selection are site-specific depending on type of process used and the soil characteristics. Waste application techniques are dependent on waste characteristics.

In 1988, EPA found that 68.5 percent of all industrial waste land application units had runon and runoff controls. No information was available on the extent of closure requirements applicable to land application units.

- 2. Potential Pollutant Sources and Options for Controlling Pollutants at Landfill and Land Application Sites
- a. Landfills. At landfill sites, runoff carrying suspended sediments and commingling of runoff with

Total Suspended Solids. Storm water discharges from landfill sites often contain high TSS levels because of the extensive land disturbance activities associated with landfill operations. Suspended solids can adversely affect fisheries by covering the bottom of a stream or lake with a blanket of material that destroys the fish food bottom fauna or spawning grounds. In addition, while they remain in suspension, suspended solids can increase turbidity, reduce light penetration, and impair the photosynthetic activity of aquatic plants.88 Specific sources of TSS loadings from landfill operations and typical Best Management Practices (BMPs) used to control TSS levels in storm water runoff are shown in Table L-1. The listed BMPs are consistent with the BMPs identified in part 1 of the permit applications submitted by landfill group applicants.

physical form. Most industrial landfills are privately owned.⁸⁶ Currently, there are limited data

uncontrolled leachate are the two primary sources of pollutants that this section is intended to address. Other potential sources of pollutants at landfills, those from ancillary areas of the landfill and which are not directly associated with landfill activities (i.e., vehicle maintenance, truck washing, etc.) may be subject to requirements in other sections of today's permit.

^{84 &}quot;Report to Congress: Solid Waste Disposal in the United States," Vol. II, Office of Solid Waste and Emergency Response, Oct. 1988.

⁸⁵ Ibid.

⁸⁶ Ibid.

⁸⁷ Ibid.

⁸⁸ EPA. 1974 (October). "Development Document for the Effluent Limitations Guidelines and New Source Performance Standards for the Steam Electric Power Point Source Category."