

CHAPTER 2

PLANNING

2-1. Feasibility Investigation.

The feasibility report for a new sanitary landfill should summarize the findings from an investigation of factors discussed herein, and should include advantages and costs of waste recycling, volume reduction, and waste minimization. The options for a new landfill must be investigated; these options include prolonging the life of an existing landfill, alternate disposal methods, and use of regional or private facilities. Army policy is to participate in municipal or regional solid waste management programs and to use municipal, regional, or private contractors for solid waste services whenever the life cycle cost (LCC) of such services is less than 125 percent of the LCC of Army owned and operated services. There should also be definite environmental advantages to the Army. In those cases where an installation sanitary landfill is recommended, plans will be included which show existing conditions and final conditions, the topography at the landfill site, surface drainage, quantity and location of cover material, supporting facility requirements, and recommended operational procedures covered in TM 5-634. Environmental documentation must be prepared in accordance with AR 200-2. Most states also have their own procedures for documenting the feasibility of a landfill project and site.

2-2. Operational Data for Planning.

a. General. Every effort should be made to maintain design intent during the operation of the landfill. Operational data which will be provided by the using service will include a detailed description of mechanical equipment to be used for handling refuse and operating the landfill, and the methods of solid waste placement that will be used.

b. Waste Characteristics. The using service should have data on the solid waste for which disposal is required, including the types of waste, the amounts, and the variations in delivery rates. When possible, the information should be based on an analysis of solid wastes from the installation on which the project is to be located, or from a similar installation. For new installations, an analysis can be made based on the population to be served and other major sources of solid waste. The daily per capita quantity of solid waste for troop facilities is typically 4 to 6 pounds of combined refuse and

garbage. This rate is based on effective population, which is the sum of the resident population plus one-third of the nonresident employees. For industrial facilities, an analysis of the operation is required.

c. Operational Equipment. The using service can provide information on the equipment to be used, both for collection and delivery, and sanitary landfill operation. This will include any planned changes in equipment. The capabilities of this equipment must be considered in evaluating factors such as access roads, grades, drainage, and operation in severe climates.

d. Operational Methods. The two most commonly used methods of operating a landfill are the area method and the trench method. Selection of the most appropriate method depends on local conditions. In the area method, waste is placed in a large open excavation, is spread and compacted, and then covered with suitable material. The trench method takes its name from the fact that waste is dumped into a trench and then covered with material from the trench excavation. Typical area and trench operations are shown in figures 2-1 and 2-2. Detailed procedures are contained in TM 5-634 and DA Pam 420-47. The expense of lining side slopes generally makes the trench method less desirable than the area method. The design presented in this manual is a combination of the area and trench methods.

2-3. Site Selection.

a. Planning. Site selection is very much a part of the design process, and could be considered the most critical step in establishing a landfill disposal facility. Landfill siting must be a balance between minimizing haul distances, which impacts the economics of the landfill, and maximizing distances from housing areas, inhabited buildings and other undesirable locations. Larger installations may require more than one landfill when justified by savings resulting from reduced haul distances. It is recommended that a preliminary closure plan be drafted prior to the site selection to ensure that the closure is considered. There are many uses for properly closed landfill sites. These include many areas of interest to an installation, such as recreational parks, parade grounds, and parking lots.

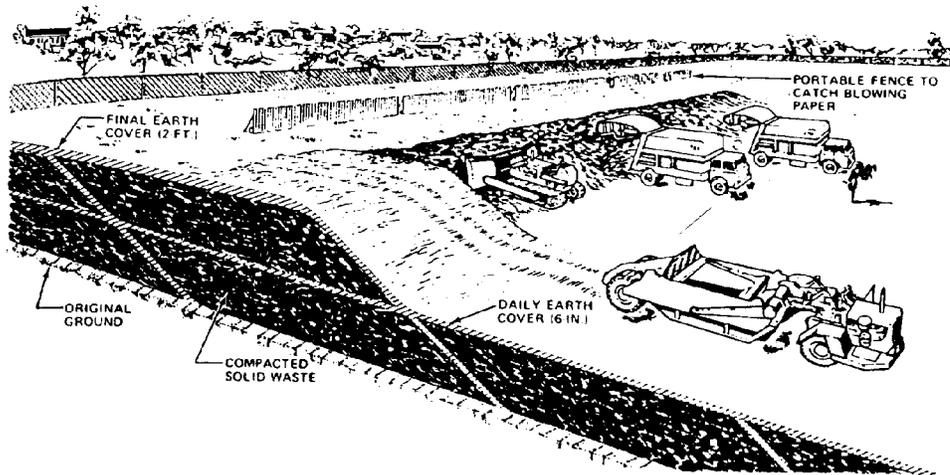


Figure 2-2. Typical Area Landfill Operation.

b. *Other Considerations.* The selection process must consider ground and surface water conditions, seismic impact zones and fault areas, geology, soils and topographic features, solid waste types and quantities, geographic factors, and aesthetic and environmental impacts. Environmentally sensitive areas, including wetlands, 100-years flood-plains, permafrost areas, critical habitats of endangered species, and recharge zones of sole source aquifers, should be avoided or receive lowest priority as potential locations for landfill disposal facilities. These areas might require a comprehensive study of the location with respect to environmentally sensitive conditions.

(1) *Airports.* No portion of a landfill can be within 10,000 feet of a runway end used by turbojet aircraft or 5,000 feet of runway end used by piston-type aircraft. If a site under consideration is within

5 miles of any runway end, the Installation Commander or his/her representative must notify the affected airport authority and the Federal Aviation Administration (FAA).

(2) *Wetlands.* All infringements into wetlands will be avoided. Restrictions and considerations for impacting wetlands are in 40 CFR 258, 33 CFR 320, and EO 11990.

(3) *Seismic Impact Zones.* Areas of high earthquake activity will be avoided. No portion of a landfill shall be in a seismic impact zone, as defined in 40 CFR 258, unless it is designed to resist the corresponding pressure.

(4) *Unstable Areas.* Karst terrain will be avoided. Before a landfill can be located in a geologically unstable area it must be demonstrated to the appropriate state agency that the integrity of the liner system and other structural components will not be disrupted.

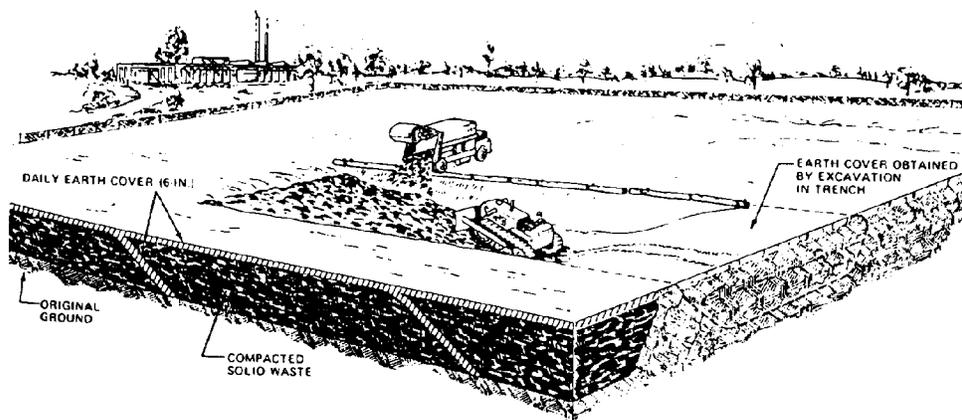


Figure 2-1. Typical Trench Landfill Operation.

(5) *Cover*. There should be a sufficient quantity of on-site soil suitable for use as cover material.

(6) *Existing Site Utilities*. Sites traversed by underground pipes or conduits (for sewage, storm water, etc.) must be rejected unless their relocation is feasible.

(7) *Access*. Preferred access to the site is over an existing secondary road net with all-weather capability and direct routes to the landfill. Use of primary roads, roads through housing areas or roads crossing major highways creates both a safety hazard and a nuisance.