measurement of soil moisture content. Electrical resistance sensors have an effective life span of up to several years, at which time they must be replaced.

A full discussion of other types of equipment and techniques possibly serving as alternatives to ground-water monitoring wells is beyond the scope of this preamble discussion. For further information on alternatives to groundwater monitoring, the reader is referred to two technical background documents "Examples of Alternatives to **Conventional Ground-Water Monitoring** Wells at Small, Dry or Remote Landfills" and "Subsurface Characterization and Monitoring Techniques, Volumes I and II," which may be found in docket number F-95-AGAP-FFFFF for this proposed rule. The Agency is assessing the need for additional technical guidance to provide regulators and landfill owners and operators with further information regarding ground-water monitoring well alternatives.

In conjunction with the types of alternatives described above and in the docket for this rulemaking, the Agency fully supports the use of beneficial modified operating practices that may serve to reduce the potential for leachate generation in certain situations. Examples of such operating practices may include the use of movable covers to prevent rainfall infiltration into the working face and body of the landfill, early final closure of the landfill cell, and careful contouring and drainage design of the final cover to route precipitation away from the closed MSWLF unit.

IV. Proposed Rule for Alternatives to Ground-Water Monitoring

A. Overview

Based on the information contained in docket number F-95-AGAP-FFFFF and on comments received at the public meetings, the Agency today is proposing to allow alternatives to the full part 258 ground-water monitoring requirement for qualifying small MSWLFs, where approved by the Director of an approved State or Tribe. This proposed rule covers only those MSWLFs meeting the criteria of 40 CFR 258.1(f)(1). The Agency estimates that approximately 750 MSWLFs would qualify as a small landfill meeting the conditions of §258.1(f)(1). The Agency estimates that between 300 to 500 of these 750 MSWLF units would be able to use alternative ground-water monitoring systems; however, the final decision to allow the use of alternative groundwater monitoring systems would be

made by the approved State or Tribe and not by the Agency.

Under today's proposal, all landfills that are not qualifying small MSWLFs would be subject to the full groundwater monitoring requirements of 40 CFR part 258, subpart E, unless they could demonstrate no potential for migration under 40 CFR 258.50(b). This proposed rule does not provide any additional exemption or "no-action" alternative to the ground-water monitoring requirements in 40 CFR part 258. An approved State or Tribe may only waive ground-water monitoring requirements if the MSWLF unit meets the conditions established in 40 CFR 258.50(b).

Today's proposal, if finalized, would allow approved States and Tribes the flexibility to determine the most appropriate alternative to ground-water monitoring for qualifying small MSWLFs based on site-specific data as long as the alternative ensures the detection of contamination. Monitoring may be conducted with a variety of relatively low-cost geochemical and geophysical technologies capable of detecting contamination and assessing the nature and extent of contamination. Some alternatives may detect contamination by directly measuring the levels of constituents in ground water, while other alternatives may monitor the unsaturated zone or saturated zone for the properties of solids, gases, or liquids that are determined to be indicative of releases from the MSWLF unit.

When the Agency proposed the MSWLF criteria in August, 1988, it discussed the reasons for requiring ground-water monitoring at all MSWLFs, indicating that ground-water monitoring is "an essential measure to ensure protection of human health and the environment * * * [and] * * * the most reliable method for determining whether a landfill is in compliance with the overall performance standard" of the MSWLF criteria. See 53 FR 33366. The Agency believes that the approach adopted in today's proposal, allowing the use of alternative methods to detect ground-water contamination (other than monitoring wells), will continue to satisfy the statutory requirements in RCRA section 4010(c) that ground-water monitoring be implemented at all MSWLFs "as necessary to detect contamination.'

By providing flexibility to approved States and Tribes to establish the best tailored alternative ground-water monitoring regime for each qualified small MSWLF, today's proposal is designed to ensure detection of contamination in an effective manner

that best takes into account the numerous, complex characteristics that are encountered on a site-specific basis. Today's proposal does not exempt qualifying small MSWLFs from groundwater monitoring, but instead allows a stepwise approach for detecting a release from the landfill that could result in ground-water contamination. Today's proposed rule provides the flexibility to approved States or Tribes to allow qualifying small MSWLFs to use cost-effective screening techniques rather than requiring immediate use of a full ground-water monitoring well program. Should the screening techniques indicate the possibility of ground-water contamination, the approved State or Tribe would then require that owners and operators establish more precise techniques that could quantify the contamination, including the installation of monitoring wells when warranted.

Alternative ground-water monitoring methods (e.g., monitoring in soil or in the unsaturated zone) are intended to detect the escape of contaminants from the MSWLF and thereby accomplish the same purpose as the ground-water monitoring well program pursuant to 40 CFR 258.51 through 258.55. While the alternative methods may not always include the collection of actual groundwater samples, they will indicate if a release from the landfill has occurred, at which point the alternative groundwater monitoring method may need to be supplemented by the installation of ground-water wells to ascertain whether the ground-water below the MSWLF has been contaminated.

The Agency understands that numerous methods and techniques exist for sampling and monitoring the saturated and unsaturated zones at qualifying small MSWLFs and that existing field methods are often refined and new methods are continually being developed. Therefore, the Agency believes it would be inappropriate to delineate in today's regulations all of the specific alternatives that may be authorized by approved States and Tribes. Approved State and Tribal authorities would decide which of the available alternatives to ground-water monitoring will ensure detection of contamination from the qualifying small MSWLF. These decisions will be made in a public forum, since the programs administered by States and Tribes provide opportunities for public participation during the permit issuance process (40 CFR part 256). Thus, members of the public will have an opportunity to comment on the selection of an appropriate and reliable