

Standard Operating Procedures for Settlement Accommodation Plan (SAP)

The following outlines the procedures for a landfill operator to submit a request for a minor permit modification to allow for settlement accommodation to permitted landfill grades. The department reserves the right to require a major modification, additional safe guards, or facility improvements for facilities that have odor, leachate management, storm water, landfill gas management, or other related issues. These additional requirements may be imposed by the department prior to or in conjunction with the submission of the Settlement Accommodation Plan (SAP), after its submission, or as a condition of its approval. Permit modifications should be submitted to the department's appropriate regional office. If the operator fills beyond the permitted SAP plan grades or is experiencing other significant compliance issues, the department may suspend the operator's approval to operate under a SAP.

- A. The SAP shall be prepared by a PA-licensed Professional Engineer (PE).
- B. The SAP shall include the following:
 1. Narrative explaining the SAP.
 2. A plan view of the affected area, including locations of settlement monuments, if any;
 3. Drawings with sections spaced at intervals no larger than 100 feet within the affected area, showing:
 - a. Bottom of waste grades and elevations (this should account for original bottom of waste grades in "piggybacking" scenarios);
 - b. Existing grades and elevations;
 - c. Permitted grades and elevations;
 - d. Boundaries of the "landfill overfill area." A "landfill overfill area" would be defined by the permittee, and would be a geographical section of the facility, typically larger than a cell;
 - e. Proposed "overfilled" grades and elevations;

- capping schedule shall be submitted in conjunction with the AOR (refer to item 3, below).
- C. The AOR shall contain a SAP update, including: narrative; drawings, if applicable; and calculations concerning the status of the settlements realized relative to those proposed in the SAP, and a validation of the assumptions/estimates used in the SAP. Proposed versus actual settlement must be shown on 100 foot cross sections, successively each year. If changes in grades included in the SAP or the capping schedule are necessary, a minor permit modification must be submitted and approved by the department. Updates to the SAP and capping schedule shall be provided within the AOR based on the annual topographic survey and capacity report provided within the AOR. The bonding update shall consider the SAP.
- D. Temporary and Permanent Capping:
1. Operators may install temporary caps in overfilled areas, if approved by the department as a minor permit modification. If temporary caps do not meet the prescribed regulatory performance standards, they shall not be approved for permanent capping or conversion to permanent capping.
 2. If temporary caps are installed (e.g., exposed geomembrane caps [EGC]), that meet the prescribed regulatory performance standards (properties after exposure, if EGC), they may be converted to permanent capping systems after permitted grades are attained, if done in accordance with the approved SAP and capping design approved in the permit. The department will not require a permit modification for this scenario. However, the operator must demonstrate to the department that the properties of any previously exposed geosynthetics conform to performance standards prior to placement of cover material.
 3. Operators may install permanent caps meeting prescribed regulatory design requirements on overfilled areas if provided for in the approved SAP. If the subject areas do not settle to the permitted grades in accordance with the schedule set forth in the approved SAP, the operator must rectify the grades (e.g., cover and waste removal) and reinstall the permanent cap system, or receive approval from the department to modify the SAP schedule with appropriate justification and bonding.

E. SAP Limitations:

1. During landfill operations, an operator of a landfill with an approved SAP design may exceed the 33% maximum grade limitation on the outer slopes of the landfill that will eventually represent final grade slopes to allow for settlement to occur, but shall not exceed 40%. Interim slopes in areas that exceed final permitted slopes may exist for up to 5 years following final waste acceptance in a landfill area if the operator can demonstrate that storm-water, landfill gas and leachate are managed in accordance with the respective storm-water, landfill gas and leachate management plans approved in the permit.

2. During landfill operations, an operator of a landfill with an approved SAP design may exceed final permitted elevations to allow for settlement to occur, but shall not exceed final permitted elevations by more than 10% of the total permitted waste thickness in that area. For computations, the total waste thickness may include waste that was deposited in underlying non-Subtitle D-compliant/non-PADEP-conforming landfill cells (i.e., for “piggy-backed cells”), but shall not include the proposed additional waste thickness afforded by the SAP. The operator shall demonstrate with supporting engineering analyses that the permitted final elevations will be achieved within 5 years after final waste acceptance within a landfill overfill area. Elevations that exceed final permitted elevations may exist for up to 5 years, or a shorter time if required by the permit, following final waste acceptance in a landfill area. Calculated bond amounts shall be consistent with the SAP and associated capping schedule.