



Defining the Zone of Saturation for Soil Media

What You Need to Know

Purpose

The Land Restoration Program (LRP) of the Maryland Department of the Environment (MDE) provides the following guidance to supplement and define the zone of saturation, and its applicability within the State of Maryland Department of the Environment Cleanup Standards for Soil and Groundwater, October 2018 Interim Final Guidance (Update No. 3) (hereinafter “Cleanup Standards”). The purpose of this fact sheet along with the Cleanup Standards and the Residential Redevelopment and Land Use Control Policy Revision #1, April 2022 is to assist in determining the depth of the zone of saturation and the necessity for soil remedial measures at sites within the LRP and other MDE Land and Materials Administration programs as applicable.

Introduction

Within the Cleanup Standards, the residential and non-residential exposure scenarios for the soil media are applicable from 0-10 feet below ground surface (BGS) or to the zone of saturation. To meet an unrestricted soil use residential standard, Tier 1A, or an unrestricted use non-residential soil standard, Tier 2A, soil must be free of contaminant concentrations exceeding the applicable residential soil standards to a depth of 10 feet BGS or to the top of the zone of saturation, whichever is shallower. Following are processes entities should utilize in determining the zone of saturation during characterization of soil and determination of the necessity for soil remedial measures.

Process

When the zone of saturation, rather than 0-10 feet BGS, is chosen as the attainment depth for soil media to meet an unrestricted use, temporal variations in the depth of the zone of saturation must be accounted for with defensible field data across the entirety of the area under consideration.

- The property owner or prospective purchaser must submit a zone of saturation characterization plan (Plan) for the site to the LRP for review and approval. At a minimum, the Plan must be robust enough to confidently delineate the apparent top of the site’s zone of saturation, taking into consideration any seasonal and/or tidal fluctuations in the water table that may occur, as well as unusual geologic conditions. Variable depths must be delineated and site/subsurface conditions will dictate acceptable buffers above the zone of saturation. The Plan must provide a detailed understanding of the nature, extent, permanence, and project relevance of any perched water zones that are anticipated or have been encountered for the area under consideration on the site. Additional time to collect the necessary data to assess the zone of



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saturation may be necessary and should be accounted for as early as possible in the review and development process.

- The Plan must be prepared by an environmental professional experienced in this type of characterization. It must be technically defensible and use data collection methods in keeping with industry practice.
- Implementation of a Plan will provide sufficient data for MDE to review and approve a site's remedial action plan to meet unrestricted future use determinations.
- In instances where the depth to the zone of saturation is shallow (i.e., <5 feet), special consideration will be given to the need for the addition of clean fill to raise the grade and/or other specialized engineering design features to meet unrestricted use requirements.
 - As a general policy when the zone of saturation is less than 5 feet, LRP will require no less than 3 feet of clean fill to meet the unrestricted use requirements.



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Additional Resources

Cleanup Standards for Soil and Groundwater, October 2018: Interim Final Guidance (Update No. 3), Maryland Department of the Environment.

Amendment#1, Cleanup Standards for Soil and Groundwater, October 2018: Interim Final Guidance (Update No. 3), Maryland Department of the Environment.

Residential Redevelopment and Land Use Control Policy Revision #1, What You Need to Know, April 2022, Maryland Department of the Environment.

For More Information

Questions or concerns regarding the Defining the Zone of Saturation
for Soil Media please contact:

The Land Restoration Program at 410-537-3493