3745-525-503 Evaluation of recompacted soil liner material and construction.

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, test methods, federal rules, and federal statutory provisions referenced in this rule, see rule 3745-500-03 of the Administrative Code titled "Incorporation by reference."]

(A) Materials used to construct the recompacted soil liner shall undergo pre-construction testing and modeling in accordance with this rule prior to construction of the recompacted soil liner.

(B) A test pad certification report shall be submitted to Ohio EPA for written concurrence not later than fourteen days prior to the intended construction of the recompacted soil liner that was modeled by the test pad. The test pad certification report shall be prepared, signed, and sealed by a professional engineer. The test pad certification report shall include the following:

(1) Certification that the construction of the test pad was in accordance with paragraph (E) of this rule.

(2) Proposed construction details in accordance with paragraph (J) of this rule.

(3) The range of soil properties that will be used to construct the recompacted soil liner.

(4) The results of all the testing required by paragraphs (F) to (H) of this rule.

(C) An evaluation of the material to be used to construct the recompacted soil liner shall be submitted to Ohio EPA no later than seven days prior to the intended use of the materials. The evaluation shall be prepared, signed, and sealed by a professional engineer. The evaluation shall contain the results of the pre-construction testing performed on representative samples of the borrow soils. The pre-construction testing shall determine the following:

(1) The maximum dry density and optimum moisture content according to ASTM D698 (standard proctor) or ASTM D1557 (modified proctor) at a frequency of no less than once for every one thousand five hundred cubic yards of borrow soil.

(2) The grain size distribution according to ASTM D422 (sieve and hydrometer) at a frequency of not less than once for every one thousand five hundred cubic yards of borrow soil.

(3) The atterberg limits according to ASTM D4318 at a frequency of not less than once for every one thousand five hundred cubic yards of borrow soil.

(4) The recompacted laboratory hydraulic conductivity according to ASTM D5084 (falling head) at a frequency of not less than once for every ten thousand cubic yards of borrow soil.

(D) The construction of the recompacted soil liner shall be modeled by an approved test pad. The test pad shall determine the construction details required to achieve the hydraulic conductivity standard for recompacted soil liners established in rule 3745-525-531 of the Administrative Code. The test pad shall establish a set of parameters for certification of the soils to be used in the construction of the recompacted soil liner. A test pad shall be constructed as follows:

(1) As many times as necessary to meet the hydraulic conductivity criterion.

(2) Whenever there is a significant change in soil material properties.

(3) Whenever the owner or operator would like to amend the construction details.

(E) The test pad shall meet the following criteria:

(1) Be designed such that the proposed tests are appropriate and the results of each test are valid.

(2) Have an area large enough to perform valid field hydraulic conductivity testing and a minimum width three times the width of compaction equipment, and a minimum length two times the length of compaction equipment, including power equipment and any attachments.

(3) Have a thickness of no less than thirty inches.

(4) Be constructed using not less than six lifts.

(F) Representative samples of the soils used to construct the test pad shall have the following pre-construction testing performed, at a frequency of not less than twice per lift for the following:

(1) Maximum dry density and optimum moisture content according to ASTM D698 (standard proctor) or ASTM D1557 (modified proctor).

(2) Grain size distribution using ASTM D422 (sieve and hydrometer).

(3) Atterberg limits using ASTM D4318.

(G) The test pad shall have construction testing of the constructed lifts performed to determine the density and moisture content according to ASTM D2922 (nuclear method), ASTM D3017 (nuclear method), ASTM D1556 (sand cone), ASTM D2167 (rubber balloon), ASTM D6780 (TDR), at a frequency of not less than three tests per lift. The

locations of the individual tests shall be adequately spaced to represent the constructed area and off set from one lift to the next. Any penetrations shall be repaired using bentonite.

(H) The test pad shall have post-construction testing performed to determine field hydraulic conductivity using one of the following:

(1) ASTM D6391 (two stage borehole).

(2) ASTM D3385 (double ring infiltrometer).

(3) ASTM D5093 (sealed double ring infiltrometer).

(I) The owner or operator may use the test pad to satisfy the requirements in paragraph (D) of rule 3745-525-505 of the Administrative Code.

(J) The construction details established by test pad construction and testing shall include the following:

(1) The maximum loose lift thickness.

(2) The minimum soil moisture content, that shall be not less than the optimum moisture content as determined by ASTM D698 (standard proctor) or ASTM D1557 (modified proctor).

(3) The minimum soil dry density, that shall be not less than ninety five per cent of the maximum using ASTM D698 (standard proctor) or at least ninety per cent of the maximum using ASTM D1557 (modified proctor).

(4) The specific type and weight of compaction equipment used to compact the test pad soils.

(5) The minimum number of passes of the compaction equipment. For the purposes of this paragraph, one pass is defined as a single contact of the compactor over an area.

(K) The director may approve an alternative to a test pad if the owner or operator demonstrates to the satisfaction of Ohio EPA that the recompacted soil liner can achieve the hydraulic conductivity criterion established in rule 3745-525-531 of the Administrative Code.