



FLORIDA DEPARTMENT OF Environmental Protection

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Secretary

BEFORE THE STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

In re: Geomatrix Systems, LLC as it relates to GeoMat™ Leaching Systems (GeoMat)

OGC Case No. 22-1693

Petition for Variance from
Provisions of Rules 62-6.008, 6.009, 6.014, 6.026, and 6.028 F.A.C.

ORDER GRANTING PETITION FOR VARIANCE

On December 10, 2020, Geomatrix Systems, L.L.C. (Geomatrix) filed a petition with the Florida Department of Health (DOH) requesting a section 120.542, Florida Statutes (F.S.), variance from the requirements of paragraphs 64E-6.008(5), 64E-6.009(3)(d)-(e), 64E-6.009(7)(d), 64E-6.014(5)(b) and (g), 64E-6.026(1), and 64E-6.028(3)-(4) Florida Administrative Code (F.A.C.), now known as 62-6.008(5), 62-6.009(3)(d)-(e), 62-6.009(8)(d), 62-6.014(5)(b) and (g), 62-6.026(1), and 62-6.028(3)-(4), F.A.C., as a result of the July 1, 2021, transfer of the Onsite Sewage Treatment and Disposal System Program to the Florida Department of Environmental Protection (DEP). In addition, prior to the transfer, due to a rule change effective July 31, 2018, paragraph 64E-6.009(7)(d) was renumbered as Rule 64E-6.009(8)(d), F.A.C. (transferred to DEP, Rule 62-6.009(8)(d) F.A.C.). These paragraphs describe requirements for loading rates to be used for the sizing of the absorption surface of mineral aggregate drainfields; specify distances between the centers of adjacent distribution lines in absorption beds and distances between distribution lines and the edge of the drainfield; provide specifications for distribution lines in standard gravity systems; prohibit the approval of alternative drainfield materials that result in a smaller drainfield size than would be required using mineral aggregate; require applications for innovative system permits to be signed sealed and dated by an engineer; provide maximum reductions for infiltrative surface reductions; and describe hydraulic surge storage requirements. Geomatrix received a variance from the same rule provisions on November 20, 2018 that expired two years later. Geomatrix requests the 24-month temporary variance to allow installation and monitoring of septic systems that incorporate the innovative GeoMat system as a means to demonstrate the effectiveness of the GeoMat in Florida soils and Florida climate to the satisfaction of the Department. Geomatrix has stated its intent to seek a permanent variance if the system's innovative testing successfully meets the requirements of the innovative system permit. The DOH and/or the DEP made timely requests of additional information on January 8, 2021, February 3, 2021 and March 17, 2021 and Geomatrix provided additional information to the DOH and/or the DEP on January 20, 2021, February 4, 2021, February 15, 2021, and March 29, 2022.

Notice of receipt of the petition was published in the Florida Administrative Register on December 21, 2020. No public comment was received.

BACKGROUND AND APPLICABLE REGULATORY CRITERIA

Geomatrix requests state-wide variances from rules in order to allow them to test their alternative drainfield products (GeoMat 1200 and GeoMat 3900) under the system's innovative system permit (ISP). As detailed in the Petition, the GeoMat is a low-profile leaching or drainfield system. It consists of a one-inch thick nylon core of fused, entangled filaments covered by a hydroscopic geotextile fabric that is bonded to one side of the core and contains the distribution pipe. The core is either 12 inches (GeoMat 1200) or 39 inches (GeoMat 3900) wide. The installations can have different configurations and variations as described in the system innovative system permit (ISP) (Version 1 dated, February 7, 2020). The variations include a new variation requested by Geomatrix on May 18, 2021. This variation consists of a flat Geomat in soil or fill with a two-inch veneer of system sand beneath the GeoMat as described in the revised ISP (Version 1.1 dated April 27, 2022). This new variation is intended to improve performance compared the variation installed in soil or fill. Three of five of these installations failed in 2020.

The applicable rules state in pertinent part:

Paragraph 62-6.008(5) F.A.C.: *The minimum absorption area for standard subsurface drainfield systems, graywater drainfield systems, and filled systems shall be based on estimated sewage flows and Table III*

<i>TABLE III</i>			
<i>For Sizing of Drainfields Other Than Mounds</i>			
<i>U.S. DEPARTMENT OF AGRICULTURE SOIL TEXTURAL</i>	<i>SOIL TEXTURE LIMITATION</i>	<i>MAXIMUM SEWAGE LOADING RATE TO TRENCH & BED ABSORPTION SURFACE INGALLONS PER SQUARE FOOT PER DAY</i>	
<i>CLASSIFICATION</i>	<i>(PERCOLATION RATE)</i>	<i>TRENCH</i>	<i>BED</i>
<i>Sand; Coarse Sand not associated with a seasonal water table of less than 48 inches; and Loamy Coarse Sand</i>	<i>Slightly limited (Less than 2 min/inch)</i>	<i>0.80</i>	<i>0.60</i>
<i>Loamy Sand; Sandy Loam; Coarse Sandy Loam; and Fine Sand;</i>	<i>Slightly limited (2-4 min/inch)</i>	<i>0.80</i>	<i>0.60</i>
<i>Loam; Fine Sandy Loam; Silt Loam; Very Fine Sand; Very Fine Sandy Loam; Loamy Fine Sand; Loamy Very Fine Sand; and Sandy Clay Loam</i>	<i>Moderately limited (5-10 min/inch)</i>	<i>0.65</i>	<i>0.35</i>
<i>Clay Loam; Silty Clay Loam; Sandy Clay; Silty Clay; and Silt</i>	<i>Moderately limited (Greater than 15 min/inch but not exceeding 30 min/inch)</i>	<i>0.35</i>	<i>0.20</i>

<i>Clay; Organic Soils; Hardpan; and Bedrock</i>	<i>Severely limited (Greater than 30 min/inch)</i>	<i>Unsatisfactory for standard subsurface system</i>	
<i>Coarse Sand with an estimated wet season high water table within 48 inches of the bottom of the proposed drainfield; Gravel or Fractured Rock or Oolitic Limestone</i>	<i>Severely limited (Less than 1 min/inch and a water table less than 4 feet below the drainfield)</i>	<i>Unsatisfactory for standard subsurface system</i>	

Paragraph 62-6.009(3)(d)-(e) F.A.C.: *Where the soil material underlying a mound system is of a similar textural material as that used in system construction, the mound drainfield size shall be based on estimated sewage flows as specified in Rule 62-6.008, F.A.C., Table I and upon the quality of fill material utilized in the mound system. ... Maximum sewage loading rates for soils used in mound construction shall be in compliance with the following:*

<i>Fill Material</i>	<i>Maximum Sewage Loading Rate to Mound Drain Trench Bottom Surface in gallons per square foot per day</i>	<i>Maximum Sewage Loading Rate to Mound Absorption Bed Bottom Surface in gallons per square foot per day</i>
<i>Sand; Coarse Sand; and Loamy Coarse Sand</i>	<i>0.80</i>	<i>0.60</i>
<i>Fine Sand Sandy Loam;</i>	<i>0.80</i>	<i>0.60</i>
<i>Coarse Sandy Loam; and Loamy Sand</i>	<i>0.65</i>	<i>0.40</i>
<i>Fine Sandy Loam; Very Fine Sand; Loamy Fine Sand; and Loamy Very Fine Sand</i>	<i>0.35</i>	<i>0.25</i>

(e) Where moderately limited soils underlie the mound within 36 inches of the bottom of the drainfield, drainfield sizing shall be based on the most restrictive soil texture existing in the profile to a depth of 36 inches below the bottom of the drainfield, using Table III for soil loading rates.

Paragraph 62-6.009(8)(d) F.A.C.: *Except as provided for in Part IV of this chapter, alternative drainfield materials and designs shall not be approved which would result in a reduction in drainfield size using the mineral aggregate drainfield system as described in Rule 62-6.014, F.A.C., and the total surface area of soil at the bottom of the drainfield as the criteria for drainfield sizing comparisons.*

Paragraph 62-6.014(5)(b): *Drain trenches and absorption beds – drain trenches and absorption beds are the standard subsurface drainfield systems used for disposing of effluent from septic tanks or other sewage waste receptacles. When used, these systems shall be constructed as specified below.*

...

(b) ... The distance between the centers of distribution lines in standard beds shall be a maximum of 36 inches. The distance between the sidewall of the bed and the center of the outside drain line shall be no more than 18 inches, but shall not be less than six inches...

Paragraph 62-6.014(5)(g): *The inside diameter of the drain pipe used in drainfields shall be determined based on the type and design of the proposed absorption system. However, for standard gravity aggregate drainfield systems, inside pipe diameter shall not be less than 4 inches. Perforated pipe shall have two rows of holes, and a minimum perforated area of 1 1/2 square inches per linear foot. Perforations shall be located not less than 30° or more than 60° from the vertical on either side of the center line of the bottom of the pipe.*

Paragraph 62-6.026(1): *Applications for innovative system permits – Applications for innovative system permits shall be made using form DEP 3143. The application and all supporting information shall be signed, dated and sealed by an engineer, licensed in the State of Florida.*

Paragraph 62-6.028(3), F.A.C. Hydraulic surge storage – *the design shall protect the residence from backflow into the treatment tank. For gravity and pumped systems, the following shall apply:*

...

(b) The effective storage volume of the drainfield shall be equal to or greater than 1.5 times the design daily flow.

(c) The total storage volume of the drainfield shall be equal to or greater than 1.8 times the design daily flow.

Paragraph 62-6.028(4), F.A.C. Infiltrative surface area reductions shall be allowed for systems designed to reduce the wastewater strength of the effluent where the drainfield is sized based on slightly limited soils. The baseline system shall be used for comparison with a typical average CBOD₅ of 140 mg/l and TSS of 105 mg/l. The maximum reduction in infiltrative surface area shall not exceed the following standards.

(a) Secondary treatment standards: 25% reduction.

(b) Advanced secondary treatment standards: 40%.

(c) Advanced wastewater treatment standards: 40%.

THE VARIANCE OR WAIVER WILL MEET THE UNDERLYING
PURPOSE OF THE STATUTE

Section 120.542(2), F.S., states “variances and waivers shall be granted when the person subject to the rule demonstrates that the purpose of the underlying statute will be or has been achieved by other means by the person and when application of a rule would create a substantial hardship or would violate principles of fairness.” The variance procedure is intended to provide relief from unreasonable, unfair, and unintended results in unique cases.

Paragraphs 62-6.008(5), 62-6.009(3)(d)-(e), 62-6.009(8)(d), 62-6.014(5)(b) and (g), 62-6.026(1), and 62-6.028(3)-(4), F.A.C., implements Section 381.0065(3)(a), F.S., which states the Department shall adopt rules to administer ss. 381.0065-381.0067, F.S., including requirements for “...the design and construction of any component part of an onsite sewage treatment and disposal system”. This includes standards for drainfields, alternative systems, and innovative systems.

The underlying purpose of the statute is stated in Section 381.0065(1)(b) F.S.: "...It is further the intent of the Legislature that the installation and use of onsite sewage treatment and disposal systems not adversely affect the public health or significantly degrade the groundwater or surface water."

An alternative drainfield product that fails could result in the leakage of untreated sewage into the ground, daylighting of untreated sewage on the ground surface, or cause untreated sewage to back up into an occupied structure. These would adversely affect public health and degrade groundwater or surface water in violation of Section 381.0065(1)(b) F.S.

Geomatrix demonstrated that the purpose of the underlying statute for provisions of Paragraphs 62-6.008(5), 62-6.009(3)(d)-(e), 62-6.009(8)(d), 62-6.014(5)(b) and (g), 62-6.026(1), and 62-6.028(3)-(4), F.A.C., will be achieved. Geomatrix requested the 24-month temporary variance to allow installation and monitoring of onsite sewage treatment and disposal systems that incorporate the GeoMat 1200 and GeoMat 3900 as a means to demonstrate the effectiveness of the GeoMat in Florida soils and Florida climate to the satisfaction of the Department. Geomatrix has stated its intent to seek a permanent variance if the system's innovative testing successfully meets the requirements of the innovative system permit. Innovative system testing will allow the Department to assess if installation of these systems as defined under the innovative system permit, meets the underlying statute. Geomatrix alleges that the shallow burial depth and the high surface area to void space ratio in the GeoMat 1200 and GeoMat 3900 compared to other drainfield products increases oxygen transfer rates and better treatment. The installations in Florida so far have frequently failed. Geomatrix proposes to address the suspected failure cause by evaluating a new variation with a two-inch system sand veneer.

Specific facts that demonstrate the underlying purpose of the statute will be met include the following:

Rules 62-6.008(5) and 62-6.009(3)(d)-(e) F.A.C., provide requirements for loading rates to be used for the sizing of the absorption surface of mineral aggregate drainfields. Rule 62-6.009(8)(d) prohibits approval of alternative systems that result in a smaller drainfield size that would be required using mineral aggregate. Rule 62-6.028(3), limits drainfield size reductions in performance-based treatment systems to slightly limited soils to 40%.

In lieu of meeting these provisions, the Geomatrix will use a higher loading rate assigned to each configuration in terms of mineral aggregate absorption area for each configuration tested as specified in the innovative system permit. The required drainfield area will be expressed in area of mineral aggregate, and the required amount of GeoMat material will be determined by dividing the mineral aggregate area by the comparability rating. The GeoMat 1200 and GeoMat 3900 will be evaluated during an innovative system evaluation period to determine if these higher loading rates are suitable for Florida climate and soil conditions.

The numerical values of proposed loading rates are based on two considerations. First, Geomatrix proposes to use the exposed bottom and sidewall area of the GeoMat product as calculated infiltrative surface, thus decreasing the required drainfield area. Second, Geomatrix proposes to apply to this calculated infiltrative surface sewage loading rates. For installations in native soils, the proposed sewage loading rates roughly represent trench loading rates in slightly

limited soils and bed loading rates in moderately limited soils. For installations in system sand, the loading rate relative to calculated infiltrative surface area was roughly doubled compared to installations in native soils. For installations dispersing pretreated effluent to a GeoMat drainfield, the loading rate relative to calculated infiltrative surface increased by a factor of between approximately four for slightly limited soils to eight for moderately limiting soils compared to installations with septic tank effluent in native soils. Consequently, Geomatrix requests a variance from the prohibition against approval of a new product that results in a smaller drainfield size than would be required using mineral aggregate. Calculations using proposed loading rates show a reduction of over 75% in slightly limited soils and 85% in moderately limited soils; this is why Geomatrix seeks a variance from rules limiting drainfield size reductions in performance-based treatment systems to slightly limited soils to 40%.

Rule 62-6.014(5)(b), F.A.C., require the distance between the centers of distribution lines in standard beds to be a maximum of 36 inches and the distance between the sidewall of the drainfield bed and the center of the outside drain line to be not more than 18 inches. Geomatrix requests a variance from the restriction of Rule 62-6.014(5)(b) F.A.C., on distances between distribution pipes and between distribution pipes and the edge of the drainfield for bed systems. Specifically, Geomatrix requests that the Department allow that one distribution pipe per GeoMat 3900 will be allowed, which results in a distance between 39 inches and at least 43 inches between adjacent distribution pipes. The distance between the sidewall of the distribution pipe and the edge of the drainfield in such cases would be between 19 inches to the edge of the GeoMat 3900 and 31 inches to the edge of the system sand. For GeoMat Edge installations in bed configuration in native soil, the request is to allow less than the required six inches distance between the distribution line and the edge of the bed.

Rule 62-6.014(5)(g), F.A.C. requires drain pipes used in drainfields for standard gravity drainfield systems to have an inside diameter of not less than 4 inches, have two rows of perforated holes with a minimum perforated area of 1 1/2 square inches per linear foot and a certain orientation. Geomatrix requests a variance from the restriction on the diameter and perforations of distribution pipes in gravity flow installations. Gravity flow installations, when internal pipe is utilized in the GeoMat, typically use 2 to 4 inch inner diameter pipe with 2 rows of 1/2 inch perforations 120° apart 5" on-center. Perforations are located between 30° and 60° from the vertical on either side of the center line of the bottom of the pipe.

Rule 62-6.026(1), F.A.C. requires, in addition to other documentation requirements, that applications for approval of innovative systems be made using form DH3143, and that the application and supporting information be signed, dated, and sealed by an engineer licensed in Florida.

Rule 62-6.028(3), F.A.C., for hydraulic surge storage in the drainfield material. Calculations using proposed loading rates for sands show that instead of 1.8 times the design daily flow, installations in native soil will have a surge volume of less than one time, and installations in sand bed, considering the sand bed, will have less than 1.5 times the daily flow. Geomatrix alleges that if desired, surge storage could be accomplished in a tank preceding the drainfield. Geomatrix alleges that GeoMat's reduced storage volume to surface area ratio improves functioning during a peak load.

Rule 62-6.028(4), F.A.C., which limits drainfield size reductions in performance-based treatment systems to 40% in slightly limited soils. Calculations using proposed loading rates show a reduction of over 75% in slightly limited soils and 85% in moderately limited soils.

Geomatrix alleges that the GeoMat's combination of a highly transmissive core and hydroscopic membrane draws the water between the application points and applies the water to the surrounding soil, and the soil then draws the water away from the membrane, in support of which Geomatrix provided results from two tests:

- a test conducted at the Massachusetts Alternative Septic System Test Center on three test cells employing the GeoMat 1200, in a trench configuration in which 12 inches of ASTM C-33 system sand was below and to each side of the core; and
- a test conducted at the Massachusetts Alternative Septic System Test Center on a bed configuration with three rows of GeoMat 3900, with six inches of ASTM C-33 system sand below and 24 inches to the side of the perimeter of the GeoMat cores.

SUBSTANTIAL HARDSHIP TO THE PETITIONER and
VIOLATIONS OF PRINCIPLES OF FAIRNESS

“Substantial hardship” means a demonstrated economic, technological, legal, or other type of hardship to the person requesting the variance or waiver.

Geomatrix requests a variance or waiver of the strict application of Rules 62-6.008(5), 62-6.009(3)(d)-(e), 62-6.009(8)(d), 62-6.014(5)(b) and (g), 62-6.026(1), 62-6.028(3), and 62-6.028(4) F.A.C., because applying the rules for licensure application would create a substantial hardship.

Geomatrix demonstrated that strict application of the rule would result in substantial technological hardship to Geomatrix. Geomatrix alleges that the GeoMat 1200 and 3900 have been extensively tested and widely used at over 550 location in varied climates and a broad range of soils with successful results.

THEREFORE, IT IS ORDERED:

Based on the foregoing reasons, Geomatrix has demonstrated that it has met the requirements for a variance from 62-6.008(5), 62-6.009(3)(d)-(e), 62-6.009(8)(d), 62-6.014(5)(b) and (g), 62-6.026(1), 62-6.028(3), and 62-6.028(4) F.A.C.

The PETITIONER'S REQUEST FOR A VARIANCE IS GRANTED with the following conditions:

Geomatrix's products GeoMat 1200 and GeoMat 3900 shall be evaluated during an innovative system evaluation period.

Permitting of GeoMat 1200 and GeoMat 3900 installations will follow innovative system permitting requirements.

This final order will expire twenty-four months after it has been filed.

Extension of Time

Under Rule 62-110.106(4), F.A.C., a person whose substantial interests are affected by the Department's action may also request an extension of time to file a petition for an administrative hearing. The Department may, for good cause shown, grant the request for an extension of time. Requests for extension of time must be filed with the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000, before the applicable deadline for filing a petition for an administrative hearing. A timely request for extension of time shall toll the running of the time period for filing a petition until the request is acted upon.

Mediation

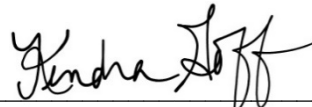
Mediation is not available in this proceeding.

Judicial Review

Once this decision becomes final, any party to this action has the right to seek judicial review pursuant to Section 120.68, F.S., by filing a Notice of Appeal pursuant to Rules 9.110 and 9.190, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 3900 Commonwealth Boulevard, M.S. 35, Tallahassee, Florida 32399-3000; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this action is filed with the Clerk of the Department.

DONE AND ORDERED this 27th day of April 2022 in Leon County, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION



Kendra Goff, PhD, DABT, CPM, CEHP
Deputy Director
Division of Water Resources Management

Copies furnished to:
Geomatrix LLC
Joint Administrative Procedures Committee

CERTIFICATE OF SERVICE

The undersigned hereby certifies that this Order, including all copies, were mailed before the close of business on 04/27/2022, to the above listed persons.

FILING AND ACKNOWLEDGMENT

FILED, on this date, under 120.52(7) of the Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Stacey Shuler

Clerk

04/27/2022

Date