September 16, 2020

Mr. Jim King
Eljen Corporation
90 Meadow Road
Windsor, Connecticut 06095

Dear Mr. King:

This is in response to your request from August 4, 2020 for a change in permit conditions to evaluate if the Eljen Geotextile Sand Filter (GSF), model A42, as treatment system component will meet the secondary treatment standard for five-day carbonaceous biochemical oxygen demand (CBOD5) and total suspended solid (TSS). This letter constitutes Version 2.0 of the innovative system permit (ISP) approval between the Florida Department of Health (Department) and Eljen Corporation (EC). On September 8, 2016, EC requested an innovative system permit approval of the Eljen Geotextile Sand Filter (GSF), model A42 to be distributed in Florida as an alternative drainfield product. The system consists of a cuspated plastic core and corrugated geotextile fabric (GSF module) surrounded by system sand of certain specifications. Because several design aspects of GSF A42 were not in compliance with 64E-6, Florida Administrative Code (FAC), EC filed a petition for variance on June 8, 2017 to request a variance from 64E-6.009(8)(d)) and 6.026(1), 64E-014(5)(b), 64E-6.008(5), 64E-6.009(3)(d), 64E-6.009(3)(e), and 64E-6.009(4), FAC. In support of the petition, Mr. Jim King, representing EC, provided results from a test conducted at the Massachusetts Alternative Septic System Test Center, articles on treatment in and increased absorption surface loading rates for the GSF module, results of modeling using the program HYDRUS, a draft Florida installation manual, and a proposed monitoring protocol. After review, the Department granted the variance on October 14, 2017. After further discussions, mainly of the manual, Mark Repasky, PE, provided a completed innovative system application electronically on December 9, 2019 and a sealed original on January 14, 2020. This letter grants the ISP approval request with the following conditions.

A. Limitations

a. This ISP will expire five years after it is issued unless EC applies for an extension in writing at least three months prior to expiration.
b. This ISP allows the installation of ten innovative systems upon approval of site-specific construction applications by the respective County Health Department (CHD) offices and the Department's Onsite Sewage Program Office (OSP). In addition, this ISP allows the installation of up to three systems where local requirements require a larger drainfield than state requirements, which will be referred to as "group B". Installation as part of new system permits, repairs and modification of existing systems will be allowed by this ISP as follows. The construction of the GSF in the drainfield must meet new system standards (such as sizing, effective soil depth and water table separation). The existing tanks may be used if they meet

repair or modification standards as applicable. All wastewater flow from properties selected for this ISP must be directed into the test system. Split flow systems are not allowed for this ISP.

c. The ISP has the objective to evaluate ten GSF A42 systems for drainfield performance as indicated by ponding depths and more qualitative observations in accordance with the hydrologic monitoring protocol (Attachment III). The ISP has the second objective to evaluate at least the first five GSF A42 system for performance as treatment system as indicated by influent and effluent concentrations of CBOD5 and TSS, and other qualitative observations. The concentrations of CBOD5 and TSS shall be monitored and estimated in accordance with the Water Quality Monitoring and Data Analyses for Performance-Based System Design (Attachment VII). Soil type and system configuration (trench or bed) must vary among the ten installed systems with at least one system each for trench and bed configurations, one system each in slightly limited and moderately limited soils, and one system each as standard subsurface or mound systems. A majority of systems shall be in slightly limited soils. Group B systems will be evaluated separately from the ten drainfield performance systems but may be included in the five treatment performance systems.
d. Systems installed under this ISP shall serve residences only. Establishments with non-residential domestic wastewater or commercial strength wastewater are excluded from this ISP.
e. Application for reclassification as an alternative drainfield system component in accordance with Rules 64E-6.0295 and 64E-6.009(8), FAC, must include hydrologic observations from three visits at three-to-four month intervals starting four months after a system is placed into service, These monitoring observations must be provided for the ten systems in accordance with the hydrologic monitoring protocol (Attachment III). Application for reclassification as performance-based treatment system for CBOD5 and TSS treatment shall include valid CBOD5 and TSS monitoring results obtained from water quality sampling in tandem with the hydrologic monitoring. Both water quality and hydrologic results must be provided for at least three sampling events at each of the at least five systems. The water quality monitoring shall be conducted in accordance with the water quality monitoring protocol (Attachment VII).
f. All systems will be designed, constructed and installed in accordance with this ISP and Chapter 64E-6, FAC, “Standards for Onsite Sewage Treatment and Disposal Systems.”
g. The ten systems included in this ISP will be permitted as innovative performance-based treatment systems (PBTS) with design criteria of baseline treatment standards. Where required by the specific site location, systems that will be monitored for treatment effectiveness may have design criteria of secondary treatment standards for CBOD5 and TSS (20 mg/L annual average) in accordance with Rule 64E-6.025(12), FAC and baseline treatment level for other water quality constituents (Rule 64E-6.025(3), FAC).
h. This ISP may be revised or amended, with prior approval from the Department’s OSP office, to address the experiences and new information gathered in the field during the evaluation period.

B. System Components

a. A primary tank. The tank shall be sized in accordance with Table II of Rule 64E-6.008, FAC for all new systems. Dual compartment tanks or multiple tanks in series are required for all new systems. The tanks shall be approved treatment receptacles in Florida. For repair or modification permits, the existing tanks can be used as part of the ISP system if they meet the respective repair or modification requirements. Septic tank effluent filters are required on all systems on the outlet end of the septic tank.
b. Gravity flow or an additional dosing tank to allow lift-dosing or low-pressure dosing. The dosing tank shall be sized in accordance with Table II of Rule 64E-6.008, FAC for all new systems, Existing dosing tanks can be used as part of the ISP system if they meet the respective repair or modification requirements.

c. A network of GSF A42 modules (48 inches long, 24 inches wide, and 7 inches tall) with 6 inches of system sand at the base and along the sides of the modules. Six inches of system sand must also be put at the beginning and end of each GSF row. The system sand must meet the requirements of ASTM C33 or FDOT 902-2 sand. Both types of sand have less than 7% passing the #100 sieve and less than 4% passing the #200 sieve. There must be a minimum 24-inch separation between the bottom of the system sand and the estimated seasonal high water table for all systems included in this ISP.
d. Four-inch perforated distribution pipes centered above the GSF modules to distribute septic effluent over and into the GSF modules. Type, size, and perforation of these pipes must meet the requirements specified in Rule 64E-6.014 (5)(g), FAC. These pipes are secured to the GSF modules with pre-formed metal clamps. These clamps drive into the system sand beneath the GSF modules, but do not penetrate the bottom of the system sand into the soil below. For low pressure dosing systems, the pressure distribution laterals must meet the specifications of Rule 64E-6.014(3), FAC, and be inserted into the four-inch perforated pipes. The pressure pipe orifices must be set at the 12 o'clock position. Each pressure lateral must have a drain hole at the 6 o'clock position and a clean-out at the end of the lateral.
e. Geotextile cover fabric (provided by manufacturer) placed over the top and sides of four-inch perforated pipes and GSF modules to prevent long-term siltation and failure. Fabric must drape vertically over the pipe and must not block holes in the distribution pipe or be stretched from the top of the pipe to the outside edge of the modules. Geotextile cover fabric must be used for the system installation; cover fabric substitution is not allowed.
f. Air vents required for all absorption systems having surface conditions that prevent proper aeration of the modules and sand filter. In a GSF system, the vent is usually a four-inch diameter pipe connecting to the four-inch perforated wastewater pipes above the GSF modules and extending to a convenient location for venting. If corrugated pipe is used for the vent, the pipe must not have any bends that will allow condensation to pond in the pipe, as this may close off the vent line. The venting pipe must have an invert higher than the system so that it does not drain wastewater effluent. In addition, all vented systems shall have a screen at the outlet to prevent bugs from entering the vent.
g. Drainfield inspection ports installed at the beginning and end of the trench, bed or mound for systems. These ports are used to monitor the effluent ponding. If multiple rows of GSF modules are used, choose one individual row for installing these inspection ports. The inspection port must be brought to grade and have a slotted or perforated section at the bottom of the pipe. The slotted or perforated section must be four to eight inches in length starting at the bottom of the pipe. The bottom of the pipe must be wrapped with geotextile cover fabric covering the slots or perforations. The bottom of the inspection ports must be placed at the bottom of the system sand.
h. Water quality sampling ports. For at least the first five of the systems included in this ISP, water quality samples shall be collected from one location representing the septic tank effluent and three locations in the drainfield representing the effluent from the GSF A42 module. The septic tank effluent samples can be collected from the outlet chamber of the septic tank if feasible. Otherwise, a sampling port shall be built between the septic tank and the Eljen drainfield. Three pan lysimeters located at the bottom of the system sand underneath the GSF A42 module shall be installed in accordance with Attachment VIII. These pan lysimeters, each connected to a 1.5-inch PVC vertical sampling port, shall be installed at the beginning, middle, and end of the trench, bed or mound systems. The drainfield inspection port shall be avoided when installing these pan lysimeters. If multiple rows of GSF modules are used, choose one row without the inspection ports to install the pan lysimeters. The top of the vertical sampling port shall be accessible at the finished grade, capped, and housed in an irrigation box.
i. The GSF A42 system covered under this ISP is intended to be re-classified as an alternative drainfield product as well as a treatment system component. Therefore, water quality sample

collection and analyses are required. The water quality sample collection and analyses and result interpretation must be conducted in accordance with the water quality monitoring protocol included in this document as the Attachment VII.

C. Construction Permitting

a. Engineers licensed in the state of Florida shall design, sign and seal site-specific system construction permit applications in accordance with Rule 64E-6.026(2), FAC. The application shall be submitted to the CHD responsible for each site and shall indicate that EC approves the site selection and design specifications. The application shall include the completed form DH3144 and a blank form DH3145 (see Attachment IV).
b. The CHD shall review the application for rule compliance. The CHD will forward the application and completed forms DH3144 and DH3145 within 15 working days to the OSP office for final review of each of the innovative systems, together with any CHD questions that may need additional information or clarification from the applicant. The OSP office will review the application in accordance with Chapter 120, Florida Statutes, and will copy the system agent on communications with the CHD regarding documentation or observations needed to complete review of the application or system installation.
c. Specified performance level per Rule 64E-6.026(2)(a), FAC, will be baseline system treatment standards or secondary treatment standards for CBOD5 and TSS (Rule 64E-6.025(12), FAC) and baseline treatment level for other water quality constituents (Rule 64E-6.025(3), FAC). The system can be permitted with the secondary design criteria in lieu of an aerobic treatment unit certified to standard NSF-40. No further reduction in drainfield size, such as in accordance with Rule 64E-6.028(4), FAC, will be allowed.
d. The minimum daily estimated sewage flow for sizing GSF A42 systems is 200 gpd for a single-family residence. The minimum number of GSF modules required is calculated by multiplying estimated sewage flow by the ratio of required modules per 100 gallons of residential wastewater and rounding up to the next whole number of modules.
e. Setback distances of the GSF A42 system shall be measured from the edge of the system sand.
f. The bottom of the system sand shall constitute the absorption surface and must be level or with a downward slope not exceeding one inch per 10 feet. While six inches of system sand below the GSF module is the minimum required, additional system sand is acceptable, as long as the bottom of the system sand meets separation requirements, and the additional system sand is not above the pan lysimeter of a system evaluated for treatment performance.
g. GSF A42 can be used for gravity, lift-dosing, and low-pressure dosing drainfields. When a low-pressure dosing system is used, the pressure laterals must be inserted into the four-inch perforated distribution pipes.
h. For constructing standard subsurface and fill trench systems, the required number of modules for the drainfield must be calculated using the following procedure:
    1. Calculate the required drainfield or absorption surface area for mineral aggregate first using the estimated daily sewage flow found in Table I of Rule 64E-6.008, FAC, and the hydraulic loading rates listed in Table III of Rule 64E-6.008, FAC, for corresponding soil or fill texture. Divide the required mineral aggregate areas by the comparability rating of 2 square foot mineral aggregate per square foot of system sand for slightly limited soil and 1.49 square foot mineral aggregate per square foot of system sand for moderately limited soil (Attachment I) to obtain the required system sand bottom absorption area for a GSF system.
    2. Number of modules based on system sand area: Divide the required system sand absorption area for a GSF system by 12 square feet (GSF A42 linear unit foot-print for the trench system) to obtain the number of GSF modules for the drainfield. Round up to the next whole number.

3. Number of modules based on estimated sewage flow: Divide the estimated sewage flow by 100 gpd for residential installations and multiply by the minimum number of modules based on the soil texture listed in Table I-1. Round up to the next whole number.
4. Pick the larger of steps 2 and 3. This is the number of GSF A42 modules required.
5. For all gravity or lift-dosing systems, the maximum length of GSF systems must not exceed 100 feet. Where two or more GSF module rows are used, these rows must be, as near as practical, the same length (Rule 64E-6.014(5)(i), FAC). Because the GSF A42 is 36 inches wide, when building a trench system, the minimum separation between the sidewalls of adjacent trenches shall be 24 inches.
6. If the total required area as mineral aggregate is greater than 1000 square feet but not more than 2000 square feet, the design engineer can choose to build a low-pressure dosing drainfield or split the required drainfield area into two drainfields, equal in size, each having no more than 1000 square feet, with each drainfield being lift-dosed.
7. An example of trench system calculation is provided with the Example 1 in the Attachment II.

i. For constructing standard subsurface and fill bed systems, the required number of modules for the drainfield must be calculated using the following procedure:
   1. Calculate the required drainfield area for mineral aggregate first using the estimated daily sewage flow found in Table I of Rule 64E-6.008 FAC, and the hydraulic loading rates listed in Table III of Rule 64E-6.008, FAC, for the corresponding soil or fill texture. Divide the required mineral aggregate areas by the comparability rating of 2.08 square foot mineral aggregate per square foot of system sand for slightly limited soil and 1.49 square foot mineral aggregate per square foot of system sand for moderately limited soil (Attachment I) to obtain the required system sand bottom absorption area for GSF systems.
   2. Calculate the required total number of GSF modules by multiplying the estimated sewage flow by the minimum modules for the soil texture per 100 gpd residential flow (Table I-1) and round up to the next whole number.
   3. EC requires that a bed drainfield include at least two rows of GSF modules. Where two or more GSF unit rows are used, these rows must be, as near as practical, the same length (Rule 64E-6.014(5)(i), FAC) and must never differ by more than one module.
   4. The required minimum length of the drainfield shall then be calculated by multiplying the number of GSF modules per row by 4 feet + 1 feet (the length of the GSF module is 4 feet. EC also requires that 6 inches of system sand be installed at the beginning and end of each GSF row). For gravity and lift-dosed system, the length of each of the rows shall not exceed 100 feet.
   5. The required width of the bed shall then be calculated by dividing the required total area of GSF system sand by the required bed length.
   6. The center-to-center distance between the adjacent perforated distribution pipe shall then be calculated by dividing the required bed width by the number of GSF rows. The center to center distance between the perforated distribution pipes can be larger than 36 inches.
   7. The distance between the sidewall of the bed and the center of the outside perforated distribution line shall then be calculated by dividing the center-to-center distance (estimated in step 6) by two. The horizontal distance from the centers of the outermost rows of pipes to the outside edge of the infiltrative surface for bed drainfield can be larger than 18 inches.
   8. An example of bed system calculation is provided with the Example 2 in Attachment II.

j. For constructing mound trench and bed systems, the required number of modules for the drainfield shall be calculated using the same procedures described in subsections i and j above, respectively. The required mineral aggregate areas shall be calculated using the estimated daily flow found in Table 1 of Rule 64E-6.008 FAC, and the hydraulic loading rates listed in 64E-6.009(3)(d). The comparability rating numbers used for mound trench and bed systems shall be

those listed in Table I-2 of Attachment I to this permit, based on different mound construction material textures.

k. When the elevation of the absorption surface compared to undisturbed native soil on the site results in a mound or filled system, the soil cap will consist of material in accordance with Rule 64E-6.009(3)(g), FAC, and must be no less than six inches thick.
l. Where a venting pipe is used and the venting pipe network extends beyond the boundaries of the system sand, setback distances for effluent transmission lines of Rule 64E-6.005(8), FAC, shall apply.
m. Schematic cross sections are shown in Attachment II.
n. A construction inspection by the Department shall occur after installation of system sand and GSF modules (including GSF A42 module, distribution pipes and fabric cover), and before the system is covered with soil or fill. All inspections beyond the first construction inspection shall be considered and charged as a re-inspection. For recording of measurements, see attachment VI for the Supplemental GSF A42 Measurements Table.
o. Prior to or concurrent with the Department's construction inspection, the installer must provide to the Department a bill of lading and grain size distribution results obtained within one year of sand delivery to the installer. These must document that an adequate amount of system sand meeting the specifications provided in Section B.c. was delivered to the installation site. Sand meeting ASTM C-33 requirements (designated by "ASTM C33" or similar on the bill of lading), or Florida Department of Transportation fine aggregate specification 902-2 (designated by a complete ticket and the designation of "certified for FDOT" and "F-01" or "01") will be assumed to comply. See Attachment VI.
p. As-built drawings will be completed and submitted by someone under the responsible charge of the system design engineer. The as-built documents provided to the Department shall at a minimum document configuration of the system; extent of system sand; location of GSF modules relative to system sand; elevations relative to a common reference point of absorption surface, estimated wet season high water table, top of the modules, top of system sand; and location, construction and elevation of top of casing of the drainfield inspection ports, and the location of the ventilation pipe if used.

D. Operation, Maintenance and Monitoring

a. EC shall identify to the Department at least one maintenance entity permitted in Florida before the construction permit of the first system is approved, and provide the OSP Office with a copy of the operation and maintenance manual issued to the maintenance entity per Rule 64E-6.027(6)(e)1., FAC.
b. An operating permit in accordance with Rule 64E-6.027(6), FAC, will be required for the innovative performance-based treatment systems installed under this permit.
c. EC will identify to the Department the principal investigator and any additional persons performing GSF A42 system evaluations in the field. The principal investigator and GSF A42 system evaluators must:
    1. Collect information on ponding depth in the inspection ports and surfacing data for drainfield system evaluation as indicated in the hydrologic monitoring protocol (Attachment III).
    2. Collect water quality samples for CBOD5 and TSS as well as either chloride or specific conductivity from a point representing the septic tank effluent and three pan lysimeters located at the bottom of system sand below the GSF A42 module as indicated in the water quality monitoring protocol (Attachment VII). Up to two pan lysimeters are allowed to be found dry or with insufficient water for sampling without impacting the validity of the sampling event.
    3. Collect ancillary field data during site visits, including information on water use, if the house has a water meter or the system is lift-dosed or pressure-dosed with a flow measurement

device, and whether there are any saturated conditions in or near the drainfield, or other indicators of failure.

4. Report quarterly on the progress and results of monitoring to the Department.

d. Failures are indicated by sewage surfacing or backing up into the house plumbing system or ponding level more than six inches in the inspection port. If more than six inches of ponding is observed in the inspection port, the system must be re-inspected in one week but not more than two weeks on a different weekday and time of day. A system shall be considered failed if more than six inches of ponding is observed during the re-inspection. None of the ten systems and the systems of group B included in this ISP can fail in order for the system to be reclassified as an alternative treatment system component. EC may propose that a system failure is due to extenuating circumstances, in which case the OSP Office will assess the system failure and issue a final determination regarding if the system will be repaired and permitted and remain in the pool of the ten monitored systems, or if additional systems must be monitored.

e. Treatment effectiveness of the GSF A42 unit relative to secondary treatment standard for CBOD5 and TSS shall be evaluated by analyzing the GSF A42 unit effluent samples collected from the pan lysimeters in accordance with the water quality monitoring protocol (Attachment VII) following the following general steps:

1. Dilution effect on the CBOD5 and TSS samples shall be evaluated by collecting samples for either chloride concentration or specific conductivity measurements. Chloride or conductivity samples shall be collected for both the septic tank effluent and GSF A42 unit effluent whenever CBOD5 and TSS samples are collected. CBOD5 and TSS concentrations shall be adjusted using the ratio of chloride concentrations or specific conductivity measurements between the effluent of septic tank and GSF A42 unit.

2. The chloride or conductivity ratio-adjusted CBOD5 and TSS results from three lysimeters in the same drainfield shall be compared using the Kruskal-Wallis one-way analysis of variance test. If significant difference is identified at $\alpha = 0.05$ level, the set of lysimeter data showing the highest median concentration shall be used for the compliance analysis. If no statistically significant difference can be identified among the results from the tree lysimeters, results from the three lysimeters can be aggregated to calculate a median for the compliance analysis. The calculated median can be compared to the secondary treatment standard to determine if the system meets the treatment standard.

3. if the number of tested GSF A42 system that meet the design treatment standards is equal to or larger than the number listed in the column of “Number of Systems Required to Meet the Design Target” in Table 1 of Attachment VII with the total number of systems being tested listed in column “Total Number of Systems Tested” in the same table, the GSF A42 unit will be considered in compliance with the design treatment standard for the number of system. If the number of systems meeting the design treatment standard is less than the number listed in Table 1 of Attachment VII, the GSF A42 unit will be considered not in compliance with the design treatment criteria for the number of systems.

4. To assess large variations among tested systems and during different sampling events, Table 3 of Attachment VII shall be used to ensure that the number of raw measurements for a given constituent that meet the designed treatment standard is equal to or larger than the number listed in column “Number of Raw Data Required to Meet the Design Target” with the total number of measurements for the constituent listed in column “Total Number of Raw Data Measurement”. The GSF A42 will be considered meeting the design treatment standard for the number of raw measurements if both CBOD5 and TSS meet the number of raw measurements in Table 3 of Attachment VII. Please note that the “raw measurements” referred to in this section are measurements adjusted for rainwater dilution if needed.

5. If both CBOD5 and TSS meet the requirements of D.e.3 and D.e.4, the GSF A42 system will be considered meeting the design treatment standard.

6. Assessments will exclude samples that are agreed upon by Eljen, the system design engineer, and the OSP to be not representative of the system.

f. The maintenance entity must:
   1. Perform maintenance and monitoring per EC's Operation and Maintenance Manual.
   2. Perform any additional monitoring as required due to site-specific permit conditions.
   3. Copy the OSP Office on maintenance and monitoring reports sent to the CHDs.
g. EC recommends that the septic tank be pumped every three years or as needed.
h. The CHDs in the respective counties will inspect the systems annually for compliance with the operating permit and will use the hydrologic inspection form (Attachment III) to record their observations during that inspection.
i. If a system fails the hydrology or is not in compliance with the required water quality treatment standard, the system must, at EC's expense, either be reengineered, which may require a new or modified innovative system construction permit or replaced with a system approved by the Department.

E. Reclassification or expiration of the ISP

a. To apply for reclassification, the monitoring information indicated under Section D. and the required information for reclassification in accordance with Rules 64E-6.0295 and 64E-6.009(7), FAC, shall be gathered and submitted.
b. It is anticipated that not all site and construction conditions will be equally represented in the sample of systems.
c. After reclassification of the innovative system, the installed innovative systems may remain in place if they function without failure and are in compliance with the secondary treatment standard for CBOD5 and TSS if required for the specific site. For systems only required to meet baseline treatment system standard, operating permit and maintenance contract will not be required after reclassification as alternative drainfield material.
d. Upon expiration of the ISP, should Eljen fail to request reclassification or should GSF fail to be reclassified, all remaining GSF A42 systems shall be removed and replaced with approved onsite sewage systems at EC's expense.

If we may be of further assistance or should you have any additional questions regarding this letter, please contact Eberhard Roeder at 850-901-6512.

Sincerely,

Ed Barranco, MPH, CEHP, CPM
Environmental Administrator
Onsite Sewage Programs

EB/er
Enclosures

NOTICE OF RIGHTS

A party whose substantial interest is affected by this action may petition for an administrative hearing pursuant to sections 120.569 and 120.57, Florida Statutes. Chapter 28-106, Florida Administrative Code, governs such proceedings. A petition for hearing must be in writing and must be received by the Agency Clerk for the Department within twenty-one (21) days from receipt of this notice. The petition may be mailed to the Agency Clerk, Department of Health, 4052 Bald Cypress Way, BIN #A-02, Tallahassee, FL 32399-1703; hand delivered to the Agency Clerk, Department of Health, 2585 Merchants Row Blvd., Prather Building, Suite 110, Tallahassee, FL; or sent by facsimile to 850-413-8743.

Mediation is not available as an alternative remedy.

The failure of any person to file a petition for hearing within 21 days from receipt of this notice will constitute a waiver of that person's right to an administrative hearing, and this notice shall become a "Final Agency Action."

Should this notice become a "Final Agency Action," a party who is adversely affected by it is entitled to judicial review pursuant to section 120.68, Florida Statutes. Review proceedings are governed by the Florida Rules of Appellate Procedure. Such Proceedings may be commenced by filing one copy of a Notice of Appeal with the Agency Clerk of the Department of Health and a second copy, accompanied by the filing fees required by law, with the Court of Appeal in the appropriate District Court. The notice must be filed within 30 days of the filing of the Final Agency Action.

Attachment I
Sewage Loading Rates for Eljen Geotextile Sand Filter (GSF) A42 System
Innovative Trench and Bed System Evaluation

Table I-1. Hydraulic Loading Rates and Comparability Ratings for Standard Subsurface and Fill Systems

Soil Texture Classification	Soil Texture Limitation (Percolation Rate)	Loading Rate (GPD/ft2)		Comparability Rating (ft2 required mineral aggregate/ft2 system sand)		Minimum GSF Modules per 100 gpd residential
		Trench	Bed	Trench	Bed	
Sand; coarse sand not associated with a seasonal water table of less than 48 inches; and loamy coarse sand	Slightly limited (less than 2 min/inch)	1.60	1.25	2.00	2.08	6
Loamy sand; sandy loam; coarse sandy loam; and fine sand	Slightly limited (2 - 4 min/inch)	1.60	1.25	2.00	2.08	6
Loam; fine sandy loam; silt loam; very fine sand; very fine sandy loam; loamy fine sand; loamy very fine sand; and sandy clay loam	Moderately limited (5 - 10 min/inch)	0.97	0.52	1.49	1.49	8
Clay loam; silty clay loam; sandy clay; silty clay; and silt	Moderately limited (greater than 15 min/inch, but not exceeding 30 min/inch)	0.52	0.3	1.49	1.49	9
Clay; organic soils; hardpan; and bedrock	Severely limited (greater than 30 min/inch)	n/a	n/a	n/a	n/a	n/a

Table I-2. Hydraulic Loading Rates and Comparability Ratings for Mound Systems

Soil Texture Classification	Loading Rate (GPD/ft2)		Comparability Rating (ft2 required mineral aggregate/f2 system sand)		Minimum GSF Modules per 100 gpd residential
	Trench	Bed	Trench	Bed	
Sand; coarse sand; and loamy coarse sand	1.60	1.25	2.00	2.08	6
Fine sand	1.60	1.25	2.00	2.08	6
Sandy loam; coarse sandy loam; and loamy sand	1.60	1.25	2.46	3.13	6
Fine sandy loam; very fine sand; loamy fine sand; and loamy very fine sand	0.97	0.52	2.77	2.08	8

Attachment II

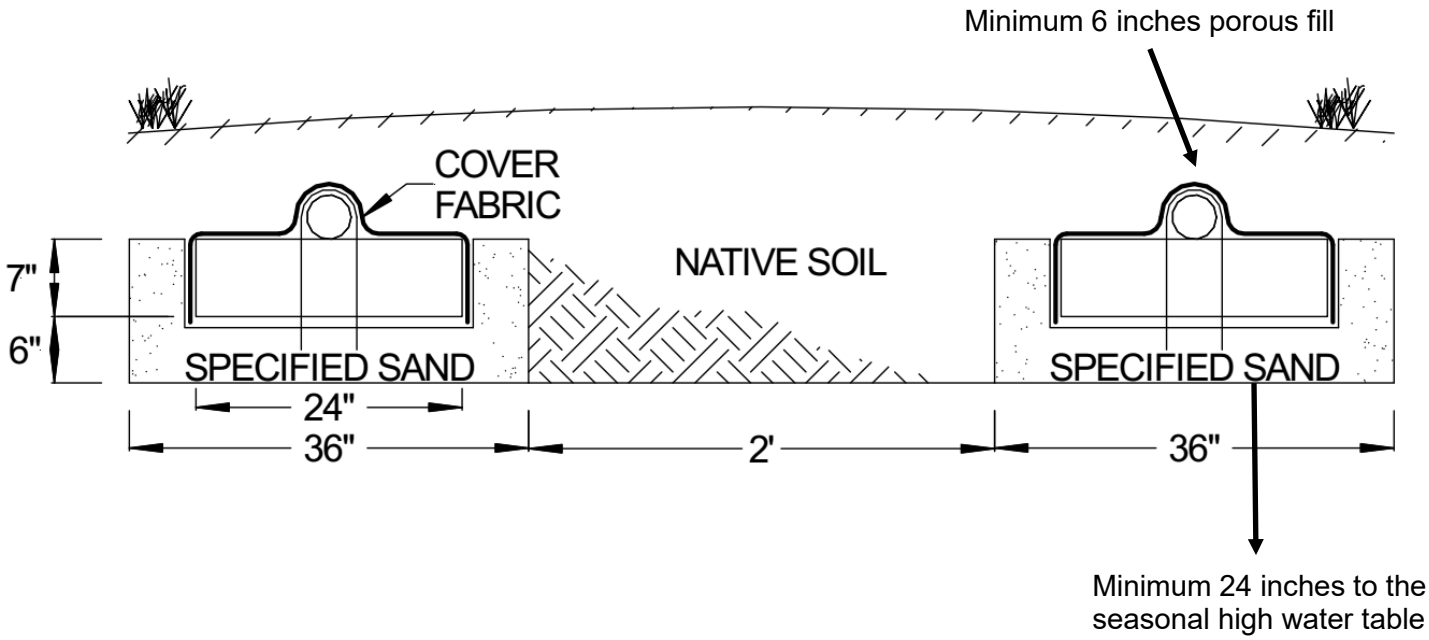
Schematic Cross Sections

Example 1: Trench, Subsurface System

Single family residence: 3 bedrooms;
Estimated flow: 300 gpd;
Soil Texture: Sandy Loam;
Loading rate: 1.60 gpd/SF for Eljen, 0.8 gpd/SF for mineral aggregate; Comparability rating 2.0
System configuration: Trench;

i) **System sand area required**: 300 gpd/0.8 gpd/SF /2 = 187.5 SF
ii) Number of GSF modules required based on sewage flow: 300 gpd * 6 units/100 gpd =18 units
iii) **Number of GSF modules required based on system sand area**: 300 gpd/0.8 gpd/SF/2/12SF/unit = 15.6 units, round to 16 units;
iv) **Pick larger number of GSF units**: 18 vs. 16, pick 18 units
v) **Length of trench**: Number of GSF units * 4 ft + 0.5 ft *2 = 18 * 4 ft + 1 ft = 73 ft (Each GSF unit is 4 ft long. System sand of 0.5 ft is also installed at the beginning and end of the GSF module row.)

Trench width: 3 ft (including the 2 ft wide GSF module and 0.5 ft of system sand on both side of the module)
System sand bottom absorption area required: 300 gpd/1.6 gpd/SF = 187.5 SF
System sand bottom absorption area provided: 3 ft * 73 ft = 219 SF.

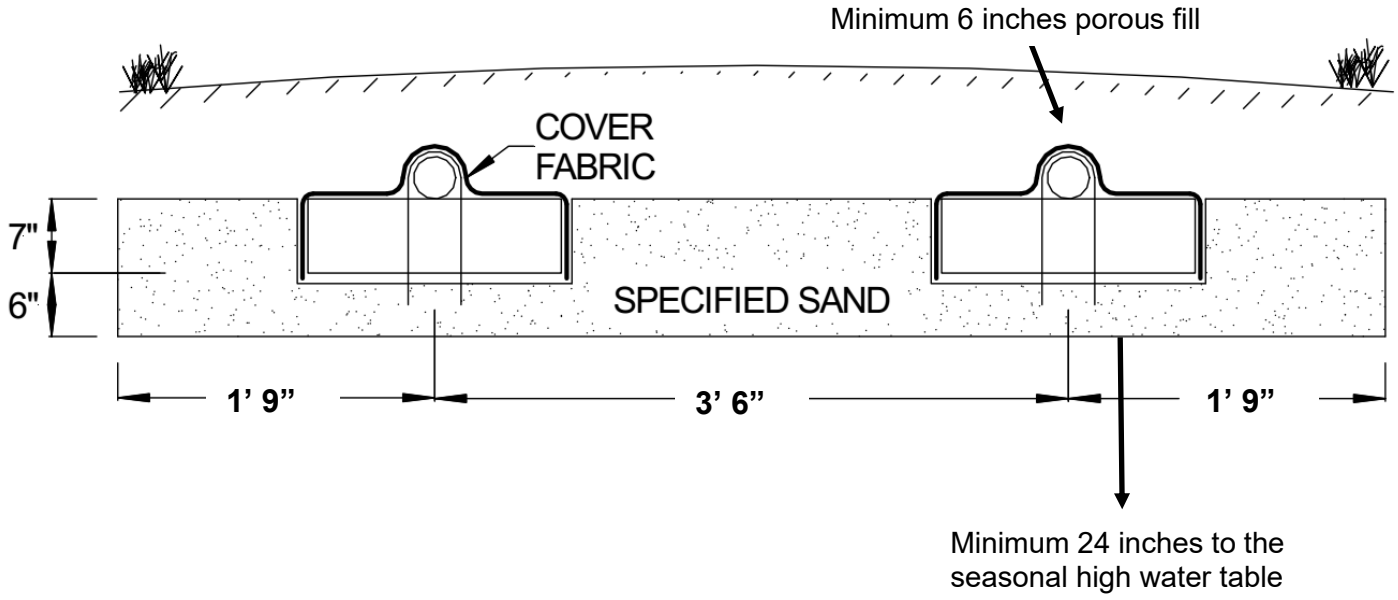


Example 2: Bed, Subsurface System

Single family residence: 3 bedrooms;
Estimated flow: 300 gpd;
Soil Texture: Sandy Loam;
Loading rate: 1.25 gpd/SF for Eljen, 0.6 gpd/SF for mineral aggregate; Comparability rating 2.08
System configuration: bed;

i) **System sand absorption area required:** 300 gpd/0.6 gpd/SF /2.08 =240.4 SF
ii) **Number of GSF modules required based on sewage flow:** 300 gpd * 6 units/100 gpd =18 units
iii) **Minimum number of rows required for a bed system**: 2 rows
iv) **Number of modules for each row**: 18 units/2 = 9 modules
Length of each row: Number of GSF modules * 4 ft + 0.5 ft *2 = 9 * 4 ft + 1 ft = 37 ft (Each GSF module is 4 ft long. System sand of 0.5 ft is also installed at the beginning and ending of the GSF module row.)
v) Bed width: absorption surface area required / length of each row = 240.4 SF / 37 ft = 6.49 ft, round to 7 ft
vi) **Lateral spacing**: bed width / number of rows = 7 ft/2 = 3.5 ft
vii) **Lateral to bed edge spacing**: lateral spacing/2 = 3.5 ft/2 = 1.75 ft

System sand absorption surface area required: 300 gpd/0.6 gpd/SF /2.08 =240.4 SF
System sand absorption surface area provided: 37 ft*7 ft = 259 SF



Attachment III
Hydrologic (Drainfield) Monitoring Protocol

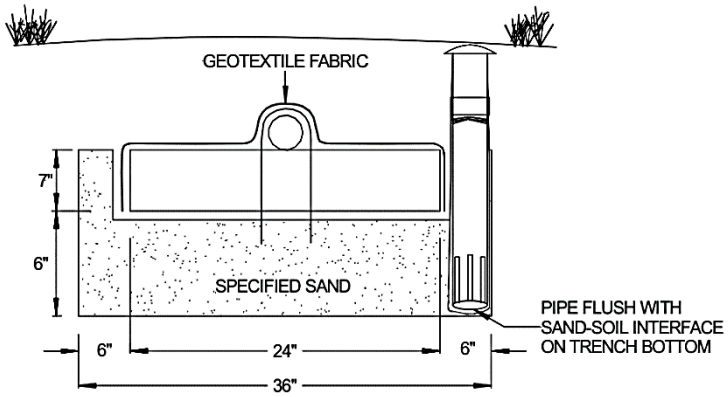
Innovative Environmental Products and Solutions Since 1970

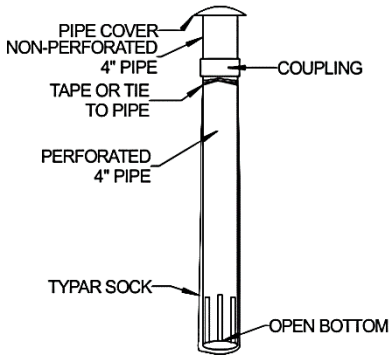
Florida Monitoring Protocol

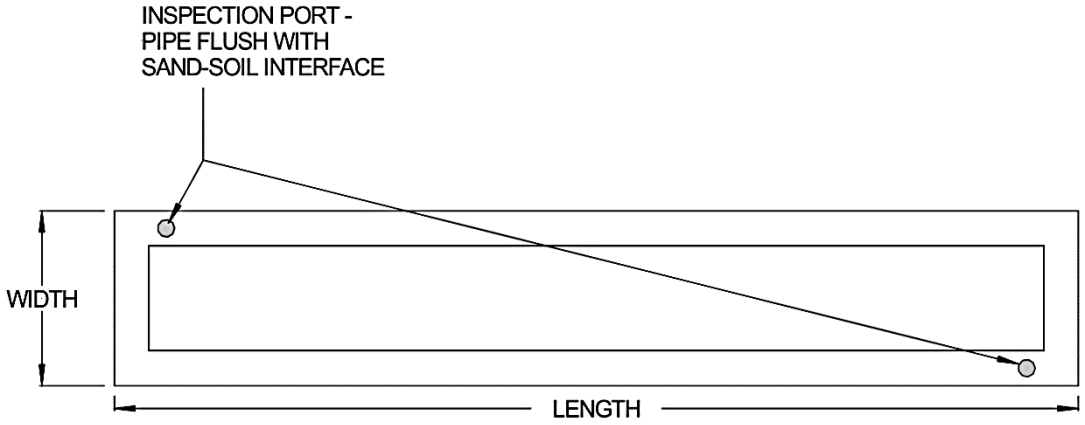
Total Systems: 10 Systems and any systems in Group B
System Description: Residential systems
Frequency: 3 Monitoring Events in about 1 year from installation spaced out every 3 to 4 months.

Inspection ports:

Inspection ports are placed at the beginning and end of the trench, bed or mound. In multiple lateral applications, choose one individual lateral. The inspection port shall be brought to grade and have a slotted or perforated section at the bottom of the pipe. The slotted or perforated section should be 4- 8” in length starting at the bottom of the pipe. The bottom of the pipe will be wrapped with fabric covering the slots or perforations. The port is placed at the sand soil interface.







Pass / Fail Criteria

The water level is not observed: pass.

If effluent is less than 6” deep in the observation port: pass
If the effluent is above 6” deep in the observation port:
Re-inspect in one week, but not more than 2 weeks.
If system fails, water level still exists above 6”: fail

Re-inspections shall be conducted on a different day of the week during a different time period (morning, afternoon, evening) if the inspection did not pass.

Ports may not be inspected if 1” of rainfall occurred in the last 24 hours.

Soil Types must vary, at least one system in moderately limited soil, majority in slightly limited soil.

Record water usage from structure.

Attachment IV
Innovative Construction Permitting Forms of the Department
(http://www.floridahealth.gov/healthy-environments/onsite-sewage/forms-publications/index.html)

DH 3144 (http://www.floridahealth.gov/healthy-environments/onsite-sewage/forms-publications/_documents/dh3144.pdf)

_____
(date)

_____County Health Department
_____
_____

Attention: Environmental Health Director or
OSTDS Program Coordinator

I _____, owner of the residence or business property located at (give physical location or street address) _____, understand that the proposed Onsite Sewage Treatment and Disposal System to serve my property is permitted as an innovative system by the Department of Health.

I agree to allow agents of the Florida Department of Health, the manufacturer and the local County Health Department to enter my property at reasonable hours for the purpose of monitoring this system.

I agree that I will not hold DOH or the _____ CHD responsible if this innovative system malfunctions.

I agree that I will notify _____ CHD of any problems or malfunctions with this innovative system.

I also understand that if the innovative system falls within the five year testing period, the manufacturer will be responsible for providing a certified installer who will provide contractor equipment, material and labor necessary to modify the system or repair the system with an DOH approved system at no additional cost to me. For the purposes of this evaluation, failure of a system shall be defined as any system that meets one or more of the following criteria: 1) systems that have been increased in size after installation for reasons other than erroneous application information; 2) systems that experience effluent surfacing and sewage backing up into the house plumbing; and 3) systems described by homeowner as having a sluggish performance during wet weather or observed to have soggy, waterlogged soils above the drainfield attributed to sewage effluent. The failure definition shall include persistent electrical or mechanical device malfunctions. It is also my understanding that I will be responsible for landscape restoration.

Sincerely,

_____
Property Owner

DH Form 3144, 01/94 Incorporated: 64E-6.004, FAC

DH3145 (http://www.floridahealth.gov/healthy-environments/onsite-sewage/forms-publications/_documents/dh3145.pdf)

INNOVATIVE ONSITE SEWAGE TREATMENT AND DISPOSAL SYSTEM REVIEW INFORMATION FORM

TO BE COMPLETED BY COUNTY HEALTH DEPARTMENT

CONSTRUCTION PERMIT APPLICATION NUMBER:_____

Property Owner:_____
(Last, First, M.I. or Business Name)

Property Address:_____
(Physical Location or Street Location)

Mailing Address:_____
(Street Address or P.O. Box)

Owner's Agent:_____

Mailing Address:_____
(Last, First, M.I. or Business Name)

_____
(Street Address or P.O. Box)

_____
(City) (State) (Zip)

PROVIDE THE FOLLOWING INFORMATION FROM SITE EVALUATION AND PROPOSED CONSTRUCTION PERMIT AND ATTACH A COPY OF THE SITE PLAN:

Septic tank(s):_____ gal.
Estimated sewage flow:_____ gpd
Aerobic treatment Unit(s):_____
Public water supply:..... Y / N
Dosing tank(s):_____ gal.
Lot size:_____ sq.ft.

DESCRIPTION OF INNOVATIVE SYSTEM AND COMPONENTS:

_____

_____

_____

FOR STATE HEALTH OFFICE REVIEW ONLY

Date received:_____ Review form complete:..... Y / N

Additional information requested:..... Y / N Date:_____

Brief explanation of information requested:_____

_____

Application: ☐ Approve ☐ Disapprove Reason:_____

_____

Reviewed by:_____

Site Number of approved sites. Date:

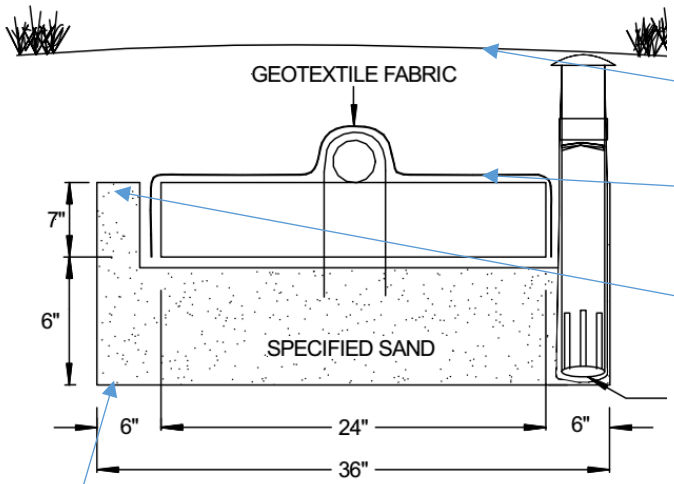
DH Form 3145, 1/94 Incorporated: 64E-6.004, FAC

Attachment V

Supplemental GSF A42 Measurements Table

Supplemental GSF A42 Measurements Table (All Elevations Relative to Benchmark)

Item	Description	Elevation	Above or Below Benchmark
A	Final grade (if determined)		
B	Top of GSF Module		
C	Width of System Sand on the Side of the GSF Module		Note: must be six inches on each side
D	Absorption surface (bottom of system sand)		
E	Length and Width of System Sand	Length	Width



A: Final Grade: _____"
(Above/Below Benchmark)

B: Top of GSF Module:: _____"
(Above/Below Benchmark)

C: Width of System Sand on the Side_____"

D: Absorption Surface (Bottom of System Sand): ____, ____, ____,
(Above/Below Benchmark)

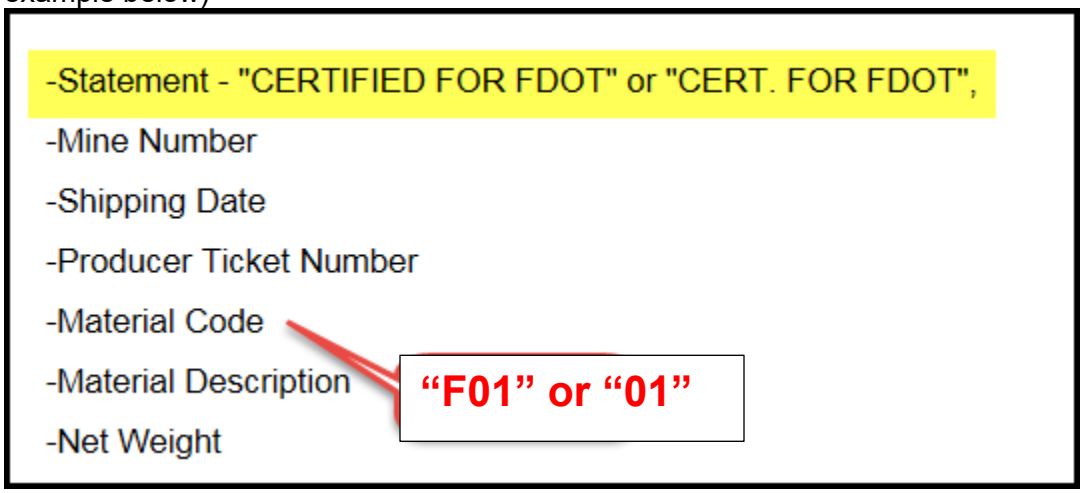
Absorption Surface (Bottom of System Sand) Level: _____
(Shall be level according to drainfield standards)

Note: Absorption Surface (Bottom of System Sand) must be validated by a minimum of three auger hole measurements.

Attachment VI

System Sand Documentation Requirements

1. ASTM C-33 sand. Needed:
    a. Bill of lading referring to C-33 sand and supplier
    b. Sieve analysis within three months of delivery showing not more than 4% passing the #200 sieve (or #100 if it shows not more than 4%)
    c. Tons of material delivered
2. FDOT 902-2 sand. Needed:
    a. Bill of lading meeting FDOT standards for a ticket for sand certified for FDOT (see example below)



    b. Sieve Analysis within one three months of delivery showing not more than 4% passing the #200 sieve (or #100 if it shows not more than 4%)
    c. Tons of material delivered
3. If the System Sand documentation detailed in Items 1 – 2 is not available, an Eljen-designated representative must be notified for evaluation of the sand to determine if the material meets the requirements of section B.c. of the ISP. Eljen will provide a copy of the notification, evaluation and determination to the OSP office.

Attachment VII

Water Quality Monitoring and Data Analyses for Performance Based System Design

To reclassify the GSF A42 system as treatment system component that treats specified pollutants from domestic wastewater to a specific treatment level, water quality monitoring on the GSF system will be required. This document describes the procedure for sample collection, general quality assurance, data analyses and result interpretation.

Principal Investigator

Eljen Corporation will identify to the OSP the principal investigator and any additional persons performing the GSF A42 system evaluations in the field (see section D.c.). The principal investigator and other GSF A42 system evaluators shall be responsible for hydrologic monitoring, water quality sample collection, and collecting ancillary field data during site visits, and other site conditions such as seven-day antecedent rain precipitation, weather condition on the day of the monitoring, and the overall system condition.

Water Quality Constituents to Be Sampled

Based on discussions with Eljen, the GSF A42 system manufacturer would like the system to be permitted where a NSF-40 certified aerobic treatment unit or equivalent system is required. This requires the GSF A42 to meet the secondary treatment standard for five-day carbonaceous biochemical oxygen demand (CBOD5) and total suspended solid (TSS) (64E-6.025(12), FAC). Other water quality constituents can be at the baseline treatment level (64E-6.025(3), FAC). Sampling of these water quality constituents will be required. Since the GSF A42 is at the same time a treatment component and a drainfield system, pollutant concentrations of the effluent from the treatment unit can be influenced by rainwater infiltration. In order to determine if an observed concentration is influenced by rainwater dilution, chloride concentration should also be measured for the effluent from both the septic tank and the GSF A42 unit. However, chloride concentration can be substituted with measurements of specific electric conductivity to adjust the CBOD5 and TSS concentration for rainwater dilution.

Number of Systems to Be Sampled and Sampling Frequency

To reclassify the GSF system to an alternative treatment system, at least the first five of the systems included in this innovative system permit (ISP) shall be sampled for CBOD5 and TSS concentrations. Water quality samples for these constituents shall be collected at least three times at three-to-four-month intervals starting four months after a system is placed into service. Samples for chloride concentration or conductivity measurements shall be collected whenever CBOD5 and TSS samples are collected. During any sampling events, if the amount of collected water samples are insufficient to cover the analyses of all desired constituents, resampling must be performed until enough samples are obtained from at least one drainfield pan lysimeter. Results representing the septic tank effluent and GSF A42 effluents must be from the same sampling event to be considered valid results.

Sampling Method and Location

For each system, water quality samples shall be collected from one location representing the septic tank effluent and three locations in the drainfield at the bottom of the system sand below the GSF A42 module in accordance with the Pan Sampling Port Design and Installation Manual (Attachment VIII). Before any alternative water quality sampling methods will be established, water quality samples for this ISP shall be collected using the pan sampler method. Three pan lysimeters, each connected to a 1.5-inch PVC vertical sampling port, shall be installed in the drainfield, with one lysimeter under the first module, one under the last module, and one under the module in the middle. The installation of these

pan lysimeters shall avoid interfering with the drainfield inspection ports. If multiple rows of modules will be installed, a row without inspection ports shall be used for lysimeter installation. The top of the vertical sampling port shall be accessible at the finished grade and shall be capped and placed in an irrigation box when not sampled. If specific electric conductivity is measured in place of chloride, the conductivity can be measured directly in situ by lowering a conductivity probe into the corresponding sampling locations representing septic tank effluent and pan samplers if a conductivity probe with long cable is available.

Sampling Procedure, Sample Analyses and Reporting

Sampling methods and procedures shall follow Florida Department of Environmental Protection's standard operating procedures FS 1000 "General Sampling", FS 2000 "General Water Sampling", and FS 2400 "Wastewater Sampling". The sampler will document methods for equipment cleaning and field decontamination following FC 1000 "Field Decontamination" and note deviations from the most closely related standard operating procedure. These documents can be found from the Florida Department of Environmental Protection's website at https://floridadep.gov/dear/quality-assurance/content/dep-sops. Quality control samples, including duplicate samples, equipment control and field control shall be collected following FQ 1000 "Quality Control". The total number of quality control samples collected shall be at least 10% of the total number of water quality samples collected for all five GSF systems. Concentration of duplicates shall be within 20 percent of the original sample; equipment or field blanks should be below detection limits in at least 90 percent of cases. Duplicates will not be included in average performance calculations.

All samples shall be analyzed by laboratories certified through the National Environmental Laboratory Accreditation Program. Sampling results (including quality control information and laboratorial reports), together with the hydrologic monitoring results and other ancillary field measurements, shall be reported to the OSP, the respective county health department, and the design engineer within the same quarter when water quality sampling is conducted.

Data Analyses and Interpretation

1. Adjusting the measured concentrations of the GSF effluent for dilution

Concentrations of all water quality constituents shall be adjusted for dilution for each sampling event if significant dilution is identified. The dilution shall be evaluated by comparing the chloride concentrations or specific conductivity of the septic tank effluent with the chloride concentrations or specific conductivity of the GSF A42 system effluent. If all three drainfield samples are obtained, the one-tailed one sample T test shall be used to evaluate whether the mean of three chloride or conductivity measurements from the three pan lysimeters is significantly lower than the chloride or conductivity measurements of the septic tank effluent. If the mean chloride concentrations or specific conductivity measurements of the three pan lysimeters is not significantly lower than the chloride or conductivity measurements of the septic effluent at α = 0.05 level, no dilution adjustment will be needed. If a significantly lower chloride or conductivity mean is found for the GSF A42 effluent, adjustment for dilution using the dilution factor will be required.

The dilution factor shall be calculated as a ratio using the following formula:

$$D = \frac{C-GSF}{C-Septic}$$

Where,

D is the dilution factor. C-GSF is the chloride concentration or specific conductivity measurement of the GSF effluent. C-Septic is the chloride concentration or specific conductivity measurement of the septic tank effluent.

In cases of only one or two drainfield samples are obtained, e.g., because the other ports are dry, T test is not needed. When only one drainfield sample is obtained and the calculated D is lower than 90%, dilution factor adjustment shall be conducted. If two drainfield samples are obtained, the mean chloride concentration or specific conductivity of the two drainfield samples shall be calculated and compared to the chloride concentration/specific conductivity of the septic effluent sample to calculate D. If D calculated based on the two drainfield sample mean is lower than 90%. Dilution factor adjustment shall be conducted.

If the chloride concentration or specific conductivity of the GSF effluent is either significantly lower (three samples), or lower than 90% (one or two samples) than that of the septic tank effluent, all water quality constituent measurements for the sampling event must be adjusted by dividing the concentration of the raw data by the rainwater dilution factor. The adjusted constituent measurements shall be used for further compliance analyses.

2. Processing the Water Quality Measurements from Three Pan Samplers

Before the dilution-factor-adjusted water quality results from the three pan lysimeters can be used for compliance analyses, these water quality data shall be processed using the following steps:

(1) If there are two or three sets of obtained sampling results from the three pans, the non-parametric Kruskal-Wallis one-way analysis of variance test shall be used to determine whether there are significant differences among the median of these sets of data at $\alpha = 0.05$ level.
(2) If statistically significant difference is identified among the median of these sets of data, the set of data with the highest median concentration shall be used for the compliance analyses. If these sets of data are not significantly different at the $\alpha = 0.05$ level, they can be aggregated into one median value for the compliance analyses.
(3) If sampling results were only obtained for one pan lysimeter, the median of the data can be used directly for compliance analyses without the Kruskal-Wallis test.

3. Compliance Analyses

The purpose of the compliance analyses is to evaluate if the water quality observations of the GSF system effluent meet the specified design treatment standards for CBOD5 and TSS. The evaluation shall be conducted using the following three steps:

(1) Determine the number of GSF A42 systems that meet the secondary treatment standard. This shall be done by comparing the median values of CBOD5 and TSS of each tested GSF A42 system with the secondary treatment standards for these constituents. If the median values of all these constitutes are lower than the secondary treatment standards, the test GSF A42 is considered meeting the secondary treatment standard. Count the number of GSF A42 systems that meet the treatment standard.
(2) Use Table 1 to check if the number of tested GSF A42 system that meet the treatment standards is equal to or larger than the number listed in the table column of “Number of Systems Required to Meet the Design Target” with the total number of systems being tested listed in column “Total Number of Systems Tested”. For example, if 5 GSF A42 systems are tested, the number of systems meet the treatment standard is 4 or more, the GSF A42 system is considered meeting the treatment standards for step (2). In contrast, if the number of systems meeting the treatment standard is less than 4, the GSF A42 will be considered not meeting the treatment standard.

Table 1. Minimum Number of Tested Systems Required to Meet the Design Target

Total Number of Systems Tested	Number of Systems Required to Meet the Design Target
3	3
4	4
5	4
6	5
7	6
8	6
9	7
10	8

(3) To assess large variations among tested systems and during different sampling events, Table 3 shall be used to ensure that the number of individual measurements for a given constituents that meet the designed treatment level is equal to or larger than the number listed in column "Number of Raw Data Required to Meet the Design Target" with the total number of measurements for the constituent listed in column "Total Number of Raw Data Measurement". For example, if five GSF A42 units are tested, for each water quality constituent, three measurements will be taken from the three pan lysimeters for each GSF system from each sampling event. Nine measurements will be taken for each GSF system from all three sampling events. In total, 45 measurements will be taken from all five tested systems. Based on Table 3, if the number of these 45 individual measurements that meet the design treatment level is equal to or larger than 38, the GSF A42 will be considered meeting the design treatment level for step (3) for the constituent. Both CBOD5 and TSS shall meet the step (3) requirement in order for the GSF A42 to be considered meeting the step (3) requirement. Please note that the "individual measurements" referred to in this section are measurements adjusted for rainwater dilution if needed.

Table 2. Minimum Number of Parameter Values Required to Meet the Design Target for Pooled Parameter Values

Total Number of Raw Data Measurements	Number of Raw Data Required to Meet the Design Target	Total Number of Raw Data Measurements	Number of Raw Data Required to Meet the Design Target
15	14	34	29
16	15	35	30
17	16	36	31
18	16	37	32
19	17	38	32
20	18	39	33
21	19	40	34
22	20	41	35
23	20	42	36
24	21	43	36
25	22	44	37

Total Number of Raw Data Measurements	Number of Raw Data Required to Meet the Design Target	Total Number of Raw Data Measurements	Number of Raw Data Required to Meet the Design Target
26	23	45	38
27	24	46	39
28	24	47	40
29	25	48	40
30	26	49	41
31	27	50	42
32	28	51	43
33	28	52	43

If the tested systems meet both the steps (2) and (3) requirements, the GSF A42 system will be considered meeting the design treatment level.

Attachment VIII

GSF
Geotextile Sand Filter

Pan Sampling Port
Installation Manual

GSF®

Geotextile Sand Filter

Pan Sampling Port Installation Manual

eljen CORPORATION

Innovative Onsite Products & Solutions Since 1970

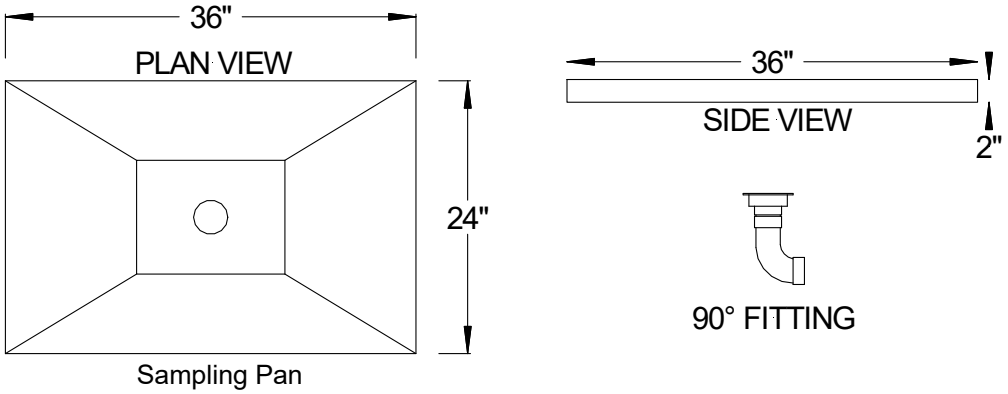
August 2020

www.eljen.com

1.0 Sampling Port Parts

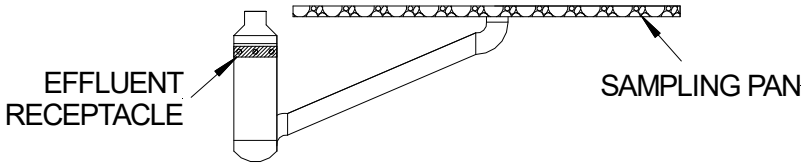
FIGURE 1: PARTS AND DEVICES

Field Sampling Parts to be installed with system:

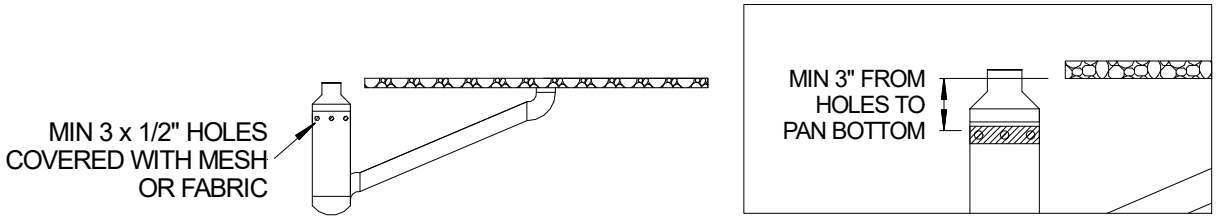


Effluent Receptacle:
Multiple configurations are acceptable. Please contact Eljen Corporation with questions.

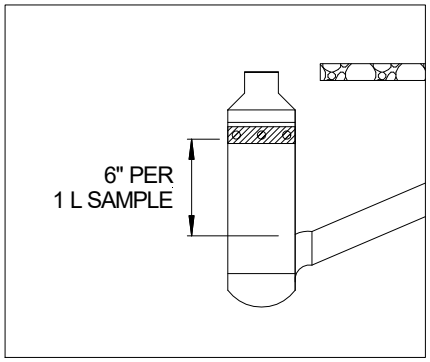
1. The completed assembly will have the effluent receptacle below the sampling pan.



2. A minimum of 3 holes, from ½ inch to 1 inch, are located near the top of the effluent receptacle. The holes must be located a minimum of 3” below sampling pan.



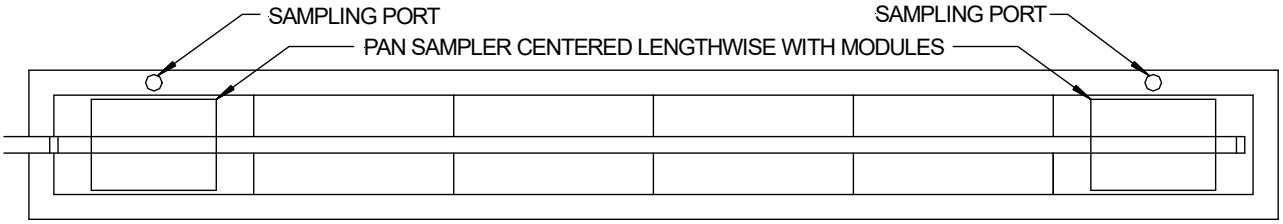
3. For every liter of sample required, ensure there is six inches of 4” pipe between the holes and the incoming effluent from the pan.



2.0 Sampling Port Placement

1. Determine the collection pipe and sampling pan placement in the system. Eljen recommends one sampler in a low-pressure distribution system or a minimum of two samplers used in gravity or pump to gravity distribution systems. In a pressure distribution system, the sampler may be placed under any unit. In gravity systems, one sampler is placed under the first module and a second one is located near the end of the same row.
2. Carefully lay out the system area and boundaries.
3. Prepare the site. Excavate a trench to the design elevation for the system. *Note: this includes the Specified Sand.*

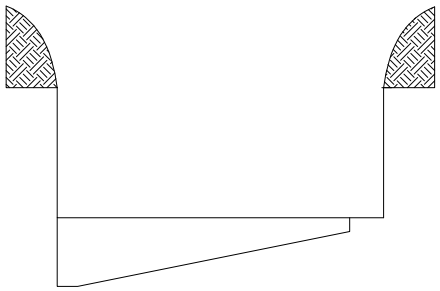
FIGURE 2: OBSERVATION AND SAMPLING PORT PREPARATION PLAN VIEW



3.0 Sampling Port Installation

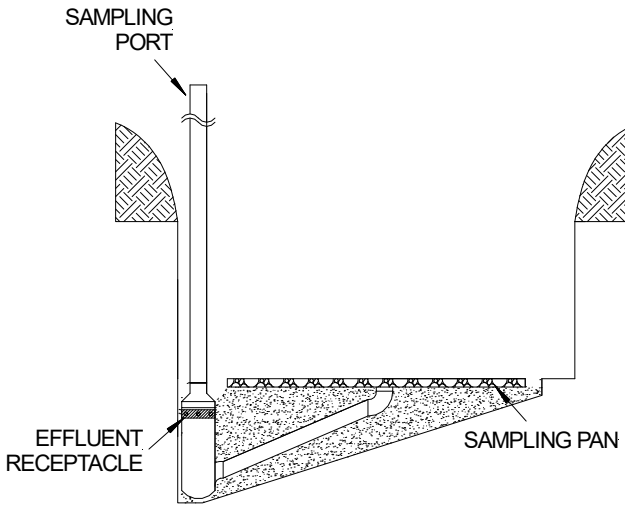
1. At the location where the sampling devices will be installed, create the form to receive the devices in order for the sampling pan to be under the Eljen GSF module and specified sand. Cut out the area for the sampling port.

FIGURE 3: PLACE BASE SAND



2. Place the sampling pans level in the excavation. The pan should be set perfectly level and centered underneath where the Eljen GSF modules will be placed. The sampling port and receptacle are placed beside the module. Use Specified sand to keep the apparatus in place.

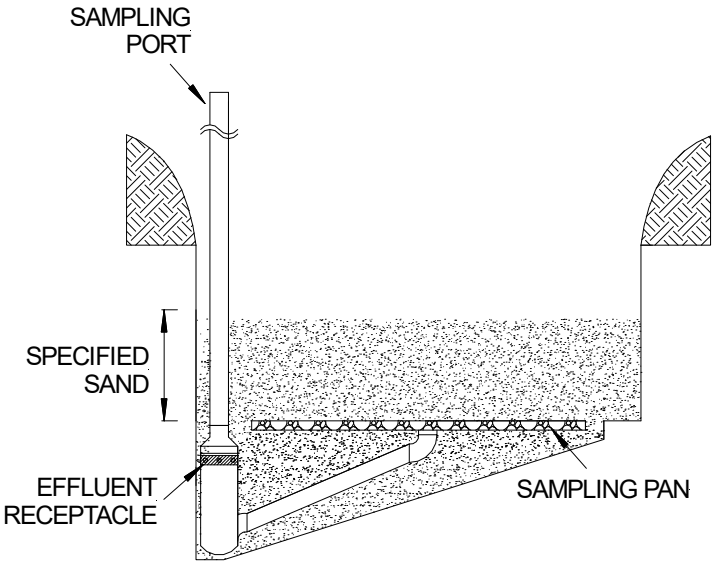
FIGURE 4: PLACE SAMPLERS ON SAND



3.0 Sampling Port Installation

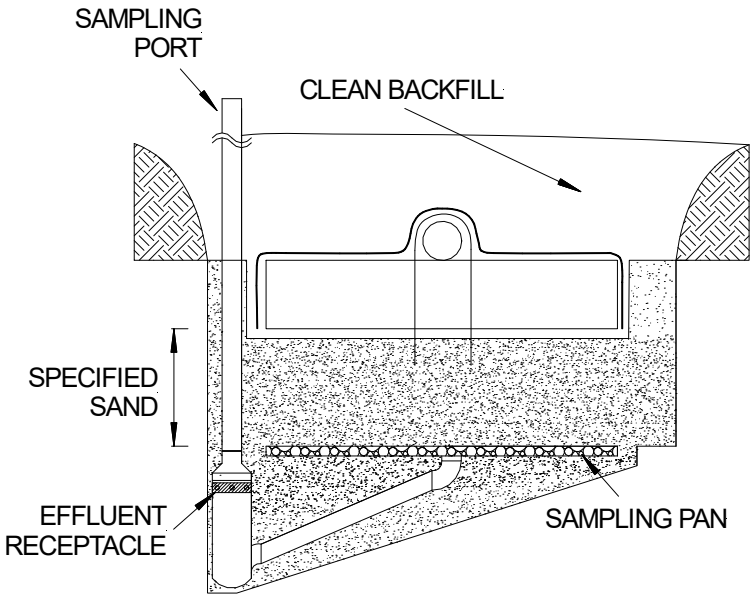
3. Fill Pan with pea gravel or if fitted with fabric, ASTM C-33 sand is acceptable.
4. Place the specified sand to required depth.

FIGURE 5: COMPLETE PLACING SPECIFIED SAND



5. Stabilize the Specified Sand height below the GSF module according to your state or local Design & Installation Manual. A hand tamper or vibratory compactor is sufficient to stabilize the Specified Sand below the GSF modules. Check the zero grade of the top of the Specified Sand using a flat piece of lumber and a carpenter's level and/or a laser before placing the modules.
6. After the GSF modules have been installed, carefully place backfill over the modules, followed by loam to complete a total minimum depth of 12 inches as measured from the top of the module. Backfill material shall be a well graded sandy fill; clean, porous, and devoid of rocks.

FIGURE 6: COMPLETE BACKFILL



3.0 Sampling Port Installation

7. Cap or place irrigation box over top of pipe. Mark so that service provider can find for sampling.
8. Divert surface runoff and finish grade to prevent surface ponding. Seed, loam, and protect from erosion.

4.0 Sampling Port Sampling

1. Sampling can be done in one day.
2. Ensure your sampling beaker or container is clean and ready to receive sample.
3. Uncap or open irrigation box.
4. Retrieve sample with clean suction device. We recommend using the suction device in a PVC tube that has holes in it, typically located a few inches from the bottom of the capped pipe or tube, so that any debris that has settled at the bottom of the sampler is not disturbed.
5. Cap or close irrigation box.
6. Return sample to lab for testing in a cool storage container.

COMPANY HISTORY

Established in 1970, Eljen Corporation created the world's first prefabricated drainage system for foundation drainage and erosion control applications. In the mid-1980s, we introduced our Geotextile Sand Filter products for the passive advanced treatment of onsite wastewater in both residential and commercial applications. Today, Eljen is a global leader in providing innovative products and solutions for protecting our environment and public health.

COMPANY PHILOSOPHY

Eljen Corporation is committed to advancing the onsite industry through continuous development of innovative new products, delivering high quality products and services to our customers at the best price, and building lasting partnerships with our employees, suppliers, and customers.

eljen CORPORATION

90 Meadow Road, Windsor, CT 06095 • Tel: 800-444-1359 • Fax: 860-610-0427

www.eljen.com

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