TREATMENT PLANT APPROVAL 10/2024 Amendment 1

Plumbing and Drainage Regulation 2019, part 4.

Queensland Government

Approval

1. The **Eljen GSF A42-UL** ("the System") described in the Specifications and Drawings in the attached Schedule and manufactured by **Eljen Corporation** (ABN 93 607 351 511) ("the manufacturer") has been assessed in accordance with the Queensland Plumbing and Wastewater Code 2025 (QPWC).
2. A Treatment Plant Approval (TPA) is granted for an **advanced secondary quality** wastewater treatment system, subject to compliance by the manufacturer/supplier with the requirements of the *Plumbing and Drainage Act 2018* and the conditions of approval detailed below.
3. This approval, the conditions of approval, and the Schedule comprise the entire TPA document.
4. Any modification by the manufacturer/supplier to the design, drawings or specifications scheduled to this approval must be approved by the Chief Executive.

Conditions of approval

5. The manufacture, installation, operation, service, and maintenance of the System must be in conformity with the conditions of this Treatment Plant Approval.
6. The System design is consistent with the Specifications and Drawings contained in the Schedule and incorporates:
   (a) a baffled septic tank in accordance with AS1546.1:2008 that complies with the QPWC
   (b) the septic tank sized in accordance with AS/NZS1547:2012
   (c) a bristle-type outlet filter fitted to the outlet of the septic tank
   (d) 6 m of 110 mm pipe installed between the septic tank and a SeptiSurge® dynamic fluid manifold
   (e) a SeptiSurge® dynamic fluid manifold with capacity of approximately 75 L that together with the 6 m of 110 mm pipe delivers approximately 120 L volume per dosing cycle
   (f) perforated distribution pipes sitting above at least 15 Eljen A42 polypropylene media modules or more as determined by 'Eljen GSF System Design Program'
   (g) 1.2 m wide anti-siltation geotextile fabric (ELJ G101) that covers all Eljen A42 polypropylene media modules
   (h) a sand bed with:
      i. specified sand (ASTM C33 compliant particle size distribution) to a minimum depth of 300 mm below the Eljen A42 polypropylene media modules;
      ii. a minimum size of 17.5 m^2 or larger sized in accordance with the 'Eljen GSF System Design Program';
      iii. at least 300 mm between rows of Eljen A42 polypropylene media modules;
      iv. at least 150 mm between the Eljen A42 polypropylene media modules and the edge of the sand bed; and
   (i) a sampling port connected to a collection pipe.

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Delegated Authority
Department of Housing & Public Works
Queensland Government

7. The system when tested by a certification accreditation body in accordance with AS1546.3:2017 was found to comply with the **advanced secondary 1200 L/day (8 EP)** level and must continue to meet the following requirements:

Table 2.1 (Abrev) AS1546.3:2017 Advanced secondary effluent compliance criteria for an STS

Parameter	Advanced secondary effluent	
	90% of Samples	Maximum
BOD_5	≤ 10 mg/L	20 mg/L
TSS	≤ 10 mg/L	20 mg/L
*E. coli**	≤ 10 cfu/100 mL	30 cfu/100 mL
FAC[Þ]	Minimum 0.5 mg/L[†]	N/A
Turbidity [§]	N/A	10 NTU

* Where disinfection is required
Þ Where chlorine disinfection is required
† Minimum level, not 90% of samples
§ Where UV light is used for disinfection

8. Each system must be serviced in accordance with the accreditation certificate **SMK41040** issued by SAI Global Pty Ltd on 21 July 2026, and details supplied in the owner's operation and maintenance manual.

9. Each application for a compliance permit to install a system must also be accompanied by a copy of a completed 'Eljen GSF System Design Program' report endorsed by the supplier, showing:

   (a) proposed design/configuration
   (b) the footprint/basal area
   (c) required parts and associated materials

10. The system is to be installed as a sub-surface irrigation system only.

11. Each system must be supplied with —

   (a) a copy of this Treatment Plant Approval document;
   (b) details of the System;
   (c) instructions for authorised persons for its installation;
   (d) a copy of the owner's manual to be given to the owner at the time of installation; and
   (e) detailed instructions for authorised service personal for its operation and maintenance.

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12. At each anniversary of the Treatment Plant Approval date, the supplier must submit to the Chief Executive a list of all systems installed in Queensland during the previous 12 months. Where the Chief Executive is notified of any system failures the Chief Executive may randomly select several installed systems for audit. The Chief Executive will notify the supplier's nominated NATA accredited laboratory which systems are to be audited for BOD_5 and TSS. The sampling and testing of the selected systems, if required, is to be done at the supplier's expense. The following results must be reported to the Chief Executive;

    (a) Address of premises;
    (b) Date inspected and sampled;
    (c) Sample identification number;
    (d) BOD_5 for influent and effluent; and
    (e) TSS for influent and effluent.

13. The Chief Executive may, by written notice, cancel this approval if the manufacturer/supplier fails —

    (a) to comply with one or more of the conditions of approval; or
    (b) within 30 days, to remedy a breach, for which a written notice been given by the Chief Executive.

14. This approval may only be assigned with the prior written consent of the Chief Executive.

15. Where there is any inconsistency between the content of this approval and the *Plumbing and Drainage Act 2018* (including any associated regulation and/or codes), the provisions of the *Plumbing and Drainage Act 2018* will apply and must be adhered to.

16. This approval expires on **08 July 2029** unless cancelled earlier in accordance with paragraph 13 above.

Mike Essery

Treatment Plant Approval
Approved by: Michael Essery
Delegated Authority
Department of Housing & Public Works

Director
Building Policy
Date approved: 24 July 2026

Level 15,
53 Albert Street Brisbane
GPO Box 2457, Brisbane Qld 4001
Telephone +61 7 3008 2557
Website www.business.qld.gov.au

Treatment Plant Approval
Approved by: Michael Essery
Delegated Authority
Department of Housing & Public Works

TREATMENT PLANT APPROVAL 10/2024 Amendment 1
Plumbing and Drainage Regulation 2019, part 4.

Queensland Government

SCHEDULE

GSF A42-UL

Attachment 1: Eljen GSF A42-UL SAI Global Certificate SMK41040

Attachment 2: Eljen GSF A42-UL Owner's manual

Attachment 3: Eljen GSF A42-UL Product Specifications and Schematic diagrams

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Delegated Authority
Department of Housing & Public Works

Attachment 1: Eljen GSF A42-UL SAI Global Certificate SMK41040

STANDARDSMARK LICENCE

intertek SAI GLOBAL

Intertek SAI Global hereby grants:

Eljen Corporation

90 Meadow Road, Windsor, CT United States

StandardsMark Licence

Manufactured to:
AS 1546.3:2017 - On-site domestic wastewater treatment units - Secondary treatment systems

"the StandardsMark Licensee "the right to use the STANDARDSMARK as shown below only in respect of the goods described and detailed in the Schedule which are produced by the Licensee or on behalf of the Licensee* and which comply with the appropriate Standard referred to above as from time to time amended. The Licence is granted subject to the rules governing the use of the STANDARDSMARK and the Terms and Conditions for certification and licence. The Licensee covenants to comply with all the Rules and Terms and Conditions.

Certificate No:
SMK41040

Originally Certified:
17 July 2021

Current Certification:
21 July 2026

Issued:
21 July 2026

Expires:
16 July 2031

Certified Product

JAS-ANZ

WWW.JAS-ANZ.ORG/REGISTER

Mark Thomas
Executive Vice President
Assurance, Sustainability, AgriWorld & Food
SAI Global Certification Services Pty Ltd
Level 7 Suite 7.01 45 Clarence Street
Sydney NSW 2000 Australia

*** For details of manufacture, refer to the licensee**

The STANDARDSMARK is a registered certification trademark of SAI Global Pty Limited (A.C.N. 050 644 642) and is issued under licence by SAI Global Certification Services Pty Limited (ACN 108 716 669) ("INTERTEK SAI Global") Level 7 Suite 7.01 45 Clarence Street Sydney NSW 2000 Australia and subject to the INTERTEK SAI Global Terms and Conditions for Certification. In the issuance of this certificate, INTERTEK SAI Global assumes no liability to any party other than to the Client, and then only in accordance with the agreed upon Certification Agreement. This certificate's validity is subject to the organization maintaining their system in accordance with INTERTEK SAI Global requirements for system's certification. This certificate may only be reproduced in its entirety and remains the property of INTERTEK SAI Global, to whom it must be returned upon request. Refer to https://register.saiglobal.com/ for the list of product models.

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Delegated Authority
Department of Housing & Public Works

SCHEDULE TO STANDARDSMARK LICENCE

intertek SAI GLOBAL

Intertek SAI Global hereby grants:

Eljen Corporation

90 Meadow Road, Windsor, CT United States

Manufactured to:

AS 1546.3:2017 - On-site domestic wastewater treatment units - Secondary treatment systems

Model identification of the goods on which the STANDARDSMARK may be used:

Brand Name & Model ID	Treatment Capacity (Litre / Day)	Treatment Type	Compliance Type	Disinfection Method	Tank Types and Capacities	Service Interval	Date Endorsed
A42 GSF non-lined	300-5000	Sand Filter	Advanced Secondary	None	This passive secondary treatment system is certified in accordance with SA TS 5406:2025 based on the L/treatment unit/day, or L/m2/day. The system includes an Approved/Certified septic tank with baffle, the minimum tank size shall be in accordance with AS/NZS 1547, an outlet bristle filter with a gravity fed sand filter scaled in proportion to the design flow as tested. These systems may be designed and installed in the field without a liner as an uncontained/unlined combined treatment and dispersal system in line with the site and soil requirements in accordance with AS/NZS 1547.	3 years as nominated by the manufacturer	13 Jul 2026

Certificate No: SMK41040 Issued Date: 21 July 2026

This schedule supersedes all previously issued schedules

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SCHEDULE TO STANDARDSMARK LICENCE

intertek SAI GLOBAL

Brand Name & Model ID	Treatment Capacity (Litre / Day)	Treatment Type	Compliance Type	Disinfection Method	Tank Types and Capacities	Service Interval	Date Endorsed
A42 GSF lined	1200	Sand Filter	Advanced Secondary	None	The system includes an Approved/Certified septic tank with baffle, the minimum tank size shall be in accordance with AS/NZS 1547, with an outlet bristle filter with a gravity fed sand filter with at least 1000L emergency storage capacity	3 years as nominated by the manufacturer	21 Jul 2026

End of Record

Certificate No: SMK41040 Issued Date: 21 July 2026

This schedule supersedes all previously issued schedules

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Attachment 2: Eljen GSF A42-UL Owner's manual

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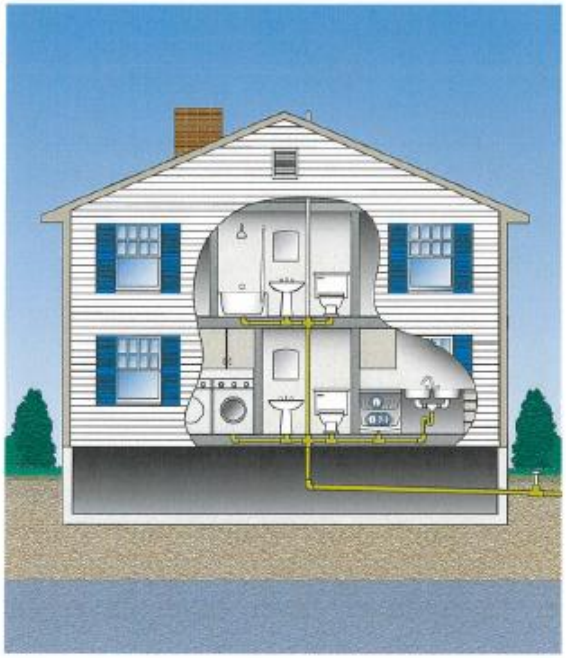
Introduction

No one budgets for a septic system failure. A new residential septic system can cost anywhere from $4,000 to more than $20,000 to install. If the system is not maintained, the soil around the system could become clogged, causing sewage to overflow onto the ground or back up into the house. Bottom line, rebuilding a failed septic system is an expensive burden on the homeowner.

Preventing a septic system failure is easier and more affordable than it is to correct. By keeping harmful materials out of the system and by pumping out the septic tank at least every three years, you can protect your system against premature failure. The minimum cost of having the septic tank pumped is wise insurance to protect your home's wastewater system.

This manual outlines the principles of septic system operations and explains the basic maintenance procedures that will lengthen the life of your system. If properly operated and maintained, your Eljen wastewater system can provide many years of trouble-free service.



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Tested for Proven Performance

The Eljen GSF system technology is based on research conducted by nationally recognized engineering scientists from the University of Connecticut. Eljen Corporation has more than 50 years of success in the onsite industry, with more than 100,000 systems currently in use. The GSF is recognized by regulatory officials and experts in the industry as one of the most reliable wastewater treatment technologies in the marketplace today.

The GSF technology is based on scientific principles that state that improved effluent quality provides increased soil absorption rates. GSF's proprietary two-stage Bio-Matt™ pre-filtration process improves effluent quality while increasing reliability and ease of operation.

GSF®
eljen Geotextile Sand Filter

GSF System Description

The Eljen GSF Geotextile Sand Filter system is a cost-effective upgrade from other septic technologies. Unlike other systems that treat effluent only once, the GSF's patented Bio-Matt™ pre-treatment process treats septic effluent twice. That means the soil can absorb the effluent more easily, resulting in a better-performing system in a smaller area than other systems.

HOW THE GSF SYSTEM WORKS

- Incoming effluent and bacteria flow through the perforated pipes that distribute the effluent over the Modules.
- Open air channels in the Modules allow beneficial bacteria to grow on the Bio-Matt fabric and treat effluent.
- A geotextile fabric covers the top and sides of the GSF Modules, protecting the system's sand and soil from fine particles that can clog the system. It also helps maintain effluent storage inside the Modules.
- After effluent passes through the GSF Modules, a lighter, secondary biomat forms on the layer of sand below the system, where the treatment process is continued.
- Treated effluent is then absorbed by the native soil, where final filtration takes place.

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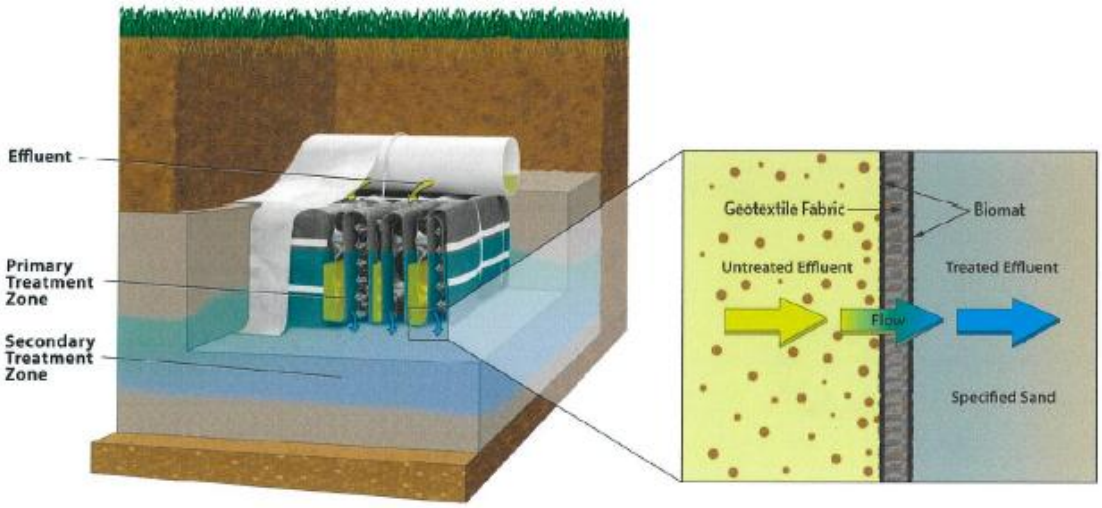
GSF System Operation

This schematic shows the inner workings of the GSF Module and the overall operation of a GSF System.



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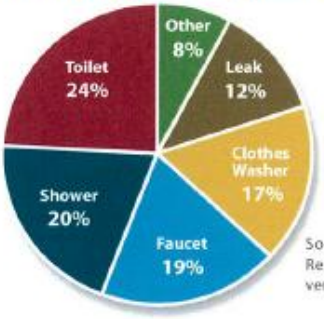
The Nature of Household Sewage

Household sewage is a combination of wastewater from several sources including sinks, toilets, showers, washing machines, dishwashers, and garbage disposals. The largest source of household sewage may vary depending upon the number of residents and water-using appliances within the home. Organic matter comes mostly from toilets and garbage disposals, while sinks, showers, and washing machines contribute large amounts of wastewater containing only small amounts of soap and dirt (including grease, detergents, lint, and vegetable matter).

Water Usage of the Typical Household

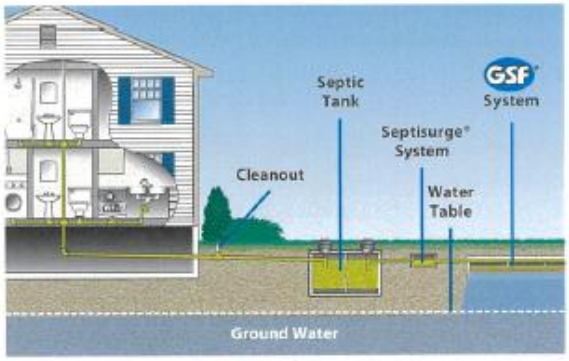


NOTE: Most states require much larger septic tanks and even larger system sizes if garbage disposals are used.

Source: Water Research Foundation, Residential End Uses of Water, version 2, 2016

The Septic System

Your septic system is a two-part sewage treatment and disposal system buried in the ground. It is composed of a septic tank and a treatment system, and may have filters, pumps, and other components depending on your location and system demands. The sewage generally flows by gravity: first, into the septic tank where larger particles settle out and some primary decomposition takes place, and then into the GSF system where it is further decomposed before slowly soaking into the soil.

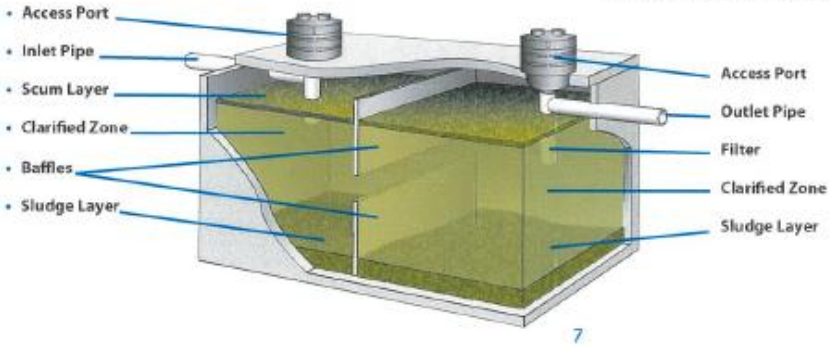


The Septic Tank

Untreated household sewage would quickly clog any system if applied directly to the soil. The function of the septic tank is primarily a settling tank allowing solids to settle to the bottom of the tank while a somewhat cleaner liquid is discharged to the GSF system for additional treatment. Septic tanks may contain one or more compartments, or the designer may have specified two or more tanks for your system.

Regardless of the number of compartments or tanks in your system, the basic principle is the same. Within the tank, as shown below, four important processes take place.

- The heavier, solid particles in the sewage settle to the bottom of the tank forming a layer of sludge. Lighter materials, including fat and grease, float to the surface, forming a scum layer.
- Bacteria living in the septic tank break down some of the organic solids into liquid components, helping to reduce the buildup of sludge in the tank.
- Sludge and scum are stored in the septic tank rather than being allowed to flow out of the septic tank, where they would quickly create problems.
- The septic tank filter and/or baffles prevent scum and other floatable materials from flowing out to the GSF system.



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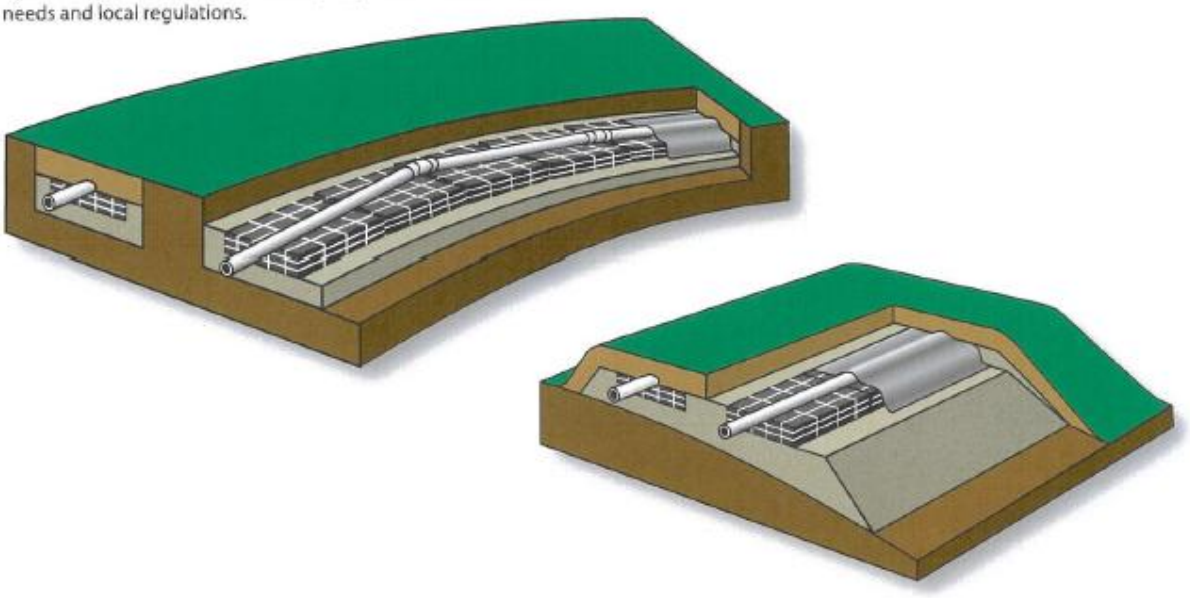
GSF System Designs

Eljen GSF Systems offer flexible design options based on a site's needs and local regulations.



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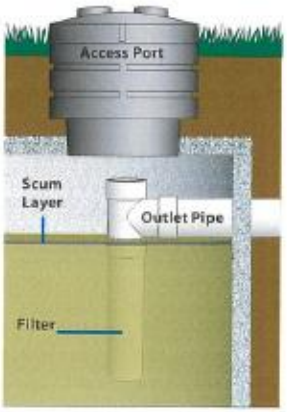
Septic Tank Effluent Filters

Your septic system will include an effluent filter, which may be located at the outlet of the septic tank, or in a separate tank located just after your septic tank. Effluent filters protect your GSF system from solids that may carry over from the septic tank during peak usage. By limiting the maximum size of particles entering the GSF Modules to about 1/16 inch, they safeguard your system from unnecessary failure.

While effluent filters are partially self-cleaning, they must be thoroughly cleaned when the tank is inspected. When operating properly, they provide a fail-safe reminder that your tank needs pumping. Effluent filters may also be added to an existing system, either in the tank or externally. Filters must be installed before a pump chamber and should be easily accessible when the tank is serviced.



Pumped Systems

An effluent pump and pump chamber are used to move the sewage to the system. The pump chamber may be located in a separate tank, or it may be placed in a second compartment within the septic tank.

Effluent levels in the pump chamber are controlled by internal switches that turn the pump on and off, sending effluent to the system by dosing or pressure distribution.

For more information, contact the pump manufacturer.

Septisurge® System

A septisurge distribution box is required on all non-low pressure dosed systems. This device is used to promote equal distribution throughout the system.

For more information, please contact the manufacturer.

Septisurge website: https://septisurge.com/

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System Care and Maintenance

SEPTIC TANK PUMPING—Do not wait until your system shows signs of failure to have your septic tank pumped out. Waiting can mean complete clogging and an expensive repair bill. A septic tank filter will gradually slow down effluent flow over 2 to 3 years as a reminder that your tank should be serviced. Filters in residential systems usually need cleaning only as often as you pump the tank. Call a licensed septic tank maintainanceservice to inspect your system.

SCHEDULING—Clean your filter and pump your tank at a minimum of every 3 years. Regular pumping remains the best insurance against system failure.

SYSTEM INSPECTION—If your system's access manholes are at ground level or are clearly marked or mapped, the job of pumping the tank should be fast and easy. While your tank is being inspected, ask the operator to examine the inlet and outlet bafflesand/or septic tank filter. If anything is broken, have repairs done immediately. The inlet should also be checked to see if wastewater is continuously flowing into the tank from previously undetected plumbing leaks.

TANK SHOULD BE COMPLETELY CLEANED—It is not necessary to leave any of the sludge in the tank as "seed." Incoming sewage contains all the bacteria needed for proper operation.

TANK CLEANERS—Acids or bleaches should not be used to clean the tank.

NO ADDITIVES NEEDED—The use of enzymes or other "miracle" septic system additives has not been shown to be of significant value, and some of these additives can actually harm your system.

KEEP RECORDS—Keep accurate records of your system's inspections and pumping in the space provided on page 14.

Potential System Problems

SIGNS OF A FAILING SYSTEM:

- Slow draining toilets or fixtures
- Sewage backing up into the house
- Sewage odors near the field or tank
- Sewage breakout onto the lawn

Problems with septic systems can be quite difficult to analyze. Whenever your system is not operating properly, it is best to contact a licensed professional, such as the installer who constructed your system, or a licensed septic system maintainance service. Your area Eljen distributor will be able to recommend trained personnel to assist you. Keep a copy of your design plan on hand for use in analyzing any malfunctions. Always be sure to document any inspections or maintenance done to your system.

IF TOILETS OR FIXTURES ARE DRAINING SLOWLY:

- Check your service records to see if it has been too long since the last tank servicing and pumping.
- If necessary, have your tank inspected and pumped.
- If your system has a septic tank filter, have it cleaned. Remember, the filter is there to protect your system.

IF SEWAGE IS BACKING UP INTO THE HOUSE AND YOU HAVE A PUMPED SYSTEM:

- Have the pump, pump controls, and dose checked by your septic service maintenance professional to make sure they are functioning properly.
- Note that in winter, effluent can freeze in the force main or the distribution box and block sewage flow if the system is not used for a sufficient period of time.

IF YOU DETECT SEWAGE ODORS OR SEE SEWAGE OVER OR NEAR THE SYSTEM, YOUR SYSTEM IS OVERLOADED:

- This may be caused by increased water use, ground water intrusion into the septic tank, or an increase of water entering the system area such as through landscaping changes.
- Check your water consumption for leaky toilets or fixtures.
- Have your tank pumped so that the system can be checked for ground water intrusion into the tank, especially at seasonal high water time.

NOTE: Sewage odors coming from vent pipes are common with all types of disposal systems. Various activated charcoal filter options are available and can be used with our system.

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Department of Housing & Public Works

Preventing System Problems

DO'S

- **DO** have your tank pumped at least every 3 years by a licensed septic tank service provider. Contact your local health department, or look in your phone directory or on the Internet to find a qualified professional.
- **DO** call a licensed professional if you think any part of your system needs attention or adjustment.
- **DO** practice water conservation. Promptly repair leaky faucets and toilets, run washing machines and dishwashers only when full, avoid long showers, and use water-saving features in faucets, showerheads, and toilets.
- **DO** divert roof drains and surface water from driveways and hillsides away from the septic system. Keep sump pumps and household footing drains away from the septic system as well.
- **DO** take leftover hazardous household chemicals to your approved hazardous-waste collection center for disposal rather than dumping them into your septic system.
- **DO** use bleach, drain and toilet bowl cleaners, and disinfectants sparingly and in accordance with product labels.
- **DO** learn the location of your septic tank and system's location and record it in the chart provided on page 14 of this manual. Keep a copy of your plan on file and attach a copy of your completed System Details form (see page 15) to a convenient place such as the main electrical panel.
- **DO** use the space provided on page 14 of this manual to keep a record of pumping, inspections, and other maintenance.

Preventing System Problems

DON'TS

- **DON'T** drive or park over any part of your septic system. The area over the system should be left undisturbed with only a mowed grass cover.
- **DON'T** plant trees or shrubs too close to your septic system. Roots from nearby trees or shrubs may clog or damage your septic system.
- **DON'T** put large amounts of cooking oil or grease into the system.
- **DON'T** discharge water treatment systems into your septic system.
- **DON'T** put non-degradable materials such as disposable diapers, sanitary products, plastic, and cigarettes into the system.
- **DON'T** put poisons such as gasoline, oil, paint, paint thinner, pesticides, antifreeze, or other chemicals into the system.
- **DON'T** flush rags or wipes, which can clog your pipes, pump, and filter. A clogged pump can burn out, leading to expensive repairs.
- **DON'T** use commercial septic tank additives. These products usually do not help and some may hurt your system in the long run.
- **DON'T** adjust your pump, float, or panels, or switch off electricity without talking to a professional.
- **DON'T** wait for signs of system failure. Follow the maintenance advice in this manual.
- **DON'T** use garbage disposals unless your system has been designed according to the requirements of Eljen's Garbage Disposal Design and Installation Guidelines.

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Department of Housing & Public Works
Queensland Government

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Service and Maintenance Record

Date	Type of Service	Contractor

Map of Your Septic System

14

System Details

Owner's Name, Address, Phone:	System Address, if Different than Owner's Address:
Contractor's Name, Address, Phone:	**Engineer's Name, Address, Phone:**
Contractor's License Number:	Designer's License Number:
Installation Date:	Number of Bedrooms:
Design Flow in Litres / Day:	Septic Tank Filter: ☐ No ☐ Yes, Location:
Eljen Products Used: ☐ GSF A42 ☐ GSF B43	Number of GSF Modules Used:
Number of Rows:	GSF Modules per Row:
Septic Tank:	Other Components:
System Design: ☐ Bed ☐ Trench ☐ Pressure Distribution ☐ Mound/Elevated System ☐ Pumped ☐ Other:	
System Type: ☐ Repair / Replacement ☐ New Construction ☐ Upgrade/Modification	
Structure Type: ☐ Residential ☐ Commercial	
System Use: ☐ Year-Round ☐ Seasonal	

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Eljen Corporation Standard Limited Warranty for Septic Products

Each GSF manufactured by Eljen Corporation and installed and operated as an onsite treatment system in accordance with Eljen Corporation's installation instructions is warranted to the original system owner against defective materials and workmanship for fifteen years from the date the system is inspected and activated for operation. In order to exercise its warranty rights, the original system owner must notify Eljen Pacific Pty Ltd in writing at: 16 The Lee, Devonport, Tasmania 7310; phone: 0418132021; email: paul@eljenpacific.com within 15 days of the alleged defect. Eljen Corporation will supply replacement Modules determined by Eljen Corporation to be defective and covered by this Limited Warranty. Eljen Corporation's liability specifically excludes the cost of removal and/or installation of the Modules; damage to the Modules due to ordinary wear and tear, alteration, accident, misuse, abuse, or neglect of the Modules; the placement and/or use of improper materials into the system containing the Modules; failure of the Modules or the septic system due to improper design, improper installation, excessive water usage, improper grease disposal, or improper operation; not using specified materials during system construction, specifically sand meeting the ASTM C33 specification; or any other event not caused by Eljen Corporation. System owners shall consider the Modules as single use, and re-use of Modules that were previously installed in an activated onsite system shall void this Limited Warranty. For this Limited Warranty to apply, the Modules must be installed in accordance with all site conditions required by state and local codes, all other applicable laws, and Eljen Corporation's installation instructions. This Limited Warranty and its remedies are exclusive and shall apply to no other party other than the original system owner.

THERE IS NO IMPLIED WARRANTY OF MERCHANTABILITY AND THERE IS NO IMPLIED WARRANTY OF FITNESS FOR BUYER'S PARTICULAR PURPOSE; THE IMPLIED WARRANTY OF MERCHANTABILITY AND THE IMPLIED WARRANTY OF FITNESS FOR BUYER'S PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF.

UNDER NO CIRCUMSTANCES SHALL ELJEN CORPORATION BE LIABLE TO THE SYSTEM OWNER OR ANY THIRD PARTY UNDER THIS AGREEMENT OR OTHERWISE FOR (a) ANY LOSS OR DAMAGE CAUSED BY OR ARISING OUT OF ANY DELAY IN FURNISHING ANY MATERIALS UNDER THIS AGREEMENT OR ANY ACT THAT IS NOT INTENTIONAL OR RECKLESS IN NATURE; OR (b) ANY INDIRECT, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES, REGARDLESS OF WHETHER ELJEN CORPORATION HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. WITHOUT LIMITING THE FOREGOING, SYSTEM OWNER OR ANY THIRD PARTY'S SOLE AND EXCLUSIVE REMEDY IN RESPECT OF THIS AGREEMENT AND THE MATERIALS FURNISHED HEREUNDER SHALL BE LIMITED TO THE REFUND TO SYSTEM OWNER OR ANY THIRD PARTY OF THE APPLICABLE FEES ACTUALLY PAID TO ELJEN CORPORATION UNDER THIS AGREEMENT WITH RESPECT TO THE PARTICULAR MATERIALS AT ISSUE. IN NO EVENT SHALL ELJEN CORPORATION'S LIABILITY HEREUNDER EXCEED THE APPLICABLE FEES ACTUALLY PAID TO ELJEN CORPORATION UNDER THIS AGREEMENT WITH RESPECT TO THE MATERIALS AT ISSUE.

This is the Standard Limited Warranty offered by Eljen Corporation. Any purchaser or potential system owner of Modules should carefully read and understand this warranty prior to the purchase of the Modules.

Represented By:

eljen CORPORATION

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Attachment 3: Eljen GSF A42-UL Product Specifications and Schematic diagrams

Product Materials—Technical Specifications and Performance

GSF®

Polypropylene Strapping

Safety data shown below.

Recommended Maximum Occupational Exposure Limits

Component	% Weight	CAS No.	Exposure Limits OSHA—Pel.	Hazard Data
Polypropylene	97–100	25085—53–4	None established	Generally recognized as a low hazard.
Inert Additives	0–3.5			
Colorants	< 1			

Physical Data

Properties	Data
Boiling Point (°F)	Not applicable
Softening Point (°F)	215–240
Melting Point (°F)	320–340
Vapor Pressure (mm HG)	Not applicable
Vapor Density (Air=1)	Not applicable
Specific Density (H_2O=1) @25 °C	0.90–0.92
Percent Volatile by Volume (%)	Not applicable
pH	Not applicable
Solubility in Water	Not applicable
Evaporation Rate	Not applicable
Appearance & Odor	White with no noticable odor

Fire & Explosion Hazard

Properties	Data
Flash Point (Method)	Not applicable
Flammable Limits (Lower)	Not applicable
Flammable Limits (Upper)	Not applicable
Extinguishing Media	Water Spray, CO_2, Dry Chemical, Foam
Special Fire Fighting Procedure	Firefighters should wear self-contained breathing apparatus as burning polypropylene produces a dense, black smoke
Unusual Fire/Explosion Hazards	Fire may produce irratating gasses and dense smoke. Avoid inhalation of vapors.

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Reactivity

Properties	Data
Stability	Stable
Incompatibility (Materials to avoid)	Potassium permanganate & liquid chlorine
Hazardous Decomposition	Carbon dioxide, carbon monoxide, organic oxidation products
Conditions to avoid	None

Spill / Leak Procedure

Description	Procedure
Steps to be taken in event material is released	If released or spilled, collect for disposal. Loose strapping may present a tripping hazard. Clean up immediately
Waste Disposal Method	Dispose of in accordance with local, state, and Federal regulations
EPA Waste Identification Number	Not applicable

Special Handling Information

Description	Information
Handling & Storage Precaution	Avoid excessive inhalation of vapors, fumes, or smoke which may be released during thermal processing (heat sealing)
Ventilation Control Measures	Use local exhaust ventilation to control the emissions of air contaminants
Respiratory Protection	Use NIOSH/MSHA approved respiratory equipment for protection against organic vapors. Avoid inhalation of excessive air contaminants. Appropriate respirator selection depends on the type and magnitude of exposure.
Eye Protection, Recommended	OSHA approved safety glasses
Gloves	When necessary, use gloves to prevent contact with sharp edges or ends.
Other Clothing & Equipment	Not applicable
Work Practices, Hygiene	Use standard work practices for hygienic safety.
Handling & Storage, Other	Store strap in a cool dry place.
Protective Measures, Maintenance	Not applicable

To the best of our knowledge, the information presented herein is accurate. However, it is not a warranty or a guarantee and is provided for reference only.

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Department of Housing & Public Works
Queensland Government

Product Materials—Technical Specifications and Performance

GSF®

ELJ PLS10

Our custom-formed, high-impact polystyrene core with the minimum values shown below.

Properties	Test Method	Value
Specific Gravity	ASTM D 792	1.04
Melt Flow (g/10min)	ASTM D 1238	2.5
Tensile @ Yield (psi)	ASTM D 638	2900
Tensile Modulus (psi)	ASTM D 638	275,000
Elongation @ Break (%)	ASTM D 638	70
Flexural Modulus (psi)	ASTM D 790	300,000
Notched Izod @ 73°F (ft-lb/in)	ASTM D 256	2.1
HDT @ 264 psi (°F)	ASTM D 648	183
Vicat Softening Point (°F)	ASTM D 1525	210

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Product Materials—Technical Specifications and Performance

GSF®

ELJ G101

Our non-woven, spun-bonded, polypropylene, gray geotextile fabric with the minimum values shown below.

Property	Test Method	Value
Grab Tensile Strength (lbs)	ASTM D 4632	130
Elongation (%)	ASTM D 4632	>50
Trapezoid Tear (lbs)	ASTM D 4533	60
Puncture (lbs)	ASTM D 4833	41
Mullen Burst (psi)	ASTM D 3786	140
AOS (U.S. sieve no.)	ASTM D 4751	70
Permittivity (sec^{-1})	ASTM D 4491	0.8
Permeability (cm/sec)	ASTM D 4491	.04
Vertical Water Flow Rate (gal/min/sf)	ASTM D 4491	60
UV Stability (%)	ASTM D 4355	70

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Product Materials—Technical Specifications and Performance

GSF®

ELJ B101

Our non-woven, spun-bonded, polypropylene , black geotextile fabric with the minimum values shown below.

Properties	Test Method	Value
Grab Tensile Strength (lbs)	ASTM D 4632	130
Elongation (%)	ASTM D 4632	>50
Trapezoid Tear (lbs)	ASTM D 4533	55
Puncture (lbs)	ASTM D 4833	75
Mullen Burst (psi)	ASTM D 3786	255
AOS (U.S. sieve no.)	ASTM D 4751	70
Permittivity (sec^{-1})	ASTM D 4491	1.7
Vertical Water Flow Rate (gal/min/sf)	ASTM D 4491	115
UV Stability (% stength retained)	ASTM D 4355	70

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Eljen Geotextile Sand Filter Specified Sand Requirements

To ensure proper system operation, Eljen Corporation requires its Geotextile Sand Filter (GSF) products to be installed using an ASTM C33 sand with less than 10% passing a #100 sieve, and less than 5% passing a #200 sieve. ASTM C33 is a medium to coarse, silica washed concrete sand. The amount of specified sand required for installation varies by state. Reference the state specific Eljen Design and Installation Manual for the proper amount of specified sand required for installation in your state.

Installers should request a sieve analysis from their material supplier to ensure that the specified sand that they are purchasing for use during installation of the Eljen GSF system meets the specified sand requirements listed below.

ASTM C33 SAND SPECIFICATION		
Sieve Size	Sieve Square Opening Size	Specification Percent Passing (Wet Sieve)
3/8 inch	9.62 mm	100
No. 4	4.76 mm	95 - 100
No. 8	2.38 mm	80 - 100
No. 16	1.19 mm	50 - 85
No. 30	590 µm	25 - 60
No. 50	297 µm	10 - 30
No. 100	149 µm	< 10
No. 200	75 µm	< 5

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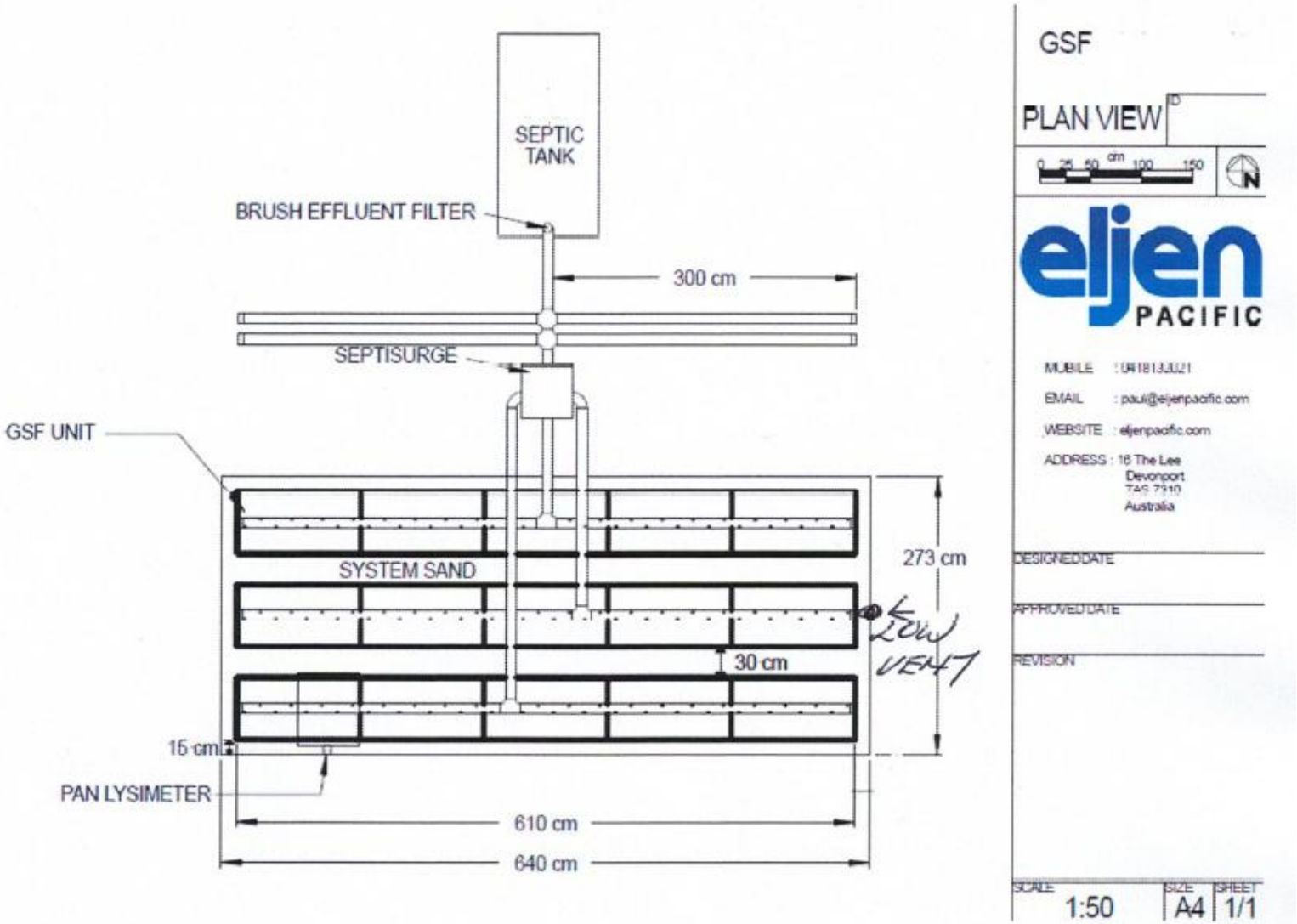

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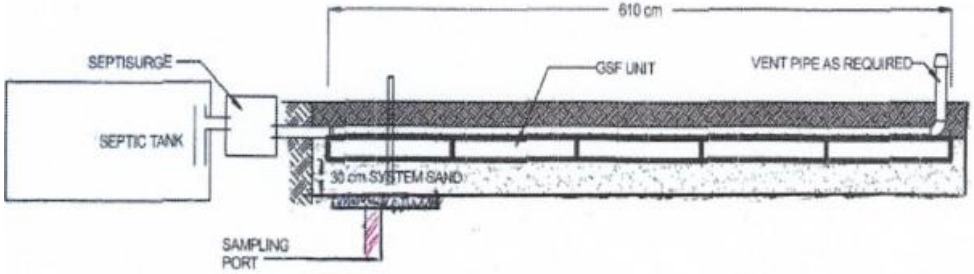

GSF

SIDE VIEW

ID

0 25 50 cm 100 150

N

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EMAIL : paul@eljenpacific.com
WEBSITE : eljenpacific.com
ADDRESS : 16 The Lee
Devonport
TAS 7310
Australia

DESIGNED DATE

APPROVED DATE

REVISION

SCALE 1:50 SIZE A4 SHEET 1/1

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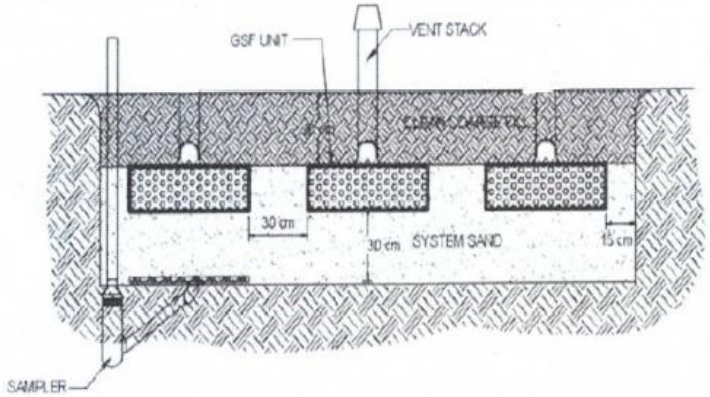

GSF SYSTEM

CROSS VIEW

ID

0 12.5 25 cm 50 75

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REVISION

SCALE 1:25 | SIZE A4 | SHEET 1/1

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6.0 Mound Installation Sizing and Guidelines

FIGURE 9: PLAN VIEW – MOUND SYSTEM

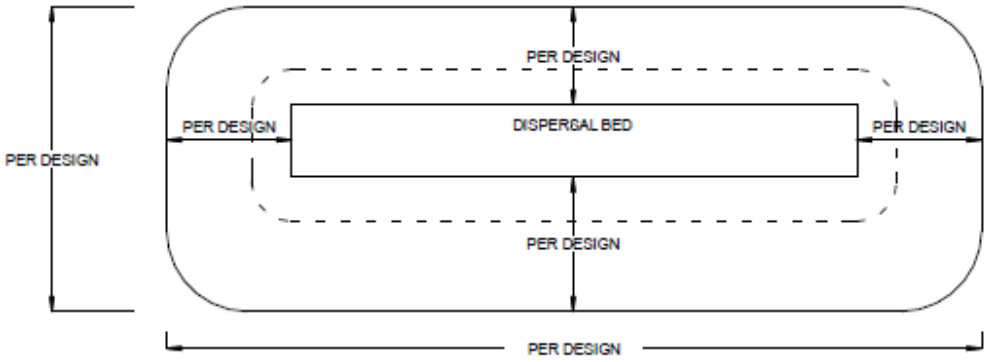


FIGURE 10: CROSS SECTION – MOUND SYSTEM

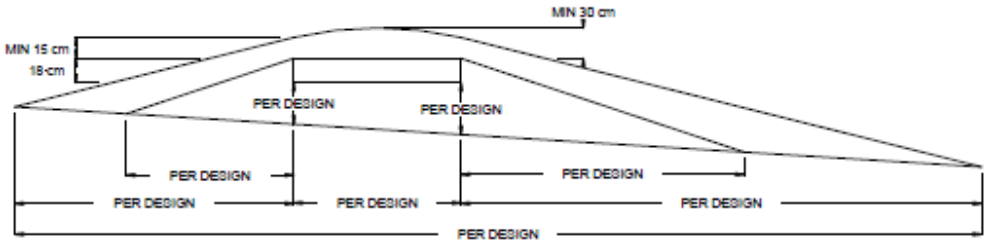
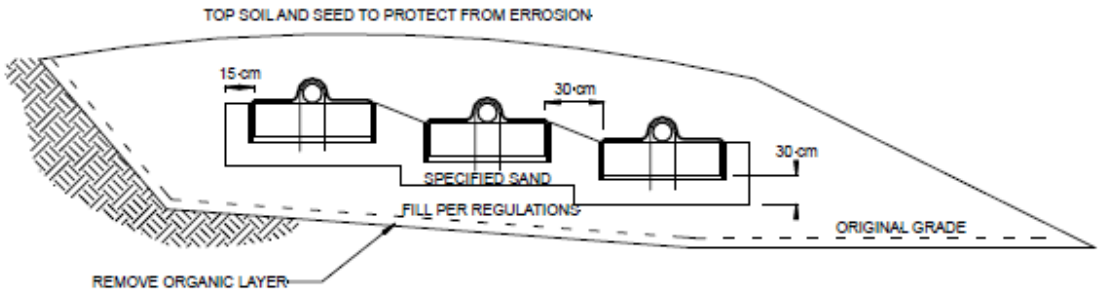


FIGURE 11: CROSS SECTION – MOUND SYSTEM



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