

ENGINEERING REPORT

for

CASCADE CREEK SUBDIVISION

WASTEWATER TREATMENT SYSTEM

APPLICANT: Hudson River Housing Inc.
313 Mill Street
Poughkeepsie, NY 12601

LOCATION: 34 Cascade Creek Road & NYS Rte. 22/44
Town of Amenia
Dutchess County, New York

Tax Map I.D. #: 132000-7167-00-245925

DATE: August 10, 2026



PREPARED BY:

RENNIA ENGINEERING DESIGN, PLLC
CIVIL ▪ ENVIRONMENTAL ▪ STRUCTURAL

6 Dover Village Plaza, Suite 5, P.O. Box 400, Dover Plains, NY 12522
Tel: (845) 877-0555

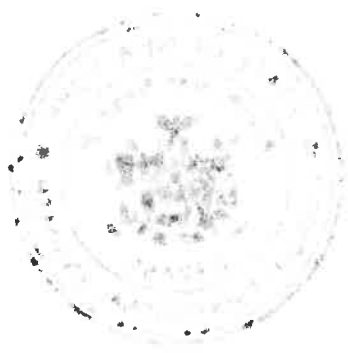


TABLE OF CONTENTS

Contents

1.0 INTRODUCTION1

 1.1 Location.....1

 1.2 Wetlands and Environmental Habitat2

 1.3 Soils 4

2.0 EXISTING6

2.1 Existing Site Conditions.....6

3.0 PROPOSED DESIGN FLOW6

 3.1 Design Flows6

4.0 PROPOSED SEWAGE TREATMENT.....7

 4.1 System – Lots 1-26 (150% 3-Section SDS).....9

5.0 PROJECT SUMMARY10

LIST OF APPENDICES

APPENDIX A

- Soil Test Results (Percolation & Deep Tests)
- Eljen GSF Modules Product Information
- Dosing Calculations
- Pump Sizing Calculations
- Pump Product Information
- Control Panel & Floats product Information

APPENDIX B

- Subdivision Grading and Utility Plan

1.0 INTRODUCTION

This report evaluates and proposes a common onsite wastewater treatment system for the Cascade Creek Subdivision project. This project proposes to subdivide of an existing 24.13-acre parcel located within the Suburban Residential “SR” zoning district. The subdivision will create twenty-six (26) residential lots, one open space lot, and one new roadway entrance onto NYS Route 22. The residential lots are intended to provide housing opportunities for low-to-moderate income households.

The proposed 26-single family residential lots will be served by both a community water supply and a wastewater treatment disposal system. Both will be operated by a proposed Home Owner’s Association (HOA) as well as the creation of any required transportation corporation(s). Each lot is proposed to be constructed with a home with a maximum of 4-bedrooms each.

The site is currently vacant, but has historically been used as agriculture, (primarily hay farming). The site soils generally consist of a well-drained soils well suited for onsite wastewater disposal.

It is proposed to develop an alternative type Small Diameter Gravity Sewers (SDGS) to convey effluent by gravity from a septic tank located on each lot to a centralized treatment location. Suspended solids will be removed from the waste stream by the septic tanks, reducing the potential for clogging to occur and allowing for smaller diameter piping downstream of the septic tank. Cleanouts will be provided at appropriate intervals to provide access for cleaning and flushing.

1.1 Location

Cascade Creek Subdivision is located within a single 24.13-acre parcel (Parcel #: 132000-7167-00-245925) in the Town of Amenia, Dutchess County, New York.

The project site is bounded on the southeast by NYS Route 22/44, on the west by Cascade Road and by other residential lots to the north. An unnamed seasonal stream runs along the westerly boundary of the site.

Figure 1-1 Location Map



1.2 Wetlands and Environmental Habitat

A review of the NYSDEC Environmental Resource Mapper (ERM) was completed. The Project Site contains one (1) federally regulated wetland. As per the National Wetland Inventory (NWI) Mapper and the NYSDEC Environmental Resource Mapper (ERM), the wetland maintains a classification code of R3UBH (Riverine, Upper Perennial, Unconsolidated Bottom, Permanently Flooded). Available maps and the wetlands “riverine” classification indicates that the wetland designation is associated with the seasonal stream channel.

The wetland area as defined by NWI and confirmed by certified biologist Micheal Nowicki, Ecological Solutions, LLC, does not exceed beyond the limits of the stream channel. Besides the federal wetland associated with the banks of the seasonal stream, there are no other wetlands located on the Project Site. The closest NYSDEC designated wetland, AM-9, is located approximately $\pm 850'$ southeast of the Project Site. The project will provide a minimum 100-ft setback to the seasonal stream for the soil absorption areas in compliance with both NYSDEC and DCDOH requirements.

Cascade Creek Subdivision Wastewater Engineering Report

Figure 1-2

Cascade Creek Subdivision - ERM



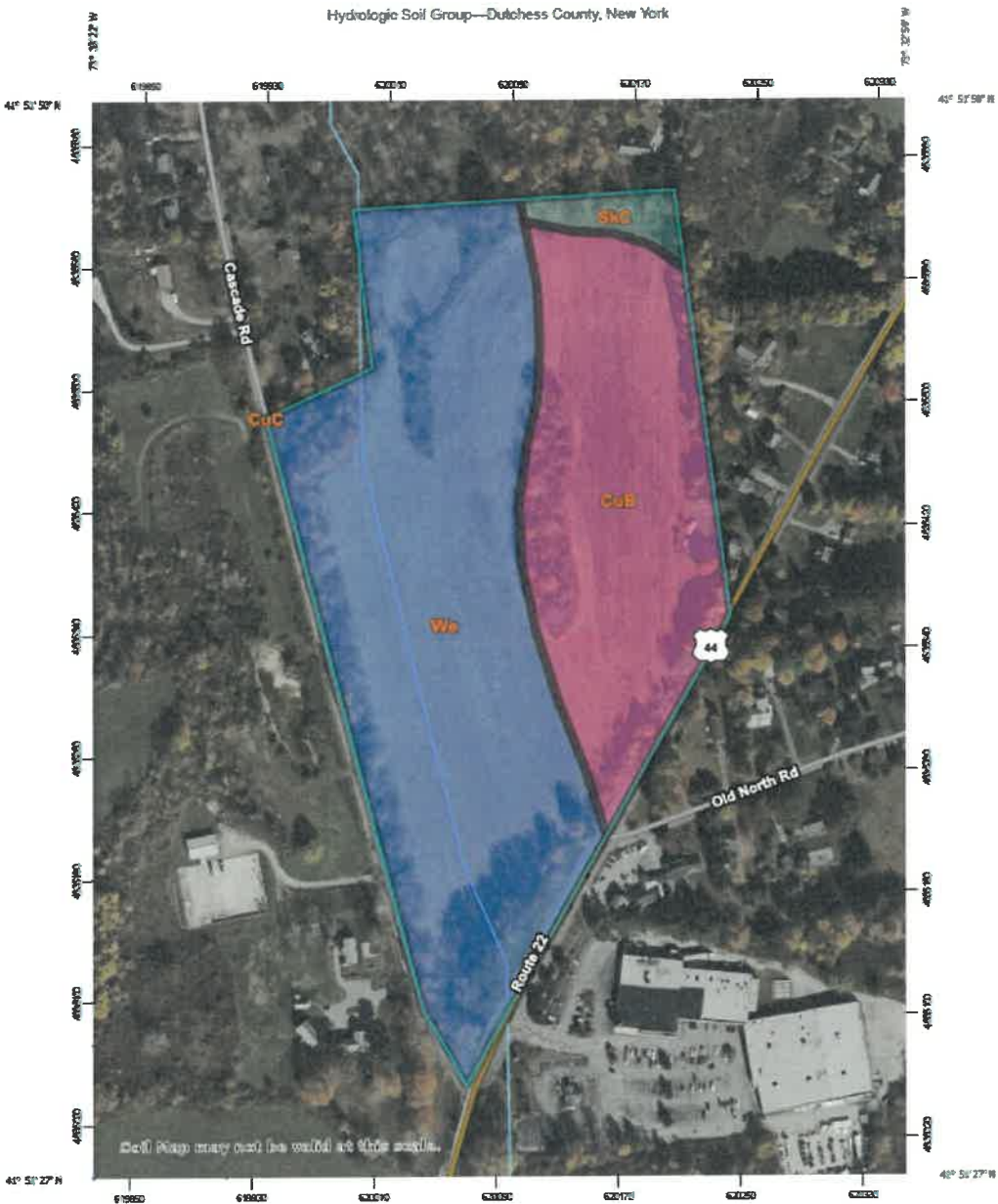
Further with respect to Threatened or Endangered Species, Ecological Solutions, LLC., surveyed the property and documented no instances or evidence of the Bog Turtle, Timber Rattle Snake, or the New England Cotton Tail.

Cascade Creek Subdivision Wastewater Engineering Report

1.3 Soils

Based on a review of the USDA Natural Resources Conservation Service's Soil Survey of Dutchess County, New York, the soils shown on the Soils Map Figure 1-3 are present on the project site.

Figure 1-3 Project Site Soils Map



**Cascade Creek Subdivision
Wastewater Engineering Report**

Table 2-1 Site Soils Information

Map unit symbol	Map unit name	HSG Rating	Septic Rating
CuB	Copake gravelly silt loam, undulating	A	Somewhat limited
SkC	Stockbridge silt loam, 8 to 15 percent slopes	C	Somewhat limited
We	Wappinger loam	B	Limited

Septic tank absorption fields are subsurface systems typically constructed of perforated pipe or chambers that distribute effluent from a septic tank into the soil. Both NYSDEC and DCDOH regulations allow installation of septic system absorption fields of varying designs, depending upon the depth of suitable soil material above any limitation in the natural soil at a site. Where necessary, imported fill material may be used to elevate absorption trenches to at least the minimum distance of 48-inches above groundwater and 60-inches above limiting soil/rock horizons. The depth ranges of suitable material and corresponding types of absorption systems are outlined within this report.

Both the Copake gravelly silt loam and Stockbridge silt loam have features that are moderately favorable for use in soil absorption. The Wappinger loam has features that may be slightly more restrictive than the Copake gravelly silt loam and Stockbridge silt loam or may have features that are unfavorable such as elevated groundwater elevations. These ratings are used as an initial guidance to assist with preliminary planning. Ultimately the design is based upon an actual soils investigation performed on the intended soil absorption areas.

In 2024, initial soil tests, spread out over the site, were conducted to obtain a preliminary feel and understanding of the onsite soil characteristics. The soil tests covered the majority of the project site to support the initial feasibility study that was performed to support the conservation analysis for the site. In 2025, additional soil tests were performed in the southerly portion of the project site, focused on the two common wastewater disposal areas that were chosen, based on the conservation analysis process with the Town of Amenia Planning Board.

In total 23 deep tests and 13 percolation tests were performed on the site. In general, the soils on the site were discovered to be a combination of silty loam and coarse sand

Cascade Creek Subdivision Wastewater Engineering Report

and gravel, which generally match with what the USDA Natural Resources Conservation Service's Soil Survey shows.

The deep tests were all dug to depths of 4.0' – 8.0' deep, most with no water, but two deep tests encountered ground water at depths of 48-50". Therefore, our proposed wastewater treatment design shall not be installed anywhere near these locations where water was uncovered. The percolation tests showed the site to have good percolation rates. The best percolation test was 1 minute per inch, while the worst was 18 minutes per inch. A copy of the deep and percolation test results is attached in Appendix A. Locations for the conducted deep and percolation tests are shown on the attached Cascade Creek Subdivision Grading and Utility Plan in Appendix B.

2.0 EXISTING

2.1 Existing Site Conditions

As indicated above, this property is an undeveloped property, historically used for farming and agricultural production. In 2005, two (2) 1-acre parcels were subdivided off of the parent parcel. The subject parcel is generally surrounded by single family residential parcels, with the exception of the shopping plaza, located across Rte. 22 (east) from the subject site.

The site investigations found no signs of surface water ponding or otherwise unsuitable areas. Historical aerials show the site has been in continuous agricultural production since at least 1936.

3.0 PROPOSED DESIGN FLOW

3.1 Design Flows

As discussed above, the proposed subdivision consists of 26-single family residences with up to 4-bedrooms each.

Provided below is a summary regarding the proposed wastewater disposal area and its proposed design flow. Design flow calculations are based on the Dutchess County Department of Health Design & Construction flow tables as well as the New York State Design Standards for Intermediate Sized Wastewater Treatment Systems, 2014.

The wastewater treatment system includes the construction of the effluent collection and treatment for all proposed 26-lots, which will be constructed in conjunction with the initial road and water supply infrastructure. The design flows for the wastewater treatment system are summarized in the table below.

**Cascade Creek Subdivision
Wastewater Engineering Report**

System (26-Lots):

Description	Quantity	Demand (GPD/PER BDRM.)	Flow (GPD)
Bedrooms	(26-lots @ 4- bdrms ea.) 104	110	11,440

4.0 PROPOSED SEWAGE TREATMENT

In this section of the report, construction has been designed to have adequately sized sewage disposal system components for the total design flows as explained in the previous section above. In addition to meeting the minimum size requirements for treating the proposed flow rates all sewage disposal system components must also meet the minimum separation distances required by both the Dutchess County Department of Health and NYSDEC.

All Septic Tanks and/or Pump Chambers must be kept a minimum of 50 feet away from nearest wells, bodies of water, and stormwater management practices discharging into surface water, a minimum of 25 feet away from infiltration practices, top of embankments, very steep slopes, retaining walls and stormwater piping, 20 feet away from in-ground swimming pools, and 10 feet away from dwellings & property lines. All Septic Distribution boxes and Absorption Fields must be kept a minimum of 100 feet away from nearest wells, bodies of water, and stormwater management practices discharging into surface water, 50 feet away from infiltration practices, top of embankments, very steep slopes, retaining walls and stormwater piping, 35 feet away from in-ground swimming pools, 20 feet away from dwellings, and 10 feet away from property lines. All septic effluent lines must be kept a minimum of 50 feet away from nearest wells, bodies of water, and stormwater management practices discharging into surface water, 25 feet away from infiltration practices, top of embankments, very steep slopes, and retaining walls, and 10 feet away from in-ground swimming pools, stormwater piping, dwellings and property lines. All other sewage disposal system components and pipe must be kept a minimum of 10 feet away from water lines and drainage lines. Pursuant to these requirements all separation distance minimums for sewage disposal system components have been met with the proposed design.

Each individual house shall have its septic flow into their individual 1,250-gallon septic tank for primary treatment. From each tank the effluent continues into the 4" & 6" SDR-35 PVC effluent collection network in the road. As per Dutchess County Department of Health, a cleanout is necessary before every bend or every 75 feet for the building sewer

**Cascade Creek Subdivision
Wastewater Engineering Report**

line. For this design the house sewer lines for each individual lot shall follow these cleanout standards outside of the central collection system.

The central effluent collection system in the road shall utilize the Water Environmental Federation (WEF) manual practice for alternative sewer systems standards. The septic collection network is a Septic Tank Effluent Gravity (STEG) system that collects all individual house lots' septic effluent. The STEG system is required to include a cleanout before every bend, transition or every 400 linear feet of sanitary sewer pipe. The WEF manual states that in STEG systems cleanouts are used instead of manholes. The hydraulic flushing is all that would be necessary to maintain the mains in a free-flowing condition, therefore making cleanouts sufficient for providing access to the mains.

The STEG network will collect the effluent and bring it into a 3,000-gallon final settling tank before the 4,000 gal. pump chamber. The 3,000-gallon settling tank shall be fitted with dual effluent filters on the outlet. The 3,000-gallon tank shall be pumped annually and the filters shall be cleaned every 6 months. The 4,000 gal. pump chamber will then pump the effluent into the three effluent disposal areas. The proposed effluent disposal areas have been located in the northeast corner of the site, along Route 22. The soils in this area were found to be a well-drained Copake Gravelly silt loam. The deep tests that were dug in this area extended to depths of 7' to 8' deep with ground water at a depth of 6'.

Additionally, it is important to note that the proposed sanitary treatment systems will use conventional application rates based upon the actual percolation rates found in the field.

All septic absorption areas have been located to meet or exceed the 100-foot horizontal separation to any water body or wetland and where possible additional space has been provided between the septic absorption areas and waterbodies. By meeting the vertical & horizontal separations to ground water and surface waters, the potential for cross contamination is removed.

The septic absorption system was designed following NYSDEC Standards for Intermediate sized wastewater treatment systems. The NYSDEC Standards recommends a septic system to be installed in three sections, with each section capable of handling 50 percent of the total design flow. The 3 sections will be operated by a series of valves that will be set so that one 50% section is always at rest while the other two 50% sections receive the full flow. The owner/operator will be required to rotate the valve positions in the proposed valve box on a semi-annual basis. This extends the life of the septic treatment system and provides a standby unit in case of failure. Utilizing this method removes the need for a full field (100%) replacement reserve area.

**Cascade Creek Subdivision
Wastewater Engineering Report**

The following sections show the calculations conducted for sizing the sewage disposal system:

4.1 System – Lots 1-26 (150% 3-Section SDS)

Septic Tank Requirements:

Septic Tank: 4 Bedrooms
440 gal./lot
(NYSDOH Appendix 75A)
USE: 1,250 gal. Tank (1-for each lot)

Primary System Soil Information:

Stabilized Perc Rate: 18 min/inch.
Percolation Test(s): PT-3
Application Rate: 0.7 gal/day/sf
Depth to Rock: N/A
Depth to Water: 72"

Primary System Sewage Disposal System Requirements:

System Type: Eljen GSF Beds
Septic Tank(s): (1) 1,250 gal. Concrete Septic Tank per home
Min. Absorption area required: $11,400 \text{ GPD} / 0.7 (\text{GPD per S.F.}) = 16,342.85 \text{ S.F.}$
(Req.) Length for Beds: $16,342.85 \text{ S.F.} / 6 \text{ ft} = 2,723.8 \text{ LF}$
(150%) Length: $2,723.8 \text{ LF} \times 1.5 = 4,085.7 \text{ LF}$
No. of Beds: 42
Min. Bed Length: $4,085.7 \text{ ft} / 42 = 97.27 \text{ ft. USE: 100 L.F.}$
Total Length Provided: 42 beds @ 100 LF for 4,200 LF
Bed Width: 4 ft.
Trench Spacing: 8 ft. O/C.
Trench Depth: 24" – 30" (Bottom of eljen sand)
Fill Depth: 0'
Dosing Required: Yes
Required Dose Volume: 1,450Gal. + 62 Gal. of Drainback = 1,512 Gal.
Nearest Well: Upgradient: >200 ft.; Downgradient:>200 ft.

Pump Requirements (100% or 2/3 of 3-Section SDS):

Pump Station:

Static Elevation Head: 20'
Force Main Length: 385'

**Cascade Creek Subdivision
Wastewater Engineering Report**

Force Main Size: 2"

Total Equivalent length due to fittings plus force main: 487.5'

USE: Goulds WE10H

TDH @ 54 gpm = 50'

5.0 PROJECT SUMMARY

The proposed Cascade Creek Subdivision consists of one large wastewater disposal system to address the wastewater disposal needs of all 26 individual lot systems. This report was prepared to review and detail both the existing site conditions and the proposed wastewater treatment construction that will be required for the project. As part of the Subdivision Plan review and once preliminary plat approval is obtained, the corresponding sewage disposal system design will be completed for review and approval by both the Dutchess County Department of Health and the NYSDEC division of water. The existing soil conditions that were investigated covering large areas of suitable areas of the project site were all found to be at least 4 feet deep before ground water was encountered, with percolation tests ranging from 1–18 minutes per inch. None of the proposed septic disposal areas are in the area where groundwater was encountered at 4 feet. Therefore, the system is designed as an in-ground system that will not need the addition of fill. Furthermore, the gravelly soils were found to have very good percolation rates showing that the areas tested will be more than sufficient space to construct and install onsite conventional sanitary sewage treatment systems.

The onsite sanitary sewage treatment systems have been placed in such a way that maintains all minimum separations required by both the Dutchess County Department of Health and NYSDEC. The locations also maximize separations to the seasonal stream to the greatest extent possible and honor the 100-foot separation at a minimum.

The sewage disposal system sizing calculations prepared for each septic area meet the sizing requirements of the Dutchess County Department of Health and the NYSDEC. Furthermore, a new NYSDEC wastewater SPDES permit will be required for both outfalls on the subdivision site.

It is our professional opinion that the sanitary sewage treatment system designs outlined in this report meet and exceed all required local and state design requirements therefore there will be no measurable impact to the groundwater resources or surface water resources such as the nearby seasonal stream.

APPENDIX A

Soil Test Results (Percolation & Deep Tests)

Eljen GSF Modules Product Information

Dosing Calculations

Pump Sizing Calculations

Pump Product Information

Control Panel & Floats Product Information

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DEEP TEST RESULTS

DUTCHESS COUNTY HEALTH DEPARTMENT

Name of property: 34 Cascade Rd

(T)(V)(C) Amenia

Date: 6/20/2024

TAX GRID #

132000	7	1	6	7	0	0	2	4	5	9	2	5
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Owner of property: xxxxx

Engineer: Richard A. Renna, Jr., P.E.

Person directing test: Thomas Harvey

DCHD Rep: William Gieseler, PE

HOLE #	LOT #	TOTAL DEPTH	ROCK DEPTH	WATER DEPTH	MOTTILING DEPTH	SOIL DESCRIPTION
1		84"	N/A	72"	N/A	0 - 18" Farm Tillage
						18" - 72" Silty Loam w/ Coarse Sand & Gravel
2		84"	N/A	72"	N/A	0 - 24" Farm Tillage
						24" - 72" Silty Loam w/ Coarse Sand & Gravel
3		90"	N/A	90"	N/A	0 - 24" Farm Tillage
						24" - 90" Silty Loam w/ Gravel
4		96"	N/A	N/A	N/A	0 - 12" Farm Tillage
						12" - 30" Gravelly Loam
						30" - 96" Coarse Sand & Gravel
5		96"	N/A	N/A	N/A	0 - 24" Farm Tillage
						24" - 48" Coarse Gravel
						48" - 96" Reddish Brown, Sandy Loam
6		96"	N/A	N/A	N/A	0 - 24" Farm Tillage
						24" - 96" Silty Clay Loam w/ Sand
7		48"	48"	N/A	N/A	0 - 18" Farm Tillage
						18" - 48" Silty Clay Loam w/ Sand
8		72"	72"	N/A	N/A	0 - 18" Farm Tillage
						18" - 72" Silty Clay Loam w/ Sand
9		90"	N/A	N/A	90"	0 - 30" Farm Tillage w/ Roots
						30" - 90" Gravel w/ Silty Loam
10		84"	N/A	84"	N/A	0 - 36" Farm Tillage
						36" - 84" Gravel w/ Silty Loam
11		90"	N/A	90"	N/A	0 - 24" Farm Tillage
						24" - 90" Gravelly Silty Loam

General remarks (terrain; weather; springs, streams, etc.):

It was very hot and sunny.

HD-185

DEEP TEST RESULTS

DUTCHESS COUNTY HEALTH DEPARTMENT

Name of property: 34 Cascade Rd

(T)(V)(C) Amenia

Date: 7/8/2025 & 7/25/2025*

TAX GRID #

132000	7	1	6	7	0	0	2	4	5	9	2	5
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Owner of property: DSL LLC.

Engineer: Richard A. Rennia, Jr., P.E.

Person directing test: Thomas Harvey

DCHD Rep: William Gieseler, PE

HOLE #	LOT #	TOTAL DEPTH	ROCK DEPTH	WATER DEPTH	MOTTLING DEPTH	SOIL DESCRIPTION
DT-A		84"	N/A	N/A	N/A	0 - 12" Farm Tillage
						12" - 84" Silty Loam w/ Coarse Sand & Gravel
DT-B		84"	N/A	N/A	N/A	0 - 12" Farm Tillage
						12" - 84" Silty Loam w/ Coarse Sand & Gravel
DT-C		84"	N/A	N/A	N/A	0 - 12" Farm Tillage
						12" - 84" Silty Loam
DT-D		84"	N/A	N/A	N/A	0 - 12" Farm Tillage
						12" - 84" Silty Loam
DT-E		82"	N/A	72"	N/A	0 - 12" Farm Tillage
						12" - 82" Silty Loam w/ Coarse Sand & Gravel
DT-F*		92"	N/A	72"	N/A	0 - 12" Farm Tillage
						12" - 92" Silty Loam w/ Coarse Sand & Gravel
DT-G*		95"	N/A	69"	N/A	0 - 12" Farm Tillage
						12" - 95" Silty Loam w/ Coarse Sand & Gravel
DT-H*		92"	N/A	69"	N/A	0 - 12" Farm Tillage
						12" - 92" Silty Loam w/ Coarse Sand & Gravel
DT-I*		82"	N/A	72"	N/A	0 - 12" Farm Tillage
						12" - 82" Silty Loam w/ Coarse Sand & Gravel
DT-J*		72"	N/A	48"	N/A	0 - 12" Farm Tillage
						12" - 72" Silty Loam w/ Coarse Sand & Gravel
DT-K*		77"	N/A	50"	N/A	0 - 12" Farm Tillage
						12" - 82" Silty Loam w/ Coarse Sand & Gravel
DT-L*		85"	N/A	82"	N/A	0 - 12" Farm Tillage
						12" - 85" Silty Loam w/ Coarse Sand & Gravel

General remarks (terrain; weather; springs, streams, etc.) :

It was very hot and sunny.

Hot, thunderstorm, heavy rain/flash flood.

HD-185

DUTCHESS COUNTY DEPARTMENT OF HEALTH

PERCOLATION TEST DATA

Name: 34 Cascade Rd

(T)(V)(G) Amenia

Date: 7/10/2025

TAX GRID #

132000	7	1	6	7	0	0	2	4	5	9	2	5
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By: Kevin Guo & Grace Burns DCHD:

Lot No.	Test Hole No.	Test Hole Depth	Soil Type	Soaked	TEST RUNS					
					*	1	2	3	4	5
	PT-1	24"	Silty loam w/ Coarse Sand & Gravel	YES	Finish	1:13	1:20	1:27		
					Start	1:07	1:14	1:21		
					Time	6 min.	6 min.	6 min.		
	PT-2	24"	Silty Loam	YES	Finish	1:40	1:53	2:06		
					Start	1:29	1:41	1:54		
					Time	11 min.	12 min.	12 min.		
	PT-3	24"	Silty Loam	YES	Finish	2:01	2:22	2:42		
					Start	1:44	2:04	2:24		
					Time	17 min.	18 min.	18 min.		
	PT-4	24"	Silty loam w/ Coarse Sand & Gravel	YES	Finish	2:10	2:12	2:13		
					Start	2:09	2:11	2:12		
					Time	1 min.	1 min.	1 min.		
	PT-5	24"	Silty loam w/ Coarse Sand & Gravel	YES	Finish	3:04	3:05	3:07		
					Start	3:03	3:04	3:06		
					Time	1 min.	1 min.	1 min.		
	PT-6	24"	Silty loam w/ Coarse Sand & Gravel	YES	Finish	2:57	3:00	3:03		
					Start	2:55	2:58	3:01		
					Time	2 min.	2 min.	2 min.		
	PT-7	24"	Silty loam w/ Coarse Sand & Gravel	YES	Finish	3:05	3:06	3:08		
					Start	3:04	3:05	3:07		
					Time	1 min.	1 min.	1 min.		
					Finish					
					Start					
					Time					

I, Richard A. Rennia, Jr., P.E., the undersigned, certify that these percolation tests were done by myself or or under my direction according to the standard procedure. The data and results presented are true and correct.

Dated: _____

Signature: _____
License No. (P.E.)(L.S.) NYPE: 082459

DUTCHESS COUNTY DEPARTMENT OF HEALTH

PERCOLATION TEST DATA

Name: 34 Cascade Rd

(T)(V)(G) Amenia

Date: 7/22/2025

TAX GRID #

132000	7	1	6	7	0	0	2	4	5	9	2	5
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By: Kevin Guo & Grace Burns

DCHD:

Lot No.	Test Hole No.	Test Hole Depth	Soil Type	Soaked	TEST RUNS					
					*	1	2	3	4	5
	PT-8	24"	Sandy Loam w/ Gravel	YES	Finish	2:38	2:45	2:52		
					Start	2:32	2:39	2:46		
					Time	6 min.	6 min.	6 min.		
	PT-9	24"	Sandy Loam w/ Gravel	YES	Finish	2:14	2:16	2:18		
					Start	2:13	2:14	2:16		
					Time	1 min.	2 min.	2 min.		
	PT-10	24"	Sandy Loam w/ Gravel	YES	Finish	1:44	1:51	1:58		
					Start	1:39	1:45	1:52		
					Time	5 min.	6 min.	6 min.		
	PT-11	24"	Sandy Loam w/ Gravel	YES	Finish	1:12	1:14	1:17		
					Start	1:10	1:12	1:15		
					Time	2 min.	2 min.	2 min.		
	PT-12	24"	Sandy Loam w/ Gravel	YES	Finish	1:07	1:14	1:21		
					Start	1:02	1:08	1:15		
					Time	5 min.	6 min.	6 min.		
	PT-13	24"	Sandy Loam w/ Gravel	YES	Finish	1:07	1:08	1:09		
					Start	1:06	1:07	1:08		
					Time	1 min.	1 min.	1 min.		
					Finish					
					Start					
					Time					
					Finish					
					Start					
					Time					
					Finish					
					Start					
					Time					
					Finish					
					Start					
					Time					

I, Richard A. Rennia, Jr., P.E., the undersigned, certify that these percolation tests were done by myself or or under my direction according to the standard procedure. The data and results presented are true and correct.

Dated: _____

Signature: _____

License No. (P.E.)(L.S.) NYPE: 082459

B43 Eljen Geotextile Sand Filter

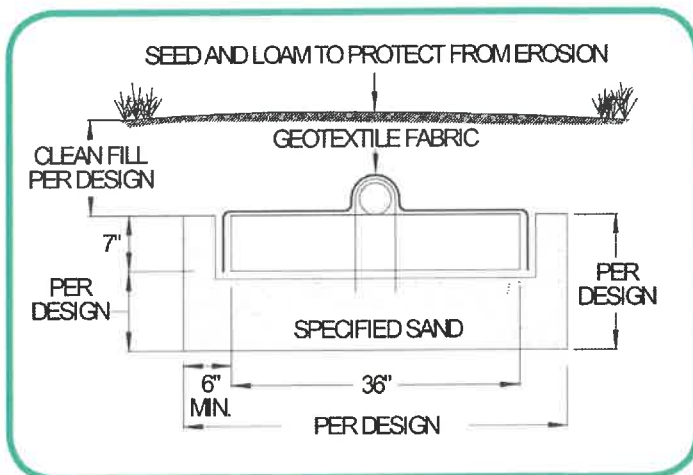
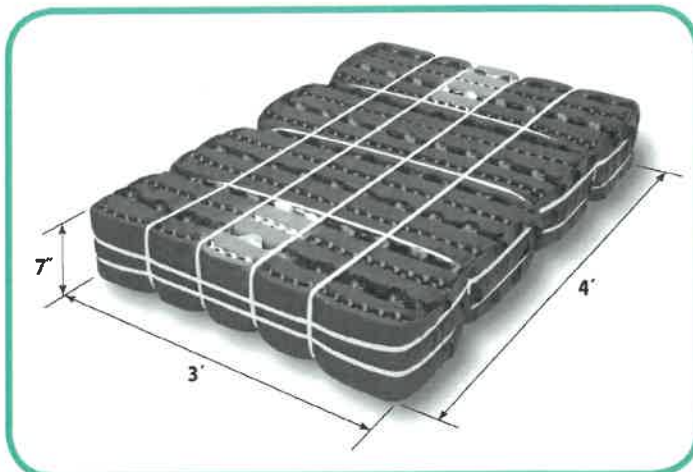


The Eljen GSF (Geotextile Sand Filter) is an alternative onsite septic leachfield system. Each GSF Module is made up of geotextile fabric and a plastic core material that work together to provide vertical surface area and oxygen transfer. The GSF System applies secondary treated effluent to the soil, increasing the soil's long-term acceptance rate. A Specified Sand layer provides additional filtration, and prevents saturated conditions.

INSTALLATION

Installation shall comply with the latest installation instructions published by Eljen Corporation and abide by local regulations. Eljen Modules are installed along their 4-foot lengths on a base of stabilized Specified Sand, with the painted stripe facing up. A 4" perforated pipe is centered on top of the Modules, and is secured with supplied metal clamps (one per Module). Cover fabric is supplied by Eljen and substitutions are not allowed. Specified Sand is placed along both sides of the Module, and at the beginning and end of each row once the cover fabric is in place.

For more specifications and detailed installation instructions consult the appropriate Design and Installation Manual.



EXAMPLE INSTALLATION



Innovative Onsite Products and Solutions Since 1970

Tel: 800-444-1359 • Fax: 860-610-0427

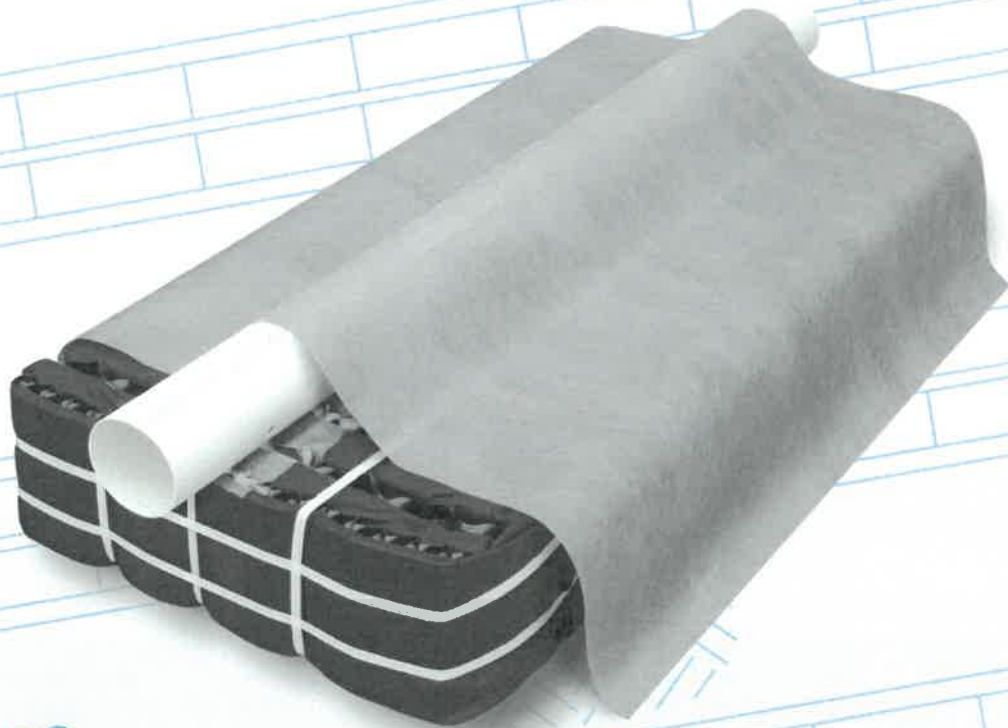
Email: info@eljen.com

www.eljen.com



Geotextile Sand Filter

Eljen GSF System Overview



eljen
CORPORATION

Innovative Onsite Products & Solutions Since 1970

www.eljen.com

Eljen GSF System Description

Each GSF Module is made up of geotextile fabric and a plastic core material that work together to provide vertical surface area and oxygen transfer. The GSF System applies secondary treated effluent to the soil, increasing the soil's long-term acceptance rate. A Specified Sand layer provides additional filtration, and prevents saturated conditions.

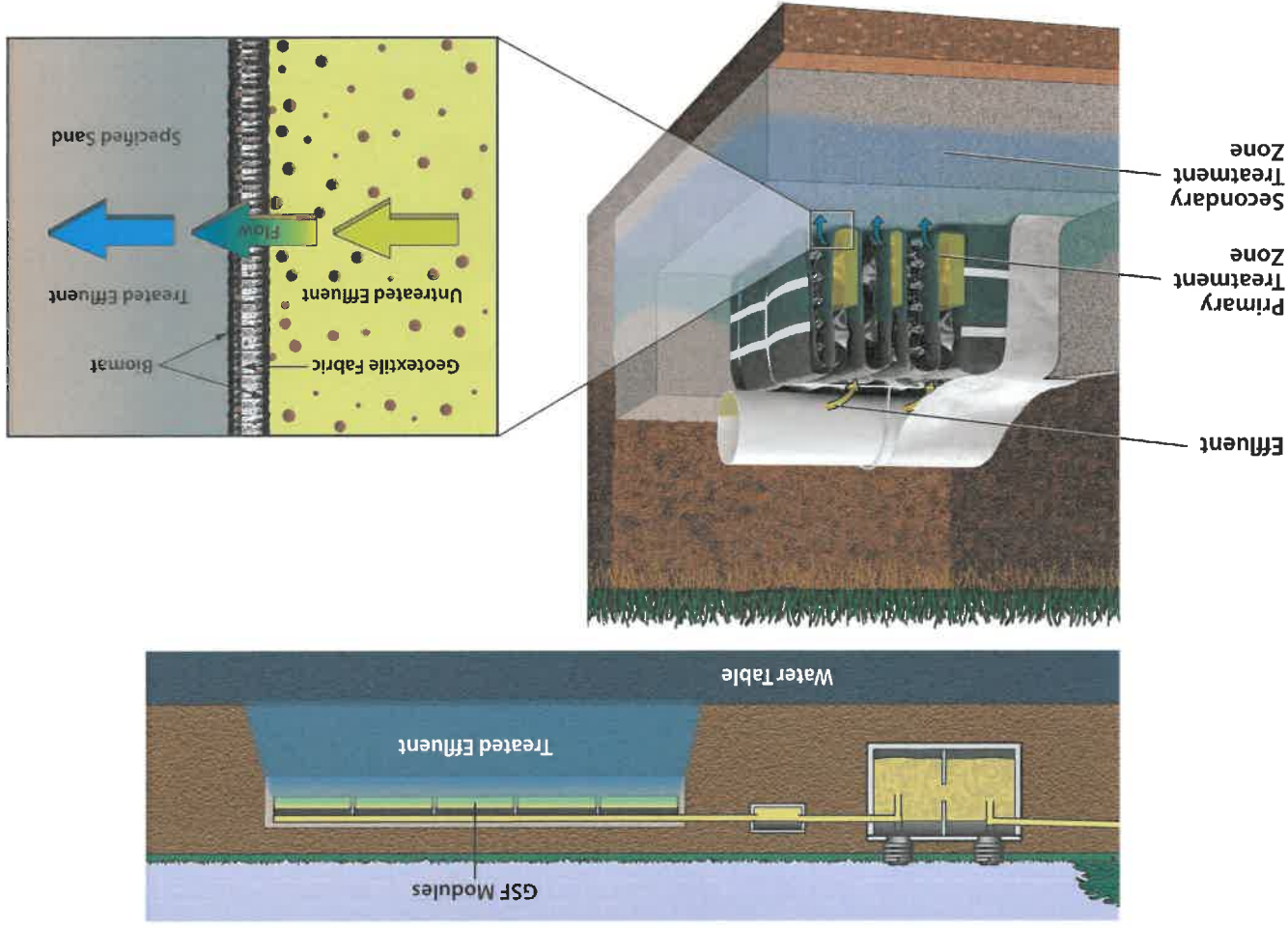
PRIMARY TREATMENT ZONE

- Perforated pipe is centered above the GSF Module to distribute septic effluent over and into corrugations created by the plastic core of the GSF Module.
- The Module's unique design provides increased surface area for biological treatment of nutrients and contaminants.
- Open air channels within the Module support aerobic bacterial growth on the Module's geotextile fabric interface, and promote oxygen in the system.
- An anti-siltation geotextile fabric covers the top and sides of the GSF Module to protect the system from the migration of fines.
- The GSF Module provides biomat management, and takes the burden of treatment and biomat development off of the native soil.

SECONDARY TREATMENT ZONE

- Effluent drips into the Specified Sand layer and supports unsaturated flow into the native soil.
- The Specified Sand layer also protects the soil from compaction and helps maintain cracks and crevices in the soil.
- Native soil provides final filtration and allows for groundwater recharge.

GSF SYSTEM OPERATION



Testing Overview and Performance

NSF Standard 40

This standard determines whether treatment systems produce secondary treatment effluent quality, with Class I systems achieving a 30-day average effluent quality of 25 mg/L CBOD5 and 30 mg/L TSS or less, and pH 6.0-9.0. Testing and certification are done at an independent third party testing facility.

SETUP: Gravity GSF system with 6" of ASTM C33 sand in a bed configuration. 450 gal/day, (2.0 gal/ft² loading rate).

RESULTS: The Eljen GSF is Tested and Certified by NSF to NSF Standard 40 Class 1 since 2014.

More information can be found at www.NSF.org.



NSF Standard 245

This standard includes Total Nitrogen reduction requirements with Class I systems achieving a 30-day average effluent quality of more than 50% Total Nitrogen removal, 25 mg/L CBOD5 and 30 mg/L TSS or less, and PH 6.0-9.0. Testing and certification are done at an independent third party testing facility.

SETUP: Gravity GSF system in a bed configuration with 18" of ASTM C33 sand, 12" of sand/woodchip mixture, and 2" of limestone. 450 gal/day (2.0 gal/ft² loading rate).

RESULTS: Tested and Certified by NSF to NSF Standard 245 Class 1 since 2018.

More information can be found at www.NSF.org.

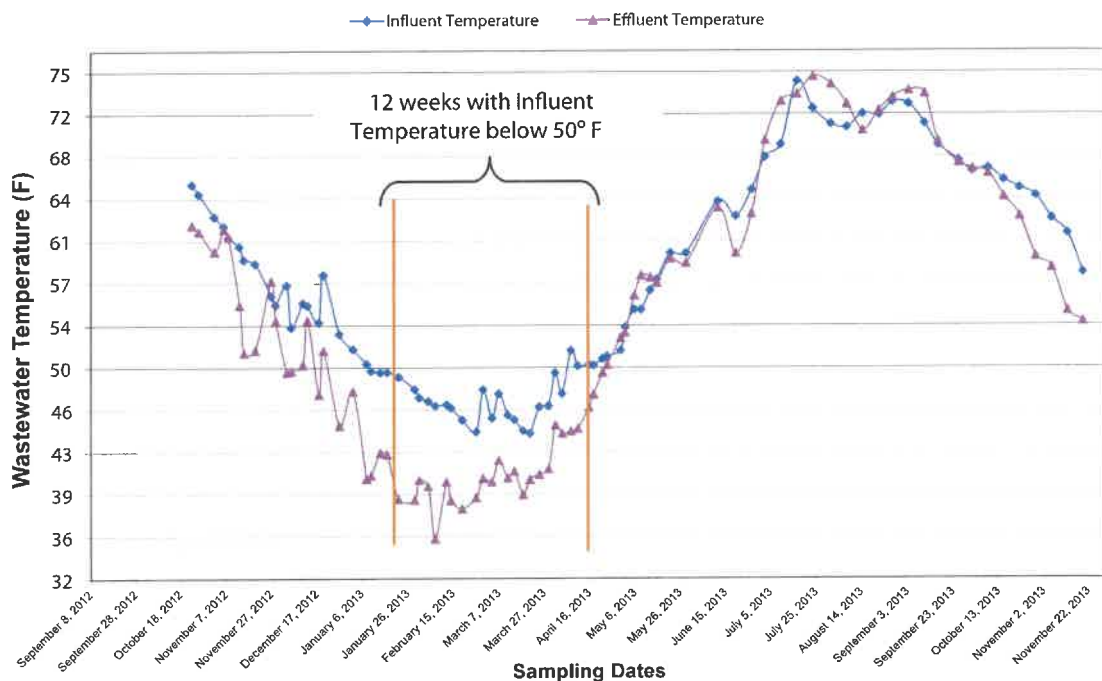


The third-party testing results listed below were taken over a 12 month consecutive period. This extended sampling period provided verification to the stability and consistency of the Eljen GSF's performance and capability to handle colder weather conditions. A summary of the test results from the independent third-party evaluation are listed below:

Eljen GSF A42 Modules Treatment Performance during third party 12 months testing (includes 12 consecutive weeks with influent temperature below 50° F)			
	CBOD (mg/L)	TSS (mg/L)	Fecal Coliform (MPN/100ml)
Average	2.0	2.7	66*
Average (cold water period)	1.2	1.7	13*
Median	1.0	2.5	71*
Min Value	1.0	2.5	2*
Max Value	7.2	7.0	10 965*

*Geometric average

Eljen GSF - A42 Influent and Effluent Temperature (degree F)



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Innovative Onsite Products & Solutions Since 1970



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.

COMPANY PHILOSOPHY

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 HISTORY

Cascade Creek Subdivision Sewage Disposal System Dosing Calculations

DESIGN

26 (4-Bedroom) Lots System	Absorption Field Length (LF)	Pipe Dia. (FT)	Pipe Volume (CF)	100% Pipe Volume (Gal.)	75% Pipe Volume (Gal.)	85% Pipe Volume (Gal.)
2/3 of 3 Section 150% SDS	2800.0	0.33	244.35	1827.71	1370.78	1553.55

PUMP SIZING CALCULATIONS

TDH CALCULATIONS FOR SYSTEM CURVE

HAZEN AND WILLIAMS $[hf = 0.002083 * L * (100/C)^{1.85} * gpm^{1.85}/d^{4.8655}]$
Static Head in Feet = Measured/Estimated
old Plastic pipe; C = 120
new Plastic pipe; C = 140

BOX 1. - System Curve

Q (gpm)	C	Dia. (in.)	L (feet)	hstat (feet)	hf (feet)	TDH
0	140	2	487.50	20.00	0.00	20.00
10					1.32	21.32
20					4.77	24.77
30					10.10	30.10
40					17.20	37.20
50					25.99	45.99
60					36.41	56.41
70					48.43	68.43
80					62.00	82.00
90					77.09	97.09

Cascade Creek SDS
Pump System
150% 3-Section SDS (2-Sections at a time)

BOX 2.

EQUIVALENT LENGTH ESTIMATE			
Element	2" Fig. Eq. Length	Number	Eq. Length
Length	385.00	1.00	385.00
Reg. 90 deg	5.50	3.00	16.50
Reg. 45 deg	2.50	0.00	0.00
T (Diverison)	12.00	1.00	12.00
Coupling (Disconnect)	2.00	1.00	2.00
Check Valve	17.00	1.00	17.00
Ball Valve (fully open)	55.00	1.00	55.00
Gate Valve (fully open)	1.20	0.00	0.00
TOTAL EQ. LENGTH			487.50

BOX 3 - Pump Rate & Float settings

Anticipated pump rate	54 gpm
Velocity (V)	5.52 fps
Treatment design flow	11440 gpd
Drainback volume per dose	62 gal.
Dosing Interval (pump rest time)	1.52 hrs.
Number of doses	7.9 d ¹
Drainback volume per day	486 gpd
Approx. volume per dose	1511.60 gal.
Pump run time per dose	27.99 min.
Pump run time per dose	1679.56 sec.
Tank volume (gal. per inch) ESTIMATE	69.81 gal. in. ⁻¹
Draw down per dose*	21.7 in.
*Prior to drainback	

Goulds WE10H @ 50 TDH

Facility design flow

Assumes 1 operating day = 12hr.

(Treatment Only)

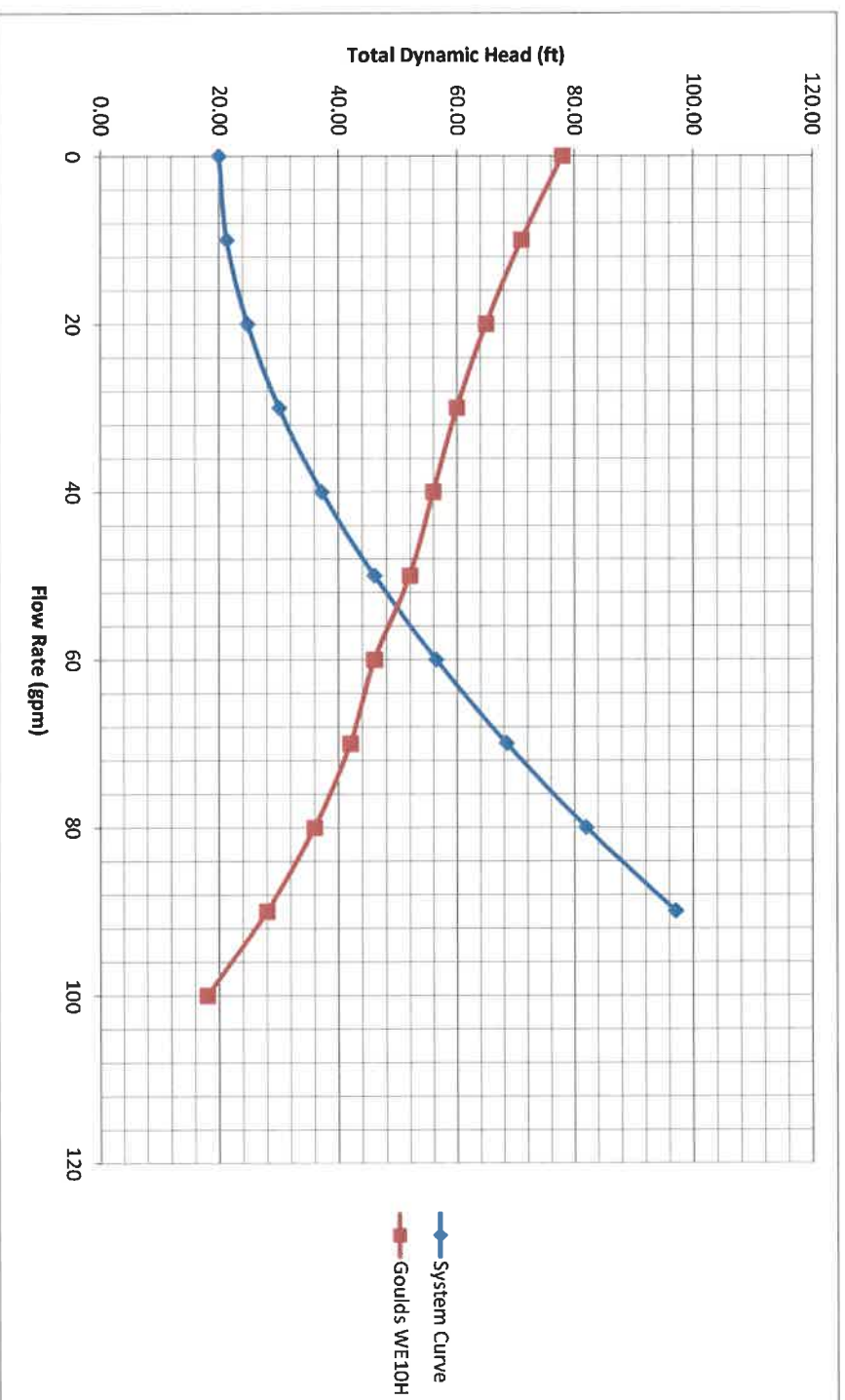
From pump tank dimensions
Seperation between on/off float

Loss through drainback hole while pump is active is assumed to be negligible

(16' x 7') BOX 4 - Tank Data

4,000 Gal. Pump Chamber:	
Required Dose:	1450 gal.
1 vert foot of dosing tank:	837.76 gal.
1 vert inch of dosing tank:	69.81 gal.
Req'd Storage: Dual Pumps Provided	0 gal.
Minimum Depth of Tank Below Inlet:	39.7 Inch

PUMP SIZING CALCULATIONS





FEATURES

Impeller: Cast iron, semi-open, non-clog with pump-out vanes for mechanical seal protection. Balanced for smooth operation. Silicon bronze impeller available as an option.

Casing: Cast iron volute type for maximum efficiency. 2" NPT discharge.

Mechanical Seal: Silicon Carbide vs. Silicon Carbide sealing faces. Stainless steel metal parts, BUNA-N elastomers.

Shaft: Corrosion-resistant, stainless steel. Threaded design. Locknut on all models to guard against component damage on accidental reverse rotation.

Fasteners: 300 series stainless steel.

Capable of running dry without damage to components.

Designed for continuous operation when fully submerged.

EXTENDED WARRANTY AVAILABLE FOR RESIDENTIAL APPLICATIONS.

WE Series Model 3885

SUBMERSIBLE EFFLUENT PUMPS



APPLICATIONS

- Specifically designed for the following uses:
- Homes, Farms, Trailer Courts, Motels, Schools, Hospitals, Industry, Effluent Systems

SPECIFICATIONS

- Pump**
- Solids handling capabilities: $\frac{3}{4}$ " maximum
 - Discharge size: 2" NPT
 - Capacities: up to 140 GPM
 - Total heads: up to 128 feet TDH
 - Temperature: 104°F (40°C) continuous, 140°F (60°C) intermittent
 - See order numbers on reverse side for specific HP, voltage, phase and RPM's available.

MOTORS

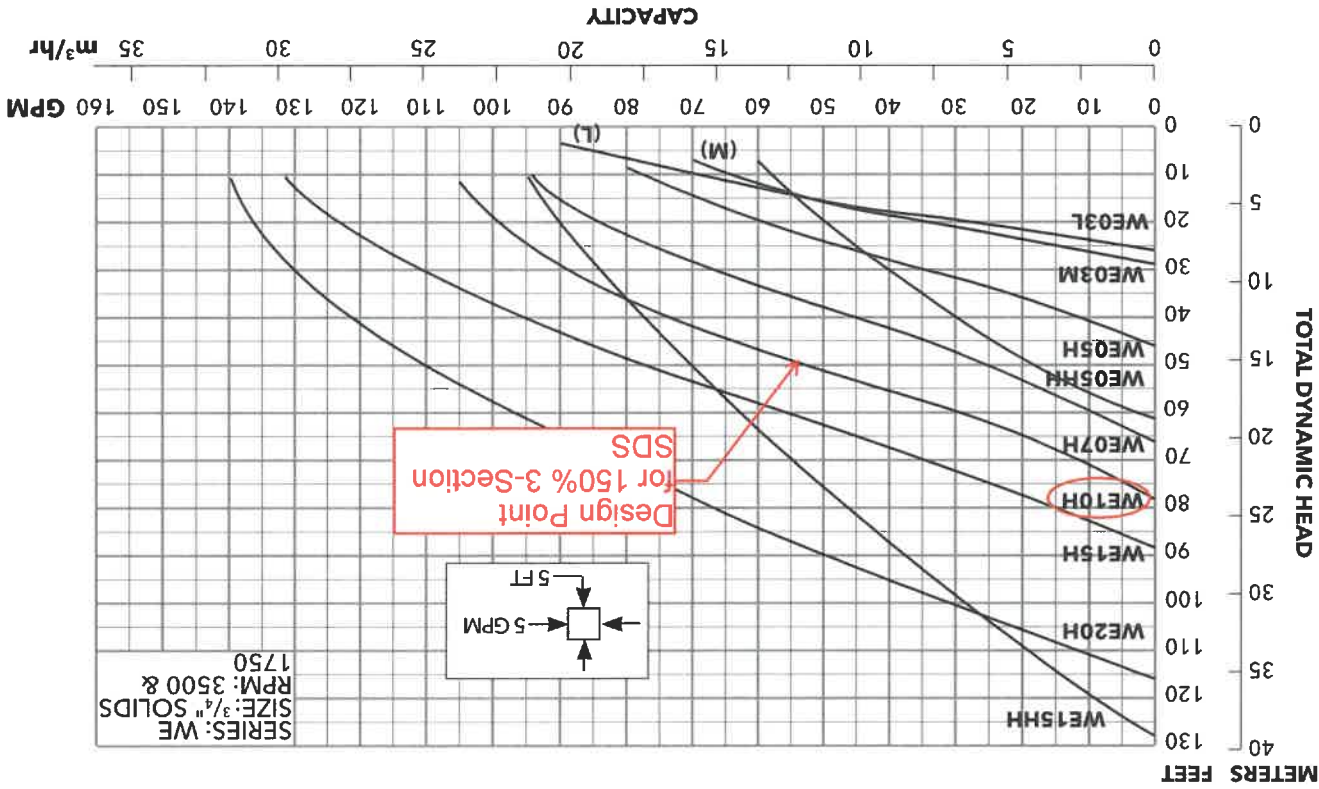
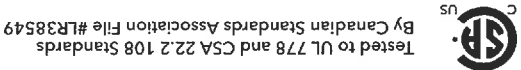
- Fully submerged in high-grade turbine oil for lubrication and efficient heat transfer.
- Class B insulation on $\frac{1}{3}$ - $1\frac{1}{2}$ HP models.
- Class F insulation on 2 HP models.

Single phase (60 Hz):

- Capacitor start motors for maximum starting torque.
- Built-in overload with automatic reset.

AGENCY LISTINGS

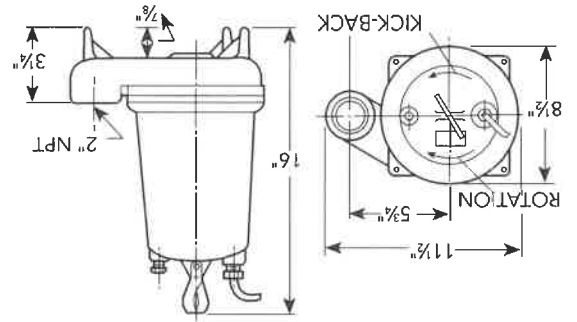
- SJTOW or STOW severe duty oil and water resistant power cords.
 - $\frac{1}{3}$ - 1 HP models have NEMA three prong grounding plugs.
 - $1\frac{1}{2}$ HP and larger units have bare lead cord ends.
- Three phase (60 Hz):**
- Class 10 overload protection must be provided in separately ordered starter unit.
 - STOW power cords all have bare lead cord ends.
 - Designed for Continuous Operation: Pump ratings are within the motor manufacturer's recommended working limits, can be operated continuously without damage when fully submerged.
 - Bearings: Upper and lower heavy duty ball bearing construction.
 - Power Cable: Severe duty rated, oil and water resistant. Epoxy seal on motor end provides secondary moisture barrier in case of outer jacket damage and to prevent oil wicking. Standard cord is 20'. Optional lengths are available.
 - O-ring: Assures positive sealing against contaminants and oil leakage.



MODELS

Order Number	HP	Phase	Volts	RPM	Impeller Diameter (in.)	Maximum Amps	Locked Rotor Amps	KVA Code	Full Load Efficiency %	Resistance		Power Cable Size	Weight (lbs.)
										Start	Line-Line		
WE0311L	0.33	1	115	1750	5.38	10.7	30.0	M	54	11.9	1.7	16/3	56
WE0318L			208			6.8	19.5	K	51	9.1	4.2		
WE0312L			230			4.9	14.1	L	53	14.5	8.0		
WE0311M			115			10.7	30.0	M	54	11.9	1.7		
WE0318M			208			6.8	19.5	K	51	9.1	4.2		
WE0312M			230			4.9	14.1	L	53	14.5	8.0		
WE0511H	0.5		115		3.56	14.5	46.0	M	54	7.5	1.0	14/3	60
WE0518H			208			8.1	31.0	K	68	9.7	2.4	16/3	
WE0512H			230			7.3	34.5	M	53	9.6	4.0	14/4	
WE0538H		3	200			4.9	22.6	R	68	NA	3.8		
WE0532H			230			3.3	18.8	R	70	NA	5.8		
WE0534H			460			1.7	9.4	R	70	NA	23.2		
WE0537H			575			1.4	7.5	R	62	NA	35.3		
WE0511HH		1	115		3.88	14.5	46.0	M	54	7.5	1.0	14/3	
WE0518HH			208			8.1	31.0	K	68	9.7	2.4	16/3	
WE0512HH			230			7.3	34.5	M	53	9.6	4.0	14/4	
WE0538HH		3	200			4.9	22.6	R	68	NA	3.8		
WE0532HH			230			3.6	18.8	R	70	NA	5.8		
WE0534HH			460			1.8	9.4	R	70	NA	23.2		
WE0537HH			575			1.5	7.5	R	62	NA	35.3		
WE0718H	0.75	1	208	4.06	11.0	31.0	K	68	9.7	2.4	14/3	70	
WE0712H			230		10.0	27.5	J	65	12.2	2.7	14/4		
WE0738H		3	200		6.2	20.6	L	64	NA	5.7			
WE0732H			230		5.4	15.7	K	68	NA	8.6			
WE0734H			460		2.7	7.9	K	68	NA	34.2			
WE0737H			575		2.2	9.9	L	78	NA	26.5			
WE1018H	1	1	208	3450	4.44	14.0	59.0	K	68	9.3	1.1	14/3	80
WE1012H			230			12.5	36.2	J	69	10.3	2.1	14/4	
WE1038H		3	200			8.1	37.6	M	77	NA	2.7		
WE1032H			230			7.0	24.1	L	79	NA	4.1		
WE1034H			460			3.5	12.1	L	79	NA	16.2		
WE1037H			575			2.8	9.9	L	78	NA	26.5		
WE1518H	1.5	1	208		4.56	17.5	59.0	K	68	9.3	1.1	14/3	80
WE1512H			230			15.7	50.0	H	68	11.3	1.6	14/4	
WE1538H			3			200	10.6	40.6	K	79	NA		
WE1532H		230				9.2	31.7	K	78	NA	2.9		
WE1534H		460				4.6	15.9	K	78	NA	11.4		
WE1537H		575				3.7	13.1	K	75	NA	16.9		
WE1518HH		1	208		5.50	17.5	59.0	K	68	9.3	1.1	14/3	
WE1512HH			230			15.7	50.0	H	68	11.3	1.6	14/4	
WE1538HH			3			200	10.6	40.6	K	79	NA		
WE1532HH		230				9.2	31.7	K	78	NA	2.9		
WE1534HH		460				4.6	15.9	K	78	NA	11.4		
WE1537HH		575				3.7	13.1	K	75	NA	16.9		
WE2012H	2	3	230		5.38	18.0	49.6	F	78	3.2	1.2	14/3	83
WE2038H			200			12.0	42.4	K	78	NA	1.7	14/4	
WE2032H			230			11.6	42.4	K	78	NA	1.7		
WE2034H			460			5.8	21.2	K	78	NA	6.6		
WE2037H			575			4.7	16.3	L	78	NA	10.5		

Xylem Inc.
2881 East Bayard Street Ext., Suite A
Seneca Falls, NY 13148
Phone: (866) 325-4210
Fax: (888) 322-5877
www.gouldswatertechnology.com
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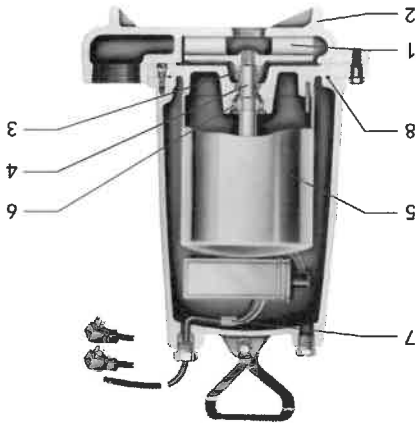
(All dimensions are in inches. Do not use for construction purposes.)

DIMENSIONS

Order No.	HP	RPM	Total Head Feet of Water																	
			03L	03M	05H	07H	10H	15H	05HH	15HH	20H	WE	WE	WE	WE	WE	WE	WE	WE	WE
1	5	86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	10	70	63	78	94	94	94	94	58	95	-	138	136	133	130	126	121	116	110	103
3	15	52	52	70	90	103	128	128	53	93	138	136	133	130	126	121	116	110	103	96
4	20	27	35	60	83	98	123	123	49	90	136	133	130	126	121	116	110	103	96	89
5	25	5	15	48	76	94	117	117	45	87	133	130	126	121	116	110	103	96	89	81
6	30	-	-	-	35	67	88	110	40	83	130	126	121	116	110	103	96	89	81	74
7	35	-	-	-	22	57	82	103	35	80	126	121	116	110	103	96	89	81	74	66
8	40	-	-	-	-	45	74	95	30	77	121	116	110	103	96	89	81	74	66	49
9	45	-	-	-	-	35	64	86	25	74	116	110	103	96	89	81	74	66	49	47
10	50	-	-	-	-	25	53	77	-	70	110	103	96	89	81	74	66	49	47	37
11	55	-	-	-	-	-	40	67	-	66	103	96	89	81	74	66	49	47	37	28
12	60	-	-	-	-	-	30	56	-	63	96	89	81	74	66	49	47	37	28	20
13	65	-	-	-	-	-	20	45	-	58	89	81	74	66	49	47	37	28	20	16
14	70	-	-	-	-	-	-	35	-	55	81	74	66	49	47	37	28	20	16	12
15	75	-	-	-	-	-	-	25	-	51	74	66	49	47	37	28	20	16	12	9
16	80	-	-	-	-	-	-	-	-	47	66	49	47	37	28	20	16	12	9	6
17	90	-	-	-	-	-	-	-	-	37	49	47	37	28	20	16	12	9	6	3
18	100	-	-	-	-	-	-	-	-	28	37	49	47	37	28	20	16	12	9	0

PERFORMANCE RATINGS (gallons per minute)

COMPONENTS



Item No.	Description
1	Impeller
2	Casing
3	Mechanical Seal
4	Motor Shaft
5	Motor
6	Ball Bearings
7	Power Cable
8	Casing O-Ring

Cascade Creek Subdivision SDS Control Panel & Float Switch Product Information

INSTALLER FRIENDLY SERIES® - IFS Single Phase Duplex (Demand/TD)

Single phase, duplex demand dose or timed dose, float or C-Level™ sensor controlled system for pump control and system monitoring.

The IFS duplex control panel is designed to control two (alternating) 120, 208, 240 VAC single phase pumps in water and sewage installations. The panel features an easy-to-use touch pad with display on the inner door for programming and system monitoring. The alternating action equalizes pump wear. In addition to the alternating pump control, this system provides override control should either pump fail.

The panel configuration can be easily converted in the field to either a timed dose or demand dose.

The optional C-Level™ sensor is a pressure transducer that senses the liquid level in the tank and sends a signal to the IFS panel. Pump activation levels can be adjusted by using the panel touch pad. C-Level™ CL40 sensor operating range is 3-39.9 inches (7.6-101.3 cm). C-Level™ CL100 operating range is 3-99.5 inches (7.6-252.7 cm).

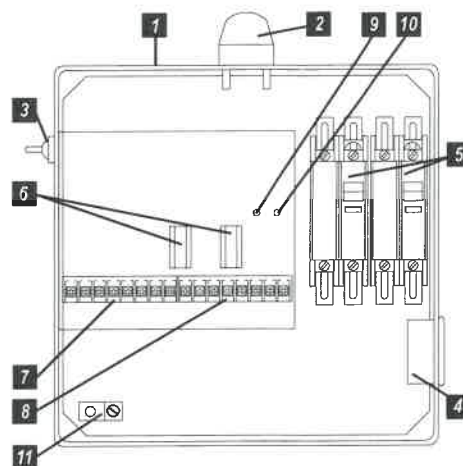
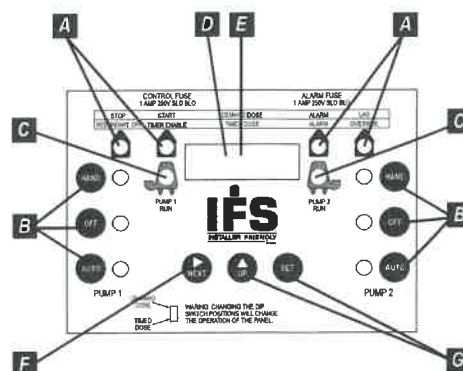
TOUCH PAD FEATURES

- A. **Level Status Indicators** illuminate when floats or set points are activated. Alarm will activate if a float operates out of sequence.
- B. **HOA (Hand-Off-Automatic) Buttons** control pump mode with indication. Hand mode defaults to Automatic when stop level or redundant off level is reached.
- C. **Pump Run Indicators** will illuminate when pumps are called to run.
- D. **Lead/Lag Selector** toggles pump operation (alternate 1-2 and 2-1).
- E. **LED Display** shows system information including: level in inches or centimeters (C-Level™ only), mode, pumps elapsed time (hh:mm), events (cycles), alarm counter, float error count, timed dose override counter (timed dose only), and ON/OFF times (timed dose only).
- F. **NEXT Push Button** toggles display.
- G. **UP and SET Push Buttons** set pump ON/OFF times (timed dose only) and activation levels (C-Level™ only).

PANEL COMPONENTS

1. **Enclosure base** measures 10 X 10 X 6 inches (25.4 X 25.4 X 15.24 cm). NEMA 4X (ultraviolet stabilized thermoplastic with removable mounting feet for outdoor or indoor use). **Note:** Options, voltage, and amp range selected may change enclosure size and component layout.
2. **Red Alarm Beacon** provides 360° visual check of alarm condition.
3. **Exterior Alarm Test/Normal/Silence Switch** allows horn and light to be tested and horn to be silenced in an alarm condition. Alarm automatically resets once alarm condition is cleared.
4. **Alarm Horn** provides audio warning of alarm condition (83 to 85 decibel rating).
5. **Circuit Breakers** (optional) provide pump disconnect and branch circuit protection.
6. **Power Relays** control pump by switching electrical lines. Definite purpose contactors used when pump full load amps are above 15.
7. **Float Connection Terminal Block**
8. **Incoming Control/Alarm Power & Pump Terminal Block**
9. **Control Power Indicator/Fuse** indicator light illuminates if control power is present in panel. Alarm activates if control fuse is blown.
10. **Alarm Power Indicator/Fuse** indicator light illuminates if alarm power is present in panel.
11. **Ground Lug**

NOTE: Schematic/Wiring Diagram and Pump Specification Label are located inside the panel on enclosure cover



Model Shown IFS31W114X8AC

Reg. Cdn Pat. & TM Off
C-Level™ Sensor US Patent 8,336,385. Other patents pending.

FEATURES

- Entire control system is UL Listed to meet and/or exceed industry safety standards
- Dual safety certification for the United States and Canada
- Standard package includes:
Demand Dose - three 20' SJE MilliAmpMaster™ control switches
Timed Dose - two 20' SJE MilliAmpMaster™ control switches
- Complete with step-by-step installation instructions
- Three-year limited warranty



SJE Rhombus

PO Box 1708, Detroit Lakes, MN 56502
1-888-DIAL-SJE • 1-218-847-1317

1-218-847-4617 Fax

email: sje@sjerhombus.com

www.sjerhombus.com

MODEL IFS

MODEL TYPE IFS

ALARM PACKAGE 3 = DPLX DEMAND DOSE (includes option BAC standard)
4 = DPLX TIMED DOSE (includes option BAC standard)

ENCLOSURE RATING 1 = alarm package (includes test/normal/silence switch, fuse, red light & horn)
W = NEMA 4X

STARTING DEVICE 1 = 120/208/240 VAC
9 = 120 VAC

PUMP FULL LOAD AMPS 0 = 0-7 FLA
1 = 7-15 FLA
2 = 15-20 FLA

PUMP DISCONNECTS 0 = no pump disconnect
4 = circuit breaker(s)

120 VAC (must select starting device option 9)
120/208/240 VAC (must select starting device option 1)

SWITCH APPLICATIONS
H = floats (Timed dose = timer enable and alarm / Demand dose = stop, start, and lag/alarm) (select 17 option)
X = no floats
C = C-Level™ sensor (must select 24 or 29 option)
(select option 3E and/or 4A & 4D for high water alarm and/or redundant off floats)

Note: Pump down applications only.
Industry practices suggest that a secondary device, such as a float switch, be used for redundant activation of the high level alarm and pump shut off.

OPTIONS Listed below

CODE DESCRIPTION

1J Duo alarm inputs

3A Alarm flasher

3B Manual alarm reset

3E High water alarm float (must select 17 option)

4A Redundant off (select option 4D if floats are required)

4D Redundant off float

4D Timed Dose

4D Demand Dose

6A Auxiliary alarm contacts, form C
(must select 4A option) (must select 17 option)

8AC Display board includes: ETM counter, events (cycles)
counter, alarm counter, and override counter (timed dose only). (Included as standard.)

10E Lockable latch - NEMA 4X

10F Lighting arrester (must select pump circuit breakers, control and alarm power combined)

10K Anti-condensation heater

11C NEMA 1 alarm panel (must select option 6A)

11D NEMA 4X alarm panel (must select option 6A)

15A Control / Alarm circuit breaker

CODE DESCRIPTION

16A 10' cord in lieu of 20' (per float)

16B 15' cord in lieu of 20' (per float)

16C 30' cord in lieu of 20' (per float)

16D 40' cord in lieu of 20' (per float)

17C Sensor Float® / internally weighted ▲ (per float)

17D Sensor Float® / externally weighted ▼ (per float)

17G MilliAmpMaster™ / pipe clamp ● (per float)

17H MilliAmpMaster™ / externally weighted ● (per float)

17J Sensor Float® / pipe clamp ▲ (per float)

18A Timer override float

19F Fourth float to separate alarm function from lag (timed dose float panel only)

24E C-Level™ CL40 sensor with 4' vent tube & 20' cord

24F C-Level™ CL40 sensor with 4' vent tube & 40' cord

24G C-Level™ CL40 sensor with 8' vent tube & 20' cord

24H C-Level™ CL40 sensor with 8' vent tube & 40' cord

24X No C-Level™ CL40 sensor

29A C-Level™ CL100 sensor w/10' vent tube & 20' cord

29B C-Level™ CL100 sensor w/10' vent tube & 40' cord

29X No C-Level™ CL100 sensor

● Mechanically-activated

▲ Mercury-activated

SAMPLE MODEL

IFS 3 1 W 9 1 4 H 8AC 10E 17G

Model Type IFS

Alarm Package 3

Enclosure Rating W

Starting Device 9

Pump Full Load Amps 1

Pump Disconnects 4

Switch Application H

Options: Display, Lockable Latch, SJE MilliAmpMaster™/pipe clamp

If additional features are required, call the factory for a quote on an Engineered Custom control panel.

Specification for Installer Friendly Series® Single Phase Control Panel

1. Must be available in either simplex or duplex models.
2. Incoming pump power shall be single-phase, 60 Hz, 120/208/240 volts AC.
3. Incoming control/alarm power shall be single-phase, 60 Hz, 120 volts AC.
4. Easy to use touch pad for programming pump control.
5. The control panel is to have models available that interface with float input and models available that interface with transducer input.
6. Float-operated models shall incorporate three (3), or four (4), normally open, mercury or mechanically-activated control switches with pipe clamps. Inputs shall be labeled in the panel as stop, lead, lag/alarm, and alarm for demand dose and redundant off, timer enable, high alarm, and timer override (timed dose models). Floats shall be SJE-Rhombus control switches or approved equal.
7. Transducer-operated models shall incorporate SJE-Rhombus C-Level™ sensor.
8. The control panel is to have a means to be configured in the field to operate as either a time dose or demand dose panel.
9. The control panel is to be equipped with separately fused alarm and control circuits.
10. The control panel is to be equipped with float status indicators, pump run indicators, Hand – Off – Auto status indicators, and power on indicators.
11. Panel must log the following data: Pump run time, cycle counts, alarm counts, float out of sequence counts, and timer override counts (time dose only).
12. Alarm must activate if floats operate out of sequence (float model) or if transducer circuit opens (C-Level™ sensor model).

SJE MILLIAMPMASTER™ Control Switch

Mechanically-activated control switch designed to activate low current control panels and alarms. This wide-angle or narrow-angle control switch offers reliable low current control for AC and DC applications in potable water, wastewater, and sewage. The internal switching mechanism has sealed gold cross-point contacts for reliable low current operation. Common applications include PLC (programmable logic controller) panels, IS panels with intrinsically safe barriers, low current solar applications, and other low current control panels and alarms applications.

The wide-angle version activates/deactivates approximately 4" (10.16 cm) above and below horizontal with a 3.5" (9 cm) tether. The narrow angle version activates/deactivates at approximately 1.5" (3.81 cm) above and below horizontal with a 3.5" (9 cm) tether. It is not sensitive to rotation.

Normally Open Model (high level)

The control switch turns on (closes) when the switch tips **above** horizontal signaling a high level, and turns off (opens) when the switch drops below horizontal.

Normally Closed Model (low level)

The control switch turns on (closes) when the switch drops **below** horizontal signaling a low level, and turns off (opens) when the switch tips above horizontal.

FEATURES

- Passed NSF Standard 61 protocol by an approved Water Quality Association laboratory.

- Low current, non-arching applications down to 0.160 mA at 125 VAC.

- Mechanically-activated, snap action contacts.

- High impact, corrosion resistant polypropylene float housing.

- Not sensitive to rotation.

- Blue colored cap for easy identification of SJE MilliAmpMaster™ control switch.

- UL Listed for use in non-potable water and sewage.

- CSA Certified.

- Five-year limited warranty.



OPTIONS

This switch is available:

- for normally open (high level) applications or normally closed (low level) applications.

- with narrow or wide-angle pumping ranges.

- in standard cable lengths of 10, 15, 20, or 30 feet and 3, 5, 6, or 10 meters (longer lengths available).

- with two mounting options that allow for flexibility in installation:

Mounting Clamp: for applications where the switch can be attached to a discharge pipe or similar mounting device.

Externally Weighted: for applications where the switch can be suspended from above.

SEE BACKSIDE FOR ORDERING INFORMATION.

SPECIFICATIONS

CABLE: flexible 18 gauge, 2 conductor (UL, CSA) SJOW, water-resistant (CPE)

FLOAT: 2.74 inch diameter x 4.83 inch long (7.0 cm x 12.3 cm), high-impact, corrosion resistant, polypropylene housing for use in sewage and water up to 140°F (60°C)

MAXIMUM WATER DEPTH: 30 feet (9 meters), 13 PSI (90kPa)

ELECTRICAL:

125 VAC

Maximum Electrical Load:

0.1 amps

Minimum Electrical Load:

0.160 milliamps

30 VDC

Maximum Electrical Load:

0.1 amps

Minimum Electrical Load:

0.160 milliamps

5 VDC

Minimum Electrical Load:

1 milliamps



PO Box 1708, Detroit Lakes, MN 56502

1-888-DIAL-SJE • 1-218-847-1317

1-218-847-4617 Fax

email: customer.service@sjerhombus.com

www.sjerhombus.com

FLOAT ACCESSORIES

Cable Clamp Assembly, Float Brackets, Pipe Mounting Bracket,
Cable Weights, ETM w/ Piggy-Back Plug, Vertical Reed Switch, Anchor and Chain

CABLE WEIGHT

Provides an accurate pivot point for suspended float switches.

- Gripper teeth on clip and weight channel securely lock float cable into place
- Cable Weight can be adjusted without the use of tools



U.S. Patent 5,306,885

HOUSING: 1 pound, 12 ounce (0.8 kgs.), 2.8 inch diameter x 3.3 inch long (7.1 cm diameter x 8.4 cm), impact resistant, non-corrosive, PVC housing for use in liquids up to 140°F (60°C).

CLIP: injection molded acetal plastic

WIRE/CABLE ACCOMMODATED: SJOW, SJTW, 18/2, 18/3, 16/2, 16/3, 14/2 and 14/3

SHIP WEIGHT: 2 lbs. (.907 kgs)

Part Number	Description	List Price
1002230	Cable Weight	\$9.88

CABLE WEIGHT MINI

Provides an accurate pivot point for suspended float switches.

- One piece cable weight
- Turn and Lock for easy installation.



HOUSING: 9.6 ounces (0.27 kgs.), 2.5 inch diameter x 2.5 inch long (6.35 cm diameter x 6.35 cm), impact resistant, non-corrosive, PVC housing for use in liquids up to 140°F (60°C)

WIRE/CABLE ACCOMMODATED:

SJOW, SJTW, 18/2, 18/3

Part Number	Description	List Price
1030356	Cable Weight Mini	\$7.65

ELAPSED TIME METER WITH PIGGY-BACK PLUG

Plugs into switched outlet or piggy-back switch of plugger control panel. Unit must be placed inside an enclosure.

- Screws and mounting adhesive included.



Part Number	Description	List Price
1022848	ETM w/120V piggy-back plug	\$92.89
1032834	ETM w/230V piggy-back plug	\$199.45

VERTICAL REED SWITCH

- Control differential: .375 inch (1 cm)
- Maximum angle from vertical: 5°
- Electrical: 250 mAmps, 12-125 VAC, 50/60 Hz
500 mAmps, 6-12 VDC, 50/60 Hz
- Housing and Float: 1.60 inch diameter x 6.7 inch long (4.06 cm X 17.01 cm), high impact, corrosion resistant PVC for use in sewage and non-potable water up to 120°F (50°C)



Part Number	Description	List Price
1011027	10ft VRS 120V Bulk	\$78.67
1016561	15ft VRS 120V Bulk	\$84.14

ANCHOR

- 10 lb. weight
- Yellow, vinyl coated, mushroom style



Part Number	Description	List Price
1018687	10 lb. Mushroom Anchor	\$46.81

CHAIN

- 1/8" thickness
- 316 grade stainless steel
- Available in one foot increments

Part Number	Description	List Price
1018823	1/8 inch Chain	\$9.04 per ft

SJE Rhombus

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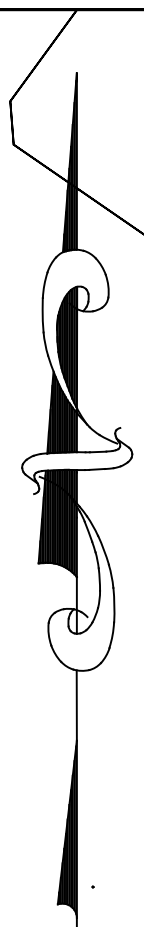
www.sjerhombus.com 151

PRODUCTS CONTINUED ON NEXT PAGE.

APPENDIX B

Subdivision Grading & Utility Plan

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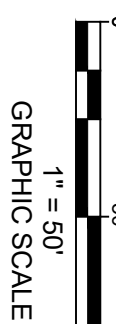
DEEP TEST RESULTS (6/20/2024 & 7/8/2025*):

HOLE#	LOT#	TOTAL DEPTH	ROCK DEPTH	WATER DEPTH	MOTTUN G DEPTH	SOIL DESCRIPTION
DT-1	84"	N/A	72"	N/A		0 - 18" Farm Tillage
DT-2	84"	N/A	72"	N/A		18" - 72" Silty Loam w/ Coarse Sand & Gravel 0 - 24" Farm Tillage
DT-3	90"	N/A	90"	N/A		24" - 72" Silty Loam w/ Coarse Sand & Gravel 0 - 24" Farm Tillage
DT-4	96"	N/A	N/A	N/A		24" - 90" Silty Loam w/ Gravel 0 - 12" Farm Tillage
DT-5	96"	N/A	N/A	N/A		30" - 96" Coarse Sand & Gravel 0 - 24" Farm Tillage
DT-6	96"	N/A	N/A	N/A		24" - 48" Coarse Gravel 48" - 96" Reddish Brown Silty Loam
DT-7	48"	48"	N/A	N/A		24" - 96" Silty Clay Loam w/ Sand 0 - 18" Farm Tillage
DT-8	72"	72"	N/A	N/A		18" - 48" Silty Clay Loam w/ Sand 0 - 18" Farm Tillage
DT-9	90"	N/A	N/A	90"		18" - 72" Silty Clay Loam w/ Sand 0 - 30" Farm Tillage w/ Rocks
DT-10	84"	N/A	84"	N/A		30" - 90" Gravel w/ Silty Loam 0 - 30" Farm Tillage
DT-11	90"	N/A	90"	N/A		36" - 84" Gravel w/ Silty Loam 0 - 24" Farm Tillage

DEEP TEST RESULTS (7/8/2025 & 7/25/2025*):

HOLE #	LOT #	TOTAL DEPTH	ROCK DEPTH	WATER DEPTH	MOTTUN G DEPTH	SOIL DESCRIPTION
DT-A	84"	N/A	N/A	N/A		0 - 12" Farm Tillage
DT-B	84"	N/A	N/A	N/A		12" - 84" Silty Loam w/ Coarse Sand & Gravel 0 - 12" Farm Tillage
DT-C	84"	N/A	N/A	N/A		12" - 84" Silty Loam w/ Coarse Sand & Gravel 0 - 12" Farm Tillage
DT-D	84"	N/A	N/A	N/A		12" - 84" Silty Loam 0 - 12" Farm Tillage
DT-E	82"	N/A	72"	N/A		0 - 12" Farm Tillage
DT-F*	92"	N/A	72"	N/A		12" - 82" Silty Loam w/ Coarse Sand & Gravel 0 - 12" Farm Tillage
DT-G*	92"	N/A	69"	N/A		12" - 92" Silty Loam w/ Coarse Sand & Gravel 0 - 12" Farm Tillage
DT-H*	92"	N/A	69"	N/A		12" - 92" Silty Loam w/ Coarse Sand & Gravel 0 - 12" Farm Tillage
DT-I*	82"	N/A	72"	N/A		12" - 82" Silty Loam w/ Coarse Sand & Gravel 0 - 12" Farm Tillage
DT-J*	72"	N/A	48"	N/A		12" - 72" Silty Loam w/ Coarse Sand & Gravel 0 - 12" Farm Tillage
DT-K*	77"	N/A	50"	N/A		12" - 82" Silty Loam w/ Coarse Sand & Gravel 0 - 12" Farm Tillage
DT-L*	85"	N/A	82"	N/A		12" - 85" Silty Loam w/ Coarse Sand & Gravel

GRADING AND UTILITY PLAN



LEGEND

- EXISTING CONTOUR
- PROPOSED SITE PROPERTY LINE
- ADJACENT SITE PROPERTY LINES
- EXISTING STREAM
- PROPOSED PROPERTY LINES
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED DRAINAGE WAYNOKE
- PROPOSED SEWERMAN
- PROPOSED WATERMAN
- PROPOSED DRAINAGE LINE
- PROPOSED SEWER MANHOLE
- PROPOSED CATCH BASIN

SITE DATA

LOT SIZE: 424.13 ACRES
ZONING DISTRICT: SPS - SUBURBAN RESIDENTIAL
PROPERTY ADDRESS: 34 CASCADE ROAD
AMENIA, NY 12501
PROPERTY OWNER: DSSL, LLC
BROOKLYN, NY 11201

PERC TEST RESULTS (7/22/25):

LOT NO.	TEST NO.	TEST DEPTH	TEST SOIL TYPE	TEST RUNS
PT-3	24"	Gravel	YES	1
PT-4	24"	Gravel	YES	2
PT-5	24"	Gravel	YES	3
PT-6	24"	Gravel	YES	4
PT-7	24"	Gravel	YES	5
PT-8	24"	Gravel	YES	6
PT-9	24"	Gravel	YES	7
PT-10	24"	Gravel	YES	8
PT-11	24"	Gravel	YES	9
PT-12	24"	Gravel	YES	10
PT-13	24"	Gravel	YES	11

PERC TEST RESULTS (7/10/25):

LOT NO.	TEST NO.	TEST DEPTH	TEST SOIL TYPE	TEST RUNS
PT-1	24"	Silty loam w/ Gravel	YES	1
PT-2	24"	Silty loam w/ Gravel	YES	2
PT-3	24"	Silty loam w/ Gravel	YES	3
PT-4	24"	Silty loam w/ Gravel	YES	4
PT-5	24"	Silty loam w/ Gravel	YES	5
PT-6	24"	Silty loam w/ Gravel	YES	6
PT-7	24"	Silty loam w/ Gravel	YES	7
PT-8	24"	Silty loam w/ Gravel	YES	8
PT-9	24"	Silty loam w/ Gravel	YES	9
PT-10	24"	Silty loam w/ Gravel	YES	10
PT-11	24"	Silty loam w/ Gravel	YES	11
PT-12	24"	Silty loam w/ Gravel	YES	12
PT-13	24"	Silty loam w/ Gravel	YES	13

- MAP NOTES:
- PROPERTY SURVEY, EXISTING FEATURES, AND TOPOGRAPHY BASED UPON ACTUAL SURVEY DATA.
 - NO. 100' WIDE BUFFER ZONE AROUND ALL EXISTING AND PROPOSED STRUCTURES.
 - ACCESS: ALL TOPOGRAPHIC DATA BASED ON N.T.S. 2024. PREPARED BY: [Firm Name]
 - CONTOURS: 10' INTERVALS.
 - NO. 100' WIDE BUFFER ZONE AROUND ALL EXISTING AND PROPOSED STRUCTURES.
 - UTILITY EASEMENTS GRANTED TO NEW YORK ELECTRIC AND GAS CORPORATION.

LOT SIZE: 424.13 ACRES
ZONING DISTRICT: SPS - SUBURBAN RESIDENTIAL
PROPERTY ADDRESS: 34 CASCADE ROAD
AMENIA, NY 12501
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