Permit Number: 282896

Commercial

Paid & Received
Division of Water
$ 460.00 05/27/2026

DELAWARE
DIVISION OF WATER RESOURCES
Working for YOU to Provide "Clean Water for Today and Tomorrow"

APPLICATION - PERMIT
ON-SITE WASTEWATER SYSTEM

(Please Type or Print Legibly)

OWNER'S NAME: RICOT EXANTUS PHONE: _____

ADDRESS: 11863 PARKER ROAD GEORGETOWN, DELAWARE 19947

PROJECT LOCATION: LOT 38 COUNTY SEAT GARDENS, WILSON ROAD, GEORGETOWN, DELAWARE

TAX/MAP #: 135-9.00-158.00

APPLICATION PREPARER: KENNETH R. CHRISTENBURY, P.E. DNREC LICENSE #: 4137

PREPARER'S ADDRESS: AXIOM ENGINEERING, LLC - 18 CHESTNUT STREET - GEORGETOWN, DE 19947

PHONE: 302-858-0810

I hereby affirm that the information provided on this document is accurate and complete.

Preparer's Signature: _____ Date: 5/26/26

By signing this permit application, the preparer further certifies they were physically present at the site.

KENNETH R. CHRISTENBURY No. 11563 PROFESSIONAL ENGINEER DELAWARE

-SEPTIC DESIGN CRITERIA-

(Please check all boxes that apply)

System Type: (CF = Cap & Fill / FD = Full Depth)

- ☐ Gravity (FD)
- ☐ Gravity (CF)
- ☐ Pressure Dose (FD)
- ☐ Pressure Dose (CF)
- ☐ Low Pressure Pipe (FD)
- ☐ Low Pressure Pipe (CF)
- ☐ Temporary Holding Tank
- ☐ Permanent Holding Tank
- ☑ Elevated Sand Mound
- ☐ Wisconsin At-Grade
- ☐ Subsurface Micro Irrigation
- ☐ Peat Bio- Filter
- ☐ Other _____

☑ Bed or ☐ Trench

☐ Gravelless Chamber ☑ Stone/Gravel ☐ Tire Chips

Sand-lined ☑ Yes ☐ No

Existing System Malfunctioning ☑ Yes ☐ No ☐ N/A

Pre-Treatment Units

☑ Septic Tank

☐ Other _____

Central Water Available ☑ Yes ☐ No

(If yes, please state Utility Name: _____)

Type of Construction:

- ☑ Replacement
- ☐ New Construction
- ☐ Component Replacement
  - Component: _____
- ☐ Repair to Existing System
  - Reason: _____
- ☐ Authorization to Use Existing System
  - Permit #: _____
  - Present Condition: _____
  - Structure to be connected: _____

# of Bedrooms: 12 SPLIT INTO 2 SYSTEMS

Avg. Percolation Rate: 30

Gallons Per Day Flow: 1440

Minimum Sq. Ft. Rcq'd: 3155

Sq. Ft. Proposed: 3360

EACH SYSTEM IS 1680 SQ.FT
FOR LOTS 156, 157,159, & 160

Revised 09/02/09

Site Evaluation Reference #: 573343

RECEIVED
07/07/2025
GROUNDWATER

PAID
$ 75.00 07/07/2025

Coastal Soil Consultants, Inc.
25092 Oak Road
Seaford, DE 19973
Phone & Text: (302) 629-2989
Email: jayduke@comcast.net

SITE EVALUATION APPROVAL PAGE

The soils on this site are approved when the following is completed in full and signed by the Delaware Department of Natural Resources and Environmental Control (DNREC). All references to the (Regulations) refer to the DNREC Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems (OWTDS) Amended 1/11/2014). Any changes in isolation distance requirements, placement of any fill material, removal of soil, or compaction of the soil may preclude or modify the design or installation of an OWTDS. An approved site evaluation must accompany any design permit application. This is not a construction permit.

Owner(s) Name:	Exantus and Son Home s, LLC	**Tax Map #: 1-35-9-158 & 159** **Lot #:** 37A & 38A **Serving Lot #s:** 36A & 37A
Address:	58 Garden Circle Georgetown, DE 19947	**Phone:** (302) 228-0990 **Email:** richansom@hotmail.com
Replacement System Type:	Sand-lined elevated sand mound **(SL-ESM)** on-site wastewater treatment and disposal system **(OWTDS)** (see Exhibits T in the Regulations). The area in the vicinity of the existing drainfield must be excavated to 12" below the existing drainfield and back filled with suitable sandy fill material (see Exhibit Q in the Regulations). Other OWTDS options include any conventional/alternative technologies approved by DNREC.	
Location of Drain Field:	In the vicinity of soil borings **(SB) #1 - #4** (hatched area on the plot plan).	
Depth to Limiting Zone:	**16"** to redox depletions & concentrations.	
Replacement System Type:	Same as above if space permits. Otherwise, the replacement system may be sand-lined in the vicinity of the initial system.	
Location of Drain Field:	In the immediate vicinity of soil borings referred to above.	
Depth to Limiting Zone:	Same as above.	

Design Comments

1. Maintain all isolation distances specified in Exhibit C of the Regulations.
2. Maintain a 100' isolation distance from all domestic wells and 150' from all public wells.
3. **To avoid soil compaction, the drainfield area must be protected from any disturbance such as vehicular traffic or stockpiling. Tree removal in this vicinity must be conducted according to DNREC strict guidelines. No soil compaction was detected at the soil boring locations, at the time of the site evaluation. Soil conditions between soil borings are unknown and site conditions can change prior to installation. During installation, the installer must make every effort to check for evidence of soil compaction. If soil compaction is suspected, stop installation and contact the site evaluator.**

Instructions to the Property Owner

1. Contact a **Class C** System Designer.
2. A permeability rate of **30 minutes per inch (mpi)** has been estimated for the soils on this site. These estimated rates are used to determine the required size of the disposal area. They are based on soil texture and are derived from tables developed by the DNREC. You may elect to use the estimated rate to size the disposal system or have the appropriate tests conducted. Contact the Site Evaluator at (302) 629-2989 or DNREC [(302) 856-4561 in Sussex or (302) 739-9947 in Kent] for testing information.
3. Read the attached Site Evaluation Report for additional information.

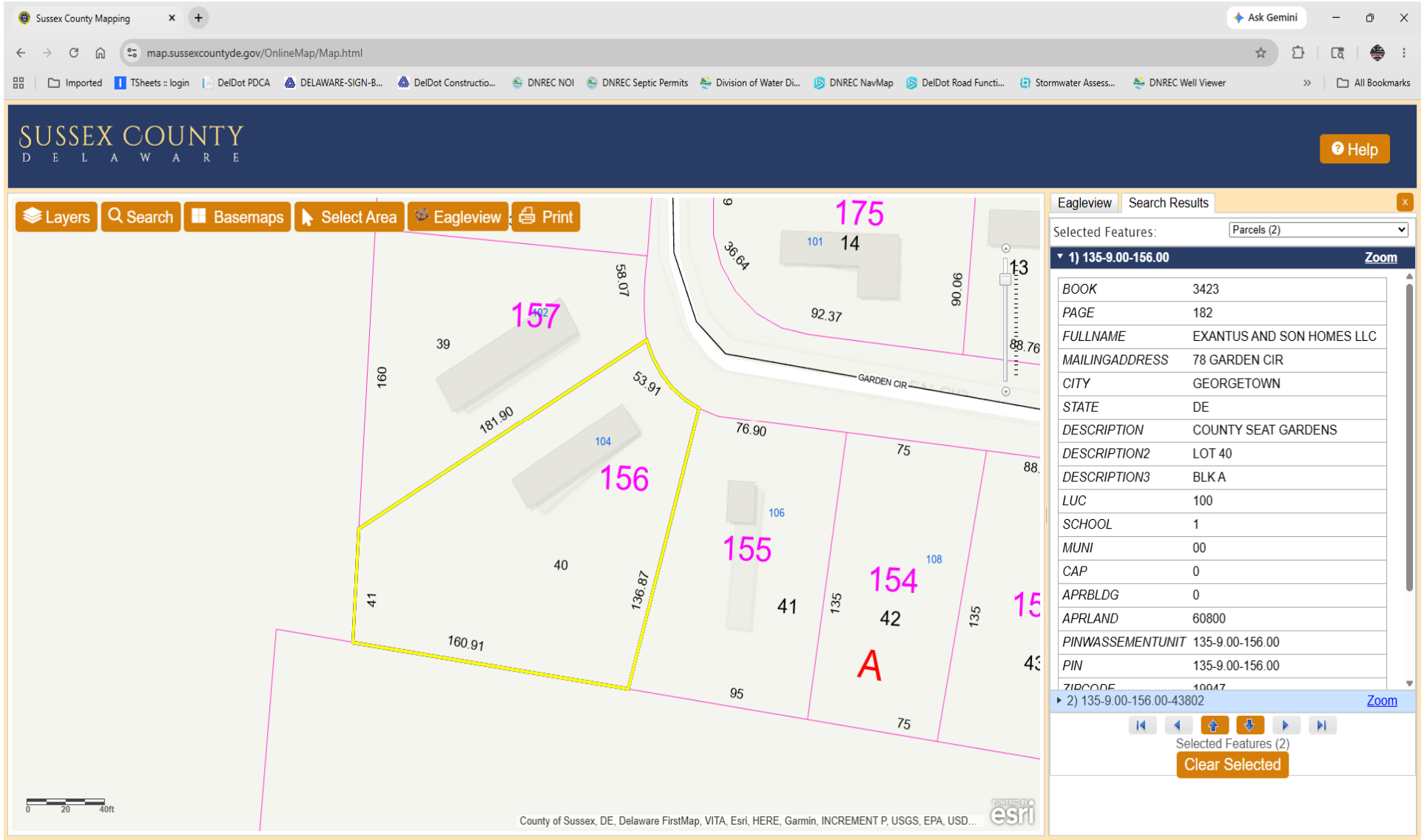
Report prepared by: J.C.D. — **Joseph C. Duke, Jr., CPSS**
Date of report: July 31, 2025
Class "D" License #: 4048

For Official Use Only

Field checked: 7/25/2025
Expiration Date: 8/4/2030
DNREC Reviewing Soil Scientist DNREC APPROVED
Approval Date: 8/4/2025

***Disclaimer:** Approval of a site evaluation indicates only that the site evaluation was conducted in compliance with the regulations. It is not an indication of the quality or correctness of the site evaluation.*

The Class D licensee is responsible for errors/omissions.
If there are questions regarding this report, contact the Class D licensee.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Zoom
BOOK 3423
PAGE 182
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MAILINGADDRESS 78 GARDEN CIR
CITY GEORGETOWN
STATE DE
DESCRIPTION COUNTY SEAT GARDENS
DESCRIPTION2 LOT 40
DESCRIPTION3 BLK A
LUC 100
SCHOOL 1
MUNI 00
CAP 0
APRBLDG 0
APRLAND 60800
PINWASSEMENTUNIT 135-9.00-156.00
PIN 135-9.00-156.00
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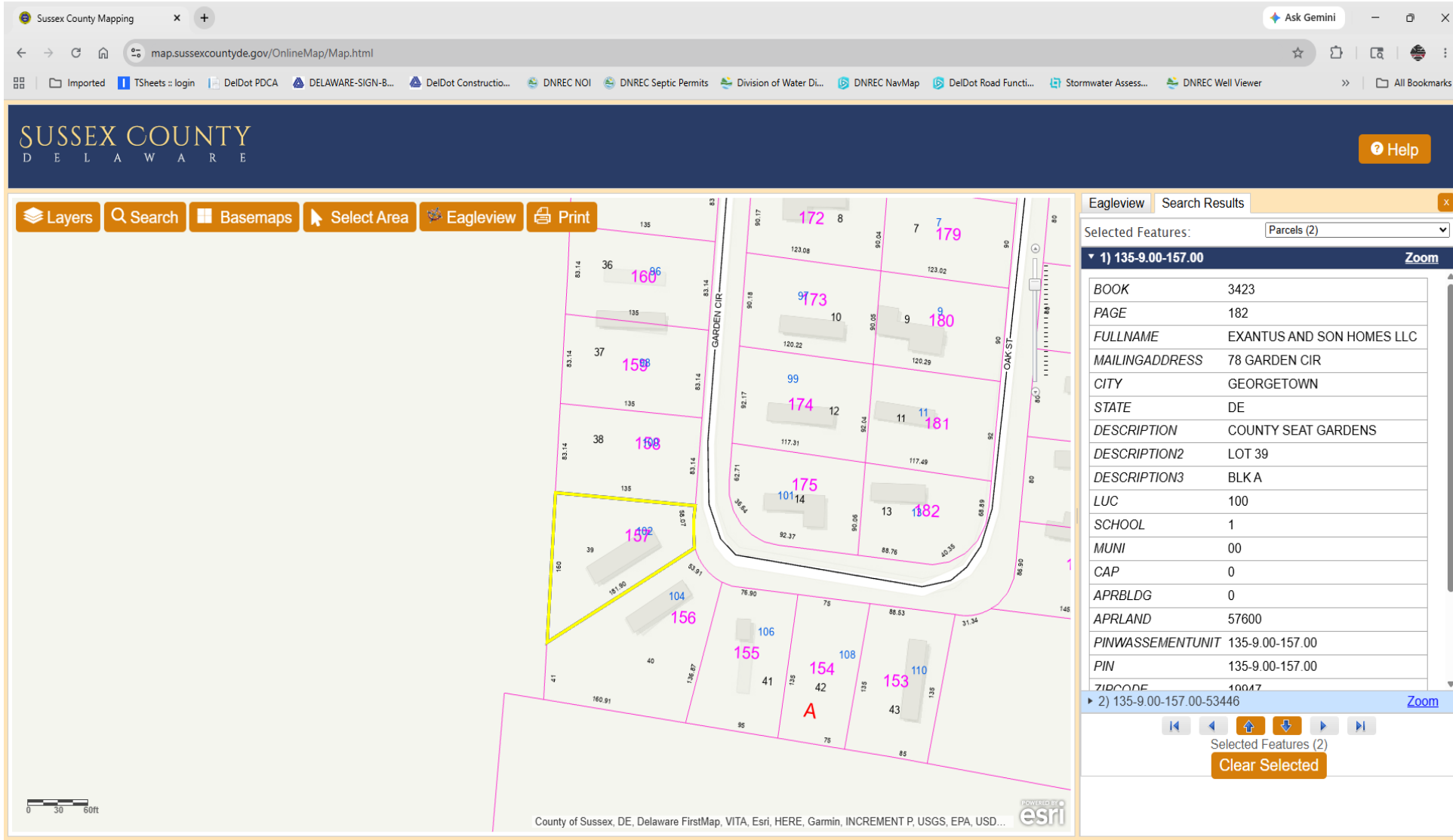
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DESCRIPTION2 LOT 39
DESCRIPTION3 BLK A
LUC 100
SCHOOL 1
MUNI 00
CAP 0
APRBLDG 0
APRLAND 57600
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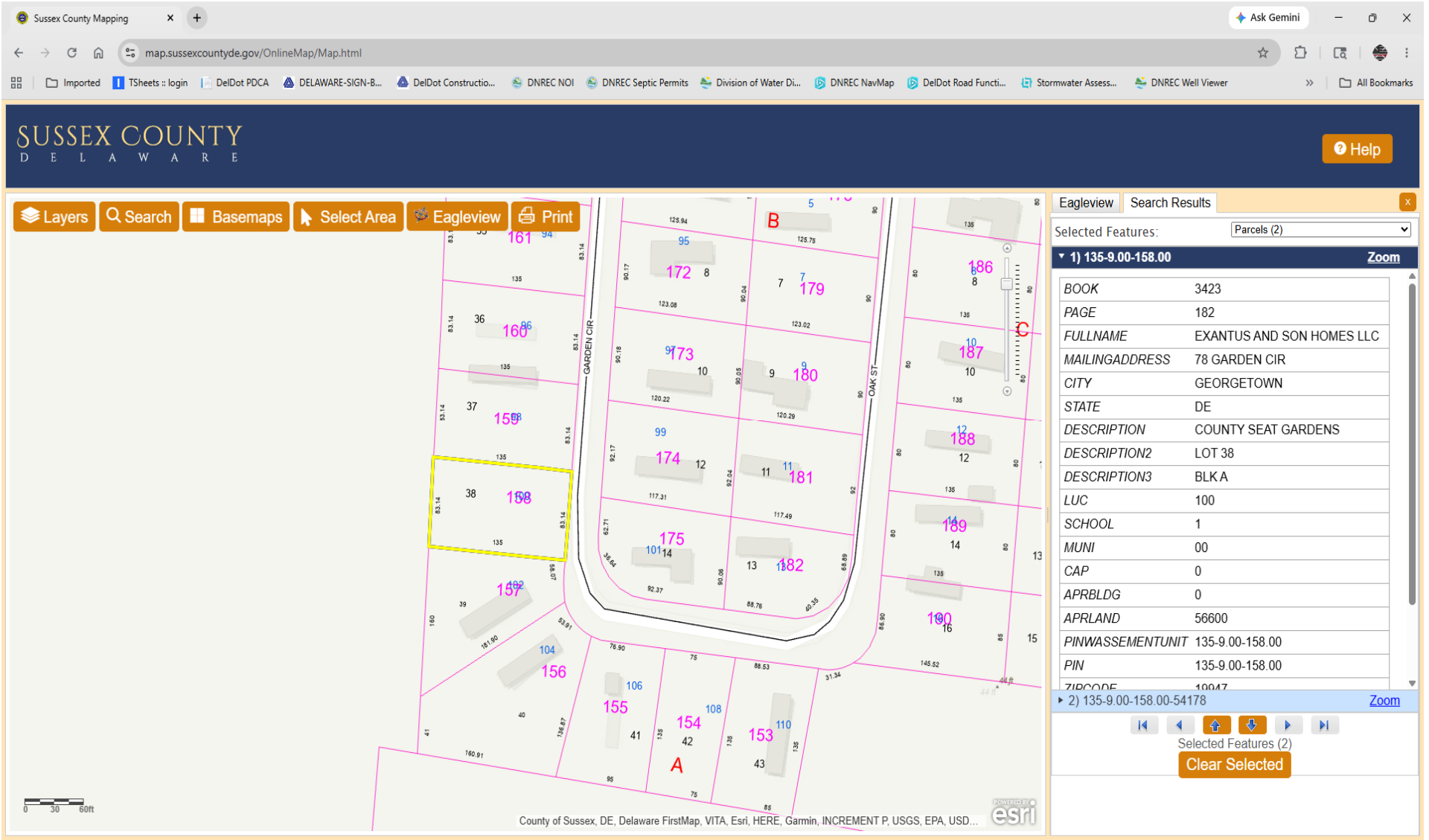
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DESCRIPTION2 LOT 38
DESCRIPTION3 BLK A
LUC 100
SCHOOL 1
MUNI 00
CAP 0
APRBLDG 0
APRLAND 56600
PINWASSEMENTUNIT 135-9.00-158.00
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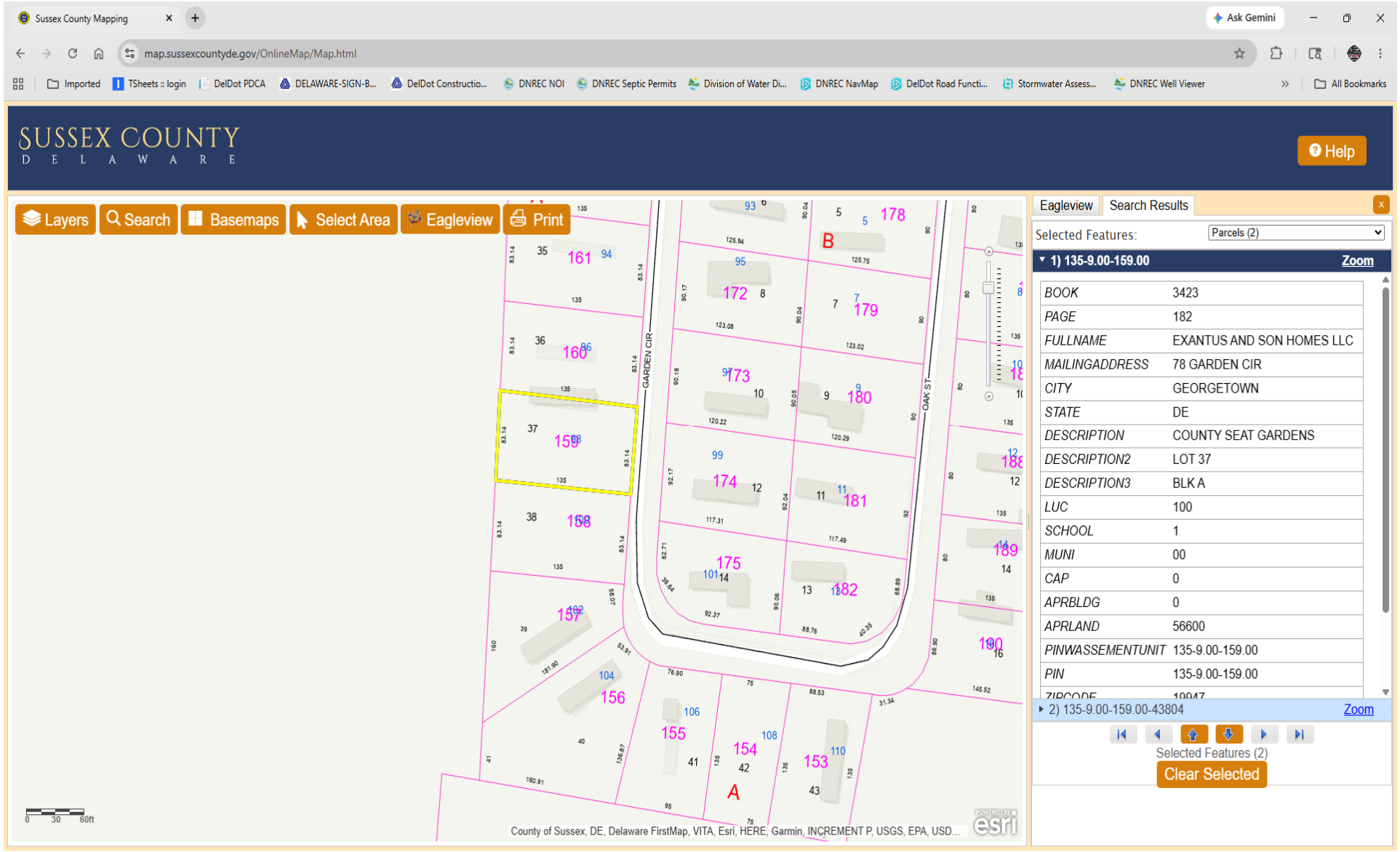
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DESCRIPTION2 LOT 37
DESCRIPTION3 BLK A
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SCHOOL 1
MUNI 00
CAP 0
APRBLDG 0
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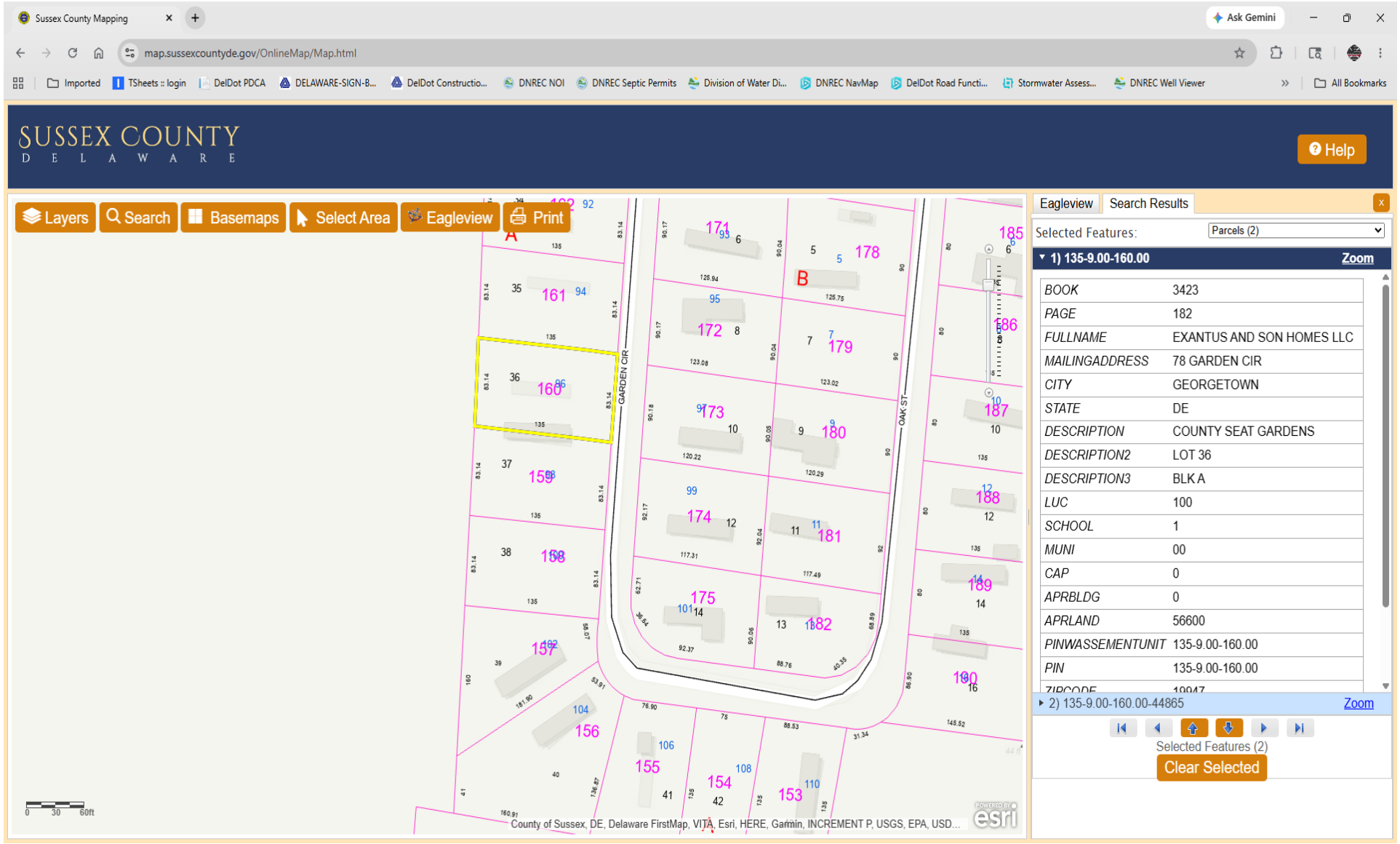
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SCHOOL 1
MUNI 00
CAP 0
APRBLDG 0
APRLAND 56600
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PROJECT NO: 0659-2501

DRAWING: S-1

SHEET: 1 OF 5

SEAL

24" X 36"	1 inch = 20 ft.
11" X 17"	1 inch = 40 ft.

0 20' 40'

ENGINEER:	KRC
DESIGNER:	KRC
DRAFTER:	EJW
CHECKED BY:	KRC
DATE:	05/22/2026
TAX MAP#:	135-9.00-158.00

AXIOM ENGINEERING L.L.C.
18 CHESTNUT STREET
GEORGETOWN, DE 19947
(302) 855-0810
FAX: 855-0812
E-MAIL: AXIOM@AXENG.COM
WEB: WWW.AXENG.COM

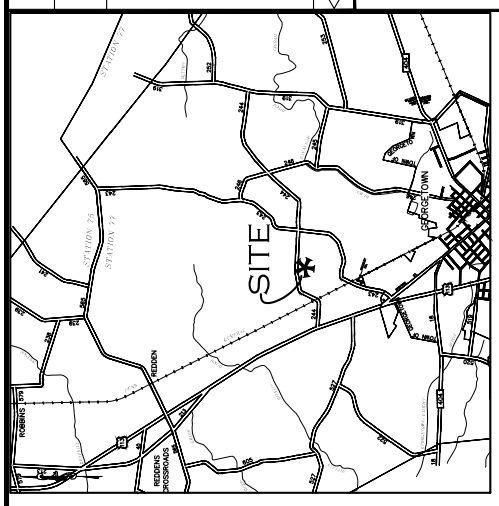
REPLACEMENT SEPTIC SYSTEM FOR COUNTY SEAT GARDENS

GEORGETOWN HUNDRED, SUSSEX COUNTY, DELAWARE

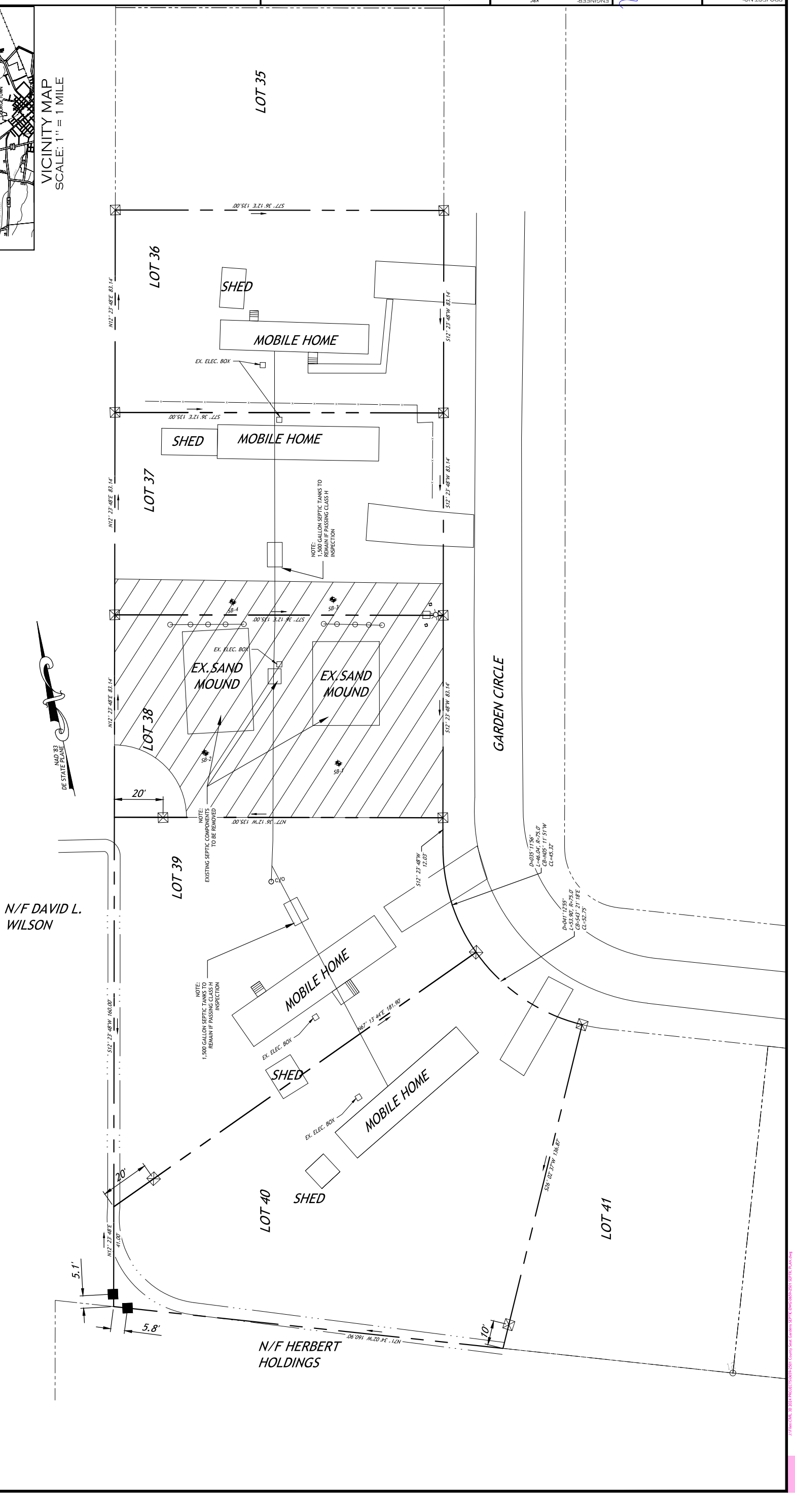
OVERVIEW SHEET

REV	DESCRIPTION OF REVISION	BY/DATE	CHECKED BY/DATE
1		.	.
2			
3			
4			
5			
6			

THIS DRAWING DOES NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL CONSTRUCTION MUST BE DONE IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 AND ALL RULES AND REGULATIONS THERETO AND APPURTENANT.



VICINITY MAP
SCALE: 1" = 1 MILE



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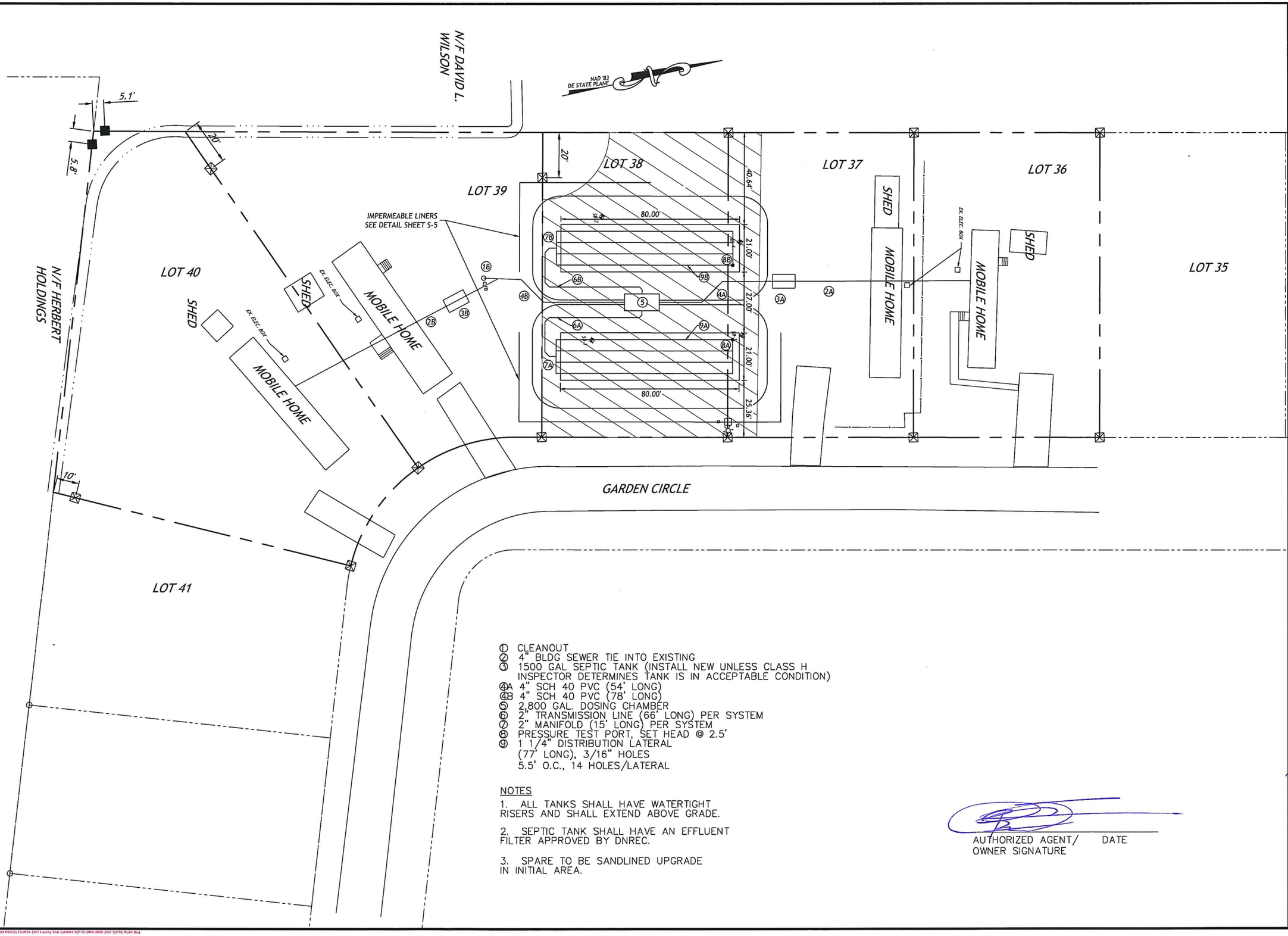


① CLEANOUT
② 4" BLDG SEWER TIE INTO EXISTING
③ 1500 GAL SEPTIC TANK (INSTALL NEW UNLESS CLASS H INSPECTOR DETERMINES TANK IS IN ACCEPTABLE CONDITION)
④A 4" SCH 40 PVC (54' LONG)
④B 4" SCH 40 PVC (78' LONG)
⑤ 2,800 GAL. DOSING CHAMBER
⑥ 2" TRANSMISSION LINE (66' LONG) PER SYSTEM
⑦ 2" MANIFOLD (15' LONG) PER SYSTEM
⑧ PRESSURE TEST PORT, SET HEAD @ 2.5'
⑨ 1 1/4" DISTRIBUTION LATERAL (77' LONG), 3/16" HOLES 5.5' O.C., 14 HOLES/LATERAL

NOTES

1. ALL TANKS SHALL HAVE WATERTIGHT RISERS AND SHALL EXTEND ABOVE GRADE.

2. SEPTIC TANK SHALL HAVE AN EFFLUENT FILTER APPROVED BY DNREC.

3. SPARE TO BE SANDLINED UPGRADE IN INITIAL AREA.

AUTHORIZED AGENT/ OWNER SIGNATURE

DATE

REV	DESCRIPTION OF REVISION	APVD BY/DATE	CHCKD BY/DATE

THIS DRAWING DOES NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH OSHA REGULATIONS FOR SAFETY AND HEALTH ACT OF 1970 AND ALL RULES AND REGULATIONS THERETO AND APPURTENANT.

SEPTIC PLAN

REPLACEMENT SEPTIC SYSTEM FOR COUNTY SEAT GARDENS

GEORGETOWN HUNDRED, SUSSEX COUNTY, DELAWARE

AXIOM ENGINEERING L.L.C.
18 CHESTNUT STREET
GEORGETOWN, DE 19947
(302) 8550810
FAX: 8550812
EMAIL: INFO@AXENG.COM
WEB: WWW.AXENG.COM

ENGINEER:	KRC
DESIGNER:	KRC
DRAFTER:	EJW
CHECKED BY:	KRC
DATE:	05/22/2026
TAX MAP:	135-9.00-158.00

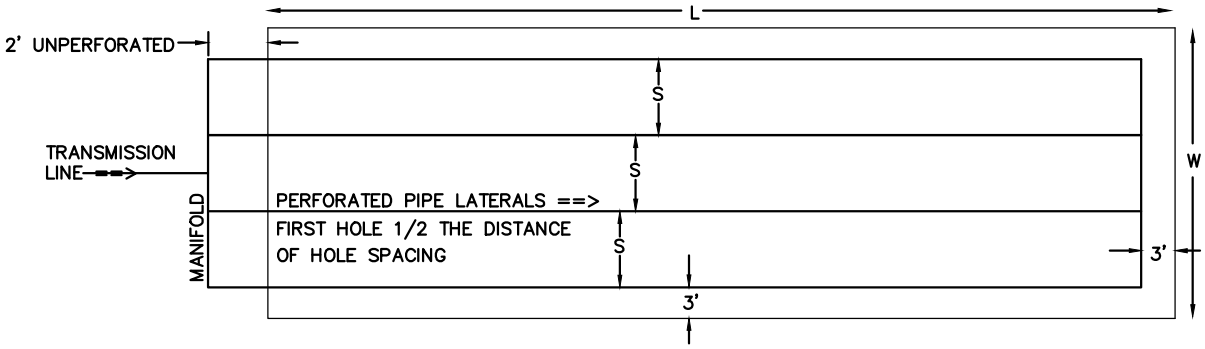
0 20' 40'
24" X 36" 1 inch = 20 ft.
11" X 17" 1 inch = 40 ft.

KENNETH R. CHRISTENSEN
No. 19333
5/22/26
PROFESSIONAL ENGINEER
SEAL

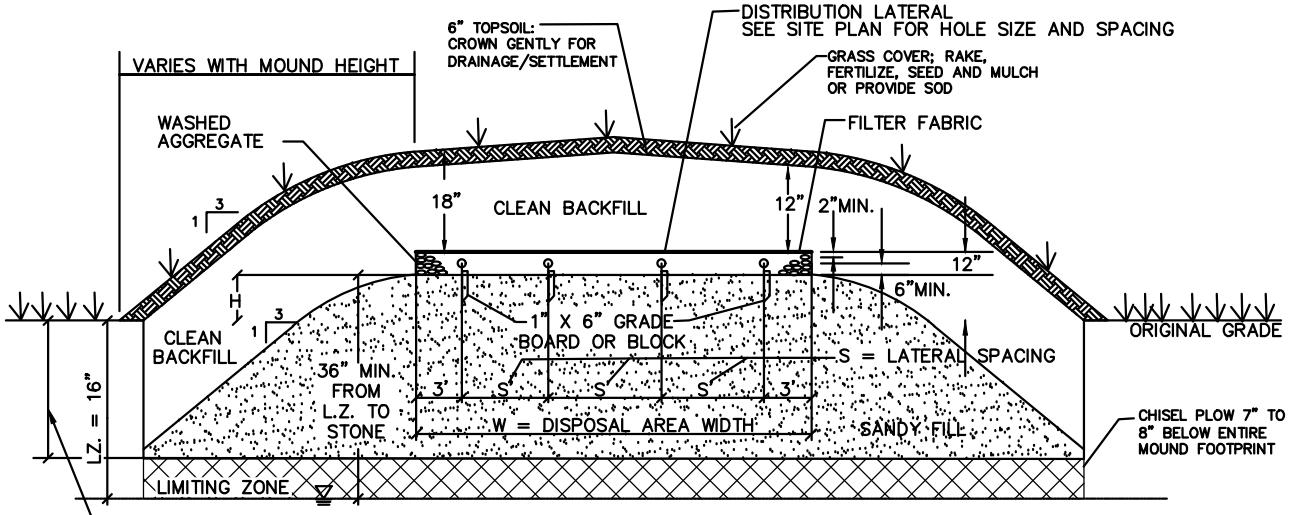
PROJECT NO: 0659-2501
DRAWING: S-2
SHEET: 2 OF 5

Z:\Files-CIVIL 3D-2024 PROJECTS\0659-2501 County Seat Gardens SEPTIC\DWG\0659-2501 SEPTIC PLAN.dwg

DUPLEX SYSTEM TO HAVE 2
IDENTICAL DRAINFIELDS INSTALLED



_21_ = W = DISPOSAL AREA WIDTH (25' MAX. RECOMMENDED)
_80_ = L = DISPOSAL AREA LENGTH (100' MAX.)
_4_ = N = NUMBER OF LATERALS
_5'_ = S = LATERAL SPACING (4'–6')
_20"_ = H = HEIGHT OF SANDY FILL ABOVE GRADE
_12"_ = D = DEPTH OF SANDY FILL BELOW GRADE



NOTE:
SAND LINING TO WITHIN 12" OF THE LIMITING ZONE AND/OR BELOW THE LIMITING ZONE SHALL BE SUBJECT TO RECEIPT OF APPROVAL OF A FORMAL VARIANCE APPLICATION TO D.N.R.E.C.

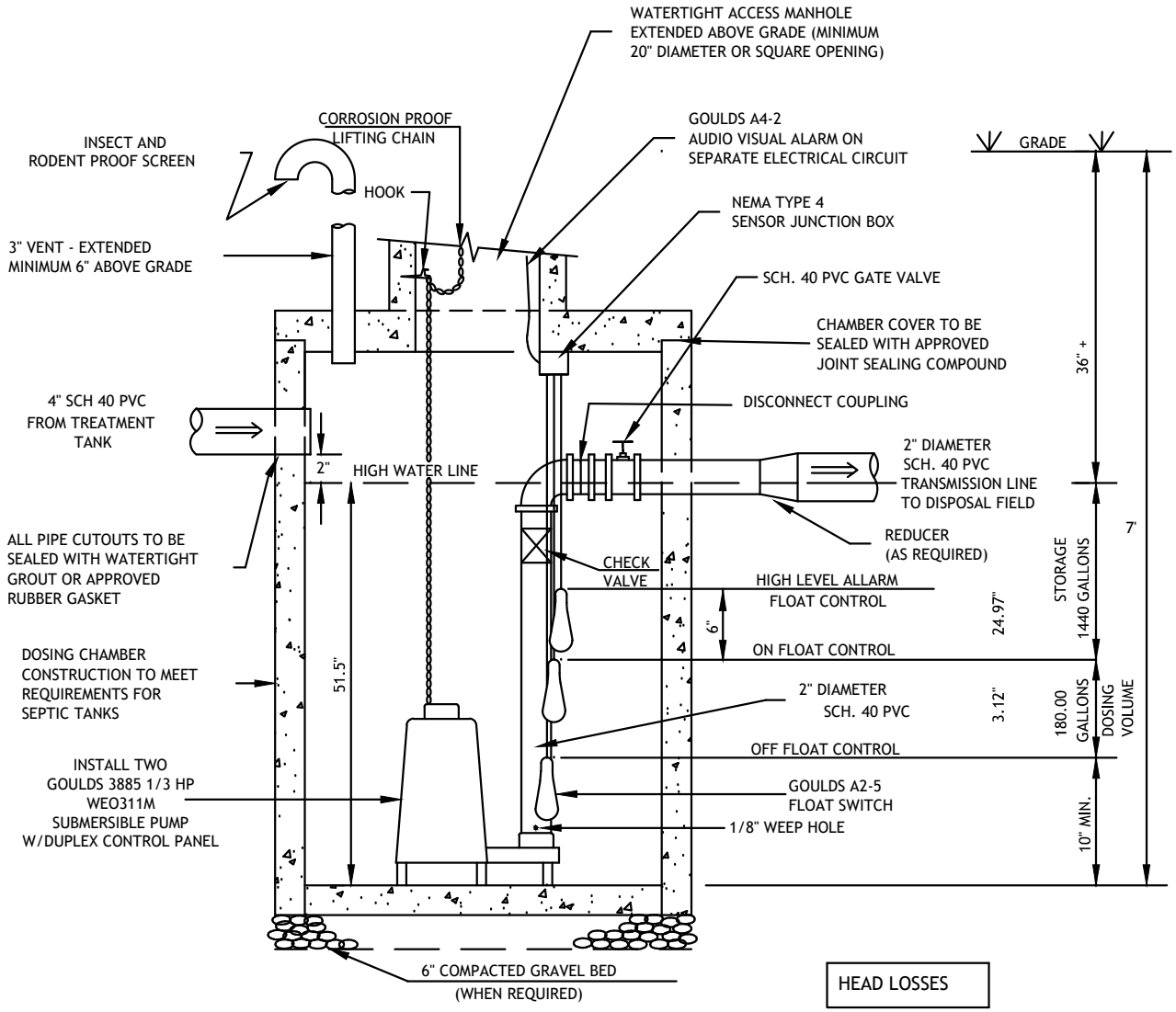
KENNETH R. CHRISTENBURY REGISTERED No. 11553 PROFESSIONAL DELAWARE ENGINEER
5/22/26

AXIOM ENGINEERING L.L.C.
18 CHESTNUT STREET
GEORGETOWN, DE 19947
(302) 855-0810
FAX: 855-0812
E-MAIL: AXIOM@AXENG.COM
WEB: WWW.AXENG.COM

COUNTY SEAT GRADENS SEPTIC REPLACEMENT
SAND LINED ELEVATED SAND MOUND DETAIL
GEORGETOWN HUNDRED, SUSSEX COUNTY, DELAWARE

SCALE	N.T.S
DESIGNED	KRC
DRAWN	EJW
CHECKED	KRC
DATE	05/22/2026
T.M.	135-9.00-158.00

0659-2501
EXHIBIT
S-3



HEAD LOSSES		
STATIC	=	8.33'
ORIFICE	=	2.5'
FRICTION	=	5.31'
TOTAL HEAD LOSS	=	16.14'

2,800 GAL DOSING CHAMBER

(W) 15.17' X (L) 7.17') X (D) 5.5'

SECTION

NOTES:

* MAXIMUM DEPTH FROM GRADE TO INVERT OF DOSING CHAMBER TO BE 7'-6" UNLESS A TRAFFIC RATED TANK IS PROVIDED
* EXCAVATION LIMITS SHALL EXTEND AT LEAST 2 FEET BEYOND TANK PERIMETER
* ALL PIPE TO BE PVC SCHEDULE 40 OR SDR 26
* CHAMBER TO BE SIZED ACCORDING TO REQUIREMENTS OF DOSING VOLUME AND STORAGE. SEE EXHIBIT
* ALL DOSING CHAMBER COMPONENTS SHALL BE FIELD TESTED TO INSURE ACCURACY , WATERTIGHTNESS AND PROPER OPERATION OF ALL PUMPS AND ALARM CONTROLS
* ALL ELECTRICAL CONNECTIONS SHALL BE WATERPROOF, CORROSION RESISTANT AND EXPLOSION PROOF

AXIOM ENGINEERING L.L.C.
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COUNTY SEAT GRADENS SEPTIC REPLACEMENT

DOSING CHAMBER DETAIL

GEORGETOWN HUNDRED, SUSSEX COUNTY, DELAWARE

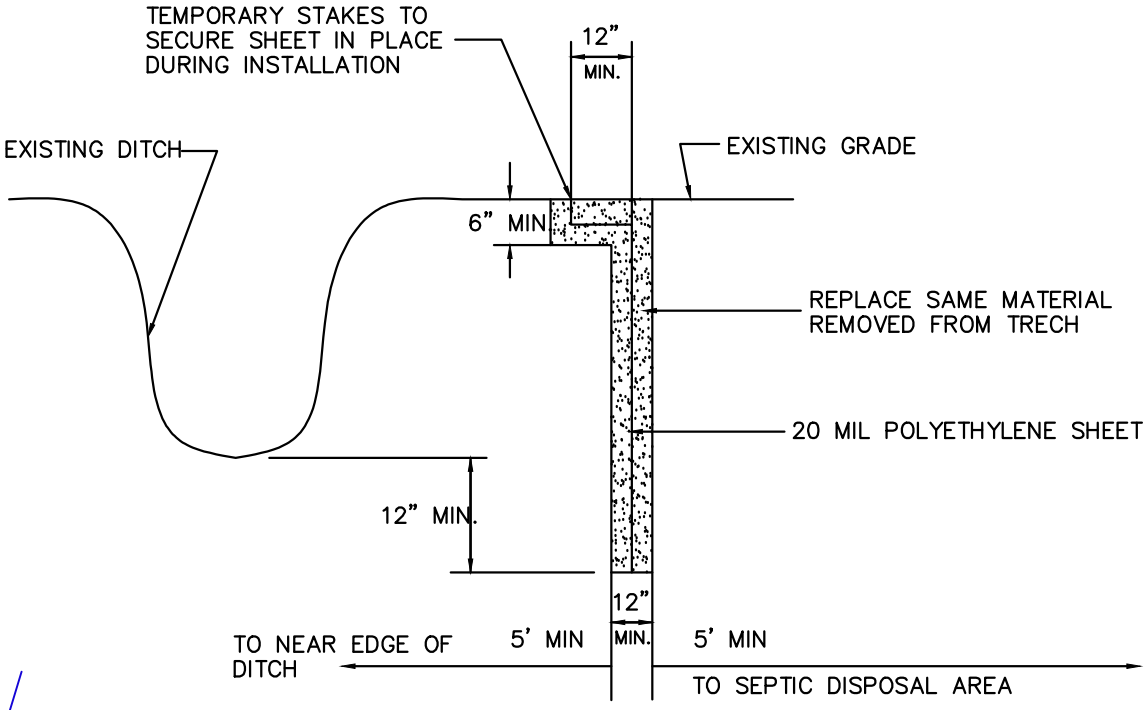
SCALE	N.T.S
DESIGNED	KRC
DRAWN	EJW
CHECKED	KRC
DATE	05/22/2026
T.M.	135-9.00-158.00

0659-2501

EXHIBIT

S-4

NOTES:
1. THIS BARRIER IS NOT TO BE PLACED IN ANY RIGHT-OF-WAYS OR EASEMENTS.
2. UTILITY LINES WHICH CROSS THE BARRIER SHOULD BE INSLALLED PRIOR TO PLACING THE BARRIER AND SHOULD BE INSTALLED AT LEAST 12" DEEPER THAN THE BARRIER.
3. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" 3 DAYS PRIOR TO EXCAVATION @ 1-800-282-8555.
4. THE CONTRACTOR SHALL EXCERCISE CARE DURING THE PLACEMENT AND BACKFILL TO ENSURE THAT THE 20 MIL POLY SHEET REMAINS IN PROPER POSITION AND IS NOT DAMAGED.
5. THE CONTRACTOR SHALL LEAVE OPEN TRENCH WITH POLY SHEET INSTALLED VISIBLE FOR DESIGN ENGINEER AND/OR DNREC INSPECTION (NO BACKFILL PRIOR TO INSPECTION).



ELEVATION VIEW

TYPICAL BARRIER DETAIL
NOT TO SCALE

KENNETH R. CHRISTENBURY REGISTERED No. 11553 DELAWARE PROFESSIONAL ENGINEER
5/22/26

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18 CHESTNUT STREET
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E-MAIL: AXIOM@AXENG.COM
WEB: WWW.AXENG.COM

COUNTY SEAT GRADENS SEPTIC REPLACEMENT

TYPICAL BARRIER DETAIL

GEORGETOWN HUNDRED, SUSSEX COUNTY, DELAWARE

SCALE	N.T.S
DESIGNED	KRC
DRAWN	EJW
CHECKED	KRC
DATE	05/22/2026
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0659-2501

EXHIBIT

S-5

GOULDS PUMPS

Submersible Effluent Pump

MODEL 3885

WE Series

PROSURANCE AVAILABLE FOR RESIDENTIAL APPLICATIONS.

APPLICATIONS

Specifically designed for the following uses:

- Homes
- Farms
- Trailer courts
- Motels
- Schools
- Hospitals
- Industry
- Effluent systems

SPECIFICATIONS

Pump

- Solids handling capabilities: ¾" 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.

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.

MOTORS

■ Fully submerged in high-grade turbine oil for lubrication and efficient heat transfer.

■ Class B insulation on ⅓-1½ 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.
- SJTOW or STOW severe duty oil and water resistant power cords.
- ⅓ – 1 HP models have NEMA three prong grounding plugs.
- 1½ 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.

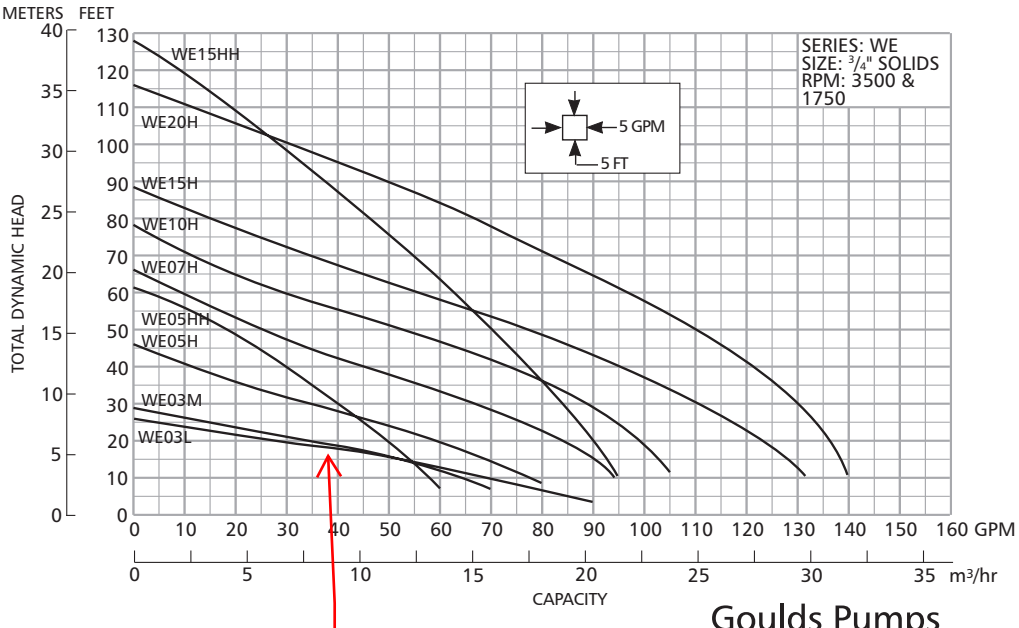
■ **Power Cable:** Severe duty rated, oil and water resistant. Epoxy seal on motor end provides secondary moisture barrier in case of outer jacket damage and to prevent oil wicking. Standard cord is 20'. Optional lengths are available.

■ **O-ring:** Assures positive sealing against contaminants and oil leakage.

AGENCY LISTINGS

C SA US — **Tested to UL 778 and CSA 22.2 108 Standards By Canadian Standards Association File #LR38549**

Goulds Pumps is ISO 9001 Registered.



Goulds Pumps

ITT Industries

37 GPM @ 16.14' TDH
NOTE: EACH DRAINFIELD WILL HAVE IT'S OWN PUMP CONTROLLED BY THE DUPLEX CONTROL PANEL

Effective December, 2004
B3885

GOULDS PUMPS

Submersible Effluent Pump

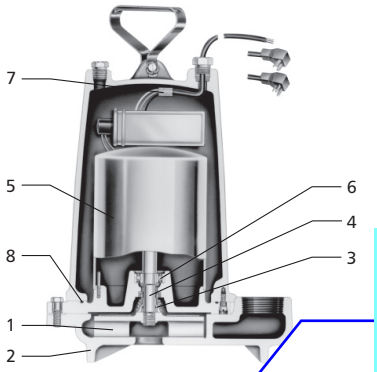
MODEL 3885

WE Series

SYSTEM TO INCLUDE 2 PUMPS, 1 FOR EACH DRAINFIELD, WITH DUPLEX CONTROL

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



MODELS

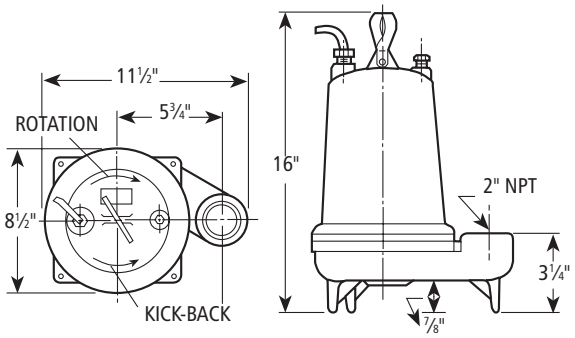
Order No.	HP	Volts	Phase	Max. Amp.	RPM	Solids	Wt. (lbs.)
WE0311L		115		10.7			
WE0318L		208		6.8			
WE0312L	⅓	230		4.9	1750		56
WE0311M		115		10.7			
WE0318M		208	1	6.8			
WE0312M		230		4.9			
WE0511H		115		14.5			
WE0518H		208		8.1			
WE0512H		230		7.3			
WE0538H		200		4.9			
WE0532H		230	3	3.3			
WE0534H		460		1.7			
WE0537H	½	575		1.4			60
WE0511HH		115		14.5			
WE0518HH		208	1	8.1			
WE0512HH		230		7.3			
WE0538HH		200		4.9			
WE0532HH		230	3	3.6			
WE0534HH		460		1.8			
WE0537HH		575		1.5			
WE0718H		208	1	11.0			
WE0712H		230		10.0			
WE0738H	¾	200		6.2			
WE0732H		230	3	5.4			
WE0734H		460		2.7		¾"	
WE0737H		575		2.2			70
WE1018H		208	1	14.0			
WE1012H		230		12.5	3500		
WE1038H	1	200		8.1			
WE1032H		230	3	7.0			
WE1034H		460		3.5			
WE1037H		575		2.8			
WE1518H		208	1	17.5			
WE1512H		230		15.7			
WE1538H		200		10.6			
WE1532H		230	3	9.2			
WE1534H		460		4.6			
WE1537H	1½	575		3.7			80
WE1518HH		208	1	17.5			
WE1512HH		230		15.7			
WE1538HH		200		10.6			
WE1532HH		230	3	9.2			
WE1534HH		460		4.6			
WE1537HH		575		3.7			
WE2012H		230	1	18.0			
WE2038H		200		12.0			
WE2032H	2	230	3	11.6			83
WE2034H		460		5.8			
WE2037H		575		4.7			

PERFORMANCE RATINGS (gallons per minute)

Order No.		WE03L	WE03M	WE05H	WE07H	WE10H	WE15H	WE05HH	WE15HH	WE20H
Total Head Feet of Water	HP	⅓	⅓	½	¾	1	1½	½	1½	2
	RPM	1750	1750	3500	3500	3500	3500	3500	3500	3500
	5	86	–	–	–	–	–	–	–	–
	10	70	63	78	94	–	–	58	95	–
	15	52	52	70	90	103	128	53	93	138
	20	27	35	60	83	98	123	49	90	136
	25	–	–	48	76	94	117	45	87	133
	30	–	–	35	67	88	110	40	83	130
	35	–	–	22	57	82	103	35	80	126
	40	–	–	–	45	74	95	30	77	121
	45	–	–	–	35	64	86	25	74	116
	50	–	–	–	25	53	77	–	70	110
	55	–	–	–	–	40	67	–	66	103
	60	–	–	–	–	30	56	–	63	96
	65	–	–	–	–	20	45	–	58	89
	70	–	–	–	–	–	35	–	55	81
	75	–	–	–	–	–	25	–	51	74
	80	–	–	–	–	–	–	–	47	66
	90	–	–	–	–	–	–	–	37	49
	100	–	–	–	–	–	–	–	28	30

DIMENSIONS

(All dimensions are in inches. Do not use for construction purposes.)

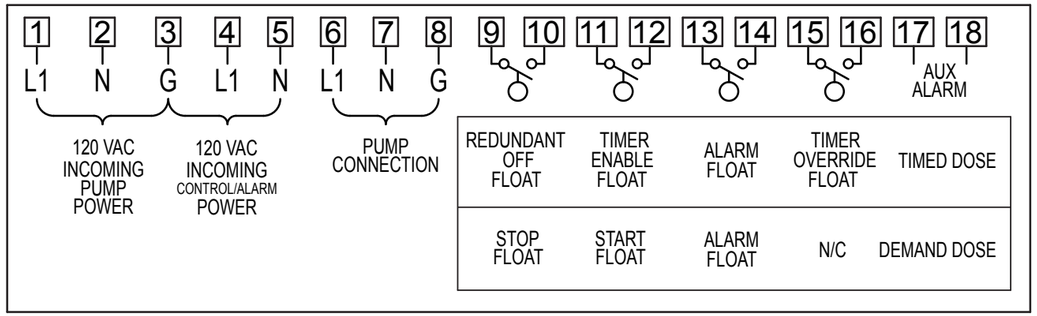


Goulds Pumps

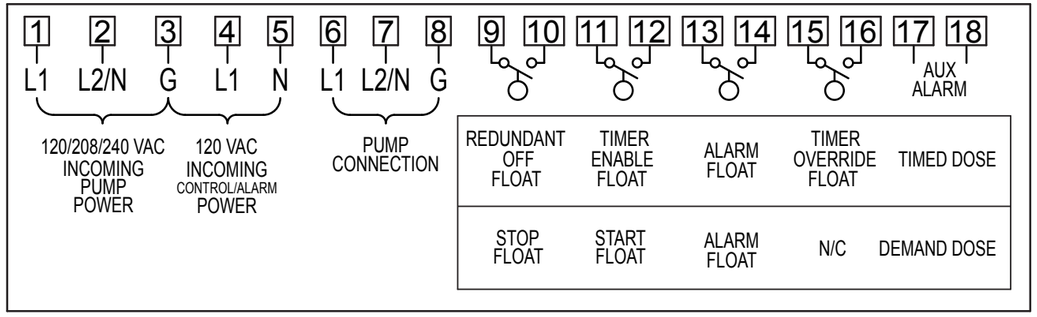
ITT Industries

Standard EZ Wiring

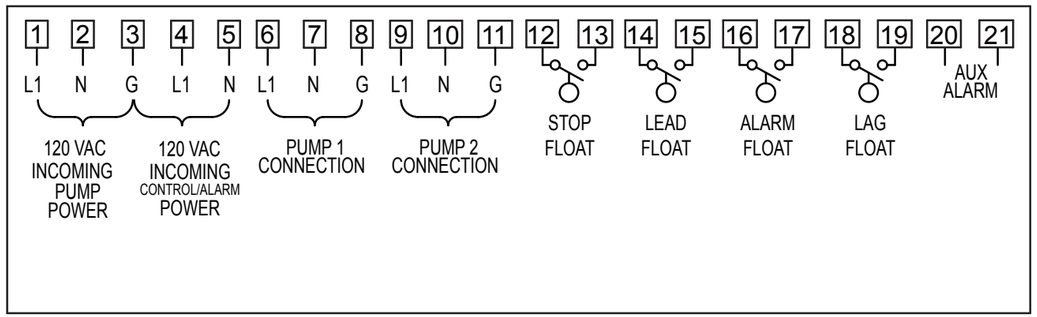
Simplex 120 VAC - Models EZS11W914* / EZ21W914* shown below:



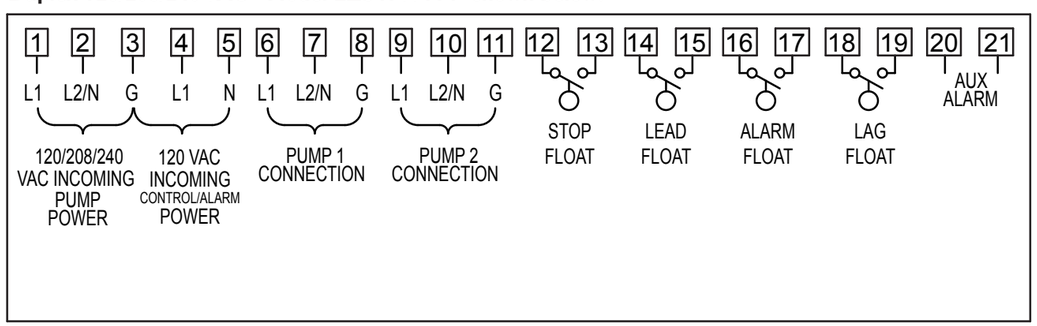
Simplex 120/208/240 VAC - Models EZS11W914* / EZS21W114* shown below:



Duplex 120 VAC - Model EZS41W914* shown below:



Duplex 120/208/240 VAC - Model EZS41W114* shown below:



SJE RHOMBUS

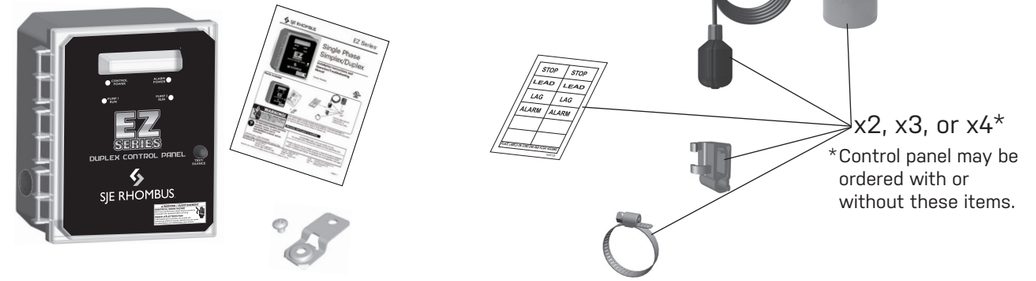
EZ Series®

Single Phase Simplex/Duplex

Installation Instructions and Operation Manual

c UL us LISTED

Parts included



WARNING!

ELECTRICAL SHOCK HAZARD
Disconnect all power sources before servicing. Failure to do so could result in serious injury or death.

This control panel must be installed and serviced by a licensed electrician in accordance with the National Electric Code NFPA-70, state and local electrical codes. UL Type 4X enclosures are for indoor or outdoor use.

Warranty void if panel is modified.

For information regarding operation, available options, or servicing questions, please call an SJE RHOMBUS customer service technician:

1-800-Rhombus (1-800-746-6287)
Monday-Friday, 7:00 AM to 6:00 PM Central Time

SJE RHOMBUS offers a five-year limited warranty.
For complete terms and conditions, please visit www.sjerhombus.com.

Products returned must be cleaned, sanitized, or decontaminated as necessary prior to shipment to ensure that employees will not be exposed to health hazards in handling said material. All applicable laws and regulations shall apply.

Manufactured by: SJE RHOMBUS
22650 County Highway 6
Detroit Lakes, MN 56501 USA

Toll free: 1-888-DIAL SJE
(1-888-342-5753)
Phone: 218-847-1317

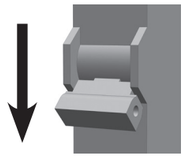
Email: customer.service@sjeinc.com
Website: www.sjerhombus.com
Fax: 218-847-4617

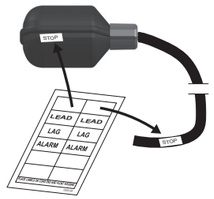
Installing the Float Switches

The EZ Series® Single Phase control panel operates with two, three, or four float switches.

1 **⚠WARNING!**
Ensure all power is turned OFF before installing floats in tank. Failure to do so could result in serious or fatal shock.

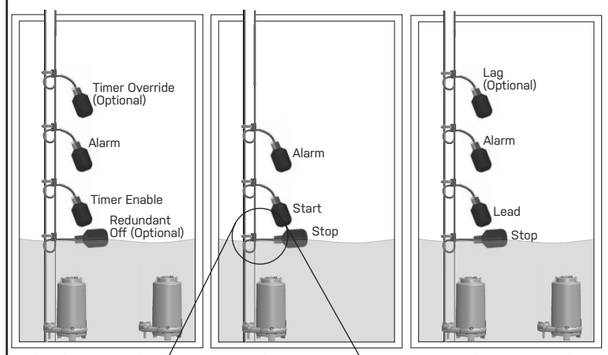
2 Label each float and cord end with the provided pairs of stickers.



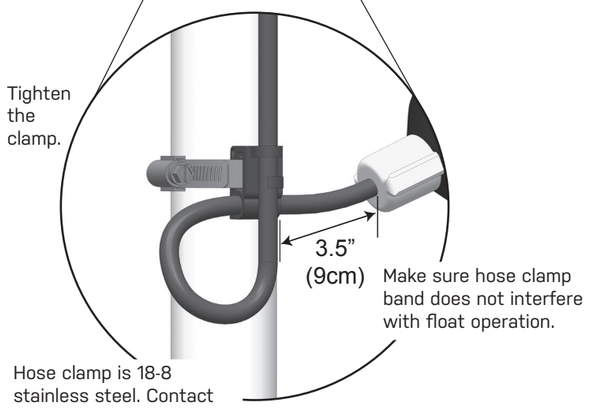


3 **⚠CAUTION!**
If the floats are not properly mounted and connected in the correct order, the pumps will not function properly.

Floats require free range of motion.



Simplex Timed Dose | Simplex Demand | Duplex Demand



Mounting the Control Panel

Mount control panel with mounting devices furnished.

NOTE

If the distance to the control panel exceeds the length of the float switch cords or the pump power cord, splicing in a liquid-tight junction box will be required. For outdoor or wet installation, we recommend an SJE RHOMBUS, UL Type 4X junction box.

Wiring the control panel

1 Determine conduit entrance locations on control panel as shown. Check local codes and schematic on the inside cover of the panel for the number of power circuits required.

⚠CAUTION!

Be sure the pump power voltage and phase are the same as the pump motor being installed.

Use of separate pump and control/alarm power sources is recommended.

2 Connect the following wires to the proper terminal positions:
- incoming power for each pump circuit
- incoming power for control/alarm circuit
- pump 1
- pump 2 (Duplex)
- float switches

⚠CAUTION!

You must use conduit sealant to prevent moisture or gases from entering the panel.

Type 4X conduit must be used to maintain a Type 4X rating of the control panel.

3 Verify correct operation of control panel after installation is complete.

Operations

The EZ Series® (EZS) control panel uses float switches to continuously monitor and control the liquid level in the tank.

Hand Operation - Press and hold the "Push to Run" switch if stop float is OPEN. If stop float is CLOSED, press "Push to Run" switch and the pump will run until stop float opens.

Off Operation - Turn control/alarm breaker off to be in Off operation.

Auto Operation - In timed dose mode (simplex models only) the timer controls pump ON and OFF time as long as the timer enable float is raised. In demand dose mode, the stop and start floats control the pump.

Green Control and Alarm Power Indicators - Illuminate when control power and alarm power is present. Alarm light will flash if alarm power is lost.

Controller

Viewing Panel Settings:

Press menu/enter button to view:
- Float Status or Float Error
- Elapsed Time Meter
- Cycle Count
- Pump 2 Elapsed Time Count (Duplex)
- Pump 2 Cycle Count (Duplex)
- High Level & Power Fail Alarm Counts
- Float Error Count
- Auxiliary Alarm Input Counts (OPTIONAL)
- Lag Float Count (Duplex)

Timed Dose Mode only:
- Timer Override Count
- ON Time
- Off Time
- Remaining ON/OFF Times

Programming Panel Settings:

Press set/change button for 3 seconds to enter program mode.

Simplex:

The display will show ON time in mm:ss.

Press set/change button to set the pump ON time. Use menu/enter button to select digit desired to change. Use set/change button to change ON time.

Press menu/enter button. The display will show OFF time in hh:mm.

Press set/change button to set the pump OFF time. Use menu/enter button to select digit desired to change. Use set/change button to change OFF time.

Note: Setting the OFF times to 00:00 turns off timed dose mode and timed dose menu items. The panel will operate in demand mode.

Duplex:

The display will show Set Alternation, then either Alternate, 1-2 or 2-1.

Press set/change button to set the desired pump sequence.

Press menu/enter button to display number of floats.

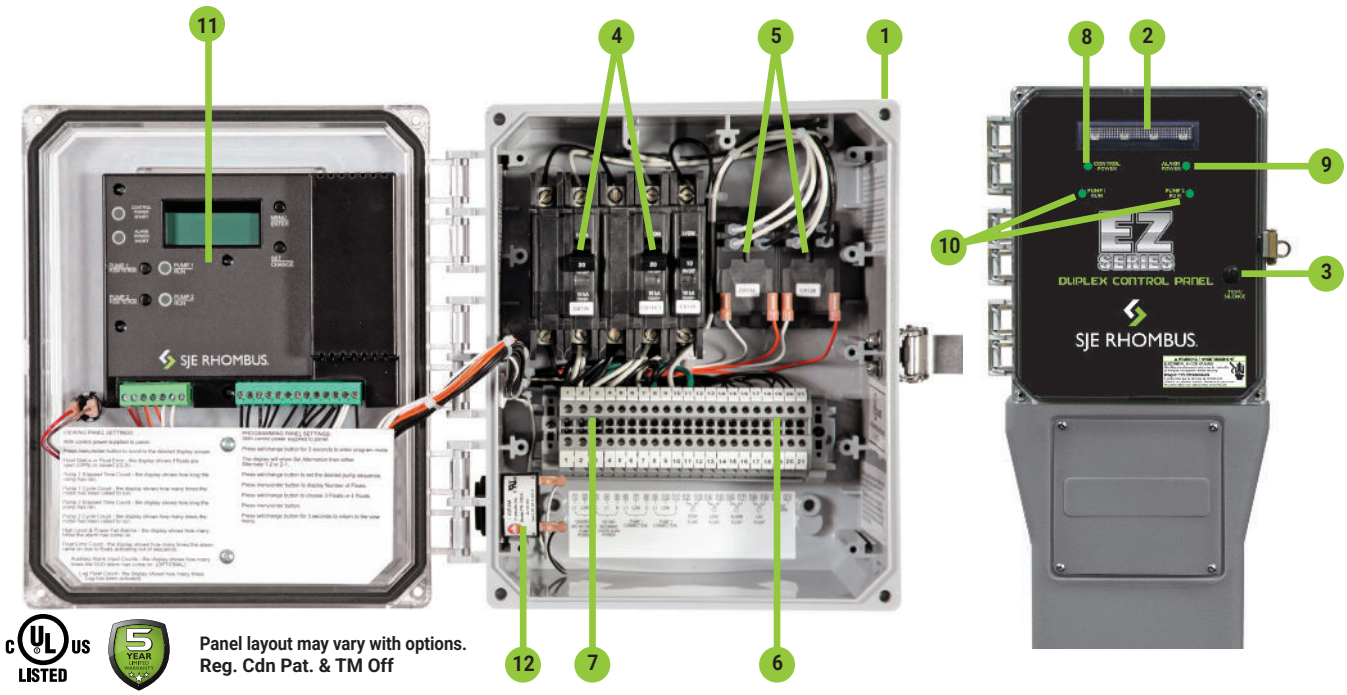
Press set/change button to choose 3 Floats or 4 floats.

Press menu/enter button.

Press set/change button for 3 seconds to return to the view menu.

EZ SERIES® SINGLE PHASE DUPLEX

Single Phase, Duplex Demand Dose Float Controlled System for Pump Control and System Monitoring



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5 YEAR LIMITED

Panel layout may vary with options.
Reg. Cdn Pat. & TM Off

The EZ Series® duplex control panel is designed to control two (alternating) 120, 208, 240 VAC single phase pumps in water and sewage installations. The alternating action equalizes pump wear. In addition to the alternating pump control, this system provides override control should either pump fail.

The EZ Series® duplex control panel features a backlit LCD display on the inside of the front cover for programming and system monitoring, including: float status, elapsed time pump run, cycle counter, alarm counts (high water/power fail), float error count, auxiliary alarm counter, timer override count (TD only).

Optional mounting post has removable access door for easy wiring. The post can be mounted in the ground directly, over a 4x4, or conduit. This panel is available with optional duo alarm for local code compliance; and optional EZconnex® float connection system.

COMPONENTS

1. Enclosure base measures 10 x 8 x 6 inches (25.4 x 20.32 x 15.24 cm); NEMA 4X enclosure (ultraviolet stabilized thermoplastic with removable mounting feet for outdoor or indoor use) includes locking latch as standard
2. Red alarm beacon provides visual check of alarm condition
3. Exterior Alarm Test/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. Two sets of circuit breakers: one for each pump power circuit; another for control and alarm power
5. Power relays control pumps by switching electrical lines
6. Float connection terminal block with auxiliary alarm contact
7. Incoming control/alarm power & pump power terminal block
8. Control Power indicator light
9. Alarm Power indicator light
10. Pump Run indicator lights
11. Duplex controller (touch safe housing) for pump control:
    a. Backlit LCD display shows system information including: pump elapsed time (hh:mm), pump events (cycles), and alarm condition (counts)
    b. Menu/Enter button used for viewing panel settings
    c. Set/Change button used for programming panel settings
    d. Pump 1 and Pump 2 Push To Run momentary switches - pump activates when pressed
    e. Control and Alarm Power - shorted condition indicators
12. Alarm horn provides audio warning of alarm condition (83 to 85 decibel rating)

Note: Options, voltage, and amp range selected may change enclosure size and component layout.

Note: Schematic/Wiring Diagram and Pump Specification Label are located inside the panel.

SJE RHOMBUS®

9500048M-WEB Rev 02/26

EZ Series® - Single phase, duplex demand dose float controlled system for pump control and system monitoring.

EZS	4	1	W	1		4		3A6A8AC10E15A
CONTROL PANEL	MODEL TYPE	ALARM PACKAGE	ENCLOSURE RATING	STARTING DEVICE	PUMP FULL LOAD AMPS	PUMP DISCONNECTS	LEVEL CONTROL APPLICATION	OPTIONS (LISTED BELOW)

CONTROL PANEL	✓	EZS		
MODEL TYPE	✓	4	Single Phase Duplex (includes Options 3A6A8AC10E15A as standard)	$1,261.05
ALARM PACKAGE	✓	1	Alarm Package (includes test/silence switch, fuse, red light, & horn)	Base
ENCLOSURE RATING	✓	W	Weatherproof, NEMA 4X (engineered thermoplastic)	Base
STARTING DEVICE	✓	1	120/208/240V	Base
PUMP FULL LOAD AMPS		0	0 - 7 FLA	Base
		1	7 - 15 FLA	Base
		2	15 - 20 FLA	Base
PUMP DISCONNECTS	✓	4	Circuit Breaker(s) 120/208/240V	$177.16
LEVEL CONTROL APPLICATION		H	Floats - Pump Down (select Option 17 below)	See Options
		E	EZconnex® Float Switch System	See Options
		X	No Floats	Base

PRICING WORKSHEET

EZS Duplex Base Price	**$1,261.05**
Alarm Package	
Enclosure Rating	
Starting Device	
Pump Full Load Amps	
Pump Disconnects	
Level Control Application	
Total Options	
TOTAL LIST PRICE	

	OPTIONS	DESCRIPTION	LIST PRICE
	1J	Duo Alarm Inputs	$41.20
✓	**3A**	**Alarm Flasher (Included as standard)**	**$0.00**
✓	**6A**	**Auxiliary Alarm Contact, Form A (Included as standard)**	**$0.00**
✓	**8AC**	**Display Board - Includes: ETM Counter, Events (Cycles) Counter, Alarm Counter (included as standard)**	**$0.00**
✓	**10E**	**Lockable Latch - NEMA 4X (included as standard)**	**$0.00**
	10P	Mounting Post (Factory installed with 2.5" cord seal)	$231.75
✓	**15A**	**Control/Alarm Circuit Breaker (Included as standard)**	**$0.00**
	16C	30' Cord in Lieu of 20' Cord (per Float)	$8.24
	16D	40' Cord in Lieu of 20' Cord (per Float)	$16.48

	OPTIONS	DESCRIPTION	LIST PRICE
	17C	Sensor Float® / Internally Weighted (3 Floats) - Mercury	$170.10
	17D	Sensor Float® / Externally Weighted (3 Floats) - Mercury	$176.40
	17G	SJE MilliAmpMaster™ / Pipe Clamp (3 Floats) - Mechanical	$120.51
	17H	SJE MilliAmpMaster™ / Externally Weighted (3 Floats) - Mechanical	$148.32
	17J	Sensor Float® / Pipe Clamp (3 Floats) - Mercury	$144.90
	19F	Fourth Float to Separate Alarm Function from Lag	$40.17
	33D	EZconnex® 3-Port, 25', with 10' Floats (3) / Pipe Clamp	$350.27
	35D	EZconnex® 4-Port, 25', with 10' Floats (4) / Pipe Clamp	$424.73

For additional level control and control panel options, please contact Technical Support at techsupport@sjeinc.com.

Axiom Engineering, LLC

Application
Site Plan (CAD sheet 2)
Cross Section Detail (CAD sheet 3)
Pump Detail (CAD sheet 4) & Pump curve .pdf
Septic Timer Note

SEPTIC CALCULATIONS County Seat Gardens Lot 38

Job #:	0569-2501	
Calc'd by:	K. CHRISTENBURY	
Date:	03/31/26	
Bedrooms	12	
Daily Flow	1440	gpd
Design flow:	1440	***gpd w/ 25% reduction for low flow devices***
LZ=Depth to Limiting Zone:	16	***in.***
Perc. rate:	30	***mpi***
Minimum Sq. Ft. Required:	3155	***sq. ft. for ESM system***
Septic width:	21	***ft. (Use increments of 5' based on lateral spacing of 5')***
Septic length:	80	***ft. (4x width or longer recommended)***
Lateral Spacing:	5	***ft (4' to 6')***
Number of Beds:	2	
Sq. Ft. Proposed:	3360	***ft.^2***

Type of System: Sand Lined Elevated Sand Mound

Outer Boundary: 3 ***ft.(use 3' for all ESM systems)***

Orifice Head: 2.5 ***ft. (2.31 min.)***

Laterals:

No. of laterals:	4	
Length of laterals:	77	***ft. (100' max.)***
Length O.C./hole:	5.50	***ft.(page 59 in regs.)***
No. of holes/lateral:	14	
No. holes/lat. used:	14	
Size of flow hole	3/16"	
Flow/hole:	0.66	***gpm/hole***
Lateral flow:	9.24	***gpm/lateral***

Total flow in field: 36.96 ***gpm***
Total flow used: 37 ***gpm***

Height of lateral above ground	26	in.
Height of Mound:	50	in.
Height of Sandy Fill below stone:	20	in.
Side Slope	3	:1
Lateral offset to disposal area:	3	ft.
Offset to toe of mound:	12.50	ft. from disposal area to toe (if ex. grade is flat)
Static Head:	8.33	ft.

Friction Head:

Lateral Diameter:	1.25	***in.***
Lateral Flow:	9.24	***gpm/lateral***
Head loss/100 ft.:	2.65	***ft./100 ft.***
Length of Lateral:	77	***ft.***
Multiplier for fittings:	1.2	
Lateral head loss:	2.45	***ft.***

Manifold Diameter:	2	***in.***
Manifold Flow:	18.5	***gpm / half manifold***
Head loss/100 ft.:	0.97	***ft./100 ft.***
Manifold Length	15.00	***ft.***
1/2 Length of manifold:	7.5	***ft.***
Multiplier for fittings:	1.2	
Manifold head loss:	0.09	***ft.***

Trans. line diameter:	2	***in.***
Trans. Line flow	37	***gpm***
Head loss/100 ft.:	3.50	***ft./100 ft.***
Length of trans. line:	66	***ft.***
Multiplier for fittings:	1.2	
Trans. line head loss:	2.77	***ft.***

Total friction head:	5.31	***ft.***

TDH:	16.14	***ft.***
Total flow used:	37	gpm

Check dosing volume:

Lateral diameter:	1.25	***in.***
Volume/ft. of lateral:	0.06	***gal/ft.***
Linear feet of lateral:	338	***ft.***
Lateral volume:	21.55	***gal.***
Manifold diameter:	2	***in.***
Volume/ft. of lateral:	0.16	***gal/ft.***
Linear feet of manifold:	15	***ft.***
Manifold volume:	2.4478243	***gal.***
Trans. line diameter:	2	***in.***
Volume/ft. of trans. line:	0.16	***gal/ft.***
Linear feet of trans. line:	66	***ft.***
Trans. line volume:	10.770427	***gal.***
Min. dosing volume:	107.72977	***gal.***
Dosing vol. used:	180	***gal.***
Doses per day (min. 2):	8.00	***(4 PER BED)***
Dosing Tank Minimum Size (1 day + 1 dose) =	1620	gal.
Size of dosing chamber:	2,800	***gal.***
Volume/in. of chamber:	57.66	***gal/in.***
Height of storage above dose:	24.97	***in.***
Set dosing float at:	3.12	***in.***
Set timer run time at:	2.43	*min.*
	146	*seconds*
Set hours off at:	3	*hours*

Tank Height		36	inch bury
Storage	1440 **gallons**	24.97	inch height above dose
Dose	180 **gallons**	3.12	inch dose
		10.00	inch wet volume
		74.10	inch tank depth
		6.17	FT. MINIMUM TANK DEPTH
		7.0	ft. tank depth

Boring	DEPTH TO LIMITING ZONE (IN.) (IN.)	(FT.)	ORIGINAL	Limiting Zone Elevation
SB1	20	1.67		-1.67
SB4	16	1.33		-1.33
SB5		0.00		0.00
SB3	20	1.67		-1.67
SB2	20	1.67		-1.67

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GENERAL NOTES

1. The contractor during inspection of the system shall perform pressure settings of lateral operating pressures. The contractor shall make available enough pressure measuring devices so that numerous simultaneous pressure determinations may be made as requested by the engineer.

TIMERS

1. Timer to operate in such a manner as to alternate between the 2 pumps/drainfields to allow a minimum of six hours off time between doses to each drainfield and to equalize doses throughout the day.
2. Run time will be set at:
    a. 146 seconds.
    b. Off time at 3 hours per dose
        i. 6 hours off-time for each bed.
    c. 8 doses per day
        i. 4 per each bed
3. Static head will be field measured for each drainfield. Orifice head will be measured with a standpipe on the furthest lateral.
4. Timer to SJ Rhombus EZ Series Single Phase Duplex or a timer of equal performance as approved by the engineer.
5. Timer is to have a battery back up power source.
6. The timer shall be installed in such a manner to override the float switches.

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GENERAL AND CONSTRUCTION NOTES TO INSTALLER

1. The Contractor shall field verify all existing conditions and features prior to construction. All Piping and Fittings shall be *Pressure rated schedule 40 PVC*. No substitutes will be permitted unless noted on the approved plans or approved by the designer prior to construction.

2. The Contractor shall field verify all isolation distances prior to initiating construction of system. If discrepancies are found in the field, the Contractor shall immediately contact the designer at the above number.

3. Any changes in the specified/approved equipment, i.e. pumps, alarms, timers, etc., shall be approved by the designer prior to construction.

4. No System shall be installed during inclement conditions, i.e. rain, snow, saturated conditions, frozen conditions, or any other condition that would create compaction, smearing or destruction of the soil structure in the disposal area.

5. The designer is not responsible for the placement of the dwelling or the actual location of the property lines shown on the approved site plan as no perimeter survey was provided or performed by the designer (unless specified on the design drawings).

6. All Low Pressure Pipe (LPP) disposal systems must be installed with a trencher. *NO LPP SYSTEM WILL BE INSPECTED OR APPROVED BY THE DESIGNER IF INSTALLED WITH A BACKHOE*.

7. Any changes made to the location of the approved system must have a pre-construction as-built done and approved by The Division of Water Resources at the expense of the contractor. No change shall be made unless approved by the designer and The Division of Water Resources. Any change made to the approved permit without the prior approval of the designer or the Division of Water Resources shall be the responsibility of the Contractor.

8. All systems requiring a pump shall be pressure tested by the designer and the Contractor during the final inspection. Any equipment necessary for providing this service, i.e. generator, hoses, water, pressure gauges shall be provided by the Contractor.

9. The Contractor or his/her representative shall be present during the final inspection. The Contractor shall notify the designer 48 hours in advance to schedule the final inspection.

10. The designer will complete only one site visit for final inspection. Any additional site visits required for designer approval will be billed as an extra to the Contractor and shall be paid prior to initiating the inspection report.

11. The system shall be installed based on the approved permit and the regulations and memorandums set forth by the Department of Natural Resources and Environmental Control, Division of Water Resources.

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GENERAL NOTES TO PROPERTY OWNERS

1. Unless otherwise stated in the Department of Natural Resources and Environmental Control (DNREC), Division of Water Resources regulations, all septic tanks shall be pumped every three (3) years. At the time of pumping, the tank shall be inspected for any deficiencies such as: concrete deterioration, cracks, holes, leaking, etc. The baffles should be inspected for cracks, concrete deterioration, etc.

2. If a filtering devise has been installed, i.e. Zabel, Webby Bucket, etc., at the time of cleanout and/or per the manufacturers specifications, the device should be rinsed thoroughly into the septic tank with a garden hose and reinstalled. This should be done so that accumulated debris can be pumped out while the waste hauler is there.

3. Be absolutely sure that your septic tank stays in good operating condition. Never allow sludge or scum to escape from the septic tank. It will clog your drain tiles and cause the drain field to fail.

4. Keep automobiles and all heavy vehicles and equipment off the field and tanks.

5. Do not allow stormwater ponding to collect over the field.

6. Do not allow downspouts to drain onto or into your drain field or tanks.

7. Do not stockpile snow or soil on the drain field and tanks.

8. Dense grass cover and other shallow rooted plants are beneficial over a drain field. Think ahead when planting trees and shrubs. Although they promote moisture removal from the drain field, their roots may clog the drain tiles. Check with The DNREC for vegetation that will be helpful to the system.

9. Mark the boundaries of your system as a reminder.

10. Do not use chemicals to clean or sweeten your system except on the advice of the DNREC.

11. Do not use a kitchen garbage disposal.

12. Do not place harmful materials in the tanks. Avoid fats, solvents, oils, disinfectants, paints, chemicals, poisons, coffee grounds, paper towels, disposable diapers, sanitary napkins, tampons and condoms.

13. Inspect for scum and sludge depth once each year.

14. Limit water entering your tanks.

15. Use water-saving fixtures, i.e. faucets, showers, toilets, etc. as required by the local building code.

16. Do not connect basement sump pump to the tanks.

17. Always drain appliances one at a time.

18. Spread clothes washing over the entire week and avoid half-loads.

19. Always fix faucet and toilet valve leaks.

FAILURE TO FOLLOW THESE REQUIREMENTS AND THE REQUIREMENTS SET FORTH BY THE DNREC, DIVISION OF WATER RESOURCES, WILL RESULT IN A REDUCED LIFE SPAN OF THE SEPTIC SYSTEM, AND INCREASE THE LIKELYHOOD OF FAILURE.