SEPTIC CHECK

EXPERT SERVICE. LASTING VALUE. CLEAN WATER

10-16-2023

Covenant Pines Bible Camp
43696 245th Place
McGregor, MN 55760

TO: Aitkin County Planning & Zoning/Environmental Services

RE: Septic Explanation for Proposed New Building

Per your request we have completed a workplan for the proposed new building septic system.

Summary:

Covenant Pines Bible Camp in McGregor is proposing a new worship building including office spaces. It is my understanding that the camp occupancy will not be increasing only relocating the meeting space to this new building. The new building will allow for up to 300 people. Using the MN Rule Chapter 7081.0130 (K) Assembly Hall (Seat-4 Gallons) the new building would have a conservative max flow of 1200 GPD. This would be if every person used the bathroom while occupying the building, which is unlikely.

The camp currently has many different septic systems that serve the buildings spread out across the property. The largest system that serves the dining hall and office buildings has the capacity to except the flows from the proposed worship building. This system has two large 3000 gallon recirculation tanks that dose a gravel filter than cleans the water. The filter effluent is then time dosed to two 25' x 150' Pressure Bed drainfields with a daily flow capacity of 5800 GPD. A compliance inspection was completed in early March and found all the components of the system compliant and free of defects. Flow meter readings from July 2022 show that the system receives and treats up to 2300 gallons on average. The addition of the proposed 1200 gallons would total an anticipated max flow of 3500 gallons. Being the current system is rated for up to 5800 GPD the addition of the new flow will not impact the system performance and is less than 70% of its capacity.

SEPTIC CHECK

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Proposed Septic Modifications:

Sewage would flow by gravity from the proposed building to a Brown Wilbert 2500-gallon two compartment septic tank equipped with a Wexco MBBR Treatment unit installed in the second compartment to reduce the BOD. An additional 2500-gallon time dose pump tank would than follow to equalize the flows before being pumped to the existing 3000-gallon recirculation tank. This proposed system would treat the wastewater to well below residential strength and the time dosing will ensure the flows are evenly dosed to the existing filter/pressure bed system.

Once the permits are obtained for the new building Septic Check has been hired to design and install the new septic components.

Please feel free to contact me regarding the proposed work plan for this project.

Sincerely,

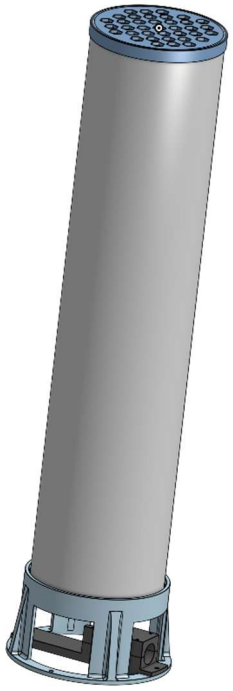
Brian Koski
Advanced Designer #2624

DESIGN OUTLINE SUMMARY & PROPOSAL

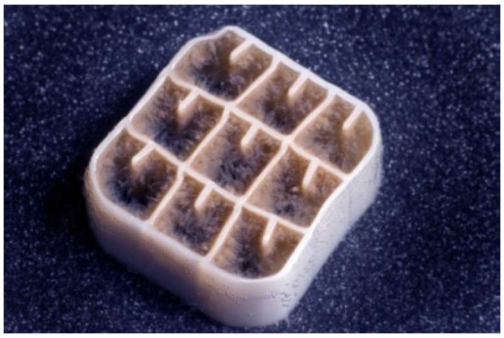
Date:	10/31/2023
Project Name:	Covenant Pines
Project Location:	McGregor MN
Design Outline Name:	Hydra – worship hall
Designer/Engineer:	Septic Check

Project Summary:
Covenant Pines Bible Camp is adding a new worship hall to the property with bathrooms and light food preparation. Due to the wastewater meeting high strength waste definition, pretreatment is required to lower the effluent strength to below level C effluent quality.

Proposed Biofilm Process:
For this application, we offer our Alpha Hydra retrofit treatment process. This process is designed to utilize the stability and versatility of the MBBR process to provide near complete BOD removal. Media is placed inside of a small diameter tube with fine bubble aeration diffuser mounted on the bottom of the unit. An exterior foam media provides additional surface area for microbial growth on the outside of the tube. Each tube is designed to remove 0.5 lbs/BOD/day. Solids generated in the process will require clarification prior to discharge.



The Biofilm Carrier:
The surface area for the support of biofilm growth consists of high-density polyethylene (HDPE) carriers with approximate dimensions of 14.5 mm high by 14.5 mm wide and 8 mm long (Figure 2). The interstitial openings have small fins on the interior square areas and nine cells. The biofilm carrier has an effective surface area for biofilm growth of 198.1 ft^2/ft^3 (650 m^2/m^3). The exterior foam media provides an additional 75 ft2 of surface area providing each Hydra tube with 273 ft2/surface area per unit.



Biofilm Carrier

Design Criteria:

Parameter	Influent to MBBR	Influent Lbs.	Effluent Requirements	Expected removal efficiency
Design Flow:	1,200 GPD			
cBOD5:	300 mg/l	3.0	125 mg/l	80%
TSS:	100 mg/l	1.1	60 mg/l	75%
Temp F (summer):	50˚F Min.			
pH:	7-8			

Proposed Treatment system overview: The proposed treatment system will utilize the a new 2500 gallon 2 compartment tank with the Hydra pretreatment system installed in the second compartment. A reverse flow 2500 gallon 2 compartment tank will follow. The first chamber will serve as a clarifier, and the second chamber will be a dose tank. The dose tank will pump effluent to the existing sand filter system. The tank will be pumped, cleaned, and verified prior to installation. Four of the Hydra Units will be installed inside the tank near the outlet end. A linear compressors will be installed in a soundproof enclosure above grade. An airlift return pump will be installed in the first compartment of the second tank to return sludge to the 2500 gallon septic tank. An effluent filter is required in the clarifier tank outlet.

Design parameters used:	
CBOD loading to reactor: 1,200 GPD x 300 mg/l CBOD =	3.0 lbs CBOD / day
Effluent goal to sand fitler	125 mg/l CBOD 60 mg/l TSS
Alpha Hydra Units (48" height)	4 ea.
Media loading rate	10 g/bod/m2
Aeration requirements	5.0 CFM 2.45 psi
MBBR SOR	0.20 lbs/O2/hr
Reactor Dissolved Oxygen goal	3 mg/l
Reactor tank sizing	830 gal
Clarifier	830 gal

Quotation:

Item Description	QTY	Cost Estimate
Alpha Hydra Units	4	
Fuji linear compressor 100lpm	1	
Soundproof enclosure	1	
Air lift pump (ALP-1.25)	1	
Blower panel	1	
Shipping	1	
Onsite installation assistance	4 hrs	
Start Up and O&M training	4 hrs	

***Does not include sales tax.**

Provided by Wexco Environmental

- Hydra units and control panel
- Installation assistance and system startup as needed onsite
  - Install air distribution piping in tank
  - Install blower and blower enclosure
  - Sludge return pump

Terms:
50% down to order, balance due net 30 days of invoice. A 1-½% service charge per month will be applied to balance due after 30 days.

Quote valid for 30 days.

WEXCO Environmental
320-983-2447

MINNESOTA POLLUTION CONTROL AGENCY

520 Lafayette Road North | St. Paul, Minnesota 55155-4194 | 651-296-6300

800-657-3864 | Use your preferred relay service | info.pca@state.mn.us | Equal Opportunity Employer

October 23, 2023

Brian Koski
Wexco Environmental
6074 Keystone Road
Milaca, MN 56353

RE: Product Registration Initial – Notice of Conditional Product Registration for Proprietary Treatment Product Listing

Description:	Sewage Treatment System, Moving Bed Biofilm Reactor
(MBBR) Manufacturer:	Wexco Environmental
Product Name:	Alpha Onsite Wastewater Treatment Systems
Models:	Alpha Maxx, Alpha Flex, Alpha Hydra
Product Listing:	Category B (high strength sewage)

Dear Brian Koski:

Thank you for your application for product renewal for Alpha Onsite Moving Bed Biofilm Reactor (MBBR) Wastewater Treatment System. Treatment components consist of septic tank (and grease interceptor when needed), pump tank, aerobic reactor tankage, secondary solids operation, and effluent discharge to a subsurface soil treatment and dispersal system.

In accordance with Minn. R. ch. 7080 through 7083, the Minnesota Pollution Control Agency (MPCA) has reviewed Environmental Health Products and Service's submitted materials requesting registration for Category B (high strength sewage) treatment product listing of the Alpha Onsite Wastewater Treatment System in this application. Based on the submitted documentation, the MPCA finds that Alpha Onsite Wastewater Treatment System is eligible for Conditional Product Registration as meeting the following treatment level:

- **Treatment Level C** ($cBOD_5$ of 125 mg/L, TSS of 60 mg/L and Oil & Grease of 25 mg/L)

The design of each Alpha Onsite System will include: 1) hydraulic and organic loading rates, 2) pretreatment tanks (septic tank and grease interceptor), 3) Alpha component tank, air flow and biofilm carrier element volume, and 4) biological solids separation tank.
The Alpha Onsite Wastewater Treatment System is registered for high strength wastewater applications with design flows up to 10,000 gallons per day.

Subject to this determination, Alpha Onsite Wastewater Treatment System will be placed on the List of Registered Subsurface Sewage Treatment System (SSTS) Products for High Strength Wastewater. The product information listed in this Notice of Conditional Product Registration for Proprietary Treatment Product Listing will be maintained on the MPCA website and may not be altered or misrepresented by the manufacturer or any other person without permission by the MPCA.

The registration of the treatment products in Minnesota is contingent upon compliance with the following conditions:

1. Products must be used in compliance with the MPCA rules, and the plans and design information provided during the period of initial product application.

2. The manufacturer shall have readily accessible information, specific to a product's registered use in Minnesota, for designers, regulators, installers, system owners, service providers and other interested parties for the following items: a) product manual; b) design instructions; c) installation instructions; d) information regarding operation and maintenance; e) owner instructions; and f) list of representatives and manufacturer-certified service providers, if any, as required by Minn. R. ch. 7083.4040(H).

3. The design organic loading for the Alpha Onsite Wastewater Treatment System is as specified in Table 1 below. The manufacturer's designated representative(s) is required to review all designs provided by Advanced Designers (i.e.: evaluation worksheets for high strength wastewaters) for treatment systems proposed to use the Alpha Wastewater Treatment System. Designers need to work directly with the manufacturer to ensure the wastewater is properly characterized and that Alpha Onsite Wastewater Treatment Systems, and other related components used in treatment train (i.e.: septic tank, pump tank, and grease interceptor) are properly sized and compatible to meet designed performance requirements.

Table 1.

Product Name Model	**Treatment Process**		**BOD_5 Removed (lbs/day)**	**Highest Treatment Level**	**Product Information**
ALPHA MAXX - 5.0	MBBR		5.0	C	• Notice of Product Listing o MPCA Letter o Conditions of Registration o Expiration Date • Alpha Onsite Manual o Submitted Drawings o Known Limitations o Installation o O&M o Owners Information o Regulators Checklist o Service Contract • Management Plan • Operating Permit Template
ALPHA MAXX- 8.0	MBBR		8.0	C	
ALPHA MAXX- 11.0	MBBR		11.0	C	
ALPHA MAXX- 14.0	MBBR		14.0	C	
ALPHA MAXX – 17.0	MBBR		17.0	C	
ALPHA MAXX- 20.0	MBBR		20.0	C	

ALPHA MAXX-23.0	MBBR		23.0	C	
ALPHA MAXX – 26.0	MBBR		26.0	C	
ALPHA MAXX-30.0	MBBR		30.0	C	
ALPHA MAXX-40.0	MBBR		40.0	C	
ALPHA MAXX-50.0	MBBR		50.0	C	
ALPHA FLEX - 750	MBBR	750	3.0	C	
ALPHA FLEX - 1000	MBBR	1000	4.5	C	
ALPHA FLEX - 1500	MBBR	1500	6.0	C	
ALPHA HYDRA	MBBR	450-2000	0.5	C	0.5 lbs./BOD/Hydra unit Expandable to 8 units/blower

4. Sewage tank capacity, tank geometry, burial depth, and other tank requirements shall meet the manufacturer's requirements and Minn. R. 7080.1900-2030 and be registered for use by the MPCA. Sewage tank(s) shall be designed to withstand the pressures to which it will be subjected. Tanks and all pipe penetrations, risers, and other connections to tanks shall be watertight. The external grease interceptor (also known as external grease trap and grease tank) shall be sized according to the manufacturer's size requirements. Designer's must utilize manufacturers recommended installation practices to secure the Alpha system's aeration network, which shall be done in a manner as to not alter the tank's registration, watertightness, or structural integrity.

5. Systems installed using Alpha Onsite Wastewater Treatment System shall be timed- dosed when deemed necessary by the product manufacturer. In such instances, adequate storage capacity shall be provided in the surge tank to prevent nuisance high water conditions from occurring. An alarm is required on tanks in the event the pump malfunctions.

6. Each Alpha Onsite Wastewater Treatment System must be delivered with an installation manual and detailed operation and maintenance manual for each system. Each component must be installed in accordance with the manufacturer's installation manual.

7. The Alpha Onsite Wastewater Treatment System is registered to be used in systems to achieve Treatment Level C. The effluent loading rates to the soil, method of distribution, and vertical separation requirements shall meet the minimum requirements contained in Minn. R. ch. 7080.2150 for flows less than 5,000 GPD. For flows greater than 5,000 GPD, final treatment and dispersal must also meet Minn. R. ch. 7081.0270.

8. All systems shall be designed and operated with a manufacturer approved effluent screen. All systems shall be designed and operated with a suitable alarm device(s) should the effluent screen malfunction.

9. Systems may only be designated as Type IV systems when designed and installed per the drawings submitted as part of the Application for Registration, received May 26th, 2023, and subsequent documents submitted prior to this registration.

10. As a Type IV system, the system must be constructed and operated under the required local permits.

11. As specified in the Owner's Manual, limitations of the product are identified. The manufacturer is responsible to provide a listing of other known limitations, made available on the company's website or other means. The level of maintenance required for Alpha Onsite Wastewater Treatment System shall be as specified in the products Operation and Maintenance Manual.

12. Training shall be provided to MPCA-licensed Subsurface Sewage Treatment System practitioners before designing, installing, or providing service to Alpha Onsite Wastewater Treatment System registered for use in Minnesota.

13. At the time of product renewal during the year 2027, performance data on systems installed in Minnesota are required to be submitted to the MPCA to substantiate product performance in accordance with Minnesota's HSW product registration guidance and protocol which can be found at the following webpage: https://www.pca.state.mn.us/sites/default/files/wq-wwists4-95.pdf. The data would be contained in a Summary Report submitted to the MPCA.

14. During the period of product registration and as part of the renewal process, systems using registered treatment products are subject to an audit by the MPCA.

Please be advised that this registration expires December 31, 2027. Manufacturers desiring to continue product registration beyond this date must obtain MPCA renewal according to the requirements in Minn. R. ch.7083.4040 (E). If the product has changed or is retested according to the protocol required for registration, renewal shall be based on the most recent test results. If the MPCA finds the product has changed in any way that may affect performance, it may not be renewed and must meet the requirements for initial registration.

The MPCA is in no way endorsing these products or any advertising and is not responsible for any situation which may result from its use or misuse. The MPCA is not liable for any product failure and these statements are not intended and cannot be relied upon to establish any substantive or procedural rights with the state of Minnesota or the MPCA, either express or implied, that can be enforced in litigation or any administrative proceeding.

If you have any questions, please contact Cody Robinson at 651-757-2535 or by email at cody.robinson@state.mn.us.

Sincerely,

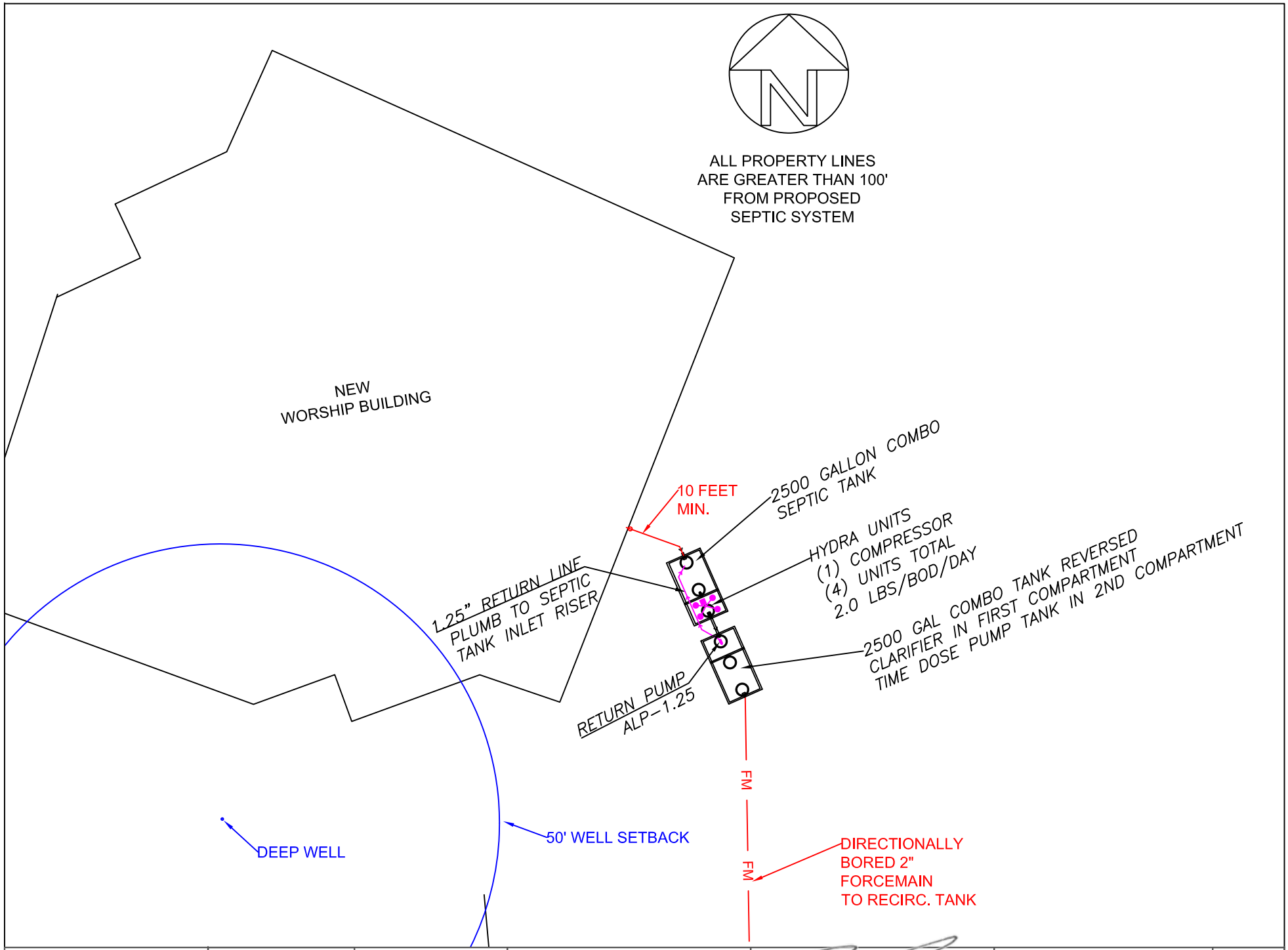
Cody Robinson

This document has been electronically signed.

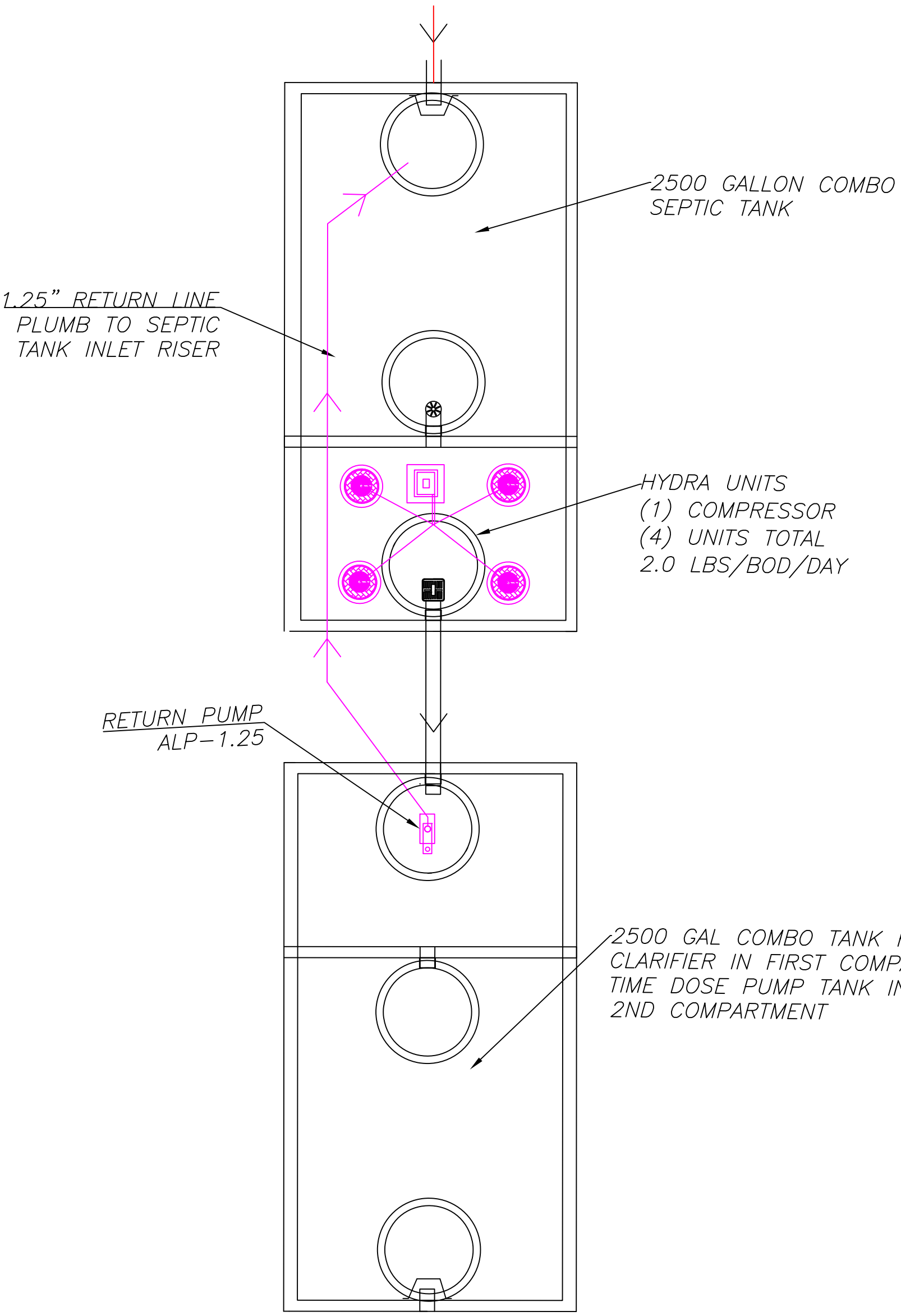
Cody Robinson
Soil Scientist
Municipal Division

CR:map

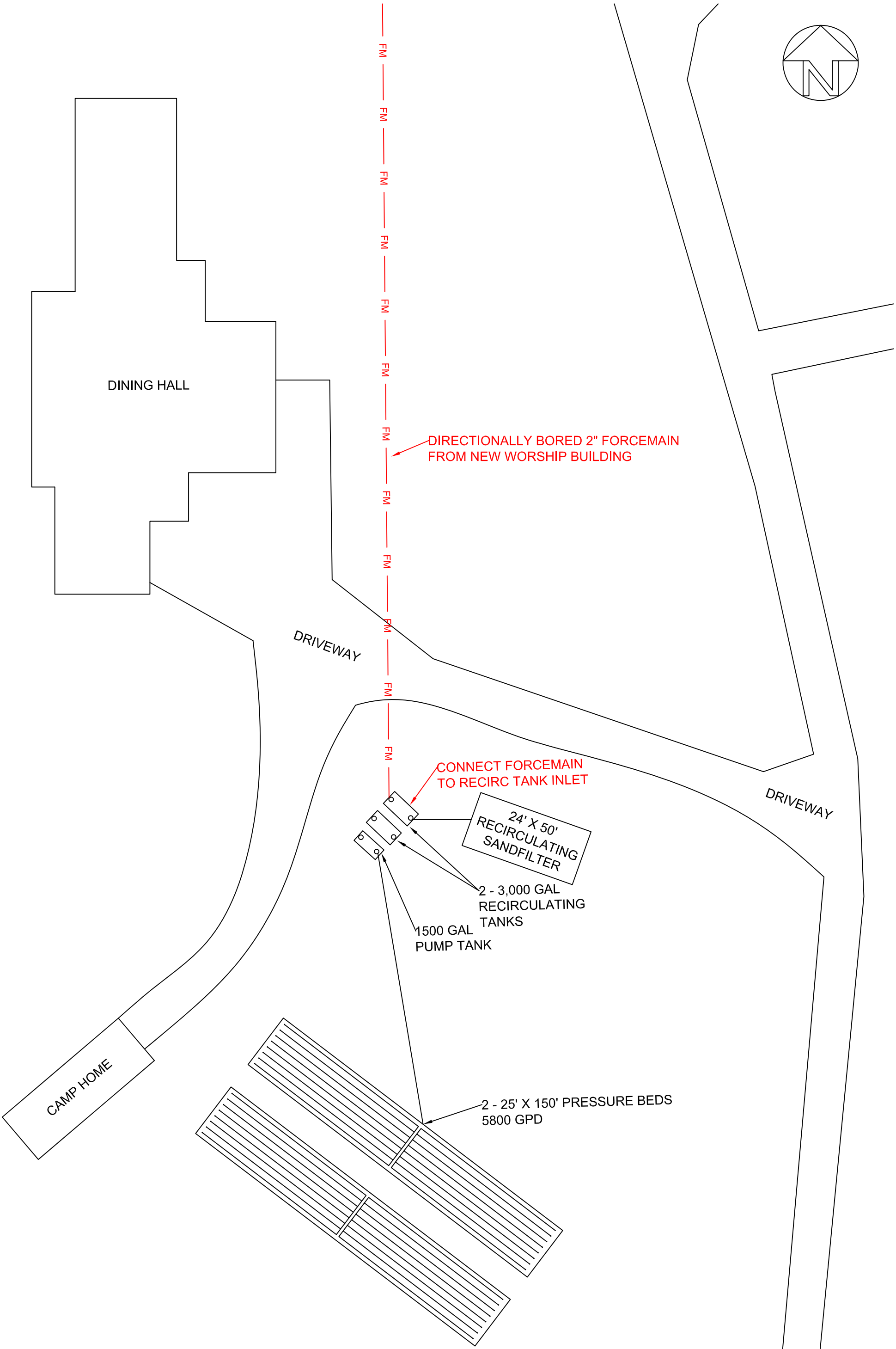
cc: File



PREPARED FOR:	PROPERTY LOCATION	PARCEL ID & COUNTY	SEPTIC CHECK		PAGE TITLE	SHEET NUMBER
Covenant Pines	43696 245th Place McGregor, MN 55760	14-0-024400 Aitkin County, Minnesota	6074 KEYSTONE RD MILACA, MN 56353 (320)-983-2447 (FAX) (320)-983-2151	I hereby certify that this site plan was prepared by me or under my direct supervision. Brian Kosel M. P. C. A. License # 2624 DATE 10.13.23	SITE MAP – NEW TANKS	1 OF 1



PREPARED FOR:		PAGE TITLE	SHEET NUMBER
Covenant Pines	I hereby certify that this site plan was prepared by me or under my direct supervision. Brian Kosky M. P. C. A. License # 2624 DATE 10/13/23	EXISTING SEPTIC SYSTEM OVERVIEW	1 OF 1



PREPARED FOR:		PAGE TITLE	SHEET NUMBER
Covenant Pines	I hereby certify that this site plan was prepared by me or under my direct supervision. *Brian Koski M. P. C. A. License # 2624* DATE 10/13/23	EXISTING SEPTIC SYSTEM OVERVIEW	1 OF 1

Minnesota Pollution Control Agency

OSTP Pump Tank Design Worksheet

University of Minnesota

DETERMINE TANK CAPACITY AND DIMENSIONS Project ID: v 07.14.15

1. A. *Design Flow (Design Sum.1A)*: 1200 GPD

   B. Min. required pump tank capacity: _____ Gal C. Recommended pump tank capacity: 2500 Gal

   D. Pump tank description: Equalization

MEASURED TANK CAPACITY (existing tanks):

2. A. Rectangle area = Length (L) X Width (W)

   _____ ft X _____ ft = _____ ft^2

   B. Circle area = $3.14r^2$ (3.14 X radius X radius)

   3.14 X _____ ^{2} ft = _____ ft^2

   C. Calculate Gallons Per Inch. Multiply the area from 1.A or 1.B, by 7.5 to determine the gallons per foot the tank holds and divide by 12 to calculate the gallons per inch.

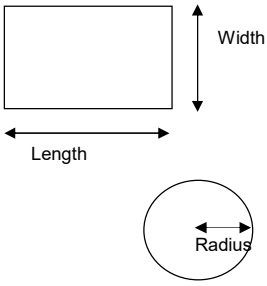
   _____ ft^2 X 7.5 gal/ft^3 ÷ 12 in/ft = _____ Gallons per inch

   D. Calculate *Total Tank Volume*

   Depth from bottom of inlet pipe to tank bottom: _____ in

   Total Tank Volume = Depth from bottom of inlet pipe (Line 4.A) X *Gallons/Inch* (Line 2)

   _____ in X 32.2 Gallons Per Inch = _____ Gallons



MANUFACTURER'S SPECIFIED TANK CAPACITY (when available):

3. A. Tank Manufacturer: Brown Wilbert

   B. Tank Model: 2500 2C

   C. Capacity from manufacturer: 1731 Gallons

   D. Gallons per inch from manufacturer: 32.2 Gallons per inch

   E. Liquid depth of tank from manufacturer: 57.0 inches

Note: Design calculations are based on this specific tank. Substituting a different tank model will change the pump float or timer settings. Contact designer if changes are necessary.

DETERMINE DOSING VOLUME

4. Calculate *Volume to Cover Pump* (The inlet of the pump must be at least 4-inches from the bottom of the pump tank & 2 inches of water covering the pump is recommended)

   (Pump and block height + 2 inches) X *Gallons Per Inch* (2C or 3E)

   (12 in + 2 inches) X 32.2 Gallons Per Inch = 451 Gallons

5. *Minimum Delivered Volume* = 4 X Volume of Distribution Piping:

   - Line 17 of the Pressure Distribution or Line 11 of Non-level _____ Gallons (minimum dose)

6. Calculate *Maximum Pumpout Volume* (25% of Design Flow)

   Design Flow: 1200 GPD X 0.25 = 300 Gallons (maximum dose)

7. *Select a pumpout volume that meets both Minimum and Maximum:* 300 Gallons

8. Calculate *Doses Per Day* = Design Flow ÷ *Delivered Volume*

   1200 gpd ÷ 300 gal = 4 *Doses*

9. Calculate Drainback:

   A. *Diameter of Supply Pipe* = _____ inches

   B. Length of Supply Pipe = _____ feet

   C. *Volume of Liquid Per Lineal Foot of Pipe* = FALSE Gallons/ft

   D. *Drainback = Length of Supply Pipe* X *Volume of Liquid Per Lineal Foot of Pipe*

   _____ ft X FALSE gal/ft = _____ Gallons

10. *Total Dosing Volume = Delivered Volume* plus *Drainback*

    300 gal + _____ gal = 300 Gallons

11. Minimum Alarm Volume = Depth of alarm (2 or 3 inches) X gallons per inch of tank

    3 in X 32.2 gal/in = 96.7 Gallons

Volume of Liquid in Pipe	
Pipe Diameter (inches)	Liquid Per Foot (Gallons)
1	0.045
1.25	0.078
1.5	0.110
2	0.170
3	0.380
4	0.661

Minnesota Pollution Control Agency

OSTP Pump Tank Design Worksheet

University of Minnesota

TIMER or DEMAND FLOAT SETTINGS

Select Timer or Demand Dosing: (●) Timer ( ) Demand Dose

A. Timer Settings

12. Required *Flow Rate* :

A. From Design (Line 12 of Pressure, Line 10 of Non-Level or Line 6 of Pump*): 30 GPM

B. Or calculated: GPM = Change in Depth (in) x Gallons Per Inch / Time Interval in Minutes

[ ] in X [32.2] gal/in ÷ [ ] min = [ ] GPM

**Note: This value must be adjusted after installation based on pump calibration.*

13. Flow Rate from Line 12.A or 12.B above. 30 GPM

14. Calculate **TIMER ON** setting:

Total Dosing Volume/GPM

[300] gal ÷ [30.0] gpm = [10.0] Minutes ON

15. Calculate **TIMER OFF** setting:

Minutes Per Day (1440)/*Doses Per Day* - Minutes On

1440 min ÷ [4] doses/day - [10.0] min = [350.0] Minutes OFF

16. Pump Off Float - Measuring from bottom of tank:

Distance to set Pump Off Float=Gallons to Cover Pump / Gallons Per Inch:

[451.22] gal ÷ [32.2] gal/in = [14.0] Inches

17. Alarm Float - Measuring from bottom of tank:

Distance to set Alarm Float = Tank Depth(4A) X 90% of Tank Depth

[57] in X 0.90 = [51.3] in

B. DEMAND DOSE FLOAT SETTINGS

18. Calculate *Float Separation Distance* using *Dosing Volume* .

Total Dosing Volume /Gallons Per Inch

[ ] gal ÷ [ ] gal/in = [ ] Inches

19. Measuring from bottom of tank:

A. *Distance to set Pump Off Float* = Pump + block height + 2 inches

[ ] in + [ ] in = [ ] Inches

B. *Distance to set Pump On Float=Distance to Set Pump-Off Float + Float Separation Distance*

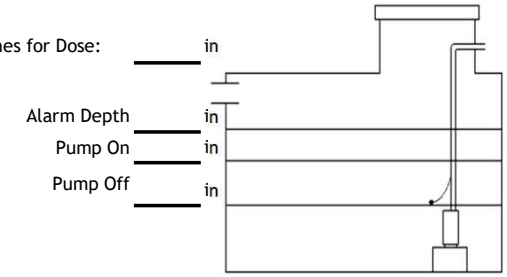
[ ] in + [ ] in = [ ] Inches

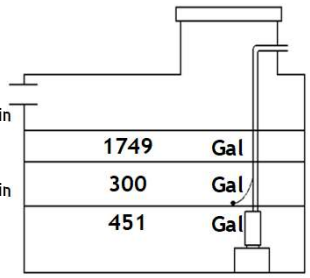
C. *Distance to set Alarm Float = Distance to set Pump-On Float + Alarm Depth* (2-3 inches)

[ ] in + [ ] in = [ ] Inches

FLOAT SETTINGS

DEMAND DOSING	TIMED DOSING
Inches for Dose: ____ in Alarm Depth ____ in Pump On ____ in Pump Off ____ in	Alarm Depth 51.3 in Pump Off 14.0 in





Minnesota Pollution Control Agency

OSTP Basic Pump Selection Design Worksheet

University of Minnesota

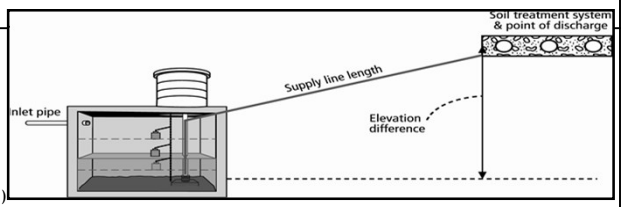
1. PUMP CAPACITY

Project ID:

Pumping to Gravity or Pressure Distribution: (●) Gravity ( ) Pressure **Selection required**

1. If pumping to gravity enter the gallon per minute of the pump: 30.0 GPM *(10 - 45 gpm)*
2. If pumping to a pressurized distribution system: GPM
3. Enter pump description:

2. HEAD REQUIREMENTS



A. Elevation Difference between pump and point of discharge: 10 ft

B. Distribution Head Loss: 0 ft

C. Additional Head Loss: ft (due to special equipment, etc.)

Distribution Head Loss	
Gravity Distribution = 0ft	
Pressure Distribution based on Minimum Average Head Value on Pressure Distribution Worksheet:	
Minimum Average Head	**Distribution Head Loss**
1ft	5ft
2ft	6ft
5ft	10ft

Table I. Friction Loss in Plastic Pipe per 100ft

Flow Rate (GPM)	Pipe Diameter (inches)			
	1	1.25	1.5	2
10	9.1	3.1	1.3	0.3
12	12.8	4.3	1.8	0.4
14	17.0	5.7	2.4	0.6
16	21.8	7.3	3.0	0.7
18		9.1	3.8	0.9
20		11.1	4.6	1.1
25		16.8	6.9	1.7
30		23.5	9.7	2.4
35			12.9	3.2
40			16.5	4.1
45			20.5	5.0
50				6.1
55				7.3
60				8.6
65				10.0
70				11.4
75				13.0
85				16.4
95				20.1

D. 1. Supply Pipe Diameter: 2.0 in

2. Supply Pipe Length: 825 ft

E. **Friction Loss in Plastic Pipe per 100ft from Table I:**

Friction Loss = 2.37 ft per 100ft of pipe

F. Determine *Equivalent Pipe Length* from pump discharge to soil dispersal area discharge point. Estimate by adding 25% to supply pipe length for fitting loss. *Suppl Pipe Length (D.2)* X 1.25 = *Equivalent Pipe Length*

825 ft X 1.25 = 1031.3 ft

G. Calculate *Supply Friction Loss* by multiplying *Friction Loss Per 100ft* (Line E) by the *Equivalent Pipe Length* (Line F) and divide by 100.

Supply Friction Loss =

2.37 ft per 100ft X 1031.3 ft ÷ 100 = 24.5 ft

H. *Total Head* requirement is the sum of the *Elevation Difference* (Line A), the Distribution Head Loss (Line B), Additional Head Loss (Line C), and the Supply Friction Loss (Line G)

10.0 ft + 0 ft + ft + 24.5 ft = 34.5 ft

3. PUMP SELECTION

A pump must be selected to deliver at least **30.0** GPM (Line 1 or Line 2) with at least **34.5** feet of total head.

Comments:

SEPTIC CHECK

EXPERT SERVICE. LASTING VALUE. CLEAN WATER

Septic System Compliance Inspection – Existing System

DATE 3/13/2023

Property Owner: Covenant Pines Bible Camp
Street Address: 43696 245th Pl
City, State, Zip: McGregor, MN 55760

Dear Covenant Pines and Aitkin County,

A compliance inspection was performed at the above location. Soil investigations were conducted to determine the seasonal high water table, the drain field was also inspected to ensure there was no ponding or leakage, and the septic tank was inspected. The system was found to be .

- **Impact on Public Health:**
  Compliant; no impact on public health.
- **Tank Integrity:**
  Compliant; tank(s) are functioning at operating level and are protecting the groundwater.
- **Other Compliance Conditions:**
  Compliant; meets conditions of A, B, & C.
- **Soil Seperation:**
  Compliant, soil has 3' of vertical separation to saturated soils.
- **Operating Permit and Nitrogen BMP:**
  Not applicable

I included a copy of the compliance documents and site sketch. Copies were sent to Aitkin County on your behalf. If you have any further questions, please do not hesitate to give us a call. Thank you for your business!

Sincerely,

Brian Koski, Lic. No. 7989
President
Office: 320-983-2447
brian@septiccheck.com

SEPTIC CHECK

EXPERT SERVICE. LASTING VALUE. CLEAN WATER

Disclaimer

The septic system inspection conducted for this property, meets the MN chapter 7082.0700 Subp. 4. Requirements for existing system inspections.

We recommend this system be serviced and inspected at least every 36 months by a septic professional.

Water use in excess of 50% of the design flow of the septic system may lead to premature failure.

This inspection does not guarantee future performance.

Additions to the home or use of the property may require the property owner to increase the system capacity.

MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

Compliance inspection report form

Existing Subsurface Sewage Treatment System (SSTS)

Doc Type: Compliance and Enforcement

Instructions: **Inspector must submit completed form to Local Governmental Unit (LGU) and system owner within 15 days of final determination of compliance or noncompliance.** Instructions for filling out this form are located on the Minnesota Pollution Control Agency (MPCA) website at https://www.pca.state.mn.us/sites/default/files/wq-wwists4-31a.pdf.

Property information

Local tracking number:

Parcel ID# or Sec/Twp/Range: 14-0-024400 Reason for Inspection Permit for Building

Local regulatory authority info: Aitkin County

Property address: 43696 - 245th Place McGregor, MN 55760

Owner/representative: Covenant Pines Bible Camp/ Bryan Schmidt Owner's phone: 651-245-7225

Brief system description: 6000 Gal recirculating sand filter, 2-25'x150' pressure beds

System status

System status on date (mm/dd/yyyy): 3/7/2023

☒ **Compliant – Certificate of compliance***

*(**Valid for 3 years from report date** unless evidence of an imminent threat to public health or safety requiring removal and abatement under section 145A.04, subdivision 8 is discovered or a shorter time frame exists in Local Ordinance.)*

***Note: Compliance indicates conformance with Minn. R. 7080.1500 as of system status date above and does not guarantee future performance.**

☐ **Noncompliant – Notice of noncompliance**

Systems failing to protect ground water must be upgraded, replaced, or use discontinued within the time required by local ordinance.

An imminent threat to public health and safety (ITPHS) must be upgraded, replaced, or its use discontinued within ten months of receipt of this notice or within a shorter period if required by local ordinance or under section 145A.04 subdivision 8.

Reason(s) for noncompliance (check all applicable)

- ☐ Impact on public health (Compliance component #1) – *Imminent threat to public health and safety*
- ☐ Tank integrity (Compliance component #2) – *Failing to protect groundwater*
- ☐ Other Compliance Conditions (Compliance component #3) – *Imminent threat to public health and safety*
- ☐ Other Compliance Conditions (Compliance component #3) – *Failing to protect groundwater*
- ☐ System not abandoned according to Minn. R. 7080.2500 (Compliance component #3) – *Failing to protect groundwater*
- ☐ Soil separation (Compliance component #5) – *Failing to protect groundwater*
- ☐ Operating permit/monitoring plan requirements (Compliance component #4) – *Noncompliant - local ordinance applies*

Comments or recommendations

Certification

I hereby certify that all the necessary information has been gathered to determine the compliance status of this system. No determination of future system performance has been nor can be made due to unknown conditions during system construction, possible abuse of the system, inadequate maintenance, or future water usage.

***By typing my name below**, I certify the above statements to be true and correct, to the best of my knowledge, and that this information can be used for the purpose of processing this form.*

Business name: Septic Check Certification number: 7989

Inspector signature: Brian Koski License number: 2624

(This document has been electronically signed) Phone: 320-983-2447

Necessary or locally required supporting documentation (must be attached)

☒ Soil observation logs ☒ System/As-Built ☐ Locally required forms ☒ Tank Integrity Assessment ☐ Operating Permit

☐ Other information (list):

Property Address: 43696 - 245th Place McGregor, MN 55760

Business Name: Septic Check Date: 3/7/2023

1. Impact on public health – Compliance component #1 of 5

Compliance criteria:	
System discharges sewage to the ground surface	☐ Yes* ☒ No
System discharges sewage to drain tile or surface waters.	☐ Yes* ☒ No
System causes sewage backup into dwelling or establishment.	☐ Yes* ☒ No

Any "yes" answer above indicates the system is an imminent threat to public health and safety.

Describe verification methods and results:

Visual Inspection

Attached supporting documentation:

☐ Other:

☐ Not applicable

2. Tank integrity – Compliance component #2 of 5

Compliance criteria:	
System consists of a seepage pit, cesspool, drywell, leaching pit, or other pit?	☐ Yes* ☒ No
Sewage tank(s) leak below their designed operating depth?	☐ Yes* ☒ No
If yes, which sewage tank(s) leaks:	

Any "yes" answer above indicates the system is failing to protect groundwater.

Describe verification methods and results:

Pumped, cleaned and visually inspected.

Attached supporting documentation:

☐ Empty tank(s) viewed by inspector

Name of maintenance business: Timberlakes

License number of maintenance business:

Date of maintenance:

☒ Existing tank integrity assessment (Attach)

Date of maintenance (mm/dd/yyyy): 3/7/2023 (must be within three years)

(See form instructions to ensure assessment complies with Minn. R. 7082.0700 subp. 4 B (1))

☐ Tank is Noncompliant (pumping not necessary – explain below)

☐ Other:

3. Other compliance conditions – Compliance component #3 of 5

3a. Maintenance hole covers appear to be structurally unsound (damaged, cracked, etc.), or unsecured?
☐ Yes* ☒ No ☐ Unknown

3b. Other issues *(electrical hazards, etc.)* to immediately and adversely impact public health or safety? ☐ Yes* ☒ No ☐ Unknown

Yes to 3a or 3b - System is an imminent threat to public health and safety.

3c. System is non-protective of ground water for other conditions as determined by inspector? ☐ Yes* ☒ No

3d. System not abandoned in accordance with Minn. R. 7080.2500? ☐ Yes* ☒ No

***Yes to 3c or 3d - System is failing to protect groundwater**.*

Describe verification methods and results:

Attached supporting documentation: ☐ Not applicable ☐ _____

4. Operating permit and nitrogen BMP* – Compliance component #4 of 5 ☐ Not applicable

Is the system operated under an Operating Permit? ☒ Yes ☐ No **If "yes", A below is required**

Is the system required to employ a Nitrogen BMP specified in the system design? ☐ Yes ☒ No **If "yes", B below is required**

BMP = Best Management Practice(s) specified in the system design

If the answer to both questions is "no", this section does not need to be completed.

Compliance criteria:

a. Have the operating permit requirements been met? ☒ Yes ☐ No

b. Is the required nitrogen BMP in place and properly functioning? ☐ Yes ☐ No

Any "no" answer indicates noncompliance.

Describe verification methods and results:

Attached supporting documentation: ☐ Operating permit (Attach) ☐

Property Address: 43696 - 245th Place McGregor, MN 55760
Business Name: Septic Check Date: 3/7/2023

5. Soil separation – Compliance component #5 of 5

Date of installation 5/15/2001 (mm/dd/yyyy) ☐ Unknown

Shoreland/Wellhead protection/Food beverage lodging? ☒ Yes ☐ No

Compliance criteria (select one):

5a. *For systems built prior to April 1, 1996, and not located in Shoreland or Wellhead Protection Area or not serving a food, beverage or lodging establishment:* Drainfield has at least a two-foot vertical separation distance from periodically saturated soil or bedrock.	☐ Yes ☐ No*
5b. *Non-performance systems built April 1, 1996, or later or for non-performance systems located in Shoreland or Wellhead Protection Areas or serving a food, beverage, or lodging establishment:* Drainfield has a three-foot vertical separation distance from periodically saturated soil or bedrock.*	☐ Yes ☐ No*
5c. *"Experimental", "Other", or "Performance" systems built under pre-2008 Rules; Type IV or V systems built under 2008 Rules 7080. 2350 or 7080.2400 (Intermediate Inspector License required ≤ 2,500 gallons per day; Advanced Inspector License required > 2,500 gallons per day)* Drainfield meets the designed vertical separation distance from periodically saturated soil or bedrock.	☒ Yes ☐ No*

***Any "no" answer above indicates the system is failing to protect groundwater.**

Describe verification methods and results:

Attached supporting documentation:

☐ Soil observation logs completed for the report
☒ Two previous verifications of required vertical separation
☐ Not applicable (No soil treatment area)
☐ _____

Indicate depths or elevations

A. Bottom of distribution media	
B. Periodically saturated soil/bedrock	
C. System separation	
D. Required compliance separation*	

*May be reduced up to 15 percent if allowed by Local Ordinance.

Upgrade requirements: *(Minn. Stat. § 115.55) An imminent threat to public health and safety (ITPHS) must be upgraded, replaced, or its use discontinued within ten months of receipt of this notice or within a shorter period if required by local ordinance. If the system is failing to protect ground water, the system must be upgraded, replaced, or its use discontinued within the time required by local ordinance. If an existing system is not failing as defined in law, and has at least two feet of design soil separation, then the system need not be upgraded, repaired, replaced, or its use discontinued, notwithstanding any local ordinance that is more strict. This provision does not apply to systems in shoreland areas, Wellhead Protection Areas, or those used in connection with food, beverage, and lodging establishments as defined in law.*

MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

Sewage tank integrity assessment form

Subsurface Sewage Treatment Systems (SSTS) Program

Doc Type: Compliance and Enforcement

Purpose: This form *may* be used to certify the compliance status of the sewage tank components of the SSTS. **This form is not a complete SSTS inspection report, only a tank integrity assessment, and may only certify sewage tank compliance status when entirely completed and signed by a qualified professional.** SSTS compliance inspection report forms can be found at: https://www.pca.state.mn.us/water/inspections.

Instructions: This form may be completed, and signed, by a Designated Certified Individual (DCI) of a licensed SSTS inspection, maintenance, installation, or service provider business who personally conducts the necessary procedures to assess the compliance status of each sewage tank in the system. Only a licensed maintenance business is authorized to pump the tank for assessment. A copy of this information should be submitted to the system owner and be maintained by the licensed SSTS business for a period of five (5) years from the assessment date.

When this form is signed by a qualified certified professional, it becomes *necessary supporting documentation* to an Existing System Compliance Inspection Report: Compliance inspection form - Existing system (wq-wwists4-31b). This form can be found on the MPCA website at https://www.pca.state.mn.us/water/inspections.

The information and certified statement on this form is **required** when existing septic tank compliance status is determined by an individual other than the SSTS Inspector that submits an inspection report. This form represents a third party assessment of SSTS component compliance and is allowable under Minn. R. 7082.0700, subp. 4(B)(1). This form is valid for a period of three years beyond the signature date on this form unless a new evaluation is requested by the owner or owner's agent or is required according to local regulations. Additional Administrative Rule references for this activity can be found at Minn. R. 7082.0700, subp. 4(B),(C), and (D) and; Minn. R. 7083.0730(C).

Owner information

Owner/Representative: Covenent Pines Bible Camp - 2 recirculating tanks and 1500 Pump tank by main lodge

Property address: 43696 245th Pl., McGregor, MN 55760

Local Regulatory Authority: Aitkin County Parcel ID: 14-0-024400

System status

System status on date (mm/dd/yyyy): 3/7/2023

☒ **Certificate of sewage tank compliance** ☐ **Notice of sewage tank non-compliance**

Compliance criteria:

The SSTS has a seepage pit, cesspool, drywell, leaching pit, or other pit - "**Failure to Protect Groundwater.**"	☐ Yes* ☒ No
The SSTS has a sewage tank that leaks below the designed operating depth - "**Failure to Protect Groundwater.**"	☐ Yes* ☒ No
The SSTS presents a threat to public safety by reason of structurally unsound (damaged, cracked, or weak) maintenance hole cover(s) or lids or any other unsafe condition - "**Imminent Threat to Public Health or Safety.**"	☐ Yes* ☒ No

Any "yes" answer above indicates sewage tank non-compliance.

Company information

Company name: Timber Lakes Septic Service Inc

Business license number: L455

Designated Certified Individual (DCI) information

Print name: Dan Swanson

Certification number: C6023

I personally conducted the work described above as a Designated Certified Individual of a Minnesota-licensed SSTS inspection, maintenance, installation, or service provider Business. I personally conducted the necessary procedures to assess the compliance status of each sewage tank in this SSTS.

***By typing/signing my name below**, I certify the above statements to be true and correct, to the best of my knowledge, and that this information can be used for the purpose of processing this form.*

Designated Certified Individual's signature: Dan Swanson
(This document has been electronically signed.)

Date (mm/dd/yyyy): 3/7/2023

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Compliance Inspection Form

Existing Subsurface Sewage Treatment Systems (SSTS)

Doc Type: Compliance and Enforcement

Inspection results based on Minnesota Pollution Control Agency (MPCA) requirements and attached forms – additional local requirements may also apply.

Submit completed form to Local Unit of Government (LUG) and system owner within 15 days

For local tracking purposes:

System Status

System status on date (mm/dd/yyyy): 5/10/2018

☒ **Compliant – Certificate of Compliance**
(Valid for 3 years from report date, unless shorter time frame outlined in Local Ordinance.)

☐ **Noncompliant – Notice of Noncompliance**
(See Upgrade Requirements on page 3.)

Reason(s) for noncompliance *(check all applicable)*

- ☐ Impact on Public Health *(Compliance Component #1) – Imminent threat to public health and safety*
- ☐ Other Compliance Conditions *(Compliance Component #3) – Imminent threat to public health and safety*
- ☐ Tank Integrity *(Compliance Component #2) – Failing to protect groundwater*
- ☐ Other Compliance Conditions *(Compliance Component #3) – Failing to protect groundwater*
- ☐ Soil Separation *(Compliance Component #4) – Failing to protect groundwater*
- ☐ Operating permit/monitoring plan requirements *(Compliance Component #5) – Noncompliant*

Property Information

Parcel ID# or Sec/Twp/Range: 14-0-024400

Property address: 43696 - 245th Place McGregor, MN 55760
Reason for inspection: Permit for bathroom

Property owner: Covenent Pines Bible Camp
Owner's phone: 612-387-2261

or

Owner's representative: Scott
Representative phone: 612-387-2261

Local regulatory authority: Aitkin County
Regulatory authority phone: 218-927-7342

Brief system description: 5000 GAL of septic tanks, 3 pump tanks, 6000 GAL recirculating sand filter, 2 - 25'x150' pressure beds

Comments or recommendations:

1 broken inspection pipe at grade on the East end of the drainfield, recommend having it replaced. Filter in the pump tank needed cleaning, recommend cleaning it once a month.

Certification

I hereby certify that all the necessary information has been gathered to determine the compliance status of this system. No determination of future system performance has been nor can be made due to unknown conditions during system construction, possible abuse of the system, inadequate maintenance, or future water usage.

Inspector name: Brian Koski
Certification number: 7989

Business name: Septic Check
License number: 2624

Inspector signature:
Phone number: 320-983-2447

Necessary or Locally Required Attachments

☒ Soil boring logs ☒ System/As-built drawing ☒ Forms per local ordinance

☐ Other information (list):

1. Impact on Public Health – Compliance component #1 of 5

Compliance criteria:	
System discharges sewage to the ground surface.	☐ Yes ☒ No
System discharges sewage to drain tile or surface waters.	☐ Yes ☒ No
System causes sewage backup into dwelling or establishment.	☐ Yes ☒ No

Any "yes" answer above indicates the system is an imminent threat to public health and safety.

Comments/Explanation:

Verification method(s):

- ☒ Searched for surface outlet
- ☒ Searched for seeping in yard/backup in home
- ☐ Excessive ponding in soil system/D-boxes
- ☐ Homeowner testimony *(See Comments/Explanation)*
- ☐ "Black soil" above soil dispersal system
- ☐ System requires "emergency" pumping
- ☐ Performed dye test
- ☐ Unable to verify *(See Comments/Explanation)*
- ☐ Other methods not listed *(See Comments/Explanation)*

2. Tank Integrity – Compliance component #2 of 5

Compliance criteria:	
System consists of a seepage pit, cesspool, drywell, or leaching pit. *Seepage pits meeting 7080.2550 may be compliant if allowed in local ordinance.*	☐ Yes ☒ No
Sewage tank(s) leak below their designed operating depth. If yes, which sewage tank(s) leaks:	☐ Yes ☒ No

Any "yes" answer above indicates the system is failing to protect groundwater.

Comments/Explanation:

Verification method(s):

- ☒ Probed tank(s) bottom
- ☐ Examined construction records
- ☐ Examined Tank Integrity Form *(Attach)*
- ☐ Observed liquid level below operating depth
- ☒ Examined empty (pumped) tanks(s)
- ☒ Probed outside tank(s) for "black soil"
- ☐ Unable to verify *(See Comments/Explanation)*
- ☐ Other methods not listed *(See Comments/Explanation)*

3. Other Compliance Conditions – Compliance component #3 of 5

a. Maintenance hole covers are damaged, cracked, unsecured, or appear to be structurally unsound. ☐ Yes* ☒ No ☐ Unknown

b. Other issues *(electrical hazards, etc.)* to immediately and adversely impact public health or safety. ☐ Yes* ☒ No ☐ Unknown
System is an imminent threat to public health and safety.

Explain:

c. System is non-protective of ground water for other conditions as determined by inspector . ☐ Yes* ☒ No
System is failing to protect groundwater.

Explain:

Property address: 43696 - 245th Place McGregor, MN 55760 Inspector initials/Date: BK | 5/10/2018 (mm/dd/yyyy)

4. Soil Separation – Compliance component #4 of 5

Date of installation: 5/15/2001 (mm/dd/yyyy) ☐ Unknown

Shoreland/Wellhead protection/Food beverage lodging? ☒ Yes ☐ No

Compliance criteria:

For systems built prior to April 1, 1996, and not located in Shoreland or Wellhead Protection Area or not serving a food, beverage or lodging establishment: Drainfield has at least a two-foot vertical separation distance from periodically saturated soil or bedrock.	☐ Yes ☐ No
Non-performance systems built April 1, 1996, or later or for non-performance systems located in Shoreland or Wellhead Protection Areas or serving a food, beverage, or lodging establishment: Drainfield has a three-foot vertical separation distance from periodically saturated soil or bedrock.*	☐ Yes ☐ No
"Experimental", "Other", or "Performance" systems built under pre-2008 Rules; Type IV or V systems built under 2008 Rules (7080. 2350 or 7080.2400 (Advanced Inspector License required) Drainfield meets the designed vertical separation distance from periodically saturated soil or bedrock.	☒ Yes ☐ No

Any "no" answer above indicates the system is failing to protect groundwater.

Verification method(s):

Soil observation does not expire. Previous soil observations by two independent parties are sufficient, unless site conditions have been altered or local requirements differ.

☒ Conducted soil observation(s) *(Attach boring logs)*
☐ Two previous verifications (A*ttach boring logs)*
☐ Not applicable *(Holding tank(s), no drainfield)*
☐ Unable to verify *(See Comments/Explanation)*
☐ Other *(See Comments/Explanation)*

Comments/Explanation:

Indicate depths or elevations

A. Bottom of distribution media	22"
B. Periodically saturated soil/bedrock	42"
C. System separation	20"
D. Required compliance separation*	18"

*May be reduced up to 15 percent if allowed by Local Ordinance.

5. Operating Permit and Nitrogen BMP* – Compliance component #5 of 5 ☐ Not applicable

Is the system operated under an Operating Permit? ☒ Yes ☐ No **If "yes", A below is required**

Is the system required to employ a Nitrogen BMP? ☐ Yes ☒ No **If "yes", B below is required**

BMP = Best Management Practice(s) specified in the system design

If the answer to both questions is "no", this section does not need to be completed.

Compliance criteria

a. Operating Permit number: 59 Have the Operating Permit requirements been met?	☒ Yes ☐ No
b. Is the required nitrogen BMP in place and properly functioning?	☐ Yes ☐ No

Any "no" answer indicates Noncompliance.

Upgrade Requirements *(Minn. Stat. § 115.55) An imminent threat to public health and safety (ITPHS) must be upgraded, replaced, or its use discontinued within ten months of receipt of this notice or within a shorter period if required by local ordinance. If the system is failing to protect ground water, the system must be upgraded, replaced, or its use discontinued within the time required by local ordinance. If an existing system is not failing as defined in law, and has at least two feet of design soil separation, then the system need not be upgraded, repaired, replaced, or its use discontinued, notwithstanding any local ordinance that is more strict. This provision does not apply to systems in shoreland areas, Wellhead Protection Areas, or those used in connection with food, beverage, and lodging establishments as defined in law.*

Soil Profile Description

Last updated: 1/15/18

Date Completed :	5/10/2018	**Observation # :**	SB 1 - 4
Completed By :	Brian Koski/Melissa Besser	**Equipment :**	Auger
Client / Project :	Covenent Pines Bible Camp	**Limiting Layer :**	42"
andscape position :	Toe	**Vegitation :**	Grass
Mapped soil type :	D458B	**Weather :**	Sunny

Observation # : 1	*Primary or Alternate Site*	*Elevation:*			
Horizon Depth	**Soil Texture**	**Matrix Color**	**Redox features**	**Shape**	**Grade**	**Consistence**
0" - 6"	Sandy Loam	10YR 3/2		Granular	Strong	Friable
6" - 25"	Fine Sand	10YR 3/3		Single Grain	Structureless	Loose
25" - 46"	Fine Sand	10YR 5/4		Single Grain	Structureless	Loose
			Redox present at 46"			

Observation # : 2	*Primary or Alternate Site*	*Elevation:*			
Horizon Depth	**Soil Texture**	**Matrix Color**	**Redox features**	**Shape**	**Grade**	**Consistence**
0" - 4"	Sandy Loam	10YR 3/2		Granular	Strong	Friable
4" - 37"	Fine Sand	10YR 3/4		Single Grain	Structureless	Loose
37" - 42"	Fine Sand	10YR 4/6		Single Grain	Structureless	Loose
			Redox present at 42"			

Observation # : 3	*Primary or Alternate Site*	*Elevation:*			
Horizon Depth	**Soil Texture**	**Matrix Color**	**Redox features**	**Shape**	**Grade**	**Consistence**
0" - 6"	Sandy Loam	10YR 3/2		Granular	Strong	Friable
6" - 33"	Fine Sand	10YR 3/4		Single Grain	Structureless	Loose
33" - 39"	Fine Sand	10YR 4/6		Single Grain	Structureless	Loose
39" - 42"	Fine Sand	10YR 6/3		Single Grain	Structureless	Loose
			Redox present at 42"			

SEPTIC CHECK
6074 Keystone Rd Milaca, MN 56353
Phone: (320)-983-2447 Fax: (320)-983-2151 info@septiccheck.com www.SepticCheck.com

Soil Profile Description

Last updated: 1/15/18

Observation # : 4	*Primary or Alternate Site*	*Elevation:*

Horizon Depth	Soil Texture	Matrix Color	Redox features	Shape	Grade	Consistence
0" - 6"	Sandy Loam	10YR 3/2		Granular	Strong	Friable
6" - 22"	Fine Sand	10YR 3/4		Single Grain	Structureless	Loose
22" - 35"	Fine Sand	10YR 4/4		Single Grain	Structureless	Loose
35" - 44"	Fine Sand	10YR 4/6	Redox present at 44"	Single Grain	Structureless	Loose

SEPTIC CHECK
6074 Keystone Rd Milaca, MN 56353
Phone: (320)-983-2447 Fax: (320)-983-2151 info@septiccheck.com www.SepticCheck.com

Aitkin County, Minnesota

D458B—Menahga loamy sand, 1 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2t4t1
Elevation: 590 to 2,030 feet
Mean annual precipitation: 23 to 33 inches
Mean annual air temperature: 36 to 48 degrees F
Frost-free period: 90 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Menahga and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Menahga

Setting

Landform: Hillslopes
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy outwash

Typical profile

A - 0 to 3 inches: loamy sand
Bw - 3 to 17 inches: loamy sand
C - 17 to 79 inches: sand

Properties and qualities

Slope: 1 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Forage suitability group: Sandy (G057XN022MN)

Hydric soil rating: No

Minor Components

Eagleview

Percent of map unit: 8 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Roscommon

Percent of map unit: 2 percent
Landform: Swales
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: Yes

Meehan

Percent of map unit: 2 percent
Landform: Swales
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Wurtsmith

Percent of map unit: 1 percent
Landform: Flats
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Andrusia

Percent of map unit: 1 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

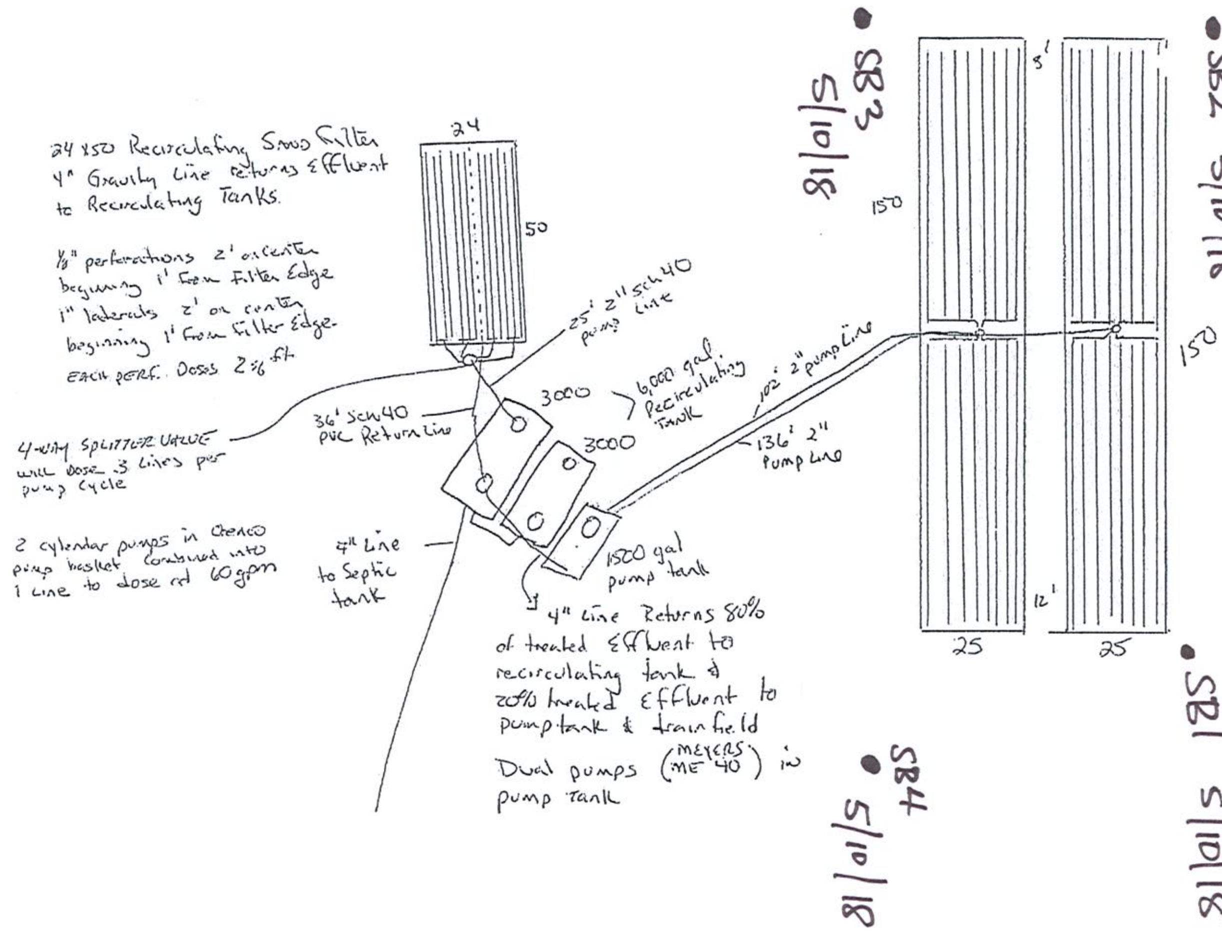
Leafriver, frequently ponded

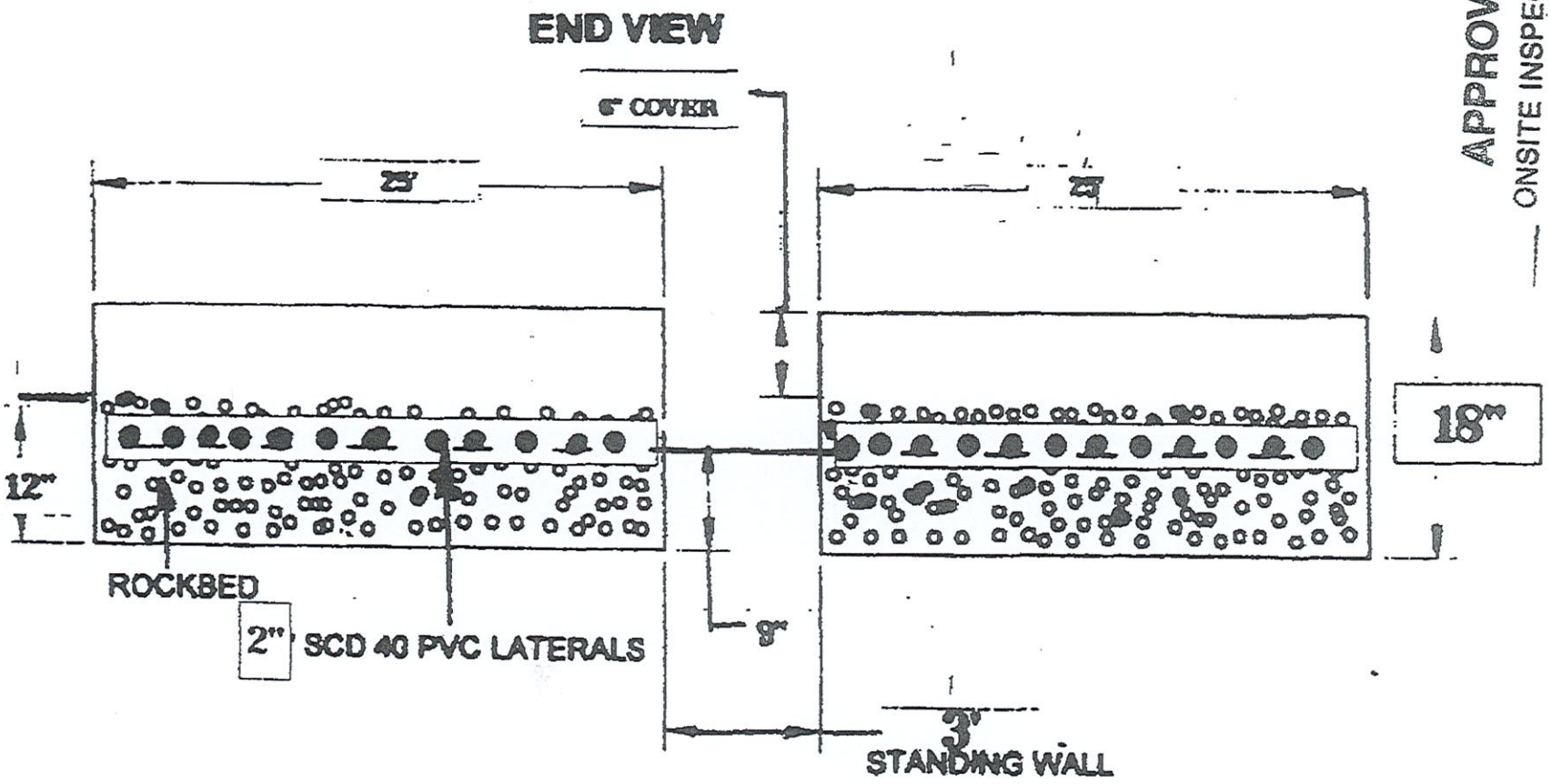
Percent of map unit: 1 percent
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Aitkin County, Minnesota
Survey Area Data: Version 18, Oct 4, 2017


24 x 50 Recirculating Sand Filter
4" Gravity Line returns Effluent to Recirculating Tanks.
1/8" perforations 2' on center beginning 1' from Filter Edge
1" laterals 2' on center beginning 1' from Filter Edge.
EACH PERF. Doses 2 1/6 ft
4-way SPLITTER VALVE will dose 3 Lines per pump cycle
2 cylinder pumps in Orenco pump basket combined into 1 Line to dose at 60 gpm
24
50
25' 2" sch 40 pump Line
36' sch 40 PVC Return Line
4" Line to Septic tank
3000
3000
6,000 gal Recirculating Tank
1500 gal pump tank
4" Line Returns 80% of treated Effluent to recirculating tank & 20% treated Effluent to pump tank & drain field
Dual pumps (MEYERS ME 40) in pump tank
102' 2" pump Line
136' 2" Pump Line
150
150
25
25
3'
12'
SB1 5/10/18
SB2 5/10/18
SB3 5/10/18
SB4 5/10/18



APPROVED
ONSITE INSPECTION
NO ONSITE INSPEC
SIGN [illegible] DATE 5-1-20

Environmental Design	B&R SEPTIC SYSTEMS	PRESSURE BED LAYOUT

9

Property Owner Covenant Pines Bible Camp Parcel ID # _____ Page 1 of 1

1 Boring # ☐ Boring ☒ Pit Ground surface elev. 1223 ft. Depth to limiting factor 53" in.

North Pit

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	Roots	Soil Application Rate GPD/ft² *Eff#1	*Eff#2
A	0-4	10YR2/1	NA	SCL	3CGR	Fri		Y		
E	4-12	10YR5/2	NA	SICL	3FSBK	Fri	Wavy	Y	Platy	
BT	12-30	10YR5/3	BT	SIC	3FABK	Fr		Y		
	30-53	10YR6/4	NA	S-FM	SG	loose		N		
	53	10YR5/2	Redox 10yr 5/6	S FM	SG	loose		N		
			Redox 53"							

☐ Boring # ☐ Boring ☐ Pit Ground surface elev. _____ ft. Depth to limiting factor _____ in.

Middle Pit

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	Roots	Soil Application Rate GPD/ft² *Eff#1	*Eff#2
A	0-4	10YR2-1	—	SCL	3CGR	Fri	—	Y		
E	4-11	10YR5-2		SICL	3FSBK	Fri	Wavy	Y	Platy	
BT	11-31	10YR5-2	BT	SIC	3FABK	Fri	—	Y		
	31-51	10YR6/4	—	S-FM	SG	loose	—	N		
	51	10YR5/2	10YR5/6	S FM	SG	loose	—	N		

☐ Boring # ☐ Boring ☐ Pit Ground surface elev. _____ ft. Depth to limiting factor _____ in.

South Pit

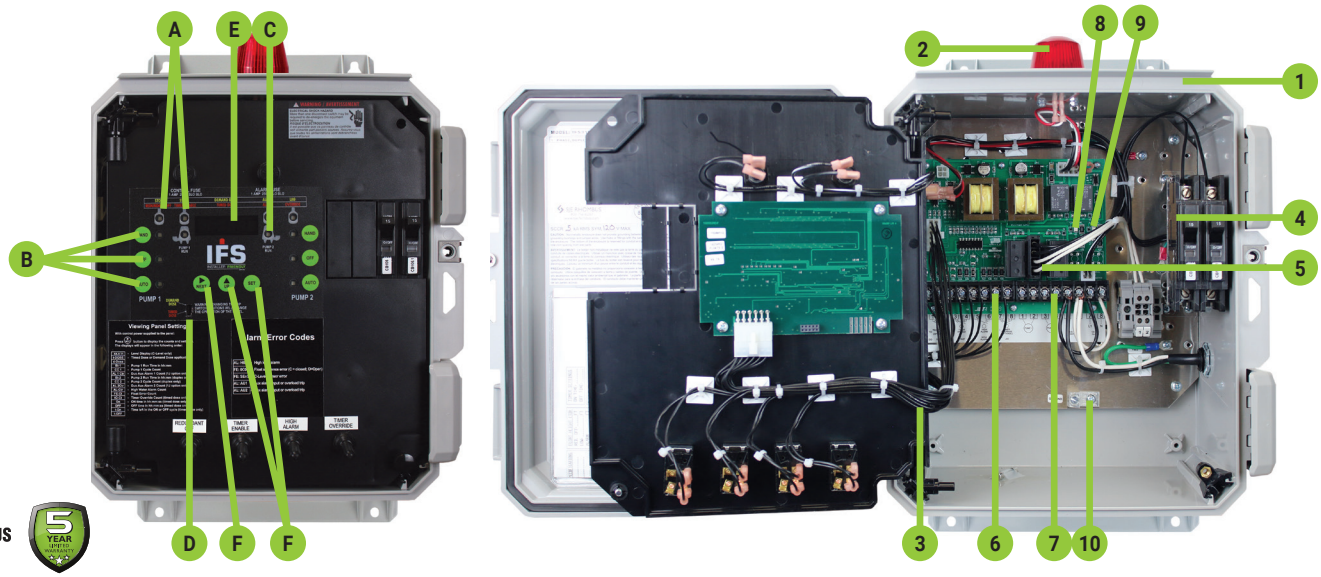
Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	Roots	Soil Application Rate GPD/ft² *Eff#1	*Eff#2
A	0-4	10YR2-1	—	SCL	CGR	Fri	—	Y		
E	4-11	10YR5-2	—	SICL	3FSBK	Fri	Wavy	Y		
B+	11-29	10YR5-2	—	SIC	3FABK	Fri		Y		
	29-44	10YR6-4		S-FM	SG	loose		N		
	44	10YR5-2	10YR5/6	S-FM	SG	loose				

* Effluent #1 = BOD_5 > 30 ≤ 220 mg/L and TSS >30 ≤ 150 mg/L

* Effluent #2 = BOD_5 ≤ 30 mg/L and TSS ≤ 30 mg/L

INSTALLER FRIENDLY SERIES® (IFS)
SINGLE PHASE DUPLEX

Demand Dose or Timed Dose, Float or C-Level™ Sensor Controlled System for Pump Control and System Monitoring



c UL us LISTED

5 YEAR LIMITED WARRANTY

Panel layout may vary with options.
Reg. Cdn Pat. & TM Off
C-Level™ Sensor US Patent No. 8,336,385; 8,567,242; 8,650,949

The IFS duplex control panel utilizes an innovative circuit board design to control two alternating 120/208/240V single phase pumps in water and sewage applications. IFS panels feature an easy-to-use touch pad on inner door for programming and system monitoring. The alternating action equalizes pump wear. In addition, 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. Available with the EZconnex® float system.

The panel can utilize the C-Level™ sensor for continuous level monitoring. It senses the level in the tank and sends a signal to the 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 for 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)

COMPONENTS

1. Enclosure measures 12 x 10 x 6 inches (30.48 x 24.4 x 15.24) NEMA 4X (ultraviolet stabilized thermoplastic, padlockable with integral mounting flanges, drip shield, (2) heavy duty cover latches, and stainless steel ¼ turn set screw; for outdoor or indoor use)
2. Red LED beacon provides 360° visual check of alarm condition
3. Alarm horn provides audio warning of alarm condition (83 to 85 decibel rating)
4. Circuit breakers (optional) provides pump disconnect and branch circuit protection
5. Power relays control pump by switching electrical lines; definite purpose contactor used when pump full load amps are above 15
6. Float connection terminal block
7. Incoming control/alarm power & pump terminal block
8. Control Power Indicator/Fuse indicator light illuminates if control power is present in panel; alarm will activate if control fuse is blown
9. Alarm Power Indicator/Fuse indicator light illuminates if alarm power is present in panel
10. Ground lug
11. 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 (not shown)

Note: Added options, voltage, and amp range selected may change enclosure size and enclosure features, and component layout.

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

SJE RHOMBUS®

9500054J Rev 05/21

INSTALLER FRIENDLY SERIES® SINGLE PHASE DUPLEX - Demand or timed dose float controlled system for pump control and system monitoring.

IFS		1	W					8AC10E
CONTROL PANEL	MODEL TYPE	ALARM PACKAGE	ENCLOSURE RATING	STARTING DEVICE	PUMP FULL LOAD AMPS	PUMP DISCONNECTS	FLOAT SWITCH APPLICATION	OPTIONS (LISTED BELOW)

CONTROL PANEL	✓	IFS		
MODEL TYPE		3	Duplex Timed Dose (includes Option 8AC and 10E as standard)	
		4	Duplex Demand Dose (includes Option 8AC and 10E as standard)	
ALARM PACKAGE	✓	1	Alarm Package (includes test/normal/silence switch, fuse, red light, & horn)	
ENCLOSURE RATING	✓	W	Weatherproof, NEMA 4X (engineered thermoplastic)	
STARTING DEVICE		1	120/208/240V	
		9	120V only	
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) 120V (select STARTING DEVICE Option 9 above)	
			Circuit Breaker(s) 120/208/240V (select STARTING DEVICE Option 1 above)	
FLOAT SWITCH APPLICATION		H	Floats - Pump Down (select Option 17 below) Timed dose = timer enable and alarm / Demand dose = stop, start, and alarm	
		E	EZconnex® Float Switch System (select Option 34 or 35 below)	Timed Dose
				Demand Dose
		X	No Floats	Timed Dose
				Demand Dose
		C	C-Level™ Sensor (select Option 24 or 29) Select Option 3E and/ or 4A & 4D for high water alarm and/or redundant off floats	Timed Dose
				Demand Dose

PRICING WORKSHEET

IFS Duplex Base Price	_____
Alarm Package	_____
Enclosure Rating	_____
Starting Device	_____
Pump Full Load Amps	_____
Pump Disconnects	_____
Float Switch Application	_____
Total Options	_____
TOTAL LIST PRICE	_____

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 when using the C-Level™ sensor.

	OPTIONS	DESCRIPTION	
	1J	Duo Alarm Inputs	
	3A	Alarm Flasher	
	3B	Manual Alarm Reset	
	3E	High Water Alarm Float (must also select Option 17) **Only Available with Float Switch Application = C**	
	4A	Redundant Off (must also select Option 4D if floats are required)	Timed Dose
			Demand Dose
	4D	Redundant Off Float (must also select Option 4A and Option 17)	
	6A	Auxiliary Alarm Contact, Form C	
✓	**8AC**	**Display Board - Includes: ETM Counter, Events (Cycles) Counter, Alarm Counter, Override Counter (Timed Dose Only), and Lead/ Lag Selector (Demand Dose Only) (included as standard)**	
✓	**10E**	**Lockable Latch - NEMA 4X (included as standard)**	
	10F	Lightning Arrestor (select pump circuit breakers, control and alarm power combined)	
	10K	Anti-condensation Heater	
	11C	Additional NEMA 1 Remote Alarm Panel (must also select Option 6A)	
	11D	Additional NEMA 4X Remote Alarm Panel (must also select Option 6A)	
	15A	Control/Alarm Circuit Breaker	
	16A	10' Cord in Lieu of 20' Cord (per Float)	
	16B	15' Cord in Lieu of 20' Cord (per Float)	
	16C	30' Cord in Lieu of 20' Cord (per Float)	
	16D	40' Cord in Lieu of 20' Cord (per Float)	

	OPTIONS	DESCRIPTION
	17C	Sensor Float® / Internally Weighted (per Float) - Mercury
	17D	Sensor Float® / Externally Weighted (per Float) - Mercury
	17G	SJE MilliAmpMaster™ / Pipe Clamp (per Float) - Mechanical
	17H	SJE MilliAmpMaster™ / Externally Weighted (per Float) - Mechanical
	17J	Sensor Float® / Pipe Clamp (per Float) - Mercury
	18A	Timer Override Float (Timed Dose Float Panel Only)
	19F	Fourth Float to Separate Alarm Function from Lag (Demand Dose Float Panel Only)
	24E	C-Level™ CL40 Sensor with 4' Vent Tube and 20' Cord
	24F	C-Level™ CL40 Sensor with 4' Vent Tube and 40' Cord
	24G	C-Level™ CL40 Sensor with 8' Vent Tube and 20' Cord
	24H	C-Level™ CL40 Sensor with 8' Vent Tube and 40' Cord
	24X	No C-Level™ CL40 Sensor
	29A	C-Level™ CL100 Sensor with 10' Vent Tube and 20' Cord
	29B	C-Level™ CL100 Sensor with 10' Vent Tube and 40' Cord
	29X	No C-Level™ CL100 Sensor
	34D ■	EZconnex® 4-Port, 25', with 10' Floats (3) / Pipe Clamp, Sealing Plug
	34E ■	EZconnex® 4-Port, 50', with 10' Floats (3) / Pipe Clamp, Sealing Plug
	34G ■	EZconnex® 4-Port, 25', with 20' Floats (3) / Pipe Clamp, Sealing Plug
	34H ■	EZconnex® 4-Port, 50', with 20' Floats (3) / Pipe Clamp, Sealing Plug
	35D ■	EZconnex® 4-Port, 25', with 10' Floats (4) / Pipe Clamp
	35E ■	EZconnex® 4-Port, 50', with 10' Floats (4) / Pipe Clamp
	35G ■	EZconnex® 4-Port, 25', with 20' Floats (4) / Pipe Clamp
	35H ■	EZconnex® 4-Port, 50', with 20' Floats (4) / Pipe Clamp

■ EZconnex® mechanically-activated, narrow angle float switches with quick release connections

TECHNICAL BROCHURE
B3885 R2

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

BUILT IN THE USA
ENGINEERED, ASSEMBLED & TESTED

GOULDS WATER TECHNOLOGY
a xylem brand

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.

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):

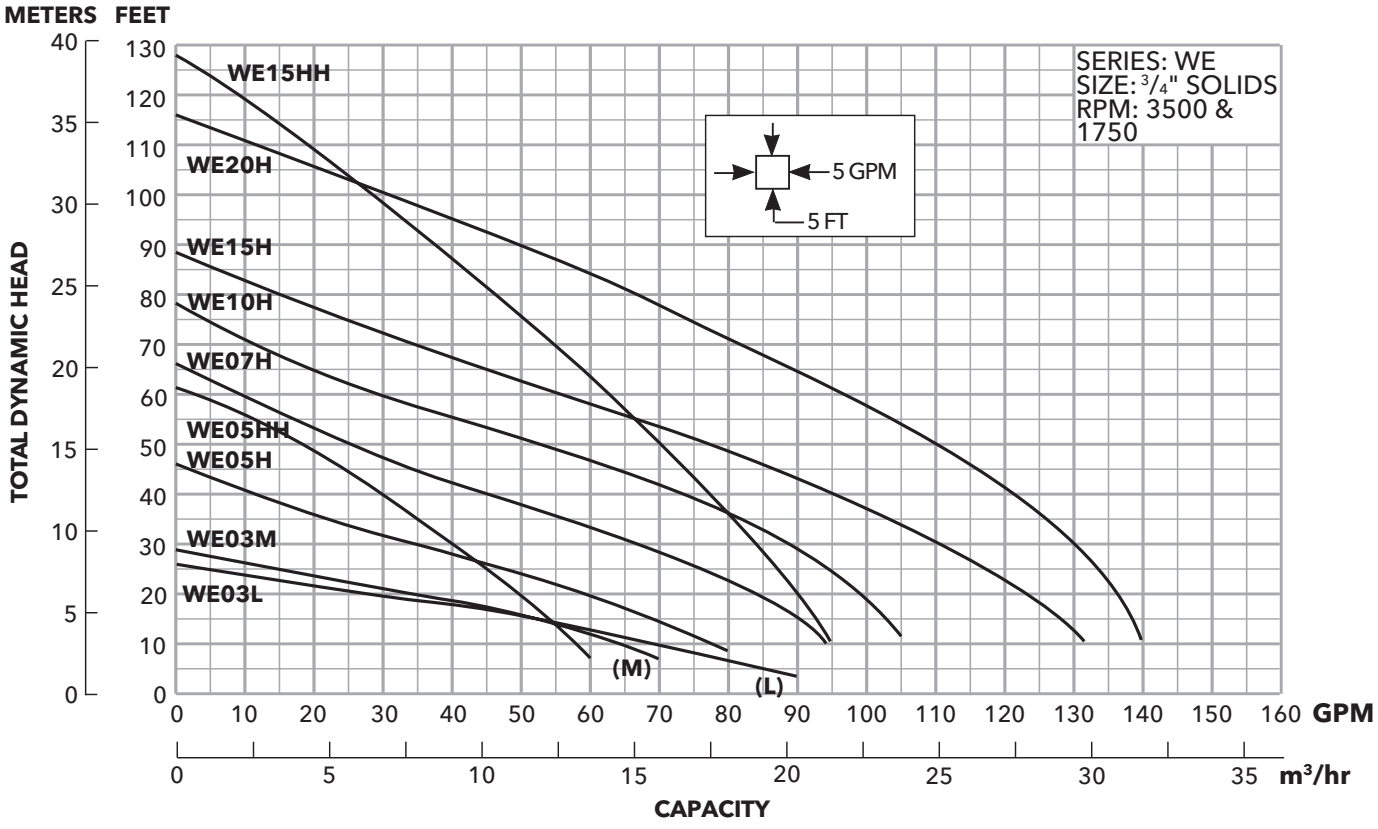
- Capacitor start motors for maximum starting torque.
- Built-in overload with automatic reset.
- SJTOW or STOW severe duty oil and water resistant power cords.
- ⅓ – 1 HP models have NEMA three prong grounding plugs.
- 1½ HP and larger units have bare lead cord ends.

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

Tested to UL 778 and CSA 22.2 108 Standards
By Canadian Standards Association File #LR38549



MODELS

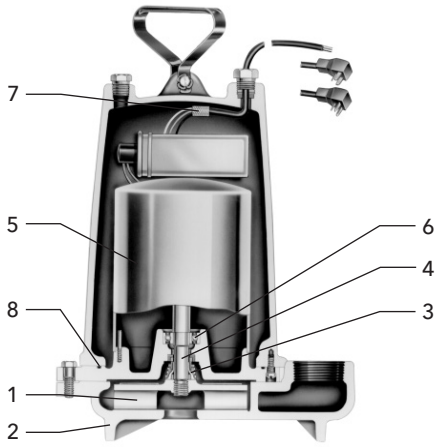
Order Number	HP	Phase	Volts	RPM	Impeller Diameter (in.)	Maximum Amps	Locked Rotor Amps	KVA Code	Full Load Efficiency %	Resistance		Power Cable Size	Weight (lbs.)
										Start	Line-Line		
WE0311L	0.33	1	115	1750	5.38	10.7	30.0	M	54	11.9	1.7	16/3	56
WE0318L			208			6.8	19.5	K	51	9.1	4.2		
WE0312L			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	1	115	3450	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		
WE0538H		3	200			4.9	22.6	R	68	NA	3.8	14/4	
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		
WE0538HH		3	200			4.9	22.6	R	68	NA	3.8	14/4	
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		
WE0738H		3	200			6.2	20.6	L	64	NA	5.7	14/4	
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		4.44	14.0	59.0	K	68	9.3	1.1	14/3	
WE1012H			230			12.5	36.2	J	69	10.3	2.1		
WE1038H		3	200			8.1	37.6	M	77	NA	2.7	14/4	
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		
WE1538H		3	200			10.6	40.6	K	79	NA	1.9	14/4	
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		
WE1538HH		3	200			10.6	40.6	K	79	NA	1.9	14/4	
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	1	230		5.38	18.0	49.6	F	78	3.2	1.2	14/3	83
WE2038H		3	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		

PERFORMANCE RATINGS (gallons per minute)

Order No.		WE-03L	WE-03M	WE-05H	WE-07H	WE-10H	WE-15H	WE-05HH	WE-15HH	WE-20H
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	5	15	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

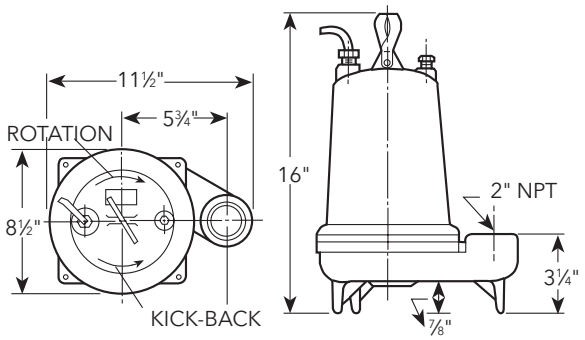
COMPONENTS

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



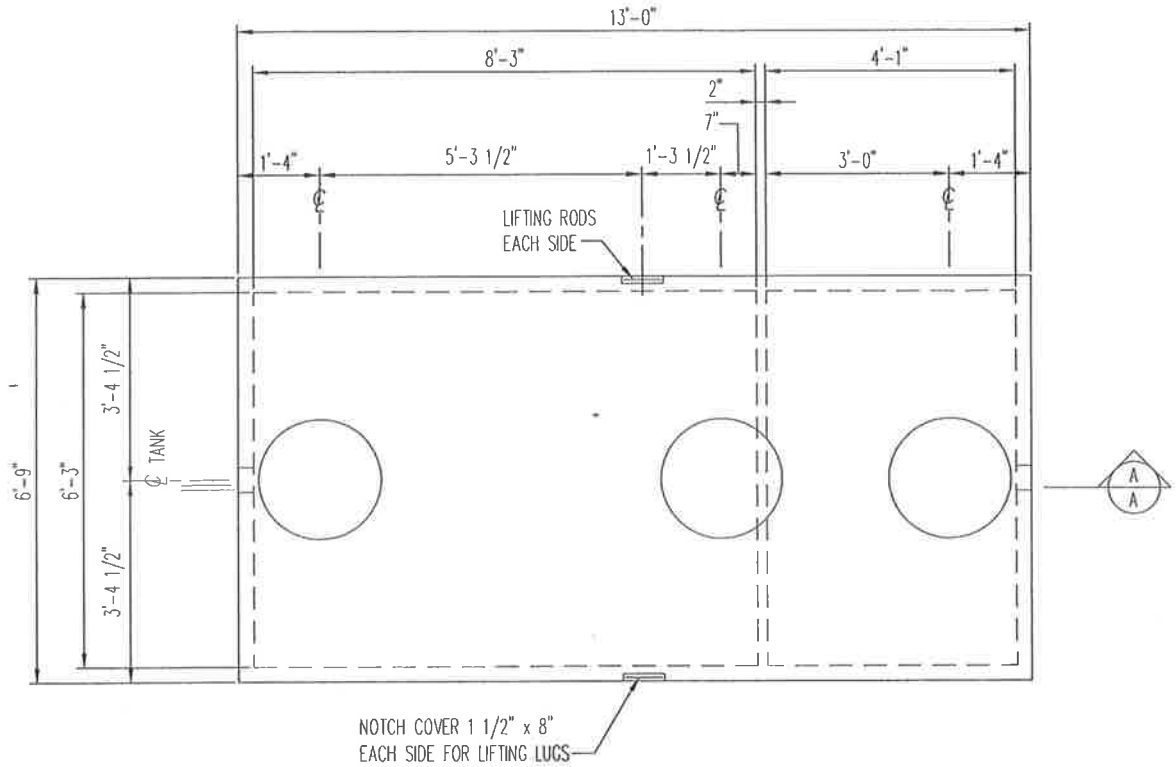
DIMENSIONS

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



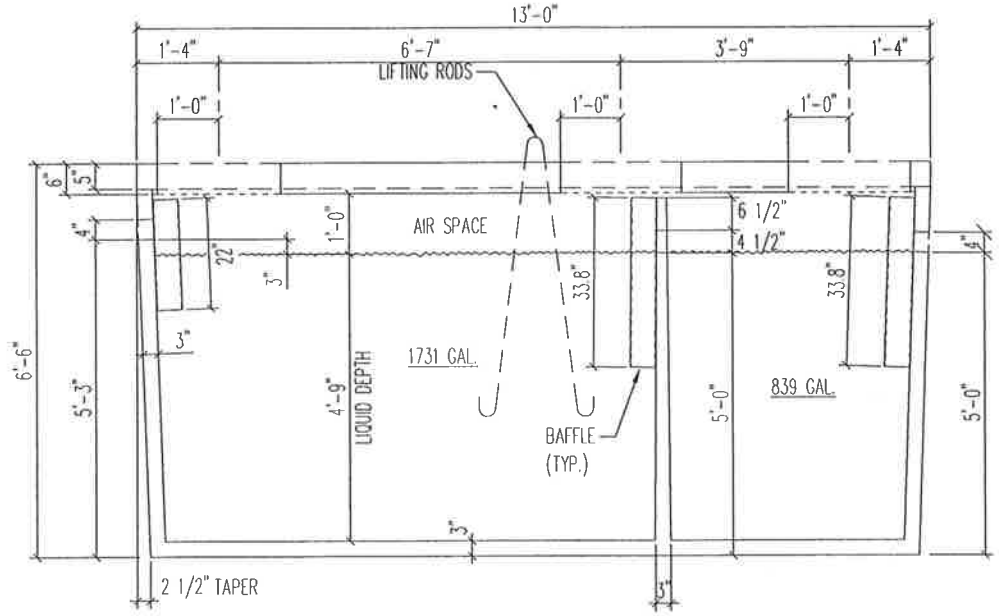
xylem
Let's Solve Water

Xylem Inc.
2881 East Bayard Street Ext., Suite A
Seneca Falls, NY 13148
Phone: (866) 325-4210
Fax: (888) 322-5877
www.gouldswatertechnology.com



2500 GALLON 2 COMP. TANK

1/2" = 1'-0"



A/A SECTION

1/2" = 1'-0"

NOTE:

1. PROVIDE MINIMUM 1" CLEAR BETWEEN TOP OF BAFFLE AND UNDERSIDE OF LID.

2500 GALLON 2 COMP. SEPTIC TANK (2500 2C)	Brown Wilbert	WEIGHT=19,500# MAX. SOIL COVER= 6'-0" TOTAL LIQUID VOLUME= 2570 GAL.