

# Reflection Lane HOA – Irrigation System

Last updated: July 7, 2025

**Overview:** This document is intended to describe the irrigation system of the Reflection Lane Homeowners Association located in the subdivision on Reflection Ln in Middleton, ID and outline a few of the minor maintenance activities needed to keep it running optimally.

## System Specifications:

Our system was designed by Agri-Lines (Parma, ID) to deliver water at 30 gpm at 60 psi to each of 9 lots simultaneously. I've never seen more than about half the lots in the sub using it at once so usually we can expect more than 30 gpm. You should see something close to 60 psi – if not, something is wrong. The system originally came with a 3/32" 475 g/min filter. A number of years back we purchased a 3/64" screen to clean up the water more. As a result, the filter plugs up more frequently and needs cleaned at a rate of roughly every 2 weeks, plus/minus a little. How often depends a lot on the flow level of the Boise River and how dirty that makes the water. More on cleaning the filter below. The system wasn't ever intended to provide water clean enough to use in lawn sprinklers so further filtering is needed at each lot wishing to water with most types of lawn sprinklers (more on this below).

The motor is a 15hp VFD (variable frequency drive). It's designed to run at a speed based on the demand. It requires an expensive computer based controller. If no one is using the system it shuts off as long as the mainline stays above about 50 psi. The system was designed to be pressurized so do not open your spigot and try and flood irrigate with it. If this is done it will reduce the pressure to other lots.

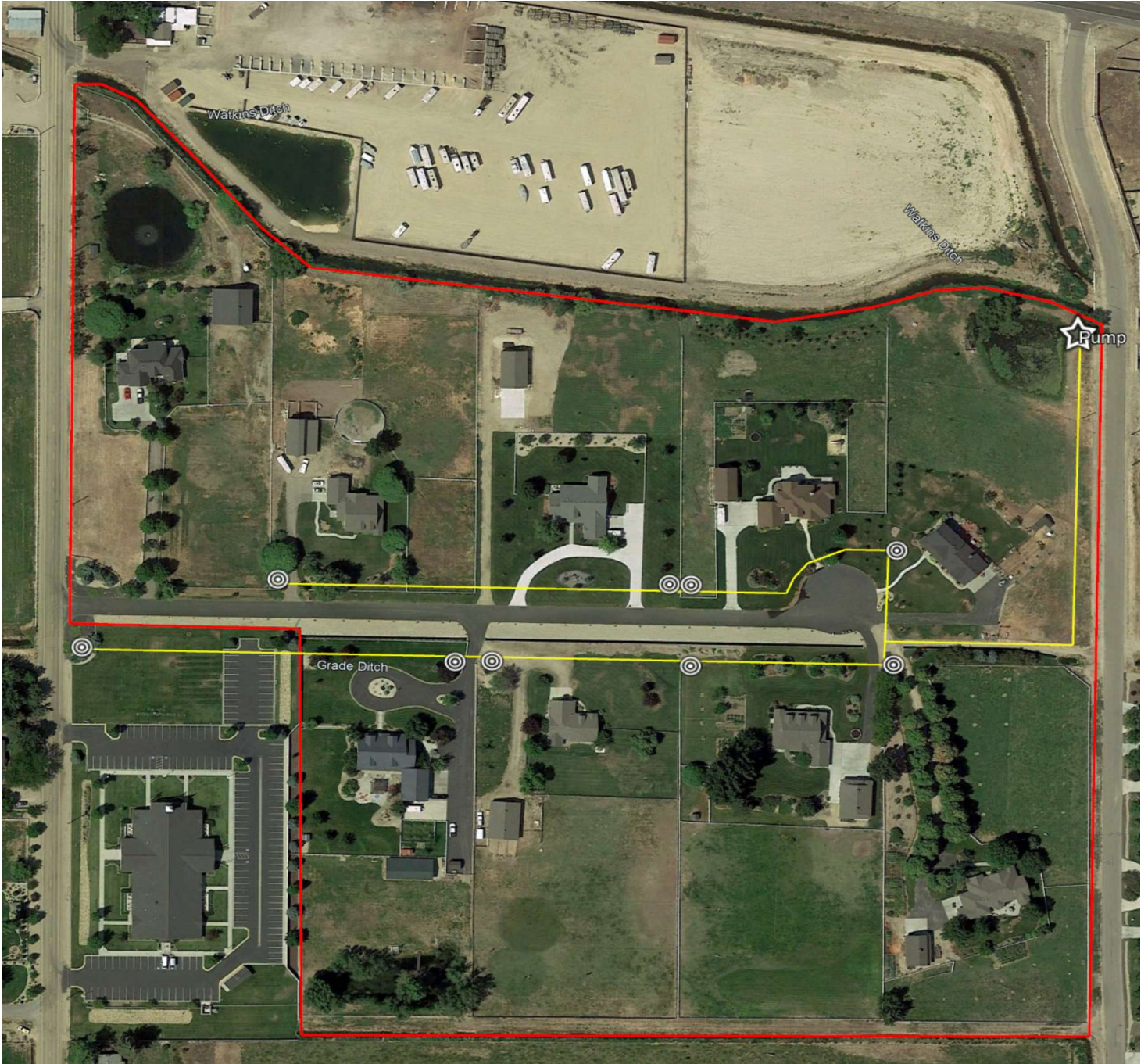
## Dirty Water:

Our 3/64" filter is equivalent to a mesh 16 filter. This filters the water plenty clean enough for impact (farm-type) sprinklers. However, it is NOT clean enough for most lawn sprinklers. If an association member wishes to water their lawn with the irrigation system (which wasn't the intent of the system when it was installed) they will have to deal with the dirty water issue at their lot. There are two options. 1. Use all impact sprinklers in your yard. 2. Purchase a sufficient filtering system. Time has clearly shown that our system, as presently set up, pumps a lot of debris smaller than 3/64". In order to clean water good enough for pop-up type sprinklers (and the like) a fairly large filter is required to prevent having to clean the filter at annoyingly short intervals. Ideally, a self-cleaning filter could be used but these can get pretty expensive. Summary, there are members using the irrigation system to water their lawns but there is a price to pay in time and money to do so. A filtering system at the pump house sufficient to clean the water well enough for all to water their lawns has been roughly priced at about \$20K-\$25K. At over \$3K per household, I don't see this happening anytime soon, but it is an option.

It is advised that if you want to set your lot up to use that irrigation system to water a lawn that you ask around and discuss the topic with others that are doing it to get some advice. Attention needs to be made to types of sprinklers used and water filtering requirements of these sprinklers when buying a filtering system.

## The System:

The irrigation system is shown in the aerial image below. Subdivision boundary is in Red. The buried mainline is in Yellow. The pump house is shown with a Star and the spigots at each lot are shown with a Target. Note that the exact locations of some buried mainline sections and some spigots are not shown exactly as they are unknown.



Note that the further most northwest lot in the subdivision was removed from the irrigation system a number of years ago and has since not participated in the use or cost of the system. This makes a total of 8 lots currently using the system. The spigot at the south front entry is not used.

The pump house sits on the further most northeast lot in the subdivision and has an easement to exist there from the lot owner. Our water right is delivered in the canal running along the northern boundary of the subdivision. The pump house is accessed via Dan's Lane. Dan's Lane is private and no permission was ever sought or received to use Dan's Lane to access our pump house. There has never been a problem with access but keep in mind when using

Dan's Lane that we need to be very neighborly and treat their roadway with respect, don't cause traffic hazards and don't track mud on their pavement, etc.



The pump pulls water from a 5' diameter and about 10' deep sump – shown below with a circle. The pump house is shown in Green and pictured above. The sump is connected to a water inlet in the canal (square) with a buried lateral pipe (about 12") – shown in Orange.



The water level in the sump normally (but not ideally) follows the water level in the canal. If the canal level gets too low or the screen at the inlet plugs with debris the water level in the sump can get too low causing the pump to cavitate (damaging). An eye needs to be kept on the canal level and screen cleaning throughout the watering season to prevent cavitating when the canal is low. A dam has been added to the canal to help keep the water level above the input screen. (more on this below)

The intake is roughly half a 3' box cut in a triangle shape as pictured below. The box extends down below the water level in this picture about 2 feet. The upstream side, south (right) side and bottom are solid metal. The top and downstream side are screened. Normally and ideally this intake is completely under water. The canal was recently dug out so the water level in this picture is very low. As pictured, the water level is about 3-4" higher than the lowest we can safely go. Also, when the water is this low the screen plugs with debris very frequently which requires a lot of attention to keep it clean. Sediment tends to build up around the screen and make its way into the box. This can also cause problems as it consumes area that water could be flowing. Sediment itself doesn't bother the pump much, it is normal for the system to pump slightly dirty water. The screen area should be kept clear of debris and sediment. This screen rusted out in 2022 and was replaced. It lasted 16 years so the new one should be good for awhile.

A pitchfork works well to keep the area around the inlet clear. It can be used to clear the buildup on the screen also, by poking the forks through the screen. The sediment around the intake can also be cleared with a pitchfork as it is usually held together with grass roots.

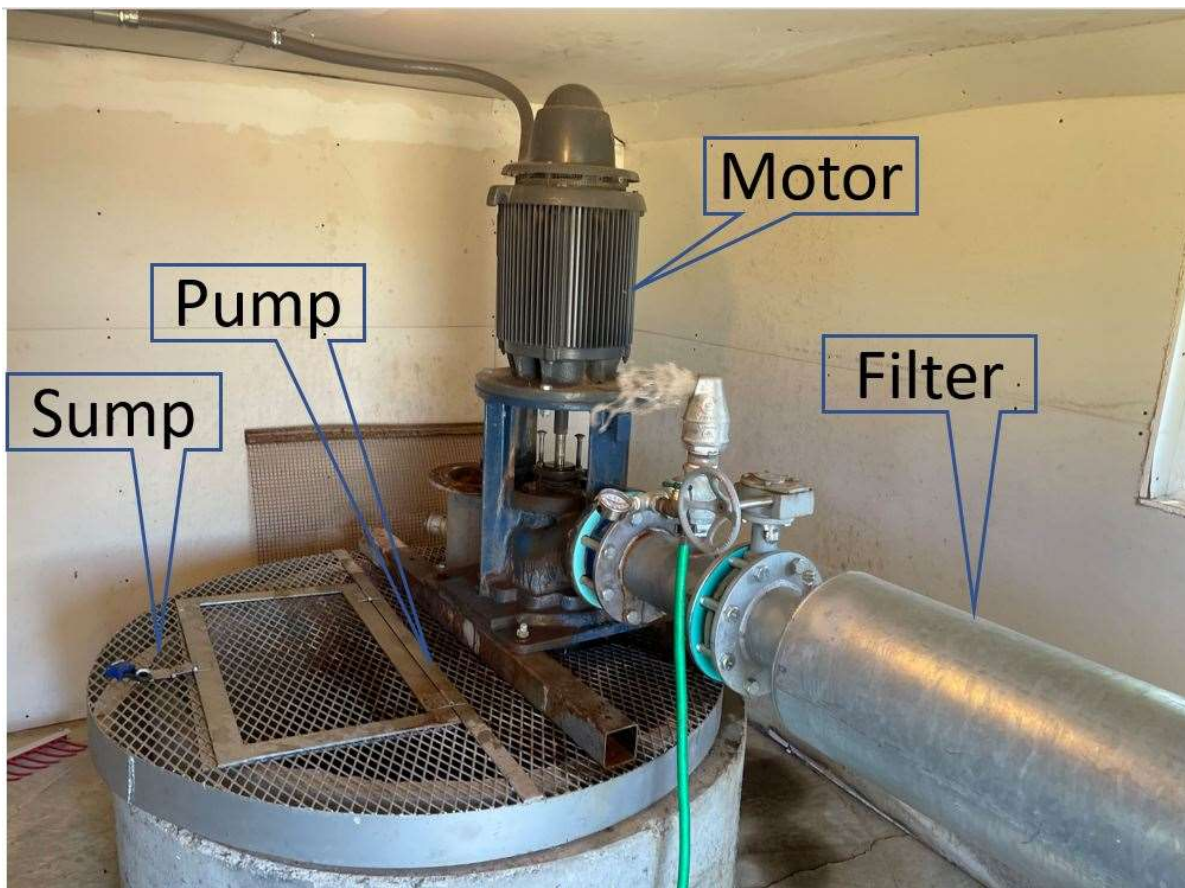


At the HOA's request, Canyon County Water Company built us a dam just downstream from our intake to help keep the water level over the intake. It is made of concrete blocks and is pictured below. Boards can be added to the gap between the blocks to adjust for changes in the flow of the canal. Since being installed it has been relatively easy to keep the water level above the input screen a few inches. A water level as picture below (running a few inches over the concrete blocks will keep the input screen a few inches under water. This really helps keep the screen clean and

the water level in the sump high enough. We have had a little bit of a problem at times with water wanting to wash around the concrete blocks and have used sandbags to stop this. The dam isn't ideal so it does need a little maintenance to keep the water level right. The dam is located about 20' downstream from the screen intake.



Inside the pump house we have the Sump, Pump, Motor, Filter and Controller. To turn the system on/off use the switch as shown below, switching it between OFF and AUTO (on). Don't mess with any other knobs and switches and do not switch the switch to "Hand".



Controller (note auto/off switch):

### Filter Cleaning:

First off, how to tell when the filter needs cleaned. If no one is currently using the system, it's impossible to tell if the filter is dirty short of removing it and looking. You can come back when the system is in use, or pull it out and look at it. If you pull it out you might as well clean it. If the system is in use, meaning at least one homeowner is watering, a person can look at the pressure differential of the two gauges on the system to tell if the filter needs cleaned. One

gauge is by the pump and the other is toward the end of the filter. If the pressure of the gauge by the pump is higher than the other gauge then the filter is restricting water flow. The larger the pressure difference the more plugged the filter is. If the pressure difference is more than about 10 lbs – go ahead and clean the filter. It's best to never let the pressure difference get above 15-20 lbs. Pressure gauges aren't perfect and some will age and tend to read a little off. It's a good idea if the person cleaning the filter has some familiarity with the gauges if they are used this way. In the past one method used was to go clean the filter often enough that it wasn't likely too dirty, then just clean it anyway. Never hurts to clean it a little too often. In past years' experience, 2-3 weeks seems to be a good cleaning period. In 2023 we purchased a second 3/64<sup>th</sup> filter, to make cleaning a little easier.

The following are the steps to follow to clean the filter.

1. Turn off the pump (switch from "Auto" to "Off"). **(Very Important!!!)**
2. Open the 18" square door in the wall at the end of the filter.
3. Open the pressure relief valve on the mainline just outside the pump house door.
4. Wait until water completely stops coming out of the pressure relief valve. **(Very Important!!!)**
5. Remove the clamp at the end of the filter.
6. Pull the screen from the filter housing – out through the small door in the wall. The screen will need a little persuasion from a wrench prying in the crack to get it moving.
7. Replace the screen with the other screen that was cleaned the prior time.
8. Put the screen back in the filter housing.
9. Replace the clamp. **(Very Important!!!)**
10. Close the pressure relief valve.
11. Turn the system back on (switch from "Off" to "Auto").
12. Close the little door in the wall.
13. Hang around to see it come back up to pressure and that everything looks ok.
14. Take the dirty screen just remove outside along with the garden hose and clean it.
15. Set the cleaned screen back in the pump house, to be swapped in at the next cleaning.

**Note**, it should be very clear why steps 1, 4 and 9 are extremely important. It is very easy to remove the clamp on the filter with a full 60 psi in the system or forget to put it back on when turning the system back on. If done, that screen will shoot out of the filter housing like a rocket and could easily hurt/kill someone, most likely you. Be careful – this has happened before but fortunately no one was hurt. It can take 1-3 minutes for the pressure relief valve to bleed off all pressure, depending on if any lots are using the system. Wait until the water completely stops coming out of the pressure relief valve before removing the clamp, and remember to replace the clamp before turning the system back on, and make sure it's on properly.



Pressure Relief Valve

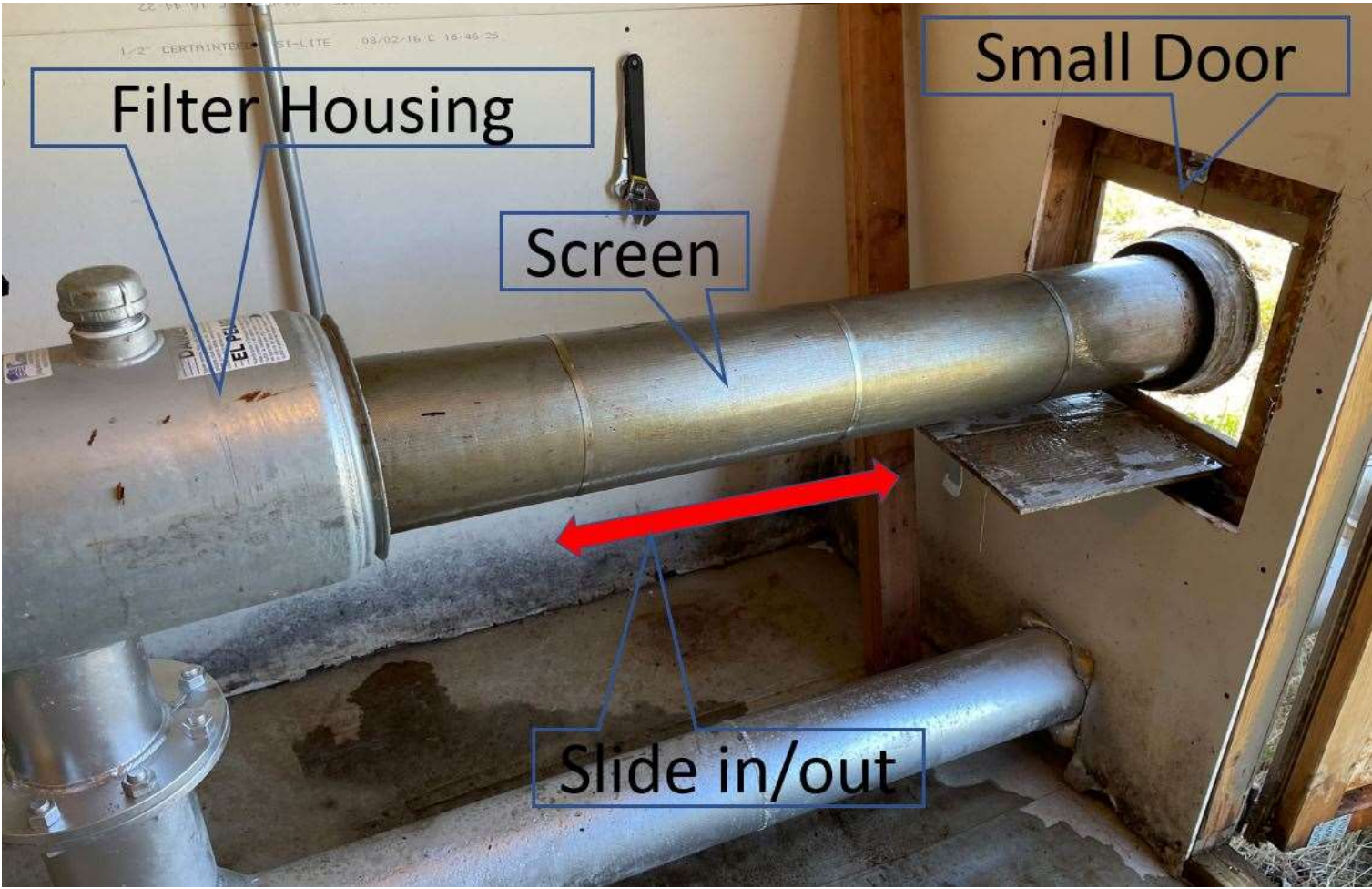
Loosening Clamp



Tightened Clamp



Filter screen being removed/replaced using small door in wall.



## Tightening Pump Shaft Packing:

The motor's drive shaft to the pump is sealed and the seal is lubricated with water. A packing seal is installed around the shaft to prevent excessive leaking but it must allow a little water to leak to lubricate the seal. Occasionally this packing needs to be tightened. Occasionally means anywhere from every few days to a month or more. Most commonly it's about every 2-4 weeks. The packing needs tightened when the water leaking starts flowing too heavy or sprays out of the motor housing (blue).



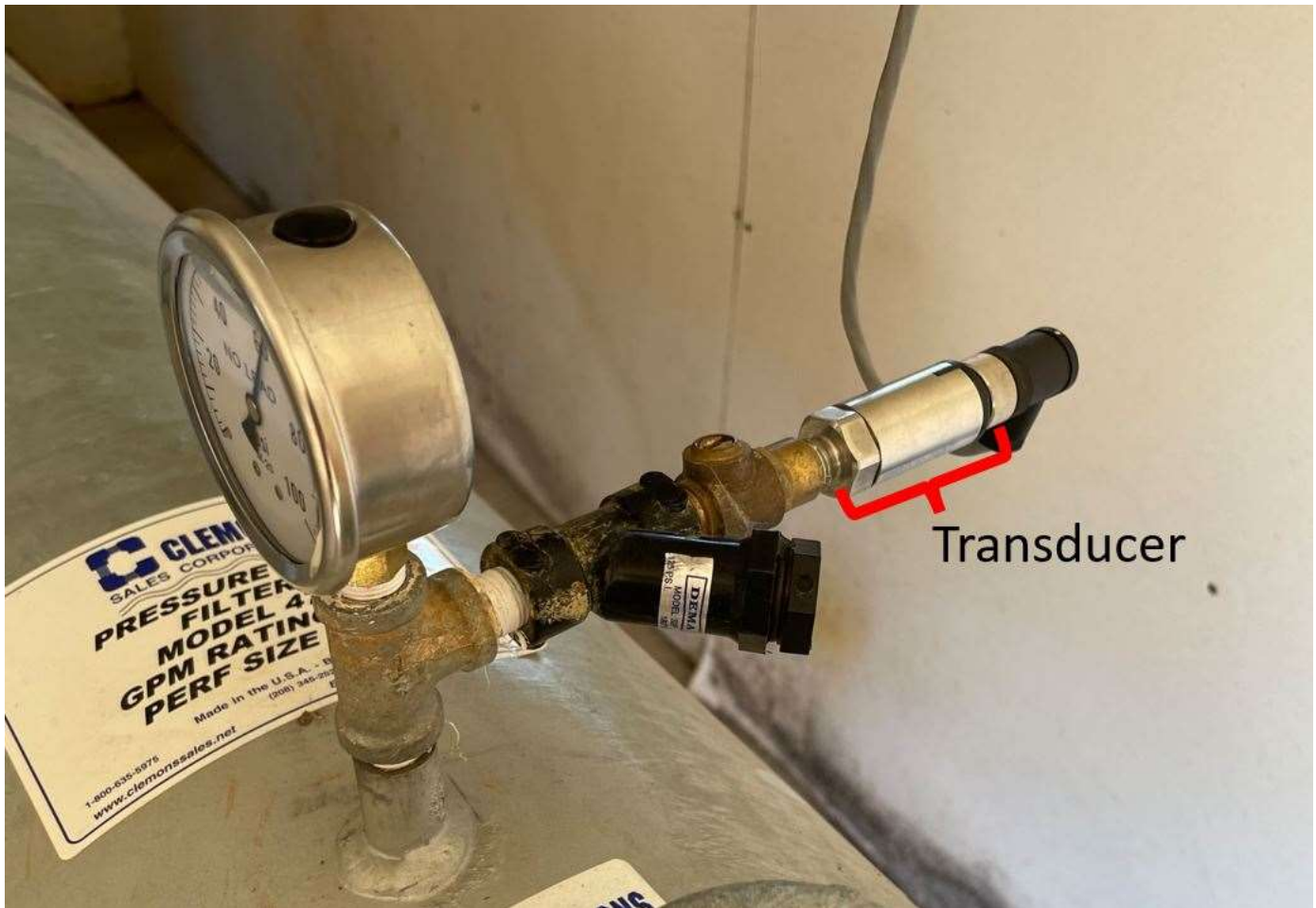
This (above) is what it should look like. A little water running out by the shaft, pooling a little in the motor housing and running out the short pipe and falling into the sump. If it gets to running much more than pictured or is splashing outside the motor housing the packing needs tightened.



There is a wrench in the pump house to tighten (clockwise) the two nuts on each side of the shaft. They will only need turned about  $1/10^{\text{th}}$  to  $1/4^{\text{th}}$  of a turn usually. Turn both nuts the same amount. Adjust so that just a small trickle of water is coming out (as picture above). Do NOT tighten enough to stop the water from leaking – a little leaking is required to lubricate the packing.

## Pressure Transducer:

The pressure transducer is an electronic pressure gauge and is connected to a small spigot on the top of the filter housing (see below). It is used by the controller to know the pressure of the water in the system. The transducer is fairly expensive (around \$200 last time we bought one). The hard way, we have learned that the transducer isn't tolerant of freezing temperatures. As the pump house is not heated, the transducer needs removed from the pump house and taken to a warm place for the winter. As of this writing, I have taken the transducer home every winter except for the two times we didn't know to remove it or forgot and we had to buy a new one. An adjustable open-end wrench (Crescent wrench) is all that's needed to remove/replace it. Just unthread the electrical connection from the right end (with fingers) and with the wrench remove the transducer on its left end (referring to the picture below). Of course, do this only when the system is turned off.



## Winterizing:

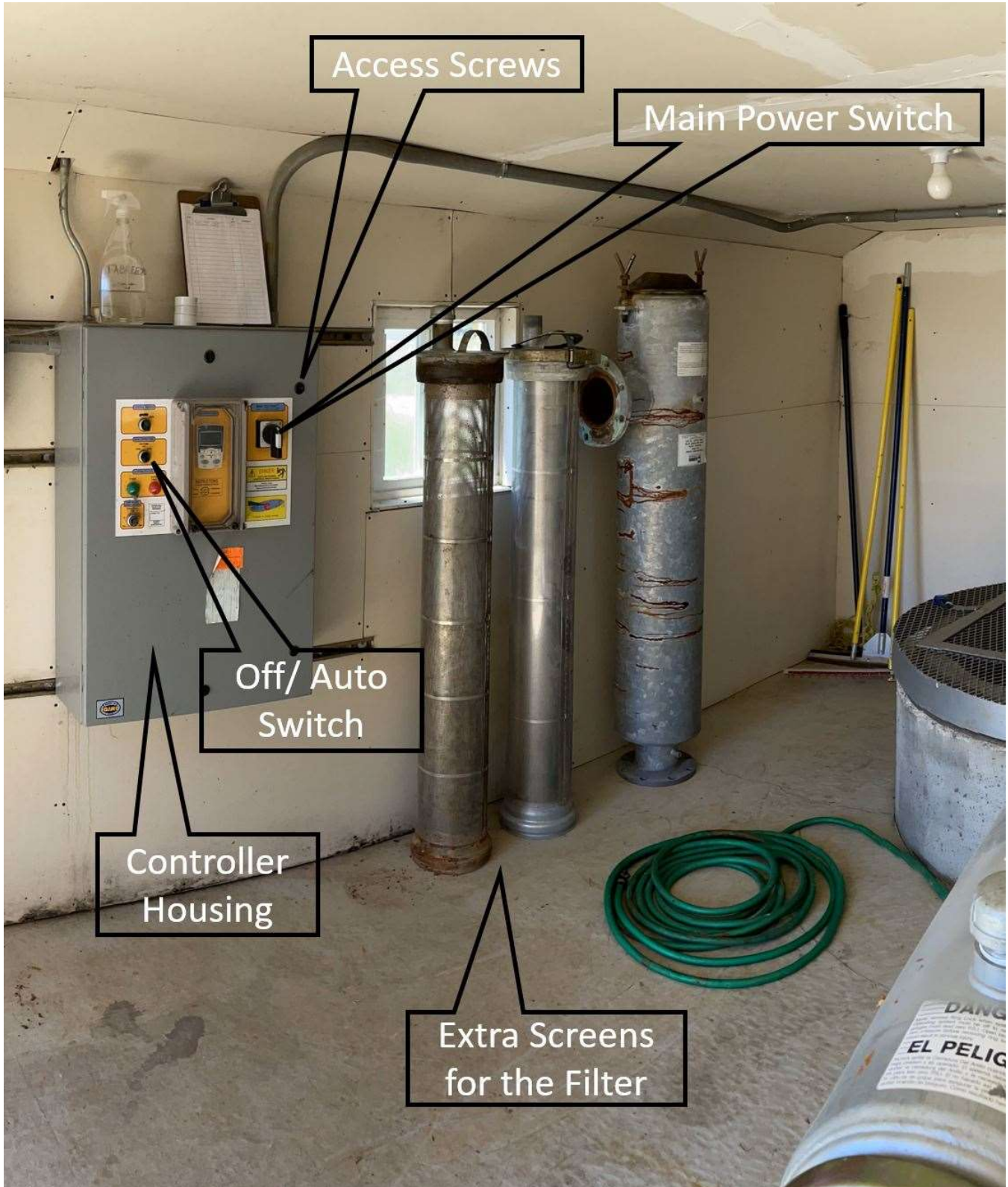
Surprisingly, the system needs very little winterizing. Only two things need done to winterize the system. 1. Remove the transducer (see above). 2. Remove the filter screen. The purpose for #2 is to allow the inside of the filter housing to dry out. Otherwise, it sits and rusts all winter. See the instructions on how to clean the filter for instruction on how to remove the filter screen. Remove the screen and just stand it up in the corner of the pump house – then replace it the following spring when turning the system back on. It is also a good idea to set up a box fan blowing air inside the filter housing to dry it out quicker – for a week or two. There is a box fan in the pump house.

There is a Main power switch on the Controller (picture below). The computer controller is supposed to remember it's settings if the main power goes or is turned off. In the past we turned the Main power switch off all winter. However,

sometimes this caused the computer to forget all it's settings and a company like Burgess or Agril-Lnes has to be called to reprogram it (\$). So, we have just been leaving it on all winter.

### Controller Cooling:

There are 2 or 3 (I forget) fans in the pump controller. They are very much like the fans in a desktop computer and suffer similar problems with dust buildup. In the past we have had the controller over heat due to both dust restricted airflow and failed fans. The controller senses its own cooling problems and will shut itself off and report an over-temperature error on the controller display if there is a problem with air flow.



In the past we have both cleaned out dust (with an air compressor) and replaced failed fans. Last time we replaced the fans we ordered extras and they are stored inside the Controller Housing. This process isn't terrible difficult but is not for the unexperienced. If someone isn't comfortable doing this then Burgess Pump (or like company) should be called to do it. One needs to get inside the Controller Housing and the voltages in there are plenty high enough to send a person to the next life. So, if someone does attempt to clear out dust or replace a fan the main power at the power pole should be shut off. There is a switch on the pole. Next the Main Power Switch needs shut off and the 4 access screws loosened (refer to picture above). The front of the Controller Housing will then swing open and expose the Controller. The door will not open if the Main Power Switch is not OFF. A few screws hold the controller cover in place, remove these and get access to the fans and dust buildup areas.

END