# Gayflower: Spring 2025 Plan

This documents the replacement of the fresh water system in the Gayflower that was completed May 2025.

## "Before" Photo:


DRUMMOND
1 HP STAINLESS STEEL
SHALLOW WELL PUMP AND TANK
WITH PRESSURE CONTROL SWITCH
FULLY AUTOMATIC OPERATION
FOR CLEAR GROUND WATER
950
GALLONS PER HOUR MAX FLOW AT 0 FT.
1"
NPT DISCHARGE PORT
115.5'
MAXIMUM HEAD LIFT AT 0 GPH
FULLY AUTOMATIC OPERATION WITH PRESSURE SWITCH
30 PSI ON / 50 PSI OFF
FOR USE IN RESIDENTIAL POTABLE WATER SYSTEMS
CORROSION-FREE STAINLESS STEEL PUMP HOUSING
POWERFUL AND QUIET OPERATION
PRIMARY USES:
IRRIGATION
63407
Mortenson



# 0. General conditions

1. Install plywood on rear wall to support the plumbing stack for the pump outlet. **DONE**
2. Get a big tool box and parts box to organize all our plumbing tools and parts **DONE**

# 1. IBC Tote Replacement

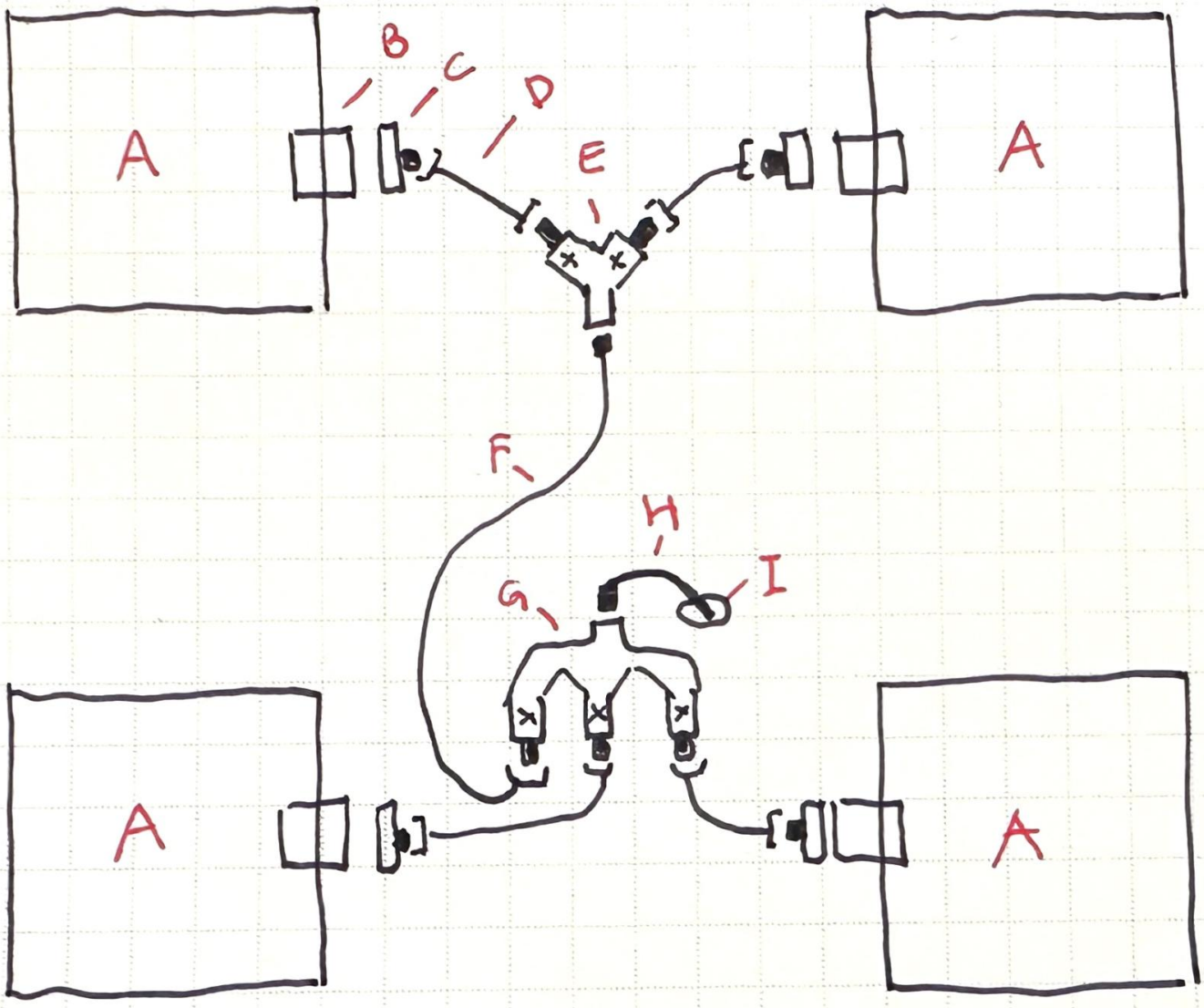
Replace all seven totes with new ones and completely replace all plumbing connecting them.

> This design had one bug: the pump would not work without a check valve at the input. We added that in and everything worked great!

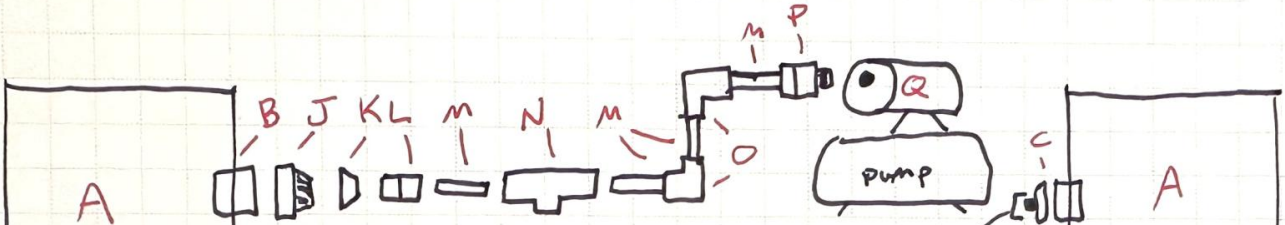
**Design considerations**

- Use flexible hoses instead of PVC with glue, for easy replacement, more flexibity, and less likely to break
- Pump requires 1" diameter inflow. To accomplish this the nearest IBC tote will be connected with 1" PEX-B. All the other totes can be connect to each other with 3/4" hose just to allow them to balance with each other.
- Shutoff valves everywhere for safety and quick repairs

## New plumbing configuration




REAR IBC PLUMBING



| | |
|---|---|
| A | IBC tote |
| B | 2" Camlock valve, preinstalled on tote |
| C | 2" Camlock to 3/4" Male Garden Hose adapter |
| D | 2' long 3/4" Female to Female Garden Hose Extender (get some 1' as well to minimize slop) |
| E | 3/4" Garden Hose splitter with valves (F - M - M) |
| F | 5' long 3/4" Garden Hose (M - F) |
| G | 3/4" Garden Hose three way splitter with valves (F - M - M - M) |
| H | 50' 3/4" Garden Hose (M - F) |
| I | Hole in floor |
| J | 2" Female Camlock to 2" Male NPT Adapter, Stainless Steel (example) |
| K | 2" Female NPT to 1" Female NPT |
| L | 1" Male NPT to 1" Sharkbite |
| M | 1" PEX-B |
| N | 1" - 1" - 3/4" Reducing Tee (Sharkbite) |
| O | 1" Sharkbite Elbows |
| P | 1" Sharkbite to 1" Male NPT |
| Q | Pump, with 1" Female NPT inlet |
| R | 3/4" PEX-B |
| S | 3/4" Sharkbite to 3/4" Male NPT |
| T | 3/4" Female NPT to 3/4" Male Garden Hose |
| U | 3/4" Garden Hose Shutoff Valve (M-F) |
| V | 3/4" Garden Hose Male to Male Coupler |

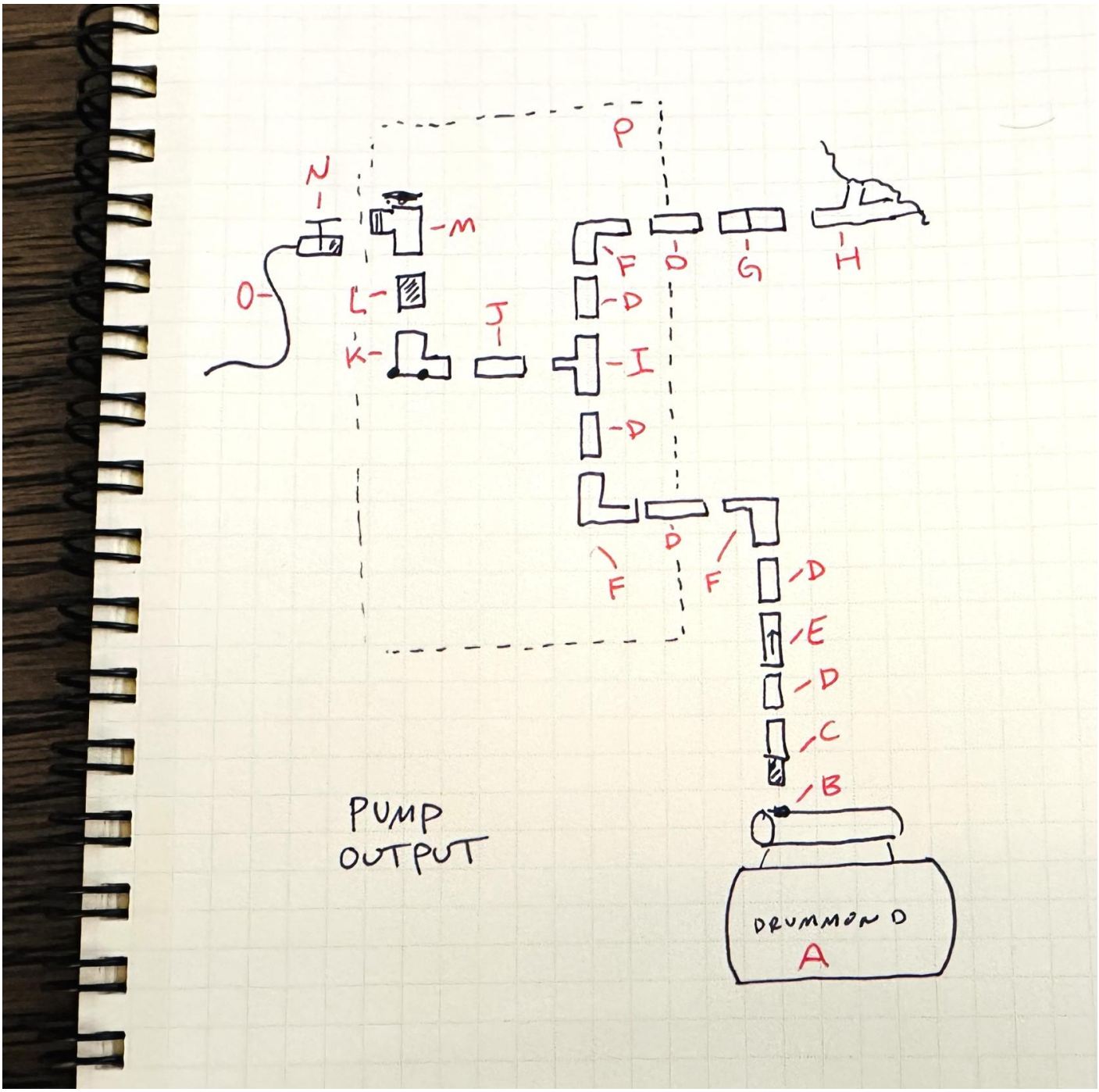
> The pump requires 1" diameter input, so it draws from the nearest tote using 1" PEX-B (put together with sharkbite fittings). That tote, and the other six, are all interconnected using 3/4" hoses, which allow the water to seek a level between them.

# 2. Evaporative Cooler Supply Rerouting

The water supply line for the evaporative cooler should be rerouted so it does not interfere with that IBC tote. Also, it might be responsible for the leak at the top of the pump.

# 3. Rework plumbing above the pump

The main goal here is to make something that allows for quickly swapping out a failed pump, and eliminate the PVC+glue that is prone to leaks.




| | |
|---|---|
| A | Existing DRUMMOND 1 HP Stainless Steel Shallow Well Pump and Tank with Pressure Control Switch - 950 GPH |
| B | 1" Female NPT output |
| C | 1" Male NPT to 1" Sharkbite U140LF |
| D | 1" PEX-B Pipe |
| E | Sharkbite 1" Check Valve (U2020-0000LF)<br><br>Provide Sharkbite disconnect tongs (U715) for winterizing. |

| | |
|---|---|
| F | 1" Sharkbite Elbow |
| G | 1" Sharkbite PVC Fittings<br>Also provide different connections because I don't know what is over there |
| H | Existing water line, splitting to cold water and hot water |
| I | 1" - 1" - 3/4" Reducing Tee (Sharkbite) |
| J | 3/4" PEX-B Pipe |
| K | Brass Push Drop-Ear Elbow (3/4" Sharkbite to 3/4" FNPT) ( U340LF)<br>Can be screwed onto plywood so that FNPT is facing out |
| L | 3/4" Male NPT to 3/4" Male Garden Hose (amazon) |
| M | 3/4 in. Evaporative Cooler FGH x MGH Sill Cock |
| N | 1/4 in. x 1/8 in. Evaporative Cooler Angle Needle Valve |
| O | 1/4 in. Evaporative Cooler Copper Tube leading to swamp cooler |
| P | This section to be mounted on plywood<br>Use some 1" and 3/4" pipe hangers like this to make it strong |

# 4. Urinal leak repair

Reference photo:



Not sure what size PVC this is. It is most likely 1 1/2" or 2".

- this might be the world's simplest fix, just glue it back
- but without knowing what it's connected to underneath, it might be a situation where whenever the black water tanks shift around, they move the pipes

To repair this, we would need:

- Short length of PVC pipe (1 1/2") (2")
- PVC couplings (1 1/2") (2")
- Fernco flexible couplings (this or this)
- PVC male - slip adapter
- Purple primer
- Fine tooth saw or PVC pipe cutter
- PVC cement

Everything here is going to be available from Home Depot.

# Consolidated Shopping List

This list has been added to the manifest on the Reno Warehouse (2025) page.

| Qty | Item | Vendor | Notes |
|---|---|---|---|
| 4 | 1" Male NPT to 1" Sharkbite | Sharkbite U140LF | |
| 10' | 1" PEX-B Pipe - White | Home Depot | |
| 5' | 3/4" PEX-B Pipe - White | Home Depot | |
| 2 | Sharkbite 1" Check Valve | Sharkbite U2020-0000LF | |
| 1 | Sharkbite Disconnect Tongs 1" | Sharkbite U715 | |
| 1 | Sharkbite Disconnect Tongs 3/4" | Sharkbite U713 | |
| 7 | Sharkbite 1" Elbow | Sharkbite U260LF | |
| 3 | Sharkbite 1" Coupling | Sharkbite U020LF | |
| 1 | Sharkbite PVC Transition (1") | Sharkbite UIP4020 | |
| 1 | Sharkbite PVC Transition (3/4") | Sharkbite UIP4016 | |
| 1 | Sharkbite 1" to 3/4" Reducing Coupling | Sharkbite U060LF | |
| 3 | Sharkbite 1" - 1" - 3/4" Reducing Tee | Sharkbite U416LF | |
| 1 | Sharkbite Brass Push Drop Ear Elbow (3/4" Sharkbite to 3/4" FNPT) | Sharkbite U340LF | |
| 1 | 3/4" Male NPT to 3/4" Male Garden Hose | Amazon | comes as a two pack to provide spare |
| 12 | 1" Pipe Hangers | Home Depot | 12 total needed. Check quantity per pack, don't order 12 packs! |
| 10 | 3/4" Pipe Hangers | Home Depot | 10 total needed. Check quantity per pack, don't order 10 packs! |

| Qty | Item | Vendor | Notes |
|---|---|---|---|
| 1 | 1/4 in. x 1/8 in. Evaporative Cooler Angle Needle Valve | Home Depot (link) | |
| 50 feet | 1/4 in. Evaporative Cooler Copper Tube | Home Depot (link) | |
| 1 | 3/4 in. Evaporative Cooler FGH x MGH Sill Cock | Home Depot (link) | |
| 1 | 1/4 in. x 1/8 in. Evaporative Cooler CC and MPT Male Union | Home Depot (link) | spare part |
| 1 | 1/4 in. Compression Brass Nut Fitting | Home Depot (link) | spare part |
| 1 | Mini Copper Tubing Cutter | Home Depot (link) | tool |
| 20 | Copper tube straps | Home Depot (link) | need 20 total, not 20 packs |
| 7 | Rebottled or new IBC totes<br>330 gallon<br>2" Camlock Valve | The Cary Company<br>EST104097 | To ship to Empire |
| 7 | 2" Camlock to 3/4" Male Garden Hose | The Cary Company or<br>Amazon | |
| 2 | 3/4" Female - Female Garden Hose<br>5' Length | Amazon | |
| 3 | 3/4" Female - Female Garden Hose<br>2' Length | Amazon | |
| 3 | 3/4" Female - Female Garden Hose<br>1' Length | Amazon | |
| 2 | 3/4" Male - Female Garden Hose<br>6' Length | Amazon | |
| 1 | 3/4" Garden Hose Y-Splitter With Valves | Amazon | |
| 2 | 3/4" Garden Hose Three way splitter With Valves | Amazon | |
| 2 | 3/4" Garden Hose, 50' | Amazon | |

| Qty | Item | Vendor | Notes |
|---|---|---|---|
| 2 | 2" Camlock to 2" Male NPT Adapter | The Cary Company<br>or<br>Amazon (two included) | |
| 2 | 2" Female NPT to 1" Female NPT Reducer | Amazon | |
| 10' | 1" PEX-B - White | Home Depot | |
| 2' | 3/4" PEX-B - White | Home Depot | |
| 2 | 3/4" Sharkbite to 3/4" Male NPT | Sharkbite U134LF | |
| 2 | 3/4" Female NPT to 3/4" Male Garden Hose | Amazon | |
| 2 | Garden hose shutoff valve 3/4" male to 3/4" female | Amazon | |
| 1 set | Garden Hose Couplers (M-M and F-F) | Amazon | |
| 1 | 3/4" Plywood<br>24" x 48" panels | Home Depot in Reno | They sell precut 24x48 pieces (or buy 4'x8' pieces and cut in four)<br><br>Consider buying an extra 14 to replace crappy shelves in Empire Fort |
| 20 | Wood-to-metal self-driving screws<br>#10 diameter<br>1 1/2" | Home Depot in Reno<br>(link) | We might have them in the tool fort |
| 1 | Teflon Tape | Home Depot | |
| 1 | Tru-Blu Pipe Thread Sealant with PTFE | Home Depot | |
| 1 | PEX-B cutter | | I might already have this in the LED Lab |
| 1 | 2" Ratcheting PVC cutter | Home Depot | |
| 1 | Assortment of wood screws | Amazon | |
| 1 | Storage packout on wheels for all plumbing parts and tools | Home Depot<br>Milwaukee Packout | probably best to buy this at Home Depot in person |

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