



Sneaky Snakes

The black High Density Polyethylene Pipe (HDPE) naturally expands and contracts with the heating and cooling of the day. Because of this, it is typical to install about 3%-5% extra pipe in a snake-like manner across the ground.



A typical problem that occurs is along hillsides when the expanding and contracting causes the pipe to creep down the hill making the top section of pipe straight and tight, and a pile of excess pipe at the bottom.

Proper Anchoring - every 200 feet, will cause the snaking to occur within 200' sections and not continue its movement in the direction of the slope. Anchoring can be as simple as tying it to fence posts, using bent rebar as a "staple" in the ground, or placing soil/rocks on top.

Pump It!

Not all Pumps are created equal. Some pumps deliver high flow rates at low pressures, or lower flow rates at high pressures.

For stockwater, you will need a pump that delivers high pressure (to get the water up the hill) at low flow rates. Conversely, a house pump requires high flow rate to overcome low pressure.

It pays to choose wisely because the efficiency of each pump is different enough that you can waste a lot of energy (and \$) in powering a pump that is oversized for the system and even more for running a pump more than what it is designed efficiently for.

The best way to handle this is to contact the pump manufacturer in addition to speaking with the salesperson. If you like to read charts, each pump has an "efficiency curve" that will indicate whether the pump is right for your needs.



Every Drop Counts!

For more information, contact your local NRCS office or irrigation supplier.



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STOCKWATER PIPELINE BASICS

A GUIDE TO AN EFFECTIVE WATER SYSTEM

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In cooperation with the Hawaii Grazing Land
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Pressure's On!

You gain 1 psi for every 2.31 feet of elevation drop between your water source and outlet, no matter what size of pipe. The typical black HDPE "poly" pipe is rated for 160 psi. To lengthen the lifespan of the pipe, 72% of that rated pressure is as much as the pipe should handle regularly, which is 115 psi.

265 feet = 115 psi

PRESSURE
REDUCING
VALVE



Therefore, if the pipe elevation drop is greater than 265 feet (115 psi), consider a pressure-reducing valve, break tank, increasing the pressure rating of the pipe, or upgrading to galvanized steel.

Go With The Flow!

Pipeline size (diameter) has everything to do with the amount and speed of water that reaches the trough in a day. The size will determine the total flow that will travel through the pipe in a day. If the pipe is too small for your needs but you have high pressure, it just means the velocities are high which could damage or wear down the system if too excessive.

Use the Pipe Sizing Chart below to stay within safe water velocities of the pipe (5 feet per second).

The next thing to consider is the size of the trough. Provide at least 12 gallons a day for each beef cow. Dairy cows require more water per day, and smaller livestock (sheep, goats) require less. Use the herd size, total daily water needs, and water recharge rate at the trough to decide how large the trough should be.

PIPE SIZING CHART

Herd Size	Trough Size		
	150 Gallon	300 Gallon	500 Gallon
100	¾"	¾"	¾"
200	1 1/4"	1"	1"
400	2"	2"	1 ½"
500	3"	2"	2"

Whoa Nelly!

High velocities in a pipeline can wear out a pipeline quicker, put added stress on your fittings and create water hammer.

Since high velocity typically means high pressure, keep your pressures within the rating of the pipeline. To avoid the water hammer effect, slow down how quickly you close your valves. The slower you close your valve, the more time the water has to stop. 5 feet per second (fps) or less are safe velocities to stay within.



All Stopped Up!

Experiencing low pressure, even when it appears there should be plenty of elevation drop? There is probably trapped air somewhere in the line.

Trapped air can prevent water from flowing in a pipeline especially if the pipeline is traveling over terrain with any kind of "crest" or "valley" between the source and destination.

Place an Air Release Valve at the top of your line and at any sharp crests. This is an easy way to solve this problem, since the air will travel to the top. The valve will allow the pipe to release any trapped air.

