

The Power-free Solution to Livestock Watering

Livestock pump their own water !
Ideal for dugouts, ponds, springs, or wells !
No electricity needed summer or winter !

We have attempted to give you as much information as possible in this brochure.

Should you have any questions or concerns that we have not covered please check our website or contact us at:

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Frostfree Nosepumps Ltd.

The Power-free Solution to Livestock Watering

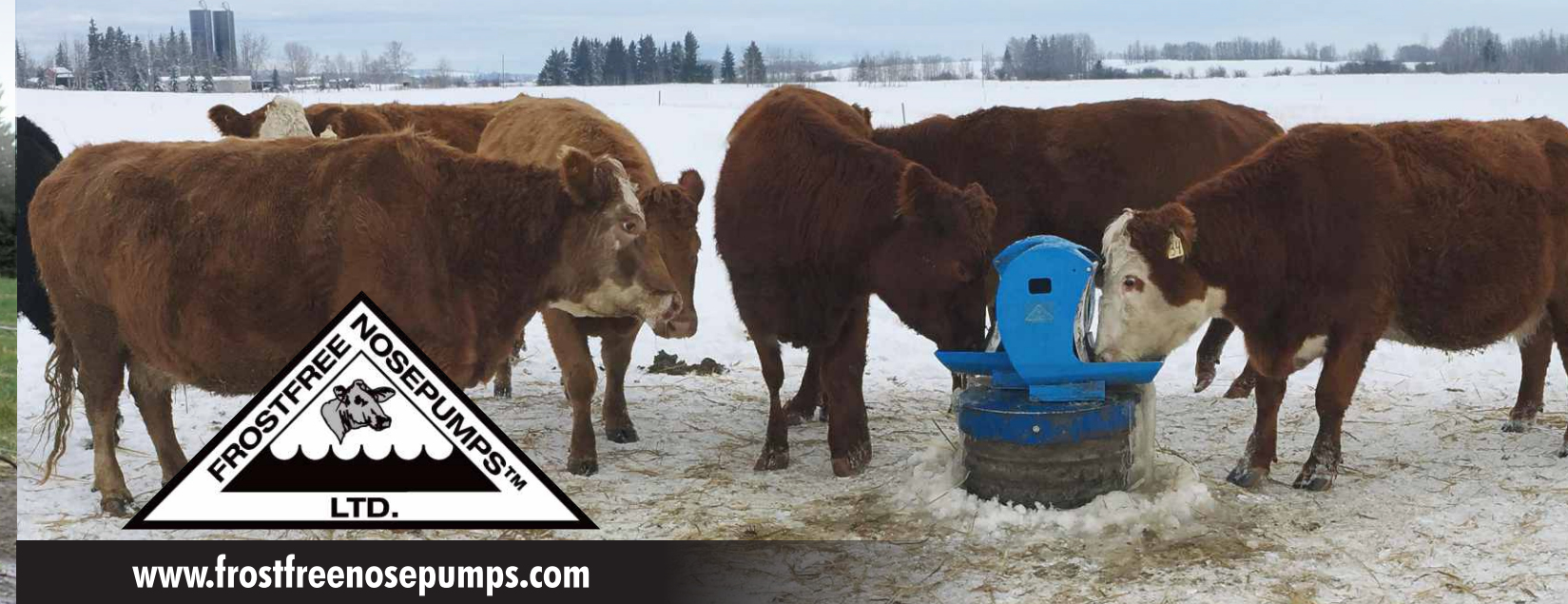
Promoting Conservation Grazing And Feeding

- **Saves Time**
- **Saves Money**
- **100% Sustainable**



**No power required...
winter or summer**

**The ONLY
"sustainable" waterer**



www.frostfreenosepumps.com

How does the FROSTFREE NOSEPUMP work?

- The animals pump their own water by pushing on the nosepad!
- Geothermal heat is captured inside the wet well, enabling it to operate winter & summer without a power source!
- The FFNP is installed on a vertical culvert:
 - 1) in a drilled or excavated large diameter well.
 - 2) around an existing small diameter well.
 - 3) alongside a dugout, pond, or spring development.
 - 4) with a pressure line, using a pitless adapter and float.



FROSTFREE NOSEPUMPS™ have been on the market since 2002. One pump will water up to 100 animals (or 50 pair). Multiple pumps per large diameter well will accommodate larger herds.

The operation of the Frostfree Nosepump is simple and uses only renewable energy (heat from the ground and power from the livestock).

Installed as directed, the Frostfree Nosepump operates reliably in temperatures as cold as -50°C. In areas of shallow frost, these parameters may be relaxed. The pump will not freeze up, however, in very cold weather (minus 25° C or lower) the occasional removal of the ice that tends to build up on the sides of the hood may be necessary. The use of a deadblow hammer is recommended to prevent damage to the powder-coated finish of your pump.

Prevention of contamination of the water source is a major focus of this system. The design of the pump will prevent backwash, and the details of the system, including a cement pad, will prevent ground water contamination.

Proper installation is imperative. Eliminating ANY of the frost prevention parameters will compromise the effectiveness & reliability of this system. Many farmers/ranchers can do this themselves, often recruiting the help of a water-well driller or a trackhoe operator.



Prevents Contamination of water source

SAVE MONEY! ...USING FROSTFREE NOSEPUMPS WITH CONSERVATION GRAZING & FEEDING WILL MAKE YOUR OPERATION PROFITABLE & SUSTAINABLE!

- Improve access to remote pastures and areas that have no power source.
- Facilitate winter feeding in non-traditional areas (swath grazing, bale feeding, etc.).
- Provide a low-cost, low-maintenance, year-round facility.

"Keeps livestock out of the rivers, creeks, dugouts & ponds . . . ideal for riparian management!"

Enable your livestock to train themselves to the FROSTFREE NOSEPUMP

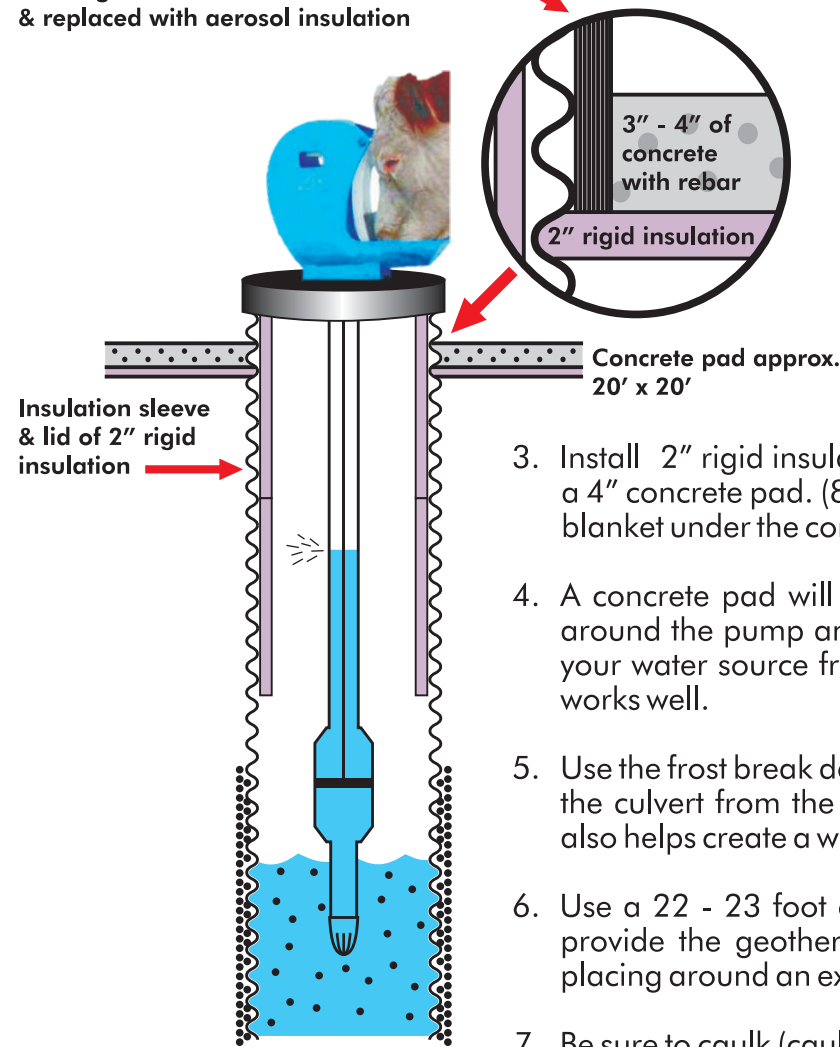
1. Eliminate other water sources. During the introduction period, livestock MUST be thirsty to be effectively transitioned onto the FFNP.
2. Expose a small group (10 - 20 head) to the FFNP. This will reduce the amount of competition during the introduction period which will shorten the learning curve. Once the core group has trained itself, they will teach the rest of the herd.
3. Training can be achieved most easily at above freezing temperatures. The drain hole is for frost protection only. This hole can be closed for training (by wrapping electrical tape around the pipe over the hole) as long as it is reopened prior to freezing temperatures! With the drain hole closed, the pipe is charged with water right to the top. Any movement of the pendulum will generate an immediate reward to the animal. If training during mildly freezing temperatures, close off the 5' drain hole and make a second drain hole approximately 5" below the lid. This should withstand several degrees of frost while the livestock learn how to use the FFNP. Once they're pumping, close the top hole and open the lower one.
4. The hood of the pump has two positions. The forward position provides the most water per stroke, while the back position provides an easier push for the animals. For the training period, you can hang the pendulum on the back position, changing to the front position once they know the system. (If you want the pump to pump easier, or you have a deeper well, you could leave it on the back position, realizing there will be less water per stroke for the animals.)
5. Hand pump the pendulum to fill the trough, making sure they have a chance to see, hear or smell the water, then go away. Standing and watching them figure it out will be frustrating for you and will delay the learning process.
6. By day four, all of the small group should be using the FFNP. Leave them there for a few more days to reinforce their new learning experience.
7. Add new animals (preferably gradually) and the experienced animals will train the newcomers for you.

Caution: If the 5 foot drain hole is closed off for training, remember to open it before freezing temperatures!



Steps to prevent freezing of your FROSTFREE NOSEPUMP!

2 wraps of cardboard & 1 wrap of metal flashing to be removed after cement is set & replaced with aerosol insulation



1. Build an insulation sleeve & lid of 2" rigid insulation. Use two 4 ft. sleeves and two 24" tops. (Instructions are provided.) One 4' x 8' sheet of 2" rigid will provide one 4' sleeve and two tops for a 24" culvert.
2. Drill drain hole in the ABS 1½" pipe, 5' down from the top of the culvert. (This hole is 7/64ths of an inch.) Drill a 2nd. hole at 5" & cover with tape to use for spring/fall training.
3. Install 2" rigid insulation around the culvert on the ground under a 4" concrete pad. (8 sheets of 4' x 8' insulation will give a 16' x 16' blanket under the concrete)
4. A concrete pad will prevent livestock traffic from mining a hole around the pump and driving the frost down. It will also protect your water source from contamination. A 20' x 20' concrete pad works well.
5. Use the frost break detail shown above to stop frost transmission to the culvert from the concrete pad. The aerosol expanding foam also helps create a water seal.
6. Use a 22 - 23 foot culvert, a minimum of a 24" in diameter, to provide the geothermal heat. (A 12 foot culvert is adequate if placing around an existing cased well.)
7. Be sure to caulk (caulking supplied with pump) between the hole in the lid, and the supply pipe to the hood, to prevent a draft causing heat loss.



If ice build-up occurs on the hood in very cold weather (minus 25° C. and colder), a dead blow hammer should be used to shatter ice. This will prevent damaging the powder coated finish.

If you would like your pump to work year-round, don't skimp on any of these protective procedures!

Frequently Asked Questions about the FROSTFREE NOSEPUMP

1. How many animals will one pump water?

One nosepump will water up to 100 head or 50 cow/calf pair. It takes a few days for them to figure out taking turns, but they will figure out their own system of rotation. For larger herds, two or more nosepumps can be installed on the same culvert, giving extra capacity.



2. What about calves?



Young calves will learn to operate the pump on the pasture with their mothers. How quickly they learn, is partially dependent on the static water level. Our experience, and also the results of the Olds College trial, demonstrates that the calves perform well. For situations with a deeper static water level, consult Frostfree Nosepumps Ltd. for a summer-only provision.

3. How high will the pump lift?

The lower the static water level, the more force is required to push the lever. There are two positions on the unit. One position gives a greater mechanical advantage for deeper wells, but also delivers less water per stroke. Cows will lift up to 50 feet from static water level (a very hard push), but calves and horses are limited to a shallower lift (eg. 20' - 25').

4. How many strokes does it take for the animal to get a drink?

The first animal gets water on the 4th stroke (with the pendulum on the front position of the hood and the drain hole at 5 feet). It takes 2½ minutes for the water to drain down to this drain level. Those drinking within that time do not need to replenish this water. Once the livestock know the water is there, they will pump until it comes up. For summer and/or training periods when there isn't freezing temperatures, the drain hole can be taped off and the livestock will get water immediately.

5. Are there any water restrictions?

Water regulations vary in different municipalities. In Alberta, where we live, there is a water act that applies to all watering facilities. A licensed water well driller is required for the drilling of any well in Alberta. We hope everyone will use care and attention with their installation in order to protect the water quality for themselves and others. Bentonite is used to seal over the aquifer. If the pump is over a well, a sealed cement pad MUST be put around the site to protect the well from contamination.

6. Are there any government grants for installation of watering systems?

These programs come and go... Contact local government agencies, conservation groups, watershed groups, Ducks Unlimited, forage associations etc. to see if you would qualify for support by keeping livestock out of water sources.



7. What will it cost to install this pump system?

This will depend on your local costs and how much of the work you can do yourself. Please refer to our current price sheet or the website.

8. Does the trough drain back into the source?

NO. Only the virgin, uncontaminated water is allowed to drain back into the source.

9. How much water pumps into the trough with each stroke of the pendulum?

Approximately one half litre (1/2 quart) of water comes up with each full stroke. This is about what the animal can swallow at one time, and therefore they don't leave water in the trough when they leave. This helps prevent freezing in the trough. Water DOES NOT drain out of the trough as this would contaminate the water source.

10. What is the temperature of the water and how does that affect the livestock?

The water is always cool and clean, which according to research, is optimal for performance. Well water will come out of the ground between 50-56 °F (13 °C)



"Ideal drinking water temperature for livestock is between 40 and 65 °F. Steers having access to cool drinking water gained .3 to .4 lbs. more per day than those drinking warm water" (Boyles, S., K. Wohlgemuth, G. Fisher, D Lundstrom, and L Johnson, 1988. Livestock and Water, AS-954. North Dakota State University, Fargo, ND)

11. Will bison and horses use this pump?

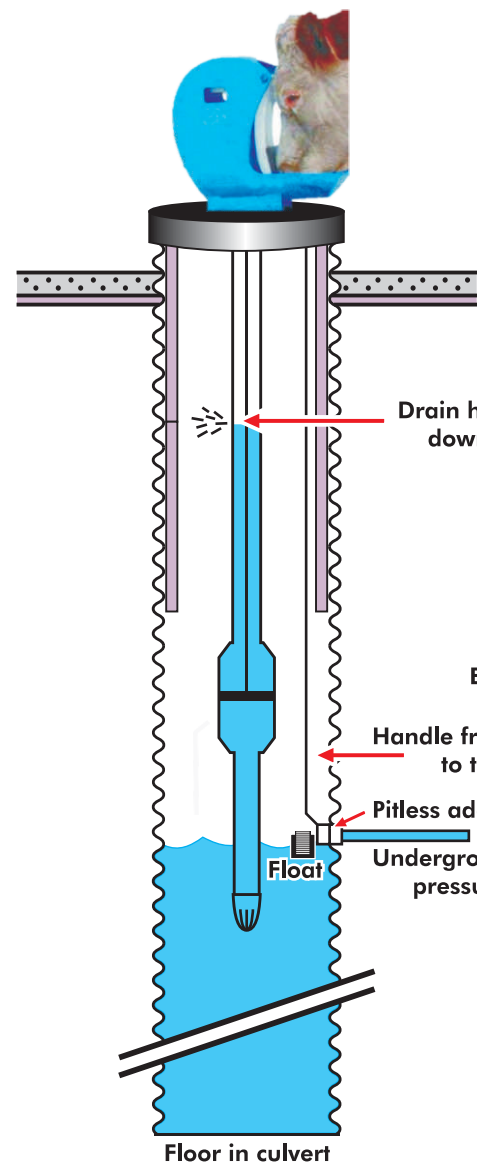
We have a number of customers using the pump for bison and horses. Our own horses are also using the pump. Horses may not be willing to lift water from the deeper depths that cattle are more than willing to do.



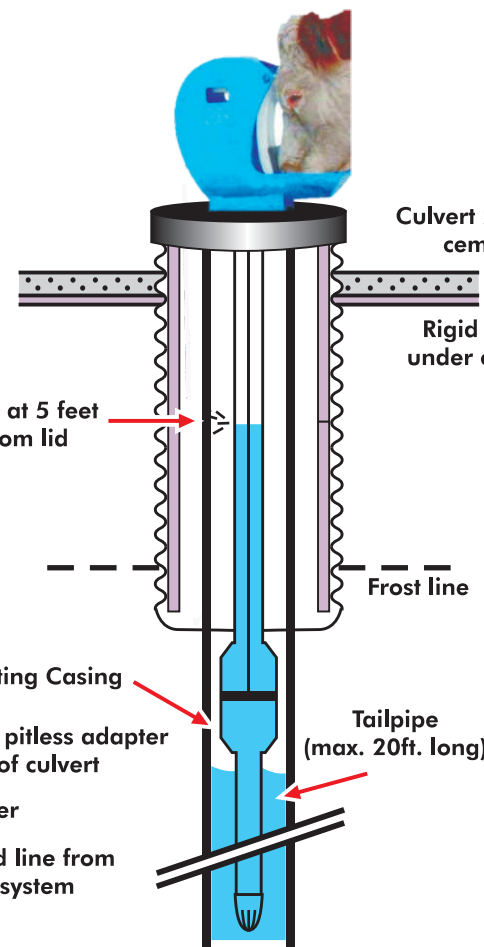
Benefits of the Frostfree Nosepump for Producers

- Dependable...keeping it simple means that it's simple to keep
- Once installed, livestock water for free...no power bills
- Livestock have access to water 24 hours/day. They have no trouble getting required amounts of water at recommended numbers (100 head/pump unit). Multiple pumps can be installed on one culvert to accommodate larger herds.
- Livestock effortlessly pump their own water at a reasonable depth and show no signs of minding to do so. Cows will pump what seems difficult to humans without any difficulty (tested to 47 feet of lift with cattle)
- No electrical components to fail - no sun, wind, gas, or electric dependency
- Nothing to replace for many years in the future...no batteries, panels, heating elements, electrical pumps etc. to fail
- Durable...powder-coated steel (acrylic nose plate)

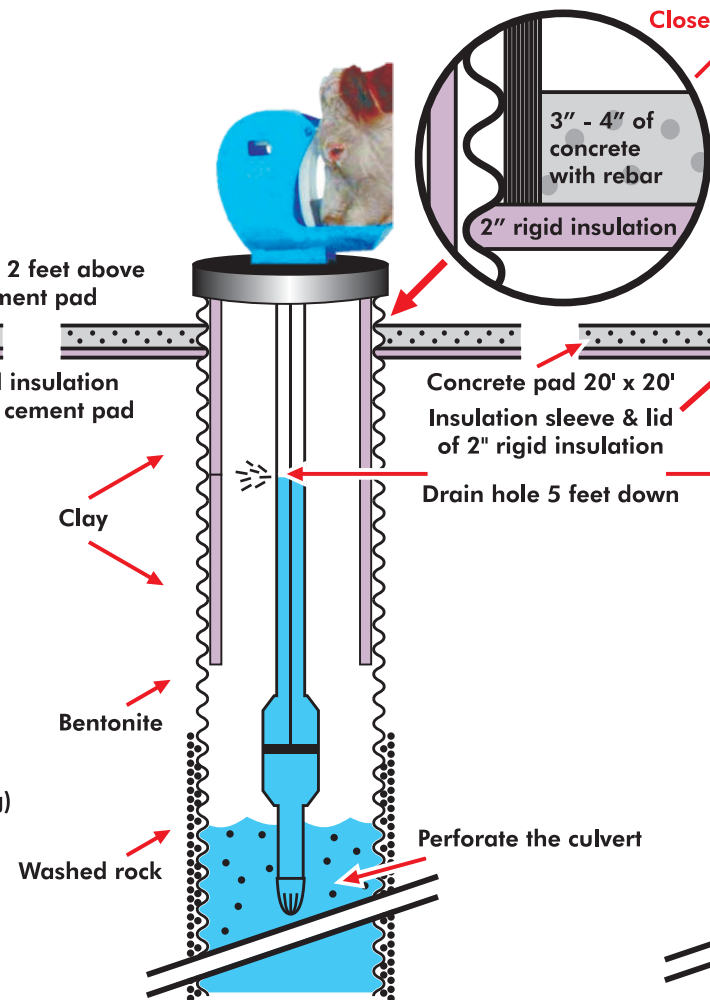
USING PRESSURE SYSTEM



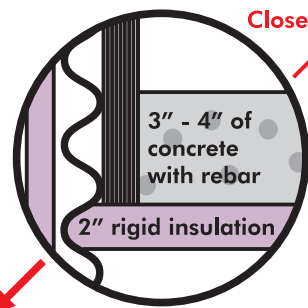
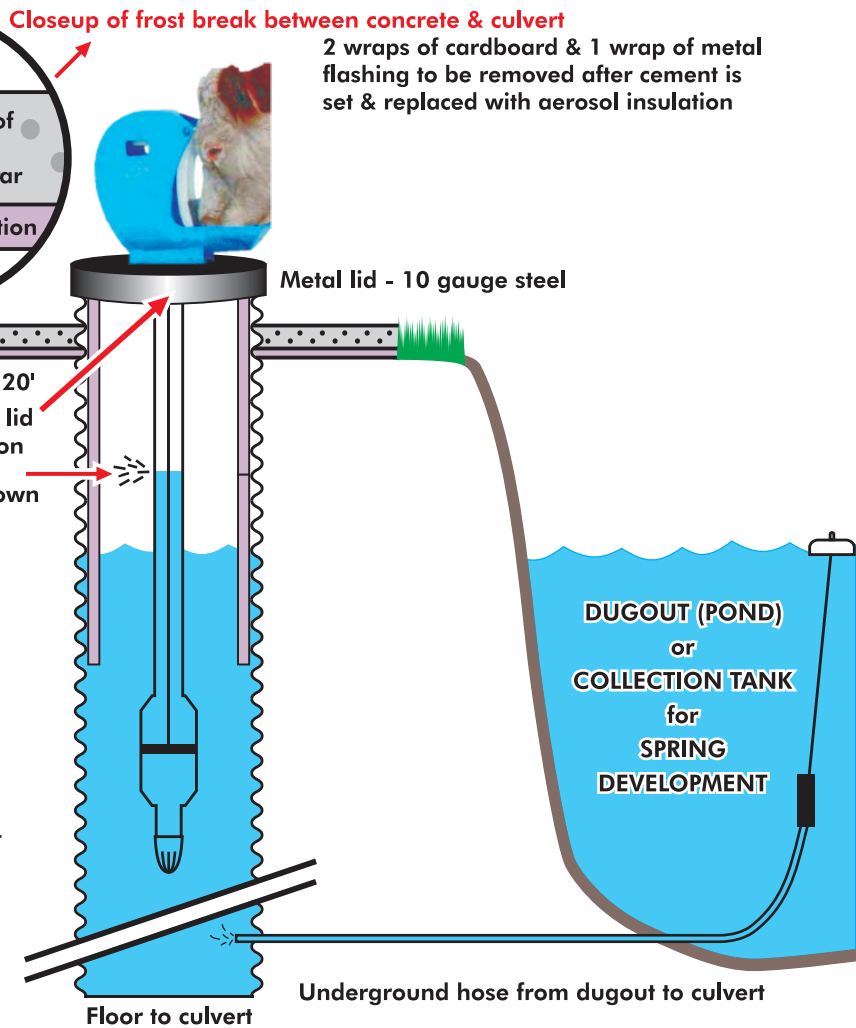
OVER EXISTING CASED WELL



OVER BORED WELL



BESIDE DUGOUT (POND) OR SPRING DEVELOPMENT



Closeup of frost break between concrete & culvert

2 wraps of cardboard & 1 wrap of metal flashing to be removed after cement is set & replaced with aerosol insulation

**In cold climates minimum length of culvert 23 feet unless over existing cased well (then only 12 feet required)
Minimum culvert diameter 24 inches.**

Various types of culverts are acceptable, but double-walled poly culverts will reduce heat loss.

Frostfree Nosepumps Ltd. - 1-866-843-6744

Spring development - single or multiple pumps

1. To utilize a spring as a source of water it is best to have the cattle gathering on higher and firmer ground, some distance away.
2. Dig into the spring source and submerge a collecting tank or culvert which will become the reservoir.
3. Trench a line from the bottom of the spring reservoir to a firmer location which will become the site for the FFNP culvert. The water level in the FFNP culvert will be the same elevation as in your spring reservoir.

Installation Procedure for New Well - single or multiple pumps

1. Drill or dig 30" diameter hole (for 24" culvert) to water. Each nosepump requires approximately 2 gallons per minute. Make sure your driller understands the system. Drillers are usually looking for large capacities of water (eg. 12 - 30 gallons/minute) and this isn't necessarily required for the nosepump. Cattle will pump static levels of 47 feet but it is a hard push at this water level.
2. Perforate culvert for inflow at depth of aquifer.
3. Install culvert so that approximately 24" extends above ground level. Level culvert. Backfill with washed rock to top of perforations, then clay and bentonite (to seal for prevention of surface water contamination).

Installation Procedure for Dugout (Pond) - single or multiple pumps

1. Site chosen for the FFNP should not return effluent back to the dugout (pond). Static water level can be predetermined by measuring the elevation difference between the site chosen and the water level in the dugout (pond). Aim for approximately a 10' static water level.
2. The culvert should be a minimum of 24" in diameter and between 22' - 23' long in order to capture sufficient geothermal heat for cold climate installations. (These measurements may be relaxed when installing in warmer climates.)
3. Consider welding a floor in the culvert in the event that it is placed on a sand vein that may drain the dugout (pond). Attach waterline into the culvert, sealing in place. Attach screen to inlet end of hose. Begin trenching from desired pump location towards the dugout (pond), keeping the trench level and leaving a berm of dirt at the edge of the dugout (pond).
4. Lower culvert into the trench so that approximately 24" extends above ground level. Culvert must be plumb! Backfill with clay and bentonite (to seal for prevention of surface water contamination). Backfill over hose in trench as approach dugout (pond). This hose must be below frost line. Complete final trenching into dugout (pond) and lay hose into dugout (pond) - not on the dugout (pond) floor. A weight and float will keep the hose off the floor. Note: Installing inlet screen at a lower level of the dugout (pond) and insuring that the culvert is at the same elevation or lower, will yield the maximum reservoir of water in the culvert. (You might want to consider pushing the pipe through the berm of dirt into the dugout (pond) rather than trenching that last distance.)
5. An insulated cement pad of approx. 20' x 20' will protect from freezing by compaction.

Installation Procedure over Existing Small Cased Well - single pump

1. The casing in the existing well must accommodate the 3" cylinder which has an outside diameter of 4 inches.
2. Excavate around the casing down to a depth of 9' - 12'. Install a 24" culvert around the casing so that approximately 24" extends above ground level. The casing must be centred in the culvert and the culvert must be plumb.

Installation Procedure for Pressure System - single or multiple pumps

1. Install a 24" culvert at least 20' deep for adequate geothermal heat. Bring the pressure line through the wall of the culvert to a pitless adapter, well below frost. The deeper the culvert, the greater the reservoir of water. Attach a float to the adapter. Attach a handle to the removable part of the adapter which will allow it to be pulled up to the top of the culvert for any service.