I (successfully) install a livestock

By Dallas Mount

In the summer of 2009, members of the team that produces *Barnyards & Backyards,* and other local resource professionals, visited my 80-acre property just west of Wheatland.

The land is mostly subirrigated grassland in a low area that is a natural drainage between two lakes. We discussed the state of the property, what my goals are for the land, and how we might move the condition of the property to meet my goals.

My goal is to have productive, healthy grassland to produce forage for grazing animals. Rotational grazing was needed. The biggest hurdle was the limited number of water points on the property. There is a single well in the corrals that feeds water into a tank using an electric pump.

The team decided additional distributed livestock watering points were needed so an effective rotational grazing program could be implemented.

I consulted with the Natural Resources Conservation Service (NRCS) and applied for funding assistance through the Environmental Quality Incentive Program (EQIP). The NRCS technician and I met several times to discuss the design of the pipeline and the layout of watering tanks. I was accepted into the program and, in the winter of 2010, I signed a contract to install the pipeline. When the contract was signed, I was given detailed plans that described NRCS requirements for the pipeline and water tanks.

The Project

The project included installation of 2,200 feet of 1.25-inch pipe and three 8-foot watering tanks. For someone who had done some plumbing work around the house and helped a time or two with other pipelines, this was still going to be a daunting task to do alone.

I knew I would need some help.

I contacted many acquaintances who I knew had installed many miles of pipelines and had first-hand knowledge. I originally planned to begin the project in the summer of 2010, but we had an unusually wet spring and summer. A drainage ditch that runs through the middle of the property – very close to where the pipeline was to be

Mount was happy over his decision to use High Density Polyethylene pipe.

About 2,200 feet of pipe were installed using a trencher and backhoe.

watering pipeline

With a little help from his friends, Mount installs 2,200 feet of underground pipe and tanks

installed – began running water in May. This ditch had not run water for the previous 10 years. With the ditch running water, I knew I'd pick up ground water in the trench so I delayed the project expecting the dry summer months to dry up the ditch and make the project easier.

When October came and the ditch was still running water, I knew I'd better get started despite the wet conditions or I'd be battling frozen ground.

Beginning

The first step was to line out equipment and order supplies. On the advice of some of those experienced friends, I decided to use High Density Polyethylene (HDPE) pipe. This was one of the best decisions I made! I found HDPE pipe manufactured in Casper I could have delivered for just under $0.50/foot. This was about half the cost of PVC, and it came in 500-foot rolls, so there would be fewer joints.

I decided to use a trencher and a backhoe to dig the trench. NRCS plans called for the pipe to be buried 5 feet, so I found a local equipment rental shop that had a large enough trencher and rented a backhoe from a friend.

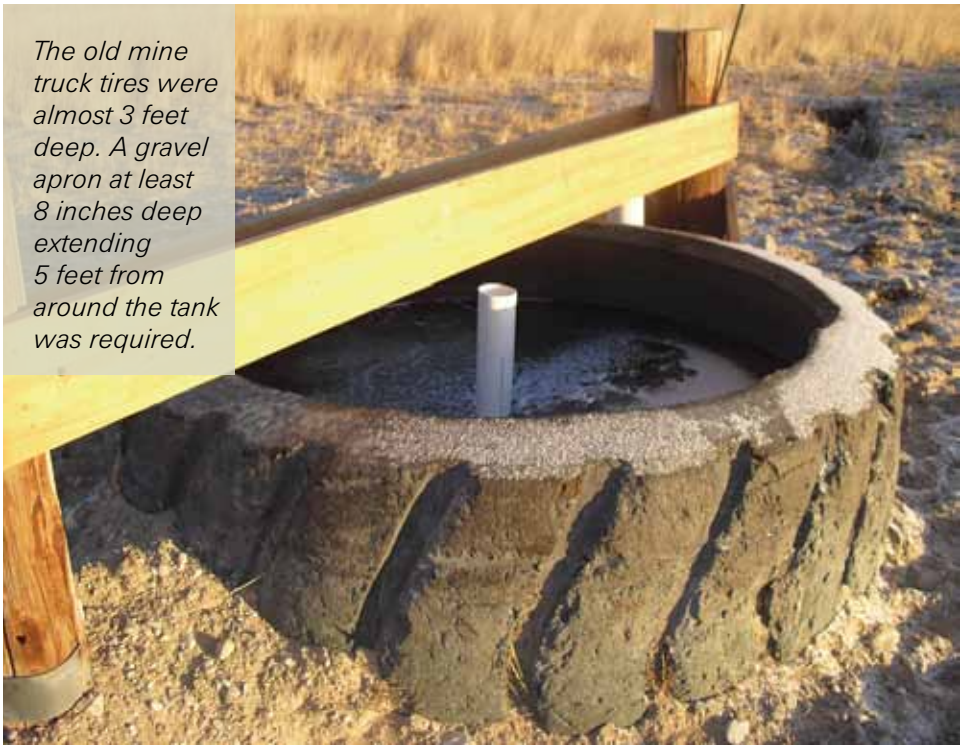
Next, I needed to tap into the existing water source in the corral. My choices were digging a pit and installing a pressure tank or tapping into the line and not using a pressurized system. I chose the latter, which involved use of a pitless adapter. This attachment uses a cutout and fitting in the well casing and diverts the water out of the casing at a frost-proof depth saving the costs of a pit and pressure tank.

Pipe and Trench

Once the pitless adaptor was installed and water was available, I rolled out the black HDPE pipe and installed all of my fittings with valves on each end. I then pressurized the system to check for leaks and also to fill the pipe with water since I knew I'd be installing the pipe in some wet areas and didn't want to fight the pipe trying to float. I used the backhoe to dig the trench near the well and at the fittings for each tank and used the trencher for digging the long, straight runs.

The digging went really well except for a few wet areas where the tires on the trencher would spin. I had

Here is the well head and pipeline origin. The pitless adaptor is installed 6 feet underground with a frost-free hydrant at well for water access.



The old mine truck tires were almost 3 feet deep. A gravel apron at least 8 inches deep extending 5 feet from around the tank was required.

A water tank viewed from above – water inlet at bottom and overflow pipe in center of tank with 4-inch PVC debris cover.

to use the backhoe to dig those areas. When conditions were perfect, the trencher would dig about 6 linear feet a minute. It took us two full days on the trencher and another day of backhoe work to get the trench dug. While the trench was being dug, we fed the water-filled pipe right in behind the trencher and walked behind pushing dirt over the pipe every few feet. This way, if the trench collapsed or as water filled the trench, the pipe was already in. One person ran the trencher, another fed the pipe in the trench, and another followed behind pushing shovels of dirt on the pipe every 6 feet.

Tanks

We used old, large mine truck tires for water tanks. The tires we got were much deeper than those typically used; ours measured almost 3-foot deep. NRCS specifications called for the tires to be 8 feet in diameter. Each tire has a drain line plumbed in that allows excess water to drain clear of the tank location so a bog is not created at the tank.

Each tank also required a gravel apron at least 8 inches deep extending 5 feet from all sides of the tank. The bottom of the tank (the tire hole) required rebar and cement at least 4 inches thick. I used sack-crete over the rebar then just filled the tank with water over the dry sack-crete allowing the cement to cure under the water.

Since I did not use a pressurized system, I couldn't use floats and valves. Instead, we installed valves at the below-frost depth that drain the vertical pipe when there is no pressure, thus making the system freeze-proof. Tanks and plumbing were protected from livestock with posts and timbers that ran in-line with the fence.

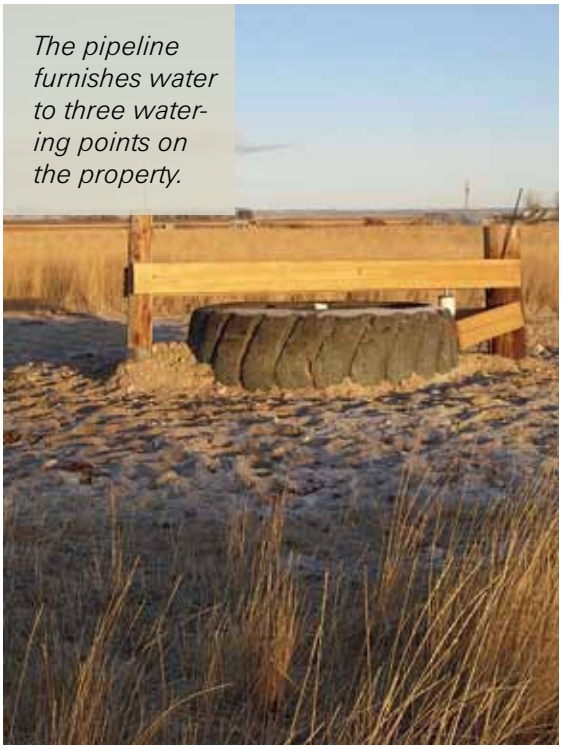
The whole project took me approximately 14 days to complete, including all the setbacks. If I was more experienced or had to do it over, I likely could have done it in 10 days.

Working with NRCS was great. The technician was very helpful and was accommodating of changes as long as I discussed these changes with NRCS beforehand.

Mistakes

I chose not to install one of my T-joints in the line as the initial pipe was run thinking I could come back and install it easily after the trench was in. That was a mistake – trying to install the weld-joints in the pit filled with water was a real headache.

When using the backhoe to dig the wet areas, I only backfilled enough to hold the pipe down in the trench. I should have completely backfilled as I went. Water filled the trench and made this area a swamp. Weeks later, I had to hire a professional backhoe operator to finish the backfilling.



The pipeline furnishes water to three watering points on the property.

Shown is the pipeline path two months after completion. The pipe is buried 5 feet deep.

I thought I was getting 8-foot tires that would meet NRCS specifications to use as tanks but received two 7-foot tires instead. To fix this, I installed a 5-foot tire next to each of the 7-foot tires – it is important to follow the NRCS specifications exactly if they are financially supporting the project.

Good decisions

Using HDPE pipe was great. The pipe requires a special pipe welding tool to join it, but it is a simple process once learned. Coupler fittings are also available to use instead of using the pipe welding tool.

Using the trencher was great. I had two breakdowns, but the equipment rental company was great about fixing it. Given my lack of skills on a backhoe and the wet ground, I'm sure the trencher sped up this process by multiple days.

Final thoughts

This pipeline was a major undertaking, but I'm confident it will have payoffs for the next 30 years and beyond. I am also confident the additional livestock watering points will allow me to manage this pasture much more effectively – potentially doubling the amount of forage grazed.

PIPELINE PROJECT BUDGET

Item	Number	Price per	Total
1.25" HDPE Pipe	2,200 ft.	$ 0.50	$ 1,100.00
Tire tank	3	$ 300.00	$ 900.00
Gravel for tanks	3	$ 300.00	$ 900.00
Fittings	3	$ 200.00	$ 600.00
Posts/lumber	3	$ 100.00	$ 300.00
Equipment rental	1	$ 1,000.00	$ 1,000.00
Fuel	30 gal.	$ 3.30	$ 99.00
Hired labor	1	$ 1,000.00	$ 1,000.00
Misc.	1	$ 500.00	$ 500.00
		Total	**$ 6,399.00**

SEE FOR YOURSELF

Videos show the problems and progress at the property described in this article. Please go to http://www.youtube.com/user/BandBWY#p/c/548C3FD327F594F9

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