

Planner's Questionnaire

To be completed with the assistance of the Cooperator

Landowner: _____
 Field Office: _____
 Tract #: _____
 Field #: _____
 Designed by: _____
 Date: _____

Question #

1 Enter planned Grazing Scenario from page 2: _____
 2 If planning for Scenario 2, enter the appropriate Option: _____

TROUGH

3 Choose specific livestock: _____
 4 Max. Herd Size: _____
 5 Continuous Grazing > 800-ft to water: (Y / N) _____
 6 Intensive Grazing < 800-ft to water: (Y / N) _____
 7 Indicate the source of the water to be used in this design: _____
 8 Enter a known or "Free" flow rate from your **water source**: _____ gpm
 9 Will a Solar Pump be used: (Y or N) _____
 10 Location of fence to trough(s): _____
 11 Which side of a rectangular trough is up against the fence: (Length or Width) _____
 12 Watering system to utilize Commercial Trough: (Y or N) _____
 13 Watering system to utilize Rubber Tire Trough: (Y or N) _____

RUBBER TIRE TROUGH

14 Inside Diameter (feet): _____ Depth (feet): _____
 15 Inner Hub Radius (feet): _____
 16 Outer Hub Radius (feet): _____
 17 Depth at Rim (inches): _____
 18 Depth at Hub (inches): _____

HUA

19 Construction material for Commercial Trough: _____
 20 Construction material for Rubber Tire Trough: _____
 21 Width of Class I non-woven geotextile to be used in HUA (enter 12.5 ft or 15 ft) _____
 22 Enter a waste factor for HUA construction material: _____ %
 23 Thickness of HUA material for Commercial Trough _____ in
 24 Thickness of HUA material for Rubber Tire Trough _____ in
 25 Total Aggregate HUA's under this construction plan: _____
 26 Total Concrete/Asphalt HUA's under this construction plan: _____

PIPELINE (WELL)

27	Pipe Material	
28	Pipe Wall Designation (PWD)	
28	Pipe Diameter (in.)	
30	Switch-off Setting	psi
31	NG Elevation at Trough	
32	Pipe Length in Well	ft
33	Pipe Dia. in Well	in
34	Pipe Material in Well	
35	Well Casing Diameter	in
36	Depth to Drawdown	ft
37	Pump Efficiency	%
38	Motor Efficiency	%

PIPELINE (GRAVITY OR PUBLIC)

39	Water Source	
40	Pipe Material	
41	Pipe Wall Designation	
42	Pipe Diameter (in.)	
43	NG Elevation at Trough	

ORIFICE

44	Water Control Device at Trough	
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Additional questions (based on conversation with landowner):

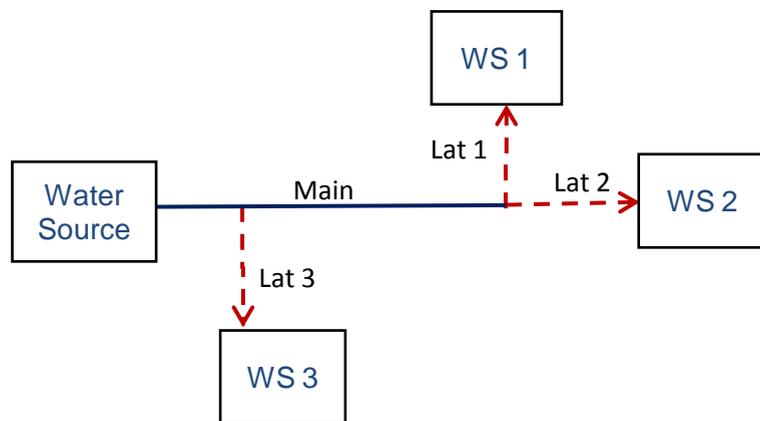
1. Test Well and Pressure Tank system: Minutes b/t pump cycling on and off: _____
 - a. Check valve already in place. Pipe diameter coming out of Pressure Tank (in): _____
2. Info from DHEC well driller's form or well plate: Static water level: _____ ft
3. Distance Pressure Tank is from well: _____
4. Landowner only on-site once a week or so (Y or N): _____
5. Landowner would like shut-off valves at each troughs (Y or N): _____
6. Possible distance between to safe overflow area and trough: _____ ft

Scenario 1) A single trough with a single pipeline (mainline) from the water source to the watering station (WS). This covers most cases (i.e., no laterals).

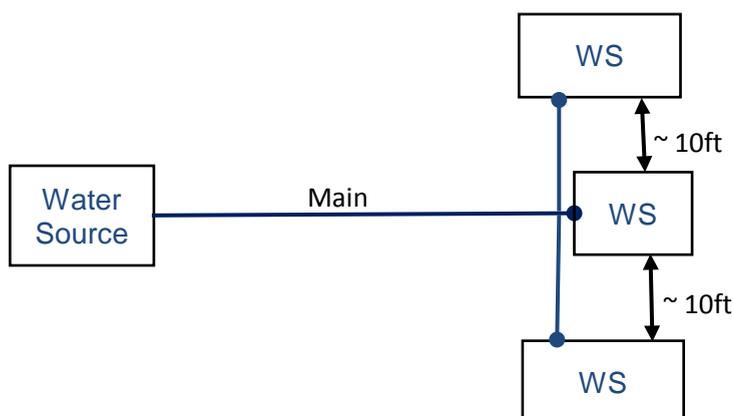


Scenario 2) Option 1: Multiple watering stations (and thus laterals) that act independently (i.e., not recharged simultaneously). This is the case in most rotational grazing in which each watering station acts independently and must be designed to meet the watering needs of the entire herd. Since only one watering station is operational and thus hydraulically connected to the water source at a time, **the main line and the laterals will be the same size**. In reality, this is the same design as in scenario 1 discussed above because each pipeline will be designed independently.

Option 2: Multiple watering stations that are to be recharged SIMULTANEOUSLY. This is the case in which multiple watering stations will be operational at one time due to the herd being split into several pastures at once (typical for horses) or to allow multiple drinking choices to a single herd in one large pasture. These watering stations might be separated by large distances or close together (site specific). With this option, the storage capacity and pipeline of each watering station will be designed on the conservative side, meaning each watering station and pipeline will be designed to manage the water needs of the entire herd even though the animals are divided into several pastures at the same time.



Scenario 3) Multiple smaller watering stations that are placed in the vicinity of each other (i.e., separated by approximately 10 ft) to avoid placing a large watering station with a single large volume trough. This is the case where a land owner prefers the use of multiple smaller troughs in place of a large trough or when a needed large volume trough is best divided into smaller commercially available troughs. This is again a design similar to the scenario 1 discussed above because you are designing one main pipeline. The small branching between the troughs in a small area is then safely neglected in the design.



Commercial Troughs

Hog Watering Bowls & Nipples
→



Cup



Bowl



Nipple



Poultry Waterer (200 Hen capacity)



Livestock Ball Waterers



Plastic & Fiberglass Troughs



Steel Troughs (Rectangular w/ rounded ends)



Steel Troughs (Round)

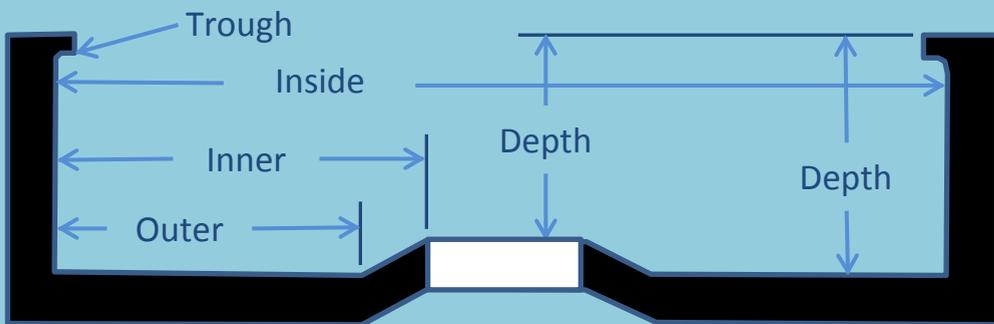


Concrete Troughs (Round)



Concrete Troughs (Rectangular w/ straight ends)
[septic tank bottoms, etc]

Rubber Tire Trough



DESIGN TOOL - DROP DOWN ITEMS

Question 3 *Choose specific livestock:*

- Beef Cattle
- Beef Cow/calf pair
- Calves
- Dry Cow
- Goats
- Horses
- Milking Cow
- Milking Cow/calf pair
- Poultry
- Sheep
- Swine [grow-finish]
- Swine [lactating]

Question 7 *Planned Water Source*

- Existing Well System
- Newly Planned Well System
- Pond with gravity flow to trough
- Spring with gravity flow to trough
- Public or other pressure system

Question 10 *Location of fence to tank(s):*

- Side of trough/waterer up against fence
- Fence splits trough/waterer in half
- Trough/waterer located in open pasture

Question 19 *Construction material for the HUA:*
& 20

- Well Graded Aggregate (FLBC - Marine Limestone)
- Well Graded Aggregate Crusher Run (Macadams Base)
- Asphalt (paved)
- Concrete [3,000psi]

Question 27 *Pipeline Material to Trough:*
or 40

- PE = Polyethylene
- PVC
- ABS

Question 28 *Pipe Wall Designation (Material):*
or 41

- (ABS), Schedule 40 & 80 [ASTM D-1527]
- (PVC), Schedule 40 [ASTM D-1785]
- (PVC), Schedule 80 [ASTM D-1785]
- (PVC), SDR 26 (ASTM D-2241)
- (PVC), SDR 21 (ASTM D-2241)
- (PVC), SDR 17 (ASTM D-2241)
- (PVC), SDR 13.5 (ASTM D-2241)
- (PE), Schedule 40 & 80 [ASTM D-2447]
- (PE), DR 26 [ASTM D-3035]

Question 34 *Pipe Material in Well (not casing):*

- PVC
- Steel

Question 39 *Water Source:*

- Pond with gravity flow to trough
- Spring with gravity flow to trough
- Public or other pressure system

Question 44 *Water Source:*

- Diaphragm Float Valve - 1/2 in
- Diaphragm Float Valve - 3/4 in
- Diaphragm Float Valve - 1 in
- Metal/Plastic Float Valve - 1/8 in
- Rod & Lever Float Valve - variable
- Garden Hose - 5/8 in
- Garden Hose - 3/4 in
- Frost Free Valve - 3/4 in