

Montana Engineering Practice Planning and Design Guide for Stockwater Spring or Pit System

RESOURCE INVENTORY

(Use Stockwater Pipeline Resource Inventory Worksheet, MSPM Pages 2-4.)

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|--|-------------------|----------------------------|
| | <u>References</u> | ✓ |
| | NPM 506.10 | |
| | MSPM Ch 2 | |
| 1. Annual grazing period. | | <input type="checkbox"/> x |
| 2. Whether or not system will need to operate in freezing weather. | | <input type="checkbox"/> x |
| 3. Types and maximum number of livestock using spring or pit. | | <input type="checkbox"/> x |
| 4. Type of grazing system to be used. | | <input type="checkbox"/> x |
| 5. Define area to be serviced by the spring or pit. | | <input type="checkbox"/> x |
| 6. Location and details of other existing water sources in the area to be serviced by the spring or pit. | | <input type="checkbox"/> x |
| 7. Reliability of spring or pit water source. | | <input type="checkbox"/> x |
| 8. Quality of water from spring or pit. | | <input type="checkbox"/> x |
| 9. Management factors: | | |
| ▪ How often are the stock checked? | | <input type="checkbox"/> x |
| ▪ Can stock be quickly moved if the spring or pit fails? | | <input type="checkbox"/> x |
| 10. User desires concerning spring or pit. | | <input type="checkbox"/> x |
| 11. Site considerations. | | |
| ▪ Determine location and details of any utilities in the construction area. | NEH 503.03 | <input type="checkbox"/> x |
| ▪ Is the site within a flood plain? | NPM MT506.17 | <input type="checkbox"/> x |
| ▪ Will wetlands be modified or disturbed by installing the project? | NPM MT506.17 | <input type="checkbox"/> x |
| ▪ Make archaeological and historical resource survey, if needed. | NPM MT506.17 | <input type="checkbox"/> x |

INTERPRETING, ANALYZING, AND EVALUATING

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|--|--|----------------------------|
| 1. Are there other alternatives to the proposed improvement? Can existing water sources be improved at less cost? Will a pipeline from a dependable source be more dependable? | | <input type="checkbox"/> x |
| 2. The spring or pit and appurtenances must be an integral part of a planned Resource Management System (RMS). | | <input type="checkbox"/> x |

Stockwater Spring or Pit System

	References	✓
3. Are there soil or geologic conditions which will limit the type of system or how it is installed?		<input type="checkbox"/> x
DEVELOPING AND EVALUATING ALTERNATIVES		
1. Determine minimum flow requirements during period of peak stockwater use.	MSPM Ch 2 MIM pg 13-69	<input type="checkbox"/>
2. Determine minimum water storage requirements.		<input type="checkbox"/>
3. Determine drinking tank type and capacity, if applicable.		<input type="checkbox"/>
4. Design the system based on all known factors.		<input type="checkbox"/>
5. Preliminary design of drinking and storage tanks if applicable.		<input type="checkbox"/> x
6. Hydrology for pit, if surface supplied.	EFH Ch 2	
▪ Peak flow determination (only if needed to design diversion)		<input type="checkbox"/>
▪ Watershed water yield and expected frequency of flow		<input type="checkbox"/> x
▪ Watershed sediment yield		<input type="checkbox"/> x
7. Preliminary design of pit, access ramps, inlet, fencing, spoil if applicable.		<input type="checkbox"/>
IMPLEMENTING DECISIONS		
<u>Spring System Design</u>		
1. Detailed hydraulic design which was not done previously. You may use approved computer programs.	NPM 506.10 Standard 640	<input type="checkbox"/> x
2. Pressure tank size requirements.	MSPM Ch 8	<input type="checkbox"/> x
3. Pressure, surge and air control features.	MSPM Ch 6, 8	<input type="checkbox"/> x
4. Pump size and pressure requirements.	MSPM Ch 8	<input type="checkbox"/> x
5. System accessory design.	MSPM ch 8	<input type="checkbox"/> x
6. Quantity calculations (if needed for cost share, bidding or other reasons).		<input type="checkbox"/>
▪ Schedule of pipe sizes, type, rating		<input type="checkbox"/>
▪ Schedule of tank types, sizes, locations		<input type="checkbox"/>
<u>Pit System Design</u>		
1. Design of pit elevations, dimensions.		<input type="checkbox"/> x
2. Design of access ramp and any paving required.		<input type="checkbox"/> x
3. Design of any inlet facilities to the pit.		<input type="checkbox"/> x
4. Design any required diversion facilities.		<input type="checkbox"/> x

