

Montana Engineering Practice Planning and Design Guide for Water Well

	<u>References</u>	
RESOURCE INVENTORY	NPPH, 600.3	✓
1. Review legal requirements: Administrative Rules of Montana at: http://www.mtrules.org/gateway/ChapterHome.asp?Chapter=36%2E21 and, Montana Codes Annotated at: http://leg.mt.gov/bills/mca_toc/37_43.htm Montana basin Closures and Controlled Groundwater Area: http://dnrc.mt.gov/divisions/water/water-rights/docs/hb831-gw_permit_information.pdf http://dnrc.mt.gov/divisions/water/water-rights/docs/new-appropriations/	Title 36, Chapter 21 ARM Title 37, Chapter 43 MCA	<input type="checkbox"/>
2. Determine volume needed for irrigation or stock water using standard NRCS techniques. Consider:	MSPM, Ch.2 MIM MIG	<input type="checkbox"/> x
3. Consider location, reliability and quality of alternate water sources.		<input type="checkbox"/> x
4. Select proposed well site. Consider:		<input type="checkbox"/> x
<ul style="list-style-type: none"> ▪ topographic position with respect to stream bottoms and drainage divides, well depths and pump lifts are generally higher on ridges, ▪ availability of electricity or potential for solar or windmill powered pumps, ▪ geologic conditions if known, ▪ other wells drilled in area, ▪ underground and overhead utilities, ▪ site accessibility, including future maintenance and repair, ▪ location within floodplain--the top of the watertight casing shall extend at least 18 inches above the regional flood of record, ▪ location of potential sources of contamination, follow NRCS setback requirements. ▪ likelihood of gas production from well. 	ARM 36.21.647 Water Well (642) Standard	
5. Document important information in the case file using the NRCS-CPA-6.	NPPH, 600.3	<input type="checkbox"/> x
INTERPRETING, ANALYZING AND EVALUATING	NPPH, 600.3	
1. Submit request for geologic report to: Tom Patton, Senior Research Hydrologist: Montana Bureau of Mines and Geology 1300 West Park Street Butte, MT 59701-8997 E-mail: tpatton@mtech.edu Use MT-ENG-642-c, Stockwater Well Report Request Worksheet, to request assistance from the Montana Bureau of Mines and Geology.	MT-ENG-642-c	<input type="checkbox"/> x

2. Requests for geologic assistance require:
 - name of owner,
 - legal description of site,
 - location of proposed site on USGS quad sheet (not photos),
 - purpose and yield requirements,
 - description of other wells in area if known,
 - history of existing well, if reconstruction is requested,
 - map showing location of area of planning unit, access route, power lines, and pipeline route, if applicable.

DEVELOPING AND EVALUATING ALTERNATIVES

The following steps should be followed if a geologic report cannot be obtained from the above sources.

1. Locate site on newest, smallest-scale geologic map available. Determine geologic formation underlying site. Determine general formation characteristics. <http://mbmggwic.mtech.edu>
<http://www.mbm.mtech.edu/gmr/gmr-statemap.asp>
2. Estimate well depth, if possible.
 - In many areas, particularly in the Great Plains, well depths and yields can be estimated by comparing this information for nearby wells which are completed in the same formation. Only those wells in the actual and adjacent townships should be compared unless geologic conditions are known to be consistent.
 - Topographic position should be considered when comparing information.
 - Information on nearby wells and water quality is available from the well database maintained by the Montana Groundwater Information Center. <http://mbmggwic.mtech.edu>
3. Most reliable drillers with experience in an area will be able to make a rough determination of the practicability of drilling a successful well at a given site.
4. Document important information in the case file using the NRCS-CPA-6.

IMPLEMENTING DECISIONS

1. Prepare contract package. It should include:
 - MONTANA WELL LOG REPORT, DNRC FORM [603 R2-04](#)
 - Location map,
 - MBMG/NRCS Geology report,
 - Construction Specification for Water Well,
 - Special provisions which normally include:
 - a. Requirement to call field office before drilling beyond the estimated total depth.
 - b. Requirement to submit a copy of the Montana Well Log Report, DNRC Form [603 R2-04](#), and Pumping Plant Certification of Installation, MT-ENG-533, to the NRCS field office before payment is authorized.

References

NPPH, 600.3

MBMG publications

NPPH, 600.3

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Water Well

	<u>References</u>	✓
<p>c. Copy of completed Montana Well Log Report, DNRC Form 603 R2-04 and a copy of the Pumping Plant Certification of Installation, MT-ENG-533 to the producer.</p> <p>d. Copy of completed Montana Well Log Report, DNRC Form 603 R2-04 to be sent by the Licensed Water Well Contractor to the Montana Bureau of Mines and Geology, 1300 West Park Street, Main Hall #322, Butte, Montana 59701-8997 (not required by tribal members on tribal land).</p> <p>e. Landowner must apply for and receive “Application for beneficial Water Use Permit”, Form 600 GW (U3-2015) from a DNRC Water Rights Regional Office before drilling begins if anticipated yield is to exceed 35 gpm or, if the total yield exceeds 10 acre-foot per year. If the well is in a controlled groundwater area, Form 600-BCA, “Basin Closure Area Addendum”, must also be submitted. South Pine and Yellowstone Controlled Ground Water Areas have addendum forms specific to their areas.</p> <p>f. For wells with yields of less than 35 gpm, the landowner must submit a “Notice of Completion of Groundwater Development”, Form 602 R 01/2016, to a DNRC Water Rights Regional Office within 60 days after the well is completed.</p>		
<p>2. Landowner must apply for and receive “Application for Beneficial Water Use Permit,” Form 600 R8/2010, from a DNRC Water Rights Regional Office <i>before drilling begins</i> if anticipated yield is to exceed 35 gpm, or if the proposed well location is within a Controlled Groundwater Area, or if the total annual yield exceeds 10 acre-feet.</p>	DNRC Administrative Rules	<input type="checkbox"/> ✕
<p>3. The well driller must submit three copies of the Montana Well Log Report, DNRC Form 603 R2-04, one copy to the well owner, one copy to the Montana Bureau of Mines and Geology, and one copy to the DNRC Water Rights Regional office <i>within 60 days</i> of completion of the well.</p>		<input type="checkbox"/> ✕
<p>4. For wells with yields of less than 35 gpm, the landowner must submit a “Notice of Completion of Ground Water Development,” Form 602 R 1/2016, to the DNRC Water Rights Regional Office <i>within 60 days</i> after the well is completed and the water has been put to beneficial use. This form is provided by the well driller on the back of the owner’s copy of the well log.</p>		<input type="checkbox"/> ✕
<p>5. Test water quality in laboratory which uses EPA-approved methods and a completed pumping test report.</p>	MT Tech Note Environment #13	<input type="checkbox"/> ✕
<p>6. Develop Operation and Maintenance plan with landowner. O&M plans will maximize the useful life of every well, however they are critical to high-yielding wells and all wells where even a temporary interruption in water supply will have serious economic consequences.</p>	NRCS MT O&M Manual	<input type="checkbox"/> ✕

✕ This activity or documentation is usually required on each job.

ARM--Administrative Rules of Montana published by Board of Water Well Contractors

DNRC--State of Montana Department of Natural Resources and Conservation

DNRC Forms are at: <http://dnrc.mt.gov/divisions/water/water-rights/water-right-forms>

MCA--Montana Codes Annotated

Further information on wells is listed in these Selected References: Hydrogeology Field Manual by Willis D. Weight; A comprehensive reference on water wells is Groundwater and Wells, Fletcher G. Driscoll, Johnson Division, St. Paul, Minnesota 55112, 1986.