

**I have encountered many issues drilling, instrumenting, and doing hydraulic tests in the field:**

1. Pump failure (talk to the drillers and see about having the pump tested before it gets used in the field; test the bottom of the well for new sediment accumulation before setting the pump);
2. Flowmeter failure due to damage by flowing rock debris (bucket test with a stopwatch saved the day);
3. Borehole natural deformation (not much we can do, but it is interesting to observe and contemplate);
4. Transducers ran out of memory (remember to go to the field periodically , download, and relaunch the data logger);
5. Transducer data gap (it was set up in a hurry and consequently not set up correctly -- - take your time and double check the logger settings);
6. Transducer out of range (manual DTW was used to correct it);
7. Caught in snowstorms during all-day pumping tests (study the weather forecast in planning field days);
8. Car got stuck in the snowdrift (check your cell to see if it has good connection in the field – Verizon is working well at Blair; go to the field with another student; etc.)
9. Frozen due to inadequate field clothes and boots under wintry conditions (get warm, windproof, and waterproof field gear including gaiters);
10. Moose wondering into the well field (stay away from animals and stay away from trees during the hunting season; wear bright-colored clothes and hat so hunters will not mistake you);
11. Fell into a creek in waist-deep snow (should tie a ribbon on a tree near your stream gauge so you can find your gauge when the creek is buried by thick snow);
12. Car window damaged by a truck throwing a pebble (you can get a WyCEGH truck to go to the field instead of using your own car; check out the link below for the required paperwork before you can use a UW vehicle); <http://www.uwyo.edu/risk/claims-and%20insurance/vehicle-use-policy-information.html>
13. Stopped for speeding trying to get back before a snowstorm and possible freeway closure (check WYDOT before heading out to the field in the winter!);
14. Issues of online reporting of water chemistry and flow rate to the government (not much you can do, just call and email until problems get resolved);
15. Months-long marathon negotiating & putting together legal documents for drilling & testing (Ye's job);
16. Land access, permit, contract, and PO drama (Ye's job). It often takes months to pay the surveyors, drillers, consultants, wellsite geologists, and field assistants.
17. As instituted by UW, we are required to use Wyocloud online financial system to report travel and get reimbursed. After the mandatory trainings (see emails from Tammy), it is a 7-step process to get approvals & get reimbursed. Please be patient.

**In summary, try your best to prepare for the field but expect issues. Additional advice:**

- For record keeping in the field, use waterproof field notes and pens. Often you need to refer to such records months later, you want to still be able to read what you wrote.
- Follow the safety instructions from the drillers. Wear a hard hat; Wear steel-toed boots;
- Driving on snow or icy roads:



I80, between Laramie and Vedauwoo, courtesy of WYDOT

1. Stay in if there is whiteout condition:  
<http://www.wyoroad.info/pls/Browse/WRR.STATIC5?SelectedDistrict=1>
2. Use your low beam headlights (do not drive at night with a dirty, foggy, or icy windshield);
3. Use your windshield wipers and defroster;
4. Use all-weather tires, snow tires, or chains; **even properly equipped vehicles can slide on ice or snow.**
5. Get a feel of the roadway: start out slowly, gently test your brakes to find out how well you can stop, start slowing down long before reaching an intersection or turn;
6. Keep speed below dry-road (i.e., posted maximum) speed limit; every stretch of roadway may be different depending on sun, shade, sanding, etc.
  - If driving in rain, drop speed by 5-10 mph;
  - If driving in snow, drive at half the speed you would normally do;
  - If driving on ice, proceed at just a few mph;
7. Reduce speed on curves and shady areas where black ice may have accumulated;  
<http://www.wikihow.com/Drive-on-Black-Ice>
8. Maintain a longer space cushion around your vehicle;
9. Be aware of driving through the Summit and the Medicine Bow National Forest on I80 between Laramie and Cheyenne. Stay away from the semi, some of which have a hard time stopping on the icy and sloping road.  
[http://www.wyomingnews.com/news/hurt-in-pileups-west-of-cheyenne/article\\_91ba3d27-3464-5d3d-a2a4-2231d63f3cf1.html](http://www.wyomingnews.com/news/hurt-in-pileups-west-of-cheyenne/article_91ba3d27-3464-5d3d-a2a4-2231d63f3cf1.html)

