



# State Engineer's Office

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February 18, 2005

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RE: Temporary Filing Nos. U.W. 36-8-633 (Well JRC-1) and 36-9-633 (Well JRA-1)

To All Interested Parties:

The State Engineer's Office received two permit applications for "Miscellaneous" wells from the University of Wyoming on September 9, 2004. Water produced from the wells will be used to water a proposed golf course. One of the proposed wells, Well JRA-1, will be located in the SW SW, Section 25, T16N, R73W, Albany County. The second well, Well JRC-1, will be located in the SW SE, Section 25, T16N, R73W, Albany County. Both wells are located in an area of structural complexity near the intersection of the north-trending Spur fault, the northeast-trending City Springs fault, and the east-trending Jackrabbit fault and monocline. Faults act as conduits within the Casper aquifer. The Spur, Jackrabbit, and City Springs faults intercept westward-flowing ground water that is discharged at City Springs.

According to information submitted on the U.W. 5, "Application for Permit to Appropriate Ground Water" forms, it appears both wells will be completed in the Casper Formation at a depth of approximately 700 feet. A maximum instantaneous flow of 1,200 gallons per minute (gpm), and a maximum volumetric quantity of 280 acre-feet per year is expected from each well.

Both wells also appear to lie within the Albany County Aquifer Protection Plan boundary. The City Springs well (Permit No. U.W. 55508) and the City of Laramie's Turner No. 2 well (Permit No. U.W. 59131) are located in the SE SW, Section 35, T16N, R73W, near the covered trace of the City Springs fault approximately 7,700 feet southwest of the proposed well locations. The Turner No. 2 well has a depth of 350 feet and an adjudicated yield of 1,600 gpm.

Surface Water  
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Due to the potential for these proposed wells to impact the City's water rights, as well as domestic water rights, the State Engineer's Office solicited comments from both the City of Laramie and the Albany County Planning Office. Those comments, together with a response from the State Engineer's Office, are summarized below:

- Comment (Albany County): The proposed U.W. wells have the potential to affect existing City wells, as well as other rural residential wells.

*Response: It is an expressed condition on each permit (both the City's and rural residential wells) that "granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level." The State Engineer's Office is mandated, by statute, to maximize the beneficial use of the groundwater resource. Therefore, the State Engineer's Office must consider any complete application it receives, and approve that application unless 1) there is no unappropriated water in the groundwater resource, or 2) it is not in the public interest.*

*If the proposed U.W. wells unreasonably interfere with any adequate well with a senior water right, the State Engineer's Office will take steps to stop, rectify, or ameliorate the interference or damage caused.*

- Comment (Albany County): The U.W. wells increase the vulnerability of the Casper Formation to contamination.

*Response: If properly constructed (i.e., in accordance with the State Engineer's Office's Water Well Minimum Construction Standards and the permit conditions and limitations), the U.W. wells should not increase the vulnerability of the Casper Formation.*

- Comment (Albany County): Vulnerability of the Casper Formation will be heightened with the application of fertilizers that generally accompany a golf course.

*Response: The State Engineer's Office does not have regulatory authority over the application of fertilizers.*

*According to U.W., "Several measures will be employed to minimize the potential for contamination from golf course activities. Bulk fertilizer and pesticide storage will be located outside the Aquifer Protection Overlay Zone (APOZ). Secondary containment will be provided around bulk storage tanks. (Pesticides used on the golf course will have a persistence of less than 24 hours. Pesticides will be applied by licensed pesticide applicators.)"*

- Comment (City of Laramie): Permits should be limited to test wells for the development of groundwater from the Forelle Limestone and that production from the Casper Formation in this location should not be authorized at this time.

*Response: Test well permits are authorized when there is a need to determine if a viable water supply exists. Sufficient data exists to assume the Casper aquifer is a viable water supply. The Forelle Limestone can be a poor aquifer and the Casper Formation is more likely to yield the quantity and quality of water desired by U.W.*

- Comment (City of Laramie): If Casper Formation wells are permitted, any new wells in this area should be cased from 10 feet below the top of the first saturated water zone within the Casper Formation to the land surface. All other aspects of the SEO rules related to well design and construction should also be specifically referenced.

*Response: The "Additional Conditions and Limitations" attached to the well permit include the following condition: "This well shall be cased with new or new-like casing and the annular space between the casing and the borehole wall shall be cemented from a depth of at least ten feet below the top of the Casper Formation to the land surface or to a depth of twenty feet if the well starts within ten feet of the top of the Casper Formation."*

*The consultant retained by U.W. to submit the permits and design and construct the wells has extensive experience with water wells in Wyoming and the State Engineer's Office is confident that they will comply with all applicable rules and regulations. It is the appropriator's and well driller's joint responsibility to insure a well is properly completed. If not, the State Engineer's Office has the regulatory authority to require the well be properly abandoned.*

- Comment (City of Laramie): The applicant should be required to provide monthly water production reports to the State Engineer's Office, and because of the significant potential and untimely impacts to the City, the City would like the State Engineer's Office to require U.W. to provide a copy of the monthly reports directly to the City of Laramie, Director of Public Works.

*Response: The "Additional Conditions and Limitations" attached to the well permit include the following condition: "A meter acceptable to the State Engineer shall be installed to measure the **monthly quantity of water produced from this well and the instantaneous flow rate**. The meter shall be calibrated prior to installation and at least once every three years to insure accuracy and these records shall be made available the State Engineer upon request". U.W. will be required to submit an annual report to the State Engineer's Office by February 15<sup>th</sup> of each year for the prior January 1 to December 31 period. The annual report will be part of the public record and will be available to the City upon request. The City may also request copies of the monthly reports directly from U.W.*

- Comment (City of Laramie): The City requests the State Engineer's Office provide for the City's participation and review of the design of the SEO-approved pump test program. The City suggests the State Engineer's Office specify a 30-day pump test to fairly and reasonably evaluate the aquifer response, potential impacts, and interference to the City's wellfields. Important to this testing will be to establish a proper set of monitoring wells (existing nearby wells and 2 to 5 properly located new monitoring wells) and a set of data collection and analysis protocols to guide the testing and evaluation of the State Engineer's office termed "unreasonable interference", and possible long-term aquifer monitoring needs, if full production permits are authorized.

*Response: The "Additional Conditions and Limitations" attached to the well permit include the following condition: A pumping test (aquifer test) approved by the State Engineer shall be performed on any well completed with a permanent pump under this permit. The test shall be completed prior to use of the well. The purpose of the pumping test is to determine if interference to existing wells with senior water rights is likely to occur. During the pumping and recovery phases of the test, water levels shall be measured in the pumping well and in one, or more nonpumping observation wells, which may have to be constructed by the permittee. A report with a description of the procedures used for the pumping test, a brief analysis, and a listing of all the data collected shall be submitted to the State Engineer no later than the deadline for the Statement of Completion and Description of Well or Spring (Form U.W. 6). After reviewing the report and considering any other pertinent data and analyses, the State Engineer may restrict the yield of this well to less than that previously approved in order to protect other appropriators from unreasonable interference. The permittee may not start using this well until notified by the State Engineer of the maximum allowable flow rate and the maximum annual production. The permittee shall notify the State Engineer within three months of any changes to the well or pump after completion of the pumping phase of the test. The permittee may perform other pumping tests of any design before or after completion of this well but all data collected shall be submitted to the State Engineer within three months of the completion of the tests."*

*The pumping test data and report will be part of the public record and available to the City upon request. The State Engineer's Office would welcome the City's comments and suggestions regarding the pumping tests and would encourage the City to regulate flows and measure water levels in City wells during the period of the pumping tests.*

- Comment (City of Laramie): Important to the City are the baseline conditions that reflect the full set of municipal long-term, seasonal and peaking operating conditions and demands that are placed upon the Casper Formation in this area. Monitoring water level information shall be gathered and reported to the State Engineer's Office and the City of Laramie on a monthly basis.

- *Response: The "Additional Conditions and Limitations" attached to the well permit include the following condition: "To establish baseline water level conditions, the permittee shall measure and report to the State Engineer water levels in selected water wells mutually agreed upon by the State Engineer and the permittee. Beginning on the date of the first beneficial use of water from this well (as reported on the Proof of Appropriation and Beneficial Use of Ground Water, Form U.W. 8), the following information for each selected well shall be included in the Annual Report and due by February 15 for measurements in the prior January 1 to December 31 period:*
  - a) *The well owner's name, the well name, the State Engineer's Office permit number, and*
  - b) *At least one static water level measurement for each of the months of March and August obtained at least 4 hours after pumping has ceased, the prior pumping (flow) rate, if known, the period of time the pump was off prior to measurement, and the date and time of the measurement.*

*Such measurements shall continue for a minimum of three years until such time as the State Engineer notifies the permittee that an adequate baseline has been established. In addition to the information required above, the permittee shall measure water levels in each selected well at least once prior to any use of the well for this permit, except for testing, and report these measurements along with the other data required for the Annual Report in the first Annual Report. Again, the annual report is part of the public record and is available to the City upon request.*

### **General Concerns:**

- **Comment (City of Laramie):** The City suggests U.W. be requested to evaluate alternative sources of water for their needs that would not create an impact to the water rights and uses by the City of Laramie. The City's concerns are extenuated by the fact that the City's historic and highest water use from the groundwater supplies is during the summer demand season, which corresponds and conflicts directly with the simultaneous irrigation needs of the golf course use proposed by U.W. Based upon U.W.'s present use of the Forelle Limestone for University irrigation and a variety of previous technical studies of groundwater aquifers in the Laramie area, we believe U.W. could develop the supplemental water supply for golf course purposes from the Forelle Limestone that would minimize the potential for impacts to the City's groundwater supplies.

The City requests that SEO not issue the well permits as golf course production wells in the Casper formation. But rather, that the SEO encourage U.W. to first pursue test well permits in the Forelle Limestone to evaluate this alternative groundwater resource.

*Response: Based on the results of the pumping test, the State Engineer will establish a maximum yield for the U.W. wells that does not unreasonably interfere with other appropriators during the summer or at any other times. If the Casper aquifer is over utilized, the State Engineer may establish a Control Area and prohibit all new wells in the Casper aquifer.*

*The City may wish to supply U.W. with the technical studies supportive of targeting the Forelle Limestone. There certainly would be a cost savings to U.W. if the desired water supply could be developed from shallower wells in the Forelle Limestone.*

- **Comment (City of Laramie):** Because of the recognized high likelihood of impacts to the City municipal water supplies, the City suggests the SEO seriously consider only issuing test well permits to U.W. for the development of wells in the Forelle Limestone and Casper formations. Test well permits would provide the authorization for U.W. to proceed to evaluate the aquifer characteristics, and to complete pump testing and water level monitoring designed to evaluate the potential impacts to the City and other nearby senior groundwater wells. If these efforts are successful, then U.W. could apply for full production permits. The SEO is fully aware of the technical conditions and limitations related to the Spur Wellfield and of the severe production restrictions place upon these City wells to protect the interests of other groundwater appropriators. The City is expecting SEO to treat the proposed new wells for U.W. in a similar, careful and measured manner.

If the SEO approves the existing permit applications into the Casper Formation, the City requests that the well permits be issued as test wells rather than production wells.

*Response: Test well permits are authorized when there is a need to determine if a viable water supply exists. Sufficient data exists to assume the Casper aquifer is a viable water supply.*

*The only difference between a test well permit and other permits is that it allows the applicant to drill without paying a permit fee. Having U.W. drill under a test well permit would change nothing but the priority date. The test well could be re-permitted as a production well and the same "Additional Conditions and Limitations" as those on the current permit would be imposed.*

*The SEO placed "Additional Conditions and Limitations" on the Spur Wellfield permits. However, the "severe production restrictions" referred to were not imposed by the SEO, but were rather the result of negotiations between the City and the appropriators of domestic water rights in the vicinity of the Spur Wellfield.*

- Comment (City of Laramie): If U.W. is authorized to proceed with full production groundwater permits from the Casper Formation, the City believes the SEO should limit the annual volume appropriated based upon the wellfield (the two permits combined) needed to meet the specific needs of the golf course. The annual limitation of the appropriation from both permits combined should be up to a maximum of 280 AF per year (600,000 gal/day for 153 days (May through September) while recognizing the operational flexibility using a two well system.

The City requests that the annual limitation of the appropriation from both permits combined be 280 AF per year.

*Response: The State Engineer's Office does not have the authority to tell appropriators how much water they should use on their crops or what crops they should plant. However, if the proposed U.W. wells interfere unreasonably with any adequate well with a senior water right, the State Engineer's Office will take steps to stop, rectify, or ameliorate the interference or damage caused.*

After careful consideration of the comments summarized above, the SEO has approved U.W.'s applications for the JRC-1 and JRA-1 wells. A copy of the "Additional Conditions and Limitations" is attached.

The State Engineer's Office thanks those who took the time and effort to submit comments and suggestions. They have helped us craft the "Additional Conditions and Limitations" to better insure the wise use of our groundwater resource".

If you have any questions, please call me at (307) 777-5063.

Sincerely,



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