



State of Idaho

DEPARTMENT OF WATER RESOURCES

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C.L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Director

March 2, 2017

SPF WATER ENGINEERS
ATTN SCOTT KING
300 E MALLARD DR SUITE 300
BOISE ID 83706

RE: Field exam report for water right permit 63-32016

Dear Mr. King:

I have reviewed the field exam you supplied for water right permits 63-32608 and 63-32226. During my review I discovered that field exam is deficient in several areas. Until these issues are clarified, we cannot re-instate the permit and cannot accept the field report submitted with the reinstatement request. I will discuss each deficiency below:

MEASUREMENT DEVICE CONDITION:

Conditions 2 and 5 of the permit states the following:

- 2.) Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 63.
- 5.) Prior to diversion of water under this right, the right holder shall install and maintain a measuring device and lockable controlling works of a type acceptable to the Department as part of the diverting works.

In your report you state that since water right 63-10560 didn't require a measurement device, the Home Owner's Association (HOA) requests the permit be conditioned the same as water right 63-10560. The Idaho Administrative Code Beneficial Use Examination Rules, IDAPA 37.03.02.035.01.j (in-part) addresses these issues are as follows:

Field reports which indicate that a measuring device or lockable controlling works, required as a condition of approval of the permit, has not been installed, are not acceptable and will be returned to the examiner unless the measuring device requirement or lockable controlling works requirement has been formally waived or modified by the Director. (3-29-12)

In order to waive a measurement device requirement, the Department generally asks the permit holder to submit a formal request with a letter from the watermaster agreeing to the waiver of the measurement device requirement. We sometimes accept a request in the field report if the field report has a letter or email from the watermaster agreeing to the waiver of the measurement device requirement, or the permit holder is willing to acquire this information from the watermaster.

However, on August 15th, 2014, the Director issued a measurement order for the Boise River and all tributaries requiring measurement devices be installed on all points of diversion exceeding . This spring is tributary to the Boise River, so the system should be required to have a measurement device installed on the system. You can find a copy of the measurement order on our website at <https://www.idwr.idaho.gov/files/legal/orders/20140815-Final-Order-Requiring-Measuring-Devices-WD63.pdf>. Your clients were included in the measurement order notification, so they were informed that they are required to install measurement devices according to the time frame designated in the order.

Due to the size of water use and the need for data to move forward with the licensing of this water right, the permit holder would need to provide a significant argument as to why a measurement device is not needed for this system. Water right 63-10560 was licensed in 1997 prior to the 2014 measurement order being issued, so we cannot consider the argument that right 63-10560 didn't require a measurement device, so this permit should not be required to have a measurement device. By this issuance of the order, water right 63-10560 is required to install a measurement device unless they seek the needed waivers from the water district and the Department for this entire system.

VOLUME OF THE HEATING USE:

The Idaho Administrative Code Beneficial Use Examination Rules, IDAPA 37.03.02.035.02.d addresses these issues are as follows:

j. For each use of water the examiner shall report an annual diversion volume based on actual beneficial use during the development period for the permit. The method of determining the annual diversion volume shall be shown. The annual diversion volume shall account for seasonal variations in factors affecting water use, including seasonal variations in water availability. For irrigation, the volume shall be based on the field headgate requirements in the map titled Irrigation Field Headgate Requirement appended to these rules (see Appendix A located at the end of this chapter). Annual diversion volumes for heating and cooling uses may be adjusted to account for documented weather conditions during any single heating or cooling season from among the fifty (50) years immediately prior to submitting proof of beneficial use for the permit. For storage uses that include filling the reservoir and periodically replenishing evaporation and seepage losses throughout the year, the annual diversion volume shall be the sum of the amounts used for filling and for replenishment. Volumes may include reasonable conveyance losses actually incurred by the water user. The following water uses are exempt from the volume reporting requirement: (3-29-12)

As you can see from the IDAPA rule shown above, all field exams reports for heating uses require a volume for that use. Your report did not provide any volume calculations or recommendations. In order to accept this field report a volume recommendation must be included with the field report.

I have spoken with our heating and cooling specialist, and she has provided some guidelines to calculating the heating volume for a large subdivision use. I suspect that individual unit data from the development period is not available.

The HOA will not likely have detailed records like the gas or power company but it doesn't hurt to ask for what they do have. The HOA was required to have measurement devices on their system to provide this information. With those measurement devices, they should have been retaining measurement records showing the volume of water used throughout the year. If that unit information is not available or is just too speculative, you should not try to estimate volumes by the individual heating units. Instead, you should calculate the volume based on the system as a whole.

To do that requires:

- 1) Some heating system operation data; at least a days-worth although more is preferred. This information would include the total gallons of water diverted for heating purposes only, and the daily Heating Degree Day (HDD) value for that day. The HDD value is a little confusing. The HDD value is the difference in temperature from outside side temperature to standard in-home temperature of around 65 degrees for a specific time frame (usually an hour).
- 2) Some weather station data from an acceptable weather station. Paradise Hot Springs doesn't appear to have a weather station in the immediate vicinity but there should be surrogate weather station nearby. What do the natives use to estimate their weather? We need both daily and statistics based on a longer period-of-record from the same weather station. I would seek out a weather station that provides HDD value for that day.

The operation data provides us with the user's requirements during the time period under measurement. The daily weather station data provides us with a way to correlate the heating system use with the weather and then a way to extrapolate the daily use to an annual use.

The rough calculations would look something like this:

Gallons diverted in 24 hours (divided) by the Daily HDD Value = Gallons/ HDD

Gallons/HDD (times) annual HDD = Total Gallons diverted per year for heating

PUMP DATA (Section 4) AND HOW THEY ARE USED:

You mention in the report narrative that there is a pump station for this system, but there is no description of the type or size of pumps being used. You also don't describe how the pumps are being used. Are they diverting water with pumps to the subdivision, from the spring to the pond, or is something else happening here. The IDAPA Beneficial Use Examination Rules 37.03.02.035.01.c states the following:

A concise description of the diversion works and a general description of the distribution works shall be given. This description must trace the water from the point of diversion to and including the place of use and the return to a public water source, if any. Any reservoir, diversion dam, headgate, well, canal, flume, pump and other related structure shall be included. If water is stored, the timing and method of storage, release, redirection and conveyance to the place of use shall be described. The make, capacity, serial number and model number of all pumps, boosters or measuring devices associated with the point of diversion at the source of the water supply shall be described on the field examination report. Schematic diagrams, photographs, and maps sufficient to locate and describe the diversion, conveyance and usage systems shall also be provided in the examination report. (3-29-12)

The field report does not supply an adequate description of the system to determine if it has been changed or altered after previous water rights were field examined by the department. To properly describe a system, a system diagram is generally used along with a narrative of how the water is used, how it is transported there, what pumps or delivery method is used, where the water goes and how it is used. The information required in section 4 of the field report is also needed on any and all delivery and re-lift pumps.

MEASUREMENTS:

In your field report, you state that there is approximately 5 gpm of flow through the pool. However, there is no storage component to this permit. Is this water used in the heating component of the water right for the individual homes? If this water is actually used for the heating of the homes, then we would need an actual measurement of the water or a theoretical analysis instead of an estimate. The IDAPA Beneficial Use Examination Rules 37.03.02.040.03 and 37.03.02.040.04 state the following:

03. Measurements. Water measurements may be made by vessel, weir, meter, rated flume, reservoir capacity table or other standard method of measurement acceptable to the Director. The field report shall describe the method used in making the measurement, the date when made, the name of the person making the measurement, the legal description of the location where the measurement was taken and shall include sufficient information, including current meter notes, rating tables, and/or calibration information to enable the Director to check the quantity of water measured in each case. (3-29-12)

04. Unacceptable Measurements. Theoretical diversion rates or theoretical carrying capacities are not acceptable as a measure of the rate of diversion except as indicated in these rules and for some diversion systems where the flow rate cannot be measured accurately due to the physical characteristics of the diversion and distribution system. (3-29-12)

I would agree that the 5 gpm discussed in your report probably cannot be measured, but we do need some type of analysis or theoretical calculation to confirm the flow rate. A guess is not an acceptable means of measurement. You may be able to use a time fill measurement, float method, or something similar to give a bit better determination of the flow.

If you decide to include the 5 gpm in the diversion rate for your report, you will need to show how that water is delivered and used for the heating in the homes, and provide some type of measurement or theoretical calculation showing the flow of water.

CONCLUSION:

The IDAPA Beneficial Use Examination Rules 37.03.02.035.02.b states the following:

Field reports not completed as required by these rules will be returned to the certified water right examiner for completion. If the date for submitting proof of beneficial use has passed, the penalty provisions of Rule 055 shall apply. (7-1-93)

The Department has concluded that this field report is not completed as required by the IDAPA Beneficial Use Rules. Therefore we are returning the field report to you for completion. We cannot re-instate the permit until we receive an acceptable field exam report.

We will hold the re-instatement fee for 30 days or until April 1, 2017. If we do not receive a completed field examination report by that time, we will refund the re-instatement fee. If you have any questions or concerns, please don't hesitate to contact me.

Respectfully,

A handwritten signature in black ink, appearing to read "Daniel Nelson", with a long horizontal flourish extending to the right.

Daniel Nelson
Staff Hydrologist
Idaho Department of Water Resources
Telephone (208) 287-4856
Fax (208) 287-6700 (attn: Dan Nelson)