

## MEMORANDUM

TO: Water Right File 97-7546

FROM: Daniel Nelson – Analyst 3

DATE: January 14, 2020

SUBJECT: Licensing Review of Water Right 97-7546

The field exam for this right was performed by Certified Water Right Examiner Eugene N.J. St. Godard of Water and Natural Resources Group. The field examiner recommended 0.04 cfs and 5.7 af of water from the Priest River to irrigate 2 acres.

### **Place of Use:**

The field report has a map that shows the acres irrigated as 1.95 acres, and the field report itself describes 2 acres being irrigated. This is a rounding issue, and shouldn't affect the licensing of this permit for 2 acres. The acres in each 40 acre tract will be adjusted to match the Department's rounding standards and to match the place of use. Mr. St. Godard did supply the shape files for place of use, but they didn't really match the diagram that he also supplied. I tweaked the shape file to show the various camper parking spots and the playground. After I did this using various years of imagery, I was able to confirm the 1.95 acres of irrigation.

### **Diversion Rate and Volume:**

The field examiner didn't provide a measurement for this field exam, but used the sprinkler design to come up with a measurement. Typically, we don't allow this type of estimation, but this is a very small system that couldn't be adequately measured other than performing sprinkler tests on the system. The attached theoretical calculations show the system is more than capable of handling the 0.04 cfs recommended by the field examiner, so there is no reason to reject the measurement estimate made by the field examiner. The volume was calculated correctly for this system, however, this is a surface water right from a natural channel.

### **Conditions:**

Conditions X15, X16, 227, and 004 should be carried forward to licensing. Condition R58 should be changed to condition R66. The remainder of the conditions on the permit will be removed at licensing.

# THEORETICAL HORSEPOWER EQUATION WORKSHEET (cjh 1/92)

Water Right No.: 97-7546  
 Reviewer: Dan Nelson  
 Date of Review: 1/14/2020

P/D No.:

PUMP HORSEPOWER  
 BOOSTER HORSEPOWER

PUMPING LEVEL

DISCHARGE PRESSURE

RATE OF FLOW (cfs)

Scenario 1
2
0
40
40
0.09
42

Scenario 2
2
0
40
50
0.08
36

Scenario 3
2
0
80
60
0.06
25

The above calculates the formula =

$$Q = \frac{\text{Efficiency) * hp}}{\text{ter} + 2.31*(\text{psi})+\text{friction}}$$

Assumptions: %70 efficiency.  
 No Friction

Examiners Notes:

The field examiner used the sprinkler set up to determine the flow rate of this system. Based on the sprinklers he estimated a flow rate of 18 gpm or 0.04 cfs. This seems a bit high for the standard sprinkler zone configurations, which usually set up sprinklers at a 12 gpm per zone standard. The field examiner also supplied the pump horsepower and the estimated lift of 2 hp lifting the water approximately 20 to 40 feet. Using a lift of 40 feet for a 2 hp pump with a pressure of 40 to 50 psi supplies significantly more water than the field examiner is recommending. See Scenario's #1 and #2 above. After looking at the contour maps, I determined the actual lift would be closer to 80 feet, and I increased the pressure against the pump due to the distance the water needed to travel. See Scenario #3. In Scenario #3 above, the 2 hp pump can provide more than the 18 gpm recommended by the field examiner. Therefore, I believe that he has underestimated the flow rather than over estimated the flow. I agree with the field examiner's recommendation.