

MEMORANDUM

Date: December 06, 2011
To: Water Right File 74-15047
From: cpalmer
Re: Licensing Review

SOURCE

The source was permitted as spring tributary to sinks. However, the field examiner commented that right 74-7214, 74-11994, and this permit all share the same PD. Right 74-7214 and 74-11994 both list the source as Cherry Spring tributary to the Lemhi River. The source will be clarified on the license for this right to be consistent with overlapping rights.

SYSTEM CAPACITY

The PD elevation is at 5360ft and the POU elevation is at 5250ft, a difference of 110ft. The pipeline appears to stretch for 2,480ft. I plugged the variables into the Manning's flow calculator and estimated the diameter pipe as 1.5; resulting possible diversion rate is 0.04 cfs. This estimate might be on the high side since I am unsure of the pipe size and it appears that the pipeline Ts from the source to the trough but I think that we can be confident that the system is capable of producing at least 0.02 cfs.

PD OVERLAPS

I believe that a combined limit condition applies that says rights 74-7214, 74-11994, and 74-15047 are limited to 0.06 cfs when combined. Since rights 74-7214 and 74-11994 do not have any overlapping conditions and a maximum possible diversion rate of 0.04 cfs was calculated; a limit that adds the diversion rate of the senior rights makes the most sense.

POU

The field examiner recommended the POU in the SESW and the SESE of Sec. 24 but there are a few problems with that recommendation. First, the trough that was recommended in the SESE is actually in the SWSE; it is obvious by the maps that the field examiner provided and the aerial imagery in GIS. Secondly, the trough that the field examiner found in the SESW of Sec. 24 is the SAME trough that is authorized under right 74-7214 and 74-11994. I know this because the applicants made the comments on their application for permit, 74-7214 is for a spring plus 1 trough-this new application is for an additional trough. The field examiner found two troughs on the system total, one under 74-7214 and 74-11994 and one under 74-15047.

NO AMENDMENT NECESSARY

Volume

$$469 \text{ cattle} \times 12 \text{ gpd} \times 365 \text{ days} = 6.3 \text{ af}$$

WD

This right is w/i WD 74

W+S

Permit pre-date W+S agreement

Manning's Equation Calculator for Flow Rate in a Circular Conduit Flowing Full

S = 0.0444 ft/ft
 n = 0.009 manning's coefficient
 d = 1.5 pipe diameter (inches)
 D = 0.13 pipe diameter (feet)
 r = 0.06 pipe radius (feet)
 A = 0.01 area (ft²)
 WP = 0.39 wetted perimeter (ft)
 R = 0.03 hydraulic radius (ft)

Q = 0.04 flow rate (CFS)

READ ME

Manning's Equation for velocity (v) in a circular conduit is equation (2) where the computation of the flow.

In equations (1) and (2), R is the hydraulic radius, which is equal to the area divided by the wetted perimeter, $R = A / WP$. R is often assumed to be equal to the pipe diameter divided by 4.

Because Manning's equation is used, the velocity reported in ft²/s, must be reported in ft/s by multiplying by a unitless constant.

Channel Slope

Slope Options

☐ Manual Entry
 ☒ Slope Calculator

Slope Calculator

Rise = 110 feet

Run = 2480 feet

Slope, S = 0.0444 ft/ft

Pipe Material, (n):

plastic (pvc, abs)

Pipe Diameter (inches)

1.5 inches

$$(1) \quad v = 1.49$$

$$(2) \quad Q = v \times A$$

$$(3) \quad Q = 1.49$$

