

# MEMO

## State of Idaho

### Department of Water Resources

322 E Front Street, P.O. Box 83720, Boise, Idaho 83720-0098

Phone: (208) 287-4800 Fax: (208) 287-6700

---

**Date:** 28 November 2011  
**To:** ESHMC  
**From:** Allan Wylie  
**cc:** Rick Raymondi, Sean Vincent  
**Subject:** HDR survey of spring elevations

---

HDR conducted a survey of spring elevations in cells 1041013 (Three Springs, Weatherby Spring, Hoagland Tunnel cell), 1042013 (Curren), 1043012 (National Fish Hatchery and part of Magic), and 1044012 (Thousand Sp and part of Magic). The results of their survey, in NAVD88, are posted at [\(http://www.idwr.idaho.gov/Browse/WaterInfo/ESPAM/monitoring\\_data/Springs/Current/Data/Elevations/HDR\\_GPS\\_Survey\\_11092011/\)](http://www.idwr.idaho.gov/Browse/WaterInfo/ESPAM/monitoring_data/Springs/Current>Data/Elevations/HDR_GPS_Survey_11092011/)

The ESHMC chose to use Covington and Weaver (USGS, 1990) for a source of spring elevations. However, since HDR surveyed these springs, I am recommending that the ESHMC update the elevations with the new information. In ESPAM2 the ESHMC chose to use two drains in any model cell containing more than one spring. One drain is assigned the elevation of the highest spring and the other drain is assigned the elevation of the lowest elevation spring. Table 1 contains the HDR survey results. I have added ESPAM2 Cell Integers to identify the model cell containing the spring. I then sorted the table by model cell and elevation to more easily identify the highest and lowest elevation spring in each model cell.

The drains in cell 1041013, the cell containing Three/Weatherby/Hoagland, are assigned elevations of 3,095 and 3,136 feet from Covington and Weaver. The HDR survey did not visit Spring Creek Spring which has the lowest elevation in cell 1041013, but did survey Three Springs and obtained an elevation of 3,144 at the highest spring. Therefore, I recommend changing the elevation of the highest drain from 3,136 to 3,144 feet.

Cell 1042013, the cell containing Curren Spring, has only one drain with an assigned elevation of 3138 feet from Covington and Weaver. The HDR survey did visit Curren Spring, but surveyed the "Tunnel Portal" which is not the low elevation of the spring. I visited Curren Spring and believe that significant water discharges from the below the tunnel. Therefore I recommend that the ESHMC continue using the 3,138-foot elevation.

The drains in cell 1043012, the cell containing the National Fish Hatchery and part of Magic Springs, are assigned elevations of 2,961 and 3,100 feet from Covington and

Weaver. The HDR survey visited 16 springs in this cell and obtained low and high elevations of 2,966 and 3,042 feet. I recommend replacing both Covington and Weaver elevations with the HDR survey elevations.

The drains in cell 1044012, the cell containing Thousand Springs and part of Magic Springs are assigned elevations of 2,951 and 3,075 feet from Covington and Weaver. The HDR survey visited the low elevation spring (Bridal Veil) and high elevation spring (Ten Springs) in the cell and obtained elevations of 2,970 and 3,092 ft. Note that Ten Springs is actually in cell 1045012, but since it obtains water from the same hydrogeologic feature as Thousand Springs and Minnie Miller Springs the ESHMC has chosen to model it as if it were in cell 1045012. I recommend replacing both Covington and Weaver elevations with the HDR survey elevations.

**Table 1. HDR survey elevations.**

Spring Name	Elevation (ft)	Model Cell
Jones-Three Spr.-Bottom of Zone	3,123	1041013
Jones-Weatherby Spr.-Portal	3,124	1041013
Jones-Hoagland Tunnel-Portal	3,127	1041013
Jones-Three Spr.-Middle of Zone	3,139	1041013
Jones-Three Spr.-Top of Zone	3,144	1041013
Rangen-Currant Tunnel-Portal	3,150	1042013
Magic Spr.-Unnamed Spr.-Below ABC	2,966	1043012
Magic Spr.-G Spr.	2,974	1043012
National Fish Hat.-Bickel Pond-End	2,977	1043012
National Fish Hat.-Bickel Pond- Outlet	2,978	1043012
Magic Spr.-I J Spr.-Pond Middle E	2,984	1043012
Magic Spr.-I J Spr.-Pond SE End	2,985	1043012
Magic Spr.-I J Spr.-Pond Middle W	2,985	1043012
Magic Spr.-I J Spr.-Pond NW End	2,985	1043012
Magic Spr.-Unnamed Spr.- Below G Spr.	2,994	1043012
National Fish Hat.- Spr. 17 - Aprox.	3,016	1043012
National Fish Hat.-Len Lewis- Pond	3,027	1043012
National Fish Hat.-Spr. 15	3,028	1043012
Magic Spr.-ABC Spr.	3,029	1043012
National Fish Hat.-Len Lewis	3,032	1043012
National Fish Hat.-Spr. 13 A	3,033	1043012
National Fish Hat.-Spr. 13B	3,042	1043012
Magic Spr.-Bridal Vail Pond-Zone	2,970	1044012
Idaho Power-1000 Spr.-At center outfall Spr.-Aprox. from pipeline	3,076	1044012
Blind Canyon Aqua Ranch-Ten Spr. Contact	3,088	1045012
Blind Canyon Aqua Ranch-Ten Spr.-Portal	3,092	1045012