Hydrogeologic Conditions in the Boise Front Geothermal Aquifer

Appendix H: Measuring Point Locations for Geothermal Monitoring Wells

NOTE: All measurements are based on the NGVD88 datum. To obtain elevations based on the NGVD29 datum, subtract 3.14 ft from the indicated value.

Christian Petrich

Idaho Water Resources Research Institute
Research Report IWRRI-2003-05
BGL#1

Geothermal ID: 1664
Ground Surface Elevation (ft): 2753.43
Survey Point Elevation (ft): 2754.61  Top of ball valve mounted vertically on well
Measuring Point Elevation (ft): 2755.23

Measurement Method: 30 psi pressure gauge

Comments: Measurement point is 0.62 ft above survey point (ball valve). Lip of Culvert rim is 4.25 feet above survey point. Transducer mount is 0.30 feet above measurement point. Ground surface elevation is approximately 1.8 feet below measuring point.
BGL#2

Geothermal ID: 1666
Ground Surface Elevation (ft): 2751.62  Chisel mark in slab 4 ft south of entrance door
Survey Point Elevation (ft): 2752.91  Tee fitting on southerly side of pump
Measuring Point Elevation (ft): 2752.91  Gauges

Measurement Method: 30 psi pressure gauge

Comments:
BGL#3

Geothermal ID: 1667
Ground Surface Elevation (ft): 2773.68 Chisel mark on concrete slab outside entrance
Survey Point Elevation (ft): 2772.31 Top of flange on pump
Measuring Point Elevation (ft): 2772.84

Measurement Method: steel tape or electric probe

Comments:

Take new photo

Survey point is at top of flange on pump. Ground surface assumed to be at chisel mark in concrete slab outside pumphouse door.

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BGL#4

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Geothermal ID:</td>
<td>1665</td>
<td>Aluminum cap in concrete pad at entrance</td>
</tr>
<tr>
<td>Ground Surface Elevation (ft):</td>
<td>2753.09</td>
<td>Pipe nipple on south side of pump</td>
</tr>
<tr>
<td>Survey Point Elevation (ft):</td>
<td>2753.17</td>
<td>Pipe nipple on south side of pump</td>
</tr>
<tr>
<td>Measuring Point Elevation (ft):</td>
<td>2753.17</td>
<td>Pipe nipple on south side of pump</td>
</tr>
</tbody>
</table>

Measurement Method: 30 psi gauges

Comments:
BLM

Geothermal ID: 1668
Ground Surface Elevation (ft): 2746.02
Survey Point Elevation (ft): 2748.36 top of well casing
Measuring Point Elevation (ft): 2749.69 shelf

Measurement Method: Manometer or sight tube

Comments: Shelf is 3.67 ft above ground surface. Casing is 2.34 ft above ground surface
BWSHD-East

Geothermal ID: 1652
Ground Surface Elevation (ft): 2767.88 pumphouse floor
Measuring Point Elevation (ft): 2768.96 1.08 ft above pumphouse floor

Measurement Method: steel tape or electric probe

Comments:
**BWSHD-West**

<table>
<thead>
<tr>
<th>Geothermal ID:</th>
<th>1653</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground Surface Elevation (ft):</td>
<td>2767.88</td>
</tr>
<tr>
<td>Measuring Point Elevation (ft):</td>
<td>2767.88</td>
</tr>
</tbody>
</table>

**Measurement Method:** Steel tape or electric probe

**Comments:**
## BWSHD#3

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geothermal ID</td>
<td>3322</td>
<td></td>
</tr>
<tr>
<td>Ground Surface Elevation (ft)</td>
<td>2789.63</td>
<td>Top-of-casing 2.75 feet above ground surface</td>
</tr>
<tr>
<td>Survey Point Elevation (ft)</td>
<td>2792.38</td>
<td>Top of the well casing</td>
</tr>
<tr>
<td>Measuring Point Elevation (ft)</td>
<td>2792.38</td>
<td>Top of the well casing</td>
</tr>
</tbody>
</table>

**Measurement Method:** Steel tape or electrical probe

**Comments:**

*Images showing a protective cover and a measuring point.*
Capitol Mall #1 (Injection Well)

<table>
<thead>
<tr>
<th>Geothermal ID:</th>
<th>1663</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground Surface Elevation (ft):</td>
<td>2721.87 Building floor</td>
</tr>
<tr>
<td>Bottom of sump elevation (ft):</td>
<td>2715.28</td>
</tr>
<tr>
<td>Measuring Point Elevation (ft):</td>
<td>2717.03 guage/transducer elevation</td>
</tr>
</tbody>
</table>

Measurement Method: 30 psi gauges

Comments:
**Capitol Mall #2 (Production)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geothermal ID:</td>
<td>1669</td>
</tr>
<tr>
<td>Ground Surface Elevation (ft):</td>
<td>2714.78</td>
</tr>
<tr>
<td>Pump house floor</td>
<td>Measuring Point Elevation (ft): 2716.46</td>
</tr>
<tr>
<td>Inside bottom 2.5&quot; ball valve:</td>
<td>2716.19</td>
</tr>
<tr>
<td>Inside bottom 1.25&quot; ball valve:</td>
<td>2717.78</td>
</tr>
<tr>
<td>Measuring Point Elevation (ft):</td>
<td>2717.71</td>
</tr>
<tr>
<td>Measuring tube height</td>
<td></td>
</tr>
<tr>
<td>Measurement Method: 30 psi pressure gauges</td>
<td></td>
</tr>
<tr>
<td>(if under pressure) or steel tape or electric</td>
<td></td>
</tr>
<tr>
<td>probe (if water level below measuring port)</td>
<td></td>
</tr>
</tbody>
</table>

**Comments:** Gauge height is 1.6 ft above floor
Boise City Injection Well

- **Geothermal ID:** 2670
- **Ground Surface Elevation (ft):** 2691.48 2688.34
- **Survey Point Elevation (ft):** 2691.48 2688.34
- **Measuring Point Elevation (ft):** 2695.98 2692.84

Measurement Method: Pressure transducer reading

Comments:

Pressure transducer located 4.5 feet above wellhouse floor

Pressure transducer (measuring point) is 4.5 ft above the concrete slab in Stor-Mor shed.
Edwards Greenhouse

Geothermal ID: 1704
Ground Surface Elevation (ft): 2676.23 square peg on black pipe elbow on the well
Survey Point Elevation (ft): 2676.23
Measuring Point Elevation (ft):

Measurement Method: 30 psi pressure gauge

Comments:
Flora (Tiegs)

Geothermal ID: 1696
Ground Surface Elevation (ft): 2692.5
Survey Point Elevation (ft): 2692.52
Measuring Point Elevation (ft): 2692.77

Top of a brass reducer pipe fitting on the well

Measurement Method: 30 psi pressure gauge

Comments: The survey point is 1.07 ft below the top of vault. The top of vault is between 0.66 ft and 1.06 ft above the surrounding sidewalk. The survey point is 0.25 feet below the measurement point.
Flora Office

Geothermal ID: 1697
Ground Surface Elevation (ft): 2690.73
Survey Point Elevation (ft): 2693.88  Top of large brass coupling
Measuring Point Elevation (ft): 2693.97

Measurement Method: 30 psi pressure gauges

Comments:
Flora Shed

Geothermal ID: 1698
Ground Surface Elevation (ft): 2690.98
Survey Point Elevation (ft): 2690.68  Chiseled "X" on steel plate attached to casing
Measuring Point Elevation (ft): 2694.36

Measurement Method: 30 psi pressure gauges

Comments:

Installed gauges
Measurement elevation
Survey Point
Harris East

<table>
<thead>
<tr>
<th>Geothermal ID:</th>
<th>229</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground Surface Elevation (ft):</td>
<td>2883.51</td>
</tr>
<tr>
<td>Survey Point Elevation (ft):</td>
<td>2884.51</td>
</tr>
<tr>
<td>Measuring Point Elevation (ft):</td>
<td>2885.01</td>
</tr>
</tbody>
</table>

Measurement Method: steel tape or electric probe

Comments:

[Images of measuring points and pump house floor]
Harris West

Geothermal ID: 230
Ground Surface Elevation (ft): 2882.99
Survey Point Elevation (ft): 2884.49 Top of casing
Measuring Point Elevation (ft): 2884.49 Top of casing

Measurement Method: steel tape or electric probe

Comments:
Kanta

Geothermal ID: 1646
Ground Surface Elevation (ft): 2785.25
Survey Point Elevation (ft): 2786.42  Top of well casing
Measuring Point Elevation (ft): 2786.42  Top of well casing

Measurement Method: steel tape or electric probe

Comments: Top -of-casing is 14" above ground surface.
Old Pen Well (Old Pen #2)

Geothermal ID: 1645
Ground Surface Elevation (ft): 2783.33
Survey Point Elevation (ft): 2784.63 Top of flange on east side of pump
Measuring Point Elevation (ft): 2784.08

Measurement Method: steel tape or electric probe

Comments:
Survey point is 1.3 ft above ground surface (defined by concrete slab under pump); measuring point is 0.75 ft above ground surface.
Quail Hollow Lower

Geothermal ID: 1710
Ground Surface Elevation (ft): 2776.46
Survey Point Elevation (ft): 2776.46
Measuring Point Elevation (ft): 2776.46

Chiseled "X" on casing in shack

Measurement Method: steel tape or electric probe

Comments:
Quail Hollow Upper

Geothermal ID: 1693
Ground Surface Elevation (ft): 2801.89 Chiseled "X" on top of well casing
Survey Point Elevation (ft): 2801.89 Chiseled "X" on top of well casing
Measuring Point Elevation (ft):

Measurement Method: steel tape or electric probe

Comments:
Terteling Motorcycle

Geothermal ID: 296
Ground Surface Elevation (ft): 3025.14
Survey Point Elevation (ft): 3026.07 Chiseled "X" on steel cap on top of casing
Measuring Point Elevation (ft): 3026.09

Measurement Method: steel tape or electric probe

Comments:

![Image of geothermal well setup]

Measuring Point
Cold-water well
Geothermal well
Survey point
Measuring Point
Terteling Pool

Geothermal ID: 1714

Ground Surface Elevation (ft): 2904.62
Survey Point Elevation (ft): 2904.27 On top of pump flange in shed by pool
Measuring Point Elevation (ft): 2904.37

Measurement Method: steel tape or electric probe

Comments:
Terteling Windsock

Geothermal ID: 1712
Ground Surface Elevation (ft): 2871.32 "X" on concrete floor by pump
Survey Point Elevation (ft): 2871.32 "X" on concrete floor by pump
Measuring Point Elevation (ft): 2871.32

Measurement Method: steel tape or electric probe

Comments: New bracket has been installed under pump, but measuring elevations remains that of the concrete pump base.
VA Injection

Geothermal ID: 1675
Ground Surface Elevation (ft): 2719.95 paint spot on top of ball valve
Survey Point Elevation (ft): 2719.95
Measuring Point Elevation (ft):

Measurement Method: Installed pressure gauge

Comments:
VA Test Injection

Geothermal ID: 1674
Ground Surface Elevation (ft): 2721.37
Survey Point Elevation (ft): 2722.87   Top of ball valve
Measuring Point Elevation (ft): 2723.57

Measurement Method: 30 psi pressure gauge

Comments:

With temporary gauges
Without gauges
VA Production

Geothermal ID: 1671

Ground Surface Elevation (ft): 2767.46  Pump house floor
Survey Point Elevation (ft): 2763.91  Top of measuring port
Measuring Point Elevation (ft): 2764.91  Top of measuring port

Measurement Method: steel tape or electric probe (or 15 psi pressure gauge if artesian)

Comments: