Hydro Logic, Inc.

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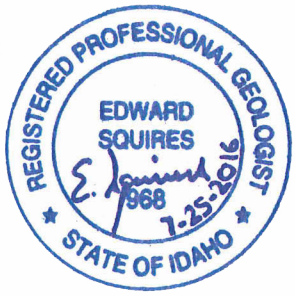
July 25, 2016



Mr. Kevin Ryan, P.E.
Staff Engineer
Department of Environmental Quality
Boise Regional Office
1445 North Orchard Street
Boise, Idaho 83706-2259

Subject: Public Drinking Water System Well Completion Report City of Eagle Spring Valley Well #1

Dear Kevin:

Overview

On behalf of my client M3 Eagle, LLC, in agreement with the City of Eagle, Idaho, and under cover of this letter, I transmit the "Record Drawing" submittals of the as-built details of well construction, hydraulic testing results, ground water chemistry/water-quality analyses (New Source Monitoring), and the Idaho Department of Water Resources (IDWR) Well Driller's Report for the newly completed City of Eagle Spring Valley Municipal Supply Well #1 (SV Well #1). The Idaho Department of Environmental Quality (IDEQ) may refer to this document as the Final Well Completion Report for the SV Well #1 (Figures 1 and 2). Under agreements between the City of Eagle and M3 Eagle, LLC, the City of Eagle will become the ultimate owner and operator of this Public Drinking Water System well facility.

This project has been completed exactly as planned, designed, and submitted to IDEQ by Hydro Logic, Inc. (HLI), and approved by IDEQ. With this submittal, all remaining conditions of IDEQ's well site and well construction approvals are deemed to be met.

Included within this transmittal are the following documents:

1) As-built details of final well construction with respect to the drilled geologic section (Figure 3).

2) Tabulated constant-discharge hydraulic testing results (Table 1) and plots (Figures 4, 6, and 9).

3) Laboratory ground water chemistry analyses for the New Source Monitoring requirements for Public Drinking Water System wells (Table 2 and Appendix A).

4) State of Idaho Well Driller's Report by Post Drilling Inc. (Appendix B).

5) Conditional IDEQ well site/well construction approval letters dated January 24 and 25, 2013 and October 22, 2015 (Appendix C).

6) Ground Water Not Under the Direct Influence of Surface Water Confirmation (see below).

7) This cover letter.

Hydrogeologic Evaluation of Ground Water under the Direct Influence of Surface Water

The purpose of this section of the report is to inform IDEQ that HLI supports the Department's original classification of the SV Well #1 ground water as "***Ground Water***". We have looked very hard at this new City of Eagle well with respect to GWUDI because it is adjacent to the Farmer's Union Ditch (Figures 1 and 2). In the end, though, and as a result of M3 Eagle's insistence on good on-site hydrogeological supervision, inspection services, and research, we agree that the SV Well #1is ***not*** under the direct influence of surface water because of the following multiple evidences to the contrary: **1)** observed head differences (confining conditions) in overlying aquifer units as shown by the nearby multi-depth monitoring well (Figure 5), **2)** ground water geochemistry differences from surface water chemistry of the Boise River (Table 1), **3)** the observed confined responses to hydraulic testing (Figures 4 and 6), **4)** analysis of the stratigraphic layering of the drilled geologic section including over 250 feet of low-permeability sticky clay sediments between the well completion interval and land surface (Figure 3), **5)** the confining artesian pressure within the completion aquifer, and **6)** the 364-foot long full-depth seal construction of the supply well (Figure 3). Each of these circumstances is explained separately below:

The Presence of Low-Permeability Strata (Aquitards) Overlying the Completion Aquifer: Between land surface and the uppermost completion interval of the new SV Well #1, we document a cumulative thickness of approximately 250 feet of low-permeability sticky clay sediments (Figures 3 and 5). Based on the thicknesses of these aquitards, with single units reaching 140 feet in thickness, and the geologic depositional processes responsible for this hydrogeologic setting, the confining units should be expected to extend long distances (many miles) laterally from the well site in all directions thus precluding a *direct* hydraulic connection of the SV Well #1 completion zone to surface water. Downward vertical permeability and the cross-bed percolation of surface waters into the aquifer system are controlled by the lowest permeability stratum no matter its thickness under prevailing gradients. In terms of a direct hydraulic interconnection, we believe there exists significant physical hydraulic impedance between the screen completion zone of SV Well #1 and any surface water bodies to preclude a *direct* hydraulic connection.

Ground Water Pressures and Confining Conditions:
Other than the 13-foot deep air-rotary "starter pipe" bore for the M3 Eagle Test Well #1 (Figure), which was dry and located adjacent to the flooded Farmer's Union Ditch, we do not know the depth of the uppermost ground water in this geologic setting. This is because we used the direct mud-rotary drilling method for the test well and the new municipal well where the boreholes were filled with weighted drilling mud until the wells were completely constructed and developed. However, the nearby M3 Eagle Test Well #1 was constructed with 5 separate screened intervals completed to various depths of the aquifer. These depth zones indicate the differing piezometric head (confining pressures) with depth (Figure 5) at this location.

The measured response in the uppermost Zone 5 of the M3 Eagle #1 Test Well provides some of the most compelling data for the hydraulic disconnect between the completion aquifer of the SV Well #1 and surface water sources. The Zone 5 screen completion interval is 97-to-137 feet below ground level (bgl) (Figure 5). The water level trend in this tube well was *rising* throughout the SV Well #1 hydraulic testing but there was also an immediate *rise* in water level of about 0.05 foot when the SV Well #1 test was started and an equivalent, and also immediate, water level decline of the same amount occurring at cessation of pumping (Figure 6) This commonly observed phenomenon (reverse water level fluctuation), which has long been referred to as "Noordbergum Effect" (Verruijt, 1969), demonstrates the presence of a confining layer (hydraulic barrier to ground water flow) that exists between the pumped aquifer and the monitored overlying sub-aquifer unit. In other words, if such a disconnection can be shown between the pumped aquifer and an overlying aquifer, there certainly cannot be a direct interconnection to free-flowing water at land surface or shallow ground water under unconfined (water table) conditions.

Ground Water/Surface Water Geochemistry Differences:
The geochemistry of the ground water produced from the new SV Well #1 is expectedly very similar to the same aquifer depth intervals in the M3 Eagle Test Well #1 and, as pointed out in HLI's initial submittals to IDEQ,

markedly different from the geochemistry of surface waters in the Boise Valley (Table 1) where most measured concentrations of dissolved constituents differ by a considerable amount. For purposes of this comparison, we use average Boise River geochemistry analyses from USGS (Glenwood Bridge) to compare to ground water samples we obtained from the SV Well #1 after 29-hours of constant-rate discharge pumping at 2,700 gallons per minute (gpm) during the period February 23-to-26, 2016 (Figure 7). Although the Farmer's Union Ditch was empty at the beginning time of this testing, the aquifer test ground water was discharged into the Ditch and nearby irrigation pond. Owing to the large rate and volume of pumped water, both the ditch and pond were filled during the test (Figure 7) and we were glad to have several staff engineers from IDEQ on site during the pumping test.

For the purposes of this evaluation, specific conductance, alone, is definitive because it has far fewer variables that can have an effect on the comparison. The dissolved concentrations of this parameter differ appreciably (Table 3). This is significant because the higher conductivity of the ground water is caused by increased dissolved solids content from the dissolution of the host rocks (residence time in the aquifer matrix). The dilution rates in the granitic sediments of the Idaho Batholith are extremely low such that these measured concentrations indicate a relatively long residence time in terms of distance and time (to be able to dissolve this level of solids); this is *not* a near-well phenomenon.

Full Depth Annular Well Seal:

Hydro Logic, Inc. hydrogeologists were on site for all aspects of the drilling, construction and sealing of the SV Well #1. In other words, we sampled the drilling, conducted the caliper survey of the uncased well bore (geophysical log), and measured and documented the depths/lengths of the installed casings and bores, and the volumes of pumped grout materials (with tagged placements) first hand. We are confident that the naturally occurring stratigraphic layering of the geologic section that separates the well's completion interval from surface water sources has been maintained in the details of well construction. In other words, the full depth surface seal installed in the supply well overbore has ensured that the existing natural low-permeability impedance to vertical ground water movement has remained intact (see Figure 3).

The 17.1-inch-outside diameter surface/pump-chamber casing has been sealed from 364 feet bgl to land surface with cement/bentonite mix grout, straight cement grout, and solid chipped bentonite from nationally certified suppliers (Figure 3). Centralizing staves were used every 20 feet to center the 17.1-inch pump chamber PVC casing within the 23-inch-diameter well bore and 24-inch diameter steel surface casing, resulting in a uniform, 3-inch (minimum) annular seal surrounding the entire length of the PVC casing. In short, the well was thoroughly sealed from land surface to the top of the completion aquifer.

Hydraulic Testing and Analysis:

The SV Well #1 has a relatively high calculated specific capacity of 19 gpm per foot of drawdown (gpm/ft) after 80-hours of high volume pumping at 2,700 gpm. Similarly, the aquifer of completion has a mid-range (for the Treasure Valley area) transmissivity of 47,520 gpd/ft (Figure 4). This plot shows the pumping water level versus the logarithm of time in the SV Well #1 during the 80-hour constant-rate discharge pumping test. The pumping water level draws down according to predictable exponential relationships of accepted hydraulic theory for confined aquifers. In other words, the aquifer pressure, as evidenced by the drawdown in response to pumping SV Well #1, does not cease to drawdown as it would if a constant head hydraulic boundary (surface water source) were to be reached by the expanding cone of depression even though the cone of depression likely extended for miles around the well after the onset of pumping. Indeed, within the pumping well, the discharge of 2,700 gpm for 80-continuous hours changed the water level by 141 feet (93 feet of which occurred almost instantaneously as frictional well loss) without deviating off of the straight line semi-log rate of drawdown. The hydraulic testing data suggests a hydraulic disconnect exists between the completion interval of the SV Well #1 and surface water bodies.

GWUDI Summary:
Individually, each measured/observed parameter explained above strongly suggests that there is *not* a direct hydraulic interconnection between the ground water aquifer drawn on by the newly completed SV Well #1 and surface water bodies. All of this information, together, tells us that there is *not* a direct connection between surface water sources and the SV Well #1 ground water anywhere close to the well. Instead, all indications are that the ground water produced from SV Well #1 is recharged far (many miles) up-gradient in the ground water flow path. Therefore, HLI supports IDEQ's initial recommendation of a designation of "***Ground Water***" for the SV Well #1 (Appendix C).

Well Head Transition:

Owing to the PVC composition of the primary well casing, it is necessary to provide physical and ultraviolet protection at the well head. Furthermore, the current plan is to equip this well facility with a submersible pumping plant with the supply well located outside the planned pump control house to facilitate future maintenance on the well and pumping plant. To accommodate these future designs, a municipal pit-less unit would eventually be installed. To that end, HLI designed and constructed a PVC/steel well casing transition (Figure 8) that protects the wellhead now and which allows for either a line-shaft turbine or submersible turbine pumping plant application when the final distribution system designs are settled upon. All annular well seals have been continued into and through this design feature to land surface (Figure 8).

Sustainable Productive Yield of the SV Well #1:

The specific capacity of 19 gpm/ft, aquifer transmissivity of 47,500 gpd/ft, and the available drawdown within the SV Well #1 combine to result in a large capacity water well with a calculated short-term (90-days of continuous pumping) sustainable productive yield of around 4,000 gpm[1] with sufficient pump intake submergence and water level in the well above the screens. The consistent exponential rate of pumping water level drawdown shows that there are no nearby negative sub-surface hydraulic barriers to ground water flow toward the well (Figure 4). From the relatively low projected drawdown per log cycle (Δs), we show that after a year of continuous pumping at 2,700 gpm, over 60 feet of available drawdown would remain in the well.

The test pump intake for the 80-hour hydraulic test of this well was set at a depth of ~265-feet bgl.

Water Level Recovery from Pumping:

According to generally accepted hydraulic theory, within an ideal aquifer under ideal conditions (Theis Assumptions met), the water level in a pumped well would "recover" to pre-test levels after the same amount of time that the well was pumped; in this case, 80 hours. HLI's continuous water level monitoring in the depth Zone 3 of the M3 Eagle Test Well #1 shows that the recovering water level from pumping the SV Well #1 returned to within 4 feet of the pre-test non-pumping water level in the tube well after 80-hours of recovery prior to HLI's stepped-rate discharge test of the supply well (Figure 9, Table 2). The water level did fully recover to pre-test levels just before the regional ground water level trend reversed to become a downward

[1] As a practical matter, the SV Well #1 will likely not be pumped at such a high rate or such a prolonged non-interrupted period; but it certainly could be. Frictional well losses would also play a role in the ultimate maximum pumping rate and draw down. Flow velocities would be higher than typical due to the somewhat restrictive casing diameter and associated column pipe.

trend.[2] The four-foot short in recovery is typical for most wells in the Treasure Valley that rarely fully recover from pumping within the same time as the pump-down period and this occurrence is not concerning. Indeed, we consider the water level recovery in the SV Well #1 to be robust and assuring with respect to the future use and operation of this well.

Well Head Vulnerability to Flooding:

The SV Well #1 is currently located in the floodplain (FEMA Zone A) of Big Gulch Creek (Figure 10). The development plan is to raise the grade such that the nearby raised Farmers Union Ditch will be below grade; a raise of approximately nine feet. M3 Eagle, LLC has a coincident Conditional Letter of Map Revision (CLOMR) submittal before FEMA to channelize the Flood Plain in this area (Figure 11). This submittal has been reviewed and approved by FEMA. An approved CLOMR application serves as evidence to the City that FEMA is in agreement with the applicant's flood plain modifications. Upon completion of the proposed construction, M3 Eagle, LLC will submit a Letter of Map Revision or LOMR. An approved LOMR will result in a change in the FEMA mapping. Once completed, the well will no longer be contained within a mapped flood way.[3]

New Source Water Quality Monitoring:

All measured water quality and water chemistry results meet USEPA and IDEQ requirements for Public Drinking Water Systems. The well was rigorously checked for sand-production during well development and hydraulic testing using a *Rossum*® sand sampling unit and found to produce clear, sand-free ground water. The certified laboratory analytical results from the SV Well #1 ground water are included herein as Appendix A.

A digital copy of this entire submittal is included on the attached compact disc. Please call me on my direct line at 631-6781 with any questions you may have concerning this evaluation and submittal. On behalf of HLI, M3 Eagle, LLC, and the City of Eagle, we have appreciated IDEQ's able and timely assistance with this project; thank you.

Respectfully,

Ed Squires, RPG.

c: Bill Brownlee, Managing Partner, M3 Eagle, LLC
Ken Acuff, Eagle Water Department, Superintendent
Richard Lee, IDEQ – GWUDI digital courtesy copy
Brandon Lowder, IDEQ – New Source Monitoring –digital copy
Scott Wonders, J-U-B- Engineers, Inc.

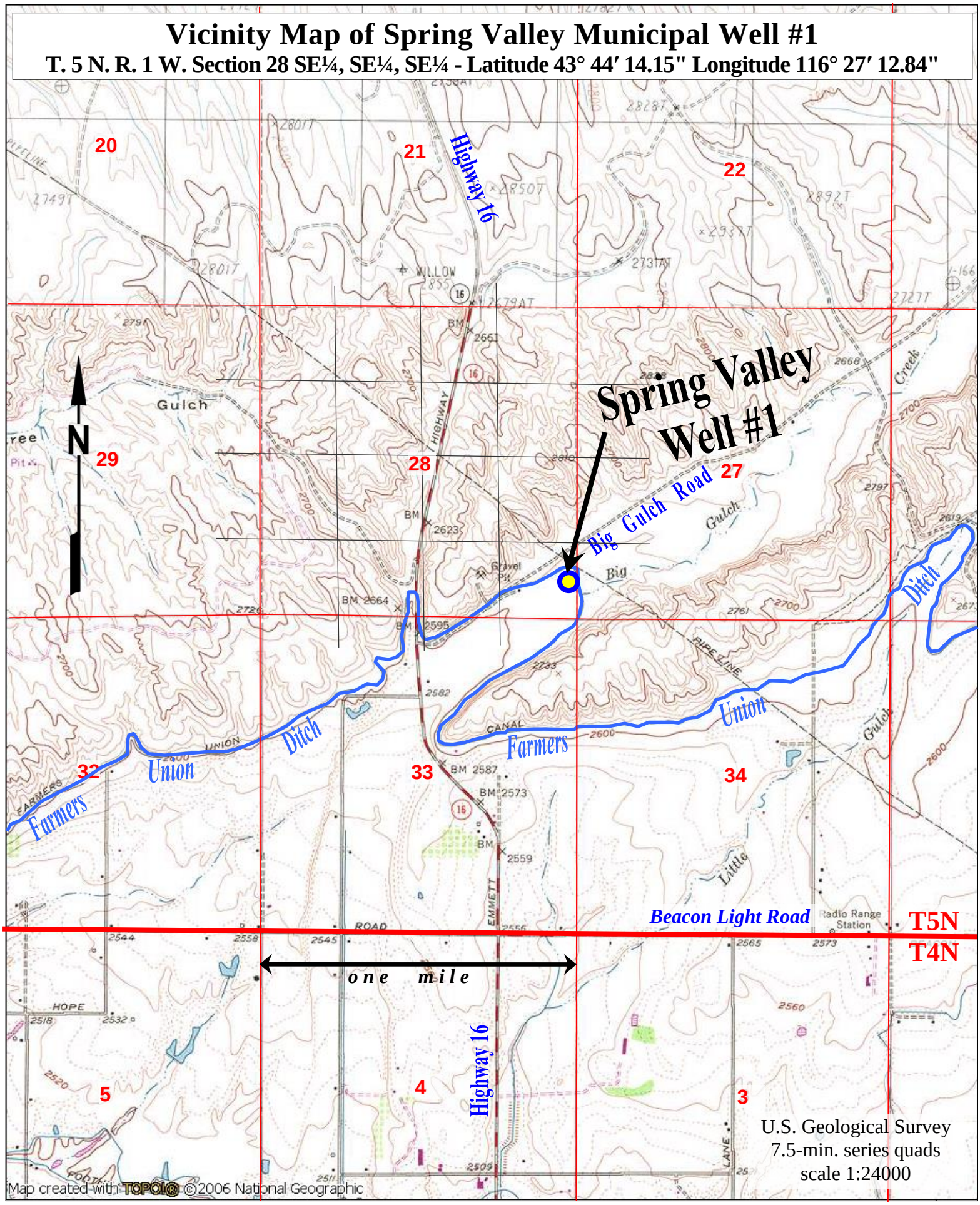
[2] We had planned this aquifer test for the most stable period of water levels in the regional Pierce Gulch Sand Aquifer based on ten years of measurements.

[3] As a practical matter, and as a result of the gulch geomorphology (broad flat bottom), Big Gulch Creek has not had overland flow observed in over twenty years. Even so, the current well drilling pad is raised about three feet above the floodplain and we have extended the well casing another two feet above the top of the pad (Figure 8) until such time as the surrounding area grade is raised as planned.

FIGURES

Vicinity Map of Spring Valley Municipal Well #1

T. 5 N. R. 1 W. Section 28 SE¼, SE¼, SE¼ - Latitude 43° 44′ 14.15" Longitude 116° 27′ 12.84"



Hydro Logic, Inc.
Boise, Idaho

Figure 1.

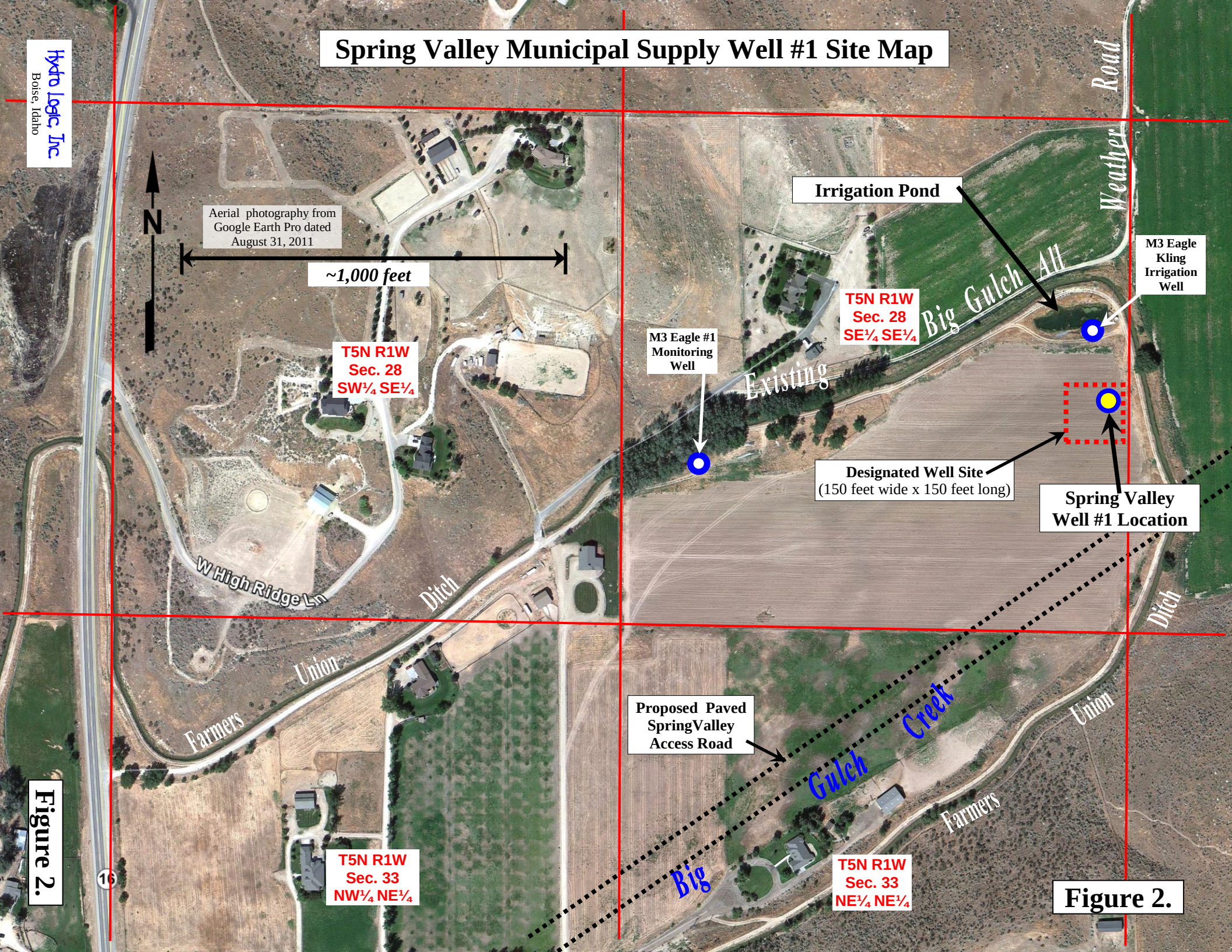

Spring Valley Municipal Supply Well #1 Site Map
Hydro Logic, Inc
Boise, Idaho
N
Aerial photography from Google Earth Pro dated August 31, 2011
~1,000 feet
Irrigation Pond
M3 Eagle Kling Irrigation Well
T5N R1W Sec. 28 SE¼ SE¼
Big Gulch Alt
Weather Road
M3 Eagle #1 Monitoring Well
Existing
T5N R1W Sec. 28 SW¼ SE¼
Designated Well Site
(150 feet wide x 150 feet long)
Spring Valley Well #1 Location
W High Ridge Ln
Ditch
Union
Farmers
Proposed Paved SpringValley Access Road
Gulch
Creek
Big
T5N R1W Sec. 33 NW¼ NE¼
T5N R1W Sec. 33 NE¼ NE¼
16
Figure 2.

Figure 2.

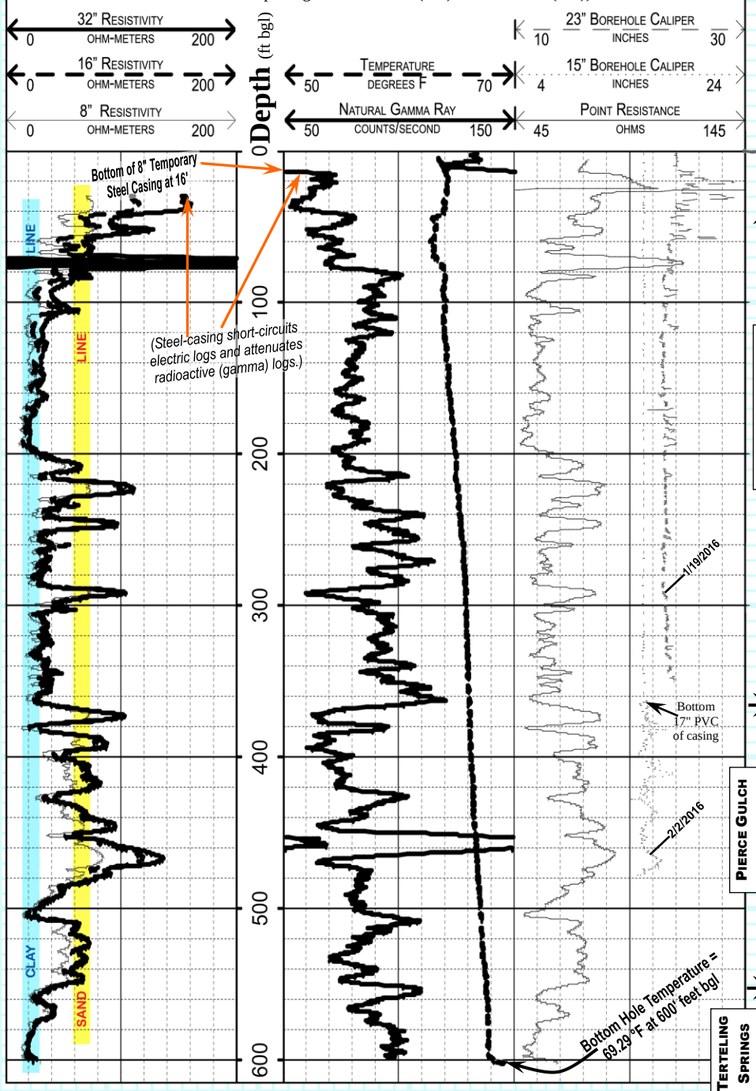
- Project administration by Bill Brownlee and Tom Warley, M3 Eagle LLC, Eagle, ID.
- Well design, hydraulic testing design, final review of diagram, and project management by Ed Squires, Hydro Logic, Inc., R.P.G.
- On site inspection, documentation, water level measurement, and water quality sampling by Kurt Newbry and Loren Pearson of Hydro Logic, Inc., Boise, ID.
- Auger drilling, direct mud-rotary drilling, well construction, and well development by George Post and Greg Mitchell of Post Drilling Inc., Weiser, ID.
- Test pump installation, discharge line setup and pump operation by Layne of Idaho, Inc., Nampa, ID.
- After pumping 29-hours at 2,700 gallons/minute on February 24th, 2016 (constant-rate discharge test) a complete municipal well suite of water samples were acquired by Hydro Logic, Inc. and shipped to Energy Laboratories in Casper, Wyoming for analysis. Analytical Laboratories in Boise, Idaho was used for four analyses (see below).

City of Eagle - Spring Valley Municipal Supply Well #1

T. 5 N. R. 1 W. Section 28, SE¼, SE¼, SE¼
Latitude 43º 44′ 14.15" Longitude 116º 27′ 12.84"
Well construction completed March 2, 2016.

Borehole Geophysical Logs

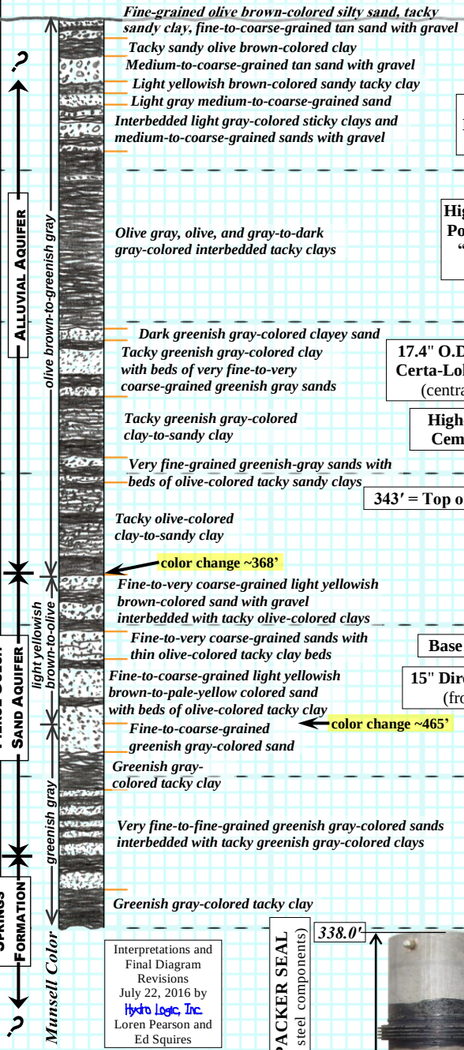
(from 8" test/pilot-bore on 11-29-2012, except supply well borehole caliper logs on 1-19-2016 (23") and 2-2-2016 (15"))



Calibrated borehole geophysics conducted by K. Newbry of Hydro Logic, Inc., on November 29th, 2012 in the 8-inch diameter, mud-filled, direct mud-rotary Spring Valley Well #1 pilot bore, to 600 feet below ground, immediately after removal of the drill steel. *The caliper logs are the final caliper logs of the upper 23-inch bore on January 19th, 2016 and the lower 15-inch bore on February 2nd, 2016.* Borehole geophysical logs interpreted by E. Squires and L. Pearson of Hydro Logic, Inc.

Lithology

Hydro Logic, Inc. lithologic log is interpreted and drawn from geophysical logs and analysis of auger/ direct mud-rotary drill cuttings, sampled by the on-site geologist (K. Newbry) during drilling of Spring Valley Municipal Supply Well #1 test/pilot-bore.

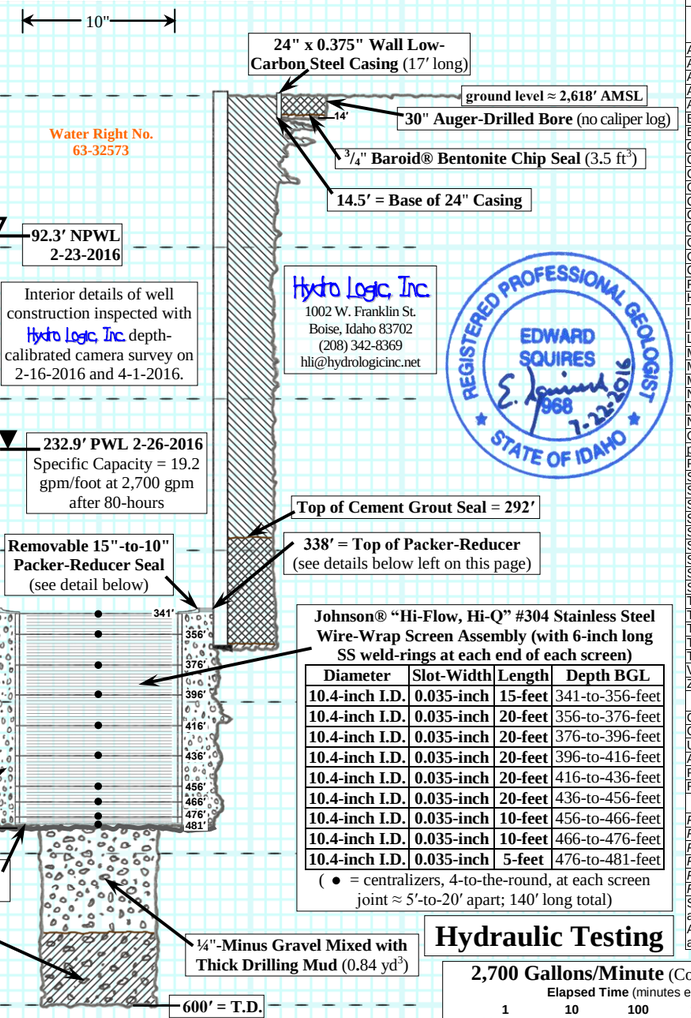


Interpretations and Final Diagram Revisions July 22, 2016 by Hydro Logic, Inc. Loren Pearson and Ed Squires

As-Built Well Construction

(horizontal scale 0.1"=1" and vertical scale 1"=100')
all measurements to ground level

Hydro Logic, Inc.



Johnson® "Hi-Flow, Hi-Q" #304 Stainless Steel Wire-Wrap Screen Assembly (with 6-inch long SS weld-rings at each end of each screen)

Diameter	Slot-Width	Length	Depth BGL
10.4-inch I.D.	0.035-inch	15-feet	341-to-356-feet
10.4-inch I.D.	0.035-inch	20-feet	356-to-376-feet
10.4-inch I.D.	0.035-inch	20-feet	376-to-396-feet
10.4-inch I.D.	0.035-inch	20-feet	396-to-416-feet
10.4-inch I.D.	0.035-inch	20-feet	416-to-436-feet
10.4-inch I.D.	0.035-inch	20-feet	436-to-456-feet
10.4-inch I.D.	0.035-inch	10-feet	456-to-466-feet
10.4-inch I.D.	0.035-inch	10-feet	466-to-476-feet
10.4-inch I.D.	0.035-inch	5-feet	476-to-481-feet

(● = centralizers, 4-to-the-round, at each screen joint ≈ 5′-to-20′ apart; 140′ long total)

Hydro Logic, Inc.
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Boise, Idaho 83702
(208) 342-8369
hli@hydrologicinc.net

REGISTERED PROFESSIONAL GEOLOGIST — EDWARD SQUIRES — 968 — 7-22-2016 — STATE OF IDAHO

Geochemistry

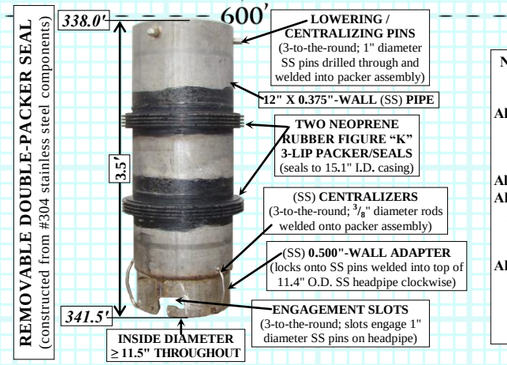
(sampled after 29-hours of pumping)

Analyte *(in mg/L unless noted)*	Result *(364-481 ft bgl)*
Alkalinity	120
Aluminum	<0.1
Ammonia (as N)	0.15
Antimony	<0.001
Arsenic	0.004
Barium	<0.1
Beryllium	<0.001
Cadmium	<0.001
Calcium (as Ca)	30
Chloride	3.52
Chlorine Demand (instantaneous)	1.17-1.31
Chromium	<0.05
Color (color units)	<5.0
Conductivity (µS)	292
Copper	<0.01
Corrosivity (Langlier Index)	-0.41
Cyanide (total)	<0.005
Fluoride	0.591
Hardness	115
Iron *(total)*	0.06
Iron *(dissolved)*	0.06
Lead	<0.001
Magnesium	6
Manganese *(dissolved)*	0.02
Mercury	<0.0001
Nickel	<0.05
Nitrate (NO_3 as N)	0.2
Nitrite (NO_2 as N)	<0.1
Orthophosphate	<0.2
pH *(S.U.)*	7.62
Potassium	3
Selenium	<0.001
Silica	35
Silver	<0.01
SOC's	none detected
Sodium	23
Sulfate	20.1
Sulfide	<1
Surfactants	<0.01
Suspended Solids	<10
Thallium	<0.0004
Total Coliform	absent
Total Dissolved Solids	184
Total Kjeldahl Nitrogen	<0.5
Total Organic Carbon	<0.5
VOC's	none detected
Zinc	<0.01
Radiology *(in pCi/L unless noted)*	
Gross Alpha	4.6 ± 1.5
Gross Beta	2.6 ± 1.6
Uranium [pCi/L (µg/L)]	1.3 (2.0)
Adjusted Gross Alpha	3.3
Radium 226	0.5 ± 0.2
Radium 228	1.9 ± 1.0
Field Measured (by Hydro Logic, Inc.) **Parameters**	
Field Conductivity (µS)	*300.7*
Field Dissolved Oxygen	*2.03*
Field Odor (describe)	*slight H_2S*
Field O.R.P. (mV)	*5.5*
Field pH (S.U.)	*7.27*
Field Temperature (ºF)	*65.6*

Sampled February 24, 2016 by Hydro Logic, Inc. after pumping at 2,700 gpm for 29-hours. Analyses by Energy Laboratories, Inc., Casper, WY and by Analytical Laboratories, Inc., Boise, ID.

Well Development

The well development program designed by Hydro Logic, Inc., consisted of evacuating all of the drilling mud by submersible pumping from the top of the well until the water was mostly clear. The screened-interval was then pumped from the water-table down to the bottom of the screen assembly using an isolation-pumping assembly (with a 3-foot spread between packer-seals), to clear remaining sediment/mud from the well and screens. For 9-hours the aquifer/screen section of the well was isolation-pumped at 300 gallons/minute with a swabbing-and-surging action until all intervals were free of mud and sand. Following the initial isolation-pumping a 300-to-500 PSI water-jet (with mud-dispersant additive) was employed to clean any remaining drilling mud and/or formation clays from the screens, sand filter and borehole wall. "Baroid" brand AQUA-CLEAR® PFD, a mud-dispersing agent, mixed at ratio of 1-gallon Aquaclear to 500-gallons of water (the factory recommended ratio), was jetted into/through the screen assembly from the bottom-up at a rate of 1-minute-per-foot and several revolutions-per-minute and then allowed to stand for 45-hours. Following high-pressure jetting, the well was again isolation pumped from the top-down, for 6-hours until all intervals of the pumped water were clear and sand free.



Note: All grout seals were pumped from the bottom-up under pressure using a tremie pipe and tagged into place with an incremented sounding line by the on-site geologist (Kurt Newbry, HLI).
All Portland cement / "Wyo-Ben" brand cement-bentonite grout batches contained at least 42% solids (by weight). Cement-bentonite grouts were utilized to help protect the integrity of the well construction by lessening settlement and to lower the heat of hydration in caved areas.
All Portland cement grout batches contained at least 65% solids (by weight).
All "Birdseed" brand graded sand filters and "Baroid" brand bentonite chip seals were poured into place through a mud-filled bore and tagged into place with an incremented sounding line by the on-site geologist (Kurt Newbry, HLI).
All seal and filter pack material volumes were checked against volumetric calculations from the caliper logs of the boreholes and pipe sizes. The grout seal volume for the 30" bore used 114% more material and the 23" bore used 28% less material than was calculated. The sand filter volume for the 15" bore was 3% more material than was calculated.

Hydraulic Testing

2,700 Gallons/Minute (Constant-Rate Discharge Testing)

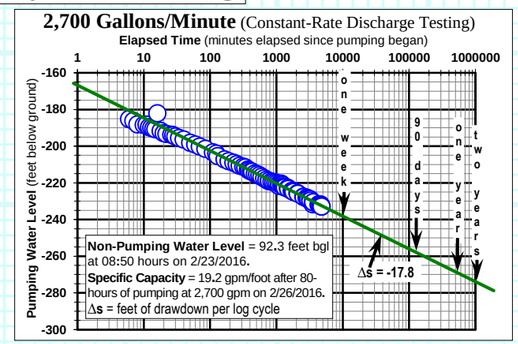


Figure 3.

80-Hour Constant-Rate Discharge Test of Spring Valley Municipal Well #1 at 2,700 Gallons/Minute

Test Conducted February 23rd, 2016 through February 26th, 2016

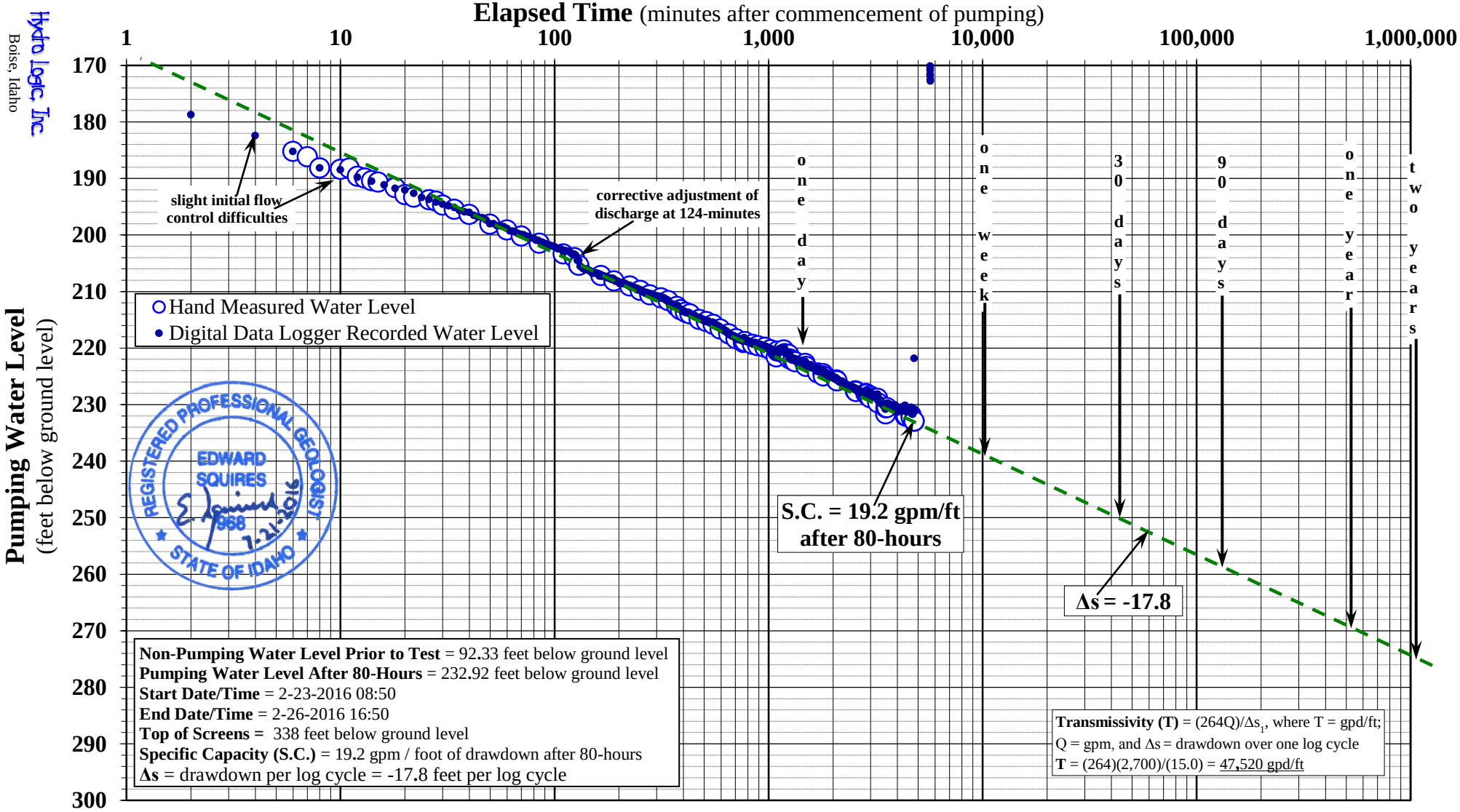


Figure 4. - Preliminary plot of pumping water level versus the logarithm of time for the initial hydraulic testing of the newly completed Spring Valley Well #1. The semi-log hydrograph shows predictable drawdown response to constant-rate pumping at 2,700 gallons per minute (gpm), or about 4 million gallons per day, for 80-hours. With only a few very slight perturbations, due to adjusting the flow rate, the pumping rate and the rate of observed drawdown both remained very consistent throughout the testing as shown by the predictable straight-line relationship on the plot. This relationship signifies a steady and even expansion of the cone of depression away from the pumping well with no apparent subsurface hydraulic boundaries. Idaho Department of Water Resources Hydrology staff had hypothesized that the aquifer at this location was bounded by nearby subsurface geologic structural faults that could be a constraint to ground water flow to wells within the aquifer. This high-discharge testing, in concert with previous HLI aquifer tests at this location, refutes the idea of a "compartmentalized" aquifer that would inhibit production of ground water supplies at this location. The drawdown per log cycle (Δs) can be projected to show future drawdown at continuous pumping at this high pumping rate (still 50 feet of additional available drawdown in the well after 2 years) that is already ~ 1/4 of the maximum-day ground water demand of the entire Spring Valley community at full build-out. Although it certainly could be, the well would never practically be pumped at this high rate continuously, but this test does illustrate the productive and highly-transmissive nature of the regional Pierce Gulch Sand Aquifer at this location and goes a very long way towards proving up the availability of the needed ground water supplies for the Spring Valley development and the City of Eagle.

Figure 4.

Figure 4.

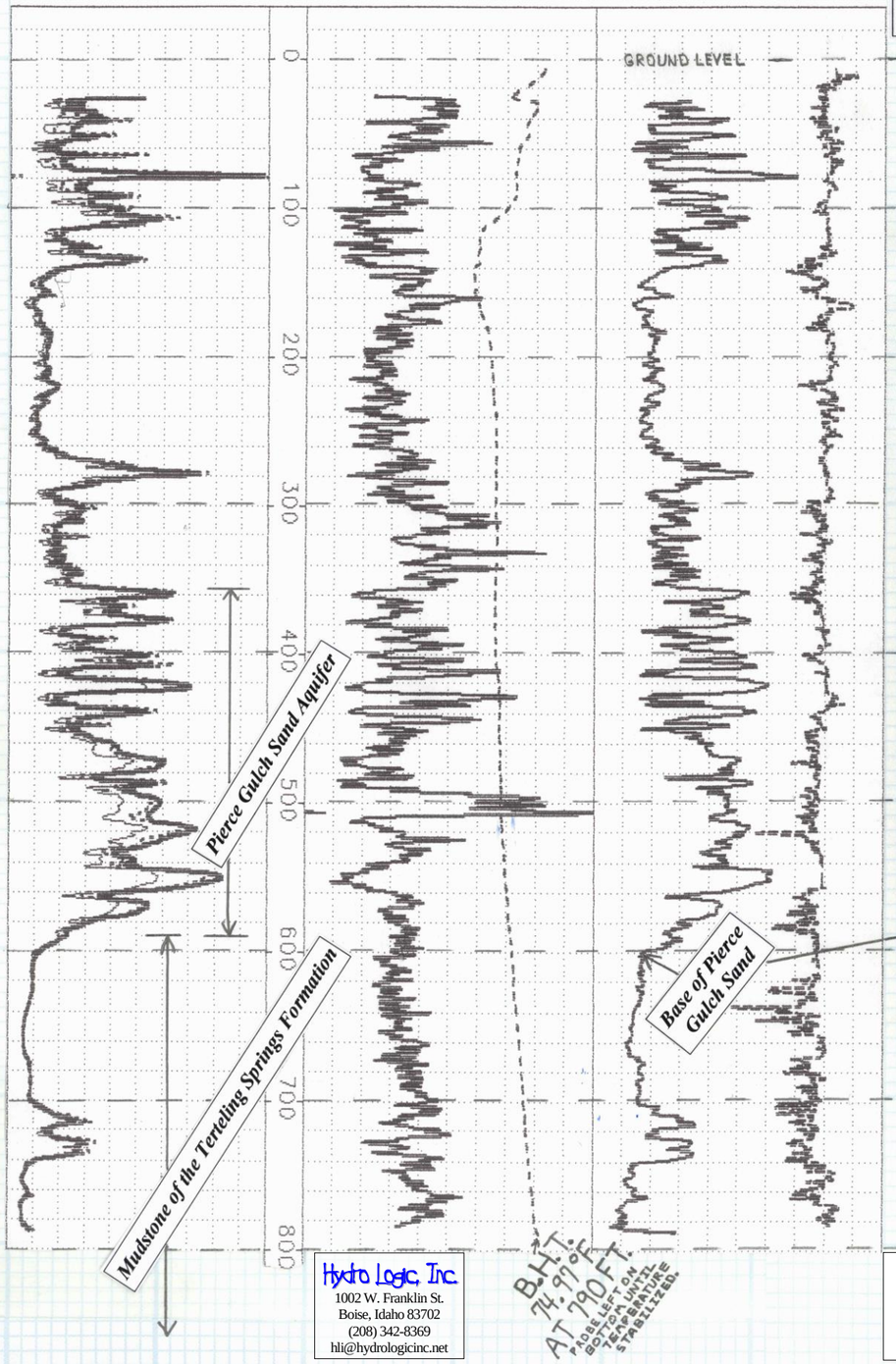
M3 Eagle #1 Monitor Well

T. 5 N. R. 1 W. Section 28, SW¼, SE¼, SE¼
Latitude 43° 44' 12.39" Longitude 116° 27' 26.93"
Well construction completed September 15, 2006.

Geophysics conducted by: Hydro Logic, Inc. on September 9, 2006 immediately after removal of drill steel

Geophysical Logs

32" Resistivity 0 ohm-meters 150
16" Resistivity 0 ohm-meters 150
8" Resistivity 0 ohm-meters 150
Temperature 50 degrees F 80
NaturalGammaRay 40 counts/sec 180
Caliper 0 inches 10
PointResistance 40 ohms 140



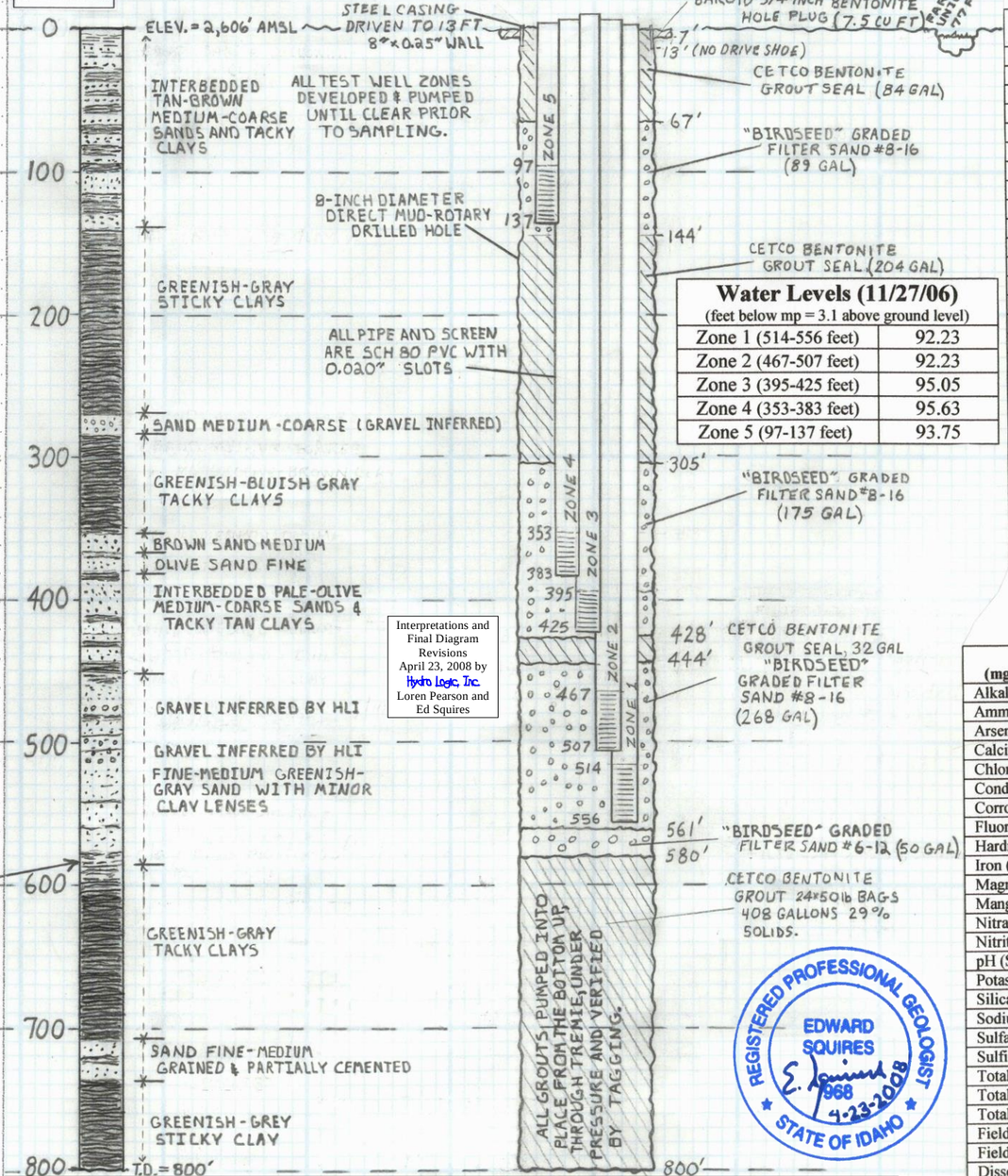
Depth
(feet below ground level)

Lithology

Hydro Logic, Inc. lithologic log is interpreted and drawn from geophysical logs and drilled cuttings from the borehole.

As-Built Well Construction

(horizontal scale 0.1"=1.0")
(vertical scale 1"=100')



Interpretations and Final Diagram Revisions April 23, 2008 by Hydro Logic, Inc. Loren Pearson and Ed Squires

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Water Levels (11/27/06)
(feet below mp = 3.1 above ground level)

Zone 1 (514-556 feet)	92.23
Zone 2 (467-507 feet)	92.23
Zone 3 (395-425 feet)	95.05
Zone 4 (353-383 feet)	95.63
Zone 5 (97-137 feet)	93.75

Water Chemistry

Analyte (mg/L unless noted)	Zone 1 514-556 feet	Zone 2 467-507 feet
Alkalinity	133.0	125.0
Ammonia as N	0.37	0.06
Arsenic	<0.003	<0.003
Calcium as CaCO3	84.4	85.5
Chloride	3.42	3.22
Conductivity (uS/cm)	302	297.0
Corrosivity	-0.40	-0.44
Fluoride	0.69	0.60
Hardness	111.0	109.0
Iron (dissolved/filtered)	0.23	<0.01
Magnesium	6.50	5.73
Manganese (dissolved)	0.10	0.02
Nitrate as N	<0.10	<0.10
Nitrite as N	<0.01	<0.01
pH (SU)	7.47	7.48
Potassium	2.26	2.21
Silica	31.8	30.7
Sodium	22.1	21.7
Sulfate	17.2	20.7
Sulfide	<0.05	<0.05
Total Dissolved Solids	173 .0	188.0
Total Kjeldahl Nitrogen	0.39	0.13
Total Organic Carbon	<1.0	<1.0
Field Temperature (°F)	67.1	66.0
Field Conductivity (uS)	305	295
Dissolved Oxygen	+1.7	+2.6
Field pH (S.U.)	7.19	7.19

Analyses by Alchem Laboratories, Boise, Idaho.
Zones 1 to 3 sampled 10/09/06. Zones 4 & 5 sampled 10/9/06.
Field measured parameters by Hydro Logic, Inc.

Analyte (mg/L unless noted)	Zone 3 395-425 feet	Zone 4 352-382 feet	Zone 5 98-138 feet
Alkalinity	119.0	114.0	119.0
Ammonia as N	0.04	<0.01	<0.01
Arsenic	<0.003	0.0049	0.0081
Calcium as CaCO3	77.7	81.3	85.9
Chloride	3.57	3.54	4.36
Conductivity (uS/cm)	282.0	285.0	281.0
Corrosivity	-0.50	-0.61	-1.16
Fluoride	0.60	0.50	0.24
Hardness	102.0	105.0	111.0
Iron (dissolved/filtered)	0.01	<0.01	<0.01
Magnesium	5.83	5.85	6.22
Manganese (dissolved)	<0.01	<0.01	<0.01
Nitrate as N	0.30	0.33	2.30
Nitrite as N	<0.01	<0.01	<0.01
pH (SU)	7.84	7.40	6.91
Potassium	2.07	2.10	2.74
Silica	29.5	28.7	38.0
Sodium	21.1	17.9	13.6
Sulfate	21.4	22.3	12.0
Sulfide	<0.05	<0.05	<0.05
Total Dissolved Solids	185.0	203.0	208.0
Total Kjeldahl N	<0.10	<0.10	<0.10
Total Organic Carbon	<1.0	<1.0	<1.0
Field Temperature (°F)	64.7	63.8	57.4
Field Conductivity (uS)	274	268	265
Dissolved Oxygen	+4.9	+2.63	+ 9.51
Field pH (S.U.)	7.27	7.07	6.72

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Boise, Idaho 83702
(208) 342-8369
hli@hydrologicinc.net

Project administration by Bill Brownlee and Tom Warley, M3 Eagle LLC, Eagle, ID.
Well design, final review of diagram, and project management by Ed Squires, Hydro Logic, Inc., R.P.G.
On site inspection, documentation, water level measurement, and water quality sampling by Loren Pearson of Hydro Logic, Inc., Boise, ID.
Direct mud-rotary drilling and well construction by Del Leavitt of Treasure Valley Drilling and Pump, Inc., Weiser, ID.
Well development by Daniel McLeran, McLeran Water Well Drilling LLC, Payette, ID.

Figure 5.

Hydro Logic, Inc
Boise, Idaho

Water Level Response in M3 Eagle #1 Monitoring Well Zone #5 During 80-Hour Constant-Rate Discharge Test of Spring Valley Municipal Well #1 at 2,700 Gallons/Minute

Test Conducted February 23rd, 2016 through February 26th, 2016

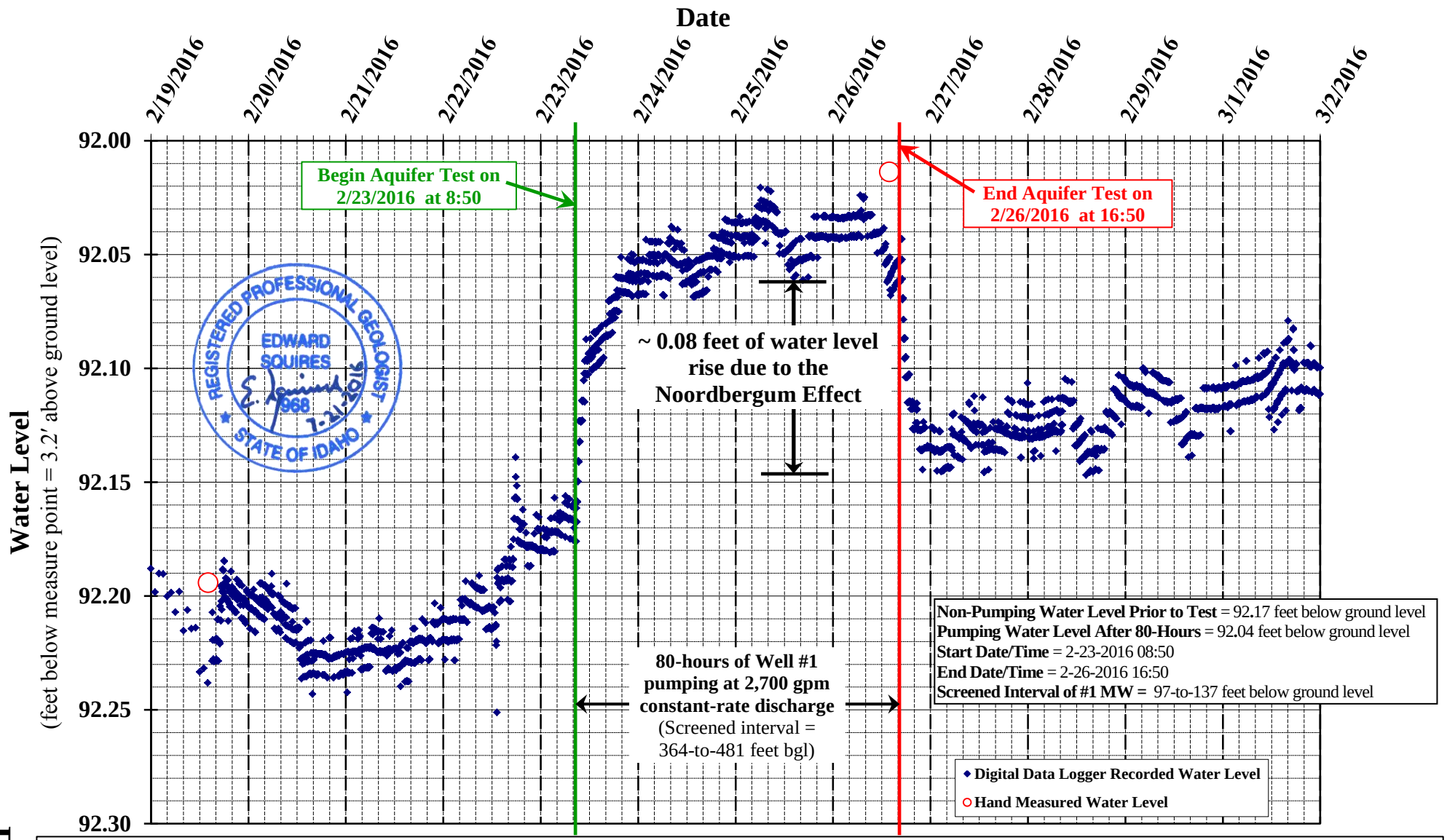

Figure 6. – Hydrograph of the water level in Depth Zone 5 of the M3 Eagle Test Well #1 located approximately 1,050 feet west of Spring Valley Well #1 (Figure 1 & 5). Pumping of SV Well #1 caused a reverse water-level fluctuation ("Noordbergum Effect") in the Zone 5 monitoring well. Noordbergum Effect, which occurs when a subsurface impermeable aquitard is present between a pumped aquifer and an overlying aquifer unit, indicates a hydraulic disconnect within an aquifer system. The reverse fluctuation in this well pair shows that the relatively shallow Zone 5 sub-aquifer is not hydraulically connected to the deeper pumped aquifer of the SV Well #1; even with a large pumping rate and significant head gradient change caused by this test. The presence of Noordbergum Effect in this location is evidence that pumping the SV Well #1 does not (cannot) affect or draw from surface water bodies such as the nearby Farmer's Union Ditch. A generally rising water-level trend is present in Zone 5 throughout the pumping test of Well #1.

Figure 6.

Figure 6.

Hydro Logic, Inc.
Boise, Idaho

2-22-2016 – Well development and aquifer test discharge using a circular orifice weir to measure flow. Ken Acuff and his staff of the City of Eagle Water Department visit site during test.

2-23-2016 – Flow-meter registering 2,700 gallons/minute during first day of 80-hour long aquifer test of Spring Valley Municipal Well #1. At end of test, totalized flow matched the instantaneous readings and pumping time.

2-23-2016 – The M3 Eagle Kling Irrigation Pond full from discharging Spring Valley Well #1 at 2,700 gallons/minute into pond for several hours. This pond flows over into the Farmer's Union Ditch at this level.

2-24-2016 – HLI sampling equipment being used for field- measured water chemistry parameters for IDEQ "New Source Monitoring" of SV Well #1 discharge water during 2,700 gallons/minute aquifer test.

Figure 7.

Figure 7.

As-Built Well Head Transition on City of Eagle Municipal Well #1

- Idaho Department of Water Resources Well ID tag #D0070298
- Idaho Department of Water Resources Water Right No. 63-32573
- Well head transition constructed on April 5, 2016

(horizontal scale 0.1" = 1" and vertical scale = none)
all measurements to ground level

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Removable and Lockable Steel Cover for Well Casing

10"

+2.1

Steel Shroud to Cover Lock Hasp and Lock

(The underground portion of the well head transition was cleaned and coated with Rust-Oleum rubberized undercoating to prevent corrosion. The above ground portion of the well head transition was cleaned and coated with Rust-Oleum green and brown rust-controlling paint.)

18" x 0.250"-Wall Low-Carbon Steel Well Casing

Well Head Design, Installation, Inspection, and Final Diagram Revisions on July 21, 2016 by Hydro Logic, Inc. (Loren Pearson and Ed Squires)
Well Head Installation Contractor: Post Drilling Inc., Weiser, Idaho

ground level ≈ 2,676′ AMSL

Back-Hoe Excavated Pit around Well Casings

Compacted Gravel and Pit-Run Backfill

Wyo-Ben® Enviroplug® Coarse (3/4") Bentonite Chips Annular Well Seal (2.8 ft³) (Poured into place as the excavated pit around well was backfilled with gravel and pit-run.

2.0′

Representation of Original 30" Auger Bore. (The chipped bentonite seal was placed within this diameter as excavated pit was backfilled with gravel.)

Silicone Caulk Seal (red) (Consists of Type II non-water based silicone caulk.)

24" O.D. x 18.25" I.D. x 0.500"-Thick Low-Carbon Steel Welded Ring (Welded to 24" and 16" casings top and bottom of ring.)

welds

Top of 30"/24" Annular Cement Grout Seal = 3′ below ground

3'

0.9′

High-Solids (≥69% by weight) Cement Grout Seal (1.6 ft³) (Added to annular space through ports in the ½"-thick steel ring. The original steel coupons were then rewelded into place to complete the full depth seal.)

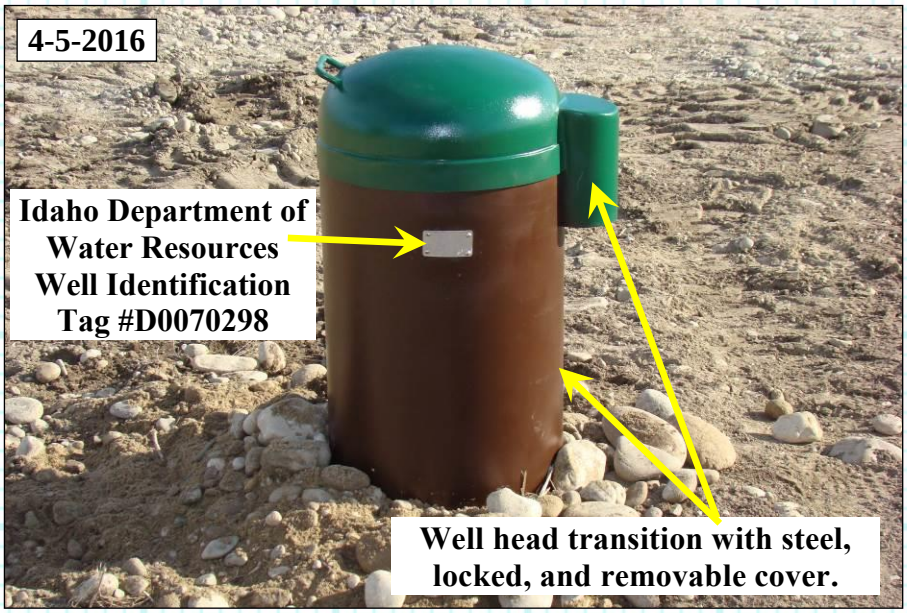
19" Auger Drilled Bore

Top of 24"/17" Annular Cement/Bentonite Grout Seal Before Refilling = 2.7′ below ground

17.4" O.D. x 15.08" I.D. CertainTeed® Certa-Lok® SDR17 PVC Well Casing (60°-beveled upper-edge.)

High-Solids (≥69% by weight) Cement Grout Seal (Part of full-depth well seals to top of aquifer.)

High-Solids (≥42% by weight) Portland Cement Mixed with "Wyo-Ben" Brand Grout-Well DF Seal (Part of full-depth well seals to top of aquifer.)



Hydro Logic, Inc.
Boise, Idaho

Figure 8.

Hydro Logic, Inc.
Boise, Idaho

80-Hour Constant-Rate Discharge Test of Spring Valley Municipal Well #1 at 2,700 Gallons/Minute

Test Conducted February 23rd, 2016 through February 26th, 2016

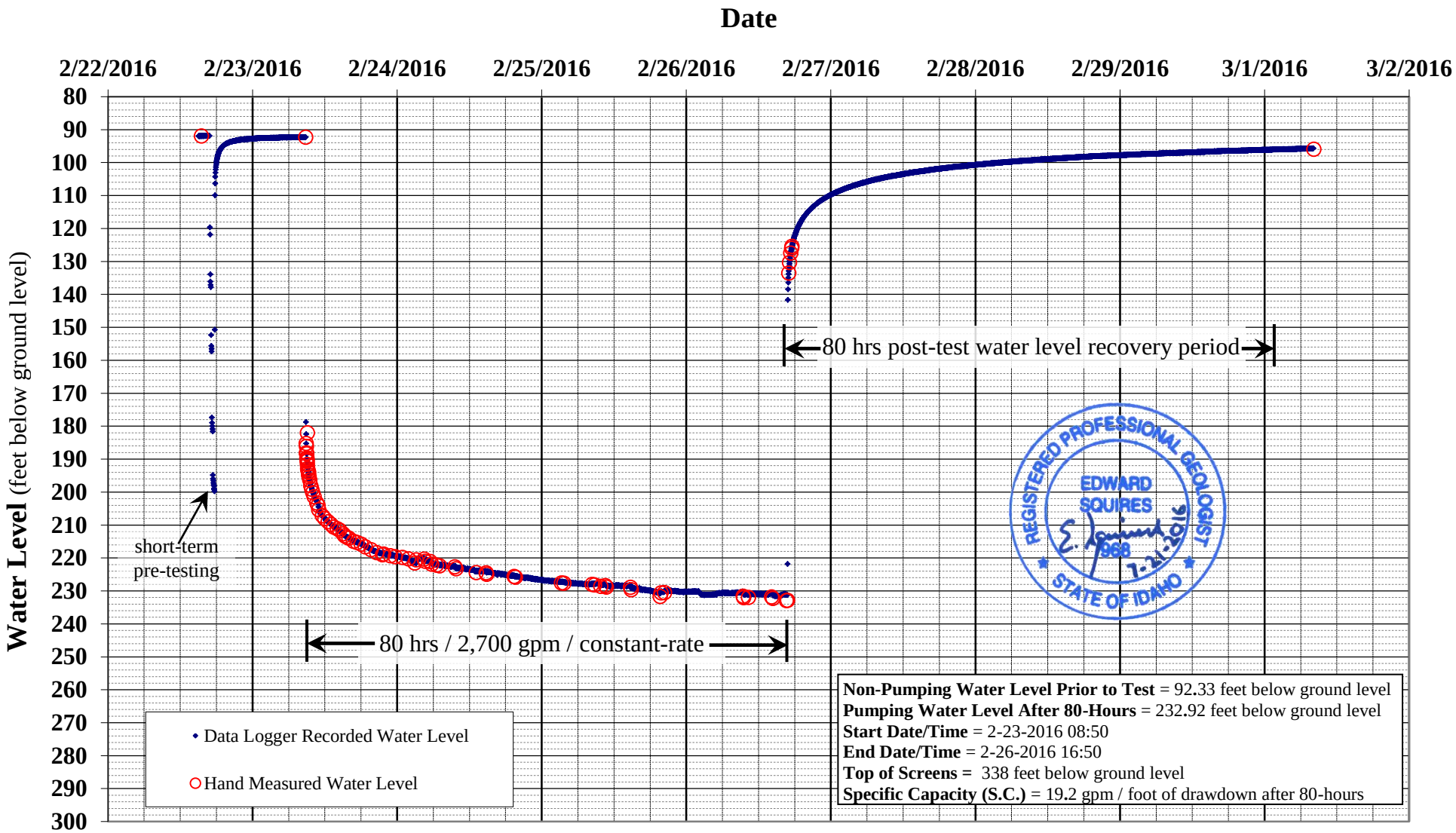


Figure 9. – Arithmetic plot of water level versus time before, during, and after the initial hydraulic testing of the newly completed Spring Valley Well #1. The hydrograph shows a drawdown and recovery response to constant-rate discharge pumping at 2,700 gpm continuously for 80-hours. According to generally accepted hydraulic theory, within an ideal aquifer under ideal conditions (Theis Assumptions met), the water level in a pumped well would "recover" to pre-test levels after the same amount of time that the well was pumped; in this case, 80 hours. The water level in SV Well #1 returned to within 4 feet of the pre-test non-pumping water level in the tube well after 80-hours of recovery The ~four-foot short in recovery is typical for most wells in the Treasure Valley that rarely fully recover from pumping within the same time as the pump-down period and this occurrence is not concerning. Indeed, the water level recovery in the SV Well #1 to be robust and assuring with respect to the future use and operation of this well.

Figure 9.

Hydro Logic, Inc
Boise, Idaho

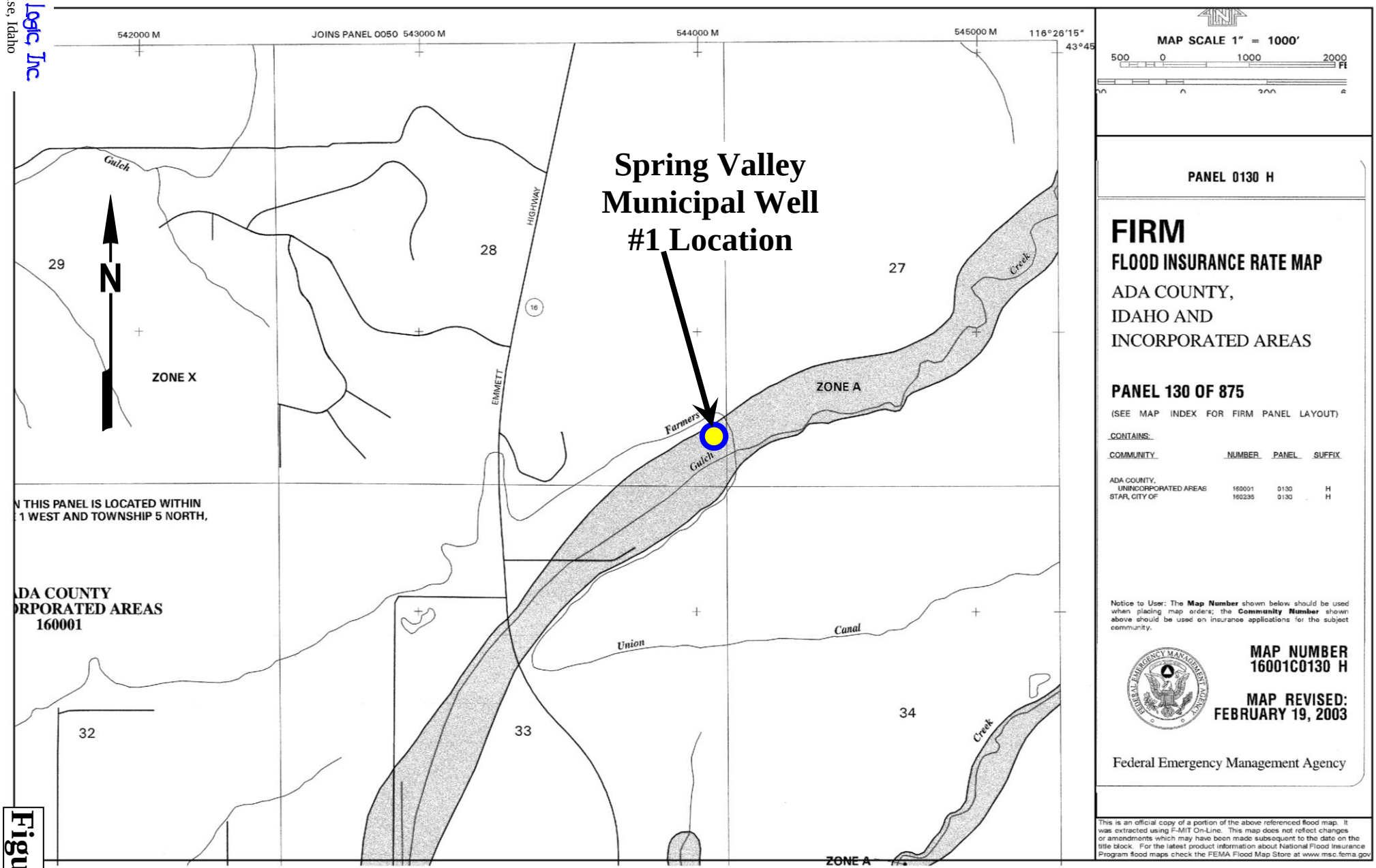
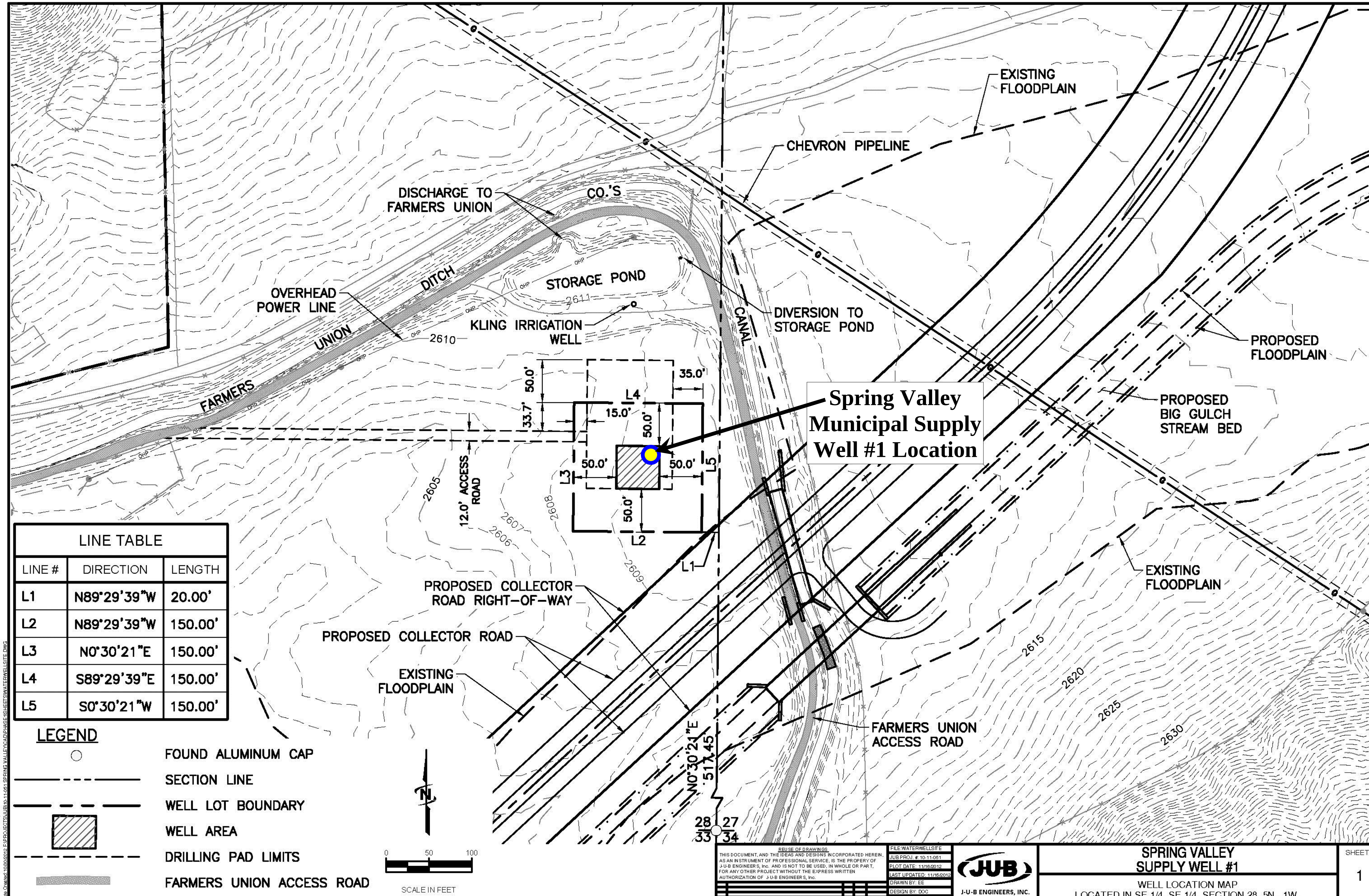


Figure 10.

Figure 10. Proposed location of Spring Valley Supply Well #1 before planned grade change. Plan is to raise grade such that Farmers Union Ditch will be below grade. The applicant has a coincident Conditional Letter of Map Revision (CLOMR) submittal before FEMA to channelize the Flood Plain in this area. This submittal has been reviewed and approved by FEMA. An approved CLOMR application serves as evidence to the City that FEMA is in agreement with the applicant's flood plain modifications. Upon completion of the proposed construction, Spring Valley, LLC will submit a Letter of Map Revision or LOMR. An approved LOMR will result in a change in the FEMA mapping. Once completed, the well will no longer be contained within a mapped flood way.



LINE TABLE		
LINE #	DIRECTION	LENGTH
L1	N89°29'39"W	20.00'
L2	N89°29'39"W	150.00'
L3	N0°30'21"E	150.00'
L4	S89°29'39"E	150.00'
L5	S0°30'21"W	150.00'

Figure 11.

TABLES

Table 1. - City of Eagle Spring Valley Municipal Well #1

Data for 80-Hour 2,700 Gallons / Minute Constant-Rate Discharge Test

Testing conducted by HLI from February 23rd - 26th, 2016

Elapsed Time (minutes)	**Date/Time** (24 hour)	**Water Level** (feet below measure point = 2.2' above ground)	**Water Level** (feet below ground)	**Drawdown** (feet)	**Comments**
-	02/23/2016 08:45	94.53	92.33		non-pumping water level
0	02/23/2016 08:50	94.53	92.33	0.00	**PUMP ON; Totalizer = 4,347,000 gallons** (starting value)**; sand in Rossum sampler =0.1 ml** (starting value)**, flow through sand sampler = 0.5 gpm**
6	02/23/2016 08:56	187.45	185.25	92.92	
7	02/23/2016 08:57	188.39	186.19	93.86	
8	02/23/2016 08:58	190.35	188.15	95.82	
10	02/23/2016 09:00	190.60	188.40	96.07	
11	02/23/2016 09:01	190.40	188.20	95.87	
12	02/23/2016 09:02	191.85	189.65	97.32	
13	02/23/2016 09:03	192.15	189.95	97.62	
14	02/23/2016 09:04	192.63	190.43	98.10	
15	02/23/2016 09:05	192.85	190.65	98.32	
16	02/23/2016 09:06	184.24	182.04	89.71	
18	02/23/2016 09:08	193.85	191.65	99.32	
20	02/23/2016 09:10	195.07	192.87	100.54	
22	02/23/2016 09:12	195.52	193.32	100.99	
26	02/23/2016 09:16	196.00	193.80	101.47	
28	02/23/2016 09:18	196.25	194.05	101.72	
30	02/23/2016 09:20	196.95	194.75	102.42	
34	02/23/2016 09:24	197.66	195.46	103.13	
40	02/23/2016 09:30	198.60	196.40	104.07	
50	02/23/2016 09:40	200.30	198.10	105.77	
60	02/23/2016 09:50	201.35	199.15	106.82	totalizer = 4,510,000
70	02/23/2016 10:00	202.40	200.20	107.87	
85	02/23/2016 10:15	203.67	201.47	109.14	
110	02/23/2016 10:40	205.56	203.36	111.03	
124	02/23/2016 10:54	206.25	204.05	111.72	totalizer = 4,680,000
130	02/23/2016 11:00	207.60	205.40	113.07	Pro Plus #1 field parameters: T = 65.3 °F, D.O. = +1.82 mg/L, cond. = 298.8, pH = 7.27, ORP = +240.7 Pro Plus #2 field parameters: T = 65.5 °F, D.O. = +2.03 mg/L, cond. = 278.3, pH = 7.20, ORP = +131.5
165	02/23/2016 11:35	209.40	207.20	114.87	
190	02/23/2016 12:00	210.33	208.13	115.80	
225	02/23/2016 12:35	211.24	209.04	116.71	
252	02/23/2016 13:02	212.03	209.83	117.50	
279	02/23/2016 13:29	212.82	210.62	118.29	Pro Plus #1 field parameters: T = 65.2 °F, D.O. = +1.88 mg/L, cond. = 298.5, pH = 7.27, ORP = +45.1 Pro Plus #2 field parameters: T = 65.5 °F, D.O. = +2.12 mg/L, cond. = 290.3, pH = 7.20, ORP = +213.6
315	02/23/2016 14:05	213.35	211.15	118.82	
340	02/23/2016 14:30	213.84	211.64	119.31	
373	02/23/2016 15:03	214.87	212.67	120.34	totalizer = 5,320,000
388	02/23/2016 15:18	215.46	213.26	120.93	
410	02/23/2016 15:40	215.90	213.70	121.37	
430	02/23/2016 16:00	216.20	214.00	121.67	
475	02/23/2016 16:45	217.15	214.95	122.62	totalizer = 5,610,000
513	02/23/2016 17:23	217.55	215.35	123.02	
552	02/23/2016 18:02	218.04	215.84	123.51	totalizer = 5,810,000
595	02/23/2016 18:45	218.85	216.65	124.32	
652	02/23/2016 19:42	219.73	217.53	125.20	
706	02/23/2016 20:36	220.57	218.37	126.04	totalizer = 6,220,000
765	02/23/2016 21:35	221.23	219.03	126.70	Pro Plus #1 field parameters: T = 64.9 °F, D.O. = +1.92 mg/L, cond. = 299.7, pH = 7.29, ORP = -0.2 Pro Plus #2 field parameters: T = 65.3 °F, D.O. = +2.13 mg/L, cond. = 286.7, pH = 7.17, ORP = +33.2
776	02/23/2016 21:46	221.06	218.86	126.53	

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Elapsed Time (minutes)	Date/Time (24 hour)	Water Level (feet below measure point = 2.2' above ground)	Water Level (feet below ground)	Drawdown (feet)	Comments
843	02/23/2016 22:53	221.55	219.35	127.02	totalizer = 6,583,000
893	02/23/2016 23:43	221.82	219.62	127.29	totalizer = 6,730,000
963	02/24/2016 00:53	222.10	219.90	127.57	
1,023	02/24/2016 01:53	222.51	220.31	127.98	totalizer = 7,060,000
1,087	02/24/2016 02:57	223.78	221.58	129.25	
1,102	02/24/2016 03:12	222.78	220.58	128.25	
1,180	02/24/2016 04:30	222.56	220.36	128.03	totalizer = 7,490,000
1,191	02/24/2016 04:41	223.22	221.02	128.69	
1,241	02/24/2016 05:31	223.34	221.14	128.81	totalizer = 7,630,000
1,256	02/24/2016 05:46	224.11	221.91	129.58	
1,303	02/24/2016 06:33	224.44	222.24	129.91	totalizer = 7,810,000
1,333	02/24/2016 07:03	224.64	222.44	130.11	
1,486	02/24/2016 09:36	224.95	222.75	130.42	Pro Plus #1 field parameters: T = 65.3 °F, D.O. = +1.93 mg/L, cond. = 300.6, pH = 7.29, ORP = -8.1 Pro Plus #2 field parameters: T = 65.5 °F, D.O. = +2.11 mg/L, cond. = 301.2 pH = 7.25, ORP = +76.3
1,498	02/24/2016 09:48	225.48	223.28	130.95	
1,700	02/24/2016 13:10	226.64	224.44	132.11	totalizer = 8,839,000
1,799	02/24/2016 14:49	226.76	224.56	132.23	
1,804	02/24/2016 14:54	227.17	224.97	132.64	
2,078	02/24/2016 19:28	227.87	225.67	133.34	
2,090	02/24/2016 19:40	228.04	225.84	133.51	totalizer = 9,882,000
2,549	02/25/2016 03:19	229.80	227.60	135.27	Pro Plus #1 field parameters: T = 65.0 °F, D.O. = +1.81 mg/L,
2,571	02/25/2016 03:41	229.90	227.70	135.37	
2,854	02/25/2016 08:24	230.25	228.05	135.72	
2,878	02/25/2016 08:48	230.37	228.17	135.84	
2,939	02/25/2016 09:49	230.82	228.62	136.29	
2,985	02/25/2016 10:35	230.65	228.45	136.12	totalizer = 12,260,000
2,996	02/25/2016 10:46	231.04	228.84	136.51	
3,236	02/25/2016 14:46	231.10	228.90	136.57	
3,242	02/25/2016 14:52	231.90	229.70	137.37	
3,532	02/25/2016 19:42	233.88	231.68	139.35	
3,541	02/25/2016 19:51	232.81	230.61	138.28	
3,573	02/25/2016 20:23	232.74	230.54	138.21	totalizer = 13,819,000
4,358	02/26/2016 09:28	233.85	231.65	139.32	
4,363	02/26/2016 09:33	234.25	232.05	139.72	totalizer = 15,914,000
4,410	02/26/2016 10:20	234.24	232.04	139.71	Pro Plus #1 field parameters: T = 65.7 °F, D.O. = +1.94 mg/L, cond. = 302.8, pH = 7.31, ORP = -30.2 Pro Plus #2 field parameters: T = 65.7 °F, D.O. = +2.20 mg/L, cond. = 292.2 pH = 7.27, ORP = -1.9
4,641	02/26/2016 14:11	234.07	231.87	139.54	totalizer = 16,665,000
4,653	02/26/2016 14:23	234.52	232.32	139.99	
4,789	02/26/2016 16:39	235.16	232.96	140.63	
4,800	02/26/2016 16:50	235.12	232.92	140.59	**PUMP OFF; Totalizer = 17,069,500 gallons (total accumulated); sand in Rossum sampler = 0.2 mL**
	02/26/2016 17:01	135.77	133.57	41.24	recovering water level
	02/26/2016 17:10	132.56	130.36	38.03	recovering water level
	02/26/2016 17:22	129.69	127.49	35.16	recovering water level
	02/26/2016 17:31	128.27	126.07	33.74	recovering water level
	02/26/2016 17:34	127.63	125.43	33.10	recovering water level
	03/01/2016 08:12	98.20	96.00	3.67	recovering water level

Aquifer Test Pumping Design and Measurement: Hydro Logic, Inc for M3 Eagle, LLC (K. Newbry & L. Pearson on-site hydrogeologists).
Pump Contractor: Layne of Idaho (installed the temporary pumping plant and plumbing under inspection by HLI).
Pumping Plant: *10-stage line-shaft turbine pump, 12-inch bowl diameter set on 260 feet of 10-inch column*

Table 2.

Ground Water Chemistry Summary of Spring Valley Municipal Well #1

Analyte	Result (in mg/L unless noted)
Alkalinity	120
Aluminum	<0.1
Ammonia as N	0.15
Antimony	<0.001
Arsenic	0.004
Barium	<0.1
Beryllium	<0.001
Cadmium	<0.001
Calcium	30
Chloride	3.52
Chlorine Demand (instantaneous)	1.17-1.31
Chromium	<0.05
Color (color units)	<5.0
Conductivity (µS)	292
Copper	<0.01
Corrosivity (Langlier Index)	-0.41
Cyanide (total)	<0.005
Fluoride	0.591
Hardness	115
Iron (total)	0.06
Iron (dissolved)	0.06
Lead	<0.001
Magnesium	6
Manganese (dissolved)	0.02
Mercury	<0.0001
Nickel	<0.05
Nitrate NO_3 as N	0.2
Nitrite NO_2 as N	<0.1
Orthophosphate	<0.2
pH (S.U.)	7.62
Potassium	3
Selenium	<0.001
Silica	35
Silver	<0.01
SOC's	none detected
Sodium	23
Sulfate	20.1
Sulfide	<1
Surfactants	<0.01
Suspended Solids	<10
Thallium	<0.0004
Total Coliform	absent
Total Dissolved Solids	184
Total Kjeldahl Nitrogen	<0.5
Total Organic Carbon	<0.5
VOC's	none detected
Zinc	<0.01

Analyte	Result (in mg/L unless noted)
Radiology (in pCi/L except Uranium which is pCi/L and (µg/L); Uranium pCi/L = 0.67 x µg/L)	
Gross Alpha	4.6 ± 1.5
Gross Beta	2.6 ± 1.6
Uranium [pCi/L (µg/L)]	1.3 (2.0)
Adjusted Gross Alpha	3.3
Radium 226	0.5 ± 0.2
Radium 228	1.9 ± 1.0
Field Measured (by Hydro Logic, Inc.) **Parameters** (each measurement is the average of two calibrated meters)	
Field Conductivity (µS)	300.7
Field Dissolved Oxygen	2.03
Field Odor (describe)	none
Field O.R.P. (mV)	+5.45
Field pH (S.U.)	7.27
Field Temperature (ºF)	65.6
Field Visible Gas (describe)	none

Sampled February 24, 2016 by Hydro Logic, Inc.

Analyses by Energy Laboratories, Inc., Casper, WY and Analytical Laboratories, Boise, ID.

Sampled after 29-hours of pumping at 2,700 gallons/minute.

Completion interval of Well #1 = 364-to-481-feet below ground.

Table 3. – Water Chemistry of the Boise River Compared to Spring Valley Municipal Well #1		
Results (in mg/L unless otherwise noted)		
Constituent	**Boise River** (Averaged USGS Values from Glenwood Bridge Station from 1970-2016)	**Spring Valley Well #1** (2,700 gpm) (2-24-2016)
Total Dissolved Solids (TDS)	82	184
Calcium (Ca)	13	30
Sodium (Na)	9	23
Potassium (K)	1	3
Sulfate (SO_4)	7	20.1
Dissolved Oxygen (O)	12	2.03
Specific Conductance (µS/cm)	112	300.7
pH - Field (standard units)	8	7.27

APPENDICES

Appendix A.

Ground Water Geochemistry Laboratory Analyses for the Initial Sampling of the Newly Completed Spring Valley Municipal Supply Well #1 ("New Source Monitoring" Reporting for Public Drinking Water Systems)

Chain of Custody and Analytical Request Record

Page 1 of 2

PLEASE PRINT (Provide as much information as possible.)

Company Name: Hydro Logic, Inc.

Report Mail Address (Required): 1002 W. Franklin St. Boise, Idaho 83702

☐ No Hard Copy Email: loren@hydrologicinc.net

Invoice Address (Required): Same as above

☐ No Hard Copy Email:

Special Report/Formats:
☒ DW ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format:
☒ State: Idaho ☐ LEVEL IV
☐ Other: ☐ NELAC

Project Name, PWS, Permit, Etc.: Spring Valley Supply Well #1

Contact Name: Loren Pearson Phone/Fax: 208-631-6782

Invoice Contact & Phone: same as above

Sample Origin State: Idaho

Cell: same

Purchase Order:

EPA/State Compliance: Yes ☒ No ☐

Sampler: (Please Print) L. Pearson

Quote/Bottle Order: 48532

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Standard Turnaround (TAT) — RUSH

Shipped by: FE-Exp

Cooler ID(s): Cooler

Receipt Temp: 5.2 °C

On Ice: (Y) N

Custody Seal: On Bottle Y N; On Cooler Y N

Intact: Y N

Signature Match: Y N

Comments: RS-Y 1250 1204

ANALYSIS REQUESTED

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other D DW - Drinking Water

SEE ATTACHED

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX
1	Spring Valley Supply Well #1	2-24-2016	13:38	8 DW
2				
3				
4				
5				
6				
7				
8				
9				
10				

1 SEE ATTACHED: X X

Bottle order was supposed to be for a municipal sampling, but no one called to let us know that the attachment had not been received. L. Pearson

LABORATORY USE ONLY C1602691

Custody Record MUST be Signed

Relinquished by (print): Date/Time: Signature:

Relinquished by (print): Loren H. Pearson Date/Time: 2-24-2016 16:58 Signature: Loren H. Pearson

Sample Disposal: Return to Client: Lab Disposal: X

Received by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by Laboratory: Date/Time: 2/25/16 1100 Signature:

All analyses will be conducted using NELAP accredited methods and all data will be reported using ELI standard analyte lists and reporting limits (SRL's) unless specifically requested otherwise on this Chain of Custody and Analytical Request Record. By signature, client grants permission for Energy Laboratories, Inc. to subcontract to other certified laboratories in order to complete the analysis requested.

Hydro Logic, Inc.
1002 W. Franklin Street, Boise, ID 83702 (208) 342-8369, Fax (208) 342-3100, hli@hydrologicinc.net

WATER QUALITY ANALYSES REQUEST FORM

RESULTS TO: Hydro Logic, Inc.
ATTENTION: Ed Squires
SAMPLE SOURCE: Spring Supply Well #1
TIME (24-hour clock): 13:38 hrs
DATE COLLECTED: 2-24-2016
COMPLIANCE SAMPLES (yes or no): yes

PROJECT/JOB: Spring Valley Well #1
BILL TO: Hydro Logic, Inc.
SUBMITTED BY: L. Pearson

STANDARD TESTS REQUESTED *(please check analytes to be tested)*:

Acute IOC Contaminants:

- ✓ nitrate (as N)
- ✓ nitrite (as N)
- ✓ sulfate

Primary IOC Contaminants:

- ✓ fluoride
- ✓ sodium

Secondary & Other IOC Contaminants:

- ✓ alkalinity
- ✓ ammonia (as N)
- ✓ calcium (as $CaCO_3$)
- ✓ chloride
- ✓ conductivity
- ✓ corrosivity
- ✓ hardness
- ✓ sulfide
- ✓ iron (total)
- ✓ magnesium
- ✓ manganese (diss.)
- ✓ potassium
- ✓ silica
- ✓ total dissolved solids

OPTIONAL TESTS REQUESTED *(please check analytes to be tested)*

- ✓ aluminum
- antimony
- ✓ arsenic
- bacteria (total coliform)
- ✓ barium
- ✓ beryllium
- ✓ cadmium
- ✓ chromium
- ~~biochemical oxygen demand~~
- ✓ color
- ✓ copper
- cyanide
- ✓ gross α and β
- ✓ iron (dissolved)
- ✓ Kjeldahl nitrogen (total)
- ✓ lead
- ✓ mercury
- ✓ nickel
- ~~lead~~
- ✓ organic carbon (total)
- ✓ orthophosphate
- ✓ pH
- ~~✓ radium 226~~
- ✓ radium 228
- ~~total phosphorus~~
- ✓ selenium
- ✓ silver
- ~~✓ surfactants~~
- ✓ suspended solids
- ✓ thallium
- ✓ uranium
- ✓ zinc

SOC's

- carbamates (531.1)
- dalapon (515.4)
- diquat (549.1)
- EDB/DBCP (504.1)
- endothall (548.1)
- glyphosate (547)
- herbicides (515.4)
- pesticides/PCBS (508)
- semivolatiles (525.2)
- **VOC's** (524.2)

FIELD WATER QUALITY PARAMETERS *(must be completed prior to submitting samples)*

Parameter Set No. 1			Meter #	Parameter Set No. 2			Meter #	Physical Descriptions	
Field Conductivity	= 303.6	µS		Field Conductivity	= 297.7	µS		Odor (describe)	none
Field Dissolved Oxygen	= +1.96	mg/L		Field Dissolved Oxygen	= +2.09	mg/L		Taste (describe)	smooth
Field pH	= 7.29	SU		Field pH	= 7.25	SU		Sand Production (yes or no)	no
Field ORP	= -10.5	mV		Field ORP	= +21.4	mV		Visible Gas (describe)	none
Field Temperature	= 65.4	°F		Field Temperature	= 65.7	°F			

ANALYTICAL SUMMARY REPORT

March 24, 2016

Hydro Logic Inc
1002 W Franklin St
Boise, ID 83702-5431

Work Order: C16020691

Project Name: Spring Valley Supply Well # 1

Energy Laboratories, Inc. Casper WY received the following 1 sample for Hydro Logic Inc on 2/25/2016 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C16020691-001	Spring Valley Supply Well # 1 at 2,700 GPM	02/24/16 13:38	02/25/16	Drinking Water	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Drinking Water Alkalinity Anion - Cation Balance Color Conductivity Carbon, Total Organic Mercury, Drinking Water Mercury Analysis Prep Client Provided Field Parameters Hardness E300.0 Anions Langelier Index Nitrogen, Ammonia Nitrogen, Nitrite Nitrogen, Nitrate + Nitrite Nitrogen, Nitrate as N Nitrogen, Total Kjeldahl pH Metals Preparation by EPA 200.2 TKN Prep Gross Alpha Calculated Gross Alpha, Gross Beta Radium 226 + Radium 228 Radium 226, Total Radium 228, Total Solids, Total Dissolved Solids, Total Dissolved - Calculated Solids, Total Suspended Sulfide, Iodine Titrimetric

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

Digitally signed by
Corinne Wagner
Date: 2016.03.24 15:04:02 -06:00

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Hydro Logic Inc
Project: Spring Valley Supply Well # 1
Lab ID: C16020691-001
Client Sample ID: Spring Valley Supply Well # 1 at 2,700 GPM

Report Date: 03/24/16
Collection Date: 02/24/16 13:38
DateReceived: 02/25/16
Matrix: Drinking Water

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Alkalinity, Total as CaCO3	120	mg/L		5		A2320 B	02/26/16 19:08 / wc
Calcium	30	mg/L		1		E200.8	03/04/16 20:31 / sf
Chloride	3.52	mg/L		1.00		E300.0	02/26/16 05:30 / wc
Fluoride	0.591	mg/L		0.100		E300.0	02/26/16 05:30 / wc
Magnesium	6	mg/L		1		E200.7	03/04/16 15:34 / rso
Nitrogen, Ammonia as N	0.15	mg/L		0.05		A4500-NH3 G	03/02/16 16:56 / ljl
Nitrogen, Nitrate+Nitrite as N	0.2	mg/L		0.1	10	E353.2	03/03/16 12:35 / ljl
Nitrogen, Kjeldahl, Total as N	ND	mg/L		0.5		E351.2	02/29/16 16:13 / eli-b
Nitrogen, Nitrate as N	0.2	mg/L		0.1		E353.2	03/09/16 13:04 / smm
Nitrogen, Nitrite as N	ND	mg/L		0.1		A4500-NO2 B	02/25/16 14:42 / wc
Phosphorus, Orthophosphate as P	ND	mg/L		0.200		E300.0	02/26/16 05:30 / wc
Potassium	3	mg/L		1		E200.7	03/04/16 15:34 / rso
Silica	35	mg/L		0.2		E200.7	02/26/16 17:03 / sf
Sodium	23	mg/L		1		E200.7	03/04/16 15:34 / rso
Sulfate	20.1	mg/L		1.00		E300.0	02/26/16 05:30 / wc
NON-METALS							
Organic Carbon, Total (TOC)	ND	mg/L		0.5		A5310 C	02/29/16 23:04 / mag
Sulfide	ND	mg/L		1		A4500-S F	02/28/16 16:49 / ljl
PHYSICAL PROPERTIES							
Color	ND	c.u.		5.0		A2120 B	02/25/16 00:00 / mag
Conductivity @ 25 C	292	umhos/cm		5		A2510 B	02/26/16 12:33 / mag
Hardness as CaCO3	115	mg/L		1		A2340 B	03/07/16 13:52 / smm
pH	7.62	s.u.	H	0.01		A4500-H B	02/26/16 12:33 / mag
Solids, Total Dissolved TDS @ 180 C	184	mg/L		10		A2540 C	02/26/16 13:54 / mag
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	02/26/16 12:39 / mag
- Color measured at pH 7.42.							
METALS - DISSOLVED							
Iron	0.06	mg/L		0.03		E200.7	03/04/16 15:34 / rso
Manganese	0.020	mg/L	D	0.002		E200.7	03/04/16 15:34 / rso
METALS - TOTAL							
Aluminum	ND	mg/L		0.1	0.2	E200.7	02/26/16 17:03 / sf
Arsenic	0.004	mg/L		0.001	0.01	E200.8	03/03/16 14:00 / sf
Barium	ND	mg/L		0.1	2	E200.7	02/26/16 17:03 / sf
Beryllium	ND	mg/L		0.001	0.004	E200.7	02/26/16 17:03 / sf
Cadmium	ND	mg/L		0.001	0.005	E200.8	03/02/16 21:20 / sf
Chromium	ND	mg/L		0.05	0.1	E200.7	02/26/16 17:03 / sf
Copper	ND	mg/L		0.01	1.3	E200.7	02/26/16 17:03 / sf
Iron	0.06	mg/L		0.03	0.3	E200.7	02/26/16 17:03 / sf
Lead	ND	mg/L		0.001	0.015	E200.8	03/02/16 21:20 / sf
Mercury	ND	mg/L		0.0001	0.002	E245.1	02/29/16 14:57 / tkr
Nickel	ND	mg/L		0.05	0.1	E200.7	02/26/16 17:03 / sf
Selenium	ND	mg/L		0.001	0.05	E200.8	03/02/16 21:20 / sf

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Hydro Logic Inc
Project: Spring Valley Supply Well # 1
Lab ID: C16020691-001
Client Sample ID: Spring Valley Supply Well # 1 at 2,700 GPM

Report Date: 03/24/16
Collection Date: 02/24/16 13:38
DateReceived: 02/25/16
Matrix: Drinking Water

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Silver	ND	mg/L		0.01	0.1	E200.7	02/26/16 17:03 / sf
Thallium	ND	mg/L		0.0004	0.002	E200.8	03/02/16 21:20 / sf
Uranium	0.0020	mg/L		0.0003	0.03	E200.8	03/03/16 14:00 / sf
Zinc	ND	mg/L		0.01	5	E200.7	02/26/16 17:03 / sf
RADIONUCLIDES - TOTAL							
Gross Alpha	4.6	pCi/L			15	E900.0	03/22/16 21:19 / plj
Gross Alpha precision (±)	1.5	pCi/L				E900.0	03/22/16 21:19 / plj
Gross Alpha MDC	0.9	pCi/L				E900.0	03/22/16 21:19 / plj
Gross Alpha - Adjusted	3.3	pCi/L			15	E900.0	03/23/16 09:59 / smm
Gross Alpha - Adjusted precision (±)	1.5	pCi/L				E900.0	03/23/16 09:59 / smm
Gross Alpha - Adjusted MDC	0.9	pCi/L				E900.0	03/23/16 09:59 / smm
Gross Beta	2.6	pCi/L			50	E900.0	03/22/16 21:19 / plj
Gross Beta precision (±)	1.6	pCi/L				E900.0	03/22/16 21:19 / plj
Gross Beta MDC	1.8	pCi/L				E900.0	03/22/16 21:19 / plj
Radium 226	0.5	pCi/L			5	E903.0	03/14/16 08:23 / dmf
Radium 226 precision (±)	0.2	pCi/L				E903.0	03/14/16 08:23 / dmf
Radium 226 MDC	0.09	pCi/L				E903.0	03/14/16 08:23 / dmf
Radium 228	1.9	pCi/L			5	RA-05	03/10/16 14:06 / plj
Radium 228 precision (±)	1	pCi/L				RA-05	03/10/16 14:06 / plj
Radium 228 MDC	0.7	pCi/L				RA-05	03/10/16 14:06 / plj
Radium 226 + Radium 228	2.5	pCi/L				A7500-RA	03/15/16 14:15 / trs
Radium 226 + Radium 228 precision (±)	1	pCi/L				A7500-RA	03/15/16 14:15 / trs
Radium 226 + Radium 228 MDC	0.7	pCi/L				A7500-RA	03/15/16 14:15 / trs
DATA QUALITY							
A/C Balance (± 5)	2.38	%				A1030 E	03/24/16 07:41 / sf
Anions	2.96	meq/L				A1030 E	03/24/16 07:41 / sf
Cations	3.10	meq/L				A1030 E	03/24/16 07:41 / sf
Solids, Total Dissolved Calculated	200	mg/L				A1030 E	03/24/16 07:41 / sf
TDS Balance (0.80 - 1.20)	0.91	unitless				A1030 E	03/24/16 07:41 / sf
Cation\Anion Balance <±0.2 meq/L Difference							
LANGELIER INDEX							
Langelier Index	-0.41					A2330 B	03/24/16 07:41 / sf
CLIENT PROVIDED FIELD PARAMETERS							
Field Conductivity	300.65	umhos/cm				FIELD	02/24/16 13:38 / ***
Field Dissolved Oxygen	2.025	ppm				FIELD	02/24/16 13:38 / ***
Field pH	7.27	s.u.				FIELD	02/24/16 13:38 / ***
Field Temperature, F	65.55	°F				FIELD	02/24/16 13:38 / ***
Oxidation-Reduction Potential (ORP)	5.45	mV				FIELD	02/24/16 13:38 / ***
*** Field data provided by client							

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

Hydro Logic, Inc.
1002 W. Franklin Street, Boise, ID 83702 (208) 342-8369, Fax (208) 342-3100, hli@hydrologicinc.net

WATER QUALITY ANALYSES REQUEST FORM

RESULTS TO: **Hydro Logic, Inc.**
ATTENTION: **Ed Squires**
SAMPLE SOURCE: Spring Valley Well #1
TIME (24-hour clock): 14:02
DATE COLLECTED: 2-24-2016
COMPLIANCE SAMPLES (yes or no) yes

PROJECT/JOB: Spring Valley Well #1
BILL TO: Hydro Logic, Inc.
SUBMITTED BY: L. Pearson

STANDARD TESTS REQUESTED *(please check analytes to be tested)*:

Acute IOC Contaminants:

___ nitrate (as N) ___ nitrite (as N) ___ sulfate

Primary IOC Contaminants:

___ fluoride ___ sodium

Secondary & Other IOC Contaminants:

___ alkalinity ___ ammonia (as N) ___ calcium (as $CaCO_3$) ___ chloride ___ conductivity
___ corrosivity ___ hardness ___ sulfide ___ iron (total) ___ magnesium
___ manganese (diss.) ___ potassium ___ silica ___ total dissolved solids

OPTIONAL TESTS REQUESTED *(please check analytes to be tested)* x2

___ aluminum ✓ antimony ___ arsenic ✓ bacteria (total coliform) ___ barium
___ beryllium ___ cadmium ___ chromium ___ chlorine demand ___ color
___ copper ✓ cyanide ___ gross α and β ___ iron (dissolved) ___ Kjeldahl nitrogen (total)
___ lead ___ mercury ___ nickel ___ odor ___ organic carbon (total)
___ orthophosphate ___ pH ___ radium 226 ___ radium 228 ___ radon 222
___ selenium ___ silver ___ surfactants ___ suspended solids ___ thallium
___ uranium ___ zinc

SOC's

✓ carbamates (531.1) ✓ dalapon (515.4) ✓ diquat (549.1) ✓ EDB/DBCP (504.1) ✓ endothall (548.1)
✓ glyphosate (547) ✓ herbicides (515.4) ✓ pesticides/PCBS (508) ✓ semivolatiles (525.2)
✓ **VOC's** (524.2)

FIELD WATER QUALITY PARAMETERS *(must be completed prior to submitting samples)*

Parameter Set No. 1	Meter #	**Parameter Set No. 2**	Meter #	**Physical Descriptions**
Field Conductivity = 3036 µS		Field Conductivity = 297.7 µS		Odor (describe) none
Field Dissolved Oxygen = +1.96 mg/L		Field Dissolved Oxygen = +2.09 mg/L		Taste (describe) smooth
Field pH = 7.29 SU		Field pH = 7.25 SU		Sand Production (yes or no) no
Field ORP = -10.5 mV		Field ORP = +21.4 mV		Visible Gas (describe) none
Field Temperature = 65.4 °F		Field Temperature = 65.7 °F		

CLIENT CODE=

CHAIN OF CUSTODY RECORD

CLIENT INFORMATION:		PROJECT INFORMATION:	
Project Manager:	Ed Squires	**Project Name:**	Spring Valley Well #1
Company:	Hydro Logic, Inc.	**PWS Number:**	
Address:	1002 W. Franklin St	**Purchase Order Number:**	
	Boise, ID 83702	**Required Due Date:**	
Phone:	342-8369 **Fax:** 342-3100	**E-mail Address:**	loren@hydrologicinc.net
Sampled by: *(Please print)*	L. Pearson	**Transported by:** *(Please print)*	L. Pearson

ANALYTICAL LABS, INC.
1804 N. 33rd Street • Boise, ID 83703
(208) 342-5515 • Fax: (208) 342-5591 • 1-800-574-5773
Website: www.analyticallaboratories.com
E-mail: ali@analyticallaboratories.com

TESTS REQUESTED

Lab ID	Date Sampled	Time Sampled	Sample Description (Source)	Sample Matrix	SEE ATTACHED									Remarks:
	2/24/2016	14:02	Spring Valley Well #1	water		X								

Invoice to: *(If different than above address)*

Special Instructions:

ALLOCATIONS OF RISK: Analytical Laboratories, Inc. will perform preparation and testing services, obtain findings and prepare reports in accordance with Good Laboratory Practices (GLP). If, for any reason, Analytical Laboratories, Inc. errors in the conduct of a test or procedure, their liability shall be limited to the cost of the test or procedure completed in error. Under no circumstances will Analytical Laboratories, Inc. be liable for any other cost associated with obtaining a sample or use of data.

Note: Samples are discarded 21 days after results are reported. Hazardous samples will be returned to client or disposed of at client expense.

Relinquished By: *(Signature)*	**Print Name:**	**Company:**	**Date:**	**Time:**
Received By: *(Signature)*	**Print Name:**	**Company:**	**Date:**	**Time:**
Relinquished By: *(Signature)* Loren H. Pearson	**Print Name:** Loren H. Pearson	**Company:** Hydro Logic, Inc.	**Date:** 2-24-2016	**Time:** 15:52
Received By: *(Signature)*	**Print Name:**	**Company:** A.T	**Date:** 2/24/16	**Time:** 15:52
SAMPLE RECEIPT **Total # of Containers:** 18	**Chains of Custody Seals** Y / N / NA	**Intact:** Y / N / NA **Temperature Received:**	**Condition:**	

REV. 2/19/12 WHITE: STAYS WITH SAMPLE (S) YELLOW: LAB PINK: SAMPLER

SAMPLE TYPE CODE
S - Routine Sample
P - Repeat sample (at original tap)
E - Enforcement (chain of custody)
U - Upstream repeat
D - Downstream repeat
X -Other Repeat
W - Untreated
V - Invalidated by Lab
C - Construction / Special

ANALYTICAL LABORATORIES, INC.

ID00020
1804 N. 33rd Street
Boise, Idaho 83703
1-800-574-5773
1-208-342-5515
www.analyticallaboratories.com

Public Water Supply X Private Water Supply Other_____

NAME OF WATER SYSTEM	COUNTY	PWS

REPORT RESULTS TO:

ED SQUIRES
HYDRO LOGIC INC
1002 W FRANKLIN ST
BOISE, ID 83702

DATE RECEIVED	2/24/2016
TIME RECEIVED	15:52
DATE ANALYZED	2/24/2016
TIME ANALYZED	16:30

SEND ADDITIONAL COPIES TO:

e-mail:

Phone (208) 342-8369 Ext Fax (208) 342-4334

IF RETEST, ORIGINAL SAMPLE DATE:

CHILLED 10 C [X] YES [ ] NO

COLLECTED BY: L. PEARSON

TRANSPORTED BY: L. PEARSON

SAMPLE TYPE	COLLECTION DATE/TIME	Sampling Location	Cl res	TOTAL COLIFORMS SM 9223	*E. COLI* SM 9223	HPC SM 9215
C	2/24/2016 14:02	LAB# **1607598** SPRING VALLEY WELL #1		**ABSENCE**	**ABSENCE**	
C	2/24/2016 14:02	LAB# **1607599** SPRING VALLEY WELL #1		**ABSENCE**	**ABSENCE**	

REMARKS: FIELD CONT=303.6; FIELD DO=+1.96; FIELD PH=7.29; FIELD ORP=-10.5; FT=65.7*F

ANALYST: LM

DATE PRINTED: 2/25/2016

ANALYTICAL METHODS

Total Coliforms

SM 9222 Membrane Filter Technique, Parts 909 and 909A, Standard Methods....16th ed.,1985

SM 9221 Mutiple Tube Fermentation , Parts 908 and 908A, and 908B, Standard Methods....16th

SM 9223 MMO-MUG Test Per 40 CFR141.21(f)(3)(IV)

E. coli

MUG Test Per 141.214(x)(7) and 40 CFR 141.21(f)(6)(III)

HPC

Pour Plate, Part 907, Standard Methods..., 16th ed., 1

Records shall be retained and destroyed in accordance with IDAPA 58.01.08 and 40 CFR 141.33.
In general, records shall not be retained beyond prescribed retention times.

Analytical Laboratories, Inc.

2-26-16

Brian McGovern Date
Laboratory Supervisor

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Attn: ED SQUIRES
HYDRO LOGIC INC
1002 W FRANKLIN ST
BOISE, ID 83702

Collected By: L. PEARSON
Submitted By: L. PEARSON

Source of Sample:
SPRING VALLEY WELL #1

Time of Collection: 14:02
Date of Collection: 2/24/2016
Date Received: 2/24/2016
Report Date: 3/16/2016

Field Temp: 18.7 °C **Temp Rcvd in Lab:**
PWS: **PWS Name**

Laboratory Analysis Report

Sample Number: 1607600

FIELD COND=303.6; FIELD DO=+1.96; FIELD PH=7.29; FIELD ORP=-10.5; FT=65.7*F; EPA Methods 200.8, 504.1, 505, 515.4, 525.2, 531.2, 547, and 549.2 were performed by Anatek Labs (ATL).

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Antimony Low	0.006	< 0.001	mg/L	0.001	EPA 200.8	3/9/2016	ATL
Ethylene Dibromide	0.05	<0.02	ug/L	0.02	EPA 504.1	3/2/2016	ATL
1,2-Dibromo-3-chloropropane	0.20	<0.02	ug/L	0.02	EPA 504.1	3/2/2016	ATL
Endrin	2	<0.02	ug/L	0.02	EPA 505	3/3/2016	ATL
gamma-BHC (Lindane)	0.2	<0.02	ug/L	0.02	EPA 505	3/3/2016	ATL
Methoxychlor	40	<0.1	ug/L	0.1	EPA 505	3/3/2016	ATL
Toxaphene	3	<1	ug/L	1	EPA 505	3/3/2016	ATL
Heptachlor	0.4	<0.04	ug/L	0.04	EPA 505	3/3/2016	ATL
Heptachlor epoxide	0.2	<0.02	ug/L	0.02	EPA 505	3/3/2016	ATL
Total PCB	0.5	<0.10	ug/L	0.1	EPA 505	3/3/2016	ATL
Chlordane(Total)	2	<0.1	ug/L	0.1	EPA 505	3/3/2016	ATL
Aldrin	UR	<0.2	ug/L	0.2	EPA 505	3/3/2016	ATL
Dieldrin	UR	<0.2	ug/L	0.2	EPA 505	3/3/2016	ATL
Dalapon	200	<1	ug/L	1	EPA 515.3	3/4/2016	ATL
Dicamba	UR	<0.2	ug/L	0.2	EPA 515.3	3/4/2016	ATL
2,4-Dichlorophenoxyacetic acid (2,4-D)	70.0	<0.1	ug/L	0.1	EPA 515.3	3/4/2016	ATL
Dinoseb	7.00	<0.2	ug/L	0.2	EPA 515.3	3/4/2016	ATL

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Date Report Printed: 4/15/2016 11:54:26

Laboratory Analysis Report

Sample Number: 1607600

FIELD COND=303.6; FIELD DO=+1.96; FIELD PH=7.29; FIELD ORP=-10.5; FT=65.7*F; EPA Methods 200.8, 504.1, 505, 515.4, 525.2, 531.2, 547, and 549.2 were performed by Anatek Labs (ATL).

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Pentachlorophenol	1.00	<0.04	ug/L	0.04	EPA 515.3	3/4/2016	ATL
Picloram	500	<0.1	ug/L	0.1	EPA 515.3	3/4/2016	ATL
Silvex	50.0	<0.2	ug/L	0.2	EPA 515.3	3/4/2016	ATL
Bis(2-ethylhexyl)adipate	400	<0.2	ug-L	0.2	EPA 525.2	3/4/2016	ATL
Bis(2-ethylhexyl)phthalate	6	<0.6	ug-L	0.6	EPA 525.2	3/4/2016	ATL
Simazine	4	<0.15	ug/L	0.15	EPA 525.2	3/4/2016	ATL
Hexachlorocyclopentadiene	50	<0.2	ug/L	0.2	EPA 525.2	3/4/2016	ATL
Atrazine	3	<0.2	ug/L	0.2	EPA 525.2	3/4/2016	ATL
Alachlor (Lasso)	2	<0.4	ug/L	0.4	EPA 525.2	3/4/2016	ATL
Hexachlorobenzene	1	<0.2	ug/L	0.2	EPA 525.2	3/4/2016	ATL
Benzo(a)pyrene	0.2	<0.02	ug/L	0.02	EPA 525.2	3/4/2016	ATL
Butachlor	UR	<0.4	ug/L	0.4	EPA 525.2	3/4/2016	ATL
Metolachlor	UR	<1	ug/L	1	EPA 525.2	3/4/2016	ATL
Metribuzin	UR	<0.2	ug/L	0.2	EPA 525.2	3/4/2016	ATL
Propachlor	UR	<0.2	ug/L	0.2	EPA 525.2	3/4/2016	ATL
Aldicarb	3.0	<2.0	ug/L	2	EPA 531.2	3/2/2016	ATL
Aldicarb sulfone	2.0	<2.0	ug/L	2	EPA 531.2	3/2/2016	ATL
Aldicarb sulfoxide	4.0	<2.0	ug/L	2	EPA 531.2	3/2/2016	ATL
Carbaryl	UR	<2.0	ug/L	2	EPA 531.2	3/2/2016	ATL
Carbofuran	40	<2.0	ug/L	2	EPA 531.2	3/2/2016	ATL
3-Hydroxycarbofuran	UR	<2.0	ug/L	2	EPA 531.2	3/2/2016	ATL
Methomyl	UR	<2.0	ug/L	2	EPA 531.2	3/2/2016	ATL
Oxamyl	200	<4.0	ug/L	4	EPA 531.2	3/2/2016	ATL
Glyphosate	700	<10.0	ug/L	10	EPA 547	3/3/2016	ATL
Endothall	100	<10	ug/L	10	EPA 548.1	3/8/2016	CG
Diquat	20.0	<0.8	ug/L	0.8	EPA 549.2	2/29/2016	ATL
Benzene	5	<0.5	ug/L	0.5	EPA 524.2	3/2/2016	CY
Carbon tetrachloride	5	<0.5	ug/L	0.5	EPA 524.2	3/2/2016	CY
Chlorobenzene	100	<0.5	ug/L	0.5	EPA 524.2	3/2/2016	CY
1,2-Dichlorobenzene	600	<0.5	ug/L	0.5	EPA 524.2	3/2/2016	CY
1,4-Dichlorobenzene	75	<0.5	ug/L	0.5	EPA 524.2	3/2/2016	CY

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Date Report Printed: 4/15/2016 11:54:26

Laboratory Analysis Report

Sample Number: 1607600

FIELD COND=303.6; FIELD DO=+1.96; FIELD PH=7.29; FIELD ORP=-10.5; FT=65.7*F; EPA Methods 200.8, 504.1, 505, 515.4, 525.2, 531.2, 547, and 549.2 were performed by Anatek Labs (ATL).

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
1,2-Dichloroethane	5	<0.5	ug/L	0.5	EPA 524.2	3/2/2016	CY
1,1-Dichloroethene	7	<0.5	ug/L	0.5	EPA 524.2	3/2/2016	CY
cis-1,2-Dichloroethene	70	<0.5	ug/L	0.5	EPA 524.2	3/2/2016	CY
trans-1,2-Dichloroethene	100	<0.5	ug/L	0.5	EPA 524.2	3/2/2016	CY
1,2-Dichloropropane	5	<0.5	ug/L	0.5	EPA 524.2	3/2/2016	CY
Ethylbenzene	700	<0.5	ug/L	0.5	EPA 524.2	3/2/2016	CY
Styrene	100	<0.5	ug/L	0.5	EPA 524.2	3/2/2016	CY
Tetrachloroethene	5	<0.5	ug/L	0.5	EPA 524.2	3/2/2016	CY
Toluene	1000	<0.5	ug/L	0.5	EPA 524.2	3/2/2016	CY
1,2,4-Trichlorobenzene	70	<0.5	ug/L	0.5	EPA 524.2	3/2/2016	CY
1,1,1-Trichloroethane	200	<0.5	ug/L	0.5	EPA 524.2	3/2/2016	CY
1,1,2-Trichloroethane	200	<0.5	ug/L	0.5	EPA 524.2	3/2/2016	CY
Trichloroethene	5	<0.5	ug/L	0.5	EPA 524.2	3/2/2016	CY
Vinyl chloride	2	<0.5	ug/L	0.5	EPA 524.2	3/2/2016	CY
Total THM's	80	<2.0	ug/L	2	EPA 524.2	3/2/2016	CY
Bromodichloromethane	----	<0.5	ug/L	0.5	EPA 524.2	3/2/2016	CY
Bromoform	----	<0.5	ug/L	0.5	EPA 524.2	3/2/2016	CY
Chloroform	----	<0.5	ug/L	0.5	EPA 524.2	3/2/2016	CY
Dibromochloromethane	----	<0.5	ug/L	0.5	EPA 524.2	3/2/2016	CY
Xylene, Total	10000	<0.5	ug/L	0.5	EPA 524.2	3/2/2016	CY
Dichloromethane	5	<0.5	ug/L	0.5	EPA 524.2	3/2/2016	CY
Methyl-tert-butylether	UR	<0.5	ug/L	0.5	EPA 524.2	3/2/2016	CY
Dibromofluoromethane (Surr)		100	% 80-120		EPA 524.2	3/2/2016	CY
Toluene-d5 Surrogate		98.2	% 80-120		EPA 524.2	3/2/2016	CY
Bromofluorobenzene Surrogate		96.0	% 80-120		EPA 524.2	3/2/2016	CY
Cyanide, Total	0.20	< 0.005	mg/L	0.005	EPA 335.4	3/2/2016	DS

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Thank you for choosing Analytical Laboratories for your testing needs.

If you have any questions concerning this report,

please contact your client manager: **James Hibbs**

Date Report Printed: 4/15/2016 11:54:26

CLIENT CODE=

CHAIN OF CUSTODY RECORD

ANALYTICAL LABS, INC.
1804 N. 33rd Street • Boise, ID 83703
(208) 342-5515 • Fax: (208) 342-5591 • 1-800-574-5773
Website: www.analyticallaboratories.com
E-mail: ali@analyticallaboratories.com

CLIENT INFORMATION:

Project Manager: Ed Squires
Company: Hydro Logic, Inc.
Address: 1002 W. Franklin St.
Boise, ID 83702
Phone: 342-8369 Fax: 342-3100
Sampled by: *(Please print)*

PROJECT INFORMATION:

Project Name: Spring Valley Well #1
PWS Number:
Purchase Order Number:
Required Due Date:
E-mail Address: loren@hydrologicinc.net
Transported by: *(Please print)* L. Pearson

TESTS REQUESTED

Lab ID	Date Sampled	Time Sampled	Sample Description (Source)	Sample Matrix	chlorine demand	surfactants	Remarks:
7855	2/26/2016	10:35	Spring Valley Well #1	water	X	X	
	18.7 °C		Measurements				
Pro Plus #1	65.7°F, D.O. = 11.94 mg/L; cond. = 302.8 µS, pH = 7.31, ORP = -30.2 mV						
Pro Plus #2	65.7°F; D.O. = 12.20 mg/L, cond. = 292.9 µS, pH = 7.27, ORP = -1.9 mV						

Invoice to: *(If different than above address)*
same

Special Instructions:
Please add these to the ~~DEQ~~ chemistry tables for the previous samples.

ALLOCATIONS OF RISK: Analytical Laboratories, Inc. will perform preparation and testing services, obtain findings and prepare reports in accordance with Good Laboratory Practices (GLP). If, for any reason, Analytical Laboratories, Inc. errors in the conduct of a test or procedure, their liability shall be limited to the cost of the test or procedure completed in error. Under no circumstances will Analytical Laboratories, Inc. be liable for any other cost associated with obtaining a sample or use of data.

Note: Samples are discarded 21 days after results are reported. Hazardous samples will be returned to client or disposed of at client expense.

	Print Name:	Company:	Date:	Time:
Relinquished By: *(Signature)*				
Received By: *(Signature)*				
Relinquished By: *(Signature)* Loren H. Pearson	Loren H. Pearson	Hydro Logic, Inc	2-26-2016	11:26 hrs
Received By: *(Signature)* Ben Butler	Ben Butler	A-I	2/26/16	11:26

SAMPLE RECEIPT Total # of Containers: 2 Chains of Custody Seals Y / (N) / NA Intact: Y (N) NA Temperature Received: 16.1 °C Condition: Good

REV. 2/19/12 WHITE: STAYS WITH SAMPLE (S) YELLOW: LAB PINK: SAMPLER

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 3/4/2016 8:08:32 AM
http://www.analyticallaboratories.com
These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1607855

Attn: ED SQUIRES
HYDRO LOGIC INC
1002 W FRANKLIN ST
BOISE, ID 83702

Collected By:

Submitted By: L PEARSON

Source of Sample:
SPRING VALLEY WELL #1

Time of Collection: 10:35
Date of Collection: 2/26/2016
Date Received: 2/26/2016
Report Date: 3/4/2016

PWS#:

Field Temp: 18.7 °C Temp Rcvd in Lab: 16.1 °C

PWS Name:

FIELD DO=+1.94; FIELD COND=302.8; FIELD PH=7.31; FIELD ORP=-1.9

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Chlorine Demand		**	mg/L	.1	SM 2350 B	3/3/2016	MDM
** Total Chlorine Demand at 30 min. = 1.24 - 1.77 mg/L., Instantaneous Demand = 1.17-1.31 mg/L, Temp. = 22.8 C, pH =7.2s.u., Chlorine additions approx. 0.50 - 3.0mg/L.							
Surfactants	UR	<0.01	mg/L	.01	SM 5540	2/29/2016	MDM

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Thank you for choosing Analytical Laboratories for your testing needs.

If you have any questions about this report, or any future analytical needs, please contact your client manager:

James Hibbs

Appendix B.

State of Idaho Well Driller's Report for
City of Eagle Spring Valley Municipal Supply Well #1

Form 238-7
6/07

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

RECEIVED
MAR 10 2016
WATER RESOURCES
WESTERN REGION

1. WELL TAG NO. D 0070298
Drilling Permit No. 970816-876873
Water right or injection well # 63-32573

2. OWNER
Name City of Eagle - Spring Valley Municipal Well #1
Address 660 East Civic Lane
City Eagle State ID Zip 83616

3. WELL LOCATION:
Twp. 05 North ☒ or South ☐ Rge. 01 East ☐ or West ☒
Sec. 28 SE 1/4 (10 acres) SE 1/4 (40 acres) SE 1/4 (160 acres)
Gov't Lot N/A County Ada
Lat. 43 ° 44.235' North (Deg. and Decimal minutes)
Long. 116 ° 27.213' West (Deg. and Decimal minutes)
Address of Well Site ~2,800' NE of Highway 16 on Big Gulch Road and Farmer's Union Ditch. City Eagle
(Give at least name of road + Distance to Road or Landmark)
Lot. N/A Blk. N/A Sub. Name Spring Valley

4. USE:
☐ Domestic ☒ Municipal ☐ Monitor ☐ Irrigation ☐ Thermal ☐ Injection
☐ Other

5. TYPE OF WORK check all that apply (Replacement etc.)
☒ New Well ☐ Replacement well ☐ Modify existing well
☐ Abandonment ☒ Other Previous test-bore tag #D0064155

6. DRILL METHOD:
☐ Air Rotary ☒ Mud Rotary ☐ Cable ☒ Other Auger drilled to 14 ft bgl

7. SEALING PROCEDURES

Seal material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method/procedure
				SEE TABLE PAGE 2

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/ Schedule	Material	Casing	Liner	Threaded	Welded
24-inch	2'	15'	0.375"	steel	☒	☐	☐	☒
18-inch	+3	2'	0.250"	steel	☒	☐	☐	☒
17.4-inch	2'	364'	SDR17	splined PVC	☒	☐	☐	☐

Was drive shoe used? ☐ Y ☒ N Shoe Depth(s) N/A

9. PERFORATIONS/SCREENS:
Perforations ☐ Y ☒ N Method Welded Vee-wire screens (304 SS)
Manufactured screen ☒ Y ☐ N Type Johnson "Hi-Flow" stainless steel
Method of installation Lowered, centralized and enveloped with filter sand

Lengths 15' 20'

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule
341'	356'	0.035"	101 / ft	11-inch	stainless steel	Sch. 40 with
356'	456'	0.035"	101 / ft	11-inch	stainless steel	6-inch long
Also	see	table	on	page 2.		weld rings

Length of Headpipe 24-ft of screen Length of Tailpipe No tailpipe
Packer ☒ Y ☐ N Type Removable 12" w/ two 3-lip Figure "K" packers

10. FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method
#8-#16 sand	343'	481'	94.5 ft³	Pour and tag into place
gradation				"Birdseed" brand

11. FLOWING ARTESIAN:
Flowing Artesian? ☐ Y ☒ N Artesian Pressure (PSIG) 118 PSI (272 ft. H2O)
Describe control device 24"-to-18" steel well-head transition / security shelter

In addition to our drillers' observations of the cuttings and rig behavior, this log also has the benefit of an on-site geologist, Kurt Newbry (HLI), during sampling and HLI borehole geophysical logs were also used to develop the best record possible of the drilled section. - GP

12. STATIC WATER LEVEL and WELL TESTS:
Depth first water encountered (ft) mud drill Static water level (ft) 92.3 ft bgl (2-23-2016)
Water temp. (°F) 65.7 °F Bottom hole temp. (°F) 69.29 °F at 600 ft bgl in test bore
Describe access port Lockable 18-inch steel pipe-cap / security shelter

Well test: Test method:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)	Pump	Bailer	Air	Flowing artesian
Testing	by: Hydro Logic, Inc.		☒	☐	☐	☐
140.6 feet	2,700 gpm	80 hours				
Constant-	rate discharge	testing.				

Water Chemistry: pH=7.29; cond. =299µS; DO=+2.1; ORP=-16.0mV
Water Quality test or comments: good taste, no sand, clear, very slight H2S

13. LITHOLOGIC LOG and/or repairs or abandonment:

Bore Dia. (in)	From (ft)	To (ft)	Remarks, lithology or description of repairs or abandonment, water temp.	Water Y	Water N
30"	0'	5'	Fine-grained olive brown colored silty sand		☒
30"	5'	8'	Olive brown-colored tacky sandy clay		☒
30"	8'	12'	Fine-to-coarse-grained tan sand with gravel		☒
30"	12'	14'	Tacky olive brown-colored clay		☒
23"	14'	25'	Sandy tacky olive brown-colored clay	n/a	n/a
23"	25'	42'	Medium-to-coarse-grained tan sand with gravel		
23"	42'	50'	Light yellowish brown-colored sandy tacky clay		
23"	50'	58'	Light gray medium-to-coarse-grained sand		
23"	58'		Interbedded light gray-colored sticky clays and		
		85'	medium-to-coarse-grained sands with gravel		
23"	85'		Olive gray, olive, and gray-to-dark gray-		
		203'	colored interbedded tacky clays		
23"	203'	212'	Dark greenish gray clayey sand		
23"	212'		Tacky greenish gray-colored clay with beds of		
			very fine-to-very coarse-grained greenish		
		289'	gray sands		
23"	289'	304'	Olive-colored tacky sandy clay		
23"	304'	364'	Tacky olive-colored clay		
15"	364'	368'	Tacky olive-colored clay		
15"	368'	378'	Fine-to-v. coarse-grained tan sand with gravel		
15"	378'	386'	Tacky olive-colored clay		
15"	386'	395'	Tan fine-to-v. coarse-grained sand with gravel		
15"	395'	403'	Sandy tacky olive-colored clay		
15"	403'		Fine-to-v. coarse-grained sands with thin		
15"		424'	olive-colored tacky clay beds		
15"	424'	429'	Tacky olive-colored clay		
15"	429'	450'	Very fine-to-coarse-grained tan sand		
15"	450'	453'	Olive-colored tacky clay		
15"	453'	465'	Fine-to-very coarse-grained pale yellow sand		
15"	465'	485'	Fine-to-very coarse-grained greenish gray sand		

=mud filled bore during drilling.

Completed Depth (Measurable) 481 feet below ground
Date: Started January 6, 2016 Completed March 2, 2016

14. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name Post Drilling Inc. Co. No. 670
*Principal Driller George Post Date 3-8-2016
*Driller Greg Mitchell Date 3-8-2016
*Operator II Date
Operator I Date
* Signature of Principal Driller and rig operator are required.

Bottom hole temperature was measured in the 8-inch diameter test-bore with a calibrated (on-site) geophysical probe left on bottom until readings were stable at 600-feet below ground.

Form 238-7
6/07

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 0070298 **Page 2 of 2**

Drilling Permit No. **970816-876873**

Water right or injection well # **63-32573**

2. OWNER

Name **City of Eagle - Spring Valley Municipal Well #1**

Address **660 East Civic Lane**

City **Eagle** State **ID** Zip **83616**

3. WELL LOCATION:

Twp. **05** North ☒ or South ☐ Rge. **01** East ☐ or West ☒

Sec. **28** **SE** 1/4 (10 acres) **SE** 1/4 (40 acres) **SE** 1/4 (160 acres)

Gov't Lot **N/A** County **Ada**

Lat. **43 °** **44.235' North** (Deg. and Decimal minutes)

Long. **116 °** **27.213' West** (Deg. and Decimal minutes)

Address of Well Site **~2,800' NE of Highway 16 on Big Gulch Road and Farmer's Union Ditch.** City **Eagle**

(Give at least name of road + Distance to Road or Landmark)

Lot. **N/A** Blk. **N/A** Sub. Name **Spring Valley**

4. USE:

☐ Domestic ☒ Municipal ☐ Monitor ☐ Irrigation ☐ Thermal ☐ Injection ☐ Other

5. TYPE OF WORK check all that apply (Replacement etc.)

☒ New Well ☐ Replacement well ☐ Modify existing well ☐ Abandonment ☒ Other **Previous test-bore tag #D0064155**

6. DRILL METHOD:

☐ Air Rotary ☒ Mud Rotary ☐ Cable ☒ Other **Auger drilled to 14 ft bgl**

7. SEALING PROCEDURES

Seal material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method/procedure
				SEE TABLE AT RIGHT

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/ Schedule	Material	Casing	Liner	Threaded	Welded
24-inch	**2'**	**15'**	**0.375"**	**steel**	☒	☐	☐	☒
18-inch	**+3**	**2'**	**0.250"**	**steel**	☒	☐	☐	☒
17.4-inch	**2'**	**364'**	**SDR17**	**splined PVC**	☒	☐	☐	☐

Was drive shoe used? ☐ Y ☒ N Shoe Depth(s) **N/A**

9. PERFORATIONS/SCREENS:

Perforations ☐ Y ☒ N Method **Welded Vee-wire screens (304 SS)**

Manufactured screen ☒ Y ☐ N Type **Johnson "Hi-Flow" stainless steel**

Method of installation **Lowered, centralized and enveloped with filter sand**

	From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule
Length 5'	**456'**	**476'**	**0.035"**	**101 / ft**	**11-inch**	**stainless steel**	**Sch. 40 with**
10'	**476'**	**481'**	**0.035"**	**101 / ft**	**11-inch**	**stainless steel**	**6-inch long**
	Also	**see**	**table**	**on**	**page 1.**		**weld rings**

Length of Headpipe **24-ft of screen** Length of Tailpipe **No tailpipe**

Packer ☒ Y ☐ N Type **Removable 12" w/ two 3-lip Figure "K" packers**

10. FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method
#8-#16 sand	**343'**	**481'**	**94.5 ft³**	**Pour and tag into place**
gradation				**"Birdseed" brand**

11. FLOWING ARTESIAN:

Flowing Artesian? ☐ Y ☒ N Artesian Pressure (PSIG) **118 PSI (272 ft. H2O)**

Describe control device **24"-to-18" steel well-head transition / security shelter**

12. STATIC WATER LEVEL and WELL TESTS:

Depth first water encountered (ft) **mud drill** Static water level (ft) **92.3 ft bgl (2-23-2016)**

Water temp. (°F) **65.7 °F** Bottom hole temp. (°F) **69.29 °F at 600 ft bgl** in test bore

Describe access port **Lockable 18-inch steel pipe-cap / security shelter**

Well test: Test method:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)
Testing	**by: Hydro Logic, Inc.**	
140.6 feet	**2,700 gpm**	**80 hours**
Constant-	**rate discharge**	**testing.**

Pump ☒ Bailer ☐ Air ☐ Flowing artesian ☐

Water Chemistry: pH=7.29; cond. =299µS; DO=+2.1; ORP=-16.0mV

Water Quality test or comments: **good taste, no sand, clear, very slight H2S**

13. LITHOLOGIC LOG and/or repairs or abandonment:

Bore Dia. (in)	From (ft)	To (ft)	Remarks, lithology or description of repairs or abandonment, water temp.	Water Y	Water N
			SEALING PROCEDURES		
30"	**0'**	**13'**	**Cement grout - pumped thru tremie - 40.1 ft³**		
30"	**13'**	**14'**	**3/4" bentonite chip - poured and tagged - 3.5 ft³**		
23"	**0'**		**Cement / Wyo-Ben Grout Well DF grout mixture**		
		292'	**pumped thru tremie - 238.3 ft³**		
23"	**292'**	**362'**	**Cement grout - pumped thru tremie - 53.5 ft³**		
23"	**362'**	**364'**	**3/4" bentonite chip - poured and tagged- 2.4 ft³**		

SEALS AND SAND FILTER:
-Seals and sand filter depths were verified by tagging in the annulus between the mud-filled borehole and casing. Volumes of materials used were compared to volume calculations of the borehole caliper log minus the volume of the screen/casing (= annulus) and to the estimated volume of material removed from the borehole during drilling.

GROUT SEALS:
-Neat cement grout was mixed at a rate of 6-gallons of water to 94-pounds of Portland Type I/II cement powder.
-Cement/bentonite grout was mixed at rate of 24-gallons of water to 94-pounds of Portland Type I/II cement powder and 50-pounds of "Wyo-Ben" brand Grout Well DF bentonite powder.
-Grouts were pumped under pressure from the bottom-up.

ALL STAINLESS STEEL PACKER-REDUCER:
- total length = 3.5 feet
- 12" barrel = 3.0 feet
- two 3-lip Figure "K" neoprene packers
- top of packer assembly = 338 feet bgl
- overshot with three "L"-shaped slots that turn on clockwise over the three 1"-pins on headpipe
- turn packer counter-clockwise to remove
- packer design by E. Squires
- packer fabrication by Advantage Machine & Hydraulic, Nampa, Idaho

Completed Depth (Measurable) **481 feet below ground**

Date: Started **January 6, 2016** Completed **March 2, 2016**

14. DRILLER'S CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name **Post Drilling Inc.** Co. No. **670**

*Principal Driller **George Post** Date **3-8-2016**

*Driller **Greg Mitchell** Date **3-8-2016**

*Operator II Date

Operator I Date

PROJECT MANAGER:
Bill Brownlee, Partner, M3 Eagle, LLC., Eagle, ID

PROJECT HYDROGEOLOGIST AND WELL DESIGN:
Ed Squires, RPG, Hydro Logic, Inc., Boise, ID

INSPECTION, HYDRAULIC TESTING, AND BOREHOLE GEOPHYSICS BY:
Hydro Logic, Inc., Boise, ID

SITE GEOLOGIST (DRILL, CONSTRUCT, DEVELOP, AND CAMERA):
Kurt Newbry, GIT, Hydro Logic, Inc. - Boise, ID

WELL DRILLING, CONSTRUCTION, and DEVELOPMENT BY:
Post Drilling Inc., Weiser, ID

PUMP CONTRACTOR:
Layne of Idaho, Inc., Nampa, ID

CITY OF EAGLE PROJECT MANAGER:
Ken Acuff, Superintendent, Eagle, ID

Appendix C.

Original and Updated Idaho Department of Environmental Quality Approval Letters for the City of Eagle Municipal Supply Well #1 Construction and Well Site

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1445 North Orchard • Boise, Idaho 83706 • (208) 373-0550
www.deq.idaho.gov

C.L. "Butch" Otter, Governor
John H. Tippets, Director

October 22, 2015

Thomas Warley
M3 Eagle, LLC
533 E Riverside Dr., Suite 110
Eagle, ID 83616

RE: Spring Valley (M3 Eagle) - Well 1 (Eagle, Ada County)
Extension of Project Approval
Well Construction

Dear Mr. Warley:

This project was approved by this office on January 25, 2013. Your engineer has certified that no significant design modifications have been made for this project. The approval of the plans and specifications for this phase of the project is extended through October 22, 2016, subject to the conditions listed in the original approval letter.

Please call me with any questions at (208) 373-0184 or contact me via e-mail at kevin.ryan@deq.idaho.gov.

Sincerely,

Kevin Ryan, P.E.
Staff Engineer

ec: Ed Squires, P.E., Hydrologic
Todd Crutcher, P.E., Boise Regional Office
TRIM Record #2015AGD3436

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1445 North Orchard • Boise, Idaho 83706 • (208) 373-0550

C.L. "Butch" Otter, Governor
Curt Fransen, Director

January 25, 2013

Thomas H. Warley
M3 Eagle, LLC
533 E. Riverside Dr., Suite 110
Eagle, ID 83616

RE: Spring Valley (M3 Eagle) - Well 1 Well Plan and Specs (Eagle, Ada County)
Water and Sewer Mains

Dear Mr. Warley:

The plans and specifications for the subject project appear to meet State of Idaho standards and are approved based on the conditions listed below.

I. STANDARD CONDITIONS

A. All conditions of this letter must be met. The standard conditions on the Department of Environmental Quality (DEQ) review stamp are part of this approval. Supporting reports or documents are considered to be part of the approved documents.

B. No work may begin until a copy of this approval letter and the plans and specifications bearing the DEQ approval stamp are delivered to and kept on the job site. As the project owner, you must ensure the contractor, the construction inspector, and the certifying engineer are aware of the approval conditions.

C. This approval will be voided if: 1) construction is not completed by January 25, 2014; 2) the project is improperly constructed, operated, or maintained; or 3) the project fails to function as intended.

D. No material deviations can be made from the approved plans without DEQ's prior written approval.

E. Per the project documents, the Land Developer or Owner or his representative shall ensure a professional engineer with Hydro Logic Inc. provides supervision of construction and written documentation as follows.

F. Within thirty (30) days after completion of construction, the Land Developer or Owner or his representative shall provide DEQ with one of the following documents.

1. Record plans and specifications prepared and sealed by the professional engineer responsible for observation on behalf of the owner. These plans and specifications shall depict significant deviations in the actual construction and illustrate alterations or modifications performed, based on as-built drawings provided by the contractor and field observations made by observer(s) under the direction of the professional engineer.

2. If actual construction does not have significant deviations from the originally approved plans and specifications, the system owners may submit a written statement to DEQ to this effect, prepared and sealed by the professional engineer. This statement shall be based on as-built drawings provided by the contractor and field observations made by observer(s) under the direction of the professional engineer.

II. PROJECT SPECIFIC CONDITIONS:

DEQ has not conducted design review for stormwater plans and specifications and has made no determination regarding whether the plans and specifications include appropriate BMPs to protect ground water and surface water quality.

If the construction phase of this project is anticipated to disturb one acre or more of land, or is part of a larger project that disturbs one acre or more of land, the project may be subject to regulation under the Federal Clean Water Act National Pollution Discharge Elimination System program administered by the U.S. Environmental Protection Agency. Stormwater events that occur during construction should be managed according to the site-specific Stormwater Pollution Prevention Plan and the other requirements of the general permit. The on-line Construction General Permit and Notice of Intent can be found at http://www.epa.gov/npdes.

If this project uses underground injection control (UIC) devices to treat and dispose of stormwater, the project may be subject to regulation under the "Rules And Minimum Standards For The Construction And Use Of Injection Wells In The State Of Idaho" (IDAPA 37.03.03) administered by the Idaho Department of Water Resources (IDWR) or under authority of local government. Additional information on IDWR's UIC program can be found at: http://www.idwr.idaho.gov/water/well/injection/injectionedit.htm.

It is the project owner's responsibility to use appropriate stormwater best management practices to prevent ground and surface water contamination.

Please call me with any questions at (208) 373-0184 or contact me via e-mail at kevin.ryan@deq.idaho.gov.

Sincerely,

Kevin P. Ryan, P.E.
Staff Engineer

KPR/vas

PDF: Todd Crutcher, P.E., Boise Regional Office
Ed Squires, P.E., Hydro Logic Inc. (w/approved and stamped set of plans)
TRIM Record #2013AGD247

APPROVED
By: _____
IDAHO DEQ
Boise Regional Office
Date: JAN-25-2013

Spring Valley (formerly M3 Eagle) Supply Well #1 "Standard" Well Construction Technical Specifications, Public Drinking Water System Well Site Evaluation, and Hydrogeologic Evaluation for GWUDI

m3companies

January 9, 2013

A submittal to Idaho Department of Environmental Quality
by Hydro Logic, Inc. Boise Idaho

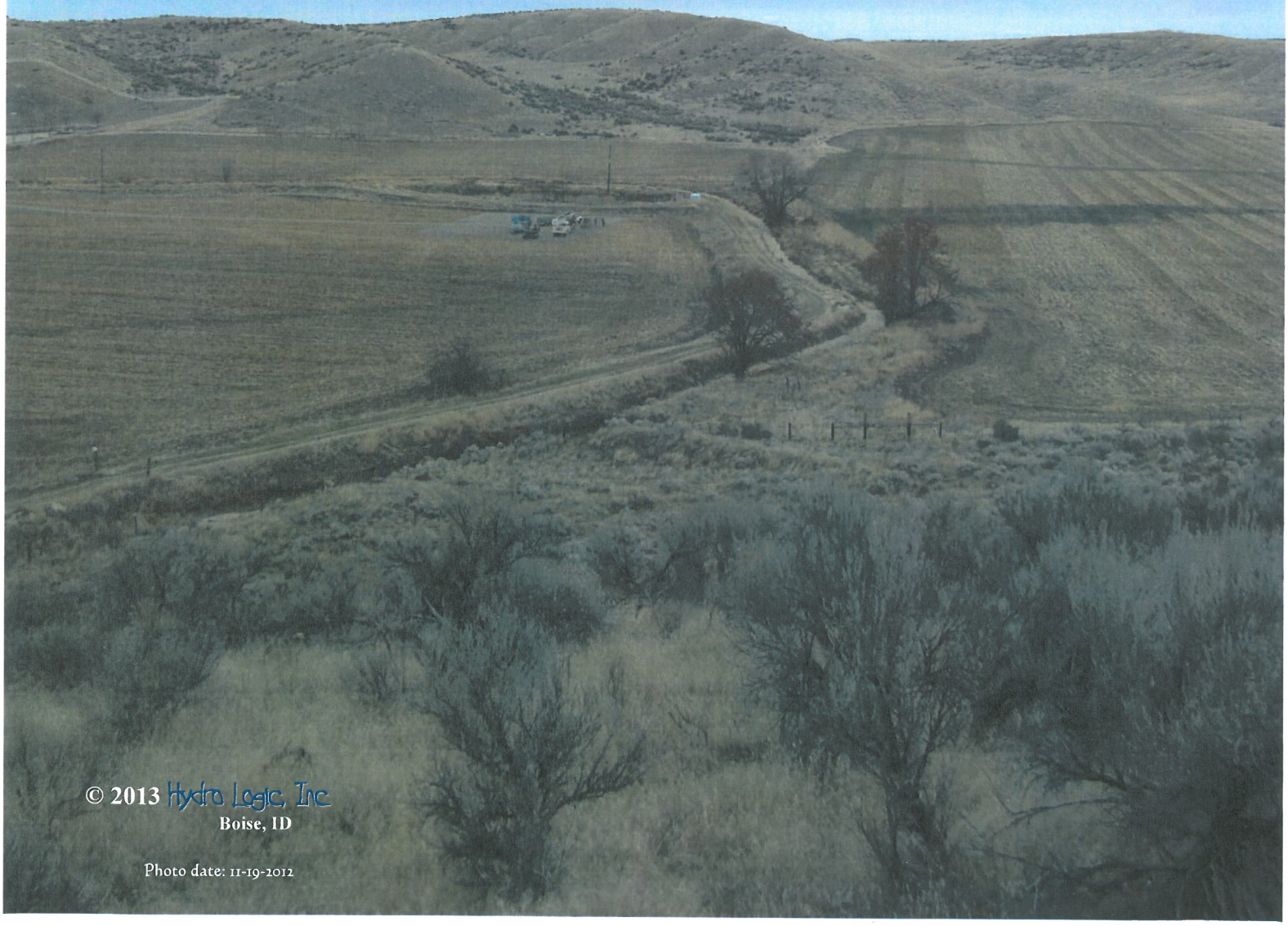

Photo date: 11-19-2012

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1445 North Orchard • Boise, Idaho 83706 • (208) 373-0550

C.L. "Butch" Otter, Governor
Curt Fransen, Director

January 24, 2013

Thomas H. Warley
M3 Eagle, LLC
533 E. Riverside Dr., Suite 110
Eagle, ID 83616

RE: Spring Valley (M3 Eagle) - Well 1 PER (Eagle, Ada County)
Public Drinking Water System - Preliminary Engineering Report

Dear Mr. Warley:

The referenced project appears to meet State of Idaho standards and is approved based on the conditions listed below.

I. PROJECT SPECIFIC CONDITIONS:

A. This approval is for the Preliminary Engineering Report only. The approval for the well plans and specifications is in a separate approval letter.

Please call me with any questions at (208) 373-0184 or contact me via e-mail at kevin.ryan@deq.idaho.gov.

Sincerely,

Kevin P. Ryan, P.E.
Staff Engineer

KPR/vas

PDF: Todd Crutcher, P.E., Boise Regional Office
Ed Squire, P.G., Hydro Logic Inc. (w/approved and stamped PER)
TRIM Record #2013AGD246

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1445 North Orchard • Boise, Idaho 83706 • (208) 373-0550

C.L. "Butch" Otter, Governor
Curt Fransen, Director

January 24, 2013

Thomas H. Warley
M3 Eagle, LLC
533 E. Riverside Dr., Suite 110
Eagle, ID 83616

RE: Spring Valley (M3 Eagle) - Well 1 WSE (Eagle, Ada County)
Well Site Conditional Approval
Groundwater Under Direct Influence of Surface Water (GWUDI) Determination

Dear Mr. Warley:

WELL SITE CONDITIONAL APPROVAL

Your consultant has submitted the required information on the well site and has certified that the site is generally acceptable for a new Public Water System well. We have reviewed that information and are approving the site per the *Idaho Rules for Public Drinking Water Systems* (IDAPA 58.01.08), subject to the following conditions:

I. STANDARD CONDITIONS

A. The approval is for the well site only. Construction of the well, pump house, and distribution system components cannot begin until plans and specifications are approved by the Department of Environmental Quality (DEQ). The plans, specifications, and related documents will have to verify and augment the data provided in the initial Well Site Evaluation, ensuring full conformance to the IRPDWS.

B. Preliminary engineering reports for water system components, such as a storage reservoir, booster station(s) and the well pump house, must be approved by DEQ prior to the submittal of plans and specifications for the water system components.

C. New source monitoring will need to be collected by the owner, tested by an Idaho certified laboratory, and approved by DEQ before the water may be distributed to the public. The detailed list of parameters that need to be tested will be forwarded when the well construction is approved.

D. You must receive written authorization from DEQ before you are allowed to serve water to the public. Approvals of other portions of this project and/or the lifting of sanitary restrictions shall not be interpreted as authorization to serve the public.

E. This approval will be voided if: 1) well construction is not completed by January 24, 2014; 2) the well is improperly constructed, operated, or maintained; or 3) the site conditions change before well construction has commenced.

II. PROJECT SPECIFIC CONDITIONS

This project will be part of a new public water system. Technical, financial, and managerial documentation must be approved by DEQ prior to or concurrent with the submittal of plans and

specifications for water system components, such as a storage reservoir, booster station, or the well pump house.

GROUNDWATER UNDER DIRECT INFLUENCE OF SURFACE WATER (GWUDI)

Idaho is required by federal drinking water regulations to determine whether groundwater sources serving public drinking water systems are directly influenced by surface water. "Groundwater Under the Direct Influence of Surface Water" (GWUDI) may contain disease causing organisms which are normally found only in surface water and may require additional treatment including filtration and/or disinfection and contact time.

From our review of the materials submitted for this project, we have classified this source as:

"Groundwater" - No further action is necessary.

Please call Richard Lee, of this office, at 373-0550 with any questions on the classification.

RECENT FEDERAL REGULATIONS

You should be aware that recent federal regulations could affect the design and operation of water systems utilizing groundwater sources.

A. The "Groundwater Rule" (71 FR 65574, November 8, 2006) will provide for evaluating groundwater sources that are not under the direct influence of surface water for vulnerability to microbial contamination. If a source is found to be vulnerable, it may be necessary to install disinfection and contact time prior to distribution to the first customer. To provide for that possibility, the planning and layout of the facility needs to include an evaluation of the how the system could be modified to supply a minimum effective "CT" (disinfectant concentration times contact time) of 12 mg-min/L (as chlorine).

B. The "Stage 2 Disinfectants and Disinfection By-Products Rule" (71 FR 388, January 4, 2006) regulates certain compounds that are formed when disinfectants combine with certain naturally occurring, organic constituents in water.

Please call me with any questions at (208) 373-0184 or contact me via e-mail at kevin.ryan@deq.idaho.gov.

Sincerely,

Kevin P. Ryan, P.E.
Staff Engineer

c: Ed Squires, P.E., Hydro Logic Inc.
Rob Whitney, IDWR-Boise Field Office

PDF: Todd Crutcher, P.E., Boise Regional Office
Richard Lee, Boise Regional Office
TRIM Record #2013AGD245