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Geotechnical Engineering  
Environmental Engineering  
Construction Material Testing  
Subsurface Exploration  
Special Inspection

Quaking Aspen Estates Owners Association  
Attn: Shane Zaring  
5489 W. Quaking Aspen Drive  
Coeur d'Alene, ID

October 19, 2015

Job Number H15518

PROJECT: Quaking Aspen Subdivision Water Supply  
Coeur d'Alene, ID

SUBJECT: Results of Aquifer Testing and Analysis

Dear Mr. Zaring:

This report presents the results of aquifer testing and analysis for the wells serving your subdivision. This work was performed at your request pursuant to the Idaho Department of Water Resources (IDWR) July 21, 2015 request for additional information to support the appropriation of State waters (water rights) for the subdivision (attached). Water system design documents, water well reports, and previous well testing data are also attached. We understand that you have applied for withdrawal of 30 gpm.

### *Project Considerations*

The Quaking Aspen Subdivision is comprised of 10 five-acre lots and is located approximately 7 miles south of Coeur d'Alene on Quaking Aspen Lane, approximately 0.3 miles east of U.S. Highway 95 as illustrated in the attached subdivision design plans. The water supply system consists of two wells, Well #1 and Well #2, which were installed in 2007 prior to development of the subdivision. The wells are located approximately 110 feet apart. The wells were tested following installation in 2007. The data is attached and was evaluated for this report.

The wells are just over 75 feet deep and draw groundwater from a permeable granular deposit below the underlying basalt bedrock as described in the attached Well Driller's Reports. This sand and gravel interflow zone is approximately 7 to 9 feet thick.

Well #1 (D0053663) has a 6-inch steel casing that is open to the interflow zone at a depth of 75 feet. Well #2 (D0051750) was similarly constructed and is open to the interflow zone at 76 feet. In August 2007, each of these wells were pumped individually for 24 hours, with drawdown being monitored in the pumping well and in the other, non-pumping well. Well #1 was pumped at a rate of approximately 30 gallons per minute (gpm) and well #2 was pumped at a rate of 17 gpm. Further details can be found in the Idaho Department of Environmental Quality (IDEQ) Record Drawings Report (Matt Plaisted, November 2007) and the Public Water Supply Improvement Plans, Revision 1 (Inland Northwest Consultants, May 2008).

Since 2008, Well #1 has been used by the Association to provide potable water as four of the ten lots that have been developed. Well #2 has not been pumped since initial well development testing and is currently being connected to the system.

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## X15518 Quaking Aspen Aquifer Testing, 2015 - Report

### ***Testing Considerations and Results***

The Quaking Aspen water system has a 60,000-gallon reservoir, most of which is designed for fire protection. Prior to testing, the reservoir was completely filled. Well #1 discharges to the reservoir; separate auxiliary pumps supply water for domestic use and fire protection from the reservoir. During testing, Well #1 was discharged to the reservoir while Well #2 was discharged to the surface near the pump house. The discharge during testing ran off the site as surface water without recharging the producing wells.

United Crown Pump and Drilling installed a pump into Well #2, and configured the water system control system to operate and control the flow from both wells during the test. Water levels in both wells were measured with electronic water level meters, and by dataloggers installed in the wells prior to testing. Simultaneous measurements from the water level meters and dataloggers were found to correlate well with each other during pumping and recovery. We coordinated with United Crown personnel to operate and monitor the test during pumping and recovery periods. The reservoir provided domestic water supply to the residents during the test.

Production (flow rate) from Well #1 was measured with the meter installed in the water supply system. Production from Well #2 was measured volumetrically during the test. Due to the sheer number of data points, datalogger measurements are transmitted electronically. Drawdown and recovery data from the testing are illustrated in various figures presented in this report.

Both wells were pumped simultaneously during the duration of pumping with a total rate that ranged (initially) from 60 gpm to a final rate of 33.5 gpm. Flow rates were adjusted (reduced) during testing to maintain water levels above the pumps and maintain sustainable pumping rates during overnight hours as illustrated for each well in Figures 1 and 2.

Following 48 hours of pumping, both pumps were shut off simultaneously, and water levels were monitored for five days prior to being removed from the wells on October 5, 2015. The system was then put back online and normal service was restored to the residents.

Table 1 provides an overall summary of observations during pumping and recovery periods. The initial or static water levels presented in Table 1 represent water levels prior to testing, which was initiated several days following use of Well #1 to fill the Association's reservoir. The final drawdown represents the amount of drawdown in each well after 48 hours of near maximum production. Water levels in the two pumping wells recovered fully to pre-testing levels within about 3.5 days of when pumping was stopped on September 30<sup>th</sup>.

### **Aquifer Analysis**

Figures 1 through 8 provide graphical plots of drawdown and recovery measurements for both wells and associated analysis of aquifer parameters.

We analyzed test data from Wells #1 and #2 to estimate aquifer transmissivity using the Cooper-Jacob Graphical Method (Cooper and Jacob, 1946). The Cooper-Jacob Graphical Method relies on the application of a best-fit line to a semi-logarithmic plot of elapsed time versus Drawdown. Under idealized confined aquifer conditions, a plot of drawdown versus the logarithm of time forms a straight line. Deviations from the idealized straight line in unconfined aquifers could be caused by variation in well discharge rate, aquifer boundary conditions, aquifer heterogeneity, delayed yield, well losses, wellbore storage, or other factors. We fit a line to the drawdown data for each well during a timeframe when pumping rates were constant.

## X15518 Quaking Aspen Aquifer Testing, 2015 - Report

Drawdown data during periods of reduced pumping rates (caused by adjusting pumping rate have very similar slope). Transmissivity estimates were calculated (during the pumping phase) using the Cooper and Jacob equation:

$$T = 264 Q / \Delta s, \text{ where } Q \text{ is discharge in gpm and } \Delta s \text{ is change in drawdown over 1 log cycle}$$

Drawdown and transmissivity during pumping of Well #1 and Well #2 are illustrated in Figures 3 and 4, respectively. For Well #1, estimated transmissivity during pumping was 2284 gpd/ft, or 305 ft<sup>2</sup>/day. For Well #2, estimate transmissivity during pumping was 2400 gpd/ft, or 321 ft<sup>2</sup>/day.

Water levels were monitored by dataloggers for approximately 5 days following the end of pumping. Estimates of transmissivity are also provided based on this recovery phase using the Theis Recovery Method. This methodology plots the ratio of time since pumping began (t) divided by the time since pumping stopped (t') logarithmically versus residual drawdown:

$$T = 264 Q / \Delta s', \text{ where } Q \text{ is average discharge in gpm (over life of test) and } \Delta s' \text{ is change in residual drawdown over 1 log cycle}$$

Recovery data for Well #1 is illustrated in Figure 5 for Well #1 and in Figure 6 for Well #2. For Well #1, we estimated transmissivity (recovery phase) to be 2033 gpd/ft, or 272 ft<sup>2</sup>/day. For Well #2, transmissivity during recovery was estimated to be 2238 gpd/ft, or 299 ft<sup>2</sup>/day.

Note that these are effective transmissivities reflective of well interference, not the actual transmissivity of the aquifer. These values are conservative, as actual transmissivity of the aquifer is likely to be much higher. These transmissivity values will control aquifer performance while the wells operate simultaneously as they are relatively close together.

Apparent Specific Capacities (including well interference) for Well #1 and #2 (Figures 3 and 4, respectively) were also calculated for the 2015 pumping as follows:

- Well #1 = 1.3 gpm/ft
- Well #2 = 2.6 gpm/ft

Table 2 presents a summary of aquifer and testing calculations for the testing conducted in 2007 and 2015 testing. The aquifer testing in 2007 represented pumping of a single well over a 24-hour period with drawdown monitored in both the pumping well and the other well (Flow rates for Well #1 averaged 30 gpm; flow rates for Well #2 averaged 17 gpm). Water levels in 2007 were very similar to current water levels. Due to limited observations and stabilized drawdown, estimates of transmissivity for 2007 data are marginal at best. For 2015 results, both wells were pumped simultaneously, at rates ranging from 60 gpm (beginning of test) to 33.5 gpm (end of testing).

For the 2015 data, aquifer transmissivity estimates are within a fairly tight range for both wells: 277 to 321 ft<sup>2</sup>/day. This range appears to provide a reasonably conservative estimate for transmissivity since both wells were pumped simultaneously. Given the estimated thickness of water-bearing strata (9 feet for Well #1 and 7 feet for Well #2), hydraulic conductivity (k) of this water-bearing zone is conservatively estimated to be approximately 35 to 40 feet/day ( $k = T/b$ , [where b = water-bearing thickness]).

## X15518 Quaking Aspen Aquifer Testing, 2015 - Report

### **Findings**

- The combined discharge of the two wells (33.5 gpm), located about 110 feet apart, exceeded the requested water rights application (30 gpm)
- Specific capacity for Well #1 (primary water supply well) is less (1.3 gpm/ft) compared to initial testing in 2007 (3.8 gpm/ft). However, the specific capacity of Well #2 (backup well historically not in use) in 2015 was greater than 2007 (2.6 to 1.6 gpm/ft).
- Transmissivity estimates for drawdown and recovery periods agreed within a fairly tight range of 277 to 321 ft<sup>2</sup>/day. Estimated hydraulic conductivity is conservatively 35 to 40 ft/day. Neither of these aquifer parameters signal that the water-bearing zone within is a prolific aquifer, but adequate to meet the anticipated water right.
- Drawdown and recovery data did not show apparent negative boundaries.
- Water levels fully recovered to pre-testing static water levels within 5 days of when pumping stopped, thus groundwater mining is not apparent.

### **Conclusions and Recommendations**

A cursory review of the topography and surface hydrology suggest limited recharge potential for the shallow basalt aquifer. A potential for groundwater mining exists for this and other future and current withdrawals in the vicinity. However, the data reviewed for this study does not suggest that this is currently happening, within the timeframe of the data (2007-2015).

Test results do not indicate limiting boundary conditions for the aquifer. We conclude that the water right requested is supported by the production rate available from the existing wells and from the aquifer. The applied for water right is approximately 30 gpm.

The wells are somewhat inefficient, as production is limited to the open bottom of the well casing. The production capacity of Well #1 has decreased since 2007; we do not know why the capacity of Well#2 appears to have increased over the values reported in 2007. Additional development, rehabilitation, casing perforation or installation of wellscreen through the production zone would likely result in improved performance for the wells and less drawdown. Improvements for both wells would increase the efficiency and rate of production from the aquifer, but would not increase the volume of water available.

We recommend monitoring water production and water levels to gain a better understanding of the aquifer and actual use of groundwater by your association. This may be as simple as recording water meter data periodically, low level alarm/shutdown conditions (should such occur) and measuring water levels in the wells. Automated monitoring equipment could be installed in the wells and pumphouse. We can work with you and your pump contractor to help set up an effective monitoring program upon request.

Thank you for the opportunity to provide these services. Should you have any questions or need further assistance, please call.

Respectfully Submitted:  
BUDINGER & ASSOCIATES

  
Stephen D. Burchett, PE  
Principal



John E. Finnegan, PE  
Principal

*Budinger & Associates, Inc.  
Geotechnical and Environmental Engineers  
Construction Materials Testing & Special Inspection*

## X15518 Quaking Aspen Aquifer Testing, 2015 - Report

### Attachments

- Table 1 - 2015 Aquifer Testing Summary
- Table 2 - 2007 to 2015 Aquifer Testing Comparison
- Figure 1 - Well #1 Pumping rates
- Figure 2 - Well #2 Pumping rates
- Figure 3 - Well #1 Pumping Analysis
- Figure 4 - Well #2 Pumping Analysis
- Figure 5 - Well #1 Recovery Analysis
- Figure 6 - Well #2 Recovery Analysis
- Figure 7 - Well #1 Drawdown During Pumping and Recovery
- Figure 8 - Well #2 Drawdown During Pumping and Recovery
- Quaking Aspen Well Location Plan
- IDWR Well Driller's Reports
- IDWR Letter dated July 21, 2015
- INC PWS Improvement Plans-1<sup>st</sup> Submittal dated May 14, 2008
- Idaho Department of Environmental Quality Record Drawing Review dated November 26, 2007

Addressee – via email

Table 1: 2015 Quaking Aspen Aquifer Testing Summary

| Well | Total Depth<br>(ft bgs) | Static Water Level (ft<br>btc) | Drawdown Data               |                               |                                     |
|------|-------------------------|--------------------------------|-----------------------------|-------------------------------|-------------------------------------|
|      |                         |                                | Final Pumping Rate<br>(gpm) | Average Pumping Rate<br>(gpm) | Drawdown at end of test (ft<br>btc) |
| #1   | 75                      | 56.0                           | 14.5                        | 16                            | 12.3                                |
| #2   | 76                      | 52.4                           | 19.0                        | 19                            | 7.4                                 |
|      |                         |                                |                             |                               |                                     |

## Notes:

ft bgs = feet below ground surface

ft btc = feet below top of casing

gpm = gallons per minute

Well #1 was cased (6-inch diameter) to 75 feet bgs, open at bottom only; Well #2 was constructed similarly with total length of 76 feet of casing

For 2015 testing, Well #1 and #2 were pumped simultaneously over a 48-hour period with total pumping rates of 34 to 61 gpm. Well #1 had a pumping range of 14.5 - 40 gpm, with final rate of 14.5 gpm. Well #2 had a pumping range of 19 - 21 gpm, with final rate of 19 gpm.

**Table 2: Quaking Aspen Aquifer Testing Comparisons**

| Well | Pumping or Observation Well? | 2007 Testing                          |                                        | 2015 Testing                          |                                        |                                       |
|------|------------------------------|---------------------------------------|----------------------------------------|---------------------------------------|----------------------------------------|---------------------------------------|
|      |                              | Drawdown Data                         |                                        | Drawdown Data                         |                                        | Recovery Data                         |
|      |                              | Transmissivity (ft <sup>2</sup> /day) | Specific Capacity (gpm/ft of drawdown) | Transmissivity (ft <sup>2</sup> /day) | Specific Capacity (gpm/ft of drawdown) | Transmissivity (ft <sup>2</sup> /day) |
| #1   | Pumping                      | 579                                   | 3.8                                    | 305                                   | 1.3                                    | 272                                   |
| #2   | Pumping                      | --                                    | 1.6                                    | 321                                   | 2.6                                    | 299                                   |

**Notes:**

For 2007 testing, Well #1 had a pumping rate range of 30 - 40 gpm, with final rate of 30 gpm. Well #2 had a pumping range of 17 - 20 gpm, with final rate of 17 gpm. Wells were pumped on different days over a 24-hour period.

For 2015 testing, Well #1 and #2 were pumped simultaneously over a 48-hour period with total pumping rates of 34 to 61 gpm. Well #1 had a pumping range of 14.5 - 40 gpm, with final rate of 14.5 gpm. Well #2 had a pumping range of 19 - 21 gpm, with final rate of 19 gpm.

Transmissivity estimates based on modified Theis equation by Cooper and Jacob (1946) methodology

-- Due to flat drawdown, transmissivity estimates during drawdown phase could not be completed

## Quaking Aspen Well #1 Pumping Analysis

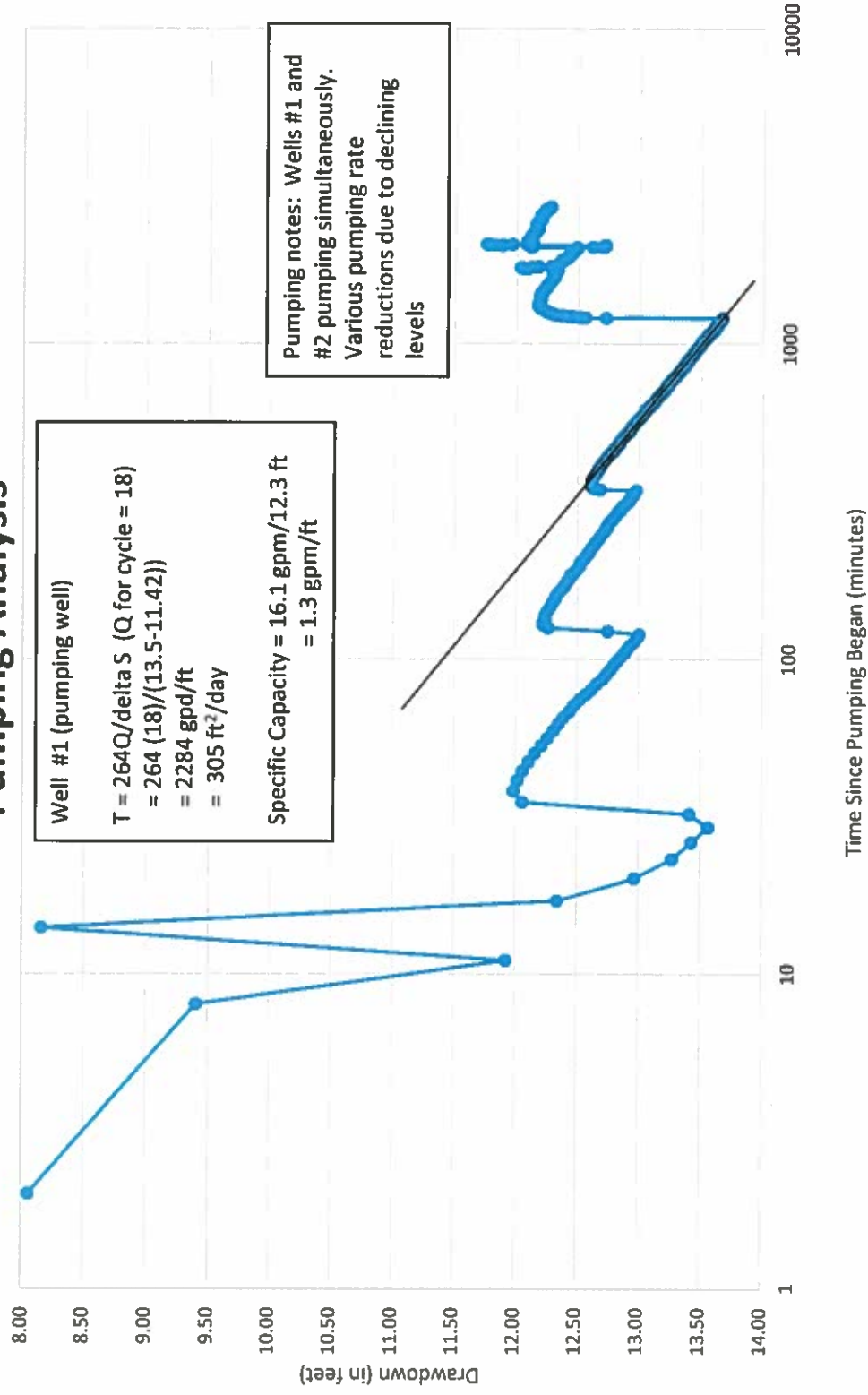


**Figure 3**  
**Quaking Aspen Well #1 Pumping Phase**

## Quaking Aspen Well #2 Pumping Rates

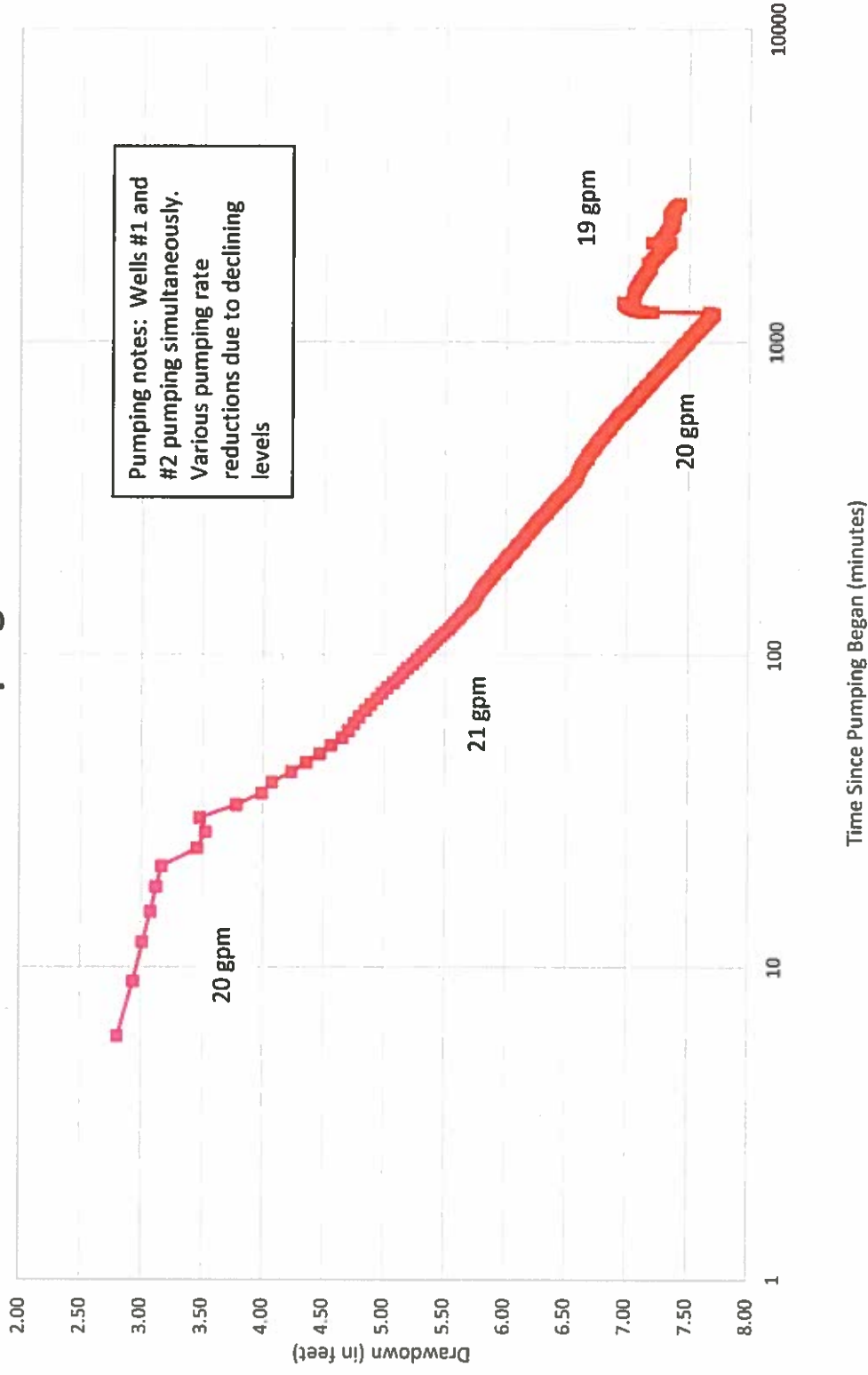


**Figure 2**  
**Quaking Aspen Well #2 Pumping Rates**

## Quaking Aspen Well #2 Pumping Analysis

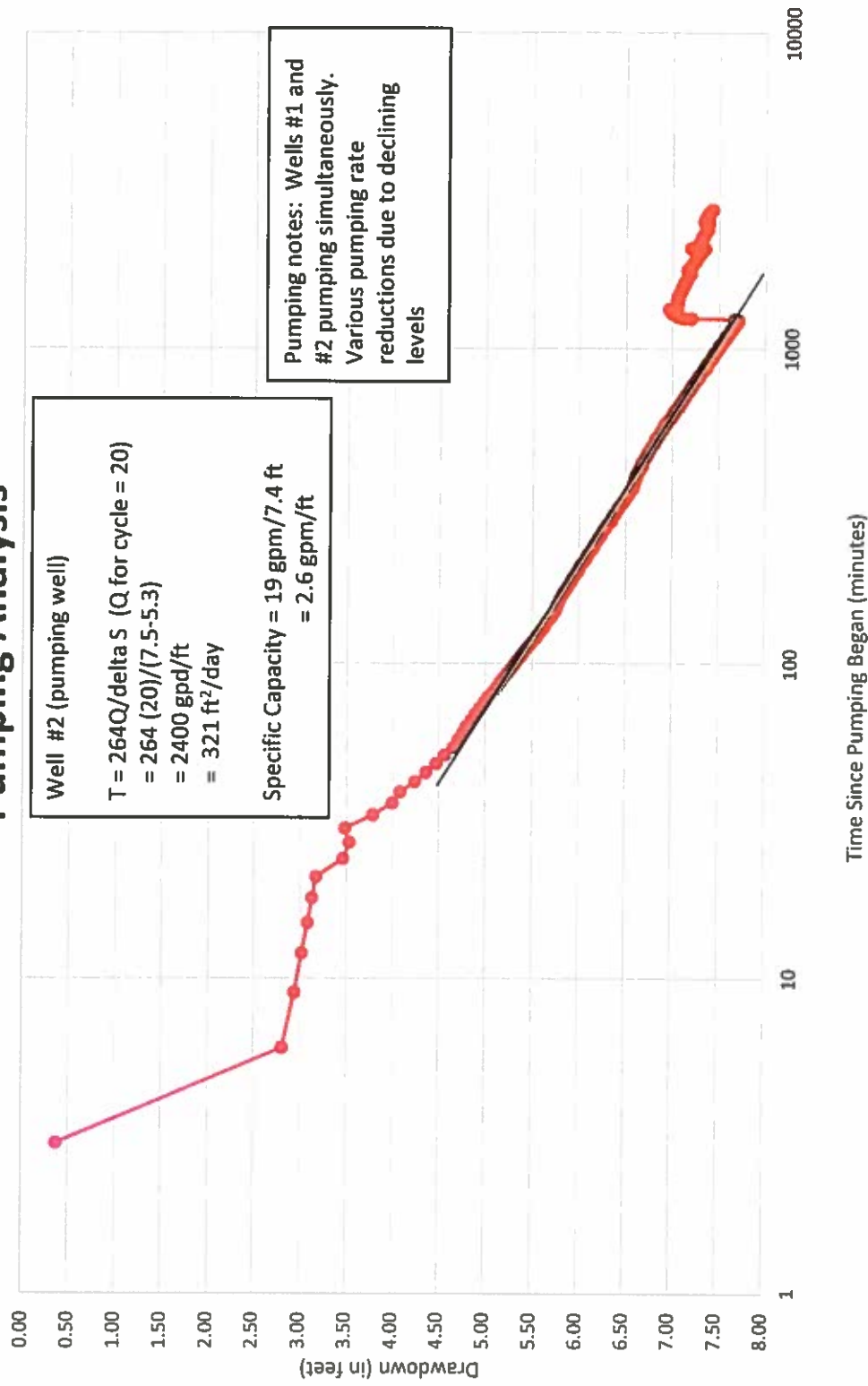


**Figure 2**  
**Quaking Aspen Well #2 Pumping Rates**

## Quaking Aspen Well #2 Recovery Analysis

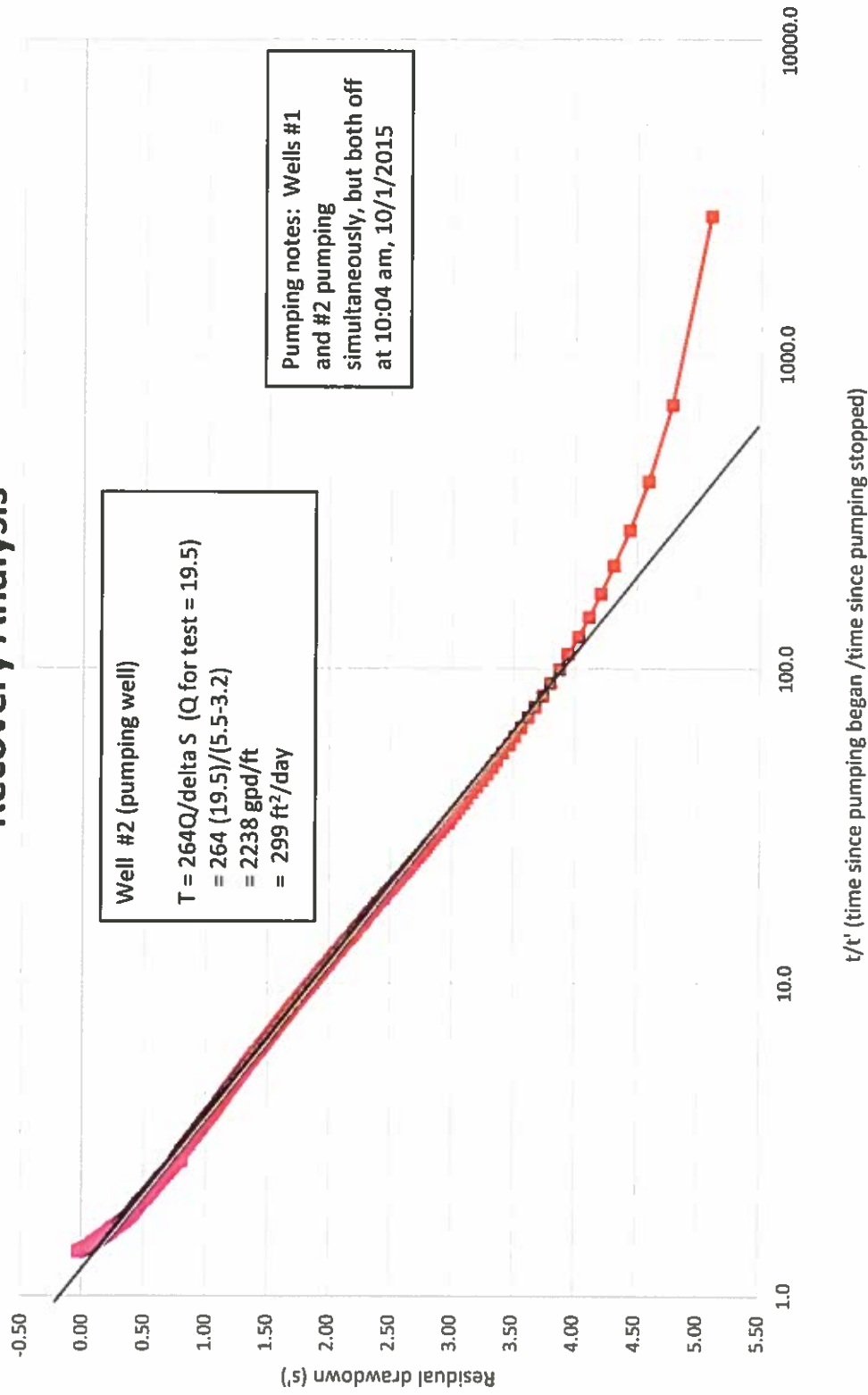
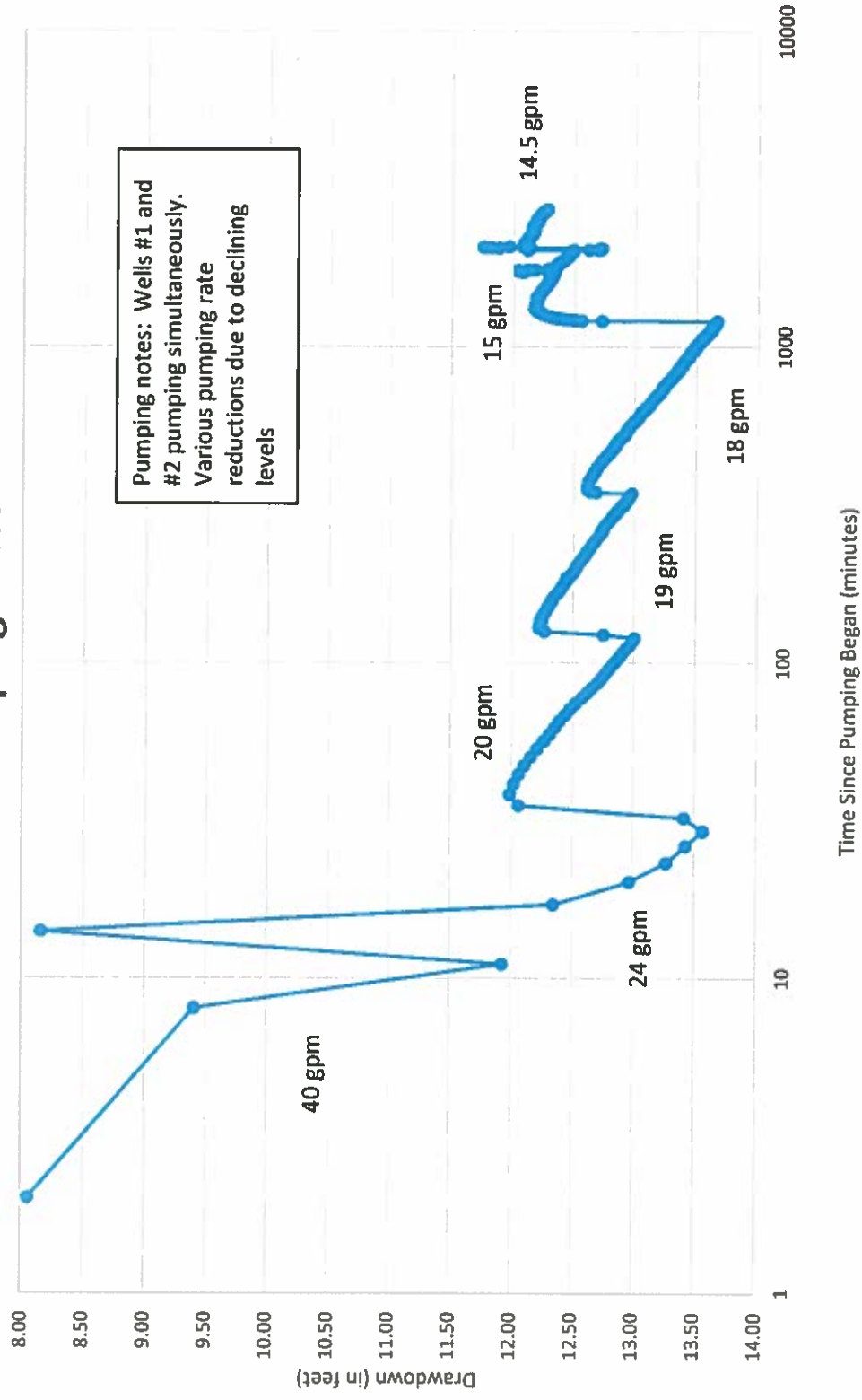


Figure 2  
Quaking Aspen Well #2 Pumping Rates

## Quaking Aspen Well #1 Pumping Rates



## Quaking Aspen Well #2 Pumping and Recovery Data

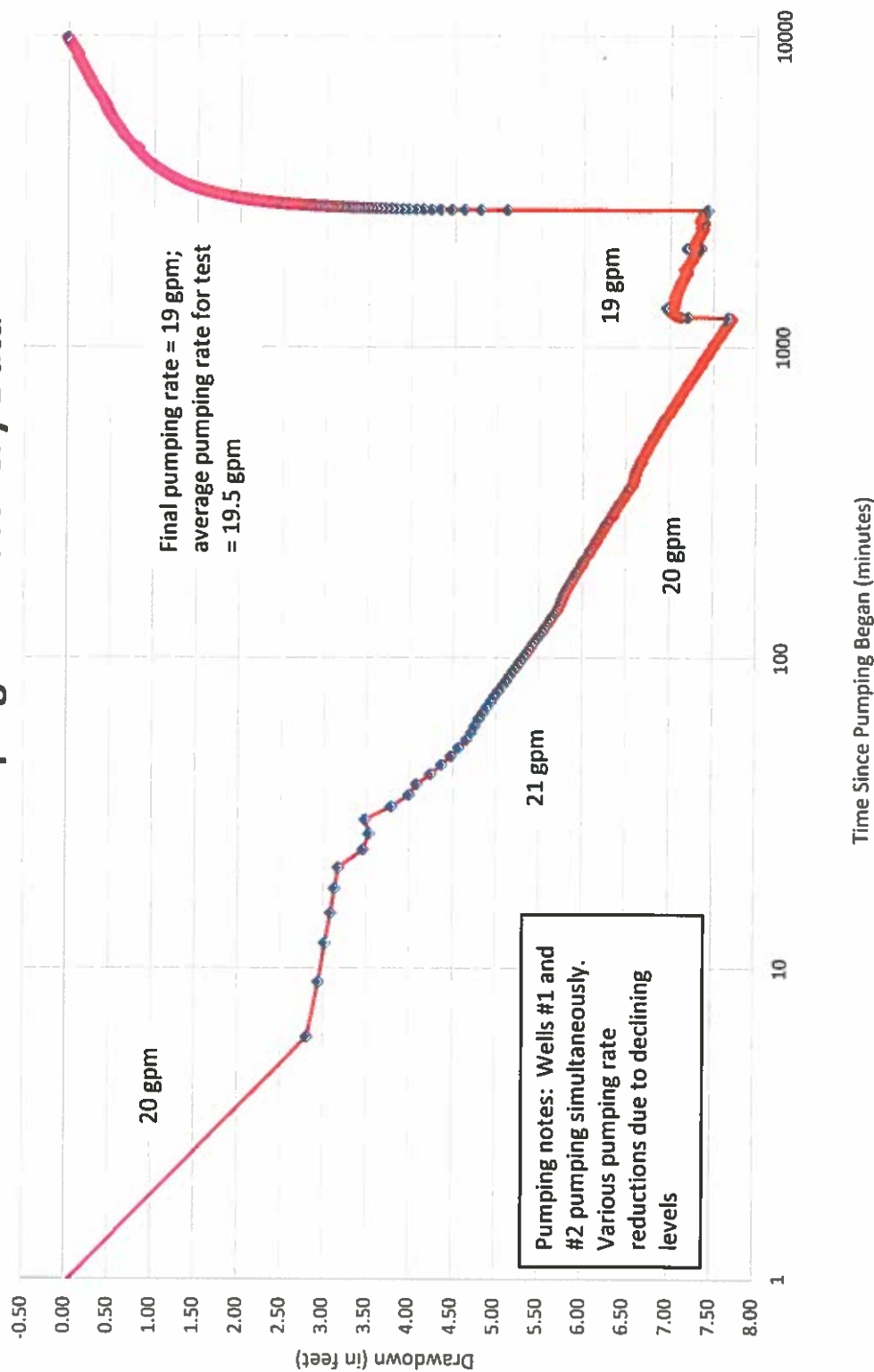


Figure 7  
Quaking Aspen Well #2 Pumping and Recovery Data

## Quaking Aspen Well #1 Drawdown During Pumping and Recovery

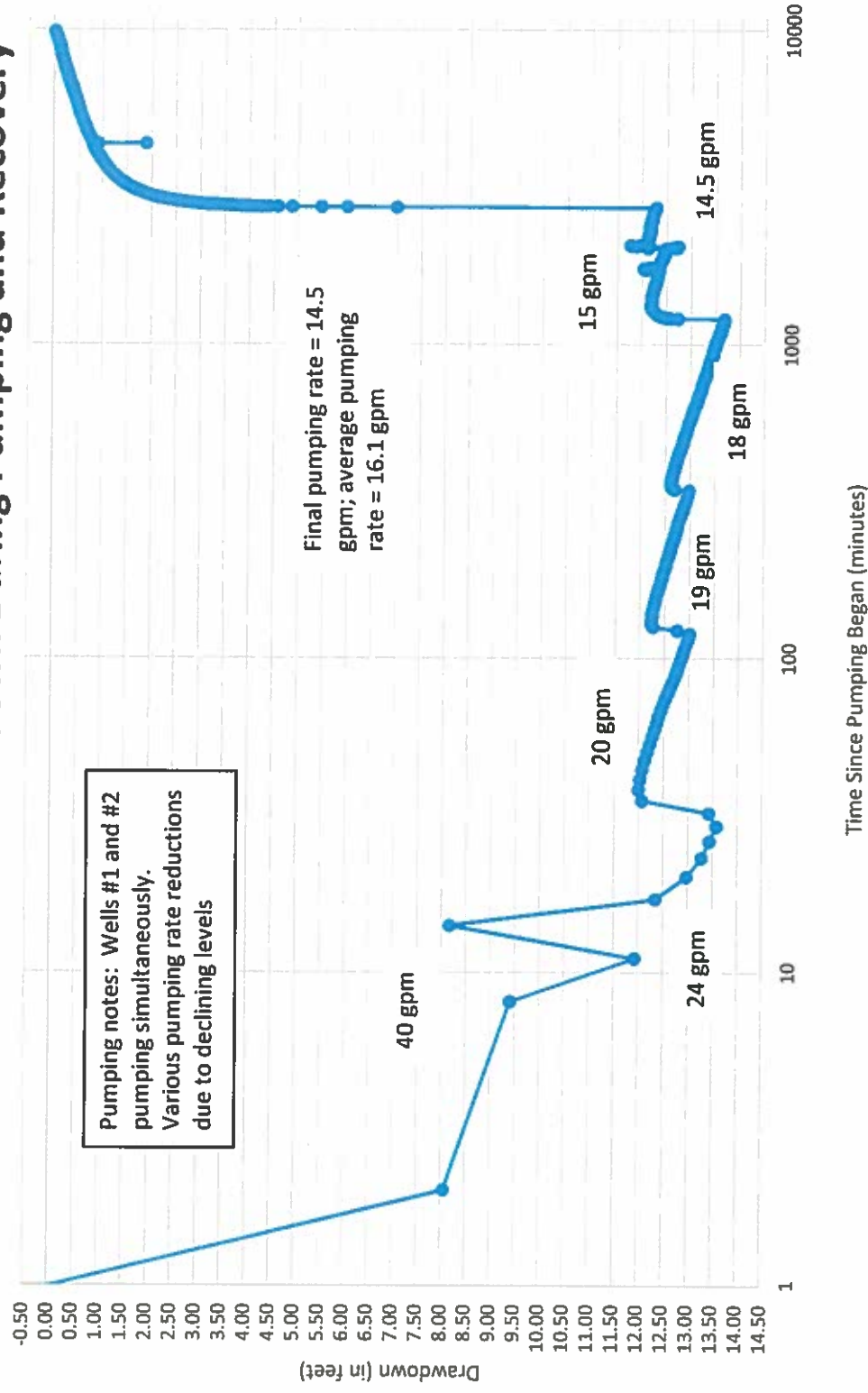


Figure 7  
Quaking Aspen Well #1 Drawdown and Recovery Data

## Quaking Aspen Well #2 Recovery Analysis

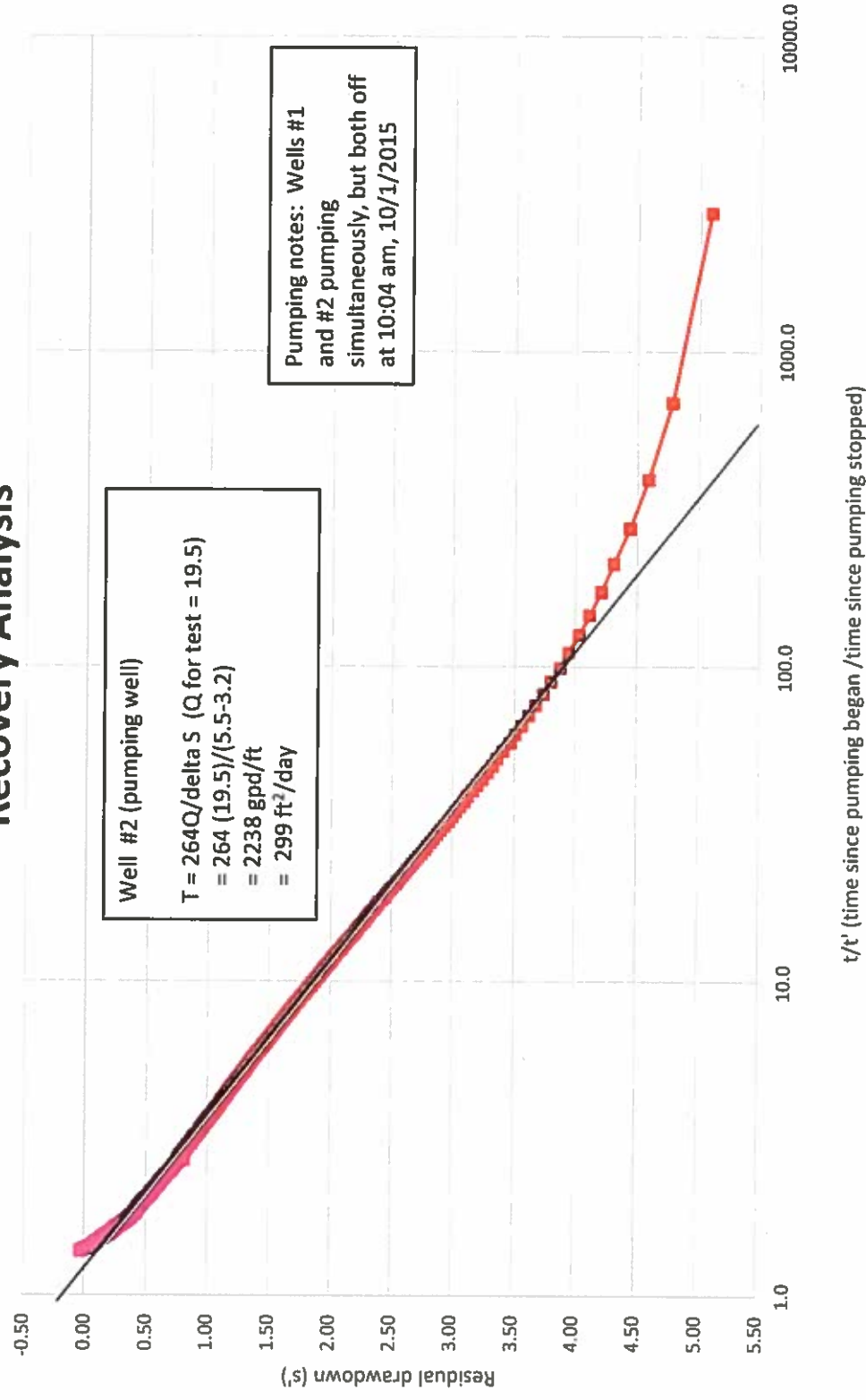


**Figure 6**  
Quaking Aspen Well #2 Recovery Phase

## Quaking Aspen Well #1 Recovery Analysis

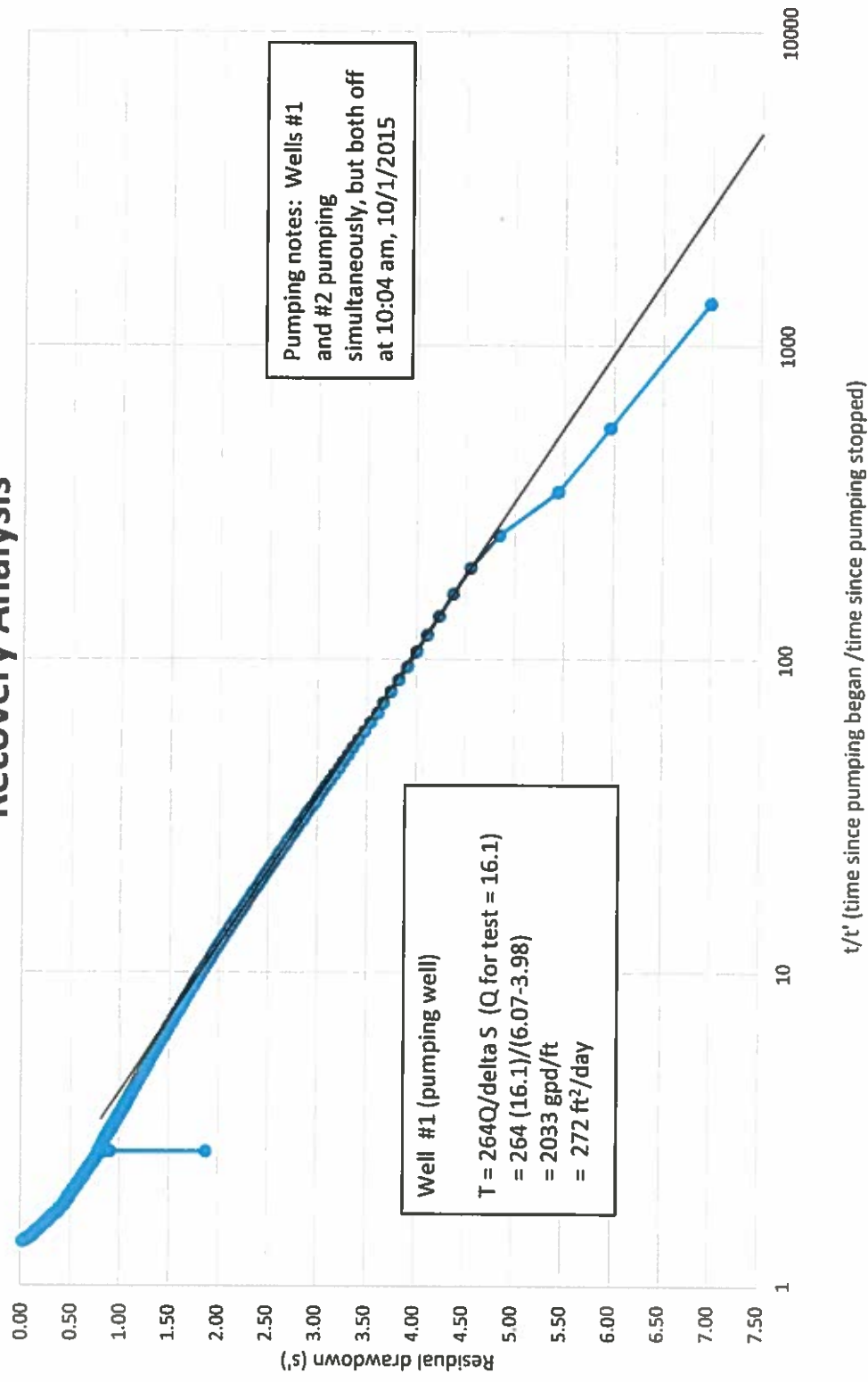


Figure 5  
Quaking Aspen Well #1 Recovery Phase

## Quaking Aspen Well #2 Pumping Analysis

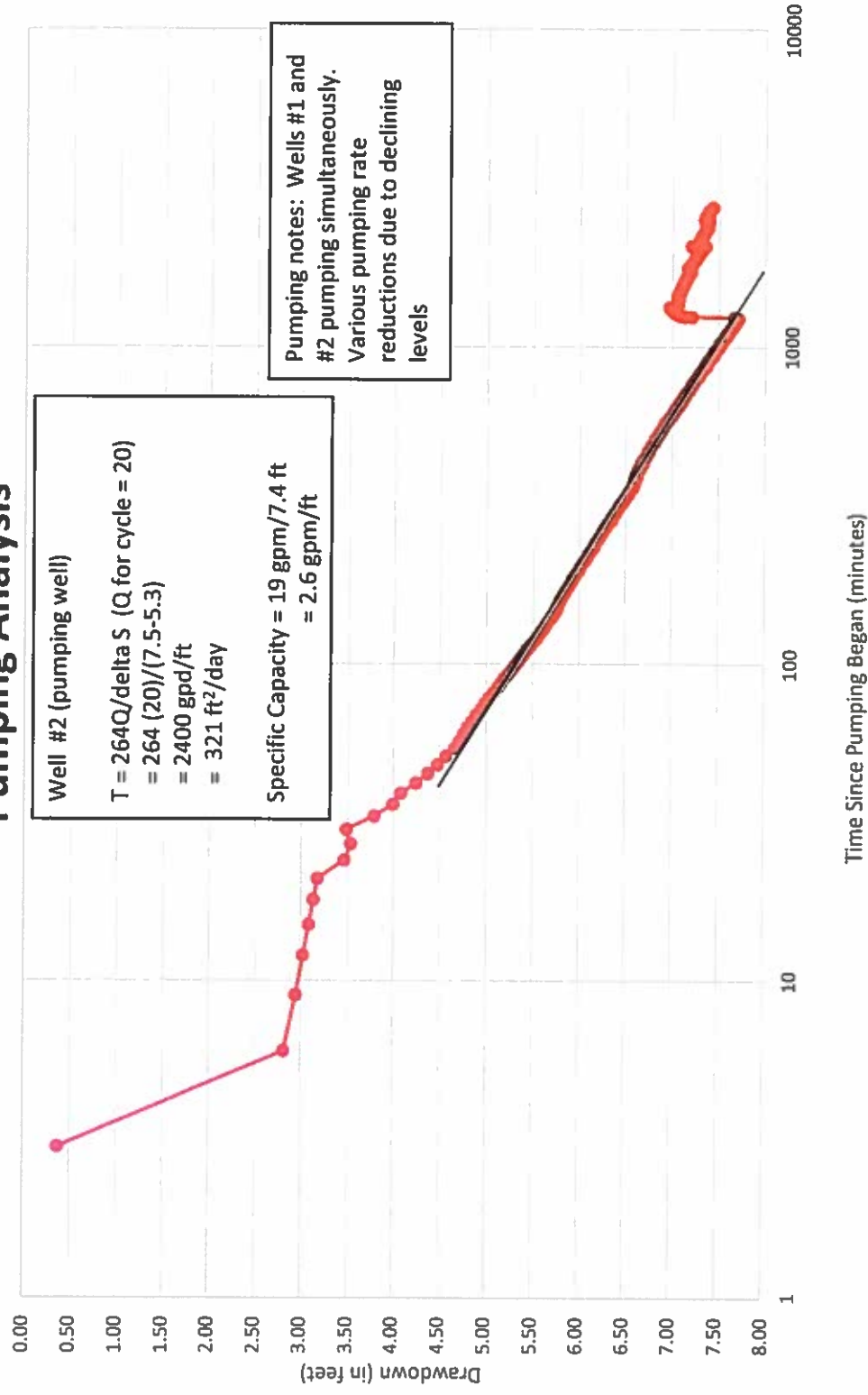


Figure 4  
Quaking Aspen Well #2 Pumping Phase





44N 4W 4

**Principal Driller and Rig Operator Required**  
Operator I must have signature of Driller/Operator I



## State of Idaho

### DEPARTMENT OF WATER RESOURCES

Northern Region, 7600 Mineral Drive, Suite 100, Coeur d'Alene, Idaho 83815

Phone: (208) 762-2800 FAX: (208) 762-2819 [www.idwr.idaho.gov](http://www.idwr.idaho.gov)

C.L. "BUTCH" OTTER  
Governor

GARY SPACKMAN  
Director

July 21, 2015

QUAKING ASPEN ESTATES OWNERS ASSN INC  
5489 W QUAKING ASPEN DR  
COEUR D ALENE ID 83814

Re: Application for Permit to Appropriate the Public Waters of the State of Idaho.

Dear Home Owners Association,

The Idaho Department of Water Resources (IDWR) has some concerns about your application for permit. The two wells (D0053663 and D0051750) were drilled in 2007 at depths of only 79 feet and 84 feet deep respectively. The pump test at time of construction said each well produced 40 gallons per minute. The yield test at the time of construction can be quite different from an actual pump test. The production capability of these wells for a development of 10 homes is suspect. Past experience has shown that in shallow basalt formations that are not directly connected to a surface water source have a limited or no recharge capability. Mining of the available water supply generally occurs which can lead to water availability problems in the future. Before processing begins, the Department of Water Resources is requiring a pump test on both wells to determine their true yield and sustainability as per IDAPA rules 58.01.08.06.a. For your convenience, please see attached copy of IDAPA rules.

Please call me at 208-762-2800 or email me at [adam.frederick@idwr.idaho.gov](mailto:adam.frederick@idwr.idaho.gov) if you have any questions.

Sincerely,

Adam Frederick  
Water Resource Agent  
Northern Region

- (1) Installed in accordance with manufacturer's specifications; or (3-30-07)
  - (2) Installed by pouring chips over a one-quarter (1/4) inch mesh screen for three-eighths (3/8) inch chips to remove fines to prevent bridging at the water table; or (3-30-07)
  - (3) Installed using coated pellets to retard hydration if approved by the reviewing authority and the Idaho Department of Water Resources. (3-30-07)
  - vi. Concrete may be approved on a case-by-case basis by the reviewing authority and the Idaho Department of Water Resources. Upon such approval, the approved method shall use a six (6) sack minus one-half (1/2) inch Portland cement concrete and shall be installed by positive displacement from the bottom up through a tremmie pipe. (3-30-07)
- 04. Disinfection.** All tools, bits, pipe, and other materials to be inserted in the borehole shall be cleaned and disinfected in accordance with the Well Construction Standards and permitting requirements of the Idaho Water Resources Board, referenced in Subsection 002.02 This applies to new well construction and repair of existing wells. (3-30-07)
- 05. Well Completion Report Required.** Upon completion of a well, and prior to its use as a drinking water source, the following information and data must be submitted by the water system to the Department. The well completion report must be submitted to the Department prior to or concurrent with the submittal of the preliminary engineering report for well house construction/modification. The well completion report shall bear the imprint of an Idaho licensed professional engineer's or an Idaho licensed professional geologist's seal that is both signed and dated by the engineer or geologist: (4-7-11)
- a. A copy of all well logs; (12-10-92)
  - b. Results of test pumping, as specified in Subsection 510.06; (4-7-11)
  - c. As constructed plans showing at least the following: (12-10-92)
    - i. Annular seal, including depth and sealant material used and method of application; (5-3-03)
    - ii. Casing perforations, results of sieve analysis used in designing screens installed in sand or gravel aquifers, gravel packs; and (5-3-03)
    - iii. Recommended pump location. (4-4-13)
  - d. Other information as may be specified by the Department. (12-10-92)
  - e. Sampling results for iron, manganese, corrosivity, and other secondary contaminants specified by the Department. Other monitoring requirements are specified in Subsections 510.05.e.i. through 510.05.e.iii. (5-8-09)
    - i. Community Systems. Results of analysis for total coliform, inorganic chemical contaminants, organic chemicals, and radionuclide contaminants set forth in Subsections 050.01, 050.02, 050.05, 100.01, 100.03, 100.04, 100.05, and 100.06, unless analysis is waived pursuant to Subsection 100.07. (5-8-09)
    - ii. Nontransient Noncommunity Systems. Results of analysis for total coliform and inorganic and organic chemical contaminants listed in Subsections 050.01, 050.02, 100.01, 100.03, 100.04, unless analysis is waived pursuant to Subsection 100.07. (5-8-09)
    - iii. Transient Noncommunity Systems. Results of a total coliform, nitrite, and nitrate analysis listed in Subsections 050.01, 100.01 and 100.03. (5-8-09)
- 06. Test Pumping.** Upon completion of a ground water source, test pumping shall be conducted in accordance with the following procedures to meet the specified requirements: (12-10-92)

a. The well shall be test pumped at the desired yield (design capacity) of the well for at least twenty-four (24) consecutive hours after the drawdown trend has stabilized, as determined by the supervising engineer or geologist. Alternatively, the well may be pumped at a rate of one hundred fifty percent (150%) of the desired yield for at least six (6) continuous hours after the drawdown trend has stabilized, as determined by the supervising engineer or geologist. The field pumping equipment must be capable of maintaining a constant rate of discharge during the test. Discharge water must be piped an adequate distance to prevent recharge of the well during the test. If the well fails the test protocol, design of the water system shall be re-evaluated and submitted to the Department for approval.

(3-30-07)

b. Upon completion of well development, the well shall be tested for sand production. Fifteen (15) minutes after the start of the test pumping (at or above the design production rate), the sand content of a new well shall not be more than five (5) parts per million. Sand production shall be measured by a centrifugal sand sampler or other means acceptable to the Department. If sand production exceeds five (5) ppm, the well shall be screened gravel packed, or re-developed.

(3-30-07)

c. The following data shall be provided:

(5-3-03)

i. Static water level in the well prior to test pumping;

(5-3-03)

ii. Well yield in gpm and duration of the pump test, including a discussion of any discrepancy between the desired yield and the yield observed during the test;

(5-3-03)

iii. Water level in the well recorded at regular intervals during pumping;

(5-3-03)

iv. Profile of water level recovery from the pumping level projected to the original static water level.

(5-3-03)

v. Depth at which the test pump was positioned in the well;

(5-3-03)

vi. Test pump capacity and head characteristics;

(5-3-03)

vii. Sand production data.

(5-3-03)

viii. Results of analysis based on the drawdown and recovery test pertaining to aquifer properties, long term sustained yield, and boundary conditions affecting drawdown.

(4-7-11)

d. The Department may allow the use of other pump test protocols that are generally accepted by engineering firms with specialized experience in well construction, by the well drilling industry, or as described in national standards (such as ANSI/AWWA A100-97), as long as the minimum data specified in Subsection 510.06.c. are provided. The Department welcomes more extensive data about the well, such as step-drawdown evaluations used in determining well capacity for test pumping purposes, zone of influence calculations, and any other information that may be of use in source protection activities or in routine water system operations.

(3-30-07)

e. Where aquifer yield, sustainability, or water quality are questionable, the Department, at its discretion, may require additional site specific investigations that could include test well construction, long-term pumping tests, or other means to demonstrate that the aquifer yield is sufficient to meet the long-term water requirements of the project.

(4-4-13)

**07. Conversion of Non-Public Water System Wells for Public Water System Use.** Any existing well constructed for use other than as a public water system source may be considered for use as a public water system source on a case-by-case basis. The owner of such a well must demonstrate to the Department's satisfaction that the well site conforms to the requirements of Subsections 510.01, 510.02, and Section 512, the well is constructed in a manner that is protective of public health and that both the quantity and quality of water produced by the well meet public water system standards set forth in these rules.

(5-8-09)

**08. Observation Wells.** If observation wells are used and are intended to remain in service after completion of the water supply well, the observation wells shall be constructed in accordance with the requirements



10469 p+s

10470 eng Rpt

10471 Tfm

May 14, 2008

Gary J. Gaffney, P.E.  
Idaho Department of Environmental Quality  
2110 Ironwood Parkway  
Coeur d'Alene, Idaho 83814

**RE: Quaking Aspen Estates: PWS Improvement Plans – 1<sup>st</sup> Submittal**

Dear Mr. Gaffney:

We are pleased to submit improvement plans for a proposed 10-lot subdivision known as Quaking Aspen Estates. This project consists of developing a public drinking water system (PWS) to provide the proposed 10-lots with both domestic and irrigation needs. The proposed project is located off of Quaking Aspen Road in the Northeast 1/4 of section 04, Township 49 North, Range 04 West, Boise Meridian, Kootenai County, Idaho.

Below is an outline of the project based on Recommended Standards for Water Works (RSWW).

## **1.0 GENERAL**

### *a. General Layout*

This project consists of connecting an existing 6-inch single source production well (Well Tag No. 0053663) to a reservoir with pump house and water mains to service 10 single family connections. The reservoir will be filled by a dedicated 2" line from the existing well head. Three pump cans, each housing a single submersible pump will be fed from the reservoir pressurizing the distribution system thru the adjacent pump house. See the attached improvement plans and detail sheets for reference.

1296 East Polston Avenue, Suite B  
Post Falls, Idaho 83854  
Phone: (208)773-8370  
Fax: (208)777-2128



*b. Summary of the Design Criteria*

1. Existing Well:

A 24-hour well test was performed in August of 2007 by American Well Drilling establishing a pumping rate of 30 gallons per minute (gpm). The well pump (5 hp) has been selected to meet this 30 gpm source production rate. Total Coli form and E. Coli were absent in samples taken. See attached driller reports and test results for reference.

2. Reservoir:

The reservoir storage provided is 71,730 gallons to meet fire flows. See attached design calculations and letter from Mica Kidd Island Fire Protection District.

3. Pump House:

Based on the Sizing Guidelines for Public Water Supplies the anticipated residential maximum instantaneous demand for 10 connections (MID) is 33 gpm. We have allocated 2.5 gpm for irrigation per service, plus 10 gpm for each acre to be irrigated over the base value for a total MID of 258 gpm. The first pump (2 hp) was sized with the pressure tanks to handle this MID. The second (15 hp) and third (15 hp) pumps were designed to step up to the required fire flows by Mica Kidd Island Fire District of 625 gpm for two hours. The total anticipated peak fire flow is 700 gpm. The pumps have been designed to exceed 40 p.s.i. at the meters. The highest pressure in the system is +/- 66 p.s.i. at the meter.

4. Distribution:

The distribution system consists of 8" PVC C-900 water mains serving the domestic services, with 6" fire hydrants service lines.

*c. Operation requirements*

A certified operator will be contracted by the Quaking Aspen Owner's Association to monitor and maintain the system. An O&M manual prepared by the engineer-of-record and installer will be supplied to DEQ along with the record drawings.

*d. Detailed Plans*

See attached improvement plans for additional detail.

*e. Specifications*

See attached improvement plans for specifications.



*f. Cost Estimates*

See attached cost estimate for the PWS.

*g. Water Purchase Contracts between water supplies, where applicable*

N/A, (new system).

*h. Other information as required by reviewing authority*

N/A.

**1.1 ENGINEER'S REPORT**

**1.1.1 General Information**

*a. Description of the existing water works and sewerage facilities*

There are no existing water works or sewerage facilities.

*b. Identification of the municipality or area served*

There is no existing municipality or service area.

*c. Name and mailing address of the owner or official custodian*

This PWS will be a newly created entity, Quaking Aspen Estates Owner's Association.

**1.1.2 Extent of Water Works System**

*a. Description of the nature and extent of the area to be served*

The proposed PWS will only serve the number of connections as proposed in this submittal. All connections are for single family residences and are located within Quaking Aspen Estates Subdivision.

*b. Provisions for extending the water works system to include additional areas*

There are no plans to extend the system at this time. Any additional connections will be submitted to, and approved by IDEQ prior to their connection.



*c. Appraisal of the future requirements for service, including existing and potential industrial, commercial, institutional, and other water supply needs*

The zoning surrounding the proposed project is Rural and Agricultural. The only potential for future requirements or connections is the adjacent parcel to the east that is currently a vacant field. There are no current plans for expansion or additional connections.

### **1.1.3 Justification of Project**

The proposed PWS is a practical source for this development.

### **1.1.4 Soil, Groundwater Conditions, and Foundation Problems**

*a. The character of the soil through which water mains are to be laid*

All water mains will be installed with bedding per the Idaho Standards for Public Works Construction Section 305. The soils on-site are a silty loam, brown clay with basalt rock outcroppings.

*b. Foundation conditions prevailing at sites of proposed structures*

There are no special foundation considerations based on the soils on-site.

*c. The approximate elevation of ground water in relation to subsurface structures*

Groundwater is not anticipated onsite based on test holes dug for septic drainfield approvals.

### **1.1.5 Water Use Data**

*a. A description of the population trends as indicated by available records, and the estimated population which will be served by the proposed water supply system or expanded system 20 years in the future in five year intervals or over the useful life of critical structures/equipment,*

N/A, new stand alone system

*b. Present water consumption and the projected average and maximum daily demands, including fire flow demand (see Section 1.1.6),*

See 1.0 GENERAL / b. summary of design criteria / Pump House above.



*c. Present and/or estimated yield of the sources of supply,*

See 1.0 GENERAL / b. summary of design criteria / Wells above.

*d. Unusual occurrences,*

There are no unusual occurrences anticipated with this system. The residential use is fairly predicable.

**1.1.6 Flow Requirements**

*a. Hydraulic analyses based on flow demands and pressure requirements, (See Section 8.1.1)*

A hydraulic analysis of flow demands and pressures has been performed in accordance to RSWW 8.1.1. See 1.0 GENERAL / b. summary of design criteria / Pump House above.

*b. Fire flows, when fire protection is provided, meeting the recommendations of the Insurance Services Office or other similar agency for the service area involved.*

See 1.0 GENERAL / b. summary of design criteria / Pump House above.

**1.1.7 Sources of Water Supply**

*a. Describe the proposed source or sources of water supply to be developed, the reasons for their selection, and provide information as follows:*

See 1.0 GENERAL / b. summary of design criteria / Wells above.

**1.1.7.1 Surface Water Sources**

N/A

**1.1.7.2 Groundwater Sources**

*a. Sites Considered*

The Well Sites were drilling in the summer of 2007, prior to the proposed PWS. The Well Site location was chosen by the well driller and the owner.



*b. Advantages of the site selected*

The site is easily accessible for drilling and maintenance equipment.

*c. Elevations with respect to surroundings*

Surrounding slopes to the well are moderately steep. The well head surface elevation is about 2414 which is near the top of the project being developed. Static water level during the 24 hour test was approximately 51-feet.

*d. Probable character of formations through which the source is to be developed*

Fractured and solid basalt formations with brown clay.

*e. Geologic conditions affecting the site, such as anticipated interference between proposed and existing wells*

There are no known interferences between the well and existing surrounding wells.

*f. Summary of source exploration, test well depth, and method of construction; placement of liners or screen; test pumping rates and their duration; water levels and specific yield; water quality*

The well was drilled and completed on 07/23/2007 by American Well Drilling, Well tag number 0053663 and permit number 848076. See attached well drillers report and well test data collection form.

*g. Sources of possible contamination such as sewers and sewerage facilities, highways, railroads, landfills, outcroppings of consolidated water-bearing formations, chemical facilities, waste disposal wells, etc.*

There are no immediate sources of possible contamination. The surrounding property to the well lot is agricultural/vacant, and does not pose a threat. The area outside of the well head will be a dedicated easement to the right-of-way line

*h. Wellhead protection measures being considered (see Section 3.2.3.2 and 3.2.3.3).*

During the platting process the well easement will be conveyed to the Quaking Aspen Estates Owner's Association. All structures and travel ways shall not encroach upon this easement to ensure the associations control over potential future contaminants.



### **1.1.8 Proposed Treatment Processes**

Chlorine is the only proposed treatment for the water system. There is a dedicated space in the pump house for treatment equipment. The dedicated fill line will be injected with chlorine prior to entering the reservoir. We have estimated that the contact time exceeds 30 minutes from where it is introduced to the first domestic service.

### **1.1.9 Sewerage System Available**

All of the proposed lots will be on individual septic drain fields. The separation from the drain fields to the water mains will exceed 25'.

### **1.1.10 Waste Disposal**

There is no anticipated waste generated from the water system. Reservoir overflows and surge relief valves will discharge to rock-lined ditch and into a grassy infiltration area within the reservoir easement.

### **1.1.11 Automation**

This PWS is a simple design with pressure tanks that buffer the pumps from the system. In the case of a failure the system will automatically call the contracted certified operator to trouble shoot and service the system. Manual override will be provided for any automatic controls.

### **1.1.12 Project Sites**

*a. Discussion of the various sites considered and advantages of the recommended ones,*

N/A

*b. The proximity of residences, industries, and other establishments*

The closest single family residence shall be approximately 150 - 200 lineal feet from the proposed project. The surrounding land is agricultural and rural with no industries.

*c. Any potential sources of pollution that may influence the quality of the supply or interfere with effective operation of the water works system, such as sewage absorption systems, septic tanks, privies, cesspools, sink holes, sanitary landfills, refuse and garbage dumps, etc.*



There are no potential sources of pollution that we are aware of. Single family septic fields will be located at approved distances from the source.

#### 1.1.13 Financing

- a. Estimated cost of integral parts of the system,

See attached Technical Financial and Managerial capacity (TFM) document.

- b. Detailed estimated annual cost of operation,

See attached Technical Financial and Managerial capacity (TFM) document.

- c. Proposed methods to finance both capital charges and operating expenses.

See attached Technical Financial and Managerial capacity (TFM) document.

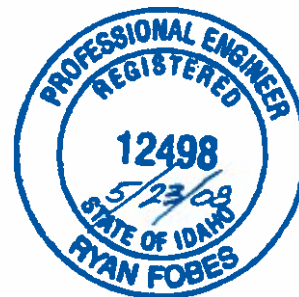
#### 1.1.14 Future Extensions

There are no current plans for future expansion

Please let us know if you require any additional information.

Sincerely yours,

Ryan Fobes, P.E.



cc: Rees Land Company, LLC – Gabe Rees



## **ATTACHMENTS**

1296 East Polston Avenue, Suite D  
Post Falls, Idaho 83854  
Phone: (208)773-8370  
Fax: (208)777-2128

## QUAKING ASPEN WATER SYSTEM DESIGN

### DESIGN CONSTRAINTS

|                              |             |          |                                                              |
|------------------------------|-------------|----------|--------------------------------------------------------------|
| TANK WATER SURFACE ELEVATION | 2566.0 (ft) |          |                                                              |
| WELL #1 SURFACE ELEVATION    | 2576.5 (ft) |          |                                                              |
| WELL #1 DEPTH TO W.S.E.      | 60.0 (ft)   |          |                                                              |
| WELL #1 DEPTH TO PUMP        | 75.0 (ft)   |          |                                                              |
| DEPTH OF WATER IN TANK       | 9.0 (ft)    |          |                                                              |
| WELL PUMP TO TANK W.S.E.     | 64.5 (ft)   | 28 (psi) | *WELL PUMP SELECTION HEAD                                    |
| NUMBER OF CONNECTIONS        | 20.00       |          |                                                              |
| REQUIRED FIRE FLOW           | 625 (gpm)   |          | *REQUIRED FIRE FLOW; AUTOMATIC SPRINKLERED HOUSES < 9,400 SF |
| STATIC HEAD                  | 64.5 (ft)   |          |                                                              |
| DYNAMIC HEAD                 | 18.9 (ft)   |          | *AT TOTAL WELL PRODUCTION                                    |
| TOTAL HEAD                   | 83.4 (ft)   |          |                                                              |
| WELL PUMP #1                 | 29 (gpm)    |          | *GRUNDFOS 10SQ/SQE05B-80 PUMP                                |
| TOTAL WELL PRODUCTION        | 29 (gpm)    |          |                                                              |
| STATIC HEAD                  | 121.4 (ft)  |          |                                                              |
| DYNAMIC HEAD                 | 13.4 (ft)   |          | *AT TOTAL RESERVOIR PRODUCTION                               |
| TOTAL HEAD                   | 134.8 (ft)  |          |                                                              |
| RESERVOIR PUMP #1            | 40 (gpm)    |          | *GRUNDFOS 40S20-7 (2HP) PUMP                                 |
| RESERVOIR PUMP #2            | 330 (gpm)   |          | *GRUNDFOS 38S8150-2 (1.5HP) PUMP                             |
| RESERVOIR PUMP #3            | 330 (gpm)   |          | *GRUNDFOS 38S8150-2 (1.5HP) PUMP                             |
| TOTAL RESERVOIR PRODUCTION   | 700 (gpm)   |          |                                                              |

### DESIGN ASSUMPTIONS

|                                 |          |            |                                  |
|---------------------------------|----------|------------|----------------------------------|
| 1 P.S.I. → FT(H <sub>2</sub> O) | 2.31     |            |                                  |
| HIGHEST PRESSURE                | 90 (psi) | 207.9 (ft) |                                  |
| LOWEST PRESSURE                 | 40 (psi) | 92.4 (ft)  |                                  |
| PRESSURE ZONE RANGE             | 50 (psi) | 115.5 (ft) |                                  |
| <b>IRRIGATION</b>               |          |            |                                  |
| # OF LARGE LOTS > 2.5 ACRES     | 10.00    |            | *ASSUMED IRRIGATING 1.5 ACRE/LOT |
| # OF SMALL LOTS < 2.5 ACRES     | 10.00    |            | *ASSUMED IRRIGATING 0.5 ACRE/LOT |
| ACRES OF OPEN SPACE IRRIGATION  | 0.00     |            | *ASSUMED AREA                    |
| ACRES IRRIGATED                 | 20.00    |            |                                  |

### GRAVITY SYSTEM

|                        |             |           |          |            |                              |
|------------------------|-------------|-----------|----------|------------|------------------------------|
| HIGHEST SERVICE        | 2595.0 (ft) | -13 (psi) | 53 (psi) | 121.4 (ft) | *BOOSTER PUMP SELECTION HEAD |
| LOWEST SERVICE         | 2565.0 (ft) | 0 (psi)   |          |            |                              |
| GRAVITY SERVICE RELIEF | 30.0 (ft)   | 13 (psi)  |          |            |                              |
| # OF ZONES REQUIRED    | 0.26        |           |          |            |                              |

### MAXIMUM INSTANTANEOUS DEMAND (MID)

|                      |           |                                                                                      |
|----------------------|-----------|--------------------------------------------------------------------------------------|
| RESIDENTIAL USE      | 33 (gpm)  | *TABLE 1 SIZING GUIDELINES FOR PUBLIC WATER SUPPLIES, DIVISION OF HEALTH, OLYMPIA WA |
| IRRIGATION DEMAND #1 | 25 (gpm)  | *2.5 X (# OF CONNECTIONS > 2.5 ACRES)                                                |
| IRRIGATION DEMAND #2 | 200 (gpm) | *10 (gpm) PER ACRE IRRIGATED                                                         |
| TOTAL MID =          | 258 (gpm) |                                                                                      |

### DAILY SUPPLY REQUIREMENT

1,500 GALLONS/CONNECTION/DAY    30000 (gal)

### STANDBY STORAGE (SS)

|                          |             |                                                  |
|--------------------------|-------------|--------------------------------------------------|
| 600 GALLONS/CONNECTION   | 12000 (gal) | *FOR SINGLE SOURCE                               |
| LEASE PRODUCTIVE PUMP    | 29 (gpm)    |                                                  |
| SS LESS ABOVE EQUIVALENT | 2088 (gal)  | *LEAST PRODUCTIVE PUMP IN GALLONS/CONNECTION/DAY |
| TOTAL SS =               | 9912 (gal)  |                                                  |

## QUAKING ASPEN WATER SYSTEM DESIGN

### EQUALIZING STORAGE (ES)

ES = (MID-Q)(150)  
MID = 258 (gpm) \*FROM TABLE 1  
SOURCE PRODUCTION RATE (Q) = 58 (gpm)  
TOTAL ES = 30000 (gal) \*ZERO IF MID < Q

### FIRE FLOWS

REQUIRED FLOW 625 (gpm) \*ALL HOUSES > 3600 SF REQUIRED TO NFPA SPRINKLER SYSTEM INSTALLED  
REQUIRED PRESSURE 20 (psi)  
REQUIRED DURATION 2 (hr)  
EQUIVALENT STORAGE VOLUME 75000 (gal) \*LEAST PRODUCTIVE PUMP IN GALLONS/CONNECTION/DAY  
SOURCE PRODUCTION RATE 58 (gpm)  
SOURCE EQUIVALENT 6960 (gal)  
REQUIRED STORAGE VOLUME = 68040 (gal)

### RESERVOIR SIZING

STORAGE NEEDED = 68040 (gal) 9096 (cf)  
STORAGE PROVIDED = 71730 (gal) 9589 (cf)  
WATER DEPTH = 9.00 (ft) \*MINIMUM DIMENSION  
INSIDE WIDTH = 14.33 (ft) \*MINIMUM DIMENSION  
INSIDE LENGTH = 74.33 (ft) \*MINIMUM DIMENSION  
WALL WIDTH = 10.00 (ft) \*MINIMUM DIMENSION  
OUTSIDE WIDTH = 16.00 (ft) \*MINIMUM DIMENSION  
OUTSIDE LENGTH = 76.00 (ft) \*MINIMUM DIMENSION  
WALL HEIGHT = 10.00 (ft) \*MINIMUM DIMENSION

### PRESSURE TANK SIZING

BOOSTER PUMP = 40 (gpm)  
DRAW DOWN (DD) = 80 (gal) \*2 MIN RUN TIME  
PRESSURE TANK VOLUME = 267 (gal) \*DD/3  
# OF 119 GALLON TANKS = 2 \*MIN # OF TANKS

### CHORINE CONTACT TIME

RESIDENTIAL MID = 258 (gpm) 0.57 (cfs)  
MINIMUM CONTACT TIME = 30 (min) 1800 (sec)  
WATER DEPTH = 9.00 (ft) \*MINIMUM DIMENSION  
INSIDE WIDTH = 14.33 (ft) \*MINIMUM DIMENSION  
AREA<sub>FLOW</sub> = 129.0 (sf)  
MINIMUM LENGTH = 8 (ft) \*MINIMUM RESERVOIR LENGTH FOR ADEQUATE CONTACT TIME  
INSIDE LENGTH = 74.33 (ft)  
ESTIMATED CONTACT TIME = 278 (min) \*PROVIDED

# HEAD LOSS CALCULATIONS

Well to Reservoir

## FRICION LOSS FOR DUCTILE IRON PIPE HAZEN-WILLIAMS EQUATION

$$H_f = 1000 \cdot (V / (0.115 \cdot C \cdot D^{0.63}))^{1.852}$$

$D_i = 1.5$  in  
 $D_i = 0.13$  ft  
 $A_c = 0.012$  sf  
 $Q = 29$  gpm  
 $Q = 0.064612$  cfs  
 $V = 5.265$  ft/s  
 $L = 80.000$  ft  
 $C = 130.000$  \*Galv.  
 $H_f = 90.188$  ft/1000ft  
 $H_f = 7.215$  ft

$H_m = \Sigma K \cdot (V^2 / 2g)$     # OF LOSSES  
 pipe entrance= 0.50    1  
 contraction= 0.42    1  
 45 deg elbow= 0.40    0  
 90 deg elbow= 0.90    2  
 $\Sigma K = 2.72$   
 $H_m = 1.17$  ft

## FRICION LOSS FOR DUCTILE IRON PIPE HAZEN-WILLIAMS EQUATION

$$H_f = 1000 \cdot (V / (0.115 \cdot C \cdot D^{0.63}))^{1.852}$$

$D_i = 2$  in  
 $D_i = 0.17$  ft  
 $A_c = 0.022$  sf  
 $Q = 29$  gpm  
 $Q = 0.064612$  cfs  
 $V = 2.962$  ft/s  
 $L = 580.000$  ft  
 $C = 150.000$  \*PVC  
 $H_f = 17.041$  ft/1000ft  
 $H_f = 9.884$  ft

$H_m = \Sigma K \cdot (V^2 / 2g)$     # OF LOSSES  
 pipe entrance= 0.50    1  
 contraction= 0.42    1  
 45 deg elbow= 0.40    0  
 90 deg elbow= 0.90    4  
 $\Sigma K = 4.52$   
 $H_m = 0.62$  ft

TOTAL HEAD LOSS IN SYSTEM= 18.885 ft

Reservoir to Terminal Fire Hydrant

## FRICION LOSS FOR DUCTILE IRON PIPE HAZEN-WILLIAMS EQUATION

$$H_f = 1000 \cdot (V / (0.115 \cdot C \cdot D^{0.63}))^{1.852}$$

$D_i = 8$  in  
 $D_i = 0.67$  ft  
 $A_c = 0.349$  sf  
 $Q = 700$  gpm  
 $Q = 1.5596$  cfs  
 $V = 4.468$  ft/s  
 $L = 1420.000$  ft    \*LENGTH OF PIPE  
 $C = 150.000$  \*COEFFICIENT FOR PVC  
 $H_f = 7.241$  ft/1000ft  
 $H_f = 10.282$  ft

$H_m = \Sigma K \cdot (V^2 / 2g)$     # OF LOSSES  
 pipe entrance= 0.50    1  
 contraction= 0.42    1  
 45 deg elbow= 0.40    0  
 90 deg elbow= 0.90    10  
 $\Sigma K = 9.92$   
 $H_m = 3.07$  ft

TOTAL HEAD LOSS IN SYSTEM= 13.357 ft

# PERFORMANCE CURVES

30 GPM

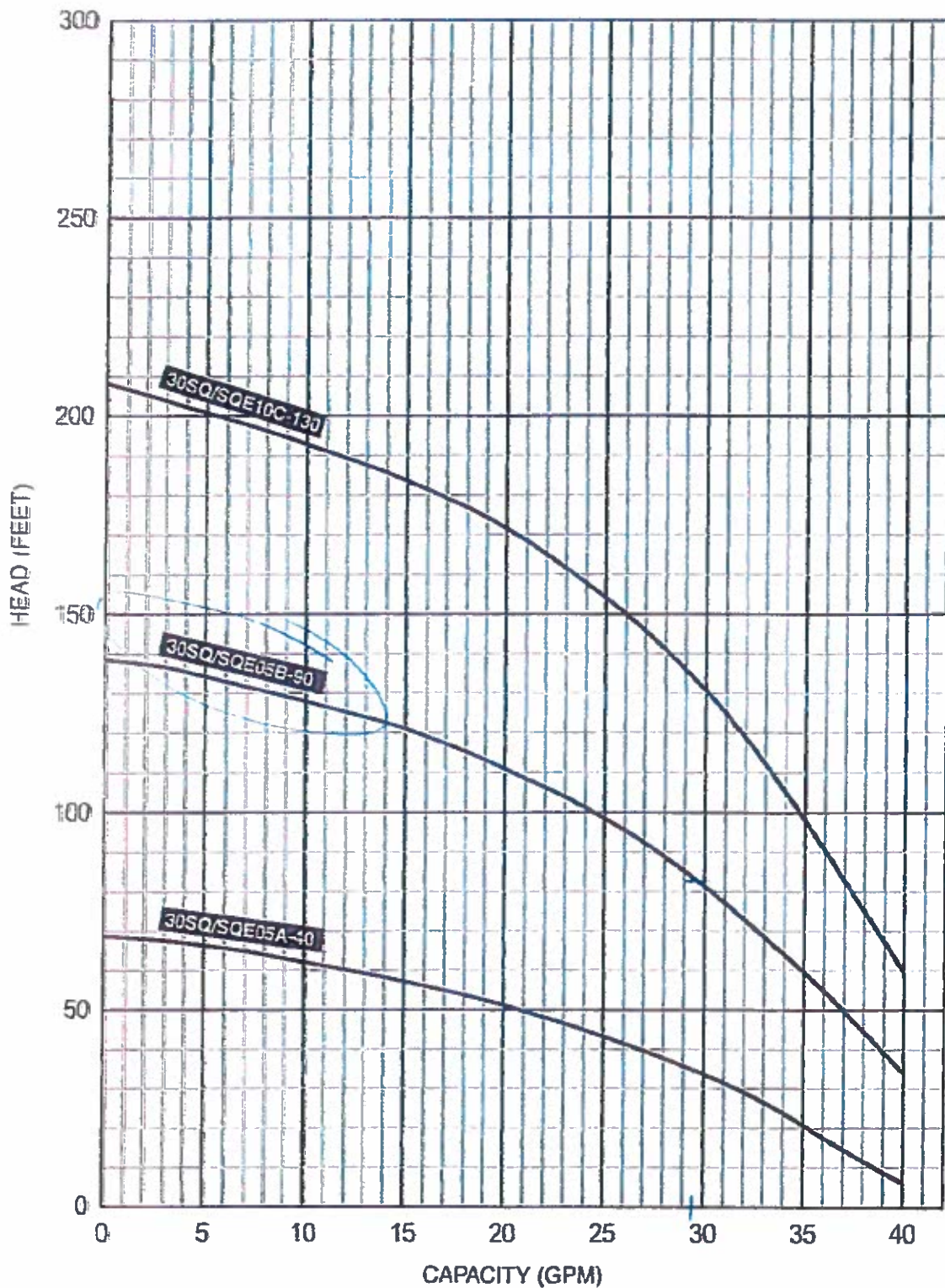
MODELS 30 SQ/SQE

FLOW RANGE: 8 - 42 GPM

OUTLET SIZE: 1 1/2" NPT

NOMINAL DIA. 3"

Well Pump



SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

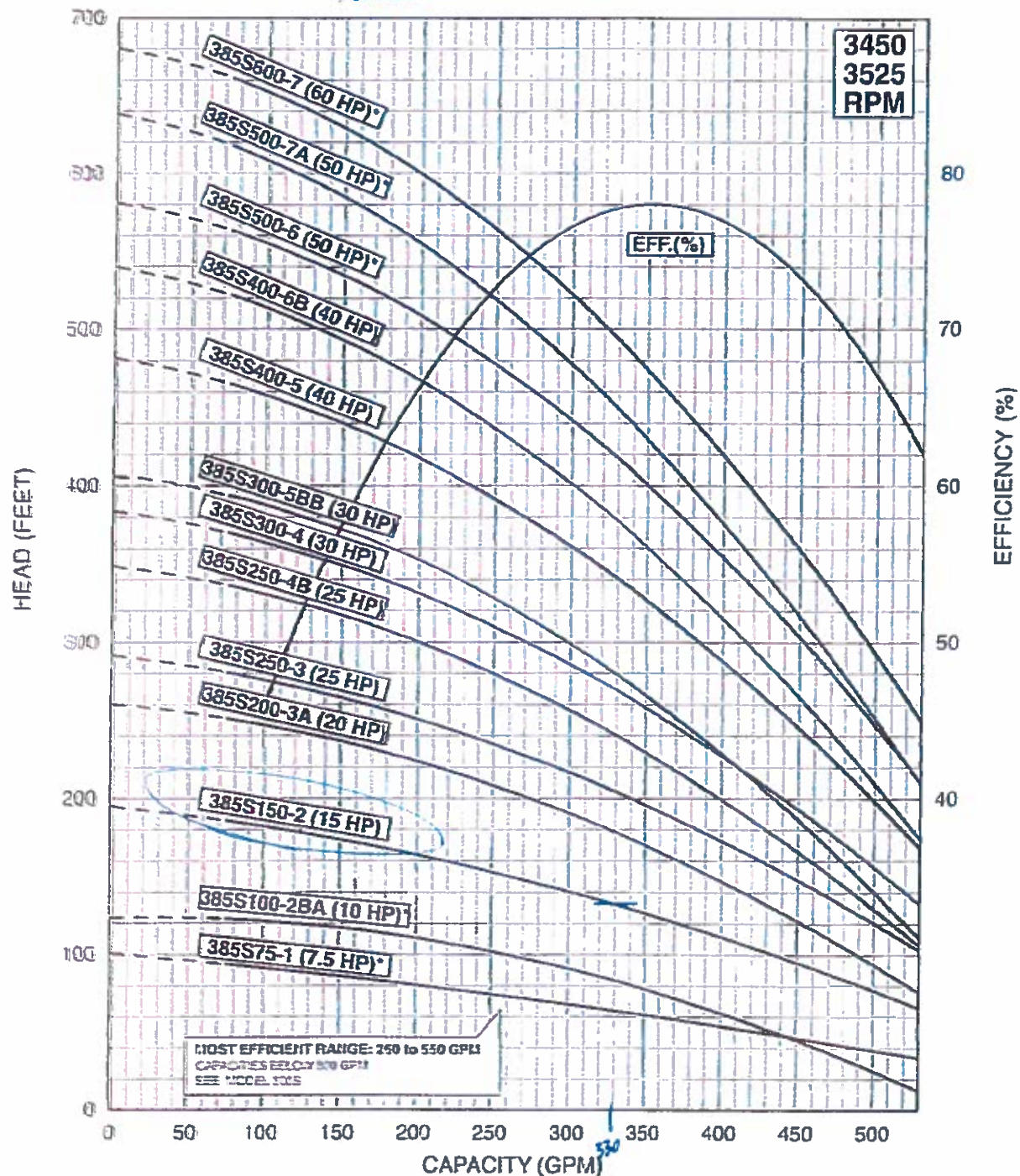
PERFORMANCE CONFORMS TO ISO 9906 (E) ANNEX A

FLOW RANGE: 75 - 550 GPM

OUTLET SIZE: 4" NPT

NOMINAL DIA. 8"

*Reservoir Pump #2 & 3*



SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

6" MOTOR STANDARD: 7.5-60 HP/3450 RPM

6" MOTOR STANDARD: 7.5-100 HP/3525 RPM

\* Alternate motor sizes available.

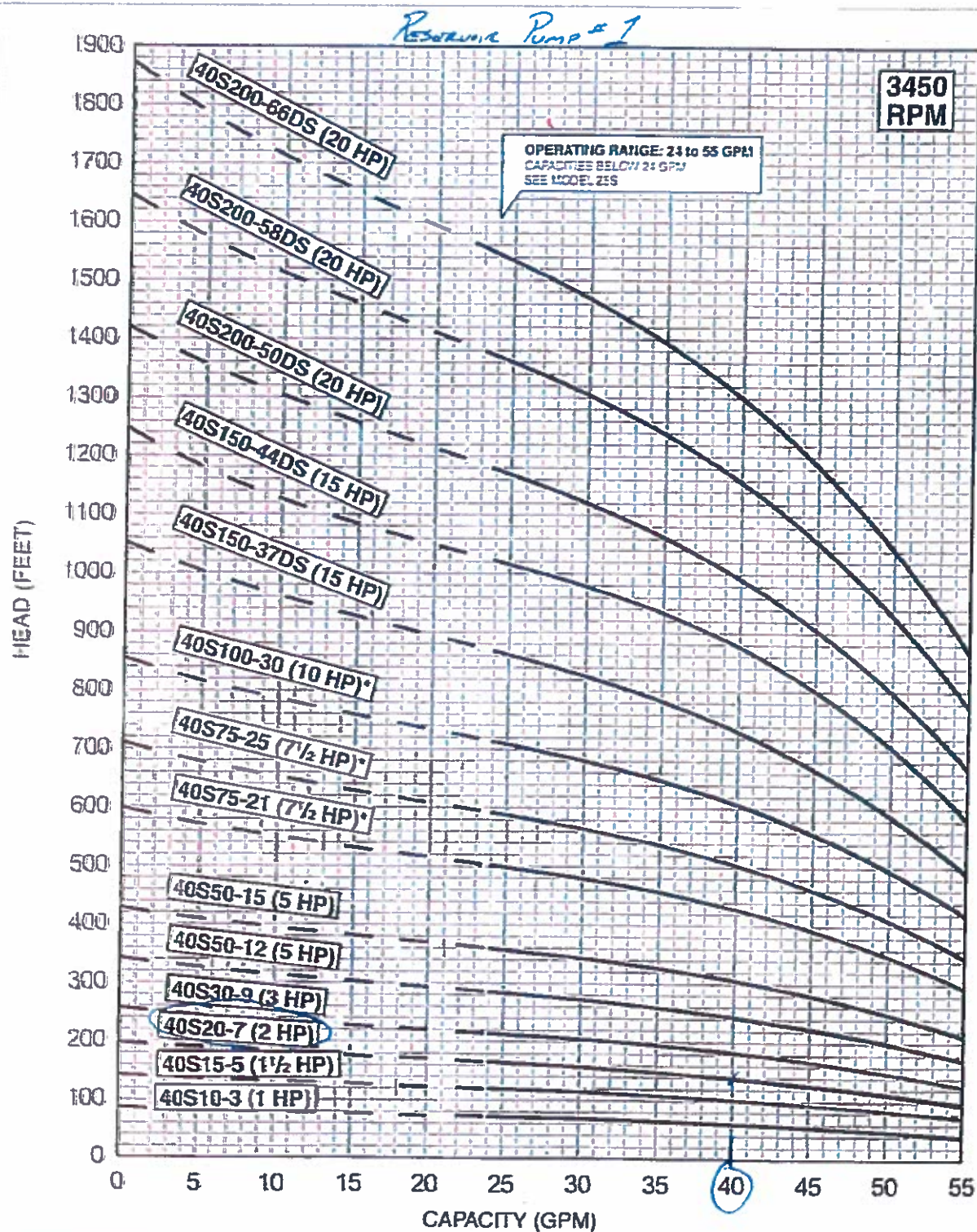
Performance conforms to ISO 9906: 1999 (E) Annex A

Minimum submergence is 8 feet

FLOW RANGE: 24 - 55 GPM

OUTLET SIZE: 2" NPT

NOMINAL DIA. 4"



SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

4" MOTOR STANDARD, 1-10 HP/3450 RPM

6" MOTOR STANDARD, 15-20 HP/3450 RPM

\* Also available with 6" motor

Performance conforms to ISO 9906:1999 (E) Annex A  
Minimum submergence is 5 feet



**Mica Kidd Island Fire Protection District**

6891 W. Kidd Island Road  
Coeur d'Alene, ID 83814-7356  
Office: 208-769-7946, Fax: 208-769-9486

Chief Bob Crawford  
mkichief@verizon.net

May 16, 2008

Inland Northwest Consultants  
Attn. Ryan Fobbs  
1296 E. Polson Ave.  
Coeur d' Alene, ID 83854

Re: Quaking Aspen Permit # SDP07-0220  
Amendment to original letter dtd. 05/16/08

Dear Mr. Fobs:

As per our conversation regarding the Quaking Aspen 10-lot subdivision, the Mica Kidd Island Fire Protection District will grant preliminary approval to the 10 homes requiring they have a fire suppression sprinkler system installed, and the 625 gallon per minute hydrant flow for 2 hours for fire suppression. If the 10 homes in the Quaking Aspen subdivision do not have fire suppression sprinkler system installed, it will be a mandatory requirement that the hydrant flow is 1,000 gallons per minute for 2 hours.

This system is approved by MKI Fire for the Quaking Aspen 10-lot subdivision only. Any further growth in the area will require their own fire protection system.

If you have any questions or concerns, please call me at (208)769-7946.

Sincerely,

A handwritten signature in black ink, appearing to read "Bob Crawford", is written over the typed name.

Bob Crawford  
Fire Chief  
Mica Kidd Island Fire Protection District

**Northwest**

Cummins Northwest, LLC  
11134 W. Westbow Blvd.  
Spokane, WA 99224  
Phone (509) 455-4411  
Fax (509) 624-4681

---

## Fax Cover Sheet

Date: May 21, 2008To: Ryan FobesFrom: Greg ReichertCompany: Inland NW ConsultantsPages: 4Fax Number: 208-437-1304Phone Number: 208-437-0920Subject: Gensize report and budget pricing.

CC: \_\_\_\_\_

Hi Ryan, The generator sizes out at a 60kw with weather enclosure, 24hr sub-base fuel tank and normal accessories, budget pricing is \$25000.00. A 300 Amp, Nema 1 Auto transfer switch is \$3000.00. See attached sizing report. Please call if you have questions. Regards,

**Powerful Solutions – Dependable Support – EVERY TIME**

[www.cumminsnorthwest.com](http://www.cumminsnorthwest.com)

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## Recommended Generator Report - 60DSFAD for Project Ryan Forbes 5-21-08

### Project Parameters

|                                     |            |                |         |
|-------------------------------------|------------|----------------|---------|
| Generator Sets Running in Parallel: | 1          | Fuel:          | Diesel  |
| Max Allowable Starting Voltage Dip: | 35 %       | Phase:         | 1       |
| Max Allowable Peak Voltage Dip:     | 35 %       | Frequency, Hz: | 60      |
| Max Allowable Frequency Dip:        | 10 %       | Voltage:       | 120/240 |
| Site Altitude, Ft. (M):             | 2600 (792) | Quiet Site:    | No      |
| Site Ambient Temperature, °F (°C):  | 104 (40)   | Duty:          | Standby |

### Calculated Individual Generator Set Load Running and Peak Requirements

|                |      |               |       |           |                      |       |
|----------------|------|---------------|-------|-----------|----------------------|-------|
| Running kW:    | 40.2 | Max Step kW:  | 82.5  | In Step 1 | Cumulative Step kW:  | 92.2  |
| Running kVA:   | 49.6 | Max Step kVA: | 167.1 | In Step 1 | Cumulative Step kVA: | 171.6 |
| Running PF:    | 0.81 | Peak kW:      | None  |           | Cumulative Peak kW:  | None  |
| Alternator kW: | 40.2 | Peak kVA:     | None  |           | Cumulative Peak kVA: | None  |

### Generator Set Configuration

|                                      |                  |                     |                |
|--------------------------------------|------------------|---------------------|----------------|
| Engine Model:                        | QSB5-G3 NR3      | Alternator:         | UC3D           |
| Fuel:                                | Diesel           | Feature Code:       | B268           |
| Engine Displacement, cu in (liters): | 275 (5)          | Reconnectable       |                |
| Engine Cylinders:                    | 4                | Full 1 Phase Output | Extended Stack |
| Excitation:                          | PMG              | Voltage Range:      | 120/240        |
| Temp. Rise at Full Rated Load, °C:   | 105 <sup>2</sup> | Number Leads:       | 12             |

### Set Performance

|                                                       |                    |
|-------------------------------------------------------|--------------------|
| Running at:                                           | 67% Rated Capacity |
| Starting Voltage Dip:                                 | 24 %               |
| Peak Voltage Dip:                                     | None %             |
| Frequency Dip:                                        | 7 %                |
| Site Rated kW:                                        | 60                 |
| Site Rated Alternator Max kW at 105°C and 240 volts:  | 79                 |
| Site Rated Alternator Max kVA at 105°C and 240 volts: | 79                 |
| Site Rated Max SkW:                                   | 89                 |
| Max SkVA:                                             | 250                |

### Load Requirements

|                           |       |
|---------------------------|-------|
| Max Starting Voltage Dip: | 35 %  |
| Max Peak Voltage Dip:     | 35 %  |
| Max Frequency Dip:        | 10 %  |
| Running kW:               | 40.2  |
| Alternator kW:            | 40.2  |
| Running kVA:              | 49.6  |
| Effective Step kW:        | 74.67 |
| Effective Step kVA:       | 156.4 |

<sup>2</sup>Note: Higher temperature rise at full rated load.

<sup>3</sup>Note: Step requirement has been reduced.



# **Loads and Steps Detail Report** **for Project Ryan Fobes 5-21-08**

## **Project Parameters**

|                                     |            |                |         |
|-------------------------------------|------------|----------------|---------|
| Generator Sets Running in Parallel: | 1          | Fuel:          | Diesel  |
| Max Allowable Starting Voltage Dip: | 35 %       | Phase:         | 1       |
| Max Allowable Peak Voltage Dip:     | 35 %       | Frequency, Hz: | 60      |
| Max Allowable Frequency Dip:        | 10 %       | Voltage:       | 120/240 |
| Site Altitude, Ft. (M):             | 2800 (792) | Quiet Site:    | No      |
| Site Ambient Temperature, °F (°C):  | 104 (40)   | Duty:          | Standby |

## **Calculated Individual Generator Set Load Running and Peak Requirements**

|                |      |               |       |           |                      |       |
|----------------|------|---------------|-------|-----------|----------------------|-------|
| Running kW:    | 40.2 | Max Step kW:  | 82.5  | In Step 1 | Cumulative Step kW:  | 92.2  |
| Running kVA:   | 49.6 | Max Step kVA: | 167.1 | In Step 1 | Cumulative Step kVA: | 171.6 |
| Running PF:    | 0.81 | Peak kW:      | None  |           | Cumulative Peak kW:  | None  |
| Alternator kW: | 40.2 | Peak kVA:     | None  |           | Cumulative Peak kVA: | None  |

## **Step 1**

### **Calculated Individual Generator Set Step Load Requirements**

|                |       |               |       |                      |       |
|----------------|-------|---------------|-------|----------------------|-------|
| Running kW:    | 23.8  | Starting kW:  | 82.5  | Cumulative Step kW:  | 82.5  |
| Running kVA:   | 29.1  | Starting kVA: | 167.1 | Cumulative Step kVA: | 167.1 |
| Running Amps:  | 121.1 |               |       |                      |       |
| Alternator kW: | 23.8  |               |       |                      |       |

|                |                                 |                     |                                |                                 |      |
|----------------|---------------------------------|---------------------|--------------------------------|---------------------------------|------|
| <b>Pump 1</b>  |                                 | <b>Single Phase</b> |                                | <b>Quantity: 1 In this Step</b> |      |
| Category:      | Motor                           |                     |                                |                                 |      |
| Running kW:    | 16.5                            | Starting kW:        | 68.4                           | Peak kW:                        | None |
| Running kVA:   | 20.6                            | Starting kVA:       | 142.5                          | Peak kVA:                       | None |
| Running PF:    | 0.80                            | Starting PF:        | 0.80                           | Cyclic:                         | No   |
| Running Amps:  | 85.7                            |                     |                                |                                 |      |
| Alternator kW: | 16.5                            |                     |                                | Voltage:                        | 240  |
| Shaft HP:      | 15.00                           | Method:             | Capacitor Start, Induction Run |                                 |      |
| Shaft kW:      | 11.19                           |                     |                                |                                 |      |
| Efficiency:    | 0.88                            | LRkVA Factor:       | 9.5                            |                                 |      |
| Design:        | Standard NEMA Design B, C, or D | LRkVA Code:         | L                              |                                 |      |

|                |       |                     |      |                                 |      |
|----------------|-------|---------------------|------|---------------------------------|------|
| <b>Pump 3</b>  |       | <b>Single Phase</b> |      | <b>Quantity: 1 In this Step</b> |      |
| Category:      | Motor |                     |      |                                 |      |
| Running kW:    | 2.3   | Starting kW:        | 9.1  | Peak kW:                        | None |
| Running kVA:   | 2.9   | Starting kVA:       | 19.0 | Peak kVA:                       | None |
| Running PF:    | 0.78  | Starting PF:        | 0.80 | Cyclic:                         | No   |
| Running Amps:  | 12.3  |                     |      |                                 |      |
| Alternator kW: | 2.3   |                     |      | Voltage:                        | 240  |

|             |                                 |               |                                |
|-------------|---------------------------------|---------------|--------------------------------|
| Shaft HP:   | 2.00                            | Method:       | Capacitor Start, Induction Run |
| Shaft kW:   | 1.49                            |               |                                |
| Efficiency: | 0.65                            | LRkVA Factor: | 9.5                            |
| Design:     | Standard NEMA Design B, C, or D | LRkVA Code:   | L                              |

|                         |                                    |                     |      |                                 |      |
|-------------------------|------------------------------------|---------------------|------|---------------------------------|------|
| <b>Heating/lighting</b> |                                    | <b>Single Phase</b> |      | <b>Quantity: 1 In this Step</b> |      |
| Category:               | Miscellaneous - General Receptacle |                     |      |                                 |      |
| Running kW:             | 5.0                                | Starting kW:        | 5.0  | Peak kW:                        | None |
| Running kVA:            | 5.6                                | Starting kVA:       | 5.6  | Peak kVA:                       | None |
| Running PF:             | 0.90                               | Starting PF:        | 0.90 | Cyclic:                         | No   |
| Running Amps:           | 23.2                               |                     |      |                                 |      |
| Alternator kW:          | 5.0                                |                     |      | Voltage:                        | 240  |

**Step 2****Calculated Individual Generator Set Step Load Requirements**

|                |      |               |       |                      |       |
|----------------|------|---------------|-------|----------------------|-------|
| Running kW:    | 16.5 | Starting kW:  | 68.4  | Cumulative Step kW:  | 92.2  |
| Running kVA:   | 20.6 | Starting kVA: | 142.5 | Cumulative Step kVA: | 171.6 |
| Running Amps:  | 85.7 |               |       |                      |       |
| Alternator kW: | 16.5 |               |       |                      |       |

|                |       |                     |       |                                 |      |
|----------------|-------|---------------------|-------|---------------------------------|------|
| <b>Pump 2</b>  |       | <b>Single Phase</b> |       | <b>Quantity: 1 In this Step</b> |      |
| Category:      | Motor |                     |       |                                 |      |
| Running kW:    | 16.5  | Starting kW:        | 68.4  | Peak kW:                        | None |
| Running kVA:   | 20.6  | Starting kVA:       | 142.5 | Peak kVA:                       | None |
| Running PF:    | 0.80  | Starting PF:        | 0.80  | Cyclic:                         | No   |
| Running Amps:  | 85.7  |                     |       |                                 |      |
| Alternator kW: | 16.5  |                     |       | Voltage:                        | 240  |

|             |                                 |               |                                |
|-------------|---------------------------------|---------------|--------------------------------|
| Shaft HP:   | 15.00                           | Method:       | Capacitor Start, Induction Run |
| Shaft kW:   | 11.19                           |               |                                |
| Efficiency: | 0.68                            | LRkVA Factor: | 9.5                            |
| Design:     | Standard NEMA Design B, C, or D | LRkVA Code:   | L                              |

REVISED  
From: 005/750

IDAHO DEPARTMENT OF WATER RESOURCES

WELL DRILLER'S REPORT

1. WELL TAG NO. D 0051730

DRILLING PERMIT NO. 847812

Water Right or Injection Well No. \_\_\_\_\_

ENTERED

2. OWNER:

Name GABE REES

Address PO BOX 333

City ANGWIN State CA Zip 94508

3. LOCATION OF WELL by legal description:

You must provide address or Lot, Blk, Sub. Or Directions to Well.

Twp. 49 North ☒ or South ☐

Rge. 04 East ☐ or West ☒

Sec. 04 NW 1/4 NE 1/4

Gov't Lot \_\_\_\_\_ County KOOTENAI

Lat: \_\_\_\_\_ Long: \_\_\_\_\_

Address of Well Site 2600 FT. E. OF HWY 95 ON QUAKING

ASPEN LN., 10 ML. S. City COEUR D'ALENE

Lt. \_\_\_\_\_ Blk. \_\_\_\_\_ Sub. Name \_\_\_\_\_

4. USE:

☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation  
☐ Thermal ☐ Injection ☒ Other MULTI-FAMILY

5. TYPE OF WORK check all that apply

☒ New Well ☐ Modify ☐ Abandonment ☐ Other \_\_\_\_\_

6. DRILL METHOD:

☒ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other \_\_\_\_\_

7. SEALING PROCEDURES

| Seal Material | From | To | Weight/Volume | Seal Placement Method |
|---------------|------|----|---------------|-----------------------|
| BENTONITE     | 0    | 60 | 26 SACKS      | OVERBORE              |

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 76'

Was drive shoe seal tested? ☒ Y ☐ N How? AIR PRESSURE

8. CASING/LINER:

| Diameter | From | To | Gauge | Material | Casing Liner                        | Weight                   | Thrust                              |
|----------|------|----|-------|----------|-------------------------------------|--------------------------|-------------------------------------|
| 6"       | +2   | 76 | .280  | STEEL    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Length of Headpipe 78' Length of Tailpipe \_\_\_\_\_

Packer ☐ Y ☒ N Type \_\_\_\_\_

9. PERFORATIONS/SCREENS PACKER TYPE

|                            |    |           |        |          |          |        |       |
|----------------------------|----|-----------|--------|----------|----------|--------|-------|
| Perforation Method         |    |           | N/A    |          |          |        |       |
| Screen Type & Installation |    |           | N/A    |          |          |        |       |
| From                       | To | Slot Size | Number | Diameter | Material | Casing | Liner |
|                            |    |           |        |          |          |        |       |
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10. FILTER PACK

| Filter Material | From | To | Weight/Volume | Placement Method |
|-----------------|------|----|---------------|------------------|
| N/A             |      |    |               |                  |

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

60 Ft. below ground Artesian pressure \_\_\_\_\_ lb.  
Depth flow encountered ft. Describe access port or control devices: HCN.Y

| Office Use Only |       |     |     |
|-----------------|-------|-----|-----|
| Well ID No.     | Twp   | Rge | Sec |
|                 | 1/4   | 1/4 | 1/4 |
| Lat:            | Long: |     |     |

12. Well Tests:

☐ Pump ☐ Baller ☒ Air ☐ Flowing Artesian

| Yield gal/min. | Drawdown | Pumping Level | Time |
|----------------|----------|---------------|------|
| 40 GPM         |          |               |      |

Water Temp. COLD Bottom hole temp COLD

Water Quality test or comments: APPEARS CLEAR W/NO SMELL

Debris first Water Encounter 72

13. LITHOLOGIC LOG: (Describe repairs or abandonment)

| Bore Dia. | From | To | Remarks: Lithology, Water Quality & Temperature | Y | N |
|-----------|------|----|-------------------------------------------------|---|---|
| 10        | 0    | 12 | CLAY, BROWN                                     |   | X |
| 10        | 12   | 13 | CLAY, BLACK                                     |   | X |
| 10        | 13   | 60 | BASALT, BLACK, HARD                             |   | X |
| 8         | 60   | 72 | BASALT, BLACK, HARD                             |   | X |
| 8         | 72   | 79 | SAND TO GRAVEL, 1"                              | X |   |
| 8         | 79   | 84 | CLAY, TAN                                       |   | X |

RECEIVED  
JUL 30 2007  
IDWR/North

Completed 76' (Measurable)  
Depth  
Date: Start 7/20/07 Completed 7/23/07

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 AMERICAN WELL DRILLING Firm No. 673  
Principal Driller Date 7-26-07  
And  
Driller or Operator II Date 7-26-07  
Operator I  
Principal Driller and Rig Operator Required  
Operator I must have signature of Driller/Operator II

49N 4W 4

August 2007

WELL #1

51' STATIC  
77' DEEP

WELL #1 229400

| TIME     | STATIC  | GPM | DRAW/DOWN |
|----------|---------|-----|-----------|
| 8:00 AM  | 56'     | 40  |           |
| 8:18     | 56'     | 35  |           |
| 8:20     | 56'     | 33  |           |
| 8:33     | 56.7    | 33  |           |
| 9:00     | 57'     | 35  |           |
| 9:20     | 57'     | 35  |           |
| 10:00    | 57.5    | 35  |           |
| 10:30    | 57.7    | 35  |           |
| 11:30    | 58'     | 33  |           |
| 12:30 PM | 58.5    | 33  |           |
| 1:30     | 58.5    | 30  |           |
| 2:30     | 58'     | 30  |           |
| 3:30     | 58'     | 30  |           |
| 4:30     | 58'     | 30  |           |
| 5:30     | 58'     | 30  |           |
| 6:30     | 58'     | 30  |           |
| 7:30     | 58'     | 30  |           |
| 8:30     | 58' 4"  | 30  |           |
| 9:30     | 58' 6"  | 30  |           |
| 10:30    | 58' 8"  | 30  |           |
| 11:30    | 58' 10" | 30  |           |
| 12:30 AM | 59'     | 30  |           |
|          |         |     |           |
|          |         |     |           |

[illegible]



STATE OF IDAHO  
DEPARTMENT OF  
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway • Coeur d'Alene, Idaho 83814 • (208) 769-1422

C.L. "Butch" Otter, Governor  
Toni Hardesty, Director

November 26, 2007

Gabriel Rees  
PO Box 333  
Angwin, CA 94508

**RE: Quaking Aspen Well – Record Drawings**

Dear Mr. Rees:

Record drawings submitted by Ryan Fobes, P.E., of Inland Northwest Consultants for completion of the two wells serving the ten lot Quaking Aspen subdivision have been reviewed. Included with this submittal were the well log as filed with the Idaho Department of Water resources, water quality test results from Well #1, and the results of the test pumping of Well #1 as completed by North Idaho Pump Co. The engineer has indicated that Well #2 was drilled but is not planned to be utilized at this time.

**Comments**

- Please specify the fate of Well #2 in the submittal to include the plans and specifications for the drinking water distribution system.
- Iron sample results from Well #1 were 0.82 mg/liter. While iron is not a regulated contaminant, the EPA has established a secondary maximum contaminant level (MCL) of 0.3 mg/l. There are no known health risks associated with high iron; however, water with iron exceeding the secondary MCL may be aesthetically unpleasant to the consumer. DEQ recommends that either a centralized iron removal treatment be installed; or at minimum, purchasers of lots within the subdivision be made aware of the iron concentrations prior to purchase.
- The initial water quality tests indicate that the drinking water produced by Well #1 may be corrosive. The Langlier Index and pH taken from the well was -1.43 and 6.79 respectively. A Langlier Index of this value is considered moderately corrosive. A pH level below 7 is acidic and may cause corrosion of household piping. The low Langlier Index in conjunction with the low pH may cause metals such as lead and copper from household plumbing to be leached into the drinking water. All public water systems must be evaluated to determine if corrosion control treatment is needed. As with all other potential contaminants, the developer is responsible for the testing and possible treatment, but the timing is different for lead/copper testing. While source testing can indicate if corrosion is likely to be a problem, final testing can only be completed in private homes

after the public drinking water system and house plumbing have stabilized after one year of use. Nevertheless, the initial owner, the developer in this case, is responsible for water quality testing at the appropriate time and then providing treatment if required by state rules. Test results must be submitted to DEQ within 15 months after the fifth home is occupied. Five homes must be tested if the system will eventually serve less than 100 homes. Contact Panhandle Health District for a determination on when to test the next five homes. The owner of the water system must obtain permission from homeowners to take the tests in the homes and it may be advisable to write that provision into the sale agreements and/or one of the homeowner's association documents.

The record drawings have been compared to the construction plans and specifications as approved by DEQ on January 10, 2007 and found to be acceptable. The submittal is hereby **accepted** by DEQ per Section 39-118 (3) of Idaho Code as the record drawings for this project.

Now that an adequate drinking water source has been established, an engineering report must be submitted to DEQ. The engineering report must address all applicable items listed in Section 503 of the Idaho Rules for Public Drinking Water Systems (Rules). In addition, the engineering report must demonstrate the technical, financial, and managerial (TFM) capacity of the water system and address all TFM requirements listed in Section 500 of the Rules. Once the engineering report and TFM documents have been approved, DEQ will be prepared to review the plans and specifications for the drinking water distribution system. Plans and specifications may be submitted with the engineering report and TFM documents.

If you should have any questions regarding this matter, please do not hesitate to call.

Sincerely,



Matt Plaisted

c: Ryan Fobes, INC  
Mike Nelson, PHD  
File: (#10151\_PHD Quaking Aspen)

File this here: \_\_\_\_\_

## DEQ Preliminary P&S Review Checklist

Log#

10151

Project Name / Quaking Aspen, new water system, asbuilts

To be served by water/sewer system / X

Engineering Firm/Contact / INC. Ryan Fobes

RECEIVED

OCT - 4 2007

DEQ-Coeur d'Alene  
Regional Office

☒ our Transmittal ltr  
Stamped and signed  
Will serve ltr included

☒ other Transmittal ltr

Will serve ltr needed

Will serve ltr not needed

### Construction

Checklist: General const

Checklist: Water distribution

Checklist: Sewer collection

Other Checklist - / X

☒ Revised P&S for Log # / 9970

☒ Disapproval Date / 10-12-07 by MC

Const plan location / in Quaking Aspen file

### Asbuilts

Const plans Log # / 0

(for QLPE approved const by / X)

Revision on Asbuilts Log # / X

Date of Approval / 0

Reviewed on / by / 0/x

Const/Asbuilt Location / X

### QLPE Certification on Construction Plans

QLPE statement ltr signed/stamped by - of (City/entity) - / X

Engineering firm/contact - / X

### Other

P&Z Application / Notice to Jurisdiction - Review by (date) / X

Engineering Report (circle one) Prelim / O&M / Master Plan / Bid Docs / Addendum / CO

Other: / X

### Owner / Developer Information

Owner/Developer / Gabriel Rees

Company Name /

Address / PO Box 333

City / State / Zip / Angwin, CA 94508

Phone / 707 494 0420

Email / X

AS-BUILT PLAN AND SPECIFICATION REVIEW

By: [Signature] CC: JAY [Signature] Date: 4/26/07  
Environmental Engineer

KC BPD

These plans and specifications depicting the actual construction, alteration or modification performed have been reviewed for compliance with IDAHO DEPARTMENT OF HEALTH AND WELFARE regulations and have been found acceptable. This review does not relieve the owner, engineer or contractor of the responsibility of having designed and constructed these facilities in compliance with all applicable federal, state and local laws, rules, regulations or ordinances.

Refer to letter of 4/26 to GABRIEL REES



10151

## Transmittal

**Date:** October 4, 2007  
**To:** Matt Plaitsted  
Idaho Department of Environmental Quality  
**From:** Tiffany Casey  
Administrative Specialist  
**Re:** Quaking Aspen

---

Enclosed for submittal, please find the following items for the above referenced project:

1. DEQ letter of transmittal
2. Narrative
3. Well Drillers Report
4. Well Logs
5. 11 x 17 of the Well Record Drawings

Should you have any questions or concerns please feel free to contact our office for assistance.

tc *[initials]*

*RY # 9957  
App 7-10-07 by mP*

*Robert Rees  
PO B 333  
Angwin, CA 94508  
107-494-0420*

1296 E. Polston Avenue, Suite B  
Post Falls, Idaho 83854  
Phone: (208)773-8370  
Fax: (208)777-2128

Log #

10151

(DEQ Use Only)



Letter of Transmittal

Date: October 4, 2007

To: DEQ Engineering Staff

Project Title: Quaking Aspen

Project Description: Record Drawings

City / County: Kootenai

Water Purveyor: Quaking Aspen HOA

Sewer Purveyor: Individual Sewer

Owner / Developer Name: Gabriel Rees

Address / City / State / Zip: PO Box 333 Angwin, CA 94508

Phone / Email: 707/965-2827

Project Type:  
(please check one)

- ☐ Water & Sewer    ☒ Water Only    ☐ Sewer Only  
☐ Wastewater Treatment    ☐ Water Treatment  
☐ Other \_\_\_\_\_

Plan Type:  
(please check one)

- ☐ Construction Plans/Specs    ☒ Asbuilts  
☐ Revised Construction    ☐ Revised Asbuilts  
☐ Engineering Report  
☐ Planning Apps for Comment Only (General / P&Z / etc)

# of Connections: \_\_\_\_\_

Water Project Description:

- ☒ New Water System/Source  
☐ Water System Improvements  
☐ Water System Extension

Sewer Project Description:

- ☐ New Sewer System  
☐ Sewer System Improvements  
☐ Sewer System Extension

Ryan Fobes-Inland Northwest Consultants  
Engineer Contact and Company Name

Note: Please submit this transmittal form with the applicable checklist(s) (found on the DEQ website: [http://www.deq.state.id.us/water/assist\\_business/engineers/checklists.cfm](http://www.deq.state.id.us/water/assist_business/engineers/checklists.cfm)) and one set of plans/specs. (Please disregard the instruction to send 3 sets of plans.) Thank you.



10151

October 3, 2007

Matt Plaisted, EIT  
Idaho Department of Environmental Quality  
Coeur d'Alene Regional Office  
2110 Ironwood Parkway  
Coeur d'Alene, ID 83814

**Re: Quaking Aspen Estates – Well Construction**

Dear Mr. Plaisted:

Attached are record drawings showing the well as-constructed. Well #1 will be the production well to serve as the drinking water supply for the 10-lot Quaking Aspen subdivision. Well #2 is not planned to be utilized at this time. The final plat for this subdivision will show the 50'+ radius well easement for the wells. The depth of the wells were estimated to be around 200 feet with an anticipated capacity of 25-30 gallons per minute (gpm), well #1 was completed at a depth of 76 feet with an air tested flow rate of 40 gpm. A 24 hour test confirmed the desired source production rate of 30 gpm. Based on this 24 hour test an adequate water source is available for this proposed 10 lot subdivision. Attached is a copy of the Well Driller's Report (well log) as filed with the Idaho Department of Water Resources and the results from test pumping.

We are waiting for the test results for from the water quality testing as shown below:

- a. Phase II and V inorganic contaminants
- b. Phase II and V volatile organic contaminants
- c. Phase II and V synthetic organic contaminants
- d. Radiological activity, quarterly for one year
- e. Nitrate and Nitrite
- f. Arsenic
- g. Corrosivity
- h. Iron and Manganese

The results of the water quality testing will be submitted when available and may be submitted prior to this review reaching your desk. If possible our client is requesting a letter allowing the plat process to continue, leaving the quality test to be reviewed and mitigated if required thru the water system approval process. If / when the preliminary plat is approved we will provide; an engineering report for the public water system addressing all of the applicable requirements of Section 503 of the Idaho Rules for Public

1296 East Polston Avenue, Suite B  
Post Falls, Idaho 83854  
Phone: (208)773-8370  
Fax: (208)777-2128



Drinking Water Systems (Rules), demonstration of technical, financial, and managerial capacity of the proposed water system and construction plans for the distribution system and any facilities associated with this well need to be submitted for approval by this office.

Should you have any question or need any further assistance please call.

Sincerely,

Ryan Fobes, P.E.  
Inland Northwest Consultants



Well #2

Form 2-7-7 IDAHO DEPARTMENT OF WATER RESOURCES  
WELL DRILLER'S REPORT

1. WELL TAG NO. D 0051750

DRILLING PERMIT NO

Water Right or Injection Well No.

847812

ENTERED

## 2. OWNER:

Name GABE REES

Address PO BOX 333

City ANGWIN State CA Zip 94508

## 3. LOCATION OF WELL by legal description:

You must provide address or Lot, Blk, Sub. Or Directions to Well.

Twp. 49 North ☒ or South ☐Rge. 04 East ☐ or West ☒

Sec. 04 1/4 NW 1/4 NE 1/4

Gov't Lot County KOOTENAI

Lat. : Long. :

Address of Well Site 2600 FT. E. OF HWY 95 ON QUAKING

ASPEN LN., 10 MI. S. City COEUR D'ALENE

Lt. Blk. Sub. Name

## 4. USE:

☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation  
☐ Thermal ☐ Injection ☒ Other MULTI-FAMILY

## 5. TYPE OF WORK check all that apply

☒ New Well ☐ Modify ☐ Abandonment ☐ Other

## 6. DRILL METHOD:

☒ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other

## 7. SEALING PROCEDURES

| Seal Material | From | To | Weight/Volume | Seal Placement Method |
|---------------|------|----|---------------|-----------------------|
| BENTONITE     | 0    | 60 | 26 SACKS      | OVERBORE              |

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 76'Was drive shoe seal tested? ☒ Y ☐ N How? AIR PRESSURE

## 8. CASING/LINER:

| Diameter | From | To | Gauge | Material | Casing Liner Welded Threaded                                                                                              |
|----------|------|----|-------|----------|---------------------------------------------------------------------------------------------------------------------------|
| 6"       | +2   | 76 | .280  | STEEL    | <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> |

Length of Headpipe 78' Length of Tailpipe

Packer ☐ Y ☒ N Type

## 9. PERFORATIONS/SCREENS PACKER TYPE

|                            |    |           |        |          |          |                          |                          |
|----------------------------|----|-----------|--------|----------|----------|--------------------------|--------------------------|
| Perforation Method         |    | N/A       |        |          |          |                          |                          |
| Screen Type & Installation |    |           | N/A    |          |          |                          |                          |
| From                       | To | Slot Size | Number | Diameter | Material | Casing                   | Liner                    |
|                            |    |           |        |          |          | <input type="checkbox"/> | <input type="checkbox"/> |
|                            |    |           |        |          |          | <input type="checkbox"/> | <input type="checkbox"/> |
|                            |    |           |        |          |          | <input type="checkbox"/> | <input type="checkbox"/> |

## 10. FILTER PACK

| Filter Material | From | To | Weight/Volume | Placement Method |
|-----------------|------|----|---------------|------------------|
| N/A             |      |    |               |                  |

## 11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

 60 Ft. below ground Artesian pressure  
 Depth flow encountered ft. Describe access port or control devices: BOLT  
 ON TURTLE CAP

| Office Use Only |     |       |     |
|-----------------|-----|-------|-----|
| Well ID No.     | Twp | Rge   | Sec |
|                 | 1/4 | 1/4   | 1/4 |
| Lat.            |     | Long. |     |

## 12. Well Tests:

☐ Pump ☐ Baller ☒ Air ☐ Flowing Artesian

| Yield gal/min. | Drawdown | Pumping Level | Time |
|----------------|----------|---------------|------|
| 40 GPM         |          |               |      |

Water Temp. COLD Bottom hole temp COLD

Water Quality test or comments: APPEARS CLEAR W/NO SMELL

Depth first Water Encounter 72

## 13. LITHOLOGIC LOG: (Describe repairs or abandonment)

| Bore Dia. | From | To | Remarks: Lithology, Water Quality & Temperature | Y | N |
|-----------|------|----|-------------------------------------------------|---|---|
| 10        | 0    | 12 | CLAY, BROWN                                     |   | X |
| 10        | 12   | 15 | CLAY, BLACK                                     |   | X |
| 10        | 15   | 60 | BASALT, BLACK, HARD                             |   | X |
| 8         | 60   | 72 | BASALT, BLACK, HARD                             |   | X |
| 8         | 72   | 76 | SAND TO GRAVEL 1"                               | X |   |
| 8         | 76   | 84 | CLAY, TAN                                       |   | X |

 RECEIVED  
 JUL 30 2007  
 IDWR/North

 Completed 7/27/07 (Measureable)  
 Depth  
 Date: Start 7/30/2007 Completed 7/27/2007

## 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 AMERICAN WELL DRILLING

Firm No. 675

Principal Driller

Date 7-26-07

And

Driller or Operator II

Date 7-26-07

Operator I

Date

 Principal Driller and Rig Operator Required  
 Operator I must have signature of Driller/Operator II

49N 4W 4



PO Box 3364  
Pocatello, ID 83407-3364  
Phone: 208-497-2021  
Fax: 208-497-2018

North Idaho Pump Co., Inc.

**Fax**

*Working  
Aspen*

**RECEIVED**  
SEP 05 2007

BY.....

|                                                                                                                                                                                         |         |        |                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------|-------------------|
| To:                                                                                                                                                                                     | Chad    | From:  | Steve Davis       |
| From:                                                                                                                                                                                   | 77-2128 | Date:  | September 5, 2007 |
| Pages:                                                                                                                                                                                  |         | Pages: | 10                |
| Re:                                                                                                                                                                                     |         | CC:    |                   |
| <input type="checkbox"/> Urgent <input type="checkbox"/> For Review <input type="checkbox"/> Please Comment <input type="checkbox"/> Please Reply <input type="checkbox"/> Please Reply |         |        |                   |

•Comments:

Chad here is the information you requested. If you have any questions please call me.

Thanks

Steve

August 2007

WELL #1

51' STATIC  
77' DEEP

WELL #2

54' STATIC  
77' DEEP

WELL # 1 229400

| TIME     | STATIC  | GPM | DRAW DOWN |
|----------|---------|-----|-----------|
| 8:00 AM  | 56'     | 40  |           |
| 8:18     | 56'     | 35  |           |
| 8:20     | 56'     | 33  |           |
| 8:33     | 56.7    | 33  |           |
| 9:00     | 57'     | 35  |           |
| 9:20     | 57'     | 35  |           |
| 10:00    | 57.5    | 35  |           |
| 10:30    | 57.7    | 35  |           |
| 11:30    | 58'     | 33  |           |
| 12:30 PM | 58.5    | 33  |           |
| 1:30     | 58.5    | 30  |           |
| 2:30     | 58'     | 30  |           |
| 3:30     | 58'     | 30  |           |
| 4:30     | 58'     | 30  |           |
| 5:30     | 58'     | 30  |           |
| 6:30     | 58'     | 30  |           |
| 7:30     | 58'     | 30  |           |
| 8:30     | 58' 4"  | 30  |           |
| 9:30     | 58' 6"  | 30  |           |
| 10:30    | 58' 8"  | 30  |           |
| 11:30    | 58' 10" | 30  |           |
| 12:30 AM | 59'     | 30  |           |
|          |         |     |           |

## DRAW DOWN

[illegible]

WELL # 2

| TIME       | STATIC | GPM | DRAW DOWN |
|------------|--------|-----|-----------|
| 8:50 AM    | 56'    | 20  |           |
| 9:50       | 64 1/2 | 20  |           |
| 10:00      | 64 1/2 | 17  |           |
| 11:00      | 64 1/2 | 17  |           |
| 12 NOON    | 64 1/2 | 17  |           |
| 1:00       | 64 1/2 | 17  |           |
| 2:00       | 64 1/2 | 17  |           |
| 3:00       | 64 1/2 | 17  |           |
| 4:00       | 64 1/2 | 17  |           |
| 5:00       | 64 1/2 | 17  |           |
| 6:00       | 64 1/2 | 17  |           |
| 7:00       | 64 1/2 | 17  |           |
| 8:00       | 64 1/2 | 17  |           |
| 9:00       | 64' 6" | 17  |           |
| 10:00      | 64' 6" | 17  |           |
| 11:00      | 64' 6" | 17  |           |
| 12 MIDNITE | 64' 6" | 17  |           |
| 1:00 AM    | 64' 6" | 17  |           |
| 2:00       | 64' 6" | 17  |           |
| 3:00       | 64' 6" | 17  |           |
| 4:00       | 64' 6" | 17  |           |
| 5:00       | 64' 6" | 17  |           |
| 6:00       | 64' 6" | 17  |           |
| 7:00       | 64' 6" | 17  |           |

[illegible]

WELL # 1 static, while running WELL #2

| TIME       | STATIC | GPM | DRAW DOWN |
|------------|--------|-----|-----------|
| 8:50 AM    | 54'    |     |           |
| 10:00      | 54'    |     |           |
| 11:00      | 54'    |     |           |
| 12 NOON    | 54'    |     |           |
| 1:00       | 54'    |     |           |
| 2:00       | 54'    |     |           |
| 3:00       | 54'    |     |           |
| 4:00       | 54'    |     |           |
| 5:00       | 54'    |     |           |
| 6:00       | 54'    |     |           |
| 7:00       | 54'    |     |           |
| 8:00       | 54'    |     |           |
| 9:00       | 54'    |     |           |
| 10:00      | 54'    |     |           |
| 11:00      | 54'    |     |           |
| 12 MIDNITE | 54'    |     |           |
| 1:00 AM    | 54'    |     |           |
| 2:00       | 54'    |     |           |
| 3:00       | 54'    |     |           |
| 4:00       | 54'    |     |           |
| 5:00       | 54'    |     |           |
| 6:00       | 54'    |     |           |
| 7:00       | 54'    |     |           |
| 8:00       | 54'    |     |           |

WELL # 1 static while running WELL #2

TIME

**STATIC**

**CIPM**

## DRAW DOWN

**9:00 AM**

54

[illegible]

WELL # 2 static, while running WELL #1

| TIME     | STATIC  | GPM | DRAW DOWN |
|----------|---------|-----|-----------|
| 8:15 AM  | 54'     |     |           |
| 9:30     | 55.5'   |     |           |
| 10:30    | 56'     |     |           |
| 11:30    | 56'     |     |           |
| 12:30 PM | 57'     |     |           |
| 1:30     | 57'     |     |           |
| 2:30     | 57'     |     |           |
| 3:30     | 57'     |     |           |
| 4:30     | 57'     |     |           |
| 5:30     | 57'     |     |           |
| 6:30     | 57'     |     |           |
| 7:30     | 57'     |     |           |
| 8:30     | 57' 4"  |     |           |
| 9:30     | 57' 8"  |     |           |
| 10:30    | 57' 8"  |     |           |
| 11:30    | 57' 10" |     |           |
| 12:30 AM | 58'     |     |           |
| 1:30     | 58'     |     |           |
| 2:30     | 58'     |     |           |
| 3:30     | 58'     |     |           |
| 4:30     | 58'     |     |           |
| 5:30     | 58'     |     |           |
| 6:30     | 58'     |     |           |

|                                                 |                                  |
|-------------------------------------------------|----------------------------------|
| Lab EPA ID No.: ID00912                         | Lab Sample #: 82334              |
| Date Received: 10/05/2007                       | Date Reported by Lab: 10/24/2007 |
| Compliance or Replacement Sample: Compliance    |                                  |
| Date Collected: 10/05/2007                      | Time Collected: 09:00:           |
| Sample Type: Plant Tap                          |                                  |
| PWS #                                           | PWS Name: Quaking Aspen Estates  |
| Sampling Location: Mica Grange D0051750         | Tag #                            |
| Collector's Name: Brian Pruitt North Idaho Pump | Phone: (208) 773-8370            |

**ATL****Accurate Testing Labs, LLC**7950 Meadowlark Way  
Coeur d'Alene, ID 83815

Phone (208) 762 8378

Fax (208) 762 9082

Web site: www accuratetesting.com

E-mail: info@accuratetesting.com

**Public Drinking Water System INORGANIC CHEMICAL (IOC) ANALYSIS REPORT:**

| Phase II |              |         |       |       |           |               |         | Phase V                   |               |         |       |      |           |               |         |
|----------|--------------|---------|-------|-------|-----------|---------------|---------|---------------------------|---------------|---------|-------|------|-----------|---------------|---------|
| FRDS     | Contaminant  | RESULT* | MCL*  | MDL*  | Method    | Analysis Date | Analyst | FRDS                      | Contaminant   | RESULT* | MCL*  | MDL* | Method    | Analysis Date | Analyst |
| 1010     | Barium       | 0.07    | 2.000 | 0.02  | EPA 200.7 | 10/23/2007    | WM      | 1036                      | Nickel        | ND      | 0.10  | 0.02 | EPA 200.7 | 10/23/2007    | WM      |
| 1015     | Cadmium      | ND      | 0.005 | .002  | EPA 200.7 | 10/23/2007    | WM      | 1074                      | Antimony      | ND      | 0.006 | .005 | EPA 200.9 | 10/23/2007    | WM      |
| 1020     | Chromium     | 0.02    | 0.100 | 0.01  | EPA 200.7 | 10/23/2007    | WM      | 1075                      | Beryllium     | ND      | 0.004 | .002 | EPA 200.7 | 10/23/2007    | WM      |
| 1035     | Mercury      | ND      | 0.002 | .0005 | EPA 245.1 | 10/08/2007    | WM      | 1085                      | Thallium      | ND      | 0.002 | .001 | EPA 200.9 | 10/23/2007    | WM      |
| 1038     | Ti (NO2/NO3) | 0.7     | 10.0  | 0.5   | EPA 300.0 | 10/05/2007    | WM      | Other IOCs                |               |         |       |      |           |               |         |
| 1040     | Nitrate      | 0.7     | 10.0  | 0.5   | EPA 300.0 | 10/05/2007    | WM      | 1005                      | Arsenic       | ND      | 0.010 | .005 | EPA 200.9 | 10/15/2007    | WM      |
| 1041     | Nitrite      | ND      | 1.0   | 0.5   | EPA 300.0 | 10/05/2007    | WM      | 1025                      | Fluoride      | 0.3     | 4.000 | 0.2  | EPA 300.0 | 10/05/2007    | WM      |
| 1045     | Selenium     | ND      | 0.050 | .005  | EPA 200.9 | 10/23/2007    | WM      | 1052                      | Sodium        | 11.90   |       | 0.30 | EPA 200.7 | 10/23/2007    | WM      |
| 1024     | Cyanide      |         |       |       |           |               |         | Secondary IOCs (optional) |               |         |       |      |           |               |         |
| 1002     | Aluminum     |         |       |       |           |               |         | 1055                      | Sulfate       | 4.9     | 250.0 | 1.50 | EPA 300.0 | 10/05/2007    | WM      |
| 1003     | Ammonia      |         |       |       |           |               |         | 1096                      | Zinc          |         |       |      |           |               |         |
| 1016     | Calcium      | 27.20   |       | 0.1   | EPA 200.7 | 10/12/2007    | WM      | 1805                      | Color         |         |       |      |           |               |         |
| 1017     | Chloride     |         |       |       |           |               |         | 1915                      | Hardness      | 116.0   |       | 0.2  | SM 2340   | 10/12/2007    | WM      |
| 1022     | Copper       |         |       |       |           |               |         | 1920                      | Odor          |         |       |      |           |               |         |
| 1027     | Hyd. Sulfide |         |       |       |           |               |         | 1925                      | pH            | 6.79    |       |      | EPA 150.1 | 10/05/2007    | AE      |
| 1028     | Iron         | 0.82    | 0.30  | 0.02  | EPA 200.7 | 10/12/2007    | WM      | 1928                      | Conductivity  |         |       |      |           |               |         |
| 1031     | Magnesium    | 11.60   |       | 0.03  | EPA 200.7 | 10/12/2007    | WM      | 1927                      | Alkalinity    | 130.0   |       | 0.1  | EPA 310.1 | 10/05/2007    | AE      |
| 1032     | Manganese    | 0.01    | 0.05  | 0.01  | EPA 200.7 | 10/12/2007    | WM      | 1930                      | Diss. Solids  | 181.0   | 500.0 | 1.00 | EPA 160.1 | 10/09/2007    | AE      |
| 1042     | Potassium    |         |       |       |           |               |         | 1997                      | Langlier Indx | -1.437  |       |      | Misc.     | 10/12/2007    | WM      |
| 1049     | Silica SiO2  |         |       |       |           |               |         | 2905                      | Surfactants   |         |       |      |           |               |         |
| 1050     | Silver       |         |       |       |           |               |         | 1030                      | Lead          |         |       |      |           |               |         |

\*Reported in mg/L unless otherwise noted, units differ for secondary MCLs depending on contaminant

ND = Not detected within sensitivity of instrument

Empty = No analysis performed for this contaminant

MDL = Method detection limit

MCL = Maximum Contaminant Level

Comments:

Inland Northwest Consultants

Joe Hassel

1296 E. Polston Ave Ste B

Post Falls, ID 83854

Lab Supervisor's Signature

Walter Mueller

10/24/2007

ATL Order No.: 2007100119 1

|                                                 |                                  |
|-------------------------------------------------|----------------------------------|
| Lab EPA ID No.: ID00912                         | Lab Sample #: 82334              |
| Date Received: 10/05/2007                       | Date Reported by Lab: 10/24/2007 |
| Compliance or Replacement Sample: Compliance    |                                  |
| Date Collected: 10/05/2007                      | Time Collected: 09:00            |
| Sample Type: Plant Tap                          |                                  |
| PWS #                                           | PWS Name: Quaking Aspen Estates  |
| Sampling Location: Mica Grange D0051750         | Tag #                            |
| Collector's Name: Brian Pruitt North Idaho Pump | Phone: (208) 773-8370            |

**ATL****Accurate Testing Labs, LLC**7950 Meadowlark Way  
Coeur d'Alene, ID 83815

Phone (208) 762 8378

Fax (208) 762 9082

Web site: www.accuratetesting.com

E-mail: info@accuratetesting.com

**Public Drinking Water System VOLATILE ORGANIC (VOC) ANALYSIS REPORT:**

Method: EPA 524.2

Analysis Date: 10/18/2007

Analyst: ANA

| FRDS | Contaminant              | RESULT* | MCL*  | MDL* | FRDS | Contaminant                | RESULT* | MCL*  | MDL* |
|------|--------------------------|---------|-------|------|------|----------------------------|---------|-------|------|
| 2378 | 1,2,4-Trichlorobenzene   | ND      | 70.0  | 0.5  | 2979 | trans-1,2-Dichloroethylene | ND      | 100.0 | 0.5  |
| 2380 | cis-1,2-Dichloroethylene | ND      | 70.0  | 0.5  | 2980 | 1,2-Dichloroethane         | ND      | 5.0   | 0.5  |
| 2950 | Trihalomethanes-Total    | 1.9     | 100.0 | 0.5  | 2981 | 1,1,1-Trichloroethane      | ND      | 200.0 | 0.5  |
| 2943 | Bromodichloromethane     | ND      |       | 0.5  | 2982 | Carbon Tetrachloride       | ND      | 5.0   | 0.5  |
| 2942 | Bromoform                | ND      |       | 0.5  | 2983 | 1,2-Dichloropropane        | ND      | 5.0   | 0.5  |
| 2941 | Chloroform               | 1.9     |       | 0.5  | 2984 | Trichloroethylene          | ND      | 5.0   | 0.5  |
| 2944 | Dibromochloromethane     | ND      |       | 0.5  | 2985 | 1,1,2-Trichloroethane      | ND      | 5.0   | 0.5  |
| 2955 | Xylenes-Total            | ND      | 1000  | 0.5  | 2987 | Tetrachloroethylene        | ND      | 5.0   | 0.5  |
| 2964 | Dichloromethane          | ND      | 5.0   | 0.5  | 2989 | Monochlorobenzene          | ND      | 100.0 | 0.5  |
| 2968 | o-Dichlorobenzene        | ND      | 600.0 | 0.5  | 2990 | Benzene                    | ND      | 5.0   | 0.5  |
| 2969 | p-Dichlorobenzene        | ND      | 75.0  | 0.5  | 2991 | Toluene                    | ND      | 1000  | 0.5  |
| 2976 | Vinyl Chloride           | ND      | 2.0   | 0.5  | 2992 | Ethylbenzene               | ND      | 700.0 | 0.5  |
| 2977 | 1,1-Dichloroethylene     | ND      | 7.0   | 0.5  | 2996 | Styrene                    | ND      | 100.0 | 0.5  |

\*Reported in ug/L unless otherwise noted

ND = Not detected within sensitivity of instrument

Empty = No analysis performed for this contaminant

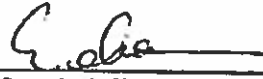
MDL = Method detection limit

MCL = Maximum Contaminant Level

VOC: Sub\_Lab: Anatek Labs, Inc.

Comments:

Inland Northwest Consultants  
 Joe Hassel  
 1296 E. Polston Ave Ste B  
 Post Falls, ID 83854

  
 Lab Supervisor's Signature  
 Walter Mueller

10/24/2007

ATL Order No.: 2007100119 1

|                                                 |                                  |
|-------------------------------------------------|----------------------------------|
| Lab EPA ID No.: ID00912                         | Lab Sample #: 82334              |
| Date Received: 10/05/2007                       | Date Reported by Lab: 10/24/2007 |
| Compliance or Replacement Sample: Compliance    |                                  |
| Date Collected: 10/05/2007                      | Time Collected: 09:00            |
| Sample Type: Plant Tap                          |                                  |
| PWS #                                           | PWS Name: Quaking Aspen Estates  |
| Sampling Location: Mica Grange D0051750         | Tag #                            |
| Collector's Name: Brian Pruitt North Idaho Pump | Phone: (208) 773-8370            |

**ATL****Accurate Testing Labs, LLC**7950 Meadowlark Way  
Coeur d'Alene, ID 83815

Phone (208) 762 8378

Fax (208) 762 9082

Web site: www.accuratetesting.com

E-mail: info@accuratetesting.com

**Public Drinking Water System VOLATILE ORGANIC (VOC) ANALYSIS REPORT:**

Method: EPA 524.2

Analysis Date: 10/18/2007

Analyst: ANA

| FRDS | Contaminant              | RESULT* | MCL*  | MDL* | FRDS | Contaminant                | RESULT* | MCL*  | MDL* |
|------|--------------------------|---------|-------|------|------|----------------------------|---------|-------|------|
| 2378 | 1,2,4-Trichlorobenzene   | ND      | 70.0  | 0.5  | 2979 | trans-1,2-Dichloroethylene | ND      | 100.0 | 0.5  |
| 2380 | cis-1,2-Dichloroethylene | ND      | 70.0  | 0.5  | 2980 | 1,2-Dichloroethane         | ND      | 5.0   | 0.5  |
| 2950 | Trihalomethanes-Total    | 1.9     | 100.0 | 0.5  | 2981 | 1,1,1-Trichloroethane      | ND      | 200.0 | 0.5  |
| 2943 | Bromodichloromethane     | ND      |       | 0.5  | 2982 | Carbon Tetrachloride       | ND      | 5.0   | 0.5  |
| 2942 | Bromoform                | ND      |       | 0.5  | 2983 | 1,2-Dichloropropane        | ND      | 5.0   | 0.5  |
| 2941 | Chloroform               | 1.9     |       | 0.5  | 2984 | Trichloroethylene          | ND      | 5.0   | 0.5  |
| 2944 | Dibromochloromethane     | ND      |       | 0.5  | 2985 | 1,1,2-Trichloroethane      | ND      | 5.0   | 0.5  |
| 2955 | Xylenes-Total            | ND      | 1000  | 0.5  | 2987 | Tetrachloroethylene        | ND      | 5.0   | 0.5  |
| 2964 | Dichloromethane          | ND      | 5.0   | 0.5  | 2989 | Monochlorobenzene          | ND      | 100.0 | 0.5  |
| 2968 | o-Dichlorobenzene        | ND      | 600.0 | 0.5  | 2990 | Benzene                    | ND      | 5.0   | 0.5  |
| 2969 | p-Dichlorobenzene        | ND      | 75.0  | 0.5  | 2991 | Toluene                    | ND      | 1000  | 0.5  |
| 2976 | Vinyl Chloride           | ND      | 2.0   | 0.5  | 2992 | Ethylbenzene               | ND      | 700.0 | 0.5  |
| 2977 | 1,1-Dichloroethylene     | ND      | 7.0   | 0.5  | 2996 | Styrene                    | ND      | 100.0 | 0.5  |

\*Reported in ug/L unless otherwise noted

ND = Not detected within sensitivity of instrument

Empty = No analysis performed for this contaminant

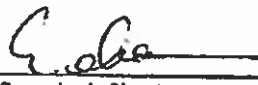
MDL = Method detection limit

MCL = Maximum Contaminant Level

VOC: Sub\_Lab: Anatek Labs, Inc.

Comments:

Inland Northwest Consultants  
Joe Hassel  
1296 E. Polston Ave Ste B  
Post Falls, ID 83854

  
Lab Supervisor's Signature  
Walter Mueller

10/24/2007

ATL Order No.: 2007100119 1

|                                                 |                                  |
|-------------------------------------------------|----------------------------------|
| Lab EPA ID No.: ID00912                         | Lab Sample #: 82334              |
| Date Received: 10/05/2007                       | Date Reported by Lab: 10/24/2007 |
| Compliance or Replacement Sample: Compliance    |                                  |
| Date Collected: 10/05/2007                      | Time Collected: 09:00:           |
| Sample Type: Plant Tap                          |                                  |
| PWS #                                           | PWS Name: Quaking Aspen Estates  |
| Sampling Location: Mica Grange D0061750         | Tag #                            |
| Collector's Name: Brian Pruitt North Idaho Pump | Phone: (208) 773-8370            |

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**Public Drinking Water System SYNTHETIC ORGANIC (SOC) ANALYSIS REPORT:**

| FRDS | Contaminant               | RESULT* | Method    | MCL* | MDL* | Analysis Date | Analyst |
|------|---------------------------|---------|-----------|------|------|---------------|---------|
| 2005 | Endrin                    | ND      | EPA 505   | 2.0  | 0.03 | 10/18/2007    | ANA     |
| 2010 | Lindane                   | ND      | EPA 505   | 0.2  | 0.02 | 10/18/2007    | ANA     |
| 2015 | Methoxychlor              | ND      | EPA 505   | 40   | 0.1  | 10/18/2007    | ANA     |
| 2020 | Toxaphene                 | ND      | EPA 505   | 3.0  | 1    | 10/18/2007    | ANA     |
| 2031 | Dalapon                   | ND      | EPA 515.3 | 200  | 1.0  | 10/15/2007    | ANA     |
| 2032 | Diquat                    | ND      | EPA 549.2 | 20   | 0.4  | 10/08/2007    | ANA     |
| 2033 | Endothall                 | ND      | EPA 548.1 | 100  | 9    | 10/12/2007    | ANA     |
| 2034 | Glyphosate                | ND      | EPA 547   | 700  | 6    | 10/08/2007    | ANA     |
| 2035 | Di(2-ethylhexyl)adipate   | ND      | EPA 525.2 | 400  | 2.0  | 10/22/2007    | ANA     |
| 2036 | Oxamyl                    | ND      | EPA 531.1 | 200  | 1    | 10/11/2007    | ANA     |
| 2037 | Simazine                  | ND      | EPA 525.2 | 4.0  | 0.07 | 10/22/2007    | ANA     |
| 2040 | Picloram                  | ND      | EPA 515.3 | 500  | 0.1  | 10/15/2007    | ANA     |
| 2041 | Dinoseb                   | ND      | EPA 516.3 | 7    | 0.1  | 10/15/2007    | ANA     |
| 2042 | Hexachlorocyclopentadiene | ND      | EPA 525.2 | 50   | 0.1  | 10/22/2007    | ANA     |
| 2046 | Carbofuran                | ND      | EPA 531.1 | 40   | 0.9  | 10/11/2007    | ANA     |
| 2050 | Atrazine                  | ND      | EPA 525.2 | 3.0  | 0.1  | 10/22/2007    | ANA     |
| 2051 | Alachlor                  | ND      | EPA 525.2 | 2.0  | 0.1  | 10/22/2007    | ANA     |
| 2065 | Heptachlor                | ND      | EPA 505   | 0.4  | 0.04 | 10/18/2007    | ANA     |
| 2067 | Heptachlor Epoxide        | ND      | EPA 505   | 0.2  | 0.02 | 10/18/2007    | ANA     |
| 2106 | 2,4-D                     | ND      | EPA 515.3 | 70   | 0.1  | 10/15/2007    | ANA     |
| 2110 | 2,4,5-TP                  | ND      | EPA 515.3 | 50   | 0.1  | 10/15/2007    | ANA     |
| 2274 | Hexachlorobenzene         | ND      | EPA 525.2 | 1.0  | 0.1  | 10/22/2007    | ANA     |
| 2039 | Di(2-ethylhexyl)phthalate | ND      | EPA 525.2 | 6    | 0.6  | 10/22/2007    | ANA     |
| 2306 | Benzof[a]pyrene           | ND      | EPA 525.2 | 0.2  | 0.02 | 10/22/2007    | ANA     |
| 2328 | Pentachlorophenol         | ND      | EPA 515.3 | 1    | 0.04 | 10/15/2007    | ANA     |
| 2383 | PCB's                     | ND      | EPA 605   | 0.5  | 0.01 | 10/18/2007    | ANA     |
| 2931 | DBCP                      | ND      | EPA 504.1 | 0.2  | 0.02 | 10/18/2007    | ANA     |
| 2946 | EDB                       | ND      | EPA 504.1 | 0.05 | 0.01 | 10/18/2007    | ANA     |
| 2959 | Chlordane                 | ND      | EPA 505   | 2.0  | 0.10 | 10/18/2007    | ANA     |

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Sub\_Lab: Analek Labs, Inc.

Comments:

Inland Northwest Consultants  
Joe Hassel  
1296 E. Polston Ave Ste B  
Post Falls, ID 83854

  
Lab Supervisor's Signature

Walter Mueller

10/24/2007

ATL Order No.: 2007100119 1



Public Health

# PANHANDLE HEALTH DISTRICT

*Healthy People in Healthy Communities*

## ENVIRONMENTAL HEALTH

322 MARION AVENUE  
SANDPOINT, IDAHO 83864  
(208) 265-6384

<http://www2.state.id.us/phd1>

*has file*

July 10, 2007

Mr. Ryan Fobes  
Inland Northwest Consultants  
1296 E Polston Ave., Ste. B  
Post Falls, ID 83854

Re: Well site evaluation, Quaking Aspen

Dear Ryan:

Thank you for the opportunity to inspect the proposed well sites to serve the **Quaking Aspen** project. The sites are located on Lots 6 and 1 respectively. The sites are in the NW ¼ of the NE ¼ of Section 4 Township 49N Range 4W, B.M. The sites appear to be in accordance with Idaho Rules for Public Drinking Water Systems, IDAPA 58.01.08 (rules), and are approved. **Drilling may not be started until the following conditions are met, and approval is received from the Idaho Department of Environmental Quality (DEQ).**

1. The wells must be located a minimum of 50 feet from any potential source of contamination, and no closer to specific sources than;

|                |          |                           |         |
|----------------|----------|---------------------------|---------|
| Sewer line     | 50 feet  | Livestock                 | 50 feet |
| Septic tank    | 100 feet | Lakes, ponds, streams,    | 50 feet |
| Disposal Field | 100 feet | canals, ditches, & tanks  |         |
| Seepage Pit    | 100 feet | used to store non-potable |         |
| Privies        | 100 feet | substances                |         |

2. The sites are located in an area with apparent high ground water. Particular attention should be paid to the surface seal for these sites to prevent surface water intrusion.
3. Observe all other applicable setbacks.
4. Obtain a drilling permit from the Idaho Department of Water Resources (IDWR), 1910 Northwest Boulevard, Coeur d'Alene, Idaho 83814.

5. In accordance with Idaho Code 39-118, As constructed plans and specifications for the well, stamped by a professional engineer registered in Idaho, must be submitted to the Department of Environmental Quality, 2110 Ironwood Parkway, Coeur d'Alene, Idaho 83814. **These plans must be reviewed and approved before the well can be used.**

Please call me at (208) 265-6384, if you have any questions.

Sincerely,

*Mike Nelson*

Mike Nelson, R.E.H.S.  
Sr. Environmental Health Specialist

cc: Steve Tanner, IDEQ – Coeur d'Alene  
Bob Haynes, IDWR – Coeur d'Alene  
Diana Bardsley, Windemere Real Estate

